# Philadelphia's Wet Weather Management Programs

# Combined Sewer Management Program Annual Report

National Pollutant Discharge Elimination System (NPDES) Permits
Nos. PA0026689, PA0026662, PA0026671

# Stormwater Management Program Annual Report

National Pollutant Discharge Elimination System (NPDES) Permit
No. PA 0054712

Reporting Period July 1st 2020 to June 30th 2021

Submitted to:

**PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION**
Bureau of Water Quality Management

And

**ENVIRONMENTAL PROTECTION AGENCY – REGION III**
Water Protection Division

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# I. Management and Control of CSOs

This report is submitted pursuant to meeting the requirements of NPDES Permits #'s PA0026662, PA0026671, and PA0026689; PART C, I. Other Requirements, Combined Sewer Overflows (CSOs), III. Implementation of the Long Term CSO Control Plan, C. Watershed-Based Management, IV. Monitoring and Assessment. This section requires that the permittee submit an Annual CSO Status Report. The purpose of this report is to document the status and changes made to programs implemented by the City of Philadelphia (City), during Fiscal Year 2021 (FY21), which encompasses the period of July 1st, 2020 through June 30th, 2021, to manage and reduce the CSOs permitted to discharge to waters of the Commonwealth of Pennsylvania.

# II. Implementation of the Nine Minimum Controls

The Philadelphia Water Department (PWD) submitted an Updated Nine Minimum Control Report to the Department on June 1, 2013 to supplement the 1995 report and describe current activities as a result of new technology or practices. The nine minimum controls (NMCs) are low-cost actions or measures that can reduce CSO discharges and their effect on receiving waters, do not require significant engineering studies or major construction, and can be implemented in a relatively short time frame.

## II.A NMC 1 - Proper Operation and Regular Maintenance Programs for the Sewer System and the CSOs

### II.A.1 Implement a Comprehensive Geographic Information System (GIS) of the City Sewer System

To ensure PWD's investment in GIS is as accurate and up to date as possible, edits and improvements are made to data on a daily basis. PWD utilizes the GIS coverages as the foundation for many of its operations including maintenance management, capital improvements, and hydraulic modeling. During FY21, GIS layers were updated and maintained to ensure the accurate tracking and reporting of PWD assets and infrastructure.

### II.A.2 Implement a Comprehensive Sewer Assessment Program (SAP)

PWD continues to implement a comprehensive SAP to provide inspection of the collection system using closed circuit television (CCTV) and sonar. The SAP is a critical tool for operations and maintenance as it provides information on existing pipe conditions and helps to locate where repairs are needed. The program is also used to guide the capital improvement program to ensure that the existing sewer systems are adequately maintained, rehabilitated, and reconstructed.

CCTV inspections are conducted/managed by PWD's Flow Control group and also performed by PWD contractors. During FY21, 24.86 miles of sewer inspections were completed via CCTV, averaging about 2.07 miles a month as shown in **Table II.A.2-1 Monthly TV Inspections.** In addition, the CCTV Unit completed a total of 1,551 inspections of Green Stormwater Infrastructure systems during FY21.

**Table II.A.2-1 Monthly TV Inspections**

| Date | Collector Systems (Miles Inspected) |
|---|---|
| Jul-20 | 2.42 |
| Aug-20 | 2.04 |
| Sep-20 | 2.04 |
| Oct-20 | 2.44 |
| Nov-20 | 1.98 |
| Dec-20 | 0.49 |
| Jan-21 | 1.62 |
| Feb-21 | 1.54 |
| Mar-21 | 3.14 |
| Apr-21 | 2.5 |
| May-21 | 2.68 |
| Jun-21 | 2.07 |
| **Average** | **2.07** |
| **Total** | **24.86** |

## II.B NMC 2 - Maximum Use of the Collection System for Storage

### II.B.1 Continue to Institutionalize a Comprehensive Monitoring and Modeling Program

*Monitoring*

PWD maintains an extensive monitoring network throughout the combined sewer system including rain gages, pump stations, and connections from adjacent outlying communities. Information on the monitoring network with an updated listing of the monitors, rain gages, and pumping stations can be found in **Appendix B - Flow Monitoring**.

*Modeling*

The hydrologic and hydraulic models will be updated as needed to support Nine Minimum Controls implementation and reporting.

### II.B.2 Continue to Operate and Maintain a Network of Permanent and Temporary Flow Monitoring Equipment

PWD continues to maintain a CSO permanent monitoring network and temporary monitoring programs to support planning for CSO control projects and to minimize dry weather overflows and tidal inflows.

*Permanent Flow Monitoring Program*

PWD uses a network of permanent flow monitors that are connected to a newer data acquisition system (TELOG) which uses cellular-based telemetry and improved enterprise data management software. As of FY21, the Collector System Monitoring Network is connected to over 320 sites at various locations including CSO Regulators, Rain Gauges, Pump Stations, Interceptors, Chemical Feed Tanks and Hydraulic Control Points which collect over 720 individual measurements with over a ninety percent operational status. All monitoring devices deployed throughout the PWD Collector System continually store data and periodically communicate monitoring information back to the Collector Systems Headquarters for review and use by staff. The listing of permanent flow monitors can be found in **Appendix B – FY 2021 Flow Monitoring.**

*Temporary Flow Monitoring Program*

PWD maintains its temporary flow monitoring program, initiated in July 1999, which consists of deploying portable flow meters throughout targeted Philadelphia sewershed areas to quantify sanitary and combined flow from the sewer system and characterize the tributary sewersheds. During FY21, PWD monitored 58 sites for the purposes of model calibration, inflow/infiltration (I/I) identification, design support, etc. The listing of all temporary flow monitors, their location, and the deployment projects can be found in **Appendix B – Flow Monitoring: Table 6 – Listing of all Temporary Flow Monitors Deployed by Projects.**

## II.B.3 Continue to Evaluate the Collection System to Ensure Adequate Transport Capacity for Dry and Wet Weather Flow

*Long Term Control Plan Update*

System-wide hydrologic and hydraulic (H&H) models have been developed in support of the Long Term CSO Control Plan Update (LTCPU). Model evaluations have been performed to evaluate the system performance benefits of various system improvement scenarios.

The evaluations of the system-wide models were completed in FY08 to support the LTCPU. Since 2008 EPA's Stormwater Management Model (SWMM) has been updated to SWMM 5. PWD continues to update the H&H models as needed to support planning and regulatory reporting needs.

*PC-30 Extreme Wet Weather Overflow*

PWD continues to monitor PC-30. For additional information on other efforts conducted for this site, please refer to **Section III.B.2.: Table III.B.2-1** on page 29.

*Flood Risk Management*

PWD has a robust flood risk management program to analyze and reduce property damage from flooding and basement backups. Aspects of this program include property data collection, implementing individual property mitigation when appropriate, sewer system H&H analysis to understand flood prone areas, and developing policies to reduce flood risk in the City.

*Flood Relief Project Summary*

More recently, the focus of PWD's flood risk management efforts include: South Philadelphia, Northern Liberties, Germantown, and Eastwick. The goal of these efforts is to improve the conveyance of stormwater by targeting peak flow and volume reduction and reducing the potential for flooding. Hydrologic and hydraulic modeling indicates that sewer system improvements or source reduction can sometimes reduce the frequency and/or severity of flooding events. However, the potential benefits of structural improvements to the City's drainage infrastructure must always be counterbalanced by the financial, economic, and social impacts of implementation. PWD continues to refine and optimize mitigation alternatives to minimize negative impacts to communities.

*South Philadelphia*

In FY21, PWD has been working towards the completion of the 70% Design of the Moore Street Storm Flood Relief Project. The project involves the construction of 8' x 12' reinforced concrete box sewers that drain to the Delaware River. PWD has applied a refined modeling methodology at the parcel level to better define annual expected damages and benefits.

### *Northern Liberties*

Storm Flood Relief sewer projects were initiated in the Northern Liberties neighborhood to reduce flood risk in the combined sewer neighborhoods of Northern Liberties, Fishtown, Port Richmond and Lower Kensington. **Table II.B.3-1** demonstrates the status of the Northern Liberties SFR program at the end of FY21:

**Table II.B.3-1 Northern Liberties SFR Sewer Improvement Projects**

| Project Name | Location | Project Status |
|---|---|---|
| Northern Liberties Phase 1 | Delaware Avenue and Laurel Street | Construction Complete (2011) |
| Northern Liberties Phase 2 | Canal Street Chamber | Construction Complete (2016) |
| Northern Liberties Phase 3 | Delaware Ave to River (Undertaken by Sugar House) | Construction Complete (2016) |
| Northern Liberties Phase 4 | Canal & Laurel Sts. to Germantown Ave. &Wildey St. | Construction Complete (2016) |
| Northern Liberties Phase 5 | Germantown Ave. from Wildey St. to Girard Ave. | Construction underway |
| Northern Liberties Phase 6 | Germantown Ave. & Thompson St. to Master & Randolph Sts. | In Design at 90% |

### *Germantown*

The East Germantown section of Philadelphia was impacted by flooding from intense rainstorms, such as Hurricane Irene (8/27/11) and Tropical Storm Lee (9/7/11). In FY21, PWD reached the 50% Design milestone of the N. 21st Street Sewer Improvement Project which aims to reduce residual flooding outside of the geographic scope of the long term capital project.

### *Eastwick*

The Eastwick neighborhood is located in a naturally low-lying area in southwest Philadelphia. The neighborhood has experienced severe riverine flooding from multiple storms including Hurricane Floyd, Hurricane Irene, Tropical Storm Lee, and Hurricane Isaias. The City of Philadelphia, acting through PWD, executed the Federal Cost Share Agreement in May 2019 to move forward with the feasibility study through the Continuing Authorities Program. Due to other priorities at the USACE, the Alternative Formulation Briefing has not been completed and it is not clear when the study will be ready for review.

## II.B.4 Fully Integrate the Real-Time Control Facility into the Operations of PWD

### *Real Time Control Evaluation*

Several projects were previously evaluated for Real Time Control; for additional information on these projects, please refer to Section 2.1 Evaluate Real Time Control in LTCP on page 10 of the 1996 Annual CSO Status Report and Section II.B.3.4 Real Time Control Evaluation on page 26 of the CSO-Stormwater FY10 Annual Report. For details regarding the current operational statuses of the City's real time control CSO regulator sites, see **Section II.B.5** below.

There are currently two projects in the Department's design process that are being evaluated for the use of real-time control technology:

#### D-05 CSO Regulator (State Road and Magee Avenue)

The D05 regulator is being examined for additional CSO capture through the installation of a new, enlarged interceptor connection with a real-time controlled sluice gate. As of FY21, this project is in the 90% design stage and is slated for completion in FY24. This project is coupled to the Frankford Siphon replacement project, which has been transmitted to Projects Control, and is expected to result in enhanced storage and conveyance of wet weather flows via modification to an existing computer controlled CSO.

#### Thomas Run Relief Sewer (R-01)

A capital construction project for the modification of the Thomas Run relief sewer has been initiated. The project is evaluating the potential for this system to be maximized for in-line storage during wet weather be creating a new interceptor connection and CSO regulator site at the outfall of this storm flood relief system and will consider the effectiveness of real-time control. This project, as of FY21, is on hold at around 30% design and is slated for FY24 for completion.

### II.B.5 Operate and Maintain In-Line Collection Storage System Projects Contained within the LTCP

#### *Main Relief*

The Main Relief project is operating as designed with a 7.5 foot static dam. The current configuration achieves an overflow reduction of approximately 30 MG annually.

#### *Tacony Creek Park (T-14)*

The T14 storage sewer provides combined sewer overflow capture in the Northeast Drainage District (NEDD). The T-14 storage sewer system is operating under automated controls and reducing overflow volume during wet weather events. T-14 operated at the full design level during FY21.

#### *Rock Run Relief (R-15)*

The Rock Run Relief Sewer provides flood relief to combined sewer areas upstream of regulator T-8 in the Northeast Drainage District (NEDD). An inflatable dam was constructed in the Rock Run Relief Sewer to allow for utilization of in-system storage to retain combined flows during wet weather events. The Rock Run storage facility operated at the full design capacity during FY21.

#### *Computer-Controlled CSO Regulators*

PWD has eight computer-controlled CSO regulators that are configured to maximize storage during wet weather. All the computer-controlled regulators are in the northeast drainage district (NEDD). Five of the eight computer-controlled regulator sites had control upgrades installed in FY17. In FY21, D-07 was put back into service with the completion of upgrades to the computer control system.

## II.C NMC 3 - Review and Modification of Pretreatment Requirements to Assure CSO Impacts Are Minimized

### II.C.1 Expand the Pretreatment Program to Include Significant Industrial Users (SIUs) Whose Facilities Contribute Runoff to the Combined Sewer System

The City of Philadelphia's Pretreatment Program regulates all significant industrial users (SIUs) that discharge into PWD's service area, which includes SIUs in both separate and combined sewer systems.

The City continually reevaluates the Pretreatment Program to determine if improvements can be made. Through annual monitoring and inspection activities, PWD currently regulates 122 SIUs that discharge to the sanitary system. PWD conducts SIU program review and inspections on a calendar year cycle, having inspected all 122 permitted facilities during the 2020 calendar year.

PWD also maintains a website to inform the public and industries of permitting regulations, requirements and other information that may benefit or impact industrial users. The responsible PWD group's website is located at the following web address: http://www.phila.gov/water/IWU.html.

### II.C.2 Incorporate Guidance on BMPs for Industrial Stormwater Discharges into Stormwater Management Regulations Guidance

Regular updates are made to the Philadelphia Stormwater Management Guidance Manual. The manual assists developers in meeting the requirements of the Stormwater Regulations and can be updated when necessary to incorporate new information. The current version of the manual is available at http://www.pwdplanreview.org/manual/.

Please refer to the MS4 Annual Report **Section F.5.g - Stormwater BMP Handbook and Construction Site BMP Sediment & Erosion Control Checklist** on page 31 for additional information on the updated manual.

### II.C.3 Continue to Serve as a Member of the Philadelphia Inter-Governmental Scrap and Tire Yard Task Force

The Scrap Yard Task Force (SYTF) was created to address numerous complaints about the operation of scrap metal and auto salvage businesses, which may cause polluted runoff to enter the City's sewers, blight in City neighborhoods, and contribute to short dumping and other environmental hazards to area waterways.

The SYTF has been in operation since it was reorganized in September of 2008. Regular inspections and meetings occur, inspecting about 4 scrap facilities each month to bring businesses conducting these activities into compliance. The SYTF will occasionally inspect facilities that do not fit the strict definitions of either a junkyard or metal recycler but present potential for negative impact on the environment and surrounding area. Some of these sites include sites with tire accumulations, overflow lots, other recycling facilities, and shipping operations. The SYTF also responds to community complaints having to do with facilities or properties that are considered a nuisance or problematic in a given neighborhood.

The core agencies involved in the SYTF are PWD, PADEP's Solid Waste division, Department of License and Inspections (L&I), Philadelphia Police Auto Squad and the Philadelphia Fire Dept. Hazmat Administration Unit. Each attending agency performs specific tasks as dictated by their primary regulatory mission. For example, PWD inspects sites for water and sewer violations, as well as violations that may be referred to the PADEP Clean Water division. PWD is the coordinating entity that designates the facilities to be visited.

Since March 2020, no SYTF meetings or inspections have occurred due to concerns relating to the COVID-19 Pandemic and re-prioritization of available staff. Plans are underway to reinitiate this program shortly once resources are available again.

## II.D NMC 4 - Maximization of Flow to the Publicly Owned Treatment Works (POTW) for Treatment

### II.D.1 Continue to Analyze and Implement Non-Capital Intensive Steps to Maximize the Wet Weather Flow to the POTW

*Modified Regulator Plan*

The Modified Regulator Plan (MRP) was designed to deliver more flow to the WPCPs more frequently and enable greater pollutant removals. The projected flow increase associated with the MRP was completely implemented by the submission of the 1997 Annual Combined Sewer Overflow Status Report. Additional plan implementation efforts were included in the Updated Nine Minimum Controls Report which can be found online by accessing the following link: http://water.phila.gov/pool/files/NMC_Report_Final.pdf.

*Maximization of Wet Weather Treatment in the LTCPU*

PWD completed and submitted a comprehensive Wet Weather Facility Plan on June 1, 2016, which provides details including schedule, cost and anticipated performance for each project presented in and supersedes the FCPs. More details on these plans can be accessed at the following link: http://water.phila.gov/reporting/ltcp/.

### II.D.2 Continue the Program Which Requires Flow Reduction Plans in Agreements to Treat Wastewater Flows from Satellite Collection Systems Where Violations of Contractual Limits are Observed

PWD provides wastewater service to some of its neighboring communities. Communities that exceed their contractual limits must develop flow reduction plans, under PWD review. In FY21, there were no significant updates to the Wholesale Wastewater Customer contracts. The list of outlying community contracts can be found below in **Table II.D.2-1: Listing of Wholesale Wastewater Customer Contracts and Capacities**.

**Table II.D.2-1 Listing of Wholesale Wastewater Customer Contracts and Capacities**

| Customers | Average Annual Daily Flow Maximum (MGD) | Maximum Daily Flow (MGD) | Instantaneous Maximum Rate (Cubic ft./sec) | Maximum Annual BOD Loadings (1,000's lbs.) | Maximum Annual SS Loadings (1,000's lbs.) |
|---|---|---|---|---|---|
| **Northeast Plant** | | | | | |
| Abington | 2.97 | 4.45 | 9.54 | 2,102 | 2,481 |
| Bensalem | 6.13 | - | 11.74 | 5,340 | 3,734 |
| Bucks | 24 | 33.00 | 74.26 | 13,400 | 13,400 |
| Cheltenham | - | - | 26 | - | - |
| Lower Moreland | 1.90 | 2.85 | 5.88 | 729 | 966 |
| Lower Southampton | 7.14 | 9.28 | 15.79 | 5,500 | 6,000 |
| **Southwest Plant** | | | | | |
| DELCORA | 50.00 | 75.00 | 155.00 | 21,771 | 19,487 |
| Lower Merion | 14.50 | - | 31.57 | 6,871 | 7,250 |
| Springfield (Erdenheim) | 3.20 | - | 6.65 | 3,100 | 3,300 |
| Upper Darby | 17.00 | - | 35.00 | 6,831 | 7,348 |
| **Southeast Plant** | | | | | |
| Springfield (Wyndmoor) | 1.00 | - | 1.93 | 300 | 400 |

### II.D.3 Use Comprehensive Monitoring and Modeling Program to Identify Suburban Communities where Excessive Rainfall-dependent I/I Appear to be Occurring

The US EPA's SWMM was used to develop the watershed-scale model for the combined and separate sewer systems. Suburban communities are modeled as separate sanitary sewersheds that load to the PWD sewer network. The rainfall response from these sheds is calibrated to flow monitoring data collected at each respective connection to PWD sewer network (if the sewershed is not monitored then a reference shed is used to obtain the rainfall response). Presently, permanent flow monitors are installed at 63 connections. **Appendix B – Flow Monitoring: Table 2** contains the list of all known connections, their location and whether the connection is permanently monitored.

### II.D.4 Maintain and Modify Combined Sewer Collection System/Chambers to send more flow to the POTW

PWD monitors regulating chambers regularly. Issues are identified and addressed as soon as possible. Modifications include the following:

- F03: The dam downstream of the slot regulator was discovered to be missing on 4/20/2021. The SWO conduit in the model was modified to reflect this change. Repairs were completed by the end of Q2 2021.
- C04W: The dam downstream of the slot regulator was discovered to be missing on 4/21/2021. The SWO conduit in the model was modified to reflect this change. Repairs were completed by the end of Q2 2021.

**Appendix D – FY21 NPDES Annual CSO Status Report:** Table 2 shows the CSO volume, duration, and frequency of overflow events per permitted outfall for the rainfall that fell in FY21 utilizing SWMM 5 model version 2017.B.02.04. Table 3 shows the same statistics as table 2 but for the typical year rainfall utilizing the SWMM model that support the 5-year Evaluation and Adaptation Plan (EAP) submitted in October 2016.

## II.E NMC 5 - Prohibition of CSOs during Dry Weather

### II.E.1 Optimize the Real-Time Control Facility to Identify and Respond to Blockages and (non-chronic) Dry Weather Discharges

Regular inspections, reactive inspections, and maintenance of combined sewer overflow (CSO) regulators are performed throughout the City to ensure that sediment accumulations and/or blockages are identified and corrected immediately to avoid dry weather overflows. PWD utilizes a remote monitoring network system daily to help identify locations showing abnormal flow patterns.

#### *CSO Regulator Inspection & Maintenance Program*

PWD maintains 175 CSO regulator chambers with regulator devices that control the diversion of wastewater flow to the interceptor system and 26 storm relief diversion chambers that allow excess flow during storm events to be diverted to storm relief sewers. These chambers discharge through 164 NPDES permitted point sources which make up the CSO outfalls. The maintenance of the chambers is critical to the performance of the system in that they control the frequency, duration, and quantity of CSO discharges.

PWD continues to implement its policy of conducting next day follow-up inspections at sites that experience a dry weather discharge. Ongoing assessment of all inspection scheduling continues to ensure that CSO regulators are inspected at the frequency required to ensure timely response to operational issues and minimize the likelihood of dry weather discharges. During FY21, Flow Control crews completed 4,173 inspections on 201 CSO regulator sites and storm relief diversion chambers. The crews cleared 171 CSO regulator blockages to prevent possible discharges from developing. There were 6 dry weather discharges total during FY21. Details of the inspections during FY21 can be found beginning on page 13 of **Appendix C – FY21 CSO Maintenance Program Annual Report.**

#### *Tide Gate Inspection and Maintenance Program*

Eighty-nine (89) tide gates are located at approximately half of the CSO regulator chambers in the City's system and prevent tidal inflow into the combined sewer system from the estuary receiving water body. Maintenance of the gates is critical to system performance because inflow from the receiving water body can adversely affect the combined sewer system and treatment facilities by reducing system capacities, potentially causing dry weather discharges. In FY21, CSO tide gate preventative maintenance was completed at 21 of the tidally affected CSO regulator sites. Summaries of the tide gate inspection and maintenance completed during the past fiscal year are on page 26 of **Appendix C –FY21 CSO Maintenance Program Annual Report**, which documents the locations of tide gate preventative maintenance performed in FY21.

#### *Somerset Grit Chamber Cleaning*

During FY14, the Somerset grit chamber was removed from service because the upstream regulator was being relocated. This relocation project was completed during FY16.

#### *Central Schuylkill Pumping Station Grit Pocket Cleaning*

During FY21, the two grit pockets at the CSPS siphon were not cleaned due to the rehabilitation of the station, the on-going pandemic and vendor availability. Additional information on the CSPS cleaning activities conducted in FY21 is available on page 26 of **Appendix C – FY21 CSO Maintenance Program Annual Report**.

#### *Routine Grit Cleaning*

PWD regularly inspects regulators, pump stations, junction chambers and sewers which are known to accumulate grit. These sites are scheduled for flushing and vacuuming on as-needed basis.

## II.F NMC 6 - Control of Solid and Floatable Materials in CSOs

### II.F.1 Control the Discharge of Solids and Floatables by Cleaning Inlets and Catch Basins

PWD's Inlet Cleaning Unit (ICU) is responsible for inspecting and cleaning stormwater inlets within the City. When fully staffed, there are forty-one inlet cleaning crews whose primary duties include cleaning, removing and properly disposing of debris (solids and floatables) from inside City inlets as well as street level cleaning in the vicinity of inlets to prevent debris from entering the collection system and waterways. Other duties include inspection of inlet conditions and referral of structural defects to the Sewer Maintenance Unit for repair to ensure proper function. Crews are responsible for cleaning high volume traffic areas, retrieving and installing inlet covers, replacing missing inlet covers, installing locking covers, and unclogging choked inlet traps and outlet pipes so inlets can take water. A high level of focus is placed on responding to customer complaints of flooding, blockages, and foul odors.

During FY21, the ICU was responsible for maintenance of approximately 72,000 stormwater inlets connected to the City's combined and separate storm sewer systems (gray inlets). ICU is also responsible for cleaning of pretreatment on stormwater inlets connected to green stormwater infrastructure (green inlets). By the end of the year, ICU was responsible for monthly preventative maintenance of approximately 1,130 green inlets.  Fiscal year totals for work on GSI-connected inlets included 11,253 inlet inspections and 8,418 pretreatment cleanings.

Statistics related to the ICU's work productivity during FY21 and the previous two fiscal years can be found in **Table II.F.1-1**, below. The quantities for inlets inspected, inlets cleaned, debris removed and pounds per inlet during FY21 include work conducted at both gray and green inlets. The process of dewatering debris at a central location has increased cleaning efficiency (higher number of inlets cleaned) and decreased the weight of materials taken for disposal.

**Table II.F.1-1: Inlet Cleaning Statistics**

| | FY 19 | FY 20 | FY 21 |
|---|---|---|---|
| Total Inlets Inspected | 138,226 | 106,567 | 124,446 |
| Total Inlets Cleaned | 111,979 | 93,453 | 106,627 |
| Total Covers Replaced | 59 | 74 | 96 |
| Total Covers Retrieved | 47 | 63 | 49 |
| Total Covers Chained | 2,987 | 1,547 | 1,498 |
| Debris Removed (tons) | 5,515 | 4,192 | 4,796 |
| Avg. Lbs./ Inlet | 121 | 99 | 98 |

### II.F.2 Continue to Fund and Operate the Waterways Restoration Team (WRT)

PWD's Waterways Restoration Team (WRT) is a multi-crew force dedicated to performing stream examinations, infrastructure protection projects and cleanup work throughout the city including large trash and debris removal and restoration of eroded streambanks and streambeds. WRT's stream examinations consist of assessing a variety of field conditions including waterway, infrastructure, site access and sewage discharge assessments. WRT waterway maintenance work involves debris removal, stream restoration work, and assisting with sewer maintenance work to help provide a safe work environment while protecting stream ecosystems. WRT works in partnership with Philadelphia Parks and Recreation (PPR) staff and various Friends of the Parks groups to maximize resources and build positive relationships with our communities.

During FY21, WRT conducted 479 stream examinations and performed maintenance 545 times. WRT removed a total of 613 tons of debris from the City's waterways (**Table II.F.2-1**).  Of the total debris removed, most of the weight can be attributed to large organic material (e.g. trees) that have fallen into the waterways and restricted flow, thus increasing the potential for bank erosion and/or damage to infrastructure.

**Table II.F.2-1 Waterways Restoration Team – Annual Activity Summary FY12-FY21**

| Activity | FY 12 | FY 13 | FY 14 | FY 15 | FY16 | FY 17 | FY 18 | FY 19 | FY20 | FY21 |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Tons Removed | 741 | 1416 | 710 | 918 | 1130 | 817 | 1582 | 1070 | 618 | 613 |
| Cars Removed | 14 | 4 | 4 | 9 | 2 | 2 | 1 | 0 | 2 | 0 |
| Tires Removed | 1256 | 4756 | 1428 | 427 | 1069 | 1153 | 859 | 1713 | 1983 | 535 |
| Shopping Carts Removed | 50 | 27 | 20 | 67 | 38 | 87 | 74 | 203 | 20 | 3 |
| # of Stream Site Cleanups | 434 | 467 | 686 | 645 | 721 | 872 | 933 | 997 | 764 | 545 |
| # of Stream Site Exams | * | * | 438 | 369 | 378 | 374 | 272 | 381 | 357 | 479 |

*This metric was not available until FY14

## II.F.3 Continue to Operate and Maintain a Floatables Skimming Vessel

The skimming vessel is used as a control measure to remove floatable material from the Schuylkill and Delaware River. These traditionally large vessels also increase public awareness and help to educate on the impact of floatables to Philadelphia's receiving waterways. The PWD currently has three (3) skimming vessels: a large marine vessel, the R.E. Roy; a smaller pontoon vessel; and a small general workboat.

### *Large Floatables Skimming Vessel – R.E. Roy*

The 39-foot skimmer vessel is operated for approximately five days per week, for about 7 months out of the year, or more as appropriate conditions allows (i.e. weather). The vessel's main purpose is to perform general debris collection and removal on both these rivers, while also serving as a mechanism for public relations events. During the 162 days of on-water operation in FY21, a total 311 cubic yards of debris and floatable material were removed from the Delaware and Schuylkill Rivers (**Table II.F.3-1**). During the FY21 season, the R.E. Roy continued sorting and separating recyclable material, which equated to 4538 lbs. This recycling procedure on the R.E. Roy was significantly optimized during FY16 resulting in a nearly 4-fold improvement in amount collected in comparison to the previous year. In addition, PWD continues to partner with Bridgestone through their Tires4Ward Program to recycle the tires collected from skimming operations to be reused for rubberized asphalt, construction materials, landscaping mulch, consumer products and as tire-derived fuel for energy.

**Table II.F.3-1 Debris Collected and Days of Operation by R.E. Roy Skimming Vessel**

| Date | Total Tons Removed* | Cubic Yards Collected | Recyclables Collected (lbs.) | Days in Operation | Days on Schuylkill | Days on Delaware |
|---|---|---|---|---|---|---|
| July 2020 | 1.24 | 21.5 | 587 | 19 | 14 | 5 |
| August 2020 | 8.38 | 73.75 | 370 | 18 | 17 | 1 |
| September 2020 | 7.77 | 33.75 | 567 | 22 | 18 | 4 |
| October 2020 | 2.61 | 48.75 | 801 | 23 | 17 | 5 |
| November 2020 | 2.03 | 26.25 | 684 | 19 | 15 | 4 |
| December 2020 | 0.95 | 12.50 | 297 | 9 | 8 | 1 |
| January 2021 | RE Roy Out of Service (Dry-docked & Winterized) for Winter Season | | | | | |
| February 2021 | | | | | | |
| March 2021 | | | | | | |
| April 2021 | 0 | 20 | 351 | 15 | 12 | 3 |
| May 2021 | 0 | 30 | 144 | 16 | 14 | 2 |
| June 2021 | 2.30 | 45 | 736 | 22 | 21 | 1 |
| **FY21 Total** | **25.28** | **311.25** | **4538** | **162** | **136** | **26** |

* *Tons removed* is not a monthly metric and is only calculated when floatables/debris are removed from the shipyard and transported to the weigh station at the trash collection facility. Additional focus on the recycling of tires and wheels has decreased the total tons of debris removed.

### *Small Skimming Vessels*

PWD operates and maintains a smaller skimming vessels to retrieve floating trash and debris from the Schuylkill and Delaware Rivers within Philadelphia. The smaller skimming vessels are more effective in tight spaces found in marinas, among piers, and in near shore (shallow) areas. During FY21, PWD continue to maintain its small general workboat, and decided to decommission its 15 year old pontoon boat and replace it with a more versatile, all metal landing craft boat that can meet more needs of the department.

PWD's workboat conducted skimming operations and other activities in the tidal portions of the Delaware and Schuylkill rivers, specifically in areas not desirable or accessible by the larger skimming vessels. The marine flotsam and floatables are picked with long handled pickers or hand netted from the water surface by employees standing on the vessel deck or from the shoreline when necessary. The materials are emptied and segregated into separate bags for trash and recyclable material. The bags are stored on deck, until they are offloaded when the work boat is docked.

In FY21 due to safety concerns from the COVID-19 pandemic and staffing issues in 2021, operations did not occur calendar year 2020 and were limited in 2021. The skimming vessel was operational from April July 2021, equating to 3 deployments. At this time collection metrics for the FY21 Small Skimming Vessels are not available.

## II.F.4 Other Floatables Control Activities

Other activities practiced within the City are conducted with the intention of managing floatables. These initiatives provide integral components to ensure additional floatable and solids do not enter the City's waterways and surrounding areas. Some of these activities are described below.

*Volunteer Water Adjacent Cleanups*

The City has embraced the value of supporting and conducting volunteer water adjacent land-based cleanups with local partners and communities in areas in Philadelphia and surrounding region. These volunteer cleanup events provide an opportunity to make a significant difference in a given area within a few hours with the help of people willing to volunteer their time. The cleanup events also serve as opportunities to provide important information and public outreach about PWD's and the City's programs and how the volunteers' efforts are beneficial not only on an environmental/ecological standpoint but also helps promote social behavior changes.

*United By Blue Cleanups*

In 2016, PWD began to partner with United By Blue (UBB), a Philadelphia-based sustainable outdoor apparel company who conducts annual stream cleanups programs. Part of the company's business model includes the amiable mission: "For every product sold, United By Blue removes one pound of trash from oceans and waterways through company organized and hosted cleanups." PWD partners with UBB by recommending litter-prone locations that are adjacent to Philadelphia waterways, promoting and supporting volunteer based cleanup events hosted by UBB, and helping coordinate pick up of event collections by PWD's Waterways Restoration Team (WRT) or the Philadelphia Streets Department staff. Much of the work conducted by UBB are often in locations under the purview o PWD's floatables control and pollution prevention programs. In FY21, Unfortunately, UBB cleanups a were postponed due the COVID-19 pandemic but hope to bring community cleanup back in Summer 2021. In the meantime, UBB has been offering a DIY Cleanup Kit which includes all the tools that a person would need to organize their own cleanup anytime, including a pair of work gloves, two large bags (blue for recycling, white for trash), exclusive enamel waves pin and a how-to guide.

*Schuylkill Scrub*

The Schuylkill Scrub is a program that encourages and supports cleanup events taking place during the spring throughout the entire Schuylkill watershed- from the headwaters in Schuylkill County down to its confluence with the Delaware River in Philadelphia. Although this year to align with the Pick Up PA initiative from Keep PA Beautiful, the 2020 Schuylkill Scrub is postponed until September 1 to November 30, 2020. The Schuylkill Action Network coordinates the initiative, along with multiple partners, with a shared goal of cleaning as many miles of road, stream, and parkland in the Schuylkill watershed. Their efforts help prevent trash from making its way into our drinking water sources and keep our land and waters clean, litter-free, and beautiful. The last advertised Schuylkill Scrub was held in calendar year 2019, resulting in 412 cleanups being supported by 28,433 volunteers, 431 miles of streams cleaned, 1.12 millions of pounds of litter and bulk waste removed, and 727 tires collected. A decision was made while the pandemic was still a concern *t*o help prevent the spread of the coronavirus diseases, Schuylkill Scrub is discouraging planning public gatherings during this time of National Emergency, suggesting enthusiastic individuals to practice solo litter cleanups using the CleanSweep app, more information on the smartphone app is available at the following link: http://schuylkillwaters.org/projects/cleansweep.

*Tookany/Tacony-Frankford Trash Task Force*

In recent years, more targeted efforts to focus on litter have been initiated in the corridors surrounding the Tacony Creek watershed. PWD gathered members of different City agencies including Streets and Philadelphia Parks and Recreation (PPR), as well as representatives from the TTF Watershed Partnership (TTF), SEPTA, United by Blue, and Keep Philadelphia Beautiful (KPB), to initiate discussions and coordinate efforts to alleviate the litter problem and its impact on Tacony Creek.

The goal of the study is to establish trash resources and transport methods and then experiment with trash management practices which can then be applied to other drainage areas. The Task Force is continuing to research and explore methods for reducing the trash problem in the Tacony Watershed. During FY21, the TTF maintained the 20 trash cans in the Juniata neighborhood decorated by local artists which was supported by a grant provided by the Environmental Protection Agency's Trash Free Waters Program, Partnership for the Delaware Estuary, Mural Arts Philadelphia, and the Zero Waste and Litter Cabinet. This grant also brought another 30 trash cans to Southwest Philadelphia. TTF also continued to partner with PowerCorpsPHL and the Alliance for Watershed Education to deploy Trail Ambassadors on a regular basis to walk the trail, clean the gateways and trail, and report dumping and other issues needing attention to Philly311. The consistent presence and reporting have resulted in quicker resolution of trash issues and a cleaner, more welcoming park. TTF is powering through the pandemic, retooling previous programs and finding safe ways to build community connection such as distributing trash cleanup kits (each kit comes with a bag, gloves, a cotton mask, a long-armed trash picker, and a map of Tacony Creek Park to guide them on their cleanup journey), offering virtual tours of park, and conducting community meetings over Zoom (virtually) to discuss park issues and how to address them.

*Love Your Park*

Love Your Park is a collaboration between Fairmount Park Conservancy, Philadelphia Parks & Recreation, and Philadelphia's Park Friends Network. They work together to support communities in activating City neighborhood parks and watershed natural areas, with a focus on volunteering. Their flagship events are Love Your Park Week in May and the Love Your Park Fall Service Day in November, when over 5,000 volunteers support City parks. This year-round Neighborhood Park Stewardship program supports a network of 135 community-run park friends groups, and our regular volunteer opportunities invite groups and individuals to get involved. In 2019 alone, this program organized 279 volunteer events and engaged 6,792 volunteers who contributed 19,723 hours of service. This included planting 685 trees, weeding and mulching over 800 existing trees, removing several tons of trash from our parks and waterways, and collecting thousands of bags of organic plant debris (like branches and leaves) for composting. Love Your Park continued implementing Love your Park Solo Cleanups, encouraging park users to safely clean up trash and litter individually or with their families as they enjoy Philly parks this year. Volunteers can sign up to receive free cleanup kits in the mail (while supplies last) by pledging to track their work online.

*Friends of the Wissahickon Cleanups*

The Friends of the Wissahickon (FOW) has conducted park cleanups within the Wissahickon Valley Park for many years. The Wissahickon Creek is a treasure to many Philadelphians and visitors to the area, who are searching for an escape to nature, providing a stunning green space for hiking, biking, and fishing. Devil's Pool, in particular, is one of the most beautiful places in the park – an iconic spot along the Cresheim Creek, just before it flows into the Wissahickon. Due to the popularity of this location, an excess of trash is sadly left behind by many of its visitors. This not only looks terrible but is dangerous to the fish and other wildlife that live in our watershed. Each year, FOW volunteers work over12,000 hours to help FOW perform duties and complete projects including park cleanups that are essential for the Wissahickon to thrive, and the skills they learn can be transferred to the work sector. During COVID-19, the Wissahickon park has simultaneously seen a huge increase in users in the park while also seeing a reduction in many of the necessary resources required to keep the park clean. The novel virus Covid-19 has made FOW's stewardship efforts more challenging, especially with the suspension of volunteer trail improvement days and cleanups in Wissahickon Valley Park. FOW made free clean-up kits available to volunteers to allow small clean-up to still occur and a process to for these small groups to report their support (bags collected and volunteer hours) and to ensure the trash /debris collected get picked up and properly disposed of.

*Bridgestone Tires4ward Partnership*
In the summer of 2016, PWD established a partnership with Bridgestone, a tire manufacturer, to recycle tires collected from PWD-sponsored cleanup events including efforts conducted by the Waterways Restoration Team (WRT), Floatables Skimming Vessels and other cleanup activities. Bridgestone or one of its associated partners collects these tires at one of PWD's maintenance facilities as part of their Tires4ward program. This program was initiated to support Bridgestone's goals of ensuring that one spent tire or any tire been taken out of use goes on to another valuable purpose such as for "use as material in rubberized asphalt, construction materials, landscaping mulch and as tire-derived fuel for energy" for every tire sold. Provided that many large scale cleanup activities were suspended due to COVID, activities with the Tires4ward program were limited. PWD plans to continue working with this partnership in future years.

*Repair, Rehabilitation, and Expansion of Outfall Debris Grills and Grit Cleanings*
Debris grills are maintained regularly at sites where the tide introduces large floating debris into the outfall conduit. This debris can become lodged in a tide gate, causing inflow from the receiving water. Additionally, debris grills provide entry restriction and some degree of floatables control.

Standard operating procedures require the inspection of debris during all regulator inspections unless the outfall is submerged at the time of inspection. During FY21, 89 debris grill maintenance events were completed. The list of the debris grill preventative maintenance activities is available on page 2 of **Appendix C – FY21 CSO Maintenance Program Annual Report**.

## II.G NMC 7 - Pollution Prevention

### II.G.1 Continue to Develop and Share a Variety of Public Information Materials Concerning the CSO LTCP

The Public Outreach and Participation conducted in FY21 for the Green City, Clean Waters program has been provided in **Section 7.0 - Public Outreach and Participation** starting on page 25 **of Appendix A – Green City, Clean Waters FY21 Annual Report** and **Section II.G.3 Continue to Provide Annual Information to City Residents about Programs via Traditional PWD Publications** on page 22 of this report.

## II.G.2 Continue to Maintain Watershed Management and Source Water Protection Partnership Websites

In May 2018, PWD incorporated watershed protection projects and program information onto the City of Philadelphia's official website at https://water.phila.gov/sustainability/watershed-protection/. This provides an alternate channel for PWD customers and the public to learn about watershed protection initiatives. The website contains key plans and reports as well as detailed information on watershed partnerships, planning, public communication, and technology-based planning and assessment tools.

### *RiverCast*

Philly RiverCast (http://www.phillyrivercast.org) is the first operable web-based recreational warning system in the United States. Using near real-time flow, precipitation, and turbidity data, the RiverCast algorithm translates predicted bacteria levels in the non-tidal Schuylkill River from Boathouse Row to Flatrock Dam in Manayunk into one of three ratings, each of which corresponds to suggested guidelines for safe recreation. RiverCast guidelines offer tools for the public to make informed decisions about recreation, and thus helps protect the public against illnesses caused by bacteria. Ultimately, RiverCast will help ensure continued safe recreational use of the Schuylkill River, while promoting public awareness of water quality concerns and indirectly engaging support for source water protection measures. More than 1.5 million users have visited the Philly RiverCast website since it launched in June 2005.

### *Schuylkill Action Network*

The Schuylkill Action Network (SAN) was established as a permanent watershed-wide organization charged with identifying problems, prioritizing projects, and securing funding sources to bring about real water quality improvement in the Schuylkill River watershed. The SAN is organized into a number of focused workgroups. One of the workgroups, the SAN Stormwater workgroup, was formed to identify a cost-effective approach to stormwater management through project prioritization and planning. The workgroup is a partnership of representatives from PWD, PADEP, EPA, DRBC, conservation districts, watershed organizations, municipalities, and other groups throughout the Schuylkill River watershed. The SAN website supports the SAN's Stormwater Workgroup by providing project and event information, SAN publications, and public messaging about restoring and protecting the Schuylkill River. The SAN Stormwater Workgroup's ultimate goal is to prevent or maximize reduction of stormwater runoff pollution. During its 18 years of existence, the workgroup has served as an advisory committee for state and local governments, an ordinance review board for municipalities, and a support group for large and small projects throughout the Schuylkill River watershed. During the last year, SAN projects have addressed important pollution sources including agriculture, abandoned mine drainage and stormwater. Efforts from SAN partners in the last calendar year are included in the following table (**Table II.G.2-1**):

**Table II.G.2-1: Schuylkill Action Network Partner Progress**

| | Cumulative Progress of Watershed Partners (2003-2020) | Highlights from 2020 |
|---|---|---|
| **Agriculture Workgroup** | • Constructed 175 manure storage facilities<br>• Completed 185 barnyard or heavy use area construction<br>• Installed 89 stream crossings<br>• Planted 494 acres of riparian buffers of ag lands<br>• 9,888 acres of agricultural lands have best management practices | • 254 agricultural BMPs implemented<br>• 9 new comprehensive nutrient management plan |
| **Abandoned Mine Drainage (AMD) Workgroup** | • Received over $15M in AMD funding<br>• Reduced annual watershed loadings of iron, aluminum, and manganese<br>• Installed, monitored, and maintained five treatment systems | • Toured the abandoned Kaska Silt Dams and began planning for remediation<br>• Partners completed the Porter Floodplain Project to turn abandoned coal silt land into a natural floodplain, and SAN made a video: https://youtu.be/bpOW1yUUo5s |
| **Stormwater Workgroup** | • Engaged over 25 schools in green stormwater infrastructure<br>• SAN has hosted presentations, workshops, and tours for businesses, municipalities, and other professionals to | • Toured the Cobbs Creek Green Stormwater Infrastructure projects with PWD in Philadelphia<br>• Held four tech transfer presentations with 63 attendees total |
| **Pathogens & Point Source Workgroup** | • Delaware Valley Early Warning System has reported nearly 450 events<br>• SAN has promoted drug takeback events throughout the watershed<br>• SAN has hosted tech transfer presentations and water utility forums for water and wastewater professionals to connect with resources and funding | • Held Water Utility Forum with 52 participants<br>• Delaware Valley Early Warning System reported 27 events, added 23 new users, and held two trainings<br>• $10,419,829.80 in water infrastructure projects granted through PENNVEST in the Schuylkill River Watershed |
| **Schuylkill River Restoration Fund** | Since its inception in 2006, the SRRF has awarded $4.4M for over 120 projects that have helped restore the Schuylkill Watershed, as well as leveraged over $5M in other funding sources. | In 2020, the SRRF awarded $307,695 to 9 projects in the Schuylkill Watershed. The SRRF also celebrated 15 years at the virtual press event and project showcase on September 10, 2020. |

During its 18 years of existence, the SAN has grown to include nearly 350 organizational and individual partners working together to protect the Schuylkill River watershed. To communicate the accomplishments of the SAN Stormwater workgroup to stakeholders as well as other SAN workgroups, the SAN routinely updates their website, http://www.schuylkillwaters.org, with input from PWD, the SAN Planning Committee and other SAN workgroups. The website was redesigned in February 2018 and includes an internal component that allows for improved communication among SAN workgroup members and facilitates on-the-ground work. The SAN website, together with https://water.phila.gov/, provide data and reports from the source water assessments for the Schuylkill River.

### *Delaware Valley Early Warning System*

The Delaware Valley Early Warning System (EWS) is an integrated monitoring, notification, and communication system designed to provide advanced warning of surface water contamination events to subscribing water suppliers, industrial surface water users and partner government agencies in the Schuylkill and Lower Delaware River Watersheds. The Delaware Valley EWS covers the entire length of the Schuylkill River as well as the Delaware River from the Delaware Water Gap to just below Wilmington, Delaware.

The EWS monitoring network is comprised of nearly 90 online water quality data stations throughout the watershed. Access to this real-time data allows EWS users to identify changes in water quality associated with both natural and accidental contamination events. The user can also access historical data from these stations with the data query wizard. Real-time and historic flow data are applied to a time of travel model that generates a range of estimated arrival times for each intake in the system. This time of travel model is also incorporated into a spill simulation tool that can be used for planning and training purposes.

When a responding agency reports a water quality event via the EWS website or telephone hotline, the entire user base is notified almost instantaneously via email. In the case of a high-risk event, supplemental phone notifications are placed using CodeRed technology, allowing all users to receive an automated telephone notification in less than three minutes. EWS users can log in to the secure website to view additional event details, spill routing, and predicted arrival times to their intakes. Additionally, a sophisticated tidal modeling component has been developed to better predict and communicate the arrival times of spills on the tidal Delaware River with a user-friendly spill trajectory animation. The EWS received the Governor's Award for Environmental Excellence and is nationally recognized for its use of stakeholder partnerships to meet regional source water protection objectives. In 2016, the EWS was featured as a case study in EPA's publication Online Source Water Quality Monitoring: For Water Quality Surveillance and Response Systems.

In the last couple of years, PWD implemented significant updates to the EWS user interface. Notable updates include full mobile device (smartphone) functionality for the EWS web site and improved mapping and notification features. These updates were presented to EWS users through a series of regional trainings and webinars.

During 2020, a total of 27 unique water quality events were reported to the EWS. Additional outreach events in Spring 2020 expanded the EWS user base, which is currently comprised of more than 450 individual users from 55 organizations.

*Other PWD Related Websites and Social Media*

PWD Main Web Site
www.phila.gov/water

The official website for the Philadelphia Water Department (PWD) contains comprehensive information about stormwater management for our customers. Resources span from the CSO LTCPU to plain language statements to help the average customer understand the importance of stormwater management.

The pages at www.phila.gov/water/wu/stormwater had 17,149 unique pageviews during FY21, with users spending an average of 2 minutes and 46 seconds on the pages. The Stormwater Grants page is geared to non-residential property owners interested in receiving grants to construct stormwater retrofit projects. The Stormwater Grants web page received 3108 unique page views in FY21.

PWD Parcel Viewer and Stormwater Billing online:
https://stormwater.phila.gov/

The stormwater.phila.gov microsite launched in FY20, continues to play an important role in showing users how their stormwater bill is calculated, how to apply for credits, or how to make appeals. Previous links, including www.phila.gov/water/swmap and www.phillystormwater.org are automatically redirected to the new site to ensure customers get to the right location with the best information. The "parcel viewer" map application is the core of the site. Here, customers can search for a specific parcel or freely explore the map. When a parcel is clicked, data such as gross area, impervious area, and the monthly stormwater charge breakdown, are displayed. Users are encouraged to take actionable steps to reduce the amount of stormwater entering the sewer system and lower their stormwater bills.
There were over 48,000 pageviews in FY21, averaging just over two minutes per session.

*Phillywatersheds.org*
Watershed information was also housed on Phillywatersheds.org; however, PWD began archiving this site on September 1st, 2019. This content continues to be migrated to www.phila.gov/water and https://water.phila.gov . Phillywatersheds.org will remain an archived site that redirects to new locations until all content is moved or decommissioned. More information about content available on the site is discussed below but notice that some content may no longer be housed on phillywatersheds.org, and no new content is being added.

The website provides information to the public on issues that are currently problematic for the City's watersheds, what PWD has done to address these issues, and what residents of Philadelphia can do to help improve watershed health. It also includes educational tools, public meeting materials, maps and reports generated by PWD or partners in the past. According to Google Analytics, the website received more than 25,000 visitors in FY21.

The website features interactive mapping for green stormwater infrastructure projects, traditional infrastructure projects, waterways restoration projects, and community partnership projects. There are also maps for each of the seven major watersheds within Philadelphia. One of the main uses of the mapping system is the Combined Sewer Overflow Public Notification System, known as CSOcast. CSOcast shows CSO outfall overflow information retrieved from PWD's sewer monitoring network. More information on CSOcast is described in further detail in **Section II.H.2** of this report on page 24.

### Development Review Program Website

https://www.pwdplanreview.org/

Since its deployment in FY16, the use of this site has grown and continues to be one of the most used websites in the City, a testament to its effectiveness in helping developers to meet Philadelphia's stormwater regulations. Over 36,500 users (36,754) accessed the site in FY21.

For more information on the activities conducted by the Development Review Program please refer to the MS4 Annual Report **Section F.5 – Monitor and Control Stormwater from Construction Activities** on page 23.

### PWD Department on Social Media

Social media is an essential tool for engaging communities in the development of stormwater infrastructure projects and best-practices. These platforms are an important tool for disseminating departmental messaging about stormwater management, pollution prevention, and programs that improve the City's water resources. Social media is also an accessible tool for building and strengthening relationships with partner organizations and community groups.

The sections below describe the City's social media:

#### *@PhillyH2O Blog*

The @PhillyH20 Blog (water.phila.gov/blog/) launched in 2018 as a mobile-friendly "rolling collection of stories, tips, and news powered by the people of the Philadelphia Water Department."

The blog is part of a customer priority-focused digital strategy and provides quick access to information residents served by the department can use. The site often acts as a streamlined showcase of messaging campaigns that are amplified by press releases, social media, direct mail, and email.

Posts promote a wide variety of topics, including how to use the Basement Protection Program, which provides free plumbing improvements for those impacted by combined sewer overflows; community input meetings for GSI construction sites and other projects; updates about the progress of Green City, Clean Waters, and highlights of current programs and events and relevant partner initiatives.

There was a total of 20 posts in FY21.

In FY21, the blog received over 34,000-page views. Our most read post highlights our 2020 Stormwater Grant recipients. The aforementioned blog was viewed more than 2000 times.

### Facebook
PWD maintains two Facebook pages to keep residents informed on any news and events at or hosted by the Water Department:

- Main Philadelphia Water Department page (http://www.facebook.com/PhillyH2O)
- Green City Clean Waters page (http://www.facebook.com/phillywatersheds)

The Fairmount Water Works (FWW) also maintains a Facebook page that extends the reach of departmental messaging. The page can be accessed at https://www.facebook.com/FairmountWW/

Between these three Facebook pages, the department has 8,315 followers.

### Twitter
Twitter is a valuable communications channel for resolving customer complaints, providing customer information, and delivering news concerning the department, education, and water in general. The Department also builds connections with national and international peer cities and other stakeholders in the stormwater management field through Twitter.

The PWD twitter account is found at https://twitter.com/PhillyH2O. The @PhillyH2O account activity decreased in FY21, averaging 41 tweets per month compared to 74 tweets per month in FY20.

The @PhillyH2O account now has about 9,600 followers, up from 9,400 in FY20.

### Nextdoor
The Philadelphia Water Department maintains a NextDoor.com account with over 150,000 followers representing Department customers in city neighborhoods. With the elimination of public meetings and flyer-distribution in spring 2020, the platform has proved a valuable tool for hyper-local outreach. Posts containing detailed information about construction projects supporting the LTCPU are made available to communities directly impacted.

The platform was also a key source of responses to the 2020 Customer Satisfaction Survey, which collects information pertaining to the LTCPU.

A total of 119 posts received 148,021 impressions from Philadelphia users in FY21.

### LinkedIn
The Philadelphia Water Department LinkedIn account had a total of 4,900 followers at the end of FY21. The Department continued to share both employment-based posts and general information pertaining to the utility and services.

### PWD Department Videos
PWD hosts videos on Vimeo, YouTube, and all social media platforms. Video content provides information about topics including:

- Why infrastructure investment is needed to reduce sewer overflows
- How green and traditional infrastructure protects waterways
- Careers building and maintaining infrastructure, and more.

PWD video content includes animation. While some content is highly produced with support from contracted professionals, videos produced in-house by Public Affairs staff also play an important role in communicating with residents.

Videos not shared on social media can be accessed at the following links:

- http://www.vimeo.com/phillywatersheds
- http://www.youtube.com/pwdepartment

Between YouTube and Vimeo, the videos have been viewed over 5,800 in FY21. Much of the departments video views are experienced through Facebook, Instagram and Twitter, where we cannot track views for the fiscal year.

### II.G.3 Continue to Provide Annual Information to City Residents about Programs via Traditional PWD Publications

The PWD develops numerous publications for the public that are distributed throughout the City at advisory committee meetings, public meetings and other public events, in addition to being distributed through the water/sewer/stormwater bill to PWD customers. The following publications, meetings and events have been shared with and/or involved the public during FY21:

*Media Advisories and Press Releases*

- **06/09/2021 12:47 PM EDT** Traffic Advisory: 12th Closed Between Green and Spring Garden
- **06/09/2021** Elmwood Park/Southwest Neighbors: You're Invited!
- **05/03/2021** Coverage Alert: Phila. Water Unveiling New Music, Videos for 'Drinking Water Week'
- **04/26/2021** Phila. Seeks New ‘Spokesdog’ to Take a Bite Out of Urban Water Poo-llution Problem
- **03/12/2021** Notice: Hunting Park/Franklinville Water Dept. Site Testing Is Starting Soon
- **03/12/2021** Notice for Hunting Park/Franklinville Residents
- **03/08/2021** Media Alert: Major Water Shutoff Extension Announced
- **02/17/2021** Traffic Advisory: Hunting Park Ave. Closed
- **02/16/2021** Media Alert: Philadelphia Water Department Requests Rate Change
- **02/09/2021** Media Alert: Phila. water customers can win $100 with survey
- **02/07/2021** Traffic Advisory: 5400-5500 N. 11th Main Break
- **02/04/2021** Traffic Advisory: West Oak Lane Main Break
- **01/25/2021** Media Alert: Philly Water Pollution Reduction Efforts Get Big Boost with $107M in Pa. Funding
- **01/20/2021** Traffic Advisory: 22nd and Dauphin Main Break
- **12/05/2020** Traffic Advisory: 2nd Street Closed in South Phila.
- **09/29/2020** Philadelphia Extends Shutoff Protection Until April 1st 2021
- **08/26/2020 01:01** Phila. Water Shutoff Pause Extended to Sept. 30, 2020
- **07/07/2020** Media Alert: Phila. Water Shutoff Pause Extended

*Publications*

No publications were published during FY21

*Billstuffers*

- April 2021: We Care - Customer Assistance
- March 2021: 2021 Customer Survey
- February 2021: Prevent Frozen Pipes
- January 2021: Proposed Changes in Water, Sewer, and Stormwater Rates and Charges
- July 2020: Tap You Can Trust
- July 2020: We Care - Customer Assistance

*Events/Campaigns*

Most in person programming was suspended during FY21 due to the ongoing global pandemic.

- Green City, Clean Waters 10 year Campaign

  Established in 2011, Green City, Clean Waters is Philadelphia's 25-year plan to restore local waterways by implementing green stormwater infrastructure and investments in traditional infrastructure, such as treatment plants. To honor this 10th anniversary, a campaign to highlight the work to make this achievement possible. The campaign work began in February 2021. The campaign webpage can be accessed here: https://water.phila.gov/drops/gccw10/

- Drink More Tap Campaign

  In May 2021, PWD joined local musicians to spread awareness about the benefits of drinking Philly tap: safe, affordable, and sustainable. Drink More Tap showcases global artists, particularly Afro, Latinx, and Indigenous musicians living in our community through a series of visual and performing arts videos.

### II.G.4 Continue to Support the Fairmount Water Works

As detailed in **Table II.G.4-1**, during FY21, 6,325 people were engaged virtually, remotely, off-site and through exterior tours of the Fairmount Water Works during the Covid-19 shortened year. Additionally, the Center was shuttered, August 2020, due to major flooding impacting staff access and program delivery. Visitors consisted of organized exterior tours for adults, families and children, on the water activities for community groups and stakeholders. Outreach efforts (**Table II.G.4-1)** include teachers and students participating in UUW middle years curriculum project, partnership with NAAEE/NOAA and Concilio constituents.* Both projects are grant funded.

**Table II.G.4-1 Fairmount Water Works – FY21 Education Center Attendance**

| Types of Attendance | Visitors |
|---|---|
| General FWW Visitors | 0 |
| School Groups, Camps and Recreational Center | 4,660 |
| Tours | 200 |
| Special Events | 0 |
| Outreach Efforts* | 1,465 |
| **FY21 Total Visitors** | **6,325** |

## II.H NMC 8 - Public Notification to Ensure that the Public Receives Adequate Notification of CSO Occurrences and CSO Impacts

PWD has developed and will continue to develop a series of informational brochures and other materials about its CSO discharges and the potential effects these discharges have on the receiving waters. In addition, PWD has enlisted watershed organizations and partnerships to assist in this endeavor to raise the level of citizen awareness about the function of CSO and stormwater outfalls through a variety of educational mediums.

### II.H.1 Launch a Proactive Public Notification Program Using Numerous Media Sources

PWD is advancing a proactive public notification program that uses print, internet, outfall signage, and other media to distribute information on the locations of CSOs, information on hazards, and potential public actions.

*CSO Outfall Signage*

In summer 2007, PWD initiated a pilot project to install 13 signs at CSO outfalls throughout the City. During a follow-up survey in October 2007 it was found that 5 of the 13 signs had been either removed or vandalized. During FY21, the working group continued to analyze the feasibility of installing updated informational signage at the City's CSO outfalls. The working group has performed outfall assessments for outfalls accessible both by land and boat, which includes materials and mounting assessments for signage. Currently each CSO outfall location, except for 8 inaccessible locations, has an identification sign installed which helps the public to accurately identify an outfall when reporting a problem.

*Other Notification Measures*

PWD continues to develop informational materials and maintain websites to educate the public about its CSO discharges and the potential effect on receiving waters. PWD has found that one of the best ways for public notification of CSOs is through the traditional public outreach programs described in NMC7: Pollution Prevention Program, please refer **Section II.G – NMC 7- Pollution Prevention** on page 15.

### II.H.2 Expand the Internet-Based Notification System (RiverCast) to the Tidal Section of the Lower Schuylkill River

In order to expand the web-based water quality forecasting system for the Schuylkill River, RiverCast, PWD developed another internet-based notification system called CSOcast in 2008, which reports on the overflow status of outfalls in every CSO shed.

The website is built using the Google Maps API which allows for the dynamic loading of geographically referenced data that can be viewed with a familiar and user-friendly interface. The map is available 24 hours a day and displays the most up-to-date data available. PWD is constantly updating and improving the notification system as well as the flow monitoring network to deliver the best information possible to the public.

During FY21, CSOcast had a total of 415 page views. The CSOcast notification system can be accessed through: https://water.phila.gov/maps/csocast/.

## II.I NMC 9 - Monitoring to Effectively Characterize CSO Impacts and the Efficacy of CSO Controls

### II.I.1 Report on the Status and Effectiveness of Each of the NMCs in the Annual CSO Status Report

The CSO Annual Report, combined with the Stormwater Annual Report, will be submitted in September of each year, documenting the previous fiscal year activities.

# III. Implementation of the LTCP

**Table III.B-1: Summary of 1997 CSO LTCP Capital Projects**

| Project | Status |
|---|---|
| *Real Time Control (RTC) Program* | |
| RTC - Main Relief Sewer Storage (R-7 through R-12) | Complete |
| RTC - Tacony Creek Park Storage (T-14) | Complete |
| RTC - Rock Run Relief Sewer Storage (R-15) | Complete |
| Establish RTC Center | Complete |
| RTC & Flow Optimization (Southwest Main Gravity Interceptor, Cobbs Creek Cut-Off, and Lower Schuylkill West Side) | Complete |
| Targeted Infiltration/Inflow Reduction Programs | On-Going |
| Solids & Floatables Control Program | On-Going |
| 85% CSO Capture Pennypack Watershed (P1 through P5) | Complete |
| Eliminate Outfalls: Dobson's Run Phase I | Complete |
| Eliminate Outfalls: Dobson's Run Phase II & III | Complete |
| Eliminate Main & Shurs Overflow (R-20) | Complete |
| Eliminate 32nd & Thompson Outfall (R-19) | Complete |
| *Collection System Improvements* | |
| Upgrade Frankford Siphon | Complete |
| Somerset Interceptor Sewer Conveyance Improvements | Complete |
| Cobbs Creek Low Level Conveyance Improvements | Complete |
| Cobbs Creek Low Level Control Project | Complete |
| Water Pollution Control Plant (WPCP) Wet Weather Treatment Maximization Program | Complete |

## III.A CSO LTCP Update

The full Philadelphia Combined Sewer Overflow LTCPU report can be found at the following address: https://water.phila.gov/green-city/.

Please refer to **Appendix A – Green City, Clean Waters FY21 Annual Report** for an update on implementation progress.

## III.B Capital Improvement Projects

### III.B.1 On-going Capital Improvement Projects

Please see **Table III.B.1-1** – Status updates for On-going Capital Improvement Projects on page 26.

**Table III.B.1-1 – Status updates for On-going Capital Improvement Projects**

| Project | Status | Update / Reference |
|---|---|---|
| Completion and Operation of the Real-time Control Center and Rehabilitate and Maintain the Monitoring Network | Completed in 2003 | For details on FY16 maintenance of monitoring network please refer to Appendix C-FY19 Program Maintenance Annual Report. |
| WPCP Wet Weather Treatment Maximization (NE) | Evaluated and implemented options from the Jan. 2000 Stress Testing Report | Refer to Section III.B.1.2 WPCP Wet Weather Treatment Maximization (NE) on page 66 of the CSO-Stormwater FY 2012 Annual Report |
| Evaluate Stress Test Report Options in the LTCPU | Completed March 2009 (all three WPCPs) | Refer to Section III.B.1.2.1 Evaluate Stress Test Report Options in the LTCPU on page 69 of the CSO-Stormwater FY 2012 Annual Report |
| Implement Options 1, 2, and 4 from the Stress Test Report (NE) | Completed January 2006 | Refer to Section III.B.1.3.2 Implement Options 1, 2, and 4 from the Stress Test Report on page 91 in the CSO-Stormwater FY 2010 Annual Report. |
| Plan, Design, and Construct Options 5 & 7 of the Stress Test Report to Increase the Secondary Plant Capacity to 435 MGD | Completed February and August 2012 | Refer to Section III.B.1.2.3 Plan, Design, and Construct Options 2 & 6 from the Stress Test Report on page 70 in the CSO-Stormwater FY 2012 Annual Report. |
| Explore increasing the preliminary treatment, primary treatment, and final effluent disinfection treatment capacities in excess of the existing secondary treatment capacity at the NE WPCP | Plan was originally submitted to the PADEP on June 1, 2013. The NE Facility Concept Plan (FCP) was revised based on comments from PADEP and re-submitted on December 31, 2013. | A Wet Weather Facility plan was submitted on June 1, 2016 which supersedes the FCP. These plans are available on-line through the following website: https://water.phila.gov/green-city/ |
| Initiate the Facility Planning and Design for the By-pass Conduit | PADEP approved on April 1, 2009, the bypass of secondary treatment for 100 MGD of additional wet weather flow at NE WPCP | As described in the LTCPU, PWD committed to the expansion of the NE WPCP to include a 215 million gallon/day secondary treatment bypass. PWD proceeded with a design and the bypass of the plant secondary processes for total plant flows that exceed 435 MGD is currently under construction. Project renamed as NEWPCP High Flow Management System. |
| Report to the DEP the Status of these Projects in the Annual Status Reports when Major Work Elements Are Completed | N/A | The CSO Annual Report continues to include information in the WPCP wet weather treatment maximization at the NE WPCP |
| 85% Capture (NE) - 85% Flow Capture Technical Report | August 2008 | Refer to Section III.B.1.3 85% Capture (NE) on page 71 of the CSO-Stormwater FY 2012 Annual Report. |
| In-Line System Storage Projects (NE) | N/A | Reported on in Section II.B.5 Operate and Maintain In-line Collection Storage System Projects Contained Within the LTCP of this report, starting on page 5. |

| Project | Status | Update / Reference |
|---|---|---|
| Implementation of the Southwest Plant Stress Test Report Option 1 | Option 1, to inspect and repair leaking weirs and concrete surfaces in the final sedimentation tanks at the Southwest Plant, was completed in April of 2002 | Option 1 and other improvements were also discussed in further detail within the Facility Concept Plan for the Southwest Water Pollution Control Plant that was submitted to the PADEP on June 1, 2013. This plan is available on-line through the following website: http://phillywatersheds.org/doc/SW%20Facility%20Concept%20Plan%20-%20Final_FINAL.pdf. |
| Real Time Control (RTC) and Flow Optimization for the Southwest Drainage (SW) - Implementation of Projects for Real Time Control (RTC) and Flow Optimization for the Southwest Drainage District | Completed April 2010 | Refer to Section III.B.1.8 Real Time Control and Flow Optimization for the Southwest Drainage on page 74 of the CSO-Stormwater FY 2012 Annual Report. |
| RTC/Main Relief Sewer Storage (SW) - Construction and Implementation of Main Relief Sewer Storage and Real-time Control | | Refer to Section II.B.5 Main Relief on page 5 of this report |
| Eliminate CSO/Dobson Run Project (SW) - Construction and Implementation of the Dobson's Run Project | Phases I completed in 1998; Phases II and III were completed by 2011. | Refer to Section III.B.1.10 Eliminate CSO/Dobson's Run Project on page 95 of the CSO-Stormwater FY 2011 Annual Report |
| Eliminate CSO/Main and Shurs Off-Line Storage (SW) - Construction and Implementation of the Main and Shurs Off-line Storage Project | In FY2021, the facility successfully captured 12 major storms storing a total of approximately 9.84 MG of sanitary wastewater. During Tropical Storm Isais, >50-year storm, Venice Island reached capacity and a possible overflow occurred at the R-20 relief window. | Grit accumulation is a known USES issue that reduces interceptor capacity and the effectiveness of the Venice Island storage tank. PWD performs periodic grit surveys of the USES to better understand grit type and accumulation frequency. Cleanings are scheduled on an as needed basis. |

## III.B.1 On-going Capital Improvement Projects

### Eliminate CSO/Main and Shurs Off-Line Storage (SW) - Construction and Implementation of the Main and Shurs Off-line Storage Project

The Upper Schuylkill East Side Interceptor Sewer (USES) is located along the Schuylkill River adjacent to the Manayunk Canal in the northwest section of Philadelphia. It conveys sewage from collection systems which serve the northwest section of the City. During extreme wet weather events, the USES exceeded its capacity and overflows occurred at relief point R-20 into a storm sewer upstream of storm water outfall S-052-5. To abate the hydraulic overload conditions in the USES, PWD finished construction of a four-million-gallon offline storage tank in May of 2013, which captures and stores excess flows. The tank would serve to eliminate surcharges and prevent overflow conditions at the R-20 relief location.

The Venice Island Storage Facility is currently in service and operating as designed. In FY21, the facility took on water for 12 major storms, 2 of those being tropical storms. The total captured volume was approximately 9.84 MG of sanitary wastewater. The weir elevation at the R20 relief window remained at 65 inches during FY21.

There was one event during FY21 in which the tank was at full capacity due to the Manyaunk Canal and Schuylkill River breaching the banks of Venice Island. This occurred during Tropical Storm Isaias on 8/4/2020. The return period for this storm was greater than 50 years.

Grit accumulation is a known USES issue that reduces interceptor capacity and the effectiveness of the Venice Island storage tank. PWD performs periodic grit surveys of the USES to better understand grit type and accumulation frequency. PWD performed a sonar inspection on the lower reach of the USES interceptor in FY19 which showed minimal grit deposition at that time. Routine level trending of the R-20 interceptor sensor indicated that grit deposition was not enough to warrant an interceptor cleaning during FY21. PWD will continue to track grit deposition in the USES. By taking a proactive approach, PWD can schedule flushing and sewer cleaning to maximize capacity of the interceptor and the Venice Island storage tank's effectiveness.

## III.B.2 New Capital Improvement Projects to be Included in LTCPU

Please see **Table III.B.2-1** – Status updates for New Capital Improvement Projects to be included in LTCPU on page 29.

### PC-30 Parallel Relief Sewer

The project and all stipulations of the COA regarding the parallel relief sewer were completed on 12/27/11. As of July 2013, the parallel relief sewer and all appurtenances have been operating as designed. In FY19 two float switches were installed at manhole PC-0030 to monitor overflows at the location with greater accuracy.

During FY21, there were no overflow events at manhole PC-0030. Detailed information regarding PC-30 can be found in the reports submitted to PADEP each month.

**Table III.B.2-1 – Status updates for New Capital Improvement Projects to be Included in LTCPU**

| Project | Status | Update / Reference |
|---|---|---|
| Asset and Capacity Management Program | | |
| Geographic Information System | Ongoing | Refer to Section II.A.1 Implement a Comprehensive Geographic Information System (GIS) of the City sewer system on page 1 |
| Sewer Assessment Program | Ongoing | Refer to Section II.A.2 Implement a Comprehensive Sewer Assessment Program (SAP) on page 1 |
| Monitoring and Modeling Program | Ongoing | Refer to II.B.1 Continue to Institutionalize a Comprehensive Monitoring and Modeling Program on page 2 |
| Inflow/Infiltration (I/I) Controls | | |
| Tide Inflow | Completed in 1999 | PWD continues to inspect and maintain all tide gates to ensure their correct performance. Refer to Section 2.1.2 Corrective Actions – Tide Inflow on page 28 of the 2001 CSO Annual Status Report |
| Sewer Assessment Program | | Refer to Section II.A.2 Implement a Comprehensive Sewer Assessment Program (SAP) on page 1 of this report |
| Infrastructure Assessments | Completed in 2008; PWD continues to monitor and inspect for problem areas | Refer to Section III.B.2.2 Infrastructure Assessments on page 82 of the CSO-Stormwater FY 2008 Annual Report |
| Interceptor Relining | • Cobbs Creek Interceptor (CC) – Ongoing (~50% Complete)<br>• Tacony Creek Interceptor (TC) – Ongoing (~50% Complete) | • CC – Phase 2 – In Projects Control<br>• CC – Phase 4 – In Projects Control (Bid Awarded)<br>• TC – Phase 3 – Design 30%<br>• TC – Phase 4 – Design 90%<br>• TC – Phase 4 – Design 90% |
| PC-30 Parallel Relief Sewer | COA stipulations completed on 12/27/11. Operating as designed as of July 2013. Floats installed in FY19. | During fiscal year 2021, there were no overflow events at manhole PC-0030. The overflow level is at 166 in. with two float switches acting as high level and overflow alarms. |
| Sewer Separation | | |
| | Sewer separation was studied and modeled as one of the options in the LTCPU and deemed cost prohibitive. No sewer separation projects have been identified or implemented during the reporting period. | |
| New Storage Facilities | | |
| | PWD is continuing to investigate opportunities to construct off-line CSO storage facilities to maximize existing sewer treatment capacity and increase the volume of CSO captured and treated. No new storage facility projects have been implemented during the reporting period. | |

## III.C Watershed-Based Management - Continue to Apply the Watershed Management Planning Process and Produce and Update the Watershed Implementation Plans

*Watershed Alliance of Southeastern Pennsylvania*

In 2013, PWD and its designated watershed partnership facilitator, the Pennsylvania Environmental Council (PEC), initiated the Watershed Alliance of Southeastern PA to unite the watershed partnerships in the Philadelphia area. In FY21, PEC continued its support of the implementation of the Upstream Philadelphia Cluster.

*Tookany/Tacony-Frankford Watershed Partnership*

In FY21, the TTF Watershed Partnership held264 outreach events in Philadelphia County with approximately 1467 participants in attendance. Programming was impacted by the gathering restrictions in place from the COVID-19 pandemic. For more information on the activities conducted by TTF Watershed Partnership please refer to **Section II.F.4** on page 12.

*Darby – Cobbs Watershed Partnership*

During the past fiscal year, the Partnership focused on outreach and education, to implement previously identified project opportunities through the William Penn Foundation's Delaware Watershed Protection Initiative. Also during FY21, the partnership continued work on implantation of projects funded through the Delaware River Watershed Initiative.

*Pennypack Creek Watershed Partnership*

The Partnership continues to organize activities to involve the community in improving the watershed. In FY21 the partnership continued education and outreach towards implementing the projects identified under the William Penn Foundation's Delaware Watershed Protection Initiative. The partnership also conducted workshops on rain gardens, citizen stream monitoring, Mowing to Meadows and municipal MS4 compliance.

*Poquessing Creek Watershed Partnership*

The Poquessing Creek Watershed Partnership holds a range of public education and outreach activities and events every year for residents. The Poquessing Partnership also participates in the Upstream Philadelphia Cluster of the William Penn Watershed Initiative developing programs for citizen monitoring and identification of stormwater projects in the watershed.

*Delaware Direct Watershed Partnership*

Throughout FY21, the Partnership continued its work acquiring grant funding to support restoration projects throughout the watershed. Due to gathering restrictions imposed due to the COVID-19 pandemic, PWD was forced to pause our successful partnership with sustainable retailer United by Blue (UBB) hosting community based cleanups. For more information, please refer to **Section II.F.4** United By Blue Cleanups on page 12.

*Wissahickon Creek Watershed Partnership*

PWD continued its participation in the Wissahickon Partnership throughout FY21. A key component of these efforts was the continuation of an alternative TMDL program for phosphorous in the watershed. The City of Philadelphia is one of 16 regional municipalities cooperating in this program with assistance from the Pennsylvania Department of Environmental Protection, the Wissahickon Valley Watershed Association and the Pennsylvania Environmental Council (PEC). The Wissahickon Partnership is also actively participating in components of the Delaware River Watershed Initiative, including citizen monitoring as well as project identification and implementation.

*Schuylkill River Watershed Partnership (Philadelphia-Based Partnership)*

PWD continued to support the efforts of the Schuylkill Action Network (SAN), a regional watershed partnership dedicated to improving the water resources of the Schuylkill River Watershed through strategic implementation of protection measures. More information on the SAN can be found in **Section II.G.2** on page 16 of this Annual Report.

*Implementation Planning - Development of Target Approach for Meeting Goals and Objectives*

The culmination of the watershed management planning process often results in an Integrated Watershed Management Plan (IWMP), or a watershed-specific planning document. The process for developing watershed planning documents has evolved and depends on the interests of the partnerships. Table III.C.1-2 contains the status of the various plans in each of Philadelphia's watersheds. Information on the each of the watersheds and the completed plans can be found at www.phillywatersheds.org/your_watershed. Many of the recommended management options in the TTF and Cobbs Creek IWMPs have been institutionalized a city-wide basis and continue to be implemented.

The watersheds in the MS4 section of the City have undergone a slightly different process. In these watersheds (Pennypack, Poquessing, and Wissahickon), the stakeholder goals and objectives were established through the development of Rivers Conservation Plans and Act 167 Plans. PWD has decided to work with the watershed partners through these existing watershed-based planning efforts. Details on the Act 167 Plans can be found in **Section III.C.3.7 Basin-Specific Stormwater Management Plans (ACT 167)** on page 43. The Act 167 process has met PWD's goal to have watershed-wide commitment to the watershed planning process and allows the process to be partner-driven and focus on implementation.

**Table III.C.1-2 – Planning by Watershed**

| Watershed | Preliminary Reconnaissance | Watershed Monitoring Program | River Conservation Plan | Watershed Management Plan | Implementation Commitment Status |
|---|---|---|---|---|---|
| Delaware River (tidal, non-tidal) | Monitoring Only | | Completed in 2011 | PWD continues to work with watershed partners on implementing specific projects. | Philadelphia commitment documented in the LTCPU and its supplements. |
| Cobbs-Darby Creeks | 2003 | 2003 | Darby RCP completed in 2005 by Darby Creek Valley Association | Completed 2004 | Philadelphia commitment documented in the LTCPU and its supplements. |
| Tacony-Frankford Creek | 2000/2001 | 2004 | Completed in 2004 | Completed 2005 | Philadelphia commitment documented in the LTCPU and its supplements. |
| Pennypack Creek | 2002 | 2007-2008 | Completed in 2005 | Act 167 Stormwater Management Plan approved in July 2013 | Philadelphia is implementing the Act 167 Plan through the Philadelphia Stormwater Management Regulations. |
| Schuylkill River (tidal, non-tidal) | Monitoring Only | | Completed in 2001 by the Academy of Natural Sciences, Natural Lands Trust, and the Conservation Fund | PWD continues to work with watershed partners on implementing specific projects. | Documented in the LTCPU and its supplements. |
| Poquessing Creek | 2001 | 2008-2009 | Completed in 2007 | Act 167 Stormwater Management Plan approved August 28, 2013. | Philadelphia is implementing the Act 167 Plan through the Philadelphia Stormwater Management Regulations. |
| Wissahickon Creek | 2001 | 2005-2006 | Completed in 2000 by FPC | Act 167 Stormwater Management Plan approved on July 10, 2015 | A Wissahickon TMDL Implementation Plan was submitted in 2012. Implementation plan depends on watershed partnership support for a watershed-wide initiative. |

### III.C.1 LAND: Wet-Weather Source Control

Watershed management fosters the coordinated implementation of programs to control sources of pollution, reduce polluted runoff, and promote managed growth in the City and surrounding areas, while protecting the region's drinking water supplies, fishing and other recreational activities, and preserving sensitive natural resources such as parks and streams.

PWD is committed to a balanced "land-water-infrastructure" approach to achieve its watershed management and CSO control goals. Where appropriate, this method includes infrastructure-based approaches, but focuses on implementation of a range of land-based stormwater management techniques and physical reconstruction of aquatic habitats where appropriate. The ultimate goal of PWD's approach is to regain the resources in and around streams that have been lost due to urbanization, both within the City of Philadelphia and in the surrounding counties, while achieving regulatory compliance objectives in a cost-effective manner. Central to all of these planning programs is a commitment to greening, sustainability, open space, waterfront revitalization, outdoor recreation, and quality of life.

The wet-weather source controls have been formalized in the LTCPU and its supplements, including the Consent Order and Agreement signed on June 1, 2011, which formally approved the Green City, Clean Waters program. Detailed information on the land-based wet-weather source controls can be found in **Appendix A – Green City, Clean Waters FY21 Annual Report**.

#### III.C.1.1 Ordinance and Regulations Modifications - Continue to review and revise stormwater management regulations for development and redevelopment

PWD's Stormwater Management Regulations became effective in Philadelphia on January 1, 2006, which provided PWD with an opportunity to ensure development/redevelopment that protects our water resources, reduces neighborhood flooding, and improves the quality of life in our communities. The Stormwater Management Regulations are triggered when a project disturbs 15,000 or more square feet of earth. Effective July 1, 2015, the Stormwater Regulations were updated to improve and strengthen PWD's stormwater programs. For more information on PWD's Regulations, please see the MS4 Annual Report **Section F.5.b – Post-Construction Stormwater Management in New Development and Redevelopment** on page 28.

#### III.C.1.2 Conduct workshops on LID

PWD staff in charge of Stormwater Regulation implementation holds weekly walk-in hours, encouraging the development community to attend to discuss general and technical details regarding their projects. Guidance is provided by PWD staff as it relates to regulatory applicability as well as stormwater management implementation and approach without the need to schedule an appointment. During the last quarter of FY20, PWD did not host walk-ins; however, staff were available for pre-application meetings and project discussions on demand as needed. Applicants can email PWD to request a call or meeting, or may use the online pre-application meeting request form: https://www.pwdplanreview.org/apply/application/pre_app_meeting.

#### III.C.1.3 Implementation of Stormwater BMPs and LID - Continue to implement best management and LID demonstration

PWD continues to implement stormwater BMPs and LID, now referred to as Green Stormwater Infrastructure (GSI) through the Green City, Clean Waters program. Please refer **to Appendix A – Green City, Clean Waters FY21 Annual Report** for a detailed description on the City's implementation of GSI during FY21.

### III.C.1.4 Catch Basin Control Program - Continue to maintain the trapped inlets

PWD continues to maintain all City-owned inlets and catch basins to ensure they are clear and operating correctly. For a full description of the activities conducted by inlet cleaning programs during FY20, please refer to **Section II.F.1 Control the Discharge of Solids and Floatables by Cleaning Inlets and Catch Basins** on page 9.

### III.C.1.5 Impervious Cover Disconnection - Evaluate the feasibility of separating the stormwater runoff from large impervious land tracts for management and direct discharge

PWD is working to separate stormwater runoff from large impervious tracts of land using incentives and regulatory-based approaches. Projects that apply for PWD's grant programs, Stormwater Management Incentives Program (SMIP) and Greened Acre Retrofit Program (GARP), are evaluated for disconnection potential and encouraged to construct connections to available separate storm sewer or private stormwater outfalls where feasible. To date, PWD has awarded a number of projects where this potential exists, and in the last year, three projects successfully disconnected from the combined sewer system.

### III.C.1.6 Reforestation - Work to implement reforestation demonstration projects to provide additional tree canopy

#### *Green Stormwater Infrastructure Projects*

Community greening and tree planting is a key component of green stormwater infrastructure and the Green City, Clean Waters plan. PWD has been planting trees as part of the GSI projects. Please refer to **Appendix A – Green City, Clean Waters FY21 Annual Report** for information on trees planted as part of GSI projects implemented in the City.

#### *Street Tree Planting*

As part of supporting the City's GreenWorks goals, PWD has partnered with PPR to conduct street tree plantings. PPR contracted trees to be planted in the right-of-way in front of properties and on public lands. During FY21, 767 street trees were planted through this contract.

#### *TreePhilly Yard Tree Program*

TreePhilly is an urban forestry community engagement initiative led by PPR, in partnership with the Fairmount Park Conservancy. TreePhilly directly engages all Philadelphians in improving their communities by planting and maintaining trees. Through TreePhilly's Yard Tree Giveaway program, Philadelphia residents can sign up for free yard trees for their private property (front, back, and side yards). In FY21 the Yard Tree Giveaway program distributed approximately 1,877 trees for residents to plant on their private property, which included improvements to accessibility of the programming brought about by the COVID-19 pandemic, such as door-to-door delivery of trees.

#### *Pennsylvania Horticultural Society's Tree Plantings*

PWD is an active partner and supporter of TreeVitalize and PHS's other tree planting programs. TreeVitalize was developed by the Pennsylvania Department of Conservation and Natural Resources to increase the tree canopy in the five-county Philadelphia area. TreeVitalize partners with numerous community Tree Tenders groups throughout this area in order to plant trees in neighborhoods lacking sufficient tree canopy. During FY21, PHS tree planting events resulted in 1153 trees planted in Philadelphia.

## III.C.2 Water Ecosystem Restoration and Aesthetics

### III.C.2.1 Waterways Restoration Team - Continue the assignment of a dedicated clean-up team to remove cars, shopping carts, and other debris, from CSO receiving waters

During FY21, the Waterways Restoration Team has continued their program which includes removal of cars, shopping carts, and other debris from receiving waters. Please refer to **Section II.F.2 Continue to Fund and Operate the Waterways Restoration Team** on page 10 for information pertaining to the Waterways Restoration Team's activities during FY21.

### III.C.2.2 Waterways Restoration Team - Evaluate the capabilities of this crew in performing minor stream bank and bed repair around outfall pipes and to remove debris at these outfalls

During FY21, the Waterways Restoration Team continued their program, which includes conducting minor stream bank and bed repairs around outfalls and removing debris around them. Please refer to **Section II.F.2 Continue to Fund and Operate the Waterways Restoration Team** on page 10 for information pertaining to the Waterways Restoration Team's activities during FY21.

### III.C.2.3 Stream Habitat Restoration - Propose and implement demonstration projects to address habitat degradation by engineering the stream channels to modern day flows and directly reconstructing the aquatic habitat

PWD employs natural stream channel design (NSCD) and associated stormwater management BMPs as a means to improve the health of aquatic communities in receiving waters with degraded flow and habitat alterations due to stormwater runoff. PWD implements a targeted approach to stream restoration to optimize capital funds and ecological uplift. PWD's stream habitat restoration program integrates environmental stressor reduction and streamside sewer asset protection and/or relocation.

| Project Name | Stream Length (ft)\| Drainage Area (acres) | Description |
|---|---|---|
| *Status:* **Complete** | | |
| Saylor Grove | 150 acres | • First stormwater wetland constructed by PWD in the fall of 2005.<br>• The one-acre wetland treats~70 million gallons of urban stormwater a year before it reaches the Monoshone Creek.<br>• This project is now monitored regularly through a formal inspection protocol. Monitoring efforts at this site are now included in the Wissahickon TMDL monitoring efforts.<br>• Site is scheduled for a maintenance dredging in the Fall 2020. |
| Cathedral Run Stormwater Wetland | 90 acres | • Cathedral Run Wetland is a stormwater management facility that is about an acre in area and treats ~90 acres of drainage area.<br>• The wetland removes sediment and nutrients from storm runoff while helping reduce the peak volume reaching Cathedral Run and Wissahickon Creek. |
| Marshall Road Stream Restoration | 900 feet | • Goal was to stabilize an exposed section of the Cobbs Creek Interceptor.<br>• Through funding from a Growing Greener Grant in 2003, PWD embarked on full scale stream restoration design to stabilize the 900 ft segment of the Creek.<br>• Construction was completed in 2006.<br>• PWD has maintained an active role in seasonal and annual monitoring of the restoration site and continually evaluates the long-term success of the project. |
| Whitaker Ave Stream Restoration | 2200 feet | • 2,200 foot stretch of the Tacony Creek main stem that begins 500 feet downstream of the Whitaker Avenue bridge and ends about 800 feet upstream of the Fishers Lane bridge.<br>• PWD, in partnership with the USACE – Philadelphia District, bid and constructed this project which was completed in November 2010.<br>• PWD began its monitoring program at this site in spring 2011. |
| Indian Creek CSO Storage and Daylighting | 2100 feet | • Located within the Cobbs Creek Watershed at the confluence of the East and West branches of Indian Creek in Morris Park, Philadelphia, Pennsylvania.<br>• Included the construction of a new stream channel by removing approximately 700 ft. of the West Branch Indian Creek from a brick culvert. Also included bank stabilization of the existing creek and the associated forested riparian buffer around the new channel. The new stream channel reconnects the West Branch to the East Branch of Indian Creek.<br>• The existing brick culvert was converted into temporary storage for Combined Sewer Overflow (CSO) during wet weather events reducing the total CSO discharges into the Cobbs Creek Watershed. Estimated removal of approximately 2 million gallons of combined sewage discharge to Indian Creek annually. |

| Project Name | Stream Length (ft)\| Drainage Area (acres) | Description |
|---|---|---|
| Wises Mill Stream Restoration | 1000 feet | • 1st/2nd order tributary to the Wissahickon Creek<br>• Stream was fully assessed and determined to be a significant source of sediment to Wissahickon Creek through bank erosion and sediment transport processes.<br>• The project is currently in the project monitoring phase. |
| Bells Mill Stream Restoration | 5100 feet | • 2nd order tributary to the Wissahickon Creek<br>• The tributary arises from an outfall near the intersection of Lykens Lane and Bells Mill Roads. It then travels through a wooded area parallel to Bells Mill Road for approximately 5,100 ft before reaching the confluence with the Wissahickon Creek.<br>• Energy dissipating structures such as rock vanes and channel-spanning boulder step structures were installed. |
| Gorgas Run Stream Restoration | 2100 feet | • Gorgas Run is a steep headwater tributary to the Wissahickon Creek with a drainage area of 499 acres.<br>• High peak stormwater flows have severely degraded Gorgas Run<br>• PWD used NSCD principles to restore the 1,800 feet of stream channel that encompasses Gorgas Run and another 300 feet of tributary to Gorgas Run.<br>• Rehabilitation of the stream corridor included in-stream stabilization structures, repairs and protection for PWD and Fairmount Park infrastructure, stabilization of stormwater gullies below Henry Avenue and park trail enhancements. |
| Wissahickon Creek Ridge Ave 2nd Dam | 200 feet | • Bank restoration around exposed manhole at the dam on Wissahickon Creek upstream of the Ridge Ave culvert.<br>• The project restored approximately 200 feet of stream bank. |
| Pauls Run Stream Restoration | 500 feet | • Approximately 350 feet of stream restoration along Pauls Run, tributary to Pennypack Creek to protect an exposed sanitary sewer and stabilize the stream channel. |
| Wises Mill Wetland | 92 acres | • System of 3 stormwater wetlands with total surface area of approximately 2 acres.<br>• Manages stormwater from a 92 acre drainage area.<br>• PWD monitoring sediment accumulation and vegetation within the wetlands.<br>• PWD has conducted site maintenance recently including construction of an armored channel between the wetlands to fix gully erosion, repairs to a berm that separates the wetland from the Wises Mill Run stream channel, and installation of a larger outlet inflow pipe for proper drainage of the wetlands. |
| Carpenters Woods | 600 feet | • Project addressed significant gully erosion downstream of 3 outfalls.<br>• Included construction of channel bed armoring, bank revetments, and vegetation to stabilize the channels and enhance the forest off Mount Pleasant Rd in northwest Philadelphia. |
| Cathedral Run Stream Restoration | 300 feet | • The culvert below Forbidden Drive trail had become clogged with debris and the banks upstream of the structure had eroded and bed downgraded.<br>• The project constructed bank and bed stabilization structures in the area just upstream of the culvert. |
| Rex Ave | 300 feet | • Project included stabilization of a portion of the stream channel parallel to Rex Avenue. |
| Cresheim Creek St. Martins | 450 feet | • Construction of 3 grade control structures (cross-vanes) and bank revetments on both sides of the stream channel below the pedestrian bridge off St. Martins Road. |

| Project Name | Stream Length (ft)\| Drainage Area (acres) | Description |
|---|---|---|
| Hartwell Lane | 300 feet | • Restoration of the stream channel upstream of a culvert structures that conveys PWD's Wissahickon High Level Interceptor.<br>• Includes 3 cross vanes for grade control and bank revetments on both sides of Hartwell Run.<br>• Bank revetments and scour protection downstream of the culvert.<br>• Masonry repairs were made to the culvert structures. |
| *Status:* **In Construction** | | |
| Cresheim Creek Interceptor and Outfall | 200 feet | • Project goals include reconfiguration of the intercepting sewer crossing between the two culverts near Woodbrook Lane, replacement of a deteriorated outfall, and installation of bank stabilization and grade control features in the stream channel.<br>• Design was finalized and project advanced to the construction phase during FY21. |
| Millbourne Cobbs Creek Bank Stabilization | 500 feet | • The project goals comprise protection of a 3'-6" brick sewer exposed near the channel downstream of Millbourne Dam and stabilization of two separate portions of the downstream left side of Cobbs Creek.<br>• The design includes concrete encasement and boulder toe revetments to protect the existing brick sewer and the access roadway, replacement of an undersized and collapsed corrugated metal pipe with a larger RCP culvert, and removal of the compromised stormwater conduit to promote proper drainage beneath the sewer maintenance access road.<br>• Design was finalized and project advanced to the construction phase during FY21. |
| *Status:* **In Design** | | |
| Cresheim Creek Outlet Tunnel | 300 feet | • The end of the culvert tunnel has degraded and the stream banks and bed around the culvert have significantly eroded. The erosion has exposed a 36 inch water main that was previously in the bank next to the culvert. The water main passes through the culvert, creating blockage for water flow through the culvert.<br>• The project will relocate the water main below the culvert, repair and/or rebuild storm and sanitary infrastructure, and stabilize stream banks downstream of the culvert exit. |
| Cardone Outfall Bank Stabilization at Rock Run | 350 feet | • A stormwater outfall owned by the adjacent Cardone Factory and draining its parking lot has been collapsing into the stream due in part to its location directly across from the Rock Run regulator.<br>• The regulator's flows have also resulted in about 70 LF of active bank erosion downstream of the outfall.<br>• This project aims to stabilize the outfall structure, protect the eroded bank with a new boulder wall tying in to an existing wall, and enhance the stream channel upstream of the outfall using an engineered riffle with riprap bank protection. |
| Park Line Dr Interceptor - Gorgas Chute and Outfall | 250 feet | • Project work is to occur across three sites.<br>• Site 1 includes stabilization and structural repairs to the interceptor crossing and installation of a plunge pool and stream bank stabilization structures at the sewer crossing down the trail from the intersection of Park Line Dr and Hortter St.<br>• Site 2 includes repairs to the concrete chute that conveys storm runoff flows to Gorgas Run from the outfall near Fountain St.<br>• Site 3 includes the installation of new pipe from the collapsed outfall off of Henry Ave that has created a large gully crossing the Yellow Trail and a new outfall structure discharging under the trail into Gorgas Run. |

| Project Name | Stream Length (ft)\| Drainage Area (acres) | Description |
|---|---|---|
| Neill Drive Stream Corridor Restoration | 1600 feet | • The stream channel, , is deeply entrenched and eroding. There is a significant amount of exposed and vulnerable PWD infrastructure including sanitary sewers, a sanitary force main, a water main crossing, and damaged stormwater outfalls.<br>• The project will protect the vital infrastructure and stabilize eroding banks. |
| Sandy Run Stream Restoration, Infrastructure Protection and Stormwater Wetland | 500 feet | • The objective of the design will relocate a sewer crossing downstream of the Ryan Avenue Bridge and include related stream restoration elements such as floodplain reconnection. |
| Pennypack Corridor Improvement Project at Holme Ave | 1500 feet | • Two sanitary sewer crossings are exposed in the mainstem of the Pennypack Creek between Holme Ave and Axe Factory Run. Increased widening and downcutting of the channel over time has destabilized the banks and stranded a manhole.<br>• Project design consists of installing grade control measures to protect the assets in-place, removing the manhole, stabilizing banks to prevent further erosion and widening, and increasing floodplain connectivity along this reach to the maximum extents possible. |
| Mount Moriah Streambank and Cobbs Creek Interceptor Stabilization | 500 feet | • Located along Cobbs Creek in the "3 bridges" area adjacent to Mt. Moriah Cemetery, about 350 ft of a 5'-0" brick interceptor and its manholes are exposed along the left bank in multiple areas of the reach.<br>• Work will focus on protecting the sewer in-place using bank protection structures while also employing stream restoration principles to optimize the compromised flow pattern through the three bridges. |
| Benton Brook Stream Restoration | 1200 feet | • The project will address streambank erosion and exposed infrastructure along Benton Brook in the Pennypack Creek Watershed. |
| Flat Rock Dam Flow Diversion | TBD | • Project goals include improving flow to the Manayunk Canal by effectively diverting more flow through the canal and remove the dam designation from the City owned portion of the dam. |
| Green Tree Run Outfall Stabilization | 200 feet | • Objective: stabilize the stream channel around the 54 inch outfall just off Shawmont Ave at Minerva Rd. The gabion baskets have collapsed into the stream channel and the banks continue to erode.<br>• The private property owner signed an easement agreement with Streets when the outfall was originally installed and has complained about the discharge from the outfall causing the erosion of the stream channel. |
| Roosevelt Blvd Dam Removal | 1000 feet | • This project will lower the existing dam by 4 feet and stabilize the walls protecting the trail by installing bank protection measures.<br>• Periodic flooding and erosion of the adjacent Pennypack Trail surface will be reduced through the lowering of the dam crest elevation.<br>• A culvert conveying a tributary will be repaired as it has collapsed and is causing further damage on the trail.<br>• A rock ramp will be constructed to promote fish passage. |

| Project Name | Stream Length (ft)\| Drainage Area (acres) | Description |
|---|---|---|
| Tacony Creek - Reach 6 (Juniata Dam Removal) | 1000 feet | • Project will improve water quality and aquatic habitat and provide fish passage.<br>• The Juniata dam is on the Tacony Creek, approximately 700-feet upstream from the Castor Ave. bridge . The dam is in good condition however, much of the upstream impoundment was filled by sediment.<br>• The combination of the reduced flow velocity and nutrient-rich sediment supply are suspected of reducing the available dissolved oxygen in the water column.<br>• The height of the dam also presents a complete barrier to fish passage during the majority of flow conditions. |
| *Status:* **On Hold** | | |
| Tacony Creek - Reaches 4-5 | 2500 feet | • This project entails the restoration of Tacony Creek Reaches 4 and 5 as identified by the Tacony Creek Restoration and Ecosystem Enhancement Program, 4/28/2010.<br>• Objective: restore ~2500 feet of stream channel, enhancement of floodplain wetlands, improvement of the riparian buffer, the completion of a paved Fairmount Park trail connection from Tabor Road to I and Ramona Sts, and implementation of green infrastructure at five trail entrances.<br>• This project will connect with the existing Whitaker Avenue stream rehabilitation project. |
| Woodland Dam Removal | TBD | • Will investigate, select, design and construct the best alternative to reestablish fish passage along Cobbs Creek.<br>• After selection of a recommend type of fish passage design, concurred by both the Corps and PWD, the project will progress to plans and specifications, and construction contingent on the availability of funds. |

### III.C.2.4 Wetland Enhancement and Construction

Three stormwater treatment wetlands facilities were designed and implemented to remove pollutants and mitigate peak flows, while providing aesthetic and ecological benefits. These projects are:

- Saylor's Grove (Construction Completed in 2006)
- Wise's Mill (Construction Completed in 2012)
- Cathedral Run (Construction Completed in 2012)

In total, these three facilities receive and treat stormwater from more than 300 acres of the MS4 service area. Because these projects were completed as part of PWD's Wissahickon Sediment TMDL Implementation Plan, a more detailed description of the Department's efforts has been provided in **Section D - Wissahickon Sediment TMDL Monitoring plan implementation** of the Stormwater Management Program Report. PWD is working to maintain these project sites.

#### *Watershed Mitigation Registry*

PWD has continued investigating projects and partnerships that could potentially be suited for the state’s mitigation banking program.

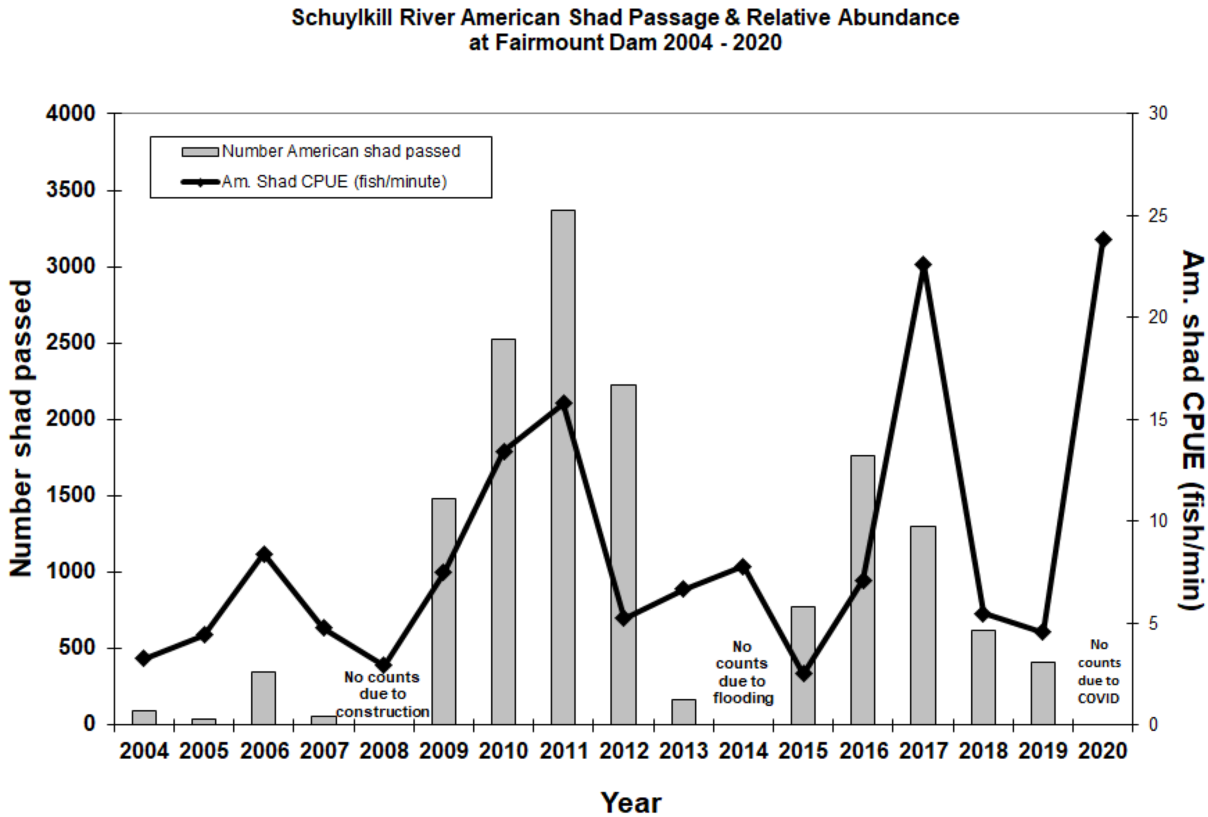
### III.C.2.5 Fish Passage Projects

#### *Schuylkill River: Fairmount Fishway*

The Fairmount Dam Fishway located on the western side of the Fairmount Dam, was completed in 1979. In 2009, through a joint cooperative agreement with the United States Army Corps of Engineers (USACE), the City of Philadelphia upgraded many features of the fishway to improve hydraulics and overall fish passage efficiency.

Adult American Shad relative abundance (number of shad per hour of electrofishing) in the Schuylkill River in 2020 ranked 1st overall in the time-series (2002-2020). The 2020 CPUE at Fairmount Dam (1,433.1 shad/hour) was more than double the time series average (2002 – 2020). It should be noted that boat electrofishing survey effort in 2020 (4.81 hours) was slightly less than time series average (5.45 hours) due to COVID-19 pandemic. The 2020 American Shad passage at Fairmount Fishway has not been evaluated due to staffing restrictions related to COVID-19. The Fairmount Fishway remained fully open and operational during the 2020 season, and video monitoring recordings were captured and archived. Video is available from the entire passage season and passage may be enumerated at a later date. Hatchery contribution for the Schuylkill River adult shad was 75% in 2020; the third lowest hatchery contribution observed in the time series and below the 13-year average of 88%.

**Figure III.C.2.5 -1 Catch-Per-Unit-Effort and Fish Passage of American Shad**




## *Pennypack Creek: Rock Ramp Fishway at Sanitary Sewer Crossing*

A rock ramp fishway was constructed in Pennypack Creek in 2007 in an attempt to alleviate the excessive drop in water surface elevation caused by the sanitary sewer crossing of the creek which prevented fish from moving upstream of this site. PWD electrofishing surveys of the tidal Pennypack Creek have documented a limited spawning population of anadromous Alewife and Blueback Herring several miles downstream of the rock ramp fishway. Both juvenile and adult Striped Bass have been collected in the tidal portion, but not above the rock ramp. No adult Hickory Shad have been collected above or below the rock ramp; no larvae were stocked 2016 to 2020 by PA Fish and Boat Commission, who had been stocking larvae for several years in an attempt to establish a self-sustaining wild population, which has yet to have been realized.

### III.C.2.6 Riparian Buffer Creation and Enhancement

*Environment, Stewardship & Education Division*

PWD continues to support Philadelphia Parks and Recreation, which undertakes a broad range of environmental restoration activities throughout the park system. Restoration activities have been ongoing since 2008. These efforts have been discussed in previous years; for more details and a full list of these activities, please refer to Section III.C.2.6 Environment, Stewardship & Education Division on page 121 of the CSO-Stormwater FY12 Annual Report.

*Riparian Buffer component of Stream Restorations*

Riparian buffer enhancement will be evaluated in all stream restorations that are completed. Typically, riparian buffer enhancement activity includes invasive species management, live-stake planting, tree and shrub planting, and native seed mix application. Invasive species management usually begins one to two years prior to construction. Once the construction of the stream restoration project is complete, a landscaping plan is implemented which includes all of the applications mentioned above. Please refer to **Section III.C.2.3 Stream Habitat Restoration** on page 43 and **Section III.C.2.4 Wetland Enhancement and Construction** on page 45 in this report for more information on these topics.

*Natural Lands Team*

The Natural Lands Team, initiated in 2011, is a group comprised of members from PWD's Ecological Restoration Unit, Waterways Restoration Team, Public Affairs, PWD Design Branch and staff from Philadelphia's Department of Parks and Recreation. Bi-monthly meetings are held to coordinate a wide range of projects that affect the City's stream corridors and natural areas. Through centralizing the myriad of ongoing and upcoming projects, this group works to improve efficiency and communication. Projects include but are not limited to stream restoration, wetland creation, stormwater management, infrastructure protection and invasive species management. During FY21, the Natural Lands Team convened once to discuss upcoming projects and potential issues that could be addressed by the team members.

## III.C.3 Other Watershed Projects

### III.C.3.1 River Conservation Plan - Continue to work in partnership with local partners to complete and implement River Conservation Plans (RCPs)

All River Conservation Plans (RCPs) are available for viewing at:
https://water.phila.gov/reporting/watershed-plans-reports/ under each respective watershed's key documents.

**Table III.C.3-1: River Conservation Plan References**

| River Conservation Plans | Complete Date | Previous Reference |
|---|---|---|
| Darby Creek | 2005 | Page 121 of the CSO-Stormwater FY 2008 Annual Report |
| Tacony-Frankford | 2004 | Page 74 of the FY 2005 Stormwater Annual Report |
| Pennypack | 2005 | Page 122 of the CSO-Stormwater FY 2008 Annual Report |
| Poquessing | 2007 | Page 155 of the CSO-Stormwater FY 2010 Report |
| Delaware Direct | 2011 | Page 151 of the CSO-Stormwater FY 2011 Annual Report |

### III.C.3.2 Watershed Information Center - Create a website to serve as a Watershed Information and Technology Center

The City maintains several websites that provide information on our watersheds and activities within them, please refer to **Section II.G.2 Continue to Maintain Watershed Management and Source Water Protection Partnership Websites** on page 16 and **Section II.H.2 Expand the Internet-Based Notification System (River cast) to the Tidal Section of the Lower Schuylkill River** on page 24 for additional information on the websites.

### III.C.3.3 Integrated Water Use Status Networks - Pilot a communication and water quality monitoring network that supports the identification and analysis of water quality events

PWD has two communication and water quality monitoring networks. RiverCast supports the identification and analysis of water quality events to support recreational water use status decisions (swimming, triathlons, rowing, etc.) and makes this information available in real time to the public. EWS is used to monitor water quality and notify water utilities about such events as hazardous substance spills or sudden changes in water quality.

Please refer to **Section II.G.2 Continue to Maintain Watershed Management and Source Water Protection Partnership Websites** on page 16 for details about these communication and water quality monitoring systems.

### III.C.3.4 Integrated Water Use Status Networks - Evaluate the technical and fiscal needs to expand the network into additional receiving waters where recreational uses are taking place.

Please refer to **Section II.H.2 Expand the Internet-based Notification System (Rivercast) to the Tidal Section of the Lower Schuylkill River** on page 24 for information pertaining to this topic.

### III.C.3.5 Interpretive Signage - Continue to implement interpretive signage

*Green Stormwater Infrastructure and Restoration Locations Signage*

Information on the Green City, Clean Waters Signage Program can be found within **Appendix A- Green City, Clean Waters FY21 Annual Report**.

### III.C.3.6 Interpretive Centers - Continue to support existing educational interpretive centers to educate citizens about their community and the water environment

PWD supports several existing educational centers including FWW and many public outreach efforts conducted by partners. Please refer to **Section II.G.3 Continue to Provide Annual Information to City Residents about Programs via Traditional PWD Publications** on page 22 and **Section II.G.4 Continue to Support the Fairmount Water Works** on page 23 for more information on activities done in FY21 by the FWW and partner sponsored events.

### III.C.3.7 Basin-Specific Stormwater Management Plans (Act 167) - Continue to support the State Act 167 Storm water Management Planning process and integrate the results of these efforts into the watershed management plans and implementation plans

As of July 10, 2015, all Act 167 plans have been approved. Please refer to **Table III.C.1-2 Planning by Watershed** on page 32 for more information.

### III.C.3.8 Sewage Facility Planning - Continue to review sewage facility planning modules and downstream sewage conveyance and treatment facilities to ensure that adequate capacity exists within these systems to accommodate flow

During FY21, PWD reviewed 1,535 “Sewage Facilities Planning Module Application Mailers” for projects requiring building permits within Philadelphia County. During the same period, PWD issued 65 sanitary sewer capacity certifications for projects in tributary municipalities.

## III.C.4 Monitoring and Assessment

### III.C.4.1 NPDES – Quarterly Special Discharge Monitoring Report

PWD is committed to submitting the Quarterly Special Discharge Monitoring Report (DMR) documenting the Department’s CSO discharges during the specified time periods. This report is due 45 days after the end of each quarter, and is submitted by February 15, May 15, August 15, and November 15 of each year. During FY21, four DMRs were submitted within the 45-day timeframe. These reports are also referred to as Quarterly Combined Sewer Overflow Status Reports.

### III.C.4.2 NPDES - Annual CSO Status Report

Monitoring and characterization of CSO impacts from a combined wastewater collection and treatment system are necessary to document existing conditions and to identify water quality benefits achievable by CSO mitigation measures. The tables included in **Appendix D** and other information provided within this annual report represent the average annual CSO overflow statistics for period July 1 2020 – June 30 2021 as required in the NPDES Permit. Please refer to **Table 1 in Appendix D – NPDES – FY21 CSO Status Report** for a listing of all CSO permitted outfalls. The tables have been reorganized to present overflows by the specific receiving water into which the CSOs from a given interceptor system discharge. In order to be consistent, the column headings are presented in the same format found in the System Hydraulic Characterization (SHC) and NMC Documentation.

### III.C.4.3 Rotating Basin Approach to Watershed Monitoring - Continue to implement a rotating basin approach to watershed monitoring in CSO receiving waters in order to characterize the impact of CSO discharges and other pollutant/pollution sources and the efficacy of CSO controls and watershed restoration practices.

The Rotating Basin Approach has been replaced with a “Comprehensive Watershed Monitoring Program,” a monitoring strategy developed by PWD to comply with both the City’s stormwater and CSO permit requirements and to assist with the Source Water Protection Program’s objectives.

Please refer MS4 Annual Report **Section F.2.Step 1.b – Preliminary physical, chemical and biological quality assessment** on page 8 for information about Comprehensive Watershed Monitoring Program.

# Stormwater Management Program
# Annual Report

**National Pollutant Discharge Elimination System (NPDES) Permit**
**No. PA 0054712**
**Reporting Period July 1, 2020 to June 30, 2021**

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## Section F

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# Part I Permit Conditions

# Section A Applicability and Limitation on Coverage

The City will comply with the permit language on what are authorized and unauthorized stormwater discharges.

# Section B Legal Authority

In accordance with the National Pollutant Discharge Elimination System (NPDES) regulations contained in 40 C.F.R. Sections 122.26(d)(1)(ii) and (d)(2)(i), the City maintains adequate legal authority to enforce the Stormwater Management Program through the Philadelphia Code (Code) and the Water Department (PWD) Regulations.

Code Section 13-603 regulates discharges into the storm sewer system and includes penalties for violations. Code Section 13-603(4)(a) grants PWD and the Department of Licenses and Inspections (L&I) the authority to require compliance, including issuing regulations, and investigating, inspecting, and monitoring all premises. Under the City's zoning provisions in Code Sections 14-301(10) and 14-704(3), PWD has the authority to regulate stormwater management on a City-wide basis. Code Section 14-306(1) grants PWD and L&I specific enforcement authority for zoning violations. The Code can be accessed at https://codelibrary.amlegal.com/codes/philadelphia/latest/overview.

PWD Regulations further provide PWD legal authority to enforce the Stormwater Management Program. Section 500 prohibits cross connected sewer laterals and Chapter 6 implements the authority to regulate stormwater management for new and redevelopment in the City. PWD Regulations can be accessed at https://www.phila.gov/water/wu/ratesregulationsresp/Pages/Regulations.aspx.

This Annual Report is submitted to the Pennsylvania Department of Environmental Protection (PADEP) and the US EPA, in accordance with requirements of the City of Philadelphia's NPDES Stormwater Management Permit No. PA 0054712. The report documents the Fiscal Year 2021 (FY21) progress completed in order to comply with the requirements during the reporting period from July 1, 2020 to June 30, 2021.

# Section D Sediment Total Maximum Daily Load (TMDL) for Wissahickon Creek

## Wissahickon Sediment TMDL Monitoring Plan Implementation

PWD's commitment to meeting the Wissahickon Sediment TMDL was initiated in 2005 through detailed monitoring and assessment of the Wissahickon Creek Watershed. The goal of PWD's implementation is to reduce the amount of sediment reaching the Wissahickon Creek using a multi-faceted approach. In addition to continuing street sweeping and implementing and strengthening stormwater management regulations, the PWD has implemented three stormwater wetland facilities and seven stream restoration and stabilization projects. During FY14, PWD completed the Sediment TMDL Baseline Monitoring Report in November 2013 based on the previously submitted TMDL Monitoring Plan. This report was submitted with the FY14 CSO-MS4 Annual Report. The baseline monitoring report documents the data collected following the implementation of the stormwater wetland facilities and stream restoration projects. This information will be used to measure sediment reductions as a result of the implemented projects. The initial phase of this effort included baseline monitoring to measure the effectiveness of the stream restoration and stormwater treatment wetland facilities projects in meeting the targeted sediment reductions and H&H modeling and topographic survey monitoring to confirm sediment reduction estimates presented in PWD's Implementation Plan.

PWD submitted a Wissahickon Siltation TMDL Implementation Plan Update in March 2018. This document includes updates on the 2012 Siltation TMDL Implementation Plan's four components: stream restoration, stormwater wetlands, inlet catchbasin cleaning, City of Philadelphia Stormwater Regulations and the estimated sediment reduction associated with these activities. A more detailed Wissahickon Siltation TMDL Monitoring Report (with appendices) was also submitted in March 2018. The Monitoring report includes results from cross-sectional survey analysis of stream restoration projects, photo monitoring, in-stream evaluations of stream restoration structures and Hydraulic and Hydrologic modeling of stormwater wetlands.

# Section E Pollutant Minimization Plan for Polychlorinated Biphenyls in the City's MS4

During the fourteenth year of the PCB PMP, the following tasks were accomplished:

- 137 of the 337 remaining sites listed by EPA or other agencies as housing PCB containing devices were inspected.
- Wet-weather PCB sampling and analysis of the three WPCPs effluent was performed as required by the WPCP NPDES permits.
- PWD continued monitoring outlying township connections using EPA Method 680.
- PWD continued monitoring of groundwater discharged from new construction and remediation sites to ensure compliance with PWD's published PCB limit of "non-detection by EPA Method 608."
- PWD issued 16 groundwater discharge permits in calendar year 2020. Every permit was compliant with PWD's regulatory PCB limit of "non-detectable by EPA Method 608".
- PWD wet and dry weather WPCP effluent data have been entered into the DRBC PCB database.
- Overall, results of the 2020 sampling, show substantial reductions of 52-73% at NEWPCP, 20-64% at SEWPCP and 68-73% at SWWPCP from the baseline PCB loading levels.

Additionally, the following initiatives were undertaken:

- PWD's PCB database, developed in 2017, is now being utilized to track and report the 2020 inspections.
- Each inspection location has been given a unique ID and geocoded in PWD's GIS database. Maps of PCB sites inspected in 2020 were created to display inspections by water pollution control plant drainage area.
  - PWD can generate interactive GIS maps to assist in the identification of areas of concern and plan additional efforts to identify potential sources.

Section F Stormwater Management

## F.1. Source Identification

A description of PWD's MS4 Infrastructure, including stormwater outfalls, lengths of sanitary sewer, and lengths of stormwater sewer within Philadelphia are shown in Table F.1-1. The 205 "Non-PWD Owned" outfalls listed in the table are owned by other City agencies, private entities, or individuals. The PWD-owned stormwater outfall locations and MS4 areas are shown in Figure F.1-1.

**Table F.1-1: Description of MS4 Infrastructure**

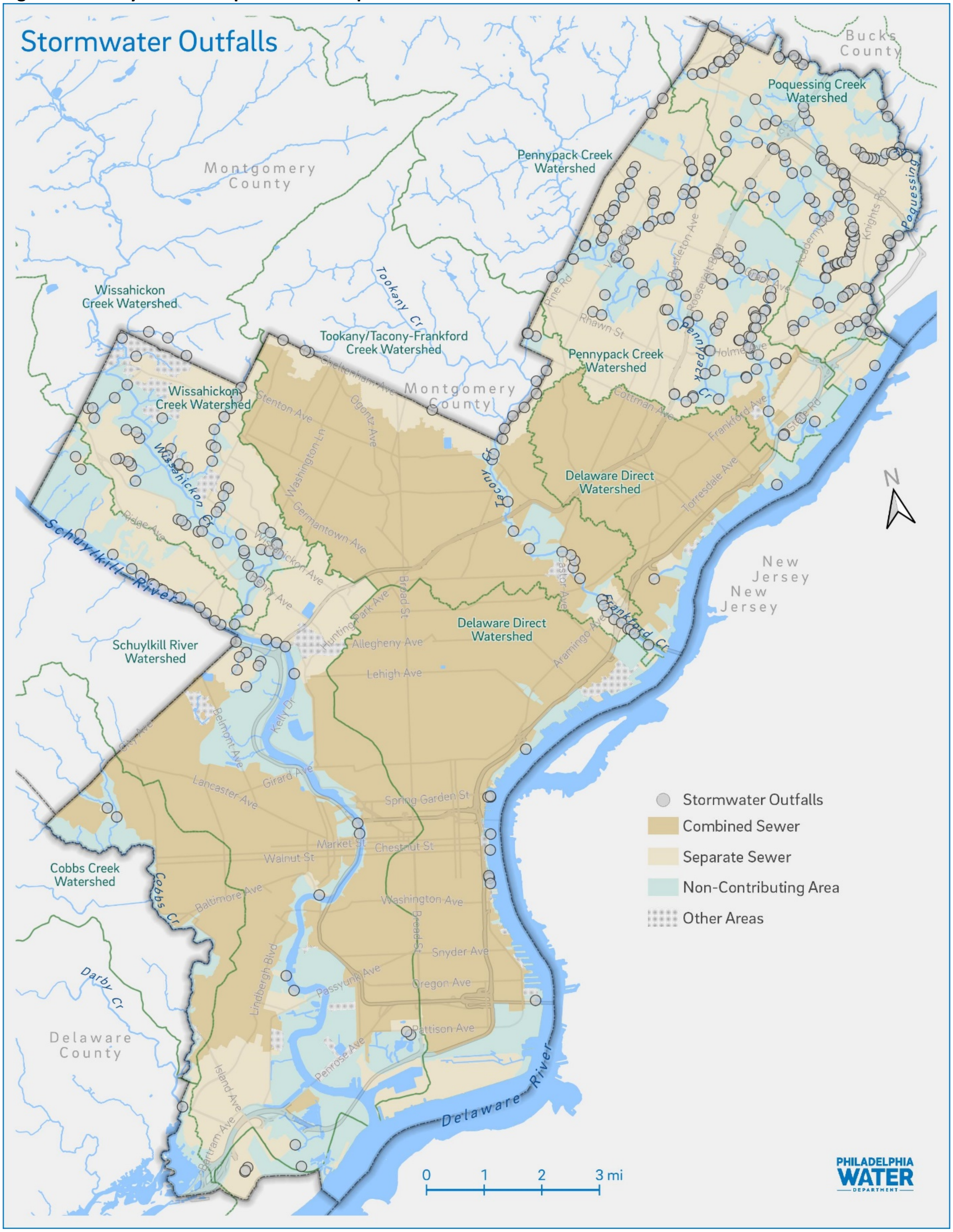
| Watershed | Drainage Area (Square Miles) | Miles of Pipe | | | MS4 Outfalls Count | |
|---|---|---|---|---|---|---|
| | | Stormwater | Sanitary | Total MS4 | PWD Owned | Non-PWD Owned |
| Darby-Cobbs | - | 1.02 | 0.81 | 1.82 | 3 | - |
| Delaware Direct | 3.15 | 79.81 | 52.68 | 132.49 | 18 | 122 |
| Pennypack | 11.67 | 234.93 | 234.03 | 468.96 | 130 | 14 |
| Poquessing | 8.00 | 154.71 | 156.52 | 311.23 | 141 | 19 |
| Schuylkill | 8.48 | 153.43 | 156.82 | 310.26 | 45 | 47 |
| Tacony | 2.47 | 54.46 | 59.02 | 113.48 | 34 | 1 |
| Wissahickon | 5.79 | 95.18 | 104.86 | 200.03 | 63 | 2 |
| **Total** | **39.56** | **773.53** | **764.74** | **1538.27** | **434** | **205** |

GIS Data Layers have been submitted within a geodatabase, **PWD_Annual_Report_GIS_Data_2021.mdb** which can be found in the **digital download link**. The GIS Data Feature class filenames within the geodatabase are provided in **Table F.1-2**.

**Table F.1-2: GIS Data Feature Classes within Geodatabase named - PWD_Annual_Report_GIS_Data_2021.mdb**

| | |
|---|---|
| • All_PWD_Monitoring_FY21 | • NPDES_Permitted_Dischargers_FY21 |
| • GSI_Monitored_Locations_FY21 | • Detention_Basins_Philadelphia |
| • Public_GSI_Projects_Completed_FY21 | • Impervious_Surfaces_Planimetric_2004 |
| • Public_GSI_Projects_Planned_FY21 | • Major_Watersheds_Full_Extent |
| • Pollution_Migration_Events_FY21 | • Major_Watersheds_Philadelphia_Clip |
| • Active_Construction_Sites_FY21 | • Sewersheds_FY21 |
| • Verified_Regulations_FY21 | • Census_Blocks_2020_Philadelphia |
| • Verified_Retrofits_FY21 | • Stormwater_Outfalls |
| • New_Project_Submissions_FY21 | • Stormwater_Outfalls_with_DrainageArea_Summary |
| • Technical_Approvals_FY21 | • Stormwatersheds_Pennypack |
| • Hydrology_Centerline | • Stormwatersheds_Poquessing |
| • Hydrology_Polygon | • Stormwatersheds_Wissahickon |
| • Land_Use_PCPC_2018Land_Use_PCPC_2021 | • Point_Sources_Wissahickon |
| • PCB_Locations_Known_Historical | • Scrap_Yard_Inspections_FY21 |

**Figure F.1-1 City of Philadelphia Water Department Stormwater Outfalls**



Descriptions of the GIS layers referenced in **Table F.1-2** are provided below:

*All_PWD_Monitoring_FY21*

This layer presents the locations of PWD's chemical, fish, macroinvertebrate, and algae sampling sites. The contents of this feature class are discussed in **Section F.2.Step.1.b** on page 8.

*GSI_Monitored_Locations_FY21*

This layer presents the locations of existing green stormwater infrastructure projects actively monitored by PWD in Philadelphia County.

*Public_GSI_Projects_Completed_FY21*

This layer presents the locations of completed publicly implemented green stormwater infrastructure projects sorted by their current status within Philadelphia County.

*Public_GSI_Projects_Planned_FY21*

This layer presents the locations of planned publicly implemented green stormwater infrastructure projects sorted by their status within Philadelphia County.

*Pollution_Migration_Events_FY21*

This layer presents the locations of spills documented by PWD Industrial Waste Unit within Philadelphia in FY21. The contents of this layer are discussed in **Section F.7.a – Pollutant Migration/Infiltration to the MS4 System** on page 32.

*Active_Construction_Sites_FY21*

This layer presents the locations of active construction private development projects within Philadelphia in FY21. The contents of this layer are discussed in **Section F.5 – Monitor and Control Stormwater from Construction Activities** on page 23.

*Verified_Regulations_FY21*

This layer presents the locations of constructed and verified private development projects subjected to stormwater regulations within Philadelphia in FY21. The contents of this layer are discussed in **Section F.5 – Monitor and Control Stormwater from Construction Activities** on page 23.

*Verified_Retrofits_FY21*

This layer presents the locations of constructed and verified private retrofit development projects subjected to stormwater regulations within Philadelphia in FY21. The contents of this layer are discussed in **Section F.5 – Monitor and Control Stormwater from Construction Activities** on page 23.

*New_Project_Submissions_FY21*

This layer presents the locations of new project submissions for conceptual stormwater plan review in FY21. The contents of this layer are discussed in **Section F.5.b – Post-Construction Stormwater Management in New Development and Redevelopment** on page 28.

*Technical_Approvals_FY21*

This layer presents the locations of projects issued technical approvals by PWD in FY21. The contents of this layer are discussed in **Section F.5.b – Post-Construction Stormwater Management in New Development and Redevelopment** on page 28.

*Hydrology_Centerline*
This layer presents the surrounding watershed hydrology in a polyline based feature class.

*Hydrology_Polygon*
This layer presents the surrounding watershed hydrology in a polygon based feature class.

*Land_Use_PCPC_2021*
This layer presents Philadelphia land use as ascribed to individual parcel boundaries or units of land. Land use is the type of activity occurring on the land such as residential, commercial or industrial. Each unit of land is assigned to one of nine major classifications of land use (2-digit codes) and where possible more narrowly defined into one of 70 sub-classifications (3-digit codes).

*PCB_Locations_Known_Historical*
This layer presents the location of all known and historical PCB locations within Philadelphia. The contents of this layer are discussed in **Section E – Pollutant Minimalization Plan for Polychlorinated Biphenyls in the City's MS4** on page 2.

*NPDES_Permitted_Dischargers_FY21*
This layer presents the location within Philadelphia of all NPDES Industrial Stormwater permitted Discharger. The contents of this layer are discussed in **Section F.2.Step 1.c** on page 14 and a list of permitted facilities can be found in **Appendix J – NPDES Industrial Stormwater Permitted Sites – Philadelphia County.**

*Detention_Basins_Philadelphia*
This layer presents the location of all known stormwater detention basins within Philadelphia County.

*Impervious_Surfaces_Planimetric_2004*
This layer presents percent imperviousness and the amount of impervious area in Philadelphia County.

*Major_Watersheds_Full_Extent*
This layer presents the delineation of the Philadelphia County and surrounding counties' watershed boundaries including Darby-Cobbs, Delaware-Direct, Pennypack, Poquessing, Schuylkill, Tacony-Frankford, and Wissahickon watersheds.

*Major_Watersheds_Philadelphia_Clip*
This layer presents the delineation of the Philadelphia County's watershed boundaries including Darby-Cobbs, Delaware-Direct, Pennypack, Poquessing, Schuylkill, Tacony-Frankford, and Wissahickon watersheds.

*Sewersheds_FY21*
This layer presents the boundaries of the MS4, combined sewer, un-sewered, non-contributing, and stormwater only areas within Philadelphia County and the neighboring contributing areas.

*Census_Blocks_2020_Philadelphia*
This layer presents the results of the 2020 Census in Philadelphia County on a block level.

### *Stormwater_Outfalls*

This layer presents locations of all permitted stormwater outfalls within Philadelphia County and the neighboring contributing areas.

### *Stormwater_Outfalls_with_DrainageArea_Summary*

This layer presents locations of all permitted stormwater outfalls within Philadelphia County and the neighboring contributing areas. Drainage area analysis values are appended in the attribute table to display outfall metrics including total drainage area, total impervious drainage area, percent impervious, and runoff coefficient.

### *Stormwatersheds_Pennypack*

This layer presents the stormwater drainage areas to receiving waterways and stormwater outfalls within the Pennypack Watershed.

### *Stormwatersheds_Poquessing*

This layer presents the stormwater drainage areas to receiving waterways and stormwater outfalls within the Poquessing Watershed.

### *Stormwatersheds_Wissahickon*

This layer presents the stormwater drainage areas to receiving waterways and stormwater outfalls within the Wissahickon Watershed.

### *Point_Sources_Wissahickon*

This layer presents permitted Point source locations within the Wissahickon Watershed.

### *Scrap_Yard_Inspections_FY21*

This layer presents locations of scrap yards inspected during the fiscal year.

### *GIS Stormwater Data Conversion Geodatabase Layers*

The City has previously submitted additional GIS data layers that will not be included this year. These layers include outfalls, manholes, inlets, and various pipe as listed in **TABLE F.1-3**. The reason for their removal is the City's policy to not release these data layers to the general public due to security concerns. These data layers would be made available for viewing by PWD, should it be necessary.

**Table F.1-3 GIS Data Feature Classes within Geodatabase named -StormwaterDataConversion.mdb**

| | |
|---|---|
| DataConv_GISAD_stBasin | DataConv_GISAD_stInletPipe |
| DataConv_GISAD_stBoring | DataConv_GISAD_stMeterChamber |
| DataConv_GISAD_stCasin | DataConv_GISAD_stOffsetAccess |
| DataConv_GISAD_stChamber | DataConv_GISAD_stOpenChannel |
| DataConv_GISAD_stCulvert | DataConv_GISAD_StormNetwork_Junctions |
| DataConv_GISAD_stDisconnectedInlet | DataConv_GISAD_stOutfall |
| DataConv_GISAD_stFitting | DataConv_GISAD_stPointFeature |
| DataConv_GISAD_stFlare | DataConv_GISAD_stPump |
| DataConv_GISAD_stForceMain | DataConv_GISAD_stRainGauges |
| DataConv_GISAD_stGravityMain | DataConv_GISAD_stStructure |
| DataConv_GISAD_stHostPipe | DataConv_GISAD_stTunnel |
| DataConv_GISAD_stManhole | DataConv_GISAD_stVentPipe |
| DataConv_GISAD_stManholeOther | DataConv_GISAD_stVirtualLink |
| DataConv_GISAD_stInlet | DataConv_GISAD_stVirtualNo |

# F.2. Discharge Management, Characterization, and Watershed-based Assessment and Management Program

## Step 1. Preliminary Reconnaissance: Permit Issuance through end of Year 2

### a. Land use and resource mapping

PWD has conducted extensive mapping of information relevant to stormwater management planning. Previously discussed in **Section F.1 – Source Identification** of this document on page 3, the GIS files include MS4 outfalls and contributing drainage areas, land use, population, monitoring locations, and other relevant layers. The maps and supporting GIS layers are included in the **digital download link**.

### b. Preliminary physical, chemical, and biological quality assessment

#### Comprehensive Watershed Monitoring Program

Comprehensive assessment of our waterways is integral to planning for the long-term health and sustainability of our water systems. By measuring all factors that contribute to supporting fishable, swimmable, and drinkable water uses, appropriate management strategies can be developed for each watershed land area that Philadelphia shares.

PWD has carried out extensive sampling and monitoring programs to characterize conditions in seven local watersheds**,** both within the county boundaries and outside counties/municipalities. From 1999 to 2021, PWD has implemented a comprehensive watershed assessment strategy, integrating biological, chemical and physical assessments to provide both quantitative and qualitative information regarding the aquatic integrity of the Philadelphia regional watersheds. This information was published in Comprehensive Characterization Reports (CCRs) and used to plan improvements to watersheds in the Southeast Region of Pennsylvania.

#### Monitoring Timeline Strategy

Prior to the creation of PWD's Comprehensive Watershed Monitoring Program, baseline assessments were conducted in all Philadelphia regional watersheds to assess the degree, location and type of impairments occurring within each system. Baseline assessments, encompassing benthic, fish, habitat and discrete water quality monitoring, were routinely completed on a watershed within one year. With the addition of continuous and wet-weather water quality monitoring, periphyton assessments, and specialized physical assessment programs (*e.g.*, FGM assessments), CCRs were typically accomplished on a two-year timeline.

PWD conducted benthic macroinvertebrate and physical habitat monitoring activities at 8 stream monitoring sites in spring 2020 **(Table F.2.Step 1.B-1).** Monitoring activities in spring 2020 were abbreviated due to the COVID-19 pandemic.

As described in PWD's *Comprehensive Watershed Monitoring Program: Proposed Strategy 2010-2015*, the scale of watershed stressors is so expansive and the BMP program is still in its early phase that full implementation is limited but will increase once the program is established. Therefore, PWD is focusing its monitoring efforts at maintaining a "sentinel" monitoring presence in each of the City's watersheds rather than dedicating monitoring efforts to individual watersheds. This regional monitoring approach has been greatly enhanced through a partnership with USGS. Continuous water quality data are collected from 11 USGS gaging stations, and quarterly baseflow water samples are analyzed for microbial and nutrient parameters of concern. PWD also continues to assess performance of stormwater BMP projects as they are constructed.

**Table F.2.Step 1.B-1 Overview of PWD Proposed Watershed Monitoring Activities 2010-2021**

| Watershed/Geographic Area | Activity | Period |
|---|---|---|
| PWD/USGS Gages | Continuous Water Quality Monitoring | 2010-2021 |
| PWD/USGS Gages | Quarterly Water Quality Grab Samples | 2010-2021 |
| Philadelphia Area Watersheds | Stormwater BMP Monitoring | 2010-2021 |
| Philadelphia Area Watersheds | Stream Restoration Project Monitoring | 2010-2021 |
| Cobbs Creek Watershed | Watershed-wide Comprehensive Assessment | 2012-2013 |
| Tookany-Tacony/Frankford Watershed | Watershed-wide Comprehensive Assessment | 2013-2014 |
| Wissahickon Creek Watershed | Tributary Assessment | 2014-2015 |
| Wissahickon Creek Watershed | Watershed-wide Comprehensive Assessment | 2015-2016 |
| Pennypack Creek Watershed | Tributary Assessment | 2016-2017 |
| Poquessing Creek Watershed | Watershed-wide Comprehensive Assessment | 2018-2019 |
| Schuylkill River Watershed | Tributary Assessment | 2019 |

## Monitoring Timeline 2010-2020

As described in the *Comprehensive Watershed Monitoring Program: Proposed Strategy 2010-2015*, PWD's current proposed strategy for watershed assessments includes a less intense, but ongoing monitoring effort within each watershed, primarily through a partnership with the USGS. It should be noted that although the monitoring plan nominally covers 2010-2015, the assessments of the Wissahickon, Pennypack and Poquessing watersheds are continuations of that plan and are thus included here. Currently, PWD's is focused on monitoring efforts to evaluate the performance of stormwater BMPs and restoration projects. Allowing 10 years before watershed re-assessment will potentially allow for a greater number of projects to be implemented.

The proposed strategy for watershed assessments 2010-2021 includes resuming watershed-scale bioassessment activities at several stations within targeted watersheds **(Table F.2.Step 1.B-2 Proposed Watershed Monitoring Timeline 2010-2021)**. These watershed scale reassessments should complement the "adaptive management" approach favored by the IWMP implementation process and allow for the locations and methods of assessment to be changed, depending upon the number of projects implemented and their spatial distribution within the watershed. It is hoped that these data will be useful as a long-term record of water quality changes in the region, more appropriate for assessing the goals of a City-wide distributed green infrastructure program than an approach that focuses on individual watersheds.

**Table F.2.Step 1.B-2 Proposed Watershed Monitoring Timeline 2010-2021**

| Watershed | BMP Monitoring | Quarterly WQ Grab sampling | Continuous WQ Monitoring | Annual WQ Summary | Bioassessment | Bioassessment Data Analysis |
|---|---|---|---|---|---|---|
| **Cobbs** | 2010-2021 | 2010-2021 | 2010-2021 | 2010-2021 | 2012, 2021 | 2012-2013, 2022 |
| **Tacony-Frankford** | 2010-2021 | 2010-2021 | 2010-2021 | 2010-2021 | 2013 | 2013-2014 |
| **Wissahickon** | 2010-2021 | 2010-2021 | 2010-2021 | 2010-2021 | 2014-2016 | 2014-2016 |
| **Pennypack** | 2010-2021 | 2010-2021 | 2010-2021 | 2010-2021 | 2016-2018 | 2016-2018 |
| **Poquessing** | 2010-2021 | 2010-2021 | 2010-2021 | 2010-2021 | 2018 | 2018-2019 |

## Water Quality Sampling and Monitoring

### *Guiding Principles of Urban Water Chemistry Assessment*

PWD's water quality assessment strategy has been designed to facilitate separate analyses of dry weather (i.e., baseflow) and wet weather water quality conditions. This program has evolved over time, as personnel and technological improvements have improved our abilities to collect more data from an increasing number of sampling locations in a more efficient manner. Automated sampling, in particular, has greatly increased the temporal resolution of stormwater sampling at multiple sampling locations for a single storm event.

In order to comply with the State-regulated stormwater permit obligations, PWD worked with USGS to record continuous water quality data at 10 gage stations in the Philadelphia region from July 2020 through November 2020 and March 2021 through June 2021. Four types of sampling were performed as discussed below. Parameters were chosen based on state water quality criteria, or because they are known or suspected to be important in urban watersheds.

### *Discrete Water Chemistry Assessment*

Each USGS/PWD cooperative monitoring gage site was sampled once during the course of a few hours, to allow for travel time and sample processing/preservation. Samples are collected during dry weather and parameters were chosen based on the conclusions from baseline sampling that indicated dry weather problems are primarily related to bacteria and nutrients. Results of samples collected to date are presented in **Appendix F – PWD Quarterly Dry Weather Water Quality Monitoring Program.** Previous annual reports describe PWD's extensive surface water grab sampling efforts dating back to 2002.

Boat run grab samples were not collected in FY21 due to the COVID-19 pandemic. PWD has collected 24 samples from the Schuylkill River and 49 samples from the Delaware River by boat since 2011. Results from quarterly dry weather grab sampling thus far are generally similar to data collected during the CCR data collection periods.

### *Continuous Water Quality Assessment*

Each USGS/PWD cooperative monitoring gage site records water quality data for dissolved oxygen, temperature, flow, pH, and specific conductance. Selected locations are also instrumented for turbidity, precipitation and photosynthetically active radiation (PAR). These data are made available to the public in near real-time on the internet at https://www.usgs.gov/centers/pa-water/science/philadelphia-water-resources-monitoring-program. The monitoring results from FY21 are presented in **Appendix G – PWD-USGS Cooperative Water Quality Monitoring Program Annual Summary**.

In addition to continuously monitoring water quality at USGS gaging stations, PWD continued deployment of an in situ self-contained data logging continuous water quality monitoring sonde (YSI Inc. Model EXO2) in the tidal Schuylkill River at SC048 (Schuylkill River at the Navy Yard) from March – November in 2020 and will be monitored between March and November in 2021.

Long-term continuous monitoring for TMDL compliance and building a long-term water quality data record for the aforementioned watersheds will be accomplished in 2010-2021 through a partnership with the USGS. Results from City-wide continuous monitoring thus far are generally similar to data collected during the CCR data collection periods. For this reason, PWD will re-evaluate whether additional water quality sampling is needed to characterize water quality in targeted watersheds on a case-by-case basis. Continuous water quality instruments will also be utilized in evaluating the performance of certain stormwater BMPs and assessing conditions in tidal portions of the Schuylkill and Delaware Rivers as well as Frankford Creek.

### *Groundwater Monitoring*

A city-wide groundwater level monitoring network will provide long-term monthly data documenting current water levels and trends in groundwater elevations throughout the City, helping to track the impacts of widespread implementation of stormwater management practices (SMPs) and global climate change. Data from the groundwater monitoring network will also be used to calibrate a Philadelphia groundwater model and update the USGS groundwater contour map of Philadelphia (Paulachok 1984).

PWD and USGS identified existing wells that would be suitable for the network and obtained permission for site access. Once wells were identified and accessible, well condition and suitability for inclusion in the monitoring network were investigated by continuous water level monitoring and remote video camera inspection when accessible. Wells that met acceptance criteria were added to the monitoring network. After examining readily available information about existing wells, PWD elected to drill additional wells in order to provide better spatial distribution of wells in the monitoring network. Current status of the groundwater monitoring network and a summary of data collected through June 30, 2021 are presented in **Appendix H – PWD/USGS Groundwater Monitoring Program**.

### *Biological Monitoring*

The biological monitoring protocols employed by PWD are based on methods developed by the US EPA (Barbour et al. 1999) and the PADEP. These procedures are as follows:

- Rapid Bioassessment Protocol III (Benthic Macroinvertebrate Sampling)
- Periphyton Assessment (Algae Monitoring)

### *Macroinvertebrate Assessments*

As described in the PWD Comprehensive Watershed Monitoring Program: Proposed Monitoring Strategy 2010-2015, PWD's approach is intended to be a compromise, recognizing not only the benefits of collecting data from randomly selected sites but also the importance of maintaining a monitoring effort at consistent locations over time. This plan is based on a similar monitoring program that USGS has implemented in Chester County (Reif 2002, Reif 2004). The plan reflects the manpower constraints of collecting and processing samples with the PADEP ICE protocol. It is hoped that this approach will achieve some of the benefits of a randomized approach, while providing periodic re-evaluation of our watersheds required to inform the watershed planning process and comply with environmental mandates. Monitoring activities in spring 2020 were abbreviated due to the COVID-19 pandemic **(Table F.2-3 Proposed Benthic Invertebrate Monitoring Timeline 2011-2021).**

**Table F.2-3: Proposed Benthic Invertebrate Monitoring Timeline 2011-2021**

| Period | Monitoring Activity (number of samples*) |
|---|---|
| 2011 | USGS gage samples (9); Randomly selected sites (16) |
| 2012 | Cobbs Creek (6**); USGS gage samples (9); Random (10) |
| 2013 | Tookany/Tacony Creek (10**) USGS gage samples (9); Random (6) |
| 2014 | Wissahickon Creek Tributaries (15); USGS gage samples (9); Random (1) |
| 2015 | Wissahickon Creek (10**); USGS gage samples (8); Random (4) |
| 2016 | Pennypack Creek Tributaries (11**); USGS gage samples (9); Random (5) |
| 2017 | Pennypack Creek (12**); USGS gage samples (9); Random (4) |
| 2018 | Poquessing Creek (12**); USGS gage samples (9); Random (4) |
| 2019 | Schuylkill River Tributaries (3); USGS gage samples (8); Random (3) |
| 2020 | USGS gage samples (6); Random (2) |
| 2021 | Cobbs Creek (6**); USGS gage samples (9); Random (10)* |

* Number of samples estimated, actual number of samples may vary

** Number of monitoring sites excludes 2 USGS gage sites in target watershed

During March and April 2020, PWD conducted Rapid Bioassessment Protocols (RBP III) at 8(n=8) locations within Philadelphia area watersheds. Sampling was conducted at 6 USGS gages in the PWD/USGS Cooperative Monitoring program and 2 randomly selected sites. These data are presented in **Appendix I – PWD Wadeable Streams Benthic Macroinvetebrate and Physical Habitat Assessments**. In spring 2021, PWD sampled 9 USGS gages, 6 sites in the Darby-Cobbs Watershed, and 10 randomly chosen sites.

### *Fish Assessments*

Fish were not assessed in 2017-2021 due to a shortage of resources and staffing **(Table F.2-4 Proposed Fish Monitoring Timeline 2010-2018)**. All surveys were conducted using electrofishing gear as described in EPA RBP V (Barbour, et al. 1999).

**Table F.2-4: Proposed Fish Monitoring Timeline 2012-2020**

| Period | Monitoring Activity (number of samples*) |
|---|---|
| 2012 | Cobbs Creek Watershed Assessment (4) |
| 2013 | Tookany/Tacony Creek Watershed Assessment (8) |
| 2015 | Wissahickon Creek Watershed Assessment (10) |
| 2016 | Fish not assessed; tributaries targeted in 2016. |
| 2017-2021 | Fish not assessed |

* Number of samples estimated, actual number of samples may vary

### *Algae Assessments*

Chlorophyll-a measurements may be used to provide information for the parameterization of water quality models. In spring 2016, PWD began a pilot effort to collect continuous chlorophyll-a data at three USGS stations along the Delaware River: 01467200 (Ben Franklin Bridge), 014670261 (Delaware River near Pennypack Woods), and 01463500 (Trenton). In addition, PWD deployed two buoys in the Delaware River (at Pea Patch Island and upstream of the confluence with the Schuylkill River) from March-November. Sondes attached to these buoys monitor continuous chlorophyll-a levels. Bi-weekly grab samples are collected and analyzed at these locations to calibrate the sensors.

### *Physical Monitoring*

#### Physical Habitat Assessments

Habitat assessments are conducted along with benthic macroinvertebrate monitoring and thus the habitat assessment strategy is described under the heading **Biological Monitoring – Macroinvertebrate Assessments**, above. PWD assesses stream physical habitat condition using PADEP Instream Comprehensive Evaluation (ICE) protocols. During calendar year 2020, PWD conducted physical habitat assessments at 8 locations within Philadelphia area watersheds. Sampling was conducted at 6 USGS gages in the PWD/USGS Cooperative Monitoring program and 2 randomly selected sites. These data are presented in **Appendix I – PWD Wadeable Stream Benthic Macroinvertebrate and Physical Habitat Assessments**. In spring 2021, PWD sampled 9 USGS gages, 6 sites in the targeted Darby-Cobbs Watershed, and 10 randomly chosen sites.

#### Habitat Suitability Index (HSI)

In addition to habitat assessments, Habitat Suitability Index (HSI) models, developed by the U.S. Fish and Wildlife Service (USFWS), have been incorporated into the monitoring program. Based on empirical data and supported by years of research and comprehensive review of scientific literature, these models present numerical relationships between various habitat parameters and biological resources, particularly gamefish species and species of special environmental concern. To date, HSI have applied to Darby-Cobbs, Tookany/Tacony-Frankford, Wissahickon, and Pennypack Creek Watersheds. The Poquessing Creek Watershed CCR approach attempted to simplify the application of fish habitat suitability analysis to generalized guilds.

#### Fluvial Geomorphologic (FGM) / Infrastructure Analysis

Fluvial Geomorphologic (FGM) studies establish the physical attributes of the stream, identify areas of concern, and provide recommendations for rehabilitation of the stream corridors and floodplains. To date, FGM analysis has been conducted on the Darby-Cobbs, Tookany/Tacony-Frankford, Wissahickon, Pennypack, and Poquessing Creeks. Analysis was conducted in order to characterize channel morphology, disturbance, stability, and habitat parameters as well as to provide a template for hydrologic and hydraulic modeling and serve as a baseline for assessing channel bank and bed changes. Data provided from the FGM analyses will also serve to develop reach rankings within each watershed in order to prioritize restoration strategies. In FY21, designs were advanced for several stream restoration and riparian infrastructure protection projects throughout Philadelphia's watersheds. Of these, two projects were advanced to the construction phase. These projects will reduce streambank erosion, improve aquatic habitat, and protect critical infrastructure in the stream corridor. Planning studies are also being developed to identify new projects for implementation.

*Summary of Monitoring Locations*

Biological, physical and chemical monitoring locations are based on 3 criteria: 1) appropriate habitat heterogeneity; 2) access availability; and 3) proximity to USGS stream gaging stations and PADEP 305b monitoring sites. In general, the number of monitoring sites is proportional to the size of the drainage and the watershed's link magnitude (i.e., number of 1st order streams). Maps of assessment sites by watershed and program (biological, chemical, or physical) are available as GIS data.

*Quality Assurance/Quality Control (QA/QC) and Data Evaluation*

PWD has planned and carried out an extensive sampling and monitoring program to characterize conditions in Philadelphia's watersheds. Sampling and monitoring follow the Standard Operating Protocols (SOPs) and Quality Manual as maintained by PWD's Bureau of Laboratory Services (BLS). These documents cover the elements of quality assurance, including field and laboratory procedures, chain of custody, holding times, collection of blanks and duplicates, and health and safety.

They are intended to help the program achieve a level of quality assurance and control that is acceptable to regulatory agencies. More information regarding Standard Operating Procedures (SOPs) for chemical and biological assessments is available from BLS.

### c. Inventory of Point and Non-Point sources

At the end of FY21, there are 114 NPDES permitted dischargers in Philadelphia County, as shown in **Appendix J – NPDES Industrial Stormwater Permitted Sites – Philadelphia County**. This listing was downloaded from the PADEP Environment Facility Compliance Tracking System (eFACTS). The eFACTS website can be accessed through the following link: http://www.ahs.dep.pa.gov/eFACTSWeb/default.aspx.

PWD is also actively involved in developing estimates of non-point source pollutants. The results of this analysis are described in the hydrologic models in **Section G - Assessment of Controls** on page 42.

### d. Preliminary problem assessment

CCRs were completed for the Wissahickon (2007), Pennypack (2009) and the Poquessing (2010) Creek Watersheds. These reports include analysis of data collected over the monitoring period and present a characterization of problems within the watershed. The reports for each watershed are available to the public through the internet at the following address: http://water.phila.gov/reporting/watershed-plans-reports/.

## Step 2. Watershed Plan Development: Permit issuance through end of Year 5

For information on the status of the Act 167 plans, please refer to the CSO Annual Report **Table III.C.1-2 - Planning by Watershed** on page 32 for more information.

# Step 3. Watershed Plan Implementation and Performance Monitoring: Permit issuance through expiration

## a. Dry Weather Water Quality and Aesthetics

### Operate the Defective Lateral Program

Over the last fiscal year, PWD has continued to successfully operate its Defective Lateral Program. A detailed discussion of this program is provided within this report in **Section F.3 - Detection, Investigation, and Abatement of Illicit Connections and Improper Disposal** on page 20.

### Debris removal from waterways impacted by storm water discharges

PWD continues to employ the Waterways Restoration Team (WRT) to remove debris and conduct small scale stream restoration projects within the City's waterways. Please refer the CSO Annual Report **Section II.F – NMC 6 - Control of Solid and Floatable Materials in CSOs** on page 8 for information about debris removal from waterways impacted by storm water discharges.

### Lincoln Drive sewer relining

PWD completed the Lincoln Drive sewer relining in 2004. Additional information on this project was reported in previous reports; please refer to Section F.2.3.a.iii on page 261 of the FY10 CSO-Stormwater Annual Report.

### Stormwater Outfall Dry Weather Inspections

The City maintains a stormwater outfall inspection program in compliance with the MS4 permit. All 434 of the City's permitted stormwater outfalls are scheduled to be inspected by the Industrial Waste unit at least once each permit cycle. Those with dry weather flow are sampled for fecal coliform and fluoride analysis. The results of these samples are reported on a quarterly basis and summarized in this annual report.

Those outfalls identified as priority outfalls under the MS4 permit are inspected quarterly.

As part of the Permit Inspection Program during FY21, 262 outfall inspections were conducted, and 126 samples were taken due to observed dry weather flow. As part of the Priority Outfall Inspection Program during FY21, 42 outfall inspections were conducted, and 39 samples were taken due to observed dry weather flow. The sample results are used on the Stormwater Outfall Priority Score list.

The full details of program accomplishments for FY21 can be found in **Appendix N – FY21 Defective Lateral Connection Quarterly Status Reports.**

**Table F.2-5: Stormwater Outfall Inspection Program – 5 Year Summary**

| Fiscal Year | Permit Inspection Program | | Priority Outfall Program | |
|---|---|---|---|---|
| | Inspections | Samples | Inspections | Samples |
| 2017 | 171 | 91 | 44 | 37 |
| 2018 | 117 | 57 | 41 | 37 |
| 2019 | 123 | 70 | 40 | 36 |
| 2020 | 96 | 62 | 46 | 39 |
| 2021 | 262 | 126 | 42 | 39 |
| **Total** | **769** | **406** | **213** | **188** |

## Defective Lateral Program - Priority Outfalls

Outfalls are prioritized for investigative work by the Defective Connections Group (DCG) using the Stormwater Outfall Priority Score list.

### *7th & Cheltenham Avenue Outfall (T-088-01)*

As of June 30, 2021, DCG program activities have performed 2,831 complete tests in this sewershed, identifying 134 cross-connections, all of which have been abated.

The locations of dry weather diversion devices, and the number of inspections, blockages, and discharges found by the Flow Control unit during FY21 are listed below.

**Table F.2-6: 7th & Cheltenham Ave – Diversion Devices - FY21 Summary**

| Location | ID # | Inspections | Blockages | Discharges |
|---|---|---|---|---|
| Plymouth St. west of Pittsville St. | CFD-01 | 33 | 3 | 0 |
| Pittsville St. south of Plymouth St. | CFD-02 | 31 | 2 | 0 |
| Elston St. east of Bouvier St. | CFD-03 | 25 | 0 | 0 |
| Ashley St. west of Bouvier St. | CFD-04 | 16 | 0 | 0 |
| Cheltenham Ave. east of 19th St. | CFD-05 | 13 | 0 | 0 |
| Verbena St. south of Cheltenham Ave. | CFD-06 | 15 | 0 | 0 |
| Cheltenham Ave. east of 7th St. | CFD-07 | 55 | 13 | 0 |
| 7th St. south of Cheltenham Ave. | CFD-08 | 51 | 5 | 0 |

Inspections and fecal coliform sampling at this outfall continue quarterly.  Results for the outfall samples during FY21 are listed below.

**Table F.2--7: 7th & Cheltenham Ave - Fecal Coliform Results – FY21 Summary**

| Date | Fecal Count (MPN per 100 ml) |
|---|---|
| 08/26/2020 | 11,199 |
| 11/10/2020 | NF* |
| 03/04/2021 | NF* |
| 05/19/2021 | 8,664 |

Note: * NF indicates that no flow was observed

### *Monastery Avenue Outfall (W-060-01)*

As of June 30, 2021, DCG program activities have performed 632 complete tests in this sewershed, identifying 17 cross-connections, of which 16 have been Abated.

The locations of dry weather diversion devices and the number of inspections, blockages, and discharges found by the Flow Control unit during FY21 are listed below.

**Table F.2-8: Monastery Ave - Diversion Devices - FY21 Summary**

| Location | ID# | Inspections | Blockages | Discharges |
|---|---|---|---|---|
| Jannette St. west of Monastery Ave. | MFD-01 | 19 | 0 | 0 |
| Green La. North of Lawnton St. | MFD-02 | 19 | 0 | 0 |

Inspections and fecal coliform sampling at this outfall continue quarterly. Results for the outfall samples during FY21 are listed below.

**Table F.2-9: Monastery Ave - Fecal Coliform Results – FY21 Summary**

| Date | Fecal Count (MPN per 100 ml) |
|---|---|
| 07/01/2020 | 410 |
| 10/06/2020 | 178 |
| 01/20/2021 | 75 |
| 05/17/2021 | 613 |

### *Monoshone Creek Outfalls (W-068-05)*

Additional areas of focus: W-060-04, W-060-08, W-060-09, W-060-10, W-060-11, W-068-04

As of June 30, 2021, DCG program activities have performed 2,750 complete tests in these sewershed areas, identifying 94 cross-connections, all of which have been abated. The majority of the efforts have been in the W-068-05 sewershed area which is by far the largest in terms of drainage area and properties served.

Inspections and fecal coliform sampling at the W-068-05 outfall continue quarterly. Results for the outfall samples during FY21 are listed below.

**Table F.2-10: Monoshone Creek (W-068-05 Outfall) - Fecal Coliform Results – FY21 Summary**

| Date | Fecal Count (MPN per 100 ml) |
|---|---|
| 07/22/2020 | 24,196 |
| 10/06/2020 | 1,986 |
| 01/20/2021 | 216 |
| 04/19/2021 | 708 |

### *Manayunk Canal Outfalls (S-051-06, S-058-01, S-059-01 through S-059-11)*

As of June 30, 2021, DLC program activities have performed 2,479 complete tests in these sewershed areas, identifying 62 cross-connections, all of which have been abated. The majority of the efforts have been in the S-059-04 sewershed area.

Inspections and fecal coliform sampling at the following outfalls continue quarterly. Results for the outfall samples during FY21 are listed below.

**Table F.2-11: Manayunk Canal - Fecal Coliform Results – FY21 Summary**

| Outfall | Fecal Count (MPN per 100 mL) | | | |
|---|---|---|---|---|
| | *07/27/2020* | *10/06/2020* | *01/21/2021* | *05/12/2021* |
| S-058-01 | 630 | 2,419 | 97 | <100 |
| S-059-01 | 2,280 | >2,419 | 198,630 | 2,130 |
| S-059-02 | 98,080 | >2,419 | 4,280 | >24,196 |
| S-059-03 | 300 | >2,419 | 1,106 | 46,110 |
| S-059-04 | 3,690 | >2,419 | 1,918 | 1,100 |
| S-059-05 | 850 | 78 | 226 | NF* |
| S-059-07 | NF* | NF* | NF* | NF* |
| S-059-09 | 129,970 | >2,419 | 14,210 | 61,310 |

Note: * NF indicates that no flow was observed

## Defective Lateral Program - Other Important Outfalls

Outfalls are prioritized for investigative work by the Defective Connections Group (DCG) using the Stormwater Outfall Priority Score list.

### *Sandyford Run Outfall (P-090-02)*

As of June 30, 2021, DCG program activities have performed 5,836 complete tests in this sewershed, identifying 87 cross-connections, all of which have been abated. The location of the dry weather diversion device and the number of inspections, blockages, and discharges found by the Flow Control unit during FY21 are listed below.

**Table F.2-12: Sandyford Run - Diversion Device - FY21 Summary**

| Location | ID# | Inspections | Blockages | Discharges |
|---|---|---|---|---|
| Brous and Lexington Aves. | PFD-01 | 76 | 3 | 1 |

**Table F.2-13: Sandyford Run – Diversion Device - Fecal Coliform Results – FY21 Summary**

| Date | Fecal Count (MPN per 100 ml) |
|---|---|
| 07/22/2020 | 5 |
| 10/07/2020 | 325 |
| 01/21/2021 | <1 |
| 05/19/2021 | NF* |

Note: * NF indicates that no flow was observed

### *Franklin and Hasbrook Outfall (T-089-04)*

As of June 30, 2021, DCG program activities have performed 1,021 complete tests in this sewershed, identifying 46 cross-connections, all of which have been abated. The location of the dry weather diversion device and the number of inspections, blockages, and discharges found by the Flow Control unit during FY21 are listed below.

**Table F.2-14: Franklin and Hasbrook - Diversion Device - FY21 Summary**

| Location | ID# | Inspections | Blockages | Discharges |
|---|---|---|---|---|
| Franklin and Hasbrook | CFD-01 | 64 | 11 | 1 |

The Outfall was inspected throughout the year but was found to be clean and dry during all quarterly visits.

Please refer to **Section F.3 - Detection, Investigation, and Abatement of Illicit Connections and Improper Disposal** on page 20 for additional information on activities conducted for the Defective Lateral Program.

## Priority Outfall Closure Testing

Investigation will continue within each particular outfall area (sewershed) until the Priority outfall status may be closed. During FY21, none of the Priority outfalls were authorized to be removed from the list by PADEP.

## Healthy Living Resources

### *Develop integrated storm water management plans*

PWD developed integrated stormwater management plans for all of the City's watersheds. Please refer to the CSO Annual Report in **Section III.C.3.7 - Basin-Specific Stormwater Management Plans (ACT 167)** on page 44 for an explanation of the City's watersheds stormwater management plans.

### *Assess the benefits of implementing a Natural Stream Channel Design (NSCD) and effectiveness of the NSCD restoration approach*

PWD has conducted several projects that have been designed with Natural Stream Channel Design concepts in mind. As each of PWD's NSCD projects are constructed, PWD realizes the importance of the extensive monitoring and O&M that accompanies such projects. Each project provides the opportunity to learn about what techniques do and do not work in their respective hydrologic and hydraulic regimes. In order to assess the effectiveness of these NSCD projects, PWD conducts post implementation monitoring at each site that includes the measurement of relevant biological, habitat, and physical parameters to be used in comparison to pre-construction conditions.

### *Wet Weather Water Quality and Quantity*

### *Implement several BMP projects*

PWD and its partners have implemented many BMP projects throughout the City including GSI, stream restoration, and wetland creation projects. For a complete listing of both completed and current GSI projects in the CSS, please refer to the **Appendix A - Green City, Clean Waters FY21 Annual Report**. For a description of activities conducted for PWD's stream restoration, and wetland creation projects, please refer to the CSO Annual Report **Sections III.C.2.3 Stream Habitat Restoration** on page 44 and **III.C.2.4 Wetland Enhancement and Construction** starting on page 44.

### *Monitor three demonstration BMPs*

PWD is committed to ensuring stormwater BMPs owned and operated by the City are maintained. This commitment is often evaluated through monitoring of these sites. PWD is currently monitoring multiple stormwater BMP project types – for example, stormwater tree trenches, stormwater planters, and porous pavement – and continue to develop and improve monitoring protocols. Monitoring activities for PWD's green stormwater infrastructure projects during FY21 are documented within **Appendix A: Green City, Clean Waters FY21 Annual Report Section-Appendix 4: GSI Monitoring Status Report**. PWD has detailed activities conducted during FY21 for PWD's stream restoration, and wetland creation; please refer to the CSO Annual Report **Sections III.C.2.3 Stream Habitat Restoration** on page 44 and **III.C.2.4 Wetland Enhancement and Construction** starting on page 44.

# F.3 Detection, Investigation, and Abatement of Illicit Connection and Improper Disposal

## a. Prevention of Illicit Discharges

### Sewer and Lateral Inspections

The City requires plumbing permits for connections to the municipal sewer system. The permit affords the property owner an inspection of the plumbing work performed. Corrections of defective connections are confirmed to ensure that the ultimate discharge to the receiving waters does not contain sanitary waste. PWD reviewed 1429 new sewer connections between 5" and 6" and 291 proposed sewer connections 8" and larger during FY21. This numbers includes all connections (storm, sanitary and /or combined sewers). A single project or permit may also have one connection or multiple connections.

## b. Investigation of Illicit Discharge Sources

### Rank the MS4 outfalls according to their priority for corrective actions

PWD maintains a stormwater outfall monitoring system in compliance with the MS4 permit issued by the PADEP. Samples are collected for outfalls that have dry weather flow and analyzed for fecal coliform and fluoride. Priority outfalls have been established through the 1998 Stormwater Consent Order and Agreement and internally, additional areas of focus have been added to maintain progress in the screening, testing and abating program and for efficient crew deployment. Priority Outfalls are sampled on a quarterly basis. Refer to **page 16** of this report for FY21 priority outfall summaries.

### Investigate dry weather flow to identify sewer lateral defects

During FY21, the DCG performed 519 complete dye tests with 33 defective connections found and 31 abatements completed. Details of FY21 activities are listed below.

**Table F.3-1: Defective Connections Program – FY21 Summary**

| Quarter | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Total |
|---|---|---|---|---|---|
| Date Coverage | Jul1-Sep30 | Oct1-Dec31 | Jan1-Mar31 | Apr1-Jun30 | **FY21** |
| Completed Tests | 79 | 163 | 148 | 129 | **519** |
| No Cross Connections | 80 | 159 | 135 | 112 | **486** |
| Cross Connection Identified | (1) | 4 | 13 | 17 | **33** |
| Abatements * | 7 | 16 | 2 | 6 | **31** |

Note: *Some cross connections abated may have been identified in prior fiscal years

Reports of potential dry weather discharge from the stormwater system are also investigated, primarily through the Industrial Waste and/or Sewer Maintenance units. During FY21, 24 incidents were investigated. For details, refer to **Appendix P – Sanitary Infiltration Events for Potential Sewage Discharges** during FY21.

The DCG Field Investigation SOP was updated in March 2017. A copy is available upon request.

## d. Abatements

### Written notice about sewer lateral defects

The Plumbing Repair Programs unit handles customer communications (through letters, telephone or site visits) and is responsible for the abatement of the defects identified.

### Abatements of Cross Connections

Due to the data entry delays, cost information is not available for all completed abatements in FY21. Details of 12 abatements and costs are listed below.

**Table F.3-2 Defective Connection Abatement – 5 Year Summary**

| Fiscal Year | # Cross Connections Abated | | Total Cost of Abatements |
|---|---|---|---|
| | Residential | Commercial | |
| 2017 | 31 | 5 | $317,851.00 |
| 2018 | 56 | 7 | $562,747.33 |
| 2019 | 57 | 4 | $555,933.30 |
| 2020 | 69 | 1 | $701,210.00 |
| 2021* | 11 | 1 | $103,211.00 |
| **Total** | **245** | **24** | **$2,240,953.00** |

*Cost data was only available for 12 of the 31 abatements in FY21

### Residential Properties Cross Connections Abatement

During FY21, 11 residential abatements were completed at a cost of $94,776.50.

### Commercial and Industrial Properties Cross Connections Abatement

During FY21, 1 commercial abatement was completed at a cost of $8,434.50.

### Defective Connections Abatement Schedule

All defective connections are required to be abated within 120 days of discovery, in compliance with the MS4 permit. Please view **Appendix P – FY21 Defective Lateral Quarterly Reports** for properties that exceeded the 120-day requirement in FY21. These properties are under administrative action.

### Defective Connections Abatement Confirmation Tests

All abatements completed during FY21 were tested to confirm that the abatement was completed properly.

## e. Defective Connection Program Reporting

### Illicit connection program quarterly report

Defective Lateral Quarterly Reports are submitted four times a year to Andrew Sinclair at PADEP as part of the reporting requirements of the City of Philadelphia NPDES Storm Water Management Permit No. PA 0054712. The report covers three-month periods staring in January, April, July, and October which are submitted no later than 45 days from the end of the reporting period. The Quarterly reports were submitted as required during FY21, and **Appendix P – FY21 Defective Lateral Quarterly Reports** contains all of these reports.

### Illicit connection program quarterly report contents

All required information is included in **Appendix P – FY21 Defective Lateral Quarterly Reports**.

# F.4 Monitor and Control Pollutants from Industrial Sources

### a. Applications/Permits

The City obtains NPDES permits/discharge information from industries if they contribute significant amounts of stormwater into the City's sewer system. Industries that contribute stormwater directly into a waterway or discharge non-industrial waste into the system usually coordinate directly with the PADEP. A list of NPDES permits that involve stormwater associated with industrial activities in the City were obtained from the PADEP's website and are listed in **Appendix J – NPDES Industrial Stormwater Permitted Sites**.

## b. Inspections

### *Industrial inspections*

The Philadelphia Local Emergency Planning Committee (PLEPC) is the entity tasked with meeting the responsibilities of SARA Title III. Under PLEPC, the Philadelphia Fire Department (PFD) Hazmat Administrative Unit (HMAU) representative is the individual that carries out the inspections. HMAU personnel inspect SARA facilities to ensure that information submitted in their Tier II report is accurate. The inspection includes a visual on-site inspection, verifying the facility has a Preparedness, Prevention, and Contingency (PPC) plan and reviewing any other information contained within the Tier II report.

As part of the MS4 permit requirement, the City is required to inspect all SARA Title III facilities located in the MS4 each fiscal year. In FY21, the City conducted a stormwater inspection at all 185 SARA Title III facilities located in the MS4.

### *Industrial waste inspection forms*

The Industrial Waste Inspection Form was updated in 2006 to include a stormwater inspection section. A copy of the form can be found in previous reports; please refer to Appendix O of the CSO-Stormwater FY09 Annual Report.

## c. Monitoring/Enforcement

### *Industrial DMR submission*

When necessary, the City shall request DMRs or additional sampling from the PADEP for surrounding industries to ensure compliance with NPDES effluent limitations.

### *NPDES permits enforcement*

Should PWD personnel observe a violation of NPDES permit terms and conditions, PWD will report the violation immediately and notify PADEP, on a case by case basis.

# F.5 Monitor and Control Stormwater from Construction Activities

Stormwater runoff is a concern both during construction and post-construction. Integrated in the City's development review process, PWD is provided the authority to review and regulate the runoff from earth disturbance activities to improve water quality. Additionally, post-construction stormwater management plan review extends beyond peak rate control and encompasses water quality and water quantity technical requirements for more frequent storm events. Efforts continue to be focused on improving plan review for both Erosion & Sedimentation (E&S) as well as post-construction stormwater management. The following sections document the progress made so far in terms of stormwater runoff from construction activities including the collaboration between the Philadelphia development community, multiple City Departments, and State agencies.

During FY21, PWD performed numerous tasks in direct compliance with the NPDES Permit as well as tasks supporting continuance and improvement of a growing stormwater management program and watershed program. Some of the FY21 activities include the following:

- Continued coordination efforts with Philadelphia Licenses and Inspections (L&I) regarding permit review and issuance for private development projects applicable to the Stormwater Regulations. At a minimum, the L&I issuance of a Zoning, Demolition, Site, and Building permit was coordinated appropriately between the two agencies. L&I supports PWD in enforcement measures through the issuance of Stop Work Orders and withholding Certificate of Occupancy permits for sites that are non-compliant. PWD serves as a reviewing entity in L&I's online permit program, eCLIPSE, by providing remote pre-requisite signoff on applicable permits, thus reducing the need for applicants to visit the PWD office for in-person permit signoff.
- Continued coordination with the PADEP Southeast Regional Office Waterways and Wetlands program through regular project communication and quarterly meetings with PADEP and southeast region conservation district staff. The purpose of the quarterly meetings is to discuss regional and district updates, permitting services and projects, and other various topics. PWD also participated in pre-application and project meetings with PADEP staff and applicants to discuss upcoming projects and active projects.

- Scheduled and held coordination meetings with local universities and other large landowners to discuss upcoming or current development projects as well as identify ways to strengthen communication and streamline the review and post-construction inspections process. Additionally, projects in enforcement are discussed, deadlines are communicated, and guidance is provided to bring projects back into compliance.
- Continued to implement erosion and sediment (E&S) compliance as an element of all active construction inspections by ensuring appropriate controls are in place throughout construction activity. Potential E&S issues or violations are documented as part of an inspection report provided to the on-site representative. The reports identify the required corrective actions, and active construction inspectors will return to the site to verify compliance. E&S violations may trigger active construction enforcement actions such as a Stop Work Order, requiring continued coordination through L&I.
- Continued to update plan review website content in an effort to provide clear and accessible resources to the applicant to support quality submittals and efficient reviews. In Fall 2019, PWD launched a revamped website that included an updated landing page as well as new content and features such as online plan submission for all review stages, a new Maintenance section and SMP Maintenance Guide. In Summer 2021, PWD launched a new GIS based tool called the Reg Finder to allow applicants to determine which Stormwater Regulations will apply to their projects before submitting to PWD.
- Continued to review projects applying for stormwater-based zoning incentives including Philadelphia's Green Roof Density Bonus, which was incorporated into the Zoning Code in 2015. This bonus offers exceptions to certain residential density rules for development projects that include a green roof. In calendar year 2018, the bonus was expanded to allow eligibility for existing buildings undergoing renovation or expansion. The green roof must meet PWD's requirements and be approved by PWD before the bonus can be awarded. In FY21, PWD approved 36 projects citywide as eligible to apply for this bonus. PWD also reviewed multiple projects that were seeking height bonuses across the East Callowhill and Central Delaware overlays by providing stormwater open space and/or manage stormwater runoff from the public rights of way (ROW) that front their property
- Continued to attend bi-monthly Business Industry Association (BIA) meetings for the Government Affairs/Fix It Philly subcommittee. In these meetings, representatives from the development community including developers, architects, and engineers come together with City agency representatives from PWD, L&I, Planning, and Streets to discuss policy and legislation impacting development in Philadelphia to ensure a transparent and efficient development process.
- In past fiscal years PWD would hold Development Services Committee (DSC) meetings with representatives from the development community including developers, designers, large landowners, and attorneys to discuss ideas for improving the PWD stormwater regulatory review and inspections program to better streamline development in the City. In FY21, PWD engaged directly with developer stakeholder groups such as the BIA, Sustainable Business Network, and Real Estate Alliance on topics such as L+I eCLIPSE permitting and guidance manual updates. The committee continues to be a valuable resource for PWD to gather input on existing procedures as well as new policies and programs.
- PWD continued to conduct reviews of stormwater management plans and maintain the website to allow online submittal of plans. In-person weekly walk-in hours were replaced with a new virtual option via a preapplication scheduling tool on the website. PWD has been promptly scheduling project specific meetings at the applicant's request.

A summary of plan review activities city-wide in FY21 is presented in **Table F.5-1** on page 26.

## a. Construction Site Runoff Control

PWD reviews and approves E&S Plans, along with Post-Construction Stormwater Management Plans, for all development sites disturbing more than 15,000 square feet of earth citywide. For E&S plans, PWD follows policies and practices as provided within the PADEP E&S Control Manual. PWD conducts coordinated reviews with the PADEP for projects disturbing more than one acre of earth.

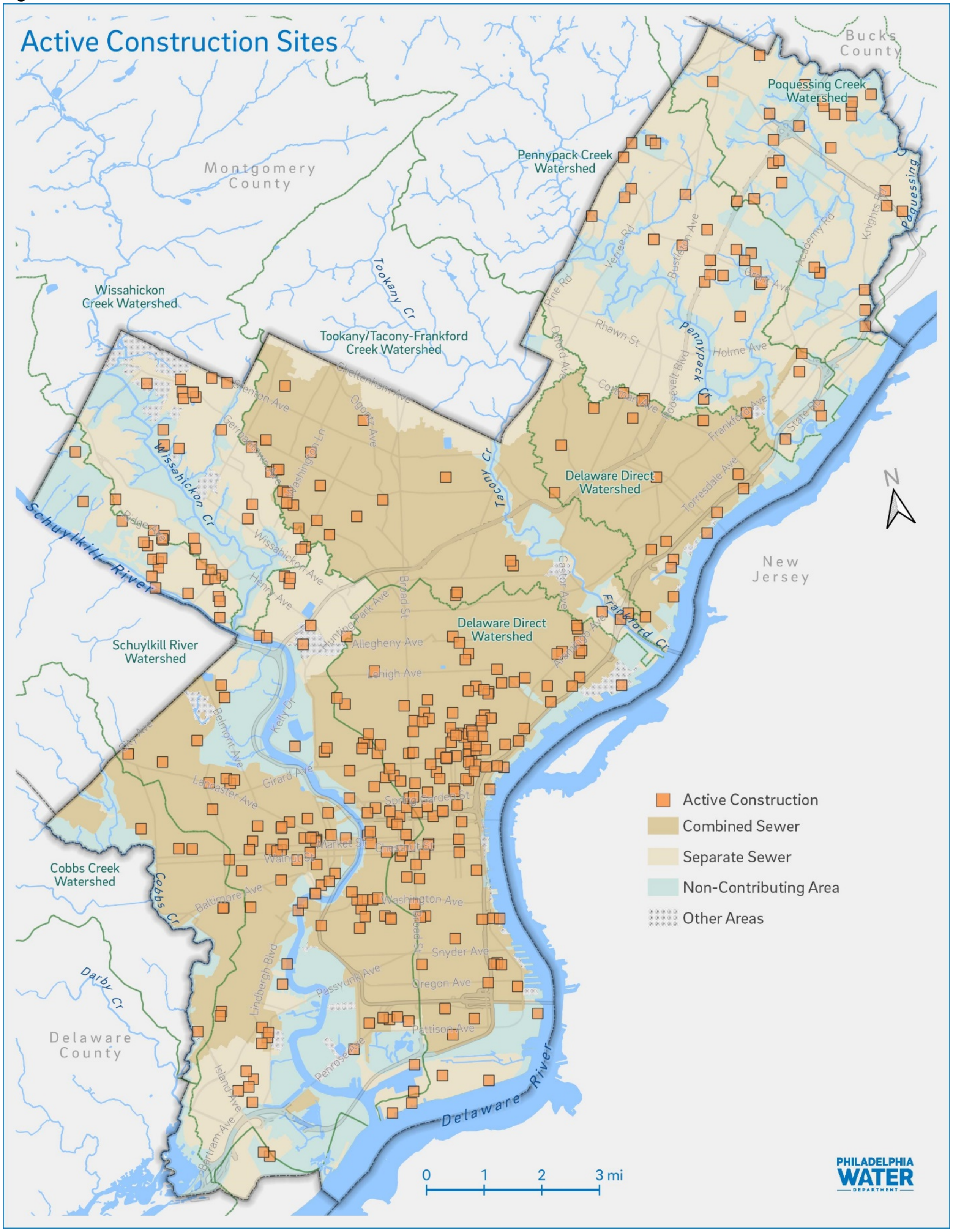
Site inspections of E&S controls are conducted on a reoccurring basis and in response to any received complaints during active construction. The purpose of reoccurring inspections is to monitor E&S controls on projects where construction and earth moving activities are active, and to require site operators to maintain E&S controls as needed. PWD inspects controls such as, but not limited to, rock construction entrances, silt fencing, inlet protection, stockpile location and protection, and concrete washouts. During an inspection, the inspector communicates with the construction manager or site representative and requests to see a copy of the on-site E&S Plan. Photographs are taken documenting site conditions. An inspection report detailing any out-of-compliance items is generated and distributed to the site manager, and then maintained as part of PWD's electronic project file. Failure to adhere to the requirements in the inspection reports can result in a Notice of Violation or a Stop Work Order. For more information regarding enforcement actions, see **Section F.5.e** on page 30.

The sites visited cover all of Philadelphia including both separate storm sewer areas and combined sewer areas as depicted in **Figure F.5-1** on page 27.

**Table F.5-1: FY21 Summary of Plan Review Activities**

| | *Jul. '20* | *Aug. '20* | *Sep. '20* | *Quarter Total* | *Oct. '20* | *Nov. '20* | *Dec. '20* | *Quarter Total* | *Jan. '21* | *Feb. '21* | *Mar. '21* | *Quarter Total* | *Apr. '21* | *May . '21* | *Jun. '21* | *Quarter Total* | *FY21 Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Conceptual Review Stage** | | | | | | | | | | | | | | | | | |
| Approvals | 8 | 14 | 13 | 35 | 10 | 14 | 10 | 34 | 13 | 14 | 17 | 44 | 12 | 21 | 11 | 44 | 157 |
| Rejections | 65 | 76 | 61 | 202 | 62 | 47 | 44 | 153 | 46 | 66 | 72 | 184 | 60 | 62 | 73 | 195 | 734 |
| Reviews | 73 | 91 | 74 | 238 | 72 | 61 | 54 | 187 | 59 | 84 | 95 | 238 | 77 | 87 | 87 | 251 | 914 |
| New Project Submittals | 43 | 52 | 37 | 132 | 30 | 24 | 20 | 74 | 30 | 43 | 50 | 123 | 48 | 45 | 33 | 126 | 455 |
| Average Review Time (days) | 15.3 | 14.4 | 21.4 | 17.0 | 17.3 | 12.1 | 7.1 | 12.2 | 9.4 | 9.0 | 7.6 | 8.6 | 10.2 | 11.8 | 14.4 | 12.2 | 12.5 |
| **Post Construction Stormwater Management Plan Review Stage** | | | | | | | | | | | | | | | | | |
| Administrative Screenings | 2 | 3 | 3 | 8 | 6 | 5 | 10 | 21 | 27 | 8 | 4 | 39 | 1 | 1 | 2 | 4 | 72 |
| Technical Approvals Issued | 7 | 7 | 2 | 16 | 7 | 15 | 20 | 42 | 7 | 7 | 7 | 21 | 8 | 15 | 8 | 31 | 110 |
| Rejections | 33 | 35 | 44 | 112 | 47 | 36 | 32 | 115 | 20 | 33 | 49 | 102 | 34 | 28 | 39 | 101 | 430 |
| Full Technical Reviews | 63 | 64 | 65 | 192 | 76 | 71 | 79 | 226 | 39 | 62 | 80 | 181 | 66 | 78 | 65 | 209 | 808 |
| New Project Submittals Received | 33 | 36 | 31 | 100 | 60 | 44 | 21 | 125 | 17 | 29 | 30 | 76 | 31 | 31 | 36 | 98 | 399 |
| Average Number of Reviews per Approval | 4.4 | 4.4 | 5.0 | 4.6 | 4.1 | 4.5 | 4.7 | 4.4 | 3.9 | 4.6 | 4.9 | 4.4 | 5.1 | 4.5 | 4.0 | 4.6 | 4.5 |
| Average Approval Time (days) | 143 | 134 | 201 | 159 | 219 | 248 | 213 | 226 | 144 | 259 | 244 | 216 | 190 | 155 | 157 | 168 | 192 |
| Acres of Earth Disturbance Approved | 15.4 | 4.8 | 1.0 | 21.2 | 5.8 | 19.0 | 183.0 | 207.7 | 36.8 | 12.2 | 39.5 | 88.6 | 40.4 | 34.7 | 11.1 | 86.3 | 403.8 |
| Acres of Green Roofs Approved | 0.6 | 0.2 | 0.3 | 1.1 | 1.0 | 2.4 | 3.3 | 6.6 | 0.0 | 1.0 | 0.4 | 1.5 | 0.9 | 2.2 | 0.1 | 3.2 | 12.4 |
| Acres of Porous Pavement Approved | 0.2 | 0.1 | 0.0 | 0.4 | 0.3 | 1.0 | 0.7 | 2.1 | 0.0 | 0.4 | 0.5 | 0.9 | 0.1 | 0.0 | 0.0 | 0.1 | 3.5 |
| **DEP Reviews** | | | | | | | | | | | | | | | | | |
| New Coordinated Reviews | 11 | 5 | 7 | 23 | 5 | 2 | 4 | 11 | 7 | 1 | 9 | 17 | 2 | 11 | 11 | 24 | 75 |
| **Erosion and Sedimentation Plan Review** | | | | | | | | | | | | | | | | | |
| Defer to DEP | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Approved | 6 | 10 | 7 | 23 | 9 | 13 | 14 | 36 | 7 | 11 | 8 | 26 | 6 | 14 | 4 | 24 | 109 |
| Rejected | 12 | 18 | 18 | 48 | 21 | 19 | 15 | 55 | 8 | 10 | 22 | 40 | 15 | 8 | 12 | 35 | 178 |
| Not Applicable | 28 | 22 | 14 | 64 | 43 | 33 | 14 | 90 | 9 | 16 | 17 | 42 | 23 | 13 | 19 | 55 | 251 |
| **Total Inspections** | | | | | | | | | | | | | | | | | |
| New Sites Inspected | 18 | 15 | 21 | 54 | 30 | 26 | 18 | 74 | 21 | 15 | 35 | 71 | 50 | 50 | 177 | 277 | 476 |
| Total Inspections | 403 | 329 | 347 | 1079 | 383 | 304 | 328 | 1015 | 311 | 232 | 395 | 938 | 338 | 247 | 313 | 898 | 3930 |
| Active Construction Inspections at Project Sites with MS4 Sewers | 140 | 108 | 113 | 361 | 142 | 104 | 134 | 380 | 106 | 84 | 117 | 307 | 89 | 59 | 79 | 227 | 1275 |
| Post Construction Inspections at Project Sites with MS4 Sewers | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 3 | 1 | 0 | 5 | 6 | 1 | 4 | 2 | 7 | 16 |
| Total Inspections at Project Sites with MS4 Sewers | 140 | 108 | 113 | 361 | 143 | 105 | 135 | 383 | 107 | 84 | 122 | 313 | 90 | 63 | 81 | 234 | 1291 |
| Active Construction Inspections at Project Sites with Combined Sewers | 208 | 184 | 176 | 568 | 182 | 163 | 159 | 504 | 178 | 124 | 225 | 527 | 224 | 160 | 206 | 590 | 2189 |
| Post Construction Inspections at Project Sites with Combined Sewers | 5 | 6 | 23 | 34 | 16 | 4 | 6 | 26 | 3 | 5 | 13 | 21 | 7 | 10 | 9 | 26 | 107 |
| Total Inspections at Project Sites with Combined Sewers | 213 | 190 | 199 | 602 | 198 | 167 | 165 | 530 | 181 | 129 | 238 | 548 | 231 | 170 | 215 | 616 | 2296 |

**Figure F.5-1: FY21 Active Construction Sites**



## b. Post-Construction Stormwater Management in New Development and Redevelopment

Adopted in January 2006, the Philadelphia Stormwater Regulations enabled PWD to review plans for both new and redevelopment sites throughout the City to ensure water quality and quantity were part of the proposed management plan. Since 2006, PWD has collected and synthesized feedback from the development community regarding improvements to the stormwater plan review program. With the signing of a Consent Order and Agreement with the PADEP in June 2011, PWD saw an opportunity to increase stormwater management from land development projects while simultaneously implementing business-friendly improvements to the program. Updates are made to the Stormwater Regulations to improve and strengthen PWD's stormwater programs and stay current in policy procedures. The Philadelphia Stormwater Management Regulations are available online at http://www.phila.gov/water/PDF/PWDregCH6.pdf.

## c. Applications/Permits

Across the entire city during FY21, 455 unique projects were submitted to PWD for conceptual review through the program's website. PWD approved full technical plans for 110 projects during FY21 citywide. It should be noted that this number does not include plans re-submitted for review, some of them multiple times. The distribution of development projects that submitted post-construction stormwater management plans for review is presented in **Table F.5-2 & 3**.

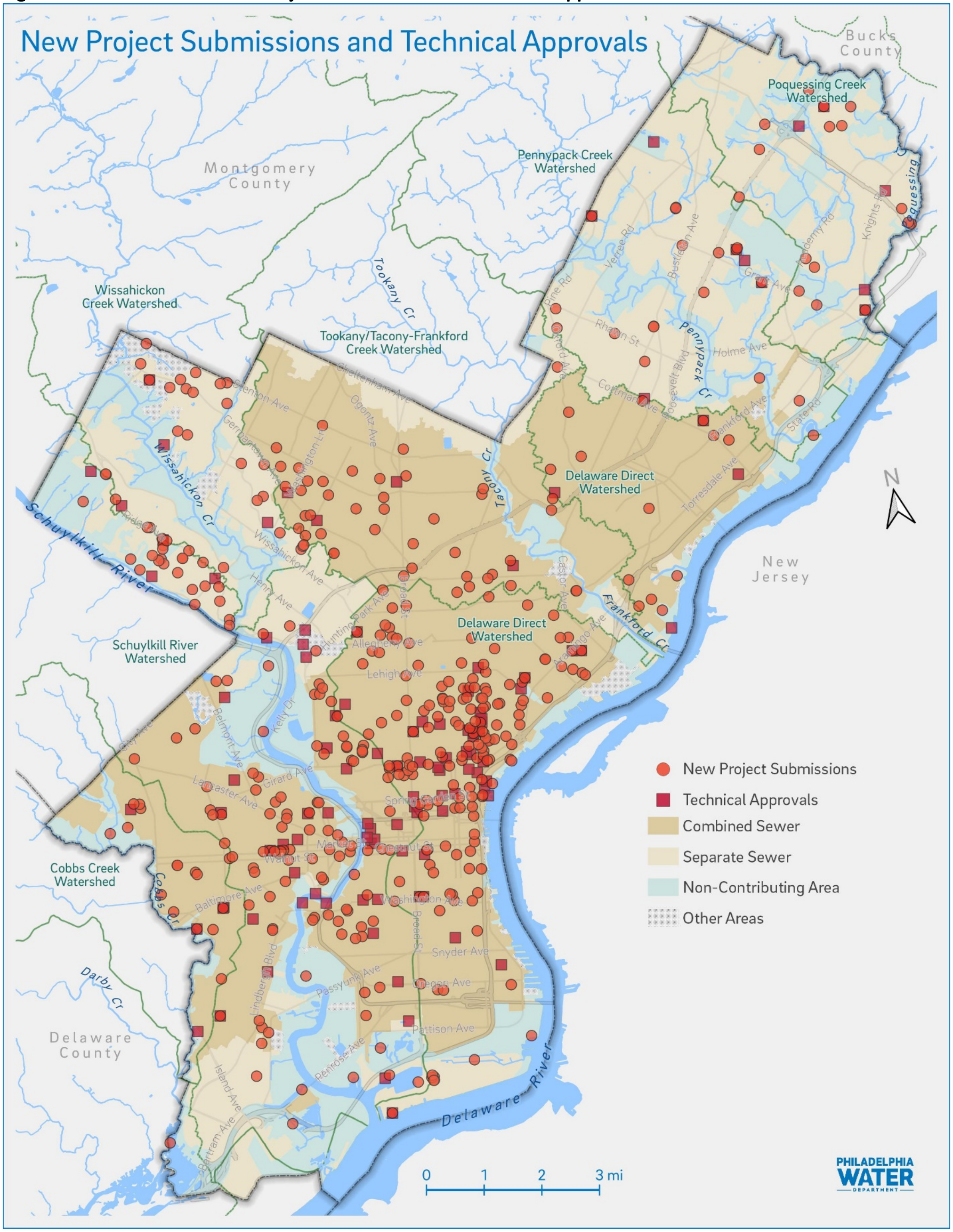
**Table F.5-2: Approved Stormwater Plan Location Summary by Contributing Area**

| Drainage Type | Number of Locations |
|---|---|
| Combined Sewer Area | 80 |
| Non-Contributing Area | 9 |
| Separate Sewer Area | 21 |
| **Total** | **110** |

**Table F.5-3: Approved Stormwater Plan Location Summary by Watershed**

| Drainage Watershed | Number of Locations |
|---|---|
| Delaware River | 47 |
| Poquessing Creek | 5 |
| Pennypack Creek | 6 |
| Schuylkill River | 39 |
| Tacony/Frankford Creek | 4 |
| Wissahickon Creek | 4 |
| Darby-Cobbs Creek | 5 |
| **Total** | **110** |

**Figure F.5-2: Locations of New Project Submissions and Technical Approvals**



## d. Inspections

PWD requires a pre-construction meeting prior to commencement of earth moving activities for projects applicable to post-construction stormwater management requirements. In FY21, PWD conducted 100 pre-construction meetings citywide for development projects. During the pre-construction meeting, both the approved E&S Control Plan and the approved Post-Construction Stormwater Management Plan (PCSMP) are discussed with the construction manager and property owner representative. Post-Construction Stormwater Management inspections are discussed in **Section F.8** on page 34.

The inspection program continued in FY21 by conducting inspections of stormwater structural controls on land development sites. PWD stormwater inspectors conducted site visits for 393 active sites citywide during FY21. Technical plan review staff was also on-site, as needed, to verify construction of the SMPs was completed in accordance with the approved plan. In the case that concerns are identified regarding SMP installation during construction, the technical plan reviewer will discuss the necessary corrective actions for the project with the PWD inspector, as well as the project's engineering and construction manager.

PWD stormwater inspectors observe the installation of SMPs and erosion and sedimentation controls during active construction for private development sites. During FY21, PWD was able to maintain its presence in the field by conducting 1,275 active construction inspections on 108 sites in the separate sewered areas of the city. Many sites were visited multiple times to ensure compliance with appropriate requirements **(Table F.5-4)**.

**Table F.5-4: Active Construction Inspection Site Location Summary**

| Drainage Watershed | Number of Locations |
|---|---|
| Combined Sewer Area | 253 |
| Non-Contributing Area | 32 |
| Separate Sewer Area | 108 |
| **Total** | **393** |

## e. Monitoring/Enforcement

As part of the 2017 EPA AOCC CWA-03-2017-0146DN, PWD was required to develop an SOP to detail enforcement procedures for responding to E&S control issues when established enforcement methods do not result in compliance. In FY21, PWD continued to use the Repeat Offenders Standard Operation Procedure (SOP) as a guide when implementing enforcement action.

The SOP outlines Notice of Violations which includes a deadline for compliance and re-inspection. If a project remains out of compliance, PWD may coordinate with the L&I to issue a Stop Work Order. PWD also coordinates with L&I to hold the building Certificate of Occupancy for any projects where major issues are identified during the construction process. In some cases, projects may fall out of compliance after enforcement actions were previously taken during the construction period.

PWD issues a Notice of Violation to sites when significant or persistent issues with E&S controls or the installation of required SMPs are not addressed in a timely manner. In FY21, PWD issued a Notice of Violation (NOV) to 13 projects under construction citywide. Four of these NOVs were associated with projects who had received a previous NOV in either FY19 or FY20. In addition, PWD issued a follow-up NOV notice to 8 of the 13 projects in order to ensure full compliance. Of the 13 active NOVs issued in

FY21, 7 have been partially or fully resolved bringing the site back into compliance. The major compliance issues for active construction projects include improper installation or absence of E&S controls, contractor not following the approved plans, and non-permitted construction activity.

### f. NPDES Permit Requests

PWD continues to serve as the Conservation District for the City of Philadelphia for NPDES Construction Permitting Requirements and Chapter 102 Regulations relating to Erosion and Sedimentation Pollution Control. PWD continues to receive notifications and coordinate reviews for permitting. For more information and full details on this process described in previous reports; please refer to Section F.5.f NPDES Permit Requests on page 204 of the CSO-Stormwater FY12 Annual Report.

### g. Stormwater BMP Handbook and Construction Site BMP Sediment & Erosion Control Checklist

The Stormwater Management Guidance Manual Version 3.0 represents a comprehensive revision released in conjunction with the updated Stormwater Regulations on July 1, 2015.  Since 2015, the Manual has received two subsequent updates; Version 3.1 released on July 2, 2018 and Version 3.2 released on October 1, 2020.  Primarily a web-based resource, this version of the manual is organized to reflect the life cycle of a development project from initial submission through operation and maintenance. In addition to providing context on the regulatory framework for stormwater management in the city, the manual builds upon over a decade of program growth and technological advancements to streamline the technical design requirements and clearly document the plan review process for applicants. The PWD leveraged feedback from design engineers to clarify existing content, provide new resources and develop a fully searchable and accessible online manual. The manual is located on the web at https://www.pwdplanreview.org/manual/introduction.

# F.6 Watershed, Combined Sewer Overflow (CSO), and Source Water Protection Programs

PWD, through the Planning and Environmental Services Division (PESD), strives to reduce the amount of point and non-point discharges entering regional waterways and improve the environmental health of the region so that all waters are fishable and swimmable. The main programs within PESD, in addition to the Stormwater Management Program, that work together to improve regional ecological health, water quality, and sustainability are: Watershed Planning, Source Water Protection Program, CSO Management Program, and Wetlands Mitigation Registry. The Watershed Planning Program is presently explained in detail throughout **Section III.C of the CSO Annual Report** on page 30.

*Source Water Protection Program*

PWD's Source Water Protection Program embodies PWD's multi-barrier approach to ensuring the safety and quality of Philadelphia's drinking water, whose sources consist of the Schuylkill and Delaware Rivers. The Source Water Protection Program conducts planning, research, and on-the-ground projects to better understand and address priority sources of water quality impairment in the 10,000 square mile upstream area encompassing Philadelphia's source watersheds. The staff works closely with PWD water treatment plant operators to anticipate and respond to emergencies and challenges to conventional treatment technology. PWD continues to implement the Source Water Protection Program and has discussed it in full detail in the past. For more information on this program, please refer to the following sections:

- Schuylkill Action Network
  Please refer the CSO Annual Report **Section II.G.2 – Schuylkill Action Network** on page 16 for information about this topic.
- Delaware Valley Early Warning System
  Please refer the CSO Annual Report **Section II.G.2 – Delaware Valley Early Warning System** on page 16 for information about this topic.
- RiverCast
  Please refer the CSO Annual Report **Section II.G.2 – RiverCast** on page 19 information about RiverCast.

*Combined Sewer Overflow Management Program*

The Combined Sewer Overflow management program works to implement technically viable, cost effective improvements and operational changes that mitigate the impacts of combined sewer overflows. Please refer to **Section I Management and Control of CSOs** on page 1 in the CSO Annual Report for additional information.

*Watershed Mitigation Registry*

Please refer to the CSO Annual Report **Section III.C.2.4 – Wetland Enhancement and Construction** on page 41 for information about the Watershed Mitigation Registry.

# F.7 Miscellaneous Programs and Activities

## a. Pollutant Migration/Infiltration to the MS4 System

PWD responds to all notifications and reported complaints of liquid, solid, or gaseous pollutants within Philadelphia. A list of all pollutant migration events in the MS4 section of the City that occurred in FY21 is presented in **Appendix O – FY21 Pollutant Migration/Infiltration**.

## b. Public Education and Awareness

*Public Education Literature*

The City takes an active role in providing information and education to the public and our community. Several events and programs are conducted each year in which the City provides numerous amounts of literature to the public. Please refer to the CSO Annual Report **Section II.G – Pollution Prevention** on page 15 for information about this topic.

## c. Pesticides, Herbicides, and Fertilizer Controls

*Integrated Pest Management protocol*

The majority of the City does not use pesticides or conduct any practices that require the use of the Integrated Pest Management (IPM) protocol. The City is currently focusing on invasive plant management through the use of herbicide to remove invasive plants.

The Philadelphia Health Department uses larvicides, Bacillus Sphaericus (brand name Vectolex), Methoprene (Altosid), and Spinosad (Natular), to prevent mosquito breeding. These larvicides are approved for use in the stormwater catch basins and are applied as such. The IPM protocol is followed when using the larvicides by inspecting the catch basins before treatments, using the least toxic or non-toxic product, and submitting a request for repairs when necessary. PWD and the Department of Public Health work closely together. This collaboration has resulted in the Health Department receiving maps with locations of the City's storm water inlets and surface basins. This allows PWD improved access to refer concerns of pests in the water collections systems for treatment by Health Department staff.

All associated Philadelphia Health Department staff are certified pest control applicators in accordance with Pennsylvania Department of Agriculture. To maintain this certification, on-going training is required. The Philadelphia Health Department holds several on-site trainings per year for staff.

*Education materials to private pesticide users*

The Philadelphia Health Department provides educational materials to organizations, companies and/or individuals upon request. Often private exterminators, especially companies that handle pest control work for City facilities, request this information since most buildings in the City contract out for pest control work through the individual Departments. Health Department Sanitarians (Inspectors) have this information available to provide to the public.

## d. Snow Management Plan

The City faces winter storms that bring potentially dangerous accumulations of ice, sleet, freezing rain, and snow. To mitigate the impact of these storms, the Streets Department has prepared a Snow and Ice Operations Plan which provides a detailed outline of the City's response to adverse winter weather conditions. The plan includes the salt storage locations at the six Highway Districts. The Snow and Ice Removal Operations Plan is available upon request.

## e. Municipal/Hazardous Waste, Storage, Treatment, and Processing Facilities

The City's only active waste transfer station, Northwest Transfer Station, is located on City property at the intersection of Domino Lane and Umbria Street in the Roxborough section of Philadelphia. Currently the City is in the final design and permitting phase for a new waste transfer facility on a different section of the same property to replace the existing facility that will eventually be decommissioned. The design includes stormwater management best practices such as an oil/water separator connected to the trench drains for the tipping floor and lower-level loading area. There are also three drains under the loading scales within the building that will be connected to the oil/water separator as well. There are three rain gardens with impermeable liners to manage all stormwater runoff on site. They will prevent water infiltration and promote evaporation due to the slightly elevated levels of contaminants within the soil that were identified by additional sampling activities. Although groundwater was never identified on-site and therefore never sampled, the liner at each rain garden will be installed under 24" of planting soil and 18" of 2B stone as a precaution.

# F.8 Best Management Practices (BMPs)

## a. Submit storm sewer discharge ordinance

The authority for PWD to adopt stormwater regulations is found within Title 14 Zoning and Planning Code under §14-704(3) Stormwater Management. PWD maintains Stormwater Regulations as Chapter 6 of PWD's regulations. These regulations were originally adopted in 2006 and were most recently updated in July of 2015. These regulations require stormwater management on development projects that exceed an earth disturbance threshold of 15,000 square feet. For more information regarding PWD's regulation updates within the last year, see **Section F.5.b. – Post-Construction Stormwater Management in New Development and Redevelopment** on page 28.

PWD has added documentation to a website (http://www.pwdplanreview.org) to provide the development community a means of accessing the most recent stormwater management information.

## b. Commercial and Residential Source Controls

### *b.i. Mingo Creek Surge Basin*

A capital construction project for the rehabilitation of Mingo Creek is currently in design. The project is targeting FY22 for bid. The Basin was last dewatered in August of 2012 to inspect the sediment levels. The basin sediment appeared to have not changed since its last inspection in 2009; therefore, no further accumulation had occurred. For more information on this project, please refer to Section F.8.b.i on page 214 of the CSO-Stormwater FY12 Annual Report.

### *b.ii. Existing privately owned structural controls*

To ensure ongoing SMP maintenance of private facilities, PWD continues to utilize four means: executing Operation & Maintenance Agreements, maintaining comprehensive operations and maintenance information, conducting post-construction maintenance inspections, and enforcing on non-compliant projects.

**An Operation & Maintenance Agreement** is executed by PWD and the property owner, notarized, and recorded to the property prior to the issuance of a Post-Construction Stormwater Management Plan Approval by PWD. These agreements outline the SMP(s) on the private site and stipulate maintenance requirements. The agreements also include language granting PWD the right to inspect on-site SMPs and even perform maintenance on behalf of the property owner if necessary. PWD also maintains a comprehensive operations and maintenance manual for SMPs geared toward private development users: http://www.phila.gov/water/PDF/Retrofit-O.M.Manual.pdf.

**Post-construction maintenance inspections** of private facilities were conducted through the reporting period. PWD utilizes visual inspections and specialized inspection techniques to assess the performance of private SMPs. Early in the post-construction inspection stage, PWD conducts a maintenance site visit for recently constructed projects. This visit gives PWD staff the opportunity to communicate expectations for SMP maintenance to the appropriate property owner and walk the site to review the stormwater management strategy. In addition, PWD conducts post-construction maintenance inspections on all applicable private facilities. As projects are identified for maintenance inspection, the PWD post-construction inspection staff contacts the property owner to schedule the inspection. PWD attempts to conduct the inspection with the property owner or their maintenance representative present so they can verbally discuss any concerns or questions. After the inspection, a post-construction inspection report is generated and shared back with the property owner. Any required corrective actions are identified in the report along with a deadline for resolution. After actions are taken, PWD re-inspects the property and compliant sites are closed until their next periodic inspection date. Inspectors will provide guidance to the property owner to ensure corrective actions are resolved. In addition to visual inspections, PWD has identified other effective methods and technologies, including closed-circuit television, ground penetrating radar, surveys of critical system elevation points, confined space, pole-mounted camera photography, and visual and wet weather inspections. PWD will continue to evaluate and refine post-construction inspection protocols. In FY21, PWD performed 127 post-construction inspections citywide.

If compliance is not achieved within the timeframe specified during the inspection process, the project is referred for enforcement. PWD has implemented a database tracking system within the existing PWD Stormwater Plan Review Database, which allows for the tracking of enforcement case and corrective action statuses and submissions of corrective action plans and other documentation of work completed to satisfy corrective actions. PWD initiates an enforcement case with the issuance of a post-construction enforcement letter to the property owner if an SMP is found to be insufficiently maintained. This notification includes a description of any issues identified with corrective actions noted and a timeline for achieving compliance. The City is authorized to compel maintenance of SMPs on private property under the Philadelphia Code and PWD Regulations. Development sites that are subject to PWD's stormwater regulations are required to maintain the SMP(s) to function as designed. If this initial notification is unsuccessful at bringing action from the property owner, PWD can compel compliance through a number of enforcement tools, including issuance of notice of violations, fines, court action, and/or a nuisance abatement and lien by the City. For non-compliant projects, PWD will also suspend any applicable stormwater billing credits if the required maintenance is not performed. FY21, PWD successfully brought 42 projects consisting of 143 SMPs back into compliance citywide. Of the enforcement cases closed, escalated enforcement tools were utilized consisting of one NOV. PWD will continue to work with property owners to ensure that SMPs are inspected and maintained in accordance with Regulations and recorded O&M agreements.

### c. Development plans review

PWD and the City Planning Commission provide review of drainage plans for new and redevelopment. The drainage plans address both flood control and potential stormwater pollutants under the authority of the Philadelphia Code. Please refer to **Section F.5 – Monitor and Control Stormwater from Construction Activities** on page 23 for additional information.

### d. Street Cleaning Program

During FY21, the Streets Department continued its street cleaning programs that target street debris and litter. However, this program was affect when resources shifted to address increased amounts of residential waste and recycling collection due to the COVID 19 pandemic. With its fleet of mechanical sweepers, the Streets Department continues to provides daily street cleaning in Center City and on major arteries and commercial corridors throughout the city. Since FY14 the Streets Department has initiated monthly street sweeping operations on routes along the Tookany/ Tacony Frankford, Wissahickon, Cobbs Creek and Pennypack watersheds within the city.

In addition, the Center City District (CCD) and University City District (UCD) conduct sidewalk cleaning. Heavily-trafficked commercial streets and areas receive daily sweeping with pans and brooms and mechanical cleaning. Other areas with a high density are cleaned at least twice weekly with machines (some areas are cleaned daily). Sidewalks also get a monthly power washing, except in winter, to remove accumulated stains, gum and grime. In FY21, 9,111 miles of streets were mechanically cleaned. Through a variety of fee-for-service arrangements, CCD crews clean several adjacent commercial and residential areas and provide a 24-hour deployment to clean the three and a half mile long underground subway concourse and Center City's two regional rail stations.

*Public awareness of litter*

The City promotes, develops, and implements litter reduction programs in an effort to increase public awareness of litter as a source of stormwater pollution. There are about 500 solar-powered, compaction litter receptacles in Center City, and another 460 in other commercial districts throughout the city. Over 600 standard wire baskets are also in place through the Philadelphia More Beautiful Committee (PMBC) Adopt-A-Basket program, which provides block captains with wire waste baskets to distribute and manage across city neighborhoods. PMBC also organizes neighborhood cleaning events citywide. Such cleaning efforts are bolstered every April by the Philly Spring Cleaning day, a citywide anti-litter event partnering various city agencies and neighborhood community groups, which is an annual event. This year’s event was cancelled due to the COVID-19 pandemic. These efforts are bolstered by Philadelphia’s SWEEP program. SWEEP officers, employees of the Streets Department, work with residential communities to address locations with problematic amounts of litter and short dumping. In cases of non-compliance, SWEEP officers will issue warnings and citations to the appropriate individuals.

## e. Animal Waste and Code Enforcement

*Educational material regarding control of animal waste*

The Philadelphia Code and Charter Chapter 10.100 – Animals and Chapter 10.700 – Refuse and Littering address the proper clean-up of pet waste and applicable fines and penalties. In addition, signs advertising said penalties are displayed city-wide in an effort to prevent residents from violating this statute. The City of Philadelphia also provides the text of this code online at http://municipalcodes.lexisnexis.com/codes/philadelphia/.

PWD provides additional information on pet waste to the public including how it affects stormwater and why to pick it up through its website located at the following site: http://water.phila.gov/drops/dog-waste/

*Dog Waste Control Program*

PWD launched an innovative approach to address dog waste in targeted neighborhoods in July of 2010. Through a pilot project in the Delaware Watershed, the Partnership for the Delaware Estuary found that many dog-owners are unaware of the connection of dog waste to water pollution. Building on almost of decade of experience, PWD redeveloped the dog waste program in FY18 to more broadly appeal to dog owners across the City. The new program will expand outreach into community dog parks, City-owned parks and various events hosted by organizations across the city. More information can be found at the following website: http://www.delawareestuary.org/manage-dog-waste/.

## f. Flood Management and Flood Control Devices

### *Structures built within the floodplain*

All development within the Special Flood Hazard Area (SFHA), which is identified on FEMA's Flood Information Rate Maps (FIRM's), is reviewed and approved per the City's codes and regulations found in both Zoning and Building codes. L&I will identify all City parcels within the SFHA, and upon an application submission will determine whether the floodplain codes apply. If the development site itself is determined to be within the SFHA, structures built will be designed to an elevation of Base Flood Elevation (BFE) plus a safety factor of at least 18 inches. The L&I will maintain records of compliance for all development located with the SFHA. Licenses and Inspections issued 260 permits in total, that includes separate building, MEP, and alteration permits.

### *Evaluate new and existing structural drainage controls*

Our evaluation of structural drainage controls was discussed in further detail in **Section F.8.b.ii - Existing privately owned structural controls** on page 34 of this report.

Work is being done on sections of the city that have chronic flooding to eliminate or reduce these occurrences; please refer to CSO Annual Report **Section II.B.3 – Flood Relief Project Summary** on page 3 for more information about the SFR projects and details on evaluating structural drainage controls.

### *Streambank Restoration and Wetland Enhancement*

Please refer to the CSO Annual Report **Section III.C.2.3 – Stream Habitat Restoration** on page 44 for information pertaining to streambank restoration.

Please refer to the CSO Annual Report **Section III.C.2.4 – Wetland Enhancement and Construction** on page 44 for information pertaining to wetland enhancement.

## g. Sanitary Infiltration Controls

### *Limit sanitary infiltration*

As part of the Cross-Connection Repair Program, PWD has conducted 1,645 abatements to correct cross connection in sewer laterals since 1994; 31 abatements were completed in FY21 alone. PWD also has in place twelve (12) dry weather diversion devices which divert sanitary flow back into the sanitary sewer but still allow stormwater to pass through during wet weather events. PWD estimates that these abatements and dry weather diversion devices have prevented over 230.9 million gallons of contaminated flow from entering our waterways since the inception of the program and about 4.4 million gallons during FY21. Please refer to **Section F.3 – Detection, investigation and abatement of Illicit Discharges** on page 20 for more information on the Cross-Connection Repair Program.

In addition, as part of PWD's Sewer Maintenance Program, sewer lining is routinely conducted on both sanitary and storm sewers. Lining sewers helps to reinforce, seal, and rehabilitate the existing sewers, specifically preventing infiltration to allow the pipe capacity to be reserved for sanitary and storm flow. Apart from those being done under consent orders, there are several sewer lining projects in the City that originate from sewer maintenance issues like street cave-ins, depressions, backups, as well as sewer assessment meetings.

As a part of PWD's commitment to improvement of water quality and aesthetics in dry weather, large sewer lining projects began on the entire length of intercepting sewers along the Tookany/Tacony-Frankford and Cobbs Creeks. Please refer to **Appendix A Green City, Clean Waters FY21 Annual Report Section 1.1 Interceptor Rehabilitation Program** on page 1 for more information on the interceptor relining project.

Construction of a storage tank upstream of relief sewer manhole R-20, located at Main Street and Shurs Lane, to capture and store excess flows was completed during November of 2013. The consent order requirement for sewer linings to be done around regulator R-20 in an effort to reduce inflow and infiltration has been completed. Please refer to CSO Annual Report **Section III.B.1– Construction and Implementation of the Main and Shurs Off-line Storage Project** on page 25 for more information on the Main and Shurs Off-line Storage Project and efforts to reduce inflow and infiltration at R-20.

PWD constructed a parallel relief sewer in December of 2011 to eliminate overflows at manhole PC-30 as per a consent order issued by the DEP. The overflows at PC-30 were caused by a combination of various factors which influence the hydraulic carrying capacity of the Poquessing Creek Interceptor during wet weather events. In FY21, PWD continued to monitor the effectiveness of this relief sewer. There were also several sewer lining projects done under the consent order for PC- 30 area in conjunction with the relief sewer being constructed. Please refer to CSO Annual Report **Section III.B.2. – PC-30 Relief Sewer** on page 28 for more information on the PC-30 Relief Sewer.

*Investigate, remediate, and report sanitary infiltration*

PWD responds to all citizen complaints of liquid, solid, or gaseous pollutants within Philadelphia. A database called the Sewage Pollution Incident & Location Log (SPILL), which stores information about unintentional sanitary discharges including the date reported, problem location, spill type, description, and abatement date, is maintained. Detailed information on the events found on the SPILL database of reported sewage pollution incidents in FY21 are found within in **Appendix P – FY21 Sanitary Infiltration Events**. The following locations have been identified by the Department as locations suffering from chronic discharges of sanitary sewage to the storm sewer system and/or waterways. A description of the specific site issues and the current status of remediation efforts is provided for each location:

*Neill Drive Pumping Station*

The Department has been operating a bypass force main on the Neill Drive pump station since March 2020. A failure in the force main near the pump station rendered the station's pumps completely unable to convey sewage to the gravity sewer system, resulting in an initial SSO incident on March 7th, 2020. After the force main was excavated and original point of failure was repaired, the Department put the station and main back into service, but the repair failed and another SSO incident occurred on March 12th. PWD was able to operate the station and force main after employing a second repair but then switched to the operation of a bypass main on March 26th to conduct a full examination and condition assessment of the existing force main.

On September 29th, a third SSO occurred when an unexpected power outage at the station shut down the pumps for about 5 hours until a portable generator was set up to restore power the station. The portable generator then went down on October 6th for about 1.5 hours, and monitoring equipment deployed at the station suggested that discharge to the emergency overflow pipe occurred for approximately 50 minutes until the portable generator was repaired. In response to the initial power outage, PWD made substantial repairs to the station's switchgear. PWD's main power source line was quickly inspected, repaired, and energized within a week by PECO, and PWD was then able to decommission the portable generator and energize the station on the primary electric service line. PWD also procured new vacuum interrupters to be installed on the secondary line so that it could restored electrical service. Faults in the original vacuum interrupters had caused issues with the circuit breaker and led to the original loss of power to the station. These electrical improvements have increased resiliency at this station and will allow it to toggle between power sources as needed to remain in operation.

CCTV examination and results analysis of the force main was completed in April 2021, and no additional repairs were required to the main. The force main was put back into service at 11:00am on May 12th, 2021. The bypass main was decommissioned, flushed and disassembled for haul away by PWD's contractor shortly thereafter.

*Navy Yard Force Mains*

Issues with the force mains associated with Pump Stations 603 and 648 in the Philadelphia Navy Yard have been ongoing for several years, and the Department saw significant progress in the necessary upgrade and rehabilitation of a portion of these mains in the past fiscal year. These two force mains and associated pumping stations are integral in conveying sanitary flows out of the western area of the Navy Yard to the Southeast Water Pollution Control Plant.

### *Pump Station 603*

Six SSOs occurred in FY21 as a result of extreme corrosion in the 8" ductile iron force main carrying sanitary flows from Pump Station 603 located at 1400 Langley Avenue in the Philadelphia Navy Yard to a discharge manhole further east near the intersection of Crescent Drive and Rouse Boulevard. All incidents required repairs to be completed by PWD's emergency contractor, while cleanup of the overflow was completed by PWD crews. All SSO volumes were contained within the street, and there was no observed discharge to nearby stormwater inlets in any of the incidents. In response to these issues, a portion of this force main is slated for reconstruction under an emergency contract beginning 2021 and will replace the ductile iron pipe with HPDE. Final construction documents were finalized in late 2020. Design plans for a second phase are currently being developed and will complete full replacement of this force main at a later date. All construction at Pump Station 603 was completed in 2020, and new corrosion-resistant pumps, piping, valve chambers were installed.

### *Pump Station 648*

Force main deterioration issues have been ongoing for several years at this location and the Department completed major overhaul of Pump Station 648, which discharges to Pump Station 603, and the cast iron force main in 2020. The project consisted of replacing the force main with HDPE and all internal station piping, pumps and fittings with stainless steel to help resist corrosion.

*Hortter Street Sewer*

On December 13th, 2020, PWD responded to the fourth SSO along the 300 and 400 blocks of W Hortter Street in the last four years. The Department has completed several CCTV inspections of sanitary and storm sewers in this street, with the most recent occurring in February 2019. The primary causes of the SSOs have been heavy debris accumulation and failures in the terracotta pipe sanitary sewer installed in the late 1800s, resulting in the restriction of flows and discharge through manholes or privately owned fresh-air-inlets. The Department has been able to adequately and timely respond to the SSO incidents by completing sewer flushing and cleaning activities and point repairs when necessary. PWD continues to monitor this location so that it can mitigate the occurrence of any future SSOs before the sewers are replaced. The Department has finalized the design and construction documents for new storm and sanitary sewers in this street and will consider this project to be among top priorities for our capital sewer rehabilitation/reconstruction program during FY22.

### *Cresheim Valley Drive (CV-0145)*
The PWD has identified a hydraulic overload along a 1,000-foot section of separate sanitary sewer in the Cresheim Valley. A hydraulic model analysis has revealed a portion of this system is hydraulically limited during wet weather events with a 1-year return interval. Pursuant to Chapter 94 reporting requirements, the PWD notified the DEP of this restriction and submitted a Corrective Action Plan (CAP) as a component of its Chapter 94 Report for the 2020 calendar year. PWD continues to work to work to resolve this issue under the framework of its CAP.

### *Holme and Longford Avenue (MH P100-14-S0015)*
During FY20, PWD experienced 2 discharges of sanitary sewage to the nearby Pennypack Creek tributary due to an accumulation of material constricting the flow and causing surcharged conditions. Additionally, discharges had been observed during the previous two fiscal years. This location is particularly difficult to inspect, maintain and repair due to excessive depth of the pipe below grade. The Department has increased inspection frequencies to prevent future discharges. In addition, during FY20, a full manhole inspection was conducted. From the results of the inspection the trough at the bottom of the manhole had several repairs completed to improve conveyance. These repairs involved eliminating pipe protrusions into the manhole to reduce potential debris accumulation and ragging. There have been no issues at this site following those repairs through the end of FY21.

### *On-lot septic/disposal system*
During FY21, zero complaints of malfunctioning on-lot sewage disposal systems were investigated and serviced. Also, during FY21, 10 applications were reviewed for the installation of on-lot sewage disposal systems. Of those applications, 7 permits were approved. In addition, 942 portable toilet permits were issued. PWD continues to support the inspection and remediation of these systems.

## h. Spill Prevention and Response
The City's response plan to respond to and contain harmful spills that may discharge to the municipal separate storm sewer system is managed by the Office of Emergency Management. The City of Philadelphia Emergency Operations Plan – Annex F Hazardous Materials and PWD – Waterways Contamination Response Protocol, can be found in the Additional Documents folder on the **digital download link**.

In order to protect PWD's structures and treatment processes, PWD staff respond to oil and chemical spills and other incidents that have the potential to threaten the water supply or impact the sewer system, twenty-four hours per day, seven days per week. PWD responds to all incidents that can impact the sewer system or endanger PWD employees. This includes both the sanitary sewer system and the storm sewer system. PWD supervises cleanup activities and assesses environmental impact. PWD inspectors also investigate various other types of complaints. In FY21, 163 pollution migration events occurred. A list of all pollutant migration events in the MS4 section of the City that occurred in FY21 is presented in **Appendix O – Pollutant Migration/Infiltration**.

## i. Public Reporting of Illicit Discharges, Improper Disposal

The City encourages residents to report the occurrence of illicit discharges that may impact the sewer system and water bodies. To facilitate the timely reporting of such events, PWD operates a Municipal Dispatcher 24 Hours/Day, 7 Days/Week to handle reports from the public. In addition, a customer service hotline (215 686-6300) is also operated that provides the ability to connect to the Dispatcher. This information is distributed in mailings, as well as online at http://www.phila.gov/water/contact_us.html.

Upon the reporting of such an incident, a PWD inspector is immediately dispatched to the site to investigate and determine the source of the discharge, as well as the extent of impact on the receiving water body. Each incident is logged into an electronic database that enables tracking of the details of each occurrence.

PWD received 407,152 phone calls in FY21. Currently PWD does not track phone calls specifically related to illicit discharges and improper disposals in the MS4 area, but instead tracks much broader topics including sewage backup, flooding, street cave-ins and water service disruptions.

### *Philly 311*

Philly311 was created to help eliminate the need to sort through the numerous phone numbers and hotlines available to contact the City government. A customer service specialist will connect the user to the information and services they may need either by calling 3-1-1, asking a question on the website or through Twitter @philly311. A Philly 311 mobile app is available for iPhone, Android, or Blackberry devices to report issues such as graffiti, potholes, litter and more. For more information on uses of Philly311, please visit: http://www.phila.gov/311/. During FY21, Philly 311 transferred 2,107 non-emergency inlet and hydrant requests to Customer Service Call Center.

## j. Used Oil and Toxic Material Disposal

The City continues to facilitate the proper disposal of used oil and other toxic materials. This program includes collections events, distribution of educational materials, the operation of a website, and a hotline accessible to the public. For more information on the hazardous waste program please visit: http://www.philadelphiastreets.com/hazardous-waste.

## k. Storm Water Inlet Labeling/Stenciling

In September 2015, PWD released a refreshed storm drain marking program. This new iteration features watershed specific storm drain markers. Each of the seven new markers prominently features a unique color scheme and an animal native to that respective watershed. Educational materials provided with each kit better inform the public about how their actions on the street can reduce stormwater runoff pollution. In 2020, PWD launched an updated version of a web-based storm drain marking app. This new app will allow participants to more accurately mark inlets on their blocks and public spaces. Inlets are color coded by watershed allowing participants to view the often hidden natural watershed boundaries of our city. The direct capture of information via the app will also allow PWD to more accurately track the placement of markers throughout the city. The app can be accessed here: https://markingapp.philadelphiawater.org/.

During FY21 PWD saw a decrease in storm drain marking activity due to poor weather and the COVID-19 pandemic. The Department distributed 44 storm drain marking kits, totaling 661 individual stormwater inlet labels. PWD continues to encourage community organizations and citizens to get involved in storm drain marking projects. More information on this program has been provided in previous years; please refer to Section F.8.k on page 312 of the CSO-MS4 FY10 Annual Report.

# Section G Assessment of Controls

PWD has selected a set of effective post-construction stormwater management controls to address problems identified in the waterways and documented these controls in the Stormwater Management Guidance Manual. Philadelphia's stormwater management regulation obligates all development and redevelopment projects subject to these regulations to implement the identified controls. The requirements of the stormwater regulations were developed through the Act 167 planning process in coordination with neighboring counties. The requirements are explained in detail in Section 1.2.1 of the Stormwater Management Guidance Manual and summarized below.

### *Water Quality*

The Water Quality requirement focuses on the removal of both runoff volume and pollutants and is similar to requirements in surrounding states and other major cities across the country. Because flow rates and velocities were identified as significant causes of aquatic ecosystem impairment, infiltration is emphasized as the preferred water quality management practice unless evidence is provided that it is infeasible on a particular site. Additional water quality benefits are provided, in part, by slowing water down and allowing suspended solids and associated pollutants to settle.

The Water Quality requirement stipulates infiltration of the first 1.5 inches of runoff from all directly connected impervious area (DCIA) within the limits of earth disturbance. The initial 2006 regulations required 1.0 inch of runoff to be managed, based on water budget analyses and precedents for control of the 90th percentile event set by Maryland and other nearby states with similar climates. This requirement has been increased in 2015 to 1.5 inches based on evidence provided by simulations showing that this level of control will further reduce the volume and flow rate of runoff to waterways.

### *Channel Protection*

Erosion of stream beds and banks caused by high volumes and velocities of urban runoff was identified as a significant contributing factor to aquatic ecosystem impairment in Philadelphia's stream systems. For this reason, a channel protection requirement was incorporated in the stormwater regulations. This requirement is based on the concept of effective channel forming discharge and is similar to precedents set by Maryland and other nearby states with similar climates and geology.

The Channel Protection requirement stipulates the detention and release of runoff from the one-year, 24-hour Natural Resources Conservation Service Type II design storm event for all DCIA within the limits of earth disturbance at a maximum rate of 0.24 cfs per acre of directly connected impervious drainage area in no more than 72 hours.

### *Flood Control*

Act 167 Plans identified peak rates of runoff as a contributing factor to out-of-bank flooding events in Philadelphia and surrounding counties. To address peak rate control, geographically specific requirements were incorporated in Philadelphia's stormwater regulations and manual.

The Flood Control requirement stipulates that a development project meet or reduce peak rates of runoff, as determined by its Flood Management District, from predevelopment to post-development conditions during certain storm events.

There are approximately 20.7 square miles of impervious area in the portion of the City that falls under the MS4 permit. Since July 2010, approximately 1.55 square miles (991 acres) of directly connected impervious area are tributary to completed or approved green stormwater infrastructure. This is approximately 7.5% of the impervious area.

# Section H Fiscal Resources

## Maintain adequate program funding

During FY21, the City provided fiscal resources needed to support operation and maintenance of the Stormwater Management Program. The budget for the upcoming FY22 budget is available upon request.

## Annually submit fiscal analysis

The conditions of the NPDES permit can be achieved through appropriate budget planning supporting the projects and assessments critical to a successful program. Any funding changes will be included as part of subsequent annual reports.

# APPENDIX A

# Green City, Clean Waters

# FY 2021 Annual Report

## Tenth Annual Report for the City of Philadelphia's Consent Order and Agreement on Green City, Clean Waters

**Reporting period July 1, 2020 – June 30, 2021**

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**Submitted to**
**The Commonwealth of Pennsylvania**
**Department of Environmental Protection**
**And**
**The United States Environmental Protection Agency**

**By the City of Philadelphia Water Department**
**September 30, 2021**

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# Appendices

# Glossary of Acronyms

| | |
|---|---|
| AOCC | Administrative Order for Compliance on Consent |
| BMP | Best Management Practice |
| BOD | Biological Oxygen Demand |
| City | City of Philadelphia |
| CMP | Comprehensive Monitoring Plan |
| COA | Consent Order and Agreement |
| CSO | Combined Sewer Overflow |
| GA | Greened Acre |
| GARP | Greened Acre Retrofit Program |
| GIS | Geographic Information Systems |
| GSI | Green Stormwater Infrastructure |
| LTCPU | Long Term Control Plan Update |
| NPDES | National Pollutant Discharge Elimination System |
| PADEP | Pennsylvania Department of Environmental Protection |
| PCSMP | Post Construction Stormwater Management Plan |
| PennDOT | Pennsylvania Department of Transportation |
| PIDC | Philadelphia Industrial Development Corporation |
| PPR | Philadelphia Parks and Recreation |
| PSWMR | Philadelphia Stormwater Management Regulations |
| PWD | Philadelphia Water Department |
| SDP | School District of Philadelphia |
| SMIP | Stormwater Management Incentive Program |
| SMP | Stormwater Management Practice |
| SRT | Simulated Runoff Testing |
| US EPA | United States Environmental Protection Agency |
| WPCP | Water Pollution Control Plant |
| WQBEL | Water Quality-Based Effluent Limit |

# 1.0 Introduction

The Consent Order and Agreement (COA) between the City of Philadelphia (City) and the Pennsylvania Department of Environmental Protection (PADEP), and the Administrative Order for Compliance on Consent (AOCC) between the City and the United States Environmental Protection Agency (US EPA), formalized the regulatory approval of the *Green City, Clean Waters* program and amended the 2009 CSO Long Term Control Plan Update (LTCPU). This is the tenth Annual Report submitted under the requirements of the COA. Fiscal Year 2021 (FY21) covers the City's *Green City, Clean Waters* implementation progress activities that occurred between July 1, 2020 and June 30, 2021.

The PADEP granted The Philadelphia Water Department (PWD) a force majeure extension for the requirements and deliverables associated with the Year 10 Performance Standards of the COA due to impacts from the COVID-19 pandemic. This extends the Year 10 compliance deadline from June 1, 2021 to December 31, 2021 which includes a revised Year 10 Evaluation and Adaptation Plan (EAP) submission date of May 30, 2022. The Year 10 EAP will provide progress of achieving the Year 10 targets outlined in the Water Quality-Based Effluent Limits (WQBEL). The FY21 COA Annual Report will focus on the progress accomplished in FY21.

The Year 5 EAP submitted on October 30, 2016 to PADEP can be found at http://water.phila.gov/pool/files/Year5_EAPBody_website.pdf.

## 1.1 Water Quality Based Effluent Limit Performance Standards

The Water Quality-Based Effluent Limits (WQBEL) performance standards are broken into incremental targets that must be achieved by the City every five years of the 25-year program. The following report includes water pollution control plant and collection system improvements, interceptor lining, and greened acre (GA) interim progress towards the Year 10 WQBEL targets. Volume reduction and mass capture are only reported every 5 years and will be included in the Year 10 EAP. **Table 1-1: Water Quality-Based Effluent Limits** displays the cumulative progress towards meeting the Year 5 WQBEL target and includes the upcoming Year 10 (2021) WQBEL target.

**Table 1-1: Water Quality-Based Effluent Limits**

| Metric | Units | Base Line Value | Year 5 WQBEL Target | Cumulative Amount as of Year 5 (2016) | Year 10 WQBEL Target |
|---|---|---|---|---|---|
| NE WPCP Improvements | *Percent Complete* | 0 | See Section 3.1.1 in this report for status updates | | Report progress in Year 10 EAP |
| SE WPCP Improvements | *Percent Complete* | 0 | See Section 3.1.2 in this report for status updates | | |
| SW WPCP Improvements | *Percent Complete* | 0 | See Section 3.1.3 in this report for status updates | | |
| Miles of Interceptor Lined | *Miles* | 0 | 2 | **7.5** | 6 |
| Overflow Reduction Volume | *Million Gallons Per Year* | 0 | 600 | **1,710** | 2,044 |
| Total GAs | *GAs* | 0 | 744 | **837.7** | 2,148 |
| Equivalent Mass Capture *(TSS)* | *Percent* | 62% | Report value | **70.5%** | Report value |
| Equivalent Mass Capture *(BOD)* | *Percent* | 62% | Report value | **88.9%** | Report value |
| Equivalent Mass Capture *(Fecal Coliform)* | *Percent* | 62% | Report value | **72.0%** | Report value |

## 1.2 Green City, Clean Waters Greened Acres

GA progress is achieved through three implementation approaches: Public Retrofits, (Re)Development Regulations, and Incentivized Retrofits. **Table 1-2: Cumulative Greened Acres** displays the cumulative program progress towards meeting the total GAs at the end of Year 10.

**Table 1-2: Cumulative Greened Acres**

| Implementation Approach | Cumulative Number of Projects (FY11-FY21) | Cumulative GAs (FY11-FY21) |
|---|---|---|
| Public Retrofits | 259 | 489 |
| Private Development | 425 | 684 |
| Incentivized Retrofits | 103 | 715 |
| **Total** | **787** | **1888** |

# 2.0 Implementation Tracking and Reporting

## 2.1 Green City, Clean Waters Program Tracking System

Currently the existing databases and systems track program implementation and support data requests for internal and external reporting. The development of the *Green City, Clean Waters* program tracking system will integrate this data from the existing Water Department systems to streamline the process.

During FY21, milestones were achieved in the development of the *Green City, Clean Waters* program tracking system. This year, the system's dashboarding features went live. A data-governance team was established to ensure proper programmatic alignment across the various source databases for metrics calculations and reporting in the live system.

**Table 2-1: FY21 Status Updates for Existing Databases and Systems**

| Existing Databases and Systems | Status |
|---|---|
| **PlanIT** | PWD's tracking system that stores information from site evaluations conducted on locations throughout Philadelphia. All sites must undergo an initial evaluation to determine the feasibility of green infrastructure before they can be transferred to CIPIT to begin design phase. In FY21, a new feature to autopopulate the names of street project entries was implemented, and development work on the editable grid user interface tool progressed significantly. |
| **GreenIT** | PWD's metrics tracking system for all public green stormwater infrastructure (GSI) projects. GreenIT tracks estimated, designed, built, and maintained compliance metrics. The GreenIT Data Entry Application is used to create metrics reports by consultants and staff that are directly uploaded to the GreenIT database. In FY21, work began to update GreenIT's front end application, phasing out the current platform. |
| **CIPIT** | CIPIT is PWD's Capital Program Information Tracking System. In FY21, PWD continued to make improvements to the database to properly track the final stages of the construction process for GSI systems. |
| **Stormwater Plan Review Database** | PWD's tracking system that stores metrics and detailed stormwater management practice (SMP) data of private development projects that are subject to the Philadelphia Stormwater Regulations, as well as voluntary stormwater management retrofit projects. The database is designed to track workflows related to reviews and inspections, including the status of conceptual and technical reviews, record drawing reviews, active and post-construction inspections, and post-construction enforcement. In FY21, the database was updated to incorporate the tracking of phased projects. This will allow GSI metrics to be updated as construction completes in multiple phases for large projects. |
| **Geographic Information System (GIS) Asset Tracking** | GIS is used to track the location of all PWD assets. This includes public retrofit, private development and incentivized retrofit SMPs. In FY21, PWD completed the first phase of an effort to add geotechnical testing information to the GIS datasets. This phase 1 included the addition of test type, date, infiltration rate, depths to groundwater or bedrock, and a simple soil description. |
| **Maintenance Management Systems** | Inspection and maintenance activities for public green stormwater infrastructure are tracked in PWD's Cityworks work order management system. This system is linked to the City's GIS data and provides tools to track and manage work performed on other PWD assets such as fire hydrants, inlets, water mains, and sewers. |

## 2.2 Reporting Metrics

### Green Stormwater Infrastructure through Public Implementation

The information in GreenIT is used to produce compliance reporting outputs for the completed and planned public project tables in Appendices 1 and 2 of this report. The Public Completed Projects reporting format and metric definitions are described in Table 1 and Table 2, respectively, in **Appendix 1**. The Public Planned Projects reporting format is described in Table 1 in **Appendix 2**.

### Green Stormwater Infrastructure through Private Development

Information from the Stormwater Plan Review Database is used to produce reporting outputs for completed private redevelopment and incentives project tables in **Appendix 3**. The reporting format is described in Table 1 in **Appendix 3**.

### Stormwater Management Types

SMP types used for public implementation are described in Table 3 of **Appendix 1** and SMP types used for private implementation are defined in Table 2 of **Appendix 3**.

# 3.0 Water Pollution Control Plant and Collection System Project Progress

## 3.1 Water Pollution Control Plant and Collection System Project Progress

Upgrades to increase the peak flow capacity at each of the City's Water Pollution Control Plants (WPCPs) were described in the Wet Weather Facility Plan, submitted on June 1, 2016. During FY21, PWD has continued working towards completing the projects committed to in the Wet Weather Facility Plan. Within the following sections, progress in FY21 on these projects is discussed. The *Green City, Clean Waters* Wet Weather Facility Plan can be referenced here: http://water.phila.gov/pool/Wet_Weather_Facility_Plan_website.pdf.

### 3.1.1 Northeast Water Pollution Control Plant

Within Table 3-1, the seven Northeast WPCP improvements committed to in the Wet Weather Facility Plan are listed with their required operation years, as approved by the PADEP. To date, five improvements have been completed and the remaining two improvements are on track for completion by the required operation date.

**Table 3-1: Status of Northeast WPCP Improvements**

| Northeast WPCP Improvements | Anticipated Completion | Project Status (FY21) |
|---|---|---|
| **Facility Improvements** | | |
| Remove Double Deck Effluent Channel in Final Sedimentation Tanks Set 2 | 6/1/2016 | Complete |
| New (4 x 48") conduits from Preliminary Treatment Building to Primary Sedimentation Tanks Set 1 | 6/1/2016 | Complete |
| High Flow Management System | 6/1/2021 | Complete |
| Gravity Sludge Thickeners | 6/1/2021 | Complete |
| Preliminary Treatment Building #2 | 6/1/2031 | In Contract Management |
| New Influent Baffles in Primary Sedimentation Tanks Set | 6/1/2031 | In Design |
| **Operational Improvements** | | |
| Operate with minimal sludge blanket when Gravity Sludge Thickeners in service | 6/1/2021 | Complete |

### 3.1.2 Southeast Water Pollution Control Plant

All Southeast WPCP improvement commitments in the Wet Weather Facility Plan were completed in FY16, meeting the required operation date of June 1, 2016. For more detailed information, please see the *Green City, Clean Waters* Wet Weather Facility Plan or the Year 5 EAP.

### 3.1.3 Southwest Water Pollution Control Plant

Within **Table 3-2**, the Southwest WPCP improvement committed to in the Wet Weather Facility Plan is listed with its associated required operation year. The project has been completed prior to the required operation date.

**Table 3-2: Status of Southwest WPCP Improvements**

| Southwest WPCP Improvements | Anticipated Completion | Project Status (FY21) |
|---|---|---|
| **Facility Improvements** | | |
| Additional Effluent Pump | 6/1/2026 | Complete |

## 3.2 Philadelphia Collection System Improvements

Within **Table 3-3**, the three Collection System improvements committed to in the Wet Weather Facility Plan are listed with their required operation dates. Two of the improvements were completed, meeting the required deadlines. The other improvement identified is a study to evaluate CSO regulator capacities and identify improvements, if necessary. This study is ongoing and is anticipated to continue throughout the implementation of the LTCPU, as PWD is committed to maintaining and improving the efficiency of the collection system. For more Collection System improvements, please see the CSO Annual Report **Section II.B.4 – Fully Integrate the Real-Time Control Facility into the Operations of PWD** on page 4.

**Table 3-3: Status of Collection System Improvements**

| Collection System Improvements | Anticipated Completion | Project Status (FY21) |
|---|---|---|
| **Improvements** | | |
| NE Second 66” Frankford Grit Chamber Bypass In Service | 6/1/2016 | Complete |
| NE Frankford High Level Second Barrel Rehabilitation | 6/1/2016 | Complete |
| All Districts: Balancing CSO Regulator Wet Weather Capacities | Study - Ongoing | On Track |

## 3.3 Interceptor Relining

### FY21 Progress on Miles of Interceptor Lined

The WQBEL Performance Standards requires 6 miles of interceptor lining completed by the end of Year 10 (2021). During FY21, the City is well ahead of the Year 10 target with 9.2 miles completed. Additionally, there are 2.6 miles in construction or in contract management, and 3.3 miles in design (**Table 3-4**).

**Table 3-4: Interceptor Relining FY21 Status**

| Project Name | Street Extents | Length (Miles) |
|---|---|---|
| **Construction Complete** | | **9.2** |
| 60th and Cobbs Creek Parkway to 75th and Wheeler Sewer Lining | 60th and Cobbs Creek Parkway to 75th and Wheeler | 2.2 |
| Cobbs Creek Park to 63rd and Market Sewer Lining | Cobbs Creek Park to 63rd and Market | 0.5 |
| Cobbs Creek Interceptor Phase 1 CIPP Lining | 63rd and Market to 62nd and Baltimore | 1.6 |
| Tacony Creek Intercepting Sewer Lining Phase 1 | Chew & Rising Sun to I & Ramona | 1.9 |
| Tacony Creek Intercepting Sewer Lining Phase 2 | 2nd St & 64th Ave to Chew & Rising Sun; DRW Mascher to Tacony Interceptor; Cheltenham Ave to Crescentville & Godfrey | 1.3 |
| Cobbs Creek Interceptor Lining Phase 3 | City Avenue to D R/W in former 67th Street | 1.7 |
| **In Contract Management** | | **2.6** |
| Cobbs Creek Intercepting Sewer Lining Phase 2 | 61st and Baltimore to 60th and Warrington | 1.0 |
| Cobbs Creek Intercepting Sewer Lining Phase 4 (Indian Creek Branch)* | City Avenue to D R/W in former 67th Street | 1.6 |
| **In Design** | | **3.3** |
| Tacony Creek Intercepting Sewer Lining Phase 3 | I & Ramona to O & Erie | 1.0 |
| Upper Frankford LL Collector/Tacony Intercepting Sewer Lining Phase 4 | Castor & Wyoming to Frankford/Hunting Park | 1.1 |
| Upper Frankford Creek LL Collector/Tacony Intercepting Sewer Lining Phase 5 | Frankford/Hunting Park to Luzerne & Richmond | 1.2 |
| **Total Anticipated Miles of Interceptor Lined** | | **15.1** |

*Cancelled bid in FY21. Expected rebid in FY22.

# 4.0 Green Stormwater Infrastructure through Public Implementation

The programmatic strategies for achieving public GAs are benchmarked in four phases: planning, design, construction, and post-construction maintenance. The following four subsections describe the progress made during FY21 for each of these phases. **Table 4-1** summarizes Public GSI projects and GAs for FY21. **Figure 4.2** displays the Planned and Completed Public GSI projects.

**Table 4-1: FY21 Summary of Public Green Stormwater Infrastructure**

| | End of FY21 | | | Cumulative |
|---|---|---|---|---|
| Project Phase | In Design | In Contract Development | In Construction | Completed |
| Number of Projects | 180 | 57 | 46 | **259** |
| Current Number of GAs | TBD* | 132 | 282 | **489** |

*Current number of GAs is subject to change as projects go through the design process

## 4.1 Planning Approaches for Green Stormwater Infrastructure Implementation

PWD has continued to evaluate entire neighborhoods and specific sites to identify appropriate locations to site GSI footprints. During FY21, PWD continued to streamline a planning district-based approach to develop a diverse set of project types that range from smaller green street SMPs to larger systems on parcels. PWD staff strategically prioritize and package these projects for the design phase. In FY21, PWD continued to refine planning strategies to ensure compliance with future implementation targets based on program type and implementation approach. Strategies included short-term and long-term policy recommendations for achieving maximum stormwater management. This past year progress was made on integrating GSI planning efforts with water and sewer projects. Planning also strengthened the direct feedback loop with maintenance to improve system siting and SMP type selection. PWD found and initiated more GAs in FY21 than any year to-date.

### Planning Outreach and Coordination

PWD works closely with a variety of partners to implement the *Green City, Clean Waters* program throughout all stages of a project. During the planning phase, PWD continues to coordinate the siting of GSI footprints with city agency partners, community groups, and other stakeholders via regular communication and meetings. The Mayor's initiative, Rebuild Community Infrastructure (Rebuild), continues to push forward with implementation and PWD has coordinated closely with project users to incorporate stormwater management in Rebuild projects. PWD continues to maximize stormwater management on all types of GSI projects, beyond just PWD-led capital planning efforts. PWD provides recommendations for maximizing the amount of stormwater managed on private development sites that have the potential to manage additional drainage or right of way (ROW) and recommends private properties with potential to manage large amounts of drainage areas to apply for stormwater retrofit grants.

## 4.2 Design Approaches

In FY21, PWD continued work on streamlining the design process through coordination and improvement of design guidance:

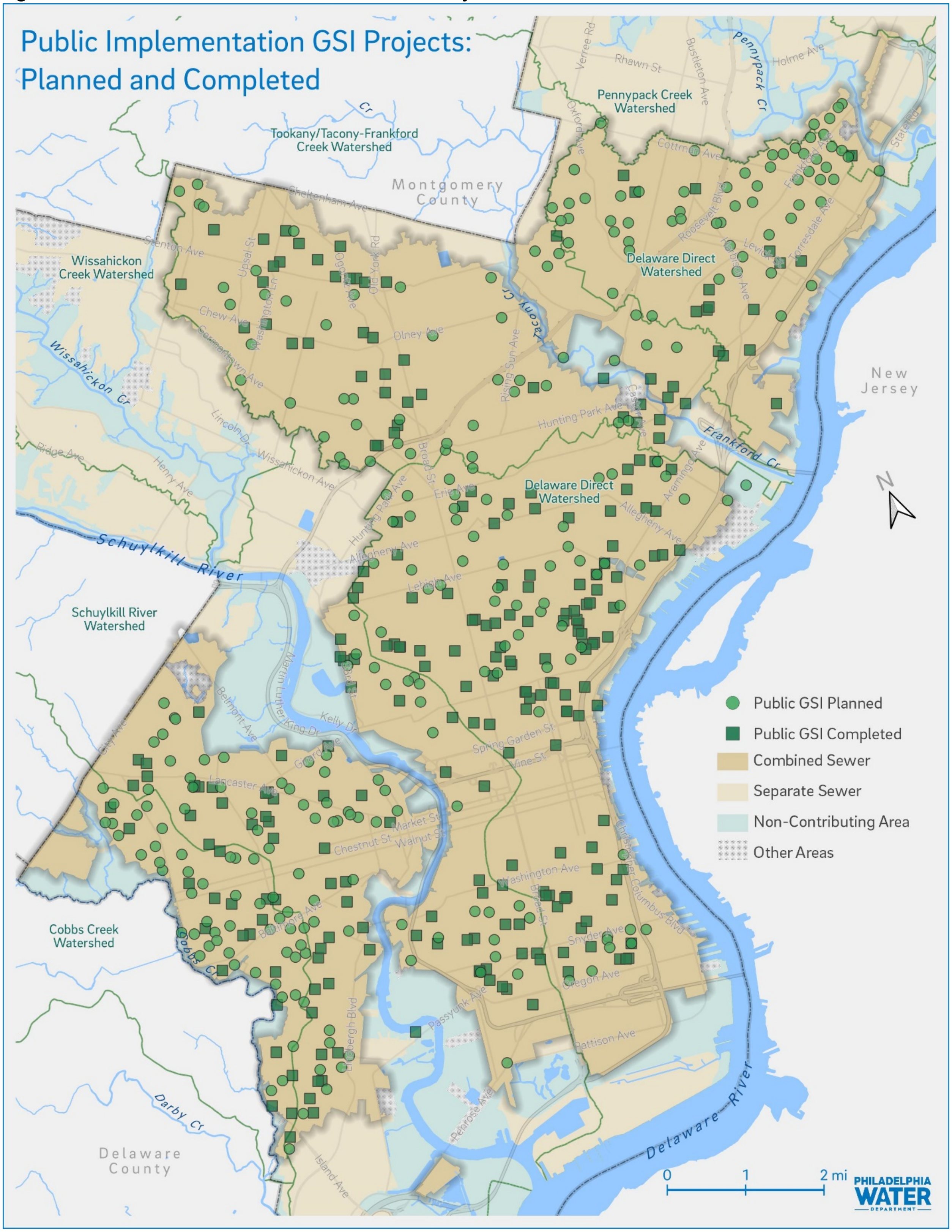
- Ongoing coordination meetings within PWD to facilitate project reviews and improve feedback, including. Establishment of new and updated procedures for joint projects.
- Released version 3.0 of the GSI Planning & Design Manual. Major revisions include expanded guidance on system placement and offset from utilities, guidance on the use of impermeable liners, and a reduction of the target storm size to be managed from 2-inches to 1.5-inches.
- Released version 3.0 of the GSI Survey & Drawing Requirements. Numerous updates were made to plot styles, blocks, linetypes, and example plans.
- Released Version 2.0 of the GSI Geotechnical Guidelines. Major edits include increasing the frequency of test borings and adding requirements to better identify seams or pathways for preferential lateral flow.
- Continued to update the Streets Design Guidance for GSI Projects. Updates include requirements for infiltration under state routes, placement of GSI at signalized intersections, and geometries for bumpouts near driveways.
- Published example design plan library for PWD GSI design community.
- Continued work to integrate capital improvements across various asset types.
- Developed PWD GSI Tree Preservation Policy as well as Planting Strategies for Areas Impacted by the Opioid Crisis. These resources are being used by the Landscape Team and designers to better site and design GSI within the urban context.
- Ongoing updates to existing procedures, standards, and guidance building on feedback from operations, monitoring, partner agencies, and other PWD units.

## 4.3 Construction

In FY21, PWD continued work on streamlining and improving the construction process through staff training, guidance updates, and coordination:

- Refined annual updates to the GSI Master Specifications and Bid Item List/Engineering Estimate template. Began work of reconciling specification differences for green-only and green on water/sewer projects.
- Implemented the second on-call contract for small GSI sites and right-of-way connections to incentivized retrofits. The contract is being utilized to connect public right-of-way runoff to private GSI and to construct small partner sites and retrofits on a faster timeline improving PWD’s ability to work with partner agencies and private developers.
- Continued implementation of a pilot protocol for construction performance and acceptance testing of systems that are fully lined with impermeable geomembranes. Lessons learned from testing and field modifications are directly informing design improvements. Continued research and modifications to design and construction guidance to improve performance of fully lined and partially lined systems.
- Ongoing trainings for inspectors and contractors.

**Figure 4-1: Public Green Stormwater Infrastructure Projects**



## 4.4 Public Green Stormwater Infrastructure Maintenance Program

To ensure the function and sustainability of stormwater management infrastructure investments, PWD continues to implement a GSI maintenance program. Table 4-2 provides a count of SMPs by type currently in PWD's maintenance program. PWD implements post construction maintenance in accordance with the maintenance manual.

**Table 4-2: FY21 PWD SMP Types in Maintenance**

| SMP Types | Total Number of SMPs |
|---|---|
| Stormwater Tree Trench | 406 |
| Rain Garden | 133 |
| Stormwater Planter | 116 |
| Stormwater Bump out | 88 |
| Infiltration/Storage Trench | 265 |
| Pervious Paving | 12 |
| Green Roof | 2 |
| Swale | 40 |
| Basin | 7 |
| Stormwater Tree | 83 |
| Drainage Well | 4 |
| Inlet Connection | 26 |
| Trench Drain Connection | 5 |
| **Total Number of SMPs** | **1,187*** |

*data from July 2020 to May 2021

### 4.4.1 Inspections

While PWD has prescribed maintenance frequencies for GSI, practice and experience have determined that pre-maintenance inspections are the best method to determine the level of maintenance required. At each SMP that has surface features, PWD completed pre-maintenance surface inspections.

#### Inspection of Surface Elements

In FY21, PWD conducted 2,165 pre-maintenance surface inspections. The condition of the site at the time of the pre-maintenance inspection determines whether maintenance is required. PWD also performs dry weather and wet weather inspections for a more comprehensive assessment. By the conclusion of FY21, PWD completed 2,976 dry weather inspections and 150 wet weather inspections. In FY21, PWD conducted a total of 5,291 inspections.

#### Inspection of Subsurface Elements

The objective of the subsurface inspection program is to observe and assess all structural components of SMPs that exist below street level. Inspections are performed in dry weather conditions as capturing discernable video during wet weather conditions is difficult. Inspection staff is certified through the National Association of Sewer Service Companies' (NASSCO) Pipeline Assessment Certification Program (PACP).

PWD completed a total of 1,558 subsurface inspection work orders which were associated with the inspection of 476 SMPs and a total of 17.15 miles of pipe during FY21. The conditions of each pipe run at the time of the inspection determined whether maintenance was completed and if any structural defects were present.

The inspections consisted of 709 post-construction inspections of new SMPs, 6 “NASSCO” inspections at select SMPs, 204 Post Maintenance, 12 Pre Maintenance, and 627 other inspections. NASSCO inspections are used to track NASSCO-specified “Construction” or “Structural” defects to determine if defects remain stable over time.

### 4.4.2 Maintenance

PWD's GSI maintenance program operates through three types of maintenance activities to adequately address the maintenance needs of PWD's GSI. Maintenance events associated with surface maintenance, subsurface maintenance and porous maintenance are summarized in **Table 4-3**.

**Table 4-3: FY21 Summary of Maintenance Events by Type**

| Maintenance Work Order Type | Number of FY21 Events |
|---|---|
| **Surface** | **16,472** |
| Surface Maintenance -Routine | 4,374 |
| Surface - Mulching | 667 |
| Surface - Pruning | 145 |
| Surface Maintenance -Watering | 428 |
| Tree Maintenance | 453 |
| Surface Inlet Protection Maintenance | 8,418 |
| Trench Drain Maintenance | 236 |
| Work Zone Protection | 0 |
| Aesthetic | 407 |
| Signage Repair | 973 |
| Surface Vegetation Cutback | 290 |
| Snow Removal | 51 |
| Rough Mowing | 30 |
| Trench Drain Maintenance | 236 |
| **Surface Maintenance - Reactive** | **157** |
| Surface Vegetation Repair | 111 |
| Earthwork | 1 |
| Surface Structural Repair | 17 |
| Green Infrastructure Request | 0 |
| Drainage Modification | 28 |
| **Subsurface** | **3,345** |
| Subsurface Maintenance | 1,624 |
| Inlet Cleaning | 1,535 |
| Subsurface Inlet Protection Maintenance | 143 |
| Non-Standard Subsurface Inspection | 34 |
| Non-Standard Subsurface Maintenance | 0 |
| Subsurface Structural Repair | 9 |
| **Porous** | **4** |
| Routine Porous Maintenance | 4 |
| Restorative Porous Maintenance | 0 |
| **Total** | **19,978*** |

*data from July 2020 to May 2021

### PowerCorpsPHL

Over the past decade, the City and PWD have implemented new strategies to promote the economic and social growth of the City and meet environmental, ecological and business missions. In support of these initiatives, and to augment PWD's GSI aesthetic maintenance responsibilities, PWD entered into partnership with PowerCorpsPHL. PowerCorps is a City of Philadelphia AmeriCorps initiative designed to engage youth, ages 18-26, which transforms lives through service and workforce development. Table 4-4 summarizes the type and amount of material collected by PowerCorps in FY21.

**Table 4-4: PowerCorpsPHL Trash and Debris Removal in FY21**

| Amount collected (in pounds) | Amount collected (in tons) |
|---:|---:|
| **92,885** | **46.5** |

# 5.0 Green Stormwater Infrastructure through Private Development

## 5.1 Philadelphia Stormwater Management Regulations

The Philadelphia stormwater management regulations (PSWMR) were revised in January of 2006 and July of 2015, providing the foundation of the private sector's role in stormwater management. In July 2018, the regulations were further updated to change how streets are regulated. The City of Philadelphia requires stormwater management for land development projects in the City of Philadelphia with 15,000 or more square feet of earth disturbance. Plans for proposed projects must be submitted for conceptual review to pursue a zoning permit, while the submission of detailed stormwater management plans must receive a technical review and approval prior to obtaining a building permit. For the projects that proceed to construction, the installations of SMPs are inspected during construction. Active construction inspections are completed for both PSWMR and incentivized retrofits in accordance with standard inspection procedures. During FY21, PWD conducted 2,184 inspections during active construction in the combined sewer area. **Figure 5.2** displays the completed green infrastructure installed through private development and incentivized retrofits. A full list of complete private development projects can be found in **Appendix 3**. A summary of constructed GAs through private development projects by watershed are listed below in **Table 5-1**.

**Table 5-1: FY21 Cumulative Completed Greened Acres by Watershed through Private Development**

| Watershed | Darby-Cobbs | Delaware | Pennypack | Tookany-Tacony/ Frankford | Schuylkill | Cumulative Completed |
|---|---|---|---|---|---|---|
| Number of Projects | 14 | 187 | 2 | 59 | 163 | **425** |
| PSWMR GAs | 16 | 295 | 3 | 96 | 274 | **684** |

### Expedited Review

PWD offers a service level goal of no more than a fifteen-day review for all projects submitting for post-construction stormwater management plan review. However, projects that use preferred green stormwater management approaches are eligible for an expedited, five-day review. PWD offers two types of expedited review: 1) disconnection green review and 2) surface green review. The disconnection green review ensures redevelopment projects that disconnect 95% or more of the post-construction impervious area (DCIA) using features such as green roofs, porous pavement and new tree canopy will receive a review response within five days. The surface green review expands the number of eligible projects by including both new development and redevelopment projects that manage 100% of the post-construction DCIA through bioinfiltration and bioretention basins as well as the practices that qualify for the disconnection green review. In FY21, a total of twenty-four projects qualified for an expedited review in the combined sewer, with twenty-three projects selecting the disconnection green review and one project selecting the surface green review.

### Construction Verification Initiative

PWD continued to refine a construction verification process with the goal of assessing individual projects prior to counting GAs toward compliance totals. This process emphasizes communication efforts from the start of the development project so property owners can adequately plan for record drawing creation. Throughout construction and at the time of construction completion, PWD conducts inspections of the site to observe and document installation of the approved SMPs. PWD also continued to perform outreach at the close of construction to solicit record drawings from project engineers and owners. These record drawings allow PWD to verify SMP installation and function.

In addition to this process, PWD continued to pursue a verification initiative to gather documentation of approvals that have not otherwise been verified and create record drawings to document the constructed conditions. To date, 188 projects totaling 239 GAs have been inspected and verified through this supplemental approach.

### I-95 Reconstruction Project

Pennsylvania Department of Transportation (PennDOT) is performing reconstruction and expansion work on Interstate 95 (I-95) in Philadelphia. Three components of the I-95 reconstruction project support stormwater management: 1) disconnection of stormwater from the combined sewer system; 2) ensuring that redevelopment occurs in a manner consistent with the PSWMR; and 3) installation of GSI in the public right-of-way.

The work on I-95 in Philadelphia is broken into two sectors: Sector A and Sector B. The multi-phased work between Bleigh Avenue and Race Street is known collectively as Sector A. Sector A of the I-95 Reconstruction Project is divided into five major design sections, moving from north to south: CPR, BSR, BRI, AFC, and GIR. Each of these sections is further subdivided into a total of twenty-five construction subsections. Sector B encompasses the area from Race Street to Girard Point Bridge (airport side). At present, Sector B has two design sections delineated, Section CAP from Chestnut to Walnut, and Section CSP from Vine Street to Girard Point Bridge (stadium side). Some of the design and construction work for Sector B may be concurrent with the work in Sector A.

A graphic illustrating the I-95 Reconstruction Project sections is featured below in **Figure 5-1**.

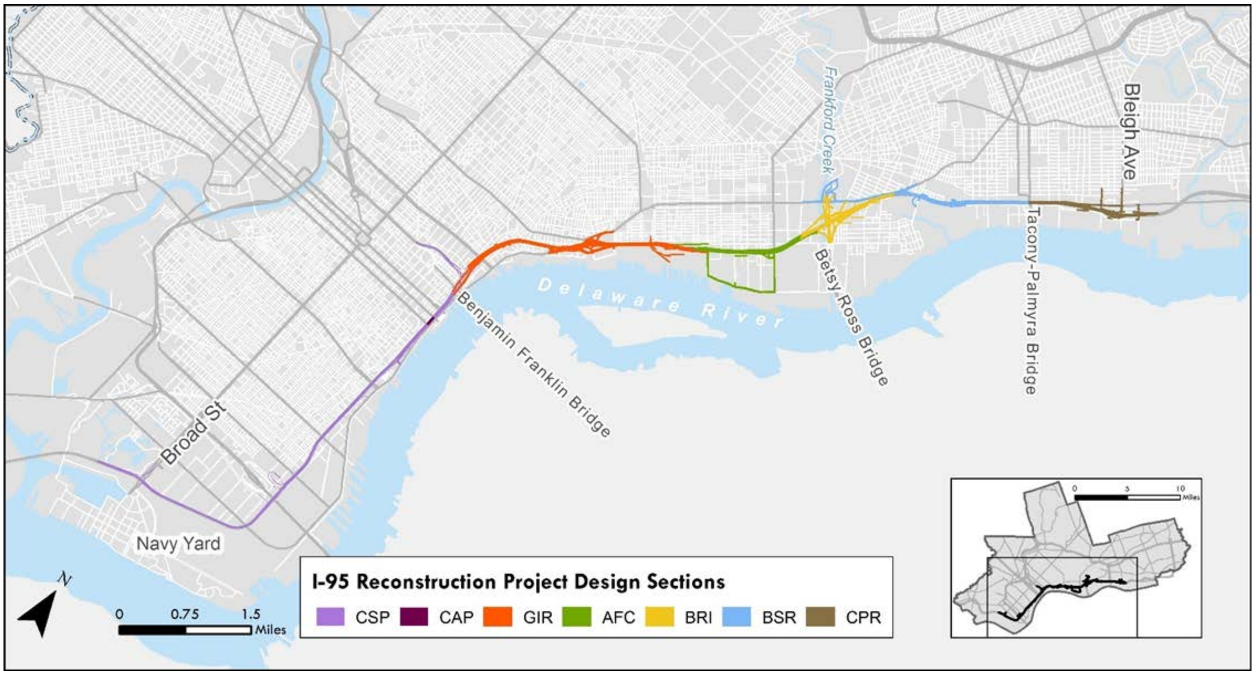



**Figure 5-1: I-95 Reconstruction Project Sections**

Project updates for the construction subsections with significant design or construction progress in FY21 are summarized in **Table 5-2.**

**Table 5.2: I-95 Construction Section FY21 Updates and Anticipated Bid Dates**

| Section | Project Description/ Update | FY21 Project Phase | Completion Date |
|---|---|---|---|
| **Sector A – Between Bleigh Avenue and Race Street** | | | |
| **Section CPR (Cottman-Princeton Ramp Area)** | | | |
| **CP2** | Six new separate stormwater outfalls have been completed in Cottman Avenue, Princeton Avenue, Magee Avenue, Disston Street, Unruh Avenue, and Bleigh Avenue. The stormwater pipes are designed to accept the drainage from the highway as well as the area in between the highway and the Delaware River as development occurs. | Complete | 2019 |
| **CP3** | Relocation of approximately 1500 feet of sanitary sewer. Anticipated bid date calendar year 2021 | In Design | (2023) |
| **Section BSR (Bridge Street Ramp Area)** | | | |
| **BS1** | Construction underway. Work includes the construction of one bioretention system, one media filter, two vortech separators, and one new outfall in Levick Street will be constructed to treat stormwater from the mainline highway. | In Construction | (2022) |
| **BS4** | New PWD storm sewers, inlets, and new outfalls were installed to covey the new Adams Street runoff. Three basins with amended soils and impervious liners were constructed to treat stormwater from the new interchange ramps. | Completed | 2020 |
| **BS2** | Work will include two bioinfiltration basins and five bioretention basins to manage stormwater from the mainline highway. Also proposing 9 tree trenches which will be owned | Planning | (2024) |

| Section | Project Description/ Update | FY21 Project Phase | Completion Date |
|---|---|---|---|
| | and maintained by PWD. A portion of the drainage area to the tree trenches is existing impervious ROW which will be banked for trade in future phases of the 95 expansion project. Anticipated bid date calendar year 2021. | | |
| **BS3** | Reconstruction of Aramingo Avenue from Church Street to Tacony Street; continuing north on Harbison Avenue to Amtrak overpass. Project is anticipated to be bid in 2026 | In Design | (2030) |
| **BS5** | Extension of Delaware Avenue from its current terminus at Orthodox Street to Tacony Street. Anticipated bid date end of calendar year 2022 | In Design | (2025) |
| **Section BRI (Betsy Ross Interchange Area)** | | | |
| **BR0** | PWD sanitary and storm sewer culverts were relocated. Stormwater runoff from the reconstructed portions of the highway and ramps was treated by under-drained bioretention and water quality units then directly discharged to the Frankford Creek, removing the drainage area from the CSO system. | Completed | 2017 |
| **BR2** | Under construction. Basins built in BR0 will be reused in BR2 and new basins will be installed. The new basins will be sized for future phases as well. All basins will have forebays, be non-infiltrating, and have amended soils and underdrains with a rock layer and liner. The PennDOT-owned outfall locations in BR2 will be reconstructed in the same locations as existing outfalls. Anticipated complete date calendar year 2022 | In Construction | (2022) |
| **BR3** | Reconstruction of northbound lanes of I-95 from Wheatsheaf Lane to just north of Margaret Street. Anticipated bid date calendar year 2023 | In Design | (2025) |
| **BR4** | Reconstruction of the southbound lanes of I-95 from Wheatsheaf Lane to just north of Margaret Street. Anticipated bid date calendar year 2026. | In Design | (2029) |
| **BR5** | Includes work related to the Conrail/NJ Transit railroad line. Bridge over northbound ramps to the Betsy Ross Bridge and Aramingo Avenue will be rehabilitated. Anticipated bid date calendar year 2023. | In Design | (2026) |
| **Section AFC (Ann to Frankford Creek Area)** | | | |
| **AF1** | Streetscape work within the Richmond Street right-of-way between Allegheny and Westmoreland is not subject to the stormwater regulations. Improvements to Melvale Street will be managed by two infiltration trenches that will be owned and maintained by PWD. | Completed | 2020 |
| **AF2** | Construction underway. Work includes rebuilding of side streets prior to mainline construction. Proposing a net decrease in impervious area and a GSI tree trench along Castor avenue. The managed area will be banked for future phases. Anticipated completion date calendar year 2023 | In Construction | (2023) |
| **AF3** | Reconstruction of northbound I-95 and its structures between Ann Street and the Frankford Creek. Anticipated bid date calendar year 2024 | Planning | (2027) |

| Section | Project Description/ Update | FY21 Project Phase | Completion Date |
|---|---|---|---|
| **AF4** | Reconstruction of southbound I-95 and its structures between the Frankford Creek and Ann Street. Anticipated bid date calendar year 2028 | In Design | (2031) |
| **Section GIR (Girard Avenue Interchange Area)** | | | |
| **GR1** | The reconstruction of Richmond Street was managed by street trees and a bioretention basin. A new separate sewer system was constructed and connected below the regulators in Dyott Street and Cumberland Street. | Completed | 2019 |
| **GR2** | The mainline highway areas are managed by multiple bioretention basins along the side of the highway. | Completed | 2017 |
| **GR3** | GR3 is the north bound mainline highway segment. One separate sewer outfall was constructed in Cumberland Street. In Dyott Street, a pipe was constructed that ties in below the regulating chamber. A sewer was found in the old Lehigh Avenue right of way and rehabilitated to separate a portion of the highway drainage.<br><br>Stormwater is managed in GR3 using bioretention basins, infiltration basins, and detention basins. The basins are designed to manage the water quality volume. | Completed | 2018 |
| **GR4** | GR4 is the southbound mainline highway segment and is currently under construction. Stormwater is managed in GR4 using bioretention basins, infiltration basins, and detention basins. The basins are designed to manage the water quality volume. Anticipated completion date calendar year 2022 | In Construction | (2022) |
| **GR5/ GR6** | Reconstruction of I-676/Vine Street ramp connections with northbound/southbound I-95. Anticipated bid date for GR6 is calendar year 2023. Anticipated bid date for GR5 calendar year 2025 | In Design | (2029) |
| **Sector B – Race Street to Girard Point Bridge (Airport Side)** | | **Planning Study Underway** | |
| **Section CSP (Central and South Philadelphia Area)** | | | |
| **CAP** | CAP project is a 600' wide structure spanning over I-95 and Christopher Columbus Blvd between Walnut and Chestnut Streets. An area of fill will gently slope from the structure to the Delaware River waterfront. A vegetated park, recreational areas, walkways and several building structures are proposed on the CAP structure and fill area. The majority of the CAP structure is proposed to function as a green roof and remaining DCIA proposed to be managed by a cistern with runoff re-used as gray-water for the restroom facilities and a subsurface detention basin. Earth disturbance in 95 and Columbus will be minimal under the CAP. Areas outside of LOD, managed by the CAP are eligible for management banking. All SWM components must be designed and built in accordance with the Green Stormwater Infrastructure design standards. Anticipated bid date calendar year 2022 | In Design | (2026) |
| **CAP - I-95 NB/SB between Race Street and Girard Point Bridge** | | | **TBD** |

## 5.2 Incentives for Private Property Owners to Implement Green Stormwater Infrastructure

PWD offers incentives to private property owners to implement stormwater management practices on existing properties that reduce stormwater pollution to the City's sewers and surrounding waterways and enhance water quality in the region's watersheds. PWD, in partnership with the Philadelphia Industrial Development Corporation (PIDC), created the Stormwater Management Incentives Program (SMIP) in FY12 and Greened Acre Retrofit Program (GARP) in FY15 to reduce the cost for qualified non-residential PWD customers and contractors to design and install stormwater best management practices (BMP). In FY21, demand for the grant programs exceeded the budget and a rubric was created to award projects based on maximizing stormwater benefits and other criteria. **Figure 5-2** displays the completed green infrastructure installed through incentivized retrofits. A summary of completed GAs from incentivized retrofit projects by watershed are listed below in **Table 5-3**. A full list of completed incentivized retrofit projects is in Table 2 of **Appendix 3**.

**Table 5-3: FY21 Cumulative Completed Greened Acres by Watershed through Incentivized Retrofits**

| Watershed | Darby-Cobbs | Delaware | Pennypack | Tookany-Tacony/ Frankford | Schuylkill | Cumulative Completed |
|---|---|---|---|---|---|---|
| Number of Projects | 0 | 32 | 5 | 31 | 35 | **103** |
| Incentivized GAs | 0 | 243 | 38 | 212 | 222 | **715** |

### Zoning Bonuses

The Philadelphia Zoning Code incentivizes stormwater management through height and density bonuses. PWD helps determine the criteria for earning a bonus but the code is written by the Philadelphia City Planning Commission and enacted by City Council, which limits PWD's control over the process.

### Green Roof Density Bonus

The Philadelphia Zoning Code offers incentives to projects citywide that install green roofs by providing exceptions to certain residential density rules. To be eligible for these exceptions, the project must be located in the designated zoning districts and propose to cover at least sixty-percent (60%) of the roof with green roof. In July 2018, the Zoning Code was amended to allow eligibility for existing buildings. New building construction must involve at least 5,000 square feet of disturbance and existing buildings must have a minimum footprint of 5,000 square feet. The green roofs are designed to PWD standards and inspected by PWD during construction. PWD also executes operation & maintenance agreements with the project owners, ensuring long-term maintenance and functionality of the green roof system. Projects submitted for this bonus sized between 5,000 square feet and 15,000 square feet of disturbance were not required to install stormwater management practices to comply with PSWMR. These bonus projects make up at least half of the bonus submissions. In FY21, a total of thirty-six projects took advantage of the green roof density bonus, twenty-nine of which were located in the combined sewer.

### Height Bonus

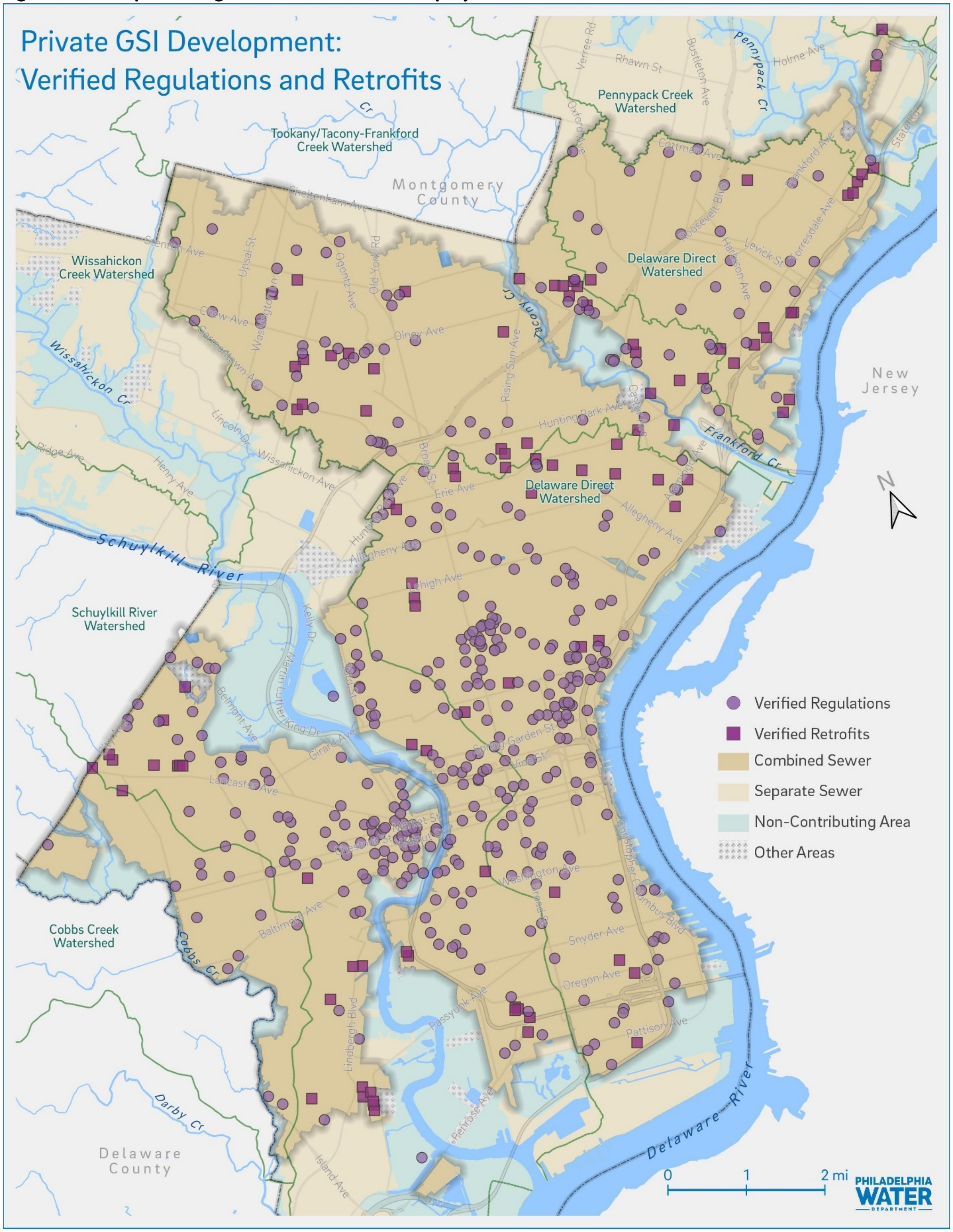
The Philadelphia Zoning Code offers incentives to projects in the East Callowhill and Central Delaware overlays that provide stormwater open space and/or manage stormwater runoff from the public rights of way (ROW) that front their property.  PWD also executes operation and maintenance agreements with the project owners who take advantage of these bonuses, ensuring long-term maintenance and functionality of the SMPs. To date no projects have been constructed using this incentive but multiple projects are currently seeking building permits.

### Stormwater Pioneers

In 2014, PWD started Stormwater Pioneers, a recognition program for excellence in design and construction of stormwater management practices on private property. Since that time, PWD has honored a total of six projects. Most recently, in 2020, PWD selected its newest Stormwater Pioneers: Chaes Foods and Birchwood at Cedars Village. Both awardees were honored for their exceptional work in maintaining stormwater management practices on their site. Chaes Foods is a commercial property located in the combined sewer section in North Philadelphia. To meet PWD's Stormwater Regulations, Chaes Foods installed a biofiltration basin which is easily maintained by on-site personnel. Birchwood at Cedars Village is a senior living facility in the combined sewer section in South Philadelphia. PWD honored this project for its ongoing maintenance of a variety of SMP types as well as their ability to address critical maintenance concerns. After a project is built, long-term maintenance is critical to the functionality of stormwater management systems. The Stormwater Pioneers acknowledges the property owners in this important responsibility.

The next Stormwater Pioneer awardee is planned for Fall/Winter 2021. The Stormwater Pioneers program brings elected officials, community members, private landowners and department officials together to recognize the importance of stormwater management on private property. Past awardees were celebrated with a press event and a short video was created to highlight the project. Most critically, PWD prepares a case study about each project to help other developers and business owners learn from these successful case studies. More information about the Stormwater Pioneers program including past awardees and the 2020 Stormwater Pioneers is available at https://www.phila.gov/water/wu/stormwater/Pages/Pioneers.aspx.

**Figure 5-2: Completed Regulations and Retrofit GSI projects**



## 5.3 Post Construction Maintenance of Private Facilities

To ensure ongoing SMP maintenance of private facilities constructed through the stormwater management regulations, SMIP or GARP, PWD continues to use the following combination of tools: executing operation & maintenance agreements, conducting post-construction maintenance inspections, utilizing enforcement, and administering stormwater credits.

In FY21, thirty-four projects were brought back into compliance in the combined sewer areas of the City using the protocols described below. PWD will continue to work with property owners to ensure SMPs are inspected and maintained in accordance with regulations and recorded O&M agreements.

**An operation & maintenance agreement** between the property owner and PWD is executed and recorded against the property as part of the PWD post-construction stormwater management plan process. These agreements outline the SMP(s) on the private site and stipulate maintenance requirements. The agreements also include language granting PWD the authority to inspect on-site SMPs and even perform maintenance on behalf of the property owner if necessary.

**PWD maintains comprehensive operations and maintenance information** geared toward the private development community in Chapter 4 of the Philadelphia Stormwater Management Guidance Manual. Each SMP section provides guidance on SMP maintenance activities, including a recommended SMP maintenance schedule and maintenance factsheets are available as a quick resource for the property owner. In addition, as part of the post-construction stormwater management plan review process, projects must create an SMP Maintenance Guide. The SMP Maintenance Guide is unique to each project and includes a site map and Maintenance Schedule Form for each SMP to allow the owner to track maintenance activities for the site. As an additional resource, PWD has compiled an O&M Manual for property owners. Please see links below for more information:

- Philadelphia Stormwater Management Guidance Manual, Chapter 4
- Maintenance Schedule and Fact Sheets
- SMP Maintenance Guide
- O&M Manual for Property Owners

**Post-construction maintenance inspections** of private facilities were conducted through the reporting period. PWD utilizes visual inspections and specialized inspection techniques to assess the performance of private SMPs. Early in the post-construction inspection stage, PWD conducts a maintenance site visit for recently constructed projects. This visit gives PWD staff the opportunity to communicate expectations for SMP maintenance to the appropriate property owner and walk the site to review the stormwater management strategy. In addition, PWD conducts post-construction maintenance inspections on all applicable private facilities. As projects are identified for maintenance inspection, the PWD post-construction inspection staff contacts the property owner to schedule the inspection. PWD attempts to conduct the inspection with the property owner or their maintenance representative present so they can verbally discuss any concerns or questions. After inspection, a post-construction inspection report is generated and issued to the property owner. Any required corrective actions are identified in the report along with a deadline for resolution. After actions are taken, PWD re-inspects the property and compliant sites are closed until their next routine inspection date. Inspectors will provide guidance to the property owner to ensure corrective actions are resolved. In addition to visual inspections, PWD has identified other effective methods and technologies, including closed-circuit television, surveys of critical system elevation points, confined space, pole-mounted camera photography, and visual and wet weather inspections. PWD will continue to evaluate and refine post-construction inspection protocols. In FY21, PWD performed 103 post-construction inspections in the combined sewer areas of the City.

If compliance is not achieved within the timeframe specified during the inspection process, the project is referred to enforcement. PWD implemented expanded tracking within the existing PWD Stormwater Plan Review Database, which allows for the tracking of enforcement case and corrective action statuses and submissions of corrective action plans and other documentation of work completed to satisfy corrective actions. PWD initiates an enforcement case with the issuance of a post-construction enforcement letter to the property owner if a post-construction stormwater management plan (PCSMP) is found to be insufficiently maintained. This notification includes a description of any issues identified and a timeline to achieve compliance. Development sites that are subject to PSWMR, as well as properties that have SMPs funded by SMIP and GARP, are required to maintain the SMP(s) to function as designed. If initial notification is unsuccessful at bringing action from the property owner, PWD can compel compliance through several enforcement tools, including notices of violation, fines, court action, and/or a nuisance abatement and lien by the City. For non-compliant projects, PWD will also suspend any applicable stormwater billing credits if the required maintenance is not performed. In FY21, PWD successfully resolved 34 enforcement cases consisting of 106 SMPs in the combined sewer area of the city. Escalated enforcement tools were utilized resulting in one NOV.

### Stormwater Credits

Non-residential property owners are eligible for stormwater credits, a direct reduction to the monthly stormwater charge, if they own and maintain stormwater management practices that reduce stormwater flows and volume to the City's sewer systems and surrounding waterways. Retrofit and development projects are eligible for credits against their stormwater charge upon completion of construction, and owners must renew their credits every four years. With the credits renewal application, owners may provide maintenance logs and/or PWD may perform an inspection to demonstrate that the SMPs continue to be functional. PWD approved or renewed 186 combined sewer area (379 citywide) stormwater billing credit applications during the reporting period. Failure to adhere to the credit requirement will result in the suspension or termination of the billing reduction.

# 6.0 Data Collection and Analysis

## 6.1 Green Stormwater Infrastructure Post-Construction Monitoring

Proposed methodologies for the *Green City, Clean Waters* monitoring program were outlined in a revised CMP that was submitted on January 10, 2014 and approved on May 28, 2014 by PADEP. PWD has updated methods through new standard operating procedures (SOPs) that better reflect current techniques.

Monitoring and testing green stormwater infrastructure are essential to evaluate its effectiveness in managing stormwater and reducing CSOs. PWD uses post-construction monitoring and post-construction testing at the SMP and system levels to ensure functionality, evaluate the performance of stormwater management practices and to provide information for improvements to design and maintenance. FY21 monitoring activities are described in detail in **Appendix 4 GSI Monitoring Status Report.** FY21 updates on non-green infrastructure components of the CMP can be referenced in Section **F.2 Step 1.b. of the Stormwater Management Program Annual Report.**

PWD has completed its 5-year green stormwater infrastructure pilot program and results were reported in the Year 5 Evaluation and Adaptation Plan. Information on the selected sites, associated variables and results are available here:
http://water.phila.gov/pool/files/Year5_EAPCombinedAppendices_website.pdf.

# 7.0 Public Outreach and Participation

PWD continues to enhance tools for engaging a broad range of stakeholders. In FY21, PWD engaged approximately 10,994 individuals through a variety of public education, outreach and participation initiatives. This figure represents a significant decrease in programming due to the COVID-19 pandemic. In order to maintain social distancing guidelines, PWD cancelled all in-person education and engagement programming starting in March 2020 through the remainder of the fiscal year. The following includes updates on current programs and projects.

## 7.1 Green Stormwater Infrastructure Notification & Outreach Process for Green Programs

Public notification, education and outreach for GSI in Philadelphia's neighborhoods continued to facilitate the number of GSI projects planned, designed and constructed in FY21. However, Covid impacted the number of opportunities to conduct in-person outreach. Use of the Philly Water Bar to promote water quality city-wide in the spring and summer was also limited due to Covid. Previously, it would help draw a crowd for engagement purposes. During FY21, approximately 1,073 community members participated in 23 community meetings or events where PWD promoted green stormwater infrastructure projects and/or promoted the status of water quality in the City through the Drink More Tap and Philly Water Bar experiences.

Also, 716 customers attended Rain Check workshops and 405 green stormwater infrastructure tools were installed on private properties through the residential program.

Finally, 12 organizations participated in Soak It Up Adoption (SIUA), where 29 community representatives helped maintain the public green stormwater infrastructure at 97 city-wide sites while removing 58,727+ pounds (lbs) of residential waste (the program's 3rd highest total) and engaging 34,712 local residents (the program's top total, ever).

Regarding environmental education, approximately 9,176 individuals participated in the following education and outreach events that featured *Green City, Clean Waters* and/or urban waters themed content:

- Environmental education programming offered by Fairmount Water Works educators
- Environmental education programming offered by Philadelphia Parks and Recreation (PPR) educators
- Environmental education and outreach programming offered in Philadelphia by the Tookany/Tacony-Frankford Watershed Partnership and Partnership for Delaware Estuary

It should be noted that the number of participants associated with Rain Check and Soak It Up Adoption are detailed in **Section 7.3** of this report.

## 7.2 Public Education and Outreach Programs

### Philadelphia Water Department Master List

The Philadelphia Water Department master list is the previously referenced *Green City, Clean Waters* Partners master list, which is a distribution list of email addresses that gets updated from contact information collected at public events and meetings hosted by PWD. By the conclusion of FY21, there were approximately 22, 722 total subscribers on the master list, *including* e-billing subscribers. The master list gained approximately 884 subscribers since last year. The total number of subscribers recorded at the end of FY20 (21, 838) *excluded* subscribers. During FY21, PWD e-billing subscribers were able to opt into receiving digital billstuffers.

Out of the individual email bulletins sent in FY21, 269,326 *"unique"* emails were opened. A "unique open" is calculated by only counting the *first* time a single subscriber opens a delivered email. Subsequent opens of the same email by the same subscriber are *not* calculated. Any contacts found to be redundant or nonresponsive are removed from the master list through use of the GovDelivery software or self-service "unsubscribe" features and are not represented in this number.

### Green City, Clean Waters Signage

In FY21, PWD continued to develop the interpretive *Green City, Clean Waters* permanent signage, which included new designs, more fabrication and additional installation of the signage. This process also included site visits, coordination with property owners/partners, and promotion of the signage. To date, PWD has installed a total of 183 *Green City, Clean Waters* interpretive signs at 118 sites. For images of the installed signage, please visit:
https://www.flickr.com/photos/philadelphiawater/sets/72157654299547526.

### Art & Design

Art and design are used to further communication and education with stakeholders and customers. Projects such as yarn bombing (temporary knitted yarn art) of stormwater tree trenches, rain barrel wrap original designs created by local students in addition to temporary and permanent vibrant murals are examples of opportunities to engage residents through visual learning. In FY21, community meetings, paint days and the majority of the installation of the Calo Rosa "Drink More Tap" mural at Penrose Recreation Center was completed as a result of PWD's partnership with Mural Arts of Philadelphia. The piece is part of a two-mural series to raise awareness of water quality (tap water) in Philadelphia, particularly in underserved communities. Community meetings for the second location (Cruz Recreation Center) were also held. Penrose Recreation Center is located at 1101 West Susquehanna Avenue, just one mile away from Cruz Recreation Center at 1431 N 6th Street.

Plans to expand Drink More Tap outreach and programming in FY21 pivoted from in-person to virtual, including public meetings for the Cruz Rec Center community, recordings and updates sent via digital communications, and the roll-out of Drink More Tap musical performances to accompany the visual art. The effort also yielded a selection of diverse artists that represent the communities with high bottled water consumption in the city. The artists, Sonni Shine, Dende Macedo, and Los Bomberos de la Calle, created original songs highlighting the benefits of tap water and promoted the message on social media, both independently and through PWD channels. The Drink More Tap murals and songs served as the focal point for PWD's Drinking Water Week celebration, held annually during the first week of May.


**Figure 7-1: Drink More Tap Mural by Calo Rosa**

### Soak It Up Adoption

The FY21 Soak It Up Adoption (SIUA) program comprised 12 total organizations with 29 individuals acting as Adoption representatives collectively. Due to the pandemic, most of the engagement Adoption partners undertook was digital and done through social media. Traditionally, Adoption partners usually engage residents and their community to highlight their adopted infrastructure. These pre-pandemic events would usually include things like: guided tours, tabling sessions at local public events, presentations at civic association meetings, as well as engagement with their social media networks. Relevant programmatic information, or partner posts, are available at the following links:

- SIUA Home Page - http://water.phila.gov/adoption/
- SIUA 'My Favorite Thing' - https://vimeo.com/307276902
- PWD SIUA Blog Highlight - http://water.phila.gov/blog/gccw10-neighbors

**Table 7-1** Provides metrics used by PWD to track the Soak It Up Adoption program throughout FY21. These figures reflect the variety of adopted stormwater management practices (SMPs), the amount of trash collected, and the number of people engaged.

**Table 7-1: Soak It Up Adoption Metrics for FY21**

| Soak It Up Adoption Partner List | Number of SMPs Adopted | *Amount of Residential Waste Collected (LBS) | Number of Residents Engaged |
|---|---|---|---|
| Asociacion Puertorriquenos en Marcha | 14 | 5,873 | 3,396 |
| Centennial Parkside Community Development Corporation (CDC) | 7 | 7,272 | 103 |
| Cloud 9 Rooftop Solutions | 3 | 1,423 | 100 |
| East Falls Development Corporation | 6 | 95 | <50** |
| Frankford CDC | 2 | 15,594 | 344 |
| Friends Rehabilitation Center | 6 | 2,605 | 50 |
| Make the World Better | 2 | 4,559 | 428 |
| Newbold CDC | 9 | 3,694 | 92 |
| Northern Liberties Neighbors Association | 11 | 974 | <50** |
| Roxborough Manayunk Conservancy | 2 | 2,741 | 92 |
| Southwest CDC | 21 | 9,722 | 30,000 |
| Tookany-Tacony Frankford Watershed Partnership - Friends of Vernon Park & Cayuga Triangle Sites | 5 | 4,170 | 99 |
| **TOTALS:** | **97 SMPs** | **~58,720+ lbs.** | **~34,700+ engagements** |

*All SIUA partners collected trash in 30-gallon paper bags then the total weights were converted from the base unit (gallons) into pounds (lbs).

## Urban Watershed Curriculum

*Understanding the Urban Watershed* is a cross-disciplinary curriculum, aligned with School District of Philadelphia core content and Education for Sustainability standards for 6th, 7th and 8th grades. Development and implementation have been a collaborative effort with School District of Philadelphia's (District) Offices of Curriculum, Instruction and Assessment, and Environmental Management and Services. Developed with major support from the William Penn Foundation and the Philadelphia Water Department.

The curriculum is an exemplar for goals and targets as outlined in the District's Sustainability Plan, GreenFutures and easily embedded into core curriculum because the Units are aligned with Academic (Science, ELA Math and SS) and Education for Sustainability Standards. All standards and performance indicators are assessed for using performance criteria.

The Curriculum is 6 Units, with multiple Learning Experiences in each Unit that are completely accessible online through a dedicated website. The website provides links to instructional materials, resources, and videos and differentiated learning opportunities. Teachers are encouraged to provide engaging student field experiences to complement classroom hands-on exploration and instruction.

The program provides online access to 6 Units. The units include links to videos and student materials, as well as engaging field trips and experiences for students that support differentiated learning.

*Highlights of the curriculum*:

- Provides Vertical articulation grades 6, 7, 8
- Provides opportunities for differentiated learning
- Learner centered/hands on; Place based; Project-Inquiry based
- Authentic, relevant to school community, neighborhood, creek, sub-watershed, public water system and infrastructure
- Experiences both inside the classroom and outside (from schoolyard, block, park)
- Interdisciplinary
- District teachers become teacher leaders and will train and mentor new teachers implementing the curriculum.
- Developed in partnership with District's GreenFutures Plan
- Aligned with the City's Greenworks Plan, District's GreenFutures Plan and the Philadelphia Water Department's *Green City, Clean Waters* Program
- Online and accessible to all through website resourcewater.org
- When students return to the classroom, FWW will continue coaching and content growth through classroom visit check-ins, monthly seminars, workshops, and ongoing field experiences Active participation in developing an expanding learning community supporting education for sustainability in schools and communities
- Opportunity for teachers to participate and present at local, regional and national conferences (e.g. STEM GSK Workshop, National Green Schools Conference and NAAEE Conference)

The Curriculum offers students, teachers, schools and the community active learning experiences about the value of water, water systems, civic action and responsibility with meaning and context.

It connects students to the real world and the role they play in their own future and the future of the planet.

In 2020, Fairmount Water Works received the Meaningful Watershed Education Experience (MWEE) Partner of Excellence Award for their outstanding partnership with Pennsylvania schools to support MWEEs for Pre-K - 12 students. This was the inaugural year of the award and we were 1 of 3 organizations statewide to receive it.  It was awarded by NOAA-funded Pennsylvania Watershed Education Task Force led by Stroud Water Research Center, PA Department of Education, and the PA Department of Environmental Protection

In 2020-21 the Curriculum has been expanded to include a 9th grade "introduction to Environmental Science" Unit and a 4th grade Unit and 5th grade Unit on water systems, watersheds, and sustainability. These were developed by teachers and will be piloted in the upcoming school year.

## 7.3 Green Homes Initiatives

### Rain Check Program

Participation in the Rain Check program is highlighted in table 7-2.   More information on the program is available at: http://www.pwdraincheck.org**.**

**Table 7-2: Rain Check Program Metrics**

| Rain Check Metrics | FY21 |
|---|---|
| Workshops Hosted | 9 |
| Workshop Attendees* | 7161 |
| Contractor Training Participants | n/a |
| Rain Barrel Installations** | 271 |
| Metal Downspout Planter Installations** | 93 |
| Rain Garden Installations** | 13 |
| Permeable Paving Installations** | 28 |
| Depaving Projects | n/a |

**Workshop Attendees: This represents the total number of people who attended a Rain Check workshop. These hour-long educational workshops are mandatory for participation in Rain Check. Some FY21 attendees had their tools installed in FY21, but others will have their tools installed in FY22*

***Installations Completed: For some participants who signed up this year, the installation of their tools is still in progress.*

***Due to the pandemic, the Rain Check program was shutdown for over three months which is reflected in some of the above metrics*

# Appendix 1

## Completed Public Green Stormwater Infrastructure Projects

## Public Green Infrastructure Reporting Metrics

**Table 1: Public Completed Project Tracking Metrics and Reporting Format**

| Public Completed Project Tracking Metrics | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Work Number** | **Project ID** | **Construction Completion Date** | **Storage Volume (cf)** | **New Trees** | **Drainage Area (acres)** | **Greened Acres (acre-inch)** | **SMP Type(s)** | **Program** | **Green Construction Cost**** | **Partner(s)** | **Watershed** |

Over the past year, PWD's new capital projects tracking system's (CIPIT) interaction with its GSI tracking system (GreenIT) has slightly changed. To accommodate this change, we have replaced Project Names with a Work Number and a Project ID. The Project ID is unique to individual projects and these projects can be bundled under one Work Number for bidding purposes. Moving forward, Work Numbers will have a 1:1 relationship with projects.

**Table 2: Public Reporting Metric Definitions**

| Metric | Definition |
|---|---|
| **Work Number** | Work Number is a unique assigned identifier from the CIPIT program. A CIPIT work number is attached to construction proposals, bids, work orders, contracts and invoices. |
| **Project ID** | This is a unique number, which is assigned automatically by the system when the project is created. |
| **Status** | Current project status. Statuses include: In Design, In Projects Control (Under Contract Management), In Construction, and Construction Complete. |
| **Storage Volume** | The volume of runoff managed by the system. For all systems, the entire depth of the system is counted, except for detention/slow-release systems that are completely lined with an impermeable liner. For those systems, only the depth above the orifice is counted. |
| **New Trees** | Total number of new trees planted in association with a system. This number also includes non-SMP trees, which are trees planted as part of a project but are not part of a stormwater management system. |
| **Drainage Area** | Area, in square footage, of impervious and/or pervious surface(s) flowing into a system(s) and SMP(s). |
| **Greened Acres (GAs)** | Greened Acres is a metric that accounts for the conversion of a highly impervious urban landscape through the implementation of projects that reduce storm water runoff. A Greened Acre is described as an acre of impervious cover connected (tributary) to a combined sewer that subsequently is reconfigured to utilize green stormwater infrastructure to manage at least one inch of stormwater runoff. If storage is provided, systems can credit up to two inches of the storm water runoff from that acre. The best available Greened Acre value is pulled from the database for regulatory reporting. |
| **Stormwater Management Practice (SMP) Type** | A Stormwater Management Practice is a technique that controls the rate and volume of stormwater runoff and/or improves runoff water quality. Multiple SMP types can be grouped together in a larger GSI system. The SMP types were originally defined in Table 2-1 of the IAMP. |
| **Program** | Current public programs which a greened acre can be assigned to include:<br>• Alleys/Driveways<br>• Campuses |

| Metric | Definition |
|---|---|
| | • Facilities<br>• Industry and Business<br>• Open Space<br>• Parking<br>• Schools<br>• Streets<br>• Vacant Land |
| **Construction Cost** | Projects with a status of Construction Complete will have a finalized cost of construction provided. |
| **Partner(s)** | External entities involved in a project. |
| **Watershed** | The City of Philadelphia watershed where the project is located. Four of the City's seven watersheds fall at least partially within the combined sewer area. These watersheds are:<br>• Cobbs Creek Watershed<br>• Delaware Direct Watershed<br>• Tookany/Tacony-Frankford Creek Watershed<br>• Schuylkill River Watersheds |

**Table 3: Public SMP Definitions**

| Public SMP Type Definitions | |
|---|---|
| **Field/Metric** | **Definition/Purpose** |
| **Basin*** | A stormwater basin is a basin or depression that is vegetated with mowed grass. It is designed to detain and release stormwater runoff and/or infiltrate where feasible. |
| **Blue Roof** | A blue roof is a storage system designed into a roof surface such that the roof retains stormwater. Blue roofs are designed to reduce the rate of stormwater runoff. |
| **Bump-out*** | A stormwater bump-out is a vegetated curb extension that intercepts gutter flow. It is designed to detain and release stormwater runoff and/or infiltrate where feasible. |
| **Cistern/Rain Barrel** | A cistern/rain barrel is a tank or storage receptacle that captures and stores runoff and can thereby reduce runoff volume. The stored water may be used to serve a variety of non-potable water needs (e.g., irrigation). |
| **Depaving** | Depaving projects remove existing impervious pavement and restore the surface with grass, other types of vegetation, or loose materials (stone, mulch, etc.) such that the area can thereafter be considered pervious area. Depaving projects remove contributing impervious area from the sewer system. |
| **Drainage Well** | A stormwater drainage well is manhole structure designed to manage stormwater runoff by receiving stormwater from upstream collection and pretreatment systems and then discharging the stormwater into the surrounding soils through perforations in the manhole. It is designed to infiltrate stormwater. |
| **Green Gutter** | A green gutter is a narrow and shallow landscaped strip along a street’s curb line. It is designed to manage stormwater runoff by placing the top of the planting media in the green gutter lower than the street’s gutter elevation allowing stormwater runoff from both the street and sidewalk to flow directly into the green gutter. It is designed to slowly infiltrate stormwater. |
| **Green Roof** | A green roof is a vegetated surface installed over a roof surface. |

| Public SMP Type Definitions | |
|---|---|
| **Infiltration/Storage Trench** | An infiltration/storage trench is a subsurface structure designed to detain and release stormwater runoff and/or infiltrate where feasible. |
| **Non-SMP Tree** | A non-SMP tree is a planted tree that does not have stormwater directed to it. |
| **Pervious Paving** | Pervious paving is a hard permeable surface commonly composed of concrete, asphalt or pavers. It is designed to detain and release stormwater runoff and/or infiltrate where feasible. |
| **Planter*** | A stormwater planter is a structure filled with soil media and planted with vegetation or trees. It is designed to detain and release stormwater runoff and/or infiltrate where feasible. Planters often contain curb edging or fencing as barrier protection around the planter. |
| **Rain Garden** | A rain garden is a shallow vegetated area designed to detain and release stormwater runoff and/or infiltrate where feasible. Rain gardens may also be referred to as bio-infiltration basins and bio-retention basins. They are typically integrated into landscape features (e.g. median strips) and are non-mowed areas. |
| **Stormwater Tree** | A stormwater tree is planted in a specialized tree pit that has stormwater runoff directed to its pit. It is designed to manage stormwater by placing the top of the planting media in a tree pit lower than the street's gutter elevation and connecting the tree pit to an inlet which directs runoff from the street into the tree pit. It is designed to detain and release stormwater runoff and/or infiltrate where feasible. |
| **Swale** | A swale is a channel designed to convey stormwater. It can be designed to attenuate and/or infiltrate where feasible. |
| **Tree Trench*** | A stormwater tree trench is a subsurface infiltration/storage trench that is planted with trees. They are typically linear features that are constructed between the curb and the sidewalk. It is designed to detain and release stormwater runoff and/or infiltrate where feasible. |
| **Wetland*** | A stormwater wetland is a vegetated basin designed principally for pollutant removal. It typically holds runoff for periods longer than 72 hours and may include a permanent pool. Wetlands can also detain and release stormwater runoff. |

*The word 'stormwater' was previously included in these types but was removed because it was redundant.

| Work Number | Project ID | Project Name | Construction Completion Date | Sewer Type | Storage Volume (cf) | New Trees | Drainage Area (acres) | Greened Acres (acre-inches) | SMP Type | Program | Green Construction Cost ** | Partner(s) | Watershed | Funding Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20391 | 1056 | Ashville/Ditman/Rhawn etal | 04-May-20 | Combined | 9674 | 22 | 1.6 | 2.7 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | $597,000 | | Delaware, Pennypack | PWD Capital |
| 20400 | 306 | Ontario, "A" - Glenwood / Glenwood | 24-Mar-17 | Combined | 5444.7 | 18 | 0.9 | 1.5 | Stormwater TreeTrench, | Streets | $461,000 | | Delaware | PWD Capital |
| 20422 | 517 | Woodland / 56th | 06-May-16 | Combined | 4077.62 | 10 | 0.5 | 1 | Stormwater TreeTrench, | Streets | $165,000 | | Schuylkill | PWD Capital |
| 20439 | 584 | Ellsworth / 20th etal | 07-Nov-18 | Combined | 6108.06 | 20 | 0.9 | 1.7 | Stormwater TreeTrench, | Streets | $600,000 | | Delaware, Schuylkill | PWD Capital |
| 20443 | 411 | Juniata : Cayuga/Claridge/Lawndale etal Ferko Playground | 08-Dec-17 | Combined | 53074 | 4 | 7.3 | 14.6 | Infiltration Storage Trench, Rain Garden, Swale, | Open Space | $3,343,000 | Philadelphia Department of Parks & Recreation | TTF | PWD Capital |
| 20444 | 563 | Corinthian / Fairmount | 26-Mar-19 | Combined | 11538 | 8 | 2 | 3.2 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | $788,000 | | Delaware, Schuylkill | PWD Capital |
| 20456 | 994 | Tulpehocken / Mansfield / Lowber / Duval / Johnson | 14-Dec-17 | Combined | 6350 | 0 | 1.3 | 1.7 | Infiltration Storage Trench, | Streets | $568,000 | | TTF | PWD Capital |
| 20458 | 1006 | Bridge/Creston/Darrah/Penn | 23-Apr-18 | Combined | 16323 | 14 | 2.6 | 4.4 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | $1,259,000 | | Delaware | PWD Capital |
| 20461 | 1066 | Frankford / Pacific / Wheatsheaf | 22-Aug-16 | Combined | 7756.777 | 0 | 1.5 | 2.1 | Infiltration Storage Trench, | Streets | $570,000 | | Delaware,TTF | PWD Capital |
| 20489 | 1136 | Angora / Cedar / Yewdall / 57th | 26-Feb-19 | Combined | 4247.83 | 0 | 0.9 | 1.2 | Infiltration Storage Trench, | Streets | $423,000 | | Cobbs-Darby | PWD Capital |
| 20490 | 1206 | Wishart/Clementine/Elkhart/Helen/Jasper | 18-Jan-19 | Combined | 3215.68 | 0 | 0.6 | 0.9 | Infiltration Storage Trench, | Streets | $341,000 | | Delaware | PWD Capital |
| 20497 | 1215 | 44th / Larchwood / Osage / Pine | 22-Nov-19 | Combined | 1437 | 8 | 0.2 | 0.4 | Stormwater TreeTrench, | Streets | $128,000 | | Schuylkill | PWD Capital |
| 40224 | 240 | PERCY STREET / WEBSTER STREET | 18-Jul-11 | Combined | 657 | 0 | 0.1 | 0.2 | Pervious Pavement, | Streets | Cost Not Available | | Delaware | PWD Capital |
| 40330 | 289 * | Coral, Sergeant-Huntingdon / Sepviva, Susquehanna - Dauphin | 27-Jan-10 | Combined | 1601.2 | 34 | 0.6 | 0.4 | Infiltration Storage Trench, Stormwater Tree, | Streets | Cost Not Available | | Delaware | Pennvest |
| 40368 | 234 | Franklin, Berks - Norris / Norris - Diamond /16th Street / Dauphin Street | 24-Oct-13 | Combined | 7215 | 30 | 1.4 | 2 | Stormwater TreeTrench, | Streets | Cost Not Available | | Delaware | PWD Capital |
| 40577 | 441 * | Wagner St.,12th - Broad; Rockland St., 11th - Broad | 08-Apr-11 | Combined | 6519.6 | 52 | 4.4 | 1.8 | Infiltration Storage Trench, Stormwater Tree, | Streets | Cost Not Available | | TTF | Pennvest |
| 40599 | 233 | Belgrade / Crease / Marlborough | 20-Dec-12 | Combined | 1263 | 0 | 0.3 | 0.3 | Infiltration Storage Trench, | Streets | Cost Not Available | | Delaware | PWD Capital |
| 40607 | 235 | Northern Liberties Flood Relief | 15-Jul-16 | Combined, Separate | 1585 | 18 | 0.9 | 0.4 | Stormwater Planter, Stormwater TreeTrench, | Streets | $475,000 | | Delaware | PWD Capital |
| 40659 | 207 | Waterview Rec Center Stormwater Management Improvements | 01-Jul-08 | Combined | 1835.84 | 16 | 0.3 | 0.5 | Pervious Pavement, Stormwater Planter, Stormwater TreeTrench, | Streets | Cost Not Available | Pennsylvania Horticulture Society,Philadelphia Department of Recreation | TTF | PWD Operating |
| 40662 | 218 | Green Streets Pilot Project - Passyunk Avenue Locations | 05-Mar-13 | Combined, Separate | 10468 | 0 | 1.4 | 1.3 | Stormwater Bump-out, | Streets | Cost Not Available | Philadelphia Streets Department | Schuylkill | Streets Department |
| 40669 | 331 | Hope St. / 2nd St. / Hancock St. | 08-Feb-16 | Combined | 1274 | 0 | 0.2 | 0.4 | Pervious Pavement, | Streets | $240,000 | | Delaware | PWD Capital |
| 40713 | 288 | Mole. Webster, Rodman | 15-Aug-18 | Combined | 1078.64 | 0 | 0.2 | 0.3 | Pervious Pavement, | Streets | $153,000 | | Delaware | PWD Capital |
| 40750 | 304 | Adams / Church / Penn | 09-Mar-20 | Combined | 1894 | 2 | 0.4 | 0.5 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | $325,000 | | TTF | PWD Capital |

| Work Number | Project ID | Project Name | Construction Completion Date | Sewer Type | Storage Volume (cf) | New Trees | Drainage Area (acres) | Greened Acres (acre-inches) | SMP Type | Program | Green Construction Cost ** | Partner(s) | Watershed | Funding Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40755 | 305 | Ellsworth / Federal / Wharton | 25-Sep-19 | Combined | 2845 | 4 | 0.5 | 0.8 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | $238,000 | Philadelphia Department of Parks & Recreation | Delaware | PWD Capital |
| 40771 | 301 | Dauphin / Sepviva etal | 26-Aug-15 | Combined | 4630 | 4 | 0.7 | 1.3 | Pervious Pavement, Stormwater TreeTrench, | Streets | $133,000 | | Delaware | PWD Capital |
| 40773 | 469 | Galloway/Roseberry etal | 13-Jun-18 | Combined | 1311.6 | 10 | 0.2 | 0.4 | Stormwater TreeTrench, | Streets | $113,000 | | Delaware | PWD Capital |
| 40784 | 406 | Conestoga / Thompson | 25-Nov-19 | Combined | 1969.63 | 0 | 0.4 | 0.5 | Infiltration Storage Trench, | Streets | $169,000 | | Schuylkill | PWD Capital |
| 40796 | 1086 | Sepviva Street | 27-Dec-12 | Combined | 1005.6 | 54 | 0 | 0.3 | Stormwater Tree, | Streets | $150,000 | | Delaware | PWD Capital |
| 40798 | 518 | Ludlow / Hirst / Robinson | 16-Jul-20 | Combined | 3351 | 0 | 0.8 | 0.9 | Infiltration Storage Trench, | Streets | $651,000 | | Cobbs-Darby | PWD Capital |
| 40799 | 556 | Cleveland/Gratz/Greene/Roberts | 01-Nov-18 | Combined | 4316.99 | 0 | 0.8 | 1.2 | Infiltration Storage Trench, | Streets | $309,000 | | TTF | PWD Capital |
| 40816 | 554 | Weikel / Witte / Gaul | 07-Jan-19 | Combined | 10995 | 10 | 1.6 | 2.7 | Infiltration Storage Trench, Stormwater Tree, Stormwater TreeTrench, | Streets | $670,000 | | Delaware | PWD Capital |
| 40817 | 1293 | C/F/Mayfield/Rosehill/Hartville | 29-Jan-18 | Combined | 4096 | 0 | 1 | 1.1 | Infiltration Storage Trench, | Streets | $286,000 | | Delaware | PWD Capital |
| 40821 | 504 | 9th / Mifflin / Pierce | 19-Dec-18 | Combined | 1194 | 4 | 0.2 | 0.3 | Stormwater TreeTrench, | Streets | $821,000 | | Delaware | PWD Capital |
| 40828 | 657 | Brandywine / Green / Melon / North | 07-Jun-17 | Combined | 1217 | 4 | 0.3 | 0.3 | Stormwater TreeTrench, | Streets | $118,000 | | Delaware | PWD Capital |
| 40829 | 990 | Galloway / Orianna / Leithgow | 27-Sep-19 | Combined | 1890 | 0 | 0.4 | 0.5 | Infiltration Storage Trench, | Streets | $249,000 | | Delaware | PWD Capital |
| 40844 | 989 | Master / Wanamaker / Hobart | 15-Oct-20 | Combined | 4588.21 | 0 | 1.1 | 1.3 | Infiltration Storage Trench, | Streets | $207,000 | | Schuylkill | PWD Capital |
| 40862 | 1064 | 8th / 12th / Lemon / North | 27-May-20 | Combined | 3651.01 | 6 | 0.6 | 1 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | $286,000 | | Delaware | PWD Capital |
| 40863 | 1010 | Bouvier / Monument / Willington / 17th | 03-Jun-19 | Combined | 6795.24 | 6 | 1 | 1.8 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | $489,000 | | Delaware | PWD Capital |
| 40865 | 1057 | Crowson / Stokes / Woodlawn | 30-Aug-18 | Combined | 5435.98 | 0 | 1.3 | 1.5 | Infiltration Storage Trench, | Streets | $553,000 | | TTF | PWD Capital |
| 40891 | 1062 | Wynnefield, Monument - 170' W. of 50th | 25-May-17 | Combined | 16510.55 | 26 | 2.9 | 4.5 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | $684,000 | | Schuylkill | PWD Capital |
| 40900 | 1058 | Medary Avenue from 13th Street to Broad Street | 31-May-16 | Combined | 2472.52 | 0 | 0.5 | 0.7 | Infiltration Storage Trench, | Streets | $179,000 | | TTF | PWD Capital |
| 40903 | 656 | Market / 43rd / Ludlow / 45th | 07-Sep-16 | Combined | 541.44 | 6 | 0.1 | 0.1 | Stormwater TreeTrench, | Streets | $79,000 | | Schuylkill | PWD Capital |
| 40906 | 1246 | Church / Orchard / Ruan / Salem | 12-Mar-20 | Combined | 866.66 | 0 | 0.1 | 0.2 | Infiltration Storage Trench, | Streets | $124,000 | | TTF | PWD Capital |
| 40918 | 1149 | Loudon / Carlisle | 28-Sep-17 | Combined | 1951 | 0 | 0.5 | 0.5 | Infiltration Storage Trench, | Streets | $138,000 | | TTF | PWD Capital |
| 40928 | 1275 | SR1026 Section H04 | 06-Sep-19 | Combined | 16804 | 56 | 2.3 | 4.4 | Stormwater TreeTrench, | Streets | Cost Not Available | | TTF | PWD Capital |
| 40938 | 1423 | I-95 Section AF1 | 04-Aug-20 | Combined | 4030 | 0 | 1 | 1.1 | Infiltration Storage Trench, | Streets | Cost Not Available | | Delaware | PWD Capital |
| 50001 | 14 * | Passyunk Square Model Neighborhood | 17-Sep-13 | Combined | 1976.82 | 0 | 0.5 | 0.5 | Infiltration Storage Trench, Rain Garden, | Streets | $966,000 | Department of Recreation,Passyunk Square Civic Association | Delaware | Pennvest |
| | 15 * | Passyunk Square Model Neighborhood | 17-Sep-13 | Combined | 1535.98 | 8 | 0.3 | 0.4 | Stormwater TreeTrench, | Streets | | Passyunk Square Civic Association | Delaware | Pennvest |
| | 16 * | Passyunk Square Model Neighborhood | 17-Sep-13 | Combined | 1111.8 | 4 | 0.2 | 0.3 | Stormwater TreeTrench, | Streets | | Department of Recreation,Passyunk Square Civic Association,South Philadelphia Older Adult Center | Delaware | Pennvest |
| | 162 * | Passyunk Square Model Neighborhood | 17-Sep-13 | Combined | 5196.94 | 26 | 1 | 1.4 | Stormwater Bump-out, Stormwater TreeTrench, | Streets | | Department of Recreation | Delaware,Schuylkil l | Pennvest |
| | 313 * | Passyunk Square Model Neighborhood | 17-Sep-13 | Combined | 1452 | 0 | 0.3 | 0.4 | Infiltration Storage Trench, | Streets | | Department of Recreation,Passyunk Square Civic Association,South Philadelphia Older Adult Center | Delaware | Pennvest |

| Work Number | Project ID | Project Name | Construction Completion Date | Sewer Type | Storage Volume (cf) | New Trees | Drainage Area (acres) | Greened Acres (acre-inches) | SMP Type | Program | Green Construction Cost ** | Partner(s) | Watershed | Funding Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50002 | 8 * | New Kensington Model Neighborhood | 04-Nov-11 | Combined | 3385.86 | 6 | 1.1 | 0.9 | Rain Garden, Stormwater TreeTrench, | Streets | Cost Not Available | Department of Recreation,New Kensington Community Development Corporation,Pennsylvania Horticulture Society | Delaware | Pennvest |
| 50003 | 12 * | Northern Liberties Model Neighborhood | 08-Feb-13 | Combined | 988.57 | 6 | 0.4 | 0.3 | Infiltration Storage Trench, Stormwater Planter, Stormwater TreeTrench, | Streets | $459,000 | City Play,Mural Arts Program,Northern Liberties Neighborhood Association | Delaware | Pennvest |
| | 91 * | Northern Liberties Model Neighborhood | 08-Feb-13 | Combined | 1463 | 10 | 0.4 | 0.4 | Stormwater Bump-out, Stormwater TreeTrench, | Streets | | Northern Liberties Neighborhood Association | Delaware | Pennvest |
| 50005 | 1 * | Green Street Project in 16th Street | 10-Nov-10 | Combined | 3556 | 12 | 1 | 1 | Stormwater TreeTrench, | Streets | Cost Not Available | Pennsylvania Horticulture Society | Delaware | Pennvest |
| | 18 * | Green Street Project in 16th Street | 10-Nov-10 | Combined | 609.4 | 8 | 0.3 | 0.2 | Stormwater TreeTrench, | Streets | | | Schuylkill | Pennvest |
| | 9 * | Green Street Project in 16th Street | 10-Nov-10 | Combined | 1272.8 | 8 | 0.2 | 0.3 | Stormwater TreeTrench, | Streets | | New Kensington Community Development Corporation,Pennsylvania Horticulture Society | Delaware | Pennvest |
| 50006 | 187 | Columbus Square Park Infrastructure Demonstration Project | 26-May-10 | Combined | 922 | 0 | 0.2 | 0.2 | Infiltration Storage Trench, Stormwater Planter, | Streets | Cost Not Available | Department of Public Property,Department of Recreation,Friends of Columbus Square | Delaware | Other Public Agency |
| 50007 | 21 * | Blue Bell Inn Triangle Stormwater Improvements | 31-Oct-13 | Combined | 2066.45 | 12 | 0.6 | 0.6 | Swale, | Streets | $297,000 | Fairmount Park Commission,Pennsylvania Horticulture Society,Philadelphia Department of Parks & Recreation | Cobbs-Darby | Pennvest |
| 50009 | 20 * | Queen Lane Bumpouts | 14-May-11 | Combined, Separate | 4423.2 | 26 | 1.2 | 0.4 | Infiltration Storage Trench, Stormwater Planter, Stormwater TreeTrench, | Streets | Cost Not Available | | TTF | Pennvest |
| 50010 | 19 * | Barry Playground - Tree Trenches | 14-Oct-13 | Combined | 16143.5 | 58 | 2.5 | 4.2 | Stormwater TreeTrench, | Streets | $1,039,000 | Department of Recreation | Schuylkill | Pennvest |
| 50011 | 194 | N. 3rd St and Wildey St | 01-Jun-09 | Combined | 849 | 0 | 0.2 | 0.2 | Rain Garden, | Open Space | Cost Not Available | Northern Liberties Neighborhood Association,Pennsylvania Department of Environmental Protection,Pennsylvania Horticulture Society,Philadelphia Department of Parks & Recreation | Delaware | PWD Operating |
| 50012 | 186 | Cliveden Park Extended Detention | 01-Oct-07 | Combined | 4563.1 | 0 | 1.2 | 1.3 | Rain Garden, | Open Space | Cost Not Available | Pennsylvania Department of Environmental Protection,Pennsylvania Horticulture Society,Philadelphia Department of Parks & Recreation | TTF | PWD Operating |

| Work Number | Project ID | Project Name | Construction Completion Date | Sewer Type | Storage Volume (cf) | New Trees | Drainage Area (acres) | Greened Acres (acre-inches) | SMP Type | Program | Green Construction Cost ** | Partner(s) | Watershed | Funding Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50013 | 208 | West Mill Creek Stormwater Tree Trench | 01-Jul-06 | Combined | 830 | 8 | 0.4 | 0.2 | Pervious Pavement, Stormwater TreeTrench, | Streets | Cost Not Available | Pennsylvania Department of Environmental Protection,Pennsylvania Horticulture Society,Philadelphia Department of Recreation | Schuylkill | Private Development |
| 50014 | 181 | 47th and Grays Ferry Rain Garden | 01-Apr-07 | Combined | 1260 | 14 | 0.4 | 0.3 | Rain Garden, | Vacant Land | Cost Not Available | Pennsylvania Department of Environmental Protection,Pennsylvania Horticulture Society,University City Green | Schuylkill | Private Development |
| 50015 | 185 | Clark Park Stormwater Bed | 01-Nov-07 | Combined | 3080 | 0 | 0.7 | 0.8 | Infiltration Storage Trench, | Open Space | Cost Not Available | Pennsylvania Department of Environmental Protection,Pennsylvania Department of Conservation & Natural Resources,Philadelphia Department of Parks & Recreation | Schuylkill | Private Development |
| 50016 | 196 | Mill Creek Farm | 01-May-06 | Combined | 360 | 8 | 0.3 | 0.1 | Rain Garden, Swale, | Streets | Cost Not Available | Pennsylvania Department of Environmental Protection,Philadelphia Water Department,Pennsylvania Horticulture Society | Schuylkill | PWD Operating |
| 50019 | 154 * | Anna B. Day School, Epiphany of Our Lord, Francis Scott, Dickinson Sq | 25-Nov-14 | Combined | 9882 | 30 | 1.7 | 2.7 | Stormwater TreeTrench, | Streets | $1,059,000 | Tookany/Tacony-Frankford Watershed Partnership | TTF | Pennvest |
| | 17 * | Anna B. Day School, Epiphany of Our Lord, Francis Scott, Dickinson Sq | 25-Nov-14 | Combined | 3650 | 4 | 0.6 | 1 | Stormwater Bump-out, Infiltration Storage Trench, Stormwater TreeTrench, | Streets | | Department of Recreation,Friends of Dickinson Park,Southeastern Transportation Authority | Delaware | Pennvest |
| | 79 * | Anna B. Day School, Epiphany of Our Lord, Francis Scott, Dickinson Sq | 25-Nov-14 | Combined | 619.48 | 0 | 0.1 | 0.2 | Infiltration Storage Trench, | Streets | | Lower Moyamensing Civic Association | Delaware | Pennvest |
| | 81 * | Anna B. Day School, Epiphany of Our Lord, Francis Scott, Dickinson Sq | 25-Nov-14 | Combined | 2980 | 4 | 0.6 | 0.8 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | | Lower Moyamensing Civic Association | Delaware | Pennvest |
| 50020 | 157 * | Welsh and Wakisha School | 23-Apr-13 | Combined | 3076.8 | 24 | 0.7 | 0.8 | Stormwater TreeTrench, | Streets | $746,000 | Department of Recreation | Delaware | Pennvest |
| | 2 * | Welsh and Wakisha School | 23-Apr-13 | Combined | 1816.8 | 14 | 0.5 | 0.5 | Infiltration Storage Trench, Rain Garden, Stormwater TreeTrench, | Streets | | Pennsylvania Horticulture Society | Delaware | Pennvest |
| | 245 * | Welsh and Wakisha School | 23-Apr-13 | Combined | 973.6 | 6 | 0.2 | 0.3 | Stormwater TreeTrench, | Streets | | Pennsylvania Horticulture Society | Delaware | Pennvest |
| | 296 * | Welsh and Wakisha School | 23-Apr-13 | Combined | 1034 | 8 | 0.2 | 0.3 | Stormwater TreeTrench, | Streets | | Pennsylvania Horticulture Society | Delaware | Pennvest |
| | 312 * | Welsh and Wakisha School | 23-Apr-13 | Combined | 2312.6 | 14 | 0.6 | 0.6 | Stormwater TreeTrench, | Streets | | Department of Recreation | Delaware | Pennvest |
| 50022 | 13 | Madison Park | 16-Dec-11 | Combined | 402 | 0 | 0.2 | 0.1 | Infiltration Storage Trench, | Open Space | Cost Not Available | City Play,Digsau,Northern Liberties Neighborhood Association,Philadelphia Department of Parks & Recreation | Delaware | Other Public Agency |

| Work Number | Project ID | Project Name | Construction Completion Date | Sewer Type | Storage Volume (cf) | New Trees | Drainage Area (acres) | Greened Acres (acre-inches) | SMP Type | Program | Green Construction Cost ** | Partner(s) | Watershed | Funding Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50023 | 192 | Herron Playground porous basketball court | 02-Oct-12 | Combined | 2689 | 24 | 0.3 | 0.5 | Infiltration Storage Trench, Pervious Pavement, Rain Garden, | Open Space | Cost Not Available | Philadelphia Capital Program Office,Philadelphia Department of Parks & Recreation | Delaware | Other Public Agency |
| 50024 | 170 | Work in Shissler Playground Blair and Hewson Street | 10-Oct-10 | Combined | 3032.6 | 8 | 0.4 | 0.8 | Stormwater TreeTrench, | Open Space | Cost Not Available | New Kensington Community Development Corporation,Pennsylvania Horticulture Society,Philadelphia Department of Parks & Recreation | Delaware | PWD Capital |
| 50025 | 223 * | A.S. Jenks School, Sacks Playground, Smith Elementary, St. Thomas Aquinas | 22-Oct-13 | Combined | 3374 | 6 | 0.5 | 0.9 | Stormwater TreeTrench, | Streets | $1,185,000 | Lower Moyamensing Civic Association | Delaware | Pennvest |
| | 224 * | A.S. Jenks School, Sacks Playground, Smith Elementary, St. Thomas Aquinas | 22-Oct-13 | Combined | 6569.25 | 8 | 1.1 | 1.8 | Stormwater TreeTrench, | Streets | | | Delaware | Pennvest |
| | 227 * | A.S. Jenks School, Sacks Playground, Smith Elementary, St. Thomas Aquinas | 22-Oct-13 | Combined | 4723 | 10 | 1 | 1.3 | Stormwater TreeTrench, | Streets | | | Schuylkill | Pennvest |
| 50026 | 210 * | Daroff School, Shepard Rec Center, Sayre School, Andrew Hamilton School | 13-Dec-12 | Combined | 8296 | 18 | 1.5 | 2.3 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | $1,718,000 | Pennsylvania Environmental Council | Cobbs-Darby | Pennvest |
| | 211 * | Daroff School, Shepard Rec Center, Sayre School, Andrew Hamilton School | 13-Dec-12 | Combined | 9382 | 24 | 1.5 | 2.4 | Stormwater Bump-out, Stormwater Planter, Stormwater TreeTrench, | Streets | | Pennsylvania Environmental Council | Schuylkill | Pennvest |
| | 216 * | Daroff School, Shepard Rec Center, Sayre School, Andrew Hamilton School | 13-Dec-12 | Combined | 4551 | 8 | 1 | 1.3 | Stormwater TreeTrench, | Streets | | Pennsylvania Environmental Council | Cobbs-Darby | Pennvest |
| | 231 * | Daroff School, Shepard Rec Center, Sayre School, Andrew Hamilton School | 13-Dec-12 | Combined | 10310 | 24 | 1.8 | 2.8 | Stormwater Bump-out, Stormwater Planter, Stormwater TreeTrench, | Streets | | Pennsylvania Environmental Council | Cobbs-Darby,Schuylkill | Pennvest |
| 50027 | 212 * | Samuel Huey School, Bryant School, Christy Rec Center, | 23-Nov-12 | Combined | 5179 | 14 | 0.8 | 1.4 | Stormwater TreeTrench, | Streets | $1,084,000 | Pennsylvania Environmental Council | Cobbs-Darby | Pennvest |
| | 213 * | Samuel Huey School, Bryant School, Christy Rec Center, | 23-Nov-12 | Combined | 5456.14 | 14 | 1 | 1.5 | Stormwater TreeTrench, | Streets | | Department of Recreation,Pennsylvania Environmental Council | Cobbs-Darby | Pennvest |
| | 214 * | Samuel Huey School, Bryant School, Christy Rec Center, | 23-Nov-12 | Combined | 2804.32 | 8 | 0.4 | 0.8 | Stormwater TreeTrench, | Streets | | | Cobbs-Darby | Pennvest |
| | 215 * | Samuel Huey School, Bryant School, Christy Rec Center, | 23-Nov-12 | Combined | 6420.64 | 12 | 1 | 1.8 | Stormwater TreeTrench, | Streets | | Pennsylvania Environmental Council | Cobbs-Darby | Pennvest |
| | 59 * | Samuel Huey School, Bryant School, Christy Rec Center, | 23-Nov-12 | Combined | 3251.22 | 4 | 0.5 | 0.9 | Stormwater TreeTrench, | Streets | | Pennsylvania Environmental Council | Cobbs-Darby | Pennvest |
| 50028 | 175 * | Phila. Military Academy/MLK Rec Center/FD Elementary /Towey Rec Center | 24-Dec-12 | Combined | 5051 | 12 | 0.7 | 1.4 | Stormwater TreeTrench, | Streets | $672,000 | | Delaware | Pennvest |
| | 176 * | Phila. Military Academy/MLK Rec Center/FD Elementary /Towey Rec Center | 24-Dec-12 | Combined | 2401 | 6 | 0.5 | 0.7 | Stormwater TreeTrench, | Streets | | | Delaware | Pennvest |
| | 177 * | Phila. Military Academy/MLK Rec Center/FD Elementary /Towey Rec Center | 24-Dec-12 | Combined | 7189.8 | 20 | 1 | 1.6 | Stormwater TreeTrench, | Streets | | | Delaware | Pennvest |
| | 178 * | Phila. Military Academy/MLK Rec Center/FD Elementary /Towey Rec Center | 24-Dec-12 | Combined | 4252 | 12 | 0.5 | 1 | Stormwater TreeTrench, | Streets | | Fairmount Park Commission,Pennsylvania Horticulture Society | Delaware | Pennvest |

| Work Number | Project ID | Project Name | Construction Completion Date | Sewer Type | Storage Volume (cf) | New Trees | Drainage Area (acres) | Greened Acres (acre-inches) | SMP Type | Program | Green Construction Cost ** | Partner(s) | Watershed | Funding Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50029 | 147 * | Morris Leeds School, Pleasant Playground, Simons Rec. Center | 10-May-13 | Combined | 709 | 0 | 0.3 | 0.2 | Infiltration Storage Trench, | Streets | $1,578,000 | Department of Recreation | TTF | Pennvest |
| | 179 * | Morris Leeds School, Pleasant Playground, Simons Rec. Center | 10-May-13 | Combined | 31169.66 | 78 | 5.3 | 8.6 | Stormwater TreeTrench, | Streets | | | TTF | Pennvest |
| 50030 | 171 | KendertonField, Cecil B.Moore, Congeso de Latinos, HM Stanton School | 27-Sep-18 | Combined | 5122 | 22 | 0.9 | 1.4 | Stormwater TreeTrench, | Streets | $1,500,000 | Fairmount Park Commission,Pennsylvania Horticulture Society | Delaware | PWD Capital |
| | 172 | KendertonField, Cecil B.Moore, Congeso de Latinos, HM Stanton School | 27-Sep-18 | Combined | 11055 | 28 | 1.8 | 3 | Stormwater Bump-out, Infiltration Storage Trench, Stormwater TreeTrench, | Streets | | Fairmount Park Commission,Pennsylvania Horticulture Society | Delaware | PWD Capital |
| | 173 | KendertonField, Cecil B.Moore, Congeso de Latinos, HM Stanton School | 27-Sep-18 | Combined | 2428 | 10 | 0.4 | 0.7 | Stormwater TreeTrench, | Streets | | | Delaware | PWD Capital |
| 50031 | 123 | 58th St. Connector -Greenway Ave. | 15-Jan-13 | Combined | 4911 | 14 | 1.1 | 1.4 | Infiltration Storage Trench, Rain Garden, Stormwater TreeTrench, | Streets | $218,000 | | Cobbs-Darby,Schuylkill | PWD Capital |
| 50032 | 180 | PHS Tree Trenches | 05-Nov-11 | Combined | 646 | 8 | 0.1 | 0.2 | Stormwater TreeTrench, | Streets | Cost Not Available | Pennsylvania Horticulture Society | Delaware | Other Public Agency |
| | 324 | PHS Tree Trenches | 05-Nov-11 | Combined | 768 | 6 | 0.2 | 0.2 | Stormwater TreeTrench, | Streets | | Pennsylvania Horticulture Society | Delaware | Other Public Agency |
| | 325 | PHS Tree Trenches | 05-Nov-11 | Combined | 1088 | 8 | 0.2 | 0.3 | Stormwater TreeTrench, | Streets | | Pennsylvania Horticulture Society | Delaware | Other Public Agency |
| | 326 | PHS Tree Trenches | 05-Nov-11 | Combined | 1047 | 12 | 0.4 | 0.3 | Stormwater TreeTrench, | Streets | | Pennsylvania Horticulture Society | Delaware | Other Public Agency |
| | 327 | PHS Tree Trenches | 05-Nov-11 | Combined | 1029 | 8 | 0.2 | 0.3 | Stormwater TreeTrench, | Streets | | Pennsylvania Horticulture Society | Delaware | Other Public Agency |
| | 342 | PHS Tree Trenches | 05-Nov-11 | Combined | 1292 | 8 | 0.3 | 0.4 | Stormwater TreeTrench, | Streets | | Pennsylvania Horticulture Society | Delaware | Other Public Agency |
| 50033 | 46 | Lancaster Ave 59th to 62nd Tree Trenches | 01-Nov-10 | Combined | 6091.1 | 34 | 1 | 1.6 | Stormwater Bump-out, Rain Garden, Swale, Stormwater TreeTrench, | Streets | Cost Not Available | Environmental Protection Agency,Philadelphia Department of Commerce,Philadelphia Industrial Development Corporation | Schuylkill | Other Public Agency |
| 50034 | 10 * | Trenton and Norris, Thompson and Columbia | 20-Sep-13 | Combined | 3921.08 | 8 | 0.8 | 1.1 | Stormwater Bump-out, Stormwater TreeTrench, | Streets | $639,000 | New Kensington Community Development Corporation,Pennsylvania Horticulture Society | Delaware | Pennvest |
| | 88 * | Trenton and Norris, Thompson and Columbia | 20-Sep-13 | Combined | 3866.11 | 2 | 0.7 | 1.1 | Infiltration Storage Trench, Rain Garden, Stormwater TreeTrench, | Streets | | New Kensington Community Development Corporation,Pennsylvania Horticulture Society | Delaware | Pennvest |
| 50035 | 45 | Ben Franklin Parkway Tree Trenches | 01-Jun-11 | Combined | 3561 | 0 | 0.7 | 1 | Infiltration Storage Trench, | Streets | Cost Not Available | Fairmount Park Commission | Schuylkill | Other Public Agency |
| 50036 | 228 * | 29th / Cambria / William Cramp / Barton / Hunting Park | 25-Apr-14 | Combined | 1189.35 | 2 | 0.2 | 0.3 | Stormwater TreeTrench, | Streets | $694,000 | Philadelphia Department of Parks & Recreation | Delaware | Pennvest |
| | 277 * | 29th / Cambria / William Cramp / Barton / Hunting Park | 25-Apr-14 | Combined | 4880.35 | 10 | 0.8 | 1.3 | Stormwater TreeTrench, | Streets | | | Delaware | Pennvest |
| | 278 * | 29th / Cambria / William Cramp / Barton / Hunting Park | 25-Apr-14 | Combined | 4884.55 | 6 | 0.9 | 1.3 | Stormwater TreeTrench, | Streets | | | TTF | Pennvest |
| | 50 * | 29th / Cambria / William Cramp / Barton / Hunting Park | 25-Apr-14 | Combined | 3353 | 0 | 0.6 | 0.9 | Stormwater Bump-out, Infiltration Storage Trench, | Streets | | Philadelphia Department of Parks & Recreation | Delaware,Schuylkill | Pennvest |

| Work Number | Project ID | Project Name | Construction Completion Date | Sewer Type | Storage Volume (cf) | New Trees | Drainage Area (acres) | Greened Acres (acre-inches) | SMP Type | Program | Green Construction Cost ** | Partner(s) | Watershed | Funding Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50037 | 250 * | Cassidy/Overbrook/Shoemaker/Cathedral/Durham/sister Clara/James Rhoads/Belmont | 09-Sep-13 | Combined | 6497 | 26 | 1.1 | 1.8 | Stormwater TreeTrench, | Streets | $1,628,000 | | Schuylkill | Pennvest |
| | 251 * | Cassidy/Overbrook/Shoemaker/Cathedral/Durham/sister Clara/James Rhoads/Belmont | 09-Sep-13 | Combined | 3614 | 12 | 0.6 | 1 | Stormwater TreeTrench, | Streets | | | Schuylkill | Pennvest |
| | 252 * | Cassidy/Overbrook/Shoemaker/Cathedral/Durham/sister Clara/James Rhoads/Belmont | 09-Sep-13 | Combined | 2933 | 14 | 0.6 | 0.8 | Stormwater TreeTrench, | Streets | | | Schuylkill | Pennvest |
| | 253 * | Cassidy/Overbrook/Shoemaker/Cathedral/Durham/sister Clara/James Rhoads/Belmont | 09-Sep-13 | Combined | 7095 | 30 | 1.3 | 1.9 | Stormwater TreeTrench, | Streets | | | Schuylkill | Pennvest |
| | 254 * | Cassidy/Overbrook/Shoemaker/Cathedral/Durham/sister Clara/James Rhoads/Belmont | 09-Sep-13 | Combined | 3297 | 8 | 0.5 | 0.9 | Stormwater TreeTrench, | Streets | | | Schuylkill | Pennvest |
| | 255 * | Cassidy/Overbrook/Shoemaker/Cathedral/Durham/sister Clara/James Rhoads/Belmont | 09-Sep-13 | Combined | 5776 | 8 | 1 | 1.6 | Stormwater TreeTrench, | Streets | | | Cobbs-Darby | Pennvest |
| | 256 * | Cassidy/Overbrook/Shoemaker/Cathedral/Durham/sister Clara/James Rhoads/Belmont | 09-Sep-13 | Combined | 3189 | 6 | 0.6 | 0.9 | Stormwater TreeTrench, | Streets | | | Schuylkill | Pennvest |
| | 257 * | Cassidy/Overbrook/Shoemaker/Cathedral/Durham/sister Clara/James Rhoads/Belmont | 09-Sep-13 | Combined | 2921 | 10 | 0.6 | 0.8 | Stormwater TreeTrench, | Streets | | | Schuylkill | Pennvest |
| 50038 | 247 * | Donald/Wilson/Vare/StephenGirard/Southwark/Markward/Cherry/JulianAbele | 16-May-13 | Combined | 3565.9 | 14 | 0.5 | 1 | Stormwater TreeTrench, | Streets | $1,348,000 | Department of Public Property | Schuylkill | Pennvest |
| | 258 * | Donald/Wilson/Vare/StephenGirard/Southwark/Markward/Cherry/JulianAbele | 16-May-13 | Combined | 3728 | 24 | 0.7 | 1 | Stormwater TreeTrench, | Streets | | | Schuylkill | Pennvest |
| | 259 * | Donald/Wilson/Vare/StephenGirard/Southwark/Markward/Cherry/JulianAbele | 16-May-13 | Combined | 8932.64 | 36 | 1.3 | 2.5 | Stormwater TreeTrench, | Streets | | | Schuylkill | Pennvest |
| | 260 * | Donald/Wilson/Vare/StephenGirard/Southwark/Markward/Cherry/JulianAbele | 16-May-13 | Combined | 4471.26 | 14 | 0.7 | 1.2 | Stormwater TreeTrench, | Streets | | | Schuylkill | Pennvest |
| | 261 * | Donald/Wilson/Vare/StephenGirard/Southwark/Markward/Cherry/JulianAbele | 16-May-13 | Combined | 1604 | 8 | 0.2 | 0.4 | Stormwater TreeTrench, | Streets | | | Schuylkill | Pennvest |
| | 262 * | Donald/Wilson/Vare/StephenGirard/Southwark/Markward/Cherry/JulianAbele | 16-May-13 | Combined | 2029 | 8 | 0.4 | 0.6 | Stormwater TreeTrench, | Streets | | | Delaware | Pennvest |
| 50039 | 268 * | Temple / William Gray / Dick Elementary / Parking Lot 12th and Diamond | 01-Aug-14 | Combined | 4224.8 | 18 | 0.9 | 1.2 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | $978,000 | | Delaware | Pennvest |
| | 269 * | Temple / William Gray / Dick Elementary / Parking Lot 12th and Diamond | 01-Aug-14 | Combined | 7687.2 | 42 | 1.1 | 2 | Stormwater TreeTrench, | Streets | | | Delaware | Pennvest |
| | 270 * | Temple / William Gray / Dick Elementary / Parking Lot 12th and Diamond | 01-Aug-14 | Combined | 6641 | 22 | 0.6 | 1.2 | Stormwater TreeTrench, | Streets | | | Delaware | Pennvest |
| | 283 * | Temple / William Gray / Dick Elementary / Parking Lot 12th and Diamond | 01-Aug-14 | Combined | 1985 | 2 | 0.3 | 0.5 | Stormwater TreeTrench, | Streets | | Philadelphia Housing Authority | Delaware | Pennvest |
| 50040 | 153 | Yorktown Green Streets | 21-Jun-19 | Combined | 8562 | 30 | 1.8 | 2.4 | Infiltration Storage Trench, Stormwater Planter, | Streets | $1,469,000 | | Delaware | PWD Capital,Public Grant |

| Work Number | Project ID | Project Name | Construction Completion Date | Sewer Type | Storage Volume (cf) | New Trees | Drainage Area (acres) | Greened Acres (acre-inches) | SMP Type | Program | Green Construction Cost ** | Partner(s) | Watershed | Funding Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50041 | 167 * | Longstretch, Little Sisters of Poor, McCresh Plground, Cobbs Crk Pkwy. Island | 13-Jan-14 | Combined | 9885 | 26 | 1.7 | 2.7 | Stormwater TreeTrench, | Streets | $1,273,000 | Snyderville Community Development Corporation | Schuylkill | Pennvest |
| | 264 * | Longstretch, Little Sisters of Poor, McCresh Plground, Cobbs Crk Pkwy. Island | 13-Jan-14 | Combined | 4488 | 12 | 0.8 | 1.2 | Stormwater Planter, Stormwater TreeTrench, | Streets | | Snyderville Community Development Corporation | Cobbs-Darby | Pennvest |
| | 265 * | Longstretch, Little Sisters of Poor, McCresh Plground, Cobbs Crk Pkwy. Island | 13-Jan-14 | Combined | 8480 | 10 | 1.4 | 2.3 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | | Snyderville Community Development Corporation | Cobbs-Darby | Pennvest |
| | 266 * | Longstretch, Little Sisters of Poor, McCresh Plground, Cobbs Crk Pkwy. Island | 13-Jan-14 | Combined | 3312 | 0 | 0.8 | 1.5 | Infiltration Storage Trench, Rain Garden, | Streets | | Snyderville Community Development Corporation | Cobbs-Darby | Pennvest |
| 50042 | 271 * | Bridesburg Sch., Dorsey Plygrnd, Roosevelt Plygrnd, Magnolia Cem.,Carmell | 30-Sep-13 | Combined | 7708.9 | 6 | 1.2 | 2 | Infiltration Storage Trench, Rain Garden, Stormwater TreeTrench, | Streets | $1,875,000 | Philadelphia Department of Parks & Recreation,Tacony Civic Association | Delaware | Pennvest |
| | 272 * | Bridesburg Sch., Dorsey Plygrnd, Roosevelt Plygrnd, Magnolia Cem.,Carmell | 30-Sep-13 | Combined | 12713.61 | 26 | 2 | 3.4 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | | Tacony Civic Association | Delaware,TTF | Pennvest |
| | 273 * | Bridesburg Sch., Dorsey Plygrnd, Roosevelt Plygrnd, Magnolia Cem.,Carmell | 30-Sep-13 | Combined | 5752 | 14 | 0.8 | 1.6 | Stormwater TreeTrench, | Streets | | Tacony Civic Association | Delaware | Pennvest |
| | 274 * | Bridesburg Sch., Dorsey Plygrnd, Roosevelt Plygrnd, Magnolia Cem.,Carmell | 30-Sep-13 | Combined | 8439 | 12 | 1.3 | 2.2 | Infiltration Storage Trench, Stormwater Planter, Stormwater TreeTrench, | Streets | | Roosevelt Playground Park Advisory Council,Tacony Civic Association | Delaware | Pennvest |
| | 275 * | Bridesburg Sch., Dorsey Plygrnd, Roosevelt Plygrnd, Magnolia Cem.,Carmell | 30-Sep-13 | Combined | 1968.4 | 4 | 0.3 | 0.5 | Stormwater TreeTrench, | Streets | | Tacony Civic Association | Delaware | Pennvest |
| 50043 | 279 * | Harpers Hollow, Wakefield Park | 04-Dec-12 | Combined | 2996 | 0 | 0.6 | 0.8 | Stormwater Basin, | Open Space | $521,000 | Philadelphia Department of Parks & Recreation | TTF | Pennvest |
| | 281 * | Harpers Hollow, Wakefield Park | 04-Dec-12 | Combined | 4567 | 0 | 0.9 | 1.3 | Rain Garden, | Open Space | | Philadelphia Department of Parks & Recreation | TTF | Pennvest |
| 50044 | 280 | Wister Woods, Kemble Park | 21-Jan-15 | Combined | 36648 | 138 | 5.2 | 10.1 | Infiltration Storage Trench, Rain Garden, Swale, | Open Space | $2,360,000 | Philadelphia Department of Parks & Recreation | TTF | PWD Capital |
| | 282 | Wister Woods, Kemble Park | 21-Jan-15 | Combined | 41165 | 14 | 4.8 | 9.5 | Rain Garden, | Open Space | | Philadelphia Department of Parks & Recreation | TTF | PWD Capital |
| 50045 | 292 | Ben Franklin Parkway 16-19th St. | 16-Mar-17 | Combined | 13098 | 0 | 1.9 | 3.5 | Infiltration Storage Trench, | Streets | Cost Not Available | Department of Public Property,Philadelphia Department of Parks & Recreation | Schuylkill | PWD Capital |
| 50046 | 243 * | Womrath Park | 27-Sep-12 | Combined | 3539 | 0 | 1.1 | 1 | Infiltration Storage Trench, Rain Garden, Swale, | Open Space | $574,000 | Tookany/Tacony-Frankford Watershed Partnership,Philadelphia Department of Parks & Recreation,Frankford Civic Association | TTF | Pennvest |
| 50047 | 366 | Philadelphia Zoo Green Streets Project | 29-May-13 | Combined | 6510.16 | 0 | 1.2 | 1.8 | Infiltration Storage Trench, Stormwater Planter, Rain Garden, | Streets | Cost Not Available | Philadelphia Department of Parks & Recreation,Philadelphia Zoo | Schuylkill | Other City Agency |
| 50048 | 375 | Kinsey Sch./National Cem./Rowen Sch./Wagner Sch. | 26-Oct-17 | Combined | 6066.79 | 20 | 0.9 | 1.6 | Stormwater TreeTrench, | Streets | $1,156,000 | | TTF | PWD Capital |
| | 377 | Kinsey Sch./National Cem./Rowen Sch./Wagner Sch. | 26-Oct-17 | Combined | 1898 | 0 | 0.5 | 0.5 | Infiltration Storage Trench, Rain Garden, Swale, | Streets | | | TTF | PWD Capital |
| | 378 | Kinsey Sch./National Cem./Rowen Sch./Wagner Sch. | 26-Oct-17 | Combined | 3260 | 18 | 0.6 | 0.9 | Stormwater TreeTrench, | Streets | | | TTF | PWD Capital |
| | 379 | Kinsey Sch./National Cem./Rowen Sch./Wagner Sch. | 26-Oct-17 | Combined | 5370 | 22 | 1 | 1.5 | Stormwater TreeTrench, | Streets | | | TTF | PWD Capital |

| Work Number | Project ID | Project Name | Construction Completion Date | Sewer Type | Storage Volume (cf) | New Trees | Drainage Area (acres) | Greened Acres (acre-inches) | SMP Type | Program | Green Construction Cost ** | Partner(s) | Watershed | Funding Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50049 | 291 | Sharswood & Our Lady of Carmel Schs./ St. Monica/ Taggart Sch. | 27-Sep-17 | Combined | 5960.72 | 6 | 1 | 1.6 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | $1,251,000 | Community Design Collaborative | Delaware | PWD Capital |
| | 388 | Sharswood & Our Lady of Carmel Schs./ St. Monica/ Taggart Sch. | 27-Sep-17 | Combined | 5963.75 | 10 | 1.2 | 1.7 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | | | Delaware | PWD Capital |
| | 389 | Sharswood & Our Lady of Carmel Schs./ St. Monica/ Taggart Sch. | 27-Sep-17 | Combined | 3482.63 | 6 | 0.8 | 1 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | | | Delaware | PWD Capital |
| 50051 | 392 | 73rd/Elmwood Pk./Patterson Sch./Connell Pk./Mother Mary Sch./St. James Ch. | 03-Feb-15 | Combined | 9534 | 16 | 1.7 | 2.6 | Stormwater TreeTrench, | Streets | $2,686,000 | | Cobbs-Darby,Schuylkill | PWD Capital |
| | 393 | 73rd/Elmwood Pk./Patterson Sch./Connell Pk./Mother Mary Sch./St. James Ch. | 03-Feb-15 | Combined | 17099 | 18 | 3.1 | 4.7 | Infiltration Storage Trench, Rain Garden, Stormwater TreeTrench, | Streets | | Philadelphia Department of Parks & Recreation | Schuylkill | PWD Capital |
| | 394 | 73rd/Elmwood Pk./Patterson Sch./Connell Pk./Mother Mary Sch./St. James Ch. | 03-Feb-15 | Combined | 5490 | 12 | 0.9 | 1.5 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | | | Schuylkill | PWD Capital |
| | 396 | 73rd/Elmwood Pk./Patterson Sch./Connell Pk./Mother Mary Sch./St. James Ch. | 03-Feb-15 | Combined | 8973 | 34 | 1.6 | 2.5 | Stormwater TreeTrench, | Streets | | | Schuylkill | PWD Capital |
| | 397 | 73rd/Elmwood Pk./Patterson Sch./Connell Pk./Mother Mary Sch./St. James Ch. | 03-Feb-15 | Combined | 5677.5 | 16 | 1.1 | 1.6 | Stormwater TreeTrench, | Streets | | | Schuylkill | PWD Capital |
| | 398 | 73rd/Elmwood Pk./Patterson Sch./Connell Pk./Mother Mary Sch./St. James Ch. | 03-Feb-15 | Combined | 16467 | 36 | 2.6 | 4.3 | Stormwater TreeTrench, | Streets | | | Cobbs-Darby,Schuylkill | PWD Capital |
| 50052 | 335 | Chelten Hills Cem./Finley Pg./Ivy Hills Cem./Pennypacker Sch./ Sedgwick Sta. | 12-Mar-18 | Combined | 6081 | 4 | 1 | 1.7 | Stormwater Bump-out, Infiltration Storage Trench, | Streets | $2,415,000 | Southeastern Transportation Authority | TTF | PWD Capital |
| | 380 | Chelten Hills Cem./Finley Pg./Ivy Hills Cem./Pennypacker Sch./ Sedgwick Sta. | 12-Mar-18 | Combined | 29798 | 0 | 4.7 | 8 | Stormwater Bump-out, Infiltration Storage Trench, Swale, | Streets | | | TTF | PWD Capital |
| | 383 | Chelten Hills Cem./Finley Pg./Ivy Hills Cem./Pennypacker Sch./ Sedgwick Sta. | 12-Mar-18 | Combined | 6574 | 0 | 1.2 | 1.8 | Infiltration Storage Trench, | Streets | | | TTF | PWD Capital |
| 50053 | 314 | Logan Sch./Wayne/Windrim/Richmond Lib./Stokley/Vacant Lot/Skev. Pk./Westmoreland | 28-Mar-18 | Combined | 6143.5 | 32 | 1.5 | 1.7 | Stormwater TreeTrench, | Streets | $1,926,000 | | TTF | PWD Capital |
| | 384 | Logan Sch./Wayne/Windrim/Richmond Lib./Stokley/Vacant Lot/Skev. Pk./Westmoreland | 28-Mar-18 | Combined | 4170 | 18 | 0.7 | 1.1 | Stormwater TreeTrench, | Streets | | | Delaware | PWD Capital |
| | 385 | Logan Sch./Wayne/Windrim/Richmond Lib./Stokley/Vacant Lot/Skev. Pk./Westmoreland | 28-Mar-18 | Combined | 2959.1 | 14 | 0.5 | 0.8 | Stormwater TreeTrench, | Streets | | | Delaware | PWD Capital |
| | 386 | Logan Sch./Wayne/Windrim/Richmond Lib./Stokley/Vacant Lot/Skev. Pk./Westmoreland | 28-Mar-18 | Combined | 3646 | 10 | 0.5 | 1 | Stormwater TreeTrench, | Streets | | | Delaware | PWD Capital |
| | 413 | Logan Sch./Wayne/Windrim/Richmond Lib./Stokley/Vacant Lot/Skev. Pk./Westmoreland | 28-Mar-18 | Combined | 2458 | 0 | 0.4 | 0.7 | Stormwater Bump-out, Infiltration Storage Trench, | Streets | | Department of Public Property | TTF | PWD Capital |
| | 439 | Logan Sch./Wayne/Windrim/Richmond Lib./Stokley/Vacant Lot/Skev. Pk./Westmoreland | 28-Mar-18 | Combined | 2770 | 6 | 0.4 | 0.8 | Stormwater TreeTrench, | Streets | | | Delaware | PWD Capital |

| Work Number | Project ID | Project Name | Construction Completion Date | Sewer Type | Storage Volume (cf) | New Trees | Drainage Area (acres) | Greened Acres (acre-inches) | SMP Type | Program | Green Construction Cost ** | Partner(s) | Watershed | Funding Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50055 | 246 | 40th St./Drexel COMAD/Malcom X Pk./42nd St.Vacant Lot/Beeber Sch./Upland Way | 20-Mar-19 | Combined | 5252 | 26 | 0.8 | 1.4 | Stormwater TreeTrench, | Streets | $2,264,000 | Drexel University | Schuylkill | PWD Capital |
| | 344 | 40th St./Drexel COMAD/Malcom X Pk./42nd St.Vacant Lot/Beeber Sch./Upland Way | 20-Mar-19 | Combined | 2506 | 6 | 0.3 | 0.6 | Stormwater TreeTrench, | Streets | | | Schuylkill | PWD Capital |
| | 399 | 40th St./Drexel COMAD/Malcom X Pk./42nd St.Vacant Lot/Beeber Sch./Upland Way | 20-Mar-19 | Combined | 11271 | 58 | 1.8 | 3 | Stormwater TreeTrench, | Streets | | Philadelphia Planning Commission,Philadelphia Department of Parks & Recreation | Cobbs-Darby,Schuylkill | PWD Capital |
| | 400 | 40th St./Drexel COMAD/Malcom X Pk./42nd St.Vacant Lot/Beeber Sch./Upland Way | 20-Mar-19 | Combined | 11821 | 0 | 1.7 | 3 | Stormwater Bump-out, Infiltration Storage Trench, Swale, | Streets | | American Cities Foundation | Schuylkill | PWD Capital |
| 50057 | 417 | Stenton Ave. & E. Washington Ln. | 08-Jul-14 | Combined | 2326 | 0 | 0.3 | 0.6 | Rain Garden, | Streets | $34,000 | Philadelphia Streets Department,Ogontz Avenue Revitalization Corporation,Mayors Office of Transportation & Utilities | TTF | PWD Capital |
| 50059 | 410 | Harrowgate Park | 01-Sep-16 | Combined | 14564.95 | 0 | 1.8 | 3.6 | Infiltration Storage Trench, Rain Garden, | Open Space | $849,000 | Southeastern Transportation Authority,Philadelphia Department of Parks & Recreation | Delaware | PWD Capital |
| 50061 | 471 | Bustleton Avenue South, TIGER 3 Project (w/PWD Green Streets Funding) | 08-Feb-16 | Combined | 2650 | 0 | 0.5 | 0.7 | Infiltration Storage Trench, | Streets | $180,000 | Philadelphia Streets Department | Delaware | PWD Capital |
| 50062 | 470 | TIGER III: Woodland Ave. Corrdor (For PWD Green Streets Program) | 14-Dec-15 | Combined | 6732 | 30 | 1.4 | 1.9 | Stormwater TreeTrench, | Streets | $458,000 | Philadelphia Streets Department | Cobbs-Darby,Schuylkill | PWD Capital |
| 50063 | 310 | Eadom St. Parking Lot - 5312-50 Eadom | 02-May-12 | Combined | 10798 | 40 | 2 | 2.9 | Rain Garden, | Parking | Cost Not Available | Department of Public Property | Delaware | Other City Agency |
| 50065 | 367 | Panati Playground | 14-May-15 | Combined | 3770 | 16 | 0.9 | 1 | Infiltration Storage Trench, Rain Garden, | Open Space | $235,000 | Department of Public Property,Philadelphia Department of Parks & Recreation | Delaware | PWD Capital |
| 50067 | 276 | 29th and Cambria PWD Facility Parking Lot | 31-Oct-16 | Combined | 8510.23 | 20 | 1.6 | 2.3 | Swale, Stormwater TreeTrench, | Streets | $1,031,000 | | Delaware | PWD Capital |
| 50068 | 244 | Ingersoll Commons | 08-Nov-16 | Combined | 6056 | 10 | 0.7 | 1.4 | Infiltration Storage Trench, Rain Garden, Swale, | Open Space | $762,000 | Community Ventures,Department of Public Property,Philadelphia Department of Parks & Recreation | Delaware | PWD Capital |
| 50069 | 511 | Callowhill St. from 2nd St. to 7th St. | 05-Feb-16 | Combined | 272 | 20 | 0 | 0.1 | Stormwater Tree, | Streets | Cost Not Available | Philadelphia Streets Department | Delaware | PWD Capital |
| 50070 | 524 | Benson Park | 13-Nov-15 | Combined | 700 | 0 | 0.2 | 0.4 | Infiltration Storage Trench, Pervious Pavement, | Open Space | $199,000 | Department of Public Property,Philadelphia Department of Parks & Recreation | Delaware | PWD Capital |
| 50071 | 475 | Green2015 - Phase I - Collazo (2.37 GA) | 23-Jun-17 | Combined | 5697.21 | 12 | 1.2 | 1.6 | Infiltration Storage Trench, Rain Garden, | Open Space | $242,000 | Philadelphia School District,Philadelphia Department of Parks & Recreation,Trust for Public Land | Delaware | Private Development |

| Work Number | Project ID | Project Name | Construction Completion Date | Sewer Type | Storage Volume (cf) | New Trees | Drainage Area (acres) | Greened Acres (acre-inches) | SMP Type | Program | Green Construction Cost ** | Partner(s) | Watershed | Funding Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50075 | 479 | Green2015 - Phase I - William Dick Elementary | 13-Jun-14 | Combined | 8738.01 | 0 | 1.5 | 2.4 | Rain Garden, | Schools | Cost Not Available | Philadelphia School District,Philadelphia Department of Parks & Recreation,Trust for Public Land | Delaware | PWD Operating |
| 50077 | 322 | Baker, Heston, Haverford Triangle | 16-Sep-16 | Combined | 5574.15 | 20 | 1.1 | 1.5 | Infiltration Storage Trench, Rain Garden, Swale, | Vacant Land | $725,000 | | Schuylkill | PWD Capital |
| | 530 | Baker, Heston, Haverford Triangle | 16-Sep-16 | Combined | 1417 | 0 | 0.3 | 0.4 | Infiltration Storage Trench, Rain Garden, | Open Space | | Philadelphia Department of Parks & Recreation | Schuylkill | PWD Capital |
| | 558 | Baker, Heston, Haverford Triangle | 16-Sep-16 | Combined | 3638 | 8 | 0.7 | 1 | Infiltration Storage Trench, Rain Garden, | Vacant Land | | Department of Public Property,Philadelphia Department of Parks & Recreation | Schuylkill | PWD Capital |
| 50078 | 303 | Clearview Community Park & Morris Estate Park | 07-Oct-16 | Combined | 3531 | 0 | 0.7 | 1 | Infiltration Storage Trench, Rain Garden, | Vacant Land | $887,000 | Tookany/Tacony-Frankford Watershed Partnership | TTF | PWD Capital |
| | 642 | Clearview Community Park & Morris Estate Park | 07-Oct-16 | Combined | 7685 | 24 | 1.4 | 2.1 | Infiltration Storage Trench, Rain Garden, Stormwater TreeTrench, | Open Space | | Philadelphia Department of Parks & Recreation | TTF | PWD Capital |
| 50079 | 401 | Guerin Recreation Center | 23-Jul-18 | Combined | 15204 | 0 | 2.1 | 4.2 | Depaving, Infiltration Storage Trench, | Open Space | $1,070,000 | Philadelphia Department of Parks & Recreation | Schuylkill | PWD Capital |
| 50080 | 588 | Penn Street Trail | 13-Jun-13 | Combined, Separate | 2265 | 46 | 0.9 | 0.5 | Rain Garden, | Streets | Cost Not Available | DRWC | Delaware | Other Public Agency |
| 50082 | 597 | 33rd and Dauphin St. Sept Bus Loop Green Streets Project | 31-Jul-13 | Combined | 481.17 | 0 | 0.1 | 0.1 | Infiltration Storage Trench, | Streets | Cost Not Available | Southeastern Transportation Authority | Schuylkill | Other Public Agency |
| 50083 | 151 | Weccacoe Playground | 09-Dec-16 | Combined | 1181 | 0 | 0.3 | 0.4 | Depaving, Infiltration Storage Trench, Rain Garden, | Open Space | $122,000 | Philadelphia Department of Parks & Recreation | Delaware | PWD Capital |
| 50084 | 487 | Moss Playground/Carmella Playground | 13-Jan-20 | Combined | 17566 | 30 | 2.8 | 4.8 | Infiltration Storage Trench, Rain Garden, Stormwater TreeTrench, | Open Space | $1,855,000 | Philadelphia Department of Parks & Recreation | Delaware | PWD Capital |
| | 580 | Moss Playground/Carmella Playground | 13-Jan-20 | Combined | 19075 | 0 | 2.9 | 5.3 | Infiltration Storage Trench, Rain Garden, | Open Space | | Philadelphia Department of Parks & Recreation | Delaware,TTF | PWD Capital |
| 50085 | 574 | Ralph Brooks Park | 08-Oct-15 | Combined | 1609 | 0 | 0.3 | 0.4 | Infiltration Storage Trench, Rain Garden, | Open Space | $152,000 | Philadelphia Department of Parks & Recreation,Councilman Johnson,Urban Roots | Schuylkill | PWD Capital |
| 50089 | 455 | Erie, Francis Hopkins, and Mariana Bracetti | 29-Oct-19 | Combined | 8478 | 0 | 1.2 | 2.3 | Stormwater Bump-out, Infiltration Storage Trench, Stormwater Planter, | Streets | $1,894,000 | | TTF | PWD Capital |
| | 459 | Erie, Francis Hopkins, and Mariana Bracetti | 29-Oct-19 | Combined | 10796 | 8 | 2.2 | 3 | Infiltration Storage Trench, Stormwater Planter, Stormwater TreeTrench, | Streets | | | TTF | PWD Capital |
| | 586 | Erie, Francis Hopkins, and Mariana Bracetti | 29-Oct-19 | Combined | 7267 | 14 | 1.8 | 2 | Infiltration Storage Trench, Stormwater Planter, Stormwater TreeTrench, | Streets | | | TTF | PWD Capital |
| 50091 | 589 | Stinger Square | 06-Jul-16 | Combined | 3033 | 2 | 0.6 | 0.8 | Infiltration Storage Trench, Rain Garden, | Open Space | $255,000 | Philadelphia Department of Parks & Recreation | Schuylkill | Other Public Agency |
| 50097 | 483 | Black Coyle McBride Playground | 16-Aug-18 | Combined | 2711 | 0 | 0.5 | 0.7 | Infiltration Storage Trench, | Open Space | $1,254,000 | Philadelphia Department of Parks & Recreation | Delaware | PWD Capital |
| | 634 | Black Coyle McBride Playground | 16-Aug-18 | Combined | 1683 | 6 | 0.3 | 0.5 | Stormwater TreeTrench, | Streets | | | Delaware | PWD Capital |
| | 637 | Black Coyle McBride Playground | 16-Aug-18 | Combined | 4693 | 22 | 0.8 | 1.3 | Stormwater TreeTrench, | Streets | | | Delaware | PWD Capital |
| | 638 | Black Coyle McBride Playground | 16-Aug-18 | Combined | 4809 | 26 | 0.7 | 1.3 | Stormwater TreeTrench, | Streets | | | Delaware | PWD Capital |
| | 993 | Black Coyle McBride Playground | 16-Aug-18 | Combined | 1471 | 4 | 0.2 | 0.4 | Stormwater TreeTrench, | Streets | | | Delaware | PWD Capital |
| 50098 | 1007 | Neighborhood Parks - Wissinoming Park | 15-Feb-18 | Combined | 7040 | 0 | 1.6 | 1.9 | Infiltration Storage Trench, Rain Garden, | Open Space | $746,000 | Philadelphia Department of Parks & Recreation | Delaware | PWD Capital |

| Work Number | Project ID | Project Name | Construction Completion Date | Sewer Type | Storage Volume (cf) | New Trees | Drainage Area (acres) | Greened Acres (acre-inches) | SMP Type | Program | Green Construction Cost ** | Partner(s) | Watershed | Funding Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50101 | 608 | Kingsessing Recreation Center and Street Locations | 04-Jun-19 | Combined | 34889 | 34 | 5.1 | 9.4 | Infiltration Storage Trench, Rain Garden, | Open Space | $1,853,000 | Philadelphia Department of Parks & Recreation | Schuylkill | PWD Capital |
| | 1049 | Kingsessing Recreation Center and Street Locations | 04-Jun-19 | Combined | 6053 | 24 | 0.9 | 1.7 | Stormwater TreeTrench, | Streets | | | Cobbs-Darby,Schuylkill | PWD Capital |
| 50102 | 1012 | Gray's Ferry Neighborhood Disconnection SMP Lanier Park | 06-Oct-16 | Combined | 224448 | 0 | 0 | 0 | Infiltration Storage Trench, | Open Space | $3,868,000 | Philadelphia Department of Parks & Recreation | Schuylkill | PWD Capital |
| 50103 | 1024 | Drainage Well | 07-Sep-18 | Combined | 561.38 | 0 | 0.2 | 0.3 | Drainage Well, | Streets | $641,000 | | Cobbs-Darby | PWD Capital |
| | 1025 | Drainage Well | 07-Sep-18 | Combined | 258.31 | 0 | 0.2 | 0.2 | Drainage Well, | Streets | | | Delaware | PWD Capital |
| | 1029 | Drainage Well | 07-Sep-18 | Combined | 458.27 | 0 | 0.4 | 0.3 | Drainage Well, | Streets | | | Delaware | PWD Capital |
| 50104 | 578 | Stenton Park and Streets Locations | 07-Dec-18 | Combined | 24682 | 40 | 3.2 | 6.4 | Infiltration Storage Trench, Rain Garden, Stormwater TreeTrench, | Open Space | $2,365,000 | Philadelphia Department of Parks & Recreation | TTF | PWD Capital |
| | 1050 | Stenton Park and Streets Locations | 07-Dec-18 | Combined | 18611 | 68 | 3.1 | 5.1 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | | | TTF | PWD Capital |
| 50109 | 1023 | Osage Ave from 42nd to 43rd | 10-Apr-19 | Combined | 440 | 22 | 0.2 | 0.1 | Stormwater Tree, | Streets | $208,000 | | Schuylkill | PWD Capital |
| 50111 | 376 | Mt. Airy Church | 29-Oct-18 | Combined | 13893 | 30 | 2 | 3.8 | Stormwater Bump-out, Infiltration Storage Trench, Stormwater TreeTrench, | Streets | $1,036,000 | | TTF | PWD Capital |
| 50112 | 1055 | Botanic Ave | 09-Feb-18 | Combined | 16811 | 34 | 2.5 | 3.8 | Infiltration Storage Trench, Rain Garden, | Streets | $500,000 | Philadelphia Department of Parks & Recreation | Schuylkill | PWD Capital |
| 50113 | 600 | 37th and Mount Vernon Playground | 16-Dec-16 | Combined | 2006 | 4 | 0.3 | 0.5 | Infiltration Storage Trench, Rain Garden, | Open Space | $90,000 | Philadelphia Department of Parks & Recreation | Schuylkill | PWD Capital |
| 50119 | 1067 | Cement Park (Northern Liberties Rec Center) | 08-May-19 | Combined | 9860 | 0 | 1.7 | 2.7 | Infiltration Storage Trench, Stormwater Planter, Rain Garden, | Parking,Streets | $1,213,000 | | Delaware | PWD Capital |
| | 1068 | Cement Park (Northern Liberties Rec Center) | 08-May-19 | Combined | 1587 | 0 | 0.3 | 0.4 | Infiltration Storage Trench, Stormwater Planter, | Streets | | | Delaware | PWD Capital |
| 50122 | 1077 | Mount Sinai | 30-Aug-19 | Combined | 7605 | 4 | 1.4 | 2.1 | Infiltration Storage Trench, Stormwater TreeTrench, | Open Space,Vacant Land | $3,726,000 | | Delaware,TTF | PWD Capital |
| | 1083 | Mount Sinai | 30-Aug-19 | Combined | 45524 | 118 | 7.8 | 12.5 | Stormwater Bump-out, Infiltration Storage Trench, Stormwater Planter, Swale, Stormwater TreeTrench, | Streets | | Philadelphia Department of Parks & Recreation | Delaware,TTF | PWD Capital |
| 50123 | 1084 | Allegheny Ave Safety Corridor Improvement Project (MPMS 85417) | 10-Jan-19 | Combined | 11596 | 0 | 1.6 | 3.1 | Infiltration Storage Trench, Rain Garden, | Streets | Cost Not Available | PennDOT | Delaware | PennDot |
| 50124 | 1085 | Trenton and Auburn Playground | 05-Feb-20 | Combined | 55349 | 0 | 7.7 | 15.2 | Infiltration Storage Trench, | Open Space | $3,244,000 | | Delaware | PWD Capital |
| 50129 | 1127 | Girard Park and Warriner Post Park | 29-Jun-20 | Combined | 5602 | 22 | 0.8 | 1.5 | Rain Garden, Stormwater TreeTrench, | Vacant Land | $2,485,000 | Philadelphia Department of Parks & Recreation | Schuylkill | PWD Capital |
| | 1128 | Girard Park and Warriner Post Park | 29-Jun-20 | Combined | 14384 | 16 | 2.2 | 3.9 | Stormwater Bump-out, Stormwater TreeTrench, | Streets | | Philadelphia Department of Parks & Recreation | Schuylkill | PWD Capital |
| | 1129 | Girard Park and Warriner Post Park | 29-Jun-20 | Combined | 14605 | 44 | 2.4 | 4 | Stormwater Bump-out, Infiltration Storage Trench, Stormwater TreeTrench, | Streets | | | Schuylkill | PWD Capital |
| 50138 | 1145 | Buist Avenue Green Streets and Buist Park Improvements | 19-Nov-19 | Combined | 22300 | 42 | 3.7 | 6.1 | Stormwater Bump-out, Infiltration Storage Trench, Stormwater TreeTrench, | Streets | $2,605,000 | Philadelphia Department of Parks & Recreation | Schuylkill | PWD Capital |
| | 1146 | Buist Avenue Green Streets and Buist Park Improvements | 19-Nov-19 | Combined | 7861 | 6 | 1.3 | 2.2 | Stormwater Bump-out, Infiltration Storage Trench, Rain Garden, | Open Space | | | Schuylkill | PWD Capital |
| 50143 | 1195 | Parkside Edge - Green Streets Buyback | 19-Jan-18 | Combined | 25668 | 0 | 2.6 | 5.2 | Infiltration Storage Trench, Rain Garden, | Open Space | $1,163,000 | Fairmount Park Conservancy | Schuylkill | PWD Capital |
| 50145 | 1163 | Nelson Playground and Hissey Playground Green Improvement | 07-Feb-20 | Combined | 10205 | 12 | 1.8 | 2.8 | Infiltration Storage Trench, Rain Garden, | Open Space | $718,000 | | Delaware | PWD Capital |

| Work Number | Project ID | Project Name | Construction Completion Date | Sewer Type | Storage Volume (cf) | New Trees | Drainage Area (acres) | Greened Acres (acre-inches) | SMP Type | Program | Green Construction Cost ** | Partner(s) | Watershed | Funding Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50146 | 1197 | Point Breeze Vacant Lots | 21-May-19 | Combined | 1749.9 | 6 | 0.3 | 0.5 | Infiltration Storage Trench, Rain Garden, | Vacant Land | $2,243,000 | | Schuylkill | PWD Capital |
| | 1198 | Point Breeze Vacant Lots | 21-May-19 | Combined | 20673.6 | 86 | 3.4 | 5.4 | Stormwater Bump-out, Infiltration Storage Trench, Rain Garden, Stormwater TreeTrench, | Streets | | | Schuylkill | PWD Capital |
| 50148 | 1200 | Elmwood Medians Package | 08-Oct-20 | Combined | 18134 | 40 | 2.9 | 5 | Infiltration Storage Trench, Rain Garden, | Streets | $1,031,000 | | Cobbs-Darby,Schuylkill | PWD Capital |
| 50149 | 1202 | Erie and Rising Sun Street Improvements | 30-Jul-19 | Combined, Separate | 18738 | 60 | 4 | 4.9 | Infiltration Storage Trench, Stormwater Planter, Stormwater TreeTrench, | Streets | $1,695,000 | | Delaware | PWD Capital |
| | 1379 | Erie and Rising Sun Street Improvements | 30-Jul-19 | Combined | 5811 | 6 | 0.8 | 1.6 | Infiltration Storage Trench, Rain Garden, | Open Space | | | Delaware | PWD Capital |
| 50150 | 1015 | Hagert Playground | 10-Feb-17 | Combined | 4224 | 2 | 0.7 | 1.2 | Infiltration Storage Trench, Rain Garden, | Open Space | $286,000 | Philadelphia Department of Parks & Recreation | Delaware | PWD Capital |
| 50151 | 1204 | Reading Viaduct | 13-Jun-18 | Combined | 1091 | 0 | 0.1 | 0.3 | Stormwater Bump-out, Infiltration Storage Trench, | Streets | Cost Not Available | Center City District | Delaware | Private Development |
| 50152 | 1209 | Athletic Square | 29-Jan-20 | Combined | 8679.4 | 18 | 1.4 | 2.4 | Infiltration Storage Trench, Stormwater Planter, Stormwater TreeTrench, | Streets | $880,000 | | Schuylkill | PWD Capital |
| 50155 | 488 | Smith Playground Green Improvements | 22-May-18 | Combined | 10725 | 16 | 1.9 | 3 | Infiltration Storage Trench, Rain Garden, Stormwater TreeTrench, | Open Space | $746,000 | Department of Public Property,Philadelphia Department of Parks & Recreation,Councilman Johnson,Urban Roots | Schuylkill | Other Public Agency |
| 50157 | 1240 | Kensington Green Street Improvements | 20-Mar-20 | Combined | 12134 | 36 | 2.3 | 3.3 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | $1,077,000 | | Delaware | PWD Capital |
| 50160 | 1242 | Kensington Neighborhood Greening Phase 2 | 08-Apr-21 | Combined | 16463 | 34 | 2.9 | 4.5 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | $1,383,000 | | Delaware | PWD Capital |
| 50170 | 1272 | East Park Greenways | 14-Dec-20 | Combined | 4193 | 12 | 0.8 | 1.2 | Stormwater Bump-out, Stormwater TreeTrench, | Streets | $1,708,000 | | Schuylkill | PWD Capital |
| | 1273 | East Park Greenways | 14-Dec-20 | Combined | 21898 | 30 | 4.2 | 6 | Infiltration Storage Trench, Rain Garden, Stormwater TreeTrench, | Streets | | Philadelphia Department of Parks & Recreation,Fairmount Park Conservancy | Schuylkill | PWD Capital |
| 50171 | 1274 | South Street Headhouse Square | 12-May-21 | Combined | 12291.48 | 0 | 2.2 | 3.4 | Infiltration Storage Trench, | Streets | $798,000 | Department of Public Property,Philadelphia Streets Department | Delaware | PWD Capital |
| 50179 | 1288 | Berks & Sedgley Greening | 21-Feb-19 | Combined | 20142 | 34 | 4.1 | 5.5 | Infiltration Storage Trench, Stormwater Planter, Rain Garden, Stormwater TreeTrench, | Streets | $1,804,000 | | Schuylkill | PWD Capital |
| 50184 | 1299 | Port Richmond Green Streets Improvements | 07-Oct-20 | Combined | 22610 | 70 | 3.7 | 6.2 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | $1,688,000 | | Delaware,TTF | PWD Capital |
| 50187 | 1302 | Palmer Park | 22-Jan-20 | Combined | 2581 | 0 | 0.5 | 0.7 | Infiltration Storage Trench, | Streets | $586,000 | Philadelphia Department of Parks & Recreation | Delaware | PWD Capital |
| | 1303 | Palmer Park | 22-Jan-20 | Combined | 2350 | 6 | 0.5 | 0.6 | Infiltration Storage Trench, Stormwater Planter, Stormwater TreeTrench, | Streets | | | Delaware | PWD Capital |
| 50195 | 290 | Windrim Avenue Green Street | 03-Apr-19 | Combined | 10451 | 0 | 1.5 | 2.7 | Stormwater Bump-out, Infiltration Storage Trench, | Streets | $1,018,000 | Philadelphia Planning Commission,Southeastern Transportation Authority,Nicetown Community Development Corporation | TTF | PWD Capital,Public Grant |
| 50212 | 1348 | Fairmount Ave Greening Improvements | 31-Oct-20 | Combined | 20199 | 32 | 3.3 | 5.5 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | $1,183,000 | | Delaware,Schuylkill | PWD Capital |
| 50217 | 1359 | Lawncrest Streets North | 19-Apr-21 | Combined | 19579 | 20 | 4.6 | 5.4 | Stormwater Bump-out, Infiltration Storage Trench, Stormwater TreeTrench, | Streets | $1,773,000 | | Delaware,TTF | PWD Capital |
| 50229 | 1383 | Columbia Field | 11-Dec-20 | Combined | 10064 | 24 | 1.4 | 2.8 | Infiltration Storage Trench, Rain Garden, | Open Space | $613,000 | | Delaware | PWD Capital |

| Work Number | Project ID | Project Name | Construction Completion Date | Sewer Type | Storage Volume (cf) | New Trees | Drainage Area (acres) | Greened Acres (acre-inches) | SMP Type | Program | Green Construction Cost ** | Partner(s) | Watershed | Funding Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50235 | 1392 | Heitzman Playground Streets | 22-Oct-20 | Combined | 15010 | 14 | 3.2 | 4.1 | Infiltration Storage Trench, Stormwater TreeTrench, | Streets | $1,116,000 | | Delaware,TTF | PWD Capital |
| 64056 | 564 | Two (2) 30 Million Gallon Storage Capacity Tanks at East Park - GC | 25-Feb-20 | Combined | 1637 | 0 | 0.5 | 0.5 | Rain Garden, | Open Space | Cost Not Available | Southeastern Transportation Authority,Philadelphia Department of Parks & Recreation | Schuylkill | PWD Capital |
| **Total Greened Acres:** | | | | | | | | **489** | | | | | | |

* PennVest project

** Reported construction costs may vary from past fiscal years. Beginning in FY19, PWD developed the capability to track Green Construction Cost, costspecifically associated Green Stormwater Infrastructure line items.

# Appendix 2

## Planned Public Green Stormwater Infrastructure Projects

**Table 1: Public Planned Project Tracking Metrics and Reporting Format**

| Public Project Tracking Metrics | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Work Number** | **Project ID** | **Sewer Type** | **Watershed** | **Program** | **Status** | **Estimated SMP Type(s)** | **Potential Partners** | **Greened Acre (acre-inches)** | **Completion Date Estimate** | **Estimated Construction Cost** |

Over the past year, PWD's new capital projects tracking system's (CIPIT) interaction with its GSI tracking system (GreenIT) has slightly changed. To accommodate this change, we have replaced Project Names with a Work Number and a Project ID. The Project ID is unique to individual projects and these projects can be bundled under one Work Number for bidding purposes. Moving forward, Work Numbers will have a 1:1 relationship with projects.

| Work Number | Project ID | Sewer Type | Watershed | Program | Status | Estimated SMP Type(s) | Potential Partner(s) | Greened Acre (acre-inches) | Completion Date Estimate | Estimated Construction Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| 20407 | 351 | Combined | Cobbs-Darby | Streets | Design | Infiltration Storage Trench, | | TBD | 2024 | TBD |
| 20479 | 1451 | Combined | Delaware, TTF | Streets | Design | Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 20496 | 1212 | Combined | Schuylkill | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 20545 | 1586 | Combined | Cobbs-Darby | Streets | Design | Stormwater Bump-out, | | TBD | 2024 | TBD |
| 20552 | 1489 | Combined | Delaware | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 20559 | 1463 | Combined | Delaware | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 20573 | 1479 | Combined | Delaware | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 20575 | 1465 | Combined | TTF | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 20578 | 1542 | Combined | Delaware | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 20579 | 1466 | Combined | Cobbs-Darby | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench, | | TBD | 2024 | TBD |
| 20587 | 1589 | Combined | Schuylkill | Streets | Design | Stormwater Bump-out, | | TBD | 2024 | TBD |
| 20597 | 1543 | Combined | Schuylkill | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 20599 | 1501 | Combined | Delaware | Streets | Design | Stormwater Planter, | | TBD | 2024 | TBD |
| 20609 | 1484 | Combined | Delaware | Streets | Design | Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 20614 | 1494 | Combined, Separate | Cobbs-Darby, Schuylkill | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 20619 | 1485 | Combined, Separate | Delaware, Pennypack | Streets | Design | Stormwater Bump-out, | | TBD | 2024 | TBD |
| 20622 | 1523 | Combined | TTF | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 20624 | 1530 | Combined, Separate | Delaware, TTF | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 20630 | 1547 | Combined | Delaware | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 20636 | 1559 | Combined | Cobbs-Darby | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 20639 | 1558 | Combined | TTF | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 20645 | 1576 | Combined | Delaware | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 20651 | 1590 | Combined, Separate | Delaware, Pennypack | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 20653 | 1581 | Combined | Delaware | Streets | Design | Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 40736 | 236 | Combined | Delaware | Streets | Design | Stormwater Planter,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 40780 | 1496 | Combined | Schuylkill | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 40794 | 168 | Combined, Separate, Non-Contributing | TTF | Open Space | Design | Rain Garden, | Tookany/Tacony-Frankford Watershed Partnership,Philadelphia Department of Parks & Recreation | TBD | 2024 | TBD |
| 40860 | 1443 | Combined | Schuylkill | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 40864 | 1132 | Combined | Schuylkill | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 40875 | 1515 | Combined, Non-Contributing | Cobbs-Darby | Streets | Design | Infiltration Storage Trench, | | TBD | 2024 | TBD |
| 40880 | 1591 | Combined | TTF | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 40882 | 1245 | Combined | Delaware | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 40923 | 1244 | Combined | Delaware | Streets | Design | Stormwater Planter,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 40933 | 1521 | Combined | Delaware | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |

| Work Number | Project ID | Sewer Type | Watershed | Program | Status | Estimated SMP Type(s) | Potential Partner(s) | Greened Acre (acre-inches) | Completion Date Estimate | Estimated Construction Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| 40975 | 1377 | Combined | Schuylkill | Streets | Design | Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 40989 | 1340 | Combined | Pennypack | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | $135,000 |
| 41008 | 1402 | Combined | Schuylkill | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | $95,000 |
| 41033 | 1505 | Combined | Schuylkill | Streets | Design | Infiltration Storage Trench, | | TBD | 2024 | TBD |
| 41049 | 1398 | Combined | Delaware | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 41064 | 1452 | Combined | Delaware | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 41070 | 1435 | Combined | Delaware, Schuylkill | Streets | Design | Stormwater TreeTrench, | Delaware Valley Regional Planning Commission (DVRPC),Philadelphia Free Library | TBD | 2024 | TBD |
| 41071 | 1471 | Combined | Schuylkill | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 41080 | 1506 | Combined | Schuylkill | Streets | Design | Infiltration Storage Trench, | | TBD | 2024 | TBD |
| 41096 | 1457 | Combined | Cobbs-Darby | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 41098 | 1518 | Combined | Cobbs-Darby | Streets | Design | Infiltration Storage Trench, | | TBD | 2024 | TBD |
| 41103 | 1492 | Combined | Schuylkill | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 41105 | 1497 | Combined | Cobbs-Darby | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 41116 | 1601 | Combined | Schuylkill | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 41117 | 1551 | Combined | Cobbs-Darby | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 41122 | 1514 | Combined | Delaware | Streets | Design | Infiltration Storage Trench, | | TBD | 2024 | TBD |
| 41124 | 1540 | Combined | TTF | Streets | Design | Stormwater Bump-out, | | TBD | 2024 | TBD |
| 41126 | 1549 | Combined | Delaware | Streets | Design | Stormwater Bump-out, | | TBD | 2024 | TBD |
| 41135 | 1553 | Combined | Delaware | Streets | Design | Stormwater Bump-out,Rain Garden,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 41137 | 1588 | Combined | Cobbs-Darby | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 41144 | 1596 | Combined | Delaware | Streets | Design | Stormwater Bump-out, | | TBD | 2024 | TBD |
| 41150 | 1593 | Combined | Delaware | Streets | Design | Stormwater Bump-out, | | TBD | 2024 | TBD |
| 41151 | 1592 | Combined | Delaware | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 41153 | 1595 | Combined | Schuylkill | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50081 | 408 | Combined | Delaware | Open Space | Design | Infiltration Storage Trench,Rain Garden,Swale, | Department of Public Property,Philadelphia Department of Parks & Recreation,Councilwoman Sanchez | TBD | 2024 | TBD |
| 50090 | 539 | Combined | Delaware | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| | 540 | Combined | Delaware | | Design | Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | |
| 50107 | 1052 | Combined | Cobbs-Darby, Schuylkill | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater Planter,Stormwater TreeTrench, | | TBD | 2024 | $2,000 |
| 50126 | 1088 | Combined | TTF | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater Planter, | | TBD | 2024 | TBD |
| | 1262 | Combined | Delaware | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench, | | TBD | 2024 | |
| 50141 | 1150 | Combined | TTF | Streets | Design | Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50168 | 1271 | Combined | Cobbs-Darby | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | $2,000 |
| 50169 | 1365 | Combined | Schuylkill | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50176 | 1283 | Combined | Schuylkill | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | $2,258,000 |

| Work Number | Project ID | Sewer Type | Watershed | Program | Status | Estimated SMP Type(s) | Potential Partner(s) | Greened Acre (acre-inches) | Completion Date Estimate | Estimated Construction Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| 50180 | 1285 | Combined | Schuylkill | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | $4,000 |
| 50186 | 1301 | Combined | Cobbs-Darby, Schuylkill | Streets | Design | Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | $2,336,000 |
| 50196 | 1318 | Combined, Separate | Schuylkill, TTF | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater Planter,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| | 1319 | Combined, Separate | Schuylkill, TTF | Open Space | Design | Rain Garden,Swale,Stormwater TreeTrench, | Philadelphia Department of Parks & Recreation | TBD | 2024 | |
| 50197 | 1322 | Combined | Delaware | Streets | Design | Rain Garden, | | TBD | 2024 | TBD |
| 50198 | 1327 | Combined | Schuylkill | Streets | Design | Stormwater Planter,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50199 | 1328 | Combined | Schuylkill | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater Planter,Stormwater TreeTrench, | | TBD | 2024 | $7,000 |
| 50201 | 1335 | Combined | TTF | Vacant Land | Design | Infiltration Storage Trench,Rain Garden, | | TBD | 2024 | $1,122,000 |
| 50202 | 1334 | Combined | TTF | Streets, Open Space | Design | Infiltration Storage Trench,Rain Garden,Stormwater TreeTrench, | | TBD | 2024 | $644,000 |
| 50203 | 1336 | Combined | Schuylkill | Streets | Design | Infiltration Storage Trench,Rain Garden,Swale, | | TBD | 2024 | $1,612,000 |
| 50204 | 1339 | Combined | Delaware | Open Space | Design | Infiltration Storage Trench,Stormwater Planter,Rain Garden,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50205 | 1341 | Combined | Schuylkill | Streets | Design | Infiltration Storage Trench,Rain Garden,Stormwater TreeTrench, | | TBD | 2024 | $1,000 |
| 50206 | 1343 | Combined | Schuylkill | Streets | Design | Stormwater Bump-out,Stormwater Planter,Stormwater TreeTrench, | Drexel University | TBD | 2024 | TBD |
| 50207 | 1342 | Combined | Schuylkill | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50214 | 1353 | Combined, Non-Contributing | Pennypack | Streets | Design | Infiltration Storage Trench, | Philadelphia Department of Parks & Recreation | TBD | 2024 | TBD |
| 50215 | 1354 | Combined | Schuylkill | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | $1,360,000 |
| 50218 | 1357 | Combined | Cobbs-Darby | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | $1,000 |
| 50219 | 1360 | Combined | Delaware | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | $1,981,000 |
| 50220 | 1361 | Combined | Cobbs-Darby, Schuylkill | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50222 | 1374 | Combined | Cobbs-Darby, Schuylkill | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Rain Garden,Stormwater Tree, | | TBD | 2024 | TBD |
| 50226 | 1382 | Combined | Delaware,TTF | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50233 | 1389 | Combined | Cobbs-Darby | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater Planter,Rain Garden,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| | 1390 | Combined | Cobbs-Darby | Open Space | Design | Rain Garden, | | TBD | 2024 | |
| 50240 | 1401 | Combined | Cobbs-Darby | Open Space, Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50241 | 1403 | Combined | TTF | Open Space | Design | Infiltration Storage Trench,Rain Garden,Swale, | | TBD | 2024 | $1,265,000 |
| 50242 | 1404 | Combined | TTF | Open Space, Streets | Design | Stormwater Basin,Stormwater Bump-out,Stormwater Planter,Swale, | PennDOT,Department of Parks & Recreation (PPR),Councilwoman Bass,Nicetown CDC,Philadelphia Redevelopment Authority (PRA) | TBD | 2024 | TBD |
| 50243 | 1405 | Combined | Schuylkill | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |

| Work Number | Project ID | Sewer Type | Watershed | Program | Status | Estimated SMP Type(s) | Potential Partner(s) | Greened Acre (acre-inches) | Completion Date Estimate | Estimated Construction Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| 50246 | 1412 | Combined | Schuylkill | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | $3,253,000 |
| 50248 | 1414 | Combined | Schuylkill | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50252 | 1420 | Combined | TTF | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50253 | 1421 | Combined | Delaware, Schuylkill | Streets | Design | Infiltration Storage Trench,Rain Garden,Stormwater TreeTrench, | Philadelphia Redevelopment Authority (PRA) | TBD | 2024 | $2,000 |
| 50255 | 1425 | Combined,Non-Contributing | Cobbs-Darby | Open Space, Streets | Design | Stormwater Bump-out,Rain Garden,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50258 | 1429 | Combined | Schuylkill | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50259 | 1431 | Combined, Separate | Delaware, Pennypack | Streets | Design | Infiltration Storage Trench, | Commerce Department,Streets Department | TBD | 2024 | TBD |
| 50260 | 1433 | Combined,Non-Contributing | Cobbs-Darby | Open Space, Streets | Design | Infiltration Storage Trench,Rain Garden,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50262 | 1436 | Combined | Cobbs-Darby | Streets, Open Space | Design | Stormwater Bump-out,Infiltration Storage Trench,Rain Garden,Stormwater TreeTrench, | | TBD | 2024 | $1,811,000 |
| 50263 | 1437 | Combined, Separate | Delaware, Pennypack | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50265 | 1439 | Combined | Cobbs-Darby | Open Space, Streets | Design | Stormwater Bump-out,Rain Garden,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50266 | 1440 | Combined | TTF | Open Space, Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | Department of Parks & Recreation (PPR) | TBD | 2024 | TBD |
| 50267 | 1441 | Combined | Pennypack | Streets | Design | Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | $945,000 |
| 50269 | 1444 | Combined | Delaware, Pennypack | Open Space, Streets | Design | Infiltration Storage Trench, | Department of Parks & Recreation (PPR) | TBD | 2024 | TBD |
| 50270 | 1445 | Combined | Delaware | Streets, Vacant Land | Design | Rain Garden, | Streets Department,Department of Public Property (DPP),Neighborhood Gardens Trust (NGT) | TBD | 2024 | TBD |
| 50271 | 1446 | Combined | Schuylkill | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | $2,008,000 |
| 50272 | 1447 | Combined | Delaware | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater Planter,Rain Garden,Stormwater TreeTrench, | | TBD | 2024 | $959,000 |
| 50274 | 1449 | Combined | Cobbs-Darby, Schuylkill | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50275 | 1450 | Combined, Separate | Pennypack | Streets | Design | Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50276 | 1454 | Combined | Delaware, Pennypack | Streets | Design | Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50279 | 1459 | Combined | TTF | Streets, Vacant Land | Design | Stormwater Basin, | | TBD | 2024 | TBD |
| 50281 | 1461 | Combined | Cobbs-Darby, Schuylkill | Facilities, Streets | Design | Rain Garden, | | TBD | 2024 | TBD |
| 50282 | 1462 | Combined | Delaware | Streets | Design | Infiltration Storage Trench,Stormwater TreeTrench, | Streets Department | TBD | 2024 | TBD |
| 50283 | 1467 | Combined, Separate, Non-Contributing | TTF | Open Space, Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Rain Garden,Stormwater TreeTrench, | Department of Parks & Recreation (PPR) | TBD | 2024 | TBD |
| 50284 | 1469 | Combined | Delaware, Pennypack | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |

| Work Number | Project ID | Sewer Type | Watershed | Program | Status | Estimated SMP Type(s) | Potential Partner(s) | Greened Acre (acre-inches) | Completion Date Estimate | Estimated Construction Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| 50286 | 1473 | Combined | Cobbs-Darby | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50287 | 1474 | Combined | Schuylkill | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50288 | 1475 | Combined | Delaware, Pennypack | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50290 | 1477 | Combined | Delaware | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50292 | 1480 | Combined | Cobbs-Darby, Schuylkill | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50293 | 1481 | Combined | Delaware | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50294 | 1482 | Combined | Cobbs-Darby, Schuylkill | Streets | Design | Stormwater Bump-out,Swale,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50296 | 1486 | Combined | Schuylkill | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50297 | 1490 | Combined | Delaware | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50298 | 1491 | Combined | Delaware,TTF | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50299 | 1495 | Combined | Cobbs-Darby, Schuylkill | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50300 | 1498 | Combined | Delaware | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50302 | 1500 | Combined | Delaware,TTF | Streets | Design | Stormwater Bump-out, | | TBD | 2024 | TBD |
| 50303 | 1502 | Combined | Delaware | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench, | | TBD | 2024 | TBD |
| 50304 | 1503 | Combined | Cobbs-Darby, Schuylkill | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50307 | 1509 | Combined | Cobbs-Darby, Schuylkill | Open Space, Streets | Design | Stormwater TreeTrench, | Department of Parks & Recreation (PPR) | TBD | 2024 | TBD |
| 50309 | 1512 | Combined | Delaware | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50310 | 1513 | Combined | Schuylkill | Streets | Design | Stormwater Bump-out,Rain Garden,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50311 | 1516 | Combined, Separate | Schuylkill,TTF | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50312 | 1517 | Combined | Delaware,TTF | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50313 | 1519 | Combined | Delaware | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50314 | 1522 | Combined | Schuylkill | Streets | Design | Rain Garden,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50315 | 1524 | Combined | Delaware | Streets | Design | Stormwater Bump-out, | | TBD | 2024 | TBD |
| 50316 | 1525 | Combined | Delaware | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50317 | 1527 | Combined | Delaware,TTF | Streets | Design | Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50318 | 1528 | Combined | Cobbs-Darby, Schuylkill | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50319 | 1531 | Combined | Cobbs-Darby | Facilities, Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50321 | 1537 | Combined | TTF | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50322 | 1538 | Combined | TTF | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50323 | 1541 | Combined | Cobbs-Darby | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |

| Work Number | Project ID | Sewer Type | Watershed | Program | Status | Estimated SMP Type(s) | Potential Partner(s) | Greened Acre (acre-inches) | Completion Date Estimate | Estimated Construction Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| 50324 | 1545 | Combined | Delaware,TTF | Streets | Design | Stormwater Bump-out,Rain Garden,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50325 | 1546 | Combined | Schuylkill | Open Space, Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50326 | 1548 | Combined | Delaware,TTF | Open Space, Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater Planter,Swale,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50327 | 1556 | Combined | TTF | Streets | Design | Infiltration Storage Trench, | | TBD | 2024 | TBD |
| 50328 | 1557 | Combined | TTF | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50329 | 1560 | Combined | TTF | Open Space, Streets | Design | Stormwater TreeTrench, | Rebuild | TBD | 2024 | TBD |
| 50330 | 1561 | Combined | Delaware | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50331 | 1564 | Combined | Cobbs-Darby | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50332 | 1568 | Combined | Delaware | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50333 | 1571 | Combined | Schuylkill | Open Space, Streets | Design | Stormwater Bump-out, | | TBD | 2024 | TBD |
| 50334 | 1570 | Combined | Delaware | Open Space | Design | Rain Garden,Stormwater TreeTrench, | Department of Parks & Recreation (PPR) | TBD | 2024 | TBD |
| 50335 | 1573 | Combined | Delaware | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50336 | 1574 | Combined | Cobbs-Darby | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50337 | 1575 | Combined | Delaware | Open Space, Streets | Design | Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50338 | 1577 | Combined, Separate | Delaware, Pennypack | Streets | Design | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50339 | 1578 | Combined | Schuylkill | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50340 | 1579 | Combined | Delaware | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50341 | 1580 | Combined | Cobbs-Darby | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50342 | 1583 | Combined | Cobbs-Darby, Schuylkill | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50344 | 1584 | Combined | Delaware | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50345 | 1585 | Combined | Delaware | Open Space, Streets | Design | Stormwater TreeTrench, | Department of Parks & Recreation (PPR) | TBD | 2024 | TBD |
| 50346 | 1587 | Combined | Delaware | Open Space, Streets | Design | Infiltration Storage Trench,Stormwater TreeTrench, | Department of Parks & Recreation (PPR) | TBD | 2024 | TBD |
| 50347 | 1594 | Combined | Delaware | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50349 | 1597 | Combined,Non-Contributing | Cobbs-Darby | Streets, Vacant Land | Design | Infiltration Storage Trench,Rain Garden, | | TBD | 2024 | TBD |
| 50350 | 1598 | Combined | Delaware | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50351 | 1599 | Combined | Cobbs-Darby | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50352 | 1600 | Combined | Delaware | Streets | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50353 | 1602 | Combined | Delaware | Streets | Design | Stormwater Bump-out,Stormwater TreeTrench, | | TBD | 2024 | TBD |
| 50354 | 1603 | Combined | Schuylkill | Open Space, Streets | Design | Infiltration Storage Trench, | Department of Parks & Recreation (PPR),Philadelphia Redevelopment Authority (PRA) | TBD | 2024 | TBD |
| 90188 | 1582 | Combined | Delaware | Streets, Vacant Land | Design | Stormwater TreeTrench, | | TBD | 2024 | TBD |

| Work Number | Project ID | Sewer Type | Watershed | Program | Status | Estimated SMP Type(s) | Potential Partner(s) | Greened Acre (acre-inches) | Completion Date Estimate | Estimated Construction Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| 20417 | 1061 | Combined | Delaware | Streets | Contract Management | Infiltration Storage Trench, | | 1.7 | 2023 | $425,000 |
| 20437 | 1124 | Combined | Delaware | Streets | Contract Management | Infiltration Storage Trench,Stormwater TreeTrench, | | 3.6 | 2023 | $876,000 |
| 20464 | 1381 | Combined, Separate | Schuylkill, TTF, Wissahickon | Streets | Contract Management | Stormwater TreeTrench, | | 2.3 | 2023 | $269,000 |
| 20472 | 1040 | Combined | Schuylkill | Streets | Contract Management | Infiltration Storage Trench, | | 0.5 | 2023 | $96,000 |
| 20474 | 1243 | Combined | Delaware,TTF | Streets | Contract Management | Infiltration Storage Trench,Stormwater TreeTrench, | | 3.4 | 2023 | $808,000 |
| 20485 | 1126 | Combined | Schuylkill | Streets | Contract Management | Infiltration Storage Trench,Stormwater TreeTrench, | | 1.4 | 2023 | $464,000 |
| 20486 | 1282 | Combined | Delaware | Streets | Contract Management | Infiltration Storage Trench, | | 0.7 | 2023 | $306,000 |
| 20487 | 1133 | Combined | Schuylkill | Streets | Contract Management | Infiltration Storage Trench, | | 0.8 | 2023 | $298,000 |
| 20513 | 1338 | Combined | Delaware | Streets | Contract Management | Infiltration Storage Trench, | | 1.1 | 2023 | $373,000 |
| 20517 | 1418 | Combined | TTF | Streets | Contract Management | Infiltration Storage Trench,Stormwater TreeTrench, | | 1.4 | 2023 | $387,000 |
| 20525 | 1310 | Combined | Delaware | Streets | Contract Management | Infiltration Storage Trench, | | 0.4 | 2023 | $115,000 |
| 20536 | 1330 | Combined | TTF | Streets | Contract Management | Infiltration Storage Trench, | | 2.8 | 2023 | $810,000 |
| 20546 | 1350 | Combined | TTF | Parking, Open Space | Contract Management | Infiltration Storage Trench, | | 0.6 | 2023 | $267,000 |
| 20558 | 1376 | Combined | TTF | Streets | Contract Management | Infiltration Storage Trench, | | 0.6 | 2023 | $1,000 |
| 20562 | 1395 | Combined | Schuylkill | Streets | Contract Management | Infiltration Storage Trench, | | 0.7 | 2023 | $310,000 |
| 20564 | 1419 | Combined | TTF | Facilities, Industry & Business, Vacant Land | Contract Management | Infiltration Storage Trench, | | 2.9 | 2023 | $984,000 |
| 20583 | 1470 | Combined | TTF | Facilities, Schools | Contract Management | Infiltration Storage Trench, | | 2.1 | 2023 | $616,000 |
| 20588 | 1487 | Combined | TTF | Streets | Contract Management | Infiltration Storage Trench, | | 1.2 | 2023 | $294,000 |
| 20601 | 1464 | Combined | Schuylkill | Streets | Contract Management | Stormwater TreeTrench, | | 0.4 | 2023 | $173,000 |
| 20625 | 1504 | Combined | TTF | Open Space | Contract Management | Stormwater TreeTrench, | | 0.5 | 2023 | $155,000 |
| 40826 | 1063 | Combined | Schuylkill | Streets | Contract Management | Stormwater TreeTrench, | | 1.5 | 2023 | $377,000 |
| 40856 | 1060 | Combined | Schuylkill | Streets | Contract Management | Infiltration Storage Trench, | | 0.3 | 2023 | $117,000 |
| 40869 | 1289 | Combined | TTF | Streets | Contract Management | Stormwater TreeTrench, | | 0.8 | 2023 | $284,000 |
| 40899 | 1219 | Combined | Delaware | Streets | Contract Management | Stormwater TreeTrench, | | 0.5 | 2023 | $173,000 |
| 40904 | 1134 | Combined | Delaware | Streets | Contract Management | Infiltration Storage Trench,Stormwater TreeTrench, | | 0.6 | 2023 | $168,000 |

| Work Number | Project ID | Sewer Type | Watershed | Program | Status | Estimated SMP Type(s) | Potential Partner(s) | Greened Acre (acre-inches) | Completion Date Estimate | Estimated Construction Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| 40908 | 1370 | Combined | Cobbs-Darby, Schuylkill | Streets | Contract Management | Infiltration Storage Trench,Stormwater TreeTrench, | | 1.4 | 2023 | $460,000 |
| 40939 | 1331 | Combined | Delaware | Streets | Contract Management | Infiltration Storage Trench, | | 1.3 | 2023 | $325,000 |
| 40951 | 1280 | Combined | Schuylkill | Streets | Contract Management | Infiltration Storage Trench, | | 0.4 | 2023 | $101,000 |
| 40965 | 1369 | Combined | Schuylkill | Streets | Contract Management | Infiltration Storage Trench, | | 0.3 | 2023 | $141,000 |
| 40985 | 1375 | Combined | Cobbs-Darby, Schuylkill | Streets | Contract Management | Stormwater Tree, | | 1.7 | 2023 | $523,000 |
| 40990 | 1355 | Combined | Cobbs-Darby | Streets | Contract Management | Stormwater TreeTrench, | | 1.1 | 2023 | $555,000 |
| 40996 | 1366 | Combined | Delaware | Streets | Contract Management | Stormwater TreeTrench, | | 0.3 | 2023 | $89,000 |
| 41025 | 1409 | Combined | Delaware | Streets | Contract Management | Stormwater TreeTrench, | | 2.3 | 2023 | $453,000 |
| 41068 | 1407 | Combined | Cobbs-Darby | Streets | Contract Management | Stormwater TreeTrench, | | 0.3 | 2023 | $94,000 |
| 41149 | 1555 | Combined | Schuylkill | Streets | Contract Management | Stormwater TreeTrench, | | 0.3 | 2023 | $194,000 |
| 50128 | 1090 | Combined | Delaware | Streets | Contract Management | Stormwater TreeTrench, | | 4.6 | 2023 | $2,354,000 |
| | 1107 | Combined | Delaware | Streets | Contract Management | Rain Garden,Stormwater TreeTrench, | Philadelphia Department of Parks & Recreation | 1.4 | 2023 | |
| | 1269 | Combined | Delaware | Streets | Contract Management | Stormwater TreeTrench, | | 0.6 | 2023 | |
| 50130 | 1135 | Combined | Delaware | Open Space | Contract Management | Stormwater Bump-out,Infiltration Storage Trench,Stormwater Planter, | Philadelphia Streets Department,Mayors Office of Transportation & Utilities | 0.7 | 2023 | $201,000 |
| 50133 | 1139 | Combined | TTF | Streets | Contract Management | Stormwater Bump-out,Infiltration Storage Trench,Stormwater Tree,Stormwater TreeTrench, | | 17.6 | 2023 | $5,732,000 |
| | 1298 | Combined | TTF | Streets | Contract Management | Infiltration Storage Trench, | | 0.9 | 2023 | |
| 50139 | 1147 | Combined | Cobbs-Darby, Schuylkill | Streets | Contract Management | Stormwater Bump-out,Infiltration Storage Trench,Stormwater Planter,Rain Garden,Stormwater TreeTrench, | | 7.4 | 2023 | $1,798,000 |
| 50181 | 1290 | Combined | Schuylkill | Streets | Contract Management | Infiltration Storage Trench,Stormwater TreeTrench, | | 0.7 | 2023 | $1,229,000 |
| | 1291 | Combined | Schuylkill | Facilities, Parking | Contract Management | Infiltration Storage Trench,Stormwater Planter, | | 3.8 | 2023 | |
| 50192 | 1311 | Combined | Delaware | Streets, Open Space | Contract Management | Infiltration Storage Trench,Stormwater TreeTrench, | Philadelphia Department of Parks & Recreation | 8.4 | 2023 | $2,691,000 |
| 50200 | 1329 | Combined | Schuylkill | Streets | Contract Management | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | 3.9 | 2023 | $1,371,000 |
| 50210 | 1345 | Combined | Schuylkill | Streets | Contract Management | Infiltration Storage Trench,Rain Garden, | | 10.8 | 2023 | $2,585,000 |
| 50213 | 1351 | Combined | Schuylkill | Streets | Contract Management | Stormwater TreeTrench, | | 2.1 | 2023 | $740,000 |
| 50221 | 1363 | Combined | Delaware, TTF | Streets | Contract Management | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | 5.8 | 2023 | $1,605,000 |
| 50234 | 1388 | Combined | Delaware | Streets | Contract Management | Stormwater TreeTrench, | Impact Services CDC | 2.8 | 2023 | $821,000 |

| Work Number | Project ID | Sewer Type | Watershed | Program | Status | Estimated SMP Type(s) | Potential Partner(s) | Greened Acre (acre-inches) | Completion Date Estimate | Estimated Construction Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| 50237 | 1394 | Combined | Delaware | Streets | Contract Management | Infiltration Storage Trench, | | 0.3 | 2023 | $129,000 |
| 50238 | 1396 | Combined | Delaware | Streets | Contract Management | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | 6.8 | 2023 | $1,776,000 |
| 50245 | 1410 | Combined | Delaware | Open Space | Contract Management | Infiltration Storage Trench, | Councilwoman Sanchez,Department of Parks & Recreation (PPR) | 2.3 | 2023 | $349,000 |
| 50247 | 1413 | Combined | Delaware,TTF | Streets | Contract Management | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | 4.1 | 2023 | $1,210,000 |
| 50257 | 1428 | Combined | Delaware | Facilities | Contract Management | Infiltration Storage Trench,Rain Garden, | Department of Parks & Recreation (PPR) | 0.8 | 2023 | $236,000 |
| 50264 | 1438 | Combined | Delaware | Vacant Land | Contract Management | Infiltration Storage Trench,Rain Garden, | Arcadia Commons,Neighborhood Gardens Trust (NGT) | 1.8 | 2023 | $337,000 |
| 71102 | 1526 | Combined | Delaware,TTF | Facilities | Contract Management | Stormwater Basin,Green Roof,Infiltration Storage Trench,Pervious Pavement, | | 1.8 | 2023 | TBD |
| 20475 | 1042 | Combined | Schuylkill | Streets | Construction | Stormwater TreeTrench, | | 0.7 | 2022 | $425,000 |
| 20480 | 1266 | Combined | Delaware | Streets | Construction | Stormwater TreeTrench, | | 0.9 | 2022 | $187,000 |
| 20483 | 1294 | Combined | Delaware | Streets | Construction | Infiltration Storage Trench, | | 0.7 | 2022 | $207,000 |
| 20499 | 1248 | Combined | Delaware | Streets | Construction | Infiltration Storage Trench, | | 0.3 | 2022 | $248,000 |
| 40795 | 443 | Combined | Cobbs-Darby | Streets, Open Space | Construction | Stormwater Basin,Stormwater Bump-out,Infiltration Storage Trench,Rain Garden,Stormwater TreeTrench, | Philadelphia Department of Parks & Recreation | 13.5 | 2022 | $3,632,000 |
| 40800 | 502 | Combined | Cobbs-Darby | Streets | Construction | Stormwater TreeTrench, | | 0.5 | 2022 | $355,000 |
| 40824 | 525 | Combined | Schuylkill | Streets | Construction | Stormwater TreeTrench, | | 1.4 | 2022 | $335,000 |
| 40839 | 995 | Combined | Cobbs-Darby, Schuylkill | Streets | Construction | Infiltration Storage Trench, | | 1.3 | 2022 | $390,000 |
| 40866 | 1065 | Combined | Cobbs-Darby | Streets | Construction | Infiltration Storage Trench, | | 0.4 | 2022 | $134,000 |
| 40877 | 1550 | Combined | Delaware | Streets | Construction | Infiltration Storage Trench, | | 0.5 | 2022 | TBD |
| 40888 | 1011 | Combined | Schuylkill | Streets | Construction | Infiltration Storage Trench,Stormwater TreeTrench, | | 2.9 | 2022 | TBD |
| 40945 | 1292 | Combined | Schuylkill | Streets | Construction | Infiltration Storage Trench, | | 2.2 | 2022 | TBD |
| 41034 | 1399 | Combined | Schuylkill | Streets | Construction | Infiltration Storage Trench, | | 0.3 | 2022 | $106,000 |
| 41039 | 1455 | Combined | Delaware | Streets | Construction | Stormwater TreeTrench, | | 2.1 | 2022 | TBD |
| 50060 | 416 | Combined | Delaware,TTF | Open Space | Construction | Infiltration Storage Trench,Rain Garden, | Philadelphia Department of Parks & Recreation | 12.7 | 2022 | $1,803,000 |
| 50088 | 546 | Combined | Delaware | Streets | Construction | Stormwater Bump-out,Infiltration Storage Trench,Stormwater Planter,Swale,Stormwater TreeTrench, | | 5.5 | 2022 | $5,058,000 |
| | 595 | Combined | Delaware, Pennypack | Streets | Construction | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | 12.3 | 2022 | |
| | 596 | Combined | Pennypack | Streets | Construction | Stormwater Bump-out,Infiltration Storage Trench, | | 3.1 | 2022 | |
| 50105 | 1051 | Combined | Cobbs-Darby, Schuylkill | Streets | Construction | Stormwater Bump-out,Green Gutter,Infiltration Storage Trench,Stormwater TreeTrench, | | 16.1 | 2022 | $4,096,000 |
| 50108 | 1053 | Combined | Delaware | Streets | Construction | Stormwater Bump-out,Infiltration Storage Trench,Stormwater Planter,Stormwater TreeTrench, | | 4.5 | 2022 | $1,762,000 |
| | 1054 | Combined | Delaware | Open Space | Construction | Infiltration Storage Trench,Rain Garden, | Philadelphia School District | 0.5 | 2022 | |
| 50110 | 242 | Non-Contributing, Combined | Cobbs-Darby | Streets, Open Space | Construction | Infiltration Storage Trench,Rain Garden, | Philadelphia Department of Parks & Recreation | 4.8 | 2022 | $2,290,000 |
| 50118 | 1059 | Combined | Delaware | Streets | Construction | Stormwater Bump-out,Infiltration Storage Trench,Rain Garden,Stormwater TreeTrench, | | 3.2 | 2022 | $1,213,000 |

| Work Number | Project ID | Sewer Type | Watershed | Program | Status | Estimated SMP Type(s) | Potential Partner(s) | Greened Acre (acre-inches) | Completion Date Estimate | Estimated Construction Cost |
|---|---|---|---|---|---|---|---|---|---|---|
| 50120 | 1070 | Combined | Delaware | Streets | Construction | Infiltration Storage Trench,Stormwater TreeTrench, | | 7.6 | 2022 | $1,901,000 |
| 50125 | 1087 | Combined | Delaware,TTF | Streets | Construction | Stormwater Bump-out,Infiltration Storage Trench, | | 12.5 | 2022 | $2,603,000 |
| 50132 | 1137 | Combined | Delaware | Streets, Open Space | Construction | Stormwater Bump-out,Infiltration Storage Trench,Stormwater Planter,Rain Garden,Swale,Stormwater TreeTrench, | | 12.9 | 2022 | $3,089,000 |
| | 1138 | Combined | Delaware | Streets | Construction | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | 3.7 | 2022 | |
| 50134 | 1140 | Combined | Schuylkill | Open Space | Construction | Infiltration Storage Trench,Rain Garden,Stormwater TreeTrench, | | 6.2 | 2022 | $1,088,000 |
| 50135 | 1142 | Combined | Schuylkill | Streets | Construction | Stormwater Bump-out,Infiltration Storage Trench,Stormwater Planter, | Philadelphia Housing Authority | 3 | 2022 | $305,000 |
| 50158 | 1221 | Combined | Cobbs-Darby | Streets | Construction | Infiltration Storage Trench,Rain Garden, | Philadelphia Streets Department | 2.5 | 2022 | $248,000 |
| 50162 | 1265 | Combined | Cobbs-Darby, Schuylkill | Streets | Construction | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | 5.9 | 2022 | $2,156,000 |
| 50166 | 1264 | Combined | Delaware | Streets | Construction | Stormwater Bump-out,Infiltration Storage Trench,Stormwater Planter,Stormwater TreeTrench, | | 4.9 | 2022 | $1,661,000 |
| 50167 | 1267 | Combined | Delaware | Open Space | Construction | Infiltration Storage Trench,Rain Garden,Stormwater Wetland, | | 41.7 | 2022 | $8,473,000 |
| 50174 | 1279 | Combined | Delaware | Streets | Construction | Infiltration Storage Trench,Stormwater TreeTrench, | | 6 | 2022 | $1,677,000 |
| 50175 | 1281 | Combined | Delaware | Streets | Construction | Stormwater Bump-out,Infiltration Storage Trench,Stormwater Planter,Rain Garden,Swale,Stormwater TreeTrench, | | 50.8 | 2022 | $5,456,000 |
| 50177 | 1287 | Combined | Schuylkill,TTF | Streets | Construction | Infiltration Storage Trench,Stormwater TreeTrench, | | 5.8 | 2022 | $1,713,000 |
| 50182 | 1296 | Combined | TTF | Streets | Construction | Stormwater Bump-out,Infiltration Storage Trench,Rain Garden,Stormwater TreeTrench, | | 5.6 | 2022 | $1,369,000 |
| 50189 | 1307 | Combined | Schuylkill | Streets | Construction | Stormwater TreeTrench, | | 3.3 | 2022 | $969,000 |
| 50190 | 1308 | Combined | Schuylkill | Streets | Construction | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | 5 | 2022 | $1,201,000 |
| 50194 | 1315 | Combined | Schuylkill | Streets | Construction | Stormwater Bump-out,Infiltration Storage Trench,Stormwater TreeTrench, | | 4.5 | 2022 | $1,339,000 |
| 50211 | 1347 | Combined | Delaware | Open Space | Construction | Infiltration Storage Trench,Rain Garden,Stormwater TreeTrench, | | 4.8 | 2022 | $1,320,000 |
| 50232 | 1387 | Combined | Delaware | Open Space | Construction | Infiltration Storage Trench,Rain Garden,Stormwater TreeTrench, | Department of Public Property | 1.3 | 2022 | $320,000 |
| 50236 | 1393 | Combined | TTF | Open Space | Construction | Infiltration Storage Trench,Rain Garden, | Frankford Community Development Corporation | 0.4 | 2022 | $195,000 |
| 50268 | 1442 | Combined | TTF | Streets | Construction | Inlet disconnection | PennDOT | 0 | 2022 | TBD |
| 50320 | 1544 | Combined | Delaware, Schuylkill | Streets, Vacant Land | Construction | Rain Garden,Stormwater TreeTrench, | | 1.8 | 2022 | $778,000 |
| 90055 | 1539 | Combined | Delaware | Streets | Construction | Stormwater TreeTrench, | Riverwards LLC | 0.9 | 2022 | $245,000 |
| **Total Greened Acres:** | | | | | | | | **413** | | |

# Appendix 3

## Complete Redevelopment and Incentivized Green Stormwater Infrastructure Projects

**Table 1: Private Project Tracking Metrics and Reporting Format**

| Private Project Tracking Metrics | | | | | | |
|---|---|---|---|---|---|---|
| **Tracking Number** | **Sewer Type** | **Category** | **Watershed** | **Zip Code** | **SMP Type (s)** | **Greened Acres (acre-inch)** |

**Table 2: Private/Incentives SMP Type Definitions**

| Private / Incentives SMP Type Definitions | |
|---|---|
| Basin | Includes surface basins or depression that are vegetated with mowed grass and subsurface infiltration and detention basins. In both cases, the basins are designed to detain and release stormwater runoff and/or infiltrate where feasible. |
| Bioinfiltration / Bioretention | A bioinfiltration/bioretention basin is a vegetated basin or depression designed to either infiltrate or release stormwater runoff. |
| Blue Roof | A blue roof is a storage system designed into a roof surface such that the roof retains stormwater. Blue roofs are designed to reduce the rate of stormwater runoff. |
| Cistern | Storage tanks, located either above or below ground, that capture and store runoff and can thereby reduce runoff volume. Stored water may drain by gravity or be pumped to its ultimate end use for a variety of non-potable water needs. |
| Depaving | Depaving projects remove existing impervious pavement and restore the surface with grass, other types of vegetation, or loose materials (stone, mulch, etc.) such that the area can thereafter be considered pervious area. Depaving projects remove contributing impervious area from the sewer system. Categorized as a Disconnection and logged in square feet. |
| Disconnected Impervious Area - Pavement Disconnections | Area where pavement runoff is designed to be directed to a vegetated area that allows for infiltration, filtration, and an increased time of concentration. Tracked as the square footage of runoff from impervious surfaces directed to a pervious area. |
| Disconnected Impervious Area - Planters | At or above grade planter area and number of planters that do not contribute to water quality. |
| Disconnected Impervious Area - Rooftop Area Disconnected | Rooftop drainage directed to a vegetated area that allows for infiltration, filtration, and increased time of concentration. Tracked as the square footage of roof runoff directed to a pervious area. |
| Disconnected Impervious Area - Tree Credit | New or existing tree canopy from an approved species list that extends over or is in close proximity to impervious area. Tracked as either "existing" or "new" tree credits. Each new tree is credited with 100 square feet of management per tree and each existing tree is credited as determined by the results of a canopy survey or by applying a 50 square foot credit to each existing tree that is not removed. |
| Green Roof | Vegetated surface installed over a roof surface. Green roofs are effective in reducing the volume and rates of stormwater runoff. |

| Private / Incentives SMP Type Definitions | |
|---|---|
| Porous Pavement | Permeable surface commonly composed of concrete, asphalt, pavers, turf, or rubber play surface. Stormwater flows through the porous surface during a rain event, then drains into the subbase beneath the pavement, where it is stored until it infiltrates into the soil. |
| Water Quality Device | Filter products that reduce pollutant levels by removing sediments, metals, hydrocarbons, and other pollutants from stormwater. |

**Table 3: Complete Private Development Green Stormwater Infrastructure**

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| 2005-0052-01 | Combined | Verified | Lower Schuylkill River | 19139 | Subsurface Infiltration Basin | 2.49 |
| 2005-0099-01 | Combined | Verified | Lower Schuylkill River | 19131 | Surface Infiltration Basin | 37.40 |
| 2006-0057-01 | Combined | Verified | Delaware Direct | 19123 | Subsurface Detention Basin | 0.02 |
| 2006-0063-01 | Combined | Verified | Delaware Direct | 19122 | Subsurface Infiltration Basin | 1.90 |
| 2006-0110-01 | Combined | Verified | Delaware Direct | 19140 | Subsurface Detention Basin, Subsurface Infiltration Basin | 0.69 |
| 2006-30TH-236-01 | Combined | Verified | Lower Schuylkill River | 19104 | Surface Infiltration Basin | 0.63 |
| 2006-94-01 | Combined | Verified | Delaware Direct | 19148 | Subsurface Detention Basin | 2.24 |
| 2006-BRID-200-01 | Combined | Verified | Delaware Direct | 19137 | Disconnected Impervious Area, Subsurface Infiltration Basin | 0.72 |
| 2006-CINT-431-01 | Combined | Verified | Lower Schuylkill River | 19131 | Surface Detention Basin | 9.47 |
| 2006-COMM-328-01 | Combined | Verified | Cobbs Creek | 19139 | Cistern, Porous Pavement, Subsurface Detention Basin | 0.93 |
| 2006-EDWI-215-01 | Combined | Verified | Delaware Direct | 19136 | Disconnected Impervious Area, Subsurface Detention Basin, Subsurface Infiltration Basin | 0.76 |
| 2006-FEDE-409-01 | Combined | Verified | Delaware Direct | 19106 | Disconnected Impervious Area, Green Roof, Subsurface Detention Basin | 0.27 |
| 2006-GENE-192-01 | Combined | Verified | Delaware Direct | 19123 | Disconnected Impervious Area, Subsurface Detention Basin | 0.30 |
| 2006-HUNT-445-01 | Combined | Verified | Delaware Direct | 19133 | Porous Pavement, Subsurface Infiltration Basin | 1.36 |
| 2006-LAWT-291-01 | Combined | Verified | Delaware Direct | 19135 | Subsurface Detention Basin | 1.17 |
| 2006-LE22-460-01 | Combined | Verified | Delaware Direct | 19123 | Disconnected Impervious Area, Porous Pavement, Subsurface Infiltration Basin | 0.68 |
| 2006-MICH-419-01 | Combined | Verified | Delaware Direct | 19125 | Porous Pavement, Subsurface Infiltration Basin | 0.37 |
| 2006-MOOR-320-01 | Combined | Verified | Delaware Direct | 19148 | Subsurface Detention Basin, Subsurface Infiltration Basin | 0.30 |
| 2006-NATI-441-01 | Combined | Verified | Delaware Direct | 19106 | Subsurface Detention Basin | 0.52 |
| 2006-PILG-444-01 | Combined | Verified | Delaware Direct | 19111 | Subsurface Infiltration Basin | 1.09 |
| 2006-PROG-400-01 | Combined | Verified | Delaware Direct | 19122 | Subsurface Infiltration Basin | 3.65 |
| 2006-SOLI-300-01 | Combined | Verified | Delaware Direct | 19149 | Bioretention, Subsurface Infiltration Basin | 1.99 |
| 2006-TACO-337-01 | Combined | Verified | Delaware Direct | 19149 | Subsurface Infiltration Basin | 0.18 |
| 2006-TEMP-210-01 | Combined | Verified | Delaware Direct | 19122 | Porous Pavement, Subsurface Detention Basin | 0.60 |
| 2006-TEMP-245-01 | Combined | Verified | Delaware Direct | 19122 | Subsurface Infiltration Basin | 1.06 |
| 2006-VILL-194-01 | Combined | Verified | Lower Schuylkill River | | Disconnected Impervious Area, Subsurface Infiltration Basin, Surface Detention Basin, Surface Infiltration Basin | 21.76 |
| 2007-4839-625-01 | Combined | Verified | Lower Schuylkill River | 19131 | Subsurface Detention Basin | 0.95 |

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| 2007-AROU-626-01 | Combined | Verified | Tacony-Frankford Creek | 19144 | Subsurface Infiltration Basin | 0.45 |
| 2007-BENC-482-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Porous Pavement, Subsurface Detention Basin | 1.04 |
| 2007-CECI-556-01 | Combined | Verified | Delaware Direct | 19121 | Subsurface Detention Basin | 1.08 |
| 2007-DREX-669-01 | Combined | Verified | Lower Schuylkill River | 19104 | Cistern, Disconnected Impervious Area, Porous Pavement | 0.82 |
| 2007-GAMB-624-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Porous Pavement | 0.07 |
| 2007-GAMB-701-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Bioinfiltration, Disconnected Impervious Area, Porous Pavement | 1.56 |
| 2007-GUIO-721-01 | Combined | Verified | Lower Schuylkill River | 19131 | Disconnected Impervious Area, Porous Pavement, Subsurface Detention Basin | 1.37 |
| 2007-HOWI-498-01 | Combined | Verified | Delaware Direct | 19123 | Disconnected Impervious Area, Subsurface Detention Basin | 0.34 |
| 2007-LASA-593-01 | Combined | Verified | Tacony-Frankford Creek | 19144 | Disconnected Impervious Area, Porous Pavement, Subsurface Infiltration Basin | 10.63 |
| 2007-MCDO-558-01 | Combined | Verified | Delaware Direct | 19133 | Subsurface Detention Basin | 0.54 |
| 2007-MCDO-560-01 | Combined | Verified | Delaware Direct | 19135 | Subsurface Detention Basin | 0.06 |
| 2007-MTTA-480-01 | Combined | Verified | Delaware Direct | 19123 | Green Roof, Porous Pavement | 0.33 |
| 2007-POWE-679-01 | Combined | Verified | Lower Schuylkill River | 19104 | Disconnected Impervious Area | 0.37 |
| 2007-SIMO-496-01 | Combined | Verified | Tacony-Frankford Creek | 19138 | Bioinfiltration, Porous Pavement | 0.52 |
| 2007-SOUT-557-01 | Combined | Verified | Delaware Direct | 19148 | Subsurface Detention Basin | 0.12 |
| 2007-THEM-495-01 | Combined | Verified | Lower Schuylkill River | 19131 | Subsurface Detention Basin, Surface Detention Basin | 6.38 |
| 2007-UNIV-633-01 | Combined | Verified | Lower Schuylkill River | 19104 | Bioinfiltration, Disconnected Impervious Area, Subsurface Infiltration Basin | 0.36 |
| 2007-WARN-651-01 | Combined | Verified | Delaware Direct | 19133 | Subsurface Infiltration Basin | 2.66 |
| 2007-WEST-684-01 | Combined | Verified | Cobbs Creek | 19139 | Disconnected Impervious Area, Subsurface Detention Basin | 0.01 |
| 2007-WILL-699-01 | Combined | Verified | Delaware Direct | 19134 | Bioretention, Subsurface Detention Basin | 5.02 |
| 2008-1600-898-01 | Combined | Verified | Delaware Direct | 19122 | Bioretention | 0.50 |
| 2008-2116-992-01 | Combined | Verified | Lower Schuylkill River | 19103 | Bioretention, Disconnected Impervious Area, Green Roof, Surface Detention Basin | 0.45 |
| 2008-2552-873-01 | Combined | Verified | Delaware Direct | 19134 | Subsurface Infiltration Basin | 0.72 |
| 2008-4014-979-01 | Combined | Verified | Delaware Direct | 19123 | Disconnected Impervious Area, Subsurface Infiltration Basin | 0.47 |
| 2008-BARN-986-01 | Combined | Verified | Lower Schuylkill River | 19130 | Disconnected Impervious Area, Green Roof, Subsurface Detention Basin, Subsurface Infiltration Basin | 3.45 |
| 2008-CAST-875-01 | Combined | Verified | Delaware Direct | 19149 | Subsurface Detention Basin | 0.02 |
| 2008-CLAS-765-01 | Combined | Verified | Lower Schuylkill River | 19104 | Disconnected Impervious Area, Porous Pavement, Subsurface Infiltration Basin | 0.34 |

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| 2008-COMM-763-01 | Combined | Verified | Lower Schuylkill River | 19130 | Disconnected Impervious Area, Green Roof, Porous Pavement, Subsurface Infiltration Basin | 2.35 |
| 2008-DREX-788-01 | Combined | Verified | Lower Schuylkill River | 19104 | Bioinfiltration, Porous Pavement, Subsurface Infiltration Basin | 1.47 |
| 2008-DREX-950-01 | Combined | Verified | Lower Schuylkill River | 19104 | Disconnected Impervious Area, Green Roof, Subsurface Detention Basin | 0.23 |
| 2008-FRAN-921-01 | Combined | Verified | Lower Schuylkill River | 19104 | Porous Pavement | 0.25 |
| 2008-FRAN-994-01 | Combined | Verified | Delaware Direct | 19130 | Porous Pavement, Subsurface Infiltration Basin | 0.66 |
| 2008-MART-980-01 | Combined | Verified | Delaware Direct | 19147 | Subsurface Infiltration Basin | 0.60 |
| 2008-NAVA-893-01 | Combined | Verified | Lower Schuylkill River | 19146 | Subsurface Infiltration Basin | 5.67 |
| 2008-NEWK-958-01 | Combined | Verified | Delaware Direct | 19122 | Bioinfiltration, Green Roof, Porous Pavement, Subsurface Detention Basin | 5.15 |
| 2008-NEWL-839-01 | Combined | Verified | Delaware Direct | 19140 | Subsurface Infiltration Basin | 0.48 |
| 2008-NORT-1012-01 | Combined | Verified | Lower Schuylkill River | 19104 | Disconnected Impervious Area, Subsurface Infiltration Basin | 0.42 |
| 2008-PROP-824-01 | Combined | Verified | Lower Schuylkill River | 19139 | Disconnected Impervious Area, Porous Pavement, Subsurface Detention Basin, Subsurface Infiltration Basin | 5.40 |
| 2008-ROLA-813-01 | Combined | Verified | Tacony-Frankford Creek | 19141 | Green Roof, Subsurface Infiltration Basin | 0.24 |
| 2008-ROTE-960-01 | Combined | Verified | Delaware Direct | 19148 | Bioretention, Porous Pavement, Subsurface Detention Basin | 0.19 |
| 2008-SCHM-902-01 | Combined | Verified | Delaware Direct | 19123 | Disconnected Impervious Area, Green Roof, Porous Pavement, Subsurface Infiltration Basin | 4.38 |
| 2008-SHER-926-01 | Combined | Verified | Delaware Direct | 19122 | Green Roof, Porous Pavement | 0.24 |
| 2008-STRA-799-01 | Combined | Verified | Lower Schuylkill River | 19121 | Porous Pavement, Subsurface Infiltration Basin | 0.42 |
| 2008-STRA-802-01 | Combined | Verified | Lower Schuylkill River | 19121 | Porous Pavement, Subsurface Infiltration Basin | 0.32 |
| 2008-THEC-806-01 | Combined | Verified | Delaware Direct | 19103 | Green Roof, Subsurface Detention Basin | 0.21 |
| 2008-WALG-838-01 | Combined | Verified | Delaware Direct | 19146 | Bioretention, Subsurface Infiltration Basin | 0.50 |
| 2008-WOOD-864-01 | Combined | Verified | Lower Schuylkill River | 19104 | Porous Pavement | 0.45 |
| 2009-2007-1090-01 | Combined | Verified | Delaware Direct | 19148 | Subsurface Detention Basin | 17.72 |
| 2009-7149-1186-01 | Combined | Verified | Delaware Direct | 19135 | Disconnected Impervious Area, Subsurface Infiltration Basin | 0.36 |
| 2009-CANC-1145-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Bioretention, Disconnected Impervious Area, Surface Detention Basin | 6.24 |
| 2009-CONG-1210-01 | Combined | Verified | Delaware Direct | 19133 | Disconnected Impervious Area, Porous Pavement, Subsurface Infiltration Basin | 2.80 |
| 2009-DORA-1041-01 | Combined | Verified | Lower Schuylkill River | 19131 | Porous Pavement, Subsurface Infiltration Basin | 0.40 |

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| 2009-FRAN-1130-01 | Combined | Verified | Delaware Direct | 19137 | Disconnected Impervious Area, Subsurface Infiltration Basin | 0.34 |
| 2009-GLOB-1016-01 | Combined | Verified | Lower Schuylkill River | 19131 | Bioretention, Subsurface Detention Basin | 1.75 |
| 2009-HAWT-1102-01 | Combined | Verified | Delaware Direct | 19147 | Disconnected Impervious Area, Porous Pavement | 0.31 |
| 2009-HELP-1138-01 | Combined | Verified | Lower Schuylkill River | 19153 | Subsurface Infiltration Basin | 3.73 |
| 2009-IATS-1023-01 | Combined | Verified | Delaware Direct | 19148 | Green Roof, Subsurface Detention Basin | 0.79 |
| 2009-JANN-1141-01 | Combined | Verified | Lower Schuylkill River | 19104 | Disconnected Impervious Area, Green Roof, Porous Pavement | 0.27 |
| 2009-LAWR-1044-01 | Combined | Verified | Delaware Direct | 19140 | Porous Pavement, Subsurface Infiltration Basin | 2.95 |
| 2009-MANT-1033-01 | Combined | Verified | Lower Schuylkill River | 19104 | Subsurface Infiltration Basin | 3.64 |
| 2009-NEWH-1079-01 | Combined | Verified | Lower Schuylkill River | 19139 | Disconnected Impervious Area, Subsurface Infiltration Basin | 0.34 |
| 2009-NEWP-1166-01 | Combined | Verified | Delaware Direct | 19140 | Disconnected Impervious Area, Subsurface Infiltration Basin | 0.74 |
| 2009-NICE-1136-01 | Combined | Verified | Tacony-Frankford Creek | 19140 | Bioretention, Subsurface Detention Basin | 0.41 |
| 2009-PARK-1197-01 | Combined | Verified | Lower Schuylkill River | 19104 | Bioinfiltration, Disconnected Impervious Area | 0.11 |
| 2009-PASC-1226-01 | Combined | Verified | Cobbs Creek | 19142 | Porous Pavement, Subsurface Infiltration Basin | 3.20 |
| 2009-PECO-1133-01 | Combined | Verified | Lower Schuylkill River | 19146 | Subsurface Infiltration Basin | 2.75 |
| 2009-PENN-1019-01 | Combined | Verified | Lower Schuylkill River | 19104 | Bioretention, Subsurface Detention Basin | 3.94 |
| 2009-PENN-1144-01 | Combined | Verified | Lower Schuylkill River | 19104 | Disconnected Impervious Area, Green Roof, Porous Pavement, Subsurface Detention Basin | 0.44 |
| 2009-PHIL-1205-01 | Combined | Verified | Delaware Direct | 19148 | Porous Pavement | 14.60 |
| 2009-PRES-1037-01 | Combined | Verified | Tacony-Frankford Creek | 19150 | Bioretention, Disconnected Impervious Area, Porous Pavement, Subsurface Infiltration Basin | 1.92 |
| 2009-PRIN-1147-01 | Combined | Verified | Lower Schuylkill River | 19121 | Green Roof, Subsurface Infiltration Basin | 0.51 |
| 2009-RODI-1176-01 | Combined | Verified | Lower Schuylkill River | 19130 | Subsurface Infiltration Basin | 0.18 |
| 2009-SIST-1062-01 | Combined | Verified | Lower Schuylkill River | 19103 | Disconnected Impervious Area | 0.15 |
| 2009-SIST-1131-01 | Combined | Verified | Lower Schuylkill River | 19103 | Disconnected Impervious Area, Green Roof, Subsurface Infiltration Basin | 0.37 |
| 2009-STRA-1050-01 | Combined | Verified | Lower Schuylkill River | 19121 | Subsurface Infiltration Basin | 0.22 |
| 2009-STRA-1055-01 | Combined | Verified | Lower Schuylkill River | 19121 | Subsurface Infiltration Basin | 0.25 |

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| 2009-TDBA-1072-01 | Combined | Verified | Delaware Direct | 19149 | Bioinfiltration, Disconnected Impervious Area, Subsurface Infiltration Basin | 1.10 |
| 2009-TEMP-1077-01 | Combined | Verified | Delaware Direct | 19122 | Bioretention, Porous Pavement, Subsurface Detention Basin | 0.91 |
| 2009-TEMP-1096-01 | Combined | Verified | Delaware Direct | 19122 | Subsurface Detention Basin | 2.65 |
| 2009-THEC-1174-01 | Combined | Verified | Delaware Direct | 19135 | Bioretention, Disconnected Impervious Area, Green Roof | 0.55 |
| 2009-THEM-1167-01 | Combined | Verified | Delaware Direct | 19121 | Disconnected Impervious Area, Green Roof, Porous Pavement | 0.39 |
| 2009-THEP-1173-01 | Combined | Verified | Lower Schuylkill River | 19140 | Green Roof | 0.09 |
| 2009-WALM-1045-01 | Combined | Verified | Delaware Direct | 19148 | Bioretention, WQ Treatment Device | 7.99 |
| 2009-WEST-1222-01 | Combined | Verified | Lower Schuylkill River | 19139 | Disconnected Impervious Area, Green Roof, Porous Pavement | 1.38 |
| 2009-WOLC-1169-01 | Combined | Verified | Tacony-Frankford Creek | 19138 | Bioinfiltration, Disconnected Impervious Area, Subsurface Detention Basin | 1.72 |
| 2010-1800-1260-01 | Combined | Verified | Lower Schuylkill River | 19146 | Disconnected Impervious Area, Subsurface Infiltration Basin | 0.84 |
| 2010-1940-1435-01 | Combined | Verified | Delaware Direct | 19140 | Disconnected Impervious Area, Porous Pavement, Subsurface Infiltration Basin | 0.55 |
| 2010-3737-1331-01 | Combined | Verified | Lower Schuylkill River | 19104 | Green Roof, Subsurface Detention Basin | 0.29 |
| 2010-4109-1277-01 | Combined | Verified | Lower Schuylkill River | 19104 | Green Roof, Porous Pavement | 0.21 |
| 2010-411W-1300-01 | Combined | Verified | Delaware Direct | 19122 | Bioretention, Subsurface Detention Basin | 0.15 |
| 2010-4FRA-1464-01 | Combined | Verified | Lower Schuylkill River | 19103 | Green Roof, Subsurface Detention Basin | 0.89 |
| 2010-5526-1348-01 | Combined | Verified | Darby Creek | 19139 | Porous Pavement, Subsurface Infiltration Basin | 0.46 |
| 2010-8828-1321-01 | Combined | Verified | Pennypack Creek | 19136 | Subsurface Infiltration Basin | 1.18 |
| 2010-AGIL-1461-01 | Combined | Verified | Delaware Direct | 19121 | Disconnected Impervious Area, Subsurface Infiltration Basin | 1.36 |
| 2010-ARCH-1393-01 | Combined | Verified | Delaware Direct | 19122 | Disconnected Impervious Area, Green Roof | 0.21 |
| 2010-BRID-1233-01 | Combined | Verified | Delaware Direct | 19137 | Porous Pavement, Subsurface Infiltration Basin | 1.08 |
| 2010-BROA-1347-01 | Combined | Verified | Tacony-Frankford Creek | 19141 | Subsurface Infiltration Basin | 0.86 |
| 2010-CHOP-1367-01 | Combined | Verified | Lower Schuylkill River | 19104 | Disconnected Impervious Area, Green Roof, Surface Detention Basin | 2.61 |
| 2010-CREA-1427-01 | Combined | Verified | Delaware Direct | 19125 | Disconnected Impervious Area, Green Roof, Porous Pavement | 0.29 |
| 2010-DICK-1410-01 | Combined | Verified | Delaware Direct | 19148 | Disconnected Impervious Area, Porous Pavement | 0.65 |

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| 2010-DILW-1442-01 | Combined | Verified | Lower Schuylkill River | 19107 | Disconnected Impervious Area, Subsurface Detention Basin, Surface Detention Basin | 0.72 |
| 2010-DREX-1399-01 | Combined | Verified | Lower Schuylkill River | 19104 | Green Roof, Subsurface Detention Basin | 1.49 |
| 2010-EARL-1460-01 | Combined | Verified | Lower Schuylkill River | 19146 | Disconnected Impervious Area, Subsurface Infiltration Basin | 0.45 |
| 2010-ESPE-1288-01 | Combined | Verified | Tacony-Frankford Creek | 19140 | Subsurface Infiltration Basin | 1.04 |
| 2010-GEST-1346-01 | Combined | Verified | Lower Schuylkill River | 19131 | Subsurface Detention Basin, Subsurface Infiltration Basin | 1.09 |
| 2010-GRAN-1432-01 | Combined | Verified | Lower Schuylkill River | 19130 | Green Roof, Subsurface Detention Basin | 0.58 |
| 2010-MOYE-1306-01 | Combined | Verified | Delaware Direct | 19125 | Green Roof, Porous Pavement | 0.59 |
| 2010-NORR-1475-01 | Combined | Verified | Delaware Direct | 19122 | Disconnected Impervious Area, Porous Pavement, Subsurface Infiltration Basin | 2.12 |
| 2010-NORT-1449-01 | Combined | Verified | Tacony-Frankford Creek | 19124-3024 | Subsurface Infiltration Basin | 0.92 |
| 2010-PASC-1238-01 | Combined | Verified | Cobbs Creek | 19142 | Disconnected Impervious Area, Porous Pavement, Subsurface Infiltration Basin | 1.97 |
| 2010-PHIL-1362-01 | Combined | Verified | Delaware Direct | 19148 | Bioretention, Surface Detention Basin | 0.92 |
| 2010-PHIL-1469-01 | Combined | Verified | Delaware Direct | 19148 | Bioretention, Disconnected Impervious Area, Subsurface Detention Basin, Surface Detention Basin | 3.38 |
| 2010-PLEA-1444-01 | Combined | Verified | Tacony-Frankford Creek | 19119 | Disconnected Impervious Area, Green Roof, Subsurface Detention Basin | 0.16 |
| 2010-PNKW-1360-01 | Combined | Verified | Tacony-Frankford Creek | 19140 | Porous Pavement, Subsurface Infiltration Basin | 2.26 |
| 2010-PROP-1376-01 | Combined | Verified | Delaware Direct | 19141 | Bioinfiltration, Bioretention, Subsurface Infiltration Basin | 2.36 |
| 2010-PSDC-1234-01 | Combined | Verified | Delaware Direct | 19147 | Subsurface Infiltration Basin | 1.08 |
| 2010-PSPH-1353-01 | Combined | Verified | Lower Schuylkill River | 19131 | Green Roof, Subsurface Infiltration Basin | 8.42 |
| 2010-STJO-1239-01 | Combined | Verified | Lower Schuylkill River | 19131 | Bioinfiltration, Green Roof, Subsurface Infiltration Basin | 1.00 |
| 2010-TEMP-1302-01 | Combined | Verified | Delaware Direct | 19122 | Cistern, Disconnected Impervious Area, Subsurface Infiltration Basin | 2.92 |
| 2010-THEF-1254-01 | Combined | Verified | Lower Schuylkill River | 19103 | Bioretention, Disconnected Impervious Area, Subsurface Detention Basin | 0.41 |
| 2010-UNIV-1312-01 | Combined | Verified | Lower Schuylkill River | 19104 | Green Roof, Subsurface Detention Basin | 0.72 |
| 2010-UNIV-1385-01 | Combined | Verified | Lower Schuylkill River | 19104 | Bioretention, Disconnected Impervious Area, Subsurface Detention Basin | 1.54 |
| 2010-WIST-1397-01 | Combined | Verified | Lower Schuylkill River | 19104 | Green Roof, Subsurface Detention Basin | 0.43 |
| 2011-3343-1653-01 | Combined | Verified | Tacony-Frankford Creek | 19144 | Porous Pavement, Subsurface Infiltration Basin | 0.68 |
| 2011-33RD-1697-01 | Combined | Verified | Lower Schuylkill River | 19132 | Bioretention, Disconnected Impervious Area, Green Roof | 0.08 |

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| 2011-4240-1543-01 | Combined | Verified | Lower Schuylkill River | 19104 | Subsurface Infiltration Basin | 0.74 |
| 2011-822N-1632-01 | Combined | Verified | Delaware Direct | 19123 | Green Roof, Porous Pavement | 0.28 |
| 2011-8318-1655-01 | Combined | Verified | Lower Schuylkill River | 19121 | Green Roof, Porous Pavement | 0.23 |
| 2011-BOTT-1646-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Bioretention, Subsurface Detention Basin | 2.71 |
| 2011-CANC-1485-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Green Roof | 0.17 |
| 2011-CCTD-1535-01 | Combined | Verified | Lower Schuylkill River | 19139 | Subsurface Infiltration Basin | 1.04 |
| 2011-CHRI-1545-01 | Combined | Verified | Delaware Direct | 19147 | Green Roof, Porous Pavement, Subsurface Infiltration Basin | 0.95 |
| 2011-CONV-1491-01 | Combined | Verified | Lower Schuylkill River | 19107 | Disconnected Impervious Area, Green Roof, Subsurface Detention Basin | 0.25 |
| 2011-DIAM-1617-01 | Combined | Verified | Delaware Direct | 19140 | Green Roof, Subsurface Detention Basin | 0.44 |
| 2011-DOLL-1636-01 | Combined | Verified | Tacony-Frankford Creek | 19144 | Subsurface Infiltration Basin | 0.32 |
| 2011-DREX-1638-01 | Combined | Verified | Lower Schuylkill River | 19104 | Bioretention, Disconnected Impervious Area, Green Roof | 0.78 |
| 2011-EAST-1687-01 | Combined | Verified | Delaware Direct | 19107 | Green Roof, Porous Pavement, Subsurface Detention Basin | 0.25 |
| 2011-FAIR-1488-01 | Combined | Verified | Delaware Direct | 19130 | Green Roof, Subsurface Detention Basin | 0.39 |
| 2011-GREE-1706-01 | Combined | Verified | Tacony-Frankford Creek | 19138 | Porous Pavement, Subsurface Detention Basin, Surface Infiltration Basin | 1.90 |
| 2011-HAGE-1562-01 | Combined | Verified | Delaware Direct | 19125 | Porous Pavement, Subsurface Infiltration Basin | 1.51 |
| 2011-HAMI-1518-01 | Combined | Verified | Lower Schuylkill River | 19104 | Cistern, Disconnected Impervious Area, Green Roof, Subsurface Infiltration Basin | 1.87 |
| 2011-HOME-1571-01 | Combined | Verified | Delaware Direct | 19107 | Bioretention, Green Roof, Subsurface Detention Basin | 0.15 |
| 2011-I95S-1699-01 | Combined | Verified | Delaware Direct | 19125 | Bioinfiltration, Bioretention, Surface Detention Basin | 4.69 |
| 2011-JWSD-1674-01 | Combined | Verified | Delaware Direct | 19122 | Disconnected Impervious Area, Subsurface Infiltration Basin | 1.82 |
| 2011-KARA-1505-01 | Combined | Verified | Lower Schuylkill River | 19139 | Disconnected Impervious Area, Porous Pavement, Subsurface Infiltration Basin | 3.96 |
| 2011-MONT-1516-01 | Combined | Verified | Delaware Direct | 19122 | Subsurface Infiltration Basin | 2.83 |
| 2011-NEWB-1672-01 | Combined | Verified | Lower Schuylkill River | 19145 | Green Roof, Porous Pavement | 0.40 |
| 2011-NEWN-1620-01 | Combined | Verified | Delaware Direct | 19123 | Green Roof, Porous Pavement, Subsurface Infiltration Basin | 0.88 |
| 2011-NICE-1728-01 | Combined | Verified | Tacony-Frankford Creek | 19140 | Porous Pavement, Subsurface Infiltration Basin | 0.30 |

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| 2011-NICE-1729-01 | Combined | Verified | Tacony-Frankford Creek | 19140 | Porous Pavement, Subsurface Detention Basin | 0.51 |
| 2011-NICE-1730-01 | Combined | Verified | Tacony-Frankford Creek | 19140 | Porous Pavement, Subsurface Infiltration Basin | 1.11 |
| 2011-NORT-1700-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Porous Pavement, Subsurface Detention Basin | 0.90 |
| 2011-PENN-1664-01 | Combined | Verified | Lower Schuylkill River | 19104 | Porous Pavement | 0.19 |
| 2011-PENN-1681-01 | Combined | Verified | Lower Schuylkill River | 19104 | Green Roof | 0.41 |
| 2011-PROP-1483-01 | Combined | Verified | Tacony-Frankford Creek | 19144 | Porous Pavement, Surface Infiltration Basin | 1.45 |
| 2011-PROP-1662-01 | Combined | Verified | Lower Schuylkill River | 19130 | Subsurface Infiltration Basin, Surface Infiltration Basin | 3.68 |
| 2011-SAMU-1569-01 | Combined | Verified | Delaware Direct | 19111 | Porous Pavement | 0.40 |
| 2011-STMA-1508-01 | Combined | Verified | Delaware Direct | 19147 | Green Roof, Porous Pavement, Subsurface Detention Basin, Subsurface Infiltration Basin | 0.52 |
| 2011-TEMP-1622-01 | Combined | Verified | Delaware Direct | 19122 | Blue Roof, Green Roof, Porous Pavement, Subsurface Infiltration Basin | 1.93 |
| 2011-TEMP-1739-01 | Combined | Verified | Delaware Direct | 19122 | Bioretention, Cistern, Porous Pavement, Subsurface Detention Basin, Subsurface Infiltration Basin | 2.14 |
| 2011-THEB-1594-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Bioretention, Disconnected Impervious Area, Subsurface Detention Basin, Subsurface Infiltration Basin | 0.84 |
| 2011-TOLL-1586-01 | Combined | Verified | Lower Schuylkill River | 19146 | Disconnected Impervious Area, Green Roof, Subsurface Infiltration Basin | 2.36 |
| 2012-1213-1925-01 | Combined | Verified | Delaware Direct | 19107 | Cistern, Green Roof, Subsurface Detention Basin | 0.30 |
| 2012-1220-1913-01 | Combined | Verified | Delaware Direct | 19123 | Green Roof, Porous Pavement | 0.42 |
| 2012-1426-1805-01 | Combined | Verified | Lower Schuylkill River | 19102 | Blue Roof, Green Roof | 0.32 |
| 2012-1900-1754-01 | Combined | Verified | Lower Schuylkill River | 19145 | Green Roof, Porous Pavement | 0.59 |
| 2012-1919-1929-01 | Combined | Verified | Lower Schuylkill River | 19103 | Disconnected Impervious Area, Green Roof, Subsurface Detention Basin | 1.24 |
| 2012-2549-1840-01 | Combined | Verified | Delaware Direct | 19125 | Porous Pavement | 0.96 |
| 2012-3601-2053-01 | Combined | Verified | Lower Schuylkill River | 19104 | Bioretention, Subsurface Detention Basin | 0.41 |
| 2012-412N-1844-01 | Combined | Verified | Delaware Direct | 19123 | Green Roof, Porous Pavement, Subsurface Infiltration Basin | 1.15 |
| 2012-600N-1963-01 | Combined | Verified | Delaware Direct | 19123 | Green Roof, Porous Pavement | 0.36 |
| 2012-701W-2002-01 | Combined | Verified | Delaware Direct | 19133 | Disconnected Impervious Area, Porous Pavement, Subsurface Detention Basin, Subsurface Infiltration Basin | 4.67 |
| 2012-810A-1974-01 | Combined | Verified | Delaware Direct | 19107 | Bioretention, Subsurface Detention Basin | 0.22 |

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| 2012-915N-1854-01 | Combined | Verified | Delaware Direct | 19123 | Porous Pavement, Subsurface Infiltration Basin | 0.82 |
| 2012-AHMA-1831-01 | Combined | Verified | Delaware Direct | 19133 | Disconnected Impervious Area, Subsurface Infiltration Basin | 1.72 |
| 2012-BUIL-1807-01 | Combined | Verified | Tacony-Frankford Creek | 19111 | Disconnected Impervious Area | 0.08 |
| 2012-CANC-1770-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Bioinfiltration, Green Roof | 0.56 |
| 2012-CARP-1765-01 | Combined | Verified | Delaware Direct | 19146 | Bioretention, Green Roof, Porous Pavement | 0.42 |
| 2012-CENT-1791-01 | Combined | Verified | Delaware Direct | 19122 | Porous Pavement | 1.34 |
| 2012-CIRA-1937-01 | Combined | Verified | Lower Schuylkill River | 19104 | Green Roof, Subsurface Detention Basin | 2.03 |
| 2012-EPIS-1888-01 | Combined | Verified | Lower Schuylkill River | 19104 | Green Roof, Subsurface Detention Basin | 0.21 |
| 2012-ESPE-1947-01 | Combined | Verified | Tacony-Frankford Creek | 19140 | Disconnected Impervious Area, Porous Pavement, Subsurface Detention Basin | 3.66 |
| 2012-GARY-1938-01 | Combined | Verified | Lower Schuylkill River | 19146 | Bioinfiltration, Bioretention, Disconnected Impervious Area, Subsurface Detention Basin | 1.26 |
| 2012-HUNT-1764-01 | Combined | Verified | Tacony-Frankford Creek | 19140-2107 | Disconnected Impervious Area, Porous Pavement | 1.77 |
| 2012-INGE-1798-01 | Combined | Verified | Delaware Direct | 19121 | Disconnected Impervious Area, Subsurface Infiltration Basin | 0.89 |
| 2012-INGL-1949-01 | Combined | Verified | Lower Schuylkill River | 19131 | Bioretention, Disconnected Impervious Area, Porous Pavement, Subsurface Infiltration Basin | 2.62 |
| 2012-LAWR-1945-01 | Combined | Verified | Delaware Direct | 19123 | Green Roof, Porous Pavement | 0.44 |
| 2012-LINC-2012-01 | Combined | Verified | Delaware Direct | 19148 | Bioinfiltration, Porous Pavement | 1.81 |
| 2012-PENN-1774-01 | Combined | Verified | Lower Schuylkill River | 19104 | Bioinfiltration, Subsurface Detention Basin | 0.98 |
| 2012-PRES-1785-01 | Combined | Verified | Lower Schuylkill River | 19131-3348 | Green Roof, Porous Pavement | 0.47 |
| 2012-PROP-1883-01 | Combined | Verified | Tacony-Frankford Creek | 19138 | Subsurface Infiltration Basin | 0.97 |
| 2012-RIVE-2027-01 | Combined | Verified | Lower Schuylkill River | 19104 | Disconnected Impervious Area, Porous Pavement | 3.33 |
| 2012-RODE-1835-01 | Combined | Verified | Delaware Direct | 19130 | Subsurface Infiltration Basin | 0.70 |
| 2012-SCHU-2065-01 | Combined | Verified | Lower Schuylkill River | 19146 | Bioretention, Disconnected Impervious Area, Subsurface Detention Basin | 4.07 |
| 2012-SENI-1900-01 | Combined | Verified | Lower Schuylkill River | 19145 | Bioretention, Disconnected Impervious Area, Subsurface Detention Basin | 0.42 |
| 2012-SOUT-1782-01 | Combined | Verified | Delaware Direct | 19102 | Green Roof, Subsurface Detention Basin | 0.76 |
| 2012-SPAR-1850-01 | Combined | Verified | Delaware Direct | 19148 | Bioinfiltration, Disconnected Impervious Area, Porous Pavement | 0.74 |
| 2012-SPRU-1813-01 | Combined | Verified | Delaware Direct | 19107 | Disconnected Impervious Area, Green Roof, Subsurface Detention Basin | 0.10 |
| 2012-SR00-2026-01 | Combined | Verified | Delaware Direct | 19125 | Bioinfiltration, Bioretention | 7.01 |

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| 2012-STFR-1986-01 | Combined | Verified | Delaware Direct | 19125 | Bioretention, Disconnected Impervious Area, Subsurface Detention Basin | 0.32 |
| 2012-SYSC-1931-01 | Combined | Verified | Delaware Direct | 19148 | Bioretention | 3.94 |
| 2012-TDBA-2047-01 | Combined | Verified | Delaware Direct | 19149 | Bioinfiltration, Disconnected Impervious Area, Subsurface Infiltration Basin | 0.82 |
| 2012-THEM-1892-01 | Combined | Verified | Delaware Direct | 19106 | Cistern, Disconnected Impervious Area, Green Roof, WQ Treatment Device | 0.71 |
| 2012-TOLL-1898-01 | Combined | Verified | Delaware Direct | 19147 | Disconnected Impervious Area, Green Roof | 1.17 |
| 2012-UNIV-1848-01 | Combined | Verified | Lower Schuylkill River | 19104 | Bioinfiltration, Disconnected Impervious Area, Green Roof, Porous Pavement, Subsurface Detention Basin | 1.57 |
| 2012-WISS-1891-01 | Combined | Verified | Tacony-Frankford Creek | 19138 | Bioretention, Disconnected Impervious Area | 1.30 |
| 2013-1118-2248-01 | Combined | Verified | Delaware Direct | 19107 | Green Roof, Porous Pavement, Subsurface Detention Basin | 0.79 |
| 2013-1323-2310-01 | Combined | Verified | Delaware Direct | 19122 | Porous Pavement, Subsurface Infiltration Basin | 0.60 |
| 2013-1601-2261-01 | Combined | Verified | Delaware Direct | 19148 | Disconnected Impervious Area, Subsurface Infiltration Basin | 0.85 |
| 2013-1900-2151-01 | Combined | Verified | Lower Schuylkill River | 19132 | Bioretention, Subsurface Detention Basin, Surface Detention Basin | 1.95 |
| 2013-1901-2109-01 | Combined | Verified | Lower Schuylkill River | 19146 | Green Roof, Porous Pavement, Subsurface Infiltration Basin | 0.56 |
| 2013-2012-2072-01 | Combined | Verified | Lower Schuylkill River | 19121 | Green Roof, Porous Pavement | 0.23 |
| 2013-2300-2240-01 | Combined | Verified | Lower Schuylkill River | 19146 | Bioretention, Subsurface Detention Basin | 0.93 |
| 2013-23RD-2272-01 | Combined | Verified | Lower Schuylkill River | 19140 | Disconnected Impervious Area, Subsurface Infiltration Basin | 0.42 |
| 2013-2413-2183-01 | Combined | Verified | Delaware Direct | 19132 | Green Roof, Subsurface Infiltration Basin | 0.77 |
| 2013-3541-2376-01 | Combined | Verified | Delaware Direct | 19134 | Disconnected Impervious Area, Subsurface Infiltration Basin | 0.55 |
| 2013-4783-2339-01 | Combined | Verified | Pennypack Creek | 19136 | Disconnected Impervious Area, Porous Pavement, Subsurface Detention Basin | 1.76 |
| 2013-708N-2316-01 | Combined | Verified | Delaware Direct | 19123 | Bioinfiltration, Subsurface Infiltration Basin | 0.31 |
| 2013-8268-2116-01 | Combined | Verified | Delaware Direct | 19123 | Subsurface Infiltration Basin | 0.40 |
| 2013-900S-2174-01 | Combined | Verified | Delaware Direct | 19147 | Bioinfiltration, Disconnected Impervious Area, Porous Pavement, Subsurface Infiltration Basin | 1.19 |
| 2013-9THS-2075-01 | Combined | Verified | Delaware Direct | 19123 | Subsurface Infiltration Basin | 4.60 |
| 2013-ALDI-2287-01 | Combined | Verified | Darby Creek | 19151 | Bioretention | 0.30 |
| 2013-CECI-2157-01 | Combined | Verified | Lower Schuylkill River | 19121 | Disconnected Impervious Area, Green Roof, Subsurface Infiltration Basin | 0.85 |

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| 2013-CHOP-2288-01 | Combined | Verified | Delaware Direct | 19145 | Bioretention, Porous Pavement, Subsurface Detention Basin | 1.22 |
| 2013-CIRA-2405-01 | Combined | Verified | Lower Schuylkill River | 19104 | Disconnected Impervious Area, Green Roof, Subsurface Detention Basin | 0.63 |
| 2013-COBB-2080-01 | Combined | Verified | Cobbs Creek | 19143 | Bioretention, Disconnected Impervious Area, Subsurface Detention Basin | 0.77 |
| 2013-DREX-2081-01 | Combined | Verified | Lower Schuylkill River | 19104 | Subsurface Detention Basin, Surface Detention Basin | 1.33 |
| 2013-EDBE-2293-01 | Combined | Verified | Delaware Direct | 19122 | Subsurface Infiltration Basin | 4.21 |
| 2013-FIRS-2202-01 | Combined | Verified | Delaware Direct | 19124 | Bioinfiltration, Disconnected Impervious Area | 4.88 |
| 2013-HALP-2134-01 | Combined | Verified | Lower Schuylkill River | 19121 | Disconnected Impervious Area, Subsurface Infiltration Basin | 1.61 |
| 2013-HELP-2241-01 | Combined | Verified | Lower Schuylkill River | 19153 | Disconnected Impervious Area, Surface Infiltration Basin | 1.78 |
| 2013-MAST-2259-01 | Combined | Verified | Lower Schuylkill River | 19121 | Disconnected Impervious Area | 0.58 |
| 2013-MUSE-2346-01 | Combined | Verified | Lower Schuylkill River | 19130 | Disconnected Impervious Area, Porous Pavement, Subsurface Infiltration Basin | 3.63 |
| 2013-NEUR-2140-01 | Combined | Verified | Lower Schuylkill River | 19104 | Bioinfiltration, Bioretention, Disconnected Impervious Area, Green Roof, Porous Pavement | 0.42 |
| 2013-NEWC-2114-01 | Combined | Verified | Lower Schuylkill River | 19104 | Bioinfiltration, Disconnected Impervious Area, Green Roof, Porous Pavement | 1.32 |
| 2013-ONER-2304-01 | Combined | Verified | Lower Schuylkill River | 19103 | Bioretention, Green Roof, Subsurface Detention Basin | 0.29 |
| 2013-PARK-2357-01 | Combined | Verified | Lower Schuylkill River | 19130 | Bioinfiltration, Disconnected Impervious Area | 1.03 |
| 2013-PROP-2163-01 | Combined | Verified | Tacony-Frankford Creek | 19141 | Subsurface Infiltration Basin | 0.87 |
| 2013-RESI-2173-01 | Combined | Verified | Cobbs Creek | 19143 | Disconnected Impervious Area, Green Roof | 0.07 |
| 2013-SETT-2085-01 | Combined | Verified | Tacony-Frankford Creek | 19144 | Bioretention, Disconnected Impervious Area, Green Roof, Porous Pavement, Subsurface Detention Basin | 1.88 |
| 2013-SHOP-2250-01 | Combined | Verified | Delaware Direct | 19124 | Green Roof, Subsurface Detention Basin, Subsurface Infiltration Basin | 2.97 |
| 2013-STCH-2103-01 | Combined | Verified | Delaware Direct | 19134 | Bioinfiltration, Bioretention, Disconnected Impervious Area | 4.59 |
| 2013-STCH-2149-01 | Combined | Verified | Delaware Direct | 19134 | Bioretention, Disconnected Impervious Area | 3.76 |
| 2013-TACO-2197-01 | Combined | Verified | Delaware Direct | 19135 | Bioinfiltration, Disconnected Impervious Area, Subsurface Detention Basin | 2.05 |
| 2013-TAJD-2286-01 | Combined | Verified | Delaware Direct | 19122 | Bioretention, Disconnected Impervious Area, Green Roof, Subsurface Detention Basin, Subsurface Infiltration Basin | 1.30 |

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| 2013-TALL-2349-01 | Combined | Verified | Delaware Direct | 19133 | Bioinfiltration, Subsurface Infiltration Basin | 2.94 |
| 2013-TEMP-2178-01 | Combined | Verified | Delaware Direct | 19140 | Bioretention, Subsurface Detention Basin | 1.13 |
| 2013-THES-2177-01 | Combined | Verified | Delaware Direct | 19123 | Subsurface Infiltration Basin | 1.17 |
| 2013-THES-2392-01 | Combined | Verified | Lower Schuylkill River | 19104 | Blue Roof, Green Roof | 0.57 |
| 2013-UPEN-2280-01 | Combined | Verified | Lower Schuylkill River | 19104 | Subsurface Infiltration Basin | 0.80 |
| 2014-1123-2645-01 | Combined | Verified | Delaware Direct | 19125 | Subsurface Infiltration Basin | 0.36 |
| 2014-1325-2469-01 | Combined | Verified | Delaware Direct | 19121 | Bioretention, Disconnected Impervious Area, Subsurface Detention Basin | 0.80 |
| 2014-1326-2422-01 | Combined | Verified | Delaware Direct | 19122 | Subsurface Infiltration Basin | 0.88 |
| 2014-1350-2658-01 | Combined | Verified | Delaware Direct | 19122 | Bioretention, Subsurface Infiltration Basin | 0.87 |
| 2014-1515-2746-01 | Combined | Verified | Delaware Direct | 19106 | Porous Pavement, Subsurface Infiltration Basin | 0.51 |
| 2014-1601-2434-01 | Combined | Verified | Lower Schuylkill River | 19103 | Bioretention, Porous Pavement, Subsurface Detention Basin | 0.33 |
| 2014-2013-2751-01 | Combined | Verified | Delaware Direct | 19125 | Porous Pavement, Subsurface Infiltration Basin | 0.42 |
| 2014-2201-2677-01 | Combined | Verified | Lower Schuylkill River | 19145 | Subsurface Infiltration Basin, WQ Treatment Device | 1.23 |
| 2014-2322-2715-01 | Combined | Verified | Lower Schuylkill River | 19130 | Porous Pavement, Subsurface Infiltration Basin | 0.43 |
| 2014-3600-2426-01 | Combined | Verified | Lower Schuylkill River | 19104 | Bioretention, Green Roof, Subsurface Detention Basin, Surface Detention Basin | 1.30 |
| 2014-420F-2574-01 | Combined | Verified | Delaware Direct | 19123 | Disconnected Impervious Area, Subsurface Infiltration Basin | 0.65 |
| 2014-4525-2505-01 | Combined | Verified | Lower Schuylkill River | 19139 | Green Roof | 0.28 |
| 2014-500W-2580-01 | Combined | Verified | Delaware Direct | 19106 | Green Roof, Subsurface Detention Basin | 0.06 |
| 2014-5454-2552-01 | Combined | Verified | Tacony-Frankford Creek | 19144 | Bioretention, Porous Pavement, Subsurface Detention Basin | 0.92 |
| 2014-5800-2463-01 | Combined | Verified | Lower Schuylkill River | 19131 | Disconnected Impervious Area, Surface Infiltration Basin | 1.03 |
| 2014-63RD-2502-01 | Combined | Verified | Cobbs Creek | 19139 | Subsurface Infiltration Basin | 1.88 |
| 2014-8365-2530-01 | Combined | Verified | Delaware Direct | 19123 | Subsurface Infiltration Basin | 1.54 |
| 2014-ALLE-2455-01 | Combined | Verified | Delaware Direct | 19125 | Disconnected Impervious Area, Green Roof, Porous Pavement | 0.37 |
| 2014-ALLE-2522-01 | Combined | Verified | Delaware Direct | 19133 | Subsurface Infiltration Basin | 0.69 |
| 2014-BLUM-2711-01 | Combined | Verified | Lower Schuylkill River | 19121 | Porous Pavement, Subsurface Infiltration Basin | 1.83 |
| 2014-CHIC-2755-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Subsurface Infiltration Basin | 0.54 |
| 2014-DOLL-2453-01 | Combined | Verified | Delaware Direct | 19135-4408 | Bioretention, Subsurface Detention Basin | 1.53 |

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| 2014-DREX-2457-01 | Combined | Verified | Lower Schuylkill River | 19104 | Disconnected Impervious Area, Porous Pavement | 2.55 |
| 2014-ENVI-2646-01 | Combined | Verified | Delaware Direct | 19148-5607 | Bioretention, Subsurface Detention Basin, Surface Infiltration Basin | 1.97 |
| 2014-GSTR-2443-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Bioinfiltration, Subsurface Infiltration Basin | 1.07 |
| 2014-HUNT-2525-01 | Combined | Verified | Lower Schuylkill River | 19140 | Bioretention, Subsurface Detention Basin | 0.93 |
| 2014-LASA-2425-01 | Combined | Verified | Tacony-Frankford Creek | 19144 | Bioinfiltration, Porous Pavement, Subsurface Infiltration Basin | 2.16 |
| 2014-NORT-2603-01 | Combined | Verified | Delaware Direct | 19123 | Bioretention, Subsurface Detention Basin | 0.45 |
| 2014-PAND-2762-01 | Combined | Verified | Delaware Direct | 19134 | Subsurface Infiltration Basin | 0.33 |
| 2014-PERE-2472-01 | Combined | Verified | Lower Schuylkill River | 19104 | Disconnected Impervious Area, Subsurface Detention Basin | 0.57 |
| 2014-PHAG-2547-01 | Combined | Verified | Lower Schuylkill River | 19132 | Bioretention, Subsurface Detention Basin | 0.31 |
| 2014-PHAM-2476-01 | Combined | Verified | Lower Schuylkill River | 19121 | Bio-infiltration/Bio-retention, Bioretention, Subsurface Detention Basin | 1.29 |
| 2014-PHAO-2459-01 | Combined | Verified | Lower Schuylkill River | 19132 | Bioretention, Porous Pavement, Subsurface Detention Basin | 0.43 |
| 2014-SEPT-2614-01 | Combined | Verified | Delaware Direct | 19124 | Disconnected Impervious Area, Green Roof | 0.29 |
| 2014-STEN-2616-01 | Combined | Verified | Tacony-Frankford Creek | 19140 | Disconnected Impervious Area, Porous Pavement, Subsurface Infiltration Basin | 0.50 |
| 2014-STJO-2424-01 | Combined | Verified | Delaware Direct | 19122 | Disconnected Impervious Area, Subsurface Infiltration Basin | 5.56 |
| 2014-TEMP-2699-01 | Combined | Verified | Delaware Direct | 19121 | Disconnected Impervious Area | 0.40 |
| 2014-TRUE-2595-01 | Combined | Verified | Delaware Direct | 19123 | Subsurface Infiltration Basin | 0.93 |
| 2014-UNIV-2747-01 | Combined | Verified | Lower Schuylkill River | 19104 | Porous Pavement | 0.53 |
| 2014-VONC-2749-01 | Combined | Verified | Lower Schuylkill River | 19130 | Disconnected Impervious Area, Subsurface Infiltration Basin | 0.46 |
| 2014-WEST-2612-01 | Combined | Verified | Lower Schuylkill River | 19121 | Disconnected Impervious Area, Porous Pavement, Subsurface Infiltration Basin | 1.88 |
| 2015-1002-2906-01 | Combined | Verified | Delaware Direct | 19123 | Bioinfiltration, Porous Pavement, Subsurface Detention Basin | 0.82 |
| 2015-2338-2915-01 | Combined | Verified | Delaware Direct | 19125 | Subsurface Infiltration Basin | 0.46 |
| 2015-2517-2803-01 | Combined | Verified | Delaware Direct | 19134 | Green Roof, Porous Pavement, Subsurface Detention Basin | 0.31 |
| 2015-3201-2786-01 | Combined | Verified | Lower Schuylkill River | 19104 | Bioretention, Disconnected Impervious Area, Green Roof, Subsurface Detention Basin | 0.26 |
| 2015-3675-2955-01 | Combined | Verified | Lower Schuylkill River | 19104 | Green Roof, Porous Pavement, Subsurface Detention Basin | 0.46 |
| 2015-4050-2828-01 | Combined | Verified | Lower Schuylkill River | 19104 | Bioretention, Disconnected Impervious Area, Subsurface Detention Basin | 0.39 |

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| 2015-40TH-2780-01 | Combined | Verified | Lower Schuylkill River | 19104 | Disconnected Impervious Area, Subsurface Infiltration Basin | 0.72 |
| 2015-7092-2945-01 | Combined | Verified | Delaware Direct | 19147 | Disconnected Impervious Area, Porous Pavement, Subsurface Infiltration Basin | 0.44 |
| 2015-8385-2856-01 | Combined | Verified | Delaware Direct | 19123 | Subsurface Infiltration Basin | 0.91 |
| 2015-CAMD-2769-01 | Combined | Verified | Delaware Direct | 19134 | Surface Infiltration Basin | 3.43 |
| 2015-DLAT-2926-01 | Combined | Verified | Delaware Direct | 19120 | Bioretention, Disconnected Impervious Area, Green Roof, Porous Pavement, Subsurface Detention Basin | 8.01 |
| 2015-GAUD-2962-01 | Combined | Verified | Lower Schuylkill River | 19140 | Bioretention, Porous Pavement, Subsurface Detention Basin | 0.59 |
| 2015-GROC-2925-01 | Combined | Verified | Delaware Direct | 19137 | Bioretention, Subsurface Detention Basin | 2.58 |
| 2015-LASA-2848-01 | Combined | Verified | Tacony-Frankford Creek | 19144 | Bioinfiltration, Porous Pavement | 1.10 |
| 2015-PHIL-2982-01 | Combined | Verified | Lower Schuylkill River | 19104 | Disconnected Impervious Area, Green Roof, Subsurface Detention Basin | 0.24 |
| 2015-ROBE-2975-01 | Combined | Verified | Tacony-Frankford Creek | 19140 | Bioretention, Subsurface Detention Basin | 0.52 |
| 2015-ROYA-2911-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Disconnected Impervious Area, Subsurface Infiltration Basin, Surface Detention Basin, Surface Infiltration Basin | 4.18 |
| 2015-SOUT-2956-01 | Combined | Verified | Lower Schuylkill River | 19145 | Bioretention, Subsurface Detention Basin, Surface Detention Basin | 5.04 |
| 2015-TEMP-2829-01 | Combined | Verified | Delaware Direct | 19122 | Porous Pavement, Subsurface Infiltration Basin | 0.22 |
| 2015-TEMP-2964-01 | Combined | Verified | Delaware Direct | 19122 | Porous Pavement, Subsurface Infiltration Basin | 6.22 |
| 2015-TULI-2824-01 | Combined | Verified | Delaware Direct | 19122 | Disconnected Impervious Area, Green Roof, Porous Pavement, Subsurface Infiltration Basin | 3.06 |
| 2015-UCHS-2939-01 | Combined | Verified | Lower Schuylkill River | 19104 | Bioretention, Disconnected Impervious Area, Subsurface Detention Basin, Subsurface Infiltration Basin | 2.18 |
| 2015-WAYN-2771-01 | Combined | Verified | Tacony-Frankford Creek | 19144 | Disconnected Impervious Area, Porous Pavement, Subsurface Infiltration Basin | 1.16 |
| 2015-WYNN-2986-01 | Combined | Verified | Lower Schuylkill River | 19131 | Disconnected Impervious Area, Porous Pavement, Subsurface Infiltration Basin | 0.67 |
| FY16-ADAM-4220-01 | Combined | Verified | Tacony-Frankford Creek | 19120 | Bioinfiltration | 0.98 |
| FY16-BARI-4074-01 | Combined | Verified | Lower Schuylkill River | 19104 | Disconnected Impervious Area, Subsurface Infiltration Basin | 0.37 |
| FY16-BERN-4350-01 | Combined | Verified | Lower Schuylkill River | 19121 | Subsurface Infiltration Basin | 1.16 |
| FY16-DREX-4244-01 | Combined | Verified | Lower Schuylkill River | 19104 | Disconnected Impervious Area, Porous Pavement | 1.00 |
| FY16-EAST-4017-01 | Combined | Verified | Delaware Direct | 19125 | Subsurface Infiltration Basin | 0.48 |

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| FY16-EAST-4179-01 | Combined | Verified | Delaware Direct | 19134 | Bioinfiltration, Disconnected Impervious Area | 0.40 |
| FY16-FAIR-4011-01 | Combined | Verified | Delaware Direct | 19123 | Subsurface Infiltration Basin | 1.22 |
| FY16-FEDE-4201-01 | Combined | Verified | Lower Schuylkill River | 19146 | Subsurface Infiltration Basin | 0.86 |
| FY16-FIVE-4029-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Bioinfiltration, Bioretention, Subsurface Infiltration Basin | 1.05 |
| FY16-FRAN-4076-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Disconnected Impervious Area | 0.02 |
| FY16-HANO-4040-01 | Combined | Verified | Lower Schuylkill River | 19107 | Subsurface Detention Basin | 2.10 |
| FY16-HELP-4027-01 | Combined | Verified | Delaware Direct | 19123 | Disconnected Impervious Area, Subsurface Infiltration Basin | 0.21 |
| FY16-JACK-4123-01 | Combined | Verified | Delaware Direct | 19124 | Disconnected Impervious Area, Green Roof, Porous Pavement, Subsurface Infiltration Basin | 2.13 |
| FY16-KENS-4216-01 | Combined | Verified | Delaware Direct | 19125 | Bioinfiltration, Porous Pavement | 0.71 |
| FY16-LASA-4354-01 | Combined | Verified | Tacony-Frankford Creek | 19141 | Disconnected Impervious Area, Porous Pavement | 0.16 |
| FY16-LINC-4309-01 | Combined | Verified | Delaware Direct | 19146 | Disconnected Impervious Area, Green Roof, Porous Pavement, Subsurface Infiltration Basin | 3.44 |
| FY16-LOVE-4088-01 | Combined | Verified | Tacony-Frankford Creek | 19119 | Bioinfiltration, Disconnected Impervious Area, Green Roof | 0.15 |
| FY16-LUCI-4053-01 | Combined | Verified | Lower Schuylkill River | 19139 | Disconnected Impervious Area | 0.32 |
| FY16-NATI-4211-01 | Combined | Verified | Delaware Direct | 19106 | Subsurface Detention Basin | 0.96 |
| FY16-NFRO-4270-01 | Combined | Verified | Delaware Direct | 19122 | Subsurface Infiltration Basin | 0.97 |
| FY16-SIMP-4337-01 | Combined | Verified | Lower Schuylkill River | 19131 | Bioinfiltration, Disconnected Impervious Area, Subsurface Infiltration Basin | 1.33 |
| FY16-SMIT-4151-01 | Combined | Verified | Lower Schuylkill River | 19146 | Disconnected Impervious Area, Porous Pavement | 4.25 |
| FY16-STJO-4085-01 | Combined | Verified | Lower Schuylkill River | 19145 | Bioretention, Porous Pavement, Subsurface Detention Basin | 1.52 |
| FY16-TEMP-4178-01 | Combined | Verified | Delaware Direct | 19121 | Bioretention, Porous Pavement, Subsurface Detention Basin | 4.15 |
| FY16-TEMP-4277-01 | Combined | Verified | Delaware Direct | 19122 | Porous Pavement | 0.38 |
| FY16-THCH-4142-01 | Combined | Verified | Lower Schuylkill River | 19102 | Blue Roof, Green Roof, Subsurface Detention Basin, WQ Treatment Device | 1.05 |
| FY16-UCHS-4213-01 | Combined | Verified | Lower Schuylkill River | 19104 | | 0.00 |
| FY16-USCI-4261-01 | Combined | Verified | Lower Schuylkill River | 19143 | Bioinfiltration, Bioretention, Porous Pavement | 1.38 |
| FY16-WASH-4360-01 | Combined | Verified | Lower Schuylkill River | 19146 | Bioinfiltration, Subsurface Infiltration Basin | 2.02 |
| FY17-ALDI-4565-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Bioretention, Disconnected Impervious Area, Subsurface Detention Basin, WQ Treatment Device | 3.07 |

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| FY17-AUTO-4659-01 | Combined | Verified | Delaware Direct | 19148 | Subsurface Detention Basin, WQ Treatment Device | 1.00 |
| FY17-BROA-4539-01 | Combined | Verified | Lower Schuylkill River | 19130 | Disconnected Impervious Area, Subsurface Detention Basin | 0.98 |
| FY17-CAMP-4378-01 | Combined | Verified | Lower Schuylkill River | 19140 | Disconnected Impervious Area, Subsurface Infiltration Basin | 0.70 |
| FY17-EAST-4468-01 | Combined | Verified | Lower Schuylkill River | 19121 | Subsurface Detention Basin | 0.84 |
| FY17-EAST-4640-01 | Combined | Verified | Cobbs Creek | 19139 | Bioinfiltration, Blue Roof, Disconnected Impervious Area, Green Roof, Subsurface Detention Basin, WQ Treatment Device | 1.96 |
| FY17-HAMP-4618-01 | Combined | Verified | Delaware Direct | 19111 | Bioinfiltration, Disconnected Impervious Area | 1.12 |
| FY17-LEED-4633-01 | Combined | Verified | Tacony-Frankford Creek | 19150 | Bioinfiltration | 4.34 |
| FY17-LUCI-4480-01 | Combined | Verified | Lower Schuylkill River | 19139 | Disconnected Impervious Area, Porous Pavement, Subsurface Detention Basin, Surface Detention Basin, WQ Treatment Device | 1.02 |
| FY17-MALB-4466-01 | Combined | Verified | Delaware Direct | 19125 | Porous Pavement, Subsurface Infiltration Basin | 0.73 |
| FY17-NTHS-4672-01 | Combined | Verified | Delaware Direct | 19122 | Porous Pavement, Subsurface Infiltration Basin | 2.13 |
| FY17-PESS-4511-01 | Combined | Verified | Lower Schuylkill River | 19145 | Surface Detention Basin | 9.27 |
| FY17-PHAA-4543-01 | Combined | Verified | Lower Schuylkill River | 19121 | Porous Pavement, Subsurface Infiltration Basin | 0.61 |
| FY17-PHAN-4699-01 | Combined | Verified | Delaware Direct | 19122 | Disconnected Impervious Area, Porous Pavement, Subsurface Detention Basin | 2.53 |
| FY17-PHIL-4417-01 | Combined | Verified | Delaware Direct | 19121 | Subsurface Detention Basin, WQ Treatment Device | 2.44 |
| FY17-ROWE-4634-01 | Combined | Verified | Tacony-Frankford Creek | 19126 | Bioinfiltration | 1.24 |
| FY17-SENI-4411-01 | Combined | Verified | Lower Schuylkill River | 19145 | Disconnected Impervious Area, Porous Pavement, Subsurface Detention Basin, WQ Treatment Device | 0.99 |
| FY17-SOUT-4486-01 | Combined | Verified | Lower Schuylkill River | 19104 | Green Roof, Subsurface Infiltration Basin | 0.49 |
| FY17-STHS-4755-01 | Combined | Verified | Lower Schuylkill River | 19146 | Subsurface Infiltration Basin | 0.92 |
| FY17-STPI-4413-01 | Combined | Verified | Cobbs Creek | 19143 | Bioinfiltration, Disconnected Impervious Area | 0.23 |
| FY17-TEMP-4573-01 | Combined | Verified | Delaware Direct | 19122 | Disconnected Impervious Area, Porous Pavement | 0.23 |
| FY17-THAN-4446-01 | Combined | Verified | Lower Schuylkill River | 19146 | Subsurface Detention Basin, WQ Treatment Device | 0.75 |

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| FY17-VIEW-4457-01 | Combined | Verified | Delaware Direct | 19122 | Bioinfiltration, Disconnected Impervious Area, Green Roof, Porous Pavement, Subsurface Infiltration Basin | 4.07 |
| FY17-WALM-4419-01 | Combined | Verified | Tacony-Frankford Creek | 19114 | Subsurface Detention Basin, WQ Treatment Device | 13.37 |
| FY17-WEND-4527-01 | Combined | Verified | Cobbs Creek | 19139 | Subsurface Infiltration Basin | 1.31 |
| FY17-WGOD-4567-01 | Combined | Verified | Tacony-Frankford Creek | 19141 | Disconnected Impervious Area, Porous Pavement, Subsurface Infiltration Basin | 1.14 |
| FY17-WIDE-4636-01 | Combined | Verified | Tacony-Frankford Creek | 19141 | Bioinfiltration | 3.99 |
| FY17-WYNN-4704-01 | Combined | Verified | Lower Schuylkill River | 19131 | Disconnected Impervious Area, Subsurface Infiltration Basin | 0.76 |
| FY17-XXXX-4458-01 | Combined | Verified | Lower Schuylkill River | 19131 | Subsurface Infiltration Basin | 1.75 |
| FY18-ALBE-4973-01 | Combined | Verified | Tacony-Frankford Creek | 19141 | Disconnected Impervious Area, Subsurface Infiltration Basin | 1.54 |
| FY18-BART-5075-01 | Combined | Verified | Lower Schuylkill River | 19143 | Subsurface Infiltration Basin | 6.12 |
| FY18-CHES-4832-01 | Combined | Verified | Lower Schuylkill River | 19104 | Green Roof, Porous Pavement | 0.19 |
| FY18-DEST-4909-01 | Combined | Verified | Delaware Direct | 19123 | Subsurface Infiltration Basin | 5.08 |
| FY18-ENOR-4838-01 | Combined | Verified | Delaware Direct | 19125 | Bioinfiltration, Porous Pavement | 0.81 |
| FY18-GALA-5145-01 | Combined | Verified | Tacony-Frankford Creek | 19138 | Bio-infiltration/Bio-retention, Subsurface Detention Basin | 0.48 |
| FY18-HSTX-5076-01 | Combined | Verified | Delaware Direct | 19134 | Subsurface Detention Basin, WQ Treatment Device | 1.25 |
| FY18-MERC-4857-01 | Combined | Verified | Cobbs Creek | 19143 | Disconnected Impervious Area, Subsurface Detention Basin, WQ Treatment Device | 0.38 |
| FY18-PARK-4775-01 | Combined | Verified | Lower Schuylkill River | 19131 | Subsurface Detention Basin, WQ Treatment Device | 1.57 |
| FY18-PARK-4896-01 | Combined | Verified | Lower Schuylkill River | 19131 | Disconnected Impervious Area | 0.00 |
| FY18-PEAB-4939-01 | Combined | Verified | Delaware Direct | 19122 | Porous Pavement | 0.15 |
| FY18-PHAS-4886-01 | Combined | Verified | Delaware Direct | 19148 | Bioretention, Disconnected Impervious Area | 2.00 |
| FY18-PHIL-5038-01 | Combined | Verified | Delaware Direct | 19107 | Subsurface Detention Basin, WQ Treatment Device | 1.57 |
| FY18-RENO-4879-01 | Combined | Verified | Cobbs Creek | 19143 | Bioinfiltration, Depave | 2.12 |
| FY19-AUTO-5287-01 | Combined | Verified | Lower Schuylkill River | 19145 | Subsurface Detention Basin, WQ Treatment Device | 0.47 |
| FY19-DREX-5307-01 | Combined | Verified | Lower Schuylkill River | 19104 | Subsurface Infiltration Basin | 0.42 |
| FY19-POPL-5344-01 | Combined | Verified | Lower Schuylkill River | 19131 | Subsurface Detention Basin | 0.69 |
| FY20-WECC-5809-01 | Combined | Verified | Delaware Direct | 19148 | Subsurface Detention Basin, WQ Treatment Device | 1.88 |
| 2007-HERR-690-01 | Combined | Verified | Delaware Direct | 19147 | Disconnected Impervious Area, Porous Pavement | 0.56 |

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| 2009-SCHU-1140-01 | Combined | Verified | Lower Schuylkill River | 19103 | Disconnected Impervious Area | 0.69 |
| 2010-HUNT-1351-01 | Combined | Verified | Tacony-Frankford Creek | 19140-2107 | Disconnected Impervious Area | 0.06 |
| 2014-VERN-2690-01 | Combined | Verified | Tacony-Frankford Creek | 19144 | Disconnected Impervious Area, Porous Pavement | 0.55 |
| 2014-WISS-2641-01 | Combined | Verified | Delaware Direct | 19135 | Disconnected Impervious Area, Porous Pavement | 0.43 |
| 2015-LANI-2871-01 | Combined | Verified | Lower Schuylkill River | 19145 | Disconnected Impervious Area, Porous Pavement | 0.32 |
| 2015-JFKP-2951-01 | Combined | Verified | Lower Schuylkill River | 19102 | Disconnected Impervious Area, Green Roof, Subsurface Detention Basin | 1.04 |
| **Total Greened Acres:** | | | | | | **684** |

**Table 4: Complete SMIP and GARP Green Stormwater Infrastructure Projects**

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| 2012-GSFS-2028-01 | Combined | Verified | Tacony-Frankford Creek | 19144 | Bioretention, Depave | 1.04 |
| 2012-WOLF-1792-01 | Combined | Verified | Delaware Direct | 19137 | | 11.74 |
| 2013-1148-2105-01 | Combined | Verified | Delaware Direct | 19147 | Green Roof, Subsurface Infiltration Basin, Surface Infiltration Basin | 0.67 |
| 2013-CARD-2076-01 | Combined | Verified | Delaware Direct | 19124 | Subsurface Detention Basin, Surface Detention Basin | 52.99 |
| 2013-CARD-2220-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Surface Detention Basin | 15.37 |
| 2013-SITE-2387-01 | Combined | Verified | Lower Schuylkill River | 19131 | Subsurface Infiltration Basin | 5.17 |
| 2013-SITE-2401-01 | Combined | Verified | Lower Schuylkill River | 19131 | Subsurface Infiltration Basin | 3.41 |
| 2014-GLOB-2467-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Subsurface Detention Basin, Surface Detention Basin | 0.58 |
| 2014-SITE-2501-01 | Combined | Verified | Lower Schuylkill River | 19131 | Bioinfiltration | 35.53 |
| 2014-SITE-2549-01 | Combined | Verified | Lower Schuylkill River | 19145 | Subsurface Infiltration Basin | 3.28 |
| 2014-SITE-2550-01 | Combined | Verified | Delaware Direct | 19135 | Subsurface Infiltration Basin | 1.67 |
| 2014-SITE-2592-01 | Combined | Verified | Lower Schuylkill River | 19153 | Subsurface Infiltration Basin | 9.08 |
| 2014-SITE-2665-01 | Combined | Verified | Lower Schuylkill River | 19145 | Subsurface Detention Basin, Subsurface Infiltration Basin | 8.92 |
| 2014-SITE-2666-01 | Combined | Verified | Lower Schuylkill River | 19153 | Subsurface Infiltration Basin | 2.70 |
| 2014-SITE-2682-01 | Combined | Verified | Lower Schuylkill River | 19131 | Subsurface Detention Basin, Surface Infiltration Basin | 7.43 |
| 2014-WARR-2757-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Bioretention | 3.11 |
| 2014-WILL-2541-01 | Combined | Verified | Delaware Direct | 19140 | Depave | 0.17 |
| 2015-3560-2776-01 | Combined | Verified | Delaware Direct | 19134 | Subsurface Infiltration Basin | 0.64 |
| 2015-FRAN-2954-01 | Combined | Verified | Delaware Direct | 19130 | Bioretention | 0.59 |
| 2015-LASA-2865-01 | Combined | Verified | Tacony-Frankford Creek | 19141 | Surface Detention Basin | 7.36 |
| 2015-LEAE-2888-01 | Combined | Verified | Lower Schuylkill River | 19036 | Bioinfiltration, Bio-infiltration/Bio-retention, Porous Pavement, Subsurface Infiltration Basin | 1.96 |
| 2015-LIGH-2907-01 | Combined | Verified | Delaware Direct | 19140 | Surface Detention Basin | 0.70 |
| 2015-MART-2832-01 | Combined | Verified | Tacony-Frankford Creek | 19138 | Bioinfiltration, Subsurface Infiltration Basin | 3.81 |
| 2015-MAYF-2796-01 | Combined | Verified | Delaware Direct | 19149 | Bioretention | 4.78 |
| 2015-MINK-2844-01 | Combined | Verified | Lower Schuylkill River | 19145 | Basin, Surface Infiltration Basin | 0.73 |
| 2015-NORT-2977-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Subsurface Detention Basin, Subsurface Infiltration Basin, WQ Treatment Device | 17.56 |
| 2015-SITE-2809-01 | Combined | Verified | Tacony-Frankford Creek | 19120 | Subsurface Infiltration Basin | 21.92 |
| 2015-SITE-2810-01 | Combined | Verified | Lower Schuylkill River | 19153 | Subsurface Infiltration Basin | 9.87 |
| 2015-SITE-2812-01 | Combined | Verified | Pennypack Creek | 19136 | Subsurface Infiltration Basin | 10.83 |
| 2015-STJA-2895-01 | Combined | Verified | Tacony-Frankford Creek | 19120 | Subsurface Detention Basin, Surface Detention Basin, Surface Infiltration Basin | 0.48 |
| 2015-TAGG-2931-01 | Combined | Verified | Delaware Direct | 19148 | Bioinfiltration, Depave, Subsurface Detention Basin | 0.93 |
| FY16-ADAI-4164-01 | Combined | Verified | Delaware Direct | 19125 | Bioinfiltration, Depave | 2.30 |
| FY16-ADAM-4101-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Disconnected Impervious Area, Surface Detention Basin | 1.80 |
| FY16-CHES-4233-01 | Combined | Verified | Lower Schuylkill River | 19146 | Depave, Porous Pavement, Subsurface Infiltration Basin, Surface Infiltration Basin | 1.02 |
| FY16-ESSI-4357-01 | Combined | Verified | Lower Schuylkill River | 19153 | Subsurface Infiltration Basin | 8.00 |
| FY16-GAUL-4273-01 | Combined | Verified | Delaware Direct | 19134 | Subsurface Infiltration Basin | 1.21 |
| FY16-ISTR-4292-01 | Combined | Verified | Delaware Direct | 19134 | Blue Roof | 1.28 |
| FY16-JMPA-4286-01 | Combined | Verified | Lower Schuylkill River | 19142 | Bioinfiltration, Depave | 0.76 |
| FY16-JOMA-4143-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Surface Detention Basin | 1.31 |
| FY16-LASA-4274-01 | Combined | Verified | Tacony-Frankford Creek | 19144 | Subsurface Infiltration Basin, Surface Infiltration Basin | 9.46 |
| FY16-LIND-4086-01 | Combined | Verified | Tacony-Frankford Creek | 19141 | Bioinfiltration | 0.93 |
| FY16-NAME-4323-01 | Combined | Verified | Tacony-Frankford Creek | 19140 | Subsurface Detention Basin | 7.48 |
| FY16-PHIL-4134-01 | Combined | Verified | Lower Schuylkill River | 19130 | Green Roof | 0.14 |
| FY16-RICH-4302-01 | Combined | Verified | Delaware Direct | 19137 | Disconnected Impervious Area | 12.86 |
| FY16-SITE-4016-01 | Combined | Verified | Lower Schuylkill River | 19145 | Subsurface Detention Basin | 6.38 |

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| FY16-SITE-4020-01 | Combined | Verified | Delaware Direct | 19136 | Subsurface Infiltration Basin | 1.54 |
| FY16-SITE-4025-01 | Combined | Verified | Pennypack Creek | 19136 | Subsurface Detention Basin | 13.70 |
| FY16-SITE-4039-01 | Combined | Verified | Delaware Direct | 19148 | Subsurface Detention Basin, Surface Detention Basin | 5.70 |
| FY16-SITE-4104-01 | Combined | Verified | Tacony-Frankford Creek | 19120 | Subsurface Infiltration Basin | 9.45 |
| FY16-SITE-4189-01 | Combined | Verified | Tacony-Frankford Creek | 19120 | Subsurface Detention Basin, Surface Detention Basin | 12.90 |
| FY16-STHS-4226-01 | Combined | Verified | Lower Schuylkill River | 19145 | Bioretention, Subsurface Detention Basin | 4.51 |
| FY16-WAKE-4282-01 | Combined | Verified | Delaware Direct | 19137 | Subsurface Detention Basin | 8.07 |
| FY17-BAKE-4685-01 | Combined | Verified | Delaware Direct | 19134 | Subsurface Infiltration Basin | 2.68 |
| FY17-BSTR-4742-01 | Combined | Verified | Delaware Direct | 19134 | Subsurface Infiltration Basin | 8.85 |
| FY17-CAST-4743-01 | Combined | Verified | Delaware Direct | 19134 | Subsurface Detention Basin | 7.11 |
| FY17-EADO-4760-01 | Combined | Verified | Delaware Direct | 19137 | Subsurface Infiltration Basin | 5.30 |
| FY17-ECHE-4667-01 | Combined | Verified | Tacony-Frankford Creek | 19144 | Bioinfiltration, Subsurface Infiltration Basin | 3.37 |
| FY17-ECHE-4668-01 | Combined | Verified | Tacony-Frankford Creek | 19144 | Bioinfiltration, Subsurface Infiltration Basin | 3.40 |
| FY17-EDMU-4680-01 | Combined | Verified | Pennypack Creek | 19136 | Subsurface Infiltration Basin | 4.34 |
| FY17-EERI-4396-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Subsurface Infiltration Basin | 3.61 |
| FY17-ELUZ-4412-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Subsurface Infiltration Basin | 8.12 |
| FY17-ESSI-4624-01 | Combined | Verified | Lower Schuylkill River | 19153 | Subsurface Detention Basin | 11.96 |
| FY17-ESSI-4628-01 | Combined | Verified | Lower Schuylkill River | 19153 | Porous Pavement, Subsurface Detention Basin, WQ Treatment Device | 7.67 |
| FY17-FRAN-4728-01 | Combined | Verified | Delaware Direct | 19125 | Green Roof | 0.18 |
| FY17-GRAY-4520-01 | Combined | Verified | Lower Schuylkill River | 19143 | Subsurface Detention Basin | 13.54 |
| FY17-HIST-4671-01 | Combined | Verified | Tacony-Frankford Creek | 19144 | Bioretention, Depave, Subsurface Detention Basin | 0.55 |
| FY17-NDAN-4582-01 | Combined | Verified | Tacony-Frankford Creek | 19140 | Subsurface Detention Basin | 25.96 |
| FY17-NTHS-4620-01 | Combined | Verified | Delaware Direct | 19140 | Subsurface Detention Basin | 13.28 |
| FY17-OVER-4682-01 | Combined | Verified | Lower Schuylkill River | 19151 | Bioinfiltration, Subsurface Infiltration Basin | 2.06 |
| FY17-PASC-4472-01 | Combined | Verified | Lower Schuylkill River | 19143 | Subsurface Detention Basin, Subsurface Infiltration Basin | 7.18 |
| FY17-POSE-4687-01 | Combined | Verified | Pennypack Creek | 19136 | Subsurface Detention Basin | 5.17 |
| FY17-STEN-4469-01 | Combined | Verified | Tacony-Frankford Creek | 19144 | Subsurface Detention Basin | 3.88 |
| FY17-STHS-4442-01 | Combined | Verified | Lower Schuylkill River | 19145 | Subsurface Detention Basin | 14.71 |
| FY17-STMA-4406-01 | Combined | Verified | Delaware Direct | 19122 | Bio-infiltration/Bio-retention | 2.04 |
| FY17-TACO-4444-01 | Combined | Verified | Delaware Direct | 19137 | Subsurface Infiltration Basin | 7.37 |
| FY17-WHEA-4544-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Disconnected Impervious Area, Subsurface Infiltration Basin | 14.00 |
| FY18-ACAD-4999-01 | Combined | Verified | Pennypack Creek | 19114 | Subsurface Infiltration Basin | 3.53 |
| FY18-ADAM-5070-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Subsurface Infiltration Basin | 3.67 |
| FY18-BALA-5159-01 | Combined | Verified | Lower Schuylkill River | 19131 | Surface Detention Basin | 24.42 |
| FY18-COML-4942-01 | Combined | Verified | Delaware Direct | 19135 | Subsurface Detention Basin | 1.35 |
| FY18-DEPA-4944-01 | Combined | Verified | Tacony-Frankford Creek | 19422 | Subsurface Detention Basin | 10.26 |
| FY18-EERI-4992-01 | Combined | Verified | Delaware Direct | 19124 | Subsurface Infiltration Basin | 9.09 |
| FY18-GRAY-4905-01 | Combined | Verified | Lower Schuylkill River | 19143 | Subsurface Detention Basin | 1.96 |
| FY18-LASA-4980-01 | Combined | Verified | Tacony-Frankford Creek | 19144 | Subsurface Infiltration Basin | 2.69 |
| FY18-NORT-4846-01 | Combined | Verified | Lower Schuylkill River | 19140 | Subsurface Infiltration Basin | 3.66 |
| FY18-OREG-5175-01 | Combined | Verified | Delaware Direct | 19148 | Subsurface Detention Basin | 6.15 |
| FY18-ORTH-5057-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Subsurface Detention Basin, Subsurface Infiltration Basin | 6.53 |
| FY18-PAUL-4979-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Subsurface Infiltration Basin | 1.72 |
| FY18-PINN-4913-01 | Combined | Verified | Lower Schuylkill River | 19131 | Subsurface Infiltration Basin | 2.54 |
| FY18-PRES-4972-01 | Combined | Verified | Delaware Direct | 19124 | Subsurface Detention Basin | 8.34 |
| FY18-STOR-5156-01 | Combined | Verified | Delaware Direct | 19148 | Subsurface Detention Basin | 55.00 |
| FY18-TALM-4904-01 | Combined | Verified | Lower Schuylkill River | 19131 | Subsurface Detention Basin | 0.92 |
| FY18-TALM-4995-01 | Combined | Verified | Lower Schuylkill River | 19131 | Subsurface Infiltration Basin | 1.40 |
| FY18-WBUL-4819-01 | Combined | Verified | Delaware Direct | 19140 | Subsurface Detention Basin | 5.99 |
| FY18-WHIT-5066-01 | Combined | Verified | Tacony-Frankford Creek | 19124 | Subsurface Detention Basin, Subsurface Infiltration Basin | 7.23 |

| Tracking Number | Sewer Type | Category | Watershed Type | Zip | SMP Types | Greened Acres |
|---|---|---|---|---|---|---|
| FY18-WHUN-4834-01 | Combined | Verified | Lower Schuylkill River | 19140 | Subsurface Infiltration Basin | 2.10 |
| FY19-ARDL-5323-01 | Combined | Verified | Tacony-Frankford Creek | 19138 | Bioinfiltration | 2.62 |
| FY19-PEER-5261-01 | Combined | Verified | Lower Schuylkill River | 19145 | Subsurface Detention Basin | 2.55 |
| FY19-PEER-5346-01 | Combined | Verified | Lower Schuylkill River | 19151 | Bioinfiltration, Subsurface Infiltration Basin | 2.27 |
| FY19-WGLE-5241-01 | Combined | Verified | Delaware Direct | 19132 | Subsurface Detention Basin | 2.73 |
| FY19-WGLE-5243-01 | Combined | Verified | Lower Schuylkill River | 19132 | Subsurface Infiltration Basin | 6.32 |
| FY19-WLEH-5378-01 | Combined | Verified | Lower Schuylkill River | 19132 | Bioretention, Subsurface Detention Basin | 7.41 |
| FY20-PARK-5828-01 | Combined | Verified | Lower Schuylkill River | 19130 | Green Roof | 0.20 |
| **Total Greened Acres:** | | | | | | **715** |

# Appendix 4

## Green Stormwater Infrastructure Monitoring Status Report

# 1.0 Introduction

During the reporting period of July 1, 2020 to June 30, 2021, the City's *Green City, Clean Waters* program addressed stormwater runoff reductions in urbanized areas using a combination of traditional infrastructure and green stormwater infrastructure (GSI). GSI systems vary in size, complexity, and interconnectedness to the existing drainage system, but the objective is to infiltrate, evapotranspire, reuse, and/or detain stormwater rather than to convey it directly to the sewer system. Monitoring and testing GSI systems is therefore essential to determine the effectiveness of various SMP types in managing stormwater and reducing combined sewer overflows.

The focus of the *Green City, Clean Waters* monitoring program has been post-construction performance monitoring and testing of public GSI systems but has expanded to test public GSI systems during construction beginning in FY19. In addition, post-construction private GSI monitoring and testing has been conducted since FY18. The primary goal of GSI monitoring and testing is to measure the performance of GSI systems for reducing stormwater runoff volume. Secondary goals include providing information for improvements to GSI design, construction and maintenance and develop appropriate monitoring methods for the variety of GSI projects installed city-wide.

Project characteristics such as contributing drainage area, storage volume, inlet capture efficiency, and slow release discharge parameters can be observed, allowing for a more complete view of a system's functionality. The comprehensive understanding of GSI through monitoring and testing allows the Water Department to make informed decisions for current and future projects regarding the GSI design standards, type and frequency of maintenance activities, and program optimization.

# 2.0 Data Tracking

The data tracking mechanism for *Green City, Clean Waters* GSI monitoring data has evolved significantly since the inception of the program. Raw data are stored on an SMP-by-SMP basis in a filesystem directory tree. Derived data from quality assurance calculations are stored in spreadsheets and relational databases, to be used for various data analyses. In FY21, record keeping of fieldwork activities transitioned away from a spreadsheet-based format to a more user-friendly and centrally controlled web-based R Shiny applications, backed by a relational database. System metrics and design characteristics are stored in other relational databases managed by PWD.

# 3.0 Comprehensive Monitoring Plan Implementation Status

Proposed methods for performance monitoring and testing were outlined in both the draft Comprehensive Monitoring Plan submitted December 1, 2012 and in a response sent to PADEP and the

EPA on July 31, 2013. A revised CMP was submitted on January 10th, 2014 and approved by PADEP on May 28, 2014. Since then, standard operating procedures (SOPs) continue to be refined for these methods. The latest monitoring and testing SOPs are available in the Appendices to the FY19 annual report.

Continuous water level (CWL) monitoring of GSI systems is the primary method the Water Department uses to evaluate performance. CWL monitoring is conducted at the stormwater management practice (SMP) level, where one or more SMPs make up a single GSI system. Multiple SMPs may be monitored, therefore, to assess the overall performance of a single GSI system. In addition to CWL monitoring, the Water Department conducts testing of GSI, including: capture efficiency testing (CETs) of inlets, simulated runoff testing (SRT) of GSI systems, infiltration testing of porous pavement and permeable pavers, and groundwater monitoring (pre-construction and post-construction of GSI).

The following sections summarize the FY21 (July 1, 2020 through June 30, 2021) monitoring and testing activities for public GSI (both post-construction and construction phases) and private GSI (post-construction only) and ancillary monitoring efforts as described in the CMP.

## 3.1 Post-Construction Public GSI Monitoring and Testing

### *3.1.1 Continuous Water Level (CWL) Monitoring*

During FY21, the Water Department completed 466 sensor deployments (HOBO pressure transducers, Onset Computer Corp, Bourne, MA) which were utilized for CWL monitoring of 122 public GSI systems, of which 31 systems were newly monitored this fiscal year (see **Table 3-1**). To-date (through FY21), 3,338 sensor deployments have been completed for CWL monitoring of 397 public GSI systems. All public SMPs with post-construction CWL monitoring are shown in **Figure 3-1**. In addition, **Figure 3-1** shows the barometric pressure sensor and rain gauge locations that are utilized in the CWL monitoring process.

In selecting water level monitoring locations, the Water Department has attempted to roughly allocate monitoring effort according to the types of SMPs constructed for the *Green City, Clean Waters* program. **Table 3-2** is a breakdown by SMP type showing the number of public SMPs with CWL monitoring compared to the total number of SMPs of each type.

**Table 3-1: Summary of Post-Construction CWL Monitoring of Public SMPs**

| | FY21 | To-Date (through FY21) |
|---|---|---|
| Sensor Deployments | 466 | 3348 |
| Systems | 122 | 397 |
| Systems Newly Monitored | 31 | |

**Table 3-2: Post-Construction CWL Monitoring of Public SMPs Listed by Type**

| SMP Type | Monitored SMPs (before and during FY21) | Total Constructed Public SMPs |
|---|---|---|
| Tree Trench | 234 | 374 |
| Stormwater Tree | 0 | 92 |
| Planter | 19 | 119 |
| Bumpout | 8 | 72 |
| Rain Garden | 56 | 132 |
| Infiltration/Storage Trench | 117 | 331 |
| Permeable Pavement | 2 | 13 |
| Swale | 3 | 29 |
| Basin | 1 | 4 |
| Drainage Well | 4 | 4 |
| Green Roof | 0 | 2 |
| **Total** | **444** | **1172** |

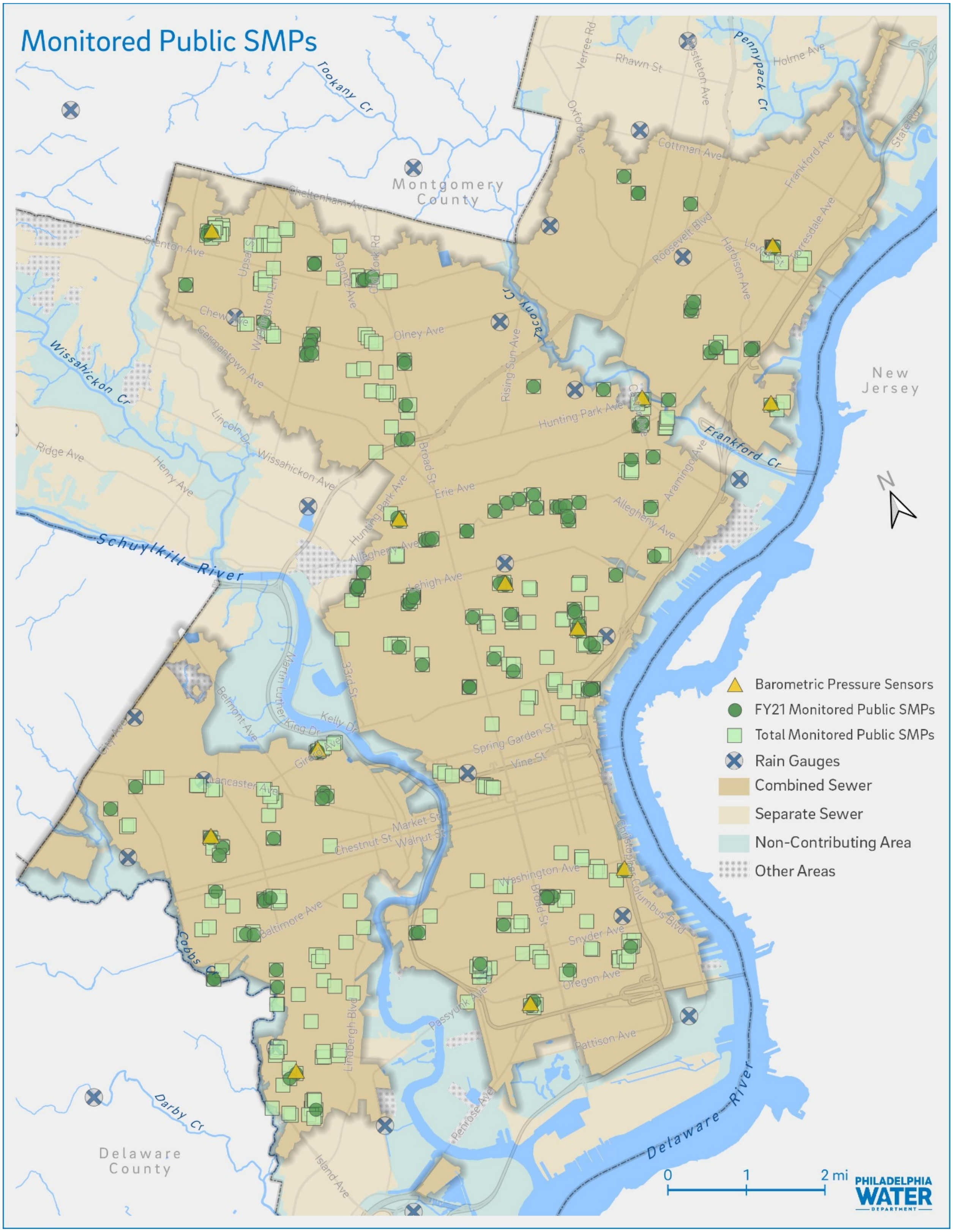



**Figure 3-1: Location of Public SMPs with Post-Construction CWL Monitoring**

### *3.1.2 Simulated Runoff Testing (SRT)*

Systems that show abnormal water level response typically undergo simulated runoff testing (SRT) using water hydrant flow, dye testing and/or CCTV to determine if there are performance issues. As described in **Table 3-3**, 21 pre-inspection SRTs were performed on public GSI systems between July 1, 2020 to June 30, 2021. To-date (through FY21), a total of 201 post-construction SRTs have been performed on public GSI systems. The breakdown of SRTs per SMP type is shown in **Table 3-4**. FY21 SRT locations are shown **Figure 3-2**.

**Table 3-3: Post-Construction SRTs performed on Public Systems**

| SRT Type | FY21 | To-Date (through FY21) |
|---|---|---|
| Pre-Inspection Dye Test | 21 | 76 |
| CCTV Dye Test | 0 | 38 |
| Performance SRT | 0 | 87 |

**Table 3-4: Public SMPs with Post-Construction SRTs Performed**

| SMP Type | FY21 | To-Date (through FY21) |
|---|---|---|
| Bumpout | 2 | 8 |
| Drainage Well | 0 | 3 |
| Permeable Pavement | 0 | 2 |
| Planter | 1 | 14 |
| Rain Garden | 3 | 15 |
| Stormwater Tree | 0 | 10 |
| Swale | 1 | 2 |
| Tree Trench | 11 | 64 |
| Trench | 7 | 28 |

Note: A single GSI system may consist of one or more SMPs; therefore, the number of SMPs tested may be larger than the number of GSI systems tested.

### *3.1.3 Capture Efficiency Testing (CET)*

Capture efficiency testing (CET) is performed on a GSI inlet to assess how well the SMP is receiving flow. Typically, all inlets at an GSI system are tested to assess a GSI system's overall capture efficiency which aids in understanding the system's overall performance. In FY21, 82 public GSI systems had capture efficiency testing (see **Table 3-5**). To-date (through FY21), 375 public GSI systems have had capture efficiency testing.

**Table 3-5: Public Systems with CETs Administered**

| | FY21 | To-date (through FY21) |
|---|---|---|
| No. of Systems with CETs Administered | 82 | 375 |

### 3.1.4 Porous Pavement and Permeable Paver Surface Infiltration Rate Testing

The Water Department uses ASTM Standards (ASTM Committee D18, ASTM C1701/C1701M-09 Standard Test method for Infiltration Rate of In Place Pervious Concrete, 2009) (ASTM Committee C15, 2013), with minor modifications for porous pavement and permeable paver infiltration testing. Development of these procedures was completed in FY13 and refinement of the methods is ongoing. Sections of schedule 60 PVC pipe are used as infiltration rings to perform multiple tests at a time. As described in **Table 3-6**, infiltration testing was performed on 5 public GSI systems in FY21 and 22 systems to-date (through FY21). **Figure 3-2** shows the public GSI systems where infiltration testing has been performed.

**Table 3-6: Public Systems with Infiltration Testing Administered**

| | FY21 | To-Date (through FY21) |
|---|---|---|
| No. of Systems with Infiltration Testing Administered | 5 | 22 |

## 3.2 Public GSI Monitoring Testing During Construction

### 3.2.1 Simulated Runoff Testing (SRT)

SRTs are performed during construction to assess system performance and address any performance issues before the Water Department accepts ownership. As described in **Table 3-7**, 1 pre-inspection SRT and 22 performance SRTs were performed on public GSI systems between July 1, 2020 to June 30, 2021. To-date (through FY21), a total of 33 construction-phase SRTs have been performed on public GSI systems. The breakdown of SRTs per SMP type is shown in **Table 3-8**. FY21 SRT locations are shown **Figure 3-2**.

**Table 3-7: Construction-Phase SRTs Performed on Public Systems**

| SRT Type | FY21 | To-Date (through FY21) |
|---|---|---|
| Pre-Inspection Dye Test | 1 | 4 |
| CCTV Dye Test | 0 | 2 |
| Performance SRT | 22 | 27 |

**Table 3-8: Public SMPs with Construction-Phase SRTs Performed**

| SMP Type | FY21 | To-Date (through FY21) |
|---|---|---|
| Bumpout | 0 | 1 |
| Rain Garden | 4 | 4 |
| Tree Trench | 7 | 11 |
| Trench | 5 | 6 |

Note: A single GSI system may consist of one or more SMPs; therefore, the number of SMPs tested may be larger than the number of GSI systems tested.

## 3.3 Groundwater Level Monitoring for Public GSI

The Water Department installs sensors within groundwater monitoring wells near proposed SMP locations to characterize seasonal groundwater fluctuations and determine the feasibility of the site for GSI. As shown in **Table 3-9**, 5 sites were monitored in FY21 to assess the feasibility of the site prior to GSI implementation. The Water Department also installs sensors within groundwater monitoring wells near active SMPs to assess the effect of infiltrating SMPs on the water table. A total of 4 GSI systems had groundwater monitoring post-construction.

**Table 3-9: Groundwater Monitoring for Public GSI**

| Monitoring Phase | FY21 | To-Date (through FY21) |
|---|---|---|
| Prior to Construction of GSI (Systems) | 5 | 8 |
| Post-Construction (Active GSI) | 4 | 12 |

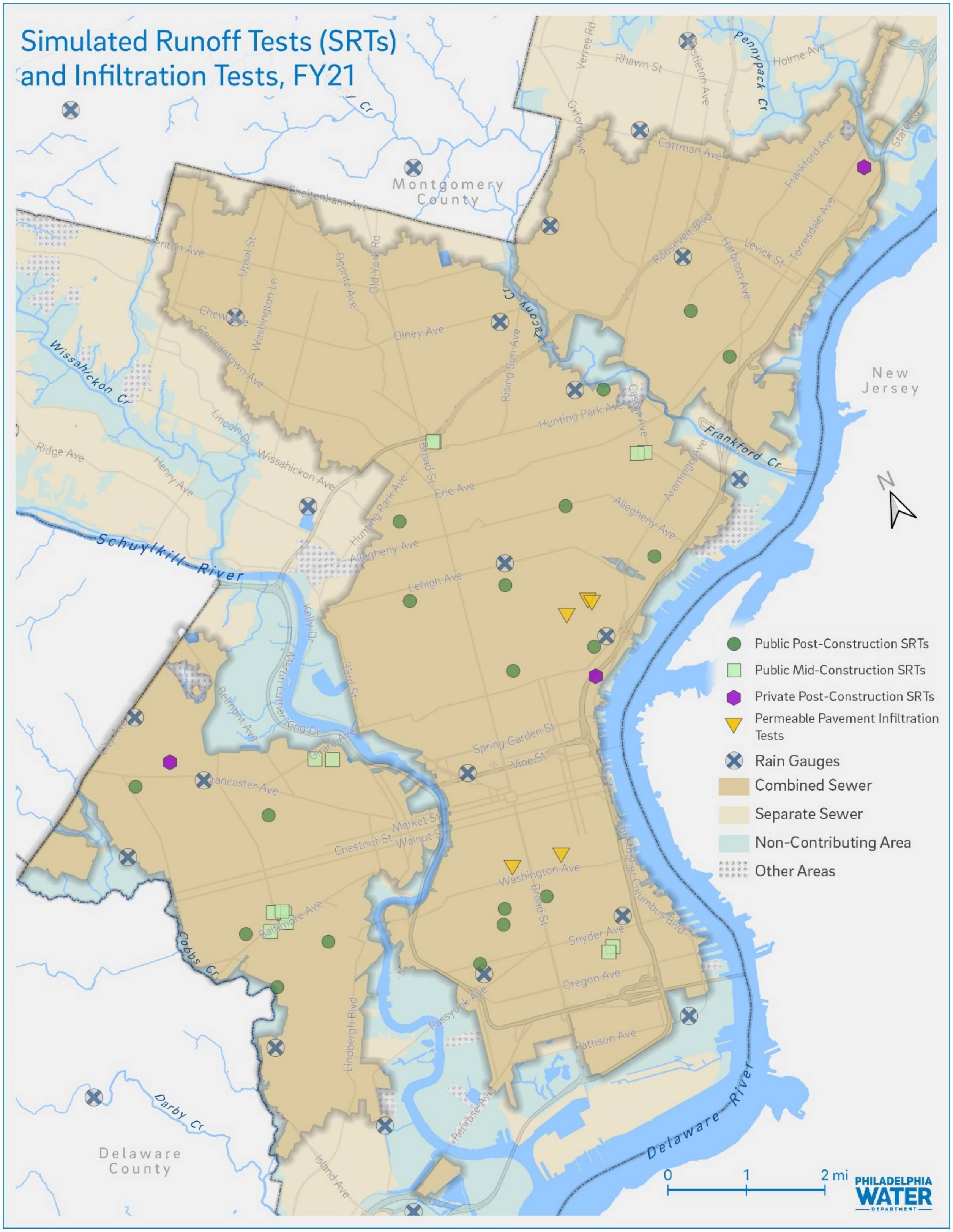



**Figure 3-2: Simulated Runoff Tests and Porous Pavement Tests**

## 3.4 Post-Construction Private GSI Monitoring and Testing

### *3.4.1 Continuous Water Level (CWL) Monitoring*

During FY21, the Water Department completed 82 sensor deployments which were utilized for CWL monitoring of 9 private GSI systems with no newly monitored systems this fiscal year (see **Table 3-10**). To-date (through FY21), 400 sensor deployments have been completed for CWL monitoring of 26 private GSI systems. All private SMPs with post-construction CWL monitoring are shown in **Figure 3-3**. In addition, **Figure 3-3** shows the barometric pressure sensor and rain gauge locations that are utilized in the CWL monitoring process. **Table 3-11** is a breakdown by SMP type showing the number of private SMPs with CWL monitoring compared to the total number of SMPs of each type.

**Table 3-10: Summary of Post-Construction CWL Monitoring of Private SMPs**

| | FY21 | To-Date (through FY21) |
|---|---|---|
| Sensor Deployments | 82 | 400 |
| Systems | 9 | 26 |
| Systems Newly Monitored | 0 | |

**Table 3-11: Post-Construction CWL-Monitoring of Private SMPs Listed by Type**

| SMP Type | Monitored SMPs (before and during FY21) | Total Constructed Private SMPs |
|---|---|---|
| Infiltration/Storage Trench | 14 | 1116 |
| Rain Garden | 8 | 484 |
| Basin | 4 | 139 |
| Pervious Paving | 0 | 244 |
| Planter | 0 | 28 |
| Cistern | 0 | 13 |
| Blue Roof | 0 | 8 |
| Tree Trench | 0 | 7 |
| Swale | 0 | 4 |
| Green Roof | 0 | 3 |
| Wetland | 0 | 1 |
| **Total** | **26** | **2047** |

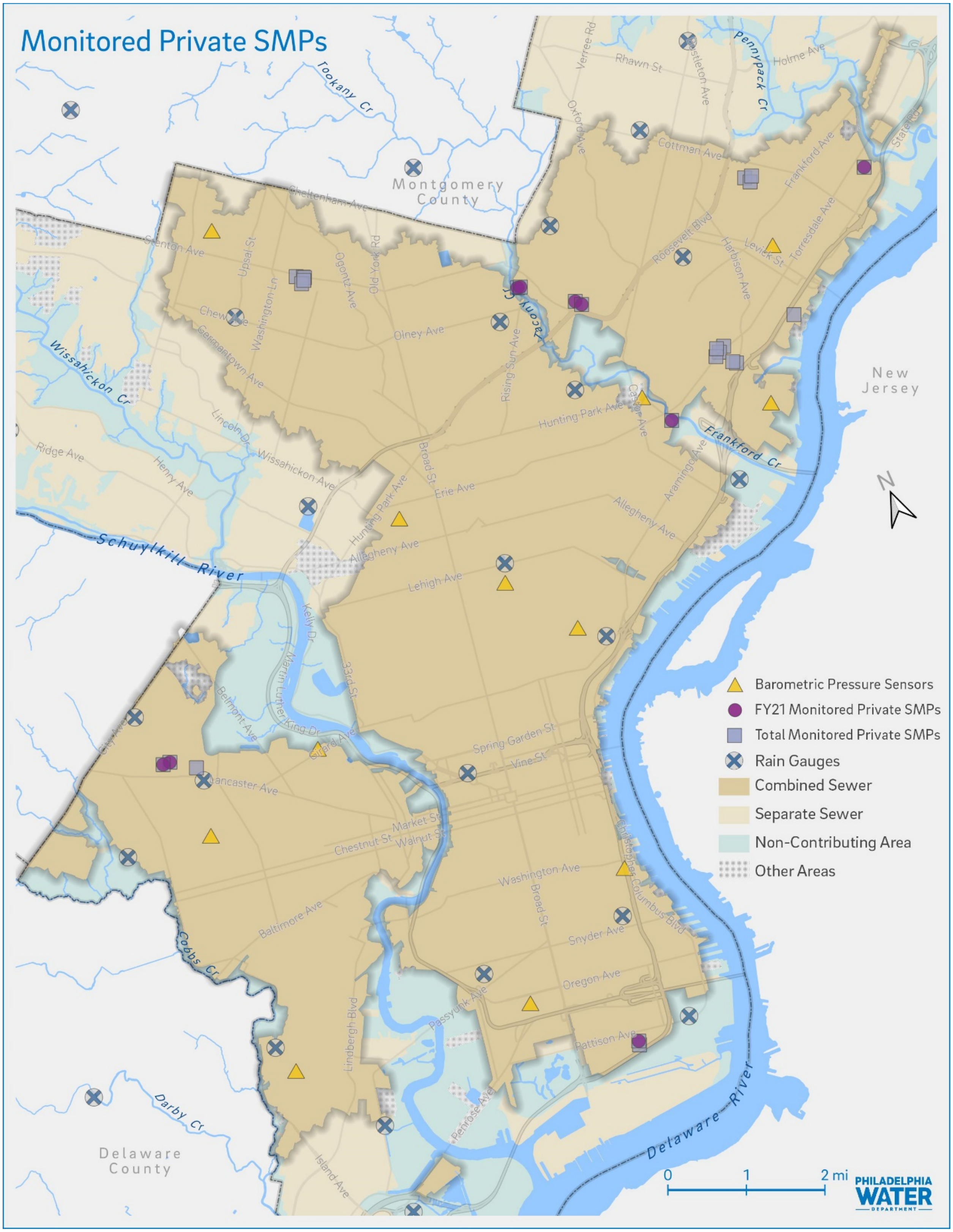



**Figure 3-3: Location of Private SMPs with Post-Construction CWL Monitoring**

### 3.4.2 Simulated Runoff Testing (SRT)

Systems that show abnormal water level response typically undergo simulated runoff testing (SRT) using water hydrant flow, dye testing and/or CCTV to determine if there are performance issues. As described in **Table 3-12**, 1 pre-inspection SRT and 3 performance SRTs were performed on private GSI systems between July 1, 2020 to June 30, 2021. To-date (through FY21), a total of 21 post-construction SRTs have been performed on private GSI systems. The breakdown of SRTs per SMP type is shown in **Table 3-13**. FY21 SRT locations are shown **Figure 3-2**.

**Table 3-12: Post-Construction SRTs performed on Private Systems**

| SRT Type | FY21 | To-Date (through FY21) |
|---|---|---|
| Pre-Inspection Dye Test | 1 | 5 |
| CCTV Dye Test | 0 | 1 |
| Performance SRT | 3 | 15 |

**Table 3-13: Private SMPs with Post-Construction SRTs Performed**

| SMP Type | FY21 | To-Date (through FY21) |
|---|---|---|
| Rain Garden | 1 | 2 |
| Trench | 2 | 10 |

Note: A single GSI system may consist of one or more SMPs; therefore, the number of SMPs tested may be larger than the number of GSI systems tested.

### 3.4.3 Capture Efficiency Testing (CET)

Capture efficiency testing (CET) is performed on a GSI inlet to assess how well the SMP is receiving flow. Typically, all inlets at an GSI system are tested to assess a GSI system's overall capture efficiency which aids in understanding the system's overall performance. In FY21, no private GSI systems had capture efficiency testing because no new systems were monitored (see **Table 3-14**). To-date (through FY21), 14 private GSI systems have had capture efficiency testing.

**Table 3-14: Private Systems with CETs Administered**

| | FY21 | To-Date (through FY21) |
|---|---|---|
| No. of Systems with CETs Administered | 0 | 14 |

## 3.5 Sewer System Monitoring

The Water Department continues to perform sewer system monitoring per the methods outlined in the CMP. More information is available in **Appendix B**.

## 3.6 Meteorological Monitoring

The Water Department continues to perform meteorological monitoring, including operation and maintenance of a rain gauge network, as described in the CMP. More information is available in **Appendix B.**

# 4.0 CMP Implementation Successes and Challenges Encountered

The GSI monitoring program has been successful in meeting monitoring and testing demands this fiscal year despite some challenges. The COVID pandemic, in particular, forced a 4-month work-from-home requirement through the end of FY20 which prevented routine field activities from occurring. This created a significant backlog in fieldwork in FY21, including: data collection, sensor deployment, and testing. A COVID safety protocol for field activities was developed for the monitoring team and has proven effective at keeping staff safe while performing their duties.

The program has seen a growing demand for performing SRTs on GSI systems during construction. Due to the time-sensitive nature of construction, there is a quick turnaround time required for performing these SRTs and relaying findings to construction staff. The monitoring team has adapted their methods accordingly to deliver testing in an effective and timely fashion.

A pilot program has been underway to test restorative maintenance techniques on right-of-way porous pavement sites. This requires infiltration testing before and shortly after restorative maintenance events. The monitoring team has met the demands of this pilot program and performed all the infiltration testing required to-date.

As requested, the GSI monitoring team continues providing monitoring assistance to Operations and GSI Implementation to collect data from systems where challenges have been observed and to interpret cause(s) and verify remediation measures.

# Appendix B – Flow Monitoring

# APPENDIX B –
# FLOW MONITORING

**Page**

**Table 1 - Summary of All Monitors**

| | # of Permanent Monitors | # of Temporary Monitors |
|---|---|---|
| Combined/Separate Sewer Monitors | 469 | 57 |
| Outlying Community Monitors | 63 | - |
| Pumping Stations | 82 | - |
| Rain Gages | 37 | 1 |
| **Total** | 651 | 58 |

**Table 2 - Listing of Monitored Outlying Community Connections**

| Site ID | Connection Type | Township | Measurement Name | Measurement Type |
|---|---|---|---|---|
| MA_1 | STD | Abington | TEMPORARY | FLOW |
| MA_2 | MTR | Abington | METERING CHAMBER FLOW | FLOW |
| MA_3 | STD | Abington | TEMPORARY | FLOW |
| MA_4 | STD | Abington | TEMPORARY | FLOW |
| MAx1 | STD | Abington | TEMPORARY | FLOW |
| MB_1 | MTR | Bucks Co. | METERING CHAMBER FLOW | FLOW |
| MBE_01 | MTR | Bensalem | METERING CHAMBER FLOW | FLOW |
| MBE_02 | MTR | Bensalem | METERING CHAMBER FLOW | FLOW |
| MBE_03 | MTR | Bensalem | METERING CHAMBER FLOW | FLOW |
| MBE_04 | MTR | Bensalem | METERING CHAMBER FLOW | FLOW |
| MBE_05 | MTR | Bensalem | METERING CHAMBER FLOW | FLOW |
| MBE_06 | MTR | Bensalem | METERING CHAMBER FLOW | FLOW |
| MBE_07 | MTR | Bensalem | METERING CHAMBER FLOW | FLOW |
| MBE_08 | MTR | Bensalem | METERING CHAMBER FLOW | FLOW |
| MBE_09 | MTR | Bensalem | METERING CHAMBER FLOW | FLOW |
| MBE_10 | MTR | Bensalem | METERING CHAMBER FLOW | FLOW |
| MBE_11 | MTR | Bensalem | METERING CHAMBER FLOW | FLOW |
| MBE_12 | MTR | Bensalem | METERING CHAMBER FLOW | FLOW |
| MBE_13 | MTR | Bensalem | METERING CHAMBER FLOW | FLOW |
| MBE_14 | MTR | Bensalem | METERING CHAMBER FLOW | FLOW |
| MBE_15 | | Bensalem | UNMONITORED | |
| MBE_16 | MTR | Bensalem | METERING CHAMBER FLOW | FLOW |
| MBE_17 | MTR | Bensalem | METERING CHAMBER FLOW | FLOW |
| MC_1 | MTR | Cheltenham | METERING CHAMBER FLOW | FLOW |
| MC_2 | MTR | Cheltenham | METERING CHAMBER FLOW | FLOW |
| MC_3 | MTR | Abington | METERING CHAMBER FLOW | FLOW |
| MCx_1 | MTR | Cheltenham | METERING CHAMBER FLOW | FLOW |
| MCx_2 | MTR | Cheltenham | METERING CHAMBER FLOW | FLOW |
| MCx_3 | MTR | Cheltenham | METERING CHAMBER FLOW | FLOW |
| MCx_4 | MTR | Cheltenham | METERING CHAMBER FLOW | FLOW |
| MCx_5 | MTR | Cheltenham | METERING CHAMBER FLOW | FLOW |
| MCx_6 | MTR | Cheltenham | METERING CHAMBER FLOW | FLOW |
| MCx_7 | MTR | Cheltenham | METERING CHAMBER FLOW | FLOW |
| MD_1 | MTR | Delaware Co. | METERING CHAMBER FLOW | FLOW |
| ML_1 | MTR | Lower Merion | METERING CHAMBER FLOW | FLOW |
| ML_2 | STD | Lower Merion | TEMPORARY | FLOW |
| ML_3 | MTR | Lower Merion | METERING CHAMBER FLOW | FLOW |
| ML_4 | MTR | Lower Merion | METERING CHAMBER FLOW | FLOW |

| Site ID | Connection Type | Township | Measurement Name | Measurement Type |
|---|---|---|---|---|
| ML_5 | MTR | Lower Merion | METERING CHAMBER FLOW | FLOW |
| ML_6 | MTR | Lower Merion | METERING CHAMBER FLOW | FLOW |
| ML_7 | MTR | Lower Merion | METERING CHAMBER FLOW | FLOW |
| MLM_1 | MTR | Lower Moreland | METERING CHAMBER FLOW | FLOW |
| MLM_2 | MTR | Lower Moreland | METERING CHAMBER FLOW | FLOW |
| MLM_3 | STD | Lower Moreland | TEMPORARY | FLOW |
| MLM_4 | STD | Lower Moreland | TEMPORARY | FLOW |
| MLM_5 | STD | Lower Moreland | TEMPORARY | FLOW |
| MLM_6 | STD | Lower Moreland | TEMPORARY | UNKNOWN |
| MLM_7 | STD | Lower Moreland | TEMPORARY | UNKNOWN |
| MS_1 | STD | Springfield | TEMPORARY | FLOW |
| MS_2 | MTR | Springfield | METERING CHAMBER FLOW | FLOW |
| MS_3 | MTR | Springfield | METERING CHAMBER FLOW | FLOW |
| MS_4 | STD | Springfield | TEMPORARY | FLOW |
| MS_5 | STD | Springfield | TEMPORARY | FLOW |
| MS_6 | MTR | Springfield | METERING CHAMBER FLOW | FLOW |
| MS_7 | STD | Springfield | TEMPORARY | UNKNOWN |
| MS_8 | STD | Springfield | TEMPORARY | FLOW |
| MSH_1 | MTR | Southampton | METERING CHAMBER FLOW | FLOW |
| MSH_2 | STD | Southampton | TEMPORARY | FLOW |
| MSHX_1 | STD | Southampton | TEMPORARY | FLOW |
| MSHX_2 | STD | Southampton | TEMPORARY | FLOW |
| MUD_1N | MTR | Upper Darby | METERING CHAMBER FLOW | FLOW |
| MUD_1S | MTR | Upper Darby | METERING CHAMBER FLOW | FLOW |
| MUD_1O | MTR | Upper Darby | METERING CHAMBER FLOW | FLOW |

*STD – temporary flow monitor

**MTR – Permanent monitor

**Table 3 - Listing of Combined/Separate Sewer Monitors**

| Site Name | Interceptor | Waterbody | Measurement Name | Measurement Type |
|---|---|---|---|---|
| C_01 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_01 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_02 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_02 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_04 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_04 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_05 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_05 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_06 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_06 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_07 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_07 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_09 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_09 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_10 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_10 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_11 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_11 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_12 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_12 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_14 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_14 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_15 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_15 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_17 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_17 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_18 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_18 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_19 | Cobbs Creek Low Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_19 | Cobbs Creek Low Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_20 | Cobbs Creek Low Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_20 | Cobbs Creek Low Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_21 | Cobbs Creek Low Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_21 | Cobbs Creek Low Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_22 | Cobbs Creek Low Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_22 | Cobbs Creek Low Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_23 | Cobbs Creek Low Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_23 | Cobbs Creek Low Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_24 | Cobbs Creek Low Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_24 | Cobbs Creek Low Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_26 | Cobbs Creek Low Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_26 | Cobbs Creek Low Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_28A | Cobbs Creek Low Level | Cobbs Creek | SWO LEVEL | LEVEL |

| Site Name | Interceptor | Waterbody | Measurement Name | Measurement Type |
|---|---|---|---|---|
| C_28A | Cobbs Creek Low Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_29 | Cobbs Creek Low Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_29 | Cobbs Creek Low Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_30 | Cobbs Creek Low Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_30 | Cobbs Creek Low Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_31 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_31 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_32 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_32 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_33 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_33 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_34 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_34 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_35 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_35 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_36 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_36 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| C_37 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| C_37 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| CSPS | Central Schuylkill | Schuylkill River | INTERCEPTOR LEVEL N | LEVEL |
| CSPS | Central Schuylkill | Schuylkill River | INTERCEPTOR LEVEL S | LEVEL |
| D_02 | Upper Delaware Low Level | Delaware River | DWO GATE POSITION | POSITION |
| D_02 | Upper Delaware Low Level | Delaware River | DWO LEVEL | LEVEL |
| D_02 | Upper Delaware Low Level | Delaware River | SWO GATE POSITION | POSITION |
| D_02 | Upper Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_02 | Upper Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_03 | Upper Delaware Low Level | Delaware River | DWO GATE POSITION | POSITION |
| D_03 | Upper Delaware Low Level | Delaware River | DWO LEVEL | LEVEL |
| D_03 | Upper Delaware Low Level | Delaware River | SWO GATE POSITION | POSITION |
| D_03 | Upper Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_03 | Upper Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_04 | Upper Delaware Low Level | Delaware River | DWO GATE POSITION | POSITION |
| D_04 | Upper Delaware Low Level | Delaware River | DWO LEVEL | LEVEL |
| D_04 | Upper Delaware Low Level | Delaware River | SWO GATE POSITION | POSITION |
| D_04 | Upper Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_04 | Upper Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_05 | Upper Delaware Low Level | Delaware River | DWO GATE POSITION | POSITION |
| D_05 | Upper Delaware Low Level | Delaware River | DWO LEVEL | LEVEL |
| D_05 | Upper Delaware Low Level | Delaware River | SWO GATE POSITION | POSITION |
| D_05 | Upper Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_05 | Upper Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_06 | Upper Delaware Low Level | Delaware River | DWO LEVEL | LEVEL |
| D_06 | Upper Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_06 | Upper Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |

| Site Name | Interceptor | Waterbody | Measurement Name | Measurement Type |
|---|---|---|---|---|
| D_07 | Upper Delaware Low Level | Delaware River | DWO GATE POSITION | POSITION |
| D_07 | Upper Delaware Low Level | Delaware River | DWO LEVEL | LEVEL |
| D_07 | Upper Delaware Low Level | Delaware River | SWO GATE POSITION 1 | POSITION |
| D_07 | Upper Delaware Low Level | Delaware River | SWO GATE POSITION 2 | POSITION |
| D_07 | Upper Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_07 | Upper Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_08 | Upper Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_08 | Upper Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_09 | Upper Delaware Low Level | Delaware River | DWO GATE POSITION | POSITION |
| D_09 | Upper Delaware Low Level | Delaware River | DWO LEVEL | LEVEL |
| D_09 | Upper Delaware Low Level | Delaware River | SWO GATE POSITION | POSITION |
| D_09 | Upper Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_09 | Upper Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_11 | Upper Delaware Low Level | Delaware River | DWO GATE POSITION | POSITION |
| D_11 | Upper Delaware Low Level | Delaware River | DWO LEVEL | LEVEL |
| D_11 | Upper Delaware Low Level | Delaware River | SWO GATE POSITION | POSITION |
| D_11 | Upper Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_11 | Upper Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_12 | Upper Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_12 | Upper Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_13 | Upper Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_13 | Upper Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_15 | Upper Delaware Low Level | Delaware River | DWO GATE POSITION | POSITION |
| D_15 | Upper Delaware Low Level | Delaware River | DWO LEVEL | LEVEL |
| D_15 | Upper Delaware Low Level | Delaware River | SWO GATE POSITION | POSITION |
| D_15 | Upper Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_15 | Upper Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_17 | Somerset | Delaware River | SWO LEVEL | LEVEL |
| D_17 | Somerset | Delaware River | TRUNK LEVEL | LEVEL |
| D_18 | Somerset | Delaware River | SWO LEVEL | LEVEL |
| D_18 | Somerset | Delaware River | TRUNK LEVEL | LEVEL |
| D_19 | Somerset | Delaware River | SWO LEVEL | LEVEL |
| D_19 | Somerset | Delaware River | TRUNK LEVEL | LEVEL |
| D_20 | Somerset | Delaware River | SWO LEVEL | LEVEL |
| D_20 | Somerset | Delaware River | TRUNK LEVEL | LEVEL |
| D_21 | Somerset | Delaware River | SWO LEVEL | LEVEL |
| D_21 | Somerset | Delaware River | TRUNK LEVEL | LEVEL |
| D_22 | Somerset | Delaware River | SWO LEVEL | LEVEL |
| D_22 | Somerset | Delaware River | TRUNK LEVEL | LEVEL |
| D_23 | Somerset | Delaware River | SWO LEVEL | LEVEL |
| D_23 | Somerset | Delaware River | TRUNK LEVEL | LEVEL |
| D_24 | Somerset | Delaware River | SWO LEVEL | LEVEL |
| D_24 | Somerset | Delaware River | TRUNK LEVEL | LEVEL |
| D_25 | Somerset | Delaware River | SWO LEVEL | LEVEL |

| Site Name | Interceptor | Waterbody | Measurement Name | Measurement Type |
|---|---|---|---|---|
| D_25 | Somerset | Delaware River | TRUNK LEVEL | LEVEL |
| D_37 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_37 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_38 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_38 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_39 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_39 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_40 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_40 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_41 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_41 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_42 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_42 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_43 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_43 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_47 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_47 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_48 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_48 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_49 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_49 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_50 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_50 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_51 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_51 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_51A | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_52 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_52 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_53 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_53 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_54 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_54 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_58 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_58 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_61 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_61 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_63 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_63 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_64 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_64 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_65 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_65 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_66 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_66 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |

| Site Name | Interceptor | Waterbody | Measurement Name | Measurement Type |
|---|---|---|---|---|
| D_67 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_67 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_68 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_68 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_69 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_69 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_70 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_70 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_72 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_72 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| D_73 | Lower Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| D_73 | Lower Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| F_03 | Lower Frankford Low Level | Frankford Creek | SWO LEVEL | LEVEL |
| F_03 | Lower Frankford Low Level | Frankford Creek | TRUNK LEVEL | LEVEL |
| F_04 | Lower Frankford Low Level | Frankford Creek | SWO LEVEL | LEVEL |
| F_04 | Lower Frankford Low Level | Frankford Creek | TRUNK LEVEL | LEVEL |
| F_05 | Lower Frankford Low Level | Frankford Creek | SWO LEVEL | LEVEL |
| F_05 | Lower Frankford Low Level | Frankford Creek | TRUNK LEVEL | LEVEL |
| F_06 | Lower Frankford Low Level | Frankford Creek | SWO LEVEL | LEVEL |
| F_06 | Lower Frankford Low Level | Frankford Creek | TRUNK LEVEL | LEVEL |
| F_07 | Lower Frankford Low Level | Frankford Creek | SWO LEVEL | LEVEL |
| F_07 | Lower Frankford Low Level | Frankford Creek | TRUNK LEVEL | LEVEL |
| F_08 | Lower Frankford Low Level | Frankford Creek | SWO LEVEL | LEVEL |
| F_08 | Lower Frankford Low Level | Frankford Creek | TRUNK LEVEL | LEVEL |
| F_09 | Lower Frankford Low Level | Frankford Creek | SWO LEVEL | LEVEL |
| F_09 | Lower Frankford Low Level | Frankford Creek | TRUNK LEVEL | LEVEL |
| F_10 | Lower Frankford Low Level | Frankford Creek | SWO LEVEL | LEVEL |
| F_10 | Lower Frankford Low Level | Frankford Creek | TRUNK LEVEL | LEVEL |
| F_11 | Lower Frankford Low Level | Frankford Creek | SWO LEVEL | LEVEL |
| F_11 | Lower Frankford Low Level | Frankford Creek | TRUNK LEVEL | LEVEL |
| F_12 | Lower Frankford Low Level | Frankford Creek | SWO LEVEL | LEVEL |
| F_12 | Lower Frankford Low Level | Frankford Creek | TRUNK LEVEL | LEVEL |
| F_13 | Lower Frankford Creek | Frankford Creek | DWO LEVEL | LEVEL |
| F_13 | Lower Frankford Creek | Frankford Creek | SWO LEVEL | LEVEL |
| F_13 | Lower Frankford Creek | Frankford Creek | TRUNK LEVEL | LEVEL |
| F_14 | Lower Frankford Creek | Frankford Creek | SWO LEVEL | LEVEL |
| F_14 | Lower Frankford Creek | Frankford Creek | TRUNK LEVEL | LEVEL |
| F_23 | Lower Frankford Creek | Frankford Creek | SWO LEVEL | LEVEL |
| F_23 | Lower Frankford Creek | Frankford Creek | TRUNK LEVEL | LEVEL |
| F_24 | Lower Frankford Creek | Frankford Creek | SWO LEVEL | LEVEL |
| F_24 | Lower Frankford Creek | Frankford Creek | TRUNK LEVEL | LEVEL |
| F_25 | Lower Frankford Creek | Frankford Creek | DWO GATE POSITION | POSITION |
| F_25 | Lower Frankford Creek | Frankford Creek | SWO GATE POSITION 1 | POSITION |
| F_25 | Lower Frankford Creek | Frankford Creek | SWO GATE POSITION 2 | POSITION |

| Site Name | Interceptor | Waterbody | Measurement Name | Measurement Type |
|---|---|---|---|---|
| F_25 | Lower Frankford Creek | Frankford Creek | SWO LEVEL | LEVEL |
| F_25 | Lower Frankford Creek | Frankford Creek | TRUNK LEVEL | LEVEL |
| H_29 | | Schuylkill River | DWO LEVEL | LEVEL |
| H_29 | | Schuylkill River | SWO LEVEL | LEVEL |
| H_29 | | Schuylkill River | TRUNK LEVEL | LEVEL |
| H_35 | | Schuylkill River | BLOWER 1 RUN | EVENT |
| H_35 | | Schuylkill River | BLOWER 2 RUN | EVENT |
| H_35 | | Schuylkill River | DAM AIR PRESSURE | PSI |
| H_35 | | Schuylkill River | DWO GATE POSITION | POSITION |
| H_35 | | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| H_35 | | Schuylkill River | SWO GATE POSITION | POSITION |
| H_35 | | Schuylkill River | SWO LEVEL | LEVEL |
| H_35 | | Schuylkill River | TRUNK LEVEL | LEVEL |
| I_BYH09 | | Byberry Creek | INTERCEPTOR LEVEL | LEVEL |
| I_CCHLC07 | Cobbs Creek High Level | Cobbs Creek | INTERCEPTOR LEVEL | LEVEL |
| I_CCHLC12 | Cobbs Creek High Level | Cobbs Creek | INTERCEPTOR LEVEL | LEVEL |
| I_CCHLC13 | Cobbs Creek High Level | Cobbs Creek | INTERCEPTOR LEVEL | LEVEL |
| I_CCHLC14 | Cobbs Creek High Level | Cobbs Creek | INTERCEPTOR LEVEL | LEVEL |
| I_CCHLC17 | Cobbs Creek High Level | Cobbs Creek | INTERCEPTOR LEVEL | LEVEL |
| I_CCHLC18 | Cobbs Creek High Level | Cobbs Creek | INTERCEPTOR LEVEL | LEVEL |
| I_CCHLC34 | Cobbs Creek High Level | Cobbs Creek | INTERCEPTOR LEVEL | LEVEL |
| I_CCHLH18 | Cobbs Creek High Level | Cobbs Creek | INTERCEPTOR LEVEL | LEVEL |
| I_CCLLC19 | Cobbs Creek Low Level | Cobbs Creek | INTERCEPTOR LEVEL | LEVEL |
| I_CCLLC20 | Cobbs Creek Low Level | Cobbs Creek | INTERCEPTOR LEVEL | LEVEL |
| I_CCLLC22 | Cobbs Creek Low Level | Cobbs Creek | INTERCEPTOR LEVEL | LEVEL |
| I_CCLLC24 | Cobbs Creek Low Level | Cobbs Creek | INTERCEPTOR LEVEL | LEVEL |
| I_CCLLC26 | Cobbs Creek Low Level | Cobbs Creek | INTERCEPTOR LEVEL | LEVEL |
| I_CCLLH01 | Cobbs Creek Low Level | Cobbs Creek | INTERCEPTOR LEVEL | LEVEL |
| I_COHOH16 | | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_CSESH11 | Central Schuylkill East Side | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_CSESH15 | Central Schuylkill East Side | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_CSESS09 | Central Schuylkill East Side | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_CSESS14 | Central Schuylkill East Side | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_CSESS17 | Central Schuylkill East Side | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_CSESS26 | Central Schuylkill East Side | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_CSSSH15 | Central Schuylkill | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_CVBH08 | | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_FHLH03 | Frankford High Level | Frankford Creek | INTERCEPTOR LEVEL | LEVEL |
| I_FHLTT08 | Frankford High Level | Frankford Creek | INTERCEPTOR LEVEL | LEVEL |
| I_FHLTT15 | Frankford High Level | Frankford Creek | INTERCEPTOR LEVEL | LEVEL |
| I_FLLH03 | Frankford Low Level | Frankford Creek | INTERCEPTOR LEVEL | LEVEL |
| I_LDLLD43 | Lower Delaware Low Level | Delaware River | INTERCEPTOR LEVEL | LEVEL |
| I_LDLLD45 | Lower Delaware Low Level | Delaware River | INTERCEPTOR LEVEL | LEVEL |
| I_LDLLD47 | Lower Delaware Low Level | Delaware River | INTERCEPTOR LEVEL | LEVEL |

| Site Name | Interceptor | Waterbody | Measurement Name | Measurement Type |
|---|---|---|---|---|
| I_LDLLD53 | Lower Delaware Low Level | Delaware River | INTERCEPTOR LEVEL | LEVEL |
| I_LDLLD62 | Lower Delaware Low Level | Delaware River | INTERCEPTOR LEVEL | LEVEL |
| I_LDLLD69 | Lower Delaware Low Level | Delaware River | INTERCEPTOR LEVEL | LEVEL |
| I_LDLLD70 | Lower Delaware Low Level | Delaware River | INTERCEPTOR LEVEL | LEVEL |
| I_LFCH07 | Lower Frankford Creek | Frankford Creek | INTERCEPTOR LEVEL | LEVEL |
| I_LFCH19 | Lower Frankford Creek | Frankford Creek | INTERCEPTOR LEVEL | LEVEL |
| I_LFLLF08 | Lower Frankford Low Level | Frankford Creek | INTERCEPTOR LEVEL | LEVEL |
| I_LFLLF10 | Lower Frankford Low Level | Frankford Creek | INTERCEPTOR LEVEL | LEVEL |
| I_LSESH15 | Lower Schuylkill East Side | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_LSESS36 | Lower Schuylkill East Side | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_LSWSH01 | Lower Schuylkill West Side | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_LSWSS33 | Lower Schuylkill West Side | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_LSWSS38 | Lower Schuylkill West Side | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_LSWSS45 | Lower Schuylkill West Side | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_MRH21 | Main Relief Sewer | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_OH12 | | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_PASYH13 | | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_PDRLH01 | | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_PDRLH02 | | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_PENRH02 | | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_PH04 | Pennypack | Pennypack Creek | INTERCEPTOR LEVEL | LEVEL |
| I_PH05 | Pennypack | Pennypack Creek | INTERCEPTOR LEVEL | LEVEL |
| I_PH06 | Pennypack | Pennypack Creek | INTERCEPTOR LEVEL | LEVEL |
| I_PH10 | Pennypack | Pennypack Creek | INTERCEPTOR LEVEL | LEVEL |
| I_PMPFH03 | | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_PP02 | Pennypack | Pennypack Creek | INTERCEPTOR LEVEL | LEVEL |
| I_PP04 | Pennypack | Pennypack Creek | INTERCEPTOR LEVEL | LEVEL |
| I_PP05 | Pennypack | Pennypack Creek | INTERCEPTOR LEVEL | LEVEL |
| I_PQH09 | Poquessing | Poquessing Creek | INTERCEPTOR LEVEL | LEVEL |
| I_PRH10 | | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_SD19 | Somerset | Delaware River | INTERCEPTOR LEVEL | LEVEL |
| I_SD21 | Somerset | Delaware River | INTERCEPTOR LEVEL | LEVEL |
| I_SD25 | Somerset | Delaware River | INTERCEPTOR LEVEL | LEVEL |
| I_SH03 | Somerset | Delaware River | INTERCEPTOR LEVEL | LEVEL |
| I_SRH05 | | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_SWMGCHLH01 | Southwest Main Gravity | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_SWMGEHLH01 | Southwest Main Gravity | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_SWMGH17 | Southwest Main Gravity | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_SWMGH20 | Southwest Main Gravity | Schuylkill River | C GATE POSITION | POSITION |

| Site Name | Interceptor | Waterbody | Measurement Name | Measurement Type |
|---|---|---|---|---|
| I_SWMGH20 | Southwest Main Gravity | Schuylkill River | E GATE POSITION | POSITION |
| I_SWMGH20 | Southwest Main Gravity | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_SWMGH20 | Southwest Main Gravity | Schuylkill River | W GATE POSITION | POSITION |
| I_SWMGS28 | Southwest Main Gravity | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_SWMGS34 | Southwest Main Gravity | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_SWMGS43 | Southwest Main Gravity | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_SWMGS47 | Southwest Main Gravity | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_SWMGS50 | Southwest Main Gravity | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_SWMGWHLH01 | Southwest Main Gravity | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| I_UDLLD04 | Upper Delaware Low Level | Delaware River | INTERCEPTOR LEVEL | LEVEL |
| I_UDLLD08 | Upper Delaware Low Level | Delaware River | INTERCEPTOR LEVEL | LEVEL |
| I_UDLLH03 | Upper Delaware Low Level | Delaware River | INTERCEPTOR LEVEL | LEVEL |
| I_UDLLH04 | Upper Delaware Low Level | Delaware River | INTERCEPTOR LEVEL | LEVEL |
| I_UDLLH07 | Upper Delaware Low Level | Delaware River | INTERCEPTOR LEVEL | LEVEL |
| I_UDLLH14 | Upper Delaware Low Level | Delaware River | INTERCEPTOR LEVEL | LEVEL |
| I_WBH06 | | Wissahickon Creek | INTERCEPTOR LEVEL | LEVEL |
| I_WHLH08 | Wissahickon High Level | Wissahickon Creek | INTERCEPTOR LEVEL | LEVEL |
| I_WLLH11 | Wissahickon Low Level | Wissahickon Creek | INTERCEPTOR LEVEL | LEVEL |
| P_01 | Pennypack | Pennypack Creek | SWO LEVEL | LEVEL |
| P_01 | Pennypack | Pennypack Creek | TRUNK LEVEL | LEVEL |
| P_02 | Pennypack | Pennypack Creek | SWO LEVEL | LEVEL |
| P_02 | Pennypack | Pennypack Creek | TRUNK LEVEL | LEVEL |
| P_03 | Pennypack | Pennypack Creek | SWO LEVEL | LEVEL |
| P_03 | Pennypack | Pennypack Creek | TRUNK LEVEL | LEVEL |
| P_04 | Pennypack | Pennypack Creek | SWO LEVEL | LEVEL |
| P_04 | Pennypack | Pennypack Creek | TRUNK LEVEL | LEVEL |
| P_05 | Pennypack | Pennypack Creek | SWO LEVEL | LEVEL |
| P_05 | Pennypack | Pennypack Creek | TRUNK LEVEL | LEVEL |
| R_06 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| R_06 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| R_07 | Main Relief Sewer | Schuylkill River | SWO LEVEL | LEVEL |
| R_07 | Main Relief Sewer | Schuylkill River | TRUNK LEVEL | LEVEL |
| R_12 | Central Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| R_12 | Central Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| R_13 | Upper Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| R_13 | Upper Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |
| R_14 | Upper Delaware Low Level | Delaware River | SWO LEVEL | LEVEL |
| R_14 | Upper Delaware Low Level | Delaware River | TRUNK LEVEL | LEVEL |

| Site Name | Interceptor | Waterbody | Measurement Name | Measurement Type |
|---|---|---|---|---|
| R_15 | Frankford High Level | Tacony Creek | SWO LEVEL | LEVEL |
| R_15 | Frankford High Level | Tacony Creek | TRUNK LEVEL | LEVEL |
| R_18 | Frankford High Level | Tacony Creek | INTERCEPTOR LEVEL | LEVEL |
| R_18 | Frankford High Level | Tacony Creek | SWO LEVEL | LEVEL |
| R_20 | Central Schuylkill East Side | Schuylkill River | INTERCEPTOR LEVEL | LEVEL |
| R_20 | Central Schuylkill East Side | Schuylkill River | STORMWATER LEVEL | LEVEL |
| R_24 | Cobbs Creek High Level | Cobbs Creek | SWO LEVEL | LEVEL |
| R_24 | Cobbs Creek High Level | Cobbs Creek | TRUNK LEVEL | LEVEL |
| S_01 | Central Schuylkill West Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_01 | Central Schuylkill West Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_03 | Central Schuylkill West Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_03 | Central Schuylkill West Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_04 | Central Schuylkill West Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_04 | Central Schuylkill West Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_05 | Central Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_05 | Central Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_06 | Central Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_06 | Central Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_07 | Central Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_07 | Central Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_08 | Central Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_08 | Central Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_09 | Central Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_09 | Central Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_10 | Central Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_10 | Central Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_11 | Central Schuylkill West Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_11 | Central Schuylkill West Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_12 | Central Schuylkill West Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_12 | Central Schuylkill West Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_12A | Central Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_12A | Central Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_13 | Central Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_13 | Central Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_15 | Central Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_15 | Central Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_17 | Central Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_17 | Central Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_18 | Central Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_18 | Central Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_19 | Central Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_19 | Central Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_22 | Central Schuylkill West Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_22 | Central Schuylkill West Side | Schuylkill River | TRUNK LEVEL | LEVEL |

| Site Name | Interceptor | Waterbody | Measurement Name | Measurement Type |
|---|---|---|---|---|
| S_23 | Central Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_23 | Central Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_25 | Central Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_25 | Central Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_26 | Central Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_26 | Central Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_27 | Central Schuylkill East Side | Schuylkill River | DWO LEVEL | LEVEL |
| S_27 | Central Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_27 | Central Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_28 | Central Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_28 | Central Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_30 | Southwest Main Gravity | Schuylkill River | SWO LEVEL | LEVEL |
| S_30 | Southwest Main Gravity | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_31 | Lower Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_31 | Lower Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_32 | Lower Schuylkill West Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_32 | Lower Schuylkill West Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_33 | Lower Schuylkill West Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_33 | Lower Schuylkill West Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_34 | Lower Schuylkill West Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_34 | Lower Schuylkill West Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_35 | Lower Schuylkill West Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_35 | Lower Schuylkill West Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_36 | Lower Schuylkill West Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_36 | Lower Schuylkill West Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_36A | Lower Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_36A | Lower Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_37 | Lower Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_37 | Lower Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_38 | Lower Schuylkill West Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_38 | Lower Schuylkill West Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_39 | Lower Schuylkill West Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_39 | Lower Schuylkill West Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_40 | Lower Schuylkill West Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_40 | Lower Schuylkill West Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_42 | Lower Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_42 | Lower Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_42A | Lower Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_42A | Lower Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_43 | Lower Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_43 | Lower Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_44 | Lower Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_44 | Lower Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_45 | Lower Schuylkill West Side | Schuylkill River | DWO LEVEL | LEVEL |

| Site Name | Interceptor | Waterbody | Measurement Name | Measurement Type |
|---|---|---|---|---|
| S_45 | Lower Schuylkill West Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_45 | Lower Schuylkill West Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_46 | Lower Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_46 | Lower Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_47 | Lower Schuylkill East Side | Schuylkill River | SWO LEVEL | LEVEL |
| S_47 | Lower Schuylkill East Side | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_50 | Southwest Main Gravity | Schuylkill River | SWO LEVEL | LEVEL |
| S_50 | Southwest Main Gravity | Schuylkill River | TRUNK LEVEL | LEVEL |
| S_51 | Southwest Main Gravity | Schuylkill River | SWO LEVEL | LEVEL |
| S_51 | Southwest Main Gravity | Schuylkill River | TRUNK LEVEL | LEVEL |
| T_01 | Frankford High Level | Tacony Creek | SWO LEVEL | LEVEL |
| T_01 | Frankford High Level | Tacony Creek | TRUNK LEVEL | LEVEL |
| T_03 | Frankford High Level | Tacony Creek | SWO LEVEL | LEVEL |
| T_03 | Frankford High Level | Tacony Creek | TRUNK LEVEL | LEVEL |
| T_04 | Frankford High Level | Tacony Creek | SWO LEVEL | LEVEL |
| T_04 | Frankford High Level | Tacony Creek | TRUNK LEVEL | LEVEL |
| T_05 | Frankford High Level | Tacony Creek | SWO LEVEL | LEVEL |
| T_05 | Frankford High Level | Tacony Creek | TRUNK LEVEL | LEVEL |
| T_06 | Frankford High Level | Tacony Creek | SWO LEVEL | LEVEL |
| T_06 | Frankford High Level | Tacony Creek | TRUNK LEVEL | LEVEL |
| T_07 | Frankford High Level | Tacony Creek | SWO LEVEL | LEVEL |
| T_07 | Frankford High Level | Tacony Creek | TRUNK LEVEL | LEVEL |
| T_08 | Frankford High Level | Tacony Creek | SWO LEVEL | LEVEL |
| T_08 | Frankford High Level | Tacony Creek | TRUNK LEVEL | LEVEL |
| T_09 | Frankford High Level | Tacony Creek | SWO LEVEL | LEVEL |
| T_09 | Frankford High Level | Tacony Creek | TRUNK LEVEL | LEVEL |
| T_10 | Frankford High Level | Tacony Creek | SWO LEVEL | LEVEL |
| T_10 | Frankford High Level | Tacony Creek | TRUNK LEVEL | LEVEL |
| T_11 | Frankford High Level | Tacony Creek | SWO LEVEL | LEVEL |
| T_11 | Frankford High Level | Tacony Creek | TRUNK LEVEL | LEVEL |
| T_12 | Frankford High Level | Tacony Creek | SWO LEVEL | LEVEL |
| T_12 | Frankford High Level | Tacony Creek | TRUNK LEVEL | LEVEL |
| T_13 | Frankford High Level | Tacony Creek | SWO LEVEL | LEVEL |
| T_13 | Frankford High Level | Tacony Creek | TRUNK LEVEL | LEVEL |
| T_14 | Frankford High Level | Tacony Creek | DWO GATE 1 | POSITION |
| T_14 | Frankford High Level | Tacony Creek | DWO GATE 2 | POSITION |
| T_14 | Frankford High Level | Tacony Creek | SWO CREST GATE | POSITION |
| T_14 | Frankford High Level | Tacony Creek | SWO LEVEL | LEVEL |
| T_14 | Frankford High Level | Tacony Creek | TRUNK LEVEL | LEVEL |
| T_15 | Frankford High Level | Tacony Creek | SWO LEVEL | LEVEL |
| T_15 | Frankford High Level | Tacony Creek | TRUNK LEVEL | LEVEL |

**Table 4 - Listing of all Rain Gages (7/1/2020 - 6/30/2021)**

| Rain Gage | Location | Percent Working |
|---|---|---|

| | | |
|---|---|---|
| RG_1 | 70th and Essington Ave | 48.73% |
| RG_2 | 66th and Regent St | 95.81% |
| RG_3 | Fox Chase Rd. and Castor Ave | 94.26% |
| RG_4 | State Rd and Pennypack St | 95.96% |
| RG_5 | 3rd and Mifflin St | 92.53% |
| RG_6 | Cardinal Ave and City Line Ave | 82.60% |
| RG_7 | G St. and E Annsbury St | 88.32% |
| RG_8 | N Water St. and E Clarkson Ave | 96.04% |
| RG_9 | 54th and Lancaster Ave | 95.54% |
| RG_10 | Pine Rd and Susquehanna Rd | 95.18% |
| RG_11 | Rising Sun Ave and Lardner St | 63.28% |
| RG_12 | Pattison Ave and Columbus Blvd | 93.23% |
| RG_13 | Glendale Ave and Algon Ave | 95.54% |
| RG_14 | Delaware Ave and Lewis St | 95.52% |
| RG_15 | E Montgomery Ave and Thompson St | 91.18% |
| RG_16 | 19th and Wood St | 94.44% |
| RG_17 | Saul St. and Benner St | 96.06% |
| RG_18 | Fox St. and Roosevelt Blvd | 81.09% |
| RG_19 | Chew Ave and Sharpnack St | 98.26% |
| RG_20 | Woodhaven Rd and Knights Rd | 52.36% |
| RG_21 | Shawmont Ave and Eva St | 95.40% |
| RG_22 | N 67th and Callowhill St | 94.56% |
| RG_23 | Penrose Ave and Mingo Ave | 72.43% |
| RG_24 | Lockart Rd and Lockart Ln | 70.23% |
| RG_25 | 24th and Wolf St | 5.14% |
| RG_26 | 621 Lehigh Ave | 40.57% |
| RG_27 | Grant Ave and Ashford Rd | 96.01% |
| RG_28 | 1350 Southampton Rd | 72.06% |
| RG_29 | Springfield Way and PaperMill Rd | 92.33% |
| RG_30 | 7609 Montgomery Ave | 0.00% |
| RG_31 | Valley Rd and Old Valley Rd | 88.49% |
| RG_32 | Rozel Ave and Crushmore Rd | 79.99% |
| RG_33 | Jackson St and E Broadway Ave | 95.91% |
| RG_34 | Lawrence Rd and Chester Ave | 73.34% |
| RG_35 | Hagysford Rd and Tower Lane | 93.88% |
| RG_36 | Schuylkill Canal and Lock St | 63.18% |
| RG_37 | S 13 St and Normandy Pl | 16.47% |

**Table 5 - Listing of All Pumping Station Monitors**

| Monitor ID | Type of Pumping Station | Measurement Name | Measurement Type | Address |
|---|---|---|---|---|
| PS_26VA | Storm Water | PUMP 1 RUN | EVENT | 26th and Vare Ave |
| PS_26VA | Storm Water | PUMP 2 RUN | EVENT | 27th and Vare Ave |
| PS_26VA | Storm Water | WET WELL LEVEL | LEVEL | 28th and Vare Ave |
| PS_42ST | Waste Water | PUMP 1 RUN | EVENT | 761 S 43rd St |
| PS_42ST | Waste Water | PUMP 2 RUN | EVENT | 762 S 43rd St |
| PS_42ST | Waste Water | PUMP 3 RUN | EVENT | 763 S 43rd St |
| PS_42ST | Waste Water | WET WELL LEVEL | LEVEL | 764 S 43rd St |
| PS_BANK | Waste Water | PUMP 1 RUN | EVENT | 15 S Bank St (Bank & Elbow Ln) |
| PS_BANK | Waste Water | PUMP 2 RUN | EVENT | 16 S Bank St (Bank & Elbow Ln) |
| PS_BANK | Waste Water | WET WELL LEVEL | LEVEL | 17 S Bank St (Bank & Elbow Ln) |
| PS_BELD | Waste Water | PUMP 1 RUN | EVENT | 751 S Manatawna St (Belfry & Steeple) |
| PS_BELD | Waste Water | PUMP 2 RUN | EVENT | 752 S Manatawna St (Belfry & Steeple) |
| PS_BELD | Waste Water | WET WELL LEVEL | LEVEL | 753 S Manatawna St (Belfry & Steeple) |
| PS_BLVD | Storm Water | PUMP 1 RUN | EVENT | 4251 N Broad St (Broad & Roosevelt Blvd) |
| PS_BLVD | Storm Water | PUMP 2 RUN | EVENT | 4252 N Broad St (Broad & Roosevelt Blvd) |
| PS_BLVD | Storm Water | PUMP 3 RUN | EVENT | 4253 N Broad St (Broad & Roosevelt Blvd) |
| PS_BLVD | Storm Water | PUMP 4 RUN | EVENT | 4254 N Broad St (Broad & Roosevelt Blvd) |
| PS_BLVD | Storm Water | WET WELL LEVEL | LEVEL | 4255 N Broad St (Broad & Roosevelt Blvd) |
| PS_CSPS | Waste Water | N GATE POSITION | POSITION | 600 University Ave (34th St Bridge & University) |
| PS_CSPS | Waste Water | N SIPHON LEVEL | LEVEL | 601 University Ave (34th St Bridge & University) |

| Monitor ID | Type of Pumping Station | Measurement Name | Measurement Type | Address |
|---|---|---|---|---|
| PS_CSPS | Waste Water | N SIPHON LEVEL | LEVEL | 602 University Ave (34th St Bridge & University) |
| PS_CSPS | Waste Water | N WET WELL LEVEL | LEVEL | 603 University Ave (34th St Bridge & University) |
| PS_CSPS | Waste Water | PUMP 1 RUN | EVENT | 604 University Ave (34th St Bridge & University) |
| PS_CSPS | Waste Water | PUMP 2 RUN | EVENT | 605 University Ave (34th St Bridge & University) |
| PS_CSPS | Waste Water | PUMP 3 RUN | EVENT | 606 University Ave (34th St Bridge & University) |
| PS_CSPS | Waste Water | PUMP 4 RUN | EVENT | 607 University Ave (34th St Bridge & University) |
| PS_CSPS | Waste Water | PUMP 5 RUN | EVENT | 608 University Ave (34th St Bridge & University) |
| PS_CSPS | Waste Water | PUMP 6 RUN | EVENT | 609 University Ave (34th St Bridge & University) |
| PS_CSPS | Waste Water | S GATE POSITION | POSITION | 610 University Ave (34th St Bridge & University) |
| PS_CSPS | Waste Water | S WET WELL LEVEL | LEVEL | 611 University Ave (34th St Bridge & University) |
| PS_FORD | Waste Water | PUMP 1 RUN | EVENT | 3800 Ford Rd (Across from West Park Hospital) |
| PS_FORD | Waste Water | PUMP 2 RUN | EVENT | 3801 Ford Rd (Across from West Park Hospital) |
| PS_FORD | Waste Water | WET WELL LEVEL | LEVEL | 3802 Ford Rd (Across from West Park Hospital) |
| PS_HOGI | Waste Water | PUMP 1 RUN | EVENT | 3 Hog Island Rd (east of Airport control tower) |
| PS_HOGI | Waste Water | PUMP 2 RUN | EVENT | 4 Hog Island Rd (east of Airport control tower) |
| PS_HOGI | Waste Water | WET WELL LEVEL | LEVEL | 5 Hog Island Rd (east of Airport control tower) |
| PS_LIND | Waste Water | PUMP 1 RUN | EVENT | 5200 Linden Ave (Linden & Milnor) |
| PS_LIND | Waste Water | PUMP 2 RUN | EVENT | 5201 Linden Ave (Linden & Milnor) |
| PS_LIND | Waste Water | WET WELL LEVEL | LEVEL | 5202 Linden Ave (Linden & Milnor) |
| PS_LOCK | Waste Water | PUMP 1 RUN | EVENT | 10778 Lockart Rd (Lockart St & Locart Ln) |
| PS_LOCK | Waste Water | PUMP 2 RUN | EVENT | 10779 Lockart Rd (Lockart St & Locart Ln) |

| Monitor ID | Type of Pumping Station | Measurement Name | Measurement Type | Address |
|---|---|---|---|---|
| PS_LOCK | Waste Water | WET WELL LEVEL | LEVEL | 10780 Lockart Rd (Lockart St & Locart Ln) |
| PS_MILN | Waste Water | PUMP 1 RUN | EVENT | 9647 Milnor St (between Grant Ave & Eden St) |
| PS_MILN | Waste Water | PUMP 2 RUN | EVENT | 9648 Milnor St (between Grant Ave & Eden St) |
| PS_MILN | Waste Water | PUMP 3 RUN | EVENT | 9649 Milnor St (between Grant Ave & Eden St) |
| PS_MILN | Waste Water | WET WELL LEVEL | LEVEL | 9650 Milnor St (between Grant Ave & Eden St) |
| PS_MING | Storm Water | BASIN LEVEL | LEVEL | 7000 Penrose Ave (Schuylkill River under Platt Bridge) |
| PS_MING | Storm Water | PUMP 1 RUN | EVENT | 7001 Penrose Ave (Schuylkill River under Platt Bridge) |
| PS_MING | Storm Water | PUMP 2 RUN | EVENT | 7002 Penrose Ave (Schuylkill River under Platt Bridge) |
| PS_MING | Storm Water | PUMP 3 RUN | EVENT | 7003 Penrose Ave (Schuylkill River under Platt Bridge) |
| PS_MING | Storm Water | PUMP 4 RUN | EVENT | 7004 Penrose Ave (Schuylkill River under Platt Bridge) |
| PS_MING | Storm Water | PUMP 5 RUN | EVENT | 7005 Penrose Ave (Schuylkill River under Platt Bridge) |
| PS_MING | Storm Water | PUMP 6 RUN | EVENT | 7006 Penrose Ave (Schuylkill River under Platt Bridge) |
| PS_NEIL | Waste Water | PUMP 1 RUN | EVENT | 4000 Neill Dr (Neill Dr & Falls Rd) |
| PS_NEIL | Waste Water | PUMP 1 RUN | EVENT | 4001 Neill Dr (Neill Dr & Falls Rd) |
| PS_NEIL | Waste Water | PUMP 3 RUN | EVENT | 4002 Neill Dr (Neill Dr & Falls Rd) |
| PS_NEIL | Waste Water | WET WELL LEVEL | LEVEL | 4003 Neill Dr (Neill Dr & Falls Rd) |
| PS_P603 | Waste Water | PUMP 1 RUN | EVENT | 2000 Langley Ave (PNBC) |
| PS_P603 | Waste Water | PUMP 2 RUN | EVENT | 2001 Langley Ave (PNBC) |
| PS_P603 | Waste Water | WET WELL LEVEL | LEVEL | 2002 Langley Ave (PNBC) |
| PS_P648 | Waste Water | PUMP 1 RUN | EVENT | PNBC |
| PS_P648 | Waste Water | PUMP 2 RUN | EVENT | PNBC |
| PS_P648 | Waste Water | WET WELL LEVEL | LEVEL | PNBC |
| PS_P796 | Waste Water | PUMP 1 RUN | EVENT | 4801 S 13th St (PNBC) |

| Monitor ID | Type of Pumping Station | Measurement Name | Measurement Type | Address |
|---|---|---|---|---|
| PS_P796 | Waste Water | PUMP 2 RUN | EVENT | 4802 S 13th St (PNBC) |
| PS_P796 | Waste Water | PUMP 3 RUN | EVENT | 4803 S 13th St (PNBC) |
| PS_P796 | Waste Water | WET WELL LEVEL | LEVEL | 4804 S 13th St (PNBC) |
| PS_POLI | Waste Water | PUMP 1 RUN | EVENT | |
| PS_POLI | Waste Water | PUMP 2 RUN | EVENT | |
| PS_POLI | Waste Water | WET WELL LEVEL | LEVEL | |
| PS_RENN | Waste Water | PUMP 1 RUN | EVENT | 11064 Rennard St (Philmont Shopping Center) |
| PS_RENN | Waste Water | PUMP 2 RUN | EVENT | 11065 Rennard St (Philmont Shopping Center) |
| PS_RENN | Waste Water | WET WELL LEVEL | LEVEL | 11066 Rennard St (Philmont Shopping Center) |
| PS_SPLA | Waste Water | PUMP 1 RUN | EVENT | 9021 Buttonwood Pl (Spring Lane Meadows) |
| PS_SPLA | Waste Water | PUMP 2 RUN | EVENT | 9022 Buttonwood Pl (Spring Lane Meadows) |
| PS_SPLA | Waste Water | WET WELL LEVEL | LEVEL | 9023 Buttonwood Pl (Spring Lane Meadows) |

**Table 6 - Listing of all Temporary Flow Monitors Deployed by Projects**

| | | | |
|---|---|---|---|
| P083-03-S0050 | 10/11/2011 | 7/24/2020 | I&I Long-term |
| WLL-0565 | 3/7/2013 | 7/13/2020 | I&I Long-term |
| USE-0400 | 5/29/2014 | 7/2/2020 | I&I Long-term; SSO Support |
| WLL-0650 | 3/10/2015 | 7/15/2020 | I&I Long-term |
| S059-02-S0010 | 4/22/2016 | 7/2/2020 | I&I Long-term; SSO Support |
| Bala Golf Course | 8/16/2017 | 7/21/2020 | GSI Long-term |
| Yeadon | 2/6/2019 | 7/29/2020 | I&I |
| W086-01-S0060 | 8/29/2019 | 7/27/2020 | I&I |
| W086-01-S0040 | 8/30/2019 | 7/29/2020 | I&I |
| P116-01-S0015 | 8/30/2019 | 7/14/2020 | I&I |
| P116-01-S0065 | 8/30/2019 | 7/14/2020 | I&I |
| SOM-0040 | 9/19/2019 | 7/28/2020 | CSO |
| UFLL-0010 | 9/19/2019 | 7/28/2020 | CSO |
| LSE-0015 | 9/20/2019 | 7/9/020 | CSO |
| CSE-0030 | 9/20/2019 | 7/9/2020 | CSO Long-term |
| LSW-0077 | 9/24/2019 | 7/24/2020 | CSO |
| OA-0020 | 9/25/2019 | 7/15/2020 | CSO |
| DST-010-01 | 3/30/2011 | Present | CSO Long-term |
| S45-001110 | 10/13/2011 | Present | CSO Long-term |
| D63-000035 | 10/14/2011 | Present | CSO Long-term |
| BC-0055 | 11/30/2011 | Present | I&I Long-term |
| IALL-B0355 | 12/12/2011 | Present | I&I Long-term |
| C17-003360 | 12/13/2011 | Present | CSO Long-term |
| T14-013875 | 1/30/2012 | Present | CSO Long-term; SFR Support |
| M005-09-0140 | 9/27/2012 | Present | Stormwater Long-term; SFR Support |
| UDLL-0120 | 1/24/2014 | Present | I/I |
| PC-0040 | 1/21/2014 | Present | I&I Long-term; SSO Support |
| D45-000015 | 5/8/2014 | Present | CSO Long-term |
| UDLL-0045 | 5/29/2014 | Present | CSO Long-term |
| USE-0365 | 5/29/2014 | Present | I&I Long-term; SSO Support |
| SWMG-B0265 | 6/24/2014 | Present | CSO Long-term |
| UDLL-0085 | 6/25/2014 | Present | CSO Long-term |
| UDLL-0275 | 9/19/2014 | Present | CSO Long-term |
| WLL-0675 | 3/13/2015 | Present | I&I Long-term |

| | | | |
|---|---|---|---|
| P083-03-S0050 | 10/11/2011 | 7/24/2020 | I&I Long-term |
| THL-0085 | 4/14/2015 | Present | CSO Long-term |
| S051-05-S0015 | 5/5/2016 | Present | I&I Long-term; SSO Support |
| S051-08-S0015 | 4/28/2016 | Present | I&I Long-term; SSO Support |
| S051-08-S0180 | 4/29/2016 | Present | I&I Long-term; SSO Support |
| S059-04-S0027 | 5/4/2016 | Present | I&I Long-term; SSO Support |
| CV-0145 | 6/24/2016 | Present | I&I Long-term; SSO Support |
| GSI DST-010-03 | 5/24/2017 | Present | GSI Long-term |
| S50-011230 | 8/29/2017 | Present | CSO Long-term |
| DD DST-010-01 | 11/7/2017 | Present | GSI Long-term |
| THL-0045 | 11/23/2017 | Present | CSO Long-term |
| CF-DST-4 | 4/27/2018 | Present | GSI Long-term |
| T14-000252 | 12/6/2018 | Present | CSO |
| T14-000140 | 1/10/2019 | Present | CSO |
| T14-000115 | 1/10/2019 | Present | CSO Long-term |
| GSI DD RG | 6/23/2017 | Present | GSI Long-term |
| SW WPCP P | 10/14/2014 | Present | WPCP Level Long-term |
| SW WPCP Q | 10/14/2014 | Present | WPCP Level Long-term |
| SW WPCP R | 10/14/2014 | Present | WPCP Level Long-term |
| CV-0130 | 8/28/2019 | Present | I&I SSO Support |
| CV-0162 | 8/28/2019 | Present | I&I SSO Support |
| CV-B0250 | 10/24/2019 | Present | I&I SSO Support |
| P108-11-0045 | 4/6/2021 | Present | Stormwater |
| P108-11-0030 | 4/9/2021 | Present | Stormwater |

**Table 7 - Listing of Outlying Community Contract Limits**

| Metered | Contract Limits | | | | | |
|---|---|---|---|---|---|---|
| Standardized | Instantaneous | | Daily Max | Township Total | | |
| Site ID | CFS | MGD | MGD | Inst. CFS | Inst. MGD | Daily Max MGD |
| MA1 | | | | | | |
| MA2 | | | | | | |
| MA3 | | | | | | |
| MA4 | | | | | | |
| MAx1 | | | | | | |
| **Abington Total** | | | | 9.542 | 6.168 | 4.453 |
| MB1 | | | | 74.26 | 47.996 | 33 |
| **Bucks Total** | | | | | | |
| MBE1 | | | | | | |
| MBE2 | | | | | | |
| MBE3 | | | | | | |
| MBE4 | | | | | | |
| MBE5 | | | | | | |
| MBE6 | | | | | | |
| MBE7 | | | | | | |
| MBE8 | | | | | | |
| MBE9 | | | | | | |
| MBE10 | | | | | | |
| MBE11 | | | | | | |
| MBE12 | | | | | | |
| MBE13 | | | | | | |
| MBE14 | | | | | | |
| MBE15 | | | | | | |
| MBE16 | | | | | | |
| **Bensalem Total** | | | | 11.74 | 7.588 | 6.133 |
| MC1 | 2.75 | 1.777 | | | | |
| MC2 | 18 | 11.634 | | | | |
| MC3 | 0.480 | 0.31 | | | | |
| MCx1 | 8 | 5.171 | Combined total for all the MCx# | | | |
| MCx2 | | | | | | |
| MCx3 | | | | | | |
| MCx4 | | | | | | |
| MCx5 | | | | | | |
| MCx6 | | | | | | |
| MCx7 | | | | | | |

| Metered | Contract Limits | | | | | |
|---|---|---|---|---|---|---|
| Standardized | Instantaneous | | Daily Max | Township Total | | |
| Site ID | CFS | MGD | MGD | Inst. CFS | Inst. MGD | Daily Max MGD |
| **Cheltenham Total** | | | | 20.75 | 13.411 | 13.380 |
| MD1 | 155 | 100.179 | 50 | 155 | 100 | 50 |
| **DELCORA Total** | | | | 155 | 100 | 50 |
| ML1 | | | 5.474 | | | |
| ML2 | | | 1.48 | | | |
| ML3 | | | | | | |
| ML4 | | | 10.264 | | | |
| ML5 | | | 1.848 | | | |
| ML6 | | | 0.252 | | | |
| ML7 | | | 0.84 | | | |
| **Lower Merion Total** | | | | 31.57 | 20.404 | 14.5 |
| MLM1 | | | | | | |
| MLM2 | 3.71 | 2.4 | 1.8 | | | |
| MLM3 | | | | | | |
| MLM4 | | | | | | |
| MLM5 | | | | | | |
| MLM6 | | | | | | |
| MLM7 | | | | | | |
| **Lower Moreland Total** | | | | 5.88 | 3.80 | 2.85 |
| MS1 | | | | | | |
| MS2 | | | | | | |
| MS3 | | | | | | |
| MS4 | | | | | | |
| MS5 | | | | | | |
| MS6 | | | | | | |
| MS7 | | | | | | |
| MS8 | | | | | | |
| **Springfield Total** | | | | 8.58 | 5.55 | 4.2 |
| MSH1 | | | | | | |
| MSH2 | | | | | | |
| MSHX_1 | | | | | | |
| MSHX_2 | | | | | | |
| **Southampton Total** | | | | 15.79 | 10.205 | 7.14 |
| MUD-N | | | | | | |
| MUD-S | | | | | | |
| MUD-O | | | | | | |

| Metered | Contract Limits | | | | | |
|---|---|---|---|---|---|---|
| Standardized | Instantaneous | | Daily Max | Township Total | | |
| Site ID | CFS | MGD | MGD | Inst. CFS | Inst. MGD | Daily Max MGD |
| MUD-1 | | | | | | |
| **Upper Darby Total** | | | | 35 | 22.621 | 17 |

# Appendix C – FY21 CSO Program Maintenance Annual Report

# FLOW CONTROL UNIT

## FY2021 ANNUAL REPORT

PHILADELPHIA WATER DEPARTMENT

Submitted By:
Michael D. Hengstler
Water Conveyance System Superintendent
PWD-Flow Control

**FLOW CONTROL UNIT- FY21**
**OPERATION and MAINTENANCE**

The Collector System Flow Control Unit's primary responsibilities are divided into four groups: Combined Sewer Overflow (CSO) Regulator Maintenance, Pumping Station Operation & Maintenance, Collector System Instrumentation and CCTV Technical Inspections. The Wastewater Pumping Group main office is located at 5202 Pennypack Street in the Torresdale Raw Water Pumping Station. The WWP Group assembles at this facility, which also has a maintenance machine shop, storage garage, and workshop to handle maintenance assignments. The other three groups have maintenance shops and assemble at the Fox Street Headquarters Facility. Brief descriptions of each group's responsibilities and their FY21 annual year highlights follow.

## CSO REGULATOR MAINTENANCE GROUP

Inspecting and servicing the combined sewer overflow regulating and diversion chambers are completed by 19 Interceptor maintenance personnel. This group is responsible for the operations, maintenance, inspections and cleaning of 175 combined sewer-regulating chambers, 89 tide gate chambers, 26 storm relief chambers, 12 sanitary flow diversions, several siphons and other related wastewater control devices throughout the collection system.

Currently the Philadelphia Water Department Flow Control Unit maintains ten types of CSO regulators and storage systems:

- Brown & Brown (B&B) mechanical
- Computer Controlled Sluice Gates
- Computer Controlled B&B Shutter Gates
- Static Dams
- Slot type regulators
- Mechanical Sluice Gates
- Side Overflow Weirs
- Inflatable Rubber Dam
- Water Hydraulic Sluice Gates
- Computer Controlled Crest Gates

Mechanical or operational malfunctions of regulators and tide gates can cause dry weather discharges and stream and river inflow. These types of events can have a major impact on the Wastewater and Fresh Water Treatment Plant's performance and the quality of stream water. They can also affect the recreational use of our local waterways. Thus, the combined sewer regulator systems are closely monitored for potential blockages and when identified the problems are corrected quickly. CSO chamber Inspections and clearing of any regulator blockages prior to causing a dry weather discharge are the primary responsibilities of this group and are key areas in assessing the group's overall performance.

By continually tracking and analyzing Dry Weather Discharges it can be determined if new or modified maintenance procedures would help to prevent them from occurring. Although our established procedures have greatly reduced the number and duration of these discharges, the combined system picks up all manner of trash and debris that is unpredictable in its pattern of causing flow disruptions. Despite incorporating best management practices such as having all inlets trapped and cleaned, preventative maintenance schedules for sewer flushing and cleaning of the regulators, CCTV inspection of DWO pipes, etc., it is virtually impossible to eliminate all blockages before they occur.

The PWD Flow Control Unit continues to aggressively control and minimize these dry weather overflows by utilizing the latest technology-based controls including our Collector System Remote Monitoring Network that currently includes over 320 sites with over 720 individual level and/or flow measurements. Training the CSO maintenance personnel in the use of the system's computer programs for analyzing the trend data has developed a comprehensive understanding of individual CSO sites and their distinctive flow patterns. This familiarity helps them recognize abnormal conditions quickly at a location so that they can respond before the conditions develop into a dry weather CSO blockage or discharge.

The CSO Maintenance Group performed 4173 inspections of the regulating chambers in FY21. The work includes frequent visual inspections of the equipment and flow patterns to make sure everything is operating properly. The more comprehensive work such as the cleaning and lubricating of the mechanical equipment is scheduled during lower flow periods between rain events.

In FY21, the crews cleared 171 regulator blockages before they developed into a CSO dry weather discharge. There were 6 CSO dry weather discharges for this fiscal year.

Many discharges are a result of debris such as rags, sticks, stones and other debris that become lodged in the CSO regulator diversion or the dry weather outlet pipe during dry weather periods. These types of blockages are virtually unpredictable so frequent inspections and closely observing the monitoring trend data is essential to our prevention program. Following moderate to heavy rain events the CSO regulators can have grit, sticks, rags and other debris caught at various places in and around the regulator that could eventually result in a discharge. The CSO maintenance crews perform quick topside inspections of the CSO sites throughout the City for several days following these events to remove or clear away any of this storm debris. The work schedule will then revert to the more comprehensive maintenance such as cleaning, lubricating, adjusting equipment and performing minor repairs to the mechanical regulators.

CSO Regulator Group with the help of Sewer maintenance and Mobile Dredging Vactoring Services, cleaned and removed approximately 102.7 tons of debris and grit from the D-25 regulating chamber.

## WASTEWATER PUMPING STATION MAINTENANCE GROUP

The Wastewater Pumping Station Maintenance Group consisting of 35 maintenance personnel are located at the 5202 Pennypack St. Maintenance Shop. They are responsible for the operations and maintenance of 17 wastewater-pumping stations, 3 stormwater pumping stations, 2 sodium hypochlorite dosing stations, 11 computer controlled CSO storage regulators and several in-line and offline wastewater-storage facilities among other duties.

Many of the pumping stations provide for only one running pump and one reserve pump. This arrangement means that pump breakdowns are responded to immediately and that overhauls need to be completed in a minimum amount of time. The main pump availability statistic is a good indicator of the Maintenance Group's performance in this area. The main pumping units were in service 100% of the time in FY21. The WWP Group completed seven main wastewater pump overhauls at the stations. These overhauls consist of repair and replacement of the worn pump and motor components to bring the equipment's performance up to new operating condition.

The Wastewater Pumping Station Maintenance Group had no main pumps out of service during annual year FY21 because of failures or breakdowns. The reason for this is that during pump maintenance and overhauls the in-service pump was rotated out of activity and replaced by the spare pump for the station. This accomplishes two things; one the station always has its full complement of pumps available and the spare pump for the station gets used. The only pump station that did have a pump out or was not at full capacity was the Central Schuylkill Pump station which is going through a Capital Project of replacing all pumps. Pump #2 and Pump #1 were out of service for 8 weeks while the replacement was being completed. The pumps were back in service in August.

On January 29, 2021, the River Road Pumping Station went into service. The station is in operation however, no homes have been connected to the sewer system yet.

In addition to the pumping station maintenance, the group maintains a variety of other equipment throughout the Collector System. They are responsible for the operations and maintenance of the two sodium hypochlorite dosing stations. The stations are located next to the Queen Lane Raw Water pumping station, which injects hypo into the Upper Schuylkill East Interceptor, and at the Totem Rd. pumping station, which injects hypo into the Bucks County force main. The group is responsible for maintaining adequate supply of the chemical, over 702,387 gallons in FY21, for monitoring the downstream hydrogen sulfide levels and adjusting the dosage levels in addition to the maintenance and repair of the equipment.

The group also fabricates and repairs bar screens, debris grills and other equipment for the Collector System and performs major maintenance of the CSO mechanical regulators such as installation of tide gates, overflow gates and servicing of the Brown & Brown regulators.

## COLLECTOR SYSTEM INSTRUMENTATION MAINTENANCE GROUP

The fourteen Instrument and Electronic Technicians located at the Fox Street facility are primarily responsible for installing, calibrating and maintaining the electronic and instrumentation equipment in the Collector System monitoring and control network. They also repair, calibrate and certify the hazardous gas detection meters for the Department as well as install temporary flow and level monitors for various units in the Water Department.

One of the primary responsibilities of the CS Instrumentation Group is to maintain the network of level sensors, flow meters, and rain gauges and keep them up and running with a minimum of downtime while maintaining accurate and reliable data. The network currently consists of 258 level and flow monitoring locations in the NE, SE, and SW Drainage Districts, 35 gauges in the citywide rain gauge network, 56 Township flow-metering stations, and a number of additional monitors at various control sites. It is crucial that the remote site equipment is communicating and downloading data to the server so that the information is available for trend chart viewing and analysis for the users. The CSO maintenance group relies heavily on these charts to monitor the performance of all the CSO regulators while paying special attention to the sites that have had recent or a history of discharges. The monitoring data is used for a wide variety of other purposes such as calibrating the Collector System's hydraulic model, generating township sewage flows for billing and for various Planning and Engineering studies.

The CS Instrumentation Maintenance group performed 1665 maintenance inspections in FY21. The data collections used by Flow Control are TELOG units.

## CCTV TECHNICAL INSPECTIONS GROUP

The CCTV Technical Inspections group consists of one Supervisor, two group leaders, and sixteen technicians who operate and maintain the seven closed circuit TV camera trucks and Green Storm Infrastructure inspection cameras. The seven CCTV trucks and CCTV Contractor logged 24.86 miles of sewer inspections in FY21. The CCTV GSI Unit completed 1551 inspections. These inspections consisted of Post Construction Inspections, Pre-Maintenance Inspections, NASSCO Inspections, GSO CCTV Requested Inspections, and Post Maintenance Inspections.

The CCTV group has several primary functions which include inspections of sewers turned in for sewer complaints, special inspection requests from the Water/ Sewer Design group and the post construction inspection program which involves videoing the sewer at the completion of all sewer construction work. Another function of the group is to work with the Defective Connection Program group to identify the defective lateral connections.

# SERVICE LEVEL GOALS

The goal of the Flow Control Unit is to maintain and exceed the service level goals. One area that directly affects the service level of the Flow Control Unit is personnel vacancies.

| MONTH | CSO Discharges per 100 Inspections | % Metering Chambers Operational | % CSO Level Meters Operational | CCTV Inspections | Main Pump Availability |
|---|---|---|---|---|---|
| **Goal -->** | **0** | **95% or Higher** | **90% or Higher** | **2.8 Miles** | **95% or Higher** |
| **Jul-20** | 0.3 | 91.00% | 92.20% | 2.42 | 100.00% |
| **Aug-20** | 0.9 | 97.00% | 92.40% | 2.04 | 100.00% |
| **Sep-20** | 0 | 98.00% | 93.80% | 2.04 | 100.00% |
| **Oct-20** | 0 | 93.00% | 95.40% | 2.44 | 100.00% |
| **Nov-20** | 0 | 96.00% | 90.40% | 1.98 | 100.00% |
| **Dec-20** | 0 | 91.00% | 93.90% | 0.49 | 100.00% |
| **Jan-21** | 0 | 94.0% | 93.0% | 1.62 | 100.00% |
| **Feb-21** | 0 | 97.0% | 94.6% | 1.54 | 100.00% |
| **Mar-21** | 0 | 97.0% | 95.0% | 3.14 | 100.00% |
| **Apr-21** | 0.8 | 100.0% | 97.6% | 2.50 | 100.00% |
| **May-21** | 0 | 97.0% | 97.7% | 2.68 | 100.00% |
| **Jun-21** | 0 | 96.0% | 97.3% | 2.07 | 100.00% |

# FLOW CONTROL PERSONNEL SUMMARY

The Flow Control Unit makes every effort to fill all 97 approved positions in order to maintain the service level goals.

| **97 Flow Control Positions** | **Active** | **Vacant** | **Total** |
|---|---|---|---|
| Clerk III | 1 | 0 | 1 |
| Clerk Typist II | 1 | 1 | 2 |
| Data Services Support Clerk | 1 | 0 | 1 |
| Electrician 1 | 5 | 0 | 5 |
| Electronic Equipment Supervisor | 2 | 0 | 2 |
| Electronic Technician 1 | 10 | 4 | 14 |
| Electronic Technician 2 | 10 | 2 | 12 |
| Electronic Technician Grp. Ldr. | 4 | 0 | 4 |
| Electronic Technician Trainee | 7 | 0 | 7 |
| Ind. Process Mach. Mech. Grp. Ldr. | 2 | 0 | 2 |
| Industrial Electrician 2 | 1 | 0 | 1 |
| Industrial Electrician Group Leader | 1 | 0 | 1 |
| Industrial Process Mach. Mech. | 4 | 2 | 6 |
| Interceptor Service Worker I | 4 | 5 | 9 |
| Interceptor Service Worker II | 4 | 1 | 5 |
| Interceptor Services Supervisor | 2 | 0 | 2 |
| Mach. & Equipment Mech. | 10 | 1 | 11 |
| Public Works Maintenance Trainee | 5 | 0 | 5 |
| Sewer Maintenance Inspector | 1 | 0 | 1 |
| Trades Helper (P) | 1 | 0 | 1 |
| Water Conveyance Sys. Asst. Supt. (P) | 1 | 1 | 2 |
| Water Conveyance Sys. Supt. | 1 | 0 | 1 |
| Water Operations Repair Helper | 2 | 0 | 2 |
| **Totals** | **80** | **17** | **97** |

| | |
|---|---|
| FLOW CONTROL-APPROVED POSITIONS | 97 |
| FLOW CONTROL-FILLED POSITIONS | 80 |
| FLOW CONTROL-VACANT POSITIONS | 17 |
| FLOW CONTROL-FMLA/LOA/Other | 4 |
| FLOW CONTROL-Active Employees | 76 |

# Flow Control

FY2021

As of 7/27/2021

| FLOW CONTROL ADDRESSES | | |
|---|---|---|
| FLOW CONTROL HEADQUARTERS | 3257 FOX STREET PHILADELPHIA PA 19129 | |
| FLOW CONTROL-CSO/CCTV | 3257 FOX STREET PHILADELPHIA PA 19129 | |
| FLOW CONTROL-WWP | 5202 PENNYPACK STREET PHILADELPHIA PA 19136 | |
| FLOW CONTROL SUPT. AND ASSIST SUPT. OFFICE PHONE NUMBERS AND EMAIL | | |
| MICHAEL HENGSTLER | 215-685-2004 | michael.hengstler@phila.gov |
| VACANT-CSO/CCTV | 215-685-2064 | |
| ANTHONY MARCHINO III-WWP | 215-685-8089 | anthony.marchino@phila.gov |

MICHAEL D. HENGSTLER
WCSS 7B07

SHARON SANDERS
Clerk 3 1A04

## FLOW CONTROL – WASTEWATER PUMPING UNIT
## PENNYPACK STREET

ANTHONY MARCHINO
WCSAS 7B06

FLORENCE KENNY
Office Clerk 2
1A03

DENNIS GEORGE
Ind. Proc. Mech. Grp.Ldr.
7J35

- BRIAN GLASS, Mach. Equip. Mech. 2 7J15
- BRUCE MESKILL, Mach. Equip. Mech. 2 7J15
- JOSE APONTE, Ind. Proc. Mach. Mech. 7J34
- LABLAIR WILLIAM, Mach. Equip. Mech. 2 7J15
- MICHAEL PHARO, Ind. Proc. Mach. Mech. 7J34
- TIM BAMBERSKI, Mach. Equip. Mech. 2 7J15

LARRY SZYMANIK
Ind. Proc. Mech. Grp.Ldr.
7J35

- FURLON WOOD, Mach. Equip. Mech. 2 7J15
- ANIILKUMAR SINGH, Mach. Equip. Mech. 2 7J15
- GEORGE DUNSON, Mach. Equip. Mech. 2 7J15
- GREGORY BROWN, Mach. Equip. Mech. 2 7J15
- JASON SAUERWALD, Mach. Equip. Mech. 2 7J15
- JEFFERY BEMISS, Ind. Proc. Mach. Mech. 7J34
- JESUS ABALO, Ind. Proc. Mach. Mech. 7J34
- JOSEPH GLINKOWSKI, Int. Srv. Wkr. 2 7B41
- CHRISTOPHER SINKO, Trades Helper
- VACANT, Ind. Proc. Mach. Mech. 7J34
- VACANT, Ind. Proc. Mach. Mech. 7J34
- VACANT, Trades Helper 7H01

MICHAEL HORGER
Elec. Tech GL
7K68

- WILLIAM CLOMAN, Electronic Tech 2 7K64
- DONNELL GREEN, Electronic Tech Trn 7K81
- DORIAN RRAPUSHAJ, Electronic Tech 1 7K63
- MICHAEL JONES, Electronic Tech 1 7K63
- MUKHTAAR LEWIS, Electronic Tech 1 7K63
- ROY GORDON, Electronic Tech 2 7K64
- VACANT, Electronic Tech 2 7K64
- ANTHONY DORWART, Electronic Tech 1 7K63

THOMAS WHITFIELD
Ind. Elect. Grp. Ldr. 7K18

- IBRAHIMA DIOP, Electrician 1 7K01
- JOHN LUDWIG, Electrician 1 7K01
- MICHAEL MAZZONI, Industrial Electrician 2 7K17
- REMY HOLLAND, Electrician 1 7K01
- SEAN LANGDON, Electrician 1 7K01
- DAVID O'LEARY, Electrician 1 7K01

## FLOW CONTROL – CSO-INTERCEPTORS, CCTV, AND CSO-INSTRUMENTATION
## FOX STREET

VACANT
WCSAS 7B06

VACANT
Office Clerk 2
1A03

KINARD KIMBROUGH
DSS Clerk 1D41

LAFAYETTE FANNING
Interceptor Serv. Supv.
7B43

- ARTHUR BOWSER, Int. Srv. Wkr. 1 7B40
- HERMAN PIERCE, Int. Srv. Wkr. 2 7B41
- JAMAL LAWSON, WORHelper 7B01
- JAMIR MCGIRT, Public Wks. Mnt. Trn 7H02
- KEITH SMITH, Int. Srv. Wkr. 1 7B40
- MICHAEL TUCKER, WORHelper 7B01
- STAISEY YOUNG, Int. Srv. Wkr. 1 7B40
- VACANT, Int. Srv. Wkr. 1 7B40
- VACANT, Int. Srv. Wkr. 1 7B40

DWAYNE SELDEN
Interceptor Serv. Supv.
7B43

- ANTHONY MAPP, Int. Srv. Wkr. 1 7B40
- DALFORD STANFORD, Int. Srv. Wkr. 2 7B41
- ERIC SPELLS, Int. Srv. Wkr. 1 7B40
- LINCON FANNING, Int. Srv. Wkr. 2 7B41
- VACANT, Int. Srv. Wkr. 1 7B40
- VACANT, Int. Srv. Wkr. 1 7B40
- VACANT, Int. Srv. Wkr. 1 7B40
- VACANT, Int. Srv. Wkr. 1 7B40

FRANK FRANCESCO
Electronic Equip. Supv.
7K67

JIM WENEY
Elec. Tech GL
7K68

- CAMERON ELLIS, Electronic Tech Trn 7K81
- DAVIDE PAYNE, Electronic Tech 2 7K64
- KEVIN HAMPTON, Sewer Maint. Inspector
- MICHAEL ROBINSON, Electronic Tech 1 7K63
- VACANT, Electronic Tech 1 7K63
- VACANT, Electronic Tech 1 7K63

GLENN BLAYLOCK
Elec. Tech GL
7K68

- CLYDE GAINEY, Electronic Tech Trn 7K81
- DARYL JONES, Electronic Tech 1 7K63
- KEENAN MADDY-LOVELACE, Public Wks. Mnt. Trn 7H02
- MONTEZ SPIVEY, Public Wks. Mnt. Trn 7H02
- ROBERT CUMMINGS, Electronic Tech 1 7K63
- SABRINA SAIDOUN, Electronic Tech 1 7K63
- VACANT, Electronic Tech 2 7K64
- VINCENT MAZZUCA, Electronic Tech 2 7K64
- VACANT, Electronic Tech 1 7K63
- YUDI KO, Electronic Tech 2 7K64
- YASIER MABERY, Electronic Tech Trn 7K81
- AMIR JOHNSON, Sewer Maint. Inspector

JOHN LANG
Electronic Equip. Supv.
7K67

SEAN KELLY
Elec. Tech GL
7K68

- BEVERLY GODWIN, Electronic Tech 2 7K64
- CHRISTOPHER SMALLWOOD, Electronic Tech 2 7K64
- VACANT, Electronic Tech 1 7K63
- ERIC STEVENS, Electronic Tech 2 7K64
- HAKEEM JACKSON, Electronic Tech Trn 7K81
- LAPHAEL FANNING, Electronic Tech Trn 7K81
- LAWRENCE GREENE, Electronic Tech 2 7K64
- PATRICIA SAINT-PIERRE, Electronic Tech 1 7K63 7K63
- RHAFIQ JACKSON, Electronic Tech Trn 7K81
- RONALD BETHEA, Electronic Tech 1 7K63
- RUSSELL COLEMAN, Electronic Tech 2 7K64
- STEVEN SCOTT, Electronic Tech 1 7K63

### Flow Control D.R.O.P. Employees

| NAME | Group | Drop Date |
|---|---|---|
| Larry Szymanik | WWP-IPMMGL | 08/04/2023 |
| Dalford Stanford | FOX-ISW2 | 4/12/2024 |
| Jesus Abalo | WWP-IPMM | 8/16/2024 |

Leave of Absence

Family Medical Leave

# APPENDICES

- Appendix A - FY 2021 Annual CSO Report Spreadsheets
- Appendix B - FY 2021 Annual CSO Miscellaneous Site & Maintenance Reports

# Appendix A

## FY 2021 Annual CSO Spreadsheets

PART 1
DRY WEATHER STATUS
REPORT

PHILADELPHIA WATER DEPARTMENT
WASTE AND STORM WATER COLLECTION
FLOW CONTROL UNIT

Section 1

July 2020 - June 2021

| COLLECTOR | Jul-20 | Aug-20 | Sep-20 | Oct-20 | Nov-20 | Dec-20 | Jan-21 | Feb-21 | Mar-21 | Apr-21 | May-21 | Jun-21 | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **UPPER PENNYPACK - 5 UNITS** | | | | | | | | | | | | | |
| INSPECTIONS | 8 | 10 | 6 | 17 | 11 | 11 | 10 | 12 | 8 | 7 | 2 | 7 | 109 |
| DISCHARGES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BLOCKS CLEARED | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| **UPPER DELAWARE LOW LEVEL - 12 UNITS** | | | | | | | | | | | | | |
| INSPECTIONS | 24 | 29 | 24 | 33 | 27 | 25 | 29 | 27 | 29 | 11 | 11 | 18 | 287 |
| DISCHARGES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BLOCKS CLEARED | 4 | 3 | 0 | 3 | 0 | 0 | 0 | 1 | 1 | 2 | 3 | 3 | 20 |
| **LOWER FRANKFORD CREEK - 6 UNITS** | | | | | | | | | | | | | |
| INSPECTIONS | 10 | 13 | 12 | 21 | 13 | 10 | 12 | 14 | 5 | 7 | 11 | 13 | 141 |
| DISCHARGES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BLOCKS CLEARED | 2 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 4 | 11 |
| **LOWER FRANKFORD LOW LEVEL - 10 UNITS** | | | | | | | | | | | | | |
| INSPECTIONS | 18 | 27 | 22 | 21 | 21 | 21 | 19 | 26 | 21 | 12 | 13 | 14 | 235 |
| DISCHARGES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BLOCKS CLEARED | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 7 |
| **FRANKFORD HIGH LEVEL - 14 UNITS** | | | | | | | | | | | | | |
| INSPECTIONS | 33 | 30 | 28 | 37 | 19 | 30 | 23 | 39 | 16 | 21 | 25 | 23 | 324 |
| DISCHARGES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| BLOCKS CLEARED | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 2 | 12 |
| **SOMERSET - 9 UNITS** | | | | | | | | | | | | | |
| INSPECTIONS | 15 | 21 | 22 | 25 | 19 | 18 | 23 | 20 | 32 | 18 | 17 | 15 | 245 |
| DISCHARGES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BLOCKS CLEARED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| **LOWER DELAWARE LOW LEVEL - 33 UNITS** | | | | | | | | | | | | | |
| INSPECTIONS | 53 | 67 | 37 | 78 | 62 | 65 | 69 | 50 | 31 | 17 | 61 | 30 | 620 |
| DISCHARGES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BLOCKS CLEARED | 2 | 4 | 2 | 0 | 3 | 2 | 0 | 7 | 1 | 3 | 5 | 2 | 31 |
| **CENTRAL SCHUYLKILL EAST - 18 UNITS** | | | | | | | | | | | | | |
| INSPECTIONS | 37 | 28 | 39 | 39 | 34 | 38 | 46 | 43 | 34 | 25 | 26 | 17 | 406 |
| DISCHARGES | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| BLOCKS CLEARED | 2 | 1 | 5 | 0 | 4 | 4 | 0 | 0 | 1 | 0 | 0 | 4 | 21 |
| **LOWER SCHUYLKILL EAST - 9 UNITS** | | | | | | | | | | | | | |
| INSPECTIONS | 20 | 24 | 11 | 15 | 15 | 20 | 17 | 19 | 25 | 16 | 14 | 26 | 222 |
| DISCHARGES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BLOCKS CLEARED | 1 | 2 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 2 | 0 | 4 | 13 |
| **CENTRAL SCHUYLKILL WEST - 9 UNITS** | | | | | | | | | | | | | |
| INSPECTIONS | 12 | 15 | 22 | 24 | 16 | 20 | 20 | 19 | 20 | 10 | 20 | 13 | 211 |
| DISCHARGES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BLOCKS CLEARED | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| **SOUTHWEST MAIN GRAVITY - 10 UNITS** | | | | | | | | | | | | | |
| INSPECTIONS | 14 | 15 | 17 | 15 | 26 | 28 | 20 | 18 | 20 | 14 | 29 | 23 | 239 |
| DISCHARGES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BLOCKS CLEARED | 0 | 1 | 0 | 0 | 3 | 4 | 0 | 0 | 2 | 2 | 1 | 6 | 19 |
| **LOWER SCHUYLKILL WEST - 4 UNITS** | | | | | | | | | | | | | |
| INSPECTIONS | 10 | 6 | 6 | 7 | 9 | 13 | 10 | 10 | 5 | 5 | 7 | 2 | 90 |
| DISCHARGES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BLOCKS CLEARED | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| **COBBS CREEK HIGH LEVEL - 24 UNITS** | | | | | | | | | | | | | |
| INSPECTIONS | 47 | 31 | 59 | 60 | 61 | 48 | 52 | 27 | 38 | 41 | 37 | 29 | 530 |
| DISCHARGES | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 |
| BLOCKS CLEARED | 1 | 4 | 1 | 1 | 4 | 2 | 1 | 0 | 0 | 1 | 1 | 2 | 18 |
| **COBBS CREEK LOW LEVEL - 13 UNITS** | | | | | | | | | | | | | |
| INSPECTIONS | 17 | 8 | 24 | 26 | 21 | 29 | 24 | 12 | 17 | 23 | 15 | 12 | 228 |
| DISCHARGES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BLOCKS CLEARED | 2 | 1 | 0 | 2 | 0 | 2 | 0 | 0 | 2 | 1 | 2 | 0 | 12 |
| **RELIEF SEWERS - 26 UNITS** | | | | | | | | | | | | | |
| INSPECTIONS | 21 | 11 | 23 | 24 | 32 | 41 | 38 | 32 | 31 | 12 | 11 | 10 | 286 |
| DISCHARGES | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BLOCKS CLEARED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTALS / MONTH for 201 REGULATOR UNITS** | | | | | | | | | | | | | Totals |
| TOTAL INSPECTIONS | 339 | 335 | 352 | 442 | 386 | 417 | 412 | 368 | 332 | 239 | 299 | 252 | 4173 |
| TOTAL DISCHARGES | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 6 |
| TOTAL BLOCKS CLEARED | 15 | 21 | 13 | 7 | 19 | 18 | 2 | 8 | 11 | 15 | 14 | 28 | 171 |
| AVER. # of INSP. / BC | 23 | 16 | 27 | 63 | 20 | 23 | 206 | 46 | 30 | 16 | 21 | 9 | 42 |
| DISC / 100 INSPECTIONS | 0.3 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.0 | 0.0 | 0.1 |

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for Knowing violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

**PART 1** **PRECIPITATION FOR THE PERIOD: January 2020 - December 2020**

**DRY WEATHER STATUS** **Section 2**

**REPORT**

| Date | Rain Inches | Date | Rain Inches | Date | Rain Inches | Date | Rain Inches | Date | Rain Inches | Date | Rain Inches | Date | Rain Inches | Date | Rain Inches | Date | Rain Inches | Date | Rain Inches | Date | Rain Inches | Date | Rain Inches |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 07-01 | | 08-01 | | 09-01 | | 10-01 | **0.10** | 11-01 | **0.54** | 12-01 | | 01-01 | 3.47 | 02-01 | | 03-01 | **0.17** | 04-01 | **0.02** | 05-01 | | 06-01 | |
| 07-02 | | 08-02 | | 09-02 | | 10-02 | | 11-02 | | 12-02 | | 01-02 | 0.25 | 02-02 | 0.39 | 03-02 | | 04-02 | | 05-02 | | 06-02 | |
| 07-03 | | 08-03 | **0.20** | 09-03 | | 10-03 | | 11-03 | | 12-03 | | 01-03 | 0.29 | 02-03 | 0.06 | 03-03 | | 04-03 | | 05-03 | **0.33** | 06-03 | **0.80** |
| 07-04 | | 08-04 | **3.40** | 09-04 | | 10-04 | | 11-04 | | 12-04 | **2.70** | 01-04 | 0.02 | 02-04 | 0.02 | 03-04 | | 04-04 | | 05-04 | **0.02** | 06-04 | **0.37** |
| 07-05 | | 08-05 | | 09-05 | | 10-05 | | 11-05 | | 12-05 | **1.70** | 01-05 | 0.01 | 02-05 | 0.08 | 03-05 | | 04-05 | | 05-05 | **0.29** | 06-05 | |
| 07-06 | **2.51** | 08-06 | **0.30** | 09-06 | | 10-06 | | 11-06 | | 12-06 | | 01-06 | | 02-06 | | 03-06 | | 04-06 | | 05-06 | | 06-06 | |
| 07-07 | | 08-07 | **0.40** | 09-07 | | 10-07 | | 11-07 | | 12-07 | | 01-07 | | 02-07 | 0.47 | 03-07 | | 04-07 | | 05-07 | **0.14** | 06-07 | |
| 07-08 | | 08-08 | | 09-08 | | 10-08 | | 11-08 | | 12-08 | | 01-08 | | 02-08 | | 03-08 | | 04-08 | | 05-08 | **0.52** | 06-08 | **0.47** |
| 07-09 | | 08-09 | | 09-09 | **0.78** | 10-09 | | 11-09 | | 12-09 | | 01-09 | | 02-09 | | 03-09 | **0.01** | 04-09 | | 05-09 | **0.04** | 06-09 | **0.03** |
| 07-10 | **2.88** | 08-10 | | 09-10 | **0.28** | 10-10 | | 11-10 | | 12-10 | | 01-10 | | 02-10 | | 03-10 | | 04-10 | **0.17** | 05-10 | | 06-10 | **0.06** |
| 07-11 | | 08-11 | | 09-11 | | 10-11 | **0.33** | 11-11 | **1.00** | 12-11 | | 01-11 | | 02-11 | 0.15 | 03-11 | | 04-11 | **0.82** | 05-11 | | 06-11 | **0.14** |
| 07-12 | **0.40** | 08-12 | **0.21** | 09-12 | | 10-12 | **0.90** | 11-12 | **0.50** | 12-12 | | 01-12 | | 02-12 | | 03-12 | | 04-12 | **0.01** | 05-12 | | 06-12 | |
| 07-13 | | 08-13 | **0.80** | 09-13 | | 10-13 | | 11-13 | **0.10** | 12-13 | | 01-13 | | 02-13 | | 03-13 | | 04-13 | **0.01** | 05-13 | | 06-13 | |
| 07-14 | | 08-14 | **0.42** | 09-14 | | 10-14 | | 11-14 | | 12-14 | **2.10** | 01-14 | | 02-14 | 0.03 | 03-14 | | 04-14 | **0.01** | 05-14 | | 06-14 | **0.96** |
| 07-15 | | 08-15 | | 09-15 | | 10-15 | | 11-15 | **0.38** | 12-15 | | 01-15 | 0.08 | 02-15 | 0.14 | 03-15 | | 04-15 | **0.11** | 05-15 | | 06-15 | **0.03** |
| 07-16 | | 08-16 | | 09-16 | | 10-16 | **1.14** | 11-16 | | 12-16 | | 01-16 | 0.41 | 02-16 | 1.26 | 03-16 | **0.02** | 04-16 | | 05-16 | | 06-16 | |
| 07-17 | | 08-17 | | 09-17 | | 10-17 | | 11-17 | **0.10** | 12-17 | **0.60** | 01-17 | | 02-17 | | 03-17 | | 04-17 | | 05-17 | | 06-17 | |
| 07-18 | | 08-18 | | 09-18 | | 10-18 | | 11-18 | | 12-18 | | 01-18 | | 02-18 | | 03-18 | **0.82** | 04-18 | | 05-18 | | 06-18 | |
| 07-19 | | 08-19 | | 09-19 | | 10-19 | | 11-19 | | 12-19 | | 01-19 | | 02-19 | 0.18 | 03-19 | **0.01** | 04-19 | | 05-19 | | 06-19 | **0.32** |
| 07-20 | | 08-20 | | 09-20 | | 10-20 | | 11-20 | | 12-20 | **0.15** | 01-20 | | 02-20 | 0.52 | 03-20 | | 04-20 | | 05-20 | | 06-20 | |
| 07-21 | | 08-21 | | 09-21 | | 10-21 | | 11-21 | | 12-21 | **0.32** | 01-21 | | 02-21 | 0.05 | 03-21 | | 04-21 | **0.06** | 05-21 | | 06-21 | **0.16** |
| 07-22 | **0.44** | 08-22 | | 09-22 | | 10-22 | | 11-22 | | 12-22 | | 01-22 | | 02-22 | 0.80 | 03-22 | | 04-22 | | 05-22 | | 06-22 | **0.15** |
| 07-23 | **0.81** | 08-23 | **0.40** | 09-23 | | 10-23 | | 11-23 | **0.30** | 12-23 | | 01-23 | | 02-23 | 0.42 | 03-23 | | 04-23 | | 05-23 | | 06-23 | |
| 07-24 | **1.50** | 08-24 | | 09-24 | | 10-24 | | 11-24 | | 12-24 | **2.50** | 01-24 | | 02-24 | | 03-24 | **1.87** | 04-24 | **0.14** | 05-24 | | 06-24 | |
| 07-25 | | 08-25 | | 09-25 | | 10-25 | | 11-25 | | 12-25 | **0.10** | 01-25 | | 02-25 | | 03-25 | **0.03** | 04-25 | **0.48** | 05-25 | | 06-25 | |
| 07-26 | | 08-26 | | 09-26 | | 10-26 | | 11-26 | **1.80** | 12-26 | | 01-26 | 0.22 | 02-26 | 0.01 | 03-26 | | 04-26 | | 05-26 | **0.81** | 06-26 | **0.01** |
| 07-27 | | 08-27 | | 09-27 | **0.40** | 10-27 | | 11-27 | | 12-27 | | 01-27 | | 02-27 | 1.02 | 03-27 | | 04-27 | | 05-27 | | 06-27 | |
| 07-28 | | 08-28 | **1.00** | 09-28 | | 10-28 | | 11-28 | | 12-28 | | 01-28 | | 02-28 | 1.76 | 03-28 | **0.53** | 04-28 | | 05-28 | **1.04** | 06-28 | |
| 07-29 | | 08-29 | | 09-29 | **2.69** | 10-29 | **1.90** | 11-29 | | 12-29 | | 01-29 | | | | 03-29 | | 04-29 | **0.61** | 05-29 | **0.60** | 06-29 | |
| 07-30 | | 08-30 | | 09-30 | **0.26** | 10-30 | **0.41** | 11-30 | **2.50** | 12-30 | | 01-30 | | | | 03-30 | | 04-30 | | 05-30 | **0.35** | 06-30 | **0.01** |
| 07-31 | | 08-31 | | | | 10-31 | | | | 12-31 | **0.20** | 01-31 | | | | 03-31 | **0.49** | | | 05-31 | | | |
| **Jul-20** | | **Aug-20** | | **Sep-20** | | **Oct-20** | | **Nov-20** | | **Dec-20** | | **Jan-21** | | **Feb-21** | | **Mar-21** | | **Apr-21** | | **May-21** | | **Jun-21** | |
| **Total Rain** | | **Total Rain** | | **Total Rain** | | **Total Rain** | | **Total Rain** | | **Total Rain** | | **Total Rain** | | **Total Rain** | | **Total Rain** | | **Total Rain** | | **Total Rain** | | **Total Rain** | |
| | **8.54** | | **7.13** | | **4.41** | | **4.78** | | **7.22** | | **10.37** | | **4.75** | | **7.36** | | **3.95** | | **2.44** | | **4.14** | | **3.51** |

**Note: Rain Gauge RG-17 & RG-18 are being used for the Precipitation Report.**

**PART 1**
**DRY WEATHER STATUS REPORT**

**DRY WEATHER DISCHARGES FOR THE PERIOD: July 2020 - June 2021**

**Section 3**

| Discharge Observed | | Discharge Stopped | | Last Inspection | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | Date | Time | Date | Time | Site ID | Collector | Type Unit | Location | Comment |
| 24-Apr-21 | 11:40:00 AM | 24-Apr-21 | 12:05:00 PM | 22-Apr-21 | 8:50:00 AM | T-13 | FHL | SLOT | Whitaker Ave. W of Tacony Creek | DEBRIS IN SLOT. |
| 14-Apr-21 | 8:50:00 AM | 14-Apr-21 | 9:30:00 AM | 27-Mar-21 | 11:00:00 AM | C-09 | CCHL | SLOT | 64th St. & Cobbs Creek | DEBRIS IN SLOT. |
| 31-Aug-20 | 9:00:00 AM | 31-Aug-20 | 3:00:00 PM | 29-Aug-20 | 7:30:00 AM | C-11 | CCHL | SLOT | 63rd St. S of Market St. | ROCKS, BRICKS AND DEBRIS IN SLOT AND DWO PIPE |
| 29-Aug-20 | 7:30:00 AM | 29-Aug-20 | 5:00:00 PM | 28-Aug-20 | 9:00:00 AM | C-11 | CCHL | SLOT | 63rd St. S of Market St. | ROCKS, BRICKS AND DEBRIS IN SLOT AND DWO PIPE |
| 25-Aug-20 | 11:00:00 AM | 25-Aug-20 | 9:00:00 PM | 30-Jul-20 | 1:10:00 PM | C-11 | CCHL | SLOT | 63rd St. S of Market St. | ROCKS, BRICKS, GRIT, SAND AND DEBRIS IN SLOT AND |
| 08-Jul-20 | 9:00:00 AM | 08-Jul-20 | 9:40:00 AM | 01-Jul-20 | 12:10:00 PM | S-08 | CSES | B&B | Race St. & Bonsall St. | DEBRIS IN REGULATOR INLET. |

CSO REGULATING CHAMBER MONTHLY INSPECTION

NEWPC & SEWPC PLANT REGULATORS



| SITE | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTA | AVER | DTR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **UPPER PENNYPACK 5 NEWPC UNITS** | | | | | | | | | | | | | | | |
| P01 | 3 | 2 | 1 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 0 | 1 | 20 | 1.7 | 18.2 |
| P02 | 2 | 2 | 1 | 3 | 3 | 2 | 2 | 4 | 2 | 1 | 0 | 1 | 23 | 1.9 | 15.9 |
| P03 | 1 | 2 | 1 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 23 | 1.9 | 15.9 |
| P04 | 1 | 2 | 1 | 4 | 2 | 3 | 2 | 2 | 2 | 2 | 1 | 2 | 24 | 2.0 | 15.2 |
| P05 | 1 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 0 | 1 | 19 | 1.6 | 19.2 |
| **UPPER DELAWARE LOW LEVEL 12 NEWPC UNITS** | | | | | | | | | | | | | | | |
| D02 | 2 | 2 | 2 | 4 | 3 | 4 | 2 | 3 | 4 | 3 | 1 | 1 | 31 | 2.6 | 11.8 |
| D03 | 3 | 2 | 2 | 5 | 3 | 4 | 2 | 3 | 4 | 1 | 1 | 1 | 31 | 2.6 | 11.8 |
| D04 | 1 | 3 | 2 | 3 | 4 | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 30 | 2.5 | 12.2 |
| D05 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 4 | 1 | 1 | 1 | 24 | 2.0 | 15.2 |
| D06 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 0 | 0 | 6 | 25 | 2.1 | 14.6 |
| D07 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 1 | 1 | 1 | 22 | 1.8 | 16.6 |
| D08 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 1 | 1 | 1 | 23 | 1.9 | 15.9 |
| D09 | 2 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 0 | 1 | 1 | 23 | 1.9 | 15.9 |
| D11 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 0 | 1 | 1 | 22 | 1.8 | 16.6 |
| D12 | 2 | 3 | 2 | 2 | 2 | 1 | 3 | 2 | 1 | 0 | 0 | 1 | 19 | 1.6 | 19.2 |
| D13 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 0 | 0 | 1 | 16 | 1.3 | 22.8 |
| D15 | 2 | 3 | 2 | 3 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 21 | 1.8 | 17.4 |
| **LOWER FRANKFORD CREEK 6 NEWPC UNITS** | | | | | | | | | | | | | | | |
| F13 | 1 | 2 | 2 | 4 | 3 | 2 | 2 | 2 | 1 | 1 | 2 | 4 | 26 | 2.2 | 14.0 |
| F14 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 1 | 2 | 2 | 4 | 27 | 2.3 | 13.5 |
| F21 | 1 | 2 | 2 | 3 | 1 | 1 | 2 | 2 | 0 | 1 | 2 | 1 | 18 | 1.5 | 20.3 |
| F23 | 2 | 3 | 2 | 4 | 2 | 2 | 2 | 3 | 2 | 1 | 1 | 2 | 26 | 2.2 | 14.0 |
| F24 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 22 | 1.8 | 16.6 |
| F25 | 2 | 2 | 2 | 4 | 3 | 1 | 2 | 2 | 0 | 1 | 2 | 1 | 22 | 1.8 | 16.6 |
| **LOWER FRANKFORD LOW LEVEL 10 NEWPC UNITS** | | | | | | | | | | | | | | | |
| F03 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 4 | 1 | 1 | 1 | 24 | 2.0 | 15.2 |
| F04 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 2 | 1 | 1 | 1 | 23 | 1.9 | 15.9 |
| F05 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 4 | 2 | 2 | 1 | 1 | 27 | 2.3 | 13.5 |
| F06 | 2 | 3 | 4 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 1 | 28 | 2.3 | 13.0 |
| F07 | 1 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 21 | 1.8 | 17.4 |
| F08 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 1 | 1 | 1 | 23 | 1.9 | 15.9 |
| F09 | 2 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 1 | 1 | 22 | 1.8 | 16.6 |
| F10 | 2 | 4 | 2 | 2 | 1 | 2 | 2 | 2 | 3 | 0 | 1 | 0 | 21 | 1.8 | 17.4 |
| F11 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 3 | 2 | 6 | 27 | 2.3 | 13.5 |
| F12 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 19 | 1.6 | 19.2 |
| **FRANKFORD HIGH LEVEL 14 NEWPC UNITS** | | | | | | | | | | | | | | | |
| T01 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 15 | 1.3 | 24.3 |
| T03 | 2 | 4 | 2 | 3 | 2 | 4 | 2 | 4 | 2 | 2 | 1 | 1 | 29 | 2.4 | 12.6 |
| T04 | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 4 | 1 | 2 | 1 | 1 | 24 | 2.0 | 15.2 |
| T05 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 4 | 1 | 2 | 1 | 1 | 22 | 1.8 | 16.6 |
| T06 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 3 | 1 | 2 | 1 | 1 | 21 | 1.8 | 17.4 |
| T07 | 2 | 2 | 2 | 2 | 1 | 3 | 2 | 3 | 1 | 1 | 1 | 1 | 21 | 1.8 | 17.4 |
| T08 | 2 | 2 | 2 | 2 | 1 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 22 | 1.8 | 16.6 |
| T09 | 3 | 1 | 3 | 2 | 1 | 3 | 2 | 2 | 1 | 1 | 2 | 2 | 23 | 1.9 | 15.9 |
| T10 | 3 | 3 | 3 | 4 | 1 | 3 | 2 | 3 | 1 | 1 | 4 | 3 | 31 | 2.6 | 11.8 |
| T11 | 3 | 3 | 2 | 3 | 1 | 2 | 2 | 3 | 1 | 1 | 3 | 2 | 26 | 2.2 | 14.0 |
| T12 | 3 | 3 | 2 | 6 | 1 | 1 | 3 | 3 | 1 | 1 | 3 | 1 | 28 | 2.3 | 13.0 |
| T13 | 2 | 3 | 3 | 3 | 1 | 1 | 2 | 3 | 2 | 3 | 4 | 7 | 34 | 2.8 | 10.7 |
| T14 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 16 | 1.3 | 22.8 |
| T15 | 2 | 0 | 1 | 2 | 1 | 1 | 1 | 2 | 0 | 1 | 1 | 0 | 12 | 1.0 | 30.4 |

1 TOTAL DISCHARGES FOR NE & SE DISTRICTS
0.1 AVERAGE DISCHARGES PER MONTH
16.7 AVER. DAYS BEFORE RETURNING TO SITE
2.7 AVER. INSPECTIONS PER DAY PER CREW

DTR = DAYS TO RETURN TO SITE
I/D/C = INSPECTIONS PER DAY PER CREW
I/D = INSPECTIONS PER DISCHARGE

| SITE | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTAL | AVER | DTR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SOMERSET LOW LEVEL 9 NEWPC UNITS** | | | | | | | | | | | | | | | |
| D17 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 1 | 2 | 1 | 26 | 2.2 | 14.0 |
| D18 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 2 | 1 | 2 | 1 | 25 | 2.1 | 14.6 |
| D19 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 24 | 2.0 | 15.2 |
| D20 | 2 | 2 | 1 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 25 | 2.1 | 14.6 |
| D21 | 2 | 1 | 1 | 3 | 2 | 2 | 3 | 2 | 2 | 1 | 1 | 1 | 21 | 1.8 | 17.4 |
| D22 | 1 | 1 | 1 | 3 | 2 | 1 | 2 | 2 | 3 | 1 | 1 | 1 | 19 | 1.6 | 19.2 |
| D23 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 3 | 1 | 1 | 1 | 18 | 1.5 | 20.3 |
| D24 | 1 | 6 | 2 | 2 | 2 | 1 | 2 | 2 | 3 | 2 | 1 | 2 | 26 | 2.2 | 14.0 |
| D25 | 2 | 4 | 10 | 3 | 2 | 1 | 2 | 3 | 13 | 8 | 7 | 6 | 61 | 5.1 | 6.0 |
| **LOWER DELAWARE LOW LEVEL 33 SEWPC UNITS** | | | | | | | | | | | | | | | |
| D37 | 2 | 2 | 1 | 3 | 3 | 1 | 3 | 5 | 2 | 1 | 3 | 2 | 28 | 2.3 | 13.0 |
| D38 | 2 | 2 | 2 | 3 | 2 | 1 | 3 | 4 | 2 | 1 | 2 | 1 | 25 | 2.1 | 14.6 |
| D39 | 2 | 2 | 1 | 3 | 3 | 1 | 2 | 5 | 2 | 1 | 2 | 1 | 25 | 2.1 | 14.6 |
| D40 | 2 | 2 | 1 | 3 | 2 | 1 | 3 | 1 | 1 | 1 | 2 | 1 | 20 | 1.7 | 18.2 |
| D41 | 2 | 2 | 1 | 3 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 20 | 1.7 | 18.2 |
| D42 | 2 | 2 | 1 | 3 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 19 | 1.6 | 19.2 |
| D43 | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 0 | 1 | 1 | 1 | 15 | 1.3 | 24.3 |
| D44 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 13 | 1.1 | 28.1 |
| D45 | 2 | 1 | 1 | 2 | 2 | 5 | 2 | 1 | 0 | 1 | 1 | 1 | 19 | 1.6 | 19.2 |
| D46 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 17 | 1.4 | 21.5 |
| D47 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 17 | 1.4 | 21.5 |
| D48 | 1 | 6 | 1 | 2 | 2 | 2 | 3 | 1 | 1 | 1 | 1 | 2 | 23 | 1.9 | 15.9 |
| D49 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 19 | 1.6 | 19.2 |
| D50 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 17 | 1.4 | 21.5 |
| D51 | 2 | 2 | 1 | 2 | 3 | 2 | 2 | 7 | 1 | 1 | 7 | 1 | 31 | 2.6 | 11.8 |
| D52 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 0 | 1 | 1 | 16 | 1.3 | 22.8 |
| D53 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 0 | 0 | 1 | 1 | 15 | 1.3 | 24.3 |
| D54 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 0 | 1 | 1 | 16 | 1.3 | 22.8 |
| D58 | 2 | 4 | 1 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 24 | 2.0 | 15.2 |
| D61 | 2 | 2 | 1 | 3 | 1 | 2 | 4 | 1 | 1 | 0 | 2 | 1 | 20 | 1.7 | 18.2 |
| D62 | 2 | 2 | 1 | 3 | 1 | 2 | 2 | 1 | 1 | 0 | 2 | 1 | 18 | 1.5 | 20.3 |
| D63 | 2 | 3 | 1 | 3 | 1 | 2 | 2 | 1 | 1 | 0 | 2 | 1 | 19 | 1.6 | 19.2 |
| D64 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 0 | 1 | 1 | 15 | 1.3 | 24.3 |
| D65 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 0 | 1 | 1 | 15 | 1.3 | 24.3 |
| D66 | 1 | 3 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 0 | 1 | 1 | 15 | 1.3 | 24.3 |
| D67 | 1 | 1 | 2 | 3 | 4 | 4 | 2 | 1 | 1 | 0 | 3 | 0 | 22 | 1.8 | 16.6 |
| D68 | 1 | 2 | 2 | 3 | 4 | 3 | 2 | 1 | 1 | 0 | 3 | 0 | 22 | 1.8 | 16.6 |
| D69 | 1 | 2 | 1 | 2 | 3 | 3 | 2 | 1 | 1 | 0 | 2 | 0 | 18 | 1.5 | 20.3 |
| D70 | 1 | 1 | 1 | 2 | 2 | 4 | 2 | 1 | 1 | 0 | 2 | 0 | 17 | 1.4 | 21.5 |
| D71 | 1 | 2 | 1 | 3 | 2 | 3 | 2 | 0 | 1 | 0 | 1 | 0 | 16 | 1.3 | 22.8 |
| D72 | 1 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 0 | 1 | 0 | 14 | 1.2 | 26.1 |
| D73 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 6 | 0 | 16 | 1.3 | 22.8 |
| D75 | 1 | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 0 | 1 | 1 | 14 | 1.2 | 26.1 |
| | | | | | | | | | | | | | | | |
| **TOTAL** | 161 | 197 | 151 | 232 | 172 | 180 | 185 | 188 | 142 | 93 | 140 | 120 | 1961 | | |
| | | | | | | | | | | | | | | | |
| **I /D/C** | 2.6 | 3.2 | 2.5 | 3.8 | 2.8 | 3.0 | 3.0 | 3.1 | 2.3 | 1.5 | 2.3 | 2.0 | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| **UP** | 8 | 10 | 6 | 17 | 11 | 11 | 10 | 12 | 8 | 7 | 2 | 7 | 109 | 1.8 | 16.9 |
| **UDLL** | 24 | 29 | 24 | 33 | 27 | 25 | 29 | 27 | 29 | 11 | 11 | 18 | 287 | 2.0 | 15.8 |
| **LFC** | 10 | 13 | 12 | 21 | 13 | 10 | 12 | 14 | 5 | 7 | 11 | 13 | 141 | 2.0 | 15.8 |
| **LFLL** | 18 | 27 | 22 | 21 | 21 | 21 | 19 | 26 | 21 | 12 | 13 | 14 | 235 | 2.0 | 15.7 |
| **FHL** | 33 | 30 | 28 | 37 | 19 | 30 | 23 | 39 | 16 | 21 | 25 | 23 | 324 | 1.9 | 17.0 |
| **SLL** | 15 | 21 | 22 | 25 | 19 | 18 | 23 | 20 | 32 | 18 | 17 | 15 | 245 | 2.3 | 15.0 |
| **LDLL** | 53 | 67 | 37 | 78 | 62 | 65 | 69 | 50 | 31 | 17 | 61 | 30 | 620 | 1.6 | 20.3 |

| SITE | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **UPPER PENNYPACK 5 NEWPC UNITS** | | | | | | | | | | | | | |
| P01 | | | | | | | | | | | | | 0 |
| P02 | | | | | | | | | | | | | 0 |
| P03 | | | | | | | | | | | | | 0 |
| P04 | | | | | | | | | | | | | 0 |
| P05 | | | | | | | | | | | | | 0 |
| **UPPER DELAWARE LOW LEVEL 12 NEWPC UNITS** | | | | | | | | | | | | | |
| D02 | | | | | | | | | | | | | 0 |
| D03 | | | | | | | | | | | | | 0 |
| D04 | | | | | | | | | | | | | 0 |
| D05 | | | | | | | | | | | | | 0 |
| D06 | | | | | | | | | | | | | 0 |
| D07 | | | | | | | | | | | | | 0 |
| D08 | | | | | | | | | | | | | 0 |
| D09 | | | | | | | | | | | | | 0 |
| D11 | | | | | | | | | | | | | 0 |
| D12 | | | | | | | | | | | | | 0 |
| D13 | | | | | | | | | | | | | 0 |
| D15 | | | | | | | | | | | | | 0 |
| **LOWER FRANKFORD CREEK 6 NEWPC UNITS** | | | | | | | | | | | | | |
| F13 | | | | | | | | | | | | | 0 |
| F14 | | | | | | | | | | | | | 0 |
| F21 | | | | | | | | | | | | | 0 |
| F23 | | | | | | | | | | | | | 0 |
| F24 | | | | | | | | | | | | | 0 |
| F25 | | | | | | | | | | | | | 0 |
| **LOWER FRANKFORD LOW LEVEL 10 NEWPC UNITS** | | | | | | | | | | | | | |
| F03 | | | | | | | | | | | | | 0 |
| F04 | | | | | | | | | | | | | 0 |
| F05 | | | | | | | | | | | | | 0 |
| F06 | | | | | | | | | | | | | 0 |
| F07 | | | | | | | | | | | | | 0 |
| F08 | | | | | | | | | | | | | 0 |
| F09 | | | | | | | | | | | | | 0 |
| F10 | | | | | | | | | | | | | 0 |
| F11 | | | | | | | | | | | | | 0 |
| F12 | | | | | | | | | | | | | 0 |
| **FRANKFORD HIGH LEVEL 14 NEWPC UNITS** | | | | | | | | | | | | | |
| T01 | | | | | | | | | | | | | 0 |
| T03 | | | | | | | | | | | | | 0 |
| T04 | | | | | | | | | | | | | 0 |
| T05 | | | | | | | | | | | | | 0 |
| T06 | | | | | | | | | | | | | 0 |
| T07 | | | | | | | | | | | | | 0 |
| T08 | | | | | | | | | | | | | 0 |
| T09 | | | | | | | | | | | | | 0 |
| T10 | | | | | | | | | | | | | 0 |
| T11 | | | | | | | | | | | | | 0 |
| T12 | | | | | | | | | | | | | 0 |
| T13 | | | | | | | | | | 1 | | | 1 |
| T14 | | | | | | | | | | | | | 0 |
| T15 | | | | | | | | | | | | | 0 |

| | NO OF DISCHARGES IN DISTRICT | | | | | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **UP** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **UDLL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **LFC** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **LFLL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **FHL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| **SLL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **LDLL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| SITE | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SOMERSET LOW LEVEL 9 NEWPC UNITS** | | | | | | | | | | | | | |
| D17 | | | | | | | | | | | | | 0 |
| D18 | | | | | | | | | | | | | 0 |
| D19 | | | | | | | | | | | | | 0 |
| D20 | | | | | | | | | | | | | 0 |
| D21 | | | | | | | | | | | | | 0 |
| D22 | | | | | | | | | | | | | 0 |
| D23 | | | | | | | | | | | | | 0 |
| D24 | | | | | | | | | | | | | 0 |
| D25 | | | | | | | | | | | | | 0 |
| **LOWER DELAWARE LOW LEVEL 33 SEWPC UNITS** | | | | | | | | | | | | | |
| D37 | | | | | | | | | | | | | 0 |
| D38 | | | | | | | | | | | | | 0 |
| D39 | | | | | | | | | | | | | 0 |
| D40 | | | | | | | | | | | | | 0 |
| D41 | | | | | | | | | | | | | 0 |
| D42 | | | | | | | | | | | | | 0 |
| D43 | | | | | | | | | | | | | 0 |
| D44 | | | | | | | | | | | | | 0 |
| D45 | | | | | | | | | | | | | 0 |
| D46 | | | | | | | | | | | | | 0 |
| D47 | | | | | | | | | | | | | 0 |
| D48 | | | | | | | | | | | | | 0 |
| D49 | | | | | | | | | | | | | 0 |
| D50 | | | | | | | | | | | | | 0 |
| D51 | | | | | | | | | | | | | 0 |
| D52 | | | | | | | | | | | | | 0 |
| D53 | | | | | | | | | | | | | 0 |
| D54 | | | | | | | | | | | | | 0 |
| D58 | | | | | | | | | | | | | 0 |
| D61 | | | | | | | | | | | | | 0 |
| D62 | | | | | | | | | | | | | 0 |
| D63 | | | | | | | | | | | | | 0 |
| D64 | | | | | | | | | | | | | 0 |
| D65 | | | | | | | | | | | | | 0 |
| D66 | | | | | | | | | | | | | 0 |
| D67 | | | | | | | | | | | | | 0 |
| D68 | | | | | | | | | | | | | 0 |
| D69 | | | | | | | | | | | | | 0 |
| D70 | | | | | | | | | | | | | 0 |
| D71 | | | | | | | | | | | | | 0 |
| D72 | | | | | | | | | | | | | 0 |
| D73 | | | | | | | | | | | | | 0 |
| D75 | | | | | | | | | | | | | 0 |
| | | | | | | | | | | | | | **TOTAL DISC** |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |

| | NO OF UNITS IN DISTRICT BLOCKED | | | | | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **UP** | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| **UDLL** | 4 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| **LFC** | 2 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| **LFLL** | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| **FHL** | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| **SLL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **LDLL** | 2 | 4 | 1 | 0 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |

CSO REGULATING CHAMBER MONTHLY BLOCKS CLEARED — NEWPC & SEWPC PLANT REGULATORS



| SITE | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **UPPER PENNYPACK 5 NEWPC UNITS** | | | | | | | | | | | | | |
| P01 | | | | | | | | | | | | | 0 |
| P02 | | | | | | | | | | | | | 0 |
| P03 | | | | | 1 | | | | | | | | 1 |
| P04 | | | | | | | | | | 1 | | | 1 |
| P05 | | | | | | | | | | | | | 0 |
| **UPPER DELAWARE LOW LEVEL 12 NEWPC UNITS** | | | | | | | | | | | | | |
| D02 | | | | | | | | | | 1 | | | 1 |
| D03 | 1 | | | 1 | | | | | 1 | | | | 3 |
| D04 | | | | 1 | | | | | | | 2 | | 3 |
| D05 | | | | | | | | | | | | | 0 |
| D06 | 1 | | | | | | | | | | | 2 | 3 |
| D07 | | | | | | | | | | | | | 0 |
| D08 | 1 | 1 | | | | | | | | | | 1 | 3 |
| D09 | | | | | | | | | | | | | 0 |
| D11 | | | | | | | | | | | | | 0 |
| D12 | | | | | | | | | | | | | 0 |
| D13 | | 1 | | | | | | | | | | | 1 |
| D15 | 1 | 1 | | 1 | | | | 1 | | 1 | 1 | | 6 |
| **LOWER FRANKFORD CREEK 6 NEWPC UNITS** | | | | | | | | | | | | | |
| F13 | | | | | | | | | | | | 2 | 2 |
| F14 | 1 | | 1 | | 1 | | | | | 1 | | 2 | 6 |
| F21 | | | | | | | | | | | | | 0 |
| F23 | 1 | | | | | | | | 1 | | | | 2 |
| F24 | | 1 | | | | | | | | | | | 1 |
| F25 | | | | | | | | | | | | | 0 |
| **LOWER FRANKFORD LOW LEVEL 10 NEWPC UNITS** | | | | | | | | | | | | | |
| F03 | | | | | | | | | | | | | 0 |
| F04 | | | | | | | | | | | | | 0 |
| F05 | | | | | | 1 | | | | | | | 1 |
| F06 | | | 1 | | | | | | | | | | 1 |
| F07 | | | | | 1 | | | | | | | | 1 |
| F08 | | 1 | | | | | | | | | | | 1 |
| F09 | | | | | | | | | | | | | 0 |
| F10 | 1 | | | | | | | | 1 | | | | 2 |
| F11 | | | | | | | | | | | 1 | | 1 |
| F12 | | | | | | | | | | | | | 0 |
| **FRANKFORD HIGH LEVEL 14 NEWPC UNITS** | | | | | | | | | | | | | |
| T01 | | | | | | | | | | | | | 0 |
| T03 | | | | | | | | | | | | | 0 |
| T04 | | | 1 | 1 | | | | | | | | | 2 |
| T05 | | | | | | | | | | | | | 0 |
| T06 | | | | | | | | | | | | | 0 |
| T07 | | | | | | | | | | | | | 0 |
| T08 | | | | | | | | | | | | | 0 |
| T09 | | | | | | | | | | | | | 0 |
| T10 | | | | | | | | | | | | | 0 |
| T11 | | | | | | | | | | | | | 0 |
| T12 | | 1 | | | | | | | | | | | 1 |
| T13 | | 1 | 1 | | 1 | 1 | | | 1 | 1 | 1 | 2 | 9 |
| T14 | | | | | | | | | | | | | 0 |
| T15 | | | | | | | | | | | | | 0 |

7.6 AVERAGE BLOCKAGES PER MONTH

| SITE | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SOMERSET LOW LEVEL 9 NEWPC UNITS** | | | | | | | | | | | | | |
| D17 | | | | | | | | | | | | | 0 |
| D18 | | | | | | | | | | | | | 0 |
| D19 | | | | | | | | | | | | | 0 |
| D20 | | | | | | | | | | | | | 0 |
| D21 | | | | | | | | | | | | | 0 |
| D22 | | | | | | | | | | | | | 0 |
| D23 | | | | | | | | | 1 | | | | 1 |
| D24 | | | | | | | | | | | | | 0 |
| D25 | | | | | | | | | | | | | 0 |
| **LOWER DELAWARE LOW LEVEL 33 SEWPC UNITS** | | | | | | | | | | | | | |
| D37 | | | | | 1 | 1 | | | | | | | 2 |
| D38 | | | | | | | | | | | | | 0 |
| D39 | | | | | | | | 2 | | | | | 2 |
| D40 | | 1 | 1 | | | | | | | 1 | | | 3 |
| D41 | | | 1 | | | | | | | | | 1 | 2 |
| D42 | | | | | | | | | | | | | 0 |
| D43 | | | | | | | | | | | | | 0 |
| D44 | | | | | | | | | | | | | 0 |
| D45 | | | | | | | | | | | | | 0 |
| D46 | | | | | | | | | | | | | 0 |
| D47 | 1 | | | | | | | | | | | | 1 |
| D48 | | 2 | | | | | | | | | | | 2 |
| D49 | | | | | | | | | | | | | 0 |
| D50 | 1 | | | | | | | | | 1 | | | 2 |
| D51 | | | | | 1 | | | 5 | 1 | 1 | 4 | 1 | 13 |
| D52 | | | | | | | | | | | | | 0 |
| D53 | | | | | | | | | | | | | 0 |
| D54 | | | | | | | | | | | | | 0 |
| D58 | | | | | | | | | | | | | 0 |
| D61 | | | | | | | | | | | | | 0 |
| D62 | | | | | | | | | | | | | 0 |
| D63 | | | | | | | | | | | | | 0 |
| D64 | | | | | | | | | | | 1 | | 1 |
| D65 | | | | | | | | | | | | | 0 |
| D66 | | | | | | | | | | | | | 0 |
| D67 | | | | | | | | | | | | | 0 |
| D68 | | | | | 1 | | | | | | | | 1 |
| D69 | | | | | | | | | | | | | 0 |
| D70 | | | | | | | | | | | | | 0 |
| D71 | | | | | | 1 | | | | | | | 1 |
| D72 | | | | | | | | | | | | | 0 |
| D73 | | 1 | | | | | | | | | | | 1 |
| D75 | | | | | | | | | | | | | 0 |
| | | | | | | | | | | | | | **TOTAL** |
| | 9 | 11 | 6 | 4 | 7 | 4 | 0 | 8 | 6 | 8 | 10 | 11 | 84 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **UP** | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| **UDLL** | 4 | 3 | 0 | 3 | 0 | 0 | 0 | 1 | 1 | 2 | 3 | 3 | 20 |
| **LFC** | 2 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 4 | 11 |
| **LFLL** | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 7 |
| **FHL** | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 2 | 12 |
| **SLL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| **LDLL** | 2 | 4 | 2 | 0 | 3 | 2 | 0 | 7 | 1 | 3 | 5 | 2 | 31 |

| SITE | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTAL | AVER | DTR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CENTRAL SCHUYLKILL EAST SIDE 18 SWWPC UNITS** | | | | | | | | | | | | | | | |
| S05 | 2 | 2 | 2 | 2 | 3 | 3 | 4 | 2 | 2 | 1 | 1 | 1 | 25 | 2.1 | 14.6 |
| S06 | 2 | 2 | 2 | 2 | 3 | 3 | 4 | 2 | 2 | 1 | 1 | 1 | 25 | 2.1 | 14.6 |
| S07 | 2 | 1 | 2 | 2 | 3 | 3 | 4 | 2 | 2 | 1 | 1 | 1 | 24 | 2.0 | 15.2 |
| S08 | 4 | 4 | 4 | 4 | 1 | 3 | 3 | 2 | 2 | 1 | 2 | 3 | 33 | 2.8 | 11.1 |
| S09 | 0 | 1 | 2 | 2 | 1 | 0 | 2 | 1 | 1 | 2 | 1 | 0 | 13 | 1.1 | 28.1 |
| S10 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 4 | 2 | 1 | 1 | 1 | 22 | 1.8 | 16.6 |
| S12 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 1 | 29 | 2.4 | 12.6 |
| S12A | 3 | 1 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 1 | 28 | 2.3 | 13.0 |
| S13 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 1 | 27 | 2.3 | 13.5 |
| S15 | 2 | 2 | 2 | 3 | 2 | 1 | 2 | 3 | 2 | 1 | 1 | 0 | 21 | 1.8 | 17.4 |
| S16 | 2 | 1 | 2 | 2 | 1 | 2 | 3 | 3 | 2 | 1 | 1 | 0 | 20 | 1.7 | 18.2 |
| S17 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 3 | 2 | 1 | 1 | 0 | 19 | 1.6 | 19.2 |
| S18 | 2 | 0 | 2 | 2 | 1 | 3 | 2 | 3 | 2 | 1 | 2 | 2 | 22 | 1.8 | 16.6 |
| S19 | 3 | 1 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 0 | 24 | 2.0 | 15.2 |
| S21 | 1 | 1 | 2 | 1 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 20 | 1.7 | 18.2 |
| S23 | 2 | 2 | 2 | 1 | 3 | 2 | 3 | 2 | 2 | 1 | 2 | 1 | 23 | 1.9 | 15.9 |
| S25 | 1 | 1 | 3 | 1 | 1 | 2 | 2 | 2 | 0 | 1 | 1 | 3 | 18 | 1.5 | 20.3 |
| S26 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 0 | 1 | 0 | 0 | 13 | 1.1 | 28.1 |
| **LOWER SCHUYLKILL EAST SIDE 9 SWWPC UNITS** | | | | | | | | | | | | | | | |
| S31 | 2 | 1 | 1 | 2 | 2 | 2 | 3 | 2 | 2 | 1 | 1 | 0 | 19 | 1.6 | 19.2 |
| S35 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 0 | 16 | 1.3 | 22.8 |
| S36 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 5 | 0.4 | 73.0 |
| S36A | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 0 | 17 | 1.4 | 21.5 |
| S37 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0.3 | 91.2 |
| S42 | 8 | 7 | 4 | 3 | 4 | 7 | 3 | 5 | 5 | 5 | 4 | 11 | 66 | 5.5 | 5.5 |
| S42A | 3 | 6 | 2 | 4 | 2 | 2 | 3 | 5 | 13 | 7 | 3 | 5 | 55 | 4.6 | 6.6 |
| S44 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0.3 | 121.6 |
| S46 | 3 | 8 | 0 | 2 | 2 | 3 | 1 | 3 | 2 | 1 | 2 | 10 | 37 | 3.1 | 9.9 |
| **CENTRAL SCHUYLKILL WEST 9 SWWPC UNITS** | | | | | | | | | | | | | | | |
| S01 | 1 | 2 | 6 | 2 | 2 | 2 | 2 | 3 | 3 | 4 | 3 | 4 | 34 | 2.8 | 10.7 |
| S02 | 1 | 2 | 3 | 2 | 2 | 5 | 2 | 2 | 3 | 1 | 1 | 1 | 25 | 2.1 | 14.6 |
| S03 | 1 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 1 | 1 | 1 | 22 | 1.8 | 16.6 |
| S04 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 1 | 3 | 1 | 24 | 2.0 | 15.2 |
| S11 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 0 | 2 | 0 | 16 | 1.3 | 22.8 |
| S14 | 1 | 1 | 2 | 3 | 1 | 2 | 3 | 2 | 2 | 1 | 1 | 0 | 19 | 1.6 | 19.2 |
| S20 | 2 | 1 | 2 | 4 | 1 | 2 | 2 | 2 | 2 | 1 | 3 | 2 | 24 | 2.0 | 15.2 |
| S22 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 1 | 0 | 3 | 2 | 23 | 1.9 | 15.9 |
| S24 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 3 | 2 | 24 | 2.0 | 15.2 |
| **SOUTHWEST MAIN GRAVITY 10 SWWPC UNITS** | | | | | | | | | | | | | | | |
| S27 | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 0 | 2 | 0 | 14 | 1.2 | 26.1 |
| S28 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 16 | 1.3 | 22.8 |
| S30 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 2 | 0 | 18 | 1.5 | 20.3 |
| S34 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 0 | 15 | 1.3 | 24.3 |
| S39 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 0 | 14 | 1.2 | 26.1 |
| S40 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 0 | 13 | 1.1 | 28.1 |
| S43 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 0 | 15 | 1.3 | 24.3 |
| S47 | 1 | 2 | 1 | 1 | 3 | 2 | 2 | 2 | 3 | 1 | 2 | 0 | 20 | 1.7 | 18.2 |
| S50 | 2 | 5 | 6 | 5 | 8 | 12 | 2 | 3 | 3 | 6 | 10 | 21 | 83 | 6.9 | 4.4 |
| S51 | 1 | 1 | 3 | 2 | 5 | 4 | 2 | 3 | 2 | 2 | 4 | 2 | 31 | 2.6 | 11.8 |
| **LOWER SCHUYLKILL WEST SIDE 4 SWWPC UNITS** | | | | | | | | | | | | | | | |
| S32 | 2 | 2 | 1 | 2 | 2 | 3 | 2 | 3 | 1 | 2 | 2 | 1 | 23 | 1.9 | 15.9 |
| S33 | 2 | 1 | 2 | 2 | 3 | 5 | 2 | 2 | 1 | 1 | 2 | 1 | 24 | 2.0 | 15.2 |
| S38 | 3 | 1 | 2 | 1 | 2 | 3 | 2 | 2 | 1 | 1 | 1 | 0 | 19 | 1.6 | 19.2 |
| S45 | 3 | 2 | 1 | 2 | 2 | 2 | 4 | 3 | 2 | 1 | 2 | 0 | 24 | 2.0 | 15.2 |

5 TOTAL DISCHARGES IN SW DISTRICT — DTR = DAYS TO RETURN TO SITE

0.4 AVERAGE DISCHARGES PER MONTH — I/D/C = INSPECTIONS PER DAY PER CREW

21.2 AVER. DAYS BEFORE RETURNING TO SITE — I/D = INSPECTIONS PER DISCHARGE

1.8 AVER. INSPECTIONS PER DAY PER CREW

| SITE | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTAL | AVER | DTR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **COBBS CREEK HIGH LEVEL 24 SWWPC UNITS** | | | | | | | | | | | | | | | |
| C01 | 2 | 1 | 2 | 2 | 3 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 22 | 1.8 | 16.6 |
| C02 | 4 | 1 | 2 | 2 | 3 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 23 | 1.9 | 15.9 |
| C04 | 3 | 1 | 2 | 2 | 3 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 23 | 1.9 | 15.9 |
| C04A | 1 | 1 | 2 | 2 | 3 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 20 | 1.7 | 18.2 |
| C05 | 1 | 1 | 2 | 2 | 3 | 1 | 2 | 0 | 1 | 2 | 1 | 1 | 17 | 1.4 | 21.5 |
| C06 | 1 | 1 | 3 | 3 | 4 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 27 | 2.3 | 13.5 |
| C07 | 3 | 1 | 4 | 3 | 5 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 32 | 2.7 | 11.4 |
| C09 | 4 | 1 | 2 | 2 | 2 | 1 | 3 | 1 | 2 | 2 | 1 | 3 | 24 | 2.0 | 15.2 |
| C10 | 2 | 1 | 4 | 2 | 2 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 20 | 1.7 | 18.2 |
| C11 | 4 | 7 | 7 | 3 | 4 | 1 | 3 | 2 | 2 | 2 | 2 | 2 | 39 | 3.3 | 9.4 |
| C12 | 2 | 1 | 3 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 20 | 1.7 | 18.2 |
| C13 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 0 | 1 | 1 | 1 | 1 | 15 | 1.3 | 24.3 |
| C14 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 1 | 1 | 2 | 1 | 1 | 22 | 1.8 | 16.6 |
| C15 | 1 | 1 | 2 | 3 | 2 | 2 | 2 | 0 | 1 | 2 | 2 | 1 | 19 | 1.6 | 19.2 |
| C16 | 1 | 1 | 2 | 3 | 2 | 3 | 2 | 0 | 1 | 2 | 1 | 1 | 19 | 1.6 | 19.2 |
| C17 | 1 | 1 | 2 | 3 | 2 | 3 | 2 | 1 | 1 | 2 | 1 | 1 | 20 | 1.7 | 18.2 |
| C18 | 1 | 1 | 3 | 2 | 3 | 3 | 2 | 1 | 1 | 2 | 1 | 1 | 21 | 1.8 | 17.4 |
| C31 | 2 | 1 | 2 | 3 | 2 | 3 | 2 | 1 | 2 | 2 | 2 | 1 | 23 | 1.9 | 15.9 |
| C32 | 1 | 1 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 3 | 1 | 22 | 1.8 | 16.6 |
| C33 | 2 | 1 | 2 | 3 | 2 | 3 | 2 | 1 | 2 | 2 | 1 | 1 | 22 | 1.8 | 16.6 |
| C34 | 2 | 1 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 21 | 1.8 | 17.4 |
| C35 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 0 | 2 | 1 | 1 | 1 | 18 | 1.5 | 20.3 |
| C36 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 1 | 20 | 1.7 | 18.2 |
| C37 | 2 | 1 | 1 | 3 | 2 | 2 | 2 | 1 | 3 | 1 | 2 | 1 | 21 | 1.8 | 17.4 |
| **COBBS CREEK LOW LEVEL 12 SWWPC UNITS** | | | | | | | | | | | | | | | |
| C19 | 1 | 1 | 2 | 2 | 2 | 3 | 2 | 1 | 1 | 2 | 1 | 1 | 19 | 1.6 | 19.2 |
| C20 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 3 | 1 | 1 | 19 | 1.6 | 19.2 |
| C21 | 3 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 21 | 1.8 | 17.4 |
| C22 | 1 | 0 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 16 | 1.3 | 22.8 |
| C23 | 1 | 1 | 2 | 2 | 2 | 4 | 2 | 1 | 1 | 2 | 1 | 1 | 20 | 1.7 | 18.2 |
| C24 | 2 | 1 | 2 | 2 | 2 | 3 | 2 | 1 | 1 | 2 | 1 | 1 | 20 | 1.7 | 18.2 |
| C25 | 1 | 2 | 2 | 3 | 3 | 6 | 2 | 1 | 3 | 2 | 2 | 1 | 28 | 2.3 | 13.0 |
| C26 | 2 | 0 | 2 | 3 | 2 | 3 | 2 | 1 | 2 | 1 | 2 | 1 | 21 | 1.8 | 17.4 |
| C27 | 2 | 0 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 1 | 2 | 1 | 18 | 1.5 | 20.3 |
| C28A | 1 | 0 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 16 | 1.3 | 22.8 |
| C29 | 1 | 0 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 15 | 1.3 | 24.3 |
| C30 | 1 | 0 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 15 | 1.3 | 24.3 |
| **TOTAL** | 157 | 127 | 178 | 186 | 182 | 196 | 189 | 148 | 159 | 134 | 148 | 122 | 1926 | | |
| **I /D/C** | 1.7 | 1.4 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 1.6 | 1.7 | 1.5 | 1.6 | 1.3 | | | |
| **CSES** | 37 | 28 | 39 | 39 | 34 | 38 | 46 | 43 | 34 | 25 | 26 | 17 | 406 | 1.9 | 17.1 |
| **LSES** | 20 | 24 | 11 | 15 | 15 | 20 | 17 | 19 | 25 | 16 | 14 | 26 | 222 | 2.1 | 41.2 |
| **CSW** | 12 | 15 | 22 | 24 | 16 | 20 | 20 | 19 | 20 | 10 | 20 | 13 | 211 | 2.0 | 16.2 |
| **SWMG** | 14 | 15 | 17 | 15 | 26 | 28 | 20 | 18 | 20 | 14 | 29 | 23 | 239 | 2.0 | 20.6 |
| **LSW** | 10 | 6 | 6 | 7 | 9 | 13 | 10 | 10 | 5 | 5 | 7 | 2 | 90 | 1.9 | 16.4 |
| **CCHL** | 47 | 31 | 59 | 60 | 61 | 48 | 52 | 27 | 38 | 41 | 37 | 29 | 530 | 1.8 | 17.1 |
| **CCLL** | 17 | 8 | 24 | 26 | 21 | 29 | 24 | 12 | 17 | 23 | 15 | 12 | 228 | 1.6 | 19.8 |

## CSO REGULATING CHAMBER DISCHARGE

## SWWPC PLANT REGULATORS



| SITE | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CENTRAL SCHUYLKILL EAST SIDE 18 SWWPC UNITS** | | | | | | | | | | | | | |
| S05 | | | | | | | | | | | | | 0 |
| S06 | | | | | | | | | | | | | 0 |
| S07 | | | | | | | | | | | | | 0 |
| S08 | 1 | | | | | | | | | | | | 1 |
| S09 | | | | | | | | | | | | | 0 |
| S10 | | | | | | | | | | | | | 0 |
| S12 | | | | | | | | | | | | | 0 |
| S12A | | | | | | | | | | | | | 0 |
| S13 | | | | | | | | | | | | | 0 |
| S15 | | | | | | | | | | | | | 0 |
| S16 | | | | | | | | | | | | | 0 |
| S17 | | | | | | | | | | | | | 0 |
| S18 | | | | | | | | | | | | | 0 |
| S19 | | | | | | | | | | | | | 0 |
| S21 | | | | | | | | | | | | | 0 |
| S23 | | | | | | | | | | | | | 0 |
| S25 | | | | | | | | | | | | | 0 |
| S26 | | | | | | | | | | | | | 0 |
| **LOWER SCHUYLKILL EAST SIDE 9 SWWPC UNITS** | | | | | | | | | | | | | |
| S31 | | | | | | | | | | | | | 0 |
| S35 | | | | | | | | | | | | | 0 |
| S36 | | | | | | | | | | | | | 0 |
| S36A | | | | | | | | | | | | | 0 |
| S37 | | | | | | | | | | | | | 0 |
| S42 | | | | | | | | | | | | | 0 |
| S42A | | | | | | | | | | | | | 0 |
| S44 | | | | | | | | | | | | | 0 |
| S46 | | | | | | | | | | | | | 0 |
| **CENTRAL SCHUYLKILL WEST 9 SWWPC UNITS** | | | | | | | | | | | | | |
| S01 | | | | | | | | | | | | | 0 |
| S02 | | | | | | | | | | | | | 0 |
| S03 | | | | | | | | | | | | | 0 |
| S04 | | | | | | | | | | | | | 0 |
| S11 | | | | | | | | | | | | | 0 |
| S14 | | | | | | | | | | | | | 0 |
| S20 | | | | | | | | | | | | | 0 |
| S22 | | | | | | | | | | | | | 0 |
| S24 | | | | | | | | | | | | | 0 |
| **SOUTHWEST MAIN GRAVITY 10 SWWPC UNITS** | | | | | | | | | | | | | |
| S27 | | | | | | | | | | | | | 0 |
| S28 | | | | | | | | | | | | | 0 |
| S30 | | | | | | | | | | | | | 0 |
| S34 | | | | | | | | | | | | | 0 |
| S39 | | | | | | | | | | | | | 0 |
| S40 | | | | | | | | | | | | | 0 |
| S43 | | | | | | | | | | | | | 0 |
| S47 | | | | | | | | | | | | | 0 |
| S50 | | | | | | | | | | | | | 0 |
| S51 | | | | | | | | | | | | | 0 |
| **LOWER SCHUYLKILL WEST SIDE 4 SWWPC UNITS** | | | | | | | | | | | | | |
| S32 | | | | | | | | | | | | | 0 |
| S33 | | | | | | | | | | | | | 0 |
| S38 | | | | | | | | | | | | | 0 |
| S45 | | | | | | | | | | | | | 0 |

| SITE | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **COBBS CREEK HIGH LEVEL 24 SWWPC UNITS** | | | | | | | | | | | | | |
| C01 | | | | | | | | | | | | | 0 |
| C02 | | | | | | | | | | | | | 0 |
| C04 | | | | | | | | | | | | | 0 |
| C04A | | | | | | | | | | | | | 0 |
| C05 | | | | | | | | | | | | | 0 |
| C06 | | | | | | | | | | | | | 0 |
| C07 | | | | | | | | | | | | | 0 |
| C09 | | | | | | | | | | 1 | | | 1 |
| C10 | | | | | | | | | | | | | 0 |
| C11 | | 3 | | | | | | | | | | | 3 |
| C12 | | | | | | | | | | | | | 0 |
| C13 | | | | | | | | | | | | | 0 |
| C14 | | | | | | | | | | | | | 0 |
| C15 | | | | | | | | | | | | | 0 |
| C16 | | | | | | | | | | | | | 0 |
| C17 | | | | | | | | | | | | | 0 |
| C18 | | | | | | | | | | | | | 0 |
| C31 | | | | | | | | | | | | | 0 |
| C32 | | | | | | | | | | | | | 0 |
| C33 | | | | | | | | | | | | | 0 |
| C34 | | | | | | | | | | | | | 0 |
| C35 | | | | | | | | | | | | | 0 |
| C36 | | | | | | | | | | | | | 0 |
| C37 | | | | | | | | | | | | | 0 |
| **COBBS CREEK LOW LEVEL 12 SWWPC UNITS** | | | | | | | | | | | | | |
| C19 | | | | | | | | | | | | | 0 |
| C20 | | | | | | | | | | | | | 0 |
| C21 | | | | | | | | | | | | | 0 |
| C22 | | | | | | | | | | | | | 0 |
| C23 | | | | | | | | | | | | | 0 |
| C24 | | | | | | | | | | | | | 0 |
| C25 | | | | | | | | | | | | | 0 |
| C26 | | | | | | | | | | | | | 0 |
| C27 | | | | | | | | | | | | | 0 |
| C28A | | | | | | | | | | | | | 0 |
| C29 | | | | | | | | | | | | | 0 |
| C30 | | | | | | | | | | | | | 0 |
| | | | | | | | | | | | | | TOTAL DISC |
| | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5 |
| | **NO OF UNITS IN DISTRICT BLOCKED** | | | | | | | | | | | | **TOTAL** |
| **CSE** | 2 | 1 | 5 | 0 | 4 | 4 | 0 | 0 | 1 | 0 | 0 | 4 | 21 |
| **LSE** | 1 | 2 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 2 | 0 | 4 | 13 |
| **CSW** | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| **SWG** | 0 | 1 | 0 | 0 | 3 | 4 | 0 | 0 | 2 | 2 | 1 | 6 | 19 |
| **LSW** | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| **CCHL** | 1 | 4 | 1 | 1 | 4 | 2 | 1 | 0 | 0 | 1 | 1 | 2 | 18 |
| **CCLL** | 2 | 1 | 0 | 2 | 0 | 2 | 0 | 0 | 2 | 1 | 2 | 0 | 12 |
| | **NO OF DISCHARGES IN DISTRICT** | | | | | | | | | | | | **TOTAL** |
| **CSE** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| **LSE** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **CSW** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **SWG** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **LSW** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **CCHL** | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 |
| **CCLL** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

CSO REGULATING CHAMBER MONTHLY BLOCKS CLEARED | SWWPC PLANT REGULATORS | 

| SITE | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CENTRAL SCHUYLKILL EAST SIDE 18 SWWPC UNITS** | | | | | | | | | | | | | |
| S05 | | | | | | | | | | | | | 0 |
| S06 | | | | | | 1 | | | | | | | 1 |
| S07 | | | | | | 1 | | | | | | | 1 |
| S08 | 1 | 1 | 1 | | | | | | 1 | | | 2 | 6 |
| S09 | | | | | | | | | | | | | 0 |
| S10 | | | | | | | | | | | | | 0 |
| S12 | | | 1 | | 2 | | | | | | | | 3 |
| S12A | | | | | | | | | | | | | 0 |
| S13 | 1 | | | | | | | | | | | | 1 |
| S15 | | | | | 1 | | | | | | | | 1 |
| S16 | | | | | | | | | | | | | 0 |
| S17 | | | | | | | | | | | | | 0 |
| S18 | | | | | | | | | | | | 1 | 1 |
| S19 | | | | | 1 | 1 | | | | | | | 2 |
| S21 | | | | | | | | | | | | | 0 |
| S23 | | | | | | | | | | | | | 0 |
| S25 | | | 3 | | | 1 | | | | | | 1 | 5 |
| S26 | | | | | | | | | | | | | 0 |
| **LOWER SCHUYLKILL EAST SIDE 9 SWWPC UNITS** | | | | | | | | | | | | | |
| S31 | | | | | | | | | | | | | 0 |
| S35 | | | | | | | | | | | | | 0 |
| S36 | | | | | | | | | | | | | 0 |
| S36A | | | | | | | 1 | | | | | | 1 |
| S37 | | | 1 | | | | | | | | | | 1 |
| S42 | 1 | | | | 1 | | | | | 1 | | | 3 |
| S42A | | 1 | | | | | | | | 1 | | | 2 |
| S44 | | | | | | | | | | | | | 0 |
| S46 | | 1 | | | | 1 | | | | | | 4 | 6 |
| **CENTRAL SCHUYLKILL WEST 9 SWWPC UNITS** | | | | | | | | | | | | | |
| S01 | | | | | | | | | | | | 1 | 1 |
| S02 | | | | | | | | | | | | | 0 |
| S03 | | | | | | | | | | | | | 0 |
| S04 | | | | | | | | | | | | | 0 |
| S11 | | | | | | | | | | | | | 0 |
| S14 | | | | | | | | | | 1 | | | 1 |
| S20 | | | | | | | | | | | | | 0 |
| S22 | | | | | | 1 | | | | | | | 1 |
| S24 | | | | | | | | | | | | | 0 |
| **SOUTHWEST MAIN GRAVITY 10 SWWPC UNITS** | | | | | | | | | | | | | |
| S27 | | | | | | | | | | | | | 0 |
| S28 | | | | | | | | | | | | | 0 |
| S30 | | | | | | | | | | | | | 0 |
| S34 | | | | | | | | | | | | | 0 |
| S39 | | | | | | | | | | | | | 0 |
| S40 | | | | | | | | | | | | | 0 |
| S43 | | | | | | | | | | | | | 0 |
| S47 | | | | | 1 | | | | | | | | 1 |
| S50 | | 1 | | | 2 | 4 | | | 2 | 2 | 1 | 6 | 18 |
| S51 | | | | | | | | | | | | | 0 |
| **LOWER SCHUYLKILL WEST SIDE 4 SWWPC UNITS** | | | | | | | | | | | | | |
| S32 | | | | | | | | | | | | | 0 |
| S33 | | | | | | | | | | | | | 0 |
| S38 | | 1 | | | | | | | | | | | 1 |
| S45 | | | | | | | | | | | | | 0 |

7.9 AVERAGE BLOCKAGES PER MONT

| SITE | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **COBBS CREEK HIGH LEVEL 24 SWWPC UNITS** | | | | | | | | | | | | | |
| C01 | | | 1 | | | | | | | | | | 1 |
| C02 | 1 | | | | | | | | | | | | 1 |
| C04 | | | | | | | | | | | | | 0 |
| C04A | | | | | | | | | | | | | 0 |
| C05 | | | | | | | | | | | | | 0 |
| C06 | | | | 1 | | | | | | | | | 1 |
| C07 | | | | | 1 | | | | | | | | 1 |
| C09 | | | | | | 1 | | | | 1 | | | 2 |
| C10 | | | | | | | 1 | | | | | | 1 |
| C11 | | 4 | | | 1 | | | | | | | | 5 |
| C12 | | | | | | | | | | | | | 0 |
| C13 | | | | | 1 | | | | | | | | 1 |
| C14 | | | | | | 1 | | | | | | 1 | 2 |
| C15 | | | | | | | | | | | 1 | | 1 |
| C16 | | | | | | | | | | | | | 0 |
| C17 | | | | | | | | | | | | | 0 |
| C18 | | | | | 1 | | | | | | | | 1 |
| C31 | | | | | | | | | | | | | 0 |
| C32 | | | | | | | | | | | | | 0 |
| C33 | | | | | | | | | | | | 1 | 1 |
| C34 | | | | | | | | | | | | | 0 |
| C35 | | | | | | | | | | | | | 0 |
| C36 | | | | | | | | | | | | | 0 |
| C37 | | | | | | | | | | | | | 0 |
| **COBBS CREEK LOW LEVEL 12 SWWPC UNITS** | | | | | | | | | | | | | |
| C19 | | | | | | | | | | | | | 0 |
| C20 | | | | | | 1 | | | | | | | 1 |
| C21 | 1 | 1 | | | | | | | | | | | 2 |
| C22 | | | | | | | | | | | | | 0 |
| C23 | | | | | | | | | | | | | 0 |
| C24 | 1 | | | 1 | | | | | | | 1 | | 3 |
| C25 | | | | | | 1 | | | | | | | 1 |
| C26 | | | | 1 | | | | | 1 | | 1 | | 3 |
| C27 | | | | | | | | | 1 | | | | 1 |
| C28A | | | | | | | | | | | | | 0 |
| C29 | | | | | | | | | | 1 | | | 1 |
| C30 | | | | | | | | | | | | | 0 |
| | | | | | | | | | | | | | TOTAL |
| | 6 | 10 | 7 | 3 | 12 | 14 | 2 | 0 | 5 | 7 | 4 | 17 | 87 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CSE** | 2 | 1 | 5 | 0 | 4 | 4 | 0 | 0 | 1 | 0 | 0 | 4 | 21 |
| **LSE** | 1 | 2 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 2 | 0 | 4 | 13 |
| **CSW** | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| **SWG** | 0 | 1 | 0 | 0 | 3 | 4 | 0 | 0 | 2 | 2 | 1 | 6 | 19 |
| **LSW** | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| **CCHL** | 1 | 4 | 1 | 1 | 4 | 2 | 1 | 0 | 0 | 1 | 1 | 2 | 18 |
| **CCLL** | 2 | 1 | 0 | 2 | 0 | 2 | 0 | 0 | 2 | 1 | 2 | 0 | 12 |

## RELIEF SEWER MONTHLY INSPECTION

| SITE | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| THOMAS RUN RELIEF SEWER | | | | | | | | | | | | | |
| R01 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 18 |
| R02 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 18 |
| R03 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 17 |
| R04 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 16 |
| R05 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 15 |
| R06 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 14 |
| MAIN RELIEF SEWER | | | | | | | | | | | | | |
| R07 | 1 | 1 | 1 | 1 | 1 | 2 | 4 | 1 | 3 | 0 | 1 | 0 | 16 |
| R08 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 3 | 1 | 1 | 0 | 16 |
| R09 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 3 | 1 | 1 | 0 | 15 |
| R10 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 0 | 0 | 13 |
| R11 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 12 |
| R11A | 1 | 0 | 0 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 11 |
| R12 | 1 | 0 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 0 | 0 | 1 | 12 |
| WAKLING RELIEF SEWER | | | | | | | | | | | | | |
| R13 | 1 | 0 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 0 | 0 | 0 | 11 |
| R14 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 9 |
| ROCK RUN STORM FLOOD RELIEF SEWER | | | | | | | | | | | | | |
| R15 | 2 | 0 | 2 | 0 | 1 | 1 | 1 | 2 | 1 | 0 | 0 | 0 | 10 |
| OREGON AVE RELIEF SEWER | | | | | | | | | | | | | |
| R16 | | | | | | | | | | | | | 0 |
| R17 | | | | | | | | | | | | | 0 |
| FRANKFORD HIGH LEVEL RELIEF SEWER | | | | | | | | | | | | | |
| R18 | 1 | 0 | 2 | 1 | 1 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 9 |
| 32ND ST RELIEF SEWER | | | | | | | | | | | | | |
| R19 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| MAIN STREET RELIEF SEWER | | | | | | | | | | | | | |
| R20 | 1 | 0 | 2 | 0 | 1 | 2 | 1 | 2 | 1 | 0 | 0 | 0 | 10 |
| SOMERSET SYSTEM DIVERSION CHAMBER | | | | | | | | | | | | | |
| R21 | | | | | | | | | | | | | 0 |
| TEMPORARY REGULATOR CHAMBER | | | | | | | | | | | | | |
| R22 | | | | | | | | | | | | | |
| R23 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 6 |
| ARCH ST RELIEF SEWER | | | | | | | | | | | | | |
| R24 | 1 | 0 | 0 | 2 | 2 | 3 | 2 | 2 | 1 | 1 | 1 | 2 | 17 |
| 16TH & SNYD | | | | | | | | | | | | | |
| R25 | 1 | 0 | 0 | 0 | 2 | 1 | 2 | 1 | 1 | 0 | 1 | 1 | 10 |
| GRANT & STATE RD. RELIEF | | | | | | | | | | | | | |
| R26 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 7 |
| TOTAL | 21 | 11 | 23 | 24 | 32 | 41 | 38 | 32 | 31 | 12 | 11 | 10 | 286 |
| AVER | 0.8 | 0.4 | 0.9 | 0.9 | 1.2 | 1.5 | 1.4 | 1.2 | 1.1 | 0.4 | 0.4 | 0.4 | 0.9 |

## RELIEF SEWER MONTHLY DISCHARGE

| SITE | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| THOMAS RUN RELIEF SEWER | | | | | | | | | | | | | |
| R01 | | | | | | | | | | | | | 0 |
| R02 | | | | | | | | | | | | | 0 |
| R03 | | | | | | | | | | | | | 0 |
| R04 | | | | | | | | | | | | | 0 |
| R05 | | | | | | | | | | | | | 0 |
| R06 | | | | | | | | | | | | | 0 |
| MAIN RELIEF SEWER | | | | | | | | | | | | | |
| R07 | | | | | | | | | | | | | 0 |
| R08 | | | | | | | | | | | | | 0 |
| R09 | | | | | | | | | | | | | 0 |
| R10 | | | | | | | | | | | | | 0 |
| R11 | | | | | | | | | | | | | 0 |
| R11A | | | | | | | | | | | | | 0 |
| R12 | | | | | | | | | | | | | 0 |
| WAKLING RELIEF SEWER | | | | | | | | | | | | | |
| R13 | | | | | | | | | | | | | 0 |
| R14 | | | | | | | | | | | | | 0 |
| ROCK RUN STORM FLOOD RELIEF SEWER | | | | | | | | | | | | | |
| R15 | | | | | | | | | | | | | 0 |
| OREGON AVE RELIEF SEWER | | | | | | | | | | | | | |
| R16 | | | | | | | | | | | | | 0 |
| R17 | | | | | | | | | | | | | 0 |
| FRANKFORD HIGH LEVEL RELIEF SEWER | | | | | | | | | | | | | |
| R18 | | | | | | | | | | | | | 0 |
| 32ND ST RELIEF SEWER | | | | | | | | | | | | | |
| R19 | | | | | | | | | | | | | 0 |
| MAIN STREET RELIEF SEWER | | | | | | | | | | | | | |
| R20 | | | | | | | | | | | | | 0 |
| SOMERSET SYSTEM DIVERSION CHAMBER | | | | | | | | | | | | | |
| R21 | | | | | | | | | | | | | 0 |
| TEMPORARY REGULATOR CHAMBER | | | | | | | | | | | | | |
| R22 | | | | | | | | | | | | | 0 |
| R23 | | | | | | | | | | | | | 0 |
| ARCH ST RELIEF SEWER | | | | | | | | | | | | | |
| R24 | | | | | | | | | | | | | 0 |
| 16TH & SNYDER | | | | | | | | | | | | | |
| R25 | | | | | | | | | | | | | 0 |
| GRANT & STATE RD. RELIEF | | | | | | | | | | | | | |
| R26 | | | | | | | | | | | | | 0 |
| TOTAL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| UNITS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

## RELIEF SEWER MONTHLY BLOCKS CLEARED



| SITE | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| THOMAS RUN RELIEF SEWER | | | | | | | | | | | | | |
| R01 | | | | | | | | | | | | | 0 |
| R02 | | | | | | | | | | | | | 0 |
| R03 | | | | | | | | | | | | | 0 |
| R04 | | | | | | | | | | | | | 0 |
| R05 | | | | | | | | | | | | | 0 |
| R06 | | | | | | | | | | | | | 0 |
| MAIN RELIEF SEWER | | | | | | | | | | | | | |
| R07 | | | | | | | | | | | | | 0 |
| R08 | | | | | | | | | | | | | 0 |
| R09 | | | | | | | | | | | | | 0 |
| R10 | | | | | | | | | | | | | 0 |
| R11 | | | | | | | | | | | | | 0 |
| R11A | | | | | | | | | | | | | 0 |
| R12 | | | | | | | | | | | | | 0 |
| WAKLING RELIEF SEWER | | | | | | | | | | | | | |
| R13 | | | | | | | | | | | | | 0 |
| R14 | | | | | | | | | | | | | 0 |
| ROCK RUN STORM FLOOD RELIEF SEWER | | | | | | | | | | | | | |
| R15 | | | | | | | | | | | | | 0 |
| OREGON AVE RELIEF SEWER | | | | | | | | | | | | | |
| R16 | | | | | | | | | | | | | 0 |
| R17 | | | | | | | | | | | | | 0 |
| FRANKFORD HIGH LEVEL RELIEF SEWER | | | | | | | | | | | | | |
| R18 | | | | | | | | | | | | | 0 |
| 32ND ST RELIEF SEWER | | | | | | | | | | | | | |
| R19 | | | | | | | | | | | | | 0 |
| MAIN STREET RELIEF SEWER | | | | | | | | | | | | | |
| R20 | | | | | | | | | | | | | 0 |
| SOMERSET SYSTEM DIVERSION CHAMBER | | | | | | | | | | | | | |
| R21 | | | | | | | | | | | | | 0 |
| TEMPORARY REGULATOR CHAMBER | | | | | | | | | | | | | |
| R22 | | | | | | | | | | | | | 0 |
| R23 | | | | | | | | | | | | | 0 |
| ARCH ST RELIEF SEWER | | | | | | | | | | | | | |
| R24 | | | | | | | | | | | | | 0 |
| 16TH & SNYDER | | | | | | | | | | | | | |
| R25 | | | | | | | | | | | | | 0 |
| GRANT & STATE RD. RELIEF | | | | | | | | | | | | | |
| R26 | | | | | | | | | | | | | 0 |
| TOTAL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AVER | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

## MISCELLANEOUS SITE INSPECTIONS

| SITE | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P-090-02-PFD-01 SANDY RUN CREEK DIVERSION REGULATOR | | | | | | | | | | | | | |
| | 6 | 3 | 7 | 7 | 5 | 8 | 7 | 5 | 5 | 9 | 7 | 9 | 78 |
| T-088-01-CFD-01 PLYMOUTH ST. WEST OF PITTVILLE | | | | | | | | | | | | | |
| | 2 | 2 | 3 | 3 | 2 | 4 | 4 | 2 | 4 | 3 | 4 | 2 | 35 |
| T-088-01-CFD-02 PITTVILLE ST. SOUTH OF PLYMOUTH ST. | | | | | | | | | | | | | |
| | 2 | 2 | 3 | 3 | 2 | 3 | 4 | 2 | 3 | 3 | 4 | 2 | 33 |
| T-088-01-CFD-03 ELSTON ST. E. OF BOUVIER ST. | | | | | | | | | | | | | |
| | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 4 | 3 | 4 | 2 | 34 |
| T-088-01-CFD-04 ASHLEY ST. W. OF BOUVIER ST. | | | | | | | | | | | | | |
| | 1 | 1 | 3 | 3 | 2 | 3 | 5 | 3 | 3 | 4 | 5 | 2 | 35 |
| T-088-01-CFD-05 CHELTENHAM AVE. E. OF 19TH ST. | | | | | | | | | | | | | |
| | 1 | 1 | 3 | 2 | 2 | 4 | 3 | 2 | 3 | 2 | 3 | 2 | 28 |
| T-088-01-CFD-06 VERBENA ST. S. OF CHELTENHAM AVE. | | | | | | | | | | | | | |
| | 2 | 3 | 4 | 2 | 3 | 4 | 2 | 3 | 2 | 3 | 3 | 2 | 33 |
| W-060-01-MFD-01 JANNETTE ST. WEST OF MONASTERY AVE. | | | | | | | | | | | | | |
| | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 25 |
| W-060-01-MFD-02 GREEN LANE NORTH OF LAWNTON ST. | | | | | | | | | | | | | |
| | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 25 |
| T-089-04-CFD-01 FRANKLIN & HASBROOK | | | | | | | | | | | | | |
| | 5 | 3 | 7 | 7 | 5 | 8 | 11 | 6 | 5 | 10 | 8 | 11 | 86 |
| T-088-01-CFD-07 CHELTENHAM E. OF 7 TH ST. | | | | | | | | | | | | | |
| | 5 | 2 | 7 | 7 | 5 | 5 | 9 | 6 | 7 | 7 | 7 | 10 | 77 |
| T-088-01-CFD-08 7 TH ST. S. OF CHELTENHAM | | | | | | | | | | | | | |
| | 4 | 2 | 7 | 5 | 5 | 5 | 9 | 5 | 8 | 6 | 6 | 6 | 68 |
| Totals | 34 | 25 | 51 | 46 | 39 | 51 | 61 | 41 | 48 | 54 | 55 | 52 | 557 |

## MISCELLANEOUS SITE DISCHARGES

| SITE | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P-090-02-PFD-01 SANDY RUN CREEK DIVERSION REGULATOR | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 0 |
| T-088-01-CFD-01 PLYMOUTH ST. WEST OF PITTVILLE | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 0 |
| T-088-01-CFD-02 PITTVILLE ST. SOUTH OF PLYMOUTH ST. | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 0 |
| T-088-01-CFD-03 ELSTON ST. E. OF BOUVIER ST. | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 0 |
| T-088-01-CFD-04 ASHLEY ST. W. OF BOUVIER ST. | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 0 |
| T-088-01-CFD-05 CHELTENHAM AVE. E. OF 19TH ST. | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 0 |
| T-088-01-CFD-06 VERBENA ST. S. OF CHELTENHAM AVE. | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 0 |
| W-060-01-MFD-01 JANNETTE ST. WEST OF MONASTERY AVE. | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 0 |
| W-060-01-MFD-02 GREEN LANE NORTH OF LAWNTON ST. | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 0 |
| T-089-04-CFD-01 FRANKLIN & HASBROOK | | | | | | | | | | | | | |
| | | | | | | 1 | 1 | | 1 | | 1 | 1 | 5 |
| T-088-01-CFD-07 CHELTENHAM E. OF 7 TH ST. | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 0 |
| T-088-01-CFD-08 7 TH ST. S. OF CHELTENHAM | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 0 |
| Totals | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 5 |

## MISCELLANEOUS SITE BLOCKAGES CLEARED

| SITE | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P-090-02-PFD-01 SANDY RUN CREEK DIVERSION REGULATOR | | | | | | | | | | | | | |
| | 1 | | 1 | 1 | | | | | | 1 | | | 4 |
| T-088-01-CFD-01 PLYMOUTH ST. WEST OF PITTVILLE | | | | | | | | | | | | | |
| | | 2 | 1 | 1 | | | | | | | | 1 | 5 |
| T-088-01-CFD-02 PITTVILLE ST. SOUTH OF PLYMOUTH ST. | | | | | | | | | | | | | |
| | 1 | | | 1 | | | 1 | 1 | | | | | 4 |
| T-088-01-CFD-03 ELSTON ST. E. OF BOUVIER ST. | | | | | | | | | | | | | |
| | | | 1 | | | | | | | | | | 1 |
| T-088-01-CFD-04 ASHLEY ST. W. OF BOUVIER ST. | | | | | | | | | | | | | |
| | 1 | | 1 | 1 | | | | | 2 | 1 | | | 6 |
| T-088-01-CFD-05 CHELTENHAM AVE. E. OF 19TH ST. | | | | | | | | | | | | | |
| | | | | | 1 | | 1 | | | | | | 2 |
| T-088-01-CFD-06 VERBENA ST. S. OF CHELTENHAM AVE. | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 0 |
| W-060-01-MFD-01 JANNETTE ST. WEST OF MONASTERY AVE. | | | | | | | | | | | | | |
| | | 2 | | | | | | | | | | | 2 |
| W-060-01-MFD-02 GREEN LANE NORTH OF LAWNTON ST. | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 0 |
| T-089-04-CFD-01 FRANKLIN & HASBROOK | | | | | | | | | | | | | |
| | | 1 | 2 | 1 | | | 4 | 1 | | 1 | 2 | 2 | 14 |
| T-088-01-CFD-07 CHELTENHAM E. OF 7 TH ST. | | | | | | | | | | | | | |
| | 1 | | 2 | 3 | 1 | | 3 | 2 | 1 | 1 | 1 | 1 | 16 |
| T-088-01-CFD-08 7 TH ST. S. OF CHELTENHAM | | | | | | | | | | | | | |
| | 2 | | 1 | | | 1 | 2 | | | 2 | 1 | 1 | 10 |
| Totals | 6 | 5 | 9 | 8 | 2 | 1 | 11 | 4 | 3 | 6 | 4 | 5 | 64 |

# Appendix B

# FY 2021 Annual CSO Miscellaneous Site & Maintenance Reports

## Chapter 94 Year End Report- July 2020 through June 2021

### SOMERSET GRIT D-25 CHAMBER & DWO CLEANINGS

| DATE | TONS |
|---|---|
| 9/21/2020 | 3.69 |
| 9/22/2020 | 3.21 |
| 9/23/2020 | 3.51 |
| 9/23/2020 | 2.25 |
| 9/28/2020 | 4.42 |
| 9/28/2020 | 5.78 |
| 9/29/2020 | 3.11 |
| 10/1/2020 | 2.22 |
| 10/2/2020 | 1.78 |
| 3/9/2021 | 6.41 |
| 3/11/2021 | 8.29 |
| 3/15/2021 | 7.26 |
| 3/16/2021 | 7.51 |
| 3/17/2021 | 7.89 |
| 3/18/2021 | 7.16 |
| 3/19/2021 | 5.17 |
| 4/20/2021 | 7.19 |
| 4/21/2021 | 4.49 |
| 4/22/2021 | 2.33 |
| 4/23/2021 | 3.37 |
| 4/26/2021 | 5.66 |

### CSPS SIPHON GRIT POCKET CLEANINGS

| DATE | CU. YARDS |
|---|---|

SIPHON NOT CLEANED DUE TO CONSTRUCTION PROJECT, VENDOR AVAILABILITY AND

### CSO B&B REGULATOR MAINTENANCE

| DATE | SITE | DATE | SITE |
|---|---|---|---|
| 7/14/2020 | S-38 | 1/30/2021 | D-04 |
| 8/24/2020 | D-72 | 1/30/2021 | D-38 |
| 8/24/2020 | D-70 | 1/30/2021 | S-05 |
| 8/24/2020 | D-68 | 1/30/2021 | S-06 |
| 8/24/2020 | D-64 | 1/30/2021 | S-07 |
| 8/24/2020 | D-63 | 2/6/2021 | D-38 |
| 9/18/2020 | S-50 | 2/6/2021 | D-47 |
| 9/18/2020 | D-37 | 2/6/2021 | D-72 |
| 9/18/2020 | D-38 | 2/6/2021 | D-73 |
| 9/24/2020 | S-50 | 2/6/2021 | F-14 |
| 9/24/2020 | D-39 | 2/6/2021 | S-45 |
| 11/21/2020 | D-39 | 2/6/2021 | S-2 |
| 11/21/2020 | D-47 | 4/6/2021 | D-48 |
| 11/21/2020 | D-48 | 4/6/2021 | D-11 |
| 11/28/2020 | D-49 | 4/6/2021 | D-15 |
| 11/28/2020 | D-50 | 4/6/2021 | D-37 |
| 11/28/2020 | D-51 | 4/6/2021 | D-38 |
| 11/28/2020 | S-05 | 4/6/2021 | D-39 |
| 11/28/2020 | S-06 | 4/6/2021 | D-46 |
| 11/28/2020 | S-07 | 4/6/2021 | D-47 |
| 12/5/2020 | D-64 | 4/6/2021 | D-49 |
| 12/5/2020 | D-65 | 4/6/2021 | D-51 |
| 12/5/2020 | D-66 | 4/6/2021 | D-52 |
| 12/5/2020 | S-08 | 4/6/2021 | D-54 |
| 12/5/2020 | S-16 | 4/6/2021 | D-61 |
| 12/5/2020 | S-18 | 4/6/2021 | D-63 |
| 12/19/2020 | D-67 | 4/6/2021 | D-64 |
| 12/19/2020 | D-70 | 4/7/2021 | S-6 |
| 12/19/2020 | D-71 | 4/7/2021 | F-13 |
| 12/19/2020 | S-14 | 4/7/2021 | S-22 |
| 12/19/2020 | S-22 | 4/7/2021 | S-23 |
| 12/19/2020 | S-24 | 4/7/2021 | D-66 |
| 12/19/2020 | S-43 | 4/7/2021 | D-67 |
| 12/19/2020 | S-47 | 4/7/2021 | D-70 |
| 12/19/2020 | S-50 | 4/9/2021 | S-42 |
| 1/23/2021 | D-52 | 4/9/2021 | S-43 |
| 1/23/2021 | D-61 | 4/9/2021 | D-50 |
| 1/23/2021 | D-66 | 4/14/2021 | S-42A |
| 1/23/2021 | D-69 | 6/2/2021 | S-50 |
| 1/23/2021 | S-36A | 6/9/2021 | S-50 |
| 1/23/2021 | S-38 | 6/10/2021 | S-50 |
| 1/23/2021 | S-42 | 6/15/2021 | S-50 |
| 1/23/2021 | S-42A | 6/23/2021 | S-50 |

### CSO TIDE GATE MAINTENANCE

| DATE | SITE | DATE | SITE | DATE | SITE |
|---|---|---|---|---|---|
| 6/5/2020 | Rock Run | 11/4/2020 | T-14 | 2/22/2021 | F-25 |
| 6/8/2020 | Fish Ladder | 11/5/2020 | D-11 | 2/22/2021 | D-15 |
| 6/9/2020 | T-14 | 11/5/2020 | D-15 | 2/22/2021 | Rock Run |
| 6/15/2020 | D-2 | 11/5/2020 | Rock Run | 2/24/2021 | D-11 |
| 6/15/2020 | D-3 | 11/6/2020 | D-2 | 2/24/2021 | D-9 |
| 6/15/2020 | D-11 | 11/6/2020 | D-3 | 2/24/2021 | Fish Ladder |
| 6/17/2020 | D-5 | 11/9/2020 | D-5 | 2/25/2021 | D-5 |
| 6/17/2020 | D-9 | 11/9/2020 | D-9 | 2/25/2021 | D-7 |
| 6/18/2020 | F-25 | 11/18/2020 | D-7 | 3/3/2021 | Fish Ladder |
| 6/18/2020 | D-15 | 11/18/2020 | F-25 | 3/3/2021 | D-5 |
| 7/1/2020 | Fish Ladder | 12/4/2020 | D-7 | 3/3/2021 | Rock Run |
| 7/2/2020 | D-5 | 12/8/2020 | D-7 | 3/3/2021 | D-9 |
| 7/2/2020 | D-7 | 12/9/2020 | Rock Run | 3/5/2021 | D-2 |
| 7/2/2020 | Rock Run | 12/10/2020 | F-25 | 3/5/2021 | D-3 |
| 7/8/2020 | D-2 | 12/10/2020 | D-9 | 3/11/2021 | D-7 |
| 7/8/2020 | D-3 | 12/11/2020 | D-11 | 3/11/2021 | T-14 |
| 7/8/2020 | Venice | 12/14/2020 | D-2 | 3/12/2021 | D-15 |
| 7/9/2020 | D-9 | 12/14/2020 | D-3 | 3/12/2021 | D-11 |
| 7/9/2020 | D-11 | 12/21/2020 | D-5 | 3/13/2021 | D-7 |
| 7/9/2020 | D-15 | 12/23/2020 | T-14 | 3/15/2021 | F-25 |
| 7/10/2020 | F-25 | 12/29/2020 | D-15 | 4/1/2021 | D-7 |
| 7/13/2020 | T-14 | 8/18/2020 | D-25 | 4/5/2021 | D-5 |
| 8/11/2020 | D-11 | 9/9/2020 | D-25 | 4/8/2021 | Venice |
| 8/13/2020 | D-2 | 12/23/2020 | S-42 | 4/9/2021 | D-15 |
| 8/13/2020 | D-3 | 1/30/2021 | D-37 | 4/9/2021 | D-11 |
| 8/13/2020 | D-7 | 7/27/2020 | S-42 | 4/14/2021 | D-9 |
| 8/13/2020 | D-9 | 8/5/2020 | S-42 | 4/15/2021 | D-2 |
| 8/14/2020 | D-15 | 8/5/2020 | S-42A | 4/15/2021 | D-3 |
| 8/14/2020 | F-25 | 8/18/2020 | D-48 | 4/15/2021 | D-5 |
| 8/14/2020 | D-5 | 8/18/2020 | D-24 | 4/24/2021 | D-7 |
| 8/17/2020 | Fish Ladder | 9/2/2020 | D-25 | 4/26/2021 | T-14 |
| 8/20/2020 | Rock Run | 9/2/2020 | D-24 | 4/26/2021 | F-25 |
| 8/20/2020 | T-14 | 12/16/2020 | S-50 | 4/28/2021 | Rock Run |
| 9/2/2020 | D-2 | 12/29/2020 | S-42 | 5/6/2021 | D-15 |
| 9/2/2020 | D-11 | 12/30/2020 | S-42 | 5/7/2021 | D-15 |
| 9/3/2020 | D-15 | 1/7/2021 | D-48 | 5/12/2021 | D-7 |
| 9/4/2020 | T-14 | 1/8/2021 | S-42 | 5/12/2021 | Rock Run |
| 9/9/2020 | F-25 | 3/22/2021 | S-42A | 5/17/2021 | D-5 |
| 9/9/2020 | D-25 | 3/22/2021 | S-42A | 5/17/2021 | D-9 |
| 9/10/2020 | Fish Ladder | 5/4/2021 | D-51 | 5/20/2021 | T-14 |
| 9/11/2020 | Rock Run | 5/11/2021 | D-25 | 5/20/2021 | D-2 |
| 9/16/2020 | D-3 | 6/1/2021 | S-42 | 5/20/2021 | D-3 |
| 9/16/2020 | D-5 | 6/2/2021 | S-50 | 5/20/2021 | F-25 |
| 9/17/2020 | D-7 | 6/2/2021 | S-42 | 6/3/2021 | D-15 |
| 9/17/2020 | D-9 | 6/15/2021 | D-24 | 6/3/2021 | D-11 |
| 9/22/2020 | D-24 | 1/4/2021 | D-3 | 6/4/2021 | F-25 |
| 10/5/2020 | Fish Ladder | 1/4/2021 | D-3 | 6/4/2021 | D-2 |
| 10/7/2020 | T-14 | 1/7/2021 | D-5 | 6/7/2021 | D-9 |
| 10/7/2020 | D-15 | 1/8/2021 | D-9 | 6/9/2021 | Rock Run |
| 10/14/2020 | D-2 | 1/8/2021 | D-11 | 6/9/2021 | T-14 |
| 10/14/2020 | D-3 | 1/11/2021 | D-15 | 6/10/2021 | D-5 |
| 10/15/2020 | D-5 | 1/11/2021 | F-25 | 6/10/2021 | D-3 |
| 10/15/2020 | D-7 | 1/13/2021 | D-2 | 6/11/2021 | D-7 |
| 10/19/2020 | D-9 | 1/14/2021 | T-14 | 6/24/2021 | Fish Ladder |
| 10/19/2020 | D-11 | 2/5/2021 | D-2 | 6/25/2021 | S-46 |
| 10/22/2020 | F-25 | 2/5/2021 | D-3 | | |
| 10/26/2020 | Rock Run | 2/16/2021 | T-14 | | |

### COMPUTER CONTROL CHAMBER PREVENTATIVE MAINTENANCE

| DATE | SITE | DATE | SITE | DATE | SITE |
|---|---|---|---|---|---|
| 6/5/2020 | D-7 | 10/15/2020 | D-5 | 2/25/2021 | D-7 |
| 6/5/2020 | Rock Run | 10/15/2020 | D-7 | 3/3/2021 | Fish Ladder |
| 6/8/2020 | Fish Ladder | 10/16/2020 | Venice | 3/3/2021 | D-5 |
| 6/8/2020 | Venice | 10/19/2020 | D-9 | 3/3/2021 | Rock Run |
| 6/9/2020 | T-14 | 10/19/2020 | D-11 | 3/3/2021 | D-9 |
| 6/15/2020 | D-2 | 10/22/2020 | F-25 | 3/5/2021 | D-2 |
| 6/15/2020 | D-3 | 10/26/2020 | Rock Run | 3/5/2021 | D-3 |
| 6/15/2020 | D-11 | 10/28/2020 | State Road | 3/8/2021 | Venice |
| 6/17/2020 | D-5 | 11/4/2020 | T-14 | 3/10/2021 | State Road |
| 6/17/2020 | D-9 | 11/5/2020 | D-11 | 3/11/2021 | T-14 |
| 6/17/2020 | State Road | 11/5/2020 | D-15 | 3/12/2021 | D-15 |
| 6/18/2020 | F-25 | 11/5/2020 | Rock Run | 3/12/2021 | D-11 |
| 6/18/2020 | D-15 | 11/6/2020 | D-2 | 3/13/2021 | D-7 |
| 7/1/2020 | Fish Ladder | 11/6/2020 | D-3 | 3/15/2021 | F-25 |
| 7/2/2020 | D-5 | 11/9/2020 | D-5 | 4/5/2021 | D-5 |
| 7/2/2020 | D-7 | 11/9/2020 | D-9 | 4/8/2021 | Venice |
| 7/2/2020 | Rock Run | 11/16/2020 | Venice | 4/9/2021 | D-15 |
| 7/8/2020 | D-2 | 11/18/2020 | State Road | 4/9/2021 | D-11 |
| 7/8/2020 | D-3 | 11/18/2020 | D-7 | 4/14/2021 | D-7 |
| 7/8/2020 | Venice | 11/18/2020 | F-25 | 4/14/2021 | D-9 |
| 7/9/2020 | D-9 | 12/8/2020 | D-7 | 4/15/2021 | D-2 |
| 7/9/2020 | D-11 | 12/9/2020 | Rock Run | 4/15/2021 | D-3 |
| 7/9/2020 | D-15 | 12/10/2020 | F-25 | 4/26/2021 | T-14 |
| 7/10/2020 | F-25 | 12/10/2020 | D-9 | 4/26/2021 | State Road |
| 7/13/2020 | T-14 | 12/11/2020 | D-11 | 4/26/2021 | F-25 |
| 7/22/2020 | State Road | 12/14/2020 | D-2 | 4/28/2021 | Rock Run |
| 8/7/2020 | Venice | 12/14/2020 | D-3 | 5/6/2021 | D-15 |
| 8/11/2020 | D-11 | 12/21/2020 | D-5 | 5/10/2021 | Venice |
| 8/13/2020 | D-2 | 12/23/2020 | Venice | 5/12/2021 | Rock Run |
| 8/13/2020 | D-3 | 12/23/2020 | T-14 | 5/14/2021 | D-7 |
| 8/13/2020 | D-7 | 12/24/2020 | State Road | 5/14/2021 | D-11 |
| 8/13/2020 | D-9 | 12/29/2020 | D-15 | 5/17/2021 | D-5 |
| 8/14/2020 | D-15 | 1/4/2021 | D-3 | 5/17/2021 | D-9 |
| 8/14/2020 | F-25 | 1/4/2021 | Venice | 5/20/2021 | T-14 |
| 8/14/2020 | D-5 | 1/7/2021 | D-5 | 5/20/2021 | D-2 |
| 8/17/2020 | Fish Ladder | 1/7/2021 | D-7 | 5/20/2021 | D-3 |
| 8/20/2020 | Rock Run | 1/8/2021 | D-9 | 5/20/2021 | F-25 |
| 8/20/2020 | T-14 | 1/8/2021 | D-11 | 5/21/2021 | State Road |
| 8/21/2020 | State Road | 1/11/2021 | D-15 | 6/2/2021 | Venice |
| 9/2/2020 | D-2 | 1/11/2021 | F-25 | 6/3/2021 | D-15 |
| 9/2/2020 | D-11 | 1/11/2021 | State Road | 6/3/2021 | D-11 |
| 9/3/2020 | State Road | 1/13/2021 | D-2 | 6/4/2021 | F-25 |
| 9/3/2020 | D-15 | 1/14/2021 | Rock Run | 6/4/2021 | D-2 |
| 9/4/2020 | T-14 | 1/14/2021 | T-14 | 6/7/2021 | D-7 |
| 9/9/2020 | F-25 | 1/15/2021 | Fish Ladder | 6/7/2021 | D-9 |
| 9/10/2020 | Fish Ladder | 2/4/2021 | Venice | 6/9/2021 | Rock Run |
| 9/11/2020 | Rock Run | 2/5/2021 | D-2 | 6/9/2021 | T-14 |
| 9/16/2020 | Venice | 2/5/2021 | D-3 | 6/10/2021 | D-5 |
| 9/16/2020 | D-3 | 2/12/2021 | State Road | 6/10/2021 | D-3 |
| 9/16/2020 | D-5 | 2/16/2021 | T-14 | 6/16/2021 | State Road |
| 9/17/2020 | D-7 | 2/22/2021 | F-25 | 6/24/2021 | Fish Ladder |
| 9/17/2020 | D-9 | 2/22/2021 | D-15 | | |
| 10/5/2020 | Fish Ladder | 2/22/2021 | Rock Run | | |
| 10/7/2020 | T-14 | 2/24/2021 | D-11 | | |
| 10/7/2020 | D-15 | 2/24/2021 | D-9 | | |
| 10/14/2020 | D-2 | 2/24/2021 | Fish Ladder | | |
| 10/14/2020 | D-3 | 2/25/2021 | D-5 | | |

### CSO OUTFALL - DEBRIS GRILL MAINTENANCE

| DATE | SITE | DATE | SITE |
|---|---|---|---|
| 6/16/2020 | Linden Outfall | 1/8/2021 | T-13 |
| 6/18/2020 | D-3 | 1/8/2021 | T-6 |
| 6/18/2020 | D-5 | 1/8/2021 | T-8 |
| 6/18/2020 | D-11 | 1/8/2021 | R-13/14 |
| 6/18/2020 | R-13/14 | 1/12/2021 | T-13 |
| 6/18/2020 | D-39 | 1/12/2021 | T-6 |
| 6/18/2020 | D-45 | 1/12/2021 | R-13/14 |
| 6/18/2020 | D-46 | 1/12/2021 | T-8 |
| 6/18/2020 | D-67 | 2/26/2021 | D-63 |
| 6/22/2020 | D-7 | 2/26/2021 | D-62 |
| 6/22/2020 | D-2 | 2/26/2021 | D-61 |
| 6/23/2020 | D-9 | 2/26/2021 | F-25 |
| 6/23/2020 | D-61 | 2/26/2021 | D-65 |
| 6/23/2020 | D-62 | 4/28/2021 | Sandy Run |
| 6/23/2020 | D-63 | 5/6/2021 | D-15 |
| 6/23/2020 | D-64 | 5/11/2021 | C-4 |
| 6/23/2020 | D-65 | 5/12/2021 | D-7 |
| 6/23/2020 | D-66 | 5/14/2021 | D-7 |
| 6/23/2020 | D-69 | 5/14/2021 | D-11 |
| 6/23/2020 | D-70 | 5/17/2021 | D-5 |
| 7/14/2020 | D-25 | 5/17/2021 | D-9 |
| 8/21/2020 | R-13/14 | 5/26/2021 | D-7 |
| 8/26/2020 | C-11 | 6/3/2021 | D-15 |
| 8/28/2020 | C-11 | 6/3/2021 | D-11 |
| 9/21/2020 | D-61 | 6/4/2021 | F-25 |
| 9/21/2020 | D-62 | 6/4/2021 | D-2 |
| 9/21/2020 | D-63 | 6/7/2021 | D-7 |
| 9/21/2020 | D-64 | 6/7/2021 | D-9 |
| 9/21/2020 | D-65 | 6/9/2021 | Rock Run |
| 9/22/2020 | Sandy Run | 6/9/2021 | T-14 |
| 9/24/2020 | D-11 | 6/10/2021 | D-5 |
| 9/24/2020 | R-13/14 | 6/10/2021 | D-3 |
| 9/24/2020 | Linden Outfa | | |
| 9/24/2020 | D-25 | | |
| 9/24/2020 | D-66 | | |
| 9/24/2020 | D-69 | | |
| 9/24/2020 | D-70 | | |
| 9/30//2020 | Sandy Run | | |
| 10/23//2020 | T-12 | | |
| 10/24//2020 | T-13 | | |
| 11/6//2020 | T-13 | | |
| 11/9//2020 | T-13 | | |
| 12/3/2020 | F-25 | | |
| 12/10/2020 | Linden Outfa | | |
| 12/10/2020 | D-2 | | |
| 12/10/2020 | D-3 | | |
| 12/10/2020 | D-5 | | |
| 12/10/2020 | D-7 | | |
| 12/10/2020 | D-9 | | |
| 12/10/2020 | D-11 | | |
| 12/10/2020 | D-25 | | |
| 12/10/2020 | D-39 | | |
| 12/10/2020 | D-45 | | |
| 12/10/2020 | D-46 | | |
| 12/10/2020 | D-68 | | |
| 1/4/2021 | D-3 | | |
| 1/2/2021 | T-13 | | |

# Appendix D – NPDES Annual CSO Report Status FY21

# APPENDIX D – NPDES ANNUAL CSO STATUS REPORT FY 2021

Page

**Table 1 - Listing of all CSO permitted outfalls**

| Point Source # | Outfall Latitude | Outfall Longitude | Regulator Location | Discharges to: | Interceptor | Outfall Name |
|---|---|---|---|---|---|---|
| **NPDES Permit #0026689 - Northeast** | | | | | | |
| 2 | 39d 58m 50s | 75d 4m 58s | Castor Ave. and Balfour St. | Delaware River | Somerset | D_17 |
| 3 | 39d 58m 45s | 75d 5m 6s | Venango St. NW of Casper St. | Delaware River | Somerset | D_18 |
| 4 | 39d 58m 41s | 75d 5m 15s | Tioga St. NW of Casper St. | Delaware River | Somerset | D_19 |
| 5 | 39d 58m 43s | 75d 5m 28s | Ontario St. NW of Casper St. | Delaware River | Somerset | D_20 |
| 6 | 39d 58m 44s | 75d 5m 41s | Westmoreland St. NW of Balfour St. | Delaware River | Somerset | D_21 |
| 7 | 39d 58m 42s | 75d 5m 53s | Allegheny Ave. SE of Bath St. | Delaware River | Somerset | D_22 |
| 8 | 39d 58m 38s | 75d 6m 12s | Indiana Ave. SE of Allen St. | Delaware River | Somerset | D_23 |
| 10 | 39d 58m 38s | 75d 6m 28s | Cambria St. E of Melvale St. | Delaware River | Somerset | D_25 |
| 11 | 40d 1m 18s | 75d 1m 44s | Cottman St. SE of Milnor St. | Delaware River | Upper Delaware Low Level | D_02 |
| 12 | 40d 1m 14s | 75d 2m 0s | Princeton Ave SE of Milnor St. | Delaware River | Upper Delaware Low Level | D_03 |
| 13 | 40d 1m 8s | 75d 2m 13s | Disston St. SE of Wissinoming St. | Delaware River | Upper Delaware Low Level | D_04 |
| 14 | 40d 0m 58s | 75d 2m 34s | Magee St. SE of Milnor St. | Delaware River | Upper Delaware Low Level | D_05 |
| 15 | 40d 0m 53s | 75d 2m 46s | Levick St. SE of Milnor St. | Delaware River | Upper Delaware Low Level | D_06 |
| 16 | 40d 0m 44s | 75d 3m 5s | Lardner St. SE of Milnor St. | Delaware River | Upper Delaware Low Level | D_07 |
| 17 | 40d 0m 38s | 75d 3m 13s | Comly St. SE of Milnor St. | Delaware River | Upper Delaware Low Level | D_08 |
| 18 | 40d 0m 34s | 75d 3m 18s | Dark Run La and Milnor St. | Delaware River | Upper Delaware Low Level | D_09 |
| 19 | 40d 0m 21s | 75d 3m 28s | Sanger St. SE of Milnor St. | Delaware River | Upper Delaware Low Level | D_11 |
| 20 | 40d 0m 2s | 75d 3m 43s | Bridge St. Se of Garden St. | Delaware River | Upper Delaware Low Level | D_12 |

| Point Source # | Outfall Latitude | Outfall Longitude | Regulator Location | Discharges to: | Interceptor | Outfall Name |
|---|---|---|---|---|---|---|
| 21 | 39d 59m 53s | 75d 3m 47s | Kirkbride St. and Delaware Ave. | Delaware River | Upper Delaware Low Level | D_13 |
| 22 | 39d 59m 24s | 75d 4m 4s | Orthodox St. and Delaware Ave. | Delaware River | Upper Delaware Low Level | D_15 |
| 23 | 40d 2m 36s | 75d 1m 15s | Frankford Avenue & Ashburner Street | Pennypack Creek | Pennypack | P_01 |
| 24 | 40d 2m 36s | 75d 1m 16s | Frankford Avenue & Holmesburg St. | Pennypack Creek | Pennypack | P_02 |
| 25 | 40d 2m 13s | 75d 1m 19s | Torresdale Ave. NW of Pennypack Ck. | Pennypack Creek | Pennypack | P_03 |
| 26 | 40d 2m 23s | 75d 1m 21s | Cottage Avenue & Holmesburg Avenue | Pennypack Creek | Pennypack | P_04 |
| 27 | 40d 2m 2s | 75d 1m 21s | Holmesburg Ave SE of Hegerman St | Pennypack Creek | Pennypack | P_05 |
| 28 | 40d 4m 34s | 75d 9m 44s | Williams Avenue SE of Sedgewick | Tacony Creek | Frankford High Level | T_01 |
| 29 | 40d 2m 28s | 75d 6m 56s | Complost Ave West of Tacony Creek | Tacony Creek | Frankford High Level | T_03 |
| 30 | 40d 2m 11s | 75d 6m 48s | Rising Sun Ave East of Tacony Creek | Tacony Creek | Frankford High Level | T_04 |
| 31 | 40d 2m 9s | 75d 6m 48s | Rising Sun Ave West of Tacony Creek | Tacony Creek | Frankford High Level | T_05 |
| 32 | 40d 2m 3s | 75d 6m 41s | Bingham Street East of Tacony Creek | Tacony Creek | Frankford High Level | T_06 |
| 33 | 40d 1m 51s | 75d 6m 43s | Tabor Road West of Tacony Creek | Tacony Creek | Frankford High Level | T_07 |
| 34 | 40d 1m 42s | 75d 6m 47s | Ashdale Street West of Tacony Creek | Tacony Creek | Frankford High Level | T_08 |
| 35 | 40d 1m 37s | 75d 6m 48s | Roosevelt Blvd. West of Tacony Creek | Tacony Creek | Frankford High Level | T_09 |
| 36 | 40d 1m 37s | 75d 6m 47s | Roosevelt Blvd. East of Tacony Creek | Tacony Creek | Frankford High Level | T_10 |
| 37 | 40d 1m 29s | 75d 6m 43s | Ruscomb Street East of Tacony Creek | Tacony Creek | Frankford High Level | T_11 |

| Point Source # | Outfall Latitude | Outfall Longitude | Regulator Location | Discharges to: | Interceptor | Outfall Name |
|---|---|---|---|---|---|---|
| 38 | 40d 1m 23s | 75d 6m 41s | Whitaker Avenue East of Tacony Creek | Tacony Creek | Frankford High Level | T_12 |
| 39 | 40d 1m 22s | 75d 6m 42s | Whitaker Avenue West of Tacony Ck | Tacony Creek | Frankford High Level | T_13 |
| 40 | 40d 0m 59s | 75d 6m 28s | I Street & Ramona Ave. | Tacony Creek | Frankford High Level | T_14 |
| 41 | 40d 0m 57s | 75d 6m 20s | J Street & Juniata Park | Tacony Creek | Frankford High Level | T_15 |
| 42 | 40d 0m 57s | 75d 5m 51s | Castor Avenue at Unity Street Circle | Frankford Creek | Upper Frankford Low Level | F_03 |
| 43 | 40d 0m 52s | 75d 5m 42s | Wingohocking St East of Adams Ave | Frankford Creek | Upper Frankford Low Level | F_04 |
| 44 | 40d 0m 41s | 75d 5m 41s | Bristol Street West of Adams Avenue | Frankford Creek | Upper Frankford Low Level | F_05 |
| 45 | 40d 0m 25s | 75d 5m 33s | Worrel Street East of Frankford Creek | Frankford Creek | Upper Frankford Low Level | F_06 |
| 46 | 40d 0m 26s | 75d 5m 34s | Worrel Street West of Frankford Creek | Frankford Creek | Upper Frankford Low Level | F_07 |
| 47 | 40d 0m 21s | 75d 5m 36s | Torresdale Ave & Hunting Park Ave | Frankford Creek | Upper Frankford Low Level | F_08 |
| 48 | 40d 0m 19s | 75d 5m 34s | Frankford Ave North of Frankford Ck | Frankford Creek | Upper Frankford Low Level | F_09 |
| 49 | 40d 0m 19s | 75d 5m 35s | Frankford Ave South of Frankford Ck | Frankford Creek | Upper Frankford Low Level | F_10 |
| 50 | 40d 0m 15s | 75d 5m 26s | Orchard Street South of Vandyke Creek | Frankford Creek | Upper Frankford Low Level | F_11 |
| 51 | 39d 59m 56s | 75d 5m 14s | Sepviva Street North of Butler Street | Frankford Creek | Upper Frankford Low Level | F_12 |
| 52 | 39d 59m 49s | 75d 5m 3s | Duncan Street Under Delaware Exp. | Frankford Creek | Lower Frankford Low Level | F_13 |
| 54 | 40d 0m 16s | 75d 4m 15s | Wakeling Street NW of Creek Basin | Frankford Creek | Lower Frankford Low Level | F_21 |
| 55 | 40d 0m 19s | 75d 4m 5s | Bridge Street NW of Creek Basin | Frankford Creek | Lower Frankford Low Level | F_23 |

| Point Source # | Outfall Latitude | Outfall Longitude | Regulator Location | Discharges to: | Interceptor | Outfall Name |
|---|---|---|---|---|---|---|
| 56 | 40d 0m 18s | 75d 4m 5s | Bridge Street SE of Creek Basin | Frankford Creek | Lower Frankford Low Level | F_24 |
| 57 | 40d 0m 15s | 75d 4m 15s | Ash Street West of Creek Basin | Frankford Creek | Lower Frankford Low Level | F_25 |
| 58 | 40d 0m 30s | 75d 3m 20s | Levick St. & Everett Ave. | Delaware River | Wakling Relief Sewer | D_FRW |
| 59 | 40d 2m 16s | 75d 6m 53s | Nedro Ave & 7th St. | Tacony Creek | Rock Run Flood Relief Sewer | T_FRRR |
| 60 | 40d 0m 36s | 75d 5m 44s | Castor Ave. & East Hunting Park Ave. | Frankford Creek | Frankford High Level Relief Sewer | F_FRFG |
| **NPDES Permit # 0026662 – Southeast** | | | | | | |
| 2 | 39d 58m 9s | 75d 7m 19s | Dyott Street & Delaware Ave. | Delaware River | Lower Delaware Low Level | D_38 |
| 3 | 39d 58m 7s | 75d 7m 23s | Susquehanna Ave. East of Beach Street | Delaware River | Lower Delaware Low Level | D_39 |
| 4 | 39d 58m 5s | 75d 7m 26s | Berks Street East of Beach Street | Delaware River | Lower Delaware Low Level | D_40 |
| 5 | 39d 58m 3s | 75d 7m 37s | Palmer Street East of Beach Street | Delaware River | Lower Delaware Low Level | D_41 |
| 6 | 39d 57m 54s | 75d 7m 42s | Columbia Avenue East of Beach Street | Delaware River | Lower Delaware Low Level | D_42 |
| 7 | 39d 57m 56s | 75d 7m 48s | Marlborough Street & Delaware Ave | Delaware River | Lower Delaware Low Level | D_43 |
| 8 | 39d 57m 53s | 75d 7m 54s | Shackamaxon St East of Delaware Ave | Delaware River | Lower Delaware Low Level | D_44 |
| 9 | 39d 57m 48s | 75d 8m 0s | Laurel Street & Delaware Avenue | Delaware River | Lower Delaware Low Level | D_45 |
| 10 | 39d 57m 41s | 75d 8m 11s | Penn Street & Delaware Avenue | Delaware River | Lower Delaware Low Level | D_46 |
| 11 | 39d 57m 37s | 75d 8m 9s | Fairmont Ave West of Delaware Ave | Delaware River | Lower Delaware Low Level | D_47 |
| 12 | 39d 57m 28s | 75d 8m 13s | Willow Street West of Delaware Ave | Delaware River | Lower Delaware Low Level | D_48 |

| Point Source # | Outfall Latitude | Outfall Longitude | Regulator Location | Discharges to: | Interceptor | Outfall Name |
|---|---|---|---|---|---|---|
| 13 | 39d 57m 24s | 75d 8m 20s | Callowhill Street & Delaware Avenue | Delaware River | Lower Delaware Low Level | D_49 |
| 14 | 39d 57m 21s | 75d 8m 13s | Delaware Avenue North of Vine Street | Delaware River | Lower Delaware Low Level | D_50 |
| 15 | 39d 57m 11s | 75d 8m 17s | Race Street West of Delaware Avenue | Delaware River | Lower Delaware Low Level | D_51 |
| 16 | 39d 57m 7s | 75d 8m 25s | Delaware Avenue & Arch Street | Delaware River | Lower Delaware Low Level | D_52 |
| 17 | 39d 56m 57s | 75d 8m 23s | Market Street & Front Street | Delaware River | Lower Delaware Low Level | D_53 |
| 20 | 39d 56m 50s | 75d 8m 24s | Front Street South of Chestnut Street | Delaware River | Lower Delaware Low Level | D_54 |
| 21 | 39d 56m 26s | 75d 8m 32s | South Street & Delaware Avenue | Delaware River | Lower Delaware Low Level | D_58 |
| 22 | 39d 56m 12s | 75d 8m 33s | Catharine Street East of Swanson Street | Delaware River | Lower Delaware Low Level | D_61 |
| 23 | 39d 56m 10s | 75d 8m 32s | Queen Street East of Swanson Street | Delaware River | Lower Delaware Low Level | D_62 |
| 24 | 39d 56m 5s | 75d 8m 33s | Christian St West of Delaware Avenue | Delaware River | Lower Delaware Low Level | D_63 |
| 25 | 39d 55m 59s | 75d 8m 35s | Washington Ave East of Delaware Ave | Delaware River | Lower Delaware Low Level | D_64 |
| 26 | 39d 55m 45s | 75d 8m 29s | Reed Street East of Delaware Avenue | Delaware River | Lower Delaware Low Level | D_65 |
| 27 | 39d 55m 37s | 75d 8m 28s | Tasker Street East of Delaware Avenue | Delaware River | Lower Delaware Low Level | D_66 |
| 28 | 39d 55m 26s | 75d 8m 21s | Moore Street East of Delaware Avenue | Delaware River | Lower Delaware Low Level | D_67 |
| 33 | 39d 54m 6s | 75d 8m 12s | Pattison Avenue & Swanson Street | Delaware River | Lower Delaware Low Level | D_73 |
| 36 | 39d 58m 21s | 75d 6m 58s | Cumberland St East of Richmond St | Delaware River | Lower Delaware Low Level | D_37 |

| Point Source # | Outfall Latitude | Outfall Longitude | Regulator Location | Discharges to: | Interceptor | Outfall Name |
|---|---|---|---|---|---|---|
| 37 | 39d 57m 12s | 75d 8m 24s | Race Street West of Delaware Avenue, North of D-51 | Delaware River | Lower Delaware Low Level | D_51A |
| 29 | 39d 55m 13s | 75d 8m 20s | Snyder Avenue & Delaware Avenue | Delaware River | Oregon | D_68 |
| 30 | 39d 54m 60s | 75d 8m 13s | Delaware Ave North of Porter Street | Delaware River | Oregon | D_69 |
| 31 | 39d 54m 44s | 75d 8m 15s | Oregon Avenue & Delaware Avenue | Delaware River | Oregon | D_70 |
| 32 | 39d 54m 33s | 75d 7m 59s | Bigler Street & Delaware Avenue | Delaware River | Oregon | D_71 |
| 34 | 39d 54m 24s | 75d 8m 8s | Packer Avenue East of Delaware Ave | Delaware River | Oregon | D_72 |
| **NPDES Permit # 0026671 - Southwest** | | | | | | |
| 2 | 39d 56m 17s | 75d 12m 17s | Reed Street & Schuylkill Avenue | Schuylkill River | Lower Schuylkill East Side | S_31 |
| 3 | 39d 55m 54s | 75d 12m 28s | 35th St. and Mifflin St. | Schuylkill River | Lower Schuylkill East Side | S_36A |
| 4 | 39d 55m 41s | 75d 12m 38s | Vare Avenue & 29th Street | Schuylkill River | Lower Schuylkill East Side | S_37 |
| 5 | 39d 55m 12s | 75d 12m 5s | Passyunk Avenue & 29th Street | Schuylkill River | Lower Schuylkill East Side | S_42 |
| 6 | 39d 55m 12s | 75d 12m 5s | Passyunk Avenue & 28th Street | Schuylkill River | Lower Schuylkill East Side | S_42A |
| 7 | 39d 54m 57s | 75d 12m 16s | 26th Street 700’ North of Hartranft St | Schuylkill River | Lower Schuylkill East Side | S_44 |
| 8 | 39d 53m 53s | 75d 12m 39s | Penrose Avenue & 26th Street | Schuylkill River | Lower Schuylkill East Side | S_46 |
| 9 | 39d 57m 38s | 75d 10m 50s | 24th Street 155’ South of Parktown Pl | Schuylkill River | Central Schuylkill East Side | S_05 |
| 10 | 39d 57m 39s | 75d 10m 49s | 24th Street 350’ South of Parktown Pl | Schuylkill River | Central Schuylkill East Side | S_06 |
| 11 | 39d 57m 39s | 75d 10m 50s | 24th Street East of Schuylkill River | Schuylkill River | Central Schuylkill East Side | S_07 |

| Point Source # | Outfall Latitude | Outfall Longitude | Regulator Location | Discharges to: | Interceptor | Outfall Name |
|---|---|---|---|---|---|---|
| 12 | 39d 57m 29s | 75d 10m 43s | Race Street & Bonsall Street | Schuylkill River | Central Schuylkill East Side | S_08 |
| 13 | 39d 57m 30s | 75d 10m 45s | Arch Street West of 23rd Street | Schuylkill River | Central Schuylkill East Side | S_09 |
| 14 | 39d 57m 16s | 75d 10m 49s | Market Street 25′ East of 24th Street | Schuylkill River | Central Schuylkill East Side | S_10 |
| 15 | 39d 57m 11s | 75d 10m 51s | 24th St. N of Chestnut St. Bridge | Schuylkill River | Central Schuylkill East Side | S_12A |
| 16 | 39d 57m 7s | 75d 10m 52s | Sansom Street West of 24th Street | Schuylkill River | Central Schuylkill East Side | S_13 |
| 17 | 39d 57m 5s | 75d 10m 53s | Walnut Street West of 24th Street | Schuylkill River | Central Schuylkill East Side | S_15 |
| 18 | 39d 57m 1s | 75d 10m 56s | Locust Street & 25th Street | Schuylkill River | Central Schuylkill East Side | S_16 |
| 19 | 39d 56m 57s | 75d 11m 0s | Spruce Street & 25th Street | Schuylkill River | Central Schuylkill East Side | S_17 |
| 20 | 39d 56m 52s | 75d 11m 5s | Pine Street West of Taney Street | Schuylkill River | Central Schuylkill East Side | S_18 |
| 21 | 39d 56m 49s | 75d 11m 9s | Lombard Street West of 27th Street | Schuylkill River | Central Schuylkill East Side | S_19 |
| 22 | 39d 56m 47s | 75d 11m 12s | South Street East of 27th Street | Schuylkill River | Central Schuylkill East Side | S_21 |
| 23 | 39d 56m 44s | 75d 11m 18s | Schuylkill Avenue & Bainbridge Street | Schuylkill River | Central Schuylkill East Side | S_23 |
| 24 | 39d 56m 34s | 75d 11m 28s | Schuylkill Avenue & Christian Street | Schuylkill River | Central Schuylkill East Side | S_25 |
| 25 | 39d 56m 29s | 75d 11m 35s | Ellsworth St West of Schuylkill Avenue | Schuylkill River | Central Schuylkill East Side | S_26 |
| 26 | 39d 58m 1s | 75d 11m 17s | Mantua Avenue & West River Drive | Schuylkill River | Central Schuylkill West Side | S_01 |
| 27 | 39d 57m 54s | 75d 11m 7s | Haverford Avenue & West River Drive | Schuylkill River | Central Schuylkill West Side | S_02 |

| Point Source # | Outfall Latitude | Outfall Longitude | Regulator Location | Discharges to: | Interceptor | Outfall Name |
|---|---|---|---|---|---|---|
| 28 | 39d 57m 51s | 75d 11m 4s | Spring Garden St W of Schuylkill Expy | Schuylkill River | Central Schuylkill West Side | S_03 |
| 29 | 39d 57m 53s | 75d 11m 4s | Powelton Ave W of Schuylkill Expy | Schuylkill River | Central Schuylkill West Side | S_04 |
| 30 | 39d 57m 16s | 75d 10m 53s | Market St West of Schuylkill Expy | Schuylkill River | Central Schuylkill West Side | S_11 |
| 31 | 39d 57m 5s | 75d 10m 58s | Schuylkill Expressway & Walnut Street | Schuylkill River | Central Schuylkill West Side | S_14 |
| 32 | 39d 56m 51s | 75d 11m 14s | 440′ Northwest of South Street | Schuylkill River | Central Schuylkill West Side | S_20 |
| 33 | 39d 56m 46s | 75d 11m 22s | 660′ South of South St E of Pennfield | Schuylkill River | Central Schuylkill West Side | S_22 |
| 34 | 39d 56m 43s | 75d 11m 26s | 1060′ South of South St E of Pennfield | Schuylkill River | Central Schuylkill West Side | S_24 |
| 35 | 39d 56m 32s | 75d 12m 27s | 46th Street & Paschall Avenue | Schuylkill River | Southwest Main Gravity | S_30 |
| 36 | 39d 56m 36s | 75d 12m 18s | 43rd St. and Locust St. | Schuylkill River | Southwest Main Gravity | S_50 |
| 37 | 39d 56m 13s | 75d 12m 23s | 49th Street South of Botanic Street | Schuylkill River | Lower Schuylkill West Side | S_32 |
| 38 | 39d 56m 8s | 75d 12m 24s | 51st Street South of Botanic Street | Schuylkill River | Lower Schuylkill West Side | S_33 |
| 39 | 39d 55m 43s | 75d 12m 45s | 56th Street East of P&R Railroad | Schuylkill River | Lower Schuylkill West Side | S_38 |
| 40 | 39d 54m 39s | 75d 12m 55s | 64th St. and Buist Ave. | Schuylkill River | Lower Schuylkill West Side | S_45 |
| 41 | 39d 56m 10s | 75d 14m 6s | 60th Street & Cobbs Creek Parkway | Cobbs Creek | Cobbs Creek High Level | C_18 |
| 51 | 39d 58m 51s | 75d 16m 4s | City Line Avenue & 73rd Street | Cobbs Creek | Cobbs Creek High Level | C_01 |
| 52 | 39d 58m 51s | 75d 16m 1s | City Line Ave 100′ South Side of Creek | Cobbs Creek | Cobbs Creek High Level | C_02 |
| 54 | 39d 58m 30s | 75d 15m 26s | Lebanon Ave Southwest of 73rd Street | Cobbs Creek | Cobbs Creek High Level | C_05 |

| Point Source # | Outfall Latitude | Outfall Longitude | Regulator Location | Discharges to: | Interceptor | Outfall Name |
|---|---|---|---|---|---|---|
| 55 | 39d 58m 31s | 75d 15m 25s | Lebanon Avenue & 68th Street | Cobbs Creek | Cobbs Creek High Level | C_06 |
| 56 | 39d 58m 26s | 75d 15m 26s | Lansdowne Avenue & 69th Street | Cobbs Creek | Cobbs Creek High Level | C_07 |
| 57 | 39d 57m 51s | 75d 14m 56s | 54th Street & Cobbs Creek | Cobbs Creek | Cobbs Creek High Level | C_09 |
| 58 | 39d 57m 50s | 75d 14m 53s | Gross Street & Cobbs Creek | Cobbs Creek | Cobbs Creek High Level | C_10 |
| 59 | 39d 57m 43s | 75d 14m 53s | Cobbs Creek Pky South of Market St | Cobbs Creek | Cobbs Creek High Level | C_11 |
| 60 | 39d 57m 27s | 75d 14m 60s | Spruce Street & Cobbs Creek | Cobbs Creek | Cobbs Creek High Level | C_12 |
| 61 | 39d 56m 45s | 75d 14m 58s | 62nd Street & Cobbs Creek | Cobbs Creek | Cobbs Creek High Level | C_13 |
| 62 | 39d 56m 36s | 75d 14m 50s | Baltimore Avenue & Cobbs Creek | Cobbs Creek | Cobbs Creek High Level | C_14 |
| 63 | 39d 56m 31s | 75d 14m 26s | 59th Street & Cobbs Creek Parkway | Cobbs Creek | Cobbs Creek High Level | C_15 |
| 64 | 39d 56m 26s | 75d 14m 23s | Thomas Avenue & Cobbs Creek | Cobbs Creek | Cobbs Creek High Level | C_16 |
| 65 | 39d 56m 13s | 75d 14m 6s | Beaumont Street & Cobbs Creek | Cobbs Creek | Cobbs Creek High Level | C_17 |
| 66 | 39d 58m 29s | 75d 16m 48s | Cobbs Creek Pky S of City Line Ave | Cobbs Creek | Cobbs Creek High Level | C_31 |
| 67 | 39d 58m 12s | 75d 15m 56s | Brockton Road & Farrington Road | Cobbs Creek | Cobbs Creek High Level | C_33 |
| 68 | 39d 58m 40s | 75d 15m 44s | Woodcrest Avenue & Morris Park | Cobbs Creek | Cobbs Creek High Level | C_34 |
| 69 | 39d 58m 47s | 75d 15m 54s | Morris Park West of 72nd Street & Sherwood Road | Cobbs Creek | Cobbs Creek High Level | C_35 |
| 70 | 39d 58m 49s | 75d 15m 35s | Woodbine Ave South of Brentwood Rd | Cobbs Creek | Cobbs Creek High Level | C_36 |

| Point Source # | Outfall Latitude | Outfall Longitude | Regulator Location | Discharges to: | Interceptor | Outfall Name |
|---|---|---|---|---|---|---|
| 71 | 39d 57m 55s | 75d 15m 15s | Cobbs Creek Parkway South of 67th & Callowhill Streets | Cobbs Creek | Cobbs Creek High Level | C_37 |
| 72 | 39d 58m 22s | 75d 16m 11s | Cobbs Creek Parkway & 77th Street | Cobbs Creek | Cobbs Creek High Level | C_32 |
| 82 | 39d 58m 38s | 75d 15m 28s | Malvern Ave. and 68th St. | Cobbs Creek | Cobbs Creek High Level | C_04A |
| 42 | 39d 55m 57s | 75d 14m 19s | Mount Moriah Cemetary & 62nd Street | Cobbs Creek | Cobbs Creek Low Level | C_19 |
| 43 | 39d 55m 46s | 75d 14m 39s | 65th Street & Cobbs Creek Parkway | Cobbs Creek | Cobbs Creek Low Level | C_20 |
| 44 | 39d 55m 37s | 75d 14m 40s | 68th Street & Cobbs Creek Parkway | Cobbs Creek | Cobbs Creek Low Level | C_21 |
| 45 | 39d 55m 27s | 75d 14m 46s | 70th Street & Cobbs Creek Parkway | Cobbs Creek | Cobbs Creek Low Level | C_22 |
| 46 | 39d 55m 15s | 75d 14m 52s | Upland Street & Cobbs Creek Parkway | Cobbs Creek | Cobbs Creek Low Level | C_23 |
| 47 | 39d 55m 1s | 75d 14m 49s | Woodland Avenue East of Island Ave. | Cobbs Creek | Cobbs Creek Low Level | C_25 |
| 49 | 39d 54m 44s | 75d 14m 56s | Claymont Street & Grays Avenue | Cobbs Creek | Cobbs Creek Low Level | C_29 |
| 50 | 39d 54m 34s | 75d 15m 1s | 77th Street West of Elmwood Avenue | Cobbs Creek | Cobbs Creek Low Level | C_30 |
| 78 | 39d 54m 49s | 75d 14m 50s | Island Ave. Southeast of Glenmore Ave | Cobbs Creek | Cobbs Creek Low Level | C_28A |
| 75 | 39d 57m 59s | 75d 11m 3s | 16th St. & Clearfield St. | Schuylkill River | Main Relief Sewer | S_FRM |
| 83 | 39d 56m 31s | 75d 14m 25s | 56th St. & Locust | Cobbs Creek | Thomas Run Relief Sewer | C_FRTR |
| 84 | 39d 57m 49s | 75d 14m 53s | Arch Street & Cobbs Creek | Cobbs Creek | Arch Street Relief Sewer | C_FRA |

**Table 2 - Overflow Summary for 7/1/2020 – 6/30/2021**

| District | Permitted Outfall | Frequency | Duration (hours) | Volume (ft^3) |
|---|---|---|---|---|
| Northeast | D_FRW | 51 | 170.5 | 39,537,556 |
| Northeast | D02 | 27 | 64.25 | 10,446,697 |
| Northeast | D03 | 29 | 58.5 | 2,768,038 |
| Northeast | D04 | 20 | 35 | 597,871 |
| Northeast | D05 | 49 | 203.75 | 67,201,655 |
| Northeast | D06 | 19 | 21.75 | 780,436 |
| Northeast | D07 | 52 | 189.5 | 28,920,381 |
| Northeast | D08 | 21 | 23.5 | 366,045 |
| Northeast | D09 | 13 | 10.25 | 288,333 |
| Northeast | D11 | 22 | 39 | 4,751,809 |
| Northeast | D12 | 51 | 102.5 | 440,314 |
| Northeast | D13 | 21 | 28.25 | 1,051,851 |
| Northeast | D15 | 21 | 40.5 | 2,520,171 |
| Northeast | D17 | 50 | 176 | 13,897,260 |
| Northeast | D18 | 42 | 117.75 | 7,417,179 |
| Northeast | D19 | 51 | 200.5 | 7,416,212 |
| Northeast | D20 | 35 | 72.25 | 4,163,066 |
| Northeast | D21 | 49 | 152.5 | 10,621,193 |
| Northeast | D22 | 67 | 353.5 | 30,819,775 |
| Northeast | D23 | 45 | 65.75 | 417,566 |
| Northeast | D25 | 59 | 302.75 | 96,845,886 |
| Northeast | F_FRFG | 7 | 18.75 | 1403989 |
| Northeast | F03 | 35 | 60.5 | 2,760,901 |
| Northeast | F04 | 57 | 190.25 | 7,637,296 |
| Northeast | F05 | 61 | 172.75 | 1,171,983 |
| Northeast | F06 | 24 | 36 | 1,401,977 |
| Northeast | F07 | 41 | 91 | 3,302,025 |
| Northeast | F08 | 41 | 79.5 | 2,527,932 |
| Northeast | F09 | 63 | 218.75 | 1,568,763 |
| Northeast | F10 | 27 | 59 | 2,504,186 |
| Northeast | F11 | 61 | 291.75 | 15,560,541 |
| Northeast | F12 | 27 | 48.5 | 912,002 |
| Northeast | F13 | 47 | 120.5 | 2,249,323 |
| Northeast | F21 | 65 | 402.5 | 114,622,831 |
| Northeast | F23 | 51 | 156.25 | 2,221,907 |

| District | Permitted Outfall | Frequency | Duration (hours) | Volume (ft^3) |
|---|---|---|---|---|
| Northeast | F24 | 50 | 109 | 1,067,701 |
| Northeast | F25 | 16 | 25.25 | 4,849,582 |
| Northeast | P01 | 20 | 25.75 | 1,185,115 |
| Northeast | P02 | 50 | 121.75 | 4,441,464 |
| Northeast | P03 | 26 | 47.75 | 865,625 |
| Northeast | P04 | 19 | 50 | 2,695,045 |
| Northeast | P05 | 35 | 111.75 | 7,712,601 |
| Northeast | T_FRRR | 38 | 222.25 | 46,503,517 |
| Northeast | T01 | 66 | 348 | 11,588,699 |
| Northeast | T03 | 53 | 161.75 | 3,984,622 |
| Northeast | T04 | 55 | 184 | 3,406,244 |
| Northeast | T05 | 42 | 78 | 1,695,019 |
| Northeast | T06 | 40 | 89.5 | 10,442,789 |
| Northeast | T07 | 13 | 14.5 | 238,469 |
| Northeast | T08 | 56 | 212.5 | 45,369,048 |
| Northeast | T09 | 38 | 55.25 | 973,575 |
| Northeast | T10 | 59 | 234.25 | 3,798,693 |
| Northeast | T11 | 46 | 97 | 1,020,908 |
| Northeast | T12 | 8 | 7.75 | 49,556 |
| Northeast | T13 | 44 | 135 | 4,245,470 |
| Northeast | T14 | 42 | 197.75 | 245,408,925 |
| Northeast | T15 | 51 | 151.5 | 7,692,001 |
| Southeast | D37 | 53 | 263 | 18,879,039 |
| Southeast | D38 | 49 | 173.25 | 19,275,972 |
| Southeast | D39 | 53 | 250.25 | 35,011,762 |
| Southeast | D40 | 60 | 225.25 | 1,588,675 |
| Southeast | D41 | 46 | 135.75 | 1,742,254 |
| Southeast | D42 | 10 | 11.25 | 128,434 |
| Southeast | D43 | 16 | 23.75 | 164,156 |
| Southeast | D44 | 24 | 56.5 | 4,578,964 |
| Southeast | D45 | 45 | 138.5 | 65,175,750 |
| Southeast | D46 | 26 | 46.5 | 862,276 |
| Southeast | D47 | 58 | 230.25 | 8,053,082 |
| Southeast | D48 | 40 | 85.75 | 15,535,032 |
| Southeast | D49 | 5 | 6.75 | 75,880 |
| Southeast | D50 | 11 | 12.25 | 174,661 |
| Southeast | D51 | 54 | 158.75 | 1,258,999 |

| District | Permitted Outfall | Frequency | Duration (hours) | Volume (ft^3) |
|---|---|---|---|---|
| Southeast | D51A | 51 | 123 | 1,558,594 |
| Southeast | D52 | 24 | 37 | 497,714 |
| Southeast | D53 | 15 | 23.25 | 3,908,635 |
| Southeast | D54 | 21 | 37.75 | 14,766,415 |
| Southeast | D58 | 23 | 36.25 | 1,370,187 |
| Southeast | D61 | 51 | 90.5 | 982,150 |
| Southeast | D62 | 30 | 41.25 | 365,667 |
| Southeast | D63 | 34 | 59.25 | 14,458,414 |
| Southeast | D64 | 49 | 89.75 | 615,280 |
| Southeast | D65 | 47 | 112 | 15,355,772 |
| Southeast | D66 | 60 | 208.75 | 17,454,933 |
| Southeast | D67 | 47 | 203.75 | 8,787,754 |
| Southeast | D68 | 52 | 203.75 | 31,821,085 |
| Southeast | D69 | 33 | 203.75 | 10,595,663 |
| Southeast | D70 | 29 | 203.75 | 14,626,809 |
| Southeast | D71 | 32 | 203.75 | 7,589,263 |
| Southeast | D72 | 17 | 203.75 | 5,956,080 |
| Southeast | D73 | 53 | 251 | 31,854,927 |
| Southwest | C_FRA | 12 | 15 | 2,839,301 |
| Southwest | C_FRTR | 72 | 466.5 | 35,899,705 |
| Southwest | C01 | 22 | 29 | 750,224 |
| Southwest | C02 | 3 | 5 | 27,505 |
| Southwest | C04A | 26 | 42 | 2,508,401 |
| Southwest | C05 | 3 | 8.25 | 395,058 |
| Southwest | C06 | 55 | 118.5 | 6,083,637 |
| Southwest | C07 | 31 | 45.25 | 1,390,733 |
| Southwest | C09 | 41 | 85.5 | 3,016,876 |
| Southwest | C10 | 38 | 83.75 | 811,701 |
| Southwest | C11 | 48 | 144.5 | 22,434,316 |
| Southwest | C12 | 43 | 124.25 | 2,924,611 |
| Southwest | C13 | 33 | 77.5 | 1,900,962 |
| Southwest | C14 | 34 | 86.75 | 3,867,758 |
| Southwest | C15 | 7 | 14 | 250,348 |
| Southwest | C16 | 3 | 3.5 | 24435 |
| Southwest | C17 | 51 | 173.75 | 37,702,989 |
| Southwest | C18 | 32 | 56.25 | 3,420,781 |
| Southwest | C19 | 20 | 20.5 | 952,977 |

| District | Permitted Outfall | Frequency | Duration (hours) | Volume (ft^3) |
|---|---|---|---|---|
| Southwest | C20 | 18 | 24 | 558,347 |
| Southwest | C21 | 9 | 14 | 498,565 |
| Southwest | C22 | 37 | 79 | 2,481,985 |
| Southwest | C23 | 10 | 30 | 354,862 |
| Southwest | C25 | 21 | 62.25 | 3,649,548 |
| Southwest | C28A | 39 | 67.25 | 574,708 |
| Southwest | C29 | 31 | 133.75 | 3,047,876 |
| Southwest | C30 | 32 | 103.5 | 932,877 |
| Southwest | C31 | 46 | 101 | 1,996,016 |
| Southwest | C32 | 52 | 92.25 | 2,563,372 |
| Southwest | C33 | 30 | 39 | 893,009 |
| Southwest | C34 | 13 | 16.5 | 610,512 |
| Southwest | C35 | 5 | 8.25 | 142,264 |
| Southwest | C36 | 4 | 8 | 172,933 |
| Southwest | C37 | 19 | 21.75 | 228,705 |
| Southwest | S_FRM | 28 | 74.25 | 28,906,172 |
| Southwest | S01 | 45 | 154.5 | 19,988,801 |
| Southwest | S01T | 44 | 88 | 4,114,030 |
| Southwest | S02 | 53 | 141.75 | 1,577,873 |
| Southwest | S03 | 5 | 3.25 | 43,501 |
| Southwest | S04 | 64 | 225.25 | 3,123,519 |
| Southwest | S05 | 73 | 389.5 | 51,966,255 |
| Southwest | S06 | 60 | 197.25 | 19,188,298 |
| Southwest | S07 | 32 | 79 | 4,957,892 |
| Southwest | S08 | 38 | 63.75 | 385,817 |
| Southwest | S09 | 48 | 115 | 13,656,740 |
| Southwest | S10 | 60 | 227 | 4,655,878 |
| Southwest | S11 | 66 | 223.5 | 2,058,406 |
| Southwest | S12A | 52 | 116.75 | 1,753,673 |
| Southwest | S13 | 19 | 22.25 | 698,472 |
| Southwest | S14 | 67 | 266 | 3,725,571 |
| Southwest | S15 | 28 | 37.75 | 543,135 |
| Southwest | S16 | 59 | 156 | 1,618,205 |
| Southwest | S17 | 28 | 40.75 | 1,088,334 |
| Southwest | S18 | 56 | 174.75 | 10,620,143 |
| Southwest | S19 | 31 | 43.25 | 579,454 |
| Southwest | S20 | 69 | 330.25 | 26,293,894 |

| District | Permitted Outfall | Frequency | Duration (hours) | Volume (ft^3) |
|---|---|---|---|---|
| Southwest | S21 | 35 | 48.75 | 376,463 |
| Southwest | S22 | 50 | 121.75 | 4,242,012 |
| Southwest | S23 | 67 | 226.25 | 2,828,500 |
| Southwest | S24 | 42 | 66.75 | 648,306 |
| Southwest | S25 | 50 | 118.5 | 3,483,728 |
| Southwest | S26 | 67 | 276.5 | 22,834,471 |
| Southwest | S30 | 8 | 8.75 | 209,488 |
| Southwest | S31 | 50 | 119.5 | 4,125,614 |
| Southwest | S32 | 18 | 20 | 279,315 |
| Southwest | S33 | 63 | 333.75 | 23,092,165 |
| Southwest | S36A | 70 | 289.25 | 10,285,848 |
| Southwest | S37 | 66 | 231.5 | 4,151,050 |
| Southwest | S38 | 31 | 49.25 | 6,223,157 |
| Southwest | S42 | 55 | 208.5 | 24,617,157 |
| Southwest | S42A | 70 | 385.25 | 27,684,833 |
| Southwest | S44 | 53 | 169.5 | 13,501,459 |
| Southwest | S45 | 37 | 76.75 | 26,186,375 |
| Southwest | S46 | 43 | 105.5 | 3,245,202 |
| Southwest | S50 | 63 | 394.75 | 236,354,812 |

**Table 3 - Overflow Summary for Typical Year Precipitation (based on Year-5 EAP submission)**

| District | Permitted Outfall | Frequency | SWO Duration (hrs) | Overflow Volume (MG) |
|---|---|---|---|---|
| Northeast | D_FRW | 44 | 117.75 | 96.0 |
| Northeast | D02 | 26 | 0 | 45.3 |
| Northeast | D03 | 26 | 61.75 | 13.3 |
| Northeast | D04 | 10 | 21.75 | 1.7 |
| Northeast | D05 | 49 | 251 | 360.7 |
| Northeast | D06 | 9 | 11 | 1.3 |
| Northeast | D07 | 54 | 204.75 | 135.9 |
| Northeast | D08 | 40 | 92.5 | 3.3 |
| Northeast | D09 | 5 | 3.5 | 0.5 |
| Northeast | D11 | 21 | 56.75 | 24.6 |
| Northeast | D12 | 46 | 114.5 | 1.6 |
| Northeast | D13 | 9 | 12.25 | 1.3 |
| Northeast | D15 | 15 | 30 | 8.0 |
| Northeast | D17 | 45 | 169 | 64.8 |
| Northeast | D18 | 52 | 180.25 | 53.6 |
| Northeast | D19 | 53 | 223.75 | 48.0 |
| Northeast | D20 | 36 | 114.5 | 28.7 |
| Northeast | D21 | 45 | 184.75 | 65.9 |
| Northeast | D22 | 71 | 512 | 251.7 |
| Northeast | D23 | 42 | 72 | 1.6 |
| Northeast | D25 | 66 | 422.75 | 963.3 |
| Northeast | F_FRFG | 5 | 2.5 | 0.3 |
| Northeast | F03 | 33 | 55.75 | 18.8 |
| Northeast | F04 | 63 | 239.25 | 63.5 |
| Northeast | F05 | 69 | 272 | 8.1 |
| Northeast | F06 | 20 | 36.75 | 5.5 |
| Northeast | F07 | 40 | 94.75 | 20.4 |
| Northeast | F08 | 39 | 76.25 | 11.0 |
| Northeast | F09 | 59 | 231 | 9.2 |
| Northeast | F10 | 63 | 322.25 | 26.5 |
| Northeast | F11 | 71 | 431.75 | 133.7 |
| Northeast | F12 | 31 | 53.25 | 5.8 |
| Northeast | F13 | 46 | 130.25 | 14.0 |
| Northeast | F21 | 67 | 385.5 | 800.2 |
| Northeast | F23 | 44 | 113.75 | 11.6 |
| Northeast | F24 | 47 | 99.75 | 5.1 |
| Northeast | F25 | 15 | 32 | 28.5 |
| Northeast | P01 | 15 | 16.25 | 3.2 |
| Northeast | P02 | 49 | 115.75 | 14.9 |
| Northeast | P03 | 20 | 26.25 | 2.0 |
| Northeast | P04 | 9 | 30.25 | 11.5 |

| District | Permitted Outfall | Frequency | SWO Duration (hrs) | Overflow Volume (MG) |
|---|---|---|---|---|
| Northeast | P05 | 27 | 56.75 | 22.3 |
| Northeast | T_FRRR | 37 | 274.5 | 281.9 |
| Northeast | T01 | 64 | 262.5 | 45.1 |
| Northeast | T03 | 61 | 158 | 22.8 |
| Northeast | T04 | 59 | 154.25 | 15.9 |
| Northeast | T05 | 42 | 64.25 | 7.6 |
| Northeast | T06 | 39 | 72 | 55.3 |
| Northeast | T07 | 9 | 8.5 | 1.0 |
| Northeast | T08 | 62 | 234.75 | 257.0 |
| Northeast | T09 | 44 | 68.25 | 5.7 |
| Northeast | T10 | 63 | 258.5 | 22.3 |
| Northeast | T11 | 59 | 165.75 | 10.1 |
| Northeast | T12 | 8 | 7 | 0.2 |
| Northeast | T13 | 63 | 191.75 | 31.4 |
| Northeast | T14 | 37 | 356.5 | 1546.5 |
| Northeast | T15 | 54 | 158 | 42.1 |
| Southeast | D37 | 54 | 282 | 184.0 |
| Southeast | D38 | 43 | 169.75 | 178.9 |
| Southeast | D39 | 54 | 270.75 | 276.7 |
| Southeast | D40 | 57 | 282 | 14.4 |
| Southeast | D41 | 42 | 153.75 | 17.7 |
| Southeast | D42 | 18 | 22 | 1.5 |
| Southeast | D43 | 19 | 31.75 | 1.3 |
| Southeast | D44 | 23 | 55 | 23.8 |
| Southeast | D45 | 36 | 121 | 357.6 |
| Southeast | D46 | 19 | 30.75 | 3.9 |
| Southeast | D47 | 56 | 215 | 46.3 |
| Southeast | D48 | 40 | 94.25 | 112.3 |
| Southeast | D49 | 6 | 4.5 | 0.4 |
| Southeast | D50 | 14 | 12.5 | 1.5 |
| Southeast | D51 | 56 | 372 | 11.4 |
| Southeast | D51A | 49 | 174 | 12.5 |
| Southeast | D52 | 22 | 31 | 2.7 |
| Southeast | D53 | 7 | 7.5 | 9.6 |
| Southeast | D54 | 19 | 30 | 48.3 |
| Southeast | D58 | 18 | 26.5 | 5.1 |
| Southeast | D61 | 46 | 94.75 | 6.2 |
| Southeast | D62 | 20 | 23.25 | 1.8 |
| Southeast | D63 | 31 | 65.25 | 73.9 |
| Southeast | D64 | 27 | 41.75 | 1.5 |
| Southeast | D65 | 29 | 66.25 | 52.4 |
| Southeast | D66 | 37 | 105.75 | 58.8 |

| District | Permitted Outfall | Frequency | SWO Duration (hrs) | Overflow Volume (MG) |
|---|---|---|---|---|
| Southeast | D67 | 31 | 80.75 | 28.0 |
| Southeast | D68 | 41 | 183.75 | 156.0 |
| Southeast | D69 | 24 | 70.75 | 47.2 |
| Southeast | D70 | 20 | 45.5 | 48.3 |
| Southeast | D71 | 24 | 63 | 45.5 |
| Southeast | D72 | 18 | 34.75 | 29.2 |
| Southeast | D73 | 51 | 236 | 159.2 |
| Southwest | C_FRA | 11 | 9.5 | 5.2 |
| Southwest | C_FRTR | 83 | 500.5 | 161.8 |
| Southwest | C01 | 15 | 15.25 | 1.7 |
| Southwest | C02 | 6 | 4.25 | 0.2 |
| Southwest | C04A | 19 | 28 | 12.6 |
| Southwest | C05 | 2 | 2.75 | 0.4 |
| Southwest | C06 | 61 | 195.75 | 40.1 |
| Southwest | C07 | 19 | 39.25 | 10.2 |
| Southwest | C09 | 33 | 65 | 13.6 |
| Southwest | C10 | 16 | 36.5 | 1.6 |
| Southwest | C11 | 42 | 122.75 | 97.1 |
| Southwest | C12 | 39 | 100 | 16.7 |
| Southwest | C13 | 30 | 68.25 | 11.0 |
| Southwest | C14 | 30 | 80.5 | 22.1 |
| Southwest | C15 | 18 | 40.75 | 2.7 |
| Southwest | C16 | 5 | 4.75 | 0.2 |
| Southwest | C17 | 55 | 266.5 | 294.4 |
| Southwest | C18 | 29 | 64.75 | 21.0 |
| Southwest | C19 | 18 | 21.75 | 4.6 |
| Southwest | C20 | 14 | 22 | 2.5 |
| Southwest | C21 | 15 | 26.25 | 3.5 |
| Southwest | C22 | 37 | 78.75 | 14.5 |
| Southwest | C23 | 12 | 25 | 1.7 |
| Southwest | C25 | 22 | 61 | 19.5 |
| Southwest | C28A | 36 | 58.5 | 2.1 |
| Southwest | C29 | 48 | 189.25 | 16.2 |
| Southwest | C30 | 30 | 118.5 | 8.4 |
| Southwest | C31 | 40 | 90.25 | 10.3 |
| Southwest | C32 | 31 | 56.25 | 9.8 |
| Southwest | C33 | 20 | 24.25 | 3.1 |
| Southwest | C34 | 13 | 11.75 | 1.7 |
| Southwest | C35 | 10 | 11.25 | 0.7 |
| Southwest | C36 | 10 | 9.25 | 0.6 |
| Southwest | C37 | 15 | 17.5 | 0.9 |
| Southwest | S_FRM | 8 | 10.75 | 41.9 |

| District | Permitted Outfall | Frequency | SWO Duration (hrs) | Overflow Volume (MG) |
|---|---|---|---|---|
| Southwest | S01 | 41 | 122 | 86.4 |
| Southwest | S02 | 49 | 142 | 7.4 |
| Southwest | S03 | 11 | 8 | 0.6 |
| Southwest | S04 | 72 | 385.5 | 19.8 |
| Southwest | S05 | 71 | 338.25 | 236.5 |
| Southwest | S06 | 65 | 281.5 | 98.6 |
| Southwest | S07 | 16 | 22.75 | 9.1 |
| Southwest | S08 | 36 | 64.25 | 1.3 |
| Southwest | S09 | 39 | 78 | 42.8 |
| Southwest | S10 | 56 | 185.25 | 18.9 |
| Southwest | S11 | 53 | 153 | 4.9 |
| Southwest | S12A | 44 | 80.5 | 4.9 |
| Southwest | S13 | 17 | 12.75 | 2.0 |
| Southwest | S14 | 62 | 263.5 | 16.4 |
| Southwest | S15 | 22 | 27.75 | 1.7 |
| Southwest | S16 | 67 | 238.75 | 9.1 |
| Southwest | S17 | 25 | 32.75 | 3.8 |
| Southwest | S18 | 51 | 188.25 | 45.1 |
| Southwest | S19 | 29 | 33.5 | 1.8 |
| Southwest | S20 | 78 | 517.5 | 145.6 |
| Southwest | S21 | 22 | 22 | 1.0 |
| Southwest | S22 | 40 | 85 | 15.5 |
| Southwest | S23 | 59 | 182.25 | 10.7 |
| Southwest | S24 | 41 | 81.25 | 5.3 |
| Southwest | S25 | 45 | 113.5 | 12.6 |
| Southwest | S26 | 69 | 376.25 | 133.5 |
| Southwest | S30 | 7 | 5.5 | 0.4 |
| Southwest | S31 | 57 | 175 | 32.4 |
| Southwest | S32 | 14 | 14 | 1.3 |
| Southwest | S33 | 70 | 349.75 | 132.0 |
| Southwest | S36A | 66 | 323 | 59.8 |
| Southwest | S37 | 60 | 239 | 24.1 |
| Southwest | S38 | 28 | 48.75 | 30.1 |
| Southwest | S42 | 50 | 185.25 | 97.9 |
| Southwest | S42A | 74 | 530.25 | 177.8 |
| Southwest | S44 | 43 | 125 | 59.4 |
| Southwest | S45 | 41 | 104.25 | 139.0 |
| Southwest | S46 | 25 | 48 | 13.5 |
| Southwest | S50 | 61 | 326.75 | 1067.6 |

**Table 4 - July 2020 PWD Rain Gage Records**

| Date/RG | RG1 | RG2 | RG3 | RG4 | RG5 | RG6 | RG7 | RG8 | RG9 | RG10 | RG11 | RG12 | RG13 | RG14 | RG15 | RG16 | RG17 | RG18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/1/2020 | 0.16 | 0 | 0 | 0 | 0.06 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0.06 | 0 | 0 | 0 | 0.01 | 0 | 0 |
| 7/2/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/3/2020 | 0 | 0.02 | 0.03 | 0.12 | 0 | 0 | 0.03 | 0.02 | 0 | 0.04 | 0.044 | 0 | 0.08 | 0.02 | 0.004 | 0 | 0.08 | 0 |
| 7/4/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/5/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/6/2020 | 0.37 | 0.14 | 4.33 | 2.77 | 0.6 | 0.595 | 2.44 | 2.884 | 0.4 | 4.9 | 3.124 | 0.37 | 4.28 | 1.91 | 1.214 | 0.57 | 2.51 | 1.35 |
| 7/7/2020 | 0 | 0 | 0.01 | 0.11 | 0 | 0.001 | 0 | 0 | 0 | 0.03 | 0.003 | 0 | 0 | 0 | 0 | 0 | 0 | 0.04 |
| 7/8/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/9/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/10/2020 | 3.78 | 4.48 | 2.64 | 3.1 | 4.26 | 4.596 | 2.96 | 2.99 | 4.7 | 3.21 | 2.935 | 2.59 | 2.84 | 2.9 | 3.222 | 4.22 | 2.88 | 2.78 |
| 7/11/2020 | 0.12 | 0.5 | 0 | 0 | 0 | 0.02 | 0.01 | 0 | 0.02 | 0.01 | 0.001 | 0 | 0 | 0.02 | 0.053 | 0.21 | 0 | 0 |
| 7/12/2020 | 0.02 | 0.01 | 0.15 | 0.01 | 0.14 | 0.095 | 0.02 | 0.07 | 0.08 | 0.31 | 0.076 | 0.08 | 0.08 | 0.03 | 0.045 | 0.03 | 0.07 | 0.23 |
| 7/13/2020 | 0.03 | 0.11 | 0.09 | 0.02 | 0.02 | 0.114 | 0.08 | 0.07 | 0.11 | 0.12 | 0.068 | 0.01 | 0.08 | 0.01 | 0.073 | 0.03 | 0.04 | 0.12 |
| 7/14/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/15/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/16/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/17/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/18/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/19/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/20/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/21/2020 | 0 | 0 | 0.01 | 0 | 0 | 0.005 | 0.01 | 0.04 | 0 | 0.04 | 0.026 | 0 | 0.01 | 0 | 0 | 0 | 0.01 | 0 |
| 7/22/2020 | 0.31 | 0.47 | 0.51 | 0.42 | 0.31 | 0.347 | 0.38 | 0.8 | 0.33 | 0.56 | 0.614 | 0.314 | 0.52 | 0.27 | 0.13 | 0.38 | 0.44 | 0.43 |
| 7/23/2020 | 0.12 | 0.04 | 1.25 | 0.58 | 0.14 | 0.182 | 0.36 | 1.22 | 0.09 | 1.02 | 1.058 | 0.138 | 1.33 | 0.22 | 0.14 | 0.06 | 0.72 | 0.32 |
| 7/24/2020 | 0.34 | 0.47 | 1.69 | 1.49 | 0.55 | 0.565 | 2.17 | 1.71 | 0.54 | 1.28 | 1.61 | 0.554 | 1.6 | 0.93 | 0.69 | 0.94 | 1.2 | 1.62 |
| 7/25/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/26/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/27/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/28/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/29/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/30/2020 | 0.25 | 0.13 | 0.01 | 0.07 | 0.2 | 0.024 | 0 | 0 | 0.02 | 0 | 0 | 0.196 | 0 | 0.07 | 0.03 | 0.08 | 0 | 0 |
| 7/31/2020 | 0.14 | 0.17 | 0.05 | 0.19 | 0.15 | 0.076 | 0.05 | 0.08 | 0.08 | 0.06 | 0.064 | 0.147 | 0.05 | 0.13 | 0.07 | 0.14 | 0.05 | 0.07 |

**Table 5 - July 2020 PWD Rain Gage Records**

| Date/RG | RG19 | RG20 | RG21 | RG22 | RG23 | RG24 | RG25 | RG26 | RG27 | RG28 | RG29 | RG30 | RG31 | RG32 | RG33 | RG34 | RG35 | RG36 | RG37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/1/2020 | 0 | 0 | 0 | 0 | 0.17 | 0 | 0.28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.03 | 0 | 0 | 0.001 | 0 |
| 7/2/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/3/2020 | 0 | 0.07 | 0 | 0 | 0 | 0.057 | 0 | 0 | 0.07 | 0.06 | 0 | 0.031 | 0.04 | 0.09 | 0 | 0 | 0 | 0 | 0 |
| 7/4/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/5/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/6/2020 | 3.12 | 1.1 | 1.56 | 0.46 | 0.45 | 1.849 | 0.498 | 1.11 | 2.13 | 0.05 | 2.521 | 3.213 | 2.47 | 0.51 | 0.18 | 0.665 | 1.29 | 2.5 | 0.49 |
| 7/7/2020 | 0 | 0.16 | 0 | 0.01 | 0 | 0.069 | 0 | 0 | 0.47 | 0 | 0 | 0.01 | 0.03 | 0.03 | 0 | 0.003 | 0 | 0 | 0 |
| 7/8/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/9/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/10/2020 | 3.31 | 2.42 | 3.71 | 4.84 | 3.73 | 2.661 | 3.965 | 3.08 | 2.32 | 2.459 | 3.324 | 3.008 | 2.52 | 2.47 | 4.01 | 4.284 | 4 | 3.83 | 3.039 |
| 7/11/2020 | 0.02 | 0 | 0.1 | 0 | 0.01 | 0.01 | 0 | 0.04 | 0 | 0.001 | 0.034 | 0.007 | 0.04 | 0 | 0.01 | 0.045 | 0.05 | 0 | 0.016 |
| 7/12/2020 | 0.19 | 0.01 | 0.13 | 0.15 | 0.02 | 0.183 | 0.078 | 0.04 | 0.04 | 0.042 | 0.163 | 0.133 | 0.26 | 0.24 | 0.07 | 0.108 | 0.15 | 0.11 | 0.076 |
| 7/13/2020 | 0.13 | 0.05 | 0.12 | 0.1 | 0.07 | 0.073 | 0.036 | 0.09 | 0.05 | 0.052 | 0.116 | 0.087 | 0.08 | 0.03 | 0.1 | 0.108 | 0.16 | 0.17 | 0.021 |
| 7/14/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/15/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/16/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/17/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/18/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/19/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/20/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/21/2020 | 0.04 | 0.04 | 0.17 | 0 | 0 | 0.061 | 0 | 0 | 0.02 | 0.036 | 0.09 | 0.039 | 0.18 | 0.04 | 0 | 0.014 | 0.07 | 0.01 | 0 |
| 7/22/2020 | 0.26 | 0.44 | 0.55 | 0.39 | 0.47 | 0.468 | 0.345 | 0.25 | 0.45 | 0.449 | 0.38 | 0.557 | 0.34 | 0.54 | 0.55 | 0.432 | 0.4 | 0.37 | 0.361 |
| 7/23/2020 | 0.91 | 0.8 | 0.59 | 0.31 | 0.06 | 0.9 | 0.118 | 0.249 | 1.46 | 0.908 | 0.17 | 0.982 | 0.56 | 0.44 | 0.06 | 0.309 | 1.03 | 0.41 | 0.116 |
| 7/24/2020 | 3.51 | 1.84 | 0.26 | 0.65 | 0.29 | 1.035 | 0.547 | 1.035 | 1.19 | 1.595 | 0.54 | 1.706 | 0.5 | 0.13 | 0.19 | 0.52 | 0.48 | 0.42 | 0.456 |
| 7/25/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/26/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/27/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/28/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/29/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7/30/2020 | 0 | 0.01 | 0.03 | 0.03 | 0.3 | 0.007 | 0.183 | 0.028 | 0 | 0.008 | 0.04 | 0.004 | 0.003 | 0.01 | 0.13 | 0.066 | 0.03 | 0.02 | 0.222 |
| 7/31/2020 | 0.03 | 0.05 | 0.12 | 0.08 | 0.14 | 0.06 | 0.144 | 0.072 | 0.04 | 0.052 | 0.13 | 0.065 | 0.06 | 0.08 | 0.13 | 0.099 | 0.08 | 0.05 | 0.143 |

**Table 6 – August 2020 PWD Rain Gage Records**

| Date/RG | RG1 | RG2 | RG3 | RG4 | RG5 | RG6 | RG7 | RG8 | RG9 | RG10 | RG11 | RG12 | RG13 | RG14 | RG15 | RG16 | RG17 | RG18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8/1/2020 | 0 | 0 | 0 | 0.02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/2/2020 | 0 | 0 | 0 | 0 | 0 | 0.016 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/3/2020 | 0 | 0.06 | 0 | 0 | 0 | 0.136 | 0 | 0 | 0.13 | 0 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 |
| 8/4/2020 | 2.97 | 4.99 | 2.49 | 2.59 | 2.78 | 5.415 | 2.03 | 2.09 | 5.04 | 2.64 | 2.167 | 1.49 | 2.2 | 2.088 | 1.65 | 3.02 | 2.11 | 3.44 |
| 8/5/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0.01 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/6/2020 | 0.3 | 0.35 | 0.28 | 0.26 | 0.35 | 0.289 | 0.29 | 0.28 | 0.3 | 0.26 | 0.286 | 0.3 | 0.31 | 0.259 | 0.18 | 0.32 | 0.29 | 0.27 |
| 8/7/2020 | 1.19 | 1.16 | 0.31 | 0.87 | 1.43 | 0.503 | 0.3 | 0.34 | 0.49 | 0.36 | 0.341 | 0.43 | 0.4 | 0.34 | 0.43 | 0.82 | 0.29 | 0.37 |
| 8/8/2020 | 0 | 0.02 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/9/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/10/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/11/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/12/2020 | 0.454 | 0.21 | 0.11 | 0.18 | 0.86 | 1.534 | 0.86 | 0.01 | 1.96 | 0.26 | 0.147 | 0.41 | 0.08 | 0.33 | 0.36 | 2.52 | 0.21 | 0.17 |
| 8/13/2020 | 0.217 | 1.06 | 0.12 | 0.05 | 0.04 | 0.624 | 0.15 | 0.42 | 0.68 | 0.23 | 0.299 | 0.06 | 0.34 | 0.17 | 0.26 | 0.08 | 0.04 | 0.75 |
| 8/14/2020 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/15/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/16/2020 | 0.565 | 0.64 | 0.42 | 0.47 | 0.67 | 0.42 | 0.45 | 0.42 | 0.49 | 0.43 | 0.423 | 0.48 | 0.43 | 0.52 | 0.3 | 0.58 | 0.42 | 0.41 |
| 8/17/2020 | 0 | 0 | 0.23 | 0 | 0 | 0.03 | 0.02 | 0.04 | 0.03 | 0.06 | 0.057 | 0 | 0.12 | 0 | 0 | 0 | 0.02 | 0.05 |
| 8/18/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/19/2020 | 0.015 | 0.03 | 0 | 0 | 0 | 0.06 | 0 | 0 | 0.09 | 0.01 | 0 | 0 | 0 | 0 | 0.02 | 0.03 | 0 | 0.01 |
| 8/20/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/21/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/22/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/23/2020 | 0.13 | 1.19 | 1.36 | 0.55 | 0.11 | 0.81 | 0.33 | 0.36 | 0.15 | 0.48 | 0.431 | 0.13 | 0.74 | 0.4 | 0.31 | 0.33 | 0.17 | 0.36 |
| 8/24/2020 | 0.05 | 0.06 | 0 | 0 | 0.06 | 0 | 0.01 | 0.01 | 0.01 | 0 | 0.008 | 0.05 | 0.01 | 0 | 0 | 0 | 0 | 0 |
| 8/25/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/26/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/27/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/28/2020 | 0.615 | 1.19 | 0.79 | 0.92 | 0.57 | 0.97 | 0.82 | 0.79 | 1.26 | 0.97 | 0.834 | 0.38 | 0.8 | 1.16 | 0.38 | 1.15 | 0.97 | 1.01 |
| 8/29/2020 | 0.145 | 0.13 | 0.05 | 0.04 | 0.2 | 0.02 | 0.03 | 0.02 | 0.04 | 0.19 | 0.04 | 0.21 | 0.06 | 0.06 | 0.03 | 0.06 | 0.04 | 0.01 |
| 8/30/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/31/2020 | 0.028 | 0.02 | 0.05 | 0.03 | 0.03 | 0.03 | 0.03 | 0.04 | 0.03 | 0.04 | 0.037 | 0.02 | 0.04 | 0.02 | 0.02 | 0.02 | 0.03 | 0.04 |

**Table 7 - August 2020 PWD Rain Gage Records**

| Date/RG | RG19 | RG20 | RG21 | RG22 | RG23 | RG24 | RG25 | RG26 | RG27 | RG28 | RG29 | RG30 | RG31 | RG32 | RG33 | RG34 | RG35 | RG36 | RG37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8/1/2020 | 0 | 0.04 | 0 | 0 | 0 | 0.018 | 0 | 0 | 0.04 | 0.036 | 0 | 0 | 0.002 | 0.03 | 0 | 0 | 0 | 0 | 0 |
| 8/2/2020 | 0.11 | 0.02 | 0 | 0.02 | 0 | 0.006 | 0 | 0.002 | 0 | 0.015 | 0 | 0.015 | 0.003 | 0.02 | 0 | 0.016 | 0.01 | 0.2 | 0 |
| 8/3/2020 | 0.15 | 0 | 0.22 | 0.16 | 0 | 0.009 | 0.011 | 0.012 | 0.01 | 0.002 | 0.2 | 0.028 | 0.007 | 0.02 | 0.19 | 0.154 | 0.23 | 0.11 | 0.002 |
| 8/4/2020 | 4.25 | 2.401 | 6.24 | 7.23 | 3.78 | 2.682 | 3.046 | 2.12 | 2.34 | 2.559 | 5.01 | 2.653 | 2.689 | 3.3 | 5.65 | 5.918 | 6.64 | 5.62 | 2.047 |
| 8/5/2020 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 | 0.001 | 0 | 0 | 0 | 0.002 | 0.007 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/6/2020 | 0.24 | 0.246 | 0.2 | 0.29 | 0.34 | 0.252 | 0.326 | 0.223 | 0.24 | 0.247 | 0.2 | 0.273 | 0.263 | 0.21 | 0.37 | 0.286 | 0.19 | 0.24 | 0.308 |
| 8/7/2020 | 0.41 | 0.417 | 0.34 | 0.63 | 1.1 | 0.345 | 1.112 | 0.439 | 0.36 | 0.373 | 0.31 | 0.359 | 0.358 | 0.25 | 1.16 | 0.43 | 0.42 | 0.39 | 0.678 |
| 8/8/2020 | 0 | 0 | 0 | 0 | 0.02 | 0 | 0.007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.003 |
| 8/9/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/10/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/11/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/12/2020 | 0.03 | 0.062 | 0.32 | 0.33 | 0.49 | 0.367 | 0.95 | 0.549 | 0.01 | 0.239 | 0.226 | 0.154 | 0.259 | 1.18 | 0.58 | 0.17 | 0.82 | 0.33 | 0.501 |
| 8/13/2020 | 0.69 | 0.186 | 0.1 | 0.67 | 0.04 | 0.171 | 0.182 | 0.282 | 0.21 | 0.174 | 0.07 | 0.355 | 0.226 | 0.04 | 0.24 | 0.25 | 0.08 | 0.27 | 0.075 |
| 8/14/2020 | 0 | 0 | 0 | 0 | 0 | 0.005 | 0 | 0 | 0 | 0.002 | 0 | 0.001 | 0.008 | 0 | 0.02 | 0 | 0 | 0 | 0 |
| 8/15/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/16/2020 | 0.4 | 0.399 | 0.36 | 0.47 | 0.55 | 0.407 | 0.604 | 0.37 | 0.39 | 0.403 | 0.33 | 0.42 | 0.422 | 0.37 | 0.57 | 0.37 | 0.36 | 0.38 | 0.512 |
| 8/17/2020 | 0.26 | 0.137 | 0.11 | 0.02 | 0 | 0.098 | 0.001 | 0.012 | 0.16 | 0.119 | 0.02 | 0.083 | 0.074 | 0 | 0.02 | 0.03 | 0.02 | 0.03 | 0 |
| 8/18/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 |
| 8/19/2020 | 0 | 0 | 0.01 | 0.26 | 0.01 | 0.003 | 0.014 | 0.017 | 0 | 0.001 | 0 | 0.002 | 0.007 | 0 | 0.02 | 0.06 | 0 | 0 | 0.002 |
| 8/20/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/21/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/22/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/23/2020 | 0.13 | 1.226 | 0.28 | 0.16 | 0.1 | 0.735 | 0.244 | 0.324 | 1.41 | 1.001 | 0.237 | 0.427 | 0.549 | 0.02 | 0.15 | 0.33 | 0.18 | 0.17 | 0.144 |
| 8/24/2020 | 0 | 0 | 0 | 0.01 | 0.09 | 0.001 | 0.048 | 0.002 | 0 | 0 | 0 | 0.006 | 0.001 | 0 | 0 | 0.01 | 0.01 | 0 | 0.054 |
| 8/25/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/26/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/27/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/28/2020 | 0.74 | 0.718 | 0.67 | 1.4 | 0.48 | 0.906 | 0.725 | 0.616 | 0.66 | 0.775 | 1.06 | 0.853 | 1.15 | 0.85 | 1.36 | 1.175 | 0.9 | 0.79 | 0.445 |
| 8/29/2020 | 0.05 | 0.066 | 0.07 | 0.04 | 0.15 | 0.236 | 0.158 | 0.034 | 0.06 | 0.119 | 0.69 | 0.098 | 0.56 | 0.27 | 0.15 | 0.064 | 0.01 | 0.01 | 0.197 |
| 8/30/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8/31/2020 | 0.03 | 0.038 | 0.04 | 0.04 | 0.03 | 0.035 | 0.026 | 0.025 | 0.04 | 0.036 | 0.03 | 0.036 | 0.03 | 0.02 | 0.03 | 0.035 | 0.04 | 0.04 | 0.021 |

**Table 8 – September 2020 PWD Rain Gage Records**

| Date/RG | RG1 | RG2 | RG3 | RG4 | RG5 | RG6 | RG7 | RG8 | RG9 | RG10 | RG11 | RG12 | RG13 | RG14 | RG15 | RG16 | RG17 | RG18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9/1/2020 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.008 | 0 | 0 | 0 | 0 | 0.01 | 0.01 | 0.01 |
| 9/2/2020 | 0.023 | 0.03 | 0.06 | 0.04 | 0.01 | 0.02 | 0.04 | 0.05 | 0.07 | 0.04 | 0.055 | 0.02 | 0.09 | 0.02 | 0.01 | 0.02 | 0.04 | 0.05 |
| 9/3/2020 | 0.048 | 0.08 | 0.05 | 0.03 | 0.01 | 0.1 | 0.06 | 0.09 | 0.15 | 0.04 | 0.075 | 0.02 | 0.07 | 0.07 | 0.06 | 0.1 | 0.06 | 0.09 |
| 9/4/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/5/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/6/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/7/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/8/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/9/2020 | 0.409 | 0.46 | 0.24 | 0.25 | 0.33 | 0.47 | 0.65 | 0.85 | 0.58 | 0.2 | 0.724 | 0.4 | 0.63 | 0.81 | 0.17 | 0.29 | 0.75 | 0.19 |
| 9/10/2020 | 0.789 | 0.3 | 0.13 | 0.26 | 0.46 | 0.1 | 0.29 | 0.14 | 0.11 | 0.26 | 0.2 | 0.48 | 0.2 | 0.52 | 0.24 | 0.41 | 0.31 | 0.19 |
| 9/11/2020 | 0 | 0 | 0 | 0.02 | 0.01 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/12/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/13/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/14/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/15/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/16/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/17/2020 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.03 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/18/2020 | 0 | 0 | 0.06 | 0 | 0 | 0 | 0 | 0 | 0.02 | 0 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/19/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/20/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/21/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/22/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/23/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/24/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/25/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/26/2020 | 0.2 | 0.35 | 0.12 | 0.13 | 0.23 | 0.29 | 0.14 | 0.14 | 0.3 | 0.1 | 0.106 | 0.16 | 0.07 | 0.08 | 0.11 | 0.16 | 0.05 | 0.08 |
| 9/27/2020 | 0.436 | 0.33 | 0.2 | 0.06 | 0.54 | 0.44 | 0.3 | 0.34 | 0.38 | 0.3 | 0.289 | 0.32 | 0.26 | 0.21 | 0.27 | 0.48 | 0.22 | 0.35 |
| 9/28/2020 | 0.002 | 0.01 | 0.06 | 0.06 | 0 | 0.07 | 0.03 | 0.05 | 0.03 | 0.11 | 0.047 | 0 | 0.05 | 0.02 | 0.01 | 0.01 | 0.02 | 0.09 |
| 9/29/2020 | 1.285 | 0.94 | 1.98 | 1.26 | 1.46 | 0.77 | 1.56 | 1.5 | 0.98 | 1.72 | 1.672 | 1.7 | 1.9 | 2 | 0.9 | 1.63 | 1.92 | 1.04 |
| 9/30/2020 | 0.625 | 0.6 | 1.14 | 1.56 | 0.84 | 0.58 | 0.75 | 0.74 | 0.62 | 0.99 | 0.875 | 0.91 | 1.05 | 1.06 | 0.46 | 0.77 | 1.03 | 0.57 |

**Table 9 - September 2020 PWD Rain Gage Records**

| Date/RG | RG19 | RG20 | RG21 | RG22 | RG23 | RG24 | RG25 | RG26 | RG27 | RG28 | RG29 | RG30 | RG31 | RG32 | RG33 | RG34 | RG35 | RG36 | RG37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9/1/2020 | 0 | 0 | 0.01 | 0 | 0 | 0.004 | 0.002 | 0.003 | 0 | 0.002 | 0 | 0.005 | 0 | 0.01 | 0.01 | 0.005 | 0.01 | 0 | 0 |
| 9/2/2020 | 0.06 | 0.04 | 0.04 | 0.1 | 0.02 | 0.031 | 0.019 | 0.022 | 0.04 | 0.036 | 0.04 | 0.051 | 0.01 | 0 | 0.14 | 0.02 | 0.04 | 0.04 | 0.02 |
| 9/3/2020 | 0.02 | 0.048 | 0.07 | 0.16 | 0.04 | 0.133 | 0.042 | 0.068 | 0.04 | 0.118 | 0.15 | 0.067 | 0.06 | 0.57 | 0.11 | 0.17 | 0.08 | 0.09 | 0.024 |
| 9/4/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/5/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/6/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/7/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/8/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/9/2020 | 0.17 | 0.195 | 0.22 | 0.58 | 0.4 | 0.217 | 0.357 | 0.305 | 0.16 | 0.212 | 0.22 | 0.528 | 0.15 | 0.17 | 0.24 | 0.21 | 0.29 | 0.31 | 0.39 |
| 9/10/2020 | 0.13 | 0.148 | 0.28 | 0.13 | 0.91 | 0.234 | 0.441 | 0.259 | 0.12 | 0.191 | 0.24 | 0.197 | 0.25 | 0.39 | 0.22 | 0.14 | 0.27 | 0.35 | 0.504 |
| 9/11/2020 | 0 | 0.002 | 0 | 0 | 0 | 0.002 | 0.006 | 0 | 0 | 0.003 | 0 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0.009 |
| 9/12/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/13/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/14/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/15/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/16/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/17/2020 | 0 | 0.001 | 0 | 0 | 0 | 0 | 0.004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.022 |
| 9/18/2020 | 0 | 0.001 | 0 | 0 | 0 | 0.005 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/19/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/20/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/21/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/22/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/23/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/24/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/25/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9/26/2020 | 0.05 | 0.15 | 0.23 | 0.23 | 0.17 | 0.128 | 0.219 | 0.117 | 0.15 | 0.16 | 0.18 | 0.112 | 0.11 | 0.09 | 0.32 | 0.27 | 0.11 | 0.31 | 0.175 |
| 9/27/2020 | 0.24 | 0.077 | 0.4 | 0.29 | 0.46 | 0.141 | 0.459 | 0.299 | 0.08 | 0.06 | 0.22 | 0.287 | 0.21 | 0.07 | 0.29 | 0.41 | 0.4 | 0.42 | 0.361 |
| 9/28/2020 | 0.22 | 0.117 | 0.15 | 0.07 | 0 | 0.11 | 0.007 | 0.025 | 0.13 | 0.12 | 0.18 | 0.086 | 0.12 | 0.11 | 0.07 | 0.04 | 0.19 | 0.13 | 0.001 |
| 9/29/2020 | 1.02 | 1.51 | 0.98 | 0.82 | 1.36 | 1.533 | 1.415 | 1.128 | 1.7 | 1.35 | 0.87 | 1.522 | 1.49 | 1.44 | 0.92 | 0.49 | 1.12 | 0.95 | 1.615 |
| 9/30/2020 | 0.68 | 1.384 | 0.48 | 0.57 | 0.63 | 1.166 | 0.779 | 0.578 | 1.33 | 1.46 | 0.53 | 0.822 | 0.68 | 1.02 | 0.49 | 0.15 | 0.52 | 0.56 | 0.863 |

**Table 10 - October 2020 PWD Rain Gage Records**

| Date/RG | RG1 | RG2 | RG3 | RG4 | RG5 | RG6 | RG7 | RG8 | RG9 | RG10 | RG11 | RG12 | RG13 | RG14 | RG15 | RG16 | RG17 | RG18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10/1/2020 | 0.065 | 0.09 | 0.09 | 0.05 | 0.08 | 0.09 | 0.09 | 0.1 | 0.09 | 0.1 | 0.095 | 0.07 | 0.11 | 0.06 | 0.03 | 0.08 | 0.08 | 0.1 |
| 10/2/2020 | 0.075 | 0.1 | 0.06 | 0.06 | 0.04 | 0.16 | 0.07 | 0.08 | 0.13 | 0.08 | 0.068 | 0.04 | 0.06 | 0.05 | 0.03 | 0.07 | 0.05 | 0.11 |
| 10/3/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/4/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/5/2020 | 0.002 | 0.01 | 0 | 0.01 | 0 | 0.01 | 0.01 | 0.01 | 0.02 | 0.01 | 0.008 | 0 | 0 | 0 | 0 | 0.01 | 0.01 | 0.01 |
| 10/6/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.07 | 0 | 0 | 0.032 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/7/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/8/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/9/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/10/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/11/2020 | 0.081 | 0.13 | 0.19 | 0.24 | 0.16 | 0.14 | 0.2 | 0.18 | 0.12 | 0.15 | 0.185 | 0.06 | 0.18 | 0.28 | 0.11 | 0.19 | 0.2 | 0.13 |
| 10/12/2020 | 0.692 | 1.04 | 1.08 | 1.04 | 1.07 | 1.04 | 0.99 | 1 | 1.1 | 1.12 | 1.025 | 0.34 | 1.15 | 0.98 | 0.65 | 1.22 | 0.94 | 1.08 |
| 10/13/2020 | 0.01 | 0.01 | 0.02 | 0.03 | 0 | 0.02 | 0 | 0.01 | 0.02 | 0.02 | 0.009 | 0 | 0.01 | 0 | 0 | 0.01 | 0.01 | 0.02 |
| 10/14/2020 | 0.002 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0.01 | 0.002 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 |
| 10/15/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/16/2020 | 1.09 | 1.11 | 1.09 | 1.23 | 1.13 | 1.14 | 1.02 | 1.09 | 1.14 | 1.17 | 1.104 | 0.99 | 1.18 | 1.08 | 0.61 | 1.09 | 1.08 | 1.09 |
| 10/17/2020 | 0.011 | 0.01 | 0.06 | 0.08 | 0.05 | 0.01 | 0.04 | 0.03 | 0.01 | 0.03 | 0.046 | 0.07 | 0.07 | 0.09 | 0.04 | 0.03 | 0.06 | 0.01 |
| 10/18/2020 | 0.002 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/19/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/20/2020 | 0.028 | 0.03 | 0.04 | 0.05 | 0.05 | 0.02 | 0.04 | 0.03 | 0.03 | 0.03 | 0.034 | 0.03 | 0.04 | 0.05 | 0.02 | 0.04 | 0.04 | 0.03 |
| 10/21/2020 | 0.008 | 0.01 | 0.01 | 0.01 | 0 | 0 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0 | 0 | 0 | 0.01 | 0.01 |
| 10/22/2020 | 0.008 | 0.01 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0.01 | 0.01 | 0.002 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 |
| 10/23/2020 | 0.008 | 0.01 | 0.02 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0.01 |
| 10/24/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/25/2020 | 0 | 0 | 0.02 | 0 | 0 | 0.02 | 0 | 0.01 | 0 | 0.02 | 0.009 | 0.01 | 0.02 | 0 | 0 | 0 | 0 | 0.01 |
| 10/26/2020 | 0.069 | 0.07 | 0.09 | 0.14 | 0.12 | 0.1 | 0.08 | 0.07 | 0.1 | 0.12 | 0.07 | 0.06 | 0.1 | 0.11 | 0.05 | 0.09 | 0.09 | 0.14 |
| 10/27/2020 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0.01 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/28/2020 | 0.009 | 0.01 | 0 | 0.01 | 0 | 0 | 0 | 0.01 | 0.01 | 0.01 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0.01 |
| 10/29/2020 | 1.998 | 2.04 | 1.93 | 1.86 | 1.78 | 2.04 | 1.83 | 1.81 | 2 | 2 | 1.79 | 1.03 | 2.18 | 1.67 | 1.06 | 1.93 | 1.77 | 1.9 |
| 10/30/2020 | 0.425 | 0.43 | 0.49 | 0.58 | 0.53 | 0.4 | 0.41 | 0.39 | 0.41 | 0.52 | 0.42 | 0.28 | 0.55 | 0.45 | 0.27 | 0.46 | 0.41 | 0.34 |
| 10/31/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 11 - October 2020 PWD Rain Gage Records**

| Date/RG | RG19 | RG20 | RG21 | RG22 | RG23 | RG24 | RG25 | RG26 | RG27 | RG28 | RG29 | RG30 | RG31 | RG32 | RG33 | RG34 | RG35 | RG36 | RG37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10/1/2020 | 0.09 | 0.066 | 0.08 | 0.09 | 0.06 | 0.081 | 0.078 | 0.053 | 0.06 | 0.07 | 0.07 | 0.094 | 0.09 | 0.08 | 0.1 | 0.091 | 0.09 | 0.09 | 0.072 |
| 10/2/2020 | 0.14 | 0.069 | 0.17 | 0.15 | 0.07 | 0.075 | 0.057 | 0.052 | 0.07 | 0.07 | 0.18 | 0.086 | 0.09 | 0.09 | 0.15 | 0.144 | 0.17 | 0.15 | 0.045 |
| 10/3/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/4/2020 | 0 | 0 | 0 | 0 | 0 | 0.001 | 0.001 | 0 | 0 | 0 | 0 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0.007 |
| 10/5/2020 | 0 | 0.001 | 0.01 | 0.02 | 0 | 0.01 | 0.003 | 0.004 | 0 | 0 | 0.01 | 0.008 | 0.01 | 0 | 0.03 | 0.017 | 0.01 | 0 | 0 |
| 10/6/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.003 | 0 | 0 | 0 | 0.024 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/7/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/8/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/9/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/10/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/11/2020 | 0.12 | 0.179 | 0.11 | 0.12 | 0.07 | 0.08 | 0.138 | 0.139 | 0.17 | 0.19 | 0.1 | 0.166 | 0.11 | 0.13 | 0.16 | 0.14 | 0.14 | 0.14 | 0.077 |
| 10/12/2020 | 1.07 | 1.116 | 1.07 | 1.15 | 0.61 | 0.88 | 0.96 | 0.816 | 1.04 | 1.22 | 0.97 | 1.044 | 1.08 | 1.09 | 1.11 | 1.08 | 1.17 | 1.12 | 0.496 |
| 10/13/2020 | 0.01 | 0.039 | 0.03 | 0.02 | 0.01 | 0.02 | 0.003 | 0.003 | 0.03 | 0.05 | 0.02 | 0.011 | 0.01 | 0.05 | 0.03 | 0.02 | 0.03 | 0.04 | 0.001 |
| 10/14/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0.001 | 0 | 0 | 0 | 0.01 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/15/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/16/2020 | 1.15 | 1.111 | 1.04 | 1.15 | 1.09 | 1.02 | 1.092 | 0.799 | 1.07 | 1.14 | 1.03 | 1.111 | 1.09 | 1.14 | 1.11 | 0.93 | 1.13 | 1.13 | 1.022 |
| 10/17/2020 | 0.01 | 0.077 | 0.01 | 0.01 | 0.01 | 0.05 | 0.02 | 0.037 | 0.07 | 0.09 | 0 | 0.036 | 0.04 | 0.03 | 0.01 | 0.04 | 0 | 0.01 | 0.053 |
| 10/18/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/19/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/20/2020 | 0.01 | 0.038 | 0.01 | 0.02 | 0.029 | 0.01 | 0.041 | 0.026 | 0.05 | 0.03 | 0.02 | 0.028 | 0.02 | 0.03 | 0.02 | 0.02 | 0.01 | 0.01 | 0.033 |
| 10/21/2020 | 0 | 0.01 | 0.02 | 0 | 0.008 | 0.01 | 0.002 | 0.002 | 0.01 | 0.01 | 0 | 0.007 | 0.01 | 0.01 | 0.01 | 0 | 0 | 0 | 0.008 |
| 10/22/2020 | 0 | 0.005 | 0.01 | 0 | 0.006 | 0 | 0.001 | 0 | 0 | 0.01 | 0.01 | 0.003 | 0.01 | 0.01 | 0 | 0.01 | 0 | 0 | 0 |
| 10/23/2020 | 0 | 0.01 | 0.01 | 0 | 0.007 | 0 | 0.001 | 0.001 | 0.01 | 0.01 | 0.01 | 0.001 | 0 | 0 | 0.01 | 0.01 | 0.01 | 0 | 0 |
| 10/24/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10/25/2020 | 0.01 | 0.018 | 0.02 | 0 | 0.002 | 0.02 | 0.001 | 0.001 | 0.02 | 0.02 | 0.02 | 0.013 | 0.02 | 0.07 | 0.01 | 0.02 | 0.02 | 0.01 | 0.008 |
| 10/26/2020 | 0.1 | 0.104 | 0.11 | 0.12 | 0.074 | 0.08 | 0.096 | 0.07 | 0.09 | 0.12 | 0.11 | 0.082 | 0.12 | 0.14 | 0.09 | 0.13 | 0.14 | 0.09 | 0.069 |
| 10/27/2020 | 0 | 0 | 0.01 | 0.01 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0.01 | 0.005 | 0.01 | 0 | 0 | 0 | 0.01 | 0 | 0 |
| 10/28/2020 | 0 | 0.015 | 0 | 0 | 0.006 | 0.01 | 0.001 | 0.001 | 0.01 | 0.02 | 0 | 0.004 | 0.01 | 0.03 | 0 | 0 | 0 | 0 | 0 |
| 10/29/2020 | 1.95 | 1.911 | 2.05 | 2.08 | 1.906 | 1.69 | 1.73 | 1.394 | 1.84 | 1.99 | 1.93 | 1.856 | 1.84 | 1.85 | 2 | 2.036 | 2.15 | 2.09 | 1.186 |
| 10/30/2020 | 0.4 | 0.493 | 0.47 | 0.39 | 0.414 | 0.41 | 0.459 | 0.327 | 0.48 | 0.5 | 0.39 | 0.429 | 0.47 | 0.42 | 0.36 | 0.402 | 0.49 | 0.41 | 0.321 |
| 10/31/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 12 - November 2020 PWD Rain Gage Records**

| Date/RG | RG1 | RG2 | RG3 | RG4 | RG5 | RG6 | RG7 | RG8 | RG9 | RG10 | RG11 | RG12 | RG13 | RG14 | RG15 | RG16 | RG17 | RG18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **11/1/2020** | 0.536 | 0.54 | 0.56 | 0.55 | 0.6 | 0.4 | 0.52 | 0.52 | 0.5 | 0.51 | 0.54 | 0.55 | 0.63 | 0.54 | 0.34 | 0.53 | 0.54 | 0.46 |
| **11/2/2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/3/2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/4/2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/5/2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/6/2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/7/2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/8/2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/9/2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/10/2020** | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0.01 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/11/2020** | 1.21 | 1.25 | 0.92 | 1.04 | 1.3 | 0.99 | 1.01 | 0.95 | 1.13 | 0.94 | 0.89 | 1.35 | 0.92 | 1.32 | 0.79 | 1.4 | 0.97 | 0.98 |
| **11/12/2020** | 0.55 | 0.52 | 0.43 | 0.51 | 0.64 | 0.52 | 0.5 | 0.48 | 0.49 | 0.46 | 0.45 | 0.59 | 0.44 | 0.55 | 0.29 | 0.51 | 0.44 | 0.48 |
| **11/13/2020** | 0.06 | 0.08 | 0.1 | 0.08 | 0.1 | 0.08 | 0.09 | 0.1 | 0.07 | 0.12 | 0.11 | 0.07 | 0.11 | 0.08 | 0.05 | 0.09 | 0.07 | 0.1 |
| **11/14/2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/15/2020** | 0.55 | 0.43 | 0.34 | 0.4 | 0.52 | 0.23 | 0.28 | 0.37 | 0.29 | 0.25 | 0.41 | 0.52 | 0.38 | 0.35 | 0.19 | 0.47 | 0.38 | 0.15 |
| **11/16/2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/17/2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/18/2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/19/2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/20/2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/21/2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/22/2020** | 0 | 0 | 0.01 | 0.05 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0.01 | 0 |
| **11/23/2020** | 0.33 | 0.31 | 0.22 | 0.3 | 0.24 | 0.33 | 0.2 | 0.21 | 0.31 | 0.2 | 0.19 | 0.17 | 0.24 | 0.25 | 0.13 | 0.28 | 0.25 | 0.25 |
| **11/24/2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/25/2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/26/2020** | 0.51 | 0.65 | 0.56 | 0.69 | 0.57 | 0.42 | 0.6 | 0.48 | 0.47 | 0.47 | 0.45 | 0.44 | 0.63 | 0.72 | 0.44 | 0.69 | 0.67 | 1.83 |
| **11/27/2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/28/2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/29/2020** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **11/30/2020** | 1 | 1.17 | 1.34 | 1.79 | 1.24 | 1.21 | 1.23 | 1.22 | 1.22 | 1.27 | 1.3 | 1.47 | 1.44 | 1.6 | 0.71 | 1.13 | 1.3 | 2.53 |

**Table 13 - November 2020 PWD Rain Gage Records**

| Date/RG | RG19 | RG20 | RG21 | RG22 | RG23 | RG24 | RG25 | RG26 | RG27 | RG28 | RG29 | RG30 | RG31 | RG32 | RG33 | RG34 | RG35 | RG36 | RG37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/1/2020 | 0.35 | 0.519 | 0.39 | 0.47 | 0.527 | 0.42 | 0.562 | 0.411 | 0.55 | 0.5 | 0.36 | 0.517 | 0.42 | 0.33 | 0.48 | 0.4 | 0.44 | 0.42 | 0.555 |
| 11/2/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/3/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/4/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/5/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/6/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/7/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/8/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/9/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/10/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 | 0 | 0 | 0 | 0.004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/11/2020 | 0.9 | 0.898 | 0.92 | 1.17 | 1.212 | 0.91 | 1.279 | 0.917 | 0.89 | 0.88 | 0.94 | 0.924 | 0.92 | 0.87 | 1.21 | 0.97 | 0.99 | 1.07 | 1.323 |
| 11/12/2020 | 0.52 | 0.404 | 0.51 | 0.49 | 0.549 | 0.4 | 0.574 | 0.379 | 0.39 | 0.4 | 0.42 | 0.46 | 0.41 | 0.43 | 0.52 | 0.537 | 0.57 | 0.53 | 0.588 |
| 11/13/2020 | 0.06 | 0.102 | 0.14 | 0.07 | 0.059 | 0.09 | 0.082 | 0.065 | 0.08 | 0.13 | 0.16 | 0.103 | 0.13 | 0.11 | 0.07 | 0.077 | 0.12 | 0.07 | 0.07 |
| 11/14/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/15/2020 | 0.35 | 0.279 | 0.22 | 0.32 | 0.542 | 0.28 | 0.495 | 0.243 | 0.31 | 0.23 | 0.23 | 0.364 | 0.34 | 0.32 | 0.37 | 0.322 | 0.32 | 0.34 | 0.515 |
| 11/16/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/17/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/18/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/19/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/20/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/21/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/22/2020 | 0 | 0.025 | 0 | 0 | 0 | 0 | 0 | 0 | 0.02 | 0.03 | 0 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/23/2020 | 0.27 | 0.286 | 0.32 | 0.34 | 0.328 | 0.19 | 0.265 | 0.177 | 0.37 | 0.23 | 0.32 | 0.215 | 0.24 | 0.25 | 0.38 | 0.36 | 0.37 | 0.33 | 0.199 |
| 11/24/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/25/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/26/2020 | 0.37 | 0.535 | 0.44 | 0.46 | 0.514 | 0.44 | 0.565 | 0.601 | 0.59 | 0.47 | 0.39 | 0.496 | 0.42 | 0.41 | 0.54 | 0.39 | 0.45 | 0.42 | 0.471 |
| 11/27/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/28/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/29/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/30/2020 | 1.39 | 1.733 | 1.64 | 1.35 | 1.013 | 1.27 | 1.198 | 1.048 | 1.89 | 1.69 | 1.64 | 1.326 | 1.47 | 1.41 | 1.27 | 1.372 | 1.91 | 1.58 | 1.387 |

**Table 14 – December 2020 PWD Rain Gage Records**

| Date/RG | RG1 | RG2 | RG3 | RG4 | RG5 | RG6 | RG7 | RG8 | RG9 | RG10 | RG11 | RG12 | RG13 | RG14 | RG15 | RG16 | RG17 | RG18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/1/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/2/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/3/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/4/2020 | 0.34 | 0.39 | 0.21 | 0.25 | 0.36 | 0.31 | 0.28 | 0.26 | 0.34 | 0.21 | 0.23 | 0.32 | 0.22 | 0.34 | 0.19 | 0.37 | 0.27 | 0.261 |
| 12/5/2020 | 0.71 | 0.77 | 0.76 | 0.86 | 0.79 | 0.7 | 0.71 | 0.68 | 0.75 | 0.71 | 0.67 | 0.58 | 0.73 | 0.74 | 0.42 | 0.78 | 0.7 | 0.686 |
| 12/6/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/7/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/8/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/9/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.02 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 |
| 12/10/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/11/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/12/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/13/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/14/2020 | 0.53 | 0.6 | 0.56 | 0.56 | 0.55 | 0.68 | 0.59 | 0.58 | 0.64 | 0.63 | 0.58 | 0.48 | 0.59 | 0.55 | 0.32 | 0.58 | 0.58 | 0.627 |
| 12/15/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/16/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/17/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/18/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/19/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/20/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/21/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/22/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/23/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/24/2020 | 1.42 | 1.42 | 1.2 | 0.53 | 1.36 | 1.35 | 1.18 | 1.21 | 1.56 | 1.21 | 1.09 | 1.26 | 1.23 | 1.2 | 0.69 | 1.47 | 1.11 | 1.525 |
| 12/25/2020 | 0.56 | 0.58 | 0.87 | 0.63 | 0.57 | 0.46 | 0.62 | 0.63 | 0.61 | 0.79 | 0.61 | 0.54 | 0.9 | 0.7 | 0.33 | 0.63 | 0.76 | 0.564 |
| 12/26/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/27/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/28/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/29/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/30/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/31/2020 | 0.05 | 0.07 | 0.12 | 0.09 | 0.04 | 0.1 | 0.08 | 0.11 | 0.07 | 0.13 | 0.12 | 0.02 | 0.14 | 0.07 | 0.03 | 0.07 | 0.09 | 0.092 |

**Table 15 - December 2020 PWD Rain Gage Records**

| Date/RG | RG19 | RG20 | RG21 | RG22 | RG23 | RG24 | RG25 | RG26 | RG27 | RG28 | RG29 | RG30 | RG31 | RG32 | RG33 | RG34 | RG35 | RG36 | RG37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/1/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/2/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/3/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/4/2020 | 0.18 | 0.195 | 0.23 | 0.36 | 0.338 | 0.19 | 0.348 | 0.23 | 0.19 | 0.19 | 0.22 | 0.231 | 0.21 | 0.22 | 0.41 | 0.342 | 0.27 | 0.27 | 0.33 |
| 12/5/2020 | 0.69 | 0.731 | 0.61 | 0.7 | 0.709 | 0.65 | 0.737 | 0.533 | 0.72 | 0.73 | 0.58 | 0.686 | 0.68 | 0.68 | 0.71 | 0.706 | 0.69 | 0.69 | 0.624 |
| 12/6/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/7/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/8/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/9/2020 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0.01 | 0.02 | 0.003 | 0.01 | 0.02 | 0 | 0 | 0 | 0 | 0 |
| 12/10/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/11/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/12/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/13/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/14/2020 | 0.61 | 0.539 | 0.7 | 0.64 | 0.542 | 0.58 | 0.55 | 0.42 | 0.52 | 0.54 | 0.63 | 0.588 | 0.61 | 0.6 | 0.63 | 0.68 | 0.72 | 0.67 | 0.499 |
| 12/15/2020 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/16/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/17/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/18/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/19/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/20/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/21/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/22/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/23/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/24/2020 | 1.45 | 1.022 | 1.78 | 1.65 | 1.42 | 0.96 | 1.377 | 0.912 | 1.02 | 1.02 | 1.82 | 1.19 | 1.35 | 1.09 | 1.47 | 1.568 | 1.95 | 1.74 | 1.293 |
| 12/25/2020 | 0.48 | 0.961 | 0.6 | 0.6 | 0.56 | 0.83 | 0.574 | 0.44 | 1.01 | 1 | 0.62 | 0.659 | 0.72 | 0.85 | 0.55 | 0.585 | 0.76 | 0.57 | 0.548 |
| 12/26/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/27/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/28/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/29/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/30/2020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/31/2020 | 0.08 | 0.113 | 0.11 | 0.07 | 0.05 | 0.13 | 0.046 | 0.048 | 0.11 | 0.12 | 0.12 | 0.113 | 0.14 | 0.19 | 0.07 | 0.07 | 0.1 | 0.1 | 0.026 |

**Table 16 - January 2021 PWD Rain Gage Records**

| Date/RG | RG1 | RG2 | RG3 | RG4 | RG5 | RG6 | RG7 | RG8 | RG9 | RG10 | RG11 | RG12 | RG13 | RG14 | RG15 | RG16 | RG17 | RG18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/1/2021 | 0.75 | 0.86 | 0.86 | 0.85 | 0.87 | 0.89 | 0.78 | 0.83 | 0.89 | 0.88 | 0.85 | 0.64 | 0.91 | 0.81 | 0.47 | 0.8 | 0.82 | 0.885 |
| 1/2/2021 | 0.04 | 0.03 | 0.04 | 0.05 | 0.03 | 0.05 | 0.04 | 0.05 | 0.05 | 0.06 | 0.04 | 0.02 | 0.05 | 0.03 | 0.02 | 0.04 | 0.04 | 0.047 |
| 1/3/2021 | 0.19 | 0.24 | 0.13 | 0.19 | 0.21 | 0.25 | 0.16 | 0.19 | 0.22 | 0.23 | 0.19 | 0.13 | 0.18 | 0.18 | 0.12 | 0.21 | 0.15 | 0.29 |
| 1/4/2021 | 0.01 | 0.01 | 0 | 0.02 | 0.01 | 0.01 | 0.02 | 0.02 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0 | 0 | 0.01 | 0.02 |
| 1/5/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 |
| 1/6/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/7/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/8/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/9/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/10/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/11/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/12/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/13/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/14/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/15/2021 | 0.07 | 0.07 | 0.03 | 0.05 | 0.07 | 0.06 | 0.05 | 0.05 | 0.06 | 0.04 | 0.05 | 0.04 | 0.05 | 0.05 | 0.04 | 0.07 | 0.05 | 0.06 |
| 1/16/2021 | 0.16 | 0.17 | 0.23 | 0.2 | 0.19 | 0.19 | 0.22 | 0.22 | 0.19 | 0.23 | 0.23 | 0.17 | 0.27 | 0.17 | 0.1 | 0.19 | 0.2 | 0.43 |
| 1/17/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/18/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/19/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/20/2021 | 0 | 0 | 0 | 0.01 | 0 | 0.01 | 0 | 0.01 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/21/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/22/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/23/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/24/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/25/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/26/2021 | 0.08 | 0.1 | 0.169 | 0.15 | 0.12 | 0.11 | 0.08 | 0.12 | 0.1 | 0.23 | 0.12 | 0.04 | 0.16 | 0.08 | 0.05 | 0.09 | 0.1 | 0.22 |
| 1/27/2021 | 0 | 0 | 0.001 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/28/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/29/2021 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/30/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/31/2021 | 0 | 0 | 0.19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0 |

**Table 17 - January 2021 PWD Rain Gage Records**

| Date/RG | RG19 | RG20 | RG21 | RG22 | RG23 | RG24 | RG25 | RG26 | RG27 | RG28 | RG29 | RG30 | RG31 | RG32 | RG33 | RG34 | RG35 | RG36 | RG37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/1/2021 | 0.89 | 0.805 | 0.92 | 0.89 | 0.755 | 0.77 | 0.804 | 0.599 | 0.8 | 0.8 | 0.82 | 0.847 | 0.82 | 0.81 | 0.85 | 0.886 | 0.97 | 0.94 | 0.688 |
| 1/2/2021 | 0.03 | 0.054 | 0.05 | 0.05 | 0.039 | 0.04 | 0.031 | 0.027 | 0.05 | 0.06 | 0.05 | 0.044 | 0.06 | 0.05 | 0.04 | 0.046 | 0.06 | 0.06 | 0.023 |
| 1/3/2021 | 0.19 | 0.173 | 0.27 | 0.22 | 0.188 | 0.18 | 0.198 | 0.155 | 0.14 | 0.2 | 0.22 | 0.189 | 0.2 | 0.2 | 0.22 | 0.27 | 0.3 | 0.25 | 0.15 |
| 1/4/2021 | 0 | 0.02 | 0.03 | 0.01 | 0.009 | 0.01 | 0.008 | 0.004 | 0.01 | 0.03 | 0.02 | 0.013 | 0.02 | 0.02 | 0.01 | 0.01 | 0.02 | 0.02 | 0.009 |
| 1/5/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/6/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/7/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/8/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/9/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/10/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/11/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/12/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/13/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/14/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/15/2021 | 0.05 | 0.04 | 0.08 | 0.06 | 0.069 | 0.04 | 0.065 | 0.047 | 0.04 | 0.04 | 0.08 | 0.048 | 0.02 | 0.05 | 0.07 | 0.01 | 0.08 | 0.05 | 0.047 |
| 1/16/2021 | 0.22 | 0.231 | 0.22 | 0.18 | 0.16 | 0.24 | 0.178 | 0.161 | 0.23 | 0.23 | 0.24 | 0.228 | 0.24 | 0.24 | 0.18 | 0.3 | 0.21 | 0.249 | 0.17 |
| 1/17/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/18/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/19/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/20/2021 | 0 | 0.001 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.006 | 0 | 0 | 0 | 0 | 0 | 0.004 | 0 |
| 1/21/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/22/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/23/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/24/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/25/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/26/2021 | 0.1 | 0.158 | 0.18 | 0.1 | 0.08 | 0.23 | 0.093 | 0.079 | 0.15 | 0.204 | 0.27 | 0.136 | 0.28 | 0.28 | 0.11 | 0.13 | 0.14 | 0.154 | 0.056 |
| 1/27/2021 | 0 | 0.008 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0.002 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0.002 | 0 |
| 1/28/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/29/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 |
| 1/30/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1/31/2021 | 0.15 | 0.001 | 0 | 0 | 0 | 0.01 | 0.01 | 0.01 | 0 | 0.005 | 0 | 0.055 | 0 | 0 | 0 | 0 | 0 | 0.003 | 0 |

**Table 18 – February 2021 PWD Rain Gage Records**

| Date/RG | RG1 | RG2 | RG3 | RG4 | RG5 | RG6 | RG7 | RG8 | RG9 | RG10 | RG11 | RG12 | RG13 | RG14 | RG15 | RG16 | RG17 | RG18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2/1/2021 | 0.612 | 0.612 | 0.75 | 0.448 | 0.62 | 0.604 | 0.347 | 0.327 | 0.611 | 0.446 | 0.38 | 0.613 | 0.436 | 0.429 | 0.605 | 0.85 | 0.344 | 0.605 |
| 2/2/2021 | 0.195 | 0.197 | 0.33 | 0.364 | 0.19 | 0.205 | 0.517 | 0.544 | 0.189 | 0.364 | 0.55 | 0.198 | 0.392 | 0.416 | 0.203 | 0.19 | 0.52 | 0.2 |
| 2/3/2021 | 0 | 0 | 0 | 0.004 | 0 | 0 | 0.036 | 0.04 | 0 | 0.004 | 0.04 | 0 | 0.012 | 0.024 | 0 | 0 | 0.036 | 0.004 |
| 2/4/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/5/2021 | 0 | 0.038 | 0.06 | 0.068 | 0.05 | 0.063 | 0.06 | 0.06 | 0.054 | 0.07 | 0.06 | 0.05 | 0.061 | 0.048 | 0.03 | 0.04 | 0.06 | 0.08 |
| 2/6/2021 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/7/2021 | 0.43 | 0.443 | 0.46 | 0.44 | 0.57 | 0.466 | 0.427 | 0.43 | 0.48 | 0.452 | 0.43 | 0.566 | 0.452 | 0.454 | 0.5 | 0.49 | 0.434 | 0.388 |
| 2/8/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/9/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/10/2021 | 0 | 0 | 0.02 | 0 | 0 | 0 | 0 | 0 | 0 | 0.02 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/11/2021 | 0.019 | 0.018 | 0.15 | 0.011 | 0.04 | 0.013 | 0.018 | 0.02 | 0.018 | 0.011 | 0.14 | 0.019 | 0.013 | 0.016 | 0.019 | 0.15 | 0.018 | 0.004 |
| 2/12/2021 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/13/2021 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.02 | 0 | 0 | 0 | 0 | 0.04 | 0 | 0 |
| 2/14/2021 | 0 | 0 | 0 | 0.011 | 0 | 0 | 0 | 0.01 | 0 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 |
| 2/15/2021 | 0 | 0.01 | 0 | 0.07 | 0.01 | 0.02 | 0 | 0.02 | 0 | 0.003 | 0.01 | 0 | 0 | 0.01 | 0.01 | 0 | 0.01 | 0.13 |
| 2/16/2021 | 0.75 | 0.88 | 0.9 | 0.94 | 0.81 | 0.94 | 0.87 | 0.89 | 0.948 | 0.896 | 0.92 | 0.69 | 0.901 | 0.85 | 0.48 | 0.89 | 0.89 | 1.27 |
| 2/17/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/18/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.68 | 0 | 0 |
| 2/19/2021 | 0.06 | 0.06 | 0.012 | 0.024 | 0.06 | 0.042 | 0.024 | 0.006 | 0.054 | 0.006 | 0.006 | 0.06 | 0.012 | 0.048 | 0.06 | 0.11 | 0.018 | 0.012 |
| 2/20/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 |
| 2/21/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/22/2021 | 0.529 | 0.528 | 0.55 | 0.561 | 0.53 | 0.53 | 0.596 | 0.605 | 0.526 | 0.559 | 0.6 | 0.53 | 0.567 | 0.566 | 0.528 | 0.53 | 0.589 | 0.532 |
| 2/23/2021 | 0 | 0 | 0 | 0.007 | 0 | 0 | 0.045 | 0.05 | 0 | 0.007 | 0.05 | 0 | 0.015 | 0.025 | 0 | 0 | 0.04 | 0.005 |
| 2/24/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/25/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/26/2021 | 0.01 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 |
| 2/27/2021 | 0.35 | 0.37 | 0.39 | 0.41 | 0.41 | 0.43 | 0.38 | 0.42 | 0.42 | 0.44 | 0.41 | 0.26 | 0.44 | 0.37 | 0.22 | 0.39 | 0.39 | 1.03 |
| 2/28/2021 | 0.9 | 1 | 0.8 | 0.87 | 1.09 | 1.02 | 0.83 | 0.84 | 1.02 | 0.85 | 0.84 | 0.82 | 0.9 | 0.91 | 0.54 | 1.04 | 0.83 | 1.76 |

**Table 19 - February 2021 PWD Rain Gage Records**

| Date/RG | RG19 | RG20 | RG21 | RG22 | RG23 | RG24 | RG25 | RG26 | RG27 | RG28 | RG29 | RG30 | RG31 | RG32 | RG33 | RG34 | RG35 | RG36 | RG37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2/1/2021 | 0.99 | 0.383 | 0.619 | 0.609 | 0.603 | 0.38 | 0.646 | 0.601 | 0.444 | 0.366 | 0.598 | 0.425 | 0.358 | 0.313 | 0.598 | 0.582 | 0.6 | 0.632 | 0.613 |
| 2/2/2021 | 0.16 | 0.407 | 0.172 | 0.201 | 0.203 | 0.456 | 0.19 | 0.224 | 0.356 | 0.443 | 0.2 | 0.485 | 0.432 | 0.452 | 0.219 | 0.227 | 0.199 | 0.179 | 0.199 |
| 2/3/2021 | 0 | 0.004 | 0 | 0 | 0 | 0.004 | 0 | 0.004 | 0 | 0.004 | 0.004 | 0.032 | 0.012 | 0.008 | 0.004 | 0.004 | 0.004 | 0 | 0 |
| 2/4/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/5/2021 | 0.03 | 0.071 | 0.059 | 0.062 | 0 | 0.09 | 0.044 | 0.04 | 0.07 | 0.083 | 0.12 | 0.06 | 0.08 | 0.08 | 0.06 | 0.08 | 0.065 | 0.07 | 0.045 |
| 2/6/2021 | 0 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/7/2021 | 0.36 | 0.448 | 0.371 | 0.481 | 0.43 | 0.451 | 0.518 | 0.48 | 0.452 | 0.45 | 0.368 | 0.422 | 0.44 | 0.444 | 0.49 | 0.483 | 0.405 | 0.388 | 0.513 |
| 2/8/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/9/2021 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0.001 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0.006 | 0.003 | 0.007 |
| 2/10/2021 | 0.01 | 0.001 | 0.01 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0.006 | 0 | 0.007 | 0 | 0 | 0 | 0 | 0.006 | 0.004 | 0 |
| 2/11/2021 | 0.13 | 0.03 | 0.001 | 0.016 | 0.018 | 0.19 | 0.041 | 0.031 | 0.01 | 0.108 | 0.002 | 0.077 | 0.01 | 0.01 | 0.017 | 0.012 | 0.005 | 0.014 | 0.022 |
| 2/12/2021 | 0 | 0.001 | 0 | 0.01 | 0 | 0 | 0 | 0.001 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/13/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004 | 0.004 | 0 | 0 | 0 | 0.008 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/14/2021 | 0 | 0.006 | 0.01 | 0 | 0 | 0.01 | 0.001 | 0.001 | 0.002 | 0.009 | 0 | 0.002 | 0.01 | 0.01 | 0 | 0.01 | 0.006 | 0.003 | 0 |
| 2/15/2021 | 0 | 0.021 | 0.004 | 0.01 | 0 | 0 | 0.005 | 0.019 | 0.02 | 0.007 | 0.01 | 0.011 | 0.01 | 0.02 | 0.01 | 0.01 | 0.002 | 0.036 | 0.001 |
| 2/16/2021 | 0.94 | 0.928 | 0.965 | 0.96 | 0.755 | 0.84 | 0.808 | 0.674 | 0.94 | 0.876 | 0.85 | 0.912 | 0.88 | 0.89 | 1.48 | 0.87 | 0.96 | 1.027 | 0.722 |
| 2/17/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/18/2021 | 0.91 | 0 | 0 | 0 | 0 | 0 | 0.09 | 0.053 | 0 | 0 | 0 | 0.108 | 0 | 0 | 0 | 0 | 0 | 0.045 | 0 |
| 2/19/2021 | 0.02 | 0.018 | 0 | 0.054 | 0.054 | 0.012 | 0.066 | 0.058 | 0.018 | 0.012 | 0 | 0.002 | 0.006 | 0.012 | 0.054 | 0.036 | 0.012 | 0.008 | 0.06 |
| 2/20/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/21/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/22/2021 | 0.52 | 0.583 | 0.518 | 0.527 | 0.528 | 0.62 | 0.529 | 0.533 | 0.56 | 0.608 | 0.529 | 0.587 | 0.586 | 0.6 | 0.541 | 0.536 | 0.533 | 0.52 | 0.529 |
| 2/23/2021 | 0 | 0.012 | 0 | 0 | 0 | 0.02 | 0 | 0.005 | 0.004 | 0.018 | 0.005 | 0.04 | 0.017 | 0.018 | 0.005 | 0.005 | 0.005 | 0 | 0 |
| 2/24/2021 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 |
| 2/25/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2/26/2021 | 0 | 0 | 0 | 0.01 | 0.009 | 0 | 0.004 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0.02 | 0.01 | 0 | 0.003 | 0.001 |
| 2/27/2021 | 0.34 | 0.33 | 0.4 | 0.44 | 0.352 | 0.36 | 0.377 | 0.41 | 0.39 | 0.39 | 0.37 | 0.412 | 0.39 | 0.38 | 0.41 | 0.41 | 0.41 | 0.526 | 0.293 |
| 2/28/2021 | 0.89 | 0.66 | 1.01 | 1.04 | 0.904 | 0.72 | 1 | 0.92 | 0.76 | 0.72 | 0.84 | 0.856 | 0.82 | 0.68 | 1.06 | 0.98 | 1.06 | 1.162 | 0.869 |

**Table 20 – March 2021 PWD Rain Gage Records**

| Date/RG | RG1 | RG2 | RG3 | RG4 | RG5 | RG6 | RG7 | RG8 | RG9 | RG10 | RG11 | RG12 | RG13 | RG14 | RG15 | RG16 | RG17 | RG18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3/1/2021 | 0.13 | 0.12 | 0.19 | 0.18 | 0.15 | 0.17 | 0.15 | 0.17 | 0.17 | 0.15 | 0.17 | 0.14 | 0.18 | 0.15 | 0.08 | 0.14 | 0.17 | 0.11 |
| 3/2/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/3/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/4/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/5/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/6/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/7/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/8/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/9/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/10/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/11/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/12/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/13/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/14/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/15/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/16/2021 | 0 | 0 | 0 | 0 | 0.002 | 0.03 | 0 | 0 | 0.04 | 0.01 | 0 | 0 | 0 | 0.01 | 0.01 | 0.02 | 0 | 0.02 |
| 3/17/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/18/2021 | 0.873 | 0.88 | 0.8 | 0.95 | 0.783 | 0.91 | 0.79 | 0.81 | 0.89 | 0.87 | 0.79 | 0.78 | 0.85 | 0.83 | 0.5 | 0.86 | 0.8 | 0.76 |
| 3/19/2021 | 0.011 | 0.01 | 0.01 | 0.05 | 0.011 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 | 0.02 | 0.02 | 0.01 | 0.02 | 0.03 | 0.01 |
| 3/20/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/21/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/22/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/23/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/24/2021 | 1.556 | 1.97 | 1.51 | 1.34 | 1.281 | 2.09 | 1.62 | 1.69 | 1.99 | 1.65 | 1.64 | 1.22 | 1.52 | 1.33 | 0.88 | 1.73 | 1.39 | 1.87 |
| 3/25/2021 | 0.012 | 0.02 | 0.01 | 0 | 0.009 | 0.02 | 0.02 | 0.01 | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.03 |
| 3/26/2021 | 0 | 0 | 0 | 0.01 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/27/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/28/2021 | 0.602 | 0.61 | 0.62 | 0.45 | 0.63 | 0.58 | 0.51 | 0.6 | 0.55 | 0.65 | 0.62 | 0.51 | 0.58 | 0.46 | 0.26 | 0.56 | 0.53 | 0.612 |
| 3/29/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/30/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/31/2021 | 0.836 | 0.66 | 0.48 | 0.48 | 0.84 | 0.44 | 0.5 | 0.5 | 0.56 | 0.4 | 0.46 | 0.85 | 0.53 | 0.6 | 0.38 | 0.68 | 0.49 | 0.459 |

**Table 21 - March 2021 PWD Rain Gage Records**

| Date/RG | RG19 | RG20 | RG21 | RG22 | RG23 | RG24 | RG25 | RG26 | RG27 | RG28 | RG29 | RG30 | RG31 | RG32 | RG33 | RG34 | RG35 | RG36 | RG37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3/1/2021 | 0.13 | 0.15 | 0.16 | 0.18 | 0.129 | 0.16 | 0.138 | 0.16 | 0.16 | 0.16 | 0.19 | 0.165 | 0.17 | 0.22 | 0.14 | 0.16 | 0.17 | 0.152 | 0.138 |
| 3/2/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/3/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/4/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/5/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/6/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/7/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/8/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/9/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/10/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/11/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/12/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/13/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/14/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/15/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/16/2021 | 0 | 0.01 | 0 | 0 | 0 | 0.02 | 0.005 | 0 | 0.02 | 0.04 | 0.02 | 0.002 | 0.02 | 0.04 | 0 | 0.01 | 0 | 0.011 | 0 |
| 3/17/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.001 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/18/2021 | 0.85 | 0.7 | 0.98 | 0.91 | 0.867 | 0.81 | 0.833 | 0.631 | 0.76 | 0.87 | 0.91 | 0.815 | 0.92 | 0.95 | 0.85 | 0.94 | 0.95 | 0.898 | 0.782 |
| 3/19/2021 | 0 | 0.02 | 0.03 | 0.01 | 0.011 | 0.02 | 0.014 | 0.011 | 0.03 | 0.05 | 0.02 | 0.012 | 0.03 | 0.04 | 0.02 | 0.02 | 0.02 | 0.016 | 0.01 |
| 3/20/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/21/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/22/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/23/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/24/2021 | 2.12 | 1.32 | 2.11 | 2.16 | 1.46 | 1.59 | 1.629 | 1.218 | 1.41 | 1.61 | 1.84 | 1.677 | 1.83 | 1.75 | 2.1 | 2.36 | 2.21 | 2.071 | 1.275 |
| 3/25/2021 | 0.01 | 0 | 0.02 | 0.02 | 0.01 | 0.01 | 0.012 | 0.011 | 0.01 | 0.004 | 0.01 | 0.011 | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 | 0.017 | 0.009 |
| 3/26/2021 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0.003 | 0 | 0 | 0.01 | 0.01 | 0 | 0 | 0.01 | 0.005 | 0 |
| 3/27/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/28/2021 | 0.67 | 0.48 | 0.67 | 0.54 | 0.6 | 0.59 | 0.591 | 0.55 | 0.55 | 0.61 | 0.66 | 0.609 | 0.65 | 0.66 | 0.59 | 0.66 | 0.81 | 0.686 | 0.536 |
| 3/29/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/30/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3/31/2021 | 0.34 | 0.42 | 0.31 | 0.53 | 0.88 | 0.37 | 0.771 | 0.52 | 0.46 | 0.38 | 0.33 | 0.457 | 0.34 | 0.35 | 0.61 | 0.43 | 0.37 | 0.393 | 0.836 |

Table 22 - April 2021 PWD Rain Gage Records

| Date/RG | RG1 | RG2 | RG3 | RG4 | RG5 | RG6 | RG7 | RG8 | RG9 | RG10 | RG11 | RG12 | RG13 | RG14 | RG15 | RG16 | RG17 | RG18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4/1/2021 | 0.042 | 0.05 | 0.02 | 0.02 | 0.03 | 0.08 | 0.02 | 0.03 | 0.07 | 0.04 | 0.03 | 0.01 | 0.02 | 0.02 | 0.01 | 0.04 | 0.02 | 0.044 |
| 4/2/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/3/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/4/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/5/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/6/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/7/2021 | 0.002 | 0.01 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0.003 |
| 4/8/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/9/2021 | 0.012 | 0.02 | 0 | 0 | 0.02 | 0.02 | 0 | 0.01 | 0.01 | 0.01 | 0.01 | 0.03 | 0 | 0.01 | 0 | 0.01 | 0 | 0.01 |
| 4/10/2021 | 0.178 | 0.17 | 0.09 | 0.09 | 0.15 | 0.22 | 0.16 | 0.16 | 0.23 | 0.09 | 0.13 | 0.14 | 0.12 | 0.2 | 0.09 | 0.2 | 0.17 | 0.191 |
| 4/11/2021 | 1.358 | 1.09 | 0.75 | 0.8 | 1.05 | 1.04 | 0.67 | 0.71 | 1.05 | 0.69 | 0.68 | 0.9 | 0.7 | 0.89 | 0.5 | 0.99 | 0.71 | 0.894 |
| 4/12/2021 | 0.01 | 0.01 | 0.18 | 0.32 | 0.03 | 0.01 | 0.07 | 0.06 | 0.02 | 0.12 | 0.08 | 0.02 | 0.13 | 0.11 | 0.02 | 0.03 | 0.12 | 0.048 |
| 4/13/2021 | 0.02 | 0.02 | 0.01 | 0.02 | 0.01 | 0.03 | 0.02 | 0.02 | 0.02 | 0.04 | 0.01 | 0 | 0.02 | 0.03 | 0.01 | 0.02 | 0.01 | 0.016 |
| 4/14/2021 | 0.018 | 0.01 | 0.03 | 0 | 0 | 0.04 | 0 | 0.02 | 0.03 | 0.05 | 0.03 | 0.02 | 0.02 | 0 | 0 | 0.01 | 0.01 | 0.012 |
| 4/15/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0.02 | 0 | 0.01 | 0.01 | 0 | 0.01 | 0.01 | 0.01 | 0 | 0.01 | 0.01 |
| 4/16/2021 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0.01 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 |
| 4/17/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/18/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/19/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/20/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/21/2021 | 0.062 | 0.07 | 0.07 | 0.08 | 0.08 | 0.08 | 0.04 | 0.07 | 0.13 | 0.06 | 0.07 | 0.05 | 0.07 | 0.08 | 0.07 | 0.08 | 0.06 | 0.06 |
| 4/22/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/23/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/24/2021 | 0.03 | 0.03 | 0.01 | 0 | 0.02 | 0.04 | 0.01 | 0.02 | 0.02 | 0.04 | 0.02 | 0.02 | 0.02 | 0.01 | 0.01 | 0.02 | 0.01 | 0.03 |
| 4/25/2021 | 0.485 | 0.5 | 0.58 | 0.61 | 0.54 | 0.6 | 0.59 | 0.54 | 0.58 | 0.6 | 0.53 | 0.4 | 0.58 | 0.51 | 0.32 | 0.56 | 0.58 | 0.55 |
| 4/26/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/27/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/28/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4/29/2021 | 0.564 | 0.36 | 0.24 | 0.46 | 0.38 | 0.565 | 0.49 | 0.36 | 0.56 | 0.41 | 0.31 | 0.63 | 0.3 | 0.5 | 0.23 | 0.53 | 0.61 | 0.43 |
| 4/30/2021 | 0.002 | 0.01 | 0 | 0 | 0 | 0.002 | 0.02 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0.02 | 0 | 0 | 0 | 0 |

**Table 23 – April 2021 PWD Rain Gage Records**

| Date/RG | RG19 | RG20 | RG21 | RG22 | RG23 | RG24 | RG25 | RG26 | RG27 | RG28 | RG29 | RG30 | RG31 | RG32 | RG33 | RG34 | RG35 | RG36 | RG37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4/1/2021** | 0.03 | 0.02 | 0.06 | 0.06 | 0.04 | 0.04 | 0.031 | 0.05 | 0.02 | 0.05 | 0.06 | 0.03 | 0.05 | 0.08 | 0.05 | 0.06 | 0.1 | 0.079 | 0.015 |
| **4/2/2021** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **4/3/2021** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **4/4/2021** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **4/5/2021** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **4/6/2021** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **4/7/2021** | 0 | 0 | 0.01 | 0 | 0 | 0 | 0.001 | 0.01 | 0 | 0 | 0.01 | 0.001 | 0 | 0 | 0.01 | 0 | 0 | 0.002 | 0 |
| **4/8/2021** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **4/9/2021** | 0.02 | 0 | 0.01 | 0.01 | 0.01 | 0 | 0.018 | 0 | 0 | 0 | 0 | 0.009 | 0 | 0 | 0.01 | 0.02 | 0.01 | 0.012 | 0.026 |
| **4/10/2021** | 0.22 | 0.038 | 0.17 | 0.24 | 0.18 | 0.04 | 0.163 | 0.18 | 0.04 | 0.02 | 0.16 | 0.139 | 0.08 | 0.052 | 0.21 | 0.3 | 0.29 | 0.234 | 0.147 |
| **4/11/2021** | 0.94 | 0.73 | 0.85 | 1.044 | 1.43 | 0.69 | 1.034 | 0.96 | 0.7 | 0.793 | 0.7 | 0.713 | 0.69 | 0.71 | 0.94 | 1.02 | 1.01 | 0.971 | 0.966 |
| **4/12/2021** | 0.05 | 0.29 | 0.04 | 0.017 | 0.01 | 0.24 | 0.026 | 0.05 | 0.29 | 0.263 | 0.09 | 0.086 | 0.12 | 0.28 | 0.01 | 0.04 | 0.03 | 0.03 | 0.021 |
| **4/13/2021** | 0 | 0.02 | 0.02 | 0.021 | 0.02 | 0.02 | 0.013 | 0.02 | 0.03 | 0.03 | 0.03 | 0.014 | 0.04 | 0.04 | 0.01 | 0.02 | 0.02 | 0.02 | 0.003 |
| **4/14/2021** | 0.01 | 0.03 | 0.03 | 0.031 | 0.02 | 0.03 | 0.007 | 0 | 0.01 | 0.026 | 0.018 | 0.025 | 0.01 | 0 | 0.02 | 0.03 | 0.02 | 0.026 | 0.016 |
| **4/15/2021** | 0.02 | 0 | 0.03 | 0 | 0 | 0 | 0 | 0.02 | 0 | 0 | 0 | 0.013 | 0 | 0.01 | 0 | 0 | 0 | 0.008 | 0 |
| **4/16/2021** | 0 | 0 | 0 | 0 | 0 | 0.01 | 0.001 | 0 | 0.01 | 0 | 0 | 0.005 | 0.01 | 0.01 | 0 | 0 | 0 | 0 | 0 |
| **4/17/2021** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **4/18/2021** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **4/19/2021** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **4/20/2021** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **4/21/2021** | 0.04 | 0.09 | 0.03 | 0.13 | 0.06 | 0.02 | 0.075 | 0.08 | 0.06 | 0.06 | 0.01 | 0.063 | 0.03 | 0.05 | 0.16 | 0.08 | 0.06 | 0.062 | 0.056 |
| **4/22/2021** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **4/23/2021** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **4/24/2021** | 0.06 | 0 | 0.06 | 0.02 | 0.03 | 0.03 | 0.021 | 0.01 | 0 | 0.03 | 0.03 | 0.024 | 0.03 | 0.01 | 0.03 | 0.08 | 0.06 | 0.047 | 0.021 |
| **4/25/2021** | 0.64 | 0.49 | 0.62 | 0.6 | 0.48 | 0.62 | 0.517 | 0.57 | 0.53 | 0.59 | 0.59 | 0.559 | 0.66 | 0.67 | 0.57 | 0.61 | 0.64 | 0.604 | 0.433 |
| **4/26/2021** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **4/27/2021** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **4/28/2021** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **4/29/2021** | 0.38 | 0.28 | 0.34 | 0.6 | 0.61 | 0.44 | 0.45 | 0.4 | 0.3 | 0.57 | 0.46 | 0.36 | 0.54 | 0.463 | 0.32 | 0.54 | 0.43 | 0.419 | 0.585 |
| **4/30/2021** | 0.01 | 0 | 0.04 | 0 | 0 | 0 | 0.001 | 0 | 0 | 0 | 0.01 | 0.003 | 0 | 0 | 0 | 0 | 0.06 | 0.032 | 0 |

**Table 24 – May 2021 PWD Rain Gage Records**

| Date/RG | RG1 | RG2 | RG3 | RG4 | RG5 | RG6 | RG7 | RG8 | RG9 | RG10 | RG11 | RG12 | RG13 | RG14 | RG15 | RG16 | RG17 | RG18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/1/2021 | 0 | 0 | 0 | 0 | 0 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/2/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/3/2021 | 0.107 | 0.18 | 0.24 | 0.1 | 0.08 | 0.35 | 0.18 | 0.28 | 0.29 | 0.35 | 0.27 | 0.06 | 0.23 | 0.13 | 0.06 | 0.14 | 0.15 | 0.3 |
| 5/4/2021 | 0.077 | 0.11 | 0.08 | 0.09 | 0.1 | 0.13 | 0.09 | 0.06 | 0.12 | 0.1 | 0.07 | 0.05 | 0.08 | 0.14 | 0.07 | 0.08 | 0.07 | 0.05 |
| 5/5/2021 | 0.387 | 0.34 | 0.26 | 0.25 | 0.33 | 0.32 | 0.3 | 0.24 | 0.37 | 0.27 | 0.25 | 0.34 | 0.26 | 0.33 | 0.2 | 0.34 | 0.27 | 0.29 |
| 5/6/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/7/2021 | 0.1 | 0.11 | 0.06 | 0.04 | 0.08 | 0.13 | 0.04 | 0.02 | 0.1 | 0.01 | 0.01 | 0.08 | 0.02 | 0.03 | 0.03 | 0.08 | 0.02 | 0.14 |
| 5/8/2021 | 0.085 | 0.05 | 0.42 | 0.4 | 0.31 | 0.05 | 0.52 | 0.37 | 0.06 | 0.3 | 0.39 | 0.4 | 0.53 | 0.4 | 0.09 | 0.15 | 0.56 | 0.1 |
| 5/9/2021 | 0.04 | 0.03 | 0.04 | 0.04 | 0.03 | 0.03 | 0.04 | 0.04 | 0.03 | 0.05 | 0.04 | 0.02 | 0.05 | 0.05 | 0.02 | 0.03 | 0.04 | 0.03 |
| 5/10/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/11/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/12/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/13/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/14/2021 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/15/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/16/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/17/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/18/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/19/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/20/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/21/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/22/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/23/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/24/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/25/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/26/2021 | 0.959 | 0.84 | 1.15 | 0.7 | 1.17 | 0.54 | 0.62 | 1.16 | 0.62 | 0.995 | 1.06 | 0.92 | 1.25 | 1.11 | 0.57 | 0.81 | 0.81 | 0.76 |
| 5/27/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/28/2021 | 0.754 | 0.93 | 1.03 | 0.64 | 0.79 | 1.25 | 1.17 | 1.03 | 1.22 | 0.93 | 0.99 | 0.39 | 1.08 | 0.67 | 0.47 | 0.92 | 1.02 | 0.9 |
| 5/29/2021 | 0.583 | 0.77 | 0.6 | 0.79 | 0.74 | 0.68 | 0.71 | 0.58 | 0.71 | 0.65 | 0.59 | 0.44 | 0.62 | 0.81 | 0.49 | 0.64 | 0.62 | 0.49 |
| 5/30/2021 | 0.287 | 0.28 | 0.4 | 0.51 | 0.36 | 0.27 | 0.33 | 0.32 | 0.26 | 0.4 | 0.33 | 0.21 | 0.37 | 0.33 | 0.18 | 0.262 | 0.35 | 0.21 |
| 5/31/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 25 - May 2021 PWD Rain Gage Records**

| Date/RG | RG19 | RG20 | RG21 | RG22 | RG23 | RG24 | RG25 | RG26 | RG27 | RG28 | RG29 | RG30 | RG31 | RG32 | RG33 | RG34 | RG35 | RG36 | RG37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/1/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.02 | 0.008 | 0 |
| 5/2/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/3/2021 | 0.36 | 0.15 | 0.33 | 0.3 | 0.09 | 0.41 | 0.109 | 0.19 | 0.18 | 0.3 | 0.39 | 0.281 | 0.46 | 0.366 | 0.25 | 0.31 | 0.28 | 0.306 | 0.069 |
| 5/4/2021 | 0.06 | 0.08 | 0.06 | 0.09 | 0.07 | 0.11 | 0.089 | 0.15 | 0.09 | 0.11 | 0.06 | 0.073 | 0.12 | 0.106 | 0.09 | 0.15 | 0.06 | 0.075 | 0.059 |
| 5/5/2021 | 0.26 | 0.26 | 0.28 | 0.36 | 0.4 | 0.29 | 0.335 | 0.35 | 0.24 | 0.38 | 0.31 | 0.258 | 0.3 | 0.303 | 0.36 | 0.26 | 0.28 | 0.295 | 0.343 |
| 5/6/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/7/2021 | 0.12 | 0.22 | 0.05 | 0.08 | 0.11 | 0.11 | 0.084 | 0.06 | 0.02 | 0.02 | 0.07 | 0.027 | 0.02 | 0.071 | 0.04 | 0.08 | 0.09 | 0.097 | 0.082 |
| 5/8/2021 | 0.13 | 0.54 | 0.07 | 0.04 | 0.09 | 0.32 | 0.24 | 0.18 | 0.39 | 0.53 | 0.12 | 0.36 | 0.23 | 0.365 | 0.04 | 0.01 | 0.05 | 0.074 | 0.348 |
| 5/9/2021 | 0.02 | 0.02 | 0.03 | 0.02 | 0.02 | 0.05 | 0.03 | 0.03 | 0.04 | 0.04 | 0.06 | 0.04 | 0.05 | 0.043 | 0.02 | 0.03 | 0.02 | 0.027 | 0.022 |
| 5/10/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0.01 | 0.003 | 0 | 0 | 0 | 0 | 0 |
| 5/11/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/12/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/13/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/14/2021 | 0 | 0 | 0 | 0.11 | 0 | 0.1 | 0.002 | 0 | 0 | 0.1 | 0.1 | 0.001 | 0 | 0.068 | 0 | 0 | 0 | 0.019 | 0 |
| 5/15/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/16/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/17/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/18/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/19/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/20/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/21/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/22/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/23/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/24/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/25/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/26/2021 | 0.93 | 0.61 | 0.46 | 0.68 | 0.99 | 0.48 | 1.001 | 0.67 | 0.89 | 0.47 | 0.38 | 1.018 | 0.53 | 0.557 | 0.92 | 0.701 | 0.49 | 0.59 | 0.952 |
| 5/27/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5/28/2021 | 1.07 | 0.79 | 0.87 | 1.28 | 0.71 | 0.9 | 0.787 | 0.69 | 0.91 | 0.93 | 0.87 | 1.004 | 0.9 | 0.91 | 1.22 | 1.166 | 0.99 | 1.21 | 0.494 |
| 5/29/2021 | 0.56 | 0.59 | 0.63 | 0.69 | 0.54 | 0.55 | 0.676 | 0.55 | 0.6 | 0.69 | 0.57 | 0.594 | 0.54 | 0.589 | 0.76 | 0.696 | 0.69 | 0.64 | 0.493 |
| 5/30/2021 | 0.27 | 0.36 | 0.27 | 0.24 | 0.29 | 0.33 | 0.309 | 0.22 | 0.35 | 0.5 | 0.27 | 0.328 | 0.32 | 0.371 | 0.22 | 0.246 | 0.27 | 0.27 | 0.237 |
| 5/31/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 26 - June 2021 PWD Rain Gage Records**

| Date/RG | RG1 | RG2 | RG3 | RG4 | RG5 | RG6 | RG7 | RG8 | RG9 | RG10 | RG11 | RG12 | RG13 | RG14 | RG15 | RG16 | RG17 | RG18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6/1/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/2/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/3/2021 | 0.504 | 0.52 | 0.86 | 0.81 | 0.77 | 0.81 | 0.8 | 0.8 | 0.58 | 1.27 | 0.92 | 0.21 | 0.87 | 0.83 | 0.34 | 0.574 | 0.8 | 0.68 |
| 6/4/2021 | 0.254 | 0.33 | 0.87 | 0.67 | 1.12 | 0.18 | 0.395 | 0.35 | 0.73 | 0.9 | 0.37 | 0.26 | 0.7 | 0.91 | 0.41 | 0.582 | 0.37 | 0.12 |
| 6/5/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/6/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/7/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/8/2021 | 0.728 | 1.53 | 0.27 | 0.18 | 0.57 | 0.73 | 0.33 | 0.33 | 0.88 | 0.34 | 0.32 | 0.5 | 0.29 | 0.39 | 0.3 | 0.547 | 0.26 | 0.47 |
| 6/9/2021 | 0.004 | 0.02 | 0 | 0.01 | 0 | 0.02 | 0.005 | 0 | 0.01 | 0.01 | 0 | 0 | 0 | 0.03 | 0 | 0.006 | 0.03 | 0 |
| 6/10/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0.005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.06 | 0 |
| 6/11/2021 | 0.155 | 0.14 | 0.09 | 0.1 | 0.13 | 0.1 | 0.115 | 0.11 | 0.11 | 0.08 | 0.15 | 0.12 | 0.12 | 0.08 | 0.05 | 0.18 | 0.14 | 0.09 |
| 6/12/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/13/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/14/2021 | 1.231 | 1.98 | 0.49 | 0.29 | 2.31 | 0.96 | 0.776 | 0.88 | 0.68 | 0.57 | 0.1 | 1.49 | 0.53 | 1.04 | 0.43 | 1.96 | 0.62 | 0.49 |
| 6/15/2021 | 0.067 | 0.09 | 0.25 | 0.27 | 0.09 | 0.25 | 0.331 | 0.39 | 0.15 | 0.26 | 0.06 | 0.08 | 0.31 | 0.15 | 0.07 | 0.13 | 0.37 | 0.37 |
| 6/16/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/17/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/18/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/19/2021 | 0.049 | 0.04 | 0.24 | 0.19 | 0.04 | 0.25 | 0.27 | 0.31 | 0.07 | 0.2 | 0.11 | 0.06 | 0.17 | 0.13 | 0.01 | 0.02 | 0.32 | 0.28 |
| 6/20/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/21/2021 | 0.191 | 0.2 | 0.17 | 0.14 | 0.16 | 0.22 | 0.182 | 0.2 | 0.22 | 0.21 | 0.08 | 0.13 | 0.18 | 0.16 | 0.08 | 0.27 | 0.16 | 0.257 |
| 6/22/2021 | 0.189 | 0.19 | 0.16 | 0.22 | 0.2 | 0.15 | 0.141 | 0.14 | 0.15 | 0.17 | 0.145 | 0.21 | 0.16 | 0.15 | 0.08 | 0.22 | 0.15 | 0.152 |
| 6/23/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/24/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/25/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/26/2021 | 0.002 | 0.01 | 0.01 | 0.07 | 0.04 | 0.02 | 0.018 | 0.01 | 0 | 0.02 | 0.012 | 0.03 | 0.01 | 0.1 | 0.02 | 0.03 | 0.01 | 0.136 |
| 6/27/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/28/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/29/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/30/2021 | 0.017 | 0 | 0 | 0 | 0.23 | 0.01 | 0.009 | 0 | 0 | 0.01 | 0.003 | 0.03 | 0 | 0.05 | 0.06 | 0.08 | 0.01 | 0.014 |

**Table 27 - June 2021 PWD Rain Gage Records**

| Date/RG | RG19 | RG20 | RG21 | RG22 | RG23 | RG24 | RG25 | RG26 | RG27 | RG28 | RG29 | RG30 | RG31 | RG32 | RG33 | RG34 | RG35 | RG36 | RG37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6/1/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/2/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/3/2021 | 1.16 | 0.81 | 0.94 | 0.62 | 0.5 | 1.1 | 0.621 | 0.464 | 0.67 | 1.06 | 0.84 | 0.94 | 1.36 | 1.076 | 0.63 | 0.713 | 1.07 | 0.99 | 0.323 |
| 6/4/2021 | 0.37 | 0.8 | 0.08 | 0.39 | 0.23 | 0.76 | 0.766 | 0.406 | 1 | 0.7 | 0.8 | 0.458 | 0.52 | 0.722 | 0.26 | 0.318 | 0.13 | 0.1 | 0.377 |
| 6/5/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0.001 | 0 | 0.001 | 0.01 | 0 | 0 |
| 6/6/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/7/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/8/2021 | 0.52 | 0.17 | 0.62 | 0.85 | 0.56 | 0.22 | 0.683 | 0.347 | 0.2 | 0.2 | 0.52 | 0.346 | 0.41 | 0.251 | 1.17 | 0.854 | 0.41 | 0.66 | 0.532 |
| 6/9/2021 | 0.03 | 0 | 0.42 | 0.03 | 0 | 0.01 | 0.004 | 0.002 | 0.01 | 0.01 | 0 | 0.006 | 0 | 0.008 | 0.04 | 0.043 | 0.09 | 0.04 | 0 |
| 6/10/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.001 | 0 | 0 | 0 | 0.002 | 0 | 0 | 0 | 0.001 | 0.01 | 0 | 0 |
| 6/11/2021 | 0.12 | 0.16 | 0.11 | 0.11 | 0.16 | 0.19 | 0.135 | 0.072 | 0.13 | 0.25 | 0.21 | 0.131 | 0.14 | 0.18 | 0.18 | 0.127 | 0.12 | 0.11 | 0.124 |
| 6/12/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/13/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/14/2021 | 0.85 | 0.15 | 0.95 | 0.69 | 1.07 | 0.28 | 1.911 | 0.639 | 0.24 | 0.14 | 0.76 | 0.464 | 0.43 | 0.306 | 0.91 | 0.881 | 0.78 | 0.88 | 1.561 |
| 6/15/2021 | 0.2 | 0.22 | 0.49 | 0.12 | 0.06 | 0.15 | 0.099 | 0.132 | 0.26 | 0.19 | 0.53 | 0.21 | 0.2 | 0.186 | 0.12 | 0.176 | 0.28 | 0.27 | 0.081 |
| 6/16/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/17/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/18/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/19/2021 | 0.11 | 0.22 | 0.13 | 0.03 | 0.05 | 0.2 | 0.044 | 0.067 | 0.21 | 0.22 | 0.13 | 0.179 | 0.17 | 0.2 | 0.06 | 0.097 | 0.13 | 0.28 | 0.058 |
| 6/20/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/21/2021 | 0.39 | 0.09 | 0.38 | 0.22 | 0.19 | 0.1 | 0.182 | 0.117 | 0.12 | 0.06 | 0.45 | 0.166 | 0.22 | 0.121 | 0.19 | 0.23 | 0.36 | 0.22 | 0.143 |
| 6/22/2021 | 0.13 | 0.09 | 0.22 | 0.25 | 0.19 | 0.11 | 0.197 | 0.106 | 0.12 | 0.16 | 0.24 | 0.154 | 0.2 | 0.136 | 0.17 | 0.197 | 0.23 | 0.15 | 0.202 |
| 6/23/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/24/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/25/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/26/2021 | 0.26 | 0.1 | 0.21 | 0 | 0 | 0 | 0.028 | 0.01 | 0.03 | 0.01 | 0.08 | 0.055 | 0.11 | 0.024 | 0 | 0.053 | 0.33 | 0.2 | 0.027 |
| 6/27/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/28/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/29/2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/30/2021 | 0 | 0.01 | 0.01 | 0 | 0.02 | 0.01 | 0.138 | 0.06 | 0 | 0.09 | 0.01 | 0.005 | 0.01 | 0.024 | 0 | 0.004 | 0 | 0 | 0.055 |

**Table 28 - Rain Gage records by year and month for FY21**

| Date/RG | RG1 | RG2 | RG3 | RG4 | RG5 | RG6 | RG7 | RG8 | RG9 | RG10 | RG11 | RG12 | RG13 | RG14 | RG15 | RG16 | RG17 | RG18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Jul20** | 5.64 | 6.54 | 10.77 | 8.88 | 6.43 | 6.62 | 8.51 | 9.88 | 6.37 | 11.58 | 9.62 | 4.46 | 10.87 | 6.51 | 5.67 | 6.67 | 8.00 | 6.96 |
| **Aug20** | 6.68 | 11.11 | 6.22 | 5.98 | 7.11 | 10.86 | 5.33 | 4.82 | 10.70 | 5.95 | 5.07 | 3.96 | 5.53 | 5.35 | 3.94 | 8.93 | 4.59 | 6.99 |
| **Sep20** | 3.82 | 3.10 | 4.04 | 3.68 | 3.89 | 2.85 | 3.83 | 3.91 | 3.25 | 3.78 | 4.05 | 4.05 | 4.32 | 4.79 | 2.23 | 3.88 | 4.41 | 2.66 |
| **Oct20** | 4.58 | 5.13 | 5.19 | 5.40 | 5.01 | 5.21 | 4.79 | 4.90 | 5.22 | 5.46 | 4.92 | 3.00 | 5.69 | 4.82 | 2.87 | 5.22 | 4.76 | 5.00 |
| **Nov20** | 4.75 | 4.96 | 4.48 | 5.41 | 5.21 | 4.19 | 4.43 | 4.33 | 4.49 | 4.22 | 4.35 | 5.17 | 4.79 | 5.42 | 2.94 | 5.10 | 4.63 | 6.78 |
| **Dec20** | 3.61 | 3.83 | 3.72 | 2.92 | 3.67 | 3.60 | 3.46 | 3.47 | 3.97 | 3.70 | 3.30 | 3.20 | 3.82 | 3.60 | 1.98 | 3.90 | 3.51 | 3.76 |
| **Jan21** | 1.30 | 1.48 | 1.65 | 1.53 | 1.50 | 1.58 | 1.35 | 1.49 | 1.52 | 1.69 | 1.60 | 1.05 | 1.63 | 1.33 | 0.80 | 1.50 | 1.37 | 1.96 |
| **Feb21** | 3.86 | 4.16 | 4.43 | 4.25 | 4.38 | 4.34 | 4.16 | 4.26 | 4.33 | 4.13 | 4.47 | 3.82 | 4.20 | 4.17 | 3.21 | 5.42 | 4.18 | 6.02 |
| **Mar21** | 4.02 | 4.27 | 3.62 | 3.46 | 3.71 | 4.26 | 3.60 | 3.79 | 4.23 | 3.78 | 3.70 | 3.52 | 3.69 | 3.41 | 2.13 | 4.02 | 3.42 | 3.87 |
| **Apr21** | 2.78 | 2.35 | 1.99 | 2.40 | 2.31 | 2.73 | 2.11 | 2.03 | 2.72 | 2.17 | 1.92 | 2.22 | 1.99 | 2.40 | 1.27 | 2.50 | 2.31 | 2.30 |
| **May21** | 3.38 | 3.64 | 4.28 | 3.56 | 3.99 | 3.85 | 4.00 | 4.10 | 3.78 | 4.06 | 4.00 | 2.91 | 4.49 | 4.00 | 2.18 | 3.45 | 3.91 | 3.27 |
| **Jun21** | 3.39 | 5.05 | 3.41 | 2.95 | 5.66 | 3.70 | 3.38 | 3.52 | 3.58 | 4.04 | 2.27 | 3.12 | 3.34 | 4.02 | 1.85 | 4.60 | 3.30 | 3.06 |
| **Total** | **47.8** | **55.62** | **53.80** | **50.42** | **52.87** | **53.79** | **48.95** | **50.51** | **54.16** | **54.55** | **49.28** | **40.48** | **54.36** | **49.81** | **31.07** | **55.19** | **48.39** | **52.63** |

| Date/RG | RG19 | RG20 | RG21 | RG22 | RG23 | RG24 | RG25 | RG26 | RG27 | RG28 | RG29 | RG30 | RG31 | RG32 | RG33 | RG34 | RG35 | RG36 | RG37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Jul20** | 11.5 | 6.99 | 7.34 | 7.02 | 5.71 | 7.43 | 6.19 | 5.99 | 8.24 | 5.71 | 7.51 | 9.84 | 7.08 | 4.61 | 5.46 | 6.65 | 7.74 | 7.89 | 4.94 |
| **Aug20** | 7.49 | 5.96 | 8.96 | 11.73 | 7.18 | 6.28 | 7.45 | 5.03 | 5.93 | 6.10 | 8.38 | 5.77 | 6.62 | 6.58 | 10.51 | 9.30 | 9.92 | 8.58 | 4.99 |
| **Sep20** | 2.59 | 3.67 | 2.86 | 2.95 | 3.99 | 3.70 | 3.75 | 2.80 | 3.75 | 3.71 | 2.63 | 3.68 | 3.08 | 3.87 | 2.81 | 1.91 | 3.03 | 3.16 | 3.98 |
| **Oct20** | 5.06 | 5.26 | 5.23 | 5.33 | 4.37 | 4.46 | 4.69 | 3.73 | 5.02 | 5.54 | 4.89 | 5.01 | 5.03 | 5.17 | 5.20 | 5.09 | 5.57 | 5.29 | 3.40 |
| **Nov20** | 4.21 | 4.78 | 4.58 | 4.67 | 4.74 | 4.00 | 5.02 | 3.84 | 5.09 | 4.56 | 4.46 | 4.41 | 4.35 | 4.13 | 4.84 | 4.43 | 5.17 | 4.76 | 5.11 |
| **Dec20** | 3.49 | 3.56 | 4.03 | 4.02 | 3.63 | 3.35 | 3.63 | 2.58 | 3.57 | 3.61 | 4.01 | 3.47 | 3.72 | 3.65 | 3.84 | 3.95 | 4.49 | 4.04 | 3.32 |
| **Jan21** | 1.63 | 1.49 | 1.77 | 1.51 | 1.30 | 1.52 | 1.39 | 1.08 | 1.43 | 1.57 | 1.70 | 1.57 | 1.65 | 1.65 | 1.48 | 1.65 | 1.78 | 1.73 | 1.14 |
| **Feb21** | 5.30 | 3.90 | 4.16 | 4.42 | 3.86 | 4.16 | 4.32 | 4.07 | 4.03 | 4.10 | 3.91 | 4.45 | 4.06 | 3.92 | 4.97 | 4.26 | 4.28 | 4.62 | 3.87 |
| **Mar21** | 4.12 | 3.10 | 4.28 | 4.35 | 3.96 | 3.58 | 3.99 | 3.10 | 3.40 | 3.73 | 3.98 | 3.75 | 3.99 | 4.03 | 4.33 | 4.59 | 4.55 | 4.25 | 3.59 |
| **Apr21** | 2.42 | 1.99 | 2.31 | 2.77 | 2.89 | 2.18 | 2.36 | 2.35 | 1.99 | 2.43 | 2.17 | 2.04 | 2.26 | 2.38 | 2.34 | 2.80 | 2.73 | 2.55 | 2.29 |
| **May21** | 3.78 | 3.62 | 3.05 | 3.89 | 3.31 | 3.65 | 3.66 | 3.09 | 3.71 | 4.08 | 3.20 | 3.98 | 3.48 | 3.75 | 3.92 | 3.65 | 3.24 | 3.61 | 3.10 |
| **Jun21** | 4.14 | 2.82 | 4.56 | 3.31 | 3.03 | 3.13 | 4.81 | 2.42 | 2.99 | 3.09 | 4.58 | 3.12 | 3.78 | 3.24 | 3.73 | 3.70 | 3.95 | 3.90 | 3.48 |
| **Total** | **55.8** | **47.15** | **53.13** | **55.97** | **47.97** | **47.45** | **51.27** | **40.09** | **49.15** | **48.24** | **51.42** | **51.09** | **49.10** | **46.97** | **53.43** | **51.97** | **56.45** | **54.38** | **43.21** |

**Table 29 - SSO Statistics for Period July 1 2020 – June 30 2021**

| **Main & Shurs** | | | | | |
|---|---|---|---|---|---|
| **Event No.** | **Start of Overflow Date Time** | **End of Overflow Date Time** | **Event Duration (hours:mins)** | **Flow Volume (ft^3)** | **Flow Volume (Millions of gallons)** |
| 0 | | | 0 | 0 | 0 |

| **PC-30** | | | | | |
|---|---|---|---|---|---|
| **Event No.** | **Start of Overflow Date** | **End of Overflow Date** | **Event Duration (hours:mins)** | **Flow Volume (ft^3)** | **Flow Volume (Millions of gallons)** |
| 0 | | | 0 | 0 | 0 |

# Appendix E – PCB PMP 14th Annual Report

# PCB

## Pollutant Minimization Plan

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Fourteenth Annual Report
Calendar Year 2020

# Table of Contents

# 1 PMP Achievement Executive Summary

The Philadelphia Water Department (PWD) submitted its PCB Pollutant Minimization Plan (PCB PMP) on September 30, 2005 and was issued a Completeness Determination letter on January 12, 2006. PWD initiated the actions called for in its PCB PMP on March 4, 2006.

PWD's PCB PMP set out the following approaches to achieving PCB minimization:

- Sample three Water Pollution Control Plants' effluent every two years and analyze using Method 1668A.
- Visit and inspect three hundred ninety-nine (399) sites listed by either EPA or other agencies as housing PCB-containing devices and report the number of devices that have been removed from each site, both prior to our inspection and subsequent to it.
- Visit and inspect thirty-one (31) sites listed by the Philadelphia Department of Public Health as having previously undergone some type of PCB remediation activity and report the number of sites removed from the list as posing no threat of PCB discharge to PWD's sewer system.
- Report any reductions in PCB concentrations in the wastestreams from our three Water Treatment Plants by measuring PCBs in the ferric chloride used in the treatment process as well as reductions of PCBs in the source water (Delaware River or Schuylkill River).
- Continue the sewershed PCB trackdown sampling program for each of our three Water Pollution Control Plants.

Revisions to the original PMP have been made over the years. Refer to the First through the Thirteenth Annual Reports for specific information on PMP efforts during Years 1 - 13. No changes to the PMP were made in Year 14 (2020). Year 14 efforts are detailed in the attached report.

During the fourteenth year of PWD's PCB PMP, the following tasks were performed:

- ❖ Wet-weather PCB sampling and analysis of the three Water Pollution Control Plants' (WPCPs') effluent was performed as required by PWD's NPDES permits. See Section 7, "Tabular Summary", for data.

- ❖ PWD inspected one hundred thirty-seven (137) of the three hundred thirty-seven (337) sites remaining on the list by EPA or other agencies as housing PCB-containing devices. This exceeds the goal of 70 site inspections per year. These inspections identified locations where a total of 36 transformers, 33 capacitors and 1 lathe had been removed from their sites. Historical information for these sites will be retained, but they will be removed from the schedule for future inspection.

- ❖ PWD wet weather and dry weather WPCP effluent data have been entered into the DRBC PCB database.

- ❖ Significant reductions in WPCP effluent PCB loadings were seen over the course of the PMP (see "Tabular Summary").

Additionally, the following initiatives were undertaken:

- ❖ PWD's PCB database was developed in 2017 and is now being populated. The database was utilized to track and report the 2020 inspections. Going forward, the database will allow PWD to track "active" sites (where Liquid Cooled Electrical Equipment (LCEE) devices are still located on site) versus "inactive" sites (where LCEE devices were previously located but have been removed). Each location has been given a unique ID and has been geocoded in PWD's GIS database. Maps of PCB sites, inspected in 2020, by water pollution control plant drainage area and those in separate sewer areas were developed and can be found in Attachment B of this report.

- ❖ In 2020, PWD continued to monitor outlying township connection points for PCBs using EPA Method 680. Results for the locations sampled were below the detection limit, and are presented in Attachment C.

- PWD issued 16 new groundwater discharge permits in 2020. Every permit was compliant with PWD's regulatory PCB limit of "non-detectable by EPA Method 608".

# 2 Facility and Contact Information

| | |
|---|---|
| Facility Name and Address: | Philadelphia Water Department<br>1101 Market Street<br>Philadelphia, PA 19107 |
| Water Pollution Control Plants: | Northeast WPCP<br>3899 Richmond St.<br>Philadelphia, PA 19137 |
| | Southeast WPCP<br>25 Pattison Ave.<br>Philadelphia, PA 19148 |
| | Southwest WPCP<br>8200 Enterprise Ave.<br>Philadelphia, PA 19153 |
| Contact Person: | Jennifer L. Moore<br>Manager<br>Industrial Waste & Backflow Compliance<br>1101 Market St., 6th Floor<br>Philadelphia, PA 19107 |
| | Phone: 215-685-6085<br>Fax: 215-685-6232<br>Email: jennifer.l.moore@phila.gov |
| Date of Submittal of PMP: | September 30, 2005 |
| Date of Completeness Determination: | January 12, 2006 |
| Date of Initiation of PMP: | March 4, 2006 |
| Reporting Period: | Year 14 (Calendar Year 2020) |

# *3 Revisions to PMP*

During Year 14, no revisions were made to the PMP.

# 4 Material and Process Modifications

During Year 14 of the PMP, there were no material or process modifications made relevant to PCB minimization.

# 5 Measures to Address Known, Probable and Potential Sources

## 5.1 Known and Probable Sources

Two known sources of PCBs were identified in PWD's PCB PMP. These were the source water for PWD's Water Treatment Plants (Delaware and Schuylkill Rivers) and the ferric chloride supplied to PWD by DuPont and used in the water treatment process. A change of ferric chloride supplier in Year 5 resulted in a 95% reduction in PCB content of the product used by PWD in its water treatment process.

A probable source of PCBs identified in PWD's PCB PMP is sludge stored in lagoons at both NEWPCP and SWWPCP. Trackdown efforts conducted in the sewersheds of both NEWPCP and SWWPCP included sampling of the lagoons. The data are available in Attachment B of the Year 5 report.

## 5.2 Potential Sources

### 5.2.1 Historical Potential Sources:

Numerous potential sources of PCBs were identified in PWD's PCB PMP. These were identified from databases supplied by EPA, the Philadelphia Fire Department, the Philadelphia Department of Public Health and others. The thirty-one (31) potential sources supplied by the Philadelphia Department of Public Health were identified as sites at which some form of prior PCB remediation had taken place. All thirty-one (31) of these sites were inspected during Year 1 of the PMP.

The remaining potential sources of PCBs, taken from information supplied by EPA and others, were identified as sites on which PCB devices were believed to be present. These sites were separated into three groups by sewershed (NEWPCP, SEWPCP or SWWPCP). Approximately one hundred sixty-seven (167), seventy-three (73) and one hundred fifty-seven (157) sites were listed for NEWPCP, SEWPCP and SWWPCP, respectively. During 2020 (Year 14 of the PMP), PWD's Industrial Waste group inspected fifty-four (54) of the NEWPCP-related sites, twenty-seven (27) of the SEWPCP-related sites and fifty-six (56) of the

SWWPCP-related sites. Details of these inspections are summarized in the Tables, “Inspections of Potential Source Sites” in Attachment B of this report.

Inspections confirmed that 36 transformers, 33 capacitors and one other device (lathe) has been removed from the sites. Historical information for these sites will be retained, but the sites will be removed from the schedule for future inspection.

*5.2.2 New Construction and Groundwater Remediation Sites:*

In an effort to minimize the amount of PCBs entering the City’s sewer system, PWD requires PCB monitoring in all Groundwater Discharge Permits. These permits are used to regulate specific pollutants of concern from groundwater discharges to the City’s sewer system. Generally, these permits are for remediation sites with groundwater contaminated with petroleum products, such as former gasoline stations. However, all temporary discharges from construction activities are permitted under the Groundwater Discharge Permit Program. The Groundwater Discharge Permits require all contractors and/or subcontractors to monitor their discharges monthly for PCBs via sampling and to report their activities and results. All Groundwater Discharge Permits include PWD’s regulatory PCB limit of “non-detectable by EPA Method 608” limitation. All PCB detections require additional monitoring by the contractor or subcontractor to show compliance with the permit limitation.

In 2020, 16 new groundwater permits were issued. All permittees reported non-detectable for PCBs.

### *5.2.3 Township Connections*

PWD has agreements with the surrounding townships to convey and treat township wastewater, which is ultimately discharged at NEWPCP, SEWPCP and SWWPCP. Part of the agreement includes sampling the respective township's wastewater at the connection to the City's sewer system (i.e. near Philadelphia border).

In 2020, PWD sampled two townships: Erdenheim Township and Abington Township in Montgomery County. Both townships samples were analyzed using EPA Method 680 to determine if there are PCB loadings entering the City through the surrounding township connections. Results of these sampling events, presented in Attachment C, were all below the detection limits. PWD is preparing to monitor additional township connections in 2021.

# 6 Incremental and Cumulative Changes from the Baseline Loading

## 6.1 Loading Baseline

PWD's PCB PMP provides the following baseline loadings (see Section 7, "Tabular Summary):

| WPCP | Baseline Loading (mg/day) |
|---|---|
| NEWPCP | 11,510 |
| SEWPCP | 7,559 |
| SWWPCP | 10,970 |

These loadings differ from those found in the TMDL. This is because the data are from different sampling events, the PMP baseline loadings are weighted by wet versus dry weather results, the analyses are for different numbers of congeners and there is a difference in analytical methods.

## 6.2 Baseline Loading Reduction – Direct Measurement

During Year 14, wet-weather effluent sampling for PCBs was performed at each of PWD's three Water Pollution Control Plants (WPCPs), as required by PWD's NPDES permits. See Section 7 ("Tabular Summary") for data. The numerical data sets are presented in Section 7, Tables 7.1 through 7.4. This data is presented in graphical form in Appendix A, Figures A1 through A3.

Loadings for the NEWPCP for 2020 were generally comparable to those calculated in Year 4 (2010) and Year 9 (2015). Results of the 2020 sampling for NEWPCP show reductions of 52-73% from the baseline PCB loading levels.

Loadings for the SEWPCP for 2020 were generally comparable to those calculated in Year 8 (2014) and Year 11 (2017). Results of the sampling for SEWPCP show reductions of 20-64% from the baseline PCB loadings.

Loadings for the SWWPCP for 2020 were generally comparable to those calculated in Year 7 (2013) and Year 8 (2014). Results of the 2020 sampling for SWWPCP show reductions of 68-73% from the baseline PCB loading levels.

Wet weather homolog contribution from 2016-2020 for all three plants are presented in Figure A4 through A6. PWD explored the PCB homolog contribution for wet and dry weather samples. The average percent contribution by homolog for both dry and wet weather samples collected between 2009 and 2020 was compared to that in 2020 for each plant. These homolog percentages are presented in Attachment A, Figures A7 through A9. For 2020, Northeast tend to have the increased contributions from tetra-, penta-, nona- and deca-homologs. Southwest tend to have increased contribution from the hexa- and hepta- homologs. Southeast, tends to have the increased contribution from tetra- homologs. Northeast and Southwest also tend to have similar patterns in wet and dry weather, whereas at Southeast the data showed more variability between samples. PWD plans to continue to explore these types of patterns in the 2021 data to see if the trends continue or if others emerge.

## 6.3 Baseline Loading Reduction – Other Measures of Progress

See Attachment B (“Potential Sources and Inspection Findings”). A report with results from 2020 inspections is shown in this section. This report was developed from the new PCB database. PWD will continue to update and refine this report with the inspection maps associated with it in future reports.

Two outlying townships were sampled in 2020, using EPA method 680. The first township location, Abington Township, was sampled and results were below the reporting limits. This township drains to SEWPCP and results have been provided in Table C1. The second township, Erdenheim Township, which also drains to SEWPCP was sampled and results have been provided in Table C2. Erdenheim had results below the detection level. In 2021, additional outlying township connections sampling is planned.

# *7 Tabular Summary*

The subsequent pages provide a summary of the PCB loading calculations for NEWPCP, SEWPCP and SWWPCP, along with the total and penta-PCB concentration results for each of the treatment plant effluents in 2020.

**Table 7.1**
**Summary of PCB Loadings**
**Northeast Water Pollution Control Plant**
**NPDES # PA0026689**

**Year 2005 Baseline Loading (mg/day): 11,510**

| Date | Calculated Loading (mg/day) | Estimated Reduction From Baseline (mg/day) | Cumulative Reduction From Baseline (%) |
|---|---|---|---|
| 12/3/07 | 8,594 | 2,916 | 25.3 |
| 3/27/09 | 5,846 | 5,664 | 49.2 |
| 10/16/09 | 6,571 | 4,939 | 42.9 |
| 4/21/10 | 5,490 | 6,020 | 52.3 |
| 12/13/10 | 4,615 | 6,895 | 59.9 |
| 9/6/11 | 6,224 | 5,286 | 45.9 |
| 11/17/11 | 3,745 | 7,765 | 67.5 |
| 6/13/12 | 11,189 | 321 | 2.8 |
| 10/16/12 | 2,542 | 8,968 | 77.9 |
| 4/20/13 | 2,849 | 8,661 | 75.2 |
| 10/8/13 | 2,349 | 9,161 | 79.6 |
| 4/16/14 | 2,315 | 9,195 | 79.9 |
| 9/25/14 | 1,552 | 9,958 | 86.5 |
| 5/28/15 | 3,157 | 8,353 | 72.6 |
| 10/10/15 | 2,291 | 9,219 | 80.1 |
| 5/14/16 | 1,755 | 9,755 | 84.8 |
| 10/23/16 | 1,479 | 10,031 | 87.1 |
| 5/6/17 | 1,749 | 9,761 | 84.8 |
| 10/9/17 | 972 | 10,538 | 91.6 |
| 3/2/18 | 17,293 | -5,783 | -50.2 |
| 10/12/18 | 4,219 | 7,291 | 63.3 |
| 5/6/19 | 2,856 | 8,654 | 75.2 |
| 10/17/19 | 3,067 | 8,443 | 73.4 |
| 4/13/2020 | 3,114 | 8,396 | 72.9 |
| 10/30/2020 | 5,570 | 5,940 | 51.6 |

| Measure | Date Initiated | Date Completed |
|---|---|---|
| NEWPCP Phase 1 Trackdown | November 3, 2010 | November 4, 2010 |
| NEWPCP Phase 2 Trackdown | January 26, 2012 | January 27, 2012 |

## Table 7.2
## Summary of PCB Loadings
## Southeast Water Pollution Control Plant
## NPDES # PA0026662

**Year 2005 Baseline Loading (mg/day): 7,559**

| Date | Calculated Loading (mg/day) | Estimated Reduction From Baseline (mg/day) | Cumulative Reduction From Baseline (%) |
|---|---|---|---|
| 12/3/07 | 4,595 | 2,964 | 39.2 |
| 3/27/09 | 3,435 | 4,124 | 54.6 |
| 10/16/09 | 4,287 | 3,272 | 43.3 |
| 4/21/10 | 2,155 | 5,404 | 71.5 |
| 12/2/10 | 2,736 | 4,823 | 63.8 |
| 9/6/11 | 4,135 | 3,424 | 45.3 |
| 11/17/11 | 1,368 | 6,191 | 81.9 |
| 6/13/12 | 5,659 | 1,900 | 25.1 |
| 10/16/12 | 1,296 | 6,263 | 82.9 |
| 4/20/13 | 2,803 | 4,756 | 62.9 |
| 11/27/13 | 2,599 | 4,960 | 65.6 |
| 4/16/14 | 6,370 | 1,189 | 15.7 |
| 9/25/14 | 1,827 | 5,732 | 75.8 |
| 5/28/15 | 2,744 | 4,815 | 63.7 |
| 10/10/15 | 2,795 | 4,764 | 63.0 |
| 5/14/16 | 1,525 | 6,034 | 79.8 |
| 10/28/16 | 1,058 | 6,501 | 86.0 |
| 5/6/17 | 2,762 | 4,797 | 63.5 |
| 10/9/17 | 1,212 | 6,347 | 84.0 |
| 4/16/18 | 21,681 | -14,122 | -186.8 |
| 10/12/18 | 9,543 | -1,984 | -26.2 |
| 4/6/19 | 828 | 6,731 | 89.0 |
| 10/28/19 | 2,386 | 5,173 | 68.4 |
| 5/1/2020 | 2,728 | 4,831 | 63.9 |
| 11/12/2020 | 6,059 | 1,500 | 19.8 |

| Measure | Date Initiated | Date Completed |
|---|---|---|
| SEWPCP Phase 2 Trackdown | October 17, 2006 | October 20, 2006 |

**Table 7.3**
**Summary of PCB Loadings**
**Southwest Water Pollution Control Plant**
**NPDES # PA0026671**

**Year 2005 Baseline Loading (mg/day): 10,970**

| Date | Calculated Loading (mg/day) | Estimated Reduction From Baseline (mg/day) | Cumulative Reduction From Baseline (%) |
|---|---|---|---|
| 12/3/07 | 6,369 | 4,601 | 41.9 |
| 3/27/09 | 7,334 | 3,636 | 33.1 |
| 10/16/09 | 5,690 | 5,280 | 48.1 |
| 4/21/10 | 2,948 | 8,022 | 73.1 |
| 12/2/10 | 5,027 | 5,943 | 54.2 |
| 9/6/11 | 10,270 | 700 | 6.4 |
| 11/17/11 | 4,280 | 6,690 | 61.0 |
| 6/13/12 | 5,766 | 5,204 | 47.4 |
| 10/16/12 | 2,663 | 8,307 | 75.7 |
| 4/20/13 | 3,673 | 7,297 | 66.5 |
| 10/8/13 | 3,040 | 7,930 | 72.3 |
| 4/16/14 | 2,939 | 8,031 | 73.2 |
| 9/25/14 | 2,882 | 8,088 | 73.7 |
| 8/12/15 | 4,265 | 6,705 | 61.1 |
| 10/10/15 | 3,610 | 7,360 | 67.1 |
| 5/14/16 | 3,662 | 7,308 | 66.6 |
| 10/23/16 | 1,416 | 9,554 | 87.1 |
| 5/6/17 | 3,273 | 7,697 | 70.2 |
| 10/9/17 | 3,294 | 7,676 | 70.0 |
| 3/2/18 | 6,015 | 4,955 | 45.2 |
| 4/16/18 | 7,183 | 3,787 | 34.5 |
| 10/12/18 | 4,870 | 6,100 | 55.6 |
| 4/6/19 | 2,596 | 8,374 | 76.3 |
| 10/17/19 | 26,869 | -15,899 | -144.9 |
| 5/1/2020 | 2,975 | 7,995 | 72.9 |
| 10/30/2020 | 3,474 | 7,496 | 68.3 |

| Measure | Date Initiated | Date Completed |
|---|---|---|
| SWWPCP Phase 1 Trackdown | October 12, 2011 | October 13, 2011 |
| SWWPCP Phase 2 Trackdown | February 23, 2012 | February 24, 2012 |

## Table 7.4
## Summary of Water Pollution Control Plant Effluent PCB Concentration (pg/L)

| NEWPCP | | | SEWPCP | | | SWWPCP | | |
|---|---|---|---|---|---|---|---|---|
| Date | Total PCBs (pg/L) | Penta-PCBs (pg/L) | Date | Total PCBs (pg/L) | Penta-PCBs (pg/L) | Date | Total PCBs (pg/L) | Penta-PCBs (pg/L) |
| 12/3/07 | 13,709 | 2340 | 12/3/07 | 13,580 | 2233 | 12/3/07 | 7,362 | 1,314 |
| 3/27/09 | 4,047 | 850 | 3/27/09 | 1,593 | 373 | 3/27/09 | 8,866 | 1,474 |
| 10/16/09 | 5,924 | 1,238 | 10/16/09 | 3,797 | 711 | 10/16/09 | 4,612 | 886 |
| 4/21/10 | 6,746 | 1,629 | 4/21/10 | 5,322 | 1,114 | 4/21/10 | 3,623 | 729 |
| 12/13/10 | 5,671 | 1,379 | 12/2/10 | 6,755 | 1,348 | 12/2/10 | 6,177 | 1,110 |
| 9/6/11 | 7,646 | 1,624 | 9/6/11 | 10,206 | 1,723 | 9/6/11 | 12,385 | 1,911 |
| 11/17/11 | 4,600 | 1,159 | 11/17/11 | 3,376 | 635 | 11/17/11 | 5,162 | 997 |
| 6/13/12 | 13,745 | 2,057 | 6/13/12 | 13,988 | 2,954 | 6/13/12 | 6,954 | 1,331 |
| 10/16/12 | 3,123 | 791 | 10/16/12 | 3,198 | 595 | 10/16/12 | 3,211 | 558 |
| 4/20/13 | 3,500 | 806 | 4/20/13 | 6,918 | 1,566 | 4/20/13 | 4,429 | 932 |
| 10/8/13 | 2,886 | 669 | 11/27/13 | 6,414 | 1,204 | 10/8/13 | 3,666 | 757 |
| 4/16/14 | 2,844 | 622 | 4/16/14 | 15,722 | 3,182 | 4/26/14 | 3,544 | 737 |
| 9/26/14 | 1,907 | 458 | 9/25/14 | 4,510 | 912 | 9/25/14 | 3,476 | 745 |
| 8/12/15 | 3,878 | 963 | 8/12/15 | 6,774 | 1,411 | 5/28/15 | 5,143 | 1,338 |
| 10/10/15 | 2,814 | 584 | 10/10/15 | 6,898 | 1,516 | 10/10/15 | 4,354 | 790 |
| 5/14/16 | 2,156 | 488 | 5/14/16 | 3,765 | 847 | 5/14/16 | 4,416 | 979 |
| 10/23/16 | 1,817 | 377 | 10/28/16 | 2,612 | 452 | 10/23/16 | 1,708 | 307 |
| 5/6/17 | 2,149 | 455 | 5/6/17 | 6,817 | 1,044 | 5/6/17 | 3,948 | 634 |
| 10/9/17 | 1,194 | 263 | 10/9/17 | 2,993 | 257 | 10/9/17 | 3,972 | 681 |
| 3/2/18 | 21,243 | 4,786 | -- | -- | -- | 3/2/18 | 5,873 | 1,044 |
| -- | -- | -- | 4/16/18 | 53,514 | 10,678 | 4/16/18 | 8,662 | 1,810 |
| 10/12/18 | 5,183 | 1,059 | 10/12/18 | 23,555 | 3,176 | 10/12/18 | 7,254 | 1,155 |
| -- | -- | -- | 4/6/19 | 2,044 | 283 | 4/6/19 | 3,131 | 603 |
| 5/6/19 | 3508 | 857 | -- | -- | -- | -- | -- | -- |
| 10/17/19 | 3768 | 1113 | -- | -- | -- | 10/17/19 | 32,404 | 7,997 |
| -- | -- | -- | 10/28/19 | 5,889 | 1,146 | -- | -- | -- |
| 4/13/20 | 3,826 | 909 | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | 5/1/20 | 6,733 | 1,216 | 5/1/20 | 3,587 | 653 |
| 10/30/20 | 6,843 | 1,911 | -- | -- | -- | 10/30/20 | 4,189 | 714 |
| -- | -- | -- | 11/12/2020 | 14,955 | 2927 | -- | -- | -- |

## Table 7.5
## Range and Median PCB Concentration (pg/L)

| Year | NE WPCP | SE WPCP | SW WPCP |
|---|---|---|---|
| 2009 | 2,994-7,280 (4561) | 1,364-9,375 (3667) | 2,994-10,696 (7587) |
| 2010 | 1,769-109,201 (6528) | 1,399-6,755 (3474) | 1,399-6,177 (4197) |
| 2011 | 1,790-7,646 (3319) | 1,493-10,206 (2672) | 3,363-12,385 (4621) |
| 2012 | 1,708-13,745 (2479) | 1,493-13,988 (3369) | 2,850-6,954 (3801) |
| 2013 | 1,440-3,500 (2165) | 2,229-6,918 (4741) | 3,582-4,429 (3674) |
| 2014 | 1,387-15,722 (1657) | 1,392-4,510 (1752) | 2,801-3,544 (3223) |
| 2015 | 2,814-3,878 (2968) | 2,103-6,898 (4472) | 3,328-5,143 (4080) |
| 2016 | 1,108-2,498 (1817) | 1,390-3,765 (2103) | 1,708-4,422 (3538) |
| 2017 | 1,173-2,149 (1421) | 1,065-6,817 (2414) | 2,784-3,972 (3854) |
| 2018 | 1,073-21,243 (5268) | 3,836-53,514 (12934) | 4,943-8,662 (5705) |
| 2019 | 1,460-3,768 (2667) | 2,044-6429 (4341) | 3,131-32,404 (3191) |
| 2020 | 1,469-3,760 (2615) | 1,825-2,320 (2073) | 2,100-2,438 (2269) |
| Note: Annual median is presented in parentheses. | | | |

Attachment A

Data Graphs

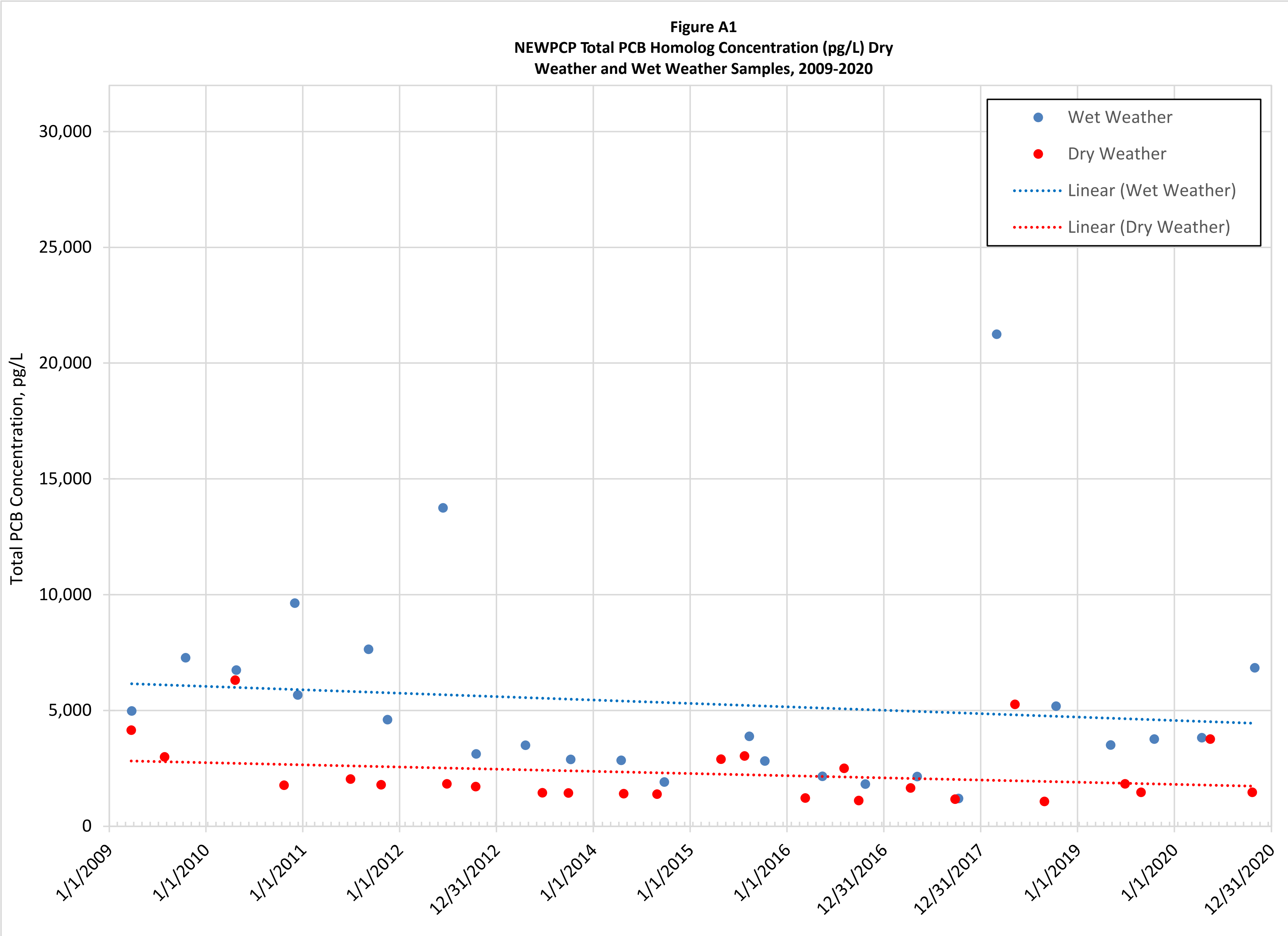


Figure A1
NEWPCP Total PCB Homolog Concentration (pg/L) Dry Weather and Wet Weather Samples, 2009-2020
Wet Weather
Dry Weather
Linear (Wet Weather)
Linear (Dry Weather)
Total PCB Concentration, pg/L
30,000
25,000
20,000
15,000
10,000
5,000
0
1/1/2009
1/1/2010
1/1/2011
1/1/2012
12/31/2012
1/1/2014
1/1/2015
1/1/2016
12/31/2016
12/31/2017
1/1/2019
1/1/2020
12/31/2020

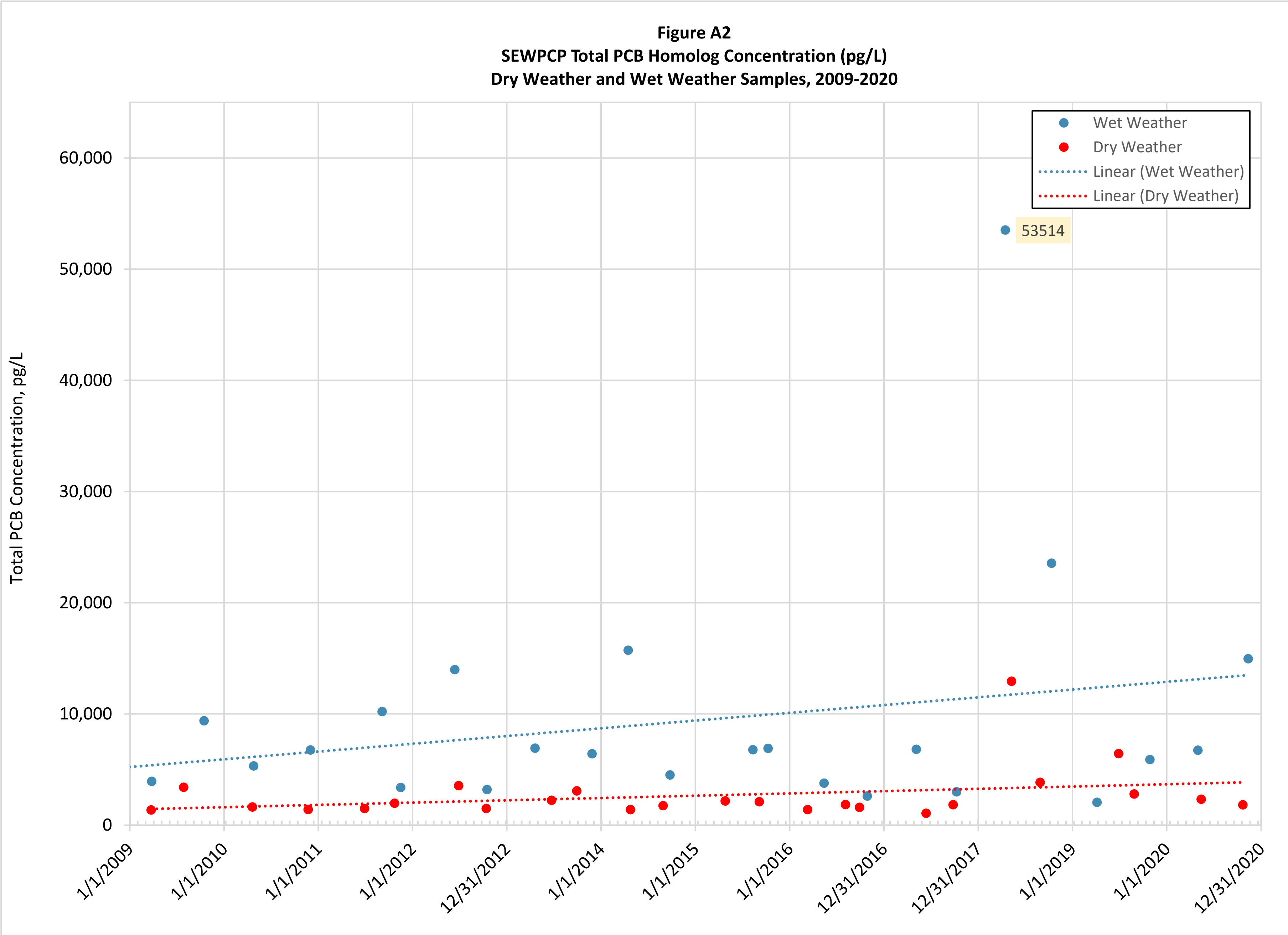


Figure A2
SEWPCP Total PCB Homolog Concentration (pg/L)
Dry Weather and Wet Weather Samples, 2009-2020
Total PCB Concentration, pg/L
60,000
50,000
40,000
30,000
20,000
10,000
0
Wet Weather
Dry Weather
Linear (Wet Weather)
Linear (Dry Weather)
53514
1/1/2009
1/1/2010
1/1/2011
1/1/2012
12/31/2012
1/1/2014
1/1/2015
1/1/2016
12/31/2016
12/31/2017
1/1/2019
1/1/2020
12/31/2020

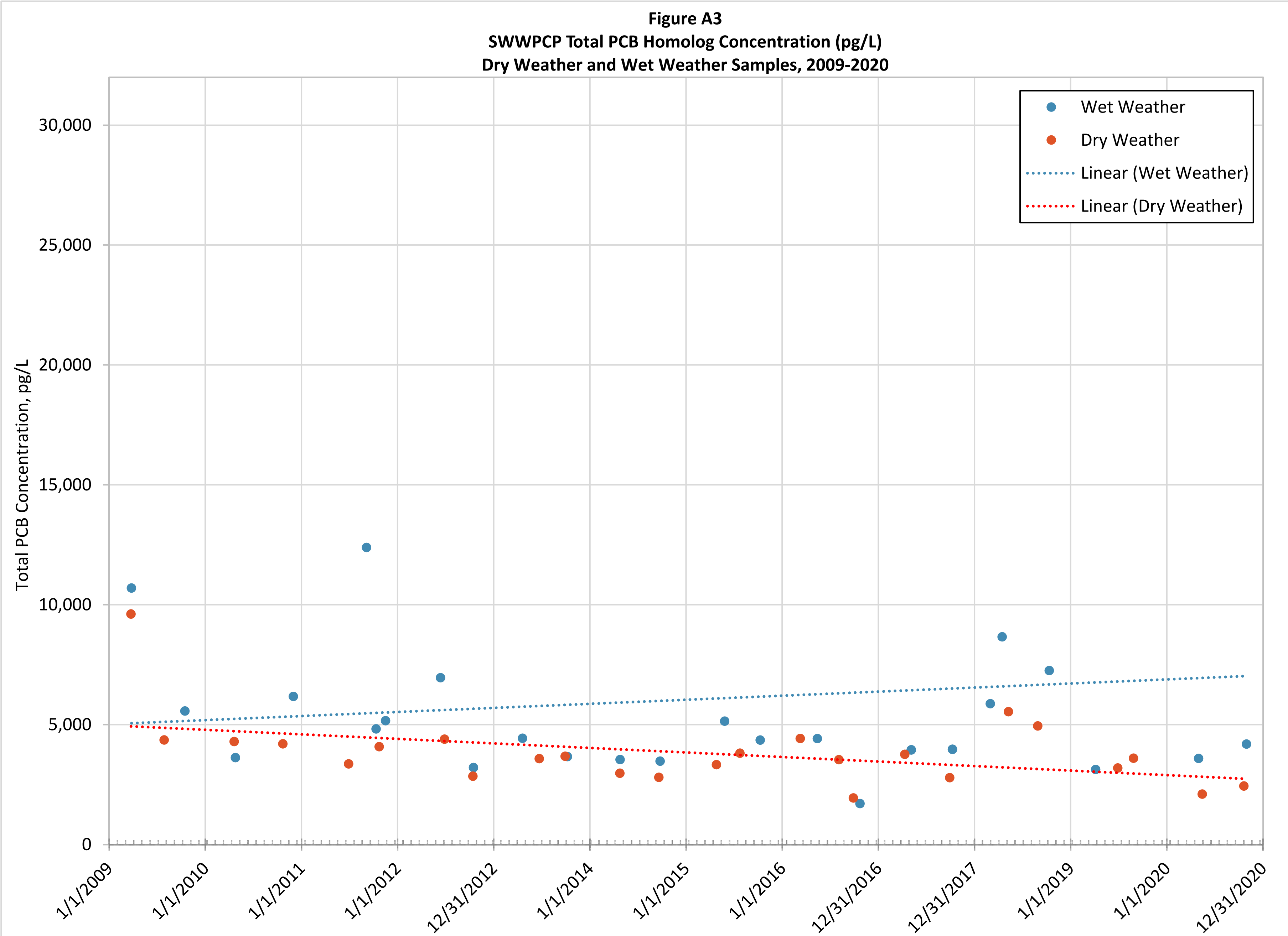


Figure A3
SWWPCP Total PCB Homolog Concentration (pg/L)
Dry Weather and Wet Weather Samples, 2009-2020
Total PCB Concentration, pg/L
30,000
25,000
20,000
15,000
10,000
5,000
0
1/1/2009
1/1/2010
1/1/2011
1/1/2012
12/31/2012
1/1/2014
1/1/2015
1/1/2016
12/31/2016
12/31/2017
1/1/2019
1/1/2020
12/31/2020
Wet Weather
Dry Weather
Linear (Wet Weather)
Linear (Dry Weather)

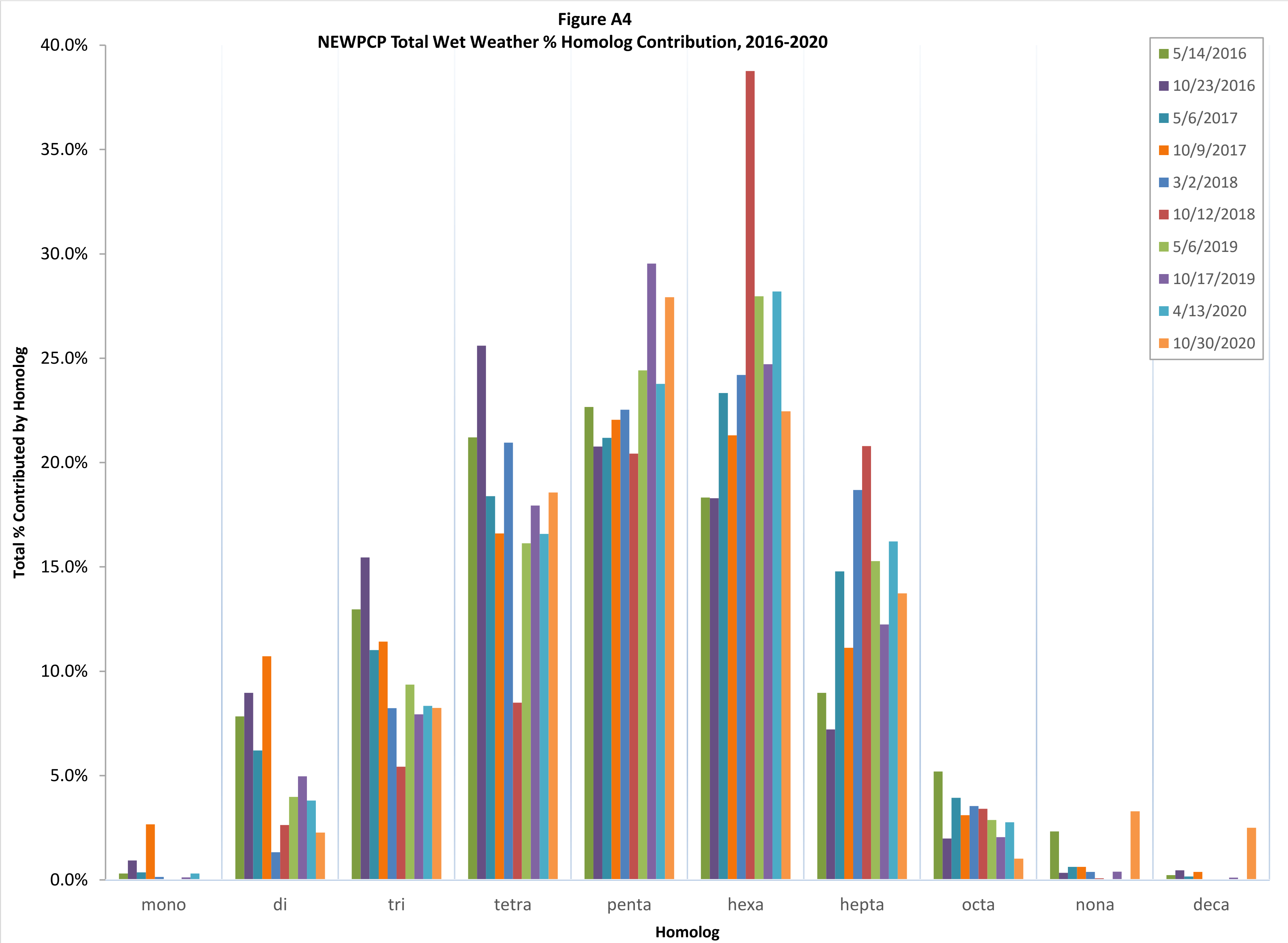


Figure A4
NEWPCP Total Wet Weather % Homolog Contribution, 2016-2020
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
Total % Contributed by Homolog
mono
di
tri
tetra
penta
hexa
hepta
octa
nona
deca
Homolog
5/14/2016
10/23/2016
5/6/2017
10/9/2017
3/2/2018
10/12/2018
5/6/2019
10/17/2019
4/13/2020
10/30/2020

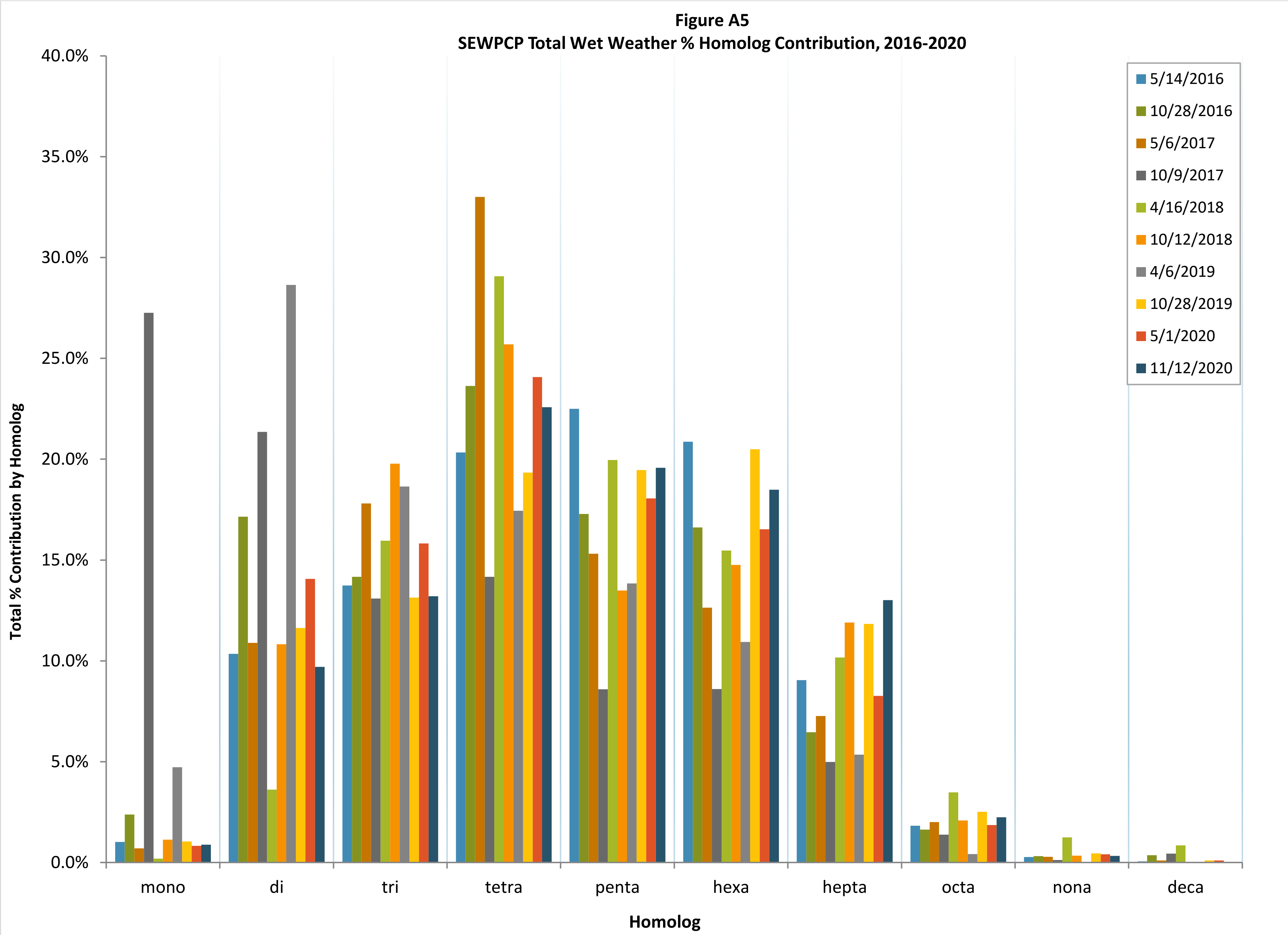


Figure A5
SEWPCP Total Wet Weather % Homolog Contribution, 2016-2020
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
Total % Contribution by Homolog
mono
di
tri
tetra
penta
hexa
hepta
octa
nona
deca
Homolog
5/14/2016
10/28/2016
5/6/2017
10/9/2017
4/16/2018
10/12/2018
4/6/2019
10/28/2019
5/1/2020
11/12/2020

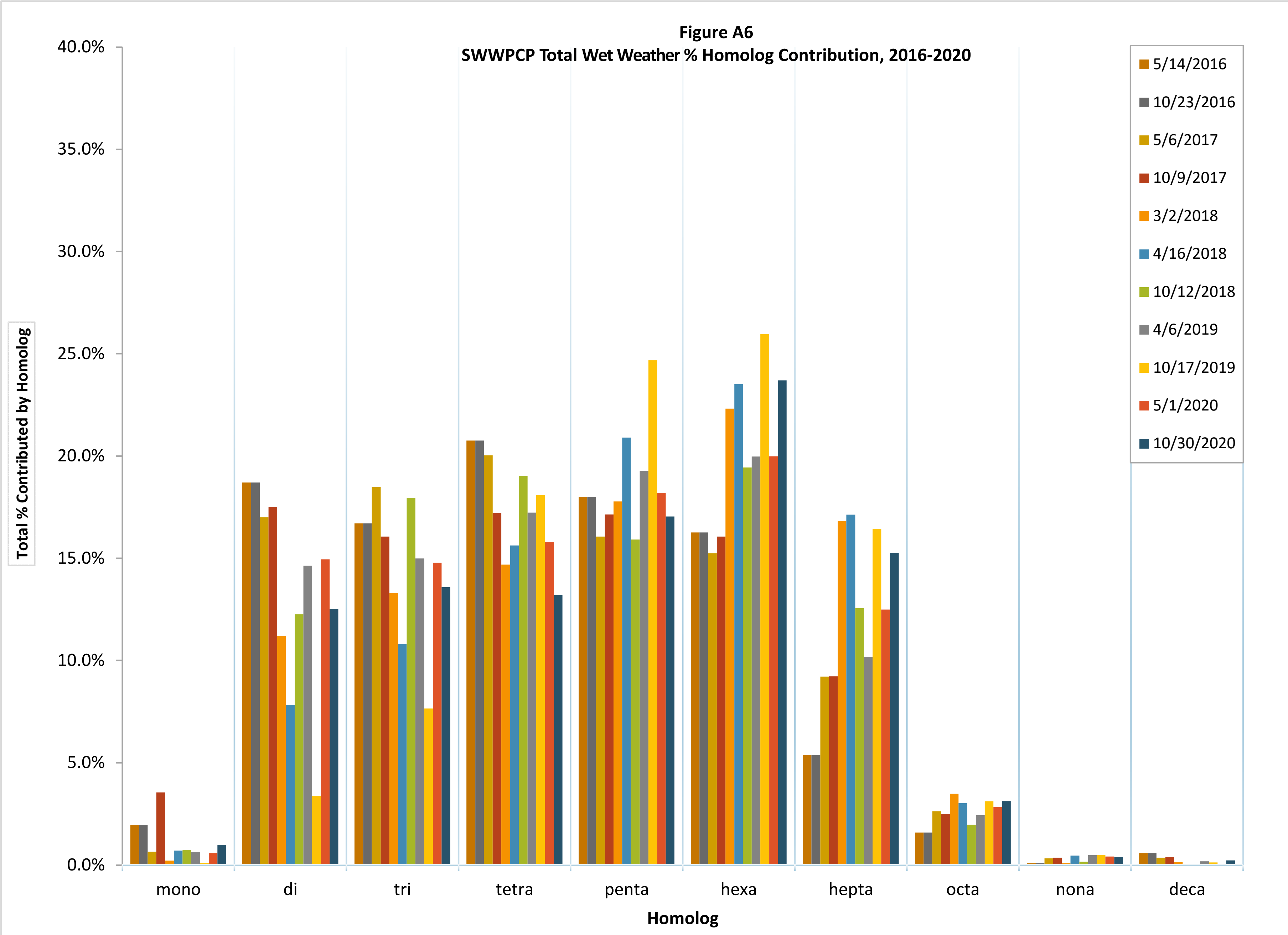


Figure A6
SWWPCP Total Wet Weather % Homolog Contribution, 2016-2020
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
Total % Contributed by Homolog
mono
di
tri
tetra
penta
hexa
hepta
octa
nona
deca
Homolog
5/14/2016
10/23/2016
5/6/2017
10/9/2017
3/2/2018
4/16/2018
10/12/2018
4/6/2019
10/17/2019
5/1/2020
10/30/2020

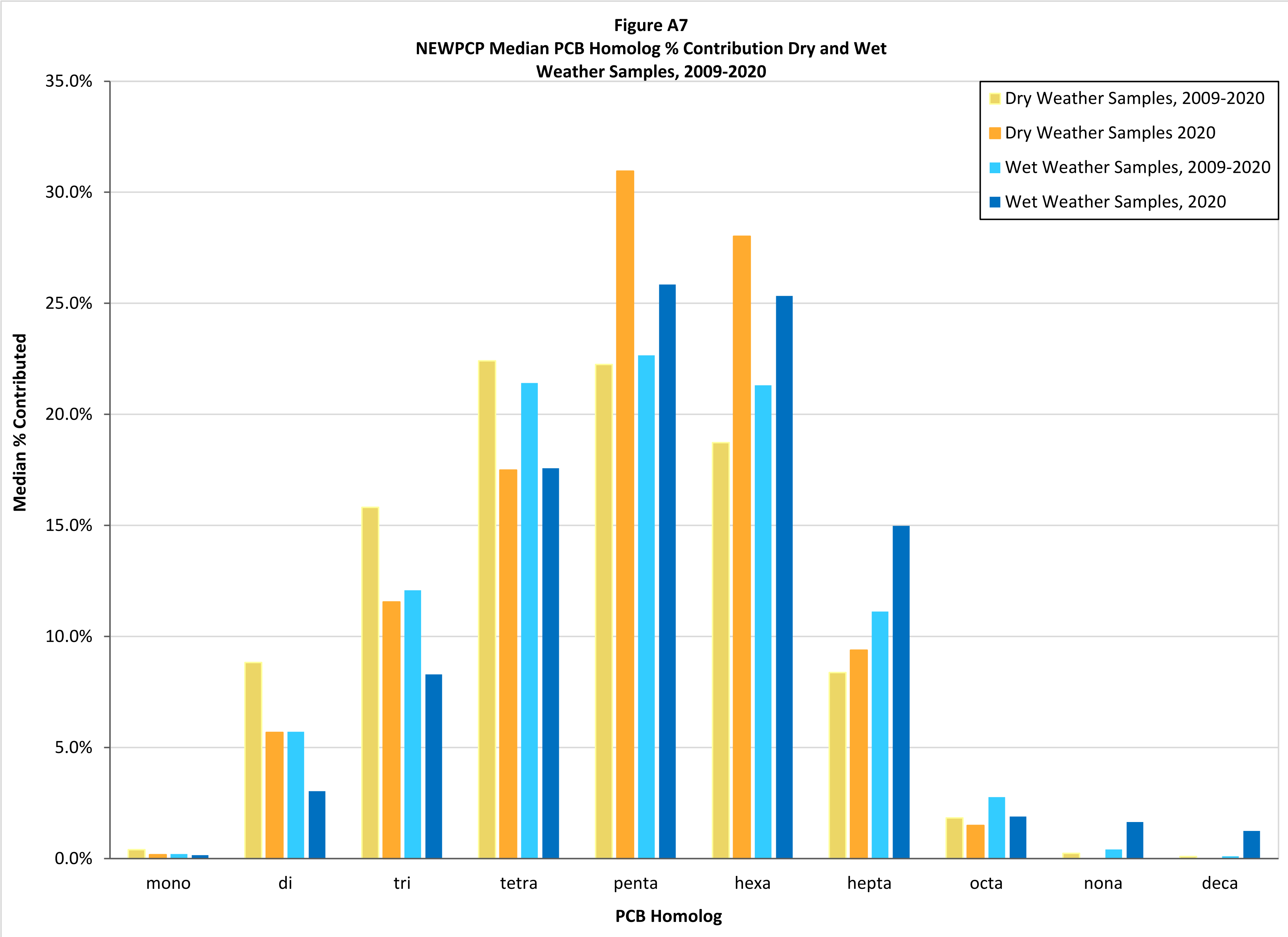


Figure A7
NEWPCP Median PCB Homolog % Contribution Dry and Wet Weather Samples, 2009-2020
Dry Weather Samples, 2009-2020
Dry Weather Samples 2020
Wet Weather Samples, 2009-2020
Wet Weather Samples, 2020
Median % Contributed
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
mono
di
tri
tetra
penta
hexa
hepta
octa
nona
deca
PCB Homolog

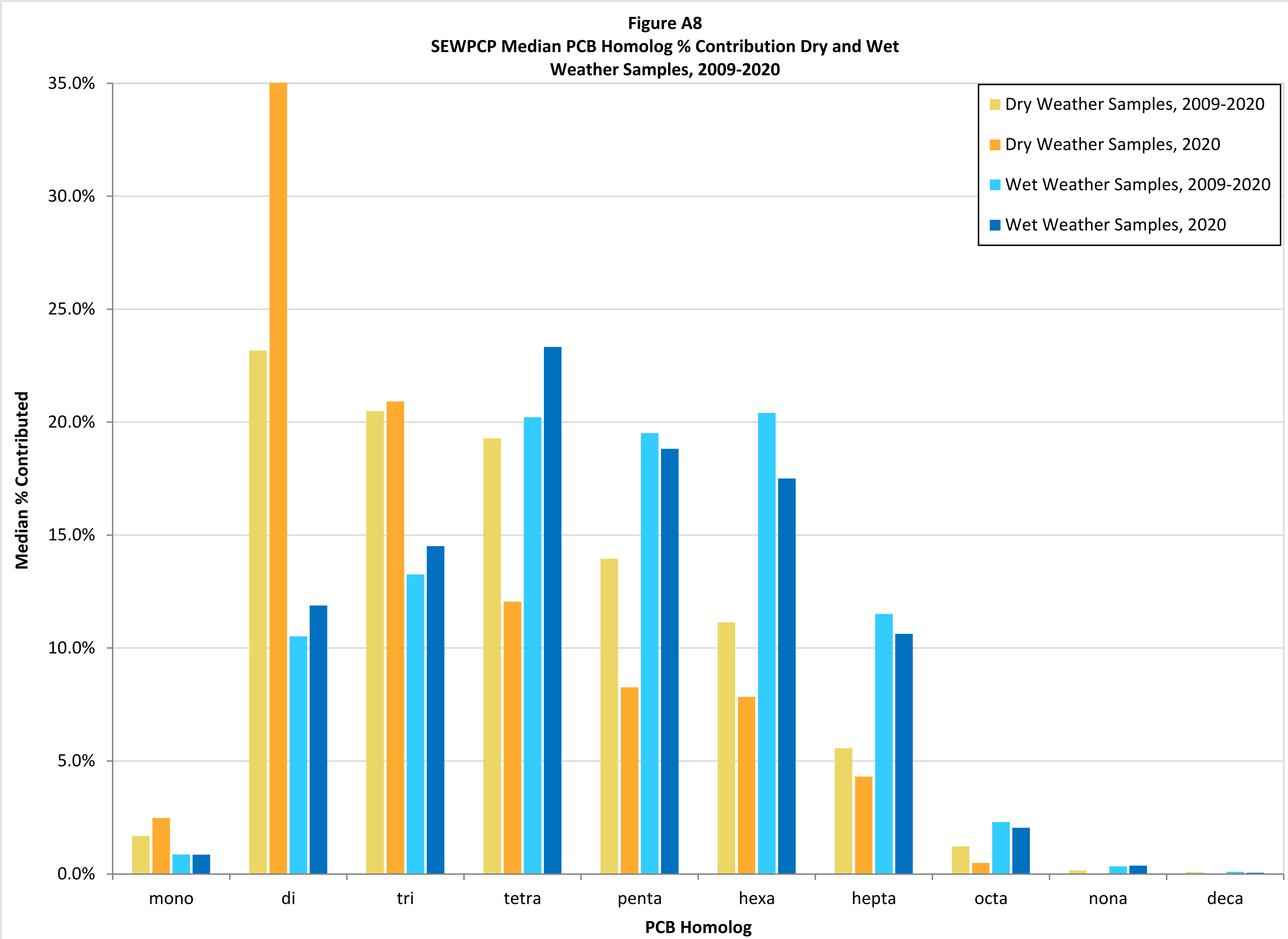


Figure A8
SEWPCP Median PCB Homolog % Contribution Dry and Wet Weather Samples, 2009-2020
Dry Weather Samples, 2009-2020
Dry Weather Samples, 2020
Wet Weather Samples, 2009-2020
Wet Weather Samples, 2020
Median % Contributed
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
mono
di
tri
tetra
penta
hexa
hepta
octa
nona
deca
PCB Homolog

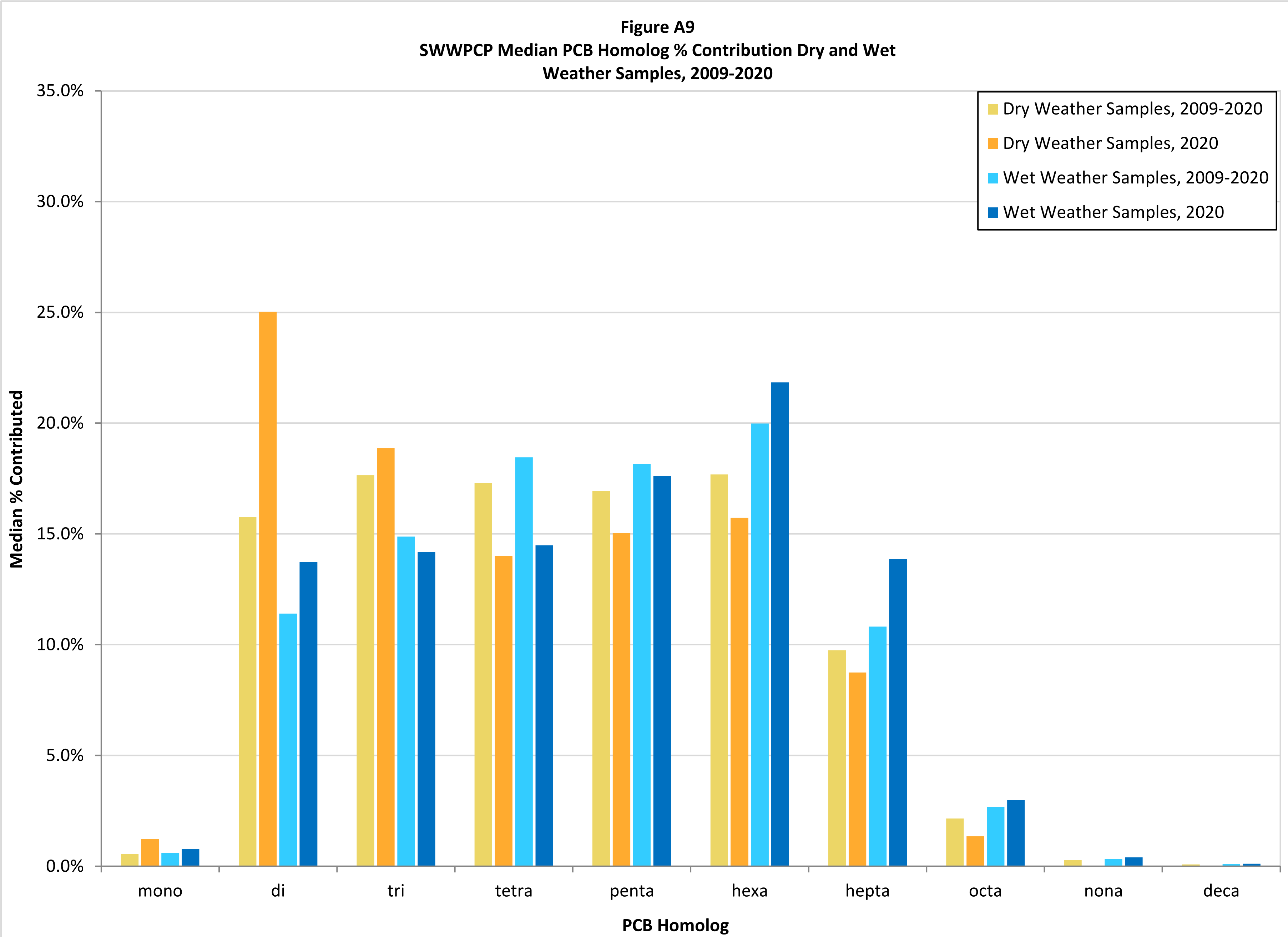


Figure A9
SWWPCP Median PCB Homolog % Contribution Dry and Wet Weather Samples, 2009-2020
Dry Weather Samples, 2009-2020
Dry Weather Samples, 2020
Wet Weather Samples, 2009-2020
Wet Weather Samples, 2020
Median % Contributed
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
mono
di
tri
tetra
penta
hexa
hepta
octa
nona
deca
PCB Homolog

Attachment B

Potential Sources and Inspection Findings

# Table B1 - Known, Probable and Potential Sources and Measures to Address Sources

| Source | Source Type: *Known* | Source Type: *Probable* | Source Type: *Potential* | Measure to Address Source |
|---|---|---|---|---|
| Water Supply (Delaware and Schuylkill Rivers) | X | | | PCB PMP and action by others |
| Ferric Chloride used in Water Treatment | X | | | Switched ferric chloride suppliers |
| Sludge Lagoons (NEWPCP and SWWPCP) | | X | | Trackdown for each WPCP calls for sampling and analysis |
| PCB Device sites in sewershed of each WPCP (see Attachment B, "Inspections of Potential Source Sites") | | | X | Site inspections, evaluation and followup |
| Significant Industrial Users | | | X | Modify permits as warranted |
| Electric Company (PECO) customers | | | X | Undetermined. PECO will not share customer information. |
| Township Connections | | | X | Sample points of connections for PCBs |
| Groundwater Discharges | | | X | Require PCB monitoring |

# Philadelphia Water Department

## Inspections by Treatment Plant

01/1/2020 - 12/31/2020

| LocID | NAME: | ADDRESS: | LOCATION | CONTACT | EQUIPMENT | NUMBER | CONC (PPM) | GALLONS | LEAKS? | INSP DATE | STATUS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Receiving Plant: NEWPCP** | | | | | | | | | | | |
| PCB-NE000 | AdvanSix Resins & Chemicals, LLC | 2501 Margaret St 19137-1193 | Dispensary | Adrienne Blanchard | Transformer | 1 | <50 | NA | No | 10/20/20 | In Use |
| PCB-NE005 | School District of Philadelphia | 4224 N. Front St. 19140 | CEP Hunting Park | Kevin Rugletic, Elect | Transformer | 0 | N/A | N/A | No | 08/12/20 | Removed From Site |
| PCB-NE010 | AdvanSix Resins & Chemicals, LLC | 2501 Margaret St 19137-1193 | Cooling Tower 4 | Adrienne Blanchard | Transformer | 2 | <50 | NA | No | 10/20/20 | In Use |
| PCB-NE020 | AdvanSix Resins & Chemicals, LLC | 2501 Margaret St 19137-1193 | Cooling Tower 3 | Adrienne Blanchard | Transformer | 1 | <50 | NA | No | 10/20/20 | In Use |
| PCB-NE022 | GE International, Inc. | 1040 E. Erie Ave 19124 | Outside (West and South) | Ana Adorno | Transformer | 2 | <50 | 220 | No | 05/12/20 | In Use |
| PCB-NE023 | GE International, Inc. | 1040 E. Erie Ave 19124 | Test balcony | Ana Adorno | Capacitor & Transformer | 0 | 0 | 0 | No | 05/12/20 | Removed From Site |
| PCB-NE024 | GE International, Inc. | 1040 E. Erie Ave 19124 | W Indoor Undercar test cage | Ana Adorno | Transformer | 0 | 0 | 0 | No | 05/12/20 | Removed From Site |
| PCB-NE025 | GE International, Inc. | 1040 E. Erie Ave 19124 | Low Bay [Col. H PCB Storage Area] | Ana Adorno | Other | 1 | <50 | 40 | No | 05/12/20 | Out of Use |
| PCB-NE027 | AdvanSix Resins & Chemicals, LLC | 2501 Margaret St 19137-1193 | Cooling Tower 5 | Adrienne Blanchard | Transformer | 1 | <50 | NA | No | 10/20/20 | In Use |
| PCB-NE044 | Boathouse Sports | 401 E. Hunting Park Ave 19124 | By loading Dock | P. Vincent | Transformer | 1 | NA | NA | No | 05/27/20 | In Use |
| PCB-NE066 | Thalheimer Brothers Inc | 5550 Whitaker Ave 19124 | Scale House | Andy Parks | Transformer | 1 | <50 | NA | No | 12/18/20 | In Use |
| PCB-NE067 | Thalheimer Brothers Inc | 700 E Godfrey Ave 19124 | Wharehouse | Andy Parks | Transformer | 4 | <50 | 250 | No | 12/18/20 | In Use |
| PCB-NE078 | Sedgley Building LLC | 1850 E. Sedgley St 19124 | Building Roof | Ben, Property Manag | Transformer | 1 | <50 | 270 | No | 07/22/20 | In Use |
| PCB-NE081 | Fox Trust Building | 3634 N. Broad St 19140 | Basement Vault | Manager | Transformer | 2 | NA | 42 | No | 11/24/20 | In Use |
| PCB-NE082 | Franklin Smelting & Refining | 160 Castor Ave 19134 | By gate on Castor Ave. | Jack Kelly | Transformer | 0 | 0 | 0 | No | 05/27/20 | Removed From Site |
| PCB-NE091 | Sterling Paper | 2155 E. Castor Ave 19134 | Sterqva Corp | Stteve Monica | Transformer | 4 | NA | NA | No | 05/21/20 | Out of Use |
| PCB-NE119 | Thajheimer Brothers Inc | 5601 Tabor Ave 19124 | Outside Building | Andy Parks | Transformer | 2 | <499 | 754 | No | 12/18/20 | In Use |
| PCB-NE143 | Thalheimer Brothers | 700 E. Godfrey Ave 19124 | Warehouse loft area | Andy Parks | Transformer | 1 | <50 | 250 | No | 12/18/20 | In Use |

Table B2

| LocID | NAME: | ADDRESS: | LOCATION | CONTACT | EQUIPMENT | NUMBER | CONC (PPM) | GALLONS | LEAKS? | INSP DATE | STATUS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Receiving Plant: NEWPCP** | | | | | | | | | | | |
| PCB-NE201 | Pioneer Leimel | 2250 E. Ontario St 19134 | Between Building Exterior | Ursula Wagner 215-7 | Transformer | 1 | N/A | 350 | No | 12/07/20 | In Use |
| PCB-NE213 | Frontida BioPharm | 1100 Orthodox St 19124 | Building Rear | Chase Brown | Transformer | 4 | <50 | 1542 | No | 09/10/20 | In Use |
| PCB-NE226 | Domestic Uniform Rental | 4100 Frankford Ave 19124 | Outside | Dennia Glancey | Transformer | 1 | NA | 414 | No | 10/05/20 | In Use |
| PCB-NE229 | Thalheimer Brothers Inc | 5550 Whitaker Ave 19124 | Outside office area | Andy Parks | Transformer | 2 | NA | 90 | No | 12/18/20 | In Use |
| PCB-NE231 | PolySat, Inc. | 7240 State Rd 19135 | Outside | Plant Manager | Transformer | 1 | <50 | NA | No | 11/24/20 | In Use |
| PCB-NE232 | Jomar | 5300 Whitaker Ave 19124 | Outside Cage | Dan Powles | Transformer | 1 | NA | 420 | No | 05/18/20 | In Use |
| PCB-NE245 | Naval Support Activity Philadelphia | 700 Robbins Ave 19111 | Navy Supply-NE Philly | Tom Breslin | Transformer | 1 | NA | 175 | No | 06/17/20 | In Use |
| PCB-NE246 | Naval Support Activity Philadelphia | 700 Robbins Ave 19111 | Wing 4 South Side | Tom Breslin | Transformer | 2 | NA | 610 | No | 06/17/20 | In Use |
| PCB-NE247 | Naval Support Activity Philadelphia | 700 Robbins Ave 19111 | Between wings 4 &5 | Tom Breslin | Transformer | 1 | NA | NA | No | 06/17/20 | In Use |
| PCB-NE248 | Naval Support Activity Philadelphia | 700 Robbins Ave 19111 | Northeast Building | Tom Breslin | Transformer | 1 | NA | 162 | No | 06/17/20 | In Use |
| PCB-NE249 | Naval Support Activity Philadelphia | 700 Robbins Ave 19111 | West Side Building 12 | Tom Breslin | Transformer | 1 | <1 | 238 | No | 06/17/20 | In Use |
| PCB-NE250 | Naval Support Activity Philadelphia | 700 Robbins Ave 19111 | Southwest building 10 | Tom Breslin | Transformer | 1 | NA | 335 | No | 06/17/20 | In Use |
| PCB-NE251 | Naval Support Activity Philadelphia | 700 Robbins Ave 19111 | In Building 27A by generator | Tom Breslin | Transformer | 1 | NA | 412 | No | 06/17/20 | In Use |
| PCB-NE252 | Naval Support Activity Philadelphia | 700 Robbins Ave 19111 | Ball Field by community Center | Tom Breslin | Transformer | 1 | NA | 700 | No | 06/17/20 | In Use |
| PCB-NE253 | Naval Support Activity Philadelphia | 700 Robbins Ave 19111 | Ball Field Northeast of Housing | Tom Breslin | Transformer | 1 | NA | 284 | No | 06/17/20 | In Use |
| PCB-NE254 | Naval Support Activity Philadelphia | 700 Robbins Ave 19111 | Southeast of CDC | Tom Breslin | Transformer | 1 | NA | 109 | No | 06/17/20 | In Use |
| PCB-NE255 | Naval Support Activity Philadelphia | 700 Robbins Ave 19111 | Southeast Building 1 | Tom Breslin | Transformer | 1 | NA | 196 | No | 06/17/20 | In Use |
| PCB-NE256 | Naval Support Activity Philadelphia | 700 Robbins Ave 19111 | SE Building 12 | Tom Breslin | Transformer | 0 | 0 | 0 | No | 06/17/20 | Removed From Site |
| PCB-NE257 | Naval Support Activity Philadelphia | 700 Robbins Ave 19111 | North Building 9 | Tom Breslin | Transformer | 1 | NA | 232 | No | 06/17/20 | In Use |
| PCB-NE258 | Naval Support Activity Philadelphia | 700 Robbins Ave 19111 | East side of Building 93 | Tom Breslin | Transformer | 1 | NA | 101 | No | 06/17/20 | In Use |
| PCB-NE260 | Michel's Bakery, Inc. | 5698 Rising Sun Ave 19120 | Electrical Room | Anthony Battle | Transformer | 2 | <50 | 637 | Staining | 10/29/20 | In Use |

Table B2

| LocID | NAME: | ADDRESS: | LOCATION | CONTACT | EQUIPMENT | NUMBER | CONC (PPM) | GALLONS | LEAKS? | INSP DATE | STATUS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Receiving Plant: NEWPCP** | | | | | | | | | | | |
| PCB-NE284 | GE International, Inc. | 1040 E. Erie Ave 19124 | Column 10 H | Ana Adorno | Other | 0 | NA | 0 | No | 05/12/20 | Removed From Site |

**Receiving Plant: NEWPCP**

**Drainage Area: Combined** **Total Number of Inspections completed: 40**

| LocID | NAME: | ADDRESS: | LOCATION | CONTACT | EQUIPMENT | NUMBER | CONC (PPM) | GALLONS | LEAKS? | INSP DATE | STATUS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-NE046 | Northeast Shopping Center | 9173 Roosevelt Blvd 19114 | Woolworths Rear | J. Holsopple | Transformer | 1 | <50 | NA | Staining | 06/09/20 | In Use |
| PCB-NE047 | Northeast Shopping Center | 9173 Roosevelt Blvd 19114 | Office Exterior | J. Holsopple | Transformer | 1 | NA | NA | No | 06/09/20 | In Use |
| PCB-NE108 | Northwest Human Services | 2900 Southampton Rd 19154 | Exterior | Chris Giordani | Transformer | 8 | <50 | NA | No | 07/09/20 | In Use |
| PCB-NE208 | HP Hood, LLC | 10975 Dutton Rd 19154 | Outside Cage | James Hawkinson | Transformer | 2 | NA | 185 | No | 05/21/20 | In Use |
| PCB-NE211 | Delavau, LLC | 10101 Roosevelt Blvd 19154 | Building Rear | Katie Flynn | Transformer | 1 | <50 | 283 | No | 09/15/20 | In Use |
| PCB-NE224 | Pepsi Beverages Company | 11701 Roosevelt Blvd 19154 | Boiler Room | Kellie Caldwell | Transformer | 1 | <50 | 465 | No | 05/21/20 | In Use |
| PCB-NE225 | Pepsi Beverages Company | 11701 Roosevelt Blvd 19154 | Outside | Kellie Caldwell | Transformer | 1 | <50 | 465 | No | 05/21/20 | In Use |
| PCB-NE259 | Zentis North America, LLC | 1741 Tomlinson Rd 19116 | Bld by Waste Tank | Jennifer Fitzgerald | Transformer | 1 | 0 | 428 | No | 05/21/20 | In Use |
| PCB-NE271 | I. Rice | 11500D Roosevelt Blvd 19116 | East Side of Building | Ashly Marchese | Transformer | 1 | <50 | NA | No | 01/21/20 | In Use |
| PCB-NE274 | Stockwell Elastomerics, Inc. | 4749 Tolbut St 19136 | Building 4749 | Jay Hough | Capacitor | 7 | NA | 3-4 | No | 09/10/20 | In Use |
| PCB-NE279 | Cintas Corporation | 10080 Sandmeyer Ln 19116 | By Tempered Water Tank | Luis Puig | Transformer | 2 | NA | NA | No | 08/27/20 | In Use |
| PCB-NE283 | Custom Powder Coating | 8451 Hegerman St 19136 | Behind Administration Building | Bill O'Sullivan | Transformer | 1 | NA | NA | No | 06/11/20 | In Use |
| PCB-NE288 | Tastepoint | 10801 Decatur Rd 19154 | Boiler room | Stacey DeMarco | Transformer | 3 | 0 | 363 | No | 11/13/20 | In Use |

**Receiving Plant: NEWPCP**

**Drainage Area: MS4** **Total Number of Inspections completed: 13**

| LocID | NAME: | ADDRESS: | LOCATION | CONTACT | EQUIPMENT | NUMBER | CONC (PPM) | GALLONS | LEAKS? | INSP DATE | STATUS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-NE209 | C. Lever Colors, Inc. | 736 Dunks Ferry Rd 19020 | Outside | Kila Estes | Transformer | 1 | <50 | NA | No | 05/21/20 | In Use |

**Receiving Plant: NEWPCP**

**Drainage Area: Township** **Total Number of Inspections completed: 1**

**Receiving Plant: NEWPCP** **Total Number of Inspections completed: 54**

Table B2

| LocID | NAME: | ADDRESS: | LOCATION | CONTACT | EQUIPMENT | NUMBER | CONC (PPM) | GALLONS | LEAKS? | INSP DATE | STATUS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Receiving Plant: SEWPCP** | | | | | | | | | | | |
| PCB-SE034 | PGW | 1800-62 N. 9th st 19122 | Basement | Kevin Grooms | Transformer | 4 | <1 | 640 | No | 11/18/20 | In Use |
| PCB-SE049 | 444 N. 4th st | 444 N. 4th St 19123 | Basement | Chad Orens | Transformer | 1 | 0 | NA | No | 07/07/20 | In Use |
| PCB-SE052 | Club Condominium | 210 N. 8th st 19107 | Mechanical Room | Joe Robinson, Facilit | Transformer | 3 | >50 | 400 | No | 07/07/20 | In Use |
| PCB-SE062 | US Government | 1020 S. Broad St 19146 | Buildings A,B,C | Earl Stump | Transformer | 0 | 0 | 0 | No | 07/21/20 | In Use |
| PCB-SE203 | Simons Brothers Co. | 2438 Sergeant St 19125 | By Front Door | Nelson Kaiser | Capacitor | 1 | <50 | NA | No | 07/10/20 | In Use |
| PCB-SE204 | Inolex Chemical Company | 2101 S. Swanson St 19148 | Jackson St | Mike Smith | Transformer | 1 | <50 | NA | No | 09/25/20 | In Use |
| PCB-SE205 | Ashland Chemical Company | 2801 Christopher Columbus Blvd 19148 | By Nitrogen | William Celtnieks | Transformer | 1 | <50 | 370 | No | 09/03/20 | In Use |
| PCB-SE207 | Ashland Chemical Company | 2801 Christopher Columbus Blvd 19148 | Roof of Building 10 | William Celtnieks | Transformer | 1 | <50 | 238 | No | 09/03/20 | In Use |
| PCB-SE207 | Ashland Chemical Company | 2801 Christopher Columbus Blvd 19148 | Roof of Building 10 | William Celtnieks | Transformer | 1 | <50 | | No | 09/03/20 | In Use |
| PCB-SE208 | Inolex Chemical Company | 2101 S. Swanson St 19148 | Reactor Dock | Mike Smith | Transformer | 3 | <50 | NA | No | 09/25/20 | In Use |
| PCB-SE209 | Inolex Chemical Company | 2101 S. Swanson St 19148 | Waccocoe St | Mike Smith | Transformer | 1 | <50 | NA | No | 09/25/20 | In Use |
| PCB-SE210 | Inolex Chemical Company | 2101 S. Swanson St 19148 | Railroad/Swanson St | Mike Smith | Transformer | 1 | <50 | NA | No | 09/25/20 | Out of Use |
| PCB-SE243 | National Chemical Laboratories, Inc. | 401 N. 10th St 19123 | Transformer Room | Kenny Pollack | Transformer | 4 | <50 | 410 | No | 09/17/20 | In Use |

**Receiving Plant: SEWPCP**

**Drainage Area: Combined** **Total Number of Inspections completed:** 13

Table B2

| LocID | NAME: | ADDRESS: | LOCATION | CONTACT | EQUIPMENT | NUMBER | CONC (PPM) | GALLONS | LEAKS? | INSP DATE | STATUS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Receiving Plant: SEWPCP** | | | | | | | | | | | |
| PCB-SE009 | Four Freedoms House | 6101 Morris St 19144 | Electrical Room | Helen Kraus | Transformer | 1 | >50 | 125 | No | 07/06/20 | In Use |
| PCB-SE212 | SEWPCP | 25 E. Pattison Ave 19148 | Administration Building | Amy Szor | Transformer | 1 | <50 | 411 | Staining | 04/17/20 | In Use |
| PCB-SE214 | SEWPCP | 25 E. Pattison Ave 19148 | S&G 1&2 | Amy Szor | Transformer | 2 | <50 | 370 | No | 04/17/20 | In Use |
| PCB-SE215 | SEWPCP | 25 E. Pattison Ave 19148 | IPS | Amy Szor | Transformer | 2 | <50 | 892 | No | 04/17/20 | In Use |
| PCB-SE216 | SEWPCP | 25 E. Pattison Ave 19148 | AT-2 | Amy Szor | Transformer | 2 | <50 | NA | No | 04/17/20 | In Use |
| PCB-SE217 | SEWPCP | 25 E. Pattison Ave 19148 | Access 6 | Amy Szor | Transformer | 1 | <50 | 217 | No | 04/17/20 | In Use |
| PCB-SE218 | SEWPCP | 25 E. Pattison Ave 19148 | Access 5 | Amy Szor | Transformer | 1 | <50 | 217 | No | 04/17/20 | In Use |
| PCB-SE219 | SEWPCP | 25 E. Pattison Ave 19148 | Compressor Building | Amy Szor | Transformer | 8 | <50 | NA | No | 04/17/20 | In Use |
| PCB-SE220 | SEWPCP | 25 E. Pattison Ave 19148 | Compressor | Amy Szor | Transformer | 2 | <50 | 425 | No | 04/17/20 | In Use |
| PCB-SE221 | SEWPCP | 25 E. Pattison Ave 19148 | At-1 | Amy Szor | Transformer | 2 | <50 | 580 | Staining | 04/17/20 | In Use |
| PCB-SE246 | PSNY (NFPC) | 4747 S. Broad St 19112 | South Building 20 | Allison Starr | Transformer | 4 | NA | NA | No | 10/14/20 | In Use |
| PCB-SE247 | PSNY (NFPC) | 4747 S. Broad St 19112 | Southwest Building 20 | Allison Starr | Transformer | 3 | NA | NA | No | 10/14/20 | In Use |
| PCB-SE250 | Tasty Baking | 4300 S. 26th St 19112 | Building Rear | Patrick West, ESS Di | Transformer | 2 | <50 | NA | No | 10/16/20 | In Use |
| PCB-SE318 | WuXi AppTec Incorporated | 4751 League Island Blvd 19112 | Loading Dock | Monica Lurtz | Transformer | 2 | 0 | NA | No | 09/01/20 | In Use |

**Receiving Plant: SEWPCP**

**Drainage Area: MS4** **Total Number of Inspections completed:** 14

**Receiving Plant: SEWPCP** **Total Number of Inspections completed:** 27

Table B2

| LocID | NAME: | ADDRESS: | LOCATION | CONTACT | EQUIPMENT | NUMBER | CONC (PPM) | GALLONS | LEAKS? | INSP DATE | STATUS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Receiving Plant: SWWPCP** | | | | | | | | | | | |
| PCB-SW025 | Paschall Apartments | 7212 Woodland Ave 19142 | Vault | Ziaur Rahman | Transformer | 0 | 0 | 0 | No | 07/15/20 | Removed From Site |
| PCB-SW026 | 1500 Walnut | 1500 Walnut St 19102 | 11th Floor Vault | Danny Moore | Transformer | 1 | NA | 172 | No | 08/17/20 | In Use |
| PCB-SW034 | Lanesborough | 1601 Locust St. 19102 | Basement | Donald, front desk | Transformer | 3 | <50 | N/A | No | 11/24/20 | In Use |
| PCB-SW059 | City Centre Philadelphian | 4500 City Ave 19131 | Strip Mall Rear | Patrick Casella | Transformer | 1 | <50 | NA | No | 04/29/20 | In Use |
| PCB-SW062 | Broad & Locust Associates | 230 S. Broad St 19102 | Roof Center East | Jason Vaughn (mg di | Transformer | 6 | <50 | 200 | No | 12/11/20 | In Use |
| PCB-SW076 | 1500 Walnut | 1500 Walnut St 19102 | Engine Room Basement | Danny Moore | Transformer | 1 | NA | 230 | No | 08/17/20 | In Use |
| PCB-SW109 | The Philadelphian | 2401 Pennsylvania Ave 19130 | Roof | Bruce Lane | Capacitor & Transformer | 3 | <50 | NA | No | 07/15/20 | In Use |
| PCB-SW125 | 3020 Market Operating LP | 3020 Market St 19104 | Penthouse | Tim, Facilities Mana | Transformer | 4 | <50 | 525 | No | 07/21/20 | In Use |
| PCB-SW131 | Commerce Building | 401 N. Broad St 19108 | 2nd & 3rd Floors | Mike Diianni, Engin | Transformer | 0 | N/A | N/A | No | 08/13/20 | Removed From Site |
| PCB-SW134 | Kennedy House Condos | 1901 JFK Blvd 19103 | Garage | Lewis Ringler, Chief | Transformer | 4 | <50 | 208 | No | 11/25/20 | In Use |
| PCB-SW136 | Land Title Building | 100 S. Broad St 19110 | LTB limited partnership | Dwayne Chapman bl | Transformer | 5 | <50 | 258 | No | 12/07/20 | In Use |
| PCB-SW144 | Bartram Transfer Station | 5100 Grays Ave 19143 | Incinerator Building | Scott McGrath | Transformer | 0 | 0 | 0 | No | 05/27/20 | Removed From Site |
| PCB-SW245 | National Railroad Passenger Corp. | 30th & Race Sts Amtrak Race St./Penn Coach Yard 19104 | Overhead Sub Station #16-#24 in Site Plan | Michael Panhuise | Transformer | 8 | NA | 800 | No | 12/04/20 | In Use |
| PCB-SW246 | National Railroad Passenger Corp. | 30th & Race Sts Amtrak Race St./Penn Coach Yard 19104 | Near Generator with Day Tank. #28 in Site Plan | Michael Panhuise | Transformer | 1 | NA | 800 | No | 12/04/20 | In Use |
| PCB-SW247 | National Railroad Passenger Corp. | 30th & Race Sts Amtrak Race St./Penn Coach Yard 19104 | Car repair shop #29 on Site Plan | Michael Panhuise | Transformer | 1 | <50 | 800 | No | 12/04/20 | In Use |
| PCB-SW248 | National Railroad Passenger Corp. | 30th & Race Sts Amtrak Race St./Penn Coach Yard 19104 | North of Oil Water Sseparator #39 on Site Plan | Michael Panhuise | Transformer | 1 | <50 | 280 | No | 12/04/20 | In Use |
| PCB-SW249 | National Railroad Passenger Corp. | 30th & Race Sts Amtrak Race St./Penn Coach Yard 19104 | Further North of Oil Water Separator #41 in Site Plan | Michael Panhuise | Transformer | 1 | <50 | 280 | No | 12/04/20 | In Use |
| PCB-SW250 | National Railroad Passenger Corp. | 30th & Race Sts Amtrak Race St./Penn Coach Yard 19104 | SE of Waste Oil Recovery System #42 on site plan | Michael Panhuise | Transformer | 1 | NA | 280 | No | 12/04/20 | In Use |
| PCB-SW251 | National Railroad Passenger Corp. | 30th & Race Streets Amtrak Race St./Penn Coach Yard 19104 | No plate/sticker seen. Assume it's inside of transformer case. Location: Engineering Bldg, #43 on site plan. | Michael Panhuise | Transformer | 1 | NA | 280 | No | 12/04/20 | In Use |

| LocID | NAME: | ADDRESS: | LOCATION | CONTACT | EQUIPMENT | NUMBER | CONC (PPM) | GALLONS | LEAKS? | INSP DATE | STATUS |
|---|---|---|---|---|---|---|---|---|---|---|---|

**Receiving Plant: SWWPCP**

**Receiving Plant: SWWPCP**

**Drainage Area: Combined** **Total Number of Inspections completed: 19**

Table B2

| LocID | NAME: | ADDRESS: | LOCATION | CONTACT | EQUIPMENT | NUMBER | CONC (PPM) | GALLONS | LEAKS? | INSP DATE | STATUS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Receiving Plant: SWWPCP** | | | | | | | | | | | |
| PCB-SW042 | EPPI | 3200 Henry Ave 19129 | TUNNEL SUBSTATION #1 TOWERS/WEST | Jesse Ramos (maint | Transformer | 0 | 0 | 0 | No | 12/03/20 | Removed From Site |
| PCB-SW071 | Falls Center LP | 3300 Henry Ave 19129 | Boiler Room | Greg Peltzer | Transformer | 3 | NA | 70 | No | 11/25/20 | Use (2) and Inactive ( |
| PCB-SW072 | Falls Center LP | 3300 Henry Ave 19129 | Mechanical Room (Commonwealth) | Greg Peltzer | Transformer | 2 | N/A | 0 | No | 11/25/20 | Out of Use |
| PCB-SW073 | Falls Center LP | 3300 Henry Ave 19129 | ELEVATOR ROOM #1-2-3 HERITAGE BLDG. | Greg Peltzer, fac sup, | Capacitor | 0 | N/A | N/A | No | 11/25/20 | Removed From Site |
| PCB-SW074 | Falls Center LP | 3300 Henry Ave 19129 | ELEVATOR ROOM #4&5 HERITAGE BLDG. | Greg Peltzer, fac sup, | Capacitor | 0 | N/A | N/A | No | 11/25/20 | Removed From Site |
| PCB-SW075 | Falls Center LP | 3300 Henry Ave 19129 | M2B-E 1ST WEST MECH. ROOM (COMMONWEALTH) | Greg Peltzer, fac sup, | Capacitor | 0 | N/A | N/A | No | 11/25/20 | Removed From Site |
| PCB-SW099 | Falls Center LP | 3300 Henry Ave 19129 | M2B-B 1ST WEST MECH. ROOM (COMMONWEALTH) | Greg Peltzer, fac sup, | Capacitor | 0 | N/A | N/A | No | 11/25/20 | Removed From Site |
| PCB-SW101 | EPPI | 3200 Henry Ave 19129 | #5 Boiler House | Jesse Ramos (maint | Transformer | 0 | N/A | N/A | No | 12/03/20 | Removed From Site |
| PCB-SW117 | Falls Center LP | 3300 Henry Ave 19129 | M2B-C-2 1ST FL. MECH. ROOM (COMMONWEALTH) | Greg Peltzer, fac sup, | Capacitor | 0 | N/A | N/A | No | 11/25/20 | Removed From Site |
| PCB-SW121 | EPPI | 3200 Henry Ave 19129 | TUNNEL SUBSTATION #3 CHILDREN'S UNIT | Jesse Ramos (maint | Transformer | 0 | N/A | N/A | No | 12/03/20 | Removed From Site |
| PCB-SW122 | EPPI | 3200 Henry Ave 19129 | TUNNEL SUBSTATION #2 TOWERS/EAST | Jesse Ramos (maint | Transformer | 0 | N/A | N/A | No | 12/03/20 | Removed From Site |
| PCB-SW123 | EPPI | 3200 Henry Ave 19129 | TUNNEL SUBSTATION #4 DR.'S QUARTERS | Jesse Ramos (maint | Transformer | 0 | N/A | N/A | No | 12/03/20 | Removed From Site |
| PCB-SW124 | EPPI | 3200 Henry Ave 19129 | TUNNEL SUBSTATION #1 TOWERS/WEST | Jesse Ramos (maint | Transformer | 0 | N/A | N/A | No | 12/03/20 | Removed From Site |
| PCB-SW129 | Falls Center LP | 3300 Henry Ave 19129 | SUBSTATION A 1ST FL. MECH. ROOM (COMMONWEALTH) | Greg Peltzer, fac sup, | Capacitor | 0 | N/A | N/A | No | 11/25/20 | Removed From Site |
| PCB-SW137 | Melrath Gasket | 2901 W. Hunting Park Ave 19129 | Electrical Room | George Matysik | Dry Transformer | 0 | 0 | 0 | No | 05/27/20 | In Use |
| PCB-SW200 | Grovers Market | 2910 S 70th st 19154 | Building Rear | N/A | Transformer | 3 | <50 | 167 | No | 04/29/20 | In Use |

Table B2

| LocID | NAME: | ADDRESS: | LOCATION | CONTACT | EQUIPMENT | NUMBER | CONC (PPM) | GALLONS | LEAKS? | INSP DATE | STATUS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Receiving Plant: SWWPCP** | | | | | | | | | | | |
| PCB-SW203 | LSG Sky Chefs | 8401 Escort Ave 19153 | Adminstration Building | Linda Miles | Transformer | 1 | 0 | NA | No | 10/28/20 | In Use |
| PCB-SW230 | Atlantic City Linen Supply, LLC | 7831 Bartram Ave 19153 | Parking Lot | Michael Greico | Transformer | 1 | 0 | NA | No | 02/11/20 | In Use |
| PCB-SW231 | Penn Fishing Tackle Mfg. Co | 3028 W. Hunting Park Ave 19132 | Anodizing Room | David Shanks | Capacitor | 2 | <50 | 2.18 | No | 01/16/20 | In Use |
| PCB-SW232 | Penn Fishing Tackle Mfg. Co | 3028 W. Hunting Park Ave 19132 | Waste Treatment Area | David Shanks | Capacitor | 1 | <50 | 1.03 | No | 01/16/20 | In Use |
| PCB-SW233 | Penn Fishing Tackle Mfg Co | 3028 W. Hunting Park Ave 19132 | Lube Pack Area | David Shanks | Capacitor | 1 | <50 | 1.03 | No | 01/16/20 | In Use |
| PCB-SW234 | Penn Fishing Tac kle Mfg. Co | 3028 W. Hunting Park Ave 19132 | Light Machine Area | David Shanks | Capacitor | 1 | <50 | 1.39 | No | 01/16/20 | In Use |
| PCB-SW235 | Penn Fishing Tac kle Mfg. Co | 3028 W. Hunting Park Ave 19132 | Basement Electrical | David Shanks | Transformer | 2 | <50 | 140 | No | 01/16/20 | In Use |
| PCB-SW236 | Penn Fishing Tac kle Mfg. Co | 3028 W. Hunting Park Ave 19132 | Outside Fenced Area | David Shanks | Transformer | 2 | <50 | 700 | No | 01/16/20 | In Use |
| PCB-SW252 | Budd Co | 2501 Hunting Park Ave 19140 | R Building | Walter Hungarter | Transformer | 3 | >50 | NA | Staining | 06/10/20 | Out of Use |
| PCB-SW253 | Budd Co | 2501 Hunting Park Ave 19140 | UNIT 6 N. | Walter Hungarter | Capacitor | 0 | 0 | 0 | No | 06/10/20 | Removed From Site |
| **Receiving Plant: SWWPCP** | | | | | | | | | | | |
| **Drainage Area: MS4** | | | **Total Number of Inspections completed: 26** | | | | | | | | |
| PCB-SW205 | PWD | 7800 Penrose Ferry Ave 19153 | Biosolids | Sonia Marin | Transformer | 1 | <50 | 325 | No | 04/29/20 | In Use |
| **Receiving Plant: SWWPCP** | | | | | | | | | | | |
| **Drainage Area: Non-Contributing** | | | **Total Number of Inspections completed: 1** | | | | | | | | |

Table B2

| LocID | NAME: | ADDRESS: | LOCATION | CONTACT | EQUIPMENT | NUMBER | CONC (PPM) | GALLONS | LEAKS? | INSP DATE | STATUS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Receiving Plant: SWWPCP** | | | | | | | | | | | |
| PCB-SW206 | Johnson & Johnson Consumer Inc. | 7050 Camp Hill Rd 19034 | Fire Pump | Deborah Heucheroth | Transformer | 1 | 16 | 125 | No | 09/01/20 | In Use |
| PCB-SW207 | Johnson & Johnson Consumer Inc. | 7050 Camp Hill Rd 19034 | By Child Care Center | Deborah Heuckeroth | Transformer | 1 | <50 | 221 | No | 09/01/20 | In Use |
| PCB-SW208 | Johnson & Johnson Consumer Inc. | 7050 Camp Hill Rd 19034 | WWTP | Deborah Heuckeroth | Transformer | 1 | <50 | 135 | No | 09/01/20 | In Use |
| PCB-SW209 | Johnson & Johnson Consumer Inc. | 7050 Camp Hill Rd 19034 | Adminstration B | Deborah Heucheroth | Transformer | 1 | 17 | 165 | No | 09/01/20 | In Use |
| PCB-SW210 | Johnson & Johnson Consumer Inc. | 7050 Camp Hill Rd 19034 | WTP | Deborah Heuckeroth | Transformer | 1 | <50 | 1373 | Staining | 09/01/20 | In Use |
| PCB-SW211 | Johnson & Johnson Consumer Inc. | 7050 Camp Hill Rd 19034 | Main B | Deborah Heuckeroth | Transformer | 1 | <50 | 1373 | Staining | 09/01/20 | In Use |
| PCB-SW213 | Astra Foods, Inc. | 6430 Market St 19082 | Boiler Room T1 | Dimitri Poulimenos | Transformer | 1 | NA | NA | No | 07/28/20 | In Use |
| PCB-SW214 | Astra Foods, Inc. | 6430 Market St 19082 | South Building T4 | Demitri Poulmentous | Transformer | 1 | NA | NA | No | 07/28/20 | In Use |
| PCB-SW215 | Astra Foods, Inc. | 6430 Market St 19082 | East Building T5 | Demitri Poulmentous | Transformer | 1 | NA | NA | No | 07/28/20 | In Use |
| PCB-SW216 | Astra Foods, Inc. | 6430 Market St 19082 | Centrifudge Building West of T4 | Demitri Poulmentous | Transformer | 1 | NA | NA | No | 07/28/20 | In Use |

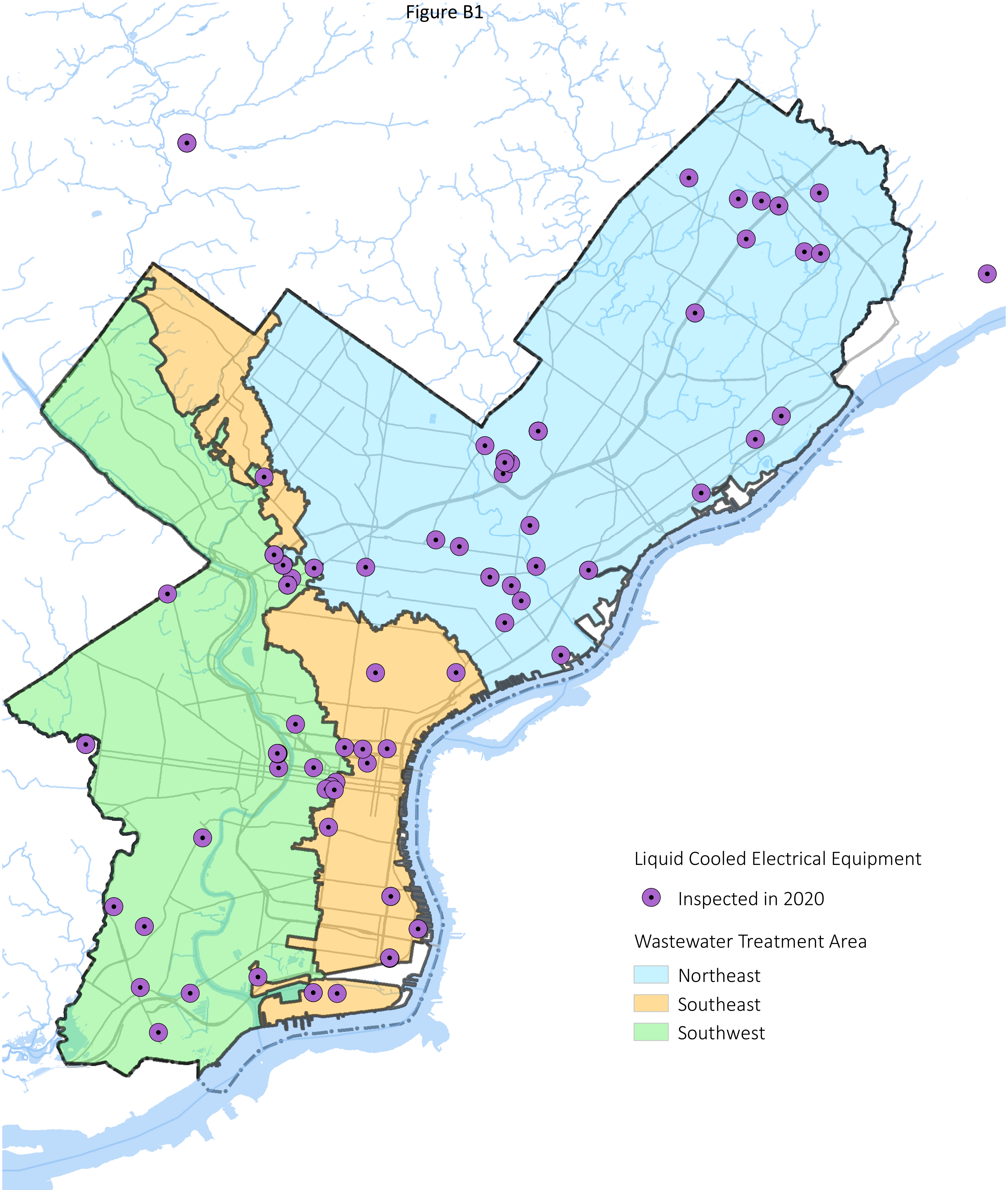
**Receiving Plant: SWWPCP**

**Drainage Area: Township** **Total Number of Inspections completed: 10**

**Receiving Plant: SWWPCP** **Total Number of Inspections completed: 56**

Total Inspections: 137

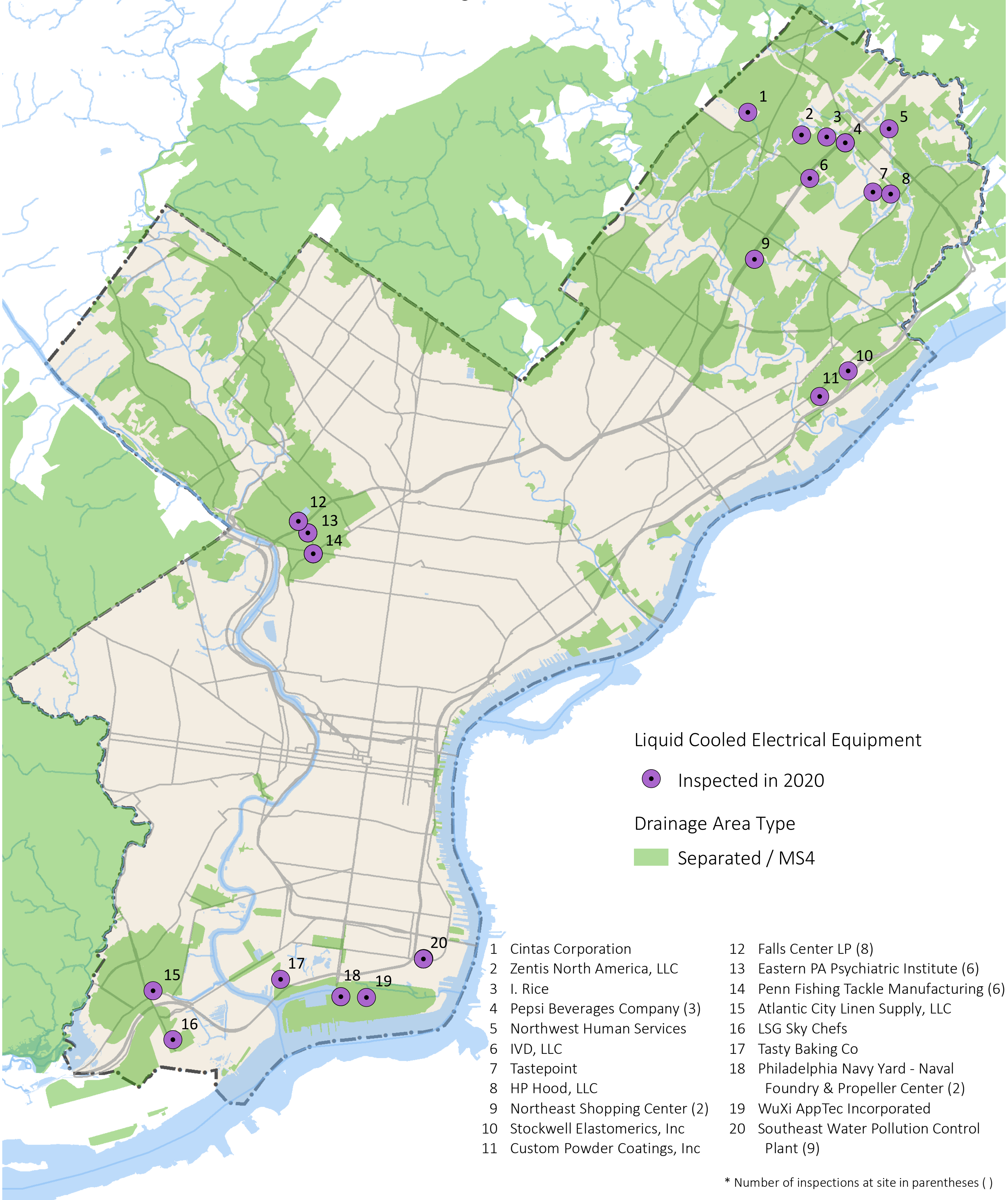
Figure B1




Liquid Cooled Electrical Equipment Sites Inspected in 2020
By Wastewater Treatment Area, Philadelphia, PA

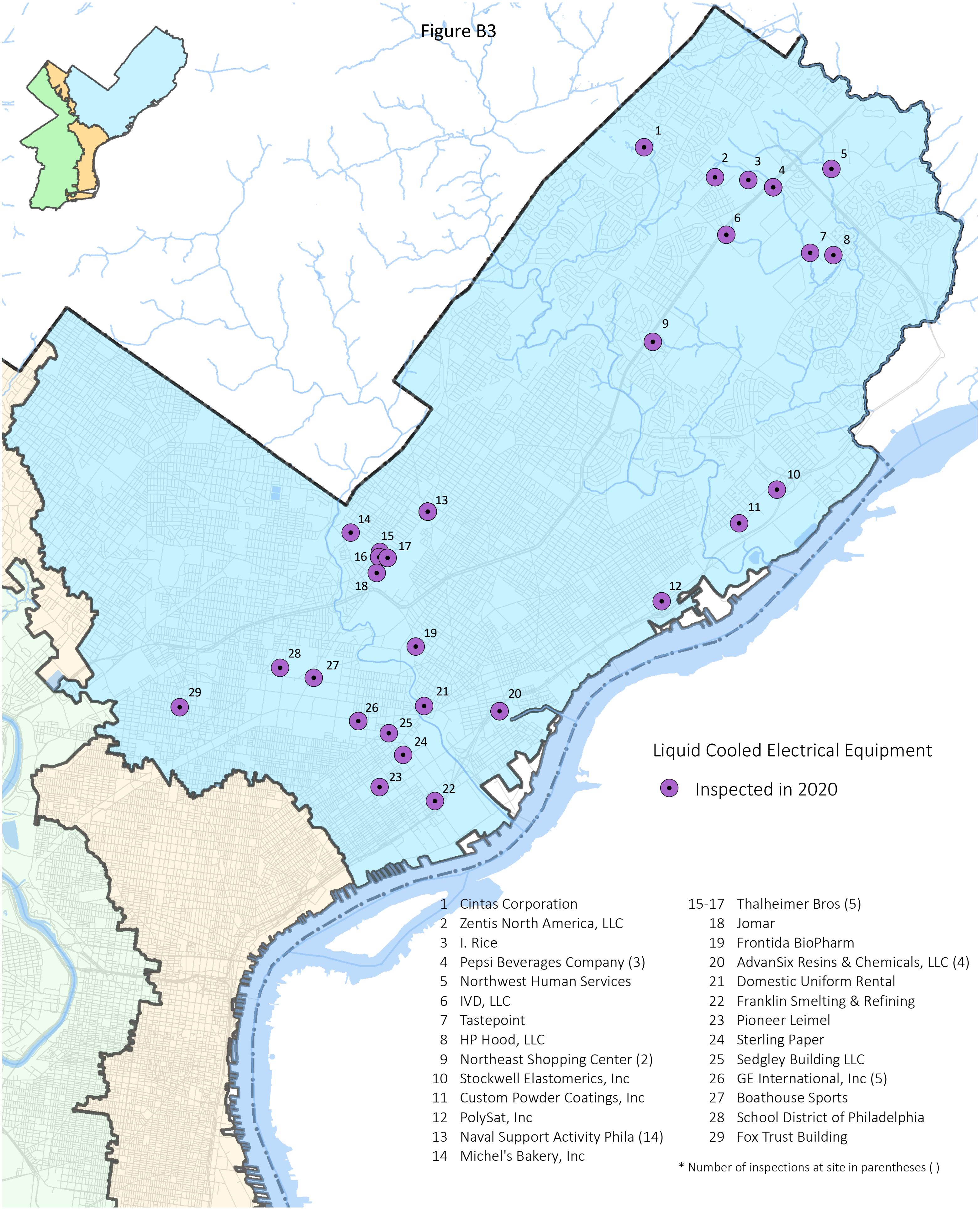
Source: Philadelphia Water Department, 2021
Created By: PWD GIS Unit, Feb 26, 2021

Figure B2




Liquid Cooled Electrical Equipment Sites Inspected in 2020
In MS4 Areas, Philadelphia, PA

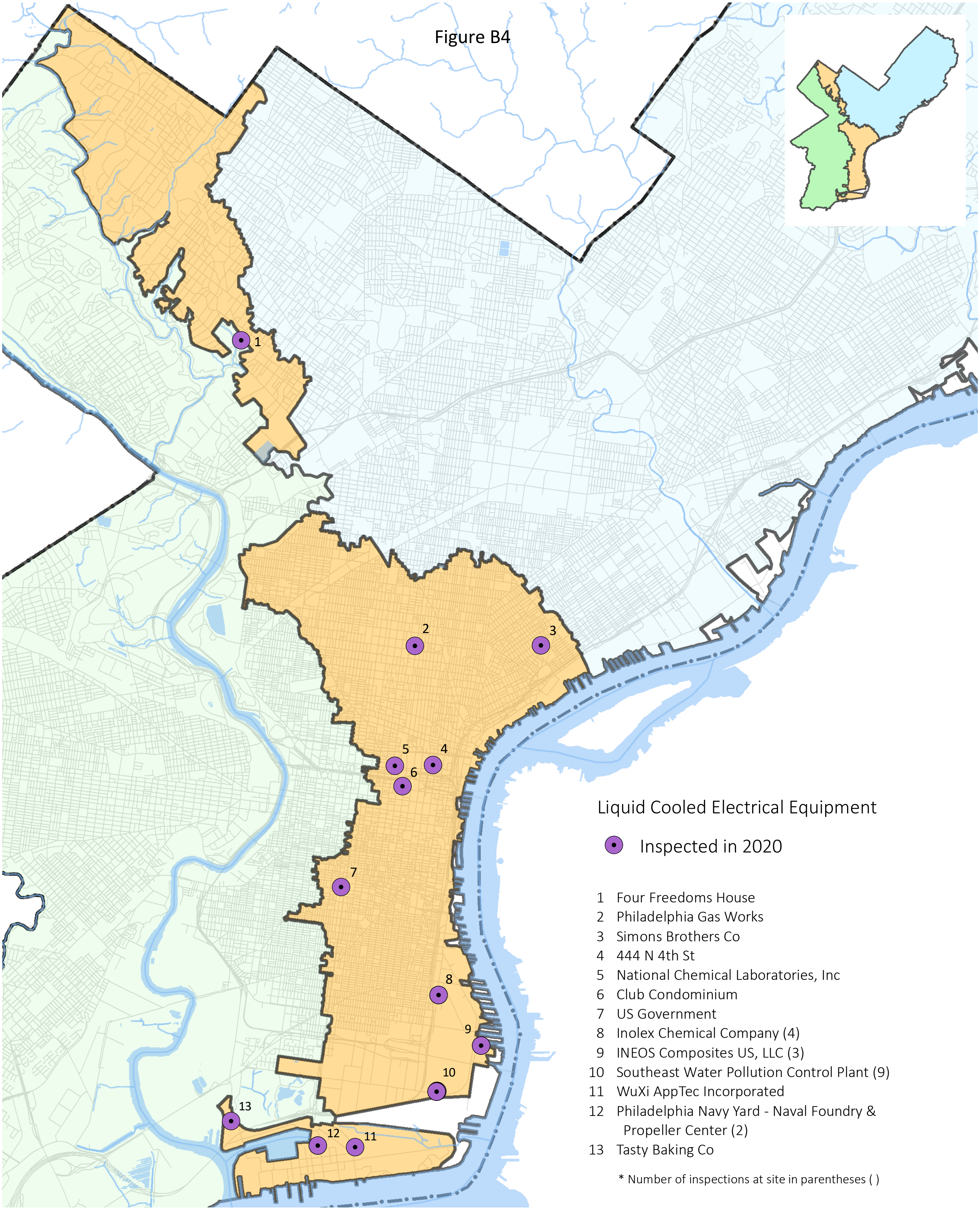
Source: Philadelphia Water Department, 2021
Created By: PWD GIS Unit, Feb 5, 2021




Liquid Cooled Electrical Equipment Sites Inspected in 2020

Northeast Treatment Area, Philadelphia, PA

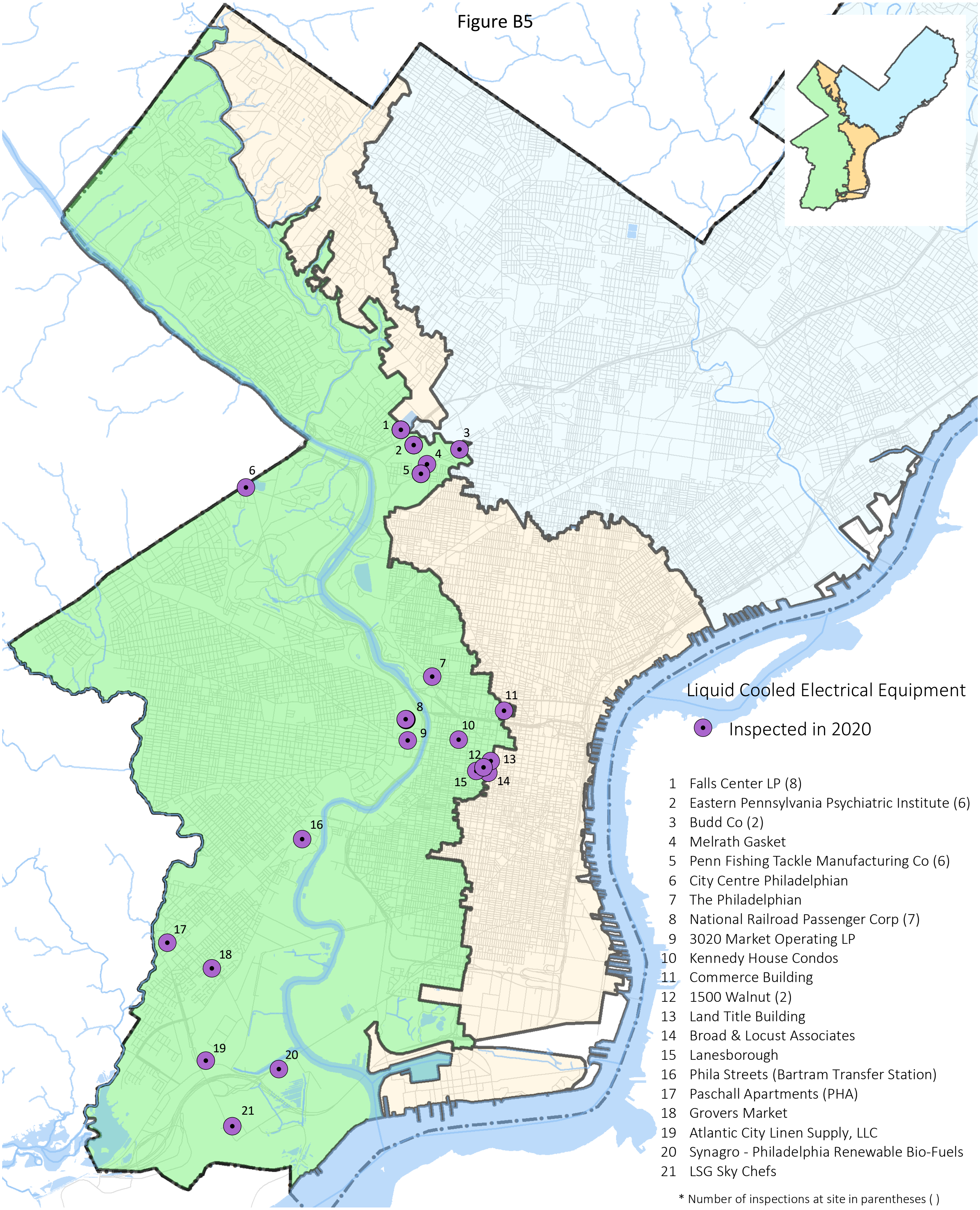
Source: Philadelphia Water Department, 2021
Created By: PWD GIS Unit, Feb 5, 2021




Liquid Cooled Electrical Equipment Sites Inspected in 2020
Southeast Treatment Area, Philadelphia, PA

Source: Philadelphia Water Department, 2021
Created By: PWD GIS Unit, Feb 5, 2021

Figure B5




Liquid Cooled Electrical Equipment Sites Inspected in 2020

Southwest Treatment Area, Philadelphia, PA

Source: Philadelphia Water Department, 2021

Created By: PWD GIS Unit, Feb 5, 2021

Attachment C

Township Connection PCB Summary

Table C1: 2020 Township PCB Summary
PCB Homolog Concentration (µg/L)

| Township Location ID | Sample Date | Parameter | "< >" | Data Value | Units | Sample Type |
|---|---|---|---|---|---|---|
| FILSHEL | 9/29/2020 | Dichlorobiphenyls | < | 0.1 | µg/L | Composite 24h |
| FILSHEL | 9/29/2020 | Heptachlorobiphenyls | < | 0.3 | µg/L | Composite 24h |
| FILSHEL | 9/29/2020 | Hexachlorobiphenyls | < | 0.2 | µg/L | Composite 24h |
| FILSHEL | 9/29/2020 | Monochlorobiphenyls | < | 0.1 | µg/L | Composite 24h |
| FILSHEL | 9/29/2020 | Nonachlorobiphenyls | < | 0.5 | µg/L | Composite 24h |
| FILSHEL | 9/29/2020 | Octachlorobiphenyls | < | 0.3 | µg/L | Composite 24h |
| FILSHEL | 9/29/2020 | Pentachlorobiphenyls | < | 0.2 | µg/L | Composite 24h |
| FILSHEL | 9/29/2020 | Tetrachlorobiphenyls | < | 0.2 | µg/L | Composite 24h |
| FILSHEL | 9/29/2020 | Trichlorobiphenyls | < | 0.1 | µg/L | Composite 24h |
| FILSHEL | 9/29/2020 | Decachlorobiphenyls | < | 0.49 | µg/L | Composite 24h |
| PINERD | 9/29/2020 | Dichlorobiphenyls | < | 0.1 | µg/L | Composite 24h |
| PINERD | 9/29/2020 | Heptachlorobiphenyls | < | 0.3 | µg/L | Composite 24h |
| PINERD | 9/29/2020 | Hexachlorobiphenyls | < | 0.2 | µg/L | Composite 24h |
| PINERD | 9/29/2020 | Monochlorobiphenyls | < | 0.1 | µg/L | Composite 24h |
| PINERD | 9/29/2020 | Nonachlorobiphenyls | < | 0.5 | µg/L | Composite 24h |
| PINERD | 9/29/2020 | Octachlorobiphenyls | < | 0.3 | µg/L | Composite 24h |
| PINERD | 9/29/2020 | Pentachlorobiphenyls | < | 0.2 | µg/L | Composite 24h |
| PINERD | 9/29/2020 | Tetrachlorobiphenyls | < | 0.2 | µg/L | Composite 24h |
| PINERD | 9/29/2020 | Trichlorobiphenyls | < | 0.1 | µg/L | Composite 24h |
| PINERD | 9/29/2020 | Decachlorobiphenyls | < | 0.5 | µg/L | Composite 24h |
| SHADYLA | 9/30/2020 | Dichlorobiphenyls | < | 0.1 | µg/L | Composite 24h |
| SHADYLA | 9/30/2020 | Heptachlorobiphenyls | < | 0.3 | µg/L | Composite 24h |
| SHADYLA | 9/30/2020 | Hexachlorobiphenyls | < | 0.2 | µg/L | Composite 24h |
| SHADYLA | 9/30/2020 | Monochlorobiphenyls | < | 0.1 | µg/L | Composite 24h |
| SHADYLA | 9/30/2020 | Nonachlorobiphenyls | < | 0.5 | µg/L | Composite 24h |
| SHADYLA | 9/30/2020 | Octachlorobiphenyls | < | 0.3 | µg/L | Composite 24h |
| SHADYLA | 9/30/2020 | Pentachlorobiphenyls | < | 0.2 | µg/L | Composite 24h |
| SHADYLA | 9/30/2020 | Tetrachlorobiphenyls | < | 0.2 | µg/L | Composite 24h |
| SHADYLA | 9/30/2020 | Trichlorobiphenyls | < | 0.1 | µg/L | Composite 24h |
| SHADYLA | 9/30/2020 | Decachlorobiphenyls | < | 0.51 | µg/L | Composite 24h |

Table C2: 2020 Township PCB Summary
PCB Homolog Concentration (µg/L)

| Township Location ID | Sample Date | Parameter | "< >" | Data Value | Units | Sample Type |
|---|---|---|---|---|---|---|
| ERDII | 09/03/2020 | Dichlorobiphenyls | < | 0.10 | µg/L | Composite 24h |
| ERDII | 09/03/2020 | Heptachlorobiphenyls | < | 0.30 | µg/L | Composite 24h |
| ERDII | 09/03/2020 | Hexachlorobiphenyls | < | 0.20 | µg/L | Composite 24h |
| ERDII | 09/03/2020 | Monochlorobiphenyls | < | 0.10 | µg/L | Composite 24h |
| ERDII | 09/03/2020 | Nonachlorobiphenyls | < | 0.50 | µg/L | Composite 24h |
| ERDII | 09/03/2020 | Octachlorobiphenyls | < | 0.30 | µg/L | Composite 24h |
| ERDII | 09/03/2020 | Pentachlorobiphenyls | < | 0.20 | µg/L | Composite 24h |
| ERDII | 09/03/2020 | Tetrachlorobiphenyls | < | 0.20 | µg/L | Composite 24h |
| ERDII | 09/03/2020 | Trichlorobiphenyls | < | 0.10 | µg/L | Composite 24h |

# Appendix F – PWD Quarterly Dry Weather Water Quality Monitoring Program

## Background

In 2009, the Philadelphia Water Department (PWD) initiated a dry weather water quality sampling program designed to work in tandem with the continuous data collection efforts of the PWD/USGS Cooperative Continuous Water Quality Monitoring Program. Grab samples are collected from 10 sites covering all six of Philadelphia County's watersheds on a quarterly basis by the staff of PWD's Bureau of Laboratory Services (BLS). Data collected through this program are most pertinent to Target A (Dry Weather Water Quality & Aesthetics) of PWD's Integrated Watershed Management Plan (IWMP) Strategy, as outlined in the following section.

## The IWMP Target Strategy

IWMPs are designed to meet the goals and objectives of numerous water resources-related regulations and programs. Each IWMP results in a series of implementation recommendations that utilize adaptive management approaches to achieve measurable, watershed-wide benefits. By working with stakeholder groups to prioritize goals and evaluate options, PWD has learned that stakeholder priorities can at times differ from those identified by the data-driven problem identification process. This can present challenges in development and approval of a management alternative for watershed implementation. PWD has developed an approach that addresses what often emerges as a set of high-priority stakeholder concerns while simultaneously addressing the scientifically defined priorities.

By defining three distinct targets to meet the overall plan objectives, priorities identified by stakeholders can be addressed simultaneously with those identified through scientific data. Two of the targets were defined so they could be fully met through implementation of a limited set of options, while the third target would be best addressed through an adaptive management approach. In addition to the three targets, a fourth category has been developed to capture the more programmatic implementation options related to planning, outreach, reporting and continuation of the Watershed Partnership.

Targets are defined here as groups of objectives that each focus on a different problem related to the urban stream system. They can be thought of as different parts of the ultimate goal of fishable and swimmable waters through improved water quality, more natural flow patterns and restored aquatic and riparian habitat. Targets are specifically designed to help focus plan implementation. By defining these targets and designing alternatives and an implementation plan to address the targets simultaneously, the plan will have a greater likelihood of success. It also achieves some of the objectives within a relatively short time frame, providing incentives to the communities and agencies involved in the restoration, as well as immediate benefits to the people living in the watershed. PWD's IWMP planning targets are defined below:

### 3 Targets of the IWMP

- Aesthetically appealing, accessible streams during dry weather
- Improved stream habitat for fish and macroinvertebrates
- Wet weather water quality that meets fishable and swimmable criteria

## Program Support

A number of implementation options deemed appropriate for a given watershed are "programmatic" in nature. While these options may support achievement of Targets A, B, and/or C, implementation of these options alone would not result in achievement of a particular target. These "Program Support" associated options include items such as monitoring, reporting, feasibility studies, outreach/education, and continuation of the Watershed Partnership.

## Target A: Dry Weather Water Quality and Aesthetics

Streams should be aesthetically appealing (look and smell good), accessible to the public, and an amenity to the community. Target A was defined with a focus on eliminating sources of sewage discharge and other pollution during dry weather, along with trash removal and litter prevention. Access and interaction with the stream during dry weather has the highest priority, because dry weather flows occur about 60-65% of the time during the course of a year. These are also the times when the public is most likely to be near or in contact with the stream. In dry weather, stream water quality should be similar to background concentrations in groundwater, particularly with respect to bacteria.

**Figure 1.** Eroded stream bank at Poquessing Creek

## Target B: Healthy Living Resources

Improvements to the number, health, and diversity of benthic macroinvertebrate and fish species need to focus on habitat improvement and the creation of refuges for organisms to avoid high velocities during storms. Fluvial geomorphological studies, wetland and streambank restoration/creation projects, and stream modeling should be combined with continued biological monitoring to ensure that correct procedures are implemented to increase habitat heterogeneity within the aquatic ecosystem.

Improving the ability of an urban stream to support viable habitat and fish populations focuses primarily on the elimination or remediation of the more obvious impacts of urbanization on the stream. These include loss of riparian habitat, eroding and undercut banks, scoured streambed or excessive sediment deposits, channelized and armored stream sections, trash buildup, and invasive species. Thus, the primary tool to accomplish Target B is stream restoration.

## Target C: Wet Weather Water Quality and Quantity

The third target is to restore water quality to meet fishable and swimmable criteria during wet weather. Improving water quality and flow conditions during and after storms is the most difficult target to meet in the urban environment. During wet weather, extreme increases in streamflow are common, accompanied by short-term changes in water quality. Where water quality and quantity problems exist, options may be identified that address both. Any stormwater management practice that increases infiltration or detains flow will help decrease the frequency of damaging floods; however, the size of such structures may need to be increased in areas where flooding is a major concern. (Reductions in the frequency of erosive flows and velocities will also help protect the investment in stream restoration made as part of Target B.)

Target C must be approached somewhat differently from Targets A and B. Full achievement of this target means meeting all water quality standards during wet weather, as well as elimination of flood-related issues.

stepped implementation with interim goals for reducing wet weather pollutant loads and stormwater flows, along with monitoring for the efficacy of control measures.

## Monitoring Locations

Water quality samples are taken at 10 USGS gage sites in the USGS/PWD Cooperative Monitoring Program (Figure 2). Site identification codes used by PWD's Bureau of Laboratory Services (BLS) and rivermile-based site ID codes are presented

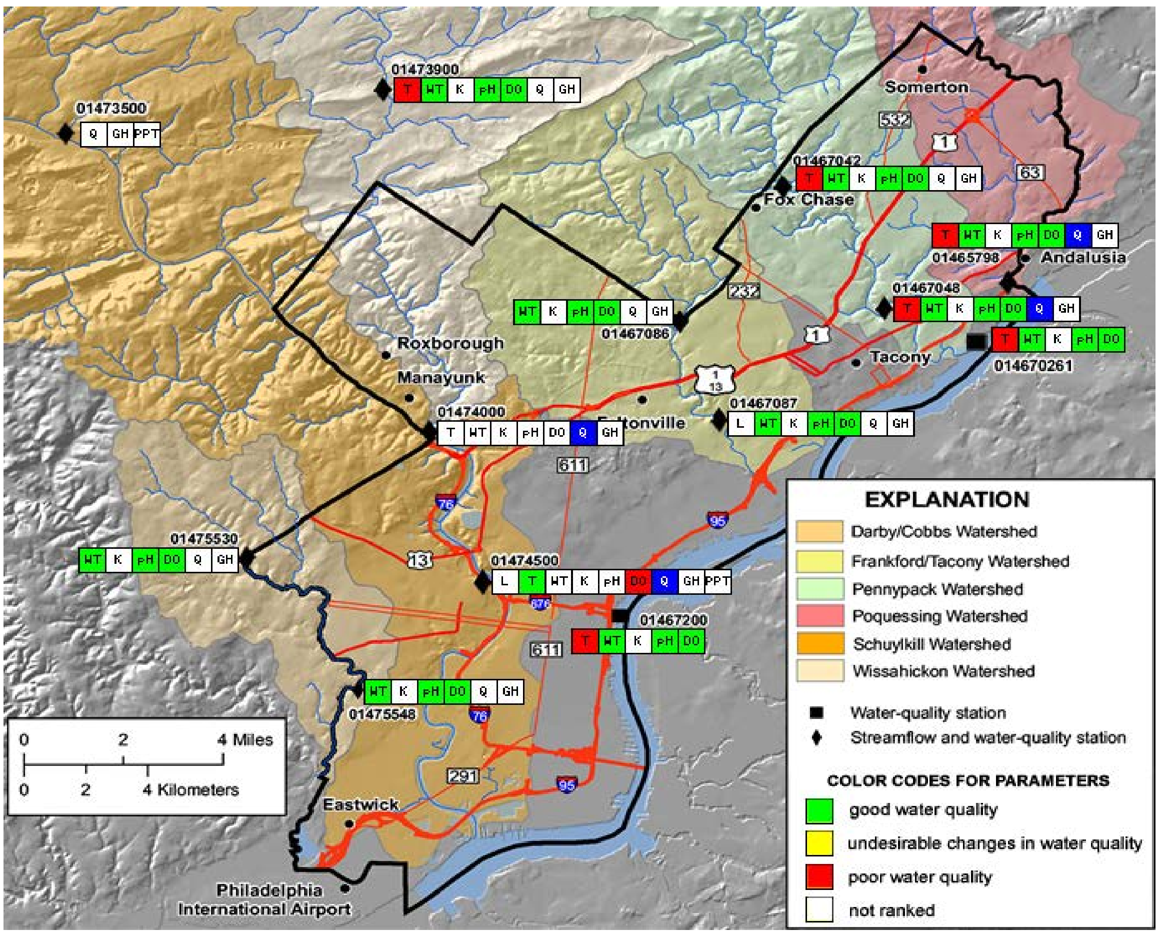



**Figure 2.** Philadelphia Water Quality Gage Stations as Viewed on Cooperative USGS-PWD Website (https://www.usgs.gov/centers/pa-water/science/philadelphia-water-resources-monitoring-program)

Meeting these goals will be difficult. It will be expensive and requires a long-term effort. A rational approach to achieve this target includes

alongside USGS gage station numbers in Table 1. USGS stream gaging stations are ideal monitoring points as they allow discrete sample data to be coupled with continuous discharge data being collected year-round at these sites for loading estimate purposes. Furthermore, grab sample results and field meter readings taken at the time of grab sampling may be invaluable when evaluating continuous water quality data from these USGS gages.

PWD is implementing a City-wide approach to dry weather water quality monitoring, rather than focusing on an individual watershed. Because a number of Green Stormwater Infrastructure (GSI) and other stormwater management projects are in the early stages of implementation, water quality benefits will only be observable over a period of several years.

Gauging the success of such projects on a more immediate scale is best accomplished solely by hydrological analysis. Therefore, the strategic value of the widespread sampling approach is that as more GSI projects are completed over the coming years, the water quality data should gradually begin to reflect their positive environmental impacts.

**Table 1.** Monitoring Locations in the PWD/USGS Cooperative Program with Location IDs used by PWD Bureau of Laboratory Services and River Mile-Based Site IDs

| Description | USGS Gage # | BLS Location ID | Site ID |
|---|---|---|---|
| Cobbs Creek at US Rte. 1 (City Line Ave.) | 01475530 | COBB700 | DCC770 |
| Cobbs Creek at Mt. Moriah Cemetery | 01475548 | COBB355 | DCC251 |
| Schuylkill River at Fairmount Dam | 01474500 | SCHU154 | SC825 |
| Wissahickon Creek at Ft Washington (Rte. 73) | 01473900 | WISS500 | WS1075 |
| Wissahickon Creek at Ridge Ave. | 01474000 | WISS130 | WS076 |
| Tacony Creek at Castor Ave. | 01467087 | TACO250 | TF280 |
| Tacony Creek at Adams Ave. | 01467086 | TACO435 | TF597 |
| Pennypack Creek at Pine Rd. | 01467042 | PENN407 | PP993 |
| Pennypack Creek at Rhawn St. | 01467048 | PENN175 | PP340 |
| Poquessing Creek at Grant Ave. | 01465798 | POQU150 | PQ050 |

**Table 2.** PWD/USGS Quarterly Dry Weather Grab Sample Dates

| Sample Date | Season | Recreational Use Season |
|---|---|---|
| 30-Jun-09 | summer | Swimming |
| 02-Oct-09 | fall | Non-Swimming |
| 17-Dec-09 | winter | Non-Swimming |
| 11-Mar-10 | spring | Non-Swimming |
| 22-Jun-10 | summer | Swimming |
| 15-Sep-10 | fall | Swimming |
| 20-Dec-10 | winter | Non-Swimming |
| 29-Mar-11 | spring | Non-Swimming |
| 27-Jun-11 | summer | Swimming |
| 15-Sep-11 | fall | Swimming |
| 13-Dec-11 | winter | Non-Swimming |
| 20-Mar-12 | spring | Non-Swimming |
| 18-Jun-12 | summer | Swimming |
| 26-Sep-12 | fall | Swimming |
| 02-Jan-13 | winter | Non-Swimming |
| 04-Apr-13 | spring | Non-Swimming |
| 17-Jul-13 | summer | Swimming |
| 26-Sep-13 | fall | Swimming |
| 17-Jan-14 | winter | Non-Swimming |
| 26-Mar-14 | spring | Non-Swimming |
| 17-Jun-14 | summer | Swimming |
| 23-Sep-14 | fall | Swimming |
| 19-Dec-14 | winter | Non-Swimming |
| 18-Mar-15 | spring | Non-Swimming |
| 23-Jun-15 | summer | Swimming |
| 6-Oct-15 | fall | Non-Swimming |
| 6-Jan-16 | winter | Non-Swimming |
| 20-Apr-16 | spring | Non-Swimming |
| 12-Jul-16 | summer | Swimming |
| 22-Sep-16 | fall | Swimming |
| 10-Jan-17 | winter | Non-Swimming |
| 20-Apr-17 | spring | Non-Swimming |
| 11-Jul-17 | summer | Swimming |
| 13/22-Sep-17 | fall | Swimming |
| 28-Feb-18 | winter | Non-Swimming |
| 02-May-18 | spring | Swimming |
| 10-Jul-18 | summer | Swimming |
| 24-Oct-18 | fall | Non-Swimming |
| 17-Jan-19 | winter | Non-Swimming |
| 20-Mar-19 | spring | Non-Swimming |
| 31-Jul-19 | summer | Swimming |
| 2-Oct-19 | fall | Non-Swimming |
| 29-Jan-20 | winter | Non-Swimming |
| 17-Jun-20 | summer | Swimming |
| 5-Oct-20 | fall | Non-Swimming |
| 10-Dec-20 | winter | Non-Swimming |
| 29-Apr-21 | spring | Non-Swimming |

# Quarterly Dry Weather Monitoring July 2009 – June 2021

## Sample Collection Dates

This report summarizes cumulative results from 47 sets of quarterly grab samples that were collected from June 2009 through June 2021. Samples were categorized by season (winter, spring, summer, fall) as well as according to PA DEP seasonal recreational use water quality criteria for interpretation of microbial sample results (Non-Swimming season or Swimming season) (Table 2).

## Nutrient Analysis

The macronutrients phosphorus and nitrogen are essential to the growth and overall survival of all plants. However, when occurring in surplus they can be extremely detrimental to aquatic ecosystems, and in turn to the human population that utilizes these water bodies for drinking water and recreational activities such as fishing, boating, and swimming. Elevated nutrient concentrations in rivers and streams can most often be attributed to anthropogenic pollution sources. In these situations, the most common sources of both nutrients are runoff from fertilized lawns/farmland and wastewater discharge.

The most immediate result of excessive nutrient concentrations in any natural water body is excessive plant growth, seen in a variety of growth forms from suspended algae to aquatic macrophytes. As the first step in the process of eutrophication, this unnatural acceleration of aquatic plant growth can start a chain reaction leading to highly adverse effects to that ecosystem. For example, in small shallow streams, unnaturally high densities of algal periphyton can cause pronounced fluctuations in dissolved oxygen and pH and also adversely affect aquatic habitat by forming thick mats of filamentous algae or algal scums on stream substrates. Moreover, alteration of the algal community structure can lead to the proliferation of nuisance taxa, taste and odor problems in the drinking water supply, increased water treatment costs and, in rare cases, production of toxins (*e.g.*, from cyanobacteria blooms). As a result of these direct and indirect responses, streams and rivers can suffer severe impacts to both aquatic biodiversity and human recreational use.

It should be noted that several phosphorus-containing compounds, known as polyphosphates, can be found in the region's waterways, but they are naturally occurring and are present due to the geologic composition of the area. Furthermore, these polyphosphates pose little ecological threat as they are not present in a biologically available form. Only over long periods of time can these compounds be broken down into orthophosphates, which plants and algae can absorb and utilize for growth. Therefore, aside from the relatively minor contributions of the region's geology, the most significant source of orthophosphates in rivers and streams is human-generated pollution. It is for this reason that orthophosphates, along with nitrates, are included as components of this water quality monitoring program. These forms of N and P are readily available to stream producers.

Ammonia, present in surface waters as un-ionized ammonia gas ($NH_3$) or as ammonium ion ($NH_4^+$), is produced by deamination of organic nitrogen-containing compounds such as proteins, and also by hydrolysis of urea. In the presence of oxygen, ammonia is converted to nitrate ($NO_3^-$) by a pair of bacteria-mediated reactions, together known as the process of nitrification. Nitrification occurs quickly in oxygenated waters with sufficient densities of nitrifying bacteria, effectively reducing ammonia concentration, although at the expense of increased $NO_3^-$ concentration. Ammonia is a primary form of nitrogen produced from excretory waste products and other organic material in sewage. Thus, presence of ammonia can be an indicator of sewage pollution. As ammonia is converted to nitrate in oxygenated streams, ammonia is a non-conservative pollution indicator that tends to decrease in concentration with increasing distance from the source of pollution. PA DEP water quality criteria for $NH_3$ reflect the relationship between stream pH, temperature, and ammonia dissociation. Ammonia toxicity is inversely related to hydrogen ion [$H^+$] concentration (*e.g.*, an increase in pH from 7 to 8 increases $NH_3$ toxicity by approximately an order of magnitude). At pH 9.5 and above, even background concentrations of $NH_3$ may be considered potentially toxic.

Ammonia may be introduced to streams through fertilizers, breakdown of natural organic material, stables and livestock operations, stormwater runoff, and in some cases from more serious anthropogenic sources of untreated sewage such as defective laterals, crossed/illicit connections, and sanitary sewer overflows (SSOs). PWD has established intensive field infrastructure trackdown, infrared photography, sewer camera monitoring, and dye testing programs to identify and correct these problems where and when they occur.

## Nutrient Results

Nutrient data collected thus far at each of the sites are generally consistent with the data collected for Comprehensive Characterization Reports (CCRs) prepared for each of the respective watersheds. Five of 10 sites are not affected by treated wastewater discharges and usually had orthophosphate concentration less than the reporting limit. The reporting limit for the majority of samples was 0.05 mg/L, but limits of 0.1 mg/L and 0.09 mg/L were also in effect at various times during the quarterly grab sampling program (Table 3). Conversely, Pennypack and Wissahickon creeks had multiple instances of elevated orthophosphate concentration, which is likely attributable to point source discharge of treated wastewater. Dilution effects were seen between upstream and downstream gages, particularly in the cases of Pennypack and Wissahickon creeks.

Though the Schuylkill River sampling station is downstream from several discharges of treated wastewater, nutrient concentrations are generally smaller than those observed from the Pennypack and Wissahickon creeks, perhaps reflecting the Schuylkill station's much larger overall watershed size and dilution capacity.

Since the detection limit in past analyses has often been greater than the guideline, all non-detected samples were considered "possible exceedances." The nonparametric statistical assessment results show that the locations at Pennypack and Wissahickon creeks, and the Schuylkill River, failed to attain water quality consistent with this guideline. The other locations are classified as needing further evaluation due to the predominance of samples below the detection limit that are all possible exceedances. Figures 3-4 show the variability of orthophosphate results at each site.

Similar examples of wastewater discharge impacts and upstream/downstream dilution have also begun to emerge with regard to the nitrate data that have been collected. The data seem to indicate a trend toward decreased nitrate concentrations during warmer months, which would correspond to the increased uptake of nutrients by plant life during those growing seasons. The only exceptions are the Pennypack and Wissahickon Creek gage sites, which as previously stated are directly impacted by treated wastewater discharge. It should be noted, however, that these statements and observations are in no way conclusive given that the dataset is

**Table 3. Orthophosphate Summary Statistics and Assessments. (Concentrations in mg/L)**

| Gage | Mean | Median | Std. dev. | Min. | Max. | n | n, non-detects | Exceedances | Possible Exceedances | Assessment |
|---|---|---|---|---|---|---|---|---|---|---|
| 01465798 | 0.055 | 0.05 | 0.027 | 0.013 | 0.164 | 46 | 35 | 7 | 35 | Needs more evaluation |
| 01467042 | 0.334 | 0.254 | 0.216 | 0.099 | 0.953 | 44 | 0 | 40 | 0 | Non-attaining |
| 01467048 | 0.235 | 0.18 | 0.165 | 0.053 | 0.852 | 46 | 0 | 43 | 0 | Non-attaining |
| 01467086 | 0.06 | 0.05 | 0.055 | 0 | 0.363 | 45 | 33 | 7 | 32 | Needs more evaluation |
| 01467087 | 0.062 | 0.05 | 0.036 | 0.011 | 0.201 | 46 | 29 | 11 | 29 | Needs more evaluation |
| 01473900 | 0.286 | 0.264 | 0.133 | 0.05 | 0.723 | 46 | 1 | 43 | 1 | Non-attaining |
| 01474000 | 0.17 | 0.158 | 0.072 | 0.05 | 0.457 | 46 | 3 | 40 | 3 | Non-attaining |
| 01474500 | 0.152 | 0.119 | 0.097 | 0.05 | 0.477 | 46 | 5 | 39 | 5 | Non-attaining |
| 01475530 | 0.054 | 0.05 | 0.028 | 0.013 | 0.165 | 46 | 35 | 5 | 34 | Needs more evaluation |
| 01475548 | 0.06 | 0.05 | 0.035 | 0 | 0.188 | 45 | 34 | 8 | 33 | Needs more evaluation |

Summary statistics for the orthophosphate samples, including results from the application of the PA DEP Chemistry Statistical Assessments protocol (PA DEP, 2007), are shown in Table 3. Exceedances were evaluated relative to the US EPA (2000) Subecoregion 64 guideline for orthophosphate of 0.02625 mg/L, *i.e.*, the median of the 25th percentile seasonal concentrations.

still relatively limited in size. As this dataset grows in subsequent years, further statistical analysis can be carried out and any apparent patterns or phenomena can be explored.

Summary statistics for the nitrate samples, including results from application of the PA DEP Chemistry Statistical Assessment protocol (PA DEP, 2007), are shown in Table 4 and Figures 5-6. Exceedances were evaluated relative to a) the PA DEP water quality standard for nitrite and nitrate of 10 mg/L, and b) the US EPA (2000) subecoregion 64 guideline for nitrite and nitrate of 0.995 mg/L, *i.e.*, the median of the 25th percentile seasonal concentrations. The nonparametric statistical assessment results show that with respect to the PA DEP standard, all locations were in attainment except the upstream Wissahickon gage. Two exceedances have been observed at that site, and more data is needed to make an evaluation. All sites failed to attain water quality consistent with the US EPA subecoregion-based guideline.

Quarterly dry-weather analysis of ammonia began in the fall of 2011, limiting the size of the current dataset to approximately 37 results per location. PWD laboratory reporting limits for ammonia fluctuated based on the performance of lab analytical equipment with spiked and blank samples. Ammonia concentration detection limits were 0.5 mg/L for the fall 2011 sample set, and the subsequent sample set results had detection limits of 0.1 mg/L or 0.167 mg/L. Ammonia concentration exceeded the detection limit in only 32 of the 369 samples: The downstream Tacony site (01467087) most often exceeded the detection limit, where a maximum concentration of 0.4 mg/L was observed in both fall 2014 and summer 2015. Results are shown in Table 5 and Figures 7-8.

There were no observed violations of ammonia water quality criteria at any site during this period of dry-weather monitoring. With 337 of the 369 sample results characterized as non-detects due to laboratory reporting limits, ammonia criteria were calculated with corresponding temperature and pH values to determine if possible exceedances existed (i.e., the criteria fell below the detection limit). None of the non-detect samples had the potential to violate water quality criteria.

**Table 4.** Nitrate Summary Statistics and Assessments. Concentrations are in mg/L.

| Gage | Mean | Median | Std. dev. | Min. | Max. | n | n, non-detects | Exceedances, PADEP | Exceedances, Subecoregion | PADEP Assessment | EPA Subecoregion Assessment |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01465798 | 1.784 | 1.744 | 0.538 | 0.797 | 3.75 | 45 | 0 | 0 | 45 | Attaining | Non-attaining |
| 01467042 | 4.498 | 4.13 | 0.961 | 3.2 | 7.943 | 43 | 0 | 0 | 43 | Attaining | Non-attaining |
| 01467048 | 3.589 | 3.41 | 1.006 | 1.209 | 6.326 | 45 | 0 | 0 | 45 | Attaining | Non-attaining |
| 01467086 | 2.51 | 2.361 | 1.19 | 1.51 | 9.74 | 44 | 0 | 0 | 44 | Attaining | Non-attaining |
| 01467087 | 1.85 | 1.808 | 0.696 | 0.505 | 3.373 | 46 | 0 | 0 | 46 | Attaining | Non-attaining |
| 01473900 | 5.988 | 5.42 | 2.018 | 2.69 | 12.039 | 44 | 0 | 2 | 44 | Needs more evaluation | Non-attaining |
| 01474000 | 3.995 | 3.984 | 0.928 | 1.288 | 6.18 | 46 | 0 | 0 | 44 | Attaining | Non-attaining |
| 01474500 | 2.966 | 2.935 | 0.422 | 2.141 | 3.96 | 46 | 0 | 0 | 46 | Attaining | Non-attaining |
| 01475530 | 3.012 | 3.05 | 0.381 | 2.489 | 4.45 | 46 | 0 | 0 | 46 | Attaining | Non-attaining |
| 01475548 | 2.528 | 2.612 | 0.53 | 1.395 | 3.5 | 45 | 0 | 0 | 45 | Attaining | Non-attaining |

**Table 5.** Ammonia Summary Statistics and Assessments. Concentrations are in mg/L.

| Gage | Mean | Median | Std. dev. | Min. | Max. | n | n, non-detects | Exceedances |
|---|---|---|---|---|---|---|---|---|
| 01465798 | 0.132 | 0.1 | 0.094 | 0.041 | 0.5 | 37 | 30 | 0 |
| 01467042 | 0.136 | 0.1 | 0.098 | 0.027 | 0.5 | 37 | 33 | 0 |
| 01467048 | 0.135 | 0.1 | 0.099 | 0.043 | 0.5 | 37 | 32 | 0 |
| 01467086 | 0.129 | 0.1 | 0.095 | 0.02 | 0.5 | 37 | 34 | 0 |
| 01467087 | 0.171 | 0.123 | 0.114 | 0.028 | 0.5 | 37 | 21 | 0 |
| 01473900 | 0.133 | 0.1 | 0.099 | 0.023 | 0.5 | 37 | 34 | 0 |
| 01474000 | 0.128 | 0.1 | 0.095 | 0.024 | 0.5 | 37 | 35 | 0 |
| 01474500 | 0.14 | 0.1 | 0.093 | 0.075 | 0.5 | 37 | 29 | 0 |
| 01475530 | 0.128 | 0.1 | 0.095 | 0.03 | 0.5 | 37 | 35 | 0 |
| 01475548 | 0.128 | 0.1 | 0.096 | 0.04 | 0.5 | 36 | 31 | 0 |

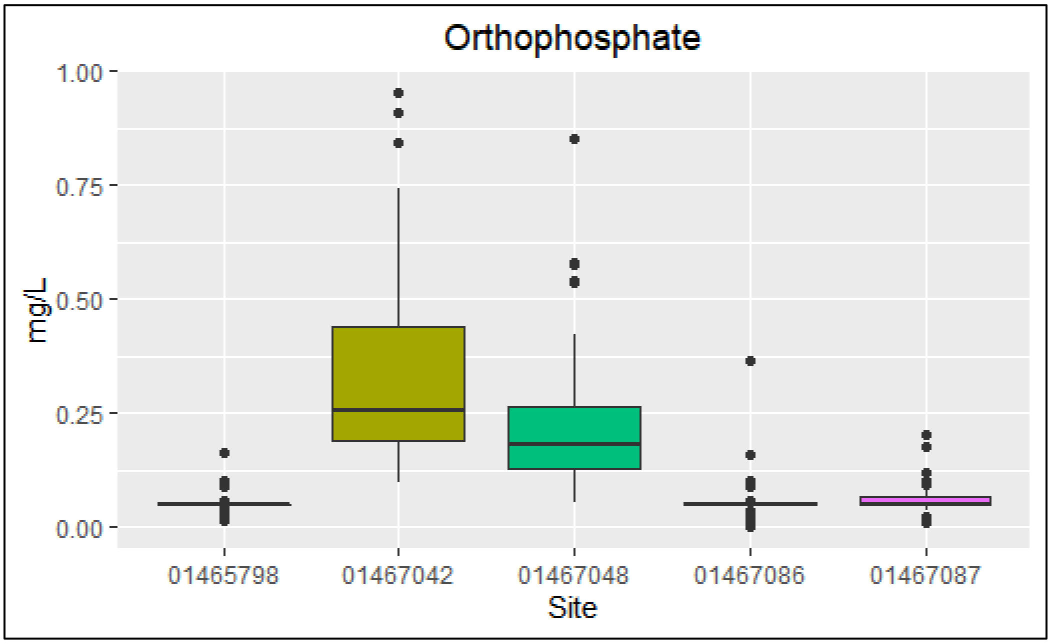



**Figure 3.** Orthophosphate concentration at 5 USGS gage stations, July 2009-June 2021

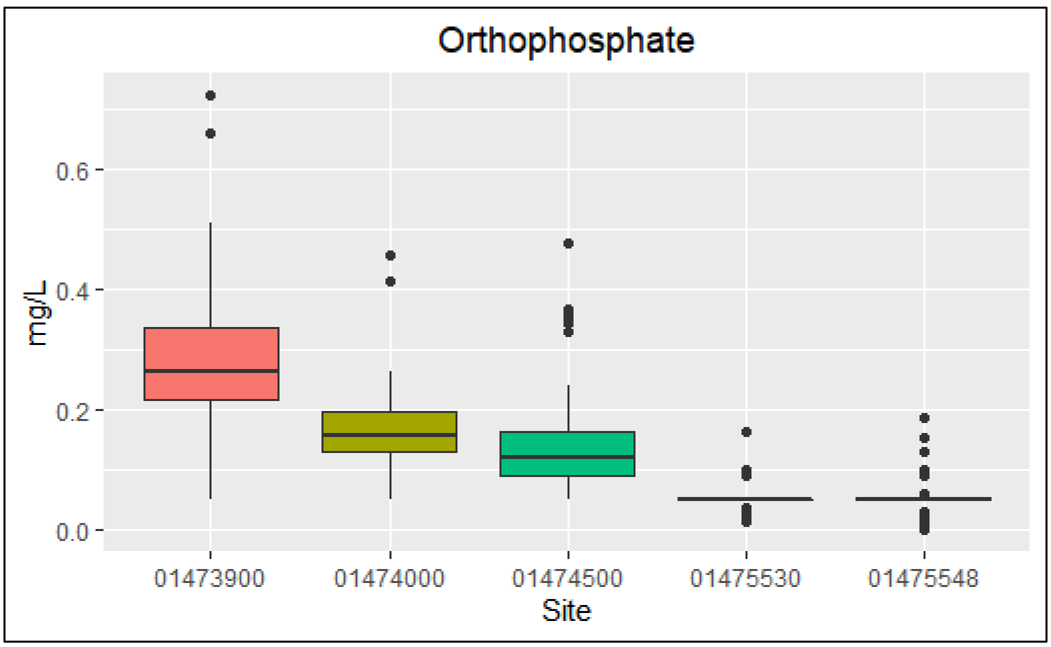



**Figure 4.** Orthophosphate concentration at 5 USGS gage stations, July 2009-June 2021

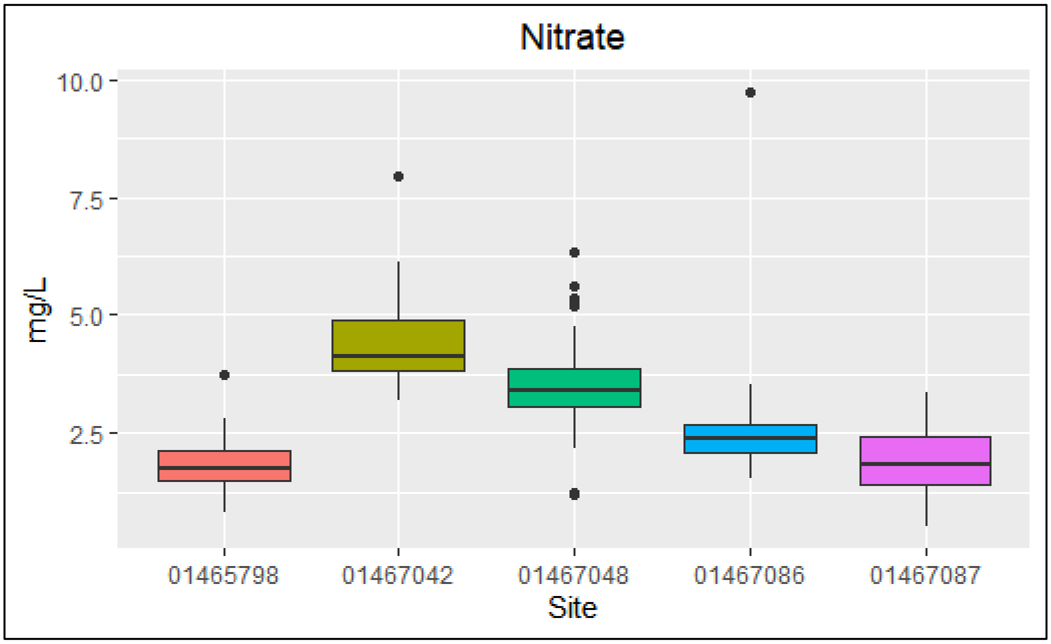



**Figure 5.** Nitrate concentration at 5 USGS gage stations, July 2009-June 2021

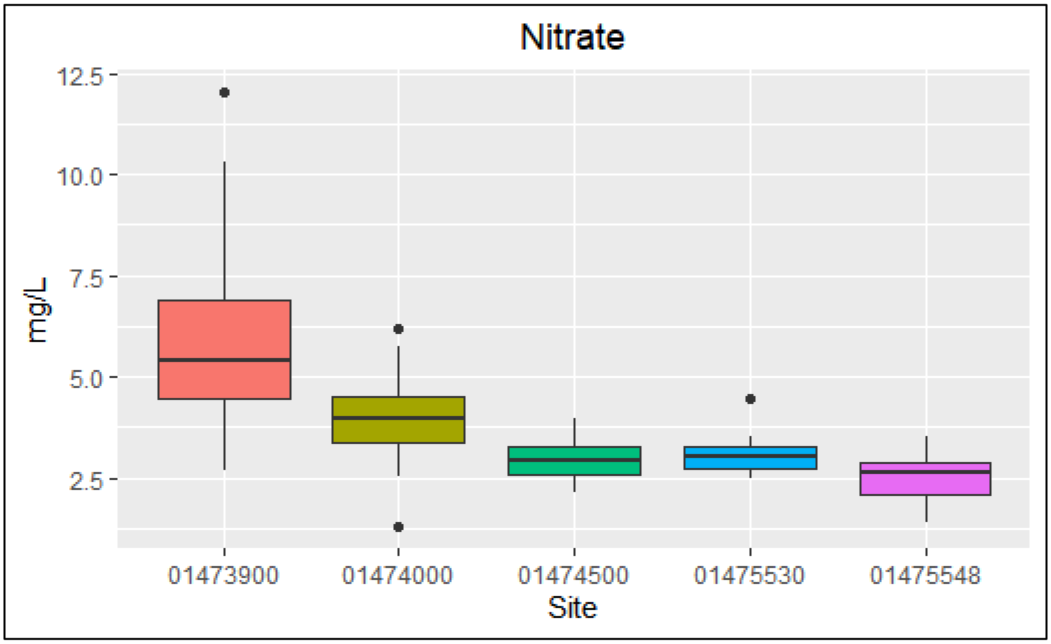



**Figure 6.** Nitrate concentration at 5 USGS gage stations, July 2009-June 2021

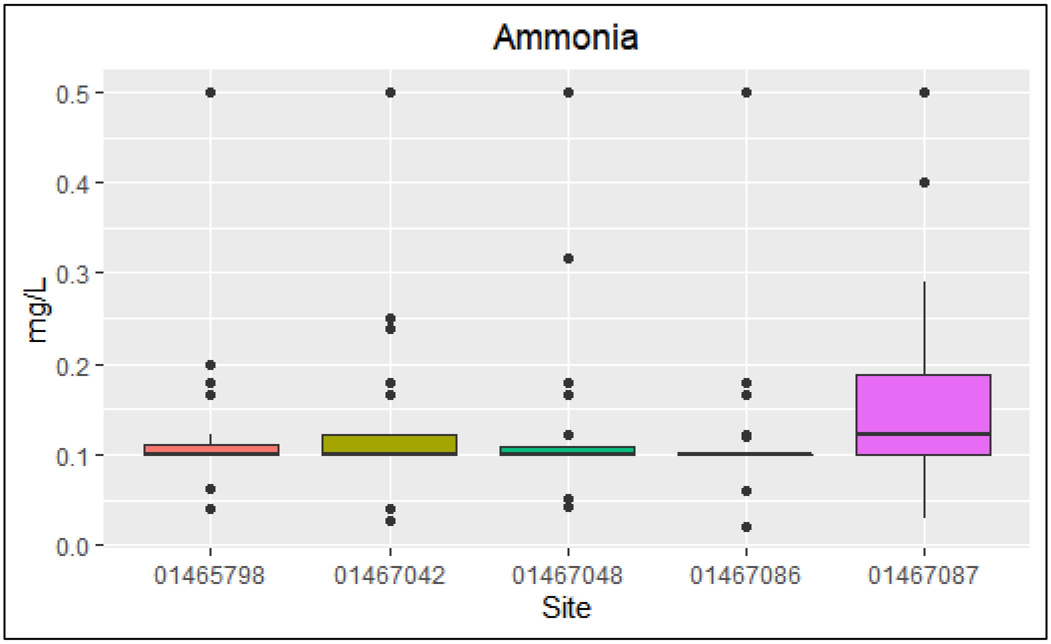



**Figure 7.** Ammonia concentration at 5 USGS gage stations, September 2011-June 2021

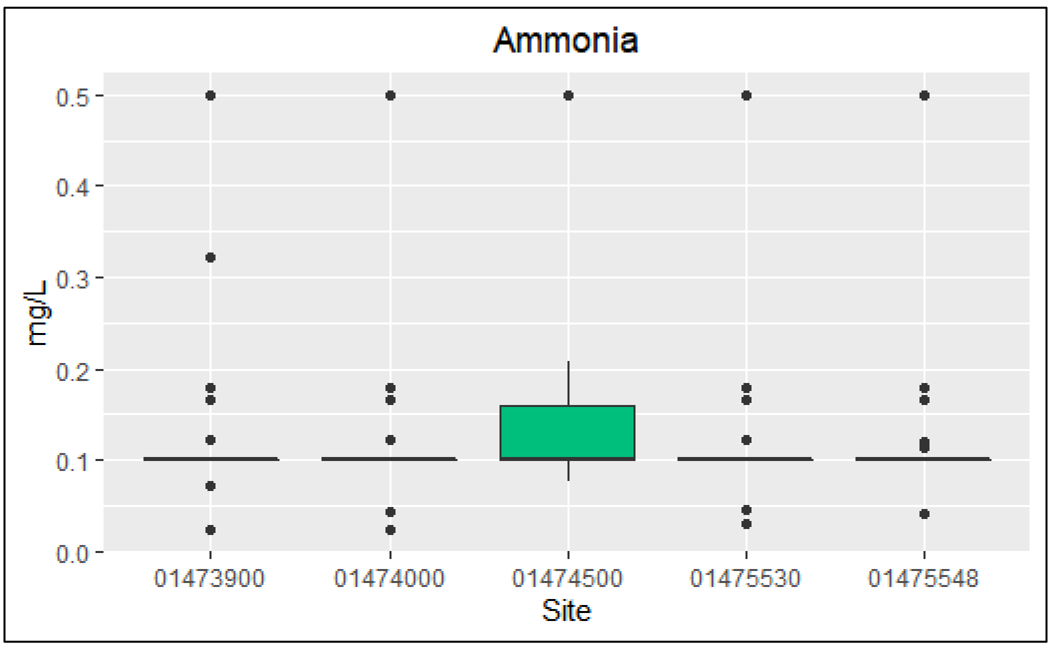



**Figure 8.** Ammonia concentration at 5 USGS gage stations, September 2011-June 2021

## Microbial Analysis

Fecal indicator bacteria, found naturally in the gut of warm-blooded animals, can be used in the detection of human or animal waste contamination in a body of water. While these bacteria themselves are generally harmless to humans, they are considered to be very reliable indicators of the presence of other, more serious fecal-borne pathogens such as viruses, protozoa and other bacteria. The extent to which a water body is contaminated with fecal indicator bacteria can indicate the likelihood that the water has been contaminated by human or animal wastes. In urban environments, the most likely dry weather pollution sources are domestic animals, wildlife and untreated sewage from improperly connected or leaking sanitary sewers.

PWD performs fecal indicator bacteria tests for fecal coliform and *E. coli*. The fecal coliform test covers a relatively wide subgroup of fecal-specific bacteria; however, it does include some species that are not necessarily fecal in origin. *E. coli*, on the other hand, is a single coliform species that is noteworthy due to the fact that it occurs only in the fecal matter of humans and other warm-blooded animals. This qualifies *E. coli* as an excellent indicator of human waste.

## Microbial Analysis Results

PA DEP has established seasonal bacteria water quality criteria that are more stringent in warmer months, or the “swimming season.” For the period May 1 through September 30, water quality standards require that the geometric mean of a group of at least five samples collected on non-consecutive days over a 30-day period not exceed 126 *E. coli* CFU (colony forming unit) per 100mL. In addition, there should not be greater than a 10% excursion frequency of 410 CFU per 100 mL for the samples collected in the same 30-day interval. Although PWD does not typically collect five or more *E. coli* samples at USGS gage sites within a 30-day period, Table 6 calculates a geometric mean of quarterly grab samples for the swimming and non-swimming seasons. Results of microbial analyses from the swimming season samples generally indicate *E. coli* geometric means greater than 126 CFU/100mL (Table 6). The only exceptions were the downstream Wissahickon Creek and Schuylkill River gage sites, which each had *E. coli* geometric means less than 126 CFU/100mL. Figures 9-10 show the variability of *E. coli* results at each site.

During the non-swimming season, water quality criteria for fecal coliform apply. The maximum fecal coliform level during the non-swimming season is a geometric mean of 2,000 CFU per 100 mL. All sites achieved the less stringent standard for fecal coliform during the non-swimming season (Table 7). Figures 11-12 show the variability of fecal coliform results at each site.

**Table 6.** *E. coli* Geometric Mean Results and PA DEP Water Quality Recreational Use Criteria Achievement Status During Swimming Season

| Gage | n | n, non-detects | Geometric mean (CFU/100 mL) | Season | Attaining Standard |
|---|---|---|---|---|---|
| 01465798 | 26 | 1 | 176 | non-swimming | NA |
| 01465798 | 19 | 0 | 528 | swimming | No |
| 01467042 | 26 | 1 | 68 | non-swimming | NA |
| 01467042 | 19 | 0 | 336 | swimming | No |
| 01467048 | 27 | 0 | 393 | non-swimming | NA |
| 01467048 | 19 | 0 | 1000 | swimming | No |
| 01467086 | 27 | 0 | 261 | non-swimming | NA |
| 01467086 | 19 | 0 | 767 | swimming | No |
| 01467087 | 26 | 0 | 422 | non-swimming | NA |
| 01467087 | 19 | 0 | 488 | swimming | No |
| 01473900 | 27 | 0 | 95 | non-swimming | NA |
| 01473900 | 19 | 0 | 327 | swimming | No |
| 01474000 | 26 | 1 | 50 | non-swimming | NA |
| 01474000 | 19 | 0 | 105 | swimming | Yes |
| 01474500 | 25 | 2 | 33 | non-swimming | NA |
| 01474500 | 17 | 2 | 49 | swimming | Yes |
| 01475530 | 26 | 1 | 87 | non-swimming | NA |
| 01475530 | 19 | 0 | 308 | swimming | No |
| 01475548 | 26 | 1 | 188 | non-swimming | NA |
| 01475548 | 18 | 0 | 645 | swimming | No |

**Table 7.** Fecal Coliform Geometric Mean Results and PA DEP Water Quality Recreational Use Criteria Achievement Status During Non-Swimming Season

| Gage | n | n, non-detects | Geometric mean (CFU/100 mL) | Season | Attaining Standard |
|---|---|---|---|---|---|
| 01465798 | 26 | 1 | 134 | non-swimming | Yes |
| 01465798 | 19 | 0 | 500 | swimming | NA |
| 01467042 | 26 | 1 | 60 | non-swimming | Yes |
| 01467042 | 19 | 0 | 331 | swimming | NA |
| 01467048 | 27 | 0 | 312 | non-swimming | Yes |
| 01467048 | 19 | 1 | 1082 | swimming | NA |
| 01467086 | 27 | 0 | 210 | non-swimming | Yes |
| 01467086 | 19 | 0 | 1057 | swimming | NA |
| 01467087 | 26 | 0 | 386 | non-swimming | Yes |
| 01467087 | 19 | 0 | 570 | swimming | NA |
| 01473900 | 27 | 0 | 79 | non-swimming | Yes |
| 01473900 | 19 | 0 | 291 | swimming | NA |
| 01474000 | 26 | 1 | 41 | non-swimming | Yes |
| 01474000 | 19 | 0 | 118 | swimming | NA |
| 01474500 | 26 | 1 | 28 | non-swimming | Yes |
| 01474500 | 19 | 2 | 50 | swimming | NA |
| 01475530 | 26 | 1 | 84 | non-swimming | Yes |
| 01475530 | 19 | 0 | 329 | swimming | NA |
| 01475548 | 27 | 0 | 163 | non-swimming | Yes |
| 01475548 | 18 | 0 | 843 | swimming | NA |

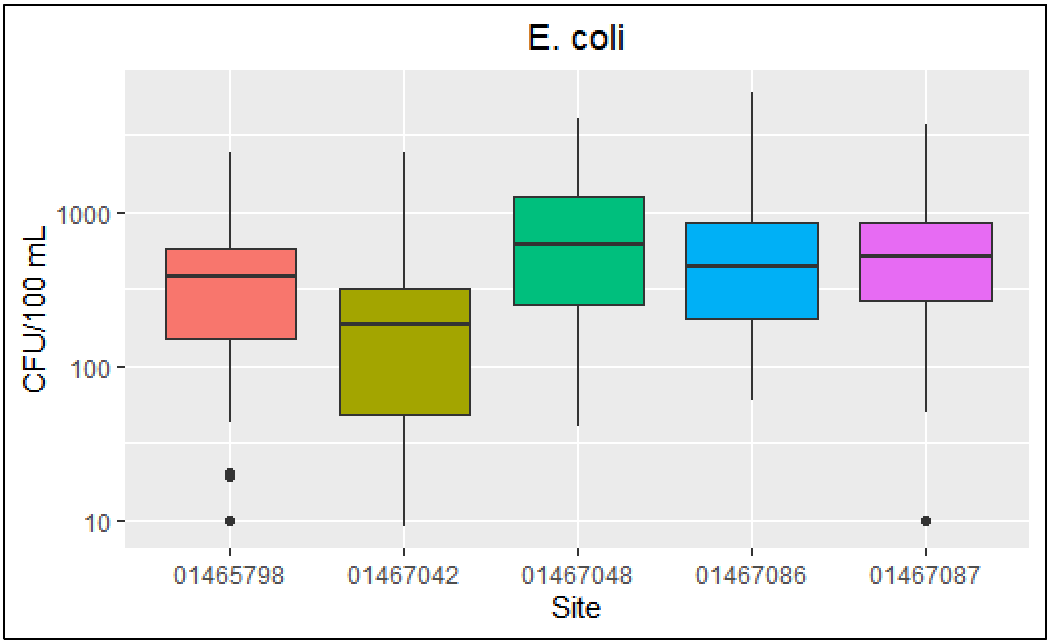



**Figure 9.** E. coli results at 5 USGS gage stations, July 2009-June 2021

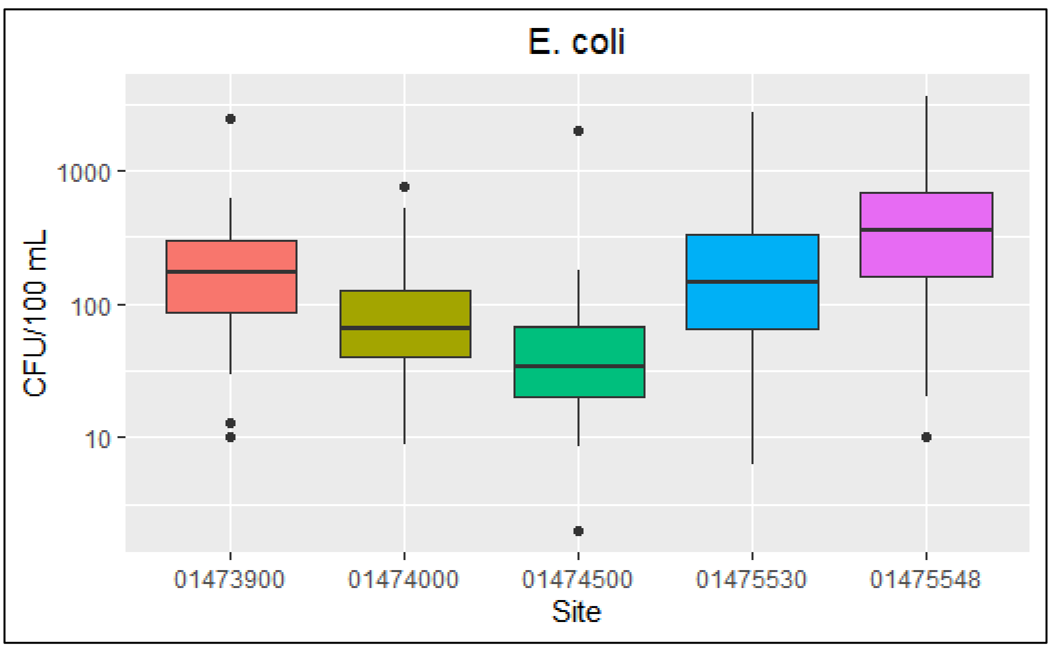



**Figure 10.** E. coli results at 5 USGS gage stations, July 2009-June 2021

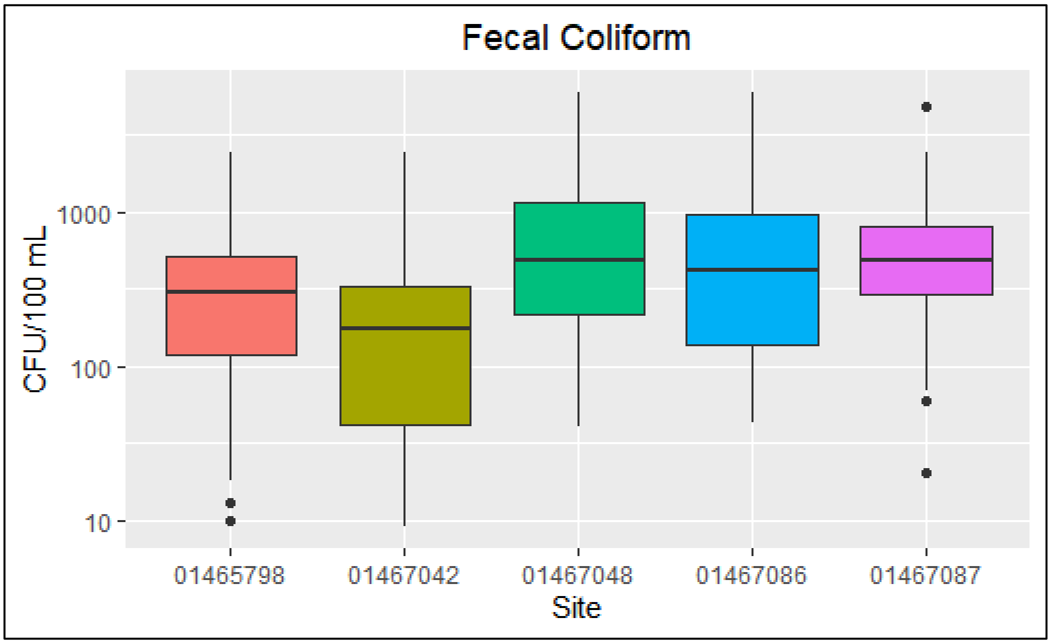



**Figure 11.** Fecal Coliform results at 5 USGS gage stations, July 2009-June 2021

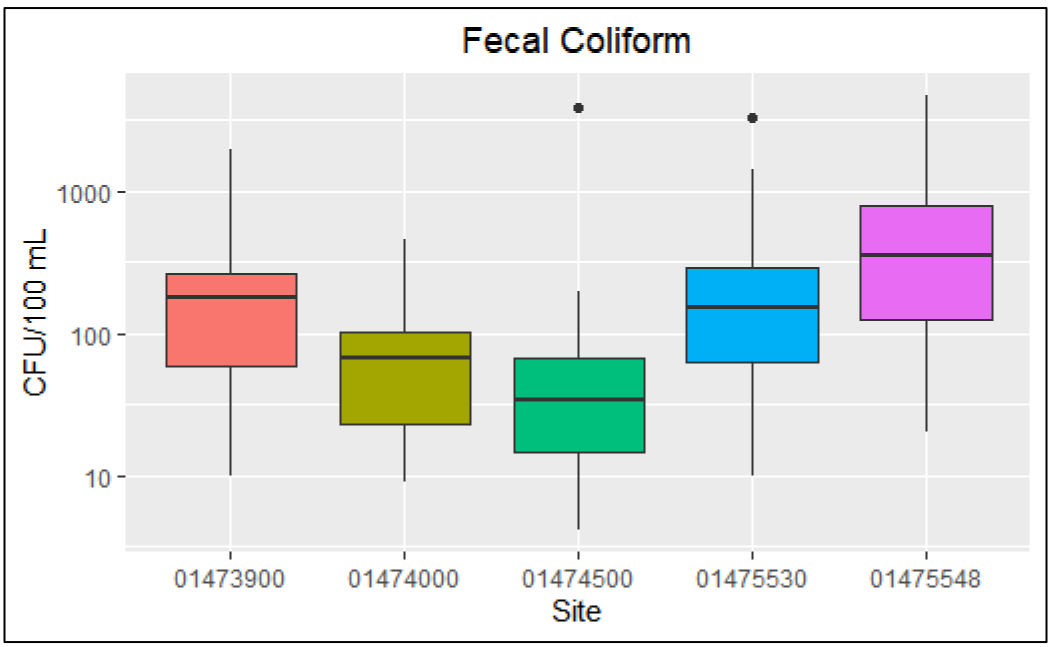



**Figure 12.** Fecal Coliform results at 5 USGS gage stations, July 2009-June 2021

## Physicochemical Analysis

In addition to nutrient and microbial analyses, a basic set of physicochemical parameters were also monitored as part of the discrete quarterly sampling program. These parameters (dissolved oxygen, pH, temperature, and specific conductance) were specifically chosen to coincide with those being measured by the USGS continuous water quality monitoring gages. These data can then be utilized as valuable field checks when analyzing continuous water quality data from USGS gages. The physicochemical data are summarized by parameter in Figures 13-20.

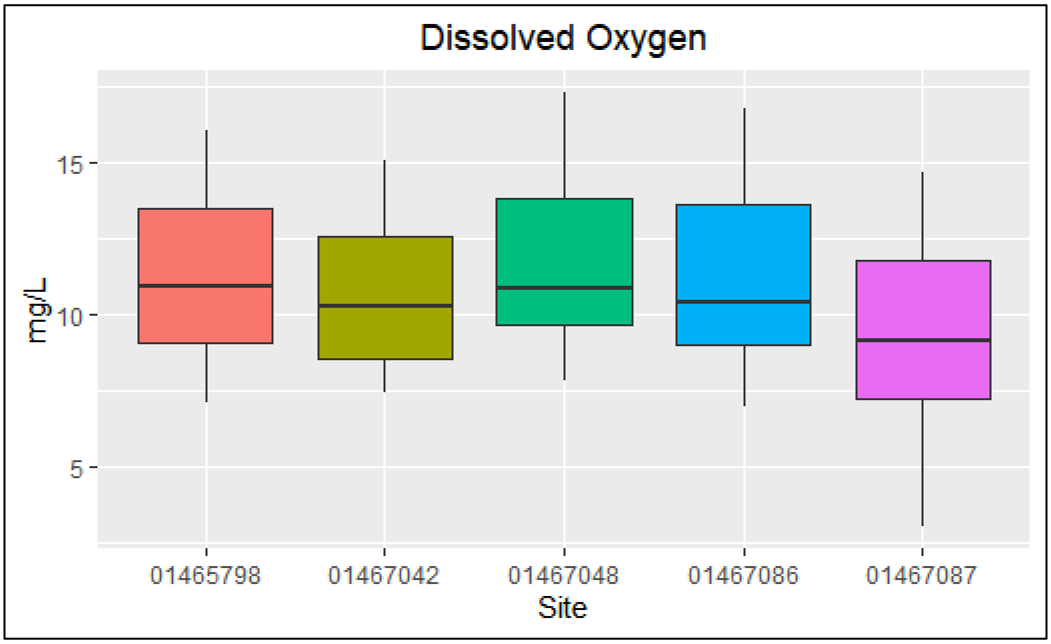



**Figure 13.** Dissolved oxygen results at 5 USGS gage stations, July 2009-June 2021

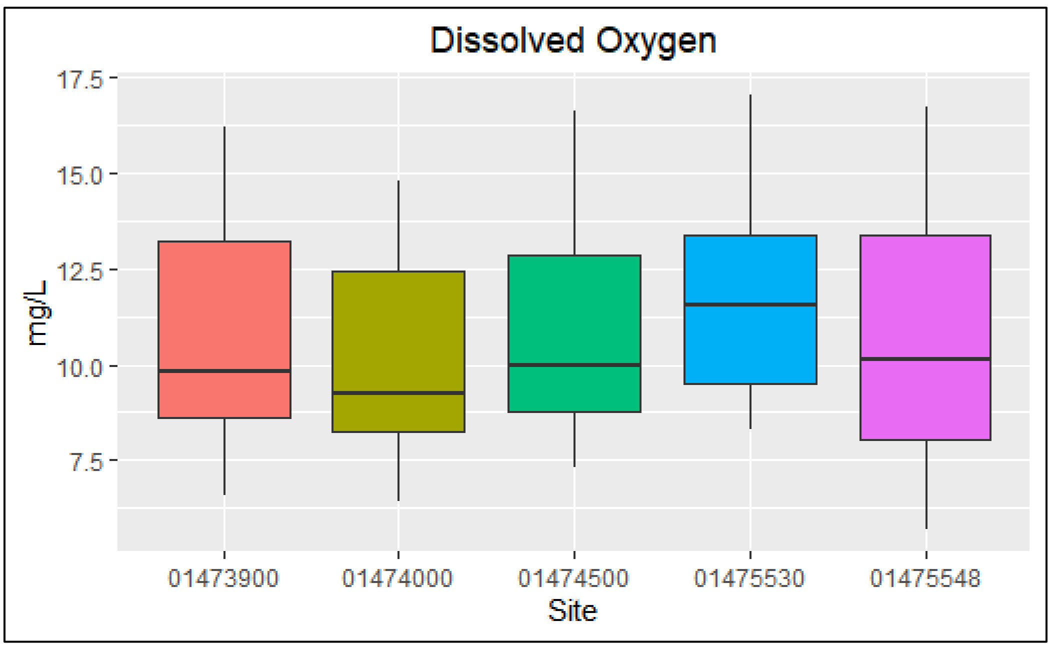



**Figure 14.** Dissolved oxygen results at 5 USGS gage stations, July 2009-June 2021

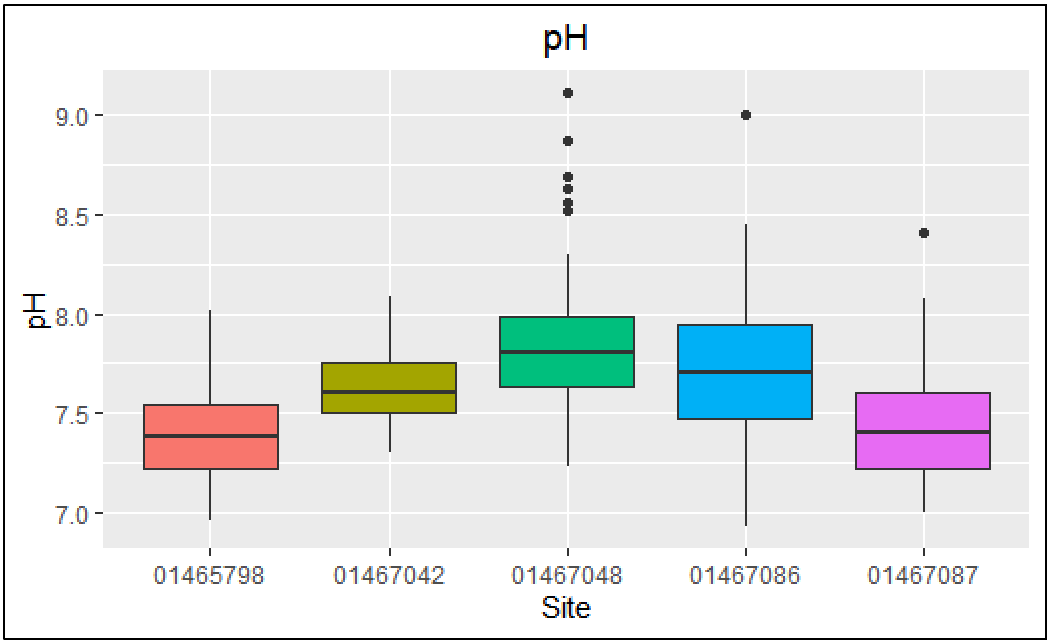



**Figure 15.** pH results at 5 USGS gage stations, July 2009-June 2021

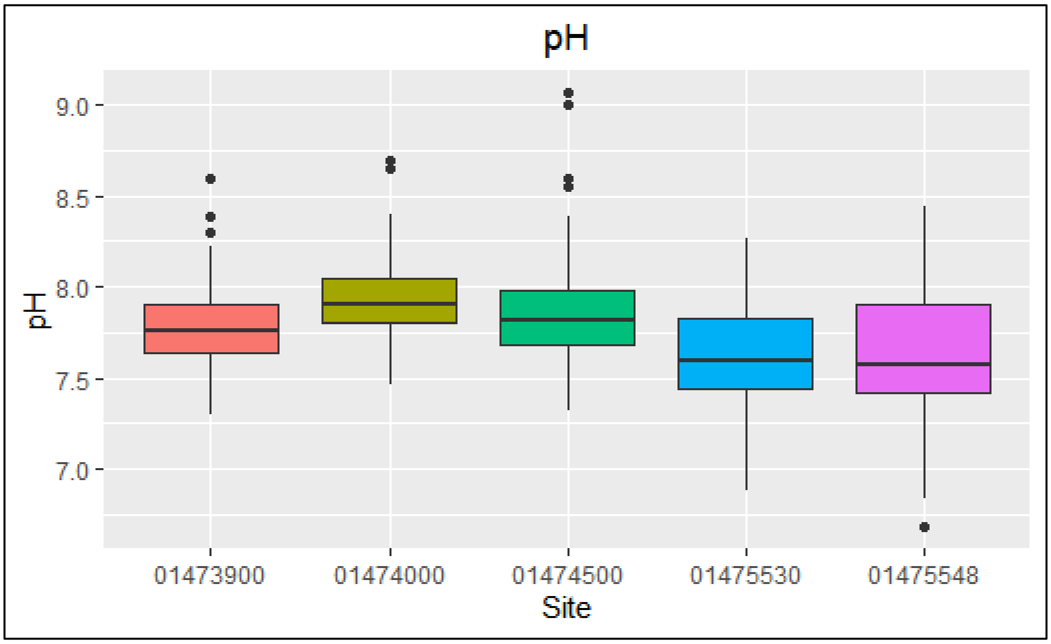



**Figure 16.** pH results at 5 USGS gage stations, July 2009-June 2021

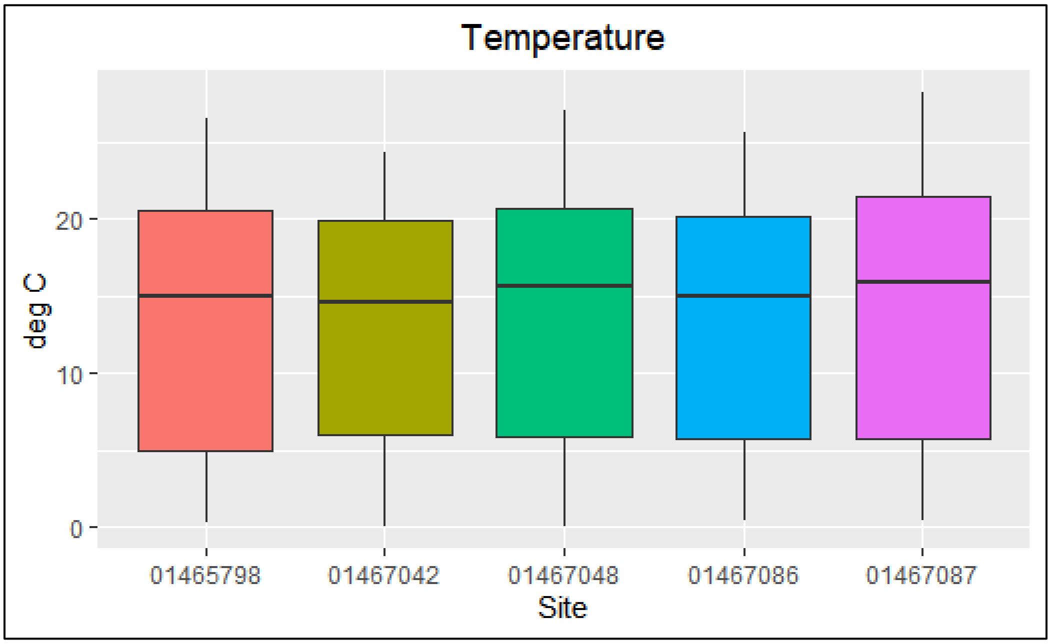



**Figure 17.** Temperature results at 5 USGS gage stations, July 2009-June 2021

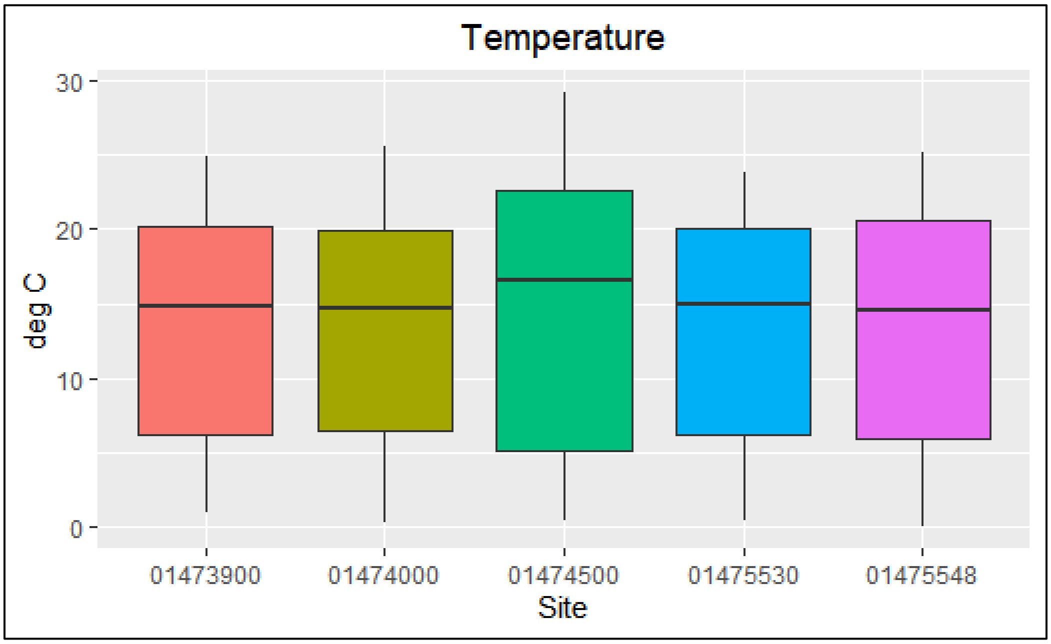



**Figure 18.** Temperature results at 5 USGS gage stations, July 2009-June 2021

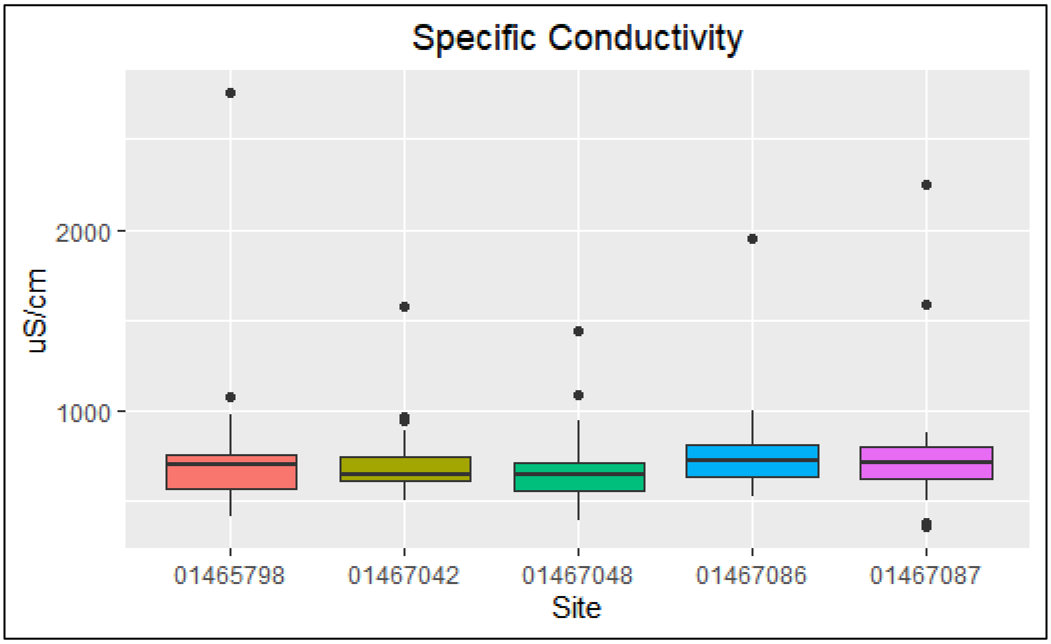



**Figure 19.** Specific conductance results at 5 USGS gage stations July 2009-June 2021

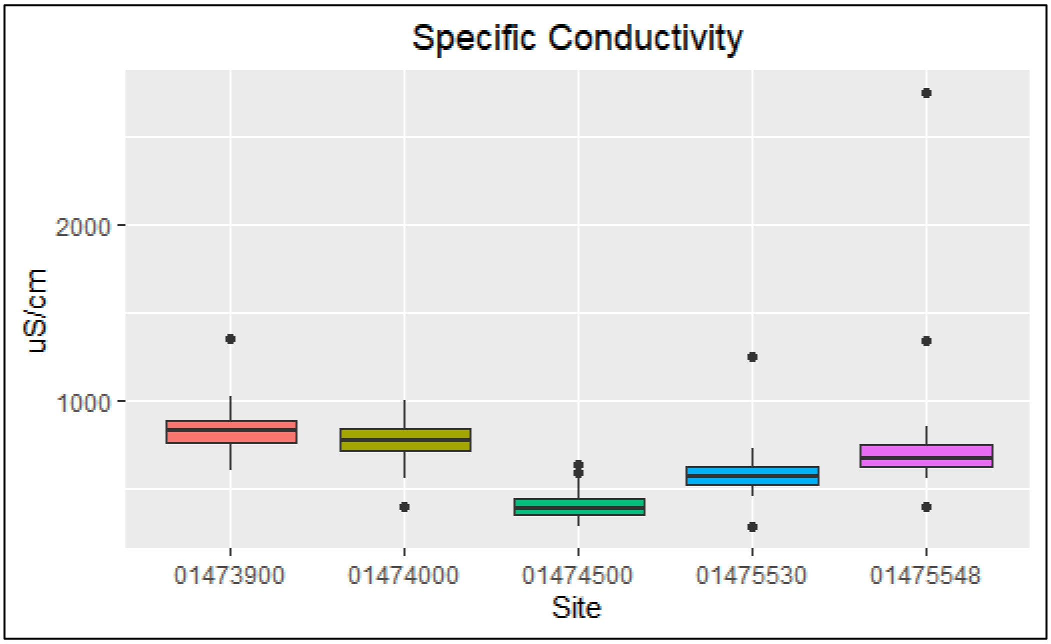



**Figure 20.** Specific conductance results at 5 USGS gage stations July 2009-June 2021

## References

Pennsylvania Department of Environmental Protection (PA DEP). (2007). Chemistry Statistical Assessments. Harrisburg, PA. 17 p.

United States Environmental Protection Agency (US EPA). (1986). Quality Criteria for Water. EPA 440/5/86/001. Washington, D.C. 447 p.

United States Environmental Protection Agency (US EPA). (2000). Ambient Water Quality Criteria Recommendations: Rivers and Streams in Nutrient Ecoregion IX. EPA 822/B/00/019. Office of Water, U.S. Environmental Protection Agency, Washington D.C.

# Appendix G – PWD-USGS Cooperative Water Quality Monitoring Program Annual Summary

## Background

PWD and the United States Geological Survey (USGS) have constructed and/or refurbished gaging stations in 10 locations throughout Philadelphia's watersheds. USGS staff is responsible for construction and maintenance of the gage structure, stream stage monitoring instruments, data communications, maintaining and verifying stage-discharge rating curves and pumping apparatus. PWD staff is responsible for installation and maintenance of continuous water quality instrumentation. Data collected through the PWD/USGS cooperative water quality monitoring program are disseminated through the USGS National Water Information System (NWIS) Web Interface (https://pa.water.usgs.gov/apps/pwd/), as well as a website specifically dedicated to Philadelphia's watersheds (Figure 1).

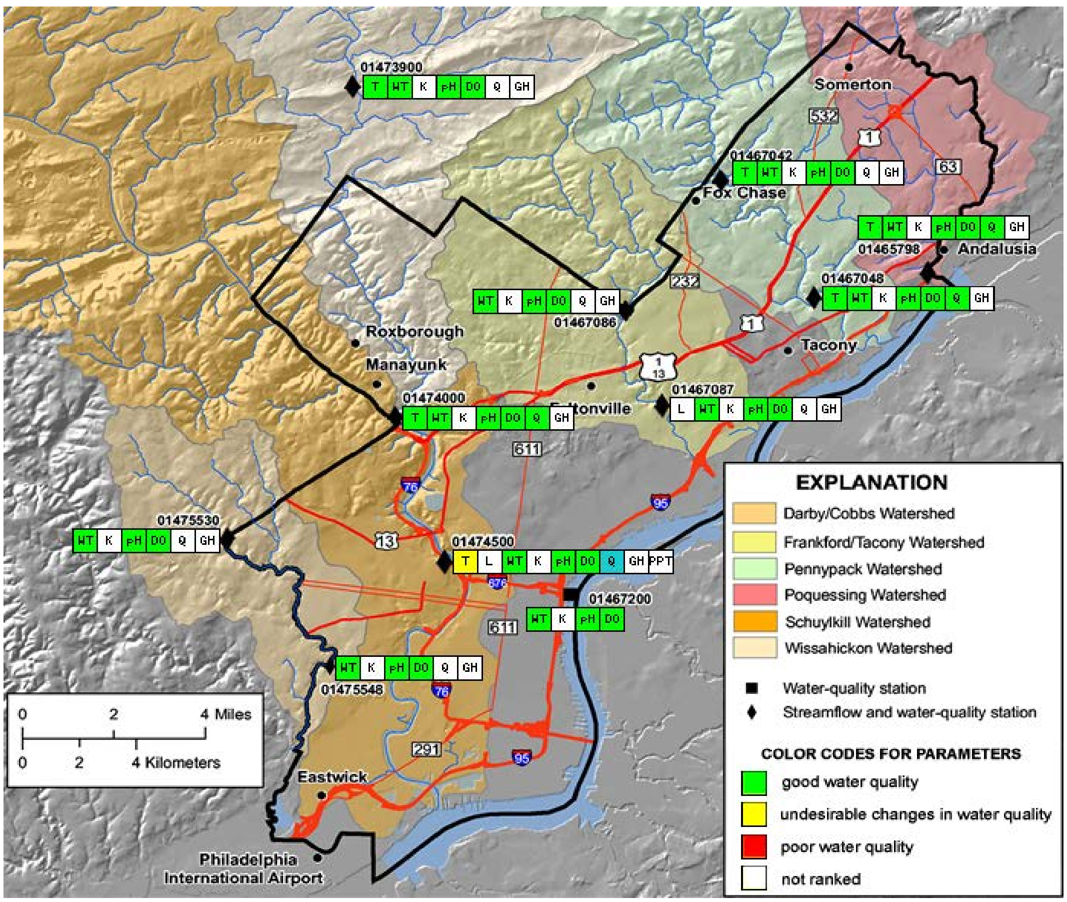



**Figure 1.** Philadelphia Water Quality Gauge Stations as Viewed on Cooperative USGS-PWD Website (https://usgs.gov/centers/pa-water/science/philadelphia-water-resources-monitoring-program).

## Monitoring Locations

The PWD/USGS Cooperative Monitoring Program builds upon the widespread network of USGS gages that were formerly operated throughout Philadelphia. These gages are logically situated and/or have a continuous period of record, making them ideal for water quality monitoring purposes. Within a given watershed, downstream-most historic stations were chosen to represent water quality, as these streams flow through Philadelphia into the receiving waters (*i.e.*, the Schuylkill and Delaware rivers).

Regarding upstream stations, three gages (Pennypack Creek at Pine Rd, Tacony Creek at Adams Ave, and Cobbs Creek at US Rte. 1) are strategically located to monitor water quality of the streams as they enter Philadelphia (Figure 1). The upstream Wissahickon Creek monitoring station is located at Rte. 73 in Fort Washington, which is approximately 3.7 river miles upstream of the City. This location was chosen due to its extensive period of record (Table 1). Upstream water quality is not measured in the Poquessing-Byberry Creek Watershed.  The Schuylkill River gage is in an ideal location to provide data related to the Schuylkill River Fairmount Dam Fish Ladder Renovation Project and was equipped with water quality monitoring instrumentation upon project completion in early 2009. In December 2020, the Delaware River gage at the Ben Franklin Bridge was relocated to a nearby downstream site at Penn's Landing.

This annual report summarizes water quality data from July 1, 2020 – June 30, 2021, excluding the period of December 2020 through February 2021, during which time monitoring probes were not deployed in order to protect the equipment from cold temperatures. Water quality data at the Delaware River gage 014670261 was collected year-round. Due to routine maintenance such as cleaning and calibration, gages are periodically taken offline, usually for no more than the span of two hours, and do not collect data. Significant gaps in data collection due to gage malfunction, repair, vandalism, etc. are noted in the Monthly Results section.

In order to summarize hydrologic conditions during the monitoring period, daily mean discharge was plotted along with the median of all daily flows for USGS gage 01474000 (Wissahickon Creek at Ridge Ave.). The period of record for this gage is 55 years. The influence of severe storms can be observed as peaks in streamflow in Figure 2; approved daily mean discharge data was available only until May 7, 2021 at the time of this writing.

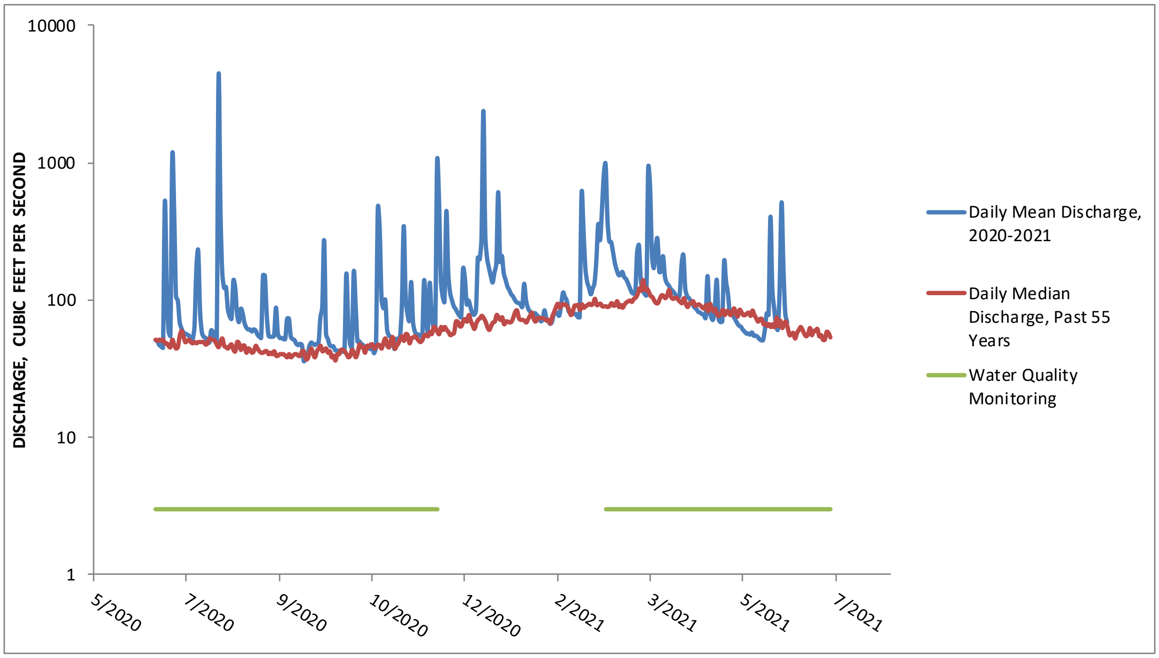



**Figure 2.** Daily mean flow July 1, 2020 - May 7, 2021 and daily median flow for 55 years of record at USGS gage 01474000 (Wissahickon Creek at Ridge Ave.).

**Table 1.** PWD/USGS Cooperative Water Quality Monitoring Program Gages

| Gage Number | Gage name | Flow Data Record |
|---|---|---|
| 01465798 | Poquessing Creek at Grant Avenue, Philadelphia, PA | July 1965 to Present |
| 01467042 | Pennypack Creek at Pine Road, Philadelphia, PA | August 1964 to September 1974; September 2007 to Present |
| 01467048 | Pennypack Creek at Lower Rhawn St Br., Philadelphia, PA | June 1965 to Present |
| 01467086 | Tacony Creek at County Line, Philadelphia, PA | October 1965 to September 1986; September 2005 to Present |
| 01467087 | Frankford Creek at Castor Ave, Philadelphia, PA | July 1982 to Present |
| 014670261 | Delaware River near Pennypack Woods, PA | February 2011 to Present |
| 01467200* | Delaware River at Ben Franklin Bridge/Penn's Landing, Philadelphia, PA | August 1949 to Present |
| 01473900** | Wissahickon Creek at Ft. Washington, PA | September 1961 to September 1968; June 2000 to Present |
| 01474000 | Wissahickon Creek at Mouth, Philadelphia, PA | June 1897 to September 1903; January 1905 to July 1906; October 1965 to Present |
| 01474500 | Schuylkill River at Philadelphia, PA | October 1931 to Present |
| 01475530 | Cobbs Creek at U.S. Highway No. 1, Philadelphia, PA | October 1964 to September 1981; September 2004 to Present |
| 01475548 | Cobbs Creek at Mt. Moriah Cemetery, Philadelphia, PA | October 2005 to Present |

*Funding for the operation of this gage is provided by USGS and the Delaware River Basin Commission (DRBC)
**Funding for the operation of this gage is provided by DRBC

## USGS Gage Data Processing & Analysis Procedures

With 10 USGS gages collecting data for multiple water quality parameters at half-hour or 15-minute intervals, a large amount of data are produced. PWD Office of Watersheds (OOW) staff have developed procedures for the processing and analysis of these data using Microsoft Excel and Access software, as well as R, a free software environment for statistical computing and graphics. Most aspects of the data processing and analysis have been automated with custom Visual Basic and R code.

OOW independently maintains databases of water quality and streamflow via automated regular retrievals of these data from USGS NWIS. On a monthly basis, the databases are queried and results for each gage are imported into MS Excel workbooks. If available, any field data collected during that period (*e.g.*, hand meter readings from field maintenance checks, water quality grab samples, etc.) are also imported. Once all required data have been entered, separate plots are produced for each parameter (dissolved oxygen, turbidity, pH, specific conductance, and temperature) to enable a subjective review of data quality.

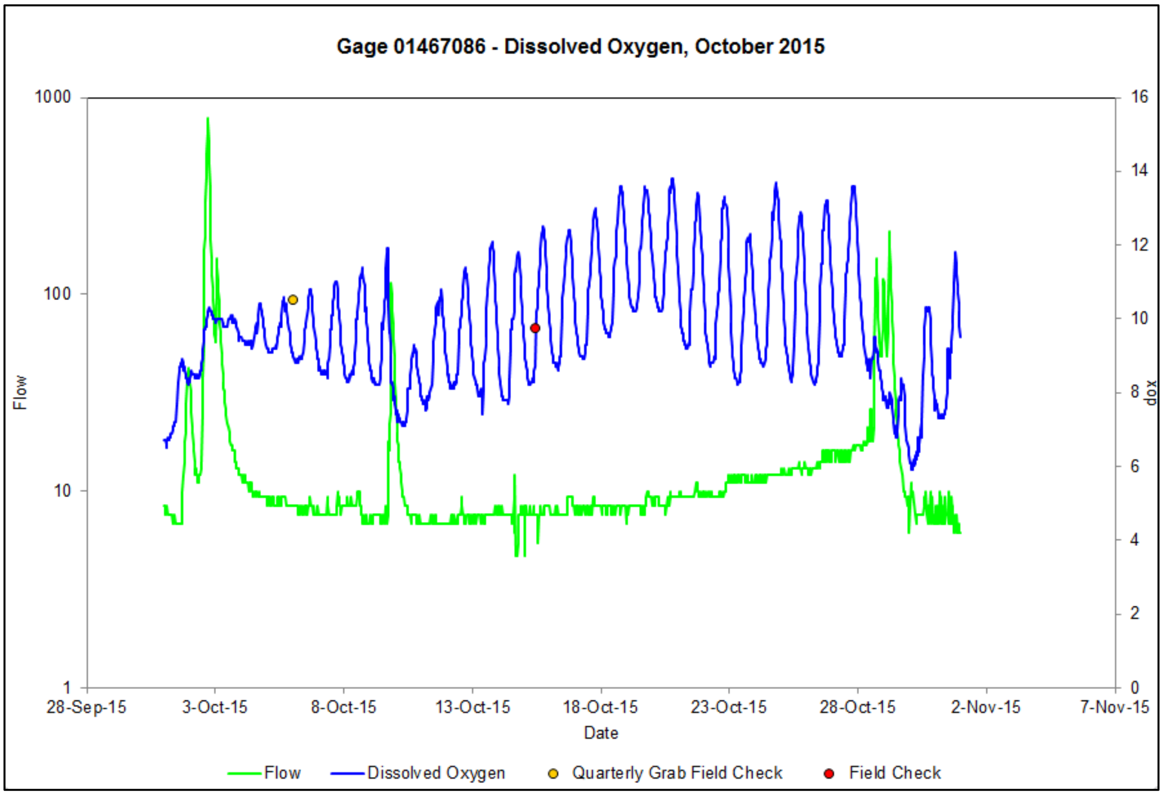



**Figure 3.** Example of an Excel-generated data processing/analysis plot; Gage 0146786, Dissolved Oxygen, October 2015.

These plots are examined and are the primary basis for the selection of good vs. questionable data for a given month. Intervals of questionable data are located and added to a table of “flagged” data for that particular parameter, which is then used to update the water quality database. Logs of field meter readings taken by PWD staff inform the flagging process, along with email records containing field notes and observations whenever water quality instrumentation is cleaned, calibrated, or otherwise maintained.

The final step of the procedure utilizes R, a statistical programming language and software environment. The R software code developed by OOW staff analyzes all of the water quality data in a database, as well as the good and questionable flags, and generates statistical and graphic results in a variety of forms. These include monthly plots for all data parameters for each site, showing accepted and questionable data, water quality criteria, grab sample data, and streamflow (Figure 4); assorted statistics including accepted and questionable data comparisons, monthly attainment percentages, and comparisons of wet and dry weather periods; and additional plots, including average dissolved oxygen (DO), percent DO saturation, and pH/percent DO saturation.

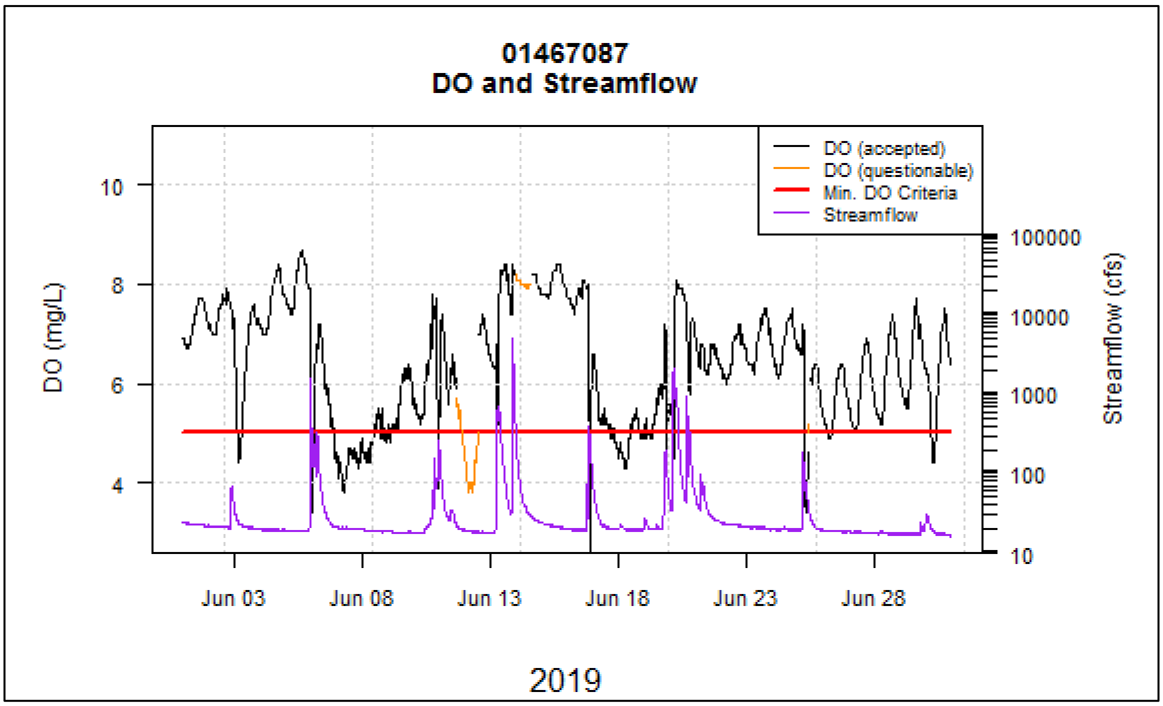



**Figure 4.** Example of an R-generated plot showing accepted and questionable data, and minimum water quality criteria; Gage 01467087, Dissolved Oxygen, June 2019.

# Continuous Water Quality Monitoring Results Annual Summary, July 2020 - June 2021

## Dissolved Oxygen

### Background

Dissolved oxygen concentrations are a concern in several of Philadelphia's watersheds. Dissolved oxygen concentration is suppressed by high temperatures, respiratory activity of stream organisms, and nitrification and other oxidation reactions. Streams generally develop problems with dissolved oxygen due to water column BOD, sediment oxygen demand (SOD) and eutrophication due to increased nutrient concentration. These processes are inter-related, and physical conditions can also affect dissolved oxygen concentrations.

### Designated Uses

Streams in the Philadelphia region are affected by ambient temperatures, which can be quite warm in the spring and summer months. For this reason, these streams cannot support natural self-sustaining populations of cold water fish. Different water quality criteria for dissolved oxygen and temperature are applied to different stream segments. Of the sites that were instrumented for water quality, the Wissahickon and Pennypack Creek gages (*i.e.*, 01473900, 01474000, 01467042, and 01467048) are each designated as a Trout Stocking Fishery (TSF) with conditions appropriate for maintenance of stocked trout over the period February 15 to July 31. Water quality criteria for dissolved oxygen are more stringent for these sites, with a daily instantaneous minimum criterion of 5 mg/L and a 7-day average of 6 mg/L from February 15 to July 31 and 5.5 mg/L the remainder of the year. Dissolved oxygen criteria for Warm Water Fisheries (WWF) are an instantaneous minimum of 5 mg/L and a 7-day average of 5.5 mg/L.

The 7-day average criteria were introduced in 2014 by PA DEP. Prior to 2014, DEP specified daily average criteria for dissolved oxygen (5.0 mg/L for WWF waters; 6.0 mg/L for TSF waters from February 15 to July 31, 5.0 mg/L the remainder of the year). It is also noted that the instantaneous minimum DO criterion for WWF waters became more stringent in 2014; it was previously 4.0 mg/L.

The Delaware River gage 01467200 dissolved oxygen criteria are defined by the Delaware River Basin Commission (DRBC) criteria for Zone 3 (DRBC, 2007) with a daily mean of 3.5 mg/L and a seasonal mean (April 1 to June 15, and September 16 to December 31) of 6.5 mg/L. The same seasonal criteria apply to Delaware River gage 014670261 (Zone 2), but there is a more stringent daily mean guideline of 5.0 mg/L (Table 2).

**Table 2.** PADEP Dissolved Oxygen Water Quality Criteria

| Gage number | Designated Use | Minimum Criterion | 7-Day Average Criterion | Daily Average Criterion |
|---|---|---|---|---|
| 01465798 | WWF | 5.0 mg/L | 5.5 mg/L | None |
| 014670261 | DRBC** | None | None | 5.0 mg/L |
| 01467042 | TSF* | 5.0 mg/L | 6.0 mg/L | None |
| 01467048 | TSF* | 5.0 mg/L | 6.0 mg/L | None |
| 01467086 | WWF | 5.0 mg/L | 5.5 mg/L | None |
| 01467087 | WWF | 5.0 mg/L | 5.5 mg/L | None |
| 01467200 | DRBC** | None | None | 3.5 mg/L |
| 01473900 | TSF* | 5.0 mg/L | 6.0 mg/L | None |
| 01474000 | TSF* | 5.0 mg/L | 6.0 mg/L | None |
| 01474500 | WWF | 5.0 mg/L | 5.5 mg/L | None |
| 01475530 | WWF | 5.0 mg/L | 5.5 mg/L | None |
| 01475548 | WWF | 5.0 mg/L | 5.5 mg/L | None |

*TSF criteria for DO only apply from February 15 - July 31. WWF criteria are applicable from August 1 – January 31.

**A seasonal mean criterion of 6.5 mg/L also applies from April 1 - June 15 and September 16 - December 31.

## Results

Results were processed as follows for Table 3. The "percent accepted data" are the total number of observations that were not flagged. The remainder of the table lists the percent of data that was flagged, and the percentages of accepted data that attained or failed to attain water quality standards were calculated.

Results were processed as follows for Tables 4 and 5. If more than 25% of the data in the 7-day window was flagged as questionable, the data point was considered questionable. The 7-day average was calculated as a two-sided moving average. During data processing and analysis, output files are split by calendar year; thus, statistics for 2020 and 2021 appear in separate tables.

Water quality at the downstream Tacony Creek site (gage 01467087) was most likely to exceed DO minimum and 7-day average criteria. A more in-depth discussion of potential causes of DO problems at gage 01467087 is presented in the Monthly Results section. A notable portion of flagged data at 01467087 and other sites is related to the fouling of sonde pipes due to sediment and debris that inhibit data collection. The DO probes are particularly susceptible to the effects of trapped sediment; when routine cleaning of the sonde pipes show that low DO readings were affected by fouling, the questionable data prior to cleaning is flagged.

**Table 3.** USGS Gage July 2020 - June 2021 Dissolved Oxygen Minimum Criterion Summary Results

| Gage number | Designated Use | Observations, n | % accepted data | % flagged data | % non-attaining | % attaining |
|---|---|---|---|---|---|---|
| 01465798 | WWF | 34481 | 97.7 | 2.3 | 0.3 | 99.7 |
| 014670261* | DRBC | 34021 | 100 | 0 | NA | NA |
| 01467042 | TSF | 34630 | 99 | 1 | 0 | 100 |
| 01467048 | TSF | 34871 | 100 | 0 | 0 | 100 |
| 01467086 | WWF | 13424 | 100 | 0 | 1 | 99 |
| 01467087 | WWF | 33372 | 96.7 | 3.3 | 11.3 | 88.7 |
| 01467200* | DRBC | 74333 | 100 | 0 | NA | NA |
| 01473900 | TSF | 13643 | 100 | 0 | 0.1 | 99.9 |
| 01474000 | TSF | 17380 | 100 | 0 | 0 | 100 |
| 01474500 | WWF | 17380 | 100 | 0 | 0 | 100 |
| 01475530 | WWF | 34833 | 99.9 | 0.1 | 0 | 100 |
| 01475548 | WWF | 34535 | 98.5 | 1.5 | 7.2 | 92.8 |

*No minimum DO criterion applies at gages 01467200 and 014670261

**Table 4.** USGS Gage July 2020 - November 2020 Dissolved Oxygen 7-Day Average Criterion Summary Results

| Gage number | Designated Use | Total hours accepted data | % hours flagged data | % hours non-attaining | % hours attaining |
|---|---|---|---|---|---|
| 01465798 | WWF | 3331.5 | 4.9 | 0 | 100 |
| 014670261 | DRBC | NA | NA | NA | NA |
| 01467042 | TSF | 3504.5 | 0 | 0 | 100 |
| 01467048 | TSF | 3504.5 | 0 | 0 | 100 |
| 01467086 | WWF | 3018.5 | 13.9 | 0 | 100 |
| 01467087 | WWF | 2962.5 | 15.5 | 12.3 | 87.7 |
| 01467200 | DRBC | NA | NA | NA | NA |
| 01473900 | TSF | 3504.5 | 0 | 0 | 100 |
| 01474000 | TSF | 3504.5 | 0 | 0 | 100 |
| 01474500 | WWF | 3504.5 | 0 | 0 | 100 |
| 01475530 | WWF | 3504.5 | 0 | 0 | 100 |
| 01475548 | WWF | 3276 | 6.5 | 20.1 | 79.9 |

**Table 5.** USGS Gage March 2021 - June 2021 Dissolved Oxygen 7-Day Average Criterion Summary Results

| Gage number | Designated Use | Total hours accepted data | % hours flagged data | % hours non-attaining | % hours attaining |
|---|---|---|---|---|---|
| 01465798 | WWF | 2590 | 6.2 | 0 | 100 |
| 014670261 | DRBC | NA | NA | NA | NA |
| 01467042 | TSF | 2517 | 8.8 | 0 | 100 |
| 01467048 | TSF | 2760.5 | 0 | 0 | 100 |
| 01467086 | WWF | 2760.5 | 0 | 0 | 100 |
| 01467087 | WWF | 2585.5 | 6.3 | 21.8 | 78.2 |
| 01467200 | DRBC | NA | NA | NA | NA |
| 01473900 | TSF | 2403 | 13.0 | 0 | 100 |
| 01474000 | TSF | 2760.5 | 0 | 0 | 100 |
| 01474500 | WWF | 2760.5 | 0 | 0 | 100 |
| 01475530 | WWF | 2760.5 | 0 | 0 | 100 |
| 01475548 | WWF | 2592.5 | 6.1 | 0 | 100 |

**Table 6.** USGS Gage 01467200 and 014670261 Dissolved Oxygen Seasonal Mean Criterion Summary Result

| Gage number | Designated Use | Days, n | Minimum Daily Average | Maximum Daily Average | Seasonal mean | Attaining Standard? |
|---|---|---|---|---|---|---|
| 01467200 | DRBC | 184 | 4.9 | 13.6 | 8.8 | Yes |
| 014670261 | DRBC | 178 | 5.5 | 13.3 | 9.3 | Yes |

## pH

### Background

pH has been identified as a parameter of potential concern for some of Philadelphia's watersheds, primarily because of algal effects on the dissolved inorganic carbon (DIC) composition of stream water. Algae take up $CO_2$ during photosynthesis and shift the composition of DIC toward the alkaline carbonates, resulting in occasional failure to attain maximum pH criteria at some sites (Table 7). pH fluctuations are typically observed concomitant with pronounced dissolved oxygen fluctuations, as detailed in the Monthly Results section.

At gages 01467200 and 014670261, pH criteria (regulated by DRBC) are bounded by 6.5 and 8.5. At all other gages, pH criteria are bounded by daily minima and maxima of 6.0 and 9.0, respectively, as defined by PA DEP water quality standards.

### Results

Results were processed as follows for Table 7. The "percent accepted data" are the percentage of observations that were not flagged. The remainder of the table lists the percentage of data that was flagged, the percentages of accepted observations that attained or failed to attain criteria, and the percentages of daily minima and maxima that attained or failed to attain criteria.

Minimum pH criteria were attained at all gages for the reporting time frame. Algal blooms may be responsible for daily maximum pH criterion exceedance at several sites during March and April.

**Table 7.** USGS Gage July 2020 - June 2021 pH Criteria Summary Results

| Gage number | Observations, n | % accepted data | % flagged data | % min. non-attaining | % max. non-attaining | % min. attaining | % max. attaining | % attaining |
|---|---|---|---|---|---|---|---|---|
| 01465798 | 34886 | 100.0 | 0.0 | 0.0 | 0.3 | 100.0 | 99.7 | 99.7 |
| 014670261 | 33988 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 01467042 | 34644 | 99.8 | 0.2 | 0.0 | 0.1 | 100.0 | 99.9 | 99.9 |
| 01467048 | 34860 | 100.0 | 0.0 | 0.0 | 0.1 | 100.0 | 99.9 | 99.9 |
| 01467086 | 13535 | 100.0 | 0.0 | 0.0 | 0.4 | 100.0 | 99.6 | 99.6 |
| 01467087 | 33518 | 99.2 | 0.8 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 01467200 | 74379 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 01473900 | 13643 | 100.0 | 0.0 | 0.0 | 1.2 | 100.0 | 98.8 | 98.8 |
| 01474000 | 17436 | 100.0 | 0.0 | 0.0 | 1.6 | 100.0 | 98.4 | 98.4 |
| 01474500 | 17223 | 100.0 | 0.0 | 0.0 | 0.1 | 100.0 | 99.9 | 99.9 |
| 01475530 | 34820 | 98.5 | 1.5 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 01475548 | 34865 | 98.8 | 1.2 | 0.0 | 0.8 | 100.0 | 99.2 | 99.2 |

## Turbidity

### Background

Turbidity in Philadelphia's streams increases with increased flow as inorganic sediment and additional constituents of stormwater runoff are introduced to the stream or scoured/eroded from the stream channel. There are no numeric PA DEP water quality criteria for turbidity, so PWD watershed management plans used a reference value for turbidity that was derived from EPA Guidance document EPA 822-B-00-023 (*i.e.*, 2.825 NTU). This value is surpassed more often in wet weather than in dry weather (Tables 84-85). Turbidity data has also been used to help investigate sediment loading and transport in the Wissahickon Creek Watershed for the Wissahickon Creek Sediment TMDL.

### Results

Results were processed as follows for Table 8. The "percent accepted data" are the percentage of observations that were not flagged. The remainder of the table lists the percentage of observations that were flagged, and the percentages of accepted data that either surpassed or fell below the maximum guideline.

Among the tributary sites, the maximum guideline was most frequently surpassed at the Schuylkill gage, and least frequently surpassed at the upstream Pennypack gage.

**Table 8.** USGS Gage July 2020 - June 2021 Turbidity Summary Results

| Gage number | Observations, n | % accepted data | % flagged data | % hrs. above max. guideline | % hrs. below max. guideline |
|---|---|---|---|---|---|
| 01465798 | 26294 | 98.7 | 1.3 | 33.6 | 66.4 |
| 014670261 | 34015 | 100.0 | 0.0 | 97.9 | 2.1 |
| 01467042 | 34583 | 96.8 | 3.2 | 24.7 | 75.3 |
| 01467048 | 25423 | 98.0 | 2.0 | 30.1 | 69.9 |
| 01467086* | NA | NA | NA | NA | NA |
| 01467087* | NA | NA | NA | NA | NA |
| 01467200* | NA | NA | NA | NA | NA |
| 01473900 | 13639 | 98.4 | 1.6 | 39.4 | 60.6 |
| 01474000 | 17396 | 100.0 | 0.0 | 25.2 | 74.8 |
| 01474500 | 17374 | 100.0 | 0.0 | 43.5 | 56.5 |
| 01475530* | NA | NA | NA | NA | NA |
| 01475548* | NA | NA | NA | NA | NA |

*Turbidity is not continuously monitored at these locations

## Specific Conductance

### Background

Specific conductance is a measure of the ability of water to conduct electricity over a given distance, expressed as microsiemens/cm (corrected to 25ºC). Conductivity in Philadelphia streams is extremely sensitive to changes in flow, as stormwater (diluent) usually contains smaller concentrations of dissolved ions than stream baseflow. Stormwater runoff typically lowers conductivity in streams; an exception sometimes occurs in winter and early spring, when road salt applied prior to snowstorms enters the stream in runoff or during snowmelt. Data collected in the report timeframe were generally consistent with earlier observations. When significant changes in conductivity are observed during dry weather, it can be an indicator of anthropogenic influence or pollution in the stream; stations receiving inputs of treated wastewater generally had greater conductivity.

### Results

There is no water quality standard for specific conductance. Table 9 merely illustrates the number of observations that were not flagged and considered "accepted" and the percentage of observations that were flagged. More detailed results at each site are described in the Monthly Results section.

**Table 9.** USGS Gage July 2020 - June 2021 Specific Conductance Summary Results

| Gage number | Observations, n | % accepted data | % flagged data |
|---|---|---|---|
| 01465798 | 34541 | 99.1 | 0.9 |
| 014670261 | 34051 | 100.0 | 0.0 |
| 01467042 | 34552 | 100.0 | 0.0 |
| 01467048 | 34826 | 100.0 | 0.0 |
| 01467086 | 13532 | 100.0 | 0.0 |
| 01467087 | 33527 | 100.0 | 0.0 |
| 01467200 | 74506 | 100.0 | 0.0 |
| 01473900 | 13640 | 100.0 | 0.0 |
| 01474000 | 17429 | 100.0 | 0.0 |
| 01474500 | 17368 | 100.0 | 0.0 |
| 01475530 | 34820 | 99.5 | 0.5 |
| 01475548 | 34865 | 98.6 | 1.4 |

## Temperature

### Background

Streams in the Philadelphia region are designated Warm Water Fisheries (WWF) or Trout Stocking Fisheries (TSF), with separate corresponding temperature criteria (Table 10). These criteria are "stepped" (remaining constant for 15- or 30-day intervals), while streams tend to warm up and cool down more gradually due primarily to changes in ambient temperature. (Gages 01467200 and 014670261 are the exceptions and are subject to a DRBC criterion of 30°C maximum). Stream temperatures were observed to exceed these criteria, somewhat frequently in springtime. These exceedances are generally natural, as there are no major sources of heated wastes. It is possible that baseflow diminution is partially responsible for a lack of buffering against temperature increases.

**Table 10.** PA DEP Temperature Water Quality Criteria

| Date range start | Date range end | WWF maximum (°C) | WWF maximum (°F) | TSF maximum (°C) | TSF maximum (°F) |
|---|---|---|---|---|---|
| 1/1 | 1/31 | 4 | 40 | 4 | 40 |
| 2/1 | 2/29 | 4 | 40 | 4 | 40 |
| 3/1 | 3/31 | 8 | 46 | 8 | 46 |
| 4/1 | 4/15 | 11 | 52 | 11 | 52 |
| 4/16 | 4/30 | 14 | 58 | 14 | 58 |
| 5/1 | 5/15 | 18 | 64 | 18 | 64 |
| 5/16 | 5/31 | 22 | 72 | 20 | 68 |
| 6/1 | 6/15 | 27 | 80 | 21 | 70 |
| 6/16 | 6/30 | 29 | 84 | 22 | 72 |
| 7/1 | 7/31 | 31 | 87 | 23 | 74 |
| 8/1 | 8/15 | 31 | 87 | 27 | 80 |
| 8/16 | 8/30 | 31 | 87 | 31 | 87 |
| 9/1 | 9/15 | 29 | 84 | 29 | 84 |
| 9/16 | 9/30 | 26 | 78 | 26 | 78 |
| 10/1 | 10/15 | 22 | 72 | 22 | 72 |
| 10/16 | 10/31 | 19 | 66 | 19 | 66 |
| 11/1 | 11/15 | 14 | 58 | 14 | 58 |
| 11/16 | 11/30 | 10 | 50 | 10 | 50 |
| 12/1 | 12/31 | 6 | 42 | 6 | 42 |

### Results

Results were processed in the same manner as the parameters described above. The highest exceedance rate occurred at the upstream Tacony Creek gage. The six gages designated as WWF have less stringent criteria.

**Table 11.** USGS Gage July 2020 - June 2021 Temperature Maximum Criteria Summary Results

| Gage number | Designated Use | Observations, n | % accepted data | % flagged data | % exceedance | % attaining |
|---|---|---|---|---|---|---|
| 01465798 | WWF | 34891 | 100.0 | 0.0 | 10.7 | 89.3 |
| 014670261 | DRBC | 34068 | 99.9 | 0.1 | 0.0 | 100.0 |
| 01467042 | TSF | 34546 | 100.0 | 0.0 | 11.5 | 88.5 |
| 01467048 | TSF | 34631 | 100.0 | 0.0 | 12.5 | 87.5 |
| 01467086 | WWF | 13543 | 100.0 | 0.0 | 14.6 | 85.4 |
| 01467087 | WWF | 33554 | 100.0 | 0.0 | 12.3 | 87.7 |
| 01467200 | DRBC | 74678 | 100.0 | 0.0 | 0.0 | 100.0 |
| 01473900 | TSF | 13518 | 100.0 | 0.0 | 13.8 | 86.2 |
| 01474000 | TSF | 17338 | 100.0 | 0.0 | 10.6 | 89.4 |
| 01474500 | WWF | 17375 | 100.0 | 0.0 | 12.2 | 87.8 |
| 01475530 | WWF | 34826 | 100.0 | 0.0 | 10.4 | 89.6 |
| 01475548 | WWF | 34774 | 100.0 | 0.0 | 11.2 | 88.8 |

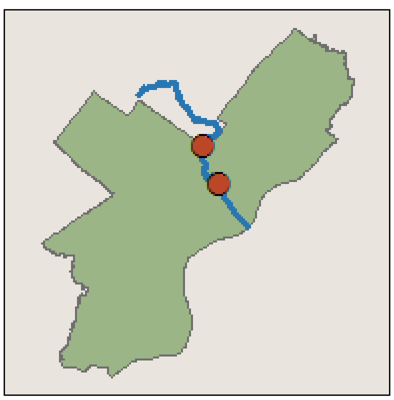
## Monthly Results, July 2020 - June 2021

This section summarizes results at the monthly time scale. Results were processed in the same manner as in the previous section. Gages are grouped according to the type of sewer system that impacts water quality at the site.

### Gages in Combined Sewer System Watersheds

The combined sewer system serves more than three-quarters of Philadelphia's residents and covers the oldest and densest parts of the city. Combined sewer outfalls affect the Tookany/Tacony-Frankford and Darby-Cobbs watersheds. (The Delaware and Schuylkill rivers also contain combined sewer outfalls but are detailed in a later section focused on large watersheds.) The gages in this section are subject to the deleterious effects of periodic combined sewer overflows during wet weather and snowmelt.

### Tookany/Tacony-Frankford Creek (Gages 01467086 and 01467087)



#### Dissolved oxygen and pH

Dissolved oxygen concentrations were markedly worse between the upstream and downstream Tacony Creek gages. The monthly minima, percentage of hours the minimum criterion was not attained, exceedance of the 7-day average guideline, and percentage of days the daily mean criteria was not attained were typically much worse at the downstream gage (Tables 12-13, Figures 5-8). For example, DO was poor at the downstream Tacony Creek gage during September 2020 (Figure 9). However, the minimum criterion was always attained at gage 01467086 during that same month (Figure 10). This difference likely reflects the additional stormwater runoff and sewage overflows that entered the creek between the two gages.

The lowest DO concentrations are typically seen in the period after storm events, reflecting both the immediate and lingering, oxygen-depleting effects of stormwater runoff and biochemical oxygen demand (BOD) entering the stream. Diel DO fluctuations are suppressed for a few days following a storm event because the event either scours away algae or temporarily inhibits their growth. As dry weather continues, the algae recover and diel DO and pH fluctuations typically increase, sometimes resulting in non-attainment of pH maximum criteria, as observed at the upstream gage in March 2021 (Figure 11). Percent DO saturation of more than 150% in daylight were also observed at gage 01467086 in March 2021, indicating high levels of algal activity (Figure 12; PAR is defined as photosynthetically active radiation). Diel DO fluctuations tended to increase with prolonged periods of sunlight, further indicating high levels of algal activity.

A lower monthly mean pH was usually observed at gage 01467087, along with generally less pronounced diel pH fluctuations, probably due to an increased buffering capacity at the downstream gage and a lesser degree of algal growth (Tables 14-15).

**Table 12.** Gage 01467086 Dissolved Oxygen Minimum Criterion Summary Results by Month

| Month | Des. Use | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % non-attaining | % attaining |
|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | WWF | 1389 | 3.7 | 13.2 | 7.3 | 100.0 | 0.0 | 5.9 | 94.1 |
| Aug-20 | WWF | 1311 | 4.6 | 12.4 | 7.5 | 100.0 | 0.0 | 0.4 | 99.6 |
| Sep-20 | WWF | 1436 | 5.0 | 13.9 | 8.7 | 100.0 | 0.0 | 0.0 | 100.0 |
| Oct-20 | WWF | 1287 | 6.7 | 14.7 | 9.5 | 100.0 | 0.0 | 0.0 | 100.0 |
| Nov-20 | WWF | 1437 | 7.6 | 14.4 | 10.5 | 100.0 | 0.0 | 0.0 | 100.0 |
| Mar-21 | WWF | 1481 | 8.3 | 17.1 | 11.8 | 99.9 | 0.1 | 0.0 | 100.0 |
| Apr-21 | WWF | 1438 | 5.0 | 16.7 | 10.3 | 100.0 | 0.0 | 0.0 | 100.0 |
| May-21 | WWF | 1486 | 3.3 | 12.2 | 8.2 | 100.0 | 0.0 | 2.3 | 97.7 |
| Jun-21 | WWF | 1391 | 4.7 | 12.4 | 7.7 | 99.7 | 0.3 | 0.5 | 99.5 |

**Table 13.** Gage 01467087 Dissolved Oxygen Minimum Criterion Summary Results by Month

| Month | Des. Use | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % non-attaining | % attaining |
|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | WWF | 2338 | 2.9 | 11.0 | 7.1 | 100.0 | 0.0 | 12.4 | 87.6 |
| Aug-20 | WWF | 2640 | 2.4 | 9.3 | 6.3 | 100.0 | 0.0 | 15.5 | 84.5 |
| Sep-20 | WWF | 2860 | 1.6 | 9.8 | 5.8 | 99.9 | 0.1 | 41.3 | 58.7 |
| Oct-20 | WWF | 2676 | 2.9 | 10.2 | 8.0 | 90.3 | 9.7 | 0.7 | 99.3 |
| Nov-20 | WWF | 2455 | 0.7 | 10.8 | 8.8 | 89.6 | 10.4 | 2.2 | 97.8 |
| Mar-21 | WWF | 2708 | 6.4 | 13.6 | 10.9 | 94.7 | 5.3 | 0.0 | 100.0 |
| Apr-21 | WWF | 2832 | 0.7 | 13.1 | 9.2 | 98.5 | 1.5 | 3.8 | 96.2 |
| May-21 | WWF | 2712 | 0.7 | 8.0 | 5.4 | 91.4 | 8.6 | 29.1 | 70.9 |
| Jun-21 | WWF | 2811 | 1.6 | 8.7 | 5.6 | 97.7 | 2.3 | 27.7 | 72.3 |

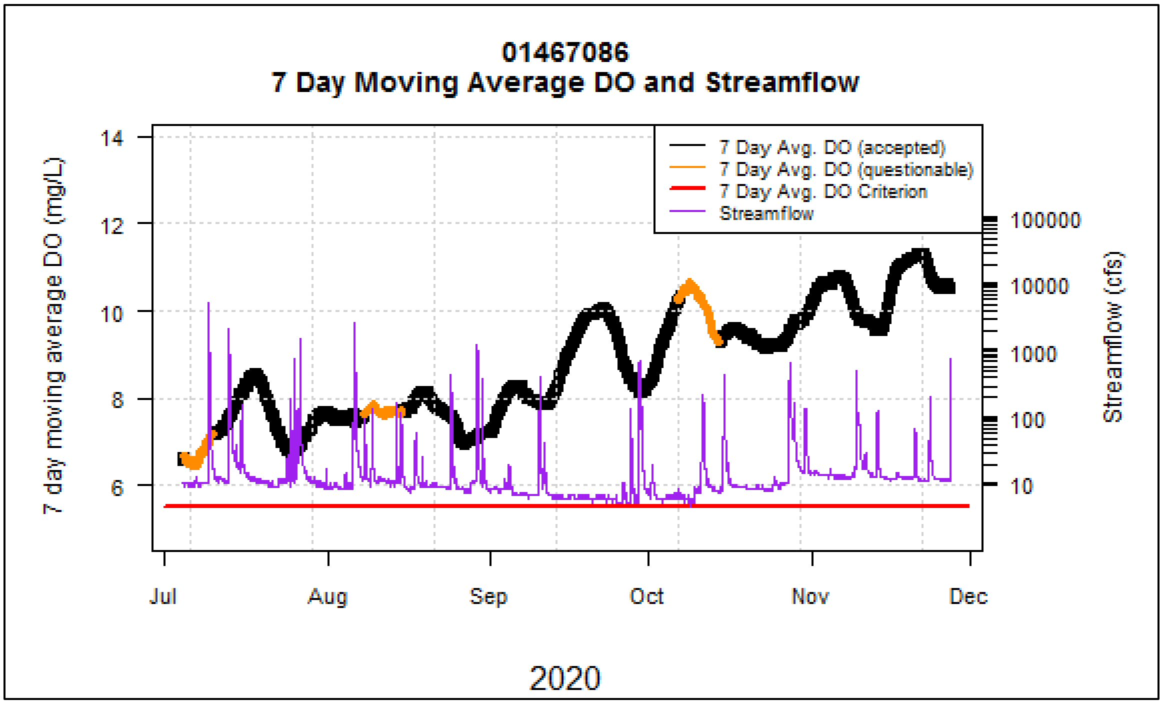



**Figure 5.** Gage 01467086, 7 Day Average Dissolved Oxygen and Streamflow, Jul-Dec 2020.

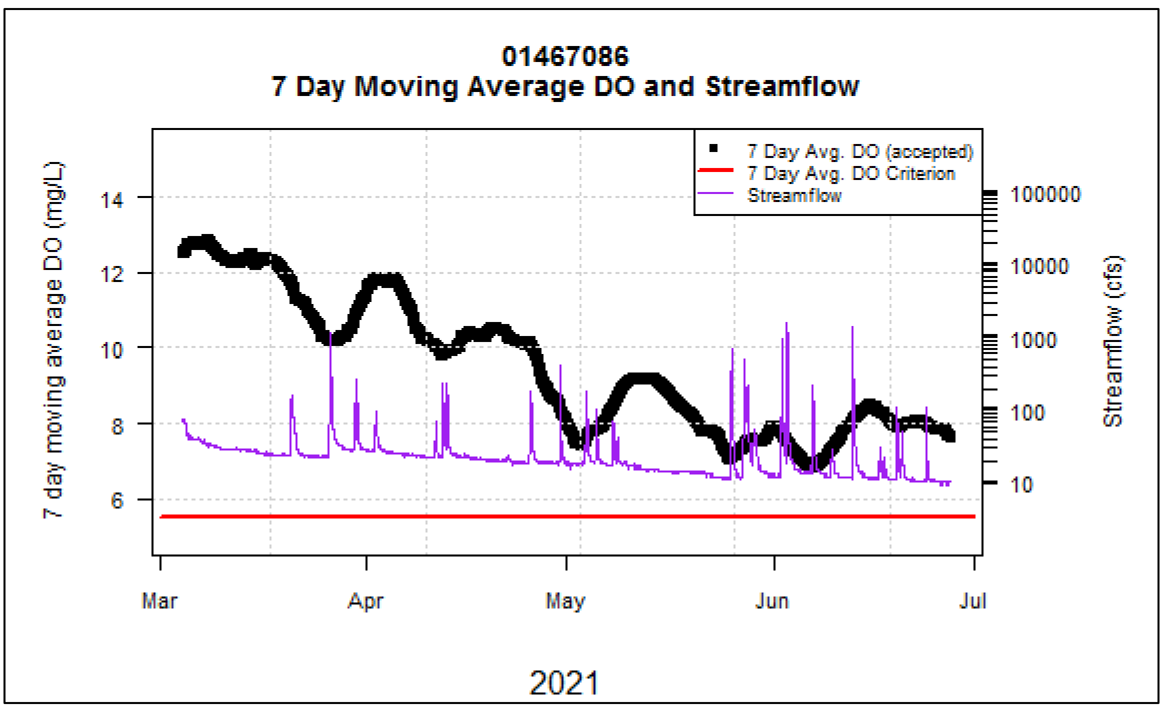



**Figure 6.** Gage 01467086, 7 Day Average Dissolved Oxygen and Streamflow, Mar-Jun 2021.

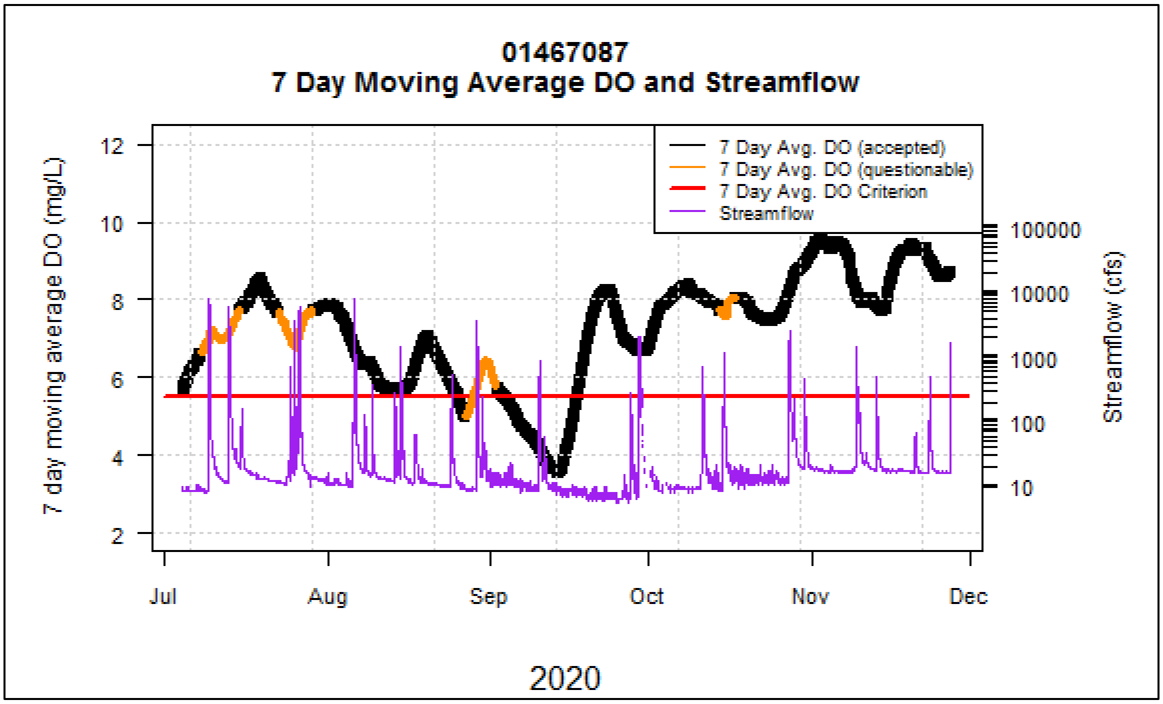



**Figure 7.** Gage 01467087, 7 Day Average Dissolved Oxygen and Streamflow, Jul-Dec 2020.

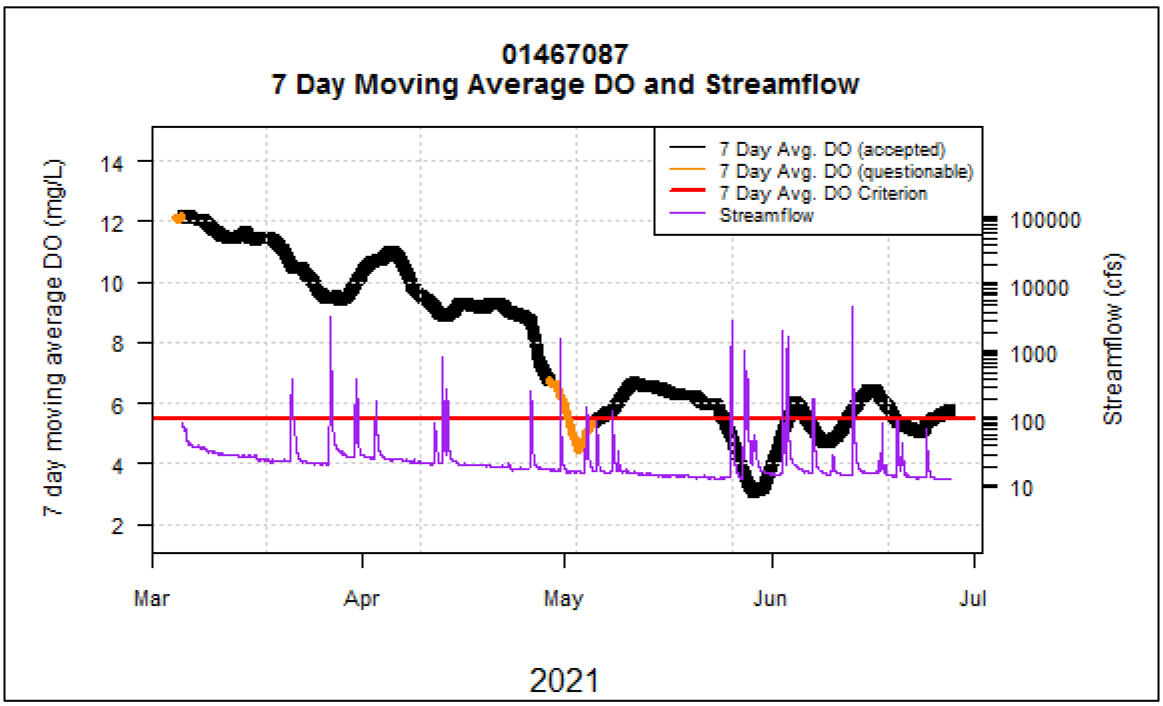



**Figure 8.** Gage 01467087, 7 Day Average Dissolved Oxygen and Streamflow, Mar-Jun 2021.

**Table 14.** Gage 01467086 pH Criteria Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % min non-attaining | % max non-attaining | % min attaining | % max attaining |
|---|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | 1485 | 6.9 | 8.8 | 7.6 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Aug-20 | 1310 | 7.0 | 8.7 | 7.6 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Sep-20 | 1434 | 7.0 | 8.7 | 7.7 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Oct-20 | 1309 | 7.3 | 8.8 | 7.7 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Nov-20 | 1436 | 7.1 | 8.4 | 7.6 | 99.9 | 0.1 | 0.0 | 0.0 | 100.0 | 100.0 |
| Mar-21 | 1481 | 7.2 | 9.2 | 7.8 | 99.9 | 0.1 | 0.0 | 1.4 | 100.0 | 98.6 |
| Apr-21 | 1437 | 7.0 | 9.2 | 7.8 | 100.0 | 0.0 | 0.0 | 2.3 | 100.0 | 97.7 |
| May-21 | 1483 | 6.8 | 8.1 | 7.5 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Jun-21 | 1394 | 7.0 | 8.5 | 7.5 | 99.9 | 0.1 | 0.0 | 0.0 | 100.0 | 100.0 |

**Table 15.** Gage 01467087 pH Criteria Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % min non-attaining | % max non-attaining | % min attaining | % max attaining |
|---|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | 2336 | 6.7 | 8.7 | 7.6 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Aug-20 | 2636 | 6.5 | 8.0 | 7.3 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Sep-20 | 2860 | 6.5 | 7.7 | 7.2 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Oct-20 | 2959 | 6.8 | 7.7 | 7.3 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Nov-20 | 2806 | 6.7 | 8.1 | 7.2 | 97.9 | 2.1 | 0.0 | 0.0 | 100.0 | 100.0 |
| Mar-21 | 2709 | 6.4 | 8.0 | 7.6 | 94.7 | 5.3 | 0.0 | 0.0 | 100.0 | 100.0 |
| Apr-21 | 2876 | 6.8 | 8.2 | 7.5 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| May-21 | 2969 | 6.5 | 7.4 | 7.1 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Jun-21 | 2811 | 6.6 | 7.4 | 7.1 | 97.7 | 2.3 | 0.0 | 0.0 | 100.0 | 100.0 |

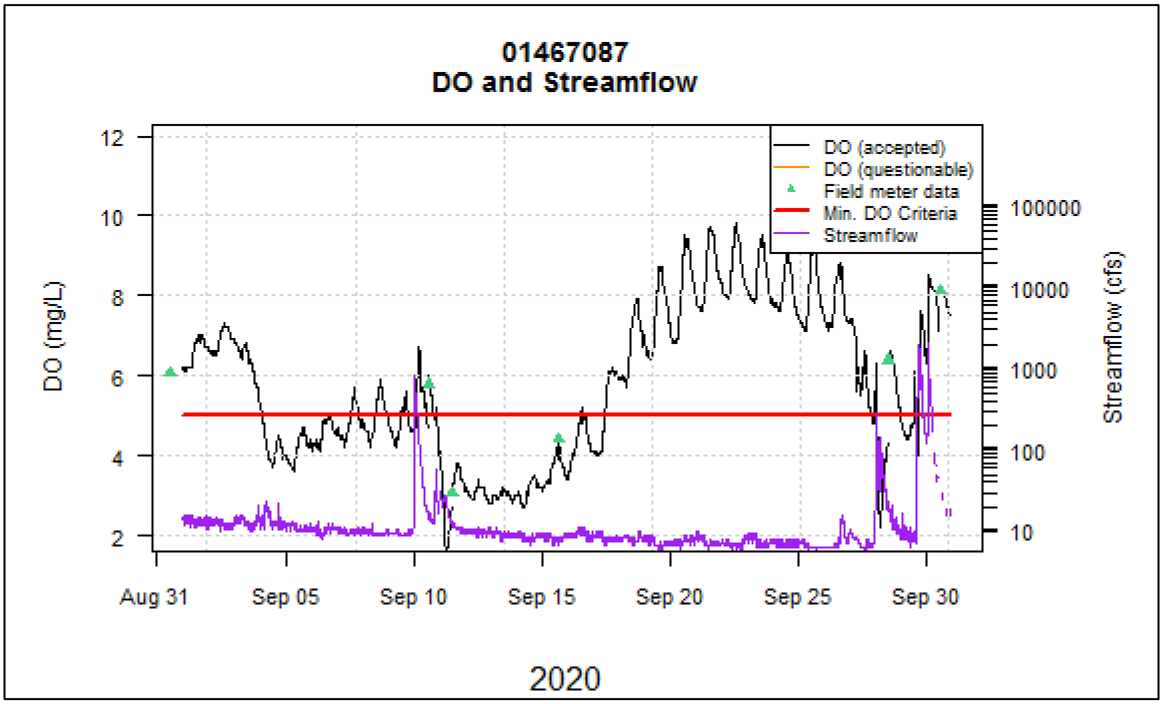



**Figure 9.** Gage 01467087, Dissolved Oxygen and Streamflow, September 2020.

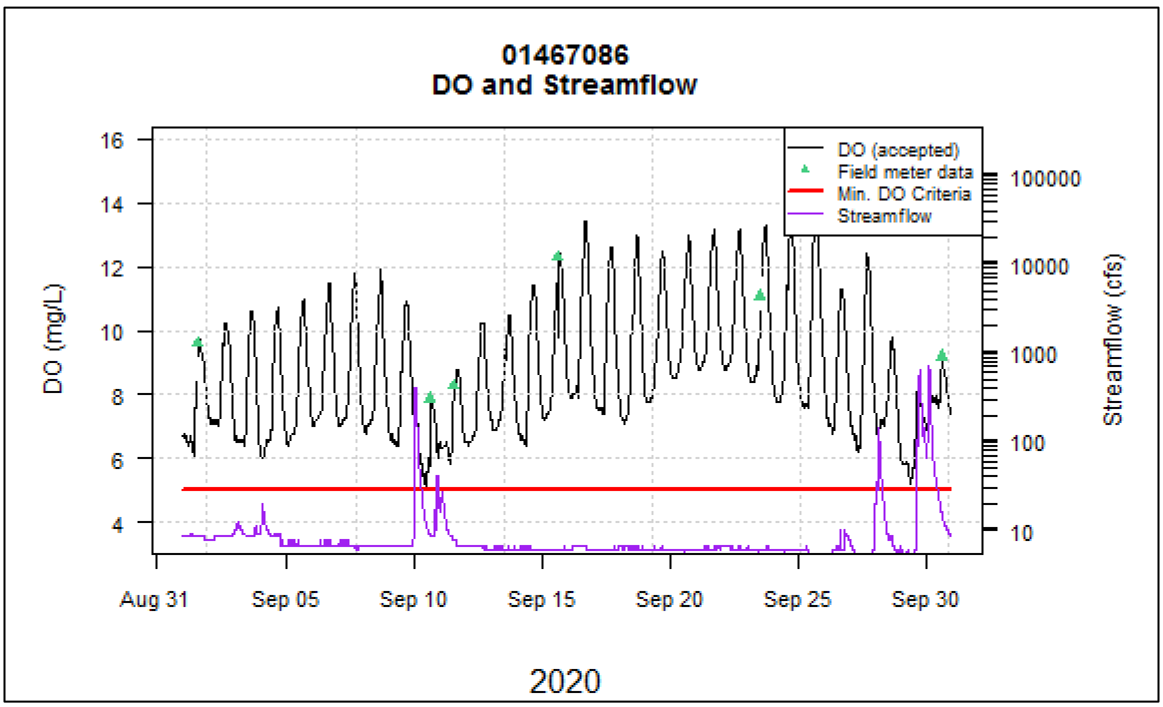



**Figure 10.** Gage 01467086, Dissolved Oxygen and Streamflow, September 2020.

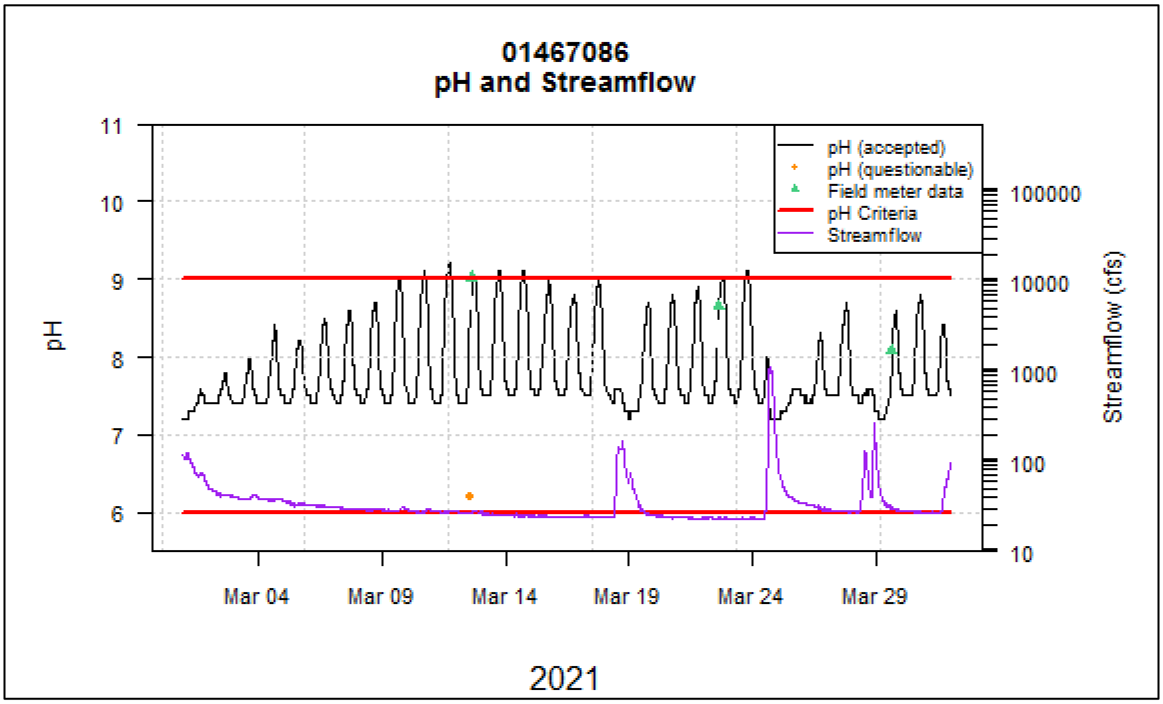



**Figure 11.** Gage 01467086, pH and Streamflow, March 2021.

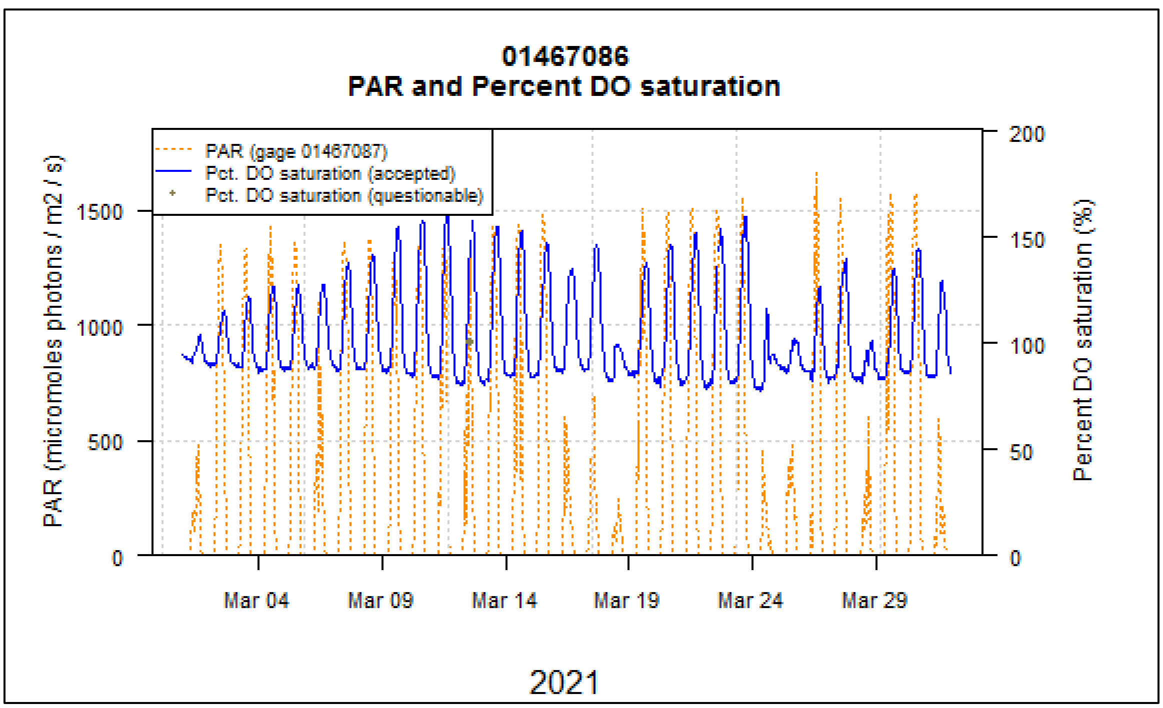



**Figure 12.** Gage 01467086, PAR and Percent Dissolved Oxygen Saturation, March 2021.


**Figure 13.** Gage 01467086, Tacony Creek at Adams Ave.

**Figure 14.** Gage 01467087, Frankford Creek at Castor Ave., looking downstream

## Specific Conductance

Specific conductance observations were usually consistent between the two gage sites (Tables 16-17). Elevated levels of specific conductance observed in late fall and early spring months are likely due to the effects of road salt entering the stream.

**Table 16.** Gage 01467086 Specific Conductance Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data |
|---|---|---|---|---|---|---|
| Jul-20 | 1484 | 54.0 | 804.0 | 610.0 | 100.0 | 0.0 |
| Aug-20 | 1310 | 56.0 | 745.0 | 573.4 | 100.0 | 0.0 |
| Sep-20 | 1434 | 94.0 | 786.0 | 668.0 | 100.0 | 0.0 |
| Oct-20 | 1312 | 96.0 | 754.0 | 605.1 | 100.0 | 0.0 |
| Nov-20 | 1436 | 112.0 | 723.0 | 590.4 | 100.0 | 0.0 |
| Mar-21 | 1481 | 118.0 | 846.0 | 698.7 | 100.0 | 0.0 |
| Apr-21 | 1437 | 255.0 | 789.0 | 650.1 | 100.0 | 0.0 |
| May-21 | 1482 | 132.0 | 758.0 | 629.8 | 100.0 | 0.0 |
| Jun-21 | 1393 | 103.0 | 786.0 | 603.8 | 100.0 | 0.0 |

**Table 17.** Gage 01467087 Specific Conductance Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data |
|---|---|---|---|---|---|---|
| Jul-20 | 2336 | 41.0 | 774.0 | 629.1 | 100.0 | 0.0 |
| Aug-20 | 2639 | 44.0 | 740.0 | 555.6 | 100.0 | 0.0 |
| Sep-20 | 2862 | 89.0 | 782.0 | 646.2 | 100.0 | 0.0 |
| Oct-20 | 2958 | 99.0 | 792.0 | 542.7 | 100.0 | 0.0 |
| Nov-20 | 2862 | 170.0 | 738.0 | 560.6 | 100.0 | 0.0 |
| Mar-21 | 2857 | 121.0 | 851.0 | 677.1 | 100.0 | 0.0 |
| Apr-21 | 2875 | 283.0 | 750.0 | 640.1 | 100.0 | 0.0 |
| May-21 | 2966 | 169.0 | 767.0 | 597.1 | 100.0 | 0.0 |
| Jun-21 | 2873 | 90.0 | 749.0 | 530.9 | 100.0 | 0.0 |

## Temperature

Monthly mean temperatures observed at the downstream gage were usually higher than at the upstream gage. Consequently, a higher rate of temperature criteria exceedance was typically observed at the downstream gage (Tables 18-19).

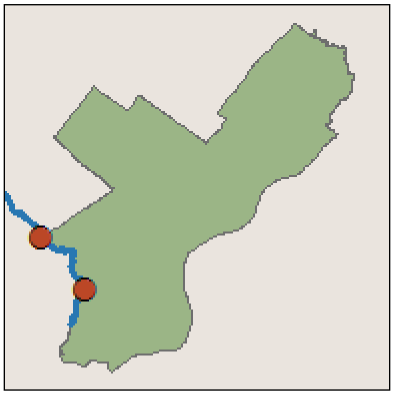
**Table 18.** Gage 01467086 Temperature Summary Results by Maximum Criteria Period

| Designated Use | Date range start | Date range end | % exceedance | % attaining | % flagged data | % accepted data | Min | Max | Mean |
|---|---|---|---|---|---|---|---|---|---|
| WWF | 1-Jul | 31-Jul | 0 | 100 | 0 | 100 | 20.5 | 28.5 | 24.6 |
| WWF | 1-Aug | 15-Aug | 0 | 100 | 0 | 100 | 21.9 | 27.8 | 24.1 |
| WWF | 16-Aug | 31-Aug | 0 | 100 | 0 | 100 | 19.5 | 26.5 | 22.7 |
| WWF | 1-Sep | 15-Sep | 0 | 100 | 0 | 100 | 16.8 | 25.4 | 21.7 |
| WWF | 16-Sep | 30-Sep | 0 | 100 | 0 | 100 | 12.3 | 22.2 | 17.4 |
| WWF | 1-Oct | 15-Oct | 0 | 100 | 0 | 100 | 13.2 | 18.8 | 15.7 |
| WWF | 16-Oct | 31-Oct | 0 | 100 | 0 | 100 | 8.4 | 18.6 | 14.3 |
| WWF | 1-Nov | 15-Nov | 15 | 85 | 0 | 100 | 6.8 | 17.3 | 11.6 |
| WWF | 16-Nov | 30-Nov | 41.5 | 58.5 | 0 | 100 | 3.9 | 14.3 | 9.4 |
| WWF | 1-Mar | 31-Mar | 61.3 | 38.7 | 0 | 100 | 2.9 | 18.4 | 9.3 |
| WWF | 1-Apr | 15-Apr | 80.3 | 19.7 | 0 | 100 | 5.2 | 18.3 | 12.9 |
| WWF | 16-Apr | 30-Apr | 44.8 | 55.2 | 0 | 100 | 7.8 | 20.7 | 14 |
| WWF | 1-May | 15-May | 11.7 | 88.3 | 0 | 100 | 11.7 | 20.1 | 15.4 |
| WWF | 16-May | 31-May | 11.6 | 88.4 | 0 | 100 | 12.4 | 26.4 | 18.4 |
| WWF | 1-Jun | 15-Jun | 0 | 100 | 0 | 100 | 15 | 26.7 | 20.9 |
| WWF | 16-Jun | 30-Jun | 0.4 | 99.6 | 0 | 100 | 17.2 | 29.2 | 22.4 |

**Table 19.** Gage 01467087 Temperature Summary Results by Maximum Criteria Period

| Designated Use | Date range start | Date range end | % exceedance | % attaining | % flagged data | % accepted data | Min | Max | Mean |
|---|---|---|---|---|---|---|---|---|---|
| WWF | 1-Jul | 31-Jul | 0 | 100 | 0 | 100 | 21.8 | 29.1 | 26 |
| WWF | 1-Aug | 15-Aug | 0 | 100 | 0 | 100 | 22.7 | 28.4 | 25.1 |
| WWF | 16-Aug | 31-Aug | 0 | 100 | 0 | 100 | 21 | 26.9 | 23.8 |
| WWF | 1-Sep | 15-Sep | 0 | 100 | 0 | 100 | 19.2 | 25.9 | 22.7 |
| WWF | 16-Sep | 30-Sep | 0 | 100 | 0 | 100 | 13.9 | 22.6 | 18 |
| WWF | 1-Oct | 15-Oct | 0 | 100 | 0 | 100 | 14.46 | 19.2 | 16 |
| WWF | 16-Oct | 31-Oct | 0 | 100 | 0 | 100 | 9.33 | 18.36 | 14.6 |
| WWF | 1-Nov | 15-Nov | 14 | 86 | 0 | 100 | 8 | 18.34 | 11.6 |
| WWF | 16-Nov | 30-Nov | 38.4 | 61.6 | 0 | 100 | 5.5 | 14.8 | 9.5 |
| WWF | 1-Mar | 31-Mar | 63.7 | 36.3 | 0 | 100 | 4.1 | 16.1 | 9.6 |
| WWF | 1-Apr | 15-Apr | 84.2 | 15.8 | 0 | 100 | 7 | 15.9 | 13.2 |
| WWF | 16-Apr | 30-Apr | 47 | 53 | 0 | 100 | 10.1 | 20.1 | 14.4 |
| WWF | 1-May | 15-May | 10.1 | 89.9 | 0 | 100 | 12.9 | 18.5 | 16.1 |
| WWF | 16-May | 31-May | 17.3 | 82.7 | 0 | 100 | 12.8 | 24.4 | 19.3 |
| WWF | 1-Jun | 15-Jun | 0 | 100 | 0 | 100 | 15.8 | 26.7 | 21.7 |
| WWF | 16-Jun | 30-Jun | 1.8 | 98.2 | 0 | 100 | 19.8 | 29.6 | 23.4 |

## Cobbs Creek (Gages 01475530 and 01475548)



### Dissolved oxygen and pH

The upstream Cobbs Creek site (01475530) almost always met the minimum dissolved oxygen criterion and never exceeded the 7-day average guideline (Table 20, Figures 15, 16, 19). Dissolved oxygen at the downstream site (01475548) did not always attain the minimum, particularly during the warmer months. The downstream site mostly attained the 7-day average guideline.

The pattern of dissolved oxygen and pH values between the upstream and downstream Cobbs Creek gages is likely due to greater algal activity at the downstream gage. During the spring—key months for algal growth—pH exceeded the maximum guideline at the downstream gage site (Tables 22-23). Algae remove $CO_2$ during photosynthesis, raising pH by shifting the dissolved inorganic carbon (DIC) balance toward alkaline carbonates. Furthermore, the diel fluctuations in DO were more pronounced at the downstream gage during these months (Figures 19-20).

A third indicator of increased algal activity in Cobbs Creek is the supersaturation of oxygen caused by photosynthesis. During April, the downstream gage recorded peak DO saturation levels greater than 150% during the day in dry weather conditions (Figures 21-22).

**Table 20.** Gage 01475530 Dissolved Oxygen Minimum Criterion Summary Results by Month

| Month | Des. Use | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % non-attaining | % attaining |
|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | WWF | 2960 | 3.5 | 10.9 | 7.4 | 100.0 | 0.0 | 0.0 | 100.0 |
| Aug-20 | WWF | 2907 | 0.7 | 10.4 | 7.8 | 98.4 | 1.6 | 0.1 | 99.9 |
| Sep-20 | WWF | 2860 | 6.5 | 12.0 | 8.7 | 100.0 | 0.0 | 0.0 | 100.0 |
| Oct-20 | WWF | 2969 | 7.7 | 11.9 | 9.3 | 100.0 | 0.0 | 0.0 | 100.0 |
| Nov-20 | WWF | 2876 | 8.4 | 12.9 | 10.2 | 100.0 | 0.0 | 0.0 | 100.0 |
| Mar-21 | WWF | 2967 | 8.8 | 15.3 | 11.4 | 100.0 | 0.0 | 0.0 | 100.0 |
| Apr-21 | WWF | 2875 | 7.1 | 13.7 | 10.1 | 100.0 | 0.0 | 0.0 | 100.0 |
| May-21 | WWF | 2966 | 6.3 | 11.1 | 8.8 | 99.9 | 0.1 | 0.0 | 100.0 |
| Jun-21 | WWF | 2873 | 5.8 | 9.9 | 7.9 | 100.0 | 0.0 | 0.0 | 100.0 |

**Table 21.** Gage 01475548 Dissolved Oxygen Minimum Criterion Summary Results by Month

| Month | Des. Use | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % non-attaining | % attaining |
|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | WWF | 2966 | 2.9 | 12.3 | 6.7 | 100.0 | 0.0 | 16.0 | 84.0 |
| Aug-20 | WWF | 2966 | 1.5 | 10.5 | 4.9 | 100.0 | 0.0 | 56.1 | 43.9 |
| Sep-20 | WWF | 2868 | 3.7 | 10.4 | 7.2 | 100.0 | 0.0 | 5.5 | 94.5 |
| Oct-20 | WWF | 2392 | 7.3 | 11.1 | 9.2 | 81.7 | 18.3 | 0.0 | 100.0 |
| Nov-20 | WWF | 2873 | 6.2 | 12.5 | 10.1 | 100.0 | 0.0 | 0.0 | 100.0 |
| Mar-21 | WWF | 2967 | 6.3 | 18.8 | 12.0 | 100.0 | 0.0 | 0.0 | 100.0 |
| Apr-21 | WWF | 2867 | 4.4 | 15.9 | 9.8 | 100.0 | 0.0 | 0.9 | 99.1 |
| May-21 | WWF | 2966 | 3.5 | 10.6 | 7.9 | 100.0 | 0.0 | 3.8 | 96.2 |
| Jun-21 | WWF | 2535 | 4.7 | 10.2 | 7.3 | 100.0 | 0.0 | 0.3 | 99.7 |

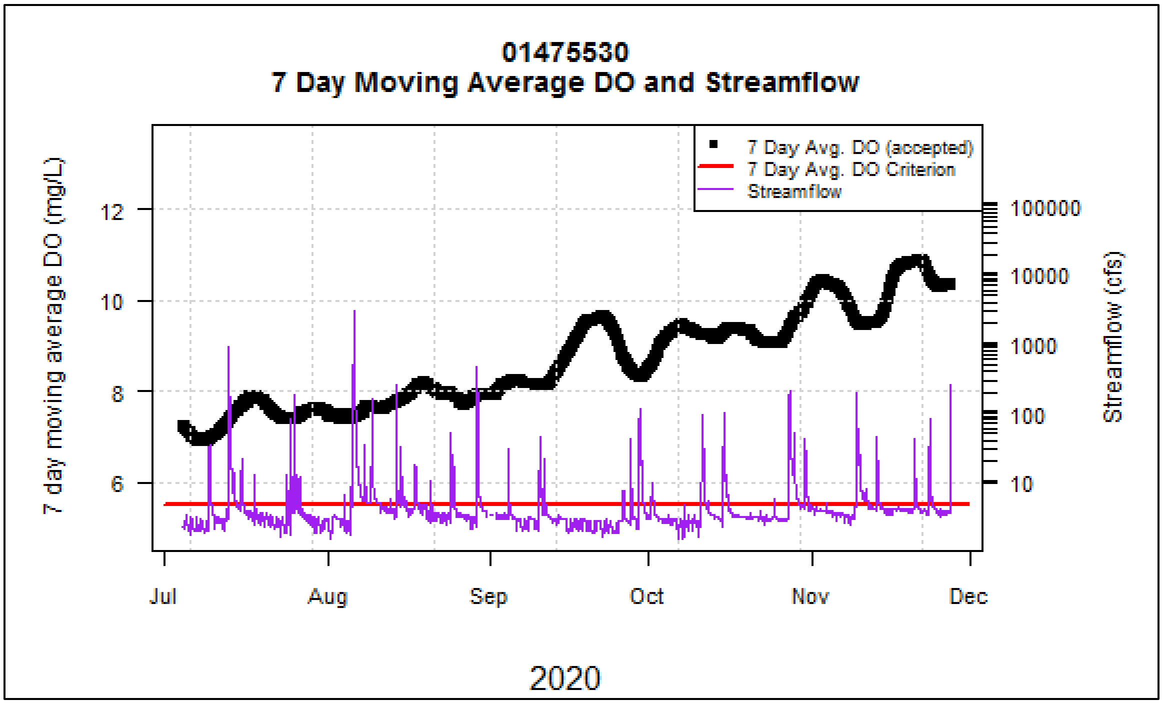



**Figure 15.** Gage 01475530, 7 Day Average Dissolved Oxygen and Streamflow, Jul-Dec 2020.

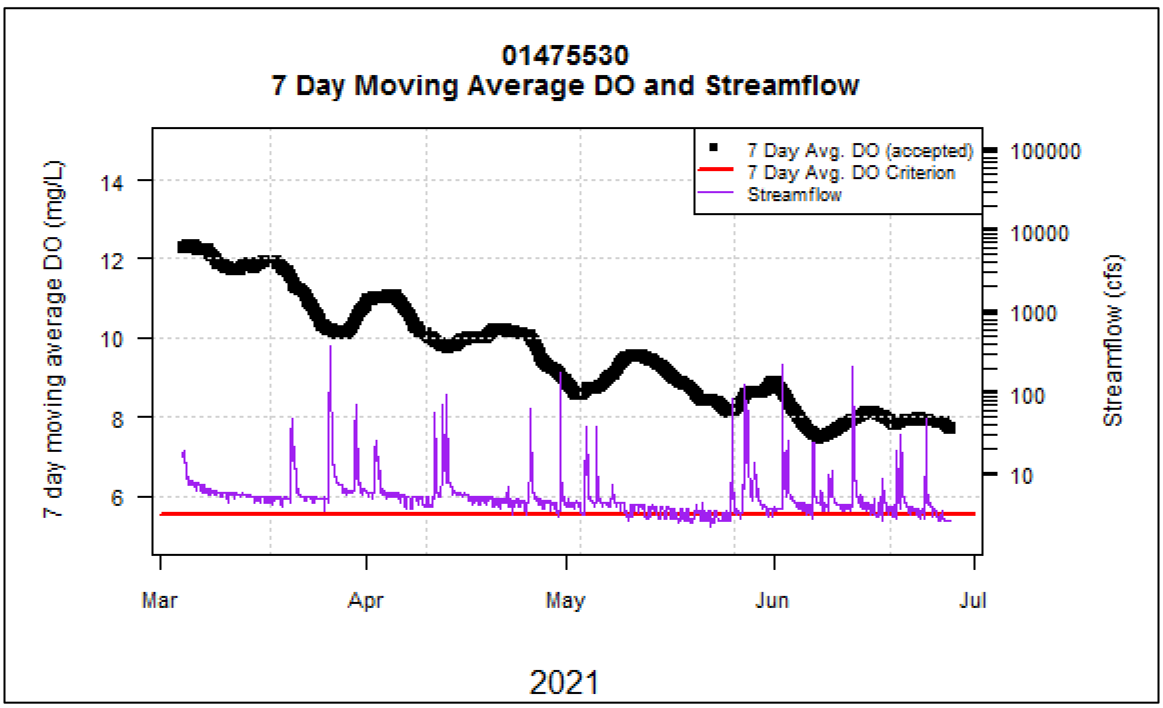



**Figure 16.** Gage 01475530, 7 Day Average Dissolved Oxygen and Streamflow, Mar-Jun 2021.

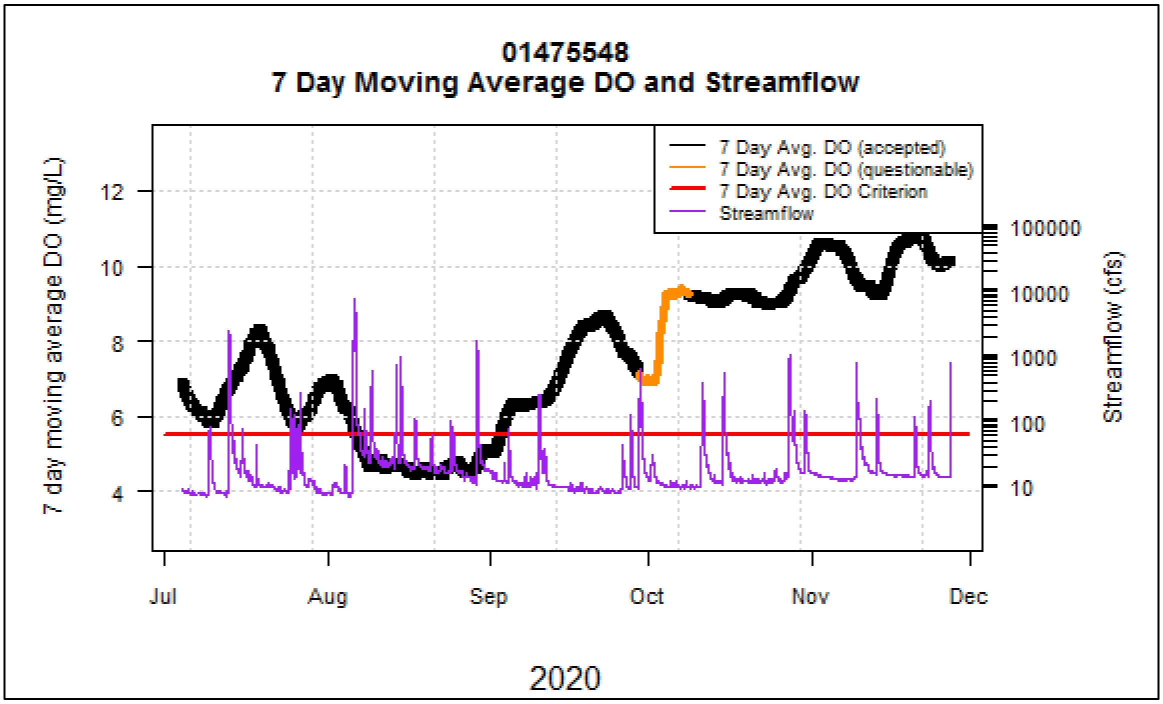



**Figure 17.** Gage 01475548, 7 Day Average Dissolved Oxygen and Streamflow, Jul-Dec 2020.

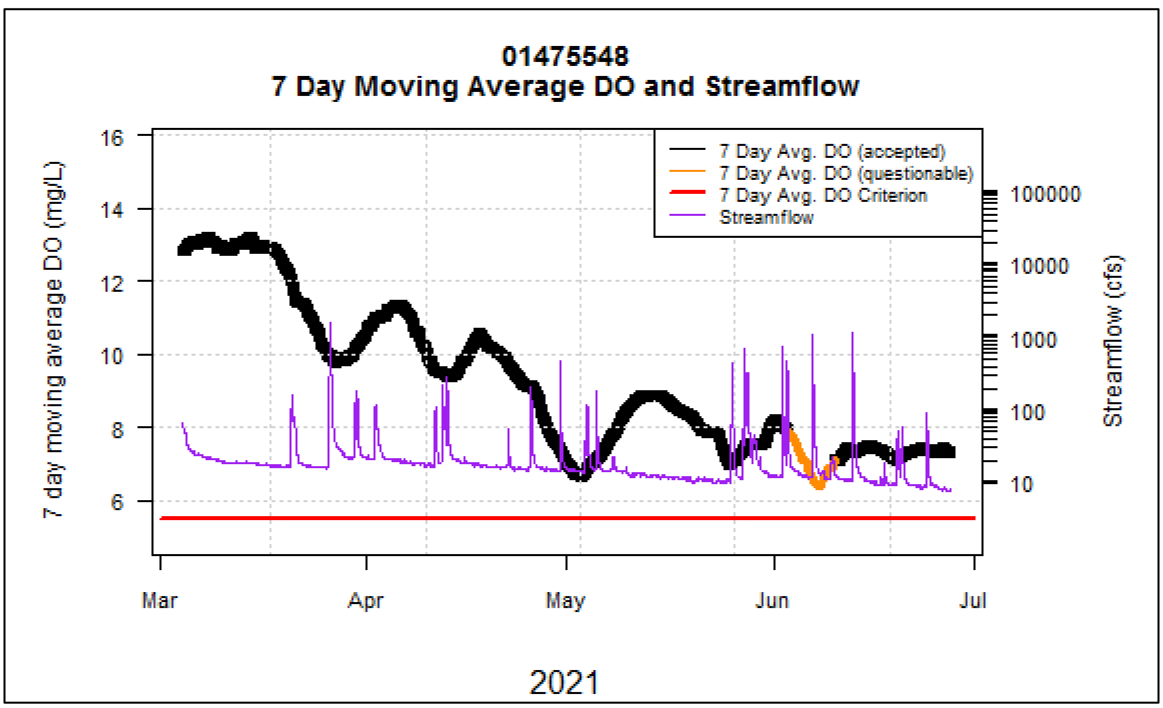



**Figure 18.** Gage 01475548, 7 Day Average Dissolved Oxygen and Streamflow, Mar-Jun 2021.

**Table 22.** Gage 01475530 pH Criteria Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % min non-attaining | % max non-attaining | % min attaining | % max attaining |
|---|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | 2960 | 6.5 | 8.4 | 7.3 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Aug-20 | 2727 | 6.0 | 8.2 | 7.4 | 92.7 | 7.3 | 0.0 | 0.0 | 100.0 | 100.0 |
| Sep-20 | 2859 | 7.2 | 8.5 | 7.6 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Oct-20 | 2969 | 7.2 | 8.3 | 7.5 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Nov-20 | 2874 | 7.1 | 7.7 | 7.4 | 99.9 | 0.1 | 0.0 | 0.0 | 100.0 | 100.0 |
| Mar-21 | 2967 | 7.2 | 9.2 | 7.7 | 100.0 | 0.0 | 0.0 | 0.4 | 100.0 | 99.6 |
| Apr-21 | 2559 | 6.8 | 9.0 | 7.6 | 89.0 | 11.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| May-21 | 2966 | 6.9 | 7.8 | 7.3 | 99.9 | 0.1 | 0.0 | 0.0 | 100.0 | 100.0 |
| Jun-21 | 2873 | 7.0 | 7.9 | 7.4 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |

**Table 23.** Gage 01475548 pH Criteria Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % min non-attaining | % max non-attaining | % min attaining | % max attaining |
|---|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | 2966 | 6.9 | 9.1 | 7.7 | 100.0 | 0.0 | 0.0 | 0.2 | 100.0 | 99.8 |
| Aug-20 | 2965 | 6.7 | 9.7 | 7.3 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Sep-20 | 2459 | 6.8 | 8.2 | 7.5 | 85.7 | 14.3 | 0.0 | 0.0 | 100.0 | 100.0 |
| Oct-20 | 2927 | 7.3 | 8.3 | 7.7 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Nov-20 | 2872 | 7.1 | 8.0 | 7.6 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Mar-21 | 2967 | 7.1 | 9.3 | 8.0 | 100.0 | 0.0 | 0.0 | 5.4 | 100.0 | 94.6 |
| Apr-21 | 2867 | 6.9 | 9.4 | 7.8 | 100.0 | 0.0 | 0.0 | 4.3 | 100.0 | 95.7 |
| May-21 | 2965 | 6.9 | 8.0 | 7.5 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Jun-21 | 2866 | 6.8 | 8.2 | 7.5 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |

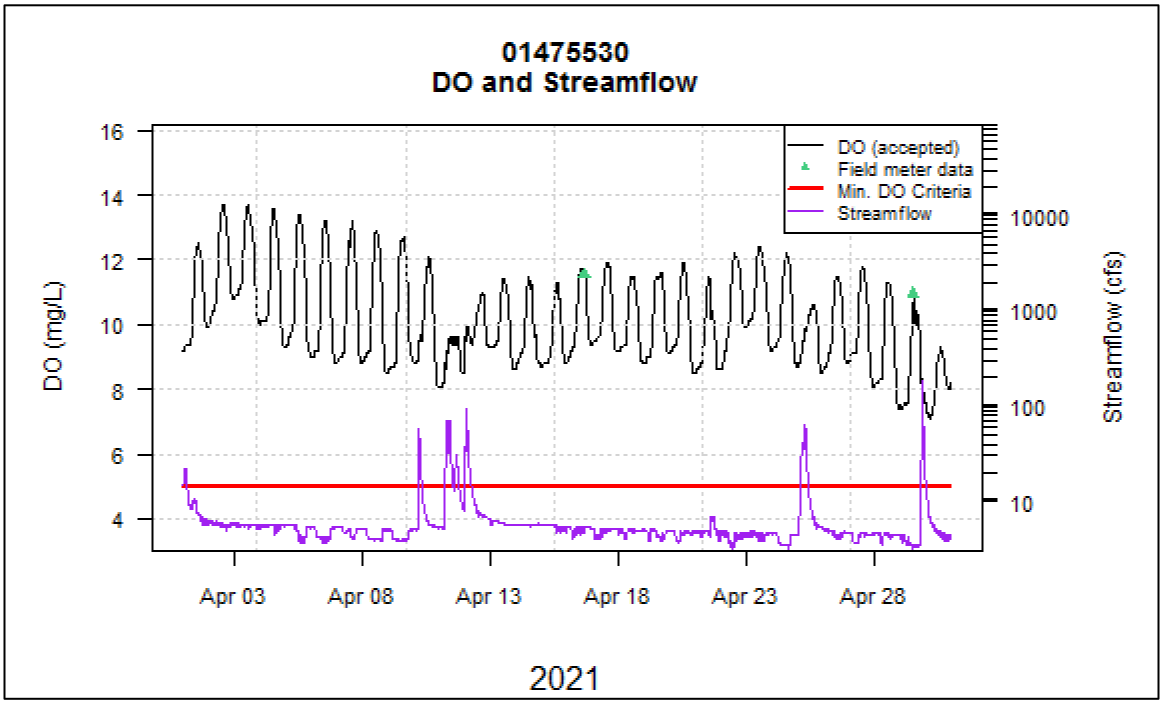



**Figure 19.** Gage 01475530, Dissolved Oxygen and Streamflow, April 2021.

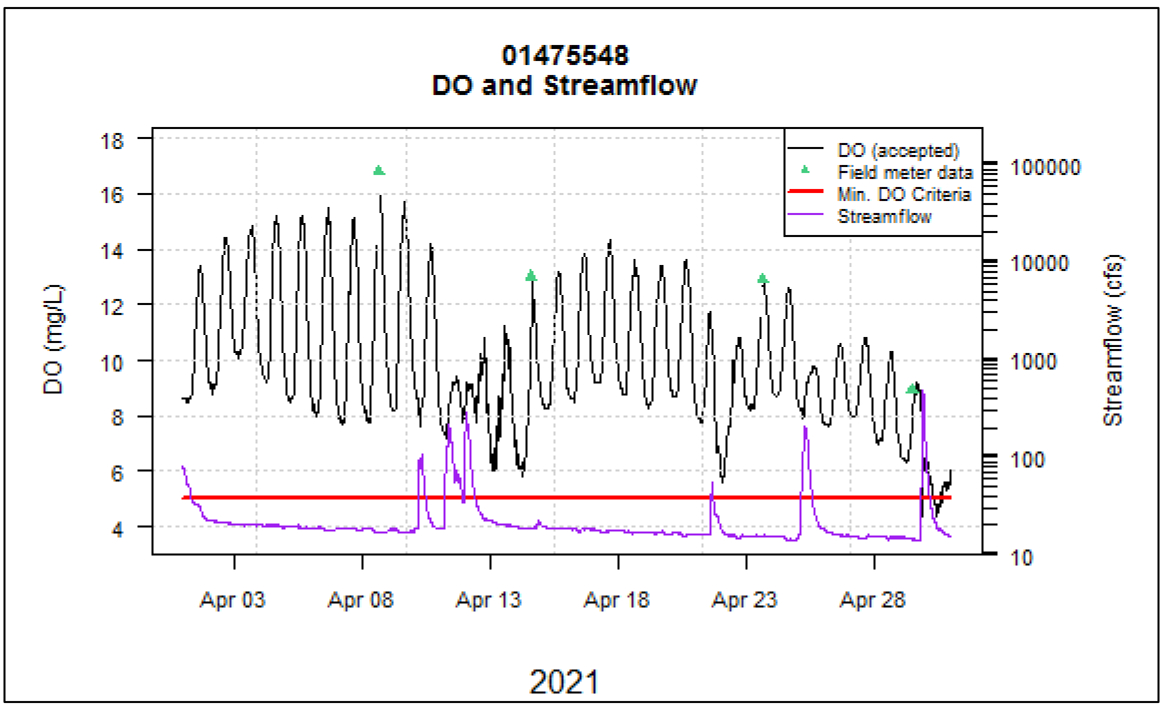



**Figure 20.** Gage 01475548, Dissolved Oxygen and Streamflow, April 2021.

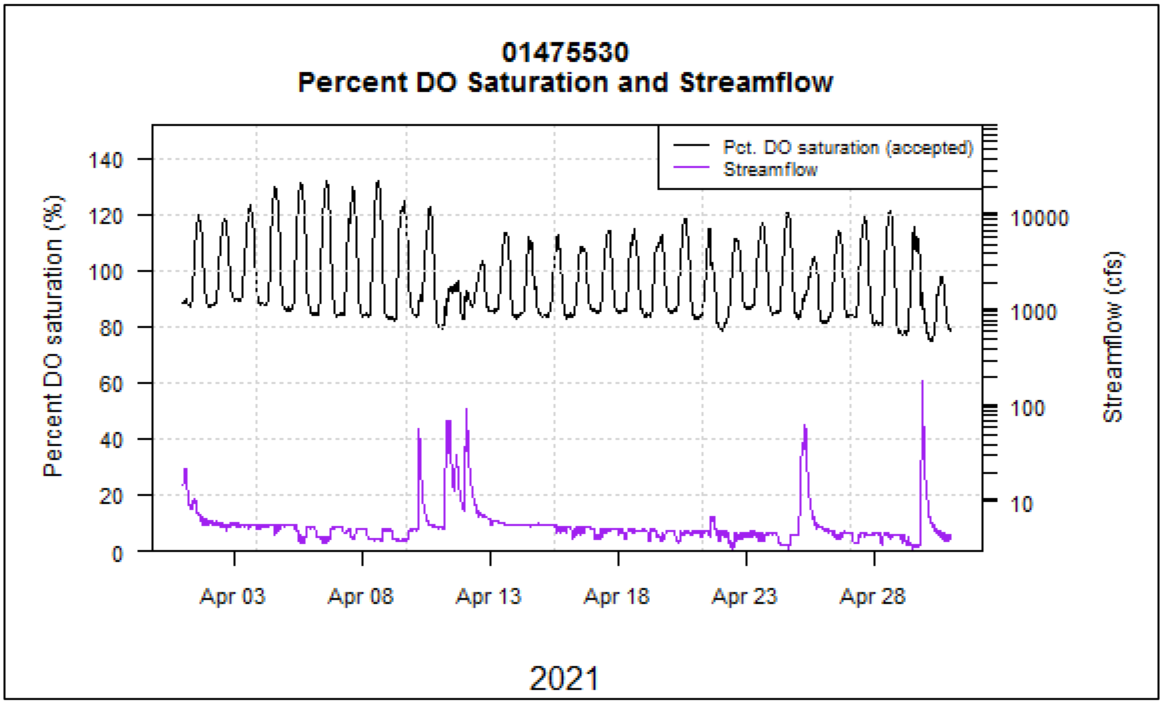



**Figure 21.** Gage 01475530, Percent DO Saturation and Streamflow, April 2021.

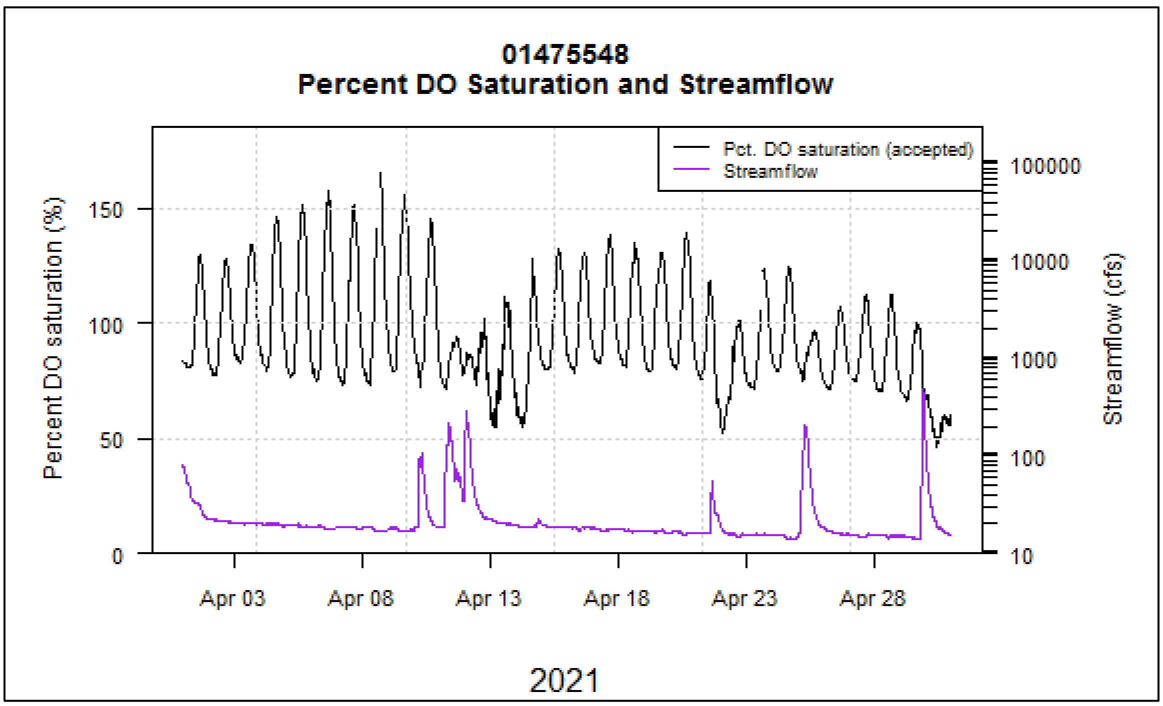



**Figure 22.** Gage 01475548, Percent DO Saturation and Streamflow, April 2021.

**Figure 23.** Gage 01475530, Cobbs Creek at Rte. 1, looking upstream

**Figure 24.** Gage 01475548, Cobbs Creek at Mt. Moriah Cemetery

### Specific Conductance

Specific conductance observations were similar to those observed in Tacony Creek (Tables 24-25). During a typical winter, road salt may have some impact on conductance at both gages. However, the typical pattern of stormwater lowering conductance levels in the stream is well-observed during the storms that occurred in April (Figures 25-26).

**Table 24.** Gage 01475530 Specific Conductance Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data |
|---|---|---|---|---|---|---|
| Jul-20 | 2956 | 60.0 | 670.0 | 564.6 | 100.0 | 0.0 |
| Aug-20 | 2950 | 44.0 | 615.0 | 503.2 | 100.0 | 0.0 |
| Sep-20 | 2688 | 124.0 | 668.0 | 561.7 | 94.1 | 5.9 |
| Oct-20 | 2969 | 92.0 | 655.0 | 539.9 | 100.0 | 0.0 |
| Nov-20 | 2874 | 90.0 | 625.0 | 528.4 | 100.0 | 0.0 |
| Mar-21 | 2967 | 126.0 | 733.0 | 632.7 | 100.0 | 0.0 |
| Apr-21 | 2875 | 138.0 | 674.0 | 580.5 | 100.0 | 0.0 |
| May-21 | 2966 | 127.0 | 665.0 | 574.4 | 100.0 | 0.0 |
| Jun-21 | 2873 | 112.0 | 622.0 | 536.9 | 100.0 | 0.0 |

**Table 25.** Gage 01475548 Specific Conductance Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data |
|---|---|---|---|---|---|---|
| Jul-20 | 2966 | 78.0 | 770.0 | 595.0 | 100.0 | 0.0 |
| Aug-20 | 2966 | 94.0 | 729.0 | 553.0 | 100.0 | 0.0 |
| Sep-20 | 2868 | 115.0 | 756.0 | 636.7 | 100.0 | 0.0 |
| Oct-20 | 2927 | 124.0 | 731.0 | 560.1 | 100.0 | 0.0 |
| Nov-20 | 2873 | 118.0 | 720.0 | 558.6 | 100.0 | 0.0 |
| Mar-21 | 2967 | 144.0 | 808.0 | 667.5 | 100.0 | 0.0 |
| Apr-21 | 2368 | 195.0 | 731.0 | 604.1 | 82.6 | 17.4 |
| May-21 | 2965 | 143.0 | 775.0 | 626.7 | 100.0 | 0.0 |
| Jun-21 | 2866 | 103.0 | 720.0 | 551.3 | 100.0 | 0.0 |

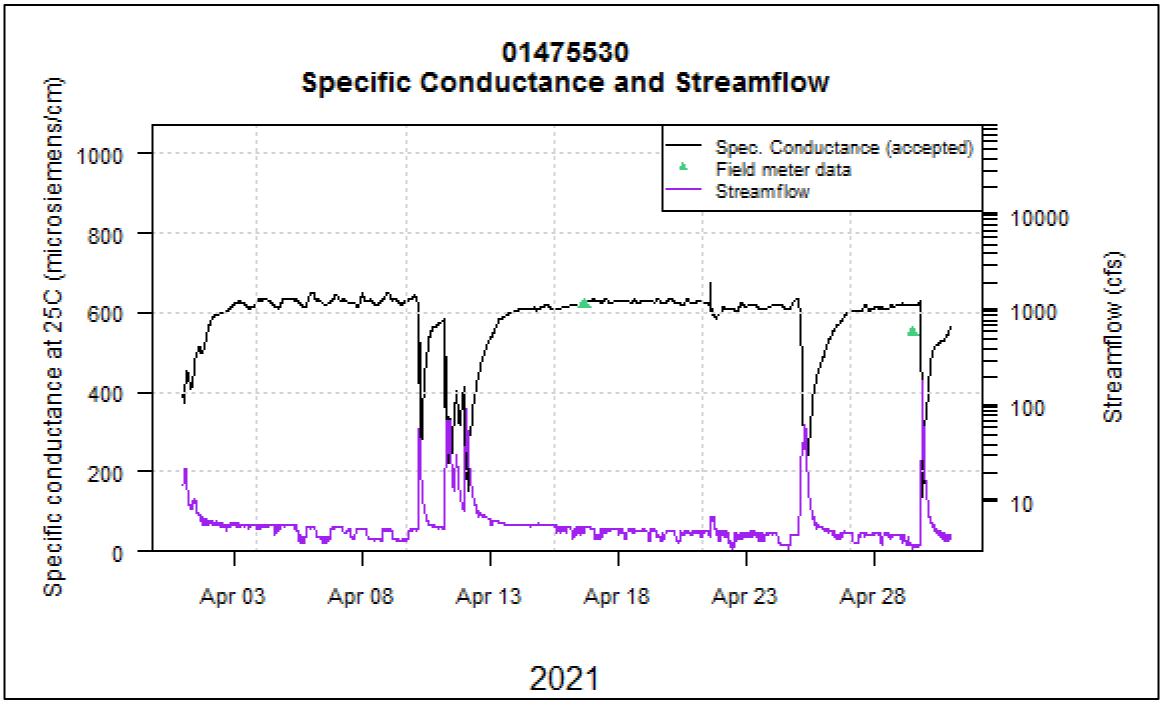



**Figure 25.** Gage 01475530, Specific Conductance and Streamflow, April 2021.

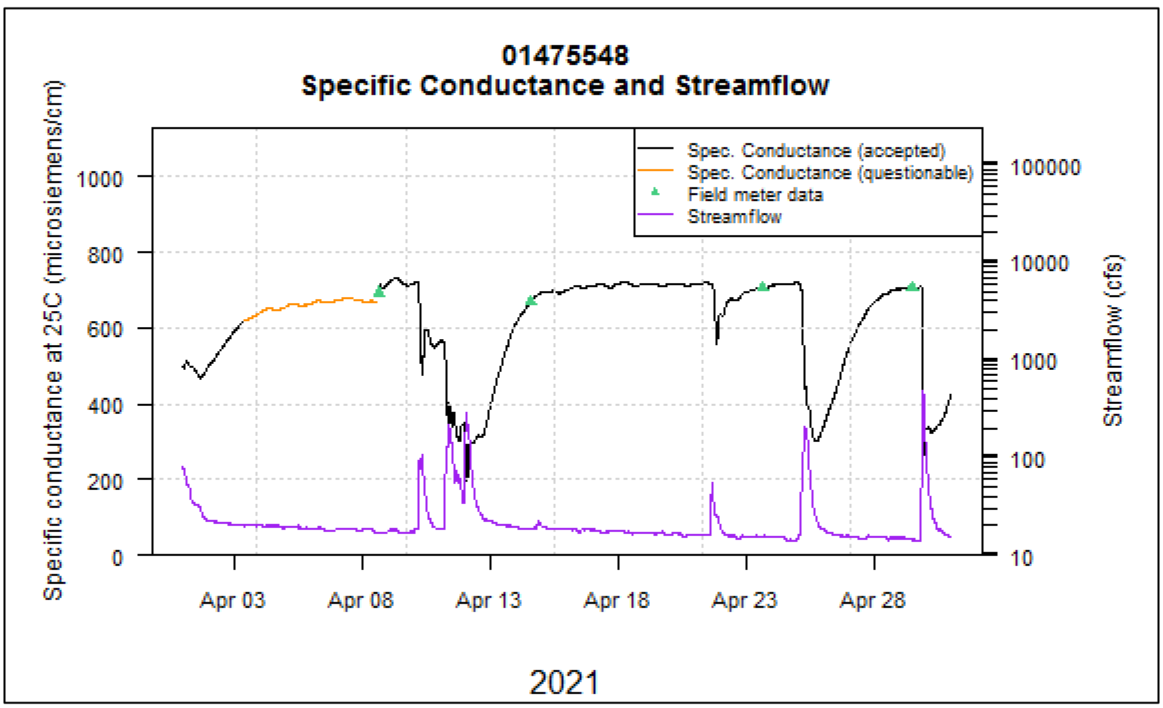



**Figure 26.** Gage 01475548, Specific Conductance and Streamflow, April 2021.

## Temperature

Both Cobbs Creek gages showed exceedances of temperature maximum criteria during the fall and spring seasons, when temperature criteria are more stringent (Tables 26-27).

**Table 26.** Gage 01475530 Temperature Summary Results by Maximum Criteria Period

| Designated Use | Date range start | Date range end | % exceedance | % attaining | % flagged data | % accepted data | Min | Max | Mean |
|---|---|---|---|---|---|---|---|---|---|
| WWF | 1-Jul | 31-Jul | 0 | 100 | 0 | 100 | 20.5 | 27.9 | 24 |
| WWF | 1-Aug | 15-Aug | 0 | 100 | 0 | 100 | 21.2 | 27.3 | 23.4 |
| WWF | 16-Aug | 31-Aug | 0 | 100 | 0 | 100 | 19.1 | 25.6 | 22 |
| WWF | 1-Sep | 15-Sep | 0 | 100 | 0 | 100 | 16.6 | 24.7 | 20.9 |
| WWF | 16-Sep | 30-Sep | 0 | 100 | 0 | 100 | 12.3 | 21.4 | 17 |
| WWF | 1-Oct | 15-Oct | 0 | 100 | 0 | 100 | 12.8 | 18.6 | 15.2 |
| WWF | 16-Oct | 31-Oct | 0 | 100 | 0 | 100 | 9.3 | 18.2 | 14.2 |
| WWF | 1-Nov | 15-Nov | 13.6 | 86.4 | 0 | 100 | 7.4 | 17.4 | 11.7 |
| WWF | 16-Nov | 30-Nov | 43.6 | 56.4 | 0 | 100 | 4.9 | 15 | 9.6 |
| WWF | 1-Mar | 31-Mar | 60.2 | 39.8 | 0 | 100 | 2.7 | 17.8 | 9.2 |
| WWF | 1-Apr | 15-Apr | 80.1 | 19.9 | 0 | 100 | 5.6 | 17.5 | 12.5 |
| WWF | 16-Apr | 30-Apr | 37.3 | 62.7 | 0 | 100 | 7.8 | 20.5 | 13.5 |
| WWF | 1-May | 15-May | 5.7 | 94.3 | 0 | 100 | 11.2 | 19.8 | 14.9 |
| WWF | 16-May | 31-May | 4.3 | 95.7 | 0 | 100 | 12.6 | 23.8 | 17.5 |
| WWF | 1-Jun | 15-Jun | 0 | 100 | 0 | 100 | 14.4 | 25.3 | 20.2 |
| WWF | 16-Jun | 30-Jun | 0 | 100 | 0 | 100 | 16.7 | 28 | 21.3 |

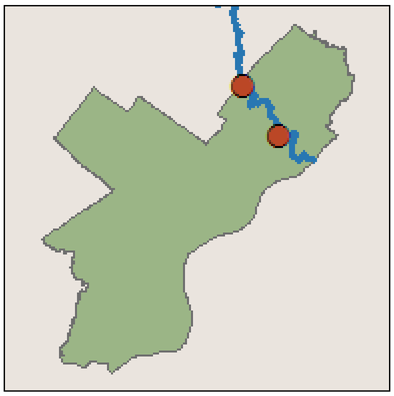
**Table 27.** Gage 01475548 Temperature Summary Results by Maximum Criteria Period

| Designated Use | Date range start | Date range end | % exceedance | % attaining | % flagged data | % accepted data | Min | Max | Mean |
|---|---|---|---|---|---|---|---|---|---|
| WWF | 1-Jul | 31-Jul | 0 | 100 | 0 | 100 | 22.3 | 28.8 | 25.4 |
| WWF | 1-Aug | 15-Aug | 0 | 100 | 0 | 100 | 22.8 | 28.5 | 24.6 |
| WWF | 16-Aug | 31-Aug | 0 | 100 | 0 | 100 | 20.6 | 26.3 | 23.1 |
| WWF | 1-Sep | 15-Sep | 0 | 100 | 0 | 100 | 17.6 | 25.3 | 22 |
| WWF | 16-Sep | 30-Sep | 0 | 100 | 0 | 100 | 13.1 | 22.3 | 17.6 |
| WWF | 1-Oct | 15-Oct | 0 | 100 | 0 | 100 | 13.5 | 19.2 | 15.7 |
| WWF | 16-Oct | 31-Oct | 0 | 100 | 0 | 100 | 9.4 | 18.6 | 14.6 |
| WWF | 1-Nov | 15-Nov | 14.1 | 85.9 | 0 | 100 | 7.6 | 17.8 | 11.7 |
| WWF | 16-Nov | 30-Nov | 39 | 61 | 0 | 100 | 4.8 | 14.9 | 9.6 |
| WWF | 1-Mar | 31-Mar | 59.5 | 40.5 | 0 | 100 | 3.5 | 17.5 | 9.3 |
| WWF | 1-Apr | 15-Apr | 81.8 | 18.2 | 0 | 100 | 6.1 | 17.4 | 13 |
| WWF | 16-Apr | 30-Apr | 42.8 | 57.2 | 0 | 100 | 8.6 | 20.5 | 14.1 |
| WWF | 1-May | 15-May | 11.8 | 88.2 | 0 | 100 | 12.6 | 19.8 | 15.7 |
| WWF | 16-May | 31-May | 10.6 | 89.4 | 0 | 100 | 12.8 | 24.5 | 18.5 |
| WWF | 1-Jun | 15-Jun | 0 | 100 | 0 | 100 | 15.2 | 26.9 | 21.5 |
| WWF | 16-Jun | 30-Jun | 0 | 100 | 0 | 100 | 18.5 | 29 | 22.6 |

## Gages in Separate Sewer System Watersheds

Gages in the Pennypack, Wissahickon and Poquessing watersheds are situated in the separate sewer system areas of Philadelphia. Although these sites are not affected by combined sewer overflows, discharge of untreated stormwater runoff from stormwater outfalls can negatively affect water quality.

### Pennypack Creek (Gages 01467042 and 01467048)



#### Dissolved oxygen and pH

Both the upstream (01467042) and downstream (01467048) gages of Pennypack Creek showed pronounced diel fluctuations in dissolved oxygen and pH as a result of algal activity. These patterns are most evident during dry weather periods, when algal growth is able to excel because of abundant sunshine and a lack of storm events that might otherwise scour the algal population.

At both upstream and downstream Pennypack Creek gages, periods of dry weather in warm months are conducive to excessive algal growth. During these periods, algal populations seemed to flourish, with large daily DO amplitudes during April (Figures 31-32).

In April, maximum daily pH fluctuations of approximately 1.25 units were observed (Figures 33-34). Maximum pH criteria exceedance occurred at both gages in the spring. It would be reasonable to conclude that if not for periodic interruptions of algal activity due to rainfall, those extreme fluctuations and chronic pH criteria exceedance would likely occur through the entire season.

Algal communities in the area of both gages recover quickly after storm events, as seen in Figures 33-34. Prior to a series of small storms occurring in March 2021, both DO and pH showed the typical pronounced fluctuations indicative of strong algal activity. This pattern diminished with the storms, when much of the algae was likely scoured away and overcast conditions likely inhibited further growth, as indicated by the PAR data at 01467048 for March 2021 (Figure 35). However, within 2-3 days of the conclusion of the rainfall and the return of sunny conditions, fluctuations of DO and pH resumed, indicative of high algal density. This not only demonstrates the resilience of the algal population in this ecosystem, but also a likely abundance of nutrients that allows regrowth to occur so quickly.

**Table 28.** Gage 01467042 Dissolved Oxygen Minimum Criterion Summary Results by Month

| Month | Des. Use | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % non-attaining | % attaining |
|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | TSF | 2969 | 5.0 | 11.6 | 7.4 | 100.0 | 0.0 | 0.0 | 100.0 |
| Aug-20 | TSF | 2966 | 5.2 | 11.1 | 7.7 | 100.0 | 0.0 | 0.0 | 100.0 |
| Sep-20 | TSF | 2875 | 6.2 | 12.5 | 8.6 | 100.0 | 0.0 | 0.0 | 100.0 |
| Oct-20 | TSF | 2969 | 7.3 | 12.2 | 9.1 | 100.0 | 0.0 | 0.0 | 100.0 |
| Nov-20 | TSF | 2877 | 7.9 | 13.3 | 10.2 | 100.0 | 0.0 | 0.0 | 100.0 |
| Mar-21 | TSF | 2649 | 8.3 | 17.5 | 11.7 | 100.0 | 0.0 | 0.0 | 100.0 |
| Apr-21 | TSF | 2873 | 5.1 | 16.1 | 9.9 | 100.0 | 0.0 | 0.0 | 100.0 |
| May-21 | TSF | 2640 | 4.5 | 10.8 | 8.5 | 88.8 | 11.2 | 0.5 | 99.5 |
| Jun-21 | TSF | 2876 | 4.6 | 10.2 | 7.7 | 100.0 | 0.0 | 0.2 | 99.8 |

**Table 29.** Gage 01467048 Dissolved Oxygen Minimum Criterion Summary Results by Month

| Month | Des. Use | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % non-attaining | % attaining |
|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | TSF | 2969 | 4.8 | 13.5 | 7.9 | 100.0 | 0.0 | 0.1 | 99.9 |
| Aug-20 | TSF | 2970 | 5.9 | 11.7 | 7.9 | 100.0 | 0.0 | 0.0 | 100.0 |
| Sep-20 | TSF | 2869 | 6.4 | 13.7 | 8.9 | 99.9 | 0.1 | 0.0 | 100.0 |
| Oct-20 | TSF | 2971 | 7.8 | 13.8 | 9.6 | 100.0 | 0.0 | 0.0 | 100.0 |
| Nov-20 | TSF | 2875 | 8.5 | 13.2 | 10.7 | 100.0 | 0.0 | 0.0 | 100.0 |
| Mar-21 | TSF | 2863 | 9.4 | 16.8 | 12.1 | 100.0 | 0.0 | 0.0 | 100.0 |
| Apr-21 | TSF | 2873 | 6.4 | 16.9 | 10.6 | 100.0 | 0.0 | 0.0 | 100.0 |
| May-21 | TSF | 2972 | 5.6 | 11.2 | 8.6 | 100.0 | 0.0 | 0.0 | 100.0 |
| Jun-21 | TSF | 2872 | 5.8 | 11.3 | 8.1 | 99.9 | 0.1 | 0.0 | 100.0 |

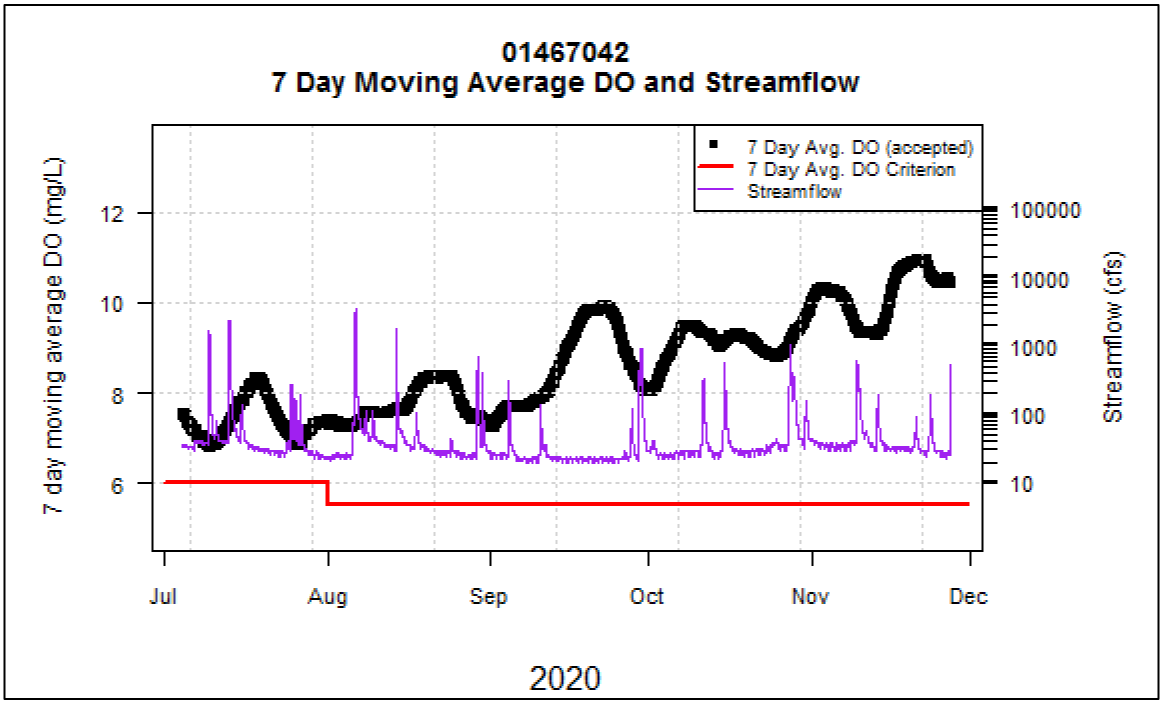



**Figure 27.** Gage 01467042, 7 Day Average Dissolved Oxygen and Streamflow, Jul-Dec 2020.

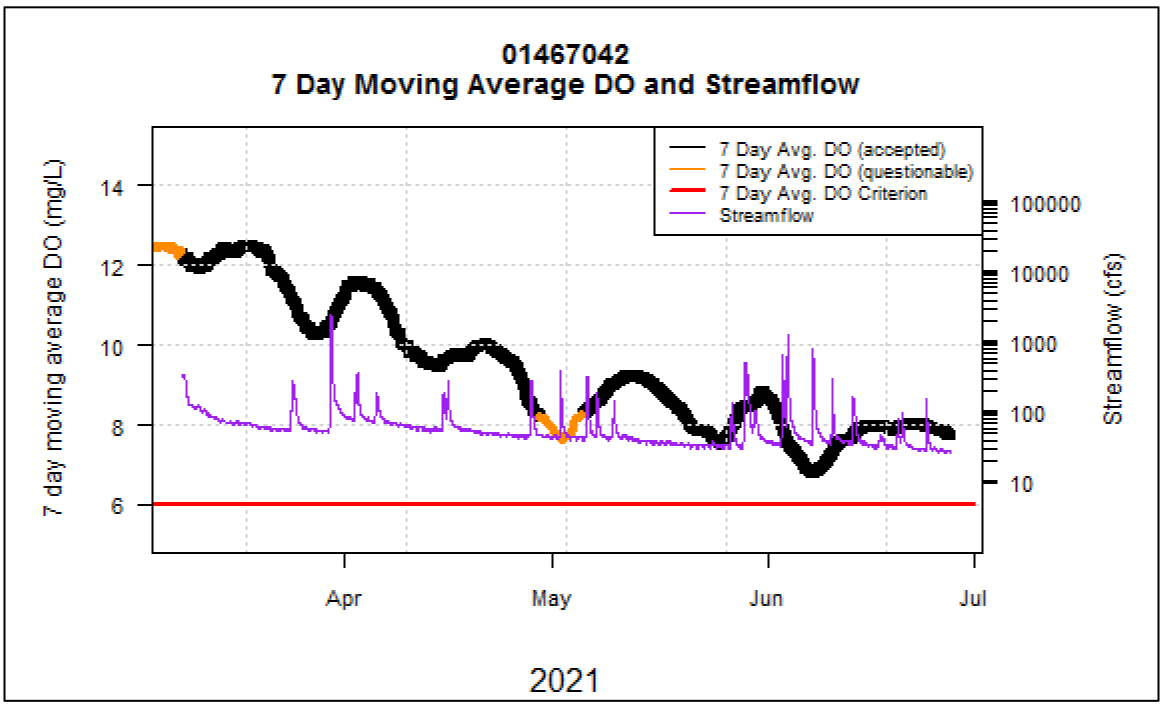



**Figure 28.** Gage 01467042, 7 Day Average Dissolved Oxygen and Streamflow, Mar-Jun 2021.

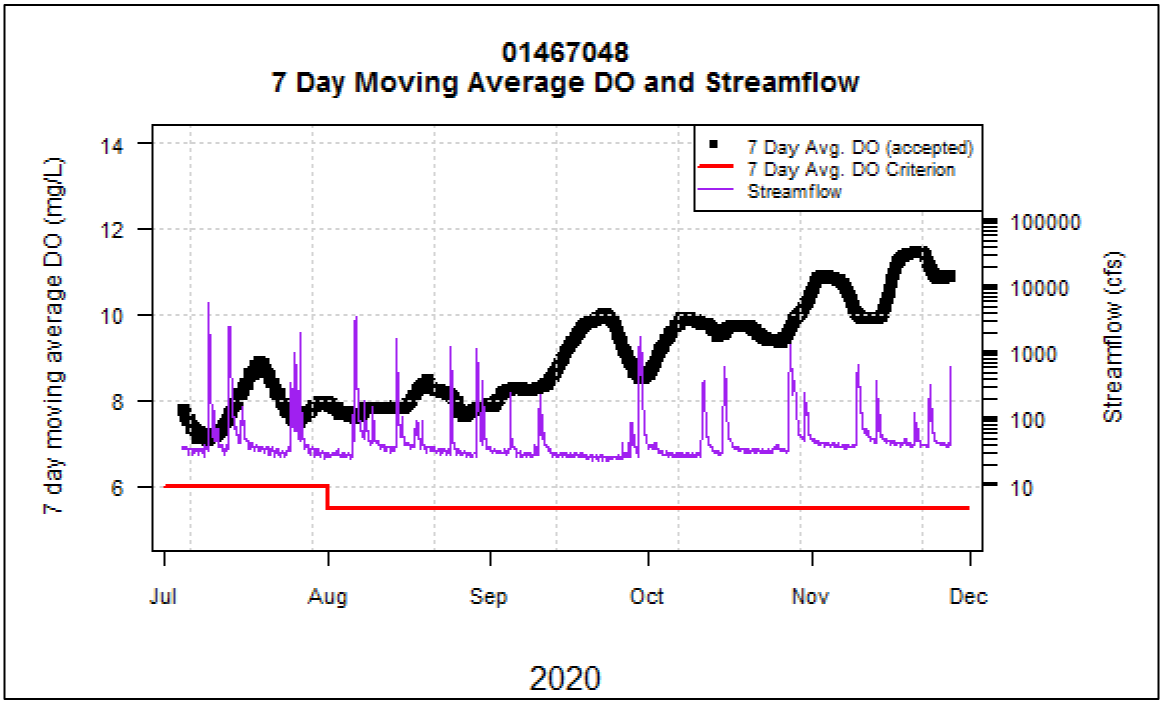



**Figure 29.** Gage 01467048, 7 Day Average Dissolved Oxygen and Streamflow, Jul-Dec 2020.

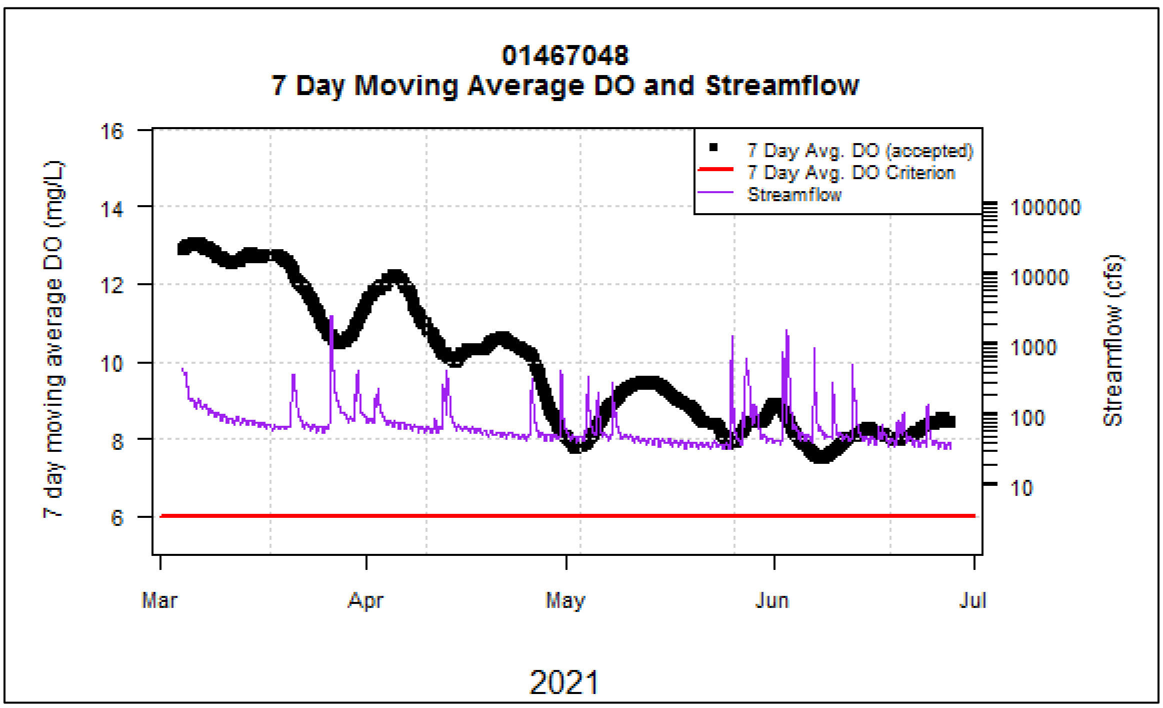



**Figure 30.** Gage 01467048, 7 Day Average Dissolved Oxygen and Streamflow, Mar-Jun 2021.

**Table 30.** Gage 01467042 pH Criteria Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % min non-attaining | % max non-attaining | % min attaining | % max attaining |
|---|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | 2969 | 7.1 | 8.9 | 7.8 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Aug-20 | 2963 | 6.9 | 8.4 | 7.6 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Sep-20 | 2874 | 7.0 | 8.6 | 7.7 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Oct-20 | 2970 | 7.1 | 8.1 | 7.5 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Nov-20 | 2877 | 6.9 | 7.9 | 7.5 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Mar-21 | 2652 | 6.9 | 9.2 | 7.8 | 100.0 | 0.0 | 0.0 | 0.7 | 100.0 | 99.3 |
| Apr-21 | 2873 | 6.9 | 8.9 | 7.5 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| May-21 | 2893 | 7.0 | 7.7 | 7.3 | 97.3 | 2.7 | 0.0 | 0.0 | 100.0 | 100.0 |
| Jun-21 | 2873 | 7.0 | 8.0 | 7.4 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |

**Table 31.** Gage 01467048 pH Criteria Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % min non-attaining | % max non-attaining | % min attaining | % max attaining |
|---|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | 2968 | 6.8 | 9.0 | 7.6 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Aug-20 | 2968 | 6.7 | 8.6 | 7.6 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Sep-20 | 2870 | 6.1 | 8.7 | 7.6 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Oct-20 | 2970 | 7.1 | 8.6 | 7.5 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Nov-20 | 2874 | 6.8 | 7.8 | 7.4 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Mar-21 | 2864 | 7.0 | 9.1 | 7.9 | 100.0 | 0.0 | 0.0 | 0.2 | 100.0 | 99.8 |
| Apr-21 | 2873 | 7.1 | 9.2 | 7.8 | 100.0 | 0.0 | 0.0 | 1.5 | 100.0 | 98.5 |
| May-21 | 2971 | 6.8 | 8.1 | 7.5 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Jun-21 | 2872 | 7.1 | 8.7 | 7.6 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |

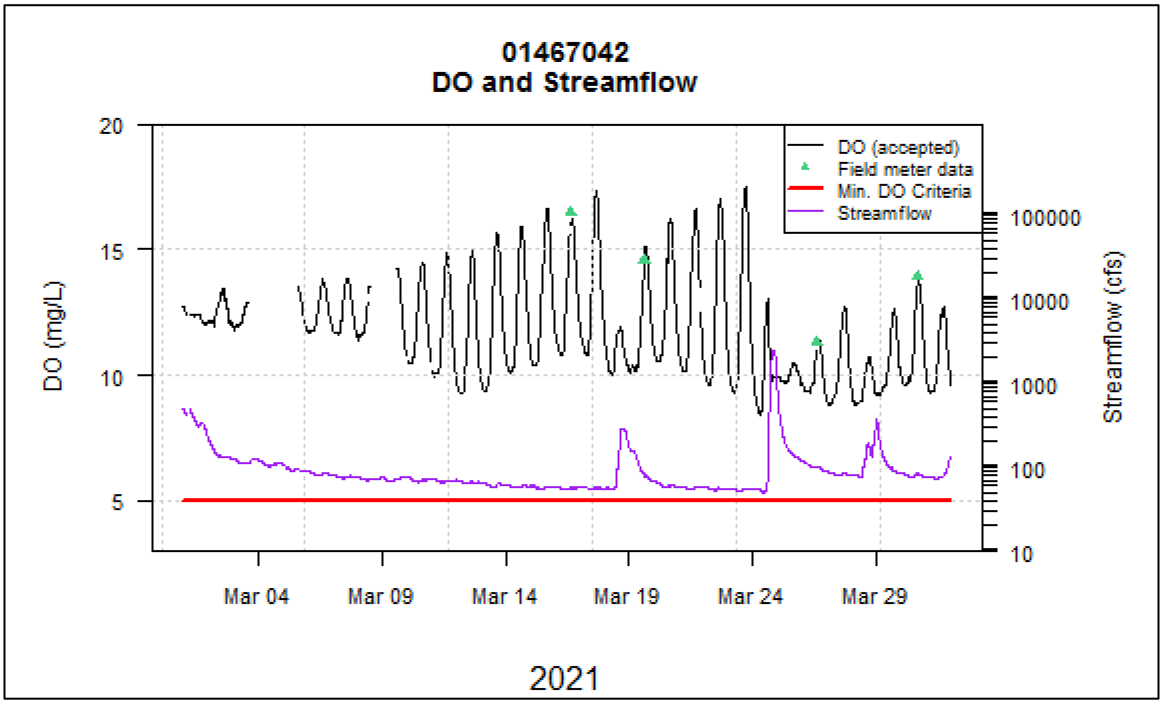



**Figure 31.** Gage 01467042, Dissolved Oxygen and Streamflow, March 2021.

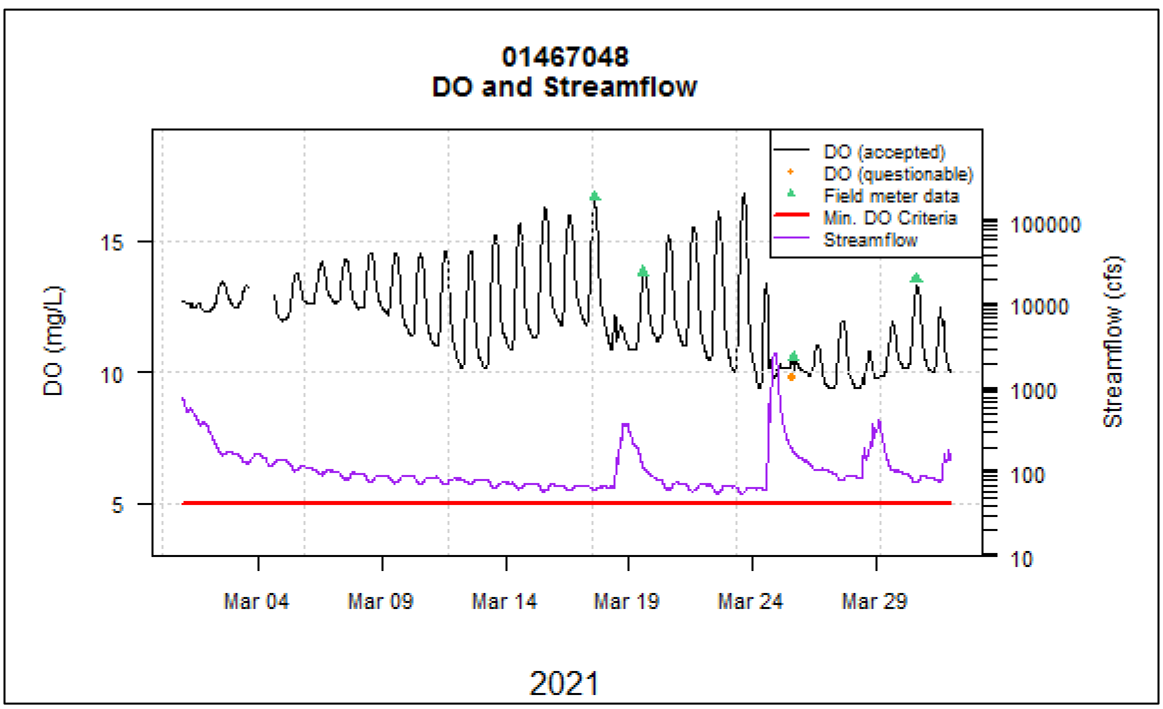



**Figure 32.** Gage 01467048, Dissolved Oxygen and Streamflow, March 2021.

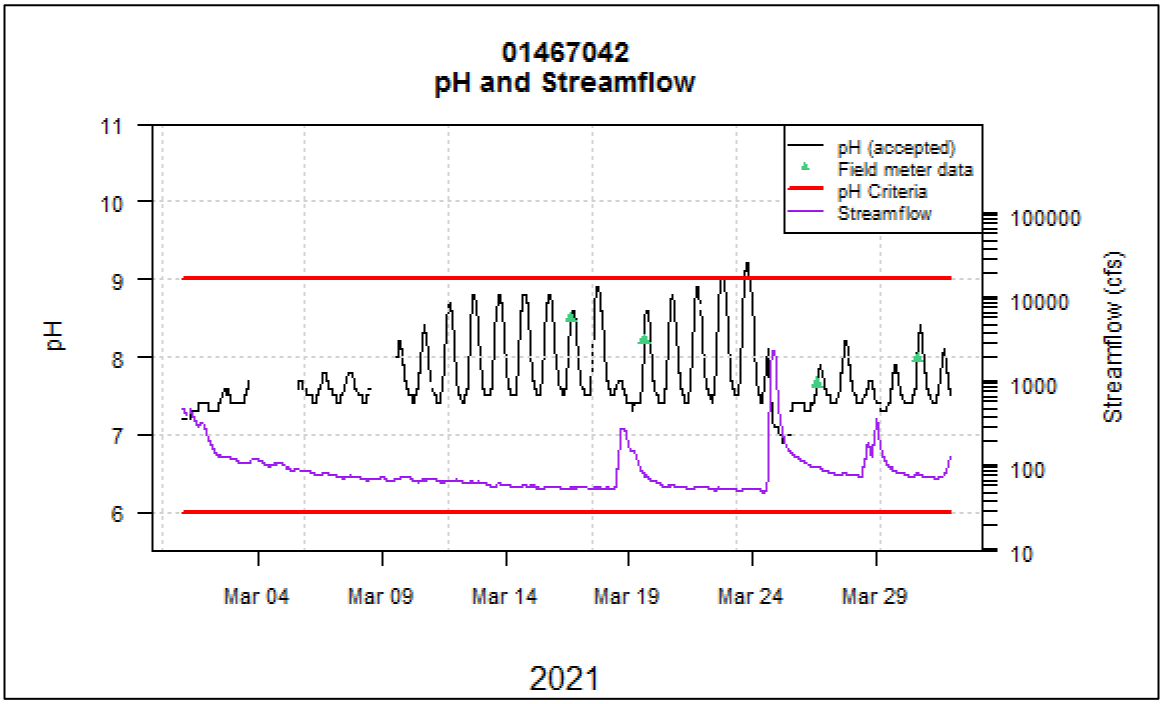



**Figure 33.** Gage 01467042, pH and Streamflow, March 2021.

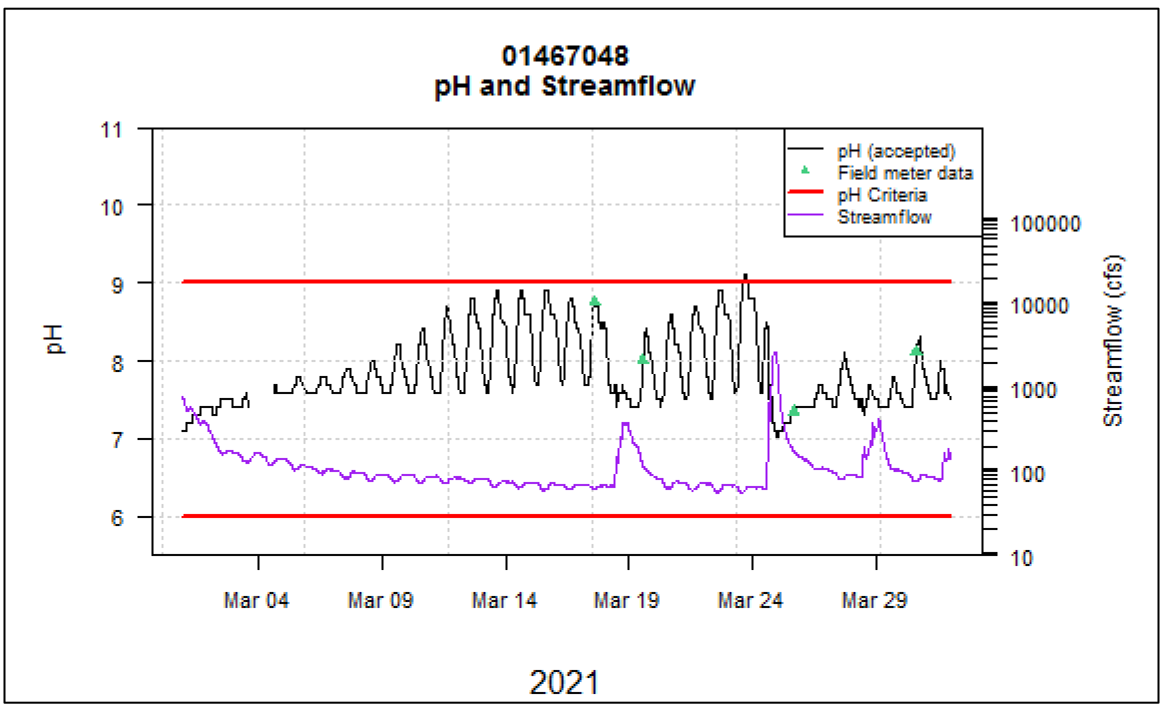



**Figure 34.** Gage 01467048, pH and Streamflow, March 2021.

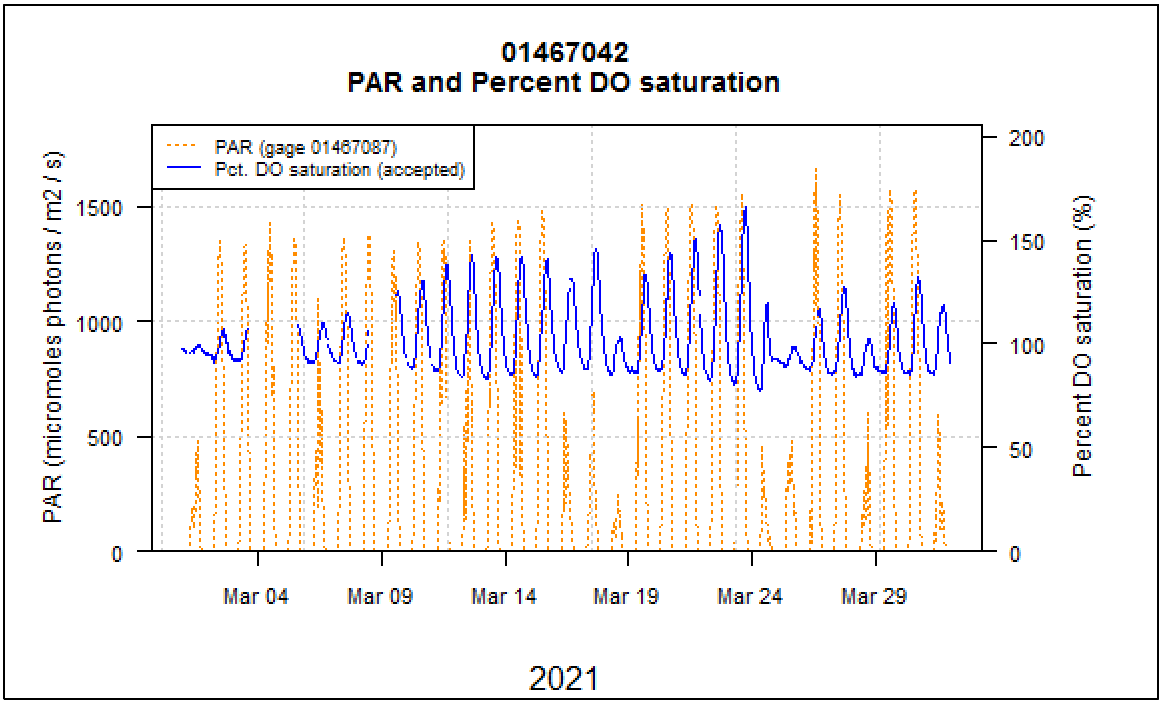



**Figure 35.** Gage 01467048, PAR and Percent Dissolved Oxygen Saturation, March 2021.

**Figure 36.** Gage 01467042, Pennypack Creek at Pine Rd., looking upstream

**Figure 37.** Gage 01467048, Pennypack Creek at Lower Rhawn St. Bridge, looking upstream

### Turbidity

Turbidity data at the Pennypack Creek gages tend to reflect streamflow conditions. When there is high flow (*i.e.*, during and after storms), increases in turbidity are common and expected, as sediment in the creek bed is resuspended and particles present in runoff enter the stream (Figure 38). The downstream gage generally exhibited higher turbidity values throughout the year (Tables 32-33).

Flagged data are often due to periods during the month when sondes report high turbidity values that were corrected after the instrumentation was cleaned. After a storm, optical sensors such as those used to detect dissolved oxygen and turbidity can return inaccurate readings due to the sonde pipe becoming clogged with sediment and other debris. When turbidity readings come down after a cleaning, it is typical procedure to flag data back to the end of a storm, when the sonde pipe likely became clogged and did not reflect actual conditions in the stream.

**Table 32.** Gage 01467042, Turbidity Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % above max. guideline | % below max. guideline |
|---|---|---|---|---|---|---|---|---|
| Jul-20 | 2757 | 0.1 | 369 | 7 | 92.9 | 7.1 | 23.7 | 76.3 |
| Aug-20 | 2880 | 0.1 | 232 | 4.5 | 100 | 0 | 20.9 | 79.1 |
| Sep-20 | 2871 | 0.3 | 77.2 | 2 | 100 | 0 | 6.8 | 93.2 |
| Oct-20 | 2434 | 0.4 | 86.7 | 2.4 | 82 | 18 | 16.3 | 83.7 |
| Nov-20 | 2879 | 0.3 | 197 | 3.1 | 100 | 0 | 11.1 | 88.9 |
| Mar-21 | 2649 | 0.3 | 1070 | 7 | 99 | 1 | 28.8 | 71.2 |
| Apr-21 | 2870 | 0.3 | 80.3 | 2.2 | 100 | 0 | 13.7 | 86.3 |
| May-21 | 2973 | 0.4 | 98.3 | 3.3 | 100 | 0 | 23.6 | 76.4 |
| Jun-21 | 2531 | 0.8 | 386 | 7.4 | 88 | 12 | 23.7 | 76.3 |

**Table 33.** Gage 01467048, Turbidity Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % above max. guideline | % below max. guideline |
|---|---|---|---|---|---|---|---|---|
| Jul-20 | NA | NA | NA | NA | NA | NA | NA | NA |
| Aug-20 | NA | NA | NA | NA | NA | NA | NA | NA |
| Sep-20 | NA | NA | NA | NA | NA | NA | NA | NA |
| Oct-20 | 1821 | 0.4 | 304.9 | 5.2 | 100 | 0 | 33.7 | 66.3 |
| Nov-20 | 2876 | 0.7 | 200 | 5.4 | 100 | 0 | 28.2 | 71.8 |
| Mar-21 | 2863 | 0.3 | 416 | 7.0 | 100 | 0 | 34.7 | 65.3 |
| Apr-21 | 2874 | 0.3 | 170 | 3. | 100 | 0 | 16.4 | 83.6 |
| May-21 | 2972 | 0.3 | 350 | 5.0 | 100 | 0 | 32.1 | 67.9 |
| Jun-21 | 2874 | 0.5 | 329 | 7.8 | 100 | 0 | 36.5 | 63.5 |

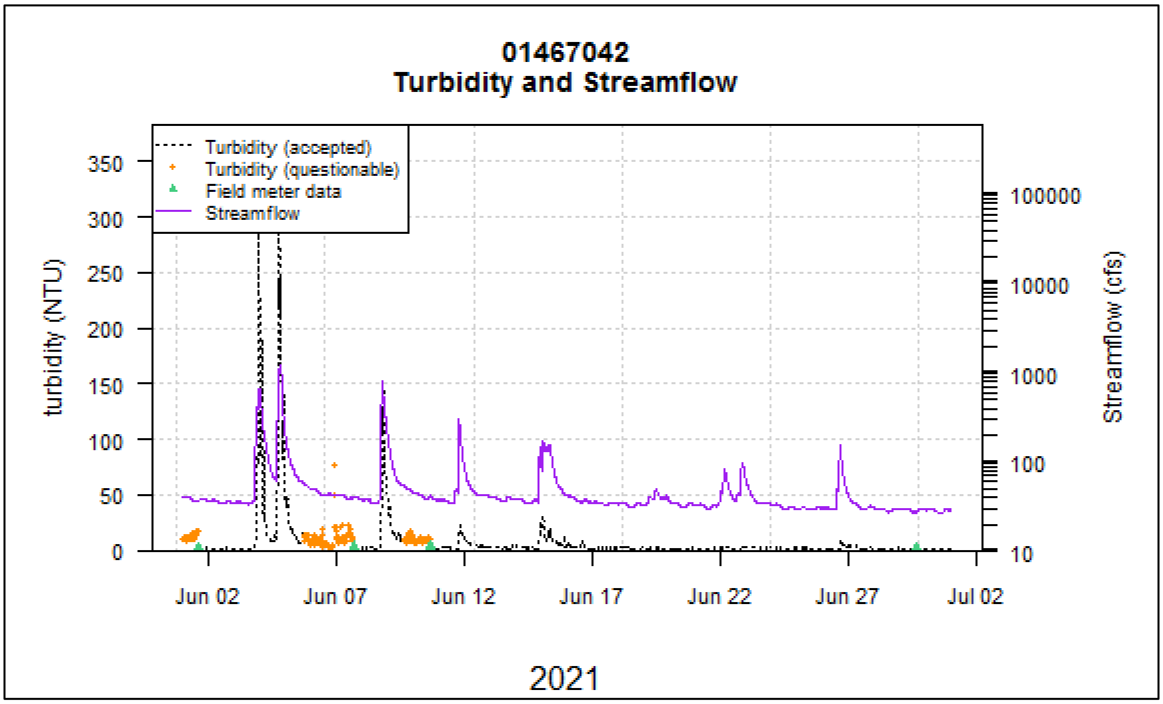



**Figure 38.** Gage 01467042, Turbidity and Streamflow, June 2021.

## Specific Conductance

Specific conductance data were similar to other Philadelphia area streams. Elevated mean and maximum conductance values at both gages in November may be evidence of the effects of stormwater runoff and snowmelt containing road salt.

**Table 34.** Gage 01467042 Specific Conductance Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data |
|---|---|---|---|---|---|---|
| Jul-20 | 2967 | 123.0 | 752.0 | 575.2 | 100.0 | 0.0 |
| Aug-20 | 2893 | 108.0 | 755.0 | 567.4 | 100.0 | 0.0 |
| Sep-20 | 2875 | 156.0 | 850.0 | 656.7 | 100.0 | 0.0 |
| Oct-20 | 2967 | 163.0 | 736.0 | 573.2 | 100.0 | 0.0 |
| Nov-20 | 2877 | 125.0 | 663.0 | 549.5 | 100.0 | 0.0 |
| Mar-21 | 2650 | 198.0 | 784.0 | 670.2 | 100.0 | 0.0 |
| Apr-21 | 2867 | 391.0 | 707.0 | 637.7 | 100.0 | 0.0 |
| May-21 | 2971 | 250.0 | 755.0 | 625.3 | 100.0 | 0.0 |
| Jun-21 | 2871 | 188.0 | 741.0 | 568.5 | 100.0 | 0.0 |

**Table 35.** Gage 01467048 Specific Conductance Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data |
|---|---|---|---|---|---|---|
| Jul-20 | 2964 | 61.0 | 714.0 | 516.0 | 100.0 | 0.0 |
| Aug-20 | 2964 | 87.0 | 724.0 | 509.7 | 100.0 | 0.0 |
| Sep-20 | 2868 | 116.0 | 771.0 | 608.8 | 100.0 | 0.0 |
| Oct-20 | 2968 | 161.0 | 703.0 | 513.1 | 100.0 | 0.0 |
| Nov-20 | 2870 | 142.0 | 664.0 | 517.6 | 100.0 | 0.0 |
| Mar-21 | 2861 | 187.0 | 834.0 | 664.9 | 100.0 | 0.0 |
| Apr-21 | 2871 | 386.0 | 683.0 | 622.5 | 100.0 | 0.0 |
| May-21 | 2970 | 137.0 | 764.0 | 597.5 | 100.0 | 0.0 |
| Jun-21 | 2870 | 101.0 | 700.0 | 535.8 | 100.0 | 0.0 |

## Temperature

Temperature data showed variable attainment of maximum temperature criteria (Tables 36-37). Spring and early summer months are always subject to major air temperature fluctuations, and reliably predicting average stream temperatures during these periods is difficult at best. Maximum criteria for the summer months, for example, do not take into account natural summer temperature peaks. Above normal air temperatures are the likely cause of stream temperature exceedance rates in Spring 2021 (Figures 39-40).

**Table 36.** Gage 01467042 Temperature Summary Results by Maximum Criteria Period

| Designated Use | Date range start | Date range end | % exceedance | % attaining | % flagged data | % accepted data | Min | Max | Mean |
|---|---|---|---|---|---|---|---|---|---|
| TSF | 1-Jul | 31-Jul | 86.1 | 13.9 | 0 | 100 | 21.4 | 27.8 | 24.7 |
| TSF | 1-Aug | 15-Aug | 1.7 | 98.3 | 0 | 100 | 22.2 | 27.4 | 24.3 |
| TSF | 16-Aug | 31-Aug | 0 | 100 | 0 | 100 | 20 | 25.6 | 22.7 |
| TSF | 1-Sep | 15-Sep | 0 | 100 | 0 | 100 | 17.7 | 24.8 | 21.6 |
| TSF | 16-Sep | 30-Sep | 0 | 100 | 0 | 100 | 12.8 | 22.1 | 17.2 |
| TSF | 1-Oct | 15-Oct | 0 | 100 | 0 | 100 | 13.4 | 18.4 | 15.5 |
| TSF | 16-Oct | 31-Oct | 0 | 100 | 0 | 100 | 9.39 | 18.22 | 14.5 |
| TSF | 1-Nov | 15-Nov | 14.5 | 85.5 | 0 | 100 | 7.62 | 16.74 | 11.6 |
| TSF | 16-Nov | 30-Nov | 44.1 | 55.9 | 0 | 100 | 4.9 | 14.2 | 9.5 |
| TSF | 1-Mar | 31-Mar | 64.2 | 35.8 | 0 | 100 | 3.3 | 16.9 | 9.3 |
| TSF | 1-Apr | 15-Apr | 80.4 | 19.6 | 0 | 100 | 6 | 16.5 | 12.5 |
| TSF | 16-Apr | 30-Apr | 38.7 | 61.3 | 0 | 100 | 8.6 | 19.7 | 13.8 |
| TSF | 1-May | 15-May | 6.4 | 93.6 | 0 | 100 | 12 | 18.9 | 15.3 |
| TSF | 16-May | 31-May | 31.7 | 68.3 | 0 | 100 | 12.6 | 23.8 | 18.3 |
| TSF | 1-Jun | 15-Jun | 41 | 59 | 0 | 100 | 14.9 | 25.7 | 20.7 |
| TSF | 16-Jun | 30-Jun | 47.5 | 52.5 | 0 | 100 | 17.9 | 28.3 | 22.2 |

**Table 37. Gage** 01467048, Temperature Summary Results by Maximum Criteria Period

| Designated Use | Date range start | Date range end | % exceedance | % attaining | % flagged data | % accepted data | Min | Max | Mean |
|---|---|---|---|---|---|---|---|---|---|
| TSF | 1-Jul | 31-Jul | 97.1 | 2.9 | 0 | 100 | 21.3 | 29.5 | 25.7 |
| TSF | 1-Aug | 15-Aug | 9.1 | 90.9 | 0 | 100 | 22.7 | 29.2 | 25 |
| TSF | 16-Aug | 31-Aug | 0 | 100 | 0 | 100 | 20.8 | 27.1 | 23.5 |
| TSF | 1-Sep | 15-Sep | 0 | 100 | 0 | 100 | 18.2 | 25.8 | 22.3 |
| TSF | 16-Sep | 30-Sep | 0 | 100 | 0 | 100 | 12.8 | 22.4 | 17.6 |
| TSF | 1-Oct | 15-Oct | 0 | 100 | 0 | 100 | 13.8 | 19.3 | 15.8 |
| TSF | 16-Oct | 31-Oct | 0 | 100 | 0 | 100 | 9.37 | 18.66 | 14.4 |
| TSF | 1-Nov | 15-Nov | 13.1 | 86.9 | 0 | 100 | 7.58 | 17.46 | 11.5 |
| TSF | 16-Nov | 30-Nov | 35.3 | 64.7 | 0 | 100 | 4.8 | 13.8 | 9.2 |
| TSF | 1-Mar | 31-Mar | 59.1 | 40.9 | 0 | 100 | 3.7 | 16 | 9.1 |
| TSF | 1-Apr | 15-Apr | 82.2 | 17.8 | 0 | 100 | 6.4 | 16.7 | 12.9 |
| TSF | 16-Apr | 30-Apr | 41.9 | 58.1 | 0 | 100 | 9.2 | 19.8 | 14.2 |
| TSF | 1-May | 15-May | 9.5 | 90.5 | 0 | 100 | 12.6 | 19.4 | 15.9 |
| TSF | 16-May | 31-May | 46.7 | 53.3 | 0 | 100 | 12.7 | 24.9 | 19.1 |
| TSF | 1-Jun | 15-Jun | 48.6 | 51.4 | 0 | 100 | 15.4 | 26.7 | 21.5 |
| TSF | 16-Jun | 30-Jun | 61.9 | 38.1 | 0 | 100 | 19.2 | 30 | 23.1 |

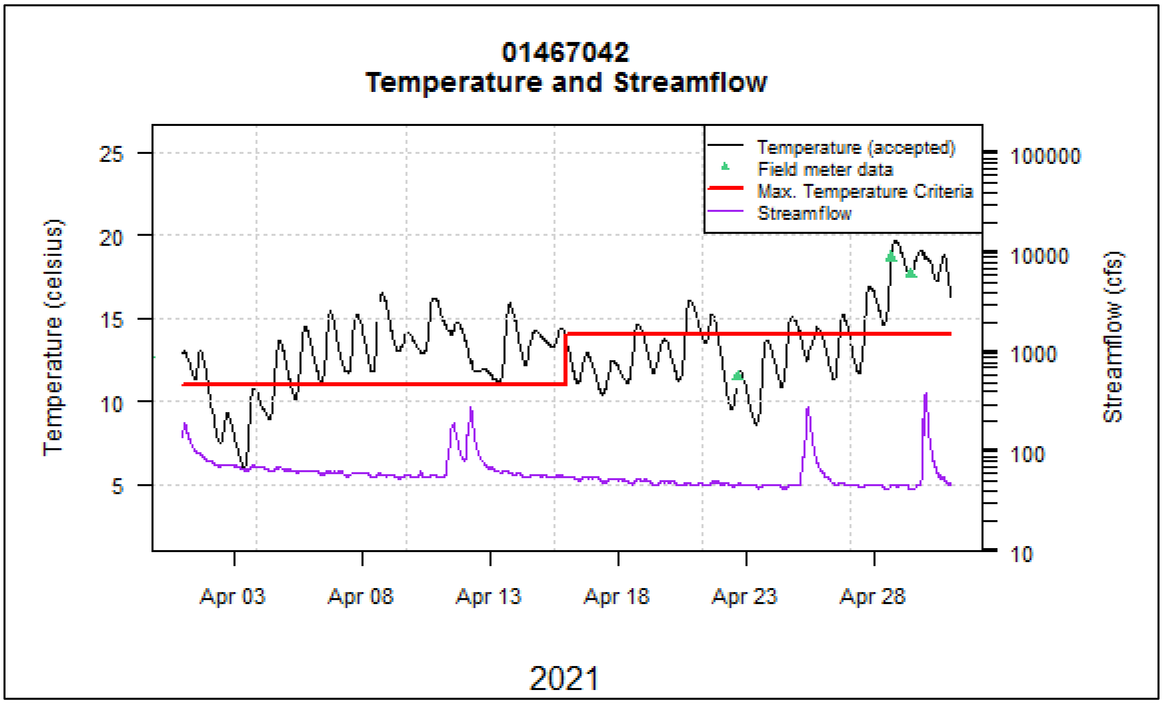



**Figure 39.** Gage 01467042, Temperature and Streamflow, April 2021.

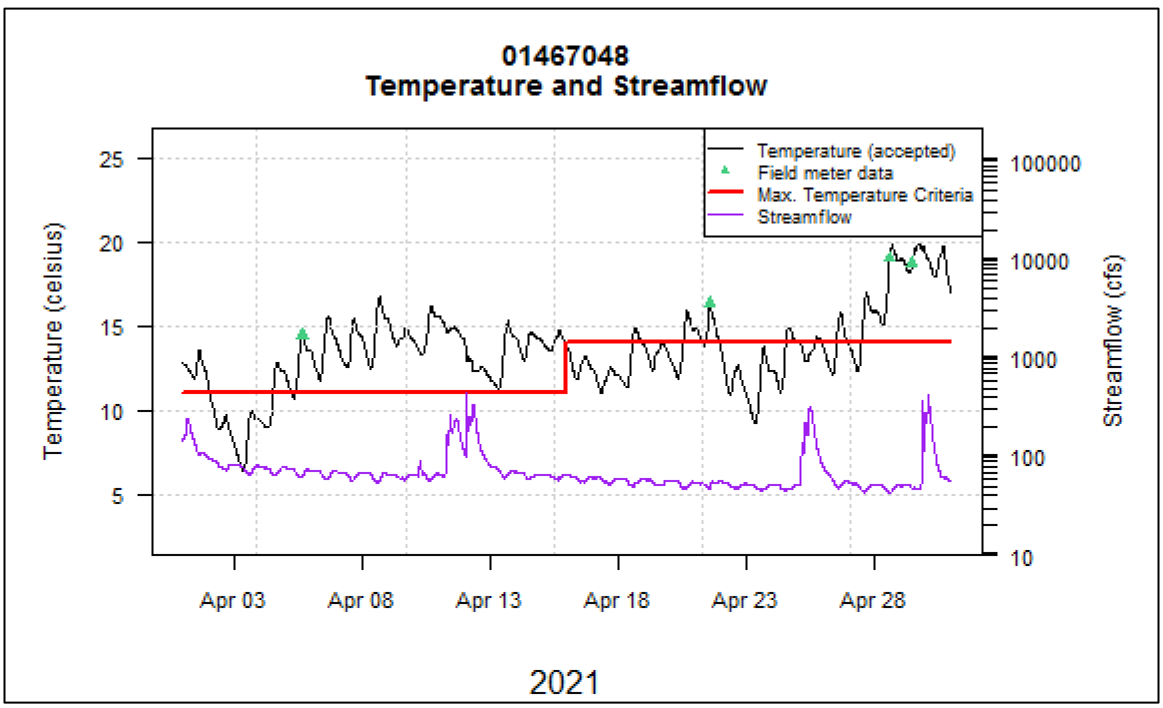
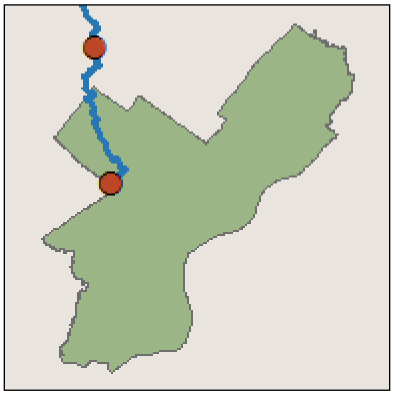



**Figure 40.** Gage 01467048, Temperature and Streamflow, April 2021.

## Wissahickon Creek (Gages 01473900 and 01474000)



### Dissolved oxygen and pH

Dissolved oxygen and pH data collected from the Wissahickon Creek gages also show signs of strong algal activity in the form of diel fluctuations. Although these two sites never exceeded the 7-day average guideline for dissolved oxygen, the upper gage (01473900) exhibits some of the most dramatic diel fluctuations of any of the Philadelphia USGS gage sites. In April 2021, dissolved oxygen can be observed to fluctuate by approximately 14 mg/L in a single day/night period (Figure 45), with pH experiencing significant swings at the same time (Figure 46). The pH maxima were exceeded in spring, a direct result of algal activity (Table 40).

**Table 38.** Gage 01473900 Dissolved Oxygen Minimum Criterion Summary Results by Month

| Month | Des. Use | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % non-attaining | % attaining |
|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | TSF | 1482 | 5.1 | 13.1 | 7.7 | 100.0 | 0.0 | 0.0 | 100.0 |
| Aug-20 | TSF | 1483 | 5.0 | 11.9 | 7.7 | 100.0 | 0.0 | 0.0 | 100.0 |
| Sep-20 | TSF | 1437 | 5.9 | 12.8 | 8.3 | 100.0 | 0.0 | 0.0 | 100.0 |
| Oct-20 | TSF | 1484 | 6.5 | 13.2 | 8.9 | 99.9 | 0.1 | 0.0 | 100.0 |
| Nov-20 | TSF | 1438 | 7.5 | 15.6 | 10.4 | 100.0 | 0.0 | 0.0 | 100.0 |
| Mar-21 | TSF | 1483 | 7.9 | 19.6 | 12.0 | 100.0 | 0.0 | 0.0 | 100.0 |
| Apr-21 | TSF | 1248 | 5.4 | 22.6 | 11.1 | 100.0 | 0.0 | 0.0 | 100.0 |
| May-21 | TSF | 1296 | 4.7 | 13.0 | 8.1 | 100.0 | 0.0 | 1.1 | 98.9 |
| Jun-21 | TSF | 1382 | 5.2 | 11.4 | 7.7 | 100.0 | 0.0 | 0.0 | 100.0 |

**Table 39.** Gage 01474000 Dissolved Oxygen Minimum Criterion Summary Results by Month

| Month | Des. Use | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % non-attaining | % attaining |
|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | TSF | 1482 | 6.2 | 12.5 | 8.2 | 100.0 | 0.0 | 0.0 | 100.0 |
| Aug-20 | TSF | 1481 | 6.4 | 12.1 | 8.5 | 100.0 | 0.0 | 0.0 | 100.0 |
| Sep-20 | TSF | 1436 | 7.4 | 13.0 | 9.3 | 100.0 | 0.0 | 0.0 | 100.0 |
| Oct-20 | TSF | 1483 | 8.1 | 12.2 | 9.8 | 100.0 | 0.0 | 0.0 | 100.0 |
| Nov-20 | TSF | 1438 | 9.1 | 13.5 | 11.0 | 100.0 | 0.0 | 0.0 | 100.0 |
| Mar-21 | TSF | 1429 | 9.6 | 17.9 | 12.2 | 100.0 | 0.0 | 0.0 | 100.0 |
| Apr-21 | TSF | 1413 | 7.3 | 16.6 | 10.6 | 100.0 | 0.0 | 0.0 | 100.0 |
| May-21 | TSF | 1482 | 6.5 | 11.2 | 9.1 | 100.0 | 0.0 | 0.0 | 100.0 |
| Jun-21 | TSF | 1431 | 6.3 | 12.2 | 8.6 | 100.0 | 0.0 | 0.0 | 100.0 |

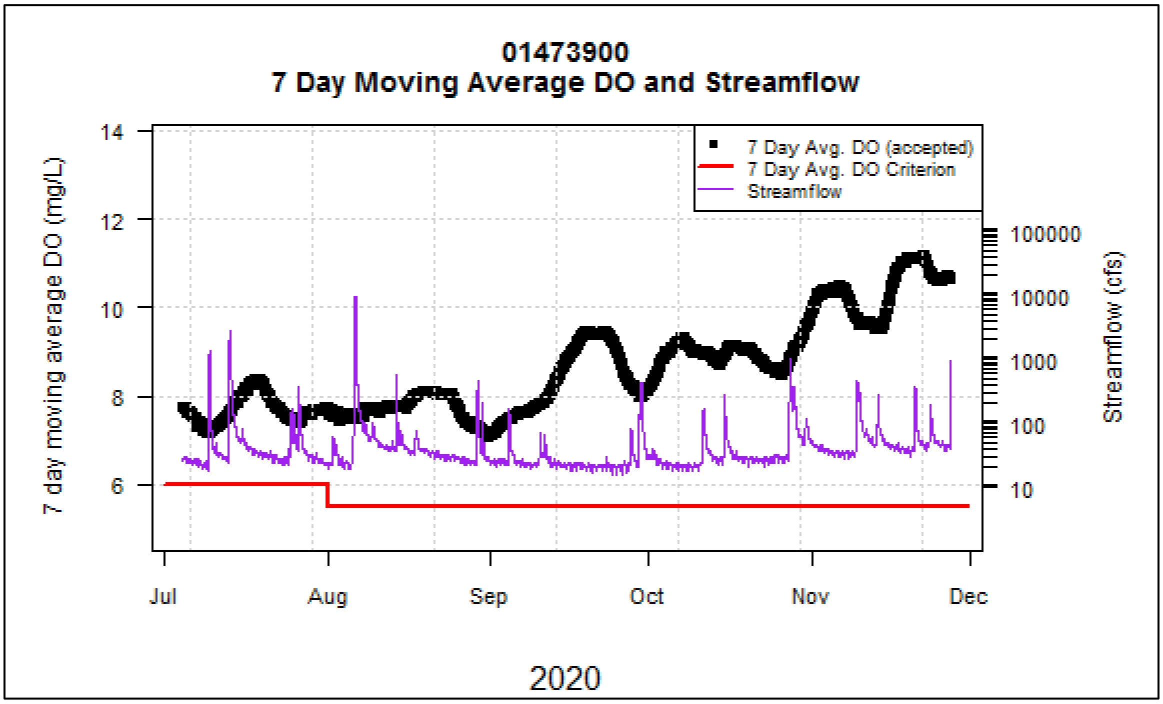



**Figure 41.** Gage 01473900, 7 Day Average Dissolved Oxygen and Streamflow, Jul-Dec 2020.

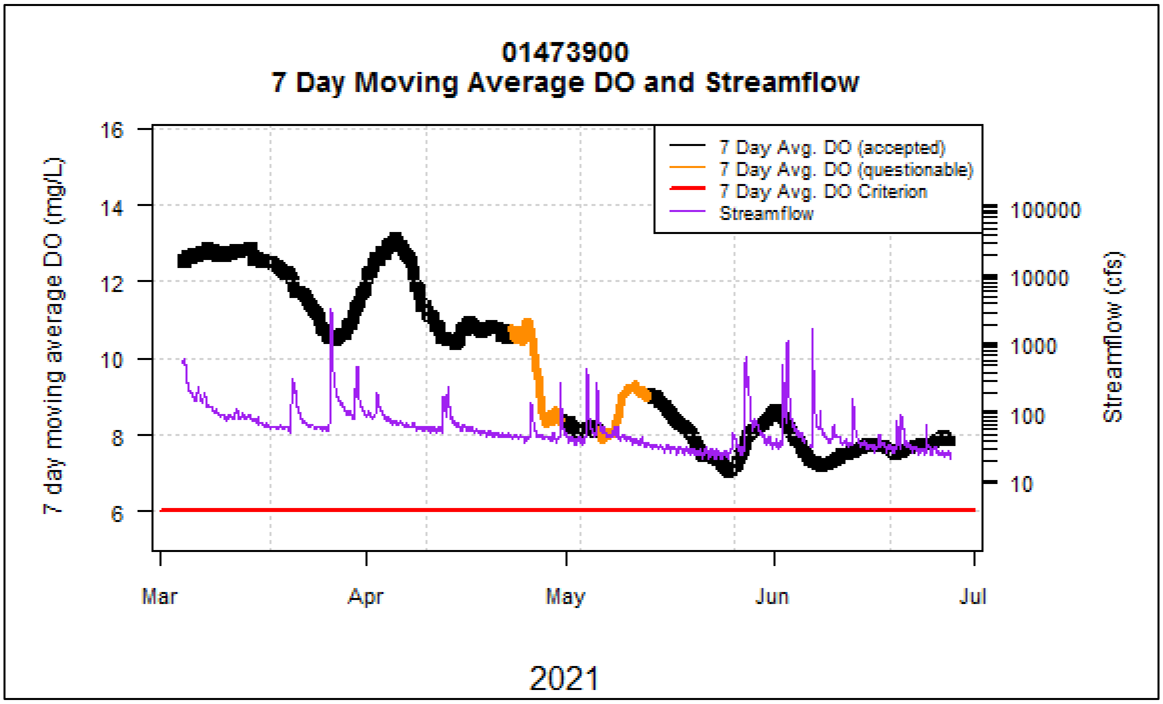



**Figure 42.** Gage 01473900, 7 Day Average Dissolved Oxygen and Streamflow, Mar-Jun 2021.

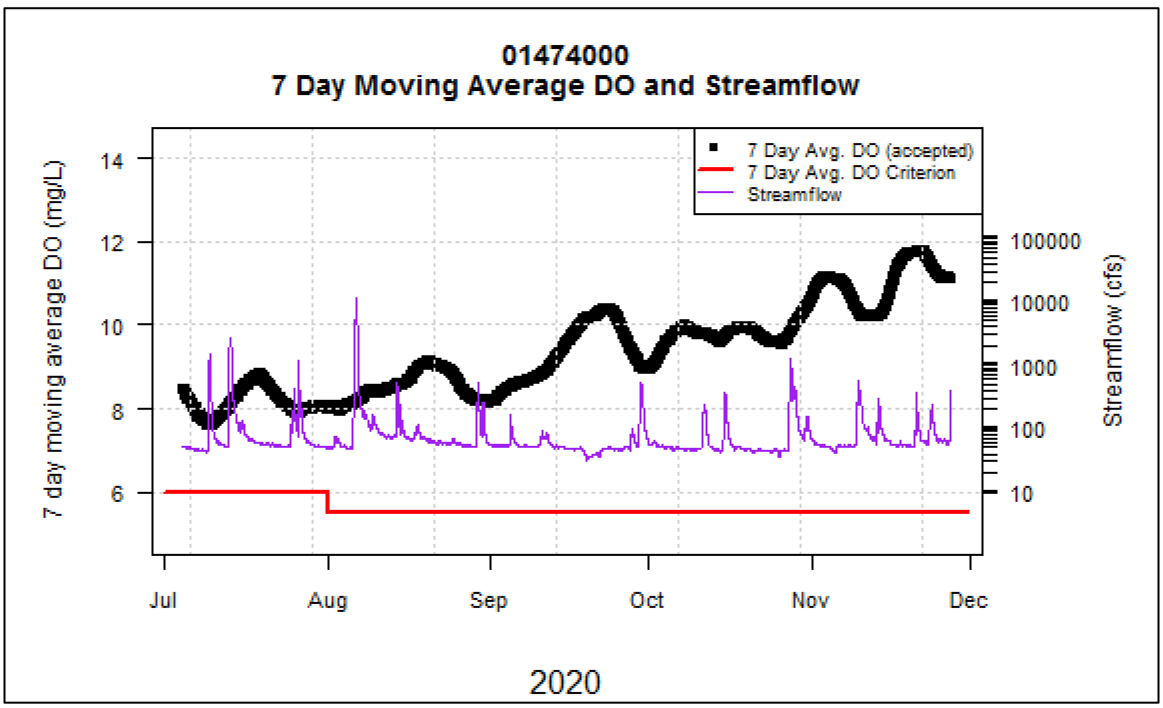



**Figure 43.** Gage 01474000, 7 Day Average Dissolved Oxygen and Streamflow, Jul-Dec 2020.

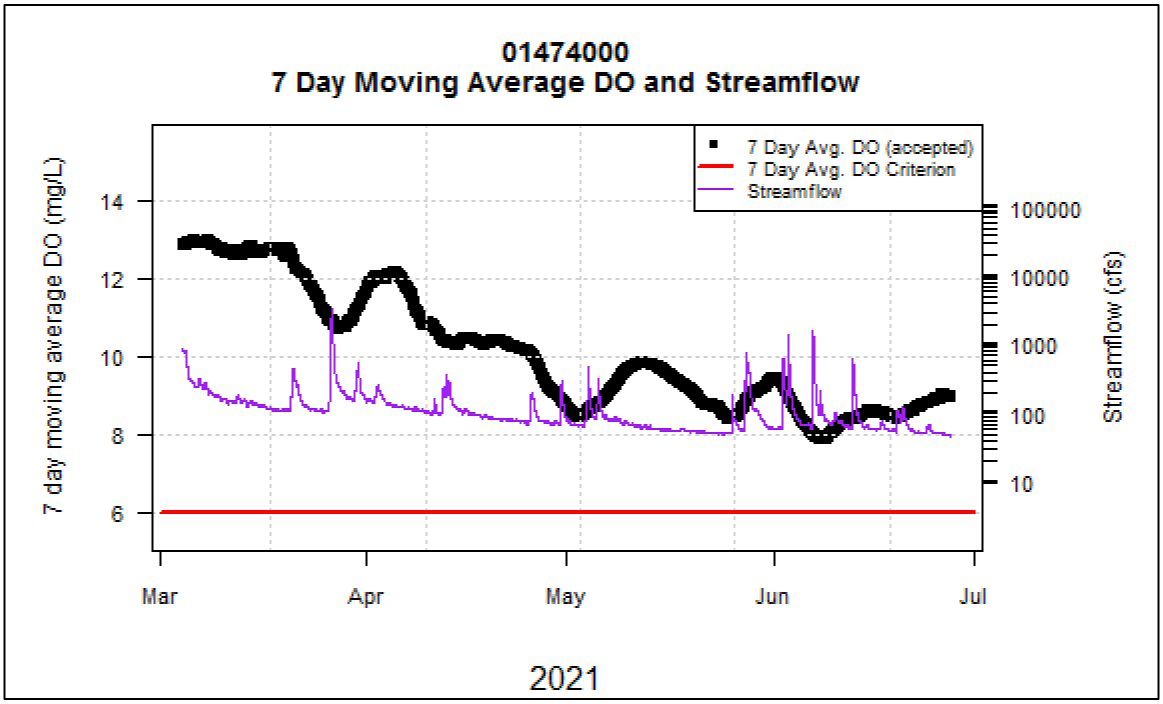



**Figure 44.** Gage 01474000, 7 Day Average Dissolved Oxygen and Streamflow, Mar-Jun 2021.

**Table 40.** Gage 01473900 pH Criteria Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % min non-attaining | % max non-attaining | % min attaining | % max attaining |
|---|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | 1482 | 6.8 | 8.6 | 7.7 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Aug-20 | 1484 | 6.7 | 8.3 | 7.6 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Sep-20 | 1437 | 7.3 | 8.2 | 7.6 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Oct-20 | 1485 | 7.2 | 8.4 | 7.6 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Nov-20 | 1438 | 7.3 | 8.6 | 7.7 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Mar-21 | 1483 | 7.2 | 9.2 | 8.0 | 100.0 | 0.0 | 0.0 | 3.0 | 100.0 | 97.0 |
| Apr-21 | 1248 | 7.4 | 9.5 | 8.1 | 100.0 | 0.0 | 0.0 | 9.0 | 100.0 | 91.0 |
| May-21 | 1296 | 7.2 | 8.4 | 7.6 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Jun-21 | 1382 | 7.1 | 8.3 | 7.6 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |

**Table 41.** Gage 01474000 pH Criteria Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % min non-attaining | % max non-attaining | % min attaining | % max attaining |
|---|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | 1480 | 7.2 | 9.0 | 8.2 | 99.9 | 0.1 | 0.0 | 0.0 | 100.0 | 100.0 |
| Aug-20 | 1481 | 6.7 | 8.8 | 7.9 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Sep-20 | 1436 | 7.7 | 8.6 | 8.1 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Oct-20 | 1483 | 7.5 | 8.6 | 8.0 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Nov-20 | 1438 | 7.2 | 8.5 | 8.0 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Mar-21 | 1483 | 7.4 | 9.5 | 8.4 | 100.0 | 0.0 | 0.0 | 8.8 | 100.0 | 91.2 |
| Apr-21 | 1413 | 7.6 | 9.4 | 8.2 | 100.0 | 0.0 | 0.0 | 5.2 | 100.0 | 94.8 |
| May-21 | 1482 | 7.5 | 8.4 | 7.9 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Jun-21 | 1431 | 7.3 | 8.7 | 8.0 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |

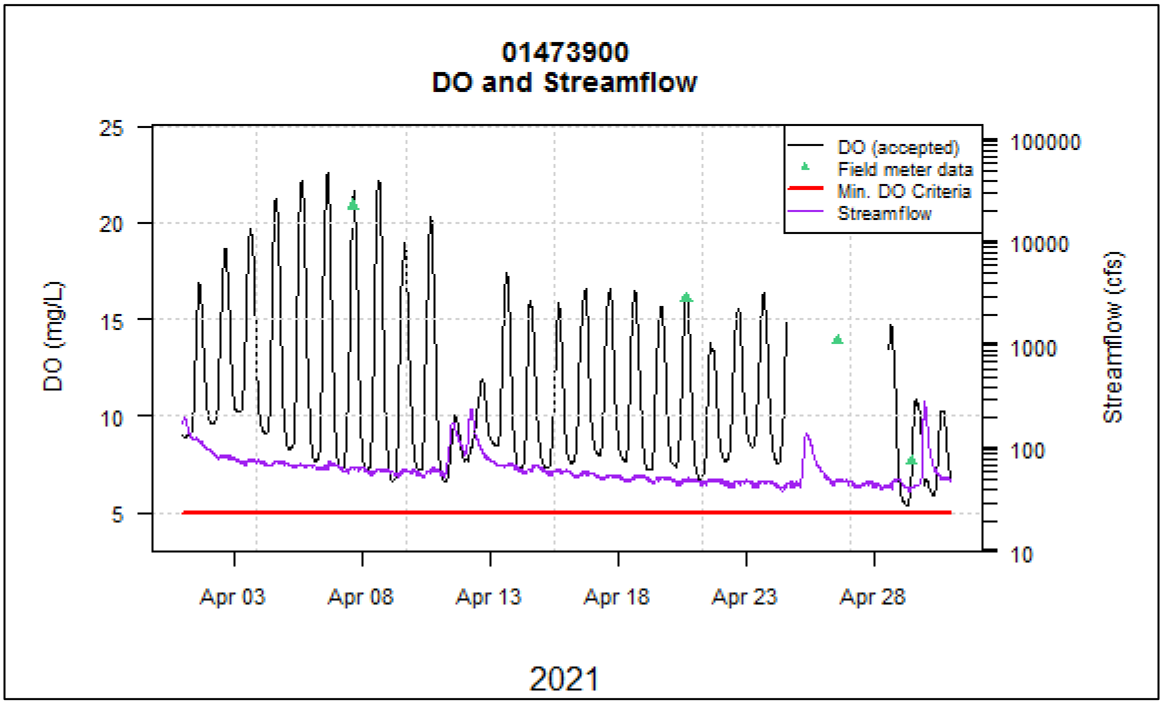



**Figure 45.** Gage 01473900, Dissolved Oxygen and Streamflow, April 2021.

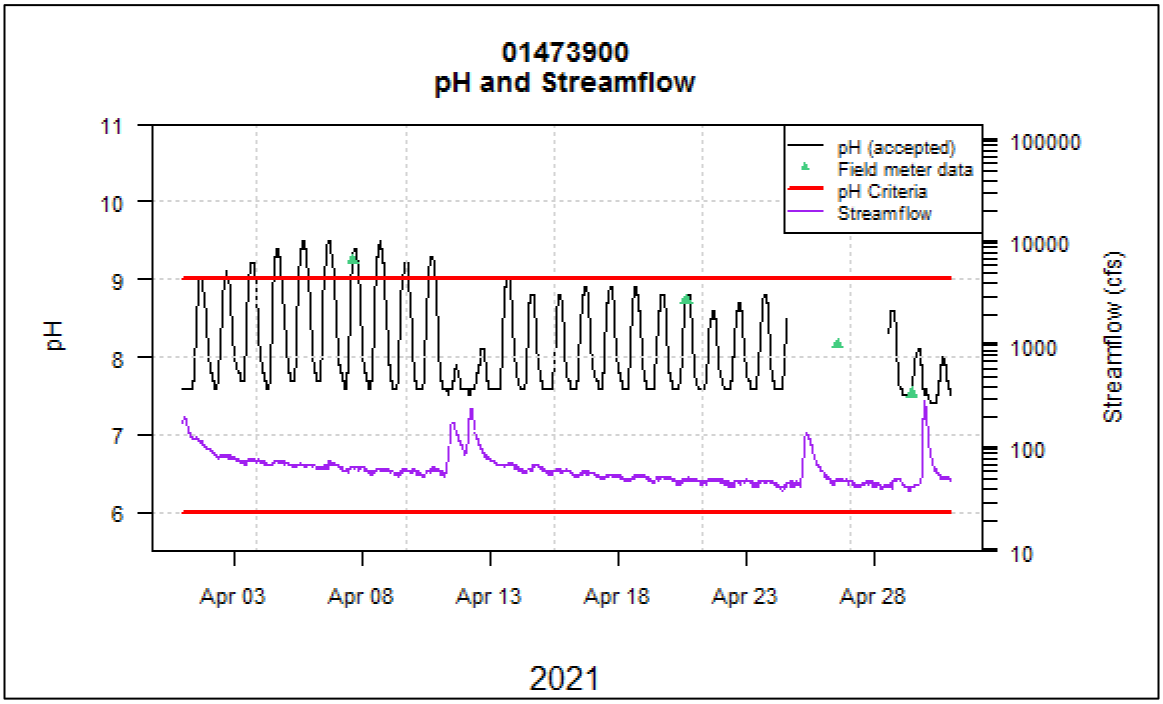



**Figure 46.** Gage 01473900, pH and Streamflow, April 2021.

**Figure 47.** Gage 01473900, Wissahickon Creek at Ft. Washington, looking downstream

**Figure 48.** Gage 01474000, Wissahickon Creek at mouth, looking downstream

## Turbidity

Turbidity in the Wissahickon, as with most of Philadelphia's streams, increases drastically with increased flow from rainfall (Tables 42-43). It is possible that these spikes represent a temporarily fouled sensor (i.e., sediment or debris obscures the optical probe for turbidity), but the general rule in QAQC procedures is not to flag turbidity spikes that recede to normal levels on their own. If the sensor remains fouled after a storm or a field check confirms aberrant values, the data is flagged as in Figure 49.

**Table 42.** Gage 01473900 Turbidity Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % above max. guideline | % below max. guideline |
|---|---|---|---|---|---|---|---|---|
| Jul-20 | 1486 | 0.4 | 570.0 | 8.0 | 100.0 | 0.0 | 38.4 | 61.6 |
| Aug-20 | 1263 | 0.5 | 194.0 | 5.6 | 100.0 | 0.0 | 22.7 | 77.3 |
| Sep-20 | 714 | 0.3 | 16.0 | 2.6 | 60.7 | 39.3 | 36.8 | 63.2 |
| Oct-20 | 1461 | 0.1 | 118.0 | 4.5 | 100.0 | 0.0 | 30.7 | 69.3 |
| Nov-20 | 1437 | 1.6 | 86.9 | 3.9 | 99.9 | 0.1 | 18.4 | 81.6 |
| Mar-21 | 1029 | 0.8 | 107.0 | 5.7 | 100.0 | 0.0 | 28.6 | 71.4 |
| Apr-21 | 1422 | 1.1 | 154.0 | 5.0 | 99.0 | 1.0 | 34.5 | 65.5 |
| May-21 | 1375 | 0.9 | 62.6 | 4.5 | 92.7 | 7.3 | 32.1 | 67.9 |
| Jun-21 | 1407 | 0.4 | 139.0 | 4.4 | 97.8 | 2.2 | 45.6 | 54.4 |

**Table 43.** Gage 01474000 Turbidity Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % above max. guideline | % below max. guideline |
|---|---|---|---|---|---|---|---|---|
| Jul-20 | 1487 | 0.6 | 270.0 | 9.4 | 100.0 | 0.0 | 40.8 | 59.2 |
| Aug-20 | 1187 | 0.8 | 369.0 | 10.8 | 88.5 | 11.5 | 43.1 | 56.9 |
| Sep-20 | 1349 | 0.9 | 104.0 | 2.9 | 93.8 | 6.2 | 15.4 | 84.6 |
| Oct-20 | 1488 | 0.8 | 122.0 | 4.9 | 100.0 | 0.0 | 26.3 | 73.7 |
| Nov-20 | 1440 | 1.0 | 87.5 | 4.0 | 100.0 | 0.0 | 18.7 | 81.3 |
| Mar-21 | 1357 | 0.6 | 97.0 | 6.1 | 100.0 | 0.0 | 30.7 | 69.3 |
| Apr-21 | 1436 | 0.6 | 212.0 | 5.5 | 99.9 | 0.1 | 25.7 | 74.3 |
| May-21 | 1479 | 0.5 | 42.3 | 3.0 | 99.9 | 0.1 | 23.5 | 76.5 |
| Jun-21 | 1261 | 0.6 | 105.0 | 4.1 | 87.9 | 12.1 | 26.9 | 73.1 |

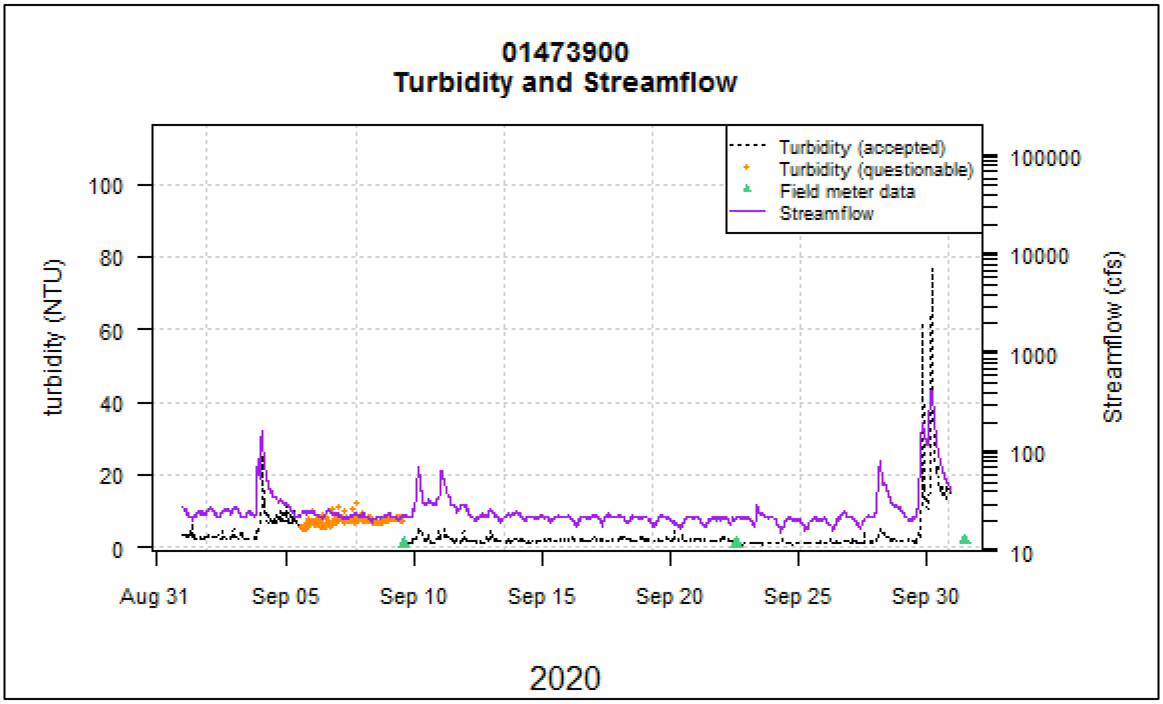



**Figure 49.** Gage 01473900, Turbidity and Streamflow, September 2020.

## Specific Conductance

Specific conductance data at the Wissahickon Creek gage sites generally follow the established pattern in other Philadelphia streams: Runoff from rain events dilutes the stream and decreases conductivity (Figure 50). However, a reversal in this trend sometimes occurs during winter storms, when it is presumed that the application of road salt (sodium chloride) prior to the storm washes into Wissahickon Creek and causes conductivity to increase in conjunction with streamflow.

**Table 44.** Gage 01473900 Specific Conductance Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data |
|---|---|---|---|---|---|---|
| Jul-20 | 1482 | 120.0 | 938.0 | 722.4 | 100.0 | 0.0 |
| Aug-20 | 1484 | 68.0 | 882.0 | 692.3 | 100.0 | 0.0 |
| Sep-20 | 1437 | 342.0 | 1000.0 | 829.7 | 100.0 | 0.0 |
| Oct-20 | 1484 | 245.0 | 975.0 | 769.9 | 100.0 | 0.0 |
| Nov-20 | 1437 | 109.0 | 857.0 | 639.6 | 100.0 | 0.0 |
| Mar-21 | 1483 | 156.0 | 772.0 | 676.9 | 100.0 | 0.0 |
| Apr-21 | 1247 | 532.0 | 819.0 | 694.9 | 99.9 | 0.1 |
| May-21 | 1296 | 240.0 | 978.0 | 760.9 | 100.0 | 0.0 |
| Jun-21 | 1381 | 166.0 | 923.0 | 679.9 | 100.0 | 0.0 |

**Table 45.** Gage 01474000 Specific Conductance Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data |
|---|---|---|---|---|---|---|
| Jul-20 | 1480 | 146.0 | 851.0 | 634.7 | 100.0 | 0.0 |
| Aug-20 | 1479 | 71.0 | 841.0 | 654.9 | 100.0 | 0.0 |
| Sep-20 | 1436 | 386.0 | 889.0 | 782.7 | 100.0 | 0.0 |
| Oct-20 | 1483 | 270.0 | 878.0 | 695.4 | 100.0 | 0.0 |
| Nov-20 | 1438 | 126.0 | 816.0 | 635.8 | 100.0 | 0.0 |
| Mar-21 | 1483 | 179.0 | 901.0 | 678.7 | 100.0 | 0.0 |
| Apr-21 | 1413 | 517.0 | 792.0 | 713.0 | 100.0 | 0.0 |
| May-21 | 1482 | 286.0 | 863.0 | 724.3 | 100.0 | 0.0 |
| Jun-21 | 1431 | 211.0 | 813.0 | 648.2 | 100.0 | 0.0 |

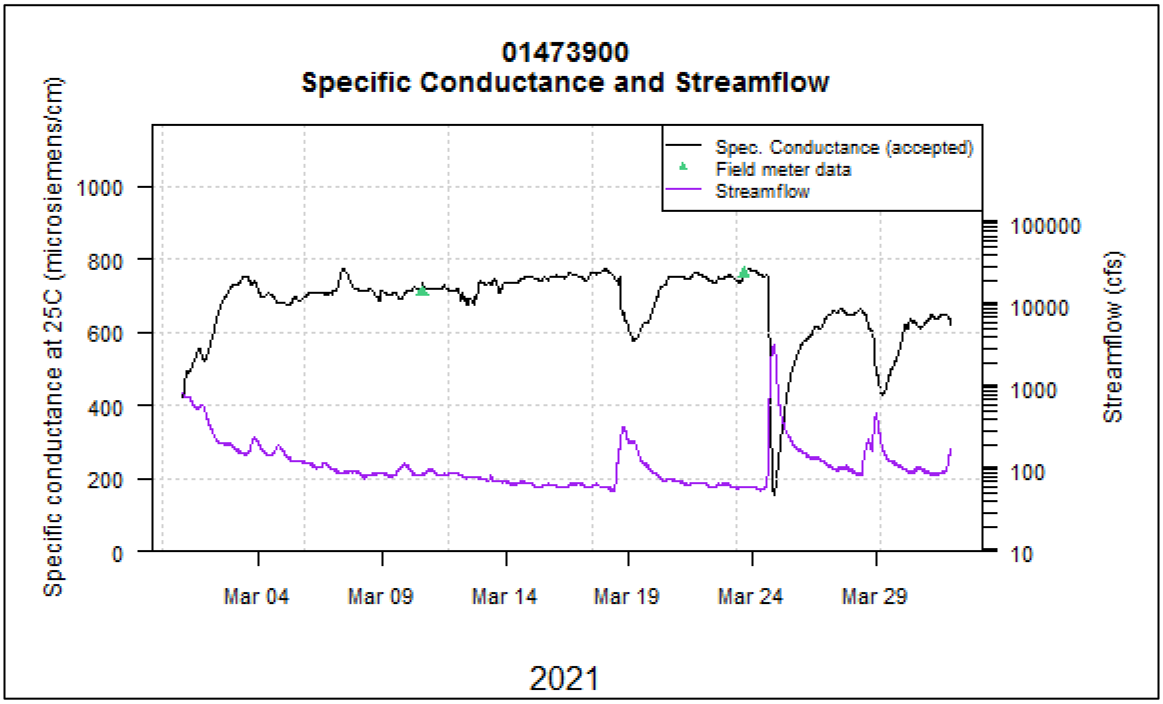


**Figure 50.** Gage 01474000, Specific Conductance and Streamflow, March 2021.

### Temperature

Temperature trends and exceedance rates in Wissahickon Creek Watershed were similar to those observed in Pennypack Creek, with frequent exceedances during the spring in conjunction with higher ambient air temperatures (Tables 46-47, Figures 51-52).

**Table 46.** Gage 01473900 Temperature Summary Results by Month by Maximum Criteria Period

| Designated Use | Date range start | Date range end | % exceedance | % attaining | % flagged data | % accepted data | Min | Max | Mean |
|---|---|---|---|---|---|---|---|---|---|
| TSF | 1-Jul | 31-Jul | 76.9 | 23.1 | 0 | 100 | 21.3 | 27.3 | 24 |
| TSF | 1-Aug | 15-Aug | 0 | 100 | 0 | 100 | 21.7 | 26.3 | 23.8 |
| TSF | 16-Aug | 31-Aug | 0 | 100 | 0 | 100 | 20 | 25.4 | 22.5 |
| TSF | 1-Sep | 15-Sep | 0 | 100 | 0 | 100 | 17.4 | 24.8 | 21.5 |
| TSF | 16-Sep | 30-Sep | 0 | 100 | 0 | 100 | 12.8 | 21.4 | 17.5 |
| TSF | 1-Oct | 15-Oct | 0 | 100 | 0 | 100 | 13.5 | 18.3 | 15.9 |
| TSF | 16-Oct | 31-Oct | 0 | 100 | 0 | 100 | 9.68 | 18.49 | 14.8 |
| TSF | 1-Nov | 15-Nov | 18.1 | 81.9 | 0 | 100 | 8.22 | 16.62 | 12.1 |
| TSF | 16-Nov | 30-Nov | 47.4 | 52.6 | 0 | 100 | 5.3 | 13.8 | 9.9 |
| TSF | 1-Mar | 31-Mar | 57.6 | 42.4 | 0 | 100 | 2.8 | 16.2 | 8.9 |
| TSF | 1-Apr | 15-Apr | 79.4 | 20.6 | 0 | 100 | 6.1 | 16.9 | 12.6 |
| TSF | 16-Apr | 30-Apr | 37.7 | 62.3 | 0 | 100 | 8.8 | 19.9 | 13.7 |
| TSF | 1-May | 15-May | 10.3 | 89.7 | 0 | 100 | 12.2 | 19.1 | 15.9 |
| TSF | 16-May | 31-May | 26.5 | 73.5 | 0 | 100 | 12.7 | 23.7 | 18.1 |
| TSF | 1-Jun | 15-Jun | 33.4 | 66.6 | 0 | 100 | 15 | 24 | 20.1 |
| TSF | 16-Jun | 30-Jun | 38.8 | 61.2 | 0 | 100 | 17.4 | 27.5 | 21.6 |

**Table 47.** Gage 01474000 Temperature Summary Results by Month by Maximum Criteria Period

| Designated Use | Date range start | Date range end | % exceedance | % attaining | % flagged data | % accepted data | Min | Max | Mean |
|---|---|---|---|---|---|---|---|---|---|
| TSF | 1-Jul | 31-Jul | 87.8 | 12.2 | 0 | 100 | 21.7 | 27.6 | 24.6 |
| TSF | 1-Aug | 15-Aug | 0 | 100 | 0 | 100 | 22 | 26.7 | 23.9 |
| TSF | 16-Aug | 31-Aug | 0 | 100 | 0 | 100 | 20.2 | 24.6 | 22.4 |
| TSF | 1-Sep | 15-Sep | 0 | 100 | 0 | 100 | 18.1 | 23.8 | 21.2 |
| TSF | 16-Sep | 30-Sep | 0 | 100 | 0 | 100 | 13.2 | 20.4 | 16.9 |
| TSF | 1-Oct | 15-Oct | 0 | 100 | 0 | 100 | 13.67 | 18.6 | 15.3 |
| TSF | 16-Oct | 31-Oct | 0 | 100 | 0 | 100 | 9.81 | 17.42 | 14.2 |
| TSF | 1-Nov | 15-Nov | 10.3 | 89.7 | 0 | 100 | 7.81 | 16.15 | 11.2 |
| TSF | 16-Nov | 30-Nov | 33.3 | 66.7 | 0 | 100 | 5.4 | 13.3 | 9.1 |
| TSF | 1-Mar | 31-Mar | 57.2 | 42.8 | 0 | 100 | 3.1 | 15.4 | 8.9 |
| TSF | 1-Apr | 15-Apr | 78.7 | 21.3 | 0 | 100 | 7 | 16 | 12.5 |
| TSF | 16-Apr | 30-Apr | 34.3 | 65.7 | 0 | 100 | 9.8 | 18.8 | 13.8 |
| TSF | 1-May | 15-May | 0.4 | 99.6 | 0 | 100 | 12.5 | 18.2 | 15.5 |
| TSF | 16-May | 31-May | 31.2 | 68.8 | 0 | 100 | 12.7 | 23 | 18.3 |
| TSF | 1-Jun | 15-Jun | 43.1 | 56.9 | 0 | 100 | 14.2 | 25 | 20.7 |
| TSF | 16-Jun | 30-Jun | 44.5 | 55.5 | 0 | 100 | 18.3 | 27.7 | 22.1 |

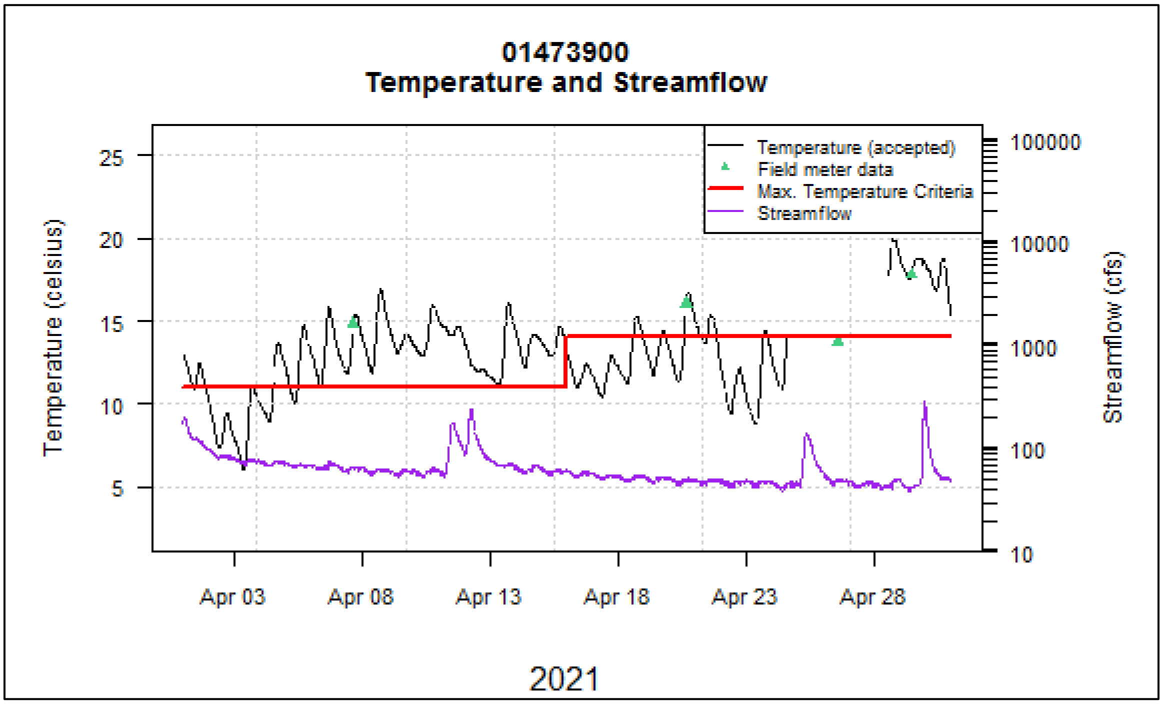



**Figure 51.** Gage 01473900, Temperature and Streamflow, April 2021.

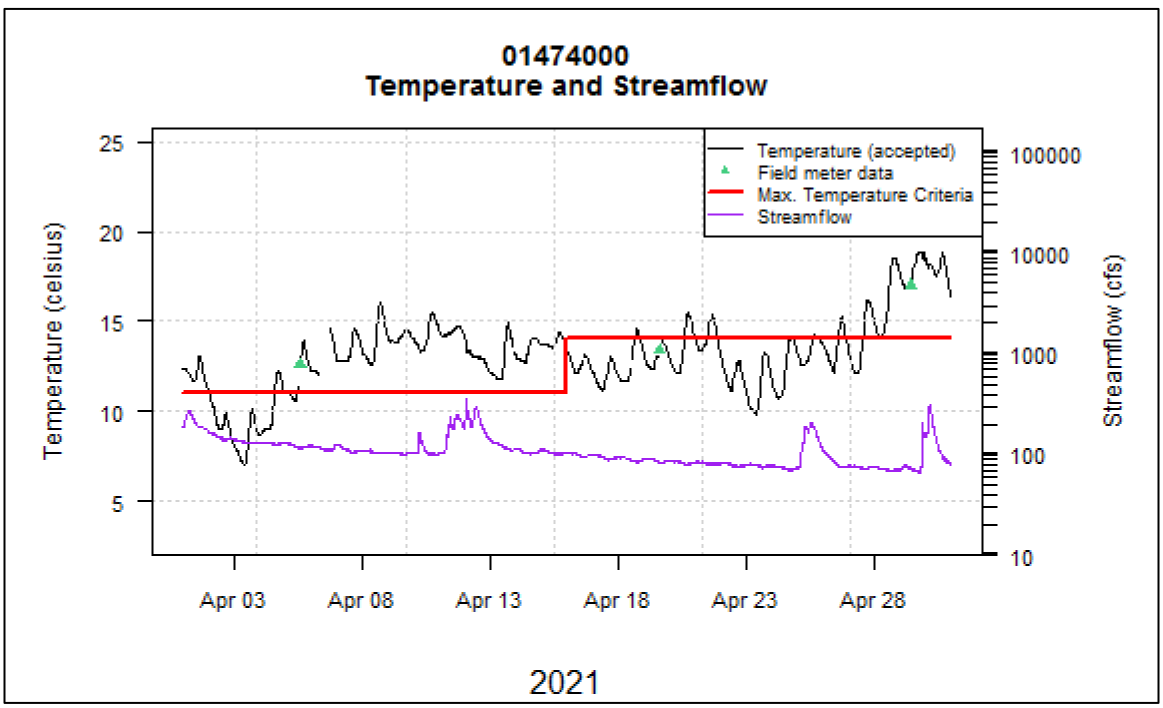
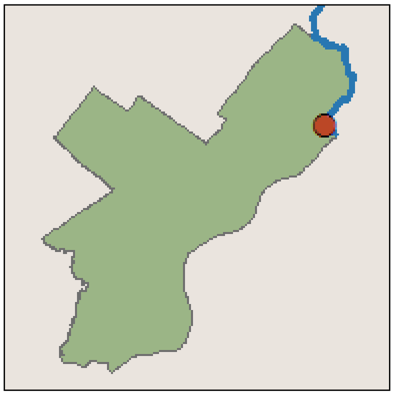



**Figure 52.** Gage 01474000, Temperature and Streamflow, April 2021.

## Poquessing Creek (Gage 01465798)



### Dissolved oxygen and pH

Dissolved oxygen and pH at this gage site were usually within acceptable ranges and only occasionally fell below the minimum DO criterion. The site rarely exceeded the pH maximum criterion (Tables 48-49, Figures 53-54). Data collected from Poquessing Creek did exhibit classic signs of algal activity, as indicated by diel fluctuations in both DO and pH.

As seen with previous sites, the algal activity and related diel fluctuations in DO and pH are only suppressed by storm events. These suppressions, however, are only very temporary. Given an adequate period of uninterrupted algal growth, such as occurred in April 2021 (Figures 55-56), one can expect increased DO and pH fluctuations.

**Table 48.** Gage 01465798 Dissolved Oxygen Min. Criteria Summary Results by Month

| Month | Des. Use | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % non-attaining | % attaining |
|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | WWF | 2720 | 4.0 | 14.5 | 7.5 | 91.8 | 8.2 | 2.6 | 97.4 |
| Aug-20 | WWF | 2856 | 3.6 | 12.7 | 7.2 | 96.3 | 3.7 | 1.4 | 98.6 |
| Sep-20 | WWF | 2868 | 5.9 | 12.9 | 8.4 | 100.0 | 0.0 | 0.0 | 100.0 |
| Oct-20 | WWF | 2765 | 7.3 | 13.2 | 9.3 | 93.4 | 6.6 | 0.0 | 100.0 |
| Nov-20 | WWF | 2780 | 4.7 | 13.0 | 10.0 | 96.8 | 3.2 | 0.0 | 100.0 |
| Mar-21 | WWF | 2891 | 6.1 | 17.8 | 11.7 | 97.8 | 2.2 | 0.0 | 100.0 |
| Apr-21 | WWF | 2742 | 4.1 | 16.9 | 10.4 | 100.0 | 0.0 | 0.1 | 99.9 |
| May-21 | WWF | 2924 | 4.8 | 10.8 | 8.1 | 98.6 | 1.4 | 0.1 | 99.9 |
| Jun-21 | WWF | 2522 | 4.6 | 11.1 | 7.4 | 97.7 | 2.3 | 0.1 | 99.9 |

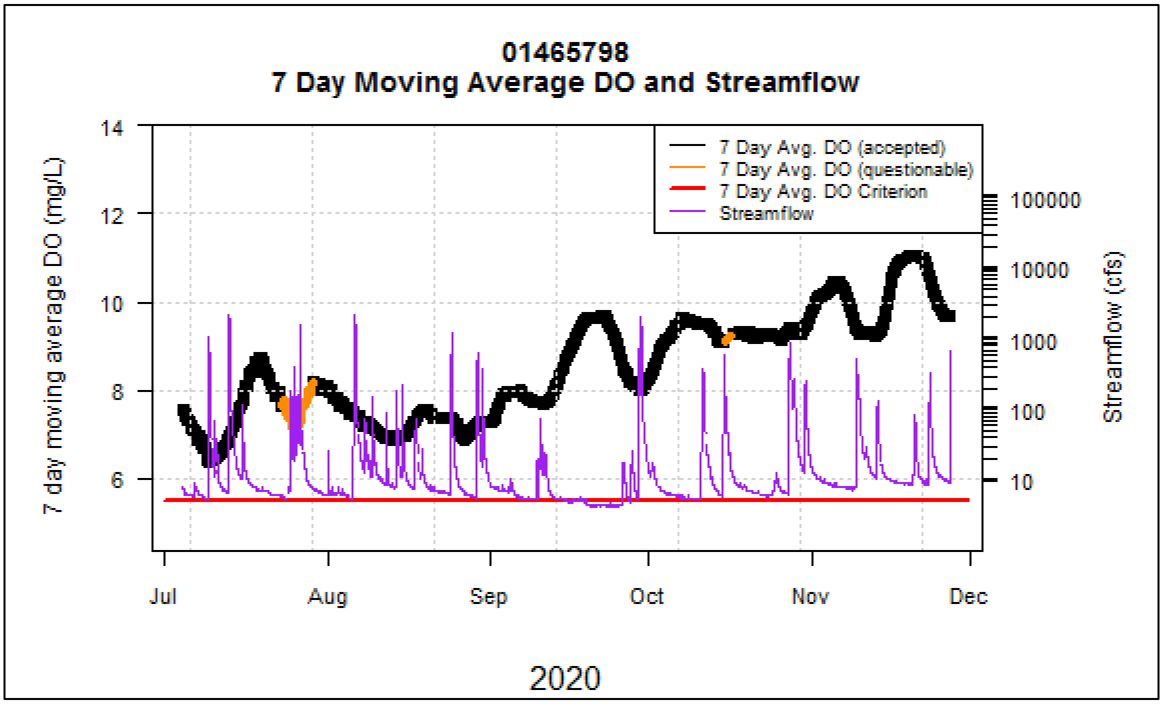



**Figure 53.** Gage 01465798, 7 Day Average Dissolved Oxygen and Streamflow, Jul-Dec 2020.

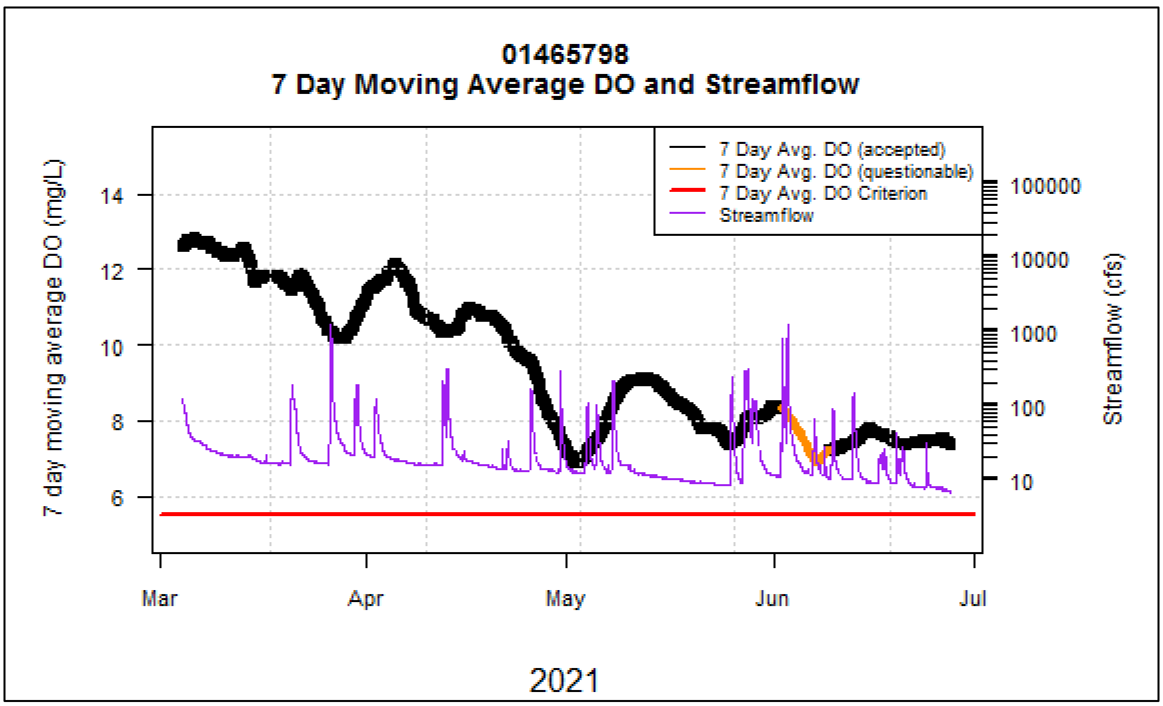



**Figure 54.** Gage 01465798, 7 Day Average Dissolved Oxygen and Streamflow, Mar-Jun 2021.

**Table 49.** Gage 01465798 pH Criteria Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % min non-attaining | % max non-attaining | % min attaining | % max attaining |
|---|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | 2962 | 6.6 | 9.0 | 7.2 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Aug-20 | 2967 | 6.6 | 8.7 | 7.1 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Sep-20 | 2868 | 6.6 | 8.1 | 7.2 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Oct-20 | 2959 | 6.8 | 7.7 | 7.2 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Nov-20 | 2873 | 6.7 | 7.6 | 7.2 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Mar-21 | 2956 | 7.1 | 9.4 | 7.5 | 100.0 | 0.0 | 0.0 | 0.9 | 100.0 | 99.1 |
| Apr-21 | 2864 | 6.9 | 9.4 | 7.5 | 100.0 | 0.0 | 0.0 | 2.8 | 100.0 | 97.2 |
| May-21 | 2966 | 6.8 | 7.5 | 7.2 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Jun-21 | 2867 | 6.8 | 7.8 | 7.1 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |

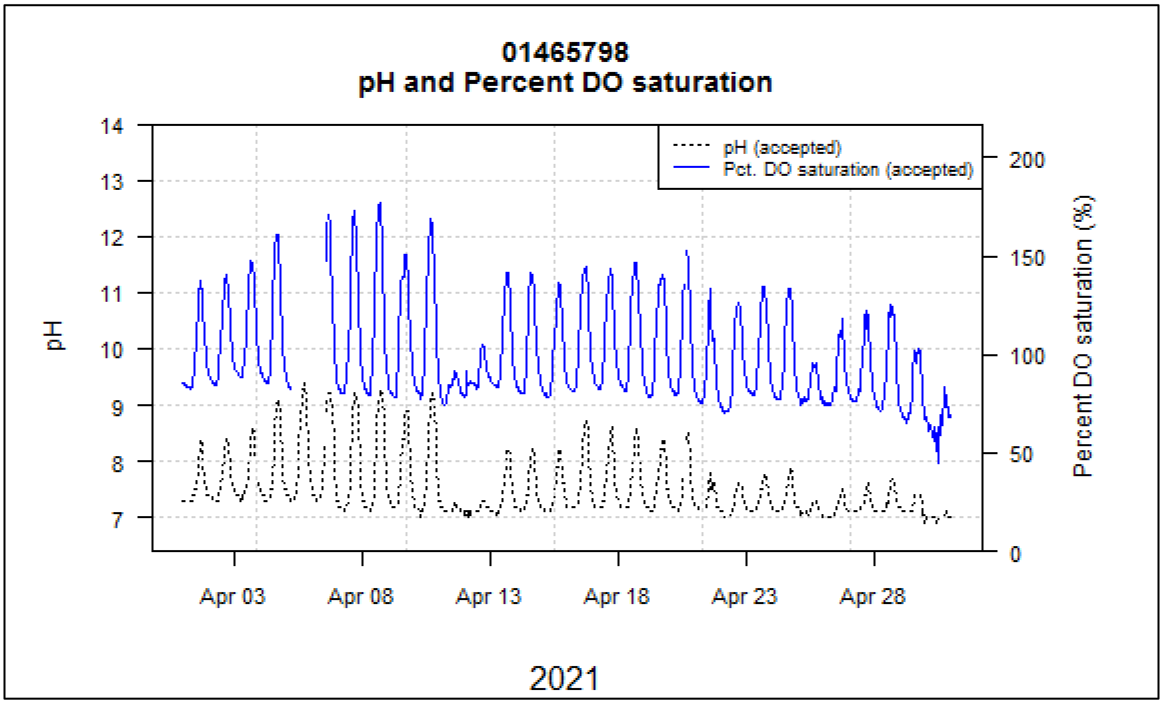



**Figure 55.** Gage 01465798, pH and Percent DO Saturation, April 2021.

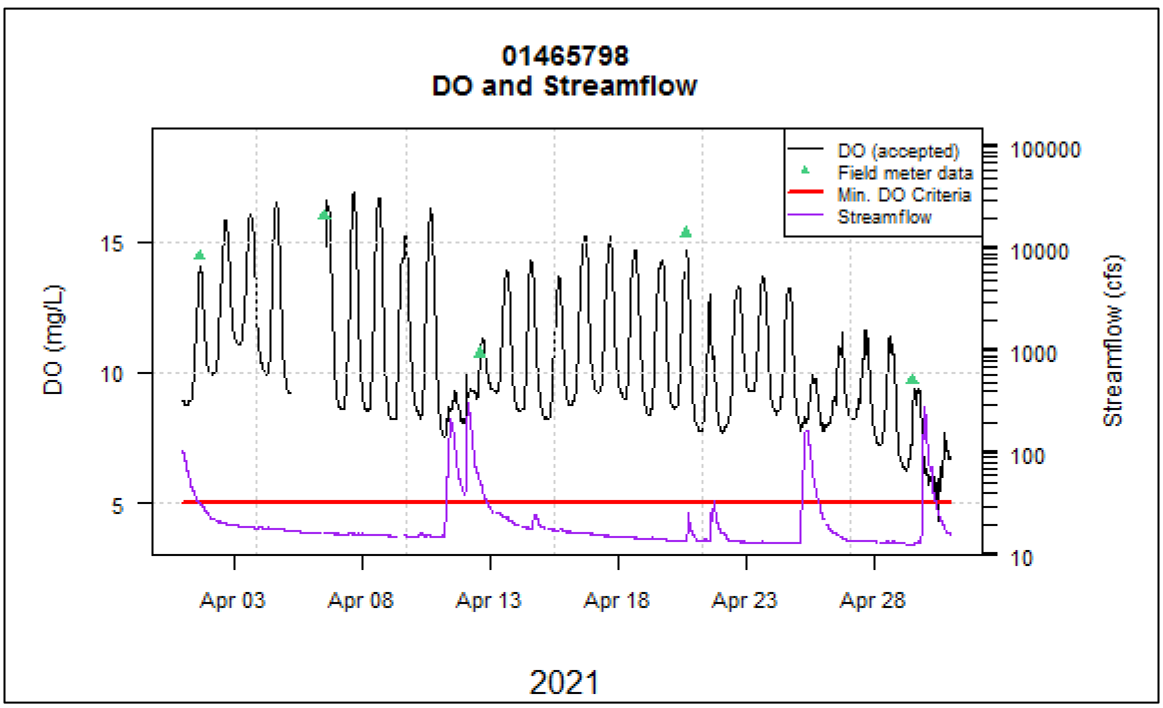



**Figure 56.** Gage 01465798, DO and Streamflow, April 2021.

**Figure 57.** Gage 01465798, Poquessing Creek at Grant Ave., looking upstream

## Turbidity

As in other Philadelphia streams, high turbidity levels accompanied storm events and increased streamflow.

**Table 50.** Gage 01465798 Turbidity Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % above max. guideline | % below max. guideline |
|---|---|---|---|---|---|---|---|---|
| Jul-20 | 2964 | 0.2 | 436.0 | 8.4 | 100.0 | 0.0 | 27.9 | 72.1 |
| Aug-20 | 2789 | 0.3 | 340.0 | 6.4 | 94.2 | 5.8 | 38.1 | 61.9 |
| Sep-20 | 2875 | 0.3 | 1300.0 | 3.9 | 100.0 | 0.0 | 8.5 | 91.5 |
| Oct-20 | 2747 | 0.2 | 991.0 | 5.5 | 96.1 | 3.9 | 23.3 | 76.7 |
| Nov-20 | 2254 | 0.3 | 54.9 | 2.1 | 78.3 | 21.7 | 13.7 | 86.3 |
| Mar-21 | 2518 | 1.0 | 202.0 | 8.8 | 96.4 | 3.6 | 48.3 | 51.7 |
| Apr-21 | 2864 | 0.9 | 1560.0 | 7.2 | 100.0 | 0.0 | 26.0 | 74.0 |
| May-21 | 2768 | 0.6 | 1180.0 | 8.8 | 93.5 | 6.5 | 17.3 | 82.7 |
| Jun-21 | 2698 | 0.4 | 207.0 | 3.0 | 94.2 | 5.8 | 15.3 | 84.7 |

## Specific Conductance

Specific conductance data were similar to other Philadelphia streams.

**Table 51.** Gage 01465798 Specific Conductance Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data |
|---|---|---|---|---|---|---|
| Jul-20 | 2847 | 70.0 | 751.0 | 516.7 | 96.1 | 3.9 |
| Aug-20 | 2967 | 76.0 | 721.0 | 427.7 | 100.0 | 0.0 |
| Sep-20 | 2868 | 43.0 | 786.0 | 618.4 | 100.0 | 0.0 |
| Oct-20 | 2757 | 94.0 | 834.0 | 504.6 | 93.2 | 6.8 |
| Nov-20 | 2873 | 74.0 | 707.0 | 499.9 | 100.0 | 0.0 |
| Mar-21 | 2746 | 167.0 | 963.0 | 752.3 | 100.0 | 0.0 |
| Apr-21 | 2732 | 162.0 | 927.0 | 629.2 | 100.0 | 0.0 |
| May-21 | 2965 | 138.0 | 802.0 | 577.0 | 100.0 | 0.0 |
| Jun-21 | 2868 | 85.0 | 757.0 | 548.8 | 100.0 | 0.0 |

### Temperature

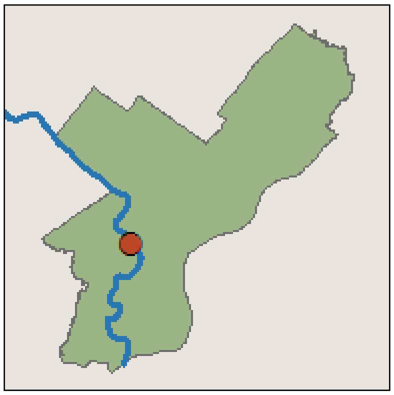
Temperature exceedance rates observed in Poquessing Creek were similar to those in other WWF designated-use creeks (*e.g.*, Tacony and Cobbs Creeks).

**Table 52.** Gage 01465798 Temperature Summary Results by Maximum Criteria Period

| Designated Use | Date range start | Date range end | % exceedance | % attaining | % flagged data | % accepted data | Min | Max | Mean |
|---|---|---|---|---|---|---|---|---|---|
| WWF | 1-Jul | 31-Jul | 0 | 100 | 0 | 100 | 22 | 30.2 | 25.5 |
| WWF | 1-Aug | 15-Aug | 0 | 100 | 0 | 100 | 22.6 | 29.3 | 24.9 |
| WWF | 16-Aug | 31-Aug | 0 | 100 | 0 | 100 | 20.3 | 27.4 | 23.4 |
| WWF | 1-Sep | 15-Sep | 0 | 100 | 0 | 100 | 17.3 | 26.3 | 22.2 |
| WWF | 16-Sep | 30-Sep | 0 | 100 | 0 | 100 | 12.8 | 22.4 | 17.8 |
| WWF | 1-Oct | 15-Oct | 0 | 100 | 0 | 100 | 13.4 | 19.3 | 15.9 |
| WWF | 16-Oct | 31-Oct | 0 | 100 | 0 | 100 | 8.99 | 18.85 | 14.5 |
| WWF | 1-Nov | 15-Nov | 14.5 | 85.5 | 0 | 100 | 7.28 | 17.9 | 11.7 |
| WWF | 16-Nov | 30-Nov | 39.4 | 60.6 | 0 | 100 | 4.2 | 15.2 | 9.4 |
| WWF | 1-Mar | 31-Mar | 54.4 | 45.6 | 0.1 | 99.9 | 2.6 | 18.1 | 8.9 |
| WWF | 1-Apr | 15-Apr | 79.4 | 20.6 | 0 | 100 | 5.2 | 18.5 | 12.8 |
| WWF | 16-Apr | 30-Apr | 42.3 | 57.7 | 0 | 100 | 8.2 | 21 | 14 |
| WWF | 1-May | 15-May | 11.7 | 88.3 | 0 | 100 | 11.9 | 19.7 | 15.5 |
| WWF | 16-May | 31-May | 14.6 | 85.4 | 0 | 100 | 12.5 | 25.2 | 18.6 |
| WWF | 1-Jun | 15-Jun | 0.1 | 99.9 | 0 | 100 | 14.8 | 27.2 | 21.1 |
| WWF | 16-Jun | 30-Jun | 2.9 | 97.1 | 0 | 100 | 18.1 | 30.2 | 22.8 |

# Gages in Large Watersheds

## Schuylkill River (Gage 01474500)



### Dissolved oxygen and pH

DO water quality criteria were not exceeded at this location (Table 53, Figures 58-59), and pH criteria were also attained (Table 54). The Schuylkill gage attained pH criteria, even during stretches of spring when algal activity is usually greatest (Figure 60).

**Table 53.** Gage 01474500 Dissolved Oxygen Minimum Criterion Summary Results by Month

| Month | Des. Use | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % non-attaining | % attaining |
|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | WWF | 1477 | 5.5 | 10.9 | 7.3 | 100.0 | 0.0 | 0.0 | 100.0 |
| Aug-20 | WWF | 1480 | 5.5 | 9.4 | 7.9 | 99.9 | 0.1 | 0.0 | 100.0 |
| Sep-20 | WWF | 1433 | 7.0 | 9.8 | 8.3 | 100.0 | 0.0 | 0.0 | 100.0 |
| Oct-20 | WWF | 1483 | 8.2 | 10.6 | 9.2 | 100.0 | 0.0 | 0.0 | 100.0 |
| Nov-20 | WWF | 1435 | 9.4 | 12.2 | 10.9 | 99.9 | 0.1 | 0.0 | 100.0 |
| Mar-21 | WWF | 1479 | 10.0 | 13.6 | 12.1 | 100.0 | 0.0 | 0.0 | 100.0 |
| Apr-21 | WWF | 1434 | 8.1 | 11.9 | 10.4 | 99.9 | 0.1 | 0.0 | 100.0 |
| May-21 | WWF | 1485 | 6.2 | 10.1 | 8.6 | 100.0 | 0.0 | 0.0 | 100.0 |
| Jun-21 | WWF | 1408 | 6.8 | 21.3 | 8.8 | 99.9 | 0.1 | 0.0 | 100.0 |

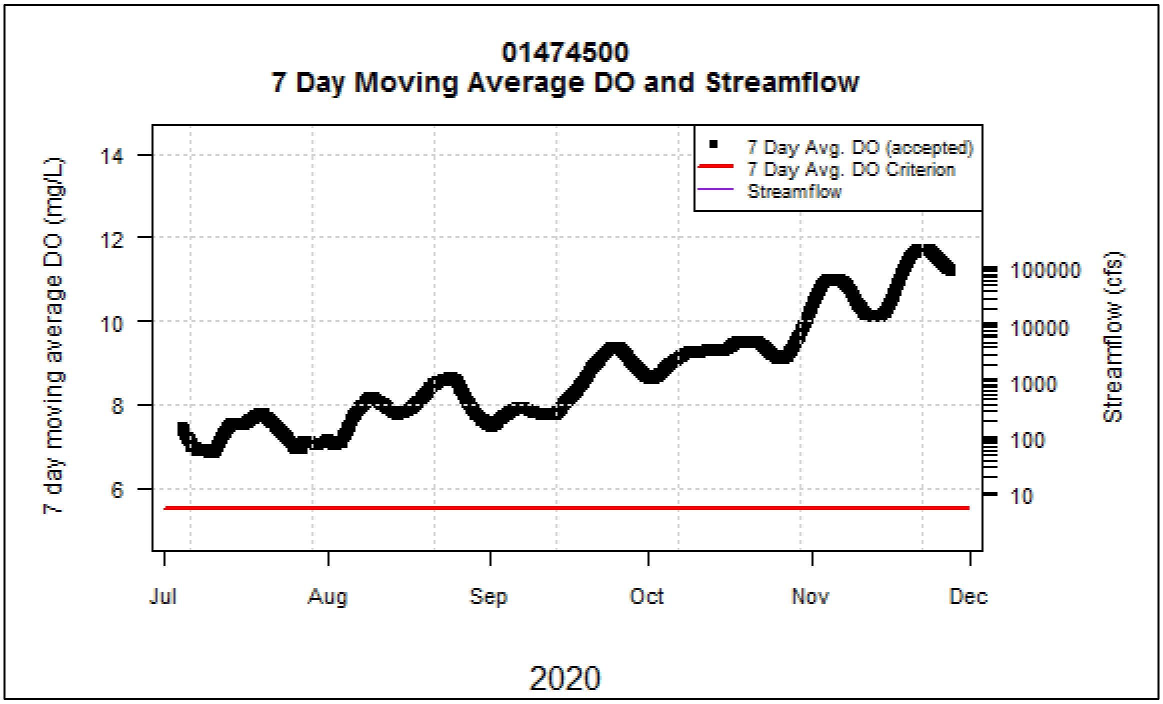



**Figure 58.** Gage 01474500, 7 Day Average Dissolved Oxygen and Streamflow, Jul-Dec 2020.

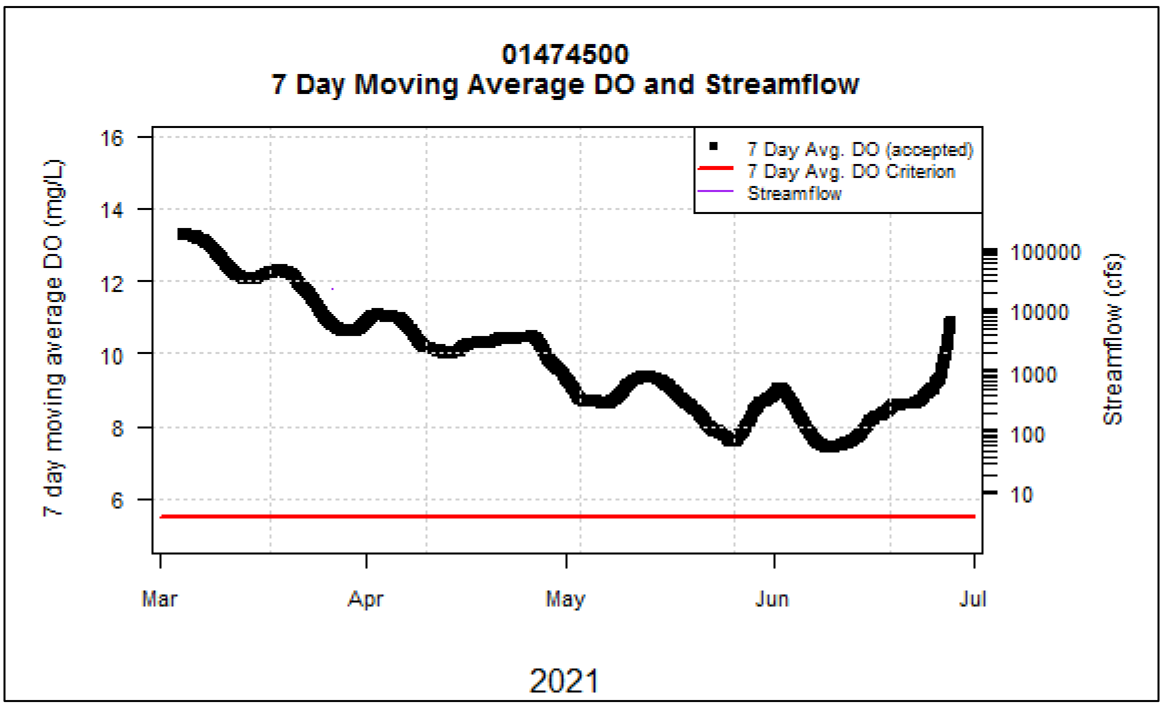



**Figure 59.** Gage 01474500, 7 Day Average Dissolved Oxygen and Streamflow, Mar-Jun 2021.

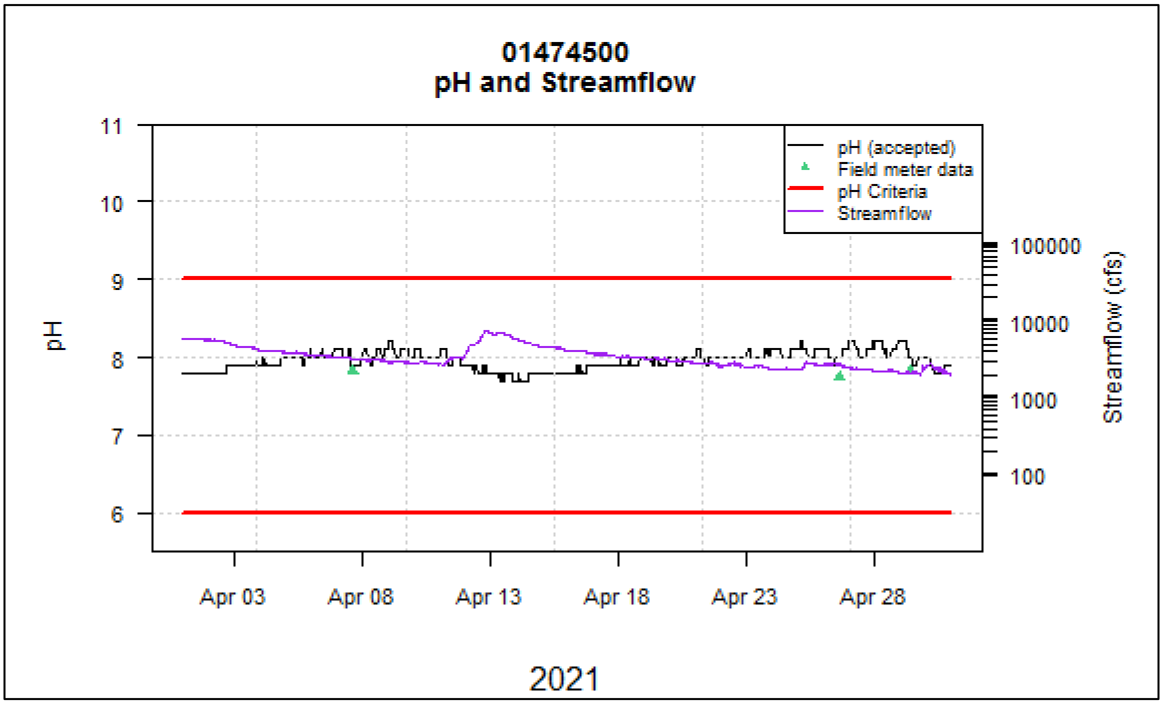



**Figure 60.** Gage 01474500, pH and Streamflow, April 2021.

**Table 54.** Gage 01474500 pH Criteria Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % min non-attaining | % max non-attaining | % min attaining | % max attaining |
|---|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | 1476 | 7.0 | 8.3 | 7.6 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Aug-20 | 1481 | 6.4 | 8.4 | 7.6 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Sep-20 | 1433 | 7.5 | 8.1 | 7.8 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Oct-20 | 1483 | 7.5 | 8.2 | 7.9 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Nov-20 | 1435 | 7.5 | 8.1 | 7.8 | 99.9 | 0.1 | 0.0 | 0.0 | 100.0 | 100.0 |
| Mar-21 | 1478 | 7.5 | 8.2 | 7.9 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Apr-21 | 1432 | 7.7 | 8.2 | 8.0 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| May-21 | 1485 | 7.5 | 8.1 | 7.8 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Jun-21 | 1408 | 7.4 | 9.3 | 7.8 | 99.9 | 0.1 | 0.0 | 1.4 | 100.0 | 98.6 |

## Temperature

**Table 55.** Gage 01474500 Temperature Summary Results by Maximum Criteria Period

| Designated Use | Date range start | Date range end | % exceedance | % attaining | % flagged data | % accepted data | Min | Max | Mean |
|---|---|---|---|---|---|---|---|---|---|
| WWF | 1-Jul | 31-Jul | 0.1 | 99.9 | 0 | 100 | 24 | 31.2 | 27.7 |
| WWF | 1-Aug | 15-Aug | 0 | 100 | 0 | 100 | 22.5 | 30.2 | 25.3 |
| WWF | 16-Aug | 31-Aug | 0 | 100 | 0 | 100 | 24.1 | 27.9 | 25.7 |
| WWF | 1-Sep | 15-Sep | 0 | 100 | 0 | 100 | 22.2 | 25.6 | 24.3 |
| WWF | 16-Sep | 30-Sep | 0 | 100 | 0 | 100 | 17.9 | 22.2 | 19.8 |
| WWF | 1-Oct | 15-Oct | 0 | 100 | 0 | 100 | 15.97 | 20.9 | 17.8 |
| WWF | 16-Oct | 31-Oct | 0 | 100 | 0 | 100 | 11.74 | 17.85 | 15.7 |
| WWF | 1-Nov | 15-Nov | 6 | 94 | 0 | 100 | 8.96 | 14.38 | 11.6 |
| WWF | 16-Nov | 30-Nov | 12.7 | 87.3 | 0 | 100 | 7 | 11.7 | 8.9 |
| WWF | 1-Mar | 31-Mar | 47 | 53 | 0 | 100 | 3.5 | 14 | 8.1 |
| WWF | 1-Apr | 15-Apr | 78.7 | 21.3 | 0 | 100 | 9.3 | 15.7 | 13 |
| WWF | 16-Apr | 30-Apr | 39 | 61 | 0 | 100 | 12.2 | 18.8 | 14.3 |
| WWF | 1-May | 15-May | 29 | 71 | 0 | 100 | 14.3 | 19.5 | 17.2 |
| WWF | 16-May | 31-May | 49 | 51 | 0 | 100 | 14.6 | 24.7 | 21 |
| WWF | 1-Jun | 15-Jun | 0.1 | 99.9 | 0 | 100 | 15.4 | 27.1 | 22.4 |
| WWF | 16-Jun | 30-Jun | 2.9 | 97.1 | 0 | 100 | 22.7 | 30.8 | 25.2 |

**Figure 61.** Gage 01474500, Schuylkill River at the Fairmount Dam, looking upstream

## Turbidity

Turbidity levels at the Schuylkill gage were less susceptible to extreme peaks due to storms and increased flow.

**Table 56.** Gage 01474500 Turbidity Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % above max. guideline | % below max. guideline |
|---|---|---|---|---|---|---|---|---|
| Jul-20 | 1486 | 2.0 | 492.0 | 15.1 | 100.0 | 0.0 | 94.8 | 5.2 |
| Aug-20 | 1488 | 1.5 | 28.6 | 4.0 | 100.0 | 0.0 | 71.3 | 28.7 |
| Sep-20 | 1436 | 1.1 | 6.3 | 2.3 | 100.0 | 0.0 | 21.4 | 78.6 |
| Oct-20 | 1484 | 1.1 | 25.4 | 3.5 | 100.0 | 0.0 | 37.4 | 62.6 |
| Nov-20 | 1442 | 1.1 | 98.0 | 7.6 | 100.0 | 0.0 | 45.7 | 54.3 |
| Mar-21 | 932 | 1.0 | 40.5 | 5.0 | 100.0 | 0.0 | 46.2 | 53.8 |
| Apr-21 | 1392 | 1.5 | 49.7 | 4.9 | 100.0 | 0.0 | 66.3 | 33.7 |
| May-21 | 1355 | 1.2 | 39.8 | 5.2 | 100.0 | 0.0 | 55.4 | 44.6 |
| Jun-21 | 1325 | 0.3 | 22.8 | 3.1 | 100.0 | 0.0 | 48.2 | 51.8 |

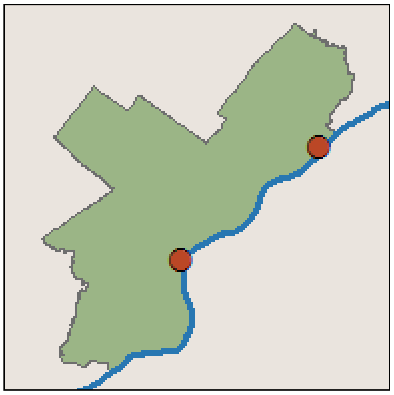
## Specific Conductance

The Schuylkill River generally exhibits intermediate conductance, lower than the small Philadelphia tributary streams described elsewhere in this report, but greater than that observed in the Delaware River. Observed differences are likely due to geology and preponderance of anthropogenic sources in the respective watersheds.

**Table 57.** Gage 01474500 Specific Conductance Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data |
|---|---|---|---|---|---|---|
| Jul-20 | 1476 | 224.0 | 518.0 | 418.8 | 100.0 | 0.0 |
| Aug-20 | 1480 | 121.0 | 536.0 | 394.0 | 100.0 | 0.0 |
| Sep-20 | 1433 | 383.0 | 586.0 | 495.5 | 100.0 | 0.0 |
| Oct-20 | 1481 | 349.0 | 563.0 | 495.7 | 100.0 | 0.0 |
| Nov-20 | 1433 | 282.0 | 457.0 | 398.0 | 100.0 | 0.0 |
| Mar-21 | 1479 | 242.0 | 483.0 | 340.9 | 100.0 | 0.0 |
| Apr-21 | 1433 | 302.0 | 441.0 | 370.5 | 100.0 | 0.0 |
| May-21 | 1485 | 290.0 | 521.0 | 434.4 | 100.0 | 0.0 |
| Jun-21 | 1408 | 295.0 | 504.0 | 414.3 | 100.0 | 0.0 |

## Delaware River (Gages 01467200 and 014670261)



### Dissolved oxygen and pH

The DRBC DO daily mean and pH criteria for Zone 3 was attained at Gage 01467200 for the entire reporting period (Tables 58 and 60). The Zone 2 DO daily mean and pH criteria were also attained at Gage 014670261 (Tables 59 and 61). Data is collected year-round at 014670261. In FY21, data were also collected year round at 01467200; this gage was relocated from the Ben Franklin Bridge in December 2020 to a new location at the Independence Seaport Museum at Penn's Landing.

**Figure 62.** Delaware River at Ben Franklin Bridge, near Gage 01467200

**Table 58.** Gage 01467200 Dissolved Oxygen Daily Mean Criterion Summary Results by Month

| Month | Des. Use | Days | Daily Avg. Min | Daily Avg. Max | Daily Avg. Mean | % non-attaining | %attaining |
|---|---|---|---|---|---|---|---|
| Jul-20 | DRBC | 31 | 3.8 | 5.2 | 4.6 | 0.0 | 100.0 |
| Aug-20 | DRBC | 31 | 4.2 | 5.5 | 4.8 | 0.0 | 100.0 |
| Sep-20 | DRBC | 30 | 4.8 | 6.3 | 5.5 | 0.0 | 100.0 |
| Oct-20 | DRBC | 31 | 6.2 | 7.4 | 6.7 | 0.0 | 100.0 |
| Nov-20 | DRBC | 30 | 7.8 | 9.9 | 9.1 | 0.0 | 100.0 |
| Dec-20 | DRBC | 31 | 10.4 | 13.6 | 12.0 | 0.0 | 100.0 |
| Jan-21 | DRBC | 31 | 12.9 | 13.7 | 13.2 | 0.0 | 100.0 |
| Feb-21 | DRBC | 28 | 13.5 | 14.0 | 13.9 | 0.0 | 100.0 |
| Mar-21 | DRBC | 31 | 9.8 | 13.3 | 12.1 | 0.0 | 100.0 |
| Apr-21 | DRBC | 30 | 9.0 | 10.5 | 9.8 | 0.0 | 100.0 |
| May-21 | DRBC | 31 | 7.6 | 9.9 | 8.9 | 0.0 | 100.0 |
| Jun-21 | DRBC | 30 | 4.8 | 7.8 | 6.5 | 0.0 | 100.0 |

**Table 59.** Gage 014670261 Dissolved Oxygen Daily Mean Criterion Summary Results by Month

| Month | Des. Use | Days | Daily Avg. Min | Daily Avg. Max | Daily Avg. Mean | % non-attaining | %attaining |
|---|---|---|---|---|---|---|---|
| Jul-20 | DRBC | 31 | 5.3 | 7.2 | 6.0 | 0.0 | 100.0 |
| Aug-20 | DRBC | 31 | 5.4 | 6.4 | 5.9 | 0.0 | 100.0 |
| Sep-20 | DRBC | 30 | 5.6 | 7.1 | 6.3 | 0.0 | 100.0 |
| Oct-20 | DRBC | 31 | 6.9 | 8.3 | 7.6 | 0.0 | 100.0 |
| Nov-20 | DRBC | 30 | 8.5 | 11.1 | 10.1 | 0.0 | 100.0 |
| Dec-20 | DRBC | 31 | 10.6 | 13.3 | 12.1 | 0.0 | 100.0 |
| Jan-21 | DRBC | 31 | 12.6 | 13.8 | 13.0 | 0.0 | 100.0 |
| Feb-21 | DRBC | 28 | 13.5 | 14.0 | 13.8 | 0.0 | 100.0 |
| Mar-21 | DRBC | 31 | 10.1 | 13.4 | 12.3 | 0.0 | 100.0 |
| Apr-21 | DRBC | 30 | 9.3 | 11.3 | 10.1 | 0.0 | 100.0 |
| May-21 | DRBC | 24 | 8.0 | 9.5 | 8.8 | 0.0 | 100.0 |
| Jun-21 | DRBC | 30 | 5.5 | 9.9 | 7.5 | 0.0 | 100.0 |

**Table 60.** Gage 01467200 pH Criteria Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % min non-attaining | % max non-attaining | % min attaining | % max attaining |
|---|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | 2876 | 6.8 | 7.1 | 7.0 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Aug-20 | 2922 | 6.9 | 7.3 | 7.0 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Sep-20 | 2726 | 7.0 | 7.7 | 7.2 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Oct-20 | 2734 | 7.1 | 7.3 | 7.2 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Nov-20 | 2868 | 7.1 | 7.4 | 7.2 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Dec-20 | 8491 | 7.0 | 7.6 | 7.3 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Jan-21 | 8870 | 7.2 | 7.6 | 7.4 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Feb-21 | 7993 | 7.4 | 7.7 | 7.5 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Mar-21 | 8869 | 7.2 | 8.0 | 7.5 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Apr-21 | 8586 | 7.3 | 7.5 | 7.4 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| May-21 | 8857 | 6.9 | 7.6 | 7.3 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Jun-21 | 8587 | 7.0 | 7.5 | 7.2 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |

**Table 61.** Gage 014670261 pH Criteria Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % min non-attaining | % max non-attaining | % min attaining | % max attaining |
|---|---|---|---|---|---|---|---|---|---|---|
| Jul-20 | 2955 | 7.0 | 7.4 | 7.1 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Aug-20 | 2965 | 6.6 | 7.3 | 7.0 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Sep-20 | 2867 | 6.6 | 7.3 | 7.2 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Oct-20 | 2940 | 7.2 | 7.5 | 7.3 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Nov-20 | 2865 | 7.0 | 7.5 | 7.3 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Dec-20 | 2967 | 6.8 | 7.5 | 7.3 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Jan-21 | 2927 | 7.2 | 7.6 | 7.4 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Feb-21 | 2657 | 7.4 | 7.7 | 7.6 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Mar-21 | 2953 | 7.0 | 8.1 | 7.5 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Apr-21 | 2851 | 7.3 | 7.8 | 7.5 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| May-21 | 2185 | 7.2 | 8.3 | 7.5 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| Jun-21 | 2871 | 7.1 | 7.6 | 7.3 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |

## Temperature

Temperature criteria for the Delaware River were not exceeded at either gage.

**Table 62.** Gage 01467200 Temperature Summary Results by Maximum Criteria Period

| Designated Use | Date range start | Date range end | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % non-attaining | % attaining |
|---|---|---|---|---|---|---|---|---|---|---|
| DRBC | 1-Jul | 31-Jul | 2904 | 25.9 | 29.1 | 27.6 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 1-Aug | 31-Aug | 2963 | 23.8 | 29.1 | 25.9 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 1-Sep | 30-Sep | 2790 | 21.0 | 26.0 | 23.8 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 1-Oct | 31-Oct | 2881 | 14.8 | 21.4 | 18.4 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 1-Nov | 30-Nov | 2881 | 8.6 | 15.2 | 11.2 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 1-Dec | 31-Dec | 8497 | 3.1 | 9.4 | 5.4 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 1-Jan | 31-Jan | 8870 | 1.5 | 4.1 | 3.4 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 1-Feb | 28-Feb | 7993 | 0.8 | 3.8 | 1.6 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 31-Mar | 31-Mar | 8869 | 3.6 | 12.2 | 6.6 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 1-Apr | 30-Apr | 8586 | 9.9 | 14.9 | 12.4 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 1-May | 31-May | 8857 | 14.4 | 21.1 | 17.0 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 1-Jun | 30-Jun | 8587 | 19.0 | 26.6 | 22.8 | 100.0 | 0.0 | 0.0 | 100.0 |

**Table 63.** Gage 014670261 Temperature Summary Results by Maximum Criteria Period

| Designated Use | Date range start | Date range end | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % non-attaining | % attaining |
|---|---|---|---|---|---|---|---|---|---|---|
| DRBC | 1-Jul | 31-Jul | 2956 | 26.2 | 29.9 | 27.8 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 1-Aug | 31-Aug | 2965 | 23.3 | 29.8 | 25.9 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 1-Sep | 30-Sep | 2867 | 20.2 | 26.4 | 23.3 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 1-Oct | 31-Oct | 2965 | 14.0 | 20.6 | 17.6 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 1-Nov | 30-Nov | 2870 | 7.5 | 14.0 | 10.1 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 1-Dec | 31-Dec | 2967 | 2.0 | 10.0 | 4.9 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 1-Jan | 31-Jan | 2936 | 0.5 | 4.5 | 3.0 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 1-Feb | 28-Feb | 2669 | 0.2 | 4.7 | 1.4 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 31-Mar | 31-Mar | 2954 | 3.2 | 12.5 | 6.8 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 1-Apr | 30-Apr | 2855 | 9.0 | 15.5 | 12.3 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 1-May | 31-May | 2205 | 13.4 | 22.2 | 17.8 | 100.0 | 0.0 | 0.0 | 100.0 |
| DRBC | 1-Jun | 30-Jun | 2858 | 17.8 | 27.7 | 22.9 | 100.0 | 0.0 | 0.0 | 100.0 |

## Specific Conductance

The Delaware River exhibits much lower conductivity than the small Philadelphia tributary streams described elsewhere in this report. This is likely caused by differences in geology and proportionally fewer anthropogenic sources in the less-developed Delaware River watershed.

**Table 64.** Gage 01467200 Specific Conductance Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data |
|---|---|---|---|---|---|---|
| Jul-20 | 2885 | 200.0 | 267.0 | 235.1 | 100.0 | 0.0 |
| Aug-20 | 2937 | 150.0 | 298.0 | 216.8 | 100.0 | 0.0 |
| Sep-20 | 2741 | 246.0 | 317.0 | 281.2 | 100.0 | 0.0 |
| Oct-20 | 2806 | 263.0 | 329.0 | 298.1 | 100.0 | 0.0 |
| Nov-20 | 2878 | 218.0 | 290.0 | 248.1 | 100.0 | 0.0 |
| Dec-20 | 8497 | 111.0 | 321.0 | 204.0 | 100.0 | 0.0 |
| Jan-21 | 8870 | 140.0 | 279.0 | 223.6 | 100.0 | 0.0 |
| Feb-21 | 7993 | 249.0 | 532.0 | 417.9 | 100.0 | 0.0 |
| Mar-21 | 8869 | 177.0 | 509.0 | 262.2 | 100.0 | 0.0 |
| Apr-21 | 8586 | 189.0 | 257.0 | 223.7 | 100.0 | 0.0 |
| May-21 | 8857 | 148.0 | 264.0 | 203.5 | 100.0 | 0.0 |
| Jun-21 | 8586 | 200.0 | 269.0 | 244.2 | 100.0 | 0.0 |

**Table 65.** Gage 014670261 Specific Conductance Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data |
|---|---|---|---|---|---|---|
| Jul-20 | 2955 | 179.0 | 257.0 | 218.1 | 100.0 | 0.0 |
| Aug-20 | 2965 | 138.0 | 281.0 | 206.5 | 100.0 | 0.0 |
| Sep-20 | 2866 | 208.0 | 321.0 | 255.4 | 100.0 | 0.0 |
| Oct-20 | 2965 | 249.0 | 314.0 | 281.3 | 100.0 | 0.0 |
| Nov-20 | 2870 | 207.0 | 285.0 | 234.7 | 100.0 | 0.0 |
| Dec-20 | 2966 | 111.0 | 418.0 | 216.5 | 100.0 | 0.0 |
| Jan-21 | 2928 | 153.0 | 295.0 | 231.0 | 100.0 | 0.0 |
| Feb-21 | 2669 | 247.0 | 676.0 | 429.5 | 100.0 | 0.0 |
| Mar-21 | 2954 | 169.0 | 537.0 | 263.1 | 100.0 | 0.0 |
| Apr-21 | 2856 | 193.0 | 290.0 | 228.4 | 100.0 | 0.0 |
| May-21 | 2198 | 138.0 | 309.0 | 212.3 | 100.0 | 0.0 |
| Jun-21 | 2859 | 206.0 | 303.0 | 241.3 | 100.0 | 0.0 |

### Turbidity

Turbidity guidelines at 014670261 were almost always exceeded throughout the year. Turbidity is not continuously measured at 01467200.

**Table 66.** Gage 014670261 Turbidity Summary Results by Month

| Month | Observations, n | Min | Max | Mean | % accepted data | % flagged data | % non-attaining | % attaining |
|---|---|---|---|---|---|---|---|---|
| Jul-20 | 2975 | 3.4 | 53.5 | 11.6 | 100.0 | 0.0 | 100.0 | 0.0 |
| Aug-20 | 2976 | 2.7 | 45.7 | 7.3 | 100.0 | 0.0 | 99.9 | 0.1 |
| Sep-20 | 2880 | 2.3 | 23.0 | 6.2 | 100.0 | 0.0 | 98.1 | 1.9 |
| Oct-20 | 2915 | 2.4 | 36.3 | 7.0 | 100.0 | 0.0 | 99.3 | 0.7 |
| Nov-20 | 2880 | 3.6 | 65.8 | 10.3 | 100.0 | 0.0 | 100.0 | 0.0 |
| Dec-20 | 2976 | 2.9 | 43.4 | 8.9 | 100.0 | 0.0 | 100.0 | 0.0 |
| Jan-21 | 2970 | 0.3 | 164.0 | 9.1 | 100.0 | 0.0 | 99.8 | 0.2 |
| Feb-21 | 2779 | 2.0 | 46.3 | 5.1 | 100.0 | 0.0 | 92.1 | 7.9 |
| Mar-21 | 2966 | 1.2 | 17.8 | 4.3 | 100.0 | 0.0 | 91.3 | 8.7 |
| Apr-21 | 2863 | 1.7 | 90.3 | 7.2 | 100.0 | 0.0 | 92.7 | 7.3 |
| May-21 | 2964 | 1.9 | 61.9 | 8.2 | 100.0 | 0.0 | 97.8 | 2.2 |
| Jun-21 | 2875 | 2.1 | 39.9 | 7.3 | 100.0 | 0.0 | 97.7 | 2.3 |

# Wet Weather and Dry Weather Results

## Annual Summary, July 2020 - June 2021

Water quality data was also categorized as wet or dry for the purpose of evaluating weather effects on water quality, and specifically the incidence of non-attainment of water quality criteria. A wet weather condition was defined as rainfall greater than 0.05 inches in the preceding 72 hours, as measured at the nearest PWD rain gage.

In general, more frequent non-attainment of DO criteria was observed in wet weather due to the tendency of storm events to decrease DO via the introduction of stormwater runoff and BOD (Tables 67-68). The turbidity maximum guideline was also usually more frequently surpassed in wet weather (Tables 71-72). The pH maximum criterion was exceeded in both wet and dry weather (Tables 69-70). Temperature criteria were more likely to be exceeded at Trout Stocking Fishery (TSF) gages due to more stringent seasonal criteria (Tables 75-76).

**Table 67.** USGS Gage July 2020 - June 2021 Dissolved Oxygen Minimum Criterion Summary Results During Wet Weather

| Gage number | Designated Use | Observations, n | % accepted data | % flagged data | % non-attaining | % attaining |
|---|---|---|---|---|---|---|
| 01465798 | WWF | 20567 | 96.1 | 3.9 | 0.4 | 99.6 |
| 014670261* | DRBC | 20748 | 100 | 0 | NA | NA |
| 01467042 | TSF | 21574 | 98.8 | 1.2 | 0.1 | 99.9 |
| 01467048 | TSF | 20848 | 100 | 0 | 0 | 100 |
| 01467086 | WWF | 8138 | 100 | 0 | 0.6 | 99.4 |
| 01467087 | WWF | 18506 | 94.8 | 5.2 | 14.9 | 85.1 |
| 01467200* | DRBC | 20365 | 100 | 0 | NA | NA |
| 01473900 | TSF | 8393 | 100 | 0 | 0 | 100 |
| 01474000 | TSF | 10296 | 100 | 0 | 0 | 100 |
| 01474500 | WWF | 10316 | 99.9 | 0.1 | 0 | 100 |
| 01475530 | WWF | 20260 | 99.8 | 0.2 | 0 | 100 |
| 01475548 | WWF | 20105 | 98 | 2 | 10.7 | 89.3 |

*No minimum DO criterion applies at these locations.

**Table 68.** USGS Gage July 2020 - June 2021 Dissolved Oxygen Minimum Criterion Summary Results During Dry Weather

| Gage number | Designated Use | Observations, n | % accepted data | % flagged data | % non-attaining | % attaining |
|---|---|---|---|---|---|---|
| 01465798 | WWF | 13913 | 100 | 0 | 0.2 | 99.8 |
| 014670261* | DRBC | 13273 | 100 | 0 | NA | NA |
| 01467042 | TSF | 13056 | 99.4 | 0.6 | 0 | 100 |
| 01467048 | TSF | 14023 | 100 | 0 | 0 | 100 |
| 01467086 | WWF | 5286 | 100 | 0 | 1.4 | 98.6 |
| 01467087 | WWF | 14863 | 99.1 | 0.9 | 7 | 93 |
| 01467200* | DRBC | 13930 | 100 | 0 | NA | NA |
| 01473900 | TSF | 5250 | 100 | 0 | 0.2 | 99.8 |
| 01474000 | TSF | 7084 | 100 | 0 | 0 | 100 |
| 01474500 | WWF | 7064 | 100 | 0 | 0 | 100 |
| 01475530 | WWF | 14573 | 100 | 0 | 0 | 100 |
| 01475548 | WWF | 14430 | 99.1 | 0.9 | 2.3 | 97.7 |

*No minimum DO criterion applies at these locations.

**Table 69.** USGS Gage July 2020 - June 2021 pH Criteria Summary Results During Wet Weather

| Gage number | Observations, n | % accepted data | % flagged data | % min. non-attaining | % max. non-attaining | % min. attaining | % max attaining | % attaining |
|---|---|---|---|---|---|---|---|---|
| 01465798 | 20851 | 100.0 | 0.0 | 0.0 | 0.1 | 100.0 | 99.9 | 99.9 |
| 014670261 | 20723 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 01467042 | 21573 | 99.6 | 0.4 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 01467048 | 20844 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 01467086 | 8249 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 01467087 | 18682 | 98.5 | 1.5 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 01467200 | 20397 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 01473900 | 8393 | 100.0 | 0.0 | 0.0 | 0.3 | 100.0 | 99.7 | 99.7 |
| 01474000 | 10303 | 100.0 | 0.0 | 0.0 | 0.4 | 100.0 | 99.6 | 99.6 |
| 01474500 | 10160 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 01475530 | 20247 | 97.4 | 2.6 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 01475548 | 20434 | 98.8 | 1.2 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 |

**Table 70.** USGS Gage July 2020 - June 2021 pH Criteria Summary Results During Dry Weather

| Gage number | Observations, n | % accepted data | % flagged data | % min. non-attaining | % max. non-attaining | % min. attaining | % max attaining | % attaining |
|---|---|---|---|---|---|---|---|---|
| 01465798 | 14034 | 100.0 | 0.0 | 0.0 | 0.7 | 100.0 | 99.3 | 99.3 |
| 014670261 | 13265 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 01467042 | 13071 | 100.0 | 0.0 | 0.0 | 0.1 | 100.0 | 99.9 | 99.9 |
| 01467048 | 14016 | 100.0 | 0.0 | 0.0 | 0.3 | 100.0 | 99.7 | 99.7 |
| 01467086 | 5286 | 100.0 | 0.0 | 0.0 | 1.0 | 100.0 | 99.0 | 99.0 |
| 01467087 | 14833 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 01467200 | 13951 | 100.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 01473900 | 5250 | 100.0 | 0.0 | 0.0 | 2.5 | 100.0 | 97.5 | 97.5 |
| 01474000 | 7133 | 100.0 | 0.0 | 0.0 | 3.4 | 100.0 | 96.6 | 96.6 |
| 01474500 | 7063 | 100.0 | 0.0 | 0.0 | 0.3 | 100.0 | 99.7 | 99.7 |
| 01475530 | 14573 | 100.0 | 0.0 | 0.0 | 0.1 | 100.0 | 99.9 | 99.9 |
| 01475548 | 14431 | 98.8 | 1.2 | 0.0 | 2.0 | 100.0 | 98.0 | 98.0 |

**Table 71.** USGS Gage July 2020 - June 2021 Turbidity Summary Results During Wet Weather

| Gage number | Observations, n | % accepted data | % flagged data | % above max. guideline | % below max. guideline |
|---|---|---|---|---|---|
| 01465798 | 15419 | 98.1 | 1.9 | 50.4 | 49.6 |
| 014670261 | 20738 | 100.0 | 0.0 | 98.0 | 2.0 |
| 01467042 | 21579 | 94.8 | 5.2 | 33.9 | 66.1 |
| 01467048 | 15180 | 97.2 | 2.8 | 46.6 | 53.4 |
| 01467086* | 0 | NA | NA | NA | NA |
| 01467087* | 0 | NA | NA | NA | NA |
| 01467200* | 0 | NA | NA | NA | NA |
| 01473900 | 8392 | 99.0 | 1.0 | 53.1 | 46.9 |
| 01474000 | 10291 | 100.0 | 0.0 | 38.1 | 61.9 |
| 01474500 | 10317 | 100.0 | 0.0 | 49.7 | 50.3 |
| 01475530* | 0 | NA | NA | NA | NA |
| 01475548* | 0 | NA | NA | NA | NA |

*Turbidity not continuously monitored at this location

**Table 72.** USGS Gage July 2020 - June 2021 Turbidity Summary Results During Dry Weather

| Gage number | Observations, n | %accepted data | % flagged data | % above max. guideline | % below max. guideline |
|---|---|---|---|---|---|
| 01465798 | 10874 | 99.5 | 0.5 | 10.0 | 90.0 |
| 014670261 | 13277 | 100.0 | 0.0 | 97.6 | 2.4 |
| 01467042 | 13003 | 100.0 | 0.0 | 10.2 | 89.8 |
| 01467048 | 10243 | 99.1 | 0.9 | 6.2 | 93.8 |
| 01467086* | 0 | NA | NA | NA | NA |
| 01467087* | 0 | NA | NA | NA | NA |
| 01467200* | 0 | NA | NA | NA | NA |
| 01473900 | 5247 | 97.4 | 2.6 | 17.0 | 83.0 |
| 01474000 | 7105 | 100.0 | 0.0 | 6.5 | 93.5 |
| 01474500 | 7057 | 100.0 | 0.0 | 34.4 | 65.6 |
| 01475530* | 0 | NA | NA | NA | NA |
| 01475548* | 0 | NA | NA | NA | NA |

*Turbidity not continuously monitored at this location

**Table 73.** USGS Gage July 2020 - June 2021 Specific Conductance Summary Results During Wet Weather

| Gage number | Observations, n | % accepted data | % flagged data |
|---|---|---|---|
| 01465798 | 20739 | 99.5 | 0.5 |
| 014670261 | 20779 | 100.0 | 0.0 |
| 01467042 | 21550 | 100.0 | 0.0 |
| 01467048 | 20824 | 100.0 | 0.0 |
| 01467086 | 8248 | 100.0 | 0.0 |
| 01467087 | 18669 | 100.0 | 0.0 |
| 01467200 | 20493 | 100.0 | 0.0 |
| 01473900 | 8390 | 100.0 | 0.0 |
| 01474000 | 10298 | 100.0 | 0.0 |
| 01474500 | 10308 | 100.0 | 0.0 |
| 01475530 | 20253 | 100.0 | 0.0 |
| 01475548 | 20434 | 99.5 | 0.5 |

**Table 74.** USGS Gage July 2020 - June 2021 Specific Conductance Summary Results During Dry Weather

| Gage number | Observations, n | % accepted data | % flagged data |
|---|---|---|---|
| 01465798 | 13801 | 98.5 | 1.5 |
| 014670261 | 13272 | 100.0 | 0.0 |
| 01467042 | 13002 | 100.0 | 0.0 |
| 01467048 | 14002 | 100.0 | 0.0 |
| 01467086 | 5284 | 100.0 | 0.0 |
| 01467087 | 14855 | 100.0 | 0.0 |
| 01467200 | 13976 | 100.0 | 0.0 |
| 01473900 | 5250 | 100.0 | 0.0 |
| 01474000 | 7131 | 100.0 | 0.0 |
| 01474500 | 7060 | 100.0 | 0.0 |
| 01475530 | 14567 | 98.9 | 1.1 |
| 01475548 | 14431 | 97.2 | 2.8 |

**Table 75.** USGS Gage July 2020 - June 2021 Temperature Maximum Criteria Summary Results During Wet Weather

| Gage number | Designated Use | Observations, n | % accepted data | % flagged data | % exceedance | % attaining |
|---|---|---|---|---|---|---|
| 01465798 | WWF | 20855 | 100.0 | 0.0 | 9.8 | 90.2 |
| 014670261 | DRBC | 20790 | 100.0 | 0.0 | 0.0 | 100.0 |
| 01467042 | TSF | 21480 | 100.0 | 0.0 | 9.8 | 90.2 |
| 01467048 | TSF | 20704 | 100.0 | 0.0 | 10.7 | 89.3 |
| 01467086 | WWF | 8255 | 100.0 | 0.0 | 13.1 | 86.9 |
| 01467087 | WWF | 18690 | 100.0 | 0.0 | 11.9 | 88.1 |
| 01467200 | DRBC | 20606 | 100.0 | 0.0 | 0.0 | 100.0 |
| 01473900 | TSF | 8318 | 100.0 | 0.0 | 11.4 | 88.6 |
| 01474000 | TSF | 10260 | 100.0 | 0.0 | 9.6 | 90.4 |
| 01474500 | WWF | 10312 | 100.0 | 0.0 | 11.7 | 88.3 |
| 01475530 | WWF | 20253 | 100.0 | 0.0 | 10.0 | 90.0 |
| 01475548 | WWF | 20363 | 100.0 | 0.0 | 10.4 | 89.6 |

**Table 76.** USGS Gage July 2020 - June 2021 Temperature Maximum Criteria Summary Results During Dry Weather

| Gage number | Designated Use | Observations, n | % accepted data | % flagged data | % exceedance | % attaining |
|---|---|---|---|---|---|---|
| 01465798 | WWF | 14036 | 100 | 0 | 12.0 | 88.0 |
| 014670261 | DRBC | 13278 | 100 | 0 | 0 | 100 |
| 01467042 | TSF | 13066 | 100 | 0 | 14.3 | 85.7 |
| 01467048 | TSF | 13927 | 100 | 0 | 15.2 | 84.8 |
| 01467086 | WWF | 5288 | 100 | 0 | 17.0 | 83.0 |
| 01467087 | WWF | 14861 | 100 | 0 | 12.8 | 87.2 |
| 01467200 | DRBC | 14035 | 100 | 0 | 0 | 100 |
| 01473900 | TSF | 5200 | 100 | 0 | 17.5 | 82.5 |
| 01474000 | TSF | 7078 | 100 | 0 | 12.1 | 87.9 |
| 01474500 | WWF | 7063 | 100 | 0 | 13.0 | 87.0 |
| 01475530 | WWF | 14573 | 100 | 0 | 11.0 | 89.0 |
| 01475548 | WWF | 14411 | 100 | 0 | 12.2 | 87.8 |

## References

Delaware River Basin Commission, 2007. Delaware River Basin Water Code: 18 CFR Part 410 (With Amendments Through September 27, 2006). West Trenton, NJ.

# Appendix H – PWD/USGS Groundwater Monitoring Program

## Background

The basis of PWD's CSO LTCPU wet weather source control strategy is the "capture" and infiltration of as much rainwater as possible with green stormwater infrastructure (GSI). The direct benefits of such an effort are a reduction of stormwater discharged directly to streams, as well as the increased recharge of stormwater to supplement groundwater resources. Increased infiltration, though advantageous in several respects, must be carefully planned and closely monitored to avoid unwanted impacts. Increasing groundwater levels in areas where the depth to water is shallow could result in the saturation of soils close to the surface, potentially causing basement flooding. In addition, building foundations could be impacted by rising groundwater levels.

The adaptive management approach being employed for the LTCPU is an iterative process strongly dependent on monitoring. In order to quantify the impact of this long-term effort on groundwater resources, it is necessary to monitor groundwater levels in Philadelphia. PWD has partnered with USGS to increase the geographic scope and frequency of groundwater monitoring in the Philadelphia region. A City-wide groundwater level monitoring network will provide long-term monthly data documenting current water levels and trends in groundwater elevations throughout the City, helping to track the impacts of widespread implementation of stormwater management practices (SMPs) and global climate change.

Data from the groundwater monitoring network will also be used to calibrate a Philadelphia groundwater model and update the USGS groundwater contour map of Philadelphia (Paulachok 1984). In addition to this City-wide, long term groundwater monitoring program, PWD is conducting site-scale monitoring to address the effectiveness of individual SMPs. The City-wide groundwater monitoring network and site-scale monitoring at GSI facilities provide complementary information regarding the effects of stormwater management practices at different spatial and temporal scales.

## Methods

PWD and USGS identified existing wells that would be suitable for the network and obtained permission for site access. Once wells were identified and accessible, well condition and suitability for inclusion in the monitoring network were investigated by continuous water level monitoring and remote video camera inspection when accessible. Wells that met acceptance criteria were added to the monitoring network. After examining readily available information about existing wells, PWD elected to drill additional wells in order to provide better spatial distribution of wells in the monitoring network. USGS staff conduct groundwater observations monthly and upload water level data to the NWIS web server. PWD staff periodically download water level data from NWIS and summarize these data annually.

### Well Network Establishment

Existing wells in the Philadelphia area were identified by USGS and PWD through digital and paper archives as well as through contacting representatives of other City agencies and large institutional landowners (*e.g.*, Philadelphia Fire Department, Philadelphia Department of Parks and Recreation, Philadelphia Gas Works, Southeastern Pennsylvania Transportation Authority, etc.). Priority was given to wells on publicly-owned or large institutional land uses in order to help ensure that wells would remain accessible in the future. The primary goal was to develop a network of wells with a spatial distribution and density sufficient to assess groundwater levels throughout the City of Philadelphia. Other criteria for establishment of the well network were:

- Sufficient density of wells in critical areas with a shallow water table
- No bias given to combined-sewered or separate-sewered areas
- Denser distribution of monitoring wells in the Northern Piedmont Ecoregion to reflect its more varied groundwater contours.

Wells that met acceptance criteria were assigned USGS location codes and added to the USGS well monitoring network and National Water Information System (NWIS) database. The well monitoring network contains 29 active sites that are monitored monthly. Additional sites are expected to be added once landowner access agreements are finalized or new wells are drilled.

## Video Camera Inspection

The availability of well attribute information varied from well to well and in most cases the physical characteristics and condition of candidate wells to be added to the network was unknown. USGS staff perform remote video camera inspection, when possible, to determine physical characteristics such as screened intervals, total depth, depth to bottom of casing, and the location of potential water-bearing zones within the bore hole. Wells narrower than 4" diameter and wells with pumps or other plumbing could not accommodate the camera equipment and were not inspected with this method.

## Continuous Water Level Monitoring

Monthly measurements are appropriate for monitoring long term trends in groundwater levels. However, it is important to verify that these monthly observations are representative of the unconfined aquifer and not influenced by anthropogenic activity or other conditions. USGS staff used data logging pressure transducers (LevelTroll model 500, In-Situ, Inc.) to conduct continuous water level monitoring in candidate wells. These sensors are vented to the surface of the well to provide atmospheric pressure correction. Continuous monitoring was carried out across all wells in the network to identify any aberrant trends, such as those that might be caused by local pumping operations. Sensors were deployed for three-month periods on a rotating schedule with five wells actively monitored at a time. Wells that appear to be influenced by permanent pumping operations will be removed from the monitoring network (*e.g.*, permanent wells dewatering the stadiums). Wells that are temporarily affected by local, dewatering operations (*e.g.*, a short term construction site), will remain in the system, but data collected during the period when dewatering operations affected the well will not be used in estimates of current water levels and water level trends.

## Routine Groundwater Observations

USGS staff conduct groundwater observations monthly at each well using a water sensor and graduated tape. Equipment is sterilized in 10% bleach solution prior to and after measurements are taken in order to prevent introducing or transferring contamination between wells. Well level measurements are converted to elevation above the North American Vertical Datum of 1988 (NAVD88) based upon the known elevation correction factor for each well. Water level data are recorded on site in field notebooks along with any pertinent field notes and then uploaded to the NWIS web server. PWD periodically downloads data from NWIS and summarizes these data annually.

## Monitoring Well Locations

Currently the well monitoring network contains 29 active sites that are monitored monthly. (Table 1, Figure 1). PWD is in the process of drilling additional wells on City-owned property in order to meet spatial distribution and other well network criteria. Of the 29 active wells, 11 are located within the Middle Atlantic Coastal Plain Ecoregion, while the remaining 18 wells are located in the Northern Piedmont (Omernik 1987). As stated above, higher well density is required in the latter region to reflect the more complex geology and interactions with groundwater.

**Table 1.** PWD-USGS Groundwater Monitoring Well Network Locations.

| Site ID | Site Name | Lat. | Long. | Established |
|---|---|---|---|---|
| USGS-395342075102101 | PH 12 | 39.895 | -75.172 | 10/22/1978 |
| USGS-395353075151501 | PH 1052 | 39.898 | -75.254 | 3/7/2011 |
| USGS-395408075104001 | PH 63 | 39.902 | -75.177 | 9/14/1954 |
| USGS-395416075150301 | PH 1053 | 39.904 | -75.251 | 4/24/2003 |
| USGS-395459075140501 | PH 797 | 39.916 | -75.259 | 10/15/1980 |
| USGS-395516075113901 | PH 1051 | 39.921 | -75.194 | -- |
| USGS-395611075091301 | PH 1059 | 39.936 | -75.154 | 8/14/2014 |
| USGS-395656075100401 | PH 136 | 39.949 | -75.167 | 12/6/1978 |
| USGS-395656075104401 | PH 1064 | 39.948 | -75.178 | 6/5/2015 |
| USGS-395705075135901 | PH 1061 | 39.951 | -75.232 | 6/5/2015 |
| USGS-395849075134201 | PH 1063 | 39.98 | -75.228 | 6/5/2015 |
| USGS-395859075085401 | PH 1042 | 39.983 | -75.148 | 2/14/2011 |
| USGS-395942075144301 | MG 2164 | 39.995 | -75.245 | 2/14/2011 |
| USGS-400001075040301 | PH 1057 | 40 | -75.068 | 8/14/2014 |
| USGS-400016075102801 | PH 1062 | 40.004 | -75.174 | 6/5/2015 |
| USGS-400038075094601 | PH 1058 | 40.011 | -75.163 | 8/14/2014 |
| USGS-400055075122501 | PH 1060 | 40.015 | -75.206 | 6/5/2015 |
| USGS-400132075031001 | PH 1056 | 40.026 | -75.053 | 8/14/2014 |
| USGS-400211075093701 | PH 1050 | 40.036 | -75.16 | -- |
| USGS-400217075142101 | PH 540 | 40.038 | -75.239 | 3/29/1948 |
| USGS-400229075104601 | PH 1043* | 40.041 | -75.179 | 2/14/2011 |
| USGS-400308074592201 | PH 397 | 40.052 | -74.989 | 1/4/1979 |
| USGS-400311075101301 | PH 1040 | 40.053 | -75.17 | 2/17/2011 |
| USGS-400327075152201 | PH 1044 | 40.057 | -75.256 | 3/16/2011 |
| USGS-400424075104901 | PH 550 | 40.073 | -75.18 | --/--/1906 |
| USGS-400512075033401 | PH 1045 | 40.087 | -75.059 | 7/18/2011 |
| USGS-400516075033201 | PH 1046 | 40.088 | -75.059 | 7/18/2011 |
| USGS-400524075042601 | MG 2195 | 40.09 | -75.074 | -- |
| USGS-400527075042801 | MG 2193 | 40.091 | -75.074 | -- |
| USGS-400527075042802 | MG 2194 | 40.091 | -75.074 | -- |
| USGS-400644074590801 | PH 1041 | 40.112 | -74.986 | 2/17/2011 |

* Philadelphia County observation well

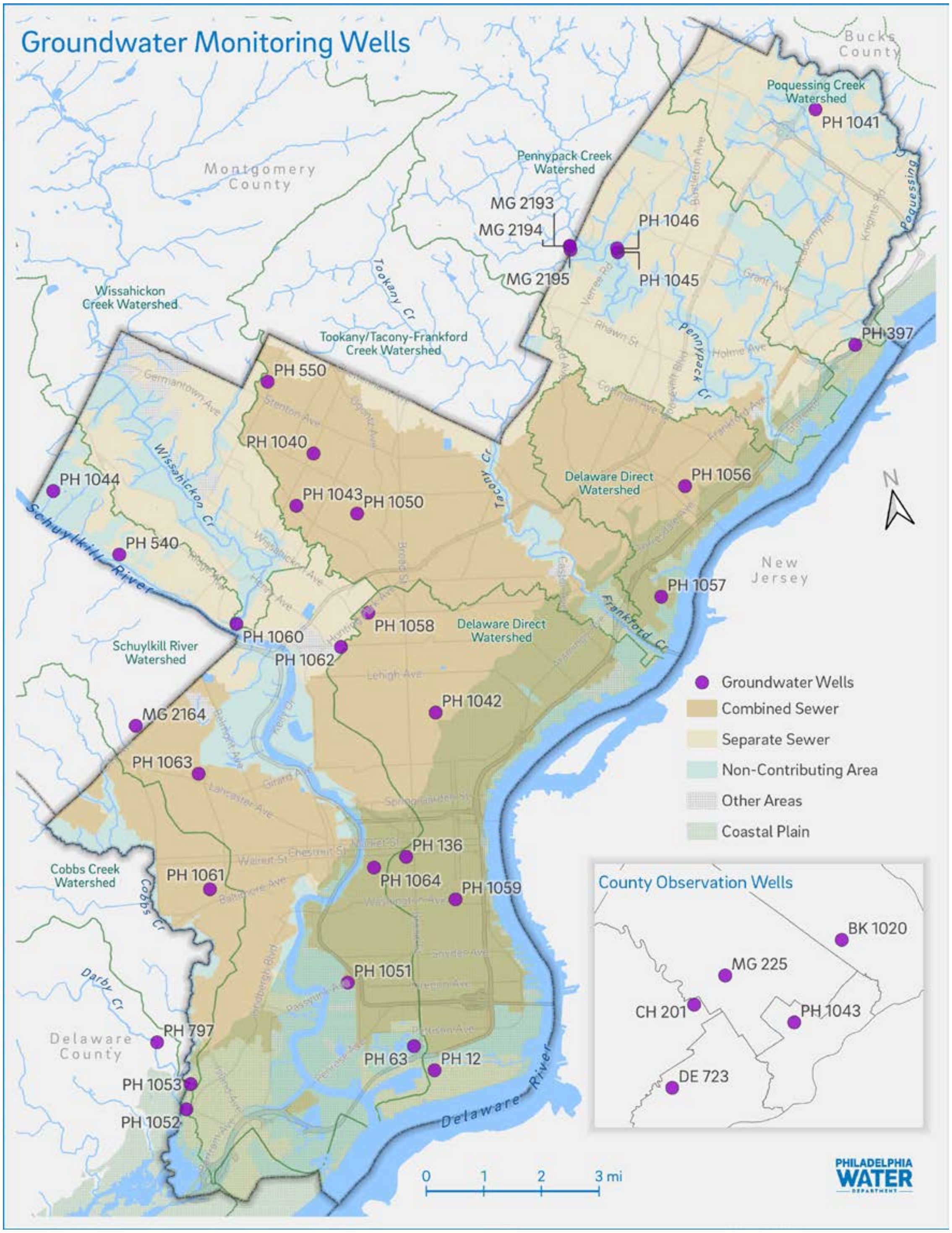



**Figure 1.** PWD-USGS Groundwater Monitoring Well Network Locations and (inset) County Reference Well Locations.

We
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were also classified according to predominant underlying geology and type of sewer system, *i.e.*, CSO or separate-sewered (Table 2, Figure 1). Another consideration for siting new wells was the potential influence of buried utilities and historic creek beds. During the period of rapid expansion of Philadelphia's grid-like network of streets, historic streams were encased in large brick sewers and buried in order to level and prepare land for development. Recent groundwater mapping and modeling work suggests that these brick sewers strongly influence local groundwater elevations (Paulachok 1991, Maimone et al. 2011).

**Table 2.** PWD-USGS Groundwater Well Geology and Sewer System Type Classification.

| Site ID | Site Name | Sewer Type | Geology |
|---|---|---|---|
| USGS-395353075151501 | PH 1052 | Separate | Trenton Gravel |
| USGS-395408075104001 | PH 63 | Separate | Trenton Gravel |
| USGS-395416075150301 | PH 1053 | Separate | Trenton Gravel |
| USGS-395516075113901 | PH 1051 | CSO | Magothy Raritan Potomac |
| USGS-395656075100401 | PH 136 | CSO | Trenton Gravel |
| USGS-395859075085401 | PH 1042 | CSO | Pennsauken and Bridgeton Formation |
| USGS-395942075144301 | MG 2164 | Separate | Granitic Gneiss and Granite |
| USGS-400211075093701 | PH 1050 | CSO | Wissahickon Formation |
| USGS-400217075142101 | PH 540 | Separate | Wissahickon Formation |
| USGS-400229075104601 | PH 1043 | CSO | Wissahickon Formation |
| USGS-400308074592201 | PH 397 | Separate | Trenton Gravel |
| USGS-400311075101301 | PH 1040 | CSO | Wissahickon Formation |
| USGS-400327075152201 | PH 1044 | Separate | Wissahickon Formation |
| USGS-400424075104901 | PH 550 | CSO | Wissahickon Formation |
| USGS-400512075033401 | PH 1045 | Separate | Granitic Gneiss and Granite |
| USGS-400516075033201 | PH 1046 | Separate | Granitic Gneiss and Granite |
| USGS-400527075042801 | MG 2193 | Separate | Wissahickon Formation |
| USGS-400527075042802 | MG 2194 | Separate | Wissahickon Formation |
| USGS-400644074590801 | PH 1041 | Separate | Wissahickon Formation |
| USGS-400132075031001 | PH 1056 | CSO | Wissahickon Formation |
| USGS-400001075040301 | PH 1057 | CSO | Trenton Gravel |
| USGS-400038075094601 | PH 1058 | CSO | Pennsauken Formation |
| USGS-395611075091301 | PH 1059 | CSO | Trenton Gravel |
| USGS-395459075140501 | PH 797 | CSO | Trenton Gravel |
| USGS-395656075104401 | PH 1064 | CSO | Trenton Gravel |
| USGS-395705075135901 | PH 1061 | CSO | Wissahickon Formation |
| USGS-395849075134201 | PH 1063 | CSO | Wissahickon Formation |
| USGS-400016075102801 | PH 1062 | Separate | Pennsauken Formation |
| USGS-400055075122501 | PH 1060 | Separate | Wissahickon Formation |

USGS maintains at least one reference well in most Pennsylvania counties. Reference wells located in neighboring counties (Figure 1, Table 3) may be used as regional reference wells for data analyses. Continuous hourly data are collected at well DE 723 in Delaware County. Reference wells in Chester, Bucks and Montgomery counties are not monitored continuously.

| Site ID | Site Name | Lat. | Long. | Established |
|---|---|---|---|---|
| USGS-400453075255601 | CH 201 Chester County Observation Well | 40.136 | -75.351 | 06/19/1978 |
| USGS-400808075210401 | MG 225 Montgomery County Observation Well | 40.199 | -75.052 | 08/15/1956 |
| USGS-401157075032001 | BK 1020 Bucks County Observation Well | 40.081 | -75.432 | 04/13/1968 |
| USGS-395512075293701 | DE 723 Delaware County Observation Well | 39.920 | -75.493 | 1983 |

## Data Analysis

USEPA (2009) published detailed guidance on statistical analysis of groundwater contaminant concentrations. In many of the examples, the same logic and techniques could apply to analysis of groundwater levels. In the case of the Philadelphia groundwater monitoring network, the goal is to understand if groundwater levels are changing over time, at either a single well or group of wells. The main statistical tests to be utilized are a) Seasonal Kendall Test, and b) ANOVA. The tests are briefly described below.

The Seasonal Kendall test performs the Mann-Kendall (MK) trend test for individual seasons of the year, where season is defined by the user. It then combines the individual results into one overall test for whether the dependent variable (*i.e.*, groundwater level) changes in a consistent direction (monotonic trend) over time. The magnitude (*i.e.*, slope) of the trend is also determined. The test is nonparametric, therefore non-normal data can be analyzed (Helsel *et al.* 2006). USEPA (2009) advises that at least 10-12 measurements are needed, whereas Helsel and Hirsch (2002) recommends that the product of number of years and number of seasons be greater than 25. Helsel *et al.* (2006) further caution that with more than 10 years of data, adjusted p-values should be calculated to account for the possibility of serial correlation. The Seasonal Kendall test can be applied to data from a single well, not multiple wells. To examine seasonal trends across multiple wells, the Covariance-Sum test is used (Lettenmaier 1988), which is essentially the execution of multiple seasonal Kendall tests and calculation of the covariances between them. To analyze regional trends over time from a group of wells, the Regional Kendall test can be applied. The Regional Kendall test essentially functions the same way as the Seasonal Kendall test, except the data is categorized by region rather than season.

An alternate method to analyze temporal trends on either a single well or group of wells is the analysis of variance (ANOVA). For a single well or group of wells with data subdivided by season, a one-way ANOVA would examine the significance of seasonality as a statistical factor. A two-way ANOVA would be applied to include location or region as a statistical factor. Either form of ANOVA assumes that the datasets are normally distributed with constant variance.

Group residuals should be tested for normality and for equality of variance. If the data cannot be transformed to a normal distribution, the nonparametric Kruskal-Wallis test can be used instead to detect significance of the specified statistical factor (USEPA 2009).

## Well Monitoring Data Summary

Well monitoring data were summarized from July 2020 to June 2021 (Tables 4-5). These data are presented as an update of the program status. Additional data analysis will be completed as part of the groundwater model calibration and groundwater map update reports. Groundwater trends will be analyzed further once a sufficient amount of data has been collected (See Data Analysis section).

**Table 4.** PWD-USGS Groundwater Monitoring Well Data 7/2020-6/2021, Depth to Water Level (Feet below Land Surface).

| Site ID | J | A | S | O | N | D | J | F | M | A | M | J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 395353075151501 | 14.88 | | 14.9 | | 15.63 | 15.27 | 15.03 | 15.21 | 14.68 | | 14.97 | 15.2 |
| 395408075104001 | 5.2 | 5.11 | 5.36 | 5.13 | 5.4 | 4.9 | 5.06 | 5.1 | 4.57 | 4.9 | 5 | 5.2 |
| 395416075150301 | 8.5 | 7.59 | 8.79 | 9.91 | 9.78 | 8.58 | 9.28 | 8.6 | 8.4 | | 9.12 | 8.79 |
| 395459075140501 | 13.51 | 13.4 | 13.58 | 13.48 | 13.47 | 13.4 | 13.8 | 13.62 | 13.74 | 13.66 | 13.72 | 13.55 |
| 395516075113901 | | | | | | | | | | | | |
| 395611075091301 | 26.55 | 26.4 | 26.4 | | 26.42 | 26.32 | 26.22 | 26.48 | 26.35 | 26.16 | 26.26 | 26.3 |
| 395656075100401 | | | | | | | | | | | | |
| 395656075104401 | 19.49 | 8.55 | 15.5 | | 5.10 | 17.98 | 16.14 | 8.16 | 14.43 | 19.46 | 13.07 | 11.88 |
| 395705075135901 | 14.47 | 13.66 | 14.9 | 14.63 | 13.9 | 13.87 | 14.28 | 13.71 | 13.83 | 14.01 | 14.69 | 14.27 |
| 395849075134201 | 13.07 | 12.62 | 13.22 | 13.29 | 13.11 | | 13.16 | | 12.95 | 13 | 13.2 | 13.17 |
| 395859075085401 | | | | | | | | | | | | |
| 395942075144301 | 15.6 | 13.64 | 16.79 | 16.7 | 13.44 | 12.66 | 12.22 | 12.01 | 11.19 | 12.42 | 15.26 | 13.99 |
| 400001075040301 | 15.41 | 15.42 | 15.8 | 15.67 | 15.44 | 15.14 | 15.08 | 15.14 | 14.8 | 15.16 | 15.5 | 16.56 |
| 400016075102801 | 10.84 | 10.8 | 10.82 | 10.8 | 10.84 | 10.57 | 10.97 | 10.8 | 11.01 | 10.88 | 11 | 10.98 |
| 400038075094601 | 19.68 | 19.5 | 19.75 | 19.73 | 19.62 | 19.66 | 19.69 | 19.6 | 19.81 | 19.5 | 19.72 | 19.67 |
| 400055075122501 | 15.82 | 15.57 | 16.25 | 15.92 | 15.67 | 15.59 | 15.52 | 15.31 | 15.22 | 15.37 | 15.53 | 15.57 |
| 400132075031001 | 20.5 | 20.48 | 20.77 | 20.65 | 20.3 | 19.8 | 19.51 | 20.07 | 19.42 | 19.6 | 20.14 | 20.53 |
| 400211075093701 | 13.72 | 13.47 | 13.61 | 13.69 | 13.82 | 13.83 | 13.85 | 14 | 13.72 | 13.6 | 13.72 | 13.7 |
| 400217075142101 | 28.91 | 28.17 | 29.04 | 29.97 | 30.32 | 30.45 | 29.46 | 28.91 | 27.94 | 24.84 | 23.53 | 24.44 |
| 400229075104601 | 15.15 | 14.62 | 16.14 | 16.8 | 15.37 | 14.99 | 15.17 | 14.57 | 14.68 | | 15.81 | 15.91 |
| 400308074592201 | 4.02 | 4.61 | 5.5 | 5.73 | 4.01 | 3.05 | 3 | 2.15 | 2.19 | 2.37 | 2.99 | 3.62 |
| 400311075101301 | 10.5 | 9.43 | 11.36 | 11.45 | 9.68 | 9.14 | 9.24 | 8.92 | 8.7 | 8.92 | 10.11 | 10.74 |
| 400327075152201 | 63.5 | 60.99 | 65.59 | 72.69 | 65.25 | 60.25 | 59.86 | 60.52 | 58.85 | 58.69 | 61 | 64.39 |
| 400424075104901 | 18.05 | 17.61 | 18.63 | 19.22 | 18.82 | 18.23 | 16.95 | 17.33 | 15.65 | 15.85 | 17.01 | 17.85 |
| 400512075033401 | 34.75 | 35.1 | 36.54 | 36.1 | 34.84 | 34.75 | 35.03 | 33.89 | 33.91 | 34.73 | 35.07 | 35.14 |
| 400516075033201 | 28.27 | 29.2 | 29.88 | 30.1 | 30.49 | 30.76 | 29.18 | 28.44 | 25.94 | 25.9 | 26.83 | 28.01 |
| 400527075042801 | | | | | | | | | | | | |
| 400527075042802 | 19.84 | 19.85 | 19.95 | 19.58 | 19.18 | 18.95 | 18.88 | 18.65 | 18.49 | 18.81 | 19.13 | 19.23 |
| 400644074590801 | 16.11 | 16.03 | 16.06 | 15.3 | 14.6 | 14.4 | 14.28 | | 13.57 | 13.94 | 14.41 | 14.6 |

**Table 5.** Regional County Observation Well Data 7/2020 - 6/2021.

| Site ID | J | A | S | O | N | D | J | F | M | A | M | J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 400453075255601 | 18.82 | 19.07 | 21.52 | 22.45 | 21.53 | 19.08 | 18.16 | 18.63 | 18.34 | 19.07 | 20.48 | 21.51 |
| 400808075210401 | 11.75 | 9.18 | | 12.41 | | 9.09 | | 10.6 | | 8.98 | | 10.86 |
| 401157075032001 | 33.06 | 34.59 | | 36.84 | 34.49 | 32 | 26.75 | 30.55 | | 27.21 | | 30.87 |
| 395512075293701 | | 6.19 | | 6.77 | | 6.27 | | | 5.05 | 5.39 | | 6.71 |

## References

USEPA, 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities -Unified Guidance. Report no. EPA-530-R-09-007. Office of Resource Conservation and Recovery. Available online at
http://www.epa.gov/epawaste/hazard/correctiveaction/resources/guidance/sitechar/gwstats/unified-guid.pdf

Helsel, D. R., and Hirsch, R. M., 2002. Statistical methods in water resources: U.S. Geological Survey Techniques of Water-Resources Investigations, book 4, chap. A3, 524 p. Available online at http://water.usgs.gov/pubs/twri/twri4a3/

Helsel, D.R., Mueller, D.K., and Slack, J.R., 2006. Computer Program for the Kendall Family of Trend Tests. U.S. Geological Survey Scientific Investigations Report 2005-5275, 4p. Available online at http://pubs.usgs.gov/sir/2005/5275/pdf/sir2005-5275.pdf

Lettenmaier D.P., 1988. Multivariate Nonparametric Tests for Trend in Water Quality. *Water Resources Bulletin*, 24, 505-512.

Maimone, M., O'Rourke, D.E., Knighton, J.O., and Thomas, C.P. 2011. Potential Impacts Of Extensive Stormwater Infiltration In Philadelphia. Environmental Engineer: Applied Research and Practice. Fall 2011. 29-39.

Paulachok, G. N., and Wood C.R. (1984). Water-table map of Philadelphia, Pennsylvania, 1976-1984. U.S. Geological Survey Hydrologic investigations atlas HA-676. Washington, D.C.

# Appendix I – PWD Wadeable Steams Benthic Macroinvertebrate and Physical Habitat Assessments

# PWD Wadeable Streams Benthic Macroinvertebrate and Physical Habitat Assessments

## Background

Since 1999, the Philadelphia Water Department (PWD) has been using benthic macroinvertebrate sampling and instream physical habitat assessments in order to characterize watershed conditions and track trends in watershed health. Assessments are performed by the staff of PWD's Bureau of Laboratory Services (BLS) using PADEP Instream Comprehensive Evaluation (ICE) methods. As benthic invertebrates may be exposed to both short and long-duration stressors, data collected through this program are pertinent to all targets of PWD's Integrated Watershed Management Plan (IWMP) Strategy.

### Common Acronyms Used in This Report

**IBI** - Index of Biotic Integrity, a biological assessment tool to indicate the capability of a stream to support a healthy aquatic community.
**ICE** - Instream Comprehensive Evaluation, a protocol to survey and evaluate wadeable streams.
**PTV** - Pollution Tolerance Values, a numeric measure of an organism's ability to withstand environmental degradation.
**EPT** - Ephemeroptera + Plecoptera + Trichoptera, the common names for pollution-sensitive mayflies, stoneflies and caddisflies.

## Assessment Study Design

In recent years, agencies tasked with evaluating water quality have attempted to incorporate statistical sampling designs, or a "probabilistic" approach, to selecting sampling sites (Paulsen 2008, Borsuk *et al*. 2001) rather than relying on fixed sites. Statistical sampling design is particularly important when the goal of monitoring is to make an estimate of the percentage of waters affected by pollution. Another advantage of probabilistic study design is that the assessment units are distributed over a larger geographic area. When monitoring efforts are directed at individual watersheds on a rotating basis, as has been the case with PWD programs, the possibility arises that larger scale patterns may be missed. For example, the effects of floods or drought conditions are widespread, but only the watershed that is being monitored within the same time period will have data reflecting these effects. Disadvantages of a probabilistic approach include the technical demands of establishing and randomly selecting from geographic data sets containing all possible sampling locations as well as additional field reconnaissance work when conduct the actual monitoring.

The current PWD monitoring strategy is intended to be a compromise, recognizing the benefits of collecting data from randomly selected sites but also the importance of maintaining a consistent monitoring effort at selected locations over time. This plan is based on a similar monitoring program implemented by USGS in Chester County (Reif 2002, Reif 2004). The plan also reflects the manpower constraints of collecting and processing samples with the PADEP ICE protocol. It is hoped that this compromise approach (Table 1) will achieve some of the benefits of a randomized approach, while providing periodic re-evaluation of our watersheds required to inform the watershed planning process and comply with environmental mandates.

### Stream Conditions

This report summarizes results from samples that were collected between March 12 and April 1, 2020. Sampling was abbreviated in 2020 due to the COVID-19 pandemic. PWD is not aware of any spills, discharges or unusual conditions that would tend to cause misleading results.

## Methods

### Benthic Macroinvertebrate Sample Collection

**Table 1.** PWD Wadeable Streams Assessments Schedule

| Period | Monitoring Activity (number of samples) |
|---|---|
| 2011 | USGS gage samples (8); Randomly selected sites (16) |
| 2012 | Cobbs Creek Assessment (6*); USGS gage samples (9); Random (10) |
| 2013 | Tookany/Tacony Creek (10*); USGS gage samples (8); Random (7) |
| 2014 | Wissahickon Creek Tributaries (11); USGS gage samples (9); Random (5) |
| 2015 | Wissahickon Creek (12*); USGS gage samples (8); Random (2) |
| 2016 | Pennypack Creek Tributaries (11); USGS gage samples (9); Random (5) |
| 2017 | Pennypack Creek (12*); USGS gage samples (9); Random (4) |
| 2018 | Poquessing Creek (12*); USGS gage samples (9); Random (4) |
| 2019 | Schuylkill River Tributaries (3); USGS gage samples (8); Random (3) |
| 2020 | USGS gage samples (6); Random (2) |
| 2021 | Cobbs Creek (6*); USGS gage samples (9); Random (10) |

* Number of monitoring sites excludes USGS gage sites in target watershed

Using the PADEP Instream Comprehensive Evaluation (ICE) protocol (PADEP 2009), macroinvertebrate samples were collected by placing a handheld D-frame net (500µm) at the downstream portion of a riffle. Stream substrate directly upstream of the D-frame net was then disturbed for approximately one minute to a depth of approximately 10 cm as substrate allowed. This procedure was repeated at other riffle locations of variable flow within the 100-m reach such that the sample at each station was a composite of six riffle samples. Composited samples from each biological monitoring location were then preserved in 95% ETOH (ethyl alcohol) and returned to the laboratory in polyethylene containers.

### Benthic Macroinvertebrate Laboratory Procedures

Benthic macroinvertebrate samples were processed according to PADEP ICE protocols (PADEP 2009). Each composited sample was placed into an 18 x 12 x 3.5-inch pan marked with 28 four-square-inch grids. Four grids were randomly selected by drawing numbers. All material was extracted from the selected grids using a four-square-inch circular "cookie cutter," and placed into another identical empty pan. From this second pan, organisms were picked from randomly selected grids or “plugs” until a minimum of 200, but not more than 240, individuals were subsampled. This procedure was a misinterpretation of the actual technique, which stipulates a count of 200 (+/- 20%) individuals. When picking either the four initial "plugs" or additional plugs results in subsampling more than 240 individuals, the PADEP ICE protocol outlines a procedure for redistributing the subsample into a clean, gridded pan and "back counting" grids until a subsample consisting of 200 (+/-20%) is obtained. Invertebrates were identified under magnification, with taxonomic classification following PADEP 2009 guidelines.

## Habitat Assessment

After collecting benthic invertebrates, biologists surveyed habitat features within the monitoring station and recorded scores for 12 habitat attributes according to the PADEP ICE protocol (Table 2). Biologists completed the survey independently and then discussed the interpretation of individual habitat attribute scores, averaging individual scores when necessary.

**Table 2.** PA DEP ICE Protocol Habitat Metrics

| Habitat Parameter | Description |
|---|---|
| Instream Cover (Fish) | Mix of boulder, cobble or other stable habitat |
| Epifaunal Substrate | Length/width of riffles; characterization of boulders, gravel, cobble |
| Embeddedness | Presence/absence of fine sediment around boulders, gravel, cobble |
| Velocity/Depth Regimes | Presence/absence of four velocity/depth regimes |
| Channel Alteration | Degree of channelization or dredging |
| Sediment Deposition | Measure of sediment deposits, degree of change at the bottom |
| Frequency of Riffles | Occurrence of riffles and distance between riffles |
| Channel Flow Status | Degree to which water fills the available channel |
| Condition of Banks | Stability of streambanks and presence of erosion or bank failure |
| Bank Vegetative Protection | Percentage of streambank surface covered by vegetation |
| Grazing or Other Disruptive Pressure | Degree to which vegetation disrupted by grazing or mowing |
| Riparian Vegetative Zone Width | Width of riparian zone and determination of impact on vegetation by human activities |

## Data Analysis

Benthic macroinvertebrate and habitat data were compiled in a Microsoft Access database and queries were used to calculate scoring metrics. Individual metric standardized scores and the PADEP Index of Biotic Integrity (IBI) were calculated using the ICE protocol (Table 3).

**Table 3.** PADEP ICE Protocol Metrics and Metric Standardization Values

| Metric | Standardization Value |
|---|---|

| | |
|---|---|
| Total Taxa Richness | 33 |
| EPT Taxa Richness (PTV 0-4) | 19 |
| Beck's Index, version 3 | 38 |
| Hilsenhoff Biotic Index | 1.89 |
| Shannon Diversity | 2.86 |
| Percent Sensitive Individuals (PTV 0-3) | 84.5 |

## Monitoring Locations

Assessments were performed at 6 USGS gage sites and 2 randomly chosen sites from PWD's watershed assessment site network between 3/12/2020 and 4/1/2020 (Figure 1, Tables 4-5). USGS stream gaging stations are used as long-term monitoring points at which streamflow and continuous water chemistry data are collected (refer to PWD-USGS Cooperative Water Quality Monitoring appendix). Water chemistry grab sampling for nutrient and bacterial parameters is also conducted at these USGS gage stations on a quarterly basis (refer to PWD Quarterly Dry Weather Water Quality Monitoring appendix). Combining different forms of monitoring at the same station allows for better integration of information and may enable more sophisticated analyses in the future.

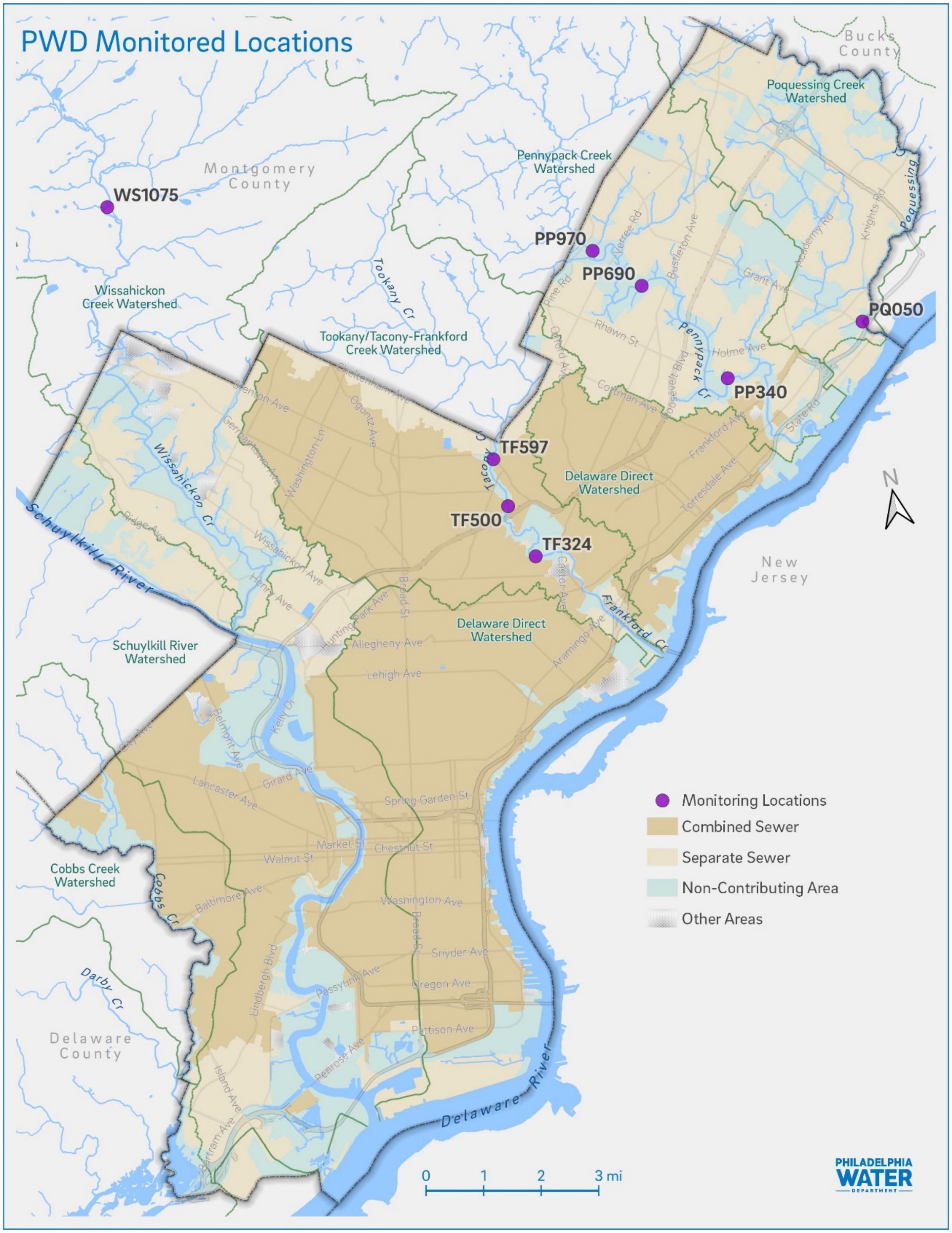



**Figure 1.** PWD Wadeable Streams Assessment Locations - Spring 2020

**Table 4.** PWD-USGS Cooperative Monitoring Program Sites

| Site ID | USGS Gage | Site Description | Drainage Area (mi$^2$) |
|---|---|---|---|
| DCC253 | 01475548 | Cobbs Creek at Mount Moriah Cemetery | 19.78 |
| DCC793 | 01475530 | Cobbs Creek at City Line Ave. | 4.60 |
| PP340 | 01467048 | Pennypack Creek at Lower Rhawn St bridge | 49.84 |
| PP970 | 01467042 | Pennypack Creek at Pine Rd. | 39.34 |
| PQ053 | 01465798 | Poquessing Creek at Holy Family College | 21.67 |
| TF324 | 01467087 | Frankford Creek at Castor Ave. | 29.69 |
| TF597 | 01467086 | Tacony Creek below Adams Ave. Bridge | 16.25 |
| WS076 | 01474000 | Wissahickon Creek at Ridge Ave. | 63.22 |
| WS1075 | 01473900 | Wissahickon Creek at Ft. Washington | 40.44 |

**Table 5.** Random Monitoring Sites, Spring 2020

| Site ID | Site Description | Drainage Area (mi$^2$) |
|---|---|---|
| PP690 | 750 ft DS of Krewstown Rd bridge | 44.3 |
| TF500 | 350 ft DS of Tabor Rd, adjacent to end of Smylie Rd | 17.4 |

## Benthic Macroinvertebrate Monitoring Results - Spring 2020

A total of 1,727 benthic macroinvertebrates from 29 taxa were collected from the 8 sampling sites. When compared to PADEP ICE protocol metric reference conditions, all assessment sites were classified as impaired and fell below 50% comparability, meaning that they are not meeting the Aquatic Life Use (ALU) designation (Figure 2). Percent comparability with the standard reference IBI score ranged from 19.9% to 27.5%. All sites were characterized by low taxa richness, low or absent modified EPT taxa, and elevated Hilsenhoff Biotic Index scores (Table 6, Figure 2).

**Table 6.** PADEP ICE Metric Scores

| Site ID | Taxa Richness | EPT richness (PTV 0-4) | % Sensitive individuals | Beck's Index | HBI | Shannon Index | IBI score |
|---|---|---|---|---|---|---|---|
| PQ054 | 13 | 0 | 4.854 | 1 | 5.77 | 1.216 | 23.7 |
| TF597 | 11 | 0 | 5.116 | 0 | 5.87 | 1.137 | 21.7 |
| TF324 | 13 | 0 | 0.455 | 0 | 6.96 | 1.400 | 21.1 |
| WS1075 | 11 | 1 | 0.000 | 0 | 5.99 | 0.903 | 19.9 |
| PP340 | 15 | 1 | 2.586 | 1 | 5.57 | 1.536 | 27.5 |
| PP970 | 12 | 1 | 0.926 | 1 | 5.63 | 1.415 | 24.8 |
| TF500 | 10 | 0 | 2.392 | 0 | 6.01 | 1.371 | 21.7 |
| PP690 | 14 | 1 | 3.556 | 0 | 5.50 | 1.248 | 25.5 |

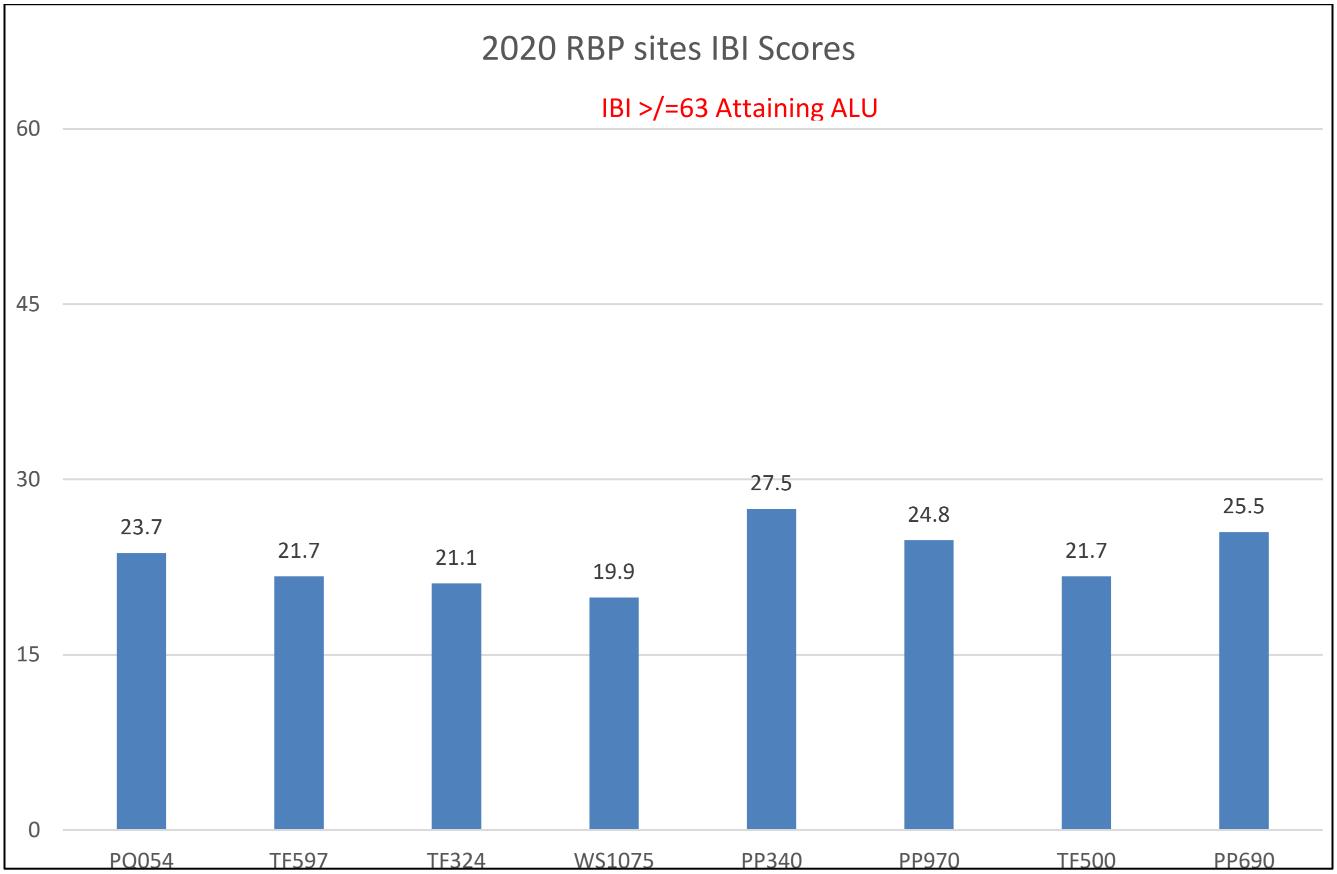



**Figure 2.** Spring 2020 Macroinvertebrate IBI Scores at USGS Sites

Very sensitive taxa (pollution tolerance value ≤ 2) were present at 3 of the 8 sites assessed in spring 2020. All sites fell below the PADEP reference standard for Percent Intolerant Taxa metric (PTV = 0 to 3) of 84.5%.

Overall diversity was low among all sites. The Shannon Diversity Index scores for all sites ranged from 0.903 to 1.536, compared to the reference metric value of 2.86. The site with the greatest diversity was the Pennypack Creek site at the Lower Rhawn Street bridge (SDI=1.536), with a taxa richness (n=15), EPT taxa richness (n=1), and HBI (5.57).

The Hilsenhoff Biotic Index (HBI) is a metric used to determine the overall pollution tolerance of a site's benthic macroinvertebrate community. This community composition and tolerance metric generally increases with increasing ecosystem stress, resulting in increasing dominance of pollution-tolerant organisms. Oriented toward the detection of organic pollution, HBI scores can range from 0 (very sensitive) to 10 (very tolerant). The average HBI for all sites was 5.91, and scores at the 8 assessment sites ranged from 5.50 to 6.96.

Tolerance/intolerance measures are intended to be representative of relative sensitivity to perturbation and may include numbers of pollution tolerant and intolerant taxa or percent composition (Barbour *et* *al*., 1999). The proportion of moderately tolerant individuals at all sites averaged 87.04%, with a range of 81.90% to 93.63%. The site with the greatest proportion of moderately tolerant taxa was WS1075, with 93.63% dominance directly related to a high number of Chironomidae (n=161) found within the sorted sample (n=204). Chironomids (Figure 3) were the dominant taxon at all of the assessment locations. The proportional dominance of Chironomids is evidence of increasingly homogenous community assemblages within the selected monitoring sites. Chironomids and other pollution-tolerant, generalist species increase in proportional dominance with increased disturbance due to the loss of optimal habitat conditions for less tolerant, more specialized species.

**Figure 3.** Chironomid, or non-biting midge
Photo: Simon Johnston

Tolerant taxa accounted for an average of 5.54% of all taxa, and the proportion of tolerant taxa at each monitoring site ranged from 0% to 27.27%. Intolerant taxa were similarly represented, averaging 7.42% of all taxa collected at the sites. The proportion of intolerant taxa at each site ranged from 2.87% to 16.81%. The Pennypack Creek site at the Lower Rhawn Street bridge (PP340) had the highest proportion of intolerant taxa.

Sensitive taxa (pollution tolerance values ≤ 3) were collected at 7 of the 8 sites (Table 7). However, the rarity of sensitive taxa at suggests a response to watershed-wide perturbation, such as water quality degradation. Other potential explanations for the rarity of sensitive taxa are habitat degradation caused by fine sediment delivered to the stream channel via bank erosion or stormwater runoff and changes in seasonal base flow and temperature that tend to accompany urbanization. *Antocha* (Diptera; Tipulidae, pollution tolerance value =3) were the most commonly collected sensitive taxa.

**Table 7.** Sensitive Taxa Collected

| Site | Order | Family | Genus | HBI |
|---|---|---|---|---|
| PQ054 | Diptera | Tipulidae | *Antocha* | 3 |
| PQ054 | Coleoptera | Elmidae | *Ancyronyx* | 2 |

| | | | | |
|---|---|---|---|---|
| TF597 | Diptera | Tipulidae | *Antocha* | 3 |
| TF324 | Diptera | Tipulidae | *Antocha* | 3 |
| PP340 | Diptera | Tipulidae | *Antocha* | 3 |
| PP340 | Coleoptera | Elmidae | *Macronychus* | 2 |
| PP970 | Diptera | Tipulidae | *Antocha* | 3 |
| PP970 | Coleoptera | Elmidae | *Ancyronyx* | 2 |
| TF500 | Diptera | Tipulidae | *Antocha* | 3 |
| PP690 | Diptera | Tipulidae | *Antocha* | 3 |

**Table 8.** 2020 Benthic Macroinvertebrate Taxa List

| Order | Family | Genus |
|---|---|---|
| Amphipoda | Crangonyctidae | *Crangonyx* |
| Amphipoda | Gammaridae | *Gammarus* |
| Bivalvia | Corbiculidae | *Corbicula* |
| Bivalvia | Corbiculidae | *sp* |
| Coleoptera | Elmidae | *Ancyronyx* |
| Coleoptera | Elmidae | *Macronychus* |
| Coleoptera | Psephenidae | *Psephenus* |
| Coleoptera | Elmidae | *Stenelmis* |
| Diptera | Tipulidae | *Antocha* |
| Diptera | Empididae | *Hemerodromia* |
| Diptera | Psychodidae | *Psychoda* |
| Diptera | Simuliidae | *Simulium* |
| Diptera | Chironomidae | *spp* |
| Diptera | Tipulidae | *Tipula* |
| Ephemeroptera | Baetidae | *Baetis* |
| Gastropoda | Ancylidae | *sp* |
| Hirudinea | | |
| Hydracarina | | |
| Isopoda | Asellidae | *Caecidotea* |
| Oligochaeta | | |
| Trichoptera | Hydropsychidae | *Cheumatopsyche* |
| Trichoptera | Philopotamidae | *Chimarra* |
| Trichoptera | Hydropsychidae | *Hydropsyche* |
| Trichoptera | Hydroptilidae | *Hydroptila* |
| Turbellaria | Planariidae | *sp* |
| Turbellaria | Nemertea | |
| Turbellaria | Nematoda | |
| Turbellaria | Planariidae | |
| Zygoptera | Coenagrionidae | *Argia* |

## Physical Habitat Monitoring Results - Spring 2020

Habitat impairments such as hydrologic extremes (*i.e.*, low base flow and accentuated flow during storm events), physical obstructions, and sedimentation/siltation appear to be the major environmental stressors on the aquatic ecosystem. Accumulation of sediment in the interstitial spaces of riffles has been shown to limit available habitat and possibly smother benthic invertebrate life stages (Runde and Hellenthal, 2000). All sites received suboptimal or marginal total scores for habitat (Table 9). The Frankford Creek site at Castor Ave (TF324) had the lowest total habitat scores of all sites, while the Wissahickon Creek site at Gypsy Lane (WS1075) had the highest scores for all sites (Table 9, Figure 4). Figure 5 depicts the critical habitat parameters for each of the 8 sites.

**Table 9.** Physical Habitat Scores at All Monitoring Sites - Spring 2020

| Site ID | Instream | Epifaunal | Embed | Veldep | Chanalt | Seddep | Riffreq | Chanflo | Bankcond | Vegpro | Graze | Ripveg | Total Score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TF324 | 6.5 | 6.5 | 5 | 11 | 11.5 | 13.5 | 9.5 | 9 | 7 | 14.5 | 12 | 11.5 | 117.5 |
| TF500 | 10 | 9.5 | 8.5 | 16 | 14 | 11.5 | 8 | 10 | 12 | 16.5 | 17 | 17 | 150 |
| TF597 | 8 | 10.5 | 9 | 12.5 | 10.5 | 6.5 | 8 | 10 | 10 | 14 | 17 | 16.5 | 132.5 |
| WS1075 | 14.5 | 12 | 13.5 | 16 | 15 | 15 | 13.5 | 17 | 13.5 | 18 | 18.5 | 17.5 | 184 |
| PP340 | 12.5 | 13 | 9 | 13.5 | 14 | 10 | 15 | 12 | 12 | 17 | 18 | 16.5 | 162.5 |
| PP690 | 15 | 8.5 | 8.5 | 17 | 17 | 11 | 10.5 | 14 | 12.5 | 17.5 | 18.5 | 16 | 166 |
| PP970 | 15 | 13 | 11 | 17 | 18 | 8.5 | 14.5 | 9.5 | 7.5 | 14.5 | 12.5 | 16.5 | 157.5 |
| PQ054 | 8 | 10 | 7 | 10 | 16.5 | 7.5 | 12.5 | 12.5 | 7 | 17 | 17 | 15 | 140 |

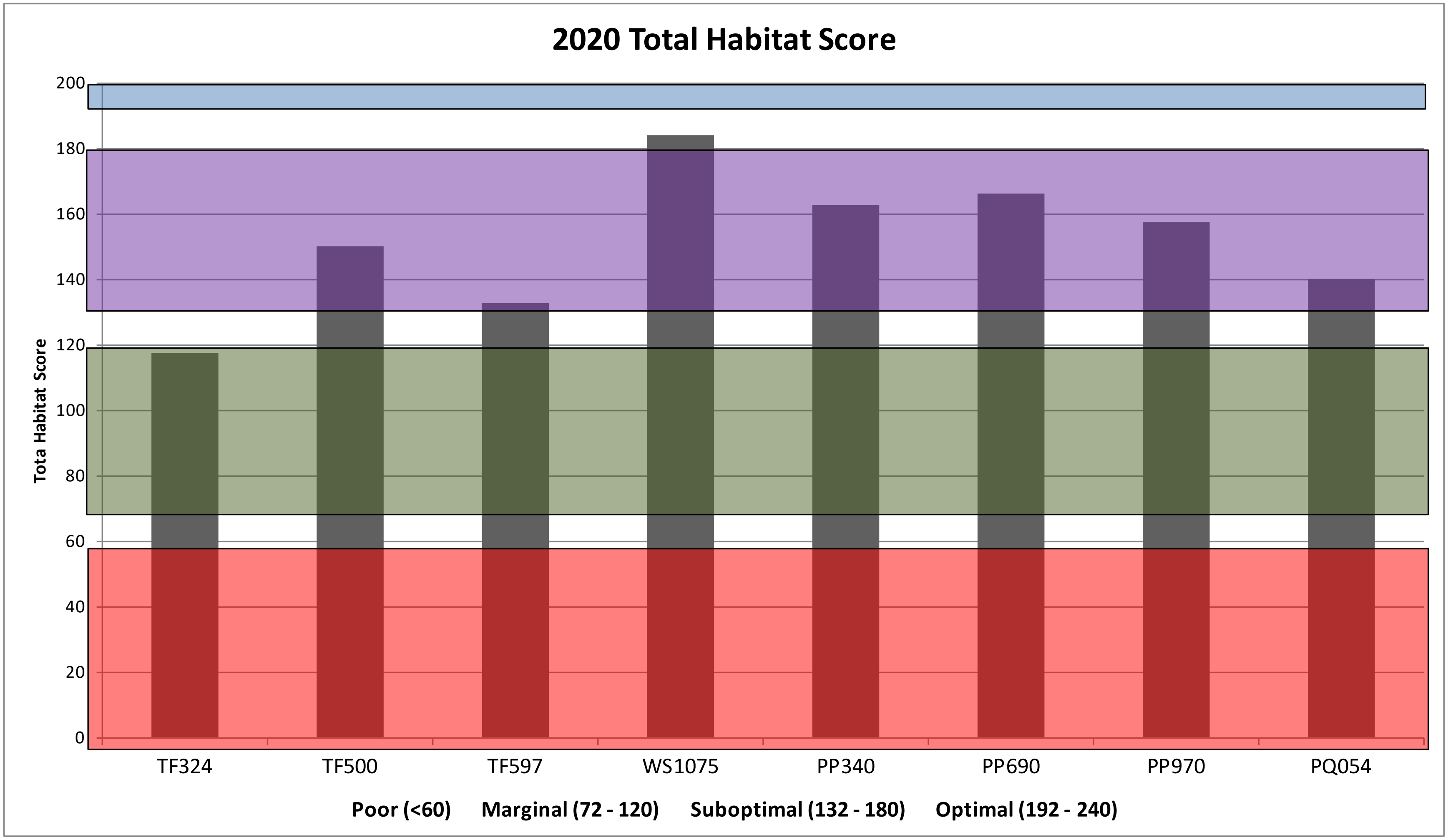
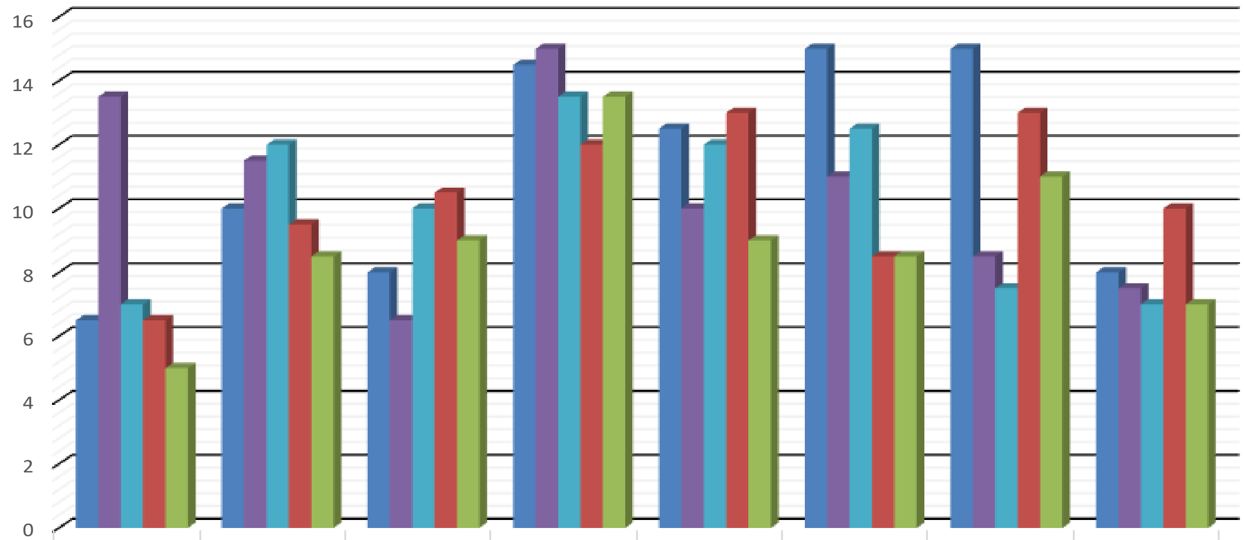



**Figure 4.** Habitat Scores, Spring 2020




| | TF324 | TF500 | TF597 | WS1075 | PP340 | PP690 | PP970 | PQ054 |
|---|---|---|---|---|---|---|---|---|
| Instream Cover | 6.5 | 10 | 8 | 14.5 | 12.5 | 15 | 15 | 8 |
| Sediment Deposition | 13.5 | 11.5 | 6.5 | 15 | 10 | 11 | 8.5 | 7.5 |
| Condition of Banks | 7 | 12 | 10 | 13.5 | 12 | 12.5 | 7.5 | 7 |
| Epifaunal substrate | 6.5 | 9.5 | 10.5 | 12 | 13 | 8.5 | 13 | 10 |
| Embeddedness | 5 | 8.5 | 9 | 13.5 | 9 | 8.5 | 11 | 7 |

**Figure 5.** Critical Habitat Parameters, Spring 2020

## References

Barbour, M.T., J. Gerritsen, B.D. Snyder, and J.B. Stribling. 1999. Rapid bioassessment protocols for use in streams and wadeable rivers: periphyton, benthic macroinvertebrates and fish, second edition. EPA 841-B-99-002. United States Environmental Protection Agency; Office of Water. Washington, D.C.

Borsuk, M. E., C. A. Stow, and K. H. Reckhow. 2002. Predicting the frequency of water quality standard violations: A probabilistic approach for TMDL development. Environmental Science & Technology, 36: 2109-2115.

Pennsylvania Department of Environmental Protection (PADEP). (2009). Instream Comprehensive Evaluation Surveys. Harrisburg, PA. 59 p.

Paulsen, S.G. et al. 2008. Condition of stream ecosystems in the US: an overview of the first national assessment. Journal of the North American Benthological Society: December 2008, Vol. 27, No. 4, pp. 812-821.

Reif, A.G. 2002. Assessment of stream quality using biological indices at selected sites in the Red Clay and White Clay Creek Basins, Chester County, Pennsylvania, 1981-97. USGS Fact Sheet FS-118-02.

Reif, A.G. 2004. Assessment of water chemistry, habitat, and benthic macroinvertebrates at selected stream-quality monitoring sites in Chester County, Pennsylvania, 1998-2000: 84.

Runde, J. M., and R. A. Hellenthal. 2000. Behavioral responses of *Hydropsyche sparna* (Trichoptera: Hydropsychidae) and related species to deposited bedload. Environmental Entomology 29:704-709.

# Appendix J – NPDES Industrial Stormwater Permitted Sites – Philadelphia County

| Authority ID | Permit Type | Site Name | Program Description | Site Address |
|---|---|---|---|---|
| **PAG-03 General** | | | | |
| 1044986 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | STEVE'S AUTO PARTS II S 61ST ST FAC | Clean Water | 3331 S 61ST ST<br>PHILADELPHIA, PA 19153 |
| 1017690 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | THE VANE BROTHERS CO PHILLY LAUNCH | Clean Water | 4700 BASIN BRIDGE RD<br>THE NAVY YARD<br>PHILADELPHIA, PA 19112 |
| 1100662 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | CONRAIL - SOUTH PHILLY YARD | Clean Water | 11TH ST & TERMINAL RD<br>PHILADELPHIA, PA 19112 |
| 1218996 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | RHOADS BUILDING 1028 | Clean Water | 4703 BASIN BRIDGE ROAD<br>PHILADELPHIA, PA 19112 |
| 1043263 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | NAVAL FOUNDRY AND PROPELLER CTR | Clean Water | 1701 KITTY HAWK AVE<br>PHILADELPHIA, PA 19112-5087 |
| 1133700 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | NORTHEAST PHILADELPHIA AIRPORT (PNE) | Clean Water | 9800 ASHTON RD<br>PHILADELPHIA, PA 19114 |
| 878137 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | ARDEX LAB | Clean Water | 2050 BYBERRY RD<br>PHILADELPHIA, PA 19116 |
| 1107170 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | SWEET OVATIONS TOMLINSON RD FAC | Clean Water | 1741 TOMLINSON RD<br>PHILADELPHIA, PA 19116-3847 |
| 1100082 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | ALLEGHENY IRON & METAL TACONY ST FAC | Clean Water | TACONY ST & ADAMS AVE<br>PHILADELPHIA, PA 19124 |
| 1100667 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | CONRAIL - FRANKFORD JUNCTION YARD | Clean Water | 2110 E BUTLER ST<br>PHILADELPHIA, PA 19124 |
| 577993 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | DHL EXPRESS COLUMBUS BLVD FAC | Clean Water | 1101 N CHRISTOPHER COLUMBUS BLVD<br>PHILADELPHIA, PA 19125 |
| 1084018 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | RICHARDSAPEX MAIN ST FAC | Clean Water | 4202-24 MAIN ST<br>PHILADELPHIA, PA 19127 |
| 1021396 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | SEPTA ROBERTS AVE FAC | Clean Water | 2705 ROBERTS AVE<br>PHILADELPHIA, PA 19129 |
| 1081910 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | SUN CHEM HUNTING PARK AVE PLT | Clean Water | 3301 HUNTING PARK AVE<br>PHILADELPHIA, PA 19132 |

| Authority ID | Permit Type | Site Name | Program Description | Site Address |
|---|---|---|---|---|
| 1100654 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | CONRAIL - ANN STREET YARD | Clean Water | 2801 E ANN STREET<br>PHILADELPHIA, PA 19134 |
| 1165282 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | CONTANDA TERMINALS | Clean Water | 2900 E ALLEGHENY AVE<br>PHILADELPHIA, PA 19134-6302 |
| 1088603 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | ORTHODOX AUTO UNRUH AVE FAC | Clean Water | 5247 UNRUH AVE<br>PHILADELPHIA, PA 19135 |
| 1283330 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | UNITED METAL TRADERS COMLY ST FAC | Clean Water | 5240 COMLY ST<br>PHILADELPHIA, PA 19135-4315 |
| 1152621 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | WASTE MGMT BLEIGH AVE FAC | Clean Water | 5109 BLEIGH AVE<br>PHILADELPHIA, PA 19136 |
| 1343571 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | S D RICHMAN SONS WHEATSHEAF LN FAC | Clean Water | 2435 WHEATSHEAF LANE<br>PHILADELPHIA, PA 19137 |
| 931796 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | REPUBLIC SVC QUICKWAY TRANSFER STATION | Clean Water | 2960 ORTHODOX ST<br>PHILADELPHIA, PA 19137 |
| 929399 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | REPUBLIC SVC OF PA PORT RICHMOND HAULING FAC | Clean Water | 3000 E HEDLEY ST<br>PHILA MARKET PLACE<br>PHILADELPHIA, PA 19137 |
| 961161 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | ABF FREIGHT SYS | Clean Water | 4000 RICHMOND ST<br>PHILADELPHIA, PA 19137 |
| 1223833 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | RECLEIM PA LLC PHILA PLT | Clean Water | 4301 N DELAWARE AVE<br>BLDG A<br>PHILADELPHIA, PA 19137 |
| 1222888 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | FIRST TRANSIT | Clean Water | 2500 WHEATSHEAF LN<br>PHILADELPHIA, PA 19137 |
| 21593 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | METRO MACH OF PA SHIP REPAIR FAC | Clean Water | FOOT OF MORTON AVE<br>CHESTER, PA 19013 |
| 1154204 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | ADVANSIX INC | Clean Water | MARGARET & BERMUDA STS<br>PHILADELPHIA, PA 19137-1193 |
| 459823 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | PHILA WATER DEPT NE WPCP | Clean Water | 3895 RICHMOND ST<br>PHILADELPHIA, PA 19137-1418 |
| 1056063 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | KANCO METALS INC | Clean Water | 4601 BATH ST<br>PHILADELPHIA, PA 19137-2216 |

| Authority ID | Permit Type | Site Name | Program Description | Site Address |
|---|---|---|---|---|
| 781605 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | NDV RECYCLING N 2ND ST FAC | Clean Water | 3630 N 2ND ST<br>PHILADELPHIA, PA 19140-4605 |
| 326472 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | PAARNG OGONTZ OMS 14A | Clean Water | 5350 OGONTZ AVE<br>PHILADELPHIA, PA 19141 |
| 887155 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | PASCO PASCHALL AVE FAC | Clean Water | 7250 PASCHALL AVE<br>PHILADELPHIA, PA 19142 |
| 813532 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | HAROLDS USED AUTO PARTS WHITBY AVE FAC | Clean Water | 5347 WHITBY AVE<br>PHILADELPHIA, PA 19143 |
| 1101644 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | PHILA GAS WORKS PASSYUNK AVE PLT | Clean Water | 3100 PASSYUNK AVE<br>PHILADELPHIA, PA 19145 |
| 970846 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | FC HAAB SCHUYLKILL AVE TERM | Clean Water | SCHUYLKILL AVE & MORRIS ST<br>PHILADELPHIA, PA 19145 |
| 944198 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | TRANSFLO TERM SVC MOORE ST FAC | Clean Water | 36TH & MOORE ST<br>PHILADELPHIA, PA 19145 |
| 1084122 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | WASTE MGMT OF PA GRAYS FERRY AVE FAC | Clean Water | 3605 GREYS FERRY AVE<br>PHILADELPHIA, PA 19146 |
| 886506 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | TRC TRANSFER STATION COLUMBUS BLVD FAC | Clean Water | 2904 S CHRISTOPHER COLUMBUS BLVD<br>PHILADELPHIA, PA 19148 |
| 1002506 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | CSX INTERMODAL CHRISTOPHER COLUMBUS AVE FAC | Clean Water | 3400 S CHRISTOPHER COLUMBUS BLVD<br>PHILADELPHIA, PA 19148 |
| 1008654 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | GREENWICH TERM S COLUMBUS BLVD FAC | Clean Water | 3301 S COLUMBUS BLVD<br>PHILADELPHIA, PA 19148 |
| 1086796 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | ECO ENERGY PHILLY | Clean Water | 3400 S CHRISTOPHER COLUMBUS BLVD<br>PHILADELPHIA, PA 19148-5110 |
| 459790 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | PHILA WATER DEPT SE WPCP | Clean Water | 25 PATTISON AVE<br>PHILADELPHIA, PA 19148-5607 |
| 326557 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | PAARNG FT MIFFLIN FAC | Clean Water | BLDG 56 FORT MIFFLIN<br>6400 HOG ISLAND RD<br>PHILADELPHIA, PA 19153 |

| Authority ID | Permit Type | Site Name | Program Description | Site Address |
|---|---|---|---|---|
| 1041802 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | B & L AUTO PARTS 61ST STREET FAC | Clean Water | 3404 S 61ST ST<br>PHILADELPHIA, PA 19153 |
| 1098554 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | JT'S USED AUTO PARTS S 61ST ST FAC | Clean Water | 3505 S 61ST ST<br>PHILADELPHIA, PA 19153 |
| 1035983 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | LKQ VENICE AUTO PARTS | Clean Water | 3350 SOUTH 61ST STREET<br>PHILADELPHIA, PA 19153 |
| 1016261 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | ATLANTIC AVIATION ENTERPRISE AVE FAC | Clean Water | 8375 ENTERPRISE AVE<br>PHILA INT AIRPORT<br>PHILADELPHIA, PA 19153 |
| 1033602 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | ESSINGTON AVE AUTO PARTS FAC | Clean Water | 6746 ESSINGTON AVE<br>PHILADELPHIA, PA 19153 |
| 1137392 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | CARTEL AUTO PARTS W PASSYUNK AVE FAC | Clean Water | 6330 W PASSYUNK AVE<br>PHILADELPHIA, PA 19153 |
| 1047066 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | JACK'S AUTO PARTS S 61ST ST FAC | Clean Water | 3517-3555 S 61ST ST<br>PHILADELPHIA, PA 19153 |
| 1039992 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | BIG HEAD AUTO SALVAGE CORP | Clean Water | 3511 S 61ST ST<br>PHILADELPHIA, PA 19153 |
| 1033629 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | JIM'S AUTO RECYCLING W PASSYUNK AVE FAC | Clean Water | 6299 W PASSYUNK AVE<br>PHILADELPHIA, PA 19153 |
| 1081872 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | BILL'S AUTO PARTS PASSYUNK AVE FAC | Clean Water | 6235 PASSYUNK AVE<br>PHILADELPHIA, PA 19153 |
| 973172 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | DHL EXPRESS HOLSTEIN AVE FAC | Clean Water | 7600 HOLSTEIN AVE<br>PHILADELPHIA, PA 19153 |
| 1020028 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | DAVE'S DELAWARE VALLEY TOWING PASSYUNK AVE FAC | Clean Water | 6159 PASSYUNK AVE<br>PHILADELPHIA, PA 19153 |
| 1032035 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | ATLANTIC USED AUTO PARTS ESSINGTON AVE FAC | Clean Water | 6544 ESSINGTON AVE<br>PHILADELPHIA, PA 19153 |
| 1011743 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | VANE LINE BUNKERING FT MIFLIN RD FAC | Clean Water | 4925 FT MIFLIN RD<br>CITY DOCK<br>PHILADELPHIA, PA 19153 |
| 1326318 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | AMAZON.COM SERVICES LLC - DPH8 | Clean Water | 7575 BREWSTER AVE<br>PHILADELPHIA, PA 19153-3206 |

| Authority ID | Permit Type | Site Name | Program Description | Site Address |
|---|---|---|---|---|
| 1102641 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | CLEAN EARTH OF PHILA FAC | Clean Water | 3201 S 61ST ST PHILADELPHIA, PA 19153-3502 |
| 1137723 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | KINDER MORGAN POINT BREEZE TERM | Clean Water | 6310 W PASSYUNK AVE PHILADELPHIA, PA 19153-3517 |
| 459812 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | PHILA WATER DEPT SW WPCP | Clean Water | 8200 ENTERPRISE AVE PHILADELPHIA, PA 19153-3813 |
| 1290160 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | KINGSBURY | Clean Water | 10385 DRUMMOND RD PHILADELPHIA, PA 19154 |
| 326466 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | PAARNG SOUTHAMPTON FAC | Clean Water | 2734 SOUTHAMPTON RD PHILADELPHIA, PA 19154 |
| 1008765 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | TJ COPE NORCOM RD FAC | Clean Water | 11500 NORCOM RD PHILADELPHIA, PA 19154 |
| 1029239 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | FEDEX TOWNSEND RD FAC | Clean Water | 14300 TOWNSEND RD PHILADELPHIA, PA 19154 |
| 1240915 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | IVD LLC | Clean Water | 10101 ROOSEVELT BLVD PHILADELPHIA, PA 19154 |
| 1327767 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | AMAZON.COM SERVICES LLC DDP9 | Clean Water | 3025 MEETING HOUSE RD PHILADELPHIA, PA 19154 |
| 1135947 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | PEPSI BOTTLING ROOSEVELT BLVD PLT | Clean Water | 11701 ROOSEVELT BLVD PHILADELPHIA, PA 19154-2108 |
| 1326311 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | HP HOOD PHILADELPHIA | Clean Water | 10975 DUTTON RD PHILADELPHIA, PA 19154-3203 |
| 921671 | PAG-03 Discharge of Stormwater Assoc w Industrial Activities | US POSTAL SVC LINDBERGH BLVD FAC | Clean Water | 7500 LINDBERGH BLVD PHILADELPHIA, PA 19176-9998 |
| **No Exposure** | | | | |
| 1027714 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | VEOLIA ENV SVC HEDLEY ST FAC | Clean Water | 3100 HEDLEY ST CHESTER, PA 19137-1934 |
| 1137663 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | WUXI APP TEC INC | Clean Water | 4000 S 26TH ST PHILADELPHIA, PA 19112 |

| Authority ID | Permit Type | Site Name | Program Description | Site Address |
|---|---|---|---|---|
| 1228873 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | JOWITT & RODGERS STATE RD FAC | Clean Water | 9400 STATE RD PHILADELPHIA, PA 19114 |
| 1023590 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | SANDMEYER STEEL | Clean Water | 10060 SANDMEYER LN PHILADELPHIA, PA 19116 |
| 1078748 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | MUTUAL PHARM CO INC | Clean Water | 7722 DUNGAN RD PHILADELPHIA, PA 19111-2733 |
| 1135081 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | WUXI APPTEC INC | Clean Water | 4751 LEAGUE ISLAND BLVD PHILADELPHIA, PA 19112-1220 |
| 1303748 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | PACKAGING COORDINATORS INC | Clean Water | 3001 RED LION RD PHILADELPHIA, PA 19114 |
| 1335502 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | ASTRAZENECA PLP | Clean Water | 3001 RED LION RD PHILADELPHIA, PA 19114-1123 |
| 1257040 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | ARCA RECYCLING INC | Clean Water | 2000 BENNETT RD PHILADELPHIA, PA 19116 |
| 1292099 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | L3 TECH INC SPD ELEC SYS | Clean Water | 13500 ROOSEVELT BLVD PHILADELPHIA, PA 19116-4201 |
| 1305859 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | USPS VEHICLE MAINTENANCE FAC | Clean Water | 1902 BYBERRY RD PHILADELPHIA, PA 19116-9997 |
| 1337031 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | HONOR FOODS INC | Clean Water | 5501 TACONY ST PHILADELPHIA, PA 19122 |
| 758806 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | FRONTIDA BIOPHARM INC | Clean Water | 1100 ORTHODOX ST PHILADELPHIA, PA 19124 |

| Authority ID | Permit Type | Site Name | Program Description | Site Address |
|---|---|---|---|---|
| 1355540 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | EXELON GENERATION CO DELAWARE STA | Clean Water | 1325 N BEACH ST PHILADELPHIA, PA 19125 |
| 1098231 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | FIBREFLEX PACKING & MFG UMBRIA ST FAC | Clean Water | 5101 UMBRIA ST PHILADELPHIA, PA 19128-4345 |
| 1107824 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | TASTYKAKE | Clean Water | 2801 HUNTING PARK AVE PHILADELPHIA, PA 19129 |
| 1073324 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | SOUTHERN GRAPHIC SYSTEMS LLC | Clean Water | 2781 ROBERTS AVE PHILADELPHIA, PA 19129 |
| 1235957 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | PURE FISHING | Clean Water | 3028 W HUNTING PARK AVE PHILADELPHIA, PA 19132 |
| 1144476 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | SMITH EDWARDS DUNLAP | Clean Water | 2867 E ALLEGHENY AVE PHILADELPHIA, PA 19134-5994 |
| 1249111 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | HILLOCK ANODIZING MFG FAC | Clean Water | 5101 COMLY ST PHILADELPHIA, PA 19135 |
| 1108533 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | COILPLUS BLEIGH AVE FAC | Clean Water | 5135 BLEIGH AVE PHILADELPHIA, PA 19136 |
| 1147387 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | LANNETT CO INC | Clean Water | 9001 TORRESDALE AVE PHILADELPHIA, PA 19136-1586 |
| 1147383 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | LANNETT CO INC | Clean Water | 9000 STATE RD PHILADELPHIA, PA 19136-1615 |
| 711143 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | VICINITY ENERGY SCHUYLKILL GEN STA | Clean Water | 2800 CHRISTIAN ST PHILADELPHIA, PA 19146 |

| Authority ID | Permit Type | Site Name | Program Description | Site Address |
|---|---|---|---|---|
| 1142051 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | EFORCE COMPLIANCE | Clean Water | 3115 WHARTON ST PHILADELPHIA, PA 19146 |
| 591838 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | PEARL PRESSMAN LIBERTY | Clean Water | 7625 SUFFOLK AVE PHILADELPHIA, PA 19153-3020 |
| 1311981 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | USPS PHILA VEHICLE MAINTENANCE FACILITY | Clean Water | 3201 SOUTH 74TH ST PHILADELPHIA, PA 19153-9996 |
| 1078315 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | INNOVATION PRINTING & COMMUNICATION | Clean Water | 11601 CAROLINE RD PHILADELPHIA, PA 19154 |
| 874849 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | SPECTRUM MICROWAVE PHILADELPHIA OPERATIONS | Clean Water | 2707 BLACK LAKE PLACE PHILADELPHIA, PA 19154-1008 |
| 1109160 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | API TECH CORP - PHILA OPS | Clean Water | 2707 BLACK LAKE PLACE PHILADELPHIA, PA 19154-1008 |
| 1259174 | No Exposure Certification, Discharge of Stormwater Assoc w Ind Activities, PAG-03 | PENN MAID DUTTON RD PLT | Clean Water | 10975 DUTTON RD PHILADELPHIA, PA 19154-3288 |
| **Individual** | | | | |
| 1201124 | NPDES Pmt Stormwater Industrial Site Runoff (Individual) | AMTRAK 30TH STREET STATION | Clean Water | 2955 MARKET ST PHILADELPHIA, PA 19104 |
| 1338563 | NPDES Pmt Stormwater Industrial Site Runoff (Individual) | WHITE PINES PARTNERS GC | Clean Water | 1 RED LION RD PHILADELPHIA, PA 19115 |
| 901759 | NPDES Pmt Stormwater Industrial Site Runoff (Individual) | PHILLY SHIPYARD INC | Clean Water | 2100 KITTY HAWK AVE PHILADELPHIA, PA 19112-1808 |
| 1131054 | NPDES Pmt Stormwater Industrial Site Runoff (Individual) | JDM MATERIALS GRANT AVE PLT | Clean Water | 2750 GRANT AVE PHILADELPHIA, PA 19114 |
| 1281171 | NPDES Pmt Stormwater Industrial Site Runoff (Individual) | PHILLY G STREET TERMINAL | Clean Water | 4210 G ST PHILADELPHIA, PA 19124 |

| Authority ID | Permit Type | Site Name | Program Description | Site Address |
|---|---|---|---|---|
| 18834 | NPDES Pmt Stormwater Industrial Site Runoff (Individual) | SEPTA VICTORY AVE TERM | Clean Water | 110 & 103 VICTORY AVE UPPER DARBY, PA 19082 |
| 963494 | NPDES Pmt Stormwater Industrial Site Runoff (Individual) | ROHM & HAAS PHILADELPHIA PLT | Clean Water | 5000 RICHMOND ST PHILADELPHIA, PA 19137 |
| 1259320 | NPDES Pmt Stormwater Industrial Site Runoff (Individual) | PBF LOGISTICS PRODUCTS TERMINALS LLC | Clean Water | 1630 S 51ST ST PHILADELPHIA, PA 19143-5831 |
| 882940 | NPDES Pmt Stormwater Industrial Site Runoff (Individual) | PHILA ENERGY SOLUTIONS REFINING & MKTG LLC | Clean Water | 3144 W PASSYUNK AVE PHILADELPHIA, PA 19145-5208 |
| 1192681 | NPDES Pmt Stormwater Industrial Site Runoff (Individual) | PHILA INTL AIRPORT | Clean Water | DIV AVIATION/INTL AIRPORT TERMINAL E PHILADELPHIA, PA 19153 |
| 1131042 | NPDES Pmt Stormwater Industrial Site Runoff (Individual) | JDM MATERIALS CO BARTRAM BATCH PLT | Clean Water | PENROSE FERRY RD PHILADELPHIA, PA 19153 |
| 1312193 | NPDES Pmt Stormwater Industrial Site Runoff (Individual) | PBF LOGISTICS PRODUCTS TERMINALS LLC | Clean Water | 6850 ESSINGTON AVE PHILADELPHIA, PA 19153-3413 |
| 1329374 | NPDES Pmt Stormwater Industrial Site Runoff (Individual) | SUNOCO PARTNERS MKT & TERM LP FT MIFFLIN TERM | Clean Water | 4 HOG ISLAND RD PHILADELPHIA, PA 19153-3809 |

# Appendix K – Defective Connections Group FY21 Report

# Sewer Maintenance Unit

# Defective Connections Group

## Fiscal Year 2021 Annual Report

# I. BACKGROUND INFORMATION

## A. Phase I Stormwater Regulations

In 1990, the Environmental Protection Agency (EPA) promulgated Stormwater Regulations that required National Pollutant Discharge Elimination System (NPDES) permits for stormwater discharges from large (populations in excess of 250,000) and medium-sized (populations between 100,000 and 250,000) municipalities with separate storm sewer systems, (MS4)[1]. The City of Philadelphia with a 1990 population of 1.4 million was one of two NPDES Stormwater Phase I permittees in Pennsylvania. The other permittee was the City of Allentown.

## B. NPDES Permit for Stormwater

The City of Philadelphia received its first NPDES Stormwater Permit under the 1990 Federal Regulations as issued by the Pennsylvania Department of Environmental Protection (PA DEP) in September 29, 1995. This permit had a 5-year term. Among other requirements, the permit required the city to reduce stormwater based pollution of local streams, creeks and rivers, from (1) residential and commercial areas, (2) construction sites, (3) industrial sites and (4) defective lateral connections.

The renewal of the NPDES Stormwater Permit that expired in September 2000 was approved by the PA DEP on September 30, 2005. The new permit provides for the same scope and requirements for the Defective Laterals Detection and Abatement Program as the previous permit and incorporates some provisions from the Consent Order and Agreement (COA) of July 1998 although the COA was successfully completed on March 18, 2004.

With the Water Department's internal reorganization and creation of the Office of Watersheds (OOW) in January 1999, the responsibilities numbered (1) through (3) above, along with the periodic reporting thereon was transferred to the OOW. The Defective Connections group (DCG) continues to pursue the 4th objective of NPDES Permit, namely the detection of defective laterals that cause sanitary wastewater to be carried to the local streams and rivers.

DCG field investigations began in March 1994.

# II. DEFECTIVE LATERALS DETECTION AND ABATEMENT PROGRAM

## A. Scope of Investigations

The MS4 impacts the areas of the city where there are two separate sewers in the street. The sanitary sewer system, which consists of a network of pipes of smaller diameter, carries domestic wastewater to the City's three Water Pollution Control Plants located in the Northeast, Southeast and Southwest sections. The storm sewer system consists of pipes of larger diameter but significantly shorter lengths and transports the stormwater to the nearest natural waterways. In general, the relatively newer sections of the city in the northeast, northwest and southwest are served by a MS4.

[1] Municipal Separate Storm Sewer System

Due to problems generally attributed to improper installation or lack of oversight during construction, sanitary wastewater from some properties can be transported into the storm sewers and from there, to the streams and rivers. This intrusion of sanitary wastewater causes pollution of the streams and rivers, which are the source of city's water supply. The polluted streams and rivers also endanger the physical health and safety of residents and users of the streams. The NPDES Permit requires the city to identify and abate the plumbing connections (defective laterals) that cause the sanitary wastewater to drain into the streams.

The **investigations** of stream pollution are triggered by the presence of a dry weather discharge from the storm sewer outfalls into the streams. There are over 400 stormwater outfalls in city's MS4 system of which some 220 have exhibited some dry weather flow.

It should be mentioned however, that not all dry weather discharge from an outfall comes from sanitary wastewater incursion; some may come from underground natural streams or from groundwater inflow. Additional testing of chemical and biochemical composition of samples collected from the outfalls determines whether or not stream pollution may be caused by defective laterals.

## B. Outfall Inspections and Sampling

A systematic sampling of the quality of dry weather flow from the 200 plus wet outfalls was performed in 1991 as part of the initial NPDES permit application process. This program attempted to document the amount of flow (gph) and in many cases, fecal coliform count (number of fecal colonies per ml of water). The outfall sampling results were updated in 1998 when additional observations of fluoride levels (mg/l) were included to provide some indication of the origin of water seen in the outfalls. This is based on the fact that the natural water coming from streams or ground water seepage does not contain any significant fluorides, but the City water contains 0.7 mg/l of fluorides.

The more likely outcomes of fluoride and fecal count analyses are interpreted as follows:

i. **High fluoride level with high fecal count:** possible intrusion of sanitary wastewater into the storm sewer
ii. **Low fluoride level with high fecal count:** possible transport of surface contamination in the non-domestic discharge
iii. **High fluoride with low fecal count**: possible drinking water source

As a part of the MS4 permit, all stormwater outfalls are to be inspected once every five years. If there is dry-weather flow present then the outfall is to be sampled and tested for fecal presence and fluoride levels. In addition, the priority outfalls of the watersheds are to be sampled on a quarterly basis. Outfall inspections and sampling are handled by the Industrial Waste unit. Laboratory analysis is completed by the Bureau of Laboratory Services.

During FY2021, 42 outfall inspections were conducted, and 39 samples were taken due to observed dry-weather flow as part of the Priority Outfall Sampling program. During FY2021, 262 outfall inspections were conducted, and 126 samples were taken due to observed dry-weather flow as part of the Permit Inspection program.

## C. Field Screening

The object of **field screening** is to identify the areas in a sewershed that are suspected of contributing to stream pollution through defective laterals. The field screening begins systematically at an outfall that shows a dry weather flow[2].

Proceeding upstream from the outfall, the storm sewer manholes are successively opened and observed for the presence of flow. The term "**flow**" has been widened to include "**wet**" stormwater manholes on the assumption that the wetness was caused by earlier active flow. These observations are continued upstream along a specified sewer line and stop when a stormwater manhole no longer exhibits any flow or wetness. The field screening is then continued along another tributary sewer and eventually through the entire sewershed of the outfall.

## D. Identification of Defective Laterals

### 1) Dye Tests

Dye testing is a process by which a cross-connected lateral at a property that carries sanitary wastewater to a storm sewer is identified.

#### (a) Initial Dye Test

Before a test is conducted, the fresh air inlets (FAIs) located at the curbside of the property are identified as being the sanitary or storm FAIs. In Philadelphia, the sanitary lateral is located downstream of the stormwater lateral in relation to the flow of the main sewer[3]. The dye test protocol adopted by the City requires the presence of two properly functioning FAIs for successful initial tests. If one or no FAI is seen at a property or one or both of the FAIs are clogged or damaged, the initial dye test is aborted with a notation "**Inconclusive**".

During the initial dye test, a water-soluble fluorescent dye is placed in the fresh air inlets (FAIs). The dye is then washed down with water.

In the case of a ***"*Camera Assisted Dye Test*"*** the emergence of the dye is observed in the **storm sewer** by a closed circuit television camera positioned in the storm sewer in front of the stormwater lateral connection of the property. Possible observations include:

(i) Green dye placed in storm FAI is seen in the storm sewer
(ii) Green dye paced in storm FAI is not seen in the storm sewer
(iii) Red dye placed in the sanitary FAI is seen in the storm sewer
(iv) Red dye placed in the sanitary FAI is not seen in the storm sewer.

The above observations are interpreted as follows:

**1)** Combination of (i) and (iv): **Proper Connection**
**2)** Combination of (i) and (iii): **Probable Cross Connection**
**3)** Combination of (ii) and (iv): **Inconclusive**
**4)** Combination of (ii) and (iii): **Probable Cross Connection**

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[2] A dry weather flow is defined as one that is detected after an elapse of 72 hours of a continuous dry spell from the previous rainfall event.
[3] As discussed in Section D. House Lateral Design, pages 5-3 and 5-4, in the PWD Water and Sewer Design Manual (2nd Edition) 2011.

In certain cases, the use of the closed circuit television camera is not possible. In such cases, the initial tests are conducted with a **"Manual Dye Test"**. Possible observations include:

In a **"Manual Dye Test"**, a green dye is placed in the storm FAI and observed in the **storm sewer**. At the same time, a red dye is placed in the sanitary FAI and observed in the **sanitary sewer**. If the red dye appears in the sanitary sewer, whether or not the green dye appears in the storm sewer, the conclusion arrived at is "**Proper Connection**".

If the red dye is not seen in the sanitary sewer, the test is repeated by placing more red dye in the sanitary FAI and observed in the **storm sewer**. If the red dye appears in the storm sewer, this result signifies the presence of a "**Probable Cross Connection**".

If dye is not seen in the sanitary and storm sewers the observation is "**Inconclusive**".

The initial dye tests, whether conducted manually or by a camera are intended to be least intrusive to the water customers. During these initial tests, no entry into the home is involved. In order to provide water for dye tests at the FAIs, field crews use portable water equipment. The Defective Connections group has two vehicles each retrofitted with water supply tanks.

### (b) Confirmation Dye Test

A confirmation dye test is conducted in case of an Inconclusive test or a Probable cross connection. This test is conducted after a second notification to the customer has been sent. This test is **intrusive**; admission inside the home is required to conduct the testing.

The confirmation dye test is conducted **manually** by placing and flushing the fluorescent dye in household plumbing fixtures, such as a toilet[4]. The emergence of the dye is then observed in the **sanitary sewer**.

If the dye does appear only in the sanitary sewer, it is concluded that the property tested has a "**Proper Connection**." If the dye from the household plumbing does not appear in the sanitary sewer, then observation is made in the storm sewer. The presence of the dye in the storm sewer confirms the existence of a "**Cross Connection.**"

### (c) Notification of Defective Lateral

When a confirmation dye test indicates that there exists a cross connection at the subject property, the property owner is advised that if the property qualifies as a residential property (with no more than 4 units in one of which the owner has his/her residence), the city will make repairs to the defective lateral(s) at no cost to the property owner. If later on it is discovered that the property does not fall within this category, the customer is informed by a follow up notice of his responsibility to repair the defect at their cost.

The Plumbing Repair Programs unit handles customer communications and is responsible for the abatement of these defects.

## 2) Customer Notifications

[4] This step was modified in CY2001 to conduct the tests from all plumbing fixtures, including any in the basement in order to identify the existence of an internal cross connection, where all fixtures but one are properly connected to the sanitary sewer, with one offending connection to the storm sewer.

### (a) Initial Notification

The identification of the defective laterals begins after delineating the parts of a sewershed suspected of contributing dry weather flow to the MS4 system, after field screening. All property holders in the specified area receive an initial notification letter, generated through the Oracle-based DLS computer program. The notification provides an introduction of the program and requests the customer's cooperation in enabling **dye tests** at their property. A dye test is conducted after an initial notification is sent out to a customer. There are three possible outcomes of a dye test:

- (i) A test is conducted and no cross connection is found. In this case, a result of "No Cross Connection" is entered in the database and the case is closed.
- (ii) A test is conducted and it is concluded that there might exist a cross connection that results in the transport of sanitary wastewater into the storm sewer. This condition requires additional tests to confirm the existence of a cross connection.
- (iii) A test cannot be conducted due to any of a variety of reasons, such as FAIs were not conclusively identified, were clogged, etc. This situation also warrants additional tests to conclude whether or not a cross connection exists.

### (b) Confirmation Notification

In either of case (ii) or (iii) above, a follow up notification is sent out to the customer, informing them of the results of the previous attempt and requesting them to be available at a specified date for additional "Confirmation" tests at their property. Of course, if the date provided by the City is not suitable to the customer, they can schedule an alternative appointment that suits them.

Dye tests are then conducted at the property from within the customer's premises as described earlier. The results of the tests, (a) a Proper Connection or (b) a Cross Connection, are entered in the DLS computer program.

### (c) Water Shutoff Notification

Not all dye tests are completed as a result of confirmation notifications. Some customers ignore the scheduled date and fail to make an alternative appointment. In such cases an informatory note is left at the property and a follow up attempt for tests is made. If this also results in no test, another notification is sent out informing the customer that if they do not make a firm appointment by a specified date (usually within two calendar weeks of the notification date), their water service would be scheduled to be turned off by the Customer Service unit. Of course if the customers do respond and make an appointment for dye tests, the service shutoff is withdrawn and tests are completed as soon as possible.

### (d) Miscellaneous Closures

In some cases, where there was no response to dye test requests or water service shutoff notifications due to properties being vacant or abandoned, the cases were closed with a notation "**Miscellaneous Closure**". A miscellaneous closure is activated because of any of the following reasons:

- No active water service to the premises
- Property abandoned, empty or unoccupied
- No billing to the property per Revenue Department
- No sewer connection

From time to time, the miscellaneously closed accounts are revisited. If we find that the reason that caused the account to be originally closed is no longer valid, a dye test is conducted and the property is then re-classified according to the test results.

## III. PRIORITY SCORE LIST OUTFALLS

The emphasis of the Defective Laterals Detection and Abatement program is on outfalls on the Priority Score List. The Priority Score List ranks all outfalls sampled with dry-weather flow based on a preset formula that includes the fecal coliform results, the estimated volume of flow, whether the outfall discharges to a drinking water source water, and a complaint factor. The Priority Score List is periodically updated based on the results of the (Permit) Outfall Inspection and Sampling Program described earlier. This list was updated in July 2013.

## IV. SUMMARY OF DYE TESTS AND ABATEMENTS

Table 1 provides a summary of the work performed in detecting and abating defective laterals. It shows the cumulative numbers since the inception of the project in 1994, and the progress that was attained during FY2021.

**Table 1.**
**Updated Progress on Dye Tests in Philadelphia MS4 Area**

| | **Since Inception of the Program** | **During Fiscal 2021** |
|---|---|---|
| Dye Tests Initiated | 65,396 | 537 |
| No Cross Connections Found | 62,482 | 486 |
| Cross Connections Identified | 1,802 | 33 |
| Completed Tests | 64,284 | 519 |
| Abatements Completed | 1,645 | 12 |

Of the 12 abatements done in FY2021, 11 were residential properties, and the cost for these abatements was $94,776.50. Additionally, 1 commercial property was abated at a cost of $8,434.50.

## V. MISCELLANEOUS

### Estimates of Pollution Removed

The following data provides a rough measure of the effectiveness of the Defective Connections group's positive contribution to improving the local environment:

- Number of Cross Connections Abated

| | |
|---|---|
| Since Inception of the Program | 1,645 |
| During FY2021 | 12 |

- Estimated gallons of Polluted Water Prevented from entering the stormwater outfalls[5]

| | |
|---|---|
| Since Inception of the Program | 228.20 million gallons per year |
| During FY2021 | 1.69 million gallons per year |

## VI. STAFF LEVELS

Because of the high priority assigned to the Defective Connections group, the availability of manpower is extremely important. The sanctioned personnel for the unit is as follows:

One **Water Conveyance Supervisor**

Two **Field Representative Supervisors**

Four **SM Crew Chief Is / Science Technicians**

Eight **Utility Representatives**
Two positions vacant

One **Data Services Support Clerk**

The above field and office staffs are organized under the Water Conveyance Supervisor. This position is responsible for all aspects of the unit. The two Field Representative Supervisors are each responsible for two field crews, four crews in all. Each crew is led by a SM Crew Chief I / Science Technician and has two Utility Representatives.

In addition to the field staff, the Defective Connections group has the following position which provides general support:

**Data Services Support Clerk:** The DSSC handles the intricacies of the DLS database, creation of various correspondences related to dye tests, and follows-up with the field staff.

The DSSC also handles a variety of communications with the customers, makes appointments, and follows-up with delinquent customers. They also maintain the record of water shutoff warnings and miscellaneous closures.

At the end of FY2021, 14 of the 16 approved positions in the Defective Connections group were filled.

[5] Based on an average use of 110 gallons per capita per day, over a family size of 3.5 persons.

# Appendix L – Sanitary Infiltration Events

| Report Date | Report Time | Problem Location | Spill Notes | Affected Outfall | Abatement Date | Abatement Time | Abatement |
|---|---|---|---|---|---|---|---|
| 8/10/2020 | 8:25 AM | NAVY YARD PS 603 | PUDDLE OF SEWAGE OBSERVED COMING FROM THE GROUND ALONG 1400 LANGLEY AVE 30 FEET FROM PS 603 | N/A | 8/10/2020 | 8:45 AM | VACTORS DEPLOYED TO CLEAN UP SEWAGE AND MANAGE PS FLOWS, PS SHUT DOWN WHILE REPAIRS MADE TO MAIN |
| 8/19/2020 | 8:40 AM | NAVY YARD PS 603 | PUDDLE OF SEWAGE OBSERVED COMING FROM THE GROUND ALONG 1400 LANGLEY AVE | N/A | 8/19/2020 | 8:50 AM | VACTORS DEPLOYED TO CLEAN UP SEWAGE AND MANAGE PS FLOWS, PS SHUT DOWN WHILE REPAIRS MADE TO MAIN |
| 9/21/2020 | 1:30 PM | 10185 VERREE RD | SEWER CHOKED | N/A | 9/21/2020 | 4:00 PM | FLUSHED AND REMOVED DEBRIS FROM SEWER |
| 9/22/2020 | 1:00 PM | ROOSEVELT BLVD & WINCHESTER AVE | SEWAGE COMING OUT OF MANHOLE | N/A | 9/22/2020 | 3:00 PM | FLUSHED AND REMOVED DEBRIS FROM SEWER |
| 9/24/2020 | 12:00 PM | 134 RECTOR ST | FOUND CHOKED SANITARY MANHOLE GOING INTO STORM | S-051-03 | 9/24/2020 | 6:00 PM | USED FLUSHER TO RELIEVE CHOKED SEWER |
| 9/29/2020 | 5:10 PM | NEILL DRIVE PS | POWER OUTAGE AT STATION, DID NOT SEE DISCHARGE IN CREEK DUE TO HIGH FLOW LEVELS IN CREEK | N/A | 9/29/2020 | 10:06 PM | PORTABLE GENERATOR DEPLOYED UNTIL THE FAULT AND MAIN SWITCHGEAR REPAIRED |
| 10/6/2020 | 12:30 AM | NEILL DRIVE PS | EMERGENCY GENERATOR FAILED AND STATION WET WELL REACHED EMERGENCY OVERFLOW LEVEL FROM 1:00 AM TO 1:49 AM | N/A | 10/6/2020 | 1:49 AM | GENERATOR REPAIRED AND PUMPS RESTARTED |

| Report Date | Report Time | Problem Location | Spill Notes | Affected Outfall | Abatement Date | Abatement Time | Abatement |
|---|---|---|---|---|---|---|---|
| 11/16/2020 | 8:30 AM | NAVY YARD PS 603 | NARY YARD SECURITY GUARD REPORTED A PUDDLE COMING FROM THE GROUND ON 1400 LANGLEY AVE ABOUT 1000 FEET FROM THE PUMPING STATION 603 | N/A | 11/16/2020 | 8:45 AM | VACTORS DEPLOYED TO CLEAN UP SEWAGE AND MANAGE PS FLOWS, PS SHUT DOWN WHILE REPAIRS MADE TO MAIN |
| 12/13/2020 | 10:00 AM | 306 W HORTTER ST | FOUND CHOKED SANITARY SEWER ON 300 W HORTTER ST | N/A | 12/13/2020 | 12:50 PM | RELIEVED CHOKED SEWER WITH FLUSHER, CLEANED SEWER, CLEANED DEBRIS FROM STREET AND INLET |
| 12/30/2020 | 10:00 AM | GRANT RD & ASHTON RD | SEWER CHOKED BETWEEN MANHOLE P105-07-S0015 & P105-07-S0010 | P105-07 | 12/30/2020 | 6:00 PM | RELIEVED CHOKED SEWER, FLUSHED STORM SEWER WITH HYDRANT AND DECHOLORINATION TABS |
| 1/25/2021 | 2:15 PM | 3, 5, 7 & 9 W GIRARD AVE | SEWAGE IN BASEMENTS | N/A | 1/25/2021 | 5:00 PM | RELIEVED CHOKED SEWER |
| 2/1/2021 | 1:10 PM | 3955 STEVENSON RD | FOUND SANITARY SEWER CHOKED AND DISCHARGING INTO GRASS AREA | N/A | 2/1/2021 | 2:40 PM | RELIEVED CHOKED SEWER, REMOVED MOP HEAD CAUSING CHOKE |
| 2/11/2021 | 7:00 AM | NAVY YARD PS 603 | NAVY YARD EMPLOYEE REPORTED SEWAGE PUDDLE ON 1400 LANGLEY AVE ABOUT 1200 FEET NORTH OF PS 603 | N/A | 2/11/2021 | 10:45 AM | VACTORS DEPLOYED TO CLEAN UP SEWAGE AND MANAGE PS FLOWS, PS SHUT DOWN WHILE REPAIRS MADE TO MAIN |
| 2/15/2021 | 10:30 AM | ASHTON RD AND GRANT AVE | SANITARY SEWER CHOKED AND DISCHARGING ONTO STREET | P105-07 | 2/15/2021 | 12:00 PM | RELIEVED CHOKED SEWER, FLUSHED STORM SEWER WITH HYDRANT AND DECHOLORINATION TABS |

| Report Date | Report Time | Problem Location | Spill Notes | Affected Outfall | Abatement Date | Abatement Time | Abatement |
|---|---|---|---|---|---|---|---|
| 2/21/2021 | 10:30 AM | 3990 STEVENSON RD | SEWAGE OBSERVED COMING FROM GROUND WHERE MANHOLE SHOULD BE | Q101-13 | 2/21/2021 | 3:00 PM | RELIEVED CHOKED AND CLEAN UP NEAR OUTFALL COMPLETED |
| 2/28/2021 | 7:20 AM | 4319 TERRACE ST | SEWAGE IN BASEMENT, FOUND CHOKED SEWER | N/A | 2/28/2021 | 11:30 AM | RELIEVED CHOKED SEWER |
| 3/26/2021 | 11:35 AM | 3469 KEIM ST | SEWAGE IN BASEMENT, FOUND CHOKED SEWER | N/A | 3/26/2021 | 1:30 PM | RELIEVED CHOKED SEWER |
| 4/12/2021 | 1:15 AM | D-5 CSO OUTFALL | TIDE GATE ON SWO DID NOT CLOSE AFTER PREVIOUS RAIN EVENT | D-5 | 4/16/2021 | 10:15 AM | REPLACED HIGH LEVEL FLOAT IN REGULATING CHAMBER AND TESTED NEW EMERGENCY HIGH TRUNK LEVEL TEAR DROP SWITCH |
| 4/12/2021 | 12:50 PM | 1000 S FAIRHILL ST | SMALL AMOUNT OF SEWAGE DISCHARGED THROUGH FAI OF 1009 FAIRHILL ST DUE TO CHOKED SEWER | N/A | 4/12/2021 | 1:30 PM | BYPASS PUMP DEPLOYED TO PROVIDE SERVICE WHILE SEWER REPAIRED |
| 5/3/2021 | 1:20 PM | NAVY YARD PS 603 | NAVY YARD EMPLOYEE REPORTED SEWAGE PUDDLE ON 1400 LANGLEY AVE ABOUT 150 FEET FROM PS 603 | N/A | 5/3/2021 | 4:30 PM | VACTORS DEPLOYED TO CLEAN UP SEWAGE AND MANAGE PS FLOWS, PS SHUT DOWN WHILE REPAIRS MADE TO MAIN |
| 5/8/2021 | 11:30 AM | NAVY YARD PS 603 | PWD EMPLOYEE REPORTED PUDDLE IN GRASS NEAR INTERSECTION OF LANGLEY AVE AND BROAD ST | N/A | 5/11/2021 | 2:30 PM | VACTORS DEPLOYED TO CLEAN UP SEWAGE AND MANAGE PS FLOWS, PS SHUT DOWN WHILE REPAIRS MADE TO MAIN |

| Report Date | Report Time | Problem Location | Spill Notes | Affected Outfall | Abatement Date | Abatement Time | Abatement |
|---|---|---|---|---|---|---|---|
| 5/11/2021 | 1:30 PM | MERRICK RD AND CAPITAL VIEW DR | SEWAGE COMING OUT OF MANHOLE AND GOING INTO INLET IN FRONT OF 3419 EAST FALLS LN | S052-04 | 5/11/2021 | 2:45 PM | RELIEVED CHOKED SEWER AND CLEANED INLET |
| 5/18/2021 | 10:00 AM | 1800 TUSTIN ST | FOUL ODOR/SEWAGE COMING FROMT OUTFALL | P-099-03 | 5/18/2021 | 12:00 PM | RELIEVED CHOKED SEWER AND CLEANED UP AREA AROUND OUTFALL |
| 6/3/2021 | 11:55 AM | 11604 RENNARD ST | PARTIAL CHOKE IN GRAVITY SANTIARY SEWER DRAINING TO RENNARD ST PS LED TO OVERFLOW VIA UPSTREAM MANHOLE OF PS | N/A | 6/4/2021 | 1:35 PM | RELIEVED CHOKED SEWER |

# Appendix M – Pollution Migration / Infiltration

| Date Reported | Date Completed | Who Called | Location | Pollutant | Pollutant Type Desc | Drainage Area | Incident Type | Destination | Observations | Vulnerability Assessment | Vulnerability Assessment Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 07/01/2020 15:10 PM | 07/04/2020 13:37 PM | Other | 1845 Judson St | Sewage | | Combined - D- 39 | Choke | Spill To Ground Only | PADEP reported that there was sewage behind the home on 1844 N. 23rd St that originated from 1845 N. Judson St. PWD inspector observed a broken outside soil pipe with sewage around the area. The sewage migrated through the backyard and along the ally way. No one was home. PWD reported the issue to 311 and to water emergency desk. | No Impact On Department Operation Or Structure | Sewage is leaking to the ground due to a defect in the customer plumbing. |
| 07/06/2020 10:20 AM | 08/19/2020 14:29 PM | Other Pwd Department | 710 N 16Th St | Water | Construction Site Run Off | Combined - D48 | Illegal Discharge \| Dumping | Overland To Inlet | Contractor pumping GW to storm inlet. No discharge at time of inspection. | Minor Impact On Department Operation Or Structure | |
| 07/06/2020 17:20 PM | 07/06/2020 18:00 PM | Citizen | 5111 F St | | | | Unfounded | | No sign of flooding in rear. Debris in neighboring yard could cause complainants side to get flooded if their drain was partially obstructed. Complainant was advised to call Clip or 311 to report property maintenance issues. No PWD structures impacted | No Impact On Department Operation Or Structure | |
| 07/08/2020 10:30 AM | 07/15/2020 14:53 PM | Citizen | 15019 Milford St | | | | Unfounded | | Reports of resident dumping oil and gasoline to storm drains. No access to site. Left business card with daughter to receive a callback. | | |
| 07/08/2020 18:45 PM | 07/09/2020 12:00 PM | Citizen | 11147 Waldemire Dr | Mud | | Ms4 - Q-110-15 | Spill \| Slug Discharge | Overland To Inlet | Heavy mud along Byberry Creek from Q-110-15 to Grant Ave from WMB on 3900 Fairdale. Dechlor deployed. OF inaccessible except by stream walk. Cl2 @ Chalfont 0.09. Area to be rechecked on 7/9 when mud has cleared. Prior to recheck, fish kill reported by citizen. | Major Impact - Fish Kill | |
| 07/09/2020 10:30 AM | 07/10/2020 14:40 PM | Other | Manayunk Canal Between Fountain And Leverington Ave | | | Ms4 - S-59-03 | Other - | Overland To Inlet | OF was clear at time of inspection for WMB on Umbria. Canal was muddy end to end from torrential rain. CL2 was 0.0 No dead fish observed. Follow up inspection at request of fish commission on 7/9 was conducted by Denis Mora who verified there was a fish kill. Cause unknown | Major Impact - Fish Kill | |
| 07/10/2020 16:41 PM | 07/14/2020 10:00 AM | Fire Communications | 7720 Lindbergh Blvd | Petroleum (Oil \| Fuel) | Oil | Ms4 - M-005-03 | Spill \| Slug Discharge | Overland To Inlet | There was a sheen present on the asphalt adjacent to the spill. The nearby inlet had no sheen or oil. Inlet is a private inlet. | No Impact On Department Operation Or Structure | |
| 07/11/2020 21:04 PM | 07/12/2020 10:00 AM | Other City Department | 8500 Essington Ave | Petroleum (Oil \| Fuel) | Jet Fuel | Ms4 - M-005-08 | Spill \| Slug Discharge | Overland To Inlet | Mingo Creek and the outfalls appeared normal. | Minor Impact On Department Operation Or Structure | |
| 07/13/2020 12:05 PM | 07/17/2020 08:00 AM | Citizen | 2200 Island Ave | Petroleum (Oil \| Fuel) | Oil | Combined - C25 | Illegal Discharge \| Dumping | Other | No Spill at site. Possible illegal auto mechanic on site. | Potential Illicit Discharge | |
| 07/13/2020 15:50 PM | 07/13/2020 18:15 PM | Fire Communications | Aramingo Ave & N Delaware Ave | Petroleum (Oil \| Fuel) | Diesel Fuel | Combined - D23 & D22 | Spill \| Slug Discharge | Drain To Sewer | Spill occurred on I-95S Allegheny Ramp. | Minor Impact On Department Operation Or Structure | |
| 07/15/2020 16:00 PM | 07/16/2020 09:30 AM | Other Pwd Department | 4300 Ford Rd | Chemical | Chemical Not Listed. | Combined - S50 | Spill \| Slug Discharge | Drain To Sewer | Fluoride leak from tank at Belmont in containment area. | Minor Impact On Department Operation Or Structure | |
| 07/16/2020 08:19 AM | 07/16/2020 12:00 PM | Citizen | 5675 N Front St | Grease And Water | | Combined - T08 | Illegal Discharge \| Dumping | Drain To Sewer | Danny's Wok was pumping grease and water behind the property to nearby drain. | Minor Impact On Department Operation Or Structure | |
| 07/24/2020 07:44 AM | 07/24/2020 16:00 PM | Citizen | 2200 Island Ave | Petroleum (Oil \| Fuel) | Oil | Ms4 - C-25 | Spill \| Slug Discharge | Overland To Inlet | Oil migrated from vacant property to storm drain on neighboring property. No observed impact on the nearby Cobbs Creek. | No Impact On Department Operation Or Structure | No observed impact on department structures |
| 07/25/2020 14:40 PM | 07/25/2020 16:40 PM | Fire Communications | State Rd And Ashburner St | Petroleum (Oil \| Fuel) | Diesel Fuel | Ms4 - P-083-03 | Spill \| Slug Discharge | Spill To Ground Only | The PFD reported diesel fuel from an accident may have migrated to an inlet. The PFD was not on site when PWD inspector arrived. The police officers were protecting the site and did not have any details. At the intersection a truck that travelling north jackknifed and punctured the fuel tank. An unknown amount of fuel was on the roadway and in the gutter. The fuel migrated 330' south towards an inlet IFO 8382 State Road State Road. Sand was placed on the roadway and in the gutter. A dam was built with sand above the inlet. There was no obvious signs of oil in the inlet. There were no odors at the creek or any sheen on the creek. The inspector talked to a sanitation worker who was moving the sand and was told that no fuel made it to the inlet. | No Impact On Department Operation Or Structure | In tidal zone of Baxter WTP. Contacted BWTP as a precaution. |
| 07/25/2020 20:00 PM | 07/25/2020 21:25 PM | Business | 6000 Rising Sun Ave | Petroleum (Oil \| Fuel) | Transformer Oil | Combined - T- 06 | Spill \| Slug Discharge | Overland To Inlet | PECO reported transformer oil spill. When thePWD inspector arrived on the site, the contractor, PSC, just arrived. PECO environmental was on site. A pole transformer blew out and 2 gallon of non-PCB transformer oil spilled on the ground and less than .5 gallons to the inlet at the corner of Comly and Rising Sun Avenue. The PCS crew was going to clean the outfall according to PECO & PWD standards. No oil left the inlet. | Minor Impact On Department Operation Or Structure | PECO cleaned inlet. |
| 07/27/2020 00:30 AM | 07/28/2020 13:30 PM | Other Pwd Department | Brous & Lexington | Solid | Dirt-Mud | Ms4 - P-090-02 | Spill \| Slug Discharge | Other | PWD responded to call reporting new mud P-090-01.<br>There was no discharge from the outfall. There was fresh mud on floor of the channel. The inspector drove around the area and found no obvious source of the mud. The creek downstream at Ryan Ave. was clear. There are no active WMBs in the area, There were 2 WMBs during the last 2 weeks that impacted the outfall.<br>The inspector returned on 1220 7/28/2020. There was no active discharge. The creek at Ryan Street was clear and live fish were observed.. The Cl2 was .16 mg/l at the bridge and 0 mg/l in pool downstream.<br>I drove the area on the east side of Rhawn St. I found no obvious sources of the mud. Another inspector reported a leak on Rhawn IFO Gloria Dei. The leak was from a repair patch. | Minor Impact On Department Operation Or Structure | Mud was caught behind the gate |
| 08/03/2020 13:05 PM | 08/17/2020 13:52 PM | Citizen | Adams Ave & Crescentville Rd | Petroleum (Oil \| Fuel) | Oil | Combined - T- 079-02 | Odor | Overland To Inlet,Overland To Receiving Stream | | Potential Illicit Discharge | |

| Date Reported | Date Completed | Who Called | Location | Pollutant | Pollutant Type Desc | Drainage Area | Incident Type | Destination | Observations | Vulnerability Assessment | Vulnerability Assessment Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 08/14/2020 19:52 PM | 08/15/2020 12:00 PM | Citizen | 2827 Guilford St | | | | Unfounded | | All inlets at the intersection of Guilford and Revere Sts were inspected. There was no sign of oil in any inlet, nor was there any evidence of oil on the ground ifo any of the inlets. A jar was dropped in the inlet on Guilford 10' W of Revere ifo 2827 Guilford st, as it appeared to have a black substance floating in the inlet. The substance was broken up leaves. There was no oil present either inside or outside of the jar. | | |
| 08/16/2020 18:25 PM | 08/24/2020 14:20 PM | Other City Department | 816 E Haines St | Petroleum (Oil \| Fuel) | Transformer Oil | Combined - T14 | Spill \| Slug Discharge | Overland To Inlet | 2 gallons of non pcb transformer oil spilled to inlet. | No Impact On Department Operation Or Structure | |
| 08/19/2020 13:33 PM | 08/24/2020 14:04 PM | Citizen | 728 Daly St | | | | Unfounded | | Complaint of used needles being dumped to storm inlet. Unfounded. | | |
| 08/21/2020 16:20 PM | 08/22/2020 11:40 AM | Citizen | 3063 Chatham St | Sewage | | Combined - D22 | Choke | Spill To Ground Only | choked or defective lateral. Sewer maintenance wo 2622197 | No Impact On Department Operation Or Structure | |
| 08/21/2020 16:50 PM | 08/22/2020 10:30 AM | Fire Communications | 2020 E Wishart St | Petroleum (Oil \| Fuel) | #2 Oil | Combined - D22 | Illegal Discharge \| Dumping | Overland To Inlet | oil trail from 2020 E Wishart St to inlet at corner of Wishart and Emerald St. Reported illegal electrical hookup to PECO. | Minor Impact On Department Operation Or Structure | |
| 08/24/2020 11:05 AM | 08/24/2020 17:00 PM | Citizen | 4417 Longshore Ave | Sewage | | Combined - D05 | Choke | Other | No evidence of oil dumping. Clogged rear drain. WO for sewer and lateral exam in Cityworks. | No Impact On Department Operation Or Structure | |
| 08/25/2020 14:36 PM | 08/25/2020 17:00 PM | Citizen | 17 W Thompson St | Solid | Dirt-Mud | Combined - D44 | Illegal Discharge \| Dumping | Overland To Inlet | No hosing down of mud. Work and cleanup had been completed. No one on site. | Minor Impact On Department Operation Or Structure | |
| 08/26/2020 17:35 PM | 11/15/2020 12:00 PM | Other Pwd Department | 39Th And Poplar St | Food Waste | | Combined - S01 | Spill \| Slug Discharge | Overland To Inlet | There was a large spill pattern/ stain that appeared to originate from the back door or back yard area. It could not be determined if the stain was due to dumping of dirty mop water or if it was runoff from trash storage in the back yard area. The accumulated dirty water near the silt sock in the street did not appear to be oily or contain oil or have a sheen. | Minor Impact On Department Operation Or Structure | Adjacent to GSI |
| 08/27/2020 13:30 PM | 08/27/2020 16:00 PM | Citizen | 10Th And Christian St | | | Combined - D63 | Spill \| Slug Discharge | Spill To Ground Only | small stain from material that had been cleaned up. No impact on sewers. Possible xylene like odor. | No Impact On Department Operation Or Structure | |
| 08/31/2020 09:16 AM | 08/31/2020 18:05 PM | 311 | C St & E Allegheny Ave | Food Waste | Cooking Oil | Combined - D- 25 | Illegal Discharge \| Dumping | Overland To Inlet | PWD received a 311 report that a someone from a food truck was dumping cooking oil to the inlet at the NWC of C & Allegheny. PWD inspector did not find any evidence of dumping. The inspector spoke to a vendor who did not use oil. A bigger sized food truck was shutdown. The NWC inlet lid was ajar. The inspector reported the inlet to water emergency. No responsible party was determined. | No Impact On Department Operation Or Structure | No impacted observed around the inlet. |
| 09/04/2020 15:17 PM | 09/23/2020 12:00 PM | Other Pwd Department | N 5Th St & Rising Sun Ave | Food Waste | Grease | Combined - T- 014 | Choke | Drain To Sewer | Sewer maintenance calledPWD to report that the manhole on the sidewalk IFO 538 Rising Sun Avenue contained grease. (WO#2628973) He suspects it is the restaurant located at 538 Rising Sun . They have a history of issues. PWD inspector conduct an inspection. They have a relatively new grease trap. They called PWD because of backups. A plumber found no grease in their lines. WO# 2645846 9/23/2020 07:06 PM Dug down 11' exposed 9' of crown missing and sewer packed with dirt. No further action is required at this time. | Major Impact - Caused Pass Through Or Interference | Blockage in sewer. PWD flushed sewer and CTV the sewer. |
| 09/15/2020 10:02 AM | 10/14/2020 12:26 PM | Other | 6041 W Passyunk Ave | Trash And Debris | | Ms4 - S014-02 | Illegal Discharge \| Dumping | Direct To Receiving Stream | | No Impact On Department Operation Or Structure | |
| 09/15/2020 11:41 AM | 11/10/2020 16:15 PM | WWTP | 3899 Richmond St | Petroleum (Oil \| Fuel) | Petroleum Type Not Listed | Not Applicable - | Odor | Other | No odors or sheen observed at the time of PWD inspection | Minor Impact On Department Operation Or Structure | |
| 09/17/2020 13:43 PM | 11/10/2020 16:16 PM | Other | 2120 E Arizona St | | | | Unfounded | | Complaint of contractor discharging construction water and washing mud down the street. Unfounded. | | |
| 09/22/2020 16:30 PM | 10/14/2020 15:13 PM | Other Pwd Department | Brous Ave & Lexington Ave | Water | Potable | Ms4 - P-090- 01/02 | Discharge At Outfall | Direct To Receiving Stream | P-090-01/02 | No Impact On Department Operation Or Structure | |
| 09/23/2020 08:31 AM | 09/23/2020 13:00 PM | Citizen | Kensington Ave & E Lehigh Ave | Petroleum (Oil \| Fuel) | Gasoline | Combined - | Spill \| Slug Discharge | Spill To Ground Only | | No Impact On Department Operation Or Structure | |
| 10/01/2020 16:30 PM | 10/21/2020 12:00 PM | Citizen | 1143 Dorset St | Sewage | | Combined - T- 14 | Choke | Drain To Sewer | PWD received complaint from DEP regarding sewage in back o f the residence at 1143 Dorset St. It has been a problem since the end of August. PWD inspector observed sewage laden water by the back garage door by the storm inlet. PWD report the back up the PWD emergency desk. 10/21/2020 Sewer maintenance FOUND NO LEAK IN REAR WITH SEWAGE AT 1143. REAR DRAIN CLEAR. NO DEFECT FOUND. SATISFIED. PER #128 | No Impact On Department Operation Or Structure | Homeowners house drain appears to be backed up. Sewage in rear storm drain. |
| 10/05/2020 13:46 PM | 10/05/2020 15:35 PM | Citizen | 4057 G St | | | | Unfounded | | The onsite drain was at the rear which is actually the Lycoming Street Parcel. There is a cement swale which leads up to the area drain grate. Neither the swale, grate, vegetation, or sidewalk had oil stains in this area. Their was some ground contamination were car engines are stored but this did not impact PWD structures. | | |
| 10/07/2020 10:10 AM | 11/19/2020 12:35 PM | Citizen | 3605 Grays Ferry Ave | Soil | | Ms4 - S-30 | Illegal Discharge \| Dumping | Direct To Receiving Stream | S-30 | | |
| 10/07/2020 10:10 AM | 11/19/2020 12:35 PM | Citizen | 3605 Grays Ferry Ave | Unknown | | Not Applicable - | Illegal Discharge \| Dumping | Direct To Receiving Stream | | No Impact On Department Operation Or Structure | |
| 10/08/2020 13:40 PM | 11/19/2020 12:15 PM | Citizen | 6623 Lansdowne Ave | Petroleum (Oil \| Fuel) | Transformer Oil | Combined - | Illegal Discharge \| Dumping | Overland To Inlet | | No Impact On Department Operation Or Structure | |
| 10/12/2020 08:59 AM | 10/15/2020 13:46 PM | Other City Department | Market St & I95 Rmp | Petroleum (Oil \| Fuel) | Diesel Fuel | Combined - D53 | Spill \| Slug Discharge | Overland To Inlet | 2 truck saddle tanks leaked in accident. PFD HMAU cleaned up spill. | No Impact On Department Operation Or Structure | |
| 10/13/2020 15:06 PM | 11/10/2020 16:25 PM | Other Pwd Department | 161-73 Cecil B Moore Ave | Water | Construction Site Run Off | Combined - D44 | Illegal Discharge \| Dumping | Drain To Sewer | Reports of contractor pumping water to city manhole. Unfounded. | No Impact On Department Operation Or Structure | |

| Date Reported | Date Completed | Who Called | Location | Pollutant | Pollutant Type Desc | Drainage Area | Incident Type | Destination | Observations | Vulnerability Assessment | Vulnerability Assessment Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10/16/2020 11:30 AM | 10/16/2020 16:00 PM | Business | 454 Red Lion Rd | Petroleum (Oil \| Fuel) | Gasoline | Ms4 - Q-113-03 | Spill \| Slug Discharge | Overland To Inlet | No observed impacts. | No Impact On Department Operation Or Structure | |
| 10/17/2020 14:30 PM | 10/17/2020 18:00 PM | Other | Schuylkill River | Sewage | | Not Applicable - Lower Merion Township | Spill \| Slug Discharge | Direct To Receiving Stream | No impact at Queen Lane pumping station. There was little impact on the Schuykill River. | No Impact On Department Operation Or Structure | |
| 10/18/2020 23:30 PM | 10/19/2020 23:00 PM | Fire Communications | 401 N 10Th St | | | | Unfounded | | National Chemical Labs was inspected by myself and PWD tech who is assigned the WW discharge permit. The complaint originated from a fire alarm that activiated when a valve in the dry system tripped. The running fire system pump caused a backup in the basement drains as the system was overloaded. Some ponds was noted. There was no evidence of any chemical spill or discharge. | | |
| 10/19/2020 16:14 PM | 11/04/2020 12:00 PM | Other City Department | 2201 Christian St | Food Waste | Cooking Oil | Combined - S25 | Spill \| Slug Discharge | Overland To Inlet | Inlet at 22nd and Norfolk (behind 2201 Christian St) (inlet 19510) was filled with cooking oil. It appears that the stored oil was hit by a car and leaked into the street and inlet. Sand and absorbant was used to stop flow into inlet. | Minor Impact On Department Operation Or Structure | |
| 10/22/2020 12:30 PM | 10/24/2020 09:00 AM | Fire Communications | 1400 W Pike St | Petroleum (Oil \| Fuel) | Petroleum Type Not Listed | Combined - D25 | Spill \| Slug Discharge | Overland To Inlet | Property appeared to be an illegal auto repair operation.<br>Several drums of oil were removed. The ground was covered in oil and two inlets contained oil. | Minor Impact On Department Operation Or Structure | |
| 10/24/2020 08:50 AM | 10/24/2020 12:51 PM | Fire Communications | 4500 Palethorp St | | | Combined - T14 | Odor | Other | PWD was requested by PFD to investigate an odor<br>coming from a sewer at 4500 block of Paletherop St. No odor was present at the time of the inspection. Talked to a resident who said that the PGW checked the houses for leaks. No impact observed in the sewer. | No Impact On Department Operation Or Structure | Odor was no longer present at the time of the inspection. |
| 10/29/2020 11:08 AM | 10/31/2020 16:00 PM | Citizen | 6324 Revere St | Chemical | Solvents And Diesel Fuel To Wash Cars | Combined - D- 05 | Illegal Discharge \| Dumping | Overland To Inlet | PA DEP forwarded an EPA complaint about a resident on<br>6300 Revere St that washes his tow truck with a degreaser and solvent and diesel is being washed to the storm drain. PWD inspector found a resident washing a car with soap and water. The resident was informed not use solvents and that only residential cars can be washed. No impact was observed at the inlets. No further action is warranted at this time. | No Impact On Department Operation Or Structure | No impact observed on inlet. |
| 10/29/2020 19:05 PM | 10/30/2020 13:00 PM | Citizen | S 13Th St & Alter St | Solid | Construction Debris | Combined - D- 063 | Illegal Discharge \| Dumping | Overland To Inlet | 311 call reporting that dumping from a construction truck<br>to the sewer at 13th and Alter. Raining at the time of call. Unknown time of dumping. PWD inspected the inlet.<br>There was a whitish dried substance on the grate. The inlet was filled with water. Inlet cleaning cleaned the inlet. Responsible party cannot be determined. | Minor Impact On Department Operation Or Structure | Inlet filled with water. |
| 10/29/2020 23:18 PM | 10/29/2020 13:00 PM | Fire Communications | I95 Nb Btwn Cottman & Academy | Petroleum (Oil \| Fuel) | Diesel Fuel | Ms4 - Pa Dot Outfall | Spill \| Slug Discharge | Overland To Inlet | PWD was requested by PFD HMAU at an accident 95 N<br>between Cottman and Academy Rd. It was raining hard. The saddle tank of tractor trailer ruptured leaking no more than 190 gallons to the highway. A PADOT highway inletlet was 2 feet away. PWD inspector observed no product in the inlet. The rain washed the product away. Pennypack creek was checked at State Rd. The creek was flowing fast and no odors were detected in the area. There also was no sheen observed on the creek. As a precaution, Baxter WTP was notified. | Minor Impact On Department Operation Or Structure | In tidal zone Baxter WTP. Potential impact. |
| 10/30/2020 10:12 AM | 11/30/2020 09:15 AM | Citizen | 6162 Newtown Ave | Petroleum (Oil \| Fuel) | Oil | Ms4 - T80 | Illegal Discharge \| Dumping | Other | No impact at Tacony Creek | No Impact On Department Operation Or Structure | |
| 11/01/2020 09:25 AM | 11/04/2020 14:53 PM | Citizen | 5128 Duffield St | Petroleum (Oil \| Fuel) | Transformer Oil | Combined - F21 | Spill \| Slug Discharge | Overland To Inlet | OIL CLEANED UP. TEST RESULTS PENDING | Minor Impact On Department Operation Or Structure | |
| 11/02/2020 11:30 AM | 12/11/2020 10:31 AM | Other City Department | 6448 Woodland Ave | Sewage | | Combined - | Spill \| Slug Discharge | Other | | No Impact On Department Operation Or Structure | |
| 11/03/2020 11:00 AM | 12/11/2020 12:27 PM | 311 | 2445 N Broad St | Petroleum (Oil \| Fuel) | Oil | Combined - | Illegal Discharge \| Dumping | Overland To Inlet,Spill To Ground Only | | Potential Illicit Discharge | |
| 11/05/2020 16:50 PM | 11/06/2020 15:13 PM | Fire Communications | West Bound Entrance To I 76Th Ave At University Ave | Petroleum (Oil \| Fuel) | Diesel Fuel | Not Applicable - | Spill \| Slug Discharge | Spill To Ground Only | Penndot cleaned up spill using sand to expedite opening of the highway | No Impact On Department Operation Or Structure | |
| 11/09/2020 09:38 AM | 11/12/2020 15:31 PM | Other | 3027 Holme Ave | Sewage | | Ms4 - P-100-14 | Illegal Discharge \| Dumping | Overland To Inlet | Sewage was observed going into street from vent stack.<br>Sewer maintenance was notified and issued an Notice of Defect. | Minor Impact On Department Operation Or Structure | |
| 11/17/2020 14:45 PM | 11/28/2020 09:30 AM | Other Pwd Department | 6505 Woodland Ave | Food Waste | Grease | Combined - S45 | Spill \| Slug Discharge | Drain To Sewer | Restaurant has a grease trap. The owner claims<br>it is cleaned every 2 weeks and waste is disposed of in a dumpster. Zheng is used for recycled kitchen grease. | No Impact On Department Operation Or Structure | |
| 11/20/2020 09:30 AM | 12/10/2020 12:00 PM | Other Pwd Department | 7600 Lexington Ave | Water | Potable | Ms4 - | Discharge At Outfall | Drain To Sewer | PWD employee noticed a that clear water was being<br>discharged at a high rate from P-090-02. PWD backtracked to flow to the Hartel and Richard Streets. PWD distribution found round crack on an 8" main. The crack was repaired and the flow decreased at the outfall. | Minor Impact On Department Operation Or Structure | Discharge impacted creek. No fish kill. |
| 11/23/2020 10:46 AM | 11/25/2020 13:00 PM | Citizen | E Roosevelt Blvd & N Front St | Petroleum (Oil \| Fuel) | Unknown Petroleum Product | Combined - T- 08 | Illegal Discharge \| Dumping | Overland To Inlet | PADEP forward PWD complain about leaking abandoned<br>drums at Front St. and Roosevelt Blvd. PWD inspector called PFD who placed oil dry on the sill. None of the product was observed in the inlet. HMAU coordinated clean up with contractor | No Impact On Department Operation Or Structure | No product observed in storm drain. |

| Date Reported | Date Completed | Who Called | Location | Pollutant | Pollutant Type Desc | Drainage Area | Incident Type | Destination | Observations | Vulnerability Assessment | Vulnerability Assessment Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/25/2020 06:00 AM | 11/25/2020 07:45 AM | Fire Communications | 2501 S. 5Th St | Petroleum (Oil \| Fuel) | Gasoline | Combined - D- 70 | Spill \| Slug Discharge | Overland To Inlet | HMAU requested PWD at 400 Porter St. Gasoline spilled from a parked truck in the parking lot. Some gasoline migrated to the parking lot storm drain, which is connected to the PWD sewer system, The storm drain had no product in it.PWD inspected the sewer at 5th and Porter and found no gasoline odors. HMAU contacted L&I who will contacted contractor to clean up the spill. | No Impact On Department Operation Or Structure | No odors in sanitary sewer |
| 11/30/2020 17:20 PM | 12/01/2020 15:38 PM | Other | 2800 Master St | | | | Unfounded | | No leaking drum at that location. An empty drum was found at Newkirk and Master. It did not have any evidence of leaking into the inlet. | | |
| 12/03/2020 14:16 PM | 12/03/2020 16:45 PM | Citizen | 7637 Germantown Ave | Solid | Dirt-Mud | Ms4 - W-86-01 | Spill \| Slug Discharge | Overland To Inlet | PWD inspectors observed that discharge from 86-01 and 02 was now clear. CL2 at 0.11. no dead fish. sediment in bottom of creek. Likely source water main replacement project near Southampton Ave and Germantown Ave. Street had a layer of dirt. | Minor Impact On Department Operation Or Structure | |
| 12/09/2020 06:55 AM | 06/17/2021 15:31 PM | Other City Department | N 18Th St & W Chew Ave | Petroleum (Oil \| Fuel) | Transformer Oil | Combined - T14 | Spill \| Slug Discharge | Overland To Inlet | Vehicle struck PECO pole and caused transformer to leak 1 gal of non-pcb oil. | No Impact On Department Operation Or Structure | |
| 12/11/2020 12:24 PM | 06/17/2021 15:37 PM | Citizen | 2301 E Tioga St | | | | Unfounded | | Unfounded. No signs of dumping or leaking oil. | | |
| 12/12/2020 16:20 PM | 12/15/2020 13:00 PM | Citizen | Lincoln Dr & Morris St | Sewage | | Ms4 - W-68-05 | Spill \| Slug Discharge | Overland To Inlet | Monoshone Creek was greenish. Had areas of grey accumulation at the creek bed. Outfall 68-05 was inspected and had cloudy flow. No Smell. .34 chlorine residual. Nearby WO for sewage flow at 306 w. horter. It appears to be a choke. Sewage flowing directly into inlet. SM contacted and resolved issue @1145. Reinspection on 12/14 (wet weather) and 12/15 (dry weather). Creek had normal flow, clear and no color or odor. | Potential Sanitary Sewer Overflow (Sso) | Choke and overflow at 306 W. Horter |
| 12/22/2020 12:39 PM | 01/06/2021 12:00 PM | Other Pwd Department | Baker St & Leverington Ave | Water | Potable | Ms4 - S-059-04 And S-059-02 | Illegal Discharge \| Dumping | Overland To Inlet | PWD was notified by a PWD engineer that a contractor installing a the section of new main in Baker from DuPont to Leverington has previously been flushing into the stormwater inlet on the south corner of Baker & Leverington. This includes both the highly-chlorinated free chlorine disinfectant around 12/11/2020 and 12/14/2020 as well as distribution water since then. The discharged was halted by the PWD engineer. Another section of new main, Fowler from Hermitage to Fountain ( BLS job # 2021-068) could also have been flushed into the nearby stormwater inlet and not into a sanitary manhole.PWD inspector inspected the canal outfalls (S-059-04—Leverington and S-059-02 Fountain St.) on December 22nd . The chlorine readings were below .1 mg/l. The inspector did not see any dead fish on the canal down to Lock St. PWD issued an NOV to the contractor. | No Impact On Department Operation Or Structure | Potential impact to aquatic life in canal. No impacts on PWD structures. |
| 12/23/2020 07:00 AM | 12/23/2020 12:30 PM | Other | 3300 N Delaware Ave | Petroleum (Oil \| Fuel) | Diesel Fuel | Combined - | Spill \| Slug Discharge | Spill To Ground Only | PWD inspector verified that no inlets were impact from an accident at Allegheny and Delaware Avenues. No discharge at D-21. No oil sheen on river was observed. (NRC Notice # 12948445) | No Impact On Department Operation Or Structure | |
| 12/23/2020 13:30 PM | 12/24/2020 12:45 PM | Citizen | 2800 E Wensley St | Petroleum (Oil \| Fuel) | Petroleum Type Not Listed | Combined - | Illegal Discharge \| Dumping | Other | NRC forwarded by EPA and PADEP reporting that multiple cars are sitting along the road at 2800 E. Wensley St. The cars were reported to be leaking oil to the ground.PWD inspector found cars on the side of the road. These wrecked cars are temporarily parked unto the insurance company picks them up. The inspector saw no leaking fluids. The ground was also not stained. The inlet was clear. No further action was taken byPWD. | No Impact On Department Operation Or Structure | |
| 12/28/2020 15:44 PM | 12/29/2020 12:00 PM | Citizen | 45 N 54Th St | | | | Unfounded | | No sewage was seen or odor was detected at the site or nearby drain. | | |
| 01/05/2021 13:36 PM | | Other City Department | E Allegheny Ave & N Delaware Ave | Petroleum (Oil \| Fuel) | Diesel Fuel | Ms4 - | Spill \| Slug Discharge | Overland To Inlet | Tractor trailer accident caused ~300 gal of diesel to leak to ground and storm inlet. | Potential Illicit Discharge | |
| 01/06/2021 20:47 PM | 02/04/2021 15:10 PM | Other Pwd Department | 1242 N American St | Food Waste | Grease | Combined - D45 | Choke | | Choked sewer caused by European & American Sausage Corp. | Major Impact - Caused Pass Through Or Interference | |
| 01/08/2021 10:51 AM | 06/17/2021 15:05 PM | Other City Department | 2329 Cottman Ave | Chemical | Antifreeze | Combined - D05 | Spill \| Slug Discharge | Overland To Inlet | PECO truck hit a pole and leaked antifreeze to storm inlet. | No Impact On Department Operation Or Structure | |
| 01/11/2021 13:43 PM | 01/11/2021 15:30 PM | Citizen | 1321 S Woodstock St | | | | Unfounded | | At time of inspection (2:30pm on 1/11/21) there was no oil tanker present. Inlets at either end of the street(reed and Wharton) were inspected and there was no sign of oil contamination. There was approximately 5 drops of oil less than the size of a nickle in the middle of the street. | | |
| 01/12/2021 11:50 AM | 01/15/2021 11:00 AM | Citizen | 2449 Turner St | Sewage | | Combined - S- 05 | Illegal Discharge \| Dumping | Other | PWD received a complaint of sewage in the basement at 2441 Turner St. The sewer is a private sewer. PWD inspector observed water in the exaction but no pumping.PWD referred the construction sit to L&L via 311. | No Impact On Department Operation Or Structure | Private sewer |
| 01/14/2021 03:22 AM | 01/14/2021 19:00 PM | Citizen | Wolf St & S Hicks St | Solid | Dog Waste | Combined - S- 42 | Illegal Discharge \| Dumping | Overland To Inlet | PWD received a 311 call reporting improper disposal of dog waste to an inlet on Hicks St. PWD inspector did not observe any evidence of dog waste around or in the inlet. The inspector did not observe any dog walker improperly disposing dog waste. No further action is required at this time. | No Impact On Department Operation Or Structure | No evidence of dog waste in inlet. |
| 01/14/2021 08:23 AM | 01/14/2021 12:00 PM | Other Pwd Department | Cottman Ave & State Rd | Water | Washing Tank | Combined - D- 02 | Illegal Discharge \| Dumping | Overland To Inlet | PWD employee reported that someone at Polysat was washing a tank out and the water was draining to an inlet on State Rd south of Cottman Ave. PWD inspector to the engineer on site who told her that the water was rainwater from a toll off that was filled with rainwater They were putting scrap metal in the roll off and the water was overflowing to the driveway. There was no sheen in the run off. Polysat placed oil dry around the roll off and stopped putting scrap metal into it. Polysat is closed and they are cleaning the site. | No Impact On Department Operation Or Structure | Very small amount of rainwater migrated to the inlet. |
| 01/14/2021 08:30 AM | 01/21/2021 09:36 AM | Citizen | 2011 W Madison St | Chemical | Acetone | Combined - | Spill \| Slug Discharge | Overland To Inlet | | No Impact On Department Operation Or Structure | |

| Date Reported | Date Completed | Who Called | Location | Pollutant | Pollutant Type Desc | Drainage Area | Incident Type | Destination | Observations | Vulnerability Assessment | Vulnerability Assessment Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01/16/2021 11:58 AM | 01/14/2021 13:00 PM | Citizen | 7777 State Rd | Petroleum (Oil \| Fuel) | Diesel Fuel | Combined - D- 05 | Spill \| Slug Discharge | Spill To Ground Only | A day after the incident,PWD received a citizen complaint about a diesel fuel spill in the driveway that was being tracked to State Road. PWD inspector observed staining on State Road but no product migrated to the storm drain 250' away. No further action is required. | No Impact On Department Operation Or Structure | Did not migrate to inlet on State Road |
| 01/25/2021 02:17 AM | 02/09/2021 09:26 AM | Other City Department | 2500 Lefevre St | Petroleum (Oil \| Fuel) | Gasoline | Combined - | Spill \| Slug Discharge | Overland To Inlet | There was trash/plastics in the inlet, there was no gasoline on the street as it may have been flushed during fire incident | No Impact On Department Operation Or Structure | |
| 01/26/2021 08:52 AM | 03/03/2021 14:46 PM | Citizen | 9 W Girard Ave | Sewage | | Combined - | Choke | Spill To Ground Only | Several Restaurants in the area, they all seem to have grease management protocols in place. | No Impact On Department Operation Or Structure | |
| 02/04/2021 16:43 PM | 02/17/2021 15:33 PM | Citizen | 1146 Frankford Ave | Water | Construction Site Run Off | Combined - D- 45 | Illegal Discharge \| Dumping | Overland To Inlet | City department forwarded a tweet about a construction company pumping groundwater to the sewer. PWD inspector was on site for another job and observed the pumping. He told the contractor to stop the pumping. The next day, PWD inspector observed muddy water on the street. No pumping was occurring. E&S was notified.<br>E&S inspection was conducted on 2/8/2021. PWD will issue NOV. | Minor Impact On Department Operation Or Structure | Silt sock was in front of inlet and was allowing water to the inlet slowly. The water backed up into the intersection. |
| 02/08/2021 17:12 PM | 03/01/2021 12:59 PM | Other City Department | 5001 Unruh Ave | Petroleum (Oil \| Fuel) | Diesel Fuel | Combined - | Spill \| Slug Discharge | Overland To Inle | There were no sheen on the Delaware river | No Impact On Department Operation Or Structure | |
| 02/18/2021 09:07 AM | 05/03/2021 15:38 PM | Citizen | 946 S 5Th St | Food Waste | Grease | Combined - | Spill \| Slug Discharge | Overland To Inlet,Spill To Ground Only | There were fresh grease spill on the sidewalk on Carpenter street, and also black grease deposit stains on the street | No Impact On Department Operation Or Structure | |
| 02/20/2021 16:15 PM | 02/26/2021 09:00 AM | Citizen | 3900 Stevenson St | Sewage | | Ms4 - Q-101-13 | Choke | Overland To Receiving Stream | DEP reported a sewage discharge at Stevenson and Brook Lane. PWD inspected the area. Sewage was leaking out of the hill overland to the creek. The creek was clear. There was no impact on the near by outfall. Sewer maintenance was notified. The choke was clear and the are was cleaned by sewer maintenance. The sewer will be TVd. | Potential Sanitary Sewer Overflow (Sso) | Sewage flowed over ground and some reached the creek |
| 02/24/2021 14:17 PM | 03/02/2021 14:32 PM | 311 | 2501 E Hagert St | Water | Construction Site Run Off | Combined - D38 | Illegal Discharge \| Dumping | Overland To Inlet | Contractor is rinsing off dirt on the driveway and sidewalk to a storm inlet. | Potential Illicit Discharge | |
| 02/25/2021 11:48 AM | | Other Pwd Department | 5909 Ridge Ave | Food Waste | Grease | Ms4 - W-060-01 | Illegal Discharge \| Dumping | Drain To Sewer,Other | Met with maintenance supervisor with Briad Group, who manages maintenance at Wendy's (5901 Ridge Ave) and observed the following:<br>- Solid brown grease residue observed on inside of fresh air inlet pipe up to 1/4 of height. Toilet was flushed 5 times to observe flow in sanitary lateral; no restriction in flow observed.<br>- Upstream and downstream stormwater and sanitary manholes dry and free of grease, respectively.<br>- January-October 2020 grease trap cleaning/hauling invoices were provided. Cleaning/hauling invoices from October-present were not available, nor were manifests/description of grease trap servicing.<br>NOV will be issued.<br>UPDATE: Grease manifests for October 2020 and February 2021 were provided by maintenance manager (see attached).<br>FOLLOW-UP INSPECTION 5/27/21, 11:00 AM: Storm basin and sanitary lateral hosed and vacced. | No Impact On Department Operation Or Structure | Material confined to private stormwater basin |
| 02/27/2021 10:15 AM | 02/27/2021 10:00 AM | Other Pwd Department | Decatur St & Tulip St | Sewage | | Combined - D- 05 | Illegal Discharge \| Dumping | Overland To Inlet | PWD received a compliant from a City worker that a pipe from a motor home was discharging directly into the inlet at Tulip and Decatur. At the time of the PWD inspection, there was no ongoing discharge. There was no sewage odor in the area. PWD inspector called 911. The police call L& I. The next day thePWD inspector dove by the site and observed the inlet was back in place and the hose was removed from the home. No further action is required at this time. | Minor Impact On Department Operation Or Structure | Inlet grate was lifted and hose was wedge in inlet. |
| 02/27/2021 13:10 PM | 03/02/2021 10:39 AM | Citizen | 9581 Walley Ave | Chemical | Chemical Not Listed. | Ms4 - P-108-21 | Spill \| Slug Discharge | Overland To Inlet | No impact on paul's run. It had rained earlier. Cleanup had commenced. Wipes placed in strategic spots to capture any remaining sheen. | No Impact On Department Operation Or Structure | |
| 03/01/2021 11:37 AM | 03/02/2021 13:30 PM | Citizen | 1016 S 55Th St | Water | Soapy | Combined - C17 | Other - Car Washing | Overland To Inle | PERSON BRIEFLY USED HYDRANT TO FILL A BUCKET AT REPORTED LOCATION TO WASH A CAR. I ADVISED HIM THAT HE NEEDED A PERMIT TO USE THE HYDRANT. | No Impact On Department Operation Or Structure | |
| 03/02/2021 14:15 PM | 03/04/2021 13:22 PM | Citizen | 1050 E Montgomery Ave | Petroleum (Oil \| Fuel) | Oil | Ms4 - D41 | Spill \| Slug Discharge | Spill To Ground Only | Waste oil on ground. No inlets in area. Empty jug nearby. Absorbents placed on spill. | No Impact On Department Operation Or Structure | |
| 03/08/2021 13:25 PM | 03/15/2021 12:00 PM | Business | 4509 Island Ave | Petroleum (Oil \| Fuel) | Diesel Fuel | Ms4 - M-005-04 | Spill \| Slug Discharge | Overland To Inlet | Outfall M-005-04 was inspected prior to arriving at the scene of the spill. Outfall did not appear to be impacted by the spill.<br>At the scene of the spill, oil absorbent was already place on the spill. Inlet was not accessible due to the truck being on top of it. A hydrocarbon boom was put in the inlet.<br>Inlet was reinspected on 3/10. Inlet was pumped out and had the hydrocarbon boom. It had a hydrocarbon smell, but no diesel was visible. | Minor Impact On Department Operation Or Structure | |
| 03/09/2021 13:06 PM | 03/11/2021 12:00 PM | Business | 6899 Bradford St | Mineral Oil | | Combined - D05/D07 | Spill \| Slug Discharge | Overland To Inlet | Pole transformer was knocked over and spilled into inlet on the cornet of Bradford and Knorr. | Minor Impact On Department Operation Or Structure | |
| 03/10/2021 16:47 PM | 03/13/2021 09:45 AM | Business | 400 N 11Th St | Transformer Oil | | Combined - D48 | Spill \| Slug Discharge | Overland To Inlet,Spill To Ground Only | Tripped transformer was actively leaking oil. Most of the oil went to a ditch in the ground. Contactor was onsite cleaning up spill. | Minor Impact On Department Operation Or Structure | |
| 03/11/2021 12:57 PM | 04/22/2021 12:00 PM | Citizen | 2830 Michael Rd | Petroleum (Oil \| Fuel) | Petroleum Type Not Listed, Motor Oil | Ms4 - P-100-16 | Spill \| Slug Discharge | Spill To Ground Only | Oil staining was in the driveway of 2830 Michael Rd, as well as several places on the street. Inlet did not appear to be impacted. The was oil dry on the oil stains in the street.<br>Warning letter will be sent. | No Impact On Department Operation Or Structure | |
| 03/11/2021 16:03 PM | | Citizen | 2600 W Girard Ave | Runoff/Concr ete | | Combined - R12 | Illegal Discharge \| Dumping | Overland To Inlet | Runoff/dumping along entire construction site. Runoff continues down the entire block of 26th street. It was dry at time if inspection. Only dried mud and concreted observed at the time. | Minor Impact On Department Operation Or Structure | |

| Date Reported | Date Completed | Who Called | Location | Pollutant | Pollutant Type Desc | Drainage Area | Incident Type | Destination | Observations | Vulnerability Assessment | Vulnerability Assessment Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 03/15/2021 18:35 PM | 03/16/2021 16:00 PM | Other City Department | 1722 W Ontario St | Petroleum (Oil \| Fuel) | Mixture Of Fuel And Gasoline | Combined - D- 25 | Spill \| Slug Discharge | Spill To Ground Only | PWD received email reporting that a driller tapped into a line that was thought to be a water line but black liquid leaked out and smelled like fuel. A ferrule was installed to stop the leak. PWD inspector observed no oil on the street or near any inlets. The line tapped was a 10" oil line. The oil company is on site. They will fix the oil line and then continue the PWD job. No impact on sewer not further action is required byPWD. | No Impact On Department Operation Or Structure | No impact on sewer system |
| 03/16/2021 10:25 AM | 03/16/2021 12:00 PM | Wwtp | 3899 Richmond St | Petroleum (Oil \| Fuel) | Reddish Oily Sheen With Fuel Oil Odor | Not Applicable - | Odor | Other | NEWPCP crew chief callPWD to report a red oily sheen in the PST with acetone like odor. The discharge started 30 minutes prior. PWD arrived 30 minutes later. ThePWD inspector smelled on usual odors or observed a red oily sheen,. The crew chief also said the discharge had dissipated and every thing looked normal. PWD check the Somerset collector and there were no remnants of any oily slug discharge. No further action is required by IBC at this time. | Minor Impact On Department Operation Or Structure | Odors in the PTB and at the PSTs. |
| 03/19/2021 13:00 PM | 03/22/2021 17:00 PM | Citizen | S 4Th St & Greenwich St | Water | Cement Wash Water | Combined - D- 66 | Illegal Discharge \| Dumping | Overland To Inlet | PWD received a report of illegal dumping via 311 at the corner of 4th and Greenwich.PWD inspector observed white staining around and in the inlet consistent with cement wash water. The sidewalk across the street was recently cemented. The responsible party could not be determined. PWD requested that the inlet be cleaned. Inlet cleaning cleaned the inlet on 3/22/2021. | No Impact On Department Operation Or Structure | Cement wash water dumped into inlet |
| 03/23/2021 15:35 PM | 04/13/2021 11:29 AM | Citizen | 1100 Jackson St | Food Waste | Grease | Combined - | Illegal Discharge \| Dumping | Overland To Inlet | It rained the first visit at the location. There was good flow into the inlets and no over flow from the inlets unto the street during the rain. I spoke to the owner on 04/13/21 to remind him of the grease management documentations. As of 04/23/21, we are yet to receive any documentation from the restaurant | No Impact On Department Operation Or Structure | |
| 03/29/2021 11:22 AM | 03/30/2021 14:36 PM | Other City Department | 3901-49 Parrish St | Water | Fire | Combined - S01 | Fire | Overland To Inlet | PECO fire suppression malfunctioned and overflowed to storm inlet. | No Impact On Department Operation Or Structure | |
| 03/31/2021 09:10 AM | | Other City Department | 1430 E Washington Ln | Food Waste | Grease | Combined - T14 | Illegal Discharge \| Dumping | Drain To Sewer | Grease dumping at storm inlet. 2 restaurants nearby. | Potential Illicit Discharge | |
| 03/31/2021 09:30 AM | | 311 | 5401 Morse St | Food Waste | Grease | Combined - S50 | Illegal Discharge \| Dumping | Overland To Inlet | Grease dumping at storm inlet at 54th and Morse. | Potential Illicit Discharge | |
| 04/01/2021 15:26 PM | 04/05/2021 12:09 PM | 311 | Lebanon Ave & Kenmore Rd | Petroleum (Oil \| Fuel) | Oil | Combined - C06 | Spill \| Slug Discharge | Spill To Ground Only | A truck flipped and leaked motor oil and transmission fluid. No impact to the storm inlet | No Impact On Department Operation Or Structure | |
| 04/05/2021 12:22 PM | 04/09/2021 12:00 PM | Other Pwd Department | Sperry And Danbury | Water | | Ms4 - | Spill \| Slug Discharge | Direct To Receiving Stream | Sudden strong discharge observed at outfall. Sampled for fecal coliform, fluoride, and qual test. Attached are inspection and qual test report. | No Impact On Department Operation Or Structure | |
| 04/06/2021 17:37 PM | 04/07/2021 15:50 PM | Citizen | 5601 Vine St | Fuel Mixture | | Combined - S- 050-01 | Illegal Discharge \| Dumping | Spill To Ground Only | NRC Notice #1302118 reported dumping of an unknown quantity of fuel and oil to the street and sidewalk in front of the Auto Zone at 56th and Vine St. It has been going on for a year. PWD inspector found that the sidewalk on Vine Street was heavily stained with oil . The guys working ion the street said they we cleaning it up. They drop the oil off at Auto Zone. In front of Auto Zone there was straining on the sidewalk. The manager said that he collects the oil that is left in front of the store. The nearest storm drain is 410' ft east. The inlet was not impacted. HMAU inspected the site and called in L&I and the streets department to coordinate cleanup. At this time no further action is required ofPWD. | No Impact On Department Operation Or Structure | Potential for an unknown amount of oil sheen to reach the inlet 410' feet away. No evidence of dumping directly to the inlet was observed. |
| 04/08/2021 08:56 AM | 04/08/2021 12:00 PM | Citizen | 2501 E Tioga St | Dust/Runoff | | Combined - D19 | Spill \| Slug Discharge | Spill To Ground Only | There was some mud at points around the construction site. Silts socks are being used. Inlets did not seem to be impacted. | No Impact On Department Operation Or Structure | |
| 04/13/2021 09:03 AM | | Citizen | 4205-07 Chestnut St | Food Waste | Grease | Combined - | Spill \| Slug Discharge | Drain To Sewer | Grease was found in the manhole in the rear of the building. 4-29-21 Owner hired contractor for clean out. | No Impact On Department Operation Or Structure | |
| 04/13/2021 09:05 AM | 04/13/2021 14:00 PM | Fire Communicati ons | 2601 N Broad St | Petroleum (Oil \| Fuel) | Diesel Fuel | Combined - D- 39 | Spill \| Slug Discharge | Overland To Inlet | Oil spill was being contained and cleaned up with sand by Streets Dept. L&I, Streets, Fire and HMAU were on scene. INlet cleaned out by contractor using sweeps. | Minor Impact On Department Operation Or Structure | |
| 04/13/2021 20:20 PM | 04/14/2021 15:30 PM | Fire Communicati ons | 510 Dupont St | Petroleum (Oil \| Fuel) | Diesel Fuel | Ms4 - W-60-01 Or S-59-04 | Spill \| Slug Discharge | Overland To Inlet | The area drain was clogged with a layer of oil floating on top from a motor vehicle accident. Oil dry was on the ground. Contractor arrived to cleanup the drains. OFs checked the next day. No impact. | No Impact On Department Operation Or Structure | |
| 04/16/2021 12:35 PM | 04/30/2021 12:20 PM | Other City Department | Dunton St & W Girard Ave | Water | Groundwater | Combined - D- 45 | Spill \| Slug Discharge | Overland To Inlet | Although an attempt to cleanup mud was made on Friday evening, it was apparent that the street sweeper had not come by yet. More cleanup required. I reiterated the need for this during a 4/19 call back from Pete Hartnstne | Minor Impact On Department Operation Or Structure | |
| 04/21/2021 09:33 AM | 06/28/2021 15:37 PM | Citizen | 2400 S Millick St | Petroleum (Oil \| Fuel) | Petroleum Type Not Listed | Combined - | Odor | Other | I could not get any reading from all the inlets in the area | No Impact On Department Operation Or Structure | |
| 04/22/2021 11:44 AM | 04/22/2021 15:00 PM | Other | S. 56Th St. And Schuylkill River | Petroleum (Oil \| Fuel) | Oil | Not Applicable - | Spill \| Slug Discharge | Direct To Receiving Stream | Small watercraft sunk and leaked oil to Schuylkill River. | No Impact On Department Operation Or Structure | |
| 04/23/2021 17:11 PM | 04/30/2021 14:45 PM | Citizen | 7350 Oxford Ave | Petroleum (Oil \| Fuel) | Petroleum Type Not Listed Motor Oil | Ms4 - T-89-04 | Illegal Discharge \| Dumping | Spill To Ground Only | Site was cleaned prior to inspection. Some evidence of a previous spill (Staning) . No indication of enter into MS4 or nearby groundwater (traintracks) . | No Impact On Department Operation Or Structure | |
| 04/28/2021 16:08 PM | 05/26/2021 14:25 PM | Citizen | 1325 Beach St | Groundwater (Tidal) | | Combined - D42 | Illegal Discharge \| Dumping | Direct To Receiving Stream | Contractor pumping tidal water out to the Delaware River. Referred to Owen Small (PADEP). PCB samples taken. | No Impact On Department Operation Or Structure | |
| 04/29/2021 10:31 AM | 04/29/2021 12:00 PM | Other Pwd Department | 1500 Pattison Ave | | | Non- Contributing - Schuykill Tidal (Fdr Park) | Discharge At Outfall | Direct To Receiving Stream | Discharge was at the East Side of the Park by tennis courts at I-95. Discharge seems to be an accumulation if Iron deposits. Flow was clear, bottom of the area around outfall was coated in orange/gold. | No Impact On Department Operation Or Structure | |

| Date Reported | Date Completed | Who Called | Location | Pollutant | Pollutant Type Desc | Drainage Area | Incident Type | Destination | Observations | Vulnerability Assessment | Vulnerability Assessment Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 04/30/2021 20:33 PM | 05/08/2021 10:19 AM | Fire Communications | 3132 Emery St | Petroleum (Oil \| Fuel) | Home Heating Oil | Combined - D- 22 | Illegal Discharge \| Dumping | Overland To Inlet | PFD Haz Mat requestPWD to evaluate the contamination of a sewer inlet from 3 leaking oil drums from an illegal heating oil distribution site. PWD inspected the 3100 Blk. of Emery St. PFD was no longer on site. There was sand on street and a slight fuel odor was in the air. There was no staining around the inlets at the corners at Allegheny or Clearfield. There was staining around an inlet IFO 3162 Emery St. The oil stain was around the rim but not on the inlet or near the pick hole. PID readings were between 0 and .3 PPM in the area, sewer and inlets. An unknown amount of oil may have reach the sewer but there was No obvious pathway. No report of oil at NEWPCP was received. | No Impact On Department Operation Or Structure | No report of oil at NEWCP |
| 05/07/2021 10:00 AM | 05/28/2021 12:19 PM | Other City Department | 1349 Southampton Rd | Sewage | | Ms4 - Q-121-05 | Illegal Discharge \| Dumping | Drain To Sewer | PWD inspector observed two hoses leading from the garage to the FAI on the sidewalk. There was no active discharge. No one answered the door. The house is in disrepair. The area is dug up and there is also a hose to the storm drain area. The outfall (Q-121-05) at Poquessing Creek and Milford was inspected. The outfall is partially submerged. There was no flow and no signs of a past sewage discharge by the outfall or downstream. PWD also conducted a routine inspection at the outfall on 4/6/2021 and found no signs of sewage. PWD reported the situation to the PWD Water Emergency Desk for leak investigation. 6/7/2021 1:00:04 pm Sewer maintenance found cave in in 1349 drive way (+) dye test in main house drain served nod sewer normal. | No Impact On Department Operation Or Structure | Illegal connection from residence to FAI. No impact at outfall. |
| 05/09/2021 13:55 PM | 05/09/2021 17:00 PM | Citizen | N Hutchinson St & W Ontario St | Petroleum (Oil \| Fuel) | #2 Oil | Combined - D 25 | Spill \| Slug Discharge | Overland To Inlet | I found an empty pail that had contained home heating oil. The oil spilled to the street and was found floating on top of a puddle on the grassy area. | Minor Impact On Department Operation Or Structure | |
| 05/12/2021 15:30 PM | 05/13/2021 17:50 PM | Citizen | N Delaware Ave & Beach St | | | | Unfounded | | No discharge at the OF or unusual conditions noted on the river. Picture attached from my observation and also from complainant. | | |
| 05/13/2021 10:33 AM | 05/13/2021 12:45 PM | Citizen | S 47Th St & Woodland Ave | Food Waste | Grease | Combined - S50 | Illegal Discharge \| Dumping | Other | No illegal dumping of grease was founded. Grease is was by BioFuels (see picture). | No Impact On Department Operation Or Structure | |
| 05/13/2021 15:15 PM | 05/17/2021 15:16 PM | Citizen | 8506 Fayette St | Sewage | | Combined - T01 | Other - Sewage At House | Other | Sewage in rear of house. | No Impact On Department Operation Or Structure | |
| 05/17/2021 14:07 PM | 06/17/2021 16:00 PM | Citizen | 6900 Elmwood Ave | Used Automotive Fluids | | Combined - S45 | Illegal Discharge \| Dumping | Spill To Ground Only | People are working on cars. There is automotive fluids in the parking lot as well as the sidewalk and along curbline. Inlets appear not to be impacted. | No Impact On Department Operation Or Structure | |
| 05/18/2021 14:08 PM | 06/28/2021 15:33 PM | Business | 3300 N Delaware Ave | Petroleum (Oil \| Fuel) | Oil | Ms4 - D-20 | Spill \| Slug Discharge | Overland To Inlet | Thick black oil leaking from what seams like a water heating tank into the inlet. The personnel from Kinder Morgan poured absorbent material over the leak | No Impact On Department Operation Or Structure | |
| 05/20/2021 14:13 PM | 05/21/2021 12:00 PM | Citizen | Lincoln Dr & Harvey St | Unknown | | Ms4 - W-60-11 | Color | Direct To Receiving Stream | A Friends of the Wissahickon volunteer has reported toPWD that there is a chemical pollutant clouding the Monoshone Creek along Lincoln Drive across from Harvey St.PWD inspector inspected the creek which had had an unusual color in ponding/deep areas. There was a slight chemical smell in the area of the falls. Outfalls were checked and appeared normal. | No Impact On Department Operation Or Structure | |
| 05/27/2021 01:35 AM | 06/15/2021 13:17 PM | Fire Communications | 12000 E Roosevelt Blvd | Petroleum (Oil \| Fuel) | Diesel Fuel | Green Infrastructure - | Spill \| Slug Discharge | Overland To Inlet | The spill did not impact any waterways or PWD structures. | No Impact On Department Operation Or Structure | |
| 05/27/2021 13:15 PM | 06/21/2021 15:35 PM | Citizen | 3899 Richmond St | Petroleum (Oil \| Fuel) | #2 Oil | Combined - | Spill \| Slug Discharge | Drain To Sewer | Oil residue observed at PTB 1 & 2. | Major Impact - Caused Pass Through Or Interference | |
| 06/02/2021 06:46 AM | 06/03/2021 12:05 PM | Citizen | 2104 E Tioga St | Petroleum (Oil \| Fuel) | #2 Oil | Combined - D- 48 | Spill \| Slug Discharge | Spill To Ground Only | PADEP requestedPWD to check on a report of an oil spill at 2100 block of E. Cayoga St. PWD could not find the block. DEP call the NRC back and found out the address was E. Tioga St. The incident happened in February and the resident is looking for help because he could still smell the oil. PA DEP will contact the oil deliver company that delivered the oil to the wrong house. No impact on PWD structure and no further action byPWD is requited. | No Impact On Department Operation Or Structure | |
| 06/04/2021 00:55 AM | 06/04/2021 12:00 PM | Citizen | 2812 E Bristol St | Petroleum (Oil \| Fuel) | Unknown Vehicle Liquid. Most Likely Fuel Oil. | Combined - D- 15 | Spill \| Slug Discharge | Spill To Ground Only | NRC#1306815--Report for 2812 E. Bristol regarding a car that has been leaking fluids to the roadway for the last 6 months. An unknown amount is pooling on the roadway.PWD inspector observed a very small amount of oil on the roadway next to newer white Ford pickup truck. There was no active leak. The inspector used a wipe to absorb the oil. It had rained the previous evening. No one answered at 2812 E. Bristol. No further action is planned at this time. | No Impact On Department Operation Or Structure | On street near south gutter. Nearest inlet 100' DS. No staining around gutter or inlet |
| 06/04/2021 11:51 AM | | Other Pwd Department | S 51St & Larchwood Ave. | Solid | Construction Debris | Green Infrastructure - | Illegal Discharge \| Dumping | Other | PWD, received a call from a GSO field inspector reporting that the debris from a utility pole set at 51st and Larchwood was left on top of the inlet grate of a green infrastructure inlet. GSO inspector showed thePWD inspector the inlets around the pole #97450. There was road debris and dirt from around the pole. The inspector cleared some of the surcharge dirt and the inlet looked good. The road dirt from yesterday's storm looked it kept the new dirt out of the inlet. All three inlets on the corner had debris. The dirt around the pole was about 4" higher. Inspectors were concerned about the rain that was forecasted. A crew was found at a different site. The Forman said that he would send a send a crew to clean up the site. At 1405,PWD received a text with pictures showing the dirt packed down and the debris was removed from the inlet grates. A warning letter will be sent. | Minor Impact On Department Operation Or Structure | Potential to block rainwater from entering inlet. Did not clog inlet. |
| 06/11/2021 11:25 AM | 06/11/2021 14:45 PM | Citizen | 6301 Frankford Ave | Petroleum (Oil \| Fuel) | Oil | Combined - D- 05 | Illegal Discharge \| Dumping | Overland To Inlet | confirmed poor waste management housekeeping. Some sheen to onsite combined area drain during heavy rain. Spoke with Manager, Kevin and advised him to have waste removed. I also advised him that PADEP would be following up and it would be a good idea to complete this ASAP. I advised Kevin Bower and he indicated someone from the Waste Management Group would follow-up. | Potential Illicit Discharge | |

| Date Reported | Date Completed | Who Called | Location | Pollutant | Pollutant Type Desc | Drainage Area | Incident Type | Destination | Observations | Vulnerability Assessment | Vulnerability Assessment Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 06/12/2021 09:47 AM | 06/14/2021 12:18 PM | Fire Communications | 12900 Knights Rd | | | | Unfounded | | No transformer spill at site. | | |
| 06/14/2021 16:41 PM | 06/19/2021 08:07 AM | Citizen | Horrocks St & Strahle St | Food Waste | Grease | Ms4 - P99-05 | Illegal Discharge \| Dumping | Spill To Ground Only | Street department removed the fryer oil. SR14148528 | No Impact On Department Operation Or Structure | |
| 06/15/2021 09:20 AM | 07/21/2021 07:53 AM | Citizen | 2601-17 Poplar St | Water | Construction Site Run Off | Combined - S05 | Hydrant | Drain To Sewer | No ground water was pumped. Use of hydrant without a permit and water run off causing clog into one of the drain. | No Impact On Department Operation Or Structure | |
| 06/15/2021 17:57 PM | 06/15/2021 19:00 PM | Other Pwd Department | 3899 Richmond St | Unknown | | Not Applicable - | Odor | Other | No odor founded. | No Impact On Department Operation Or Structure | |
| 06/15/2021 18:21 PM | 06/22/2021 11:01 AM | Citizen | 4200 Chester Ave | Food Waste | Grease | Combined - S50 | Illegal Discharge \| Dumping | Drain To Sewer | Noticed some staining on the other side of the stain. Opened drain and did not see any grease visible. | No Impact On Department Operation Or Structure | |
| 06/16/2021 10:10 AM | 06/16/2021 11:35 AM | Fire Communications | S Front St & Pattison Ave | Petroleum (Oil \| Fuel) | Diesel Fuel | Combined - D73 | Spill \| Slug Discharge | Spill To Ground Only | Diesel spilled was contained. Contractor called for clean up. Spill to ground only. | No Impact On Department Operation Or Structure | |
| 06/16/2021 14:47 PM | 06/19/2021 09:11 AM | Other City Department | 4100 Chestnut St | Chemical | Chemical Not Listed. | Combined - S50 | Spill \| Slug Discharge | Drain To Sewer | About 1 gal spilled on to the ground and a little bit made it to the drain. | No Impact On Department Operation Or Structure | |
| 06/28/2021 08:25 AM | 07/06/2021 08:48 AM | Citizen | 2545 E Norris St | Petroleum (Oil \| Fuel) | Automotive Fluids | Combined - D- 38 | Illegal Discharge \| Dumping | Other | A citizen reported that his security camera recorded a neighbor fixing cars at night and washing automotive fluids to the storm drain. PWD inspector did not observe any evidence of automotive fluids ion the street or in the inlet. There was some mud in the gutter. The suspected party was not home. No further action is required at this time. | No Impact On Department Operation Or Structure | No impact observed. |
| 06/29/2021 08:50 AM | 07/06/2021 10:57 AM | Business | 4125 Longshore Ave | Water | Potable | Combined - D- 25 | Spill \| Slug Discharge | Overland To Inlet | PECO reported toPWD that they had a leak on the fire suppression sprinkler at their Longshore substation. On the street ifo of their building fresh water was leaking down the street to the inlet. Dechlor was dropped. The area is a combined area. The leak was fixed by 1129 AM. Refer to Backflow engineers. No backflow preventer was on fire supply line prior to sprinkler system. | No Impact On Department Operation Or Structure | No impact to inlet |

# Appendix N – Defective Lateral Quarterly Report FY21

**STORM WATER MANAGEMENT PROGRAM**
**NPDES PERMIT NO. PA0054712**

# DEFECTIVE LATERAL CONNECTION STATUS REPORT
**(Covering Period from July 1, 2020 to September 30, 2020)**

Submitted to

**PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION**
**BUREAU OF WATER QUALITY MANAGEMENT**

By

**CITY OF PHILADELPHIA**
**PHILADELPHIA, PA**

November 10, 2020

**DLC Program Update**
**3rd Quarter 2020**

# I. INTRODUCTION

This Defective Lateral Connection Status Report is submitted to the Pennsylvania Department of Environmental Protection (PADEP) as part of the reporting requirements of the City of Philadelphia NPDES Storm Water Management Permit No. PA 0054712. The report covers the three-month period beginning July 1, 2020 and ending September 30, 2020.

The body of this report will describe the recent activities of the City during the past quarter within the 1998 COA Priority Outfall areas and at other significant outfalls on the Stormwater Outfall Priority Score list. Additionally, goals for the next quarter will be listed.

Table 1 provides a summary of the program with respect to Complete tests, Cross-connections identified, and Abatements performed. Table 2 provides a listing of all laboratory analyses of samples taken at stormwater outfalls or within the stormwater system during the previous quarter. Table 3 provides a listing of properties with cross-connections outstanding greater than 120 days. Finally, Table 4 provides a listing of reported wastewater spills to the stormwater system or receiving streams.

# II. PAST QUARTER REVIEW

## A. Priority Outfalls

### 1. 7th & Cheltenham Outfall (T-088-01)

DLC program activities have performed 2,831 Complete tests in this sewershed, identifying 134 Cross-connections, all but one of which have been Abated.

Eight (8) sites intercepting flow are listed below.

| | | |
|---|---|---|
| 1. | CFD-01 | Plymouth St. west of Pittsville St. |
| 2. | CFD-02 | Pittsville St. south of Plymouth St. |
| 3. | CFD-03 | Elston St. east of Bouvier St. |
| 4. | CFD-04 | Ashley St. west of Bouvier St. |
| 5. | CFD-05 | Cheltenham Ave. east of 19th St. |
| 6. | CFD-06 | Verbena St. south of Cheltenham Ave. |
| 7. | CFD-07 | Cheltenham Ave. east of 7th St. |
| 8. | CFD-08 | 7th St. south of Cheltenham Ave. |

The number of inspections, blockages cleared and discharges noted during this quarter are listed below.

| Flap Gate | Inspections | Blockages | Discharges |
|---|---|---|---|
| CFD-01 | 9 | 1 | 0 |
| CFD-02 | 8 | 2 | 0 |
| CFD-03 | 6 | 0 | 0 |
| CFD-04 | 4 | 0 | 0 |
| CFD-05 | 4 | 0 | 0 |
| CFD-06 | 4 | 0 | 0 |
| CFD-07 | 16 | 4 | 0 |
| CFD-08 | 16 | 2 | 0 |

The most recent fecal sample value was 11,199 MPN per 100 ml. at the outfall on August 26, 2020.

**2. Monastery Ave. Outfall (W-060-01)**

DLC program activities have performed 632 Complete tests in this sewershed, identifying 17 Cross-connections, all of which have been Abated.

Two (2) sites intercepting flow are listed below.

1. MFD-01 Jannette St. west of Monastery Ave.
2. MFD-02 Green La. north of Lawnton St.

The number of inspections, blockages cleared and discharges noted during this quarter are listed below.

| Flap Gate | Inspections | Blockages | Discharges |
|---|---|---|---|
| MFD-01 | 4 | 0 | 0 |
| MFD-02 | 4 | 0 | 0 |

The most recent fecal sample value was 410 MPN per 100 ml. at the outfall on July 1, 2020.

**3. Monoshone Creek Outfalls (W-060-04, W-060-08, W-060-09, W-060-10, W-060-11, W-068-04 and W-068-05)**

DLC program activities have performed 2,750 Complete tests in these sewershed areas, identifying 94 Cross-connections, all of which have been Abated. The majority of the efforts have been in the W-068-05 sewershed area which is by far the largest in terms of drainage area and properties served.

The most recent fecal sample value was >24,196 MPN per 100 ml. at the W-068-05 outfall on July 22, 2020.

### 4. Manayunk Canal Outfalls (S-051-06, S-058-01, S-059-01 through S-059-11)

DLC program activities have performed 2,478 Complete tests in these sewershed areas, identifying 62 Cross-connections, all of which have been Abated. The majority of the efforts have been in the S-059-04 sewershed area.

The most recent fecal sample values at each outfall were:

- 630 MPN per 100 ml. at the S-058-01 outfall on July 27, 2020.
- 2,280 MPN per 100 ml. at the S-059-01 outfall on July 27, 2020.
- 92,080 MPN per 100 ml. at the S-059-02 outfall on July 27, 2020.
- 300 MPN per 100 ml. at the S-059-03 outfall on July 27, 2020.
- 3,690 MPN per 100 ml. at the S-059-04 outfall on July 28, 2020.
- 850 MPN per 100 ml. at the S-059-05 outfall on July 28, 2020.
- 129,970 MPN per 100 ml. at the S-059-09 outfall on July 28, 2020.

## B. Other Outfalls

### 1. Sandyford Run Outfall (P-090-02)

DLC program activities have performed 5,836 Complete tests in this sewershed, identifying 87 Cross-connections, all of which have been Abated.

One (1) site intercepting flow is listed below.

1. PFD-01 Sandyford Run (Brous and Lexington Aves.)

The number of inspections, blockages cleared and discharges noted during this quarter are listed below.

| Flap Gate | Inspections | Blockages | Discharges |
|---|---|---|---|
| PFD-01 | 14 | 1 | 0 |

The most recent fecal sample value was 5.2 MPN per 100 ml. at the outfall on July 22, 2020.

### 2. Franklin and Hasbrook Outfall (T-089-04)

DLC program activities have performed 1,021 Complete tests in this sewershed, identifying 46 Cross-connections, all of which have been Abated.

One (1) site intercepting flow is listed below.

1. CFD-01 Franklin and Hasbrook Aves.

The number of inspections, blockages cleared and discharges noted during this quarter are listed below.

| Flap Gate | Inspections | Blockages | Discharges |
|---|---|---|---|
| CFD-01 | 16 | 1 | 0 |

The outfall was found dry on August 18, 2020.

**3.** A current summary of additional outfalls from the Stormwater Outfall Priority Score list that the City has performed complete testing or abatements this quarter is as follows.

| Outfall # | Complete Test | Cross Connection | Abatement |
|---|---|---|---|
| D-092-05 | 3 | 0 | 0 |
| P-082-01 | (1) | 0 | 0 |
| P-091-06 | (17) | 0 | 0 |
| P-099-03 | 27 | 0 | 0 |
| P-100-11 | 12 | (1) | (1) |
| P-100-13 | 8 | 0 | 0 |
| P01 | 1 | 0 | 0 |
| Q-101-09 | (3) | 0 | 0 |
| R18 | 0 | 0 | 8 |
| S-052-04 | 50 | 0 | 0 |
| W-086-01 | (2) | 0 | 0 |
| W-086-02 | 2 | 0 | 0 |

## III. NEXT QUARTER GOALS

### A. Priority Outfalls

### 1. 7th & Cheltenham Outfall (T-088-01)

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatuses.
- Continue sampling at the outfall with dry-weather flow.

### 2. Monastery Ave. Outfall (W-060-01)

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatuses.
- Continue sampling at the outfall with dry-weather flow.

### 3. Monoshone Creek Outfalls (W-060-04, W-060-08, W-060-09, W-060-10, W-060-11, W-068-04 and W-068-05)

Goals for the Quarter

- Continue sampling at outfall W-068-05 with dry-weather flow.

**4. Manayunk Canal Outfalls (S-051-06, S-058-01, S-059-01 through S-059-11)**

Goals for the Quarter

- Continue sampling at the outfalls with dry-weather flow.

**B. Other Outfalls**

**1. Sandyford Run Outfall (P-090-02)**

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatus.

**2. Franklin and Hasbrook Outfall (T-089-04)**

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatus.

**3.** Continue to perform abatements of identified cross-connections within the following outfalls.

- D-056-09
- D-093-01
- P-083-03
- P-091-06
- P-091-09
- P-100-04
- Q-109-07
- Q-110-09
- R18
- S-046-06
- S-052-03
- S-052-04
- S-052-05
- T-080-02
- W-067-01
- W-077-02
- W-086-02

**4.** Continue to perform property testing within the following outfalls.

- P-091-06
- P-099-01
- P-099-03
- P-100-11
- P-100-13
- S-052-04

**Table 1**
**DLC Program Summary**
**July 1, 2020 to September 30, 2020**

Complete Tests:

- 63,844 Complete tests have been performed under the DLC program
- **79 Complete tests were performed this past quarter**
- 3 Complete tests were performed in outfall D-092-05
- (1) Complete test was performed in outfall P-082-01
- (17) Complete tests were performed in outfall P-091-06
- 27 Complete tests were performed in outfall P-099-03
- 12 Complete tests were performed in outfall P-100-11
- 8 Complete tests were performed in outfall P-100-13
- 1 Complete test was performed in outfall P01
- (3) Complete tests were performed in outfall Q-101-09
- 50 Complete tests were performed in outfall S-052-04
- (1) Complete test was performed in outfall S-059-04
- (2) Complete tests were performed in outfall W-086-01
- 2 Complete tests were performed in outfall W-086-02

Cross-Connections Found:

- 1,768 Cross-connections have been identified under the DLC program
- **(1) Cross-connection was identified this past quarter**
- (1) Cross-connection was identified in outfall P-100-11

Abatements:

- 1,621 Abatements have been performed under the DLC program
- **7 Abatements were performed this past quarter**
- (1) Abatement was performed in outfall P-100-11
- 8 Abatements were performed in outfall R18

Outfall/Manhole Screening and Sampling:

- 9 outfall inspections were made as part of the **Priority Outfall Inspection Program** this past quarter
- 9 outfall samples were taken due to observed dry-weather flow during the above inspections

- 39 outfall inspections were made as part of the **Permit Inspection Program** this past quarter
- 27 outfall samples were taken due to observed dry-weather flow during the above inspections

**Table 2**

**Lab Analysis of Water at Outfalls and/or in the Storm Sewers**

**July 1, 2020 to September 30, 2020**

| Outfall | Date | Time | Location | Sewer Size (in) | Flow (gph) | Fluoride (mg/l) | Fecal Count (MPN per 100 ml) | Comments |
|---|---|---|---|---|---|---|---|---|
| **A. Priority Outfalls** | | | | | | | | |
| **T-088-01** | 8/26/2020 | 12:05 | Outfall: 7th and Cheltenham | 84 | NR | 0.116 | 11199 | Clear. No shee/odors |
| **W-060-01** | 7/1/2020 | 11:30 | Outfall:Monastery and Janette | 5' x 4'4" | 180 | 0.139 | 410 | Clear. No sheen/odors |
| **S-058-01** | 7/27/2020 | 11:25 | Outfall:Umbria St. & Domino Lane | 54 | NR | 0.196 | 630 | Clear, no sheen/odors. Orange sediment. |
| **S-059-01** | 7/27/2020 | 11:45 | Outfall:Towpath & Parker St. | 42 | 2520 | 0.379 | 2280 | Light tan, orange sediment, no sheen/odors. |
| **S-059-02** | 7/27/2020 | 11:55 | Outfall:Towpath & Fountain St. | 42 | 60 | 0.144 | 92080 | Clear, no sheen/odors |
| **S-059-03** | 7/27/2020 | 12:05 | Outfall:Towpath & Wright St. | 42 | 600 | 0.144 | 300 | Clear, no sheen/odors |
| **S-059-04** | 7/28/2020 | 11:30 | Outfall:Towpath & Leverington Ave. Bridge | 51 | NR | 0.182 | 3690 | Clear, no sheen no odors, tidal influence, submerged |
| **S-059-05** | 7/28/2020 | 11:35 | Outfall:Towpath & Leverington Ave. Bridge | 4'0" x 2'8" | NR | 0.177 | 850 | Clear, no sheen no odors, tidal influence, submerged |
| **S-059-09** | 7/28/2020 | 11:45 | Outfall:Main St. & Green Lane | 36 | 1200 | 0.582 | 129970 | Flow beneath boardwalk |
| **B. Permit Inspection Program** | | | | | | | | |
| **P-090-02** | 7/22/2020 | 10:45 | Outfall: Sandyford | 156 | 2400 | 0.63 | 5.2 | Clear, No sheen No odors |
| **P-091-01** | 9/1/2020 | 11:05 | Outfall: Sandyford & Brous | 42 | NR | 0.614 | 2098 | Clear, no sheen/odors. Sampled 75' downstream due to unsafe access to O/F. |
| **P-091-06** | 9/3/2020 | 12:15 | Outfall: Holme & Winchester | 3'00" x 7'07" | NR | <0.1 | 1014 | Outfall submerged in deep creek channel. Waders, jar on string tossed into OF mouth to sample. Creek Influence. |
| **P-099-03** | 9/3/2020 | 11:45 | Outfall: Bustleton & Tustin | 7'00" x 6'06" | 120 | 0.302 | 129970 | Lots of green, grey, brown bacteria/algae |
| **P-100-14** | 7/22/2020 | 10:21 | Outfall: Holme and Longford | 42 | NR | NS | NS | No Flow (slight trickle) |
| **P-100-16** | 7/22/2020 | 10:40 | Outfall: Tolbut and Tremont | 54 | 300 | <0.1 | >24196.0 | Clear, no sheen/odors. Rust sediment. |
| **P-100-23** | 7/22/2020 | 11:00 | Outfall: Ashton and Angus | 36 | 30 | <0.1 | 1413.6 | Clear, no sheen/odors. Oufall structure is collapsed. |
| **P-100-24** | 9/4/2020 | 11:00 | Outfall: Angus & Woodbridge | 27 | 0 | NS | NS | Very slight trickle, <0.1 Unable to sample |
| **P-101-02** | 9/4/2020 | 10:30 | Outfall: Annapolis & Brookdale | 42 | 0 | NS | NS | Very slight trickle, <0.1 Unable to sample |
| **P-104-06** | 7/29/2020 | 11:20 | Outfall: Meetinghouse & Veree | 48 | 1200 | <.1 | >24196 | Clear, no sheen/odors |
| **P-104-07** | 7/29/2020 | 10:40 | Outfall: Tustin & Rising Sun | 66 | 3600 | <.1 | 6488 | Clear, no sheen/odors |
| **P-105-01** | 7/15/2020 | 10:50 | Outfall: Roosevelt Blvd. & Goodnaw | 102 | NR | NS | NS | Observed a sheen downstream of OF. No flow. |
| **P-105-02** | 7/21/2020 | 10:40 | Outfall: Winchester & Mather | 60 | 1500 | <0.1 | >24196.0 | Observed white/orange, fluffy bacteria-like substance on outfall. |
| **P-105-06** | 9/3/2020 | 11:20 | Outfall: Old Bustleton & Gregg | 6'00" x 9'09" | NR | 0.15 | 9208 | Sample taken in culvert channel. Unable to find storm MH's on street, other manholes asphalted over. |
| **P-108-13** | 9/3/2020 | 10:45 | Outfall: Verree & Bloomfield | 36 | 60 | 0.362 | 12033 | Trickle flow, sample taken |
| **P-108-16** | 7/30/2020 | 11:00 | Outfall: Welsh & Alburger | 54 | 0 | NS | NS | No flow |
| **P-108-17** | 7/30/2020 | 10:50 | Outfall: Welsh & Alburger | 42 | NR | 0.231 | 1986.3 | Outfall submerged; unable to tell if there is flow |
| **P-109-01** | 9/4/2020 | 11:45 | Outfall: Fenwick & Bartlett | 72 | 9000 | 0.639 | 41 | Very heavy clear flow, no odors, plunge pool blue clear |
| **Q-102-02** | 9/17/2020 | 10:40 | Outfall: Hegerman and St. Denis | 48 | 720 | 0.649 | 20 | Concrete Apron separated from OF mouth. Bluish pool |
| **Q-106-12** | 7/1/2020 | 10:45 | Outfall: Morrell & Ashfield | 30 | 240 | 0.1 | >24196.0 | Grey Algae/bacteris in OF mouth |
| **Q-106-13** | 7/1/2020 | 0:00 | Outfall: Keswick Rd & Keswick Pl | 27 | 720 | 0.593 | >24196.0 | Outfall detached from concrete collar/piping |
| **Q-106-14** | 7/1/2020 | 0:00 | Outfall: Rayland and Helmer | 36 | <0.01 | NS | NS | Trickle flow very low, unable to sample |
| **Q-106-15** | 7/1/2020 | 0:00 | Outfall: Morrell & Calera | 66 | 1800 | 0.112 | 23.1 | Pool clear/bluish, soime scum/sheen |
| **Q-107-02** | 9/3/2020 | 10:30 | Outfall: Dearpath and Parkdale | 7'00" x 8'00" | NR | 0.328 | 24196 | Outfall is culvert |
| **Q-109-06** | 9/17/2020 | 11:30 | Outfall: Red Lion / Quaker Valley Foods | 66 | 300 | 0.132 | 437 | Slow Flow OF apron channel 2-4 in deep water |
| **Q-110-09** | 9/17/2020 | 11:00 | Outfall: Academy & Comly | 36 | 720 | 0.688 | >241960 | Possible cross connection, heavy sewage odor. Additional bottle sampled for dilution. |
| **Q-114-03** | 9/4/2020 | 9:30 | Outfall: SE of Comply & Nester | 42 | 0 | NS | NS | No flow |
| **Q-115-07** | 9/4/2020 | 11:00 | Outfall: NW of Academy & Torrey Dr | 24 | 0 | NS | NS | No Flow |
| **Q-115-12** | 9/3/2020 | 10:30 | Outfall:Nanton and Canby | 72 | 120 | 0.392 | 12033 | Clear |
| **Q-117-02** | 9/4/2020 | 10:00 | Outfall: Carousel Station Byberry & Audubon | 7'00" x 6'06" | 0 | NS | NS | No flow, channel had 6" water |
| **Q-121-02** | 9/4/2020 | 10:30 | Outfall: NE of Kovats & Poquessing Creek Dr | 48 | 0 | NS | NS | No flow |
| **T-089-04** | 8/18/2020 | 9:33 | Outfall: Franklin & Hasbrook | 3'0" x 6'6" | NF | NS | NS | No discharge from city side outfall. Minor clear flow from Cheltenham township. No unusual color, sheen, or odor. |
| **W-060-09** | 8/28/2020 | 8:20 | Outfall: Daniel St and Hermit | 30 | 3.75 | 0.2 | 11199 | Trickle Flow |
| **W-067-01** | 7/1/2020 | 11:07 | Outfall:Gorgas Lane | 6' x 6'6" | 4800 | 0.104 | 6131 | Clear. No sheen/odors. Slight scum on plunge pool |
| **W-067-02** | 7/1/2020 | 11:00 | Outfall:Fountain and Henry | 36" | 600 | <0.1 | 355 | Clear. No sheen/odors |
| **W-068-05** | 7/22/2020 | 11:30 | Outfall: Lincoln & Morris | 5'0" x 4'0" | 3600 | 0.219 | >24196.0 | Clear, slight musty odor |
| **W076-10** | 8/28/2020 | 9:00 | Outfall: SW of Valley Green Rd & Wolcott Dr | 42 | 1 | <0.1 | 249 | Stagnant Water in mouth of outfall. Flow rate estimated. Outfall partially submerged. |
| **W-076-12** | 9/2/2020 | 11:05 | Outfall:Saint Martins & Huron | 66 | NR | NS | NS | No Flow |
| **W-076-13** | 9/2/2020 | 11:35 | Outfall:Wises Mill & Henry | 48 | 12 | 0.162 | 25.9 | Clear. No sheen/odors |

# Table 3
# Residential Cross Connections Not Abatted Within 120 Days

## A. Properties Abated & Confirmed Prior to Reporting:

| Address | Outfall Code | Complete Date | Admin. Action | Abatement Confirmation Date | Comments |
|---|---|---|---|---|---|

## B. Properties Active As Of Reporting:

| Address | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|
| 00015 Osborn St | S-052-05 | 01-17-2018 | | |
| 01941 Kentwood St | Q-109-07 | 01-19-2018 | | |
| 03411 W Penn St | S-052-04 | 02-13-2018 | | |
| 03423 W Penn St | S-052-04 | 02-17-2018 | | |
| 03424 W Penn St | S-052-04 | 02-17-2018 | | |
| 03433 W Penn St | S-052-04 | 02-21-2018 | | |
| 03331 W Penn St | S-052-04 | 02-24-2018 | | |
| 03332 W Penn St | S-052-04 | 02-26-2018 | | |
| 03425 Conrad St | S-052-04 | 03-01-2018 | | |
| 03530 Henry Ave | S-052-04 | 03-03-2018 | | |
| 03340 W Penn St | S-052-04 | 03-03-2018 | | |
| 03305 Tilden St | S-052-04 | 03-24-2018 | | |
| 03313 Tilden St | S-052-04 | 03-24-2018 | | |
| 03329 Tilden St | S-052-04 | 03-27-2018 | | |
| 03316 Tilden St | S-052-04 | 03-28-2018 | | |
| 03333 Tilden St | S-052-04 | 03-29-2018 | | |
| 03461 Sunnyside Ave | S-052-04 | 04-02-2018 | | |
| 03411 Osmond St | S-052-04 | 04-28-2018 | | |
| 03449 W Penn St | S-052-04 | 05-03-2018 | | |
| 03446 Crawford St | S-052-04 | 05-17-2018 | | |
| 03467 Indian Queen La | S-052-04 | 05-26-2018 | | |
| 03433 Crawford St | S-052-04 | 05-26-2018 | | |
| 03317 W Penn St | S-052-04 | 06-02-2018 | | |

# Table 3
# Residential Cross Connections Not Abated Within 120 Days

| Address | | | | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|---|---|---|
| 03448 | W | Queen | La | S-052-04 | 06-23-2018 | | |
| 00032 | W | Gowen | Ave | W-086-02 | 06-28-2018 | | |
| 03419 | W | Queen | La | S-052-04 | 07-02-2018 | | |
| 03335 | W | Queen | La | S-052-04 | 07-02-2018 | | |
| 03417 | W | Queen | La | S-052-04 | 07-05-2018 | | |
| 03326 | W | Queen | La | S-052-04 | 07-12-2018 | | |
| 03452 | W | Queen | La | S-052-04 | 07-13-2018 | | |
| 03469 | W | Queen | La | S-052-04 | 07-17-2018 | | |
| 03414 | W | Queen | La | S-052-04 | 07-20-2018 | | |
| 03440 | W | Queen | La | S-052-04 | 07-21-2018 | | |
| 03474 | | Tilden | St | S-052-04 | 07-21-2018 | | |
| 03333 | W | Queen | La | S-052-04 | 07-21-2018 | | |
| 03435 | W | Queen | La | S-052-04 | 07-30-2018 | | |
| 03464 | W | Queen | La | S-052-04 | 07-30-2018 | | |
| 03429 | W | Queen | La | S-052-04 | 08-02-2018 | | |
| 03459 | W | Queen | La | S-052-04 | 08-16-2018 | | |
| 03434 | W | Queen | La | S-052-04 | 08-17-2018 | | |
| 03460 | W | Queen | La | S-052-04 | 08-24-2018 | | |
| 02612 | | Woodward | St | P-100-04 | 09-12-2018 | | |
| 04437 | | Riverview | La | S-052-03 | 09-19-2018 | | |
| 04456 | | Riverview | La | S-052-03 | 09-26-2018 | | |
| 04423 | | Driftwood | Dr | S-052-03 | 09-27-2018 | | |
| 04406 | | Driftwood | Dr | S-052-03 | 09-29-2018 | | |
| 04433 | | Driftwood | Dr | S-052-03 | 09-29-2018 | | |
| 04410 | | Driftwood | Dr | S-052-03 | 10-06-2018 | | |
| 03235 | | Comly | Pl | Q-110-09 | 10-06-2018 | | |

# Table 3
# Residential Cross Connections Not Abated Within 120 Days

| Address | | | | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|---|---|---|
| 04415 | | Driftwood | Dr | S-052-03 | 10-12-2018 | | |
| 04402 | | Driftwood | Dr | S-052-03 | 10-13-2018 | | |
| 04312 | | Ashburner | St | P-083-03 | 10-20-2018 | | |
| 03454 | W | Penn | St | S-052-04 | 10-24-2018 | | |
| 04425 | | Driftwood | Dr | S-052-03 | 10-27-2018 | | |
| 04431 | | Driftwood | Dr | S-052-03 | 10-27-2018 | | |
| 04404 | | Driftwood | Dr | S-052-03 | 10-31-2018 | | |
| 04412 | | Driftwood | Dr | S-052-03 | 11-09-2018 | | |
| 04417 | | Driftwood | Dr | S-052-03 | 11-17-2018 | | |
| 04435 | | Aberdale | Rd | P-083-03 | 12-04-2018 | | |
| 03005 | | Comly | Rd | Q-110-09 | 12-10-2018 | | |
| 03700 | | Falls | Cir | S-052-03 | 12-15-2018 | | |
| 08726 | | Cottage | St | P-083-03 | 12-22-2018 | | |
| 03702 | | Falls | Cir | S-052-03 | 12-24-2018 | | |
| 04702 | | Almond | St | D-056-09 | 12-26-2018 | | |
| 03482 | | Tilden | St | S-052-04 | 01-07-2019 | | |
| 04611 | | Ashburner | St | P-083-03 | 01-16-2019 | | |
| 09524 | | State | Rd | D-093-01 | 01-16-2019 | | |
| 03704 | | Falls | Cir | S-052-03 | 01-17-2019 | | |
| 04408 | | Driftwood | Dr | S-052-03 | 01-19-2019 | | |
| 03706 | | Falls | Cir | S-052-03 | 01-19-2019 | | |
| 04712 | | Ashburner | St | P-083-03 | 01-22-2019 | | |
| 02629 | | Pratt | St | D-056-09 | 01-26-2019 | | |
| 04416 | | Ashburner | St | P-083-03 | 02-02-2019 | | |
| 04312 | | M | St | R18 | 03-13-2019 | | |
| 04300 | | M | St | R18 | 03-15-2019 | | |

# Table 3
# Residential Cross Connections Not Abated Within 120 Days

| Address | | | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|---|---|
| 04422 | Ashburner | St | P-083-03 | 03-22-2019 | | |
| 04337 | Glendale | St | R18 | 03-23-2019 | | |
| 04232 | O | St | R18 | 03-28-2019 | | |
| 04254 | O | St | R18 | 04-06-2019 | | |
| 00223 | Stearly | St | T-080-02 | 04-06-2019 | | |
| 04310 | Glendale | St | R18 | 04-13-2019 | | |
| 02095 | Red Lion | Rd | Q-109-07 | 04-16-2019 | | |
| 00215 | Stearly | St | T-080-02 | 04-20-2019 | | |
| 05930 | Newtown | Ave | T-080-02 | 04-22-2019 | | |
| 04250 | Neilson | St | R18 | 04-25-2019 | | |
| 05922 | Newtown | Ave | T-080-02 | 04-26-2019 | | |
| 04215 | Castor | Ave | R18 | 04-27-2019 | | |
| 04219 | Castor | Ave | R18 | 05-02-2019 | | |
| 04249 | Neilson | St | R18 | 05-04-2019 | | |
| 04242 | Castor | Ave | R18 | 05-11-2019 | | |
| 08336 | Ditman | St | P-083-03 | 05-18-2019 | | |
| 01434 E | Bristol | St | R18 | 05-28-2019 | | |
| 04236 | Neilson | St | R18 | 06-01-2019 | | |
| 04404 | Carwithan | Rd | P-083-03 | 06-04-2019 | | |
| 04245 | Ormond | St | R18 | 06-08-2019 | | |
| 04307 | Glendale | St | R18 | 06-10-2019 | | |
| 04309 | Glendale | St | R18 | 06-15-2019 | | |
| 04227 | Maywood | St | R18 | 06-15-2019 | | |
| 04122 | M | St | R18 | 07-06-2019 | | |
| 08635 | Ditman | St | P-083-03 | 07-10-2019 | | |
| 04146 | Markland | St | R18 | 07-27-2019 | | |

# Table 3
# Residential Cross Connections Not Abated Within 120 Days

| Address | | | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|---|---|
| 04144 | M | St | R18 | 07-29-2019 | | |
| 04144 | Markland | St | R18 | 07-30-2019 | | |
| 04142 | Markland | St | R18 | 08-03-2019 | | |
| 04122 | Markland | St | R18 | 08-05-2019 | | |
| 01433 E | Lycoming | St | R18 | 08-12-2019 | | |
| 01409 E | Lycoming | St | R18 | 08-13-2019 | | |
| 04120 | Markland | St | R18 | 08-17-2019 | | |
| 04114 | Markland | St | R18 | 08-17-2019 | | |
| 01413 E | Lycoming | St | R18 | 08-20-2019 | | |
| 01447 E | Lycoming | St | R18 | 08-26-2019 | | |
| 01453 E | Lycoming | St | R18 | 08-27-2019 | | |
| 04025 | Castor | Ave | R18 | 08-29-2019 | | |
| 01404 E | Lycoming | St | R18 | 08-31-2019 | | |
| 04023 | Castor | Ave | R18 | 09-04-2019 | | |
| 04034 | Castor | Ave | R18 | 09-06-2019 | | |
| 04051 | Castor | Ave | R18 | 09-11-2019 | | |
| 04026 | Castor | Ave | R18 | 09-13-2019 | | |
| 04224 | Markland | St | R18 | 09-14-2019 | | |
| 01455 E | Lycoming | St | R18 | 09-14-2019 | | |
| 04024 | Castor | Ave | R18 | 09-17-2019 | | |
| 01444 E | Lycoming | St | R18 | 09-19-2019 | | |
| 04143 | M | St | R18 | 09-21-2019 | | |
| 04215 | M | St | R18 | 09-24-2019 | | |
| 04038 | Castor | Ave | R18 | 09-28-2019 | | |
| 07331 | Hill | Rd | W-067-01 | 09-30-2019 | | |
| 04138 | M | St | R18 | 10-01-2019 | | |

# Table 3
# Residential Cross Connections Not Abated Within 120 Days

| Address | | | | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|---|---|---|
| 02623 | W | Allegheny | Ave | S-046-06 | 10-05-2019 | | |
| 04033 | | Castor | Ave | R18 | 10-08-2019 | | |
| 04014 | | Castor | Ave | R18 | 10-08-2019 | | |
| 04030 | | Castor | Ave | R18 | 10-12-2019 | | |
| 01405 | E | Lycoming | St | R18 | 10-12-2019 | | |
| 03063 | | Winchester | Ave | P-091-09 | 10-19-2019 | | |
| 04259 | | Castor | Ave | R18 | 10-22-2019 | | |
| 04261 | | Castor | Ave | R18 | 10-26-2019 | | |
| 01431 | E | Lycoming | St | R18 | 11-02-2019 | | |
| 08820 | | Cottage | St | P-083-03 | 11-06-2019 | | |
| 04259 | | Neilson | St | R18 | 12-02-2019 | | |
| 00531 | | Roxborough | Ave | W-060-01 | 12-14-2019 | | |
| 02320 | | Benson | St | P-091-06 | 01-06-2020 | | |
| 01352 | E | Hunting Park | Ave | R18 | 01-08-2020 | | |
| 04123 | | Markland | St | R18 | 02-06-2020 | | |
| 02306 | | Benson | St | P-091-06 | 02-10-2020 | | |
| 01441 | E | Hunting Park | Ave | R18 | 02-29-2020 | | |
| 00038 | W | Hartwell | La | W-077-02 | 03-05-2020 | | |

**Table 4**
**Spills to Storm Sewers and/or Receiving Waters**
**July 1, 2020 to September 30, 2020**

| Date | Outfall | Address | Source Code | Material Involved | Completion Date | Remarks |
|---|---|---|---|---|---|---|
| 07/15/20 | P100-16 | 9041 Ashton Rd | 3009 | Sewage | 07/16/20 | Industrial Waste unit investigated a report of grease trail from property to storm inlet. No infulence at outfall. NOV to be issued. |
| 07/24/20 | C-25 | 2200 Island Ave<br>Cobbs Creek | 3009 | Sewage | 07/24/20 | Industrial Waste unit investigated a report of oil migration from property to storm drain. No observed impact on creek. Contacted contractor for cleanup. |
| 08/10/20 | PNBC PS 603 Force Main | 1400 Langley Ave<br>Schuylkil River | 3008 | Sewage | 08/10/20 | Sewer Maintenance unit ran vactor trucks to clean up the puddle causing approximate 1 gpm discharge. Contractor JPC did the excavation and made the repair on the force main. Contaminated material was removed. |
| 08/19/20 | PNBC PS 603 Force Main | 1400 Langley Ave<br>Schuylkil River | 3008 | Sewage | 08/19/20 | Sewer Maintenance unit used flusher trucks to vaccum up the puddle causing approximate 1 gpm discharge. Contractor JPC did the replacement of the force main section. Excavation was backfilled. |
| 09/21/20 | P113-04 | 10185 Verree Road<br>Pennypack Creek | 3009 | Sewage | 09/21/20 | Sewer Maintenance unit flushed 10" diameter sanitary sewer causing negligible discharge and removed debris. No cleanup needed. |
| 09/22/20 | P100-02 | Roosevelt Blvd & Winchester Ave<br>Pennypack Creek | 3008 | Sewage | 09/22/20 | Sewer Maintenance unit flushed 10" diameter sanitary sewer causing approximate 5 gpm discharge and removed debris. Sent waterways to clean up and sanitize affected area around the manhole. |
| 09/24/20 | S051-03 | 134 Rector Street<br>Schuylkil River | 3009 | Sewage | 09/24/20 | Sewer Maintenance unit flushed 8" diameter sanitary sewer causing approximate 1 gpm discharge. No clean up needed. |

**Source Codes:**
**3008 - Spill to Ground Only**
**3009 - Spill to Storm Sewer**
**3010 - Spill to Sanitary Sewer**
**3011 - Spill to Receiving Stream**

**STORM WATER MANAGEMENT PROGRAM**
**NPDES PERMIT NO. PA0054712**

# DEFECTIVE LATERAL CONNECTION STATUS REPORT
**(Covering Period from October 1, 2020 to December 31, 2020)**

Submitted to

**PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION**
**BUREAU OF WATER QUALITY MANAGEMENT**

By

**CITY OF PHILADELPHIA**
**PHILADELPHIA, PA**

February 3, 2021

# DLC Program Update
# 4th Quarter 2020

## I. INTRODUCTION

This Defective Lateral Connection Status Report is submitted to the Pennsylvania Department of Environmental Protection (PADEP) as part of the reporting requirements of the City of Philadelphia NPDES Storm Water Management Permit No. PA 0054712. The report covers the three-month period beginning October 1, 2020 and ending December 31, 2020.

The body of this report will describe the recent activities of the City during the past quarter within the 1998 COA Priority Outfall areas and at other significant outfalls on the Stormwater Outfall Priority Score list. Additionally, goals for the next quarter will be listed.

Table 1 provides a summary of the program with respect to Complete tests, Cross-connections identified, and Abatements performed. Table 2 provides a listing of all laboratory analyses of samples taken at stormwater outfalls or within the stormwater system during the previous quarter. Table 3 provides a listing of properties with cross-connections outstanding greater than 120 days. Finally, Table 4 provides a listing of reported wastewater spills to the stormwater system or receiving streams.

## II. PAST QUARTER REVIEW

### A. Priority Outfalls

#### 1. 7th & Cheltenham Outfall (T-088-01)

DLC program activities have performed 2,831 Complete tests in this sewershed, identifying 134 Cross-connections, all but one of which have been Abated.

Eight (8) sites intercepting flow are listed below.

| | | |
|---|---|---|
| 1. | CFD-01 | Plymouth St. west of Pittsville St. |
| 2. | CFD-02 | Pittsville St. south of Plymouth St. |
| 3. | CFD-03 | Elston St. east of Bouvier St. |
| 4. | CFD-04 | Ashley St. west of Bouvier St. |
| 5. | CFD-05 | Cheltenham Ave. east of 19th St. |
| 6. | CFD-06 | Verbena St. south of Cheltenham Ave. |
| 7. | CFD-07 | Cheltenham Ave. east of 7th St. |
| 8. | CFD-08 | 7th St. south of Cheltenham Ave. |

The number of inspections, blockages cleared and discharges noted during this quarter are listed below.

| Flap Gate | Inspections | Blockages | Discharges |
|---|---|---|---|
| CFD-01 | 12 | 0 | 0 |
| CFD-02 | 12 | 0 | 0 |
| CFD-03 | 10 | 0 | 0 |
| CFD-04 | 6 | 0 | 0 |
| CFD-05 | 5 | 0 | 0 |
| CFD-06 | 5 | 0 | 0 |
| CFD-07 | 18 | 4 | 0 |
| CFD-08 | 16 | 1 | 0 |

The most recent fecal sample value was 24,196 MPN per 100 ml. at the outfall on November 19, 2020.

**2. Monastery Ave. Outfall (W-060-01)**

DLC program activities have performed 632 Complete tests in this sewershed, identifying 17 Cross-connections, 16 of which have been Abated.

Two (2) sites intercepting flow are listed below.

1. MFD-01 Jannette St. west of Monastery Ave.
2. MFD-02 Green La. north of Lawnton St.

The number of inspections, blockages cleared and discharges noted during this quarter are listed below.

| Flap Gate | Inspections | Blockages | Discharges |
|---|---|---|---|
| MFD-01 | 7 | 0 | 0 |
| MFD-02 | 7 | 0 | 0 |

The most recent fecal sample value was 178.5 MPN per 100 ml. at the outfall on October 6, 2020.

**3. Monoshone Creek Outfalls (W-060-04, W-060-08, W-060-09, W-060-10, W-060-11, W-068-04 and W-068-05)**

DLC program activities have performed 2,750 Complete tests in these sewershed areas, identifying 94 Cross-connections, all of which have been Abated. The majority of the efforts have been in the W-068-05 sewershed area which is by far the largest in terms of drainage area and properties served.

The most recent fecal sample value was 1,986.3 MPN per 100 ml. at the W-068-05 outfall on October 6, 2020.

**4. Manayunk Canal Outfalls (S-051-06, S-058-01, S-059-01 through S-059-11)**

DLC program activities have performed 2,478 Complete tests in these sewershed areas, identifying 62 Cross-connections, all of which have been Abated. The majority of the efforts have been in the S-059-04 sewershed area.

The most recent fecal sample values on October 6 at each outfall were:

- 2,419.6 MPN per 100 ml. at the S-058-01 outfall.
- >2,419.6 MPN per 100 ml. at the S-059-01 outfall.
- >2,419.6 MPN per 100 ml. at the S-059-02 outfall.
- >2,419.6 MPN per 100 ml. at the S-059-03 outfall.
- >2,419.6 MPN per 100 ml. at the S-059-04 outfall.
- 78 MPN per 100 ml. at the S-059-05 outfall.
- >2,419.6 MPN per 100 ml. at the S-059-09 outfall.

**B. Other Outfalls**

**1. Sandyford Run Outfall (P-090-02)**

DLC program activities have performed 5,836 Complete tests in this sewershed, identifying 87 Cross-connections, all of which have been Abated.

One (1) site intercepting flow is listed below.

1. PFD-01 Sandyford Run (Brous and Lexington Aves.)

The number of inspections, blockages cleared and discharges noted during this quarter are listed below.

| Flap Gate | Inspections | Blockages | Discharges |
|---|---|---|---|
| PFD-01 | 37 | 1 | 1 |

The most recent fecal sample value was 325.5 MPN per 100 ml. at the outfall on October 7, 2020.

**2. Franklin and Hasbrook Outfall (T-089-04)**

DLC program activities have performed 1,021 Complete tests in this sewershed, identifying 46 Cross-connections, all of which have been Abated.

One (1) site intercepting flow is listed below.

1. CFD-01 Franklin and Hasbrook Aves.

The number of inspections, blockages cleared and discharges noted during this quarter are listed below.

| Flap Gate | Inspections | Blockages | Discharges |
|---|---|---|---|
| CFD-01 | 22 | 4 | 0 |

The outfall was found dry on November 10, 2020.

**3.** A current summary of additional outfalls from the Stormwater Outfall Priority Score list that the City has performed complete testing or abatements this quarter is as follows.

| Outfall # | Complete Test | Cross Connection | Abatement |
|---|---|---|---|
| P-083-03 | 2 | 0 | 3 |
| P-091-01 | 14 | 0 | 0 |
| P-091-06 | 52 | 2 | 0 |
| P-099-01 | 4 | 0 | 0 |
| P-099-03 | 11 | 0 | 0 |
| P-100-11 | 14 | 0 | 0 |
| P-100-13 | 9 | 0 | 0 |
| P-108-18 | 11 | 0 | 0 |
| P-108-19 | 3 | 0 | 0 |
| P-113-08 | 1 | 0 | 0 |
| Q-106-21 | 6 | 0 | 0 |
| Q-109-07 | 4 | 0 | 1 |
| Q-120-03 | 1 | 0 | 0 |
| R18 | 5 | 2 | 8 |
| S-052-04 | 23 | 0 | 3 |
| T-056-08 | 1 | 0 | 0 |
| W-076-01 | 2 | 0 | 0 |
| W-086-02 | 0 | 0 | 1 |

## III. NEXT QUARTER GOALS

### A. Priority Outfalls

### 1. 7th & Cheltenham Outfall (T-088-01)

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatuses.
- Continue sampling at the outfall with dry-weather flow.

### 2. Monastery Ave. Outfall (W-060-01)

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatuses.
- Continue sampling at the outfall with dry-weather flow.

**3. Monoshone Creek Outfalls (W-060-04, W-060-08, W-060-09, W-060-10, W-060-11, W-068-04 and W-068-05)**

Goals for the Quarter

- Continue sampling at outfall W-068-05 with dry-weather flow.

**4. Manayunk Canal Outfalls (S-051-06, S-058-01, S-059-01 through S-059-11)**

Goals for the Quarter

- Continue sampling at the outfalls with dry-weather flow.

**B. Other Outfalls**

**1. Sandyford Run Outfall (P-090-02)**

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatus.

**2. Franklin and Hasbrook Outfall (T-089-04)**

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatus.

**3.** Continue to perform abatements of identified cross-connections within the following outfalls.

- D-056-09
- D-093-01
- P-083-03
- P-091-06
- P-091-09
- P-100-04
- Q-109-07
- Q-110-09
- R18
- S-046-06
- S-052-03
- S-052-04
- S-052-05
- T-080-02

- W-067-01
- W-077-02

**4.** Continue to perform property testing within the following outfalls.

- P-083-03
- P-091-01
- P-091-06
- P-099-01
- P-099-03
- P-100-11
- P-100-13
- P-108-18
- P-108-19
- P-113-08
- Q-106-21
- Q-109-07
- Q-117-05
- R18
- S-052-04
- T-056-08

**Table 1**
**DLC Program Summary**
**October 1, 2020 to December 31, 2020**

Complete Tests:

- 64,007 Complete tests have been performed under the DLC program
- **163 Complete tests were performed this past quarter**
- 2 Complete tests were performed in outfall P-083-03
- 14 Complete tests were performed in outfall P-091-01
- 52 Complete tests were performed in outfall P-091-06
- 4 Complete tests were performed in outfall P-099-01
- 11 Complete tests were performed in outfall P-099-03
- 14 Complete tests were performed in outfall P-100-11
- 9 Complete tests were performed in outfall P-100-13
- 11 Complete tests were performed in outfall P-108-18
- 3 Complete tests were performed in outfall P-108-19
- 1 Complete test was performed in outfall P-113-08
- 6 Complete tests were performed in outfall Q-106-21
- 4 Complete tests were performed in outfall Q-109-07
- 1 Complete test was performed in outfall Q-120-03
- 5 Complete tests were performed in outfall R18
- 23 Complete tests were performed in outfall S-052-04
- 1 Complete test was performed in outfall T-056-08
- 2 Complete tests were performed in outfall W-076-01

Cross-Connections Found:

- 1,772 Cross-connections have been identified under the DLC program
- **4 Cross-connections were identified this past quarter**
- 2 Cross-connections were identified in outfall P-091-06
- 2 Cross-connections were identified in outfall R18

Abatements:

- 1,637 Abatements have been performed under the DLC program
- **16 Abatements were performed this past quarter**
- 3 Abatements were performed in outfall P-083-03
- 1 Abatement was performed in outfall Q-109-07
- 8 Abatements were performed in outfall R18
- 3 Abatements were performed in outfall S-052-04
- 1 Abatement was performed in outfall W-086-02

Outfall/Manhole Screening and Sampling:

- 9 outfall inspections were made as part of the **Priority Outfall Inspection Program** this past quarter
- 9 outfall samples were taken due to observed dry-weather flow during the above inspections

- 36 outfall inspections were made as part of the **Permit Inspection Program** this past quarter
- 21 outfall samples were taken due to observed dry-weather flow during the above inspections

**Table 2**

**Lab Analysis of Water at Outfalls and/or in the Storm Sewers**

**October 1, 2020 to December 31, 2020**

| Outfall | Date | Time | Location | Sewer Size (in) | Flow (gph) | Fluoride (mg/l) | Fecal Count (MPN per 100 ml) | Comments |
|---|---|---|---|---|---|---|---|---|
| **A. Priority Outfalls** | | | | | | | | |
| **T-088-01** | 11/19/2020 | 10:40 | Outfall: 7th and Cheltenham | 84 | NR | 0.137 | 24196 | Clear. No sheen/odors |
| **W-060-01** | 10/6/2020 | 11:30 | Outfall: Monastery & Janette | 5' x 4'4" | 180 | 0.102 | 178.5 | Clear flow |
| **S-058-01** | 10/6/2020 | 10:20 | Outfall:Umbria St. & Domino Lane | 54 | 3600 | 0.208 | 2419.6 | Outfall Submerged |
| **S-059-01** | 10/6/2020 | 10:40 | Outfall:Towpath & Parker St. | 42 | 7200 | 0.418 | >2419.6 | Newly fallen tree in way of OF, must crawl under. |
| **S-059-02** | 10/6/2020 | 11:00 | Outfall:Towpath & Fountain St. | 42 | 1800 | 0.232 | >2419.6 | Grey bacteria in OF |
| **S-059-03** | 10/6/2020 | 11:05 | Outfall:Towpath & Wright St. | 42 | 3600 | 0.125 | >2419.6 | GREY Bacteria and green algae on rock cascade below OF |
| **S-059-04** | 10/6/2020 | 11:15 | Outfall:Towpath & Leverington Ave. Bridge | 51 | NR | 0.156 | >2419.6 | Outfall submerged, channel influence |
| **S-059-05** | 10/6/2020 | 11:20 | Outfall:Towpath & Leverington Ave. Bridge | 4'0" x 2'8" | NR | 0.194 | 78 | Submerged, influence from S-059-04 |
| **S-059-09** | 10/6/2020 | 11:30 | Outfall:Main St. & Green Lane | 36 | 1200 | 0.502 | >2419.6 | Outfall under boardwalk difficult to observe. |
| **B. Permit Inspection Program** | | | | | | | | |
| **C-032-02** | 12/10/2020 | 10:35 | Pennwood & Brockton | 18 | NF | NS | NS | OF part subm. in cloudy grey water. Grey pulpy solids coating riprap and path of flow. Sewage smell obvious. |
| **P-082-01** | 12/29/2020 | 11:45 | Outfall: Torresdale & Enfield | 27 | 360 | 0.434 | 272.3 | Clear flow |
| **P-082-02** | 12/29/2020 | 11:30 | Outfall: Holmesburg and Cottage (Welsh and Mill) | 48 | 720 | 0.185 | >2419.16 | Hybrid outfall of P-04 |
| **P-083-01** | 12/30/2020 | 9:45 | Outfall: Rhawn and State | 18 | 0 | NS | NS | Dry. No flow present during inspection. OF apron collapsed |
| **P-083-02** | 12/30/2020 | 9:55 | Outfall: Rhawn and State | 18 | 0 | NS | NS | Dry. No flow present during inspection. Steep Hill |
| **P-090-02** | 10/7/2020 | 11:00 | Outfall: Sandyford | 156 | 72000 | 0.682 | 325.5 | Higher flow than usual, grey bacteria in channel bed floor |
| **P-091-06** | 12/30/2020 | 10:55 | Holme and Winchester | 3'0"x7'7" | 0 | NS | NS | OF submerged. No flow present during time of inspection |
| **P-091-07** | 12/30/2020 | 10:45 | Holme and Winchester | 54 | 0 | NS | NS | OF submerged. No flow present during time of inspection |
| **P-099-02** | 11/18/2020 | 12:30 | Outfall: Solly & Rising Sun | 72 | 75 | <0.1 | 1616 | Clear flow, no odor |
| **P-104-07** | 10/8/2020 | 11:30 | Outfall: Tustin & Rising Sun | 66 | 5400 | 0.103 | 29090 | Clear flow, but high |
| **P-112-03** | 12/3/2020 | 12:00 | Outfall: Laramie & Kismet | 104 x 96 | 300 | <0.1 | 118.7 | Foam Patches On Surface Downstream |
| **P-113-01** | 11/18/2020 | 11:15 | Outfall: Red Lion & Northeast | 60 | NF | NS | NS | Half submerged, no flow |
| **P-113-04** | 11/18/2020 | 11:00 | Oufall: Northeast & Gorman | 122 x 72 | NF | 0.151 | 1782 | Sample collected from pool, though no flow was observed. Grate clogged with trash. |
| **P-113-07** | 10/9/2020 | 11:30 | Outfall: Redlion and Bustleton | 66 | 1800 | 0.42 | 2613 | Clear flow, some grey bacteria in OF channel bed |
| **P-113-08** | 12/3/2020 | 13:00 | Outfall: Verree & Greymont | 113 x 72 | 3600 | 0.167 | >2419.6 | Membranous film in plunge pool |
| **Q-102-04** | 10/8/2020 | 10:40 | Outfall: Grant & James | 30 | NF | NS | NS | No Flow |
| **Q-106-22** | 10/8/2020 | 11:40 | Outfall: Morrell & Ashfield | 30 | 180 | 0.522 | >241960 | Light tan, moderate sewage odor, slight sudsing, cloudy. |
| **Q-110-15** | 10/8/2020 | 11:15 | Outfall: Waldemire & Ronnald | 60 | NF | NS | NS | No flow in 3 upstream manholes |
| **Q-121-01** | 12/29/2020 | 11:00 | Outfall: Ina & Stevens | 54 | 0 | NS | NS | No Flow |
| **Q-121-02** | 12/29/2020 | 11:15 | Outfall: Kovats & Poquessing Creek Dr | 48 | 0 | NS | NS | No Flow |
| **Q-121-03** | 12/29/2020 | 11:25 | Outfall: Liberty & Poquessing Creek Dr | 36 | 0 | NS | NS | No Flow |
| **Q-121-04** | 12/29/2020 | 11:35 | Outfall: Poquessing Creek Dr & Poquessing Creek Ln | 36 | 0 | NS | NS | No Flow |
| **S-046-09** | 12/10/2020 | 9:30 | Ford & Wentworth | 42 | | 0.292 | >24196 | Outfall submerged, water in apron/channel bluish grey. Sample collected from mouth of pipe, though no flow observed |
| **S-051-02** | 12/8/2020 | 11:43 | Outfall: Main & Harvey | 18 | 60 | 0.274 | 10 | Clear flow, no odor. Some sediment buildup in pipe mouth |
| **S-051-03** | 12/8/2020 | 11:24 | Outfall: Main & Cotton | 60 | 0 | NS | NS | Outfall partly submerged, tidal water ebbing and flowing through opening |
| **S-051-05** | 12/8/2020 | 11:05 | Outfall: Main & Gay | 48 | 0.25 | 0.345 | 14136 | Outfall partly submerged, trickle flow observed in riffle at discharge point |
| **T-050-01** | 11/20/2020 | 10:10 | Outfall: Delaware & Lewis | 42 | 0.05 | 0.44 | 12 | Trickle flow, apron muddy with tidal sediment |
| **T-080-02** | 11/20/2020 | 11:00 | Outfall: Comly & Newtown | 54 x 39 | 480 | 0.396 | >24196 | Slimy sand-colored mats coating path of flow in pipe. |
| **T-080-03** | 12/4/2020 | 10:10 | Outfall: Newtown & Van Kirk | 30 | 0.2 | 0.556 | >24196 | Could Not Find Outfall Opening. Trickle Flow. Sewage odor, cloudy with black solids. |
| **T-089-04** | 11/10/2020 | 11:15 | Outfall: Franklin & Hasbrook | 3'0" x 6'6" | NF | NS | NS | No discharge from city side outfall. No unusual color, sheen, or odor. |
| **T-097-02** | 12/10/2020 | 8:00 | W Cheltenham & Vernon | 24 | 30 | 0.113 | 3450 | Grey film in pool and in path of flow in pipe |
| **W-060-08** | 12/9/2020 | 9:45 | Outfall: Walnut Ln & Kingsley | 33 | 120 | 0.616 | 1046200 | Grey spongy mat in outfall mouth. Water in pool very cloudy. |
| **W-068-05** | 10/6/2020 | 10:55 | Outfall: Lincoln & Morris | 5'0" x 4'0" | 7200 | 0.191 | 1986.3 | Clear flow |
| **W-085-02** | 12/9/2020 | 10:25 | Outfall: Rex & Seminole | 54 | 900 | 0.118 | 3873 | Crystal clear, strong flow. No odor. Moss growing in mouth of OF |
| **W-095-01** | 12/9/2020 | 11:34 | Outfall: Hillcrest & Germantown | 48 | 3600 | 0.382 | 10 | Crystal clear, strong flow. No odor |
| **W-095-04** | 12/9/2020 | 11:05 | Outfall: Stenton & Bells Mill | 30 | NF | NS | NS | Rebar exposed by cracking/collapsing concrete beneath opening. Water dripping (1 drop/5 seconds) from OF. |

# Table 3
# Residential Cross Connections Not Abated Within 120 Days

## A. Properties Abated & Confirmed Prior to Reporting:

| Address | Outfall Code | Complete Date | Admin. Action | Abatement Confirmation Date | Comments |
|---|---|---|---|---|---|

## B. Properties Active As Of Reporting:

| Address | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|
| 00015 Osborn St | S-052-05 | 01-17-2018 | | |
| 01941 Kentwood St | Q-109-07 | 01-19-2018 | | |
| 03411 W Penn St | S-052-04 | 02-13-2018 | | |
| 03424 W Penn St | S-052-04 | 02-17-2018 | | |
| 03433 W Penn St | S-052-04 | 02-21-2018 | | |
| 03425 Conrad St | S-052-04 | 03-01-2018 | | |
| 03530 Henry Ave | S-052-04 | 03-03-2018 | | |
| 03340 W Penn St | S-052-04 | 03-03-2018 | | |
| 03305 Tilden St | S-052-04 | 03-24-2018 | | |
| 03313 Tilden St | S-052-04 | 03-24-2018 | | |
| 03329 Tilden St | S-052-04 | 03-27-2018 | | |
| 03316 Tilden St | S-052-04 | 03-28-2018 | | |
| 03333 Tilden St | S-052-04 | 03-29-2018 | | |
| 03461 Sunnyside Ave | S-052-04 | 04-02-2018 | | |
| 03411 Osmond St | S-052-04 | 04-28-2018 | | |
| 03449 W Penn St | S-052-04 | 05-03-2018 | | |
| 03446 Crawford St | S-052-04 | 05-17-2018 | | |
| 03467 Indian Queen La | S-052-04 | 05-26-2018 | | |
| 03433 Crawford St | S-052-04 | 05-26-2018 | | |
| 03317 W Penn St | S-052-04 | 06-02-2018 | | |
| 03448 W Queen La | S-052-04 | 06-23-2018 | | |
| 03419 W Queen La | S-052-04 | 07-02-2018 | | |
| 03335 W Queen La | S-052-04 | 07-02-2018 | | |

# Table 3
# Residential Cross Connections Not Abated Within 120 Days

| Address | | | | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|---|---|---|
| 03417 | W | Queen | La | S-052-04 | 07-05-2018 | | |
| 03326 | W | Queen | La | S-052-04 | 07-12-2018 | | |
| 03452 | W | Queen | La | S-052-04 | 07-13-2018 | | |
| 03469 | W | Queen | La | S-052-04 | 07-17-2018 | | |
| 03414 | W | Queen | La | S-052-04 | 07-20-2018 | | |
| 03440 | W | Queen | La | S-052-04 | 07-21-2018 | | |
| 03474 | | Tilden | St | S-052-04 | 07-21-2018 | | |
| 03333 | W | Queen | La | S-052-04 | 07-21-2018 | | |
| 03435 | W | Queen | La | S-052-04 | 07-30-2018 | | |
| 03464 | W | Queen | La | S-052-04 | 07-30-2018 | | |
| 03429 | W | Queen | La | S-052-04 | 08-02-2018 | | |
| 03459 | W | Queen | La | S-052-04 | 08-16-2018 | | |
| 03434 | W | Queen | La | S-052-04 | 08-17-2018 | | |
| 03460 | W | Queen | La | S-052-04 | 08-24-2018 | | |
| 02612 | | Woodward | St | P-100-04 | 09-12-2018 | | |
| 04437 | | Riverview | La | S-052-03 | 09-19-2018 | | |
| 04456 | | Riverview | La | S-052-03 | 09-26-2018 | | |
| 04423 | | Driftwood | Dr | S-052-03 | 09-27-2018 | | |
| 04406 | | Driftwood | Dr | S-052-03 | 09-29-2018 | | |
| 04433 | | Driftwood | Dr | S-052-03 | 09-29-2018 | | |
| 04410 | | Driftwood | Dr | S-052-03 | 10-06-2018 | | |
| 03235 | | Comly | Pl | Q-110-09 | 10-06-2018 | | |
| 04415 | | Driftwood | Dr | S-052-03 | 10-12-2018 | | |
| 04402 | | Driftwood | Dr | S-052-03 | 10-13-2018 | | |
| 04312 | | Ashburner | St | P-083-03 | 10-20-2018 | | |
| 03454 | W | Penn | St | S-052-04 | 10-24-2018 | | |

# Table 3
## Residential Cross Connections Not Abated Within 120 Days

| Address | | | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|---|---|
| 04425 | Driftwood | Dr | S-052-03 | 10-27-2018 | | |
| 04431 | Driftwood | Dr | S-052-03 | 10-27-2018 | | |
| 04404 | Driftwood | Dr | S-052-03 | 10-31-2018 | | |
| 04412 | Driftwood | Dr | S-052-03 | 11-09-2018 | | |
| 04417 | Driftwood | Dr | S-052-03 | 11-17-2018 | | |
| 04435 | Aberdale | Rd | P-083-03 | 12-04-2018 | | |
| 03005 | Comly | Rd | Q-110-09 | 12-10-2018 | | |
| 03700 | Falls | Cir | S-052-03 | 12-15-2018 | | |
| 08726 | Cottage | St | P-083-03 | 12-22-2018 | | |
| 03702 | Falls | Cir | S-052-03 | 12-24-2018 | | |
| 04702 | Almond | St | D-056-09 | 12-26-2018 | | |
| 03482 | Tilden | St | S-052-04 | 01-07-2019 | | |
| 09524 | State | Rd | D-093-01 | 01-16-2019 | | |
| 03704 | Falls | Cir | S-052-03 | 01-17-2019 | | |
| 04408 | Driftwood | Dr | S-052-03 | 01-19-2019 | | |
| 03706 | Falls | Cir | S-052-03 | 01-19-2019 | | |
| 02629 | Pratt | St | D-056-09 | 01-26-2019 | | |
| 04416 | Ashburner | St | P-083-03 | 02-02-2019 | | |
| 04312 | M | St | R18 | 03-13-2019 | | |
| 04300 | M | St | R18 | 03-15-2019 | | |
| 04422 | Ashburner | St | P-083-03 | 03-22-2019 | | |
| 04337 | Glendale | St | R18 | 03-23-2019 | | |
| 04232 | O | St | R18 | 03-28-2019 | | |
| 04254 | O | St | R18 | 04-06-2019 | | |
| 00223 | Stearly | St | T-080-02 | 04-06-2019 | | |
| 04310 | Glendale | St | R18 | 04-13-2019 | | |

# Table 3
# Residential Cross Connections Not Abated Within 120 Days

| Address | | | | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|---|---|---|
| 00215 | | Stearly | St | T-080-02 | 04-20-2019 | | |
| 05930 | | Newtown | Ave | T-080-02 | 04-22-2019 | | |
| 04250 | | Neilson | St | R18 | 04-25-2019 | | |
| 05922 | | Newtown | Ave | T-080-02 | 04-26-2019 | | |
| 04215 | | Castor | Ave | R18 | 04-27-2019 | | |
| 04219 | | Castor | Ave | R18 | 05-02-2019 | | |
| 04249 | | Neilson | St | R18 | 05-04-2019 | | |
| 04242 | | Castor | Ave | R18 | 05-11-2019 | | |
| 08336 | | Ditman | St | P-083-03 | 05-18-2019 | | |
| 01434 | E | Bristol | St | R18 | 05-28-2019 | | |
| 04236 | | Neilson | St | R18 | 06-01-2019 | | |
| 04245 | | Ormond | St | R18 | 06-08-2019 | | |
| 04309 | | Glendale | St | R18 | 06-15-2019 | | |
| 04122 | | M | St | R18 | 07-06-2019 | | |
| 08635 | | Ditman | St | P-083-03 | 07-10-2019 | | |
| 04146 | | Markland | St | R18 | 07-27-2019 | | |
| 04144 | | M | St | R18 | 07-29-2019 | | |
| 04144 | | Markland | St | R18 | 07-30-2019 | | |
| 04142 | | Markland | St | R18 | 08-03-2019 | | |
| 04122 | | Markland | St | R18 | 08-05-2019 | | |
| 01409 | E | Lycoming | St | R18 | 08-13-2019 | | |
| 04114 | | Markland | St | R18 | 08-17-2019 | | |
| 01413 | E | Lycoming | St | R18 | 08-20-2019 | | |
| 01447 | E | Lycoming | St | R18 | 08-26-2019 | | |
| 01453 | E | Lycoming | St | R18 | 08-27-2019 | | |
| 04025 | | Castor | Ave | R18 | 08-29-2019 | | |

# Table 3
## Residential Cross Connections Not Abated Within 120 Days

| Address | | | | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|---|---|---|
| 01404 | E | Lycoming | St | R18 | 08-31-2019 | | |
| 04023 | | Castor | Ave | R18 | 09-04-2019 | | |
| 04034 | | Castor | Ave | R18 | 09-06-2019 | | |
| 04051 | | Castor | Ave | R18 | 09-11-2019 | | |
| 04224 | | Markland | St | R18 | 09-14-2019 | | |
| 01455 | E | Lycoming | St | R18 | 09-14-2019 | | |
| 04024 | | Castor | Ave | R18 | 09-17-2019 | | |
| 01444 | E | Lycoming | St | R18 | 09-19-2019 | | |
| 04143 | | M | St | R18 | 09-21-2019 | | |
| 04215 | | M | St | R18 | 09-24-2019 | | |
| 07331 | | Hill | Rd | W-067-01 | 09-30-2019 | | |
| 02623 | W | Allegheny | Ave | S-046-06 | 10-05-2019 | | |
| 04033 | | Castor | Ave | R18 | 10-08-2019 | | |
| 04014 | | Castor | Ave | R18 | 10-08-2019 | | |
| 04030 | | Castor | Ave | R18 | 10-12-2019 | | |
| 03063 | | Winchester | Ave | P-091-09 | 10-19-2019 | | |
| 04259 | | Castor | Ave | R18 | 10-22-2019 | | |
| 04261 | | Castor | Ave | R18 | 10-26-2019 | | |
| 01431 | E | Lycoming | St | R18 | 11-02-2019 | | |
| 08820 | | Cottage | St | P-083-03 | 11-06-2019 | | |
| 04259 | | Neilson | St | R18 | 12-02-2019 | | |
| 00531 | | Roxborough | Ave | W-060-01 | 12-14-2019 | | |
| 02320 | | Benson | St | P-091-06 | 01-06-2020 | | |
| 01352 | E | Hunting Park | Ave | R18 | 01-08-2020 | | |
| 04123 | | Markland | St | R18 | 02-06-2020 | | |
| 02306 | | Benson | St | P-091-06 | 02-10-2020 | | |

# Table 3
# Residential Cross Connections Not Abated Within 120 Days

| Address | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|
| 01441 E Hunting Park Ave | R18 | 02-29-2020 | | |
| 00038 W Hartwell La | W-077-02 | 03-05-2020 | | |

**Table 4**
**Spills to Storm Sewers and/or Receiving Waters**
**October 1, 2020 to December 31, 2020**

| Date | Outfall | Address | Source Code | Material Involved | Completion Date | Remarks |
|---|---|---|---|---|---|---|
| 10/05/20 | Neil Drive PS | Neil Drive<br>Schuylkil River | 3008 | Sewage | 10/06/20 | The Emergency generator was repaired and pumps was restarted, causing approximate 310 gpm discharge. No cleanup needed. |
| 11/09/20 | P-100-14 | 3027 Holme Ave<br>Pennypack Creek | 3008 | Sewage | 11/12/20 | Sewage was observed leaking into street from vent stack. Sewer maintenance was notified and issued an Notice of Defect. |
| 11/16/20 | PS 603<br>Force main | 1400 Langley Ave | 3008 | Sewage | 11/17/20 | Sewer Maintenance unit ran vactor trucks to clean up the puddle causing approximate 1 gpm discharge. Contractor JPC made the repair on the 8 inch force main. |
| 12/12/20 | W-068-05 | 306 W. Hortter St<br>Monoshone Creek | 3011 | Sewage | 12/15/20 | Monoshone Creek was greenish. Sewer Maintenance unit flushed 10" diameter sanitary sewer causing approximate 10 gpm discharge. Debris from inlet & street and sewer were cleaned. Reinspection showed creek had clear flow. |
| 12/30/20 | P-105-07 | Grant West of Ashton Rd | 3009 | Sewage | 12/30/20 | Sewer Maintenance unit flushed 10" diameter sanitary sewer causing approximate 5 gpm discharge. Debris was removed. Flused Storm sewer. No further cleanup needed. |

**Source Codes:**

**3008 - Spill to Ground Only**    **3010 - Spill to Sanitary Sewer**
**3009 - Spill to Storm Sewer**    **3011 - Spill to Receiving Stream**

**STORM WATER MANAGEMENT PROGRAM**
**NPDES PERMIT NO. PA0054712**

# DEFECTIVE LATERAL CONNECTION STATUS REPORT
**(Covering Period from January 1, 2021 to March 31, 2021)**

Submitted to

**PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION**
**BUREAU OF WATER QUALITY MANAGEMENT**

By

**CITY OF PHILADELPHIA**
**PHILADELPHIA, PA**

May 10, 2021

# DLC Program Update
# 1st Quarter 2021

## I. INTRODUCTION

This Defective Lateral Connection Status Report is submitted to the Pennsylvania Department of Environmental Protection (PADEP) as part of the reporting requirements of the City of Philadelphia NPDES Storm Water Management Permit No. PA 0054712. The report covers the three-month period beginning January 1, 2021 and ending March 31, 2021.

The body of this report will describe the recent activities of the City during the past quarter within the 1998 COA Priority Outfall areas and at other significant outfalls on the Stormwater Outfall Priority Score list. Additionally, goals for the next quarter will be listed.

Table 1 provides a summary of the program with respect to Complete tests, Cross-connections identified, and Abatements performed. Table 2 provides a listing of all laboratory analyses of samples taken at stormwater outfalls or within the stormwater system during the previous quarter. Table 3 provides a listing of properties with cross-connections outstanding greater than 120 days. Finally, Table 4 provides a listing of reported wastewater spills to the stormwater system or receiving streams.

## II. PAST QUARTER REVIEW

### A. Priority Outfalls

### 1. 7th & Cheltenham Outfall (T-088-01)

DLC program activities have performed 2,831 Complete tests in this sewershed, identifying 134 Cross-connections, all but one of which have been Abated.

Eight (8) sites intercepting flow are listed below.

| | | |
|---|---|---|
| 1. | CFD-01 | Plymouth St. west of Pittsville St. |
| 2. | CFD-02 | Pittsville St. south of Plymouth St. |
| 3. | CFD-03 | Elston St. east of Bouvier St. |
| 4. | CFD-04 | Ashley St. west of Bouvier St. |
| 5. | CFD-05 | Cheltenham Ave. east of 19th St. |
| 6. | CFD-06 | Verbena St. south of Cheltenham Ave. |
| 7. | CFD-07 | Cheltenham Ave. east of 7th St. |
| 8. | CFD-08 | 7th St. south of Cheltenham Ave. |

The number of inspections, blockages cleared and discharges noted during this quarter are listed below.

| Flap Gate | Inspections | Blockages | Discharges |
|---|---|---|---|
| CFD-01 | 7 | 1 | 0 |
| CFD-02 | 7 | 0 | 0 |
| CFD-03 | 6 | 0 | 0 |
| CFD-04 | 4 | 0 | 0 |
| CFD-05 | 4 | 0 | 0 |
| CFD-06 | 5 | 0 | 0 |
| CFD-07 | 12 | 3 | 0 |
| CFD-08 | 10 | 1 | 0 |

The most recent fecal sample value was 15,531 MPN per 100 ml. at the outfall on March 4, 2021.

**2. Monastery Ave. Outfall (W-060-01)**

DLC program activities have performed 632 Complete tests in this sewershed, identifying 17 Cross-connections, 16 of which have been Abated.

Two (2) sites intercepting flow are listed below.

1. MFD-01 Jannette St. west of Monastery Ave.
2. MFD-02 Green La. north of Lawnton St.

The number of inspections, blockages cleared and discharges noted during this quarter are listed below.

| Flap Gate | Inspections | Blockages | Discharges |
|---|---|---|---|
| MFD-01 | 5 | 0 | 0 |
| MFD-02 | 5 | 0 | 0 |

The most recent fecal sample value was 75 MPN per 100 ml. at the outfall on January 20, 2021.

**3. Monoshone Creek Outfalls (W-060-04, W-060-08, W-060-09, W-060-10, W-060-11, W-068-04 and W-068-05)**

DLC program activities have performed 2,750 Complete tests in these sewershed areas, identifying 94 Cross-connections, all of which have been Abated. The majority of the efforts have been in the W-068-05 sewershed area which is by far the largest in terms of drainage area and properties served.

The most recent fecal sample value was 216 MPN per 100 ml. at the W-068-05 outfall on January 20, 2021.

**4. Manayunk Canal Outfalls (S-051-06, S-058-01, S-059-01 through S-059-11)**

DLC program activities have performed 2,478 Complete tests in these sewershed areas, identifying 62 Cross-connections, all of which have been Abated. The majority of the efforts have been in the S-059-04 sewershed area.

The most recent fecal sample values at each outfall were:

- 97 MPN per 100 ml. at the S-058-01 outfall on January 21.
- 198,630 MPN per 100 ml. at the S-059-01 outfall on January 21.
- 4,280 MPN per 100 ml. at the S-059-02 outfall on January 21.
- 1,106 MPN per 100 ml. at the S-059-03 outfall on January 20.
- 1,918 MPN per 100 ml. at the S-059-04 outfall on January 20.
- 226 MPN per 100 ml. at the S-059-05 outfall on January 20.
- 14,210 MPN per 100 ml. at the S-059-09 outfall on January 21.

## B. Other Outfalls

**1. Sandyford Run Outfall (P-090-02)**

DLC program activities have performed 5,836 Complete tests in this sewershed, identifying 87 Cross-connections, all of which have been Abated.

One (1) site intercepting flow is listed below.

1. PFD-01 Sandyford Run (Brous and Lexington Aves.)

The number of inspections, blockages cleared and discharges noted during this quarter are listed below.

| Flap Gate | Inspections | Blockages | Discharges |
|---|---|---|---|
| PFD-01 | 14 | 0 | 0 |

The most recent fecal sample value was <1 MPN per 100 ml. at the outfall on January 21, 2021.

**2. Franklin and Hasbrook Outfall (T-089-04)**

DLC program activities have performed 1,021 Complete tests in this sewershed, identifying 46 Cross-connections, all of which have been Abated.

One (1) site intercepting flow is listed below.

1. CFD-01 Franklin and Hasbrook Aves.

The number of inspections, blockages cleared and discharges noted during this quarter are listed below.

| Flap Gate | Inspections | Blockages | Discharges |
|---|---|---|---|
| CFD-01 | 14 | 2 | 0 |

The outfall was found dry on March 4, 2021.

**3.** A current summary of additional outfalls from the Stormwater Outfall Priority Score list that the City has performed complete testing or abatements this quarter is as follows.

| Outfall # | Complete Test | Cross Connection | Abatement |
|---|---|---|---|
| D-056-09 | 1 | 0 | 0 |
| D-093-01 | 0 | 0 | 1 |
| P-083-03 | 0 | 0 | 1 |
| P-091-01 | 4 | 0 | 0 |
| P-091-06 | 8 | 2 | 0 |
| P-099-03 | 6 | 0 | 0 |
| P-100-11 | 24 | 0 | 0 |
| P-100-13 | 3 | 0 | 0 |
| P-108-18 | 2 | 0 | 0 |
| P-108-19 | 1 | 0 | 0 |
| Q-106-21 | 2 | 0 | 0 |
| Q-109-07 | 1 | 0 | 0 |
| R18 | 1 | 0 | 0 |
| S-052-04 | 89 | 11 | 0 |
| W-076-01 | 4 | 0 | 0 |
| W-077-02 | 4 | 0 | 0 |
| W-086-02 | (2) | 0 | 0 |

## III. NEXT QUARTER GOALS

### A. Priority Outfalls

### 1. 7th & Cheltenham Outfall (T-088-01)

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatuses.
- Continue sampling at the outfall with dry-weather flow.

### 2. Monastery Ave. Outfall (W-060-01)

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatuses.
- Continue sampling at the outfall with dry-weather flow.

**3. Monoshone Creek Outfalls (W-060-04, W-060-08, W-060-09, W-060-10, W-060-11, W-068-04 and W-068-05)**

Goals for the Quarter

- Continue sampling at outfall W-068-05 with dry-weather flow.

**4. Manayunk Canal Outfalls (S-051-06, S-058-01, S-059-01 through S-059-11)**

Goals for the Quarter

- Continue sampling at the outfalls with dry-weather flow.

**B. Other Outfalls**

**1. Sandyford Run Outfall (P-090-02)**

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatus.

**2. Franklin and Hasbrook Outfall (T-089-04)**

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatus.

**3.** Continue to perform abatements of identified cross-connections within the following outfalls.

- D-056-09
- P-083-03
- P-091-06
- P-091-09
- P-100-04
- Q-109-07
- Q-110-09
- R18
- S-046-06
- S-052-03
- S-052-04
- S-052-05
- T-080-02
- W-067-01
- W-077-02

**4.** Continue to perform property testing within the following outfalls.

- D-056-09
- P-091-01
- P-091-06
- P-099-03
- P-100-13
- P-108-18
- P-108-19
- Q-106-21
- Q-109-07
- R18
- S-052-04
- W-076-01
- W-077-02
- W-086-02

**Table 1**
**DLC Program Summary**
**January 1, 2021 to March 31, 2021**

Complete Tests:

- 64,155 Complete tests have been performed under the DLC program
- **148 Complete tests were performed this past quarter**
- 1 Complete test was performed in outfall D-056-09
- 4 Complete tests were performed in outfall P-091-01
- 8 Complete tests were performed in outfall P-091-06
- 6 Complete tests were performed in outfall P-099-03
- 24 Complete tests were performed in outfall P-100-11
- 3 Complete tests were performed in outfall P-100-13
- 2 Complete tests were performed in outfall P-108-18
- 1 Complete test was performed in outfall P-108-19
- 2 Complete tests were performed in outfall Q-106-21
- 1 Complete test was performed in outfall Q-109-07
- 1 Complete test was performed in outfall R18
- 89 Complete tests were performed in outfall S-052-04
- 4 Complete tests were performed in outfall W-076-01
- 4 Complete tests were performed in outfall W-077-02
- (2) Complete tests were performed in outfall W-086-02

Cross-Connections Found:

- 1,785 Cross-connections have been identified under the DLC program
- **13 Cross-connections were identified this past quarter**
- 2 Cross-connections were identified in outfall P-091-06
- 11 Cross-connections were identified in outfall S-052-04

Abatements:

- 1,639 Abatements have been performed under the DLC program
- **2 Abatements were performed this past quarter**
- 1 Abatement was performed in outfall D-093-01
- 1 Abatement was performed in outfall P-083-03

Outfall/Manhole Screening and Sampling:

- 11 outfall inspections were made as part of the **Priority Outfall Inspection Program** this past quarter
- 10 outfall samples were taken due to observed dry-weather flow during the above inspections

- 122 outfall inspections were made as part of the **Permit Inspection Program** this past quarter
- 42 outfall samples were taken due to observed dry-weather flow during the above inspections

**Table 2**

**Lab Analysis of Water at Outfalls and/or in the Storm Sewers**

**January 1, 2021 to March 31, 2021**

| Outfall | Date | Time | Location | Sewer Size (in) | Flow (gph) | Fluoride (mg/l) | Fecal Count (MPN per 100 ml) | Comments |
|---|---|---|---|---|---|---|---|---|
| **A. Priority Outfalls** | | | | | | | | |
| **T-088-01** | 3/4/2021 | 11:55 | Outfall: 7th and Cheltenham | 84 | NR | 0.126 | 15531 | Clear, no sheen/odors |
| **W-060-01** | 1/20/2021 | 11:30 | Outfall Monastery and Jeanette | 4'4" x 5'0" | 600 | 0.11 | 75 | Clear flow, bluish clear pool |
| **W-060-08** | 1/13/2021 | 11:15 | Outfall Walnut and Kingsley | 36 | NA | NS | NS | Grey mat covering part of OF mouth |
| **W-068-05** | 1/20/2021 | 12:15 | Outfall Lincoln and Morris | 90 | 3600 | 0.366 | 216 | clear flow mostly creek influence. Sandy grey bacteria on bottom of channel |
| **S-058-01** | 1/21/2021 | 11:00 | Outfall:Umbria St. & Domino Lane | 54 | 7200 | 0.175 | 97 | Outfall Submerged |
| **S-059-01** | 1/21/2021 | 11:15 | Outfall:Towpath & Parker St. | 42 | 3000 | 0.283 | 198630 | Fallen tree in way of OF, must crawl under. |
| **S-059-02** | 1/21/2021 | 11:25 | Outfall:Towpath & Fountain St. | 42 | 120 | <0.1 | 4280 | Grey bacteria in OF |
| **S-059-03** | 1/20/2021 | 11:05 | Outfall:Towpath & Wright St. | 42 | 3600 | 0.189 | 1106 | GREY Bacteria and green algae on rock cascade below OF |
| **S-059-04** | 1/20/2021 | 10:50 | Outfall:Towpath & Leverington Ave. Bridge | 51 | NR | 0.225 | 1918 | Outfall submerged, channel inflluence |
| **S-059-05** | 1/20/2021 | 10:55 | Outfall:Towpath & Leverington Ave. Bridge | 4'0" x 2'8" | NR | 0.216 | 226 | Submerged, influence from S-059-04 |
| **S-059-09** | 1/21/2021 | 11:45 | Outfall:Main St. & Green Lane | 36 | 300 | 0.585 | 14210 | Outfall under boardwalk difficult to observe. |
| **B. Permit Inspection Program** | | | | | | | | |
| **C-032-02** | 1/13/2021 | 12:30 | Outfall Penwood and Brockton | 18 | NA | NS | NS | Cloudy grey water in stagnant pool at discharge point |
| **P-083-03** | 1/14/2021 | 12:50 | Outfall State and Ashburner | 108 x 132 | NA | NS | NS | Fish in pool, cloudy but stagnant |
| **P-083-04** | 1/14/2021 | 12:25 | Outfall State and Ashburner | 72 | 200 | 0.372 | <10 | OF partially subm. Sampled w/ jar & string flung into pipe |
| **P-090-01** | 1/21/2021 | 9:30 | Outfall Brous and Roosevelt | 42 | 900 | <0.1 | 14.6 | Clear, no odors. Trash, needles, tent camp nearby |
| **P-090-02** | 1/21/2021 | 9:25 | Outfall Sandyford | 156 | 1800 | 0.428 | <1 | Clear, slight musty odors. Trash, needles, tent camp nearby |
| **P-091-02** | 1/12/2021 | 11:00 | Outfall Sandyford and Ryan | 42 | 3 | 0.169 | 20 | Iron colored mat in OF and apron. Water clear, no sewage odor. Slight sudsing |
| **P-091-03** | 1/12/2021 | 11:25 | Outfall Sandyford and Ryan | 27 | 7.5 | 0.594 | <10 | No sewage odor. Trickle flow |
| **P-091-04** | 1/12/2021 | 11:45 | Outfall Rhawn and Lexington | 36 | NA | NS | NS | Stone/Concrete apron detached from OF pipe |
| **P-091-05** | 1/12/2021 | 12:10 | Outfall Winchester and Albion | 42 | NA | NS | NS | OF pipe and apron detached, eroding. Contacted sewer maintenance |
| **P-091-09** | 1/12/2021 | 12:50 | Outfall Welsh and Rowland | 36 | 7.5 | 0.671 | <10 | Strong slear flow with chlorine odor |
| **P-091-10** | 1/12/2021 | 12:40 | Outfall Welsh and Rowland | 42 | 0.1 | 0.565 | 12997 | Cloudy, slightly grey; film/growth in path of flow from discharge of pipe |
| **P-100-09** | 1/25/2021 | 12:25 | Outfall Ashton and Jenny Pl | 15 | NF | NS | NS | Dry. No Flow |
| **P-100-10** | 1/25/2021 | 12:20 | Outfall Ashton and Jenny Pl | 21 | NF | NS | NS | Dry. No Flow |
| **P-100-12** | 1/25/2021 | 12:15 | Outfall Ashton and Jenny Pl | 15 | NF | NS | NS | Dry. No Flow |
| **P-104-01** | 1/25/2021 | 12:55 | Outfall Pine and Longmead | 21 | NF | NS | NS | Dry. No Flow |
| **P-104-02** | 1/25/2021 | 13:00 | Outfall Pine and Longmead | 42 | NF | NS | NS | Dry. No Flow. Sheen puddle on apron |
| **P-104-03** | 1/25/2021 | 13:15 | Outfall Verree and Meetinghouse | 42 | NF | NS | NS | Dry. No Flow. Orange sheen puddle on apron. |
| **P-104-04** | 1/25/2021 | 13:20 | Outfall Verree and Meetinghouse | 24 | NF | NS | NS | Dry. No Flow |
| **P-108-01** | 1/12/2021 | 13:30 | Outfall Jennifer Tr | 36 | 0 | NS | NS | Dry, No flow. |
| **P-108-02** | 1/12/2021 | 12:45 | Outfall Jennifer Tr | 21 | 0 | NS | NS | Dry, No flow, steep banks |
| **P-108-03** | 1/12/2021 | 12:55 | Outfall Millwood & Alicia | 48 | 0 | NS | NS | Dry, No Flow, Trash in Apron. |
| **P-108-04** | 1/12/2021 | 13:05 | Outfall Kings Oak Lane South and West | 30 | 0 | NS | NS | Dry, No flow,. OF apron muddy |
| **P-108-05** | 1/14/2021 | 10:45 | Outfall Greycourt | 27 | 120 | <0.1 | 422 | Orange algae in pipe and apron |
| **P-108-06** | 1/14/2021 | 10:30 | Outfall Alburger and Darlington | 27 | 600 | 0.28 | >24196 | access inside culvery blocked by trees. Grey bacteria in OF mouth and in culvert channel. Contacted sewer maintenance. |
| **P-108-07** | 1/14/2021 | 11:30 | Outfall Alburger and Darlington | 36 | NF | NS | NS | Dry No flow access inside culvert |
| **P-108-08** | 1/14/2021 | 10:00 | Outfall Kings Oak | 42 | NF | NS | NS | Dry No flow, can access from Jennifer Tr |
| **P-108-09** | 1/14/2021 | 10:10 | Outfall Darlington and Grace | 36 | 120 | 0.107 | 10 | trickle flow green algae in OF pipe |
| **P-108-10** | 1/14/2021 | 11:30 | Outfall Pecan and Stratford | 18 | 300 | <0.1 | <10 | Clear |
| **P-108-11** | 1/14/2021 | 11:45 | Outfall Darlington and Stratford | 60 | 1800 | <0.1 | 30 | Partially submerged clear |
| **P-108-12** | 1/14/2021 | 11:35 | Outfall bloomfield and verree | 36 | NF | NS | NS | Dry no flow |
| **P-108-13** | 1/13/2021 | 11:45 | Outfall Bloomfield and Verree | 36 | 720 | 0.563 | >24196 | Clear flow |
| **P-108-14** | 1/13/2021 | 11:55 | Outfall Verree and Marchman | 66 | 1800 | <0.1 | <10 | Clear flow no odors |
| **P-108-15** | 1/13/2021 | 12:05 | Outfall Verree and Marchman | 36 | NF | NS | NS | Dry No flow |
| **P-108-16** | 1/13/2021 | 10:45 | Outfall Welsh and Alburger | 54 | 60 | <0.1 | 5794 | Light flow, possible creek influence submerged |
| **P-108-17** | 1/13/2021 | 10:55 | Outfall Welsh and Alburger | 42 | 120 | 0.219 | 428 | Light flow, possible creek influence submerged. Blue milky plume from OF and grey bacteria |
| **P-108-18** | 1/13/2021 | 10:25 | Outfall Welsh and Walley | 36 | 120 | <0.1 | 134 | Submerged Creek influence. Wadfers needed |
| **P-108-19** | 1/13/2021 | 10:15 | Outfall Walley and Twist | 36 | NF | NS | NS | Dry No flow |
| **P-108-20** | 1/12/2021 | 13:30 | Outfall Northeast Ave and Fulmer St | 60 | 0 | NS | NS | No flow, Outfall partially submerged. No movement in OF channel/Apron |
| **P-108-21** | 1/12/2021 | 13:45 | Outfall Northeast Ave and Fulmer St | 60 | 0 | NS | NS | No flow, Outfall partially submerged. No movement in OF channel/Apron |
| **P-108-22** | 1/19/2021 | 9:30 | Outfall Redd Rambler Tr & Dr | 18 | 60 | <0.1 | <10 | Trickle flow grey bacteria |
| **P-108-23** | 1/19/2021 | 11:15 | Outfall Redd Rambler and Oakfield | 36 | NF | NS | NS | Dry no flow |
| **P-108-24** | 1/19/2021 | 11:25 | Outfall Verree and Pine Hill | 60 | 720 | 0.121 | 7270 | Flow, grey bacteria in OF |
| **P-108-25** | 1/19/2021 | 11:30 | Outfall Bloomfield and Jennifer Tr | 18 | NF | NS | NS | Dry no flow. |
| **Q-101-03** | 1/15/2021 | 10:10 | Outfall Holme & Academy | 66 x 72 | 150 | 0.646 | <10 | Clear flow |
| **Q-101-04** | 1/15/2021 | 10:30 | Outfall Pearson and Crispin | 42 | NF | NS | NS | Observed from edge of culvert |
| **Q-101-05** | 1/15/2021 | 10:50 | Outfall Grant and Fordham | 54 | 1125 | <0.1 | 12997 | Tan mat of dense filamentous growth on OF mouth |
| **Q-101-06** | 1/15/2021 | 10:50 | Outfall Grant and Fordham | 21 | NF | NS | NS | Observed from Q-101-05 |
| **Q-101-07** | 1/15/2021 | 11:20 | Outfall Grant and Leon | 36 | 120 | <0.1 | <10 | Accessible from Union Club golf course. Waders. |
| **Q-101-08** | 1/15/2021 | 11:30 | Outfall Grant and Leon | 21 | NF | NS | NS | Rusty staining on concrete below OF. |
| **Q-101-09** | 1/15/2021 | 11:50 | Outfall Ditman and Eden | 74 x 117 | 0.5 | 0.457 | 24196 | Trickle flow. Sampled from apron |
| **Q-101-13** | 3/12/2021 | 9:15 | Outfall: Brook & Stevenson | 18 | NF | NS | NS | Seg of pipe upsewer of headwall exposed by soil erosion |
| **Q-101-14** | 3/12/2021 | 9:30 | Outfall: Brook & Constance | 18 | NF | NS | NS | Sewage/cleaner smell from OF |
| **Q-101-15** | 3/12/2021 | 9:55 | Outfall: Brook & Carteret | 18 | NF | NS | NS | Partially submerged; clear |
| **Q-101-16** | 3/12/2021 | 9:45 | Outfall: Brook & Rowena | 18 | 5 | <0.1 | 345 | Algae, rust colored sed in pipe |
| **Q-101-17** | 3/12/2021 | 10:00 | Outfall: Morrell & Cresmont | 30 | 0.02 | 0.183 | 31 | OF on W side of Morrell culvert; yellow tint |
| **Q-101-18** | 3/12/2021 | 10:05 | Outfall: Morrell & Cresmont | 27 | NF | NS | NS | OF on E side of Morrell culvert |
| **Q-101-19** | 3/12/2021 | 10:30 | Outfall: Morrell & Cresmont | 36 | 675 | <0.1 | >24196 | algal mats on mouth; filam growth in pool |
| **Q-102-02** | 3/5/2021 | 10:55 | Outfall: St. Denis & Hegerman | 48 | 300 | 0.615 | 10 | Clear, No sheen/odors. |
| **Q-102-03** | 3/5/2021 | 11:10 | Outfall: Stevenson Dr. & tulip | 48 | NF | NS | NS | No Flow. |
| **Q-110-01** | 3/15/2021 | 12:25 | Outfall: Norcom & Charter | 30 | NF | NS | NS | Outfall completely dry |
| **Q-110-21** | 3/15/2021 | 12:20 | Outfall: Norcom & Charter | 66 | NF | NS | NS | Stagnant water in pipe. No perceptible flow |
| **Q-113-10** | 3/22/2021 | 12:00 | Outfall: Foster & Dedaker | 27 | NF | NS | NS | Half-submerged. Use RR ROW from Kleinlife p-lot |
| **Q-113-11** | 3/15/2021 | 14:40 | Outfall: Bennett & Roosevelt | 36 | NF | NS | NS | Observed from Q113-11-0010 & 0015 (no flow); moderate sewer gas smell in culvert |
| **Q-114-04** | 3/22/2021 | 11:00 | Outfall: Comly & Caroline | 54 | 11.25 | 0.172 | <10 | Rust-colored film in pipe. Musty smell in culvert. |
| **Q-114-05** | 3/15/2021 | 13:45 | Outfall: Norcom & Comly | 48 | NF | NS | NS | Abundant brown algae in culvert channel |
| **Q-114-07** | 3/22/2021 | 10:31 | Outfall: Woodhaven & Thornton | 66 | NF | NS | NS | orange globs of growth in bottom of pipe and at discharge point |
| **Q-114-08** | 3/22/2021 | 9:45 | Outfall: Woodhaven & Thornton | 42 | NF | NS | NS | Part submerged, no odor. |
| **Q-114-09** | 3/22/2021 | 9:50 | Outfall: Woodhaven & Thornton | 42 | 56.25 | <0.1 | <10 | Rust-colored sediment/film in pipe. No odor. |
| **Q-114-17** | 3/15/2021 | 13:40 | Outfall: Norcom & Comly | 27 | NF | NS | NS | Moderate musty smell in culvert; algae in channel |
| **Q-115-01** | 1/21/2021 | 9:30 | Outfall Dunks Ferry & Secane | 54 | NF | NS | NS | Water in pool stagnant, slightly cloudy |
| **Q-115-02** | 1/22/2021 | 9:30 | Outfall Medford & Ancona | 30 | 0.6 | 0.648 | <10 | Slight chlorine/greywater odor. Flow source traced to just upstream of Q-115-02-0030. |
| **Q-115-03** | 1/21/2021 | 11:45 | Outfall Ancona & Medford | 24 | NF | NS | NS | OF pipe segments separated by settling |
| **Q-115-04** | 1/21/2021 | 10:30 | Outfall Ancona & Tyrone | 36 | NF | NS | NS | Part of headwall under OF pipe falling apart |
| **Q-115-05** | 1/21/2021 | 11:15 | Outfall Academy & Medford | 27 | NF | NS | NS | Accessible via ROW along creek |
| **Q-115-06** | 1/21/2021 | 11:32 | Outfall Academy & Torrey | 30 | NF | NS | NS | Dry no flow |
| **Q-115-07** | 1/21/2021 | 11:30 | Outfall Academy & Torrey | 24 | NF | NS | NS | Dry no flow |
| **Q-115-08** | 1/22/2021 | 10:30 | Outfall Academy & Torrey | 36 | NF | NS | NS | Bottom of OF mouth has holes in it |
| **Q-115-09** | 1/22/2021 | 11:15 | Outfall Cabell & Lester | 66 | 2.25 | 0.513 | >24196 | Slight musty smell, poss mixing with stagnant water/creek water in sample |
| **Q-115-10** | 1/22/2021 | 11:30 | Outfall Medford& Vinton | 36 | NF | NS | NS | Dry no flow |
| **Q-115-11** | 1/22/2021 | 12:30 | Outfall Vinton & Teton | 42 | 1.8 | 0.656 | <10 | Slight chlorine smell |
| **Q-115-12** | 1/22/2021 | 11:50 | Outfall Nanton & Canby | 72 | 11.25 | 0.479 | <10 | Slight greywater/sewage smell |
| **Q-115-13** | 1/22/2021 | 10:30 | Outfall Academy & Torrey | 27 | NF | NS | NS | Flow=1 drop per second. Soil, rocks and trash in pipe |
| **Q-115-14** | 1/22/2021 | 11:30 | Outfall Medford & Vinton | 36 | NF | NS | NS | Dry no flow |
| **Q-115-15** | 1/22/2021 | 9:30 | Outfall Medford & Ancona | 18 | NF | NS | NS | Pipe 1/4 full with soil and rocks |
| **Q-115-16** | 3/16/2021 | 13:20 | Outfall: Duffey & Galdi | 18 | NF | NS | NS | Rocks, soil in pipe. Private stormwater basin |
| **Q-115-17** | 3/16/2021 | 13:25 | Outfall: McCarthy & Cliffe | 18 | NF | NS | NS | Private stormwater basin |
| **Q-115-18** | 3/16/2021 | 13:50 | Outfall: Knights & McCarthy | 24 | NF | NS | NS | Outfall buried, standing water up to second highest rung in upstream MH |
| **Q-119-01** | 3/16/2021 | 14:30 | Outfall: McNulty & Townsend | 36 | NF | NS | NS | Walk towards creek starting from yellow gate |
| **Q-119-02** | 3/16/2021 | 14:45 | Outfall: Maureen & Mechanicsville | 18 | NF | NS | NS | Partially subm in water. Accessible via ROW along 3123 Maureen. |
| **Q-120-08** | 3/22/2021 | 11:40 | Outfall:Edison & Trevose | 36 | NR | 0.359 | 2 | Clear, no sheen/odors. Outfall submerged |
| **Q-120-09** | 3/22/2021 | 11:45 | Outfall: Edison & Trevose | 27 | NF | NS | NS | No Flow |
| **Q-120-10** | 3/22/2021 | 11:30 | Outfall: Southampton & Trevose | 36 | NF | NS | NS | No Flow. |
| **Q-120-11** | 3/22/2021 | 11:10 | Outfall:Philmont & Lukens | 28 | NF | NS | NS | No Flow |
| **Q-120-12** | 3/16/2021 | 12:25 | Outfall: Laura Lane | 18 | 60 | 0.684 | 10 | Clear, no sheen/odors. |
| **Q-120-13** | 3/16/2021 | 12:20 | Outfall: Laura Lane | 21 | NF | NS | NS | No Flow. |
| **Q-120-14** | 3/16/2021 | 12:15 | Outfall: Laura Lane | 18 | NF | NS | NS | No Flow. |
| **Q-121-05** | 3/11/2021 | 11:40 | Outfall: St. Poquessing & Milford | 42 | NF | NS | NS | No Flow. |
| **Q-121-06** | 3/11/2021 | 11:45 | Outfall: Carter & Poquessing | 30 | NF | NS | NS | No Flow. |
| **T-050-02** | 1/6/2021 | 10:05 | Outfall Bath & Hedley | 48 | 0 | NS | NS | OF partially submerged. Tidal waters ebbing in/out of pipe |
| **T-056-03** | 1/6/2021 | 10:55 | Outfall Aramingo & Ashland | 60 x 52 | 0 | NS | NS | OF half submerged. Tidal waters ebbing in/out of pipe. Clear. |
| **T-056-04** | 1/6/2021 | 11:05 | Outfall Aramingo & Ashland | 54 | 0.25 | 0.122 | 2282 | OF partially submerged. Minor flow noticeable before creek influence. |
| **T-056-06** | 1/6/2021 | 10:30 | Outfall Thompson & Roxborough | 42 | NA | NS | NS | Outfall could not be found |
| **T-056-07** | 1/6/2021 | 9:30 | Outfall Richmond & Roxborough | 36 | 15 | 0.425 | <10 | Apron detached from OF. Clean trickle, no odor |
| **T-063-03** | 1/8/2021 | 11:38 | Outfall Castor and Wyoming | 21 | 15 | 0.188 | <10 | Ferrous sediment in path of flow |
| **T-089-01** | 3/24/2021 | 10:30 | Outfall Passmore & Newtown | 36 | NF | NS | NS | No Flow. O/F discharge has no drainage and stagnates. |
| **T-089-01** | 3/25/2021 | 11:50 | Outfall Passmore & Newtown | 36 | NF | 0.101 | 3880 | No Flow. O/F discharge has no drainage and stagnates. Sampled stagnant water at outfall. Clear, no sheen/odors |
| **T-089-04** | 3/4/2021 | 11:35 | Outfall: Franklin & Hasbrook | 3'0" x 6'6" | NR | NS | NS | Clear flow. Choked diversion gate |
| **W-052-01** | 1/13/2021 | 10:50 | Outfall Gypsy and Lincoln | 30 | NA | NS | NS | Outfall 1/4 submerged, water clear, no flow |
| **W-068-07** | 3/23/2021 | 9:58 | Outfall: Park Line Dr. & Hortter St | 24 | 47.49 | <.1 | <1 | Flow Rate: 20 sec to fill 1 Liter |
| **W-075-02** | 1/25/2021 | 11:45 | Outfall Seffert and Lawnton | 27 | NF | NS | NS | Dry. No flow |
| **W-076-01** | 1/21/2021 | 11:35 | Outfall Cathedral and Wissahickon | 48 | 3600 | 0.146 | <10 | Clear flow, no odors. Might be from draining retention pond nearby |
| **W-076-02** | 1/21/2021 | 11:45 | Outfall Cathedral and Glenroy | 36 | NF | NS | NS | Dry No flowOF apron collapsed |
| **W-076-03** | 1/21/2021 | 11:55 | Outfall Glenroy and Lommand | 24 | NF | NS | NS | Dry no flow. Stone OF next to stream |
| **W-076-04** | 1/21/2021 | 12:05 | Outfall Summit and Cadiallac | 27 | NF | NS | NS | Dry No flow. OF mouth full of sediment at bottom |
| **W-076-05** | 1/21/2021 | 12:10 | Outfall Summit and Cadiallac | 36 | NF | NS | NS | Dry, no flow. Left of 'double pipe' culvert |
| **W-076-06** | 1/21/2021 | 12:15 | Outfall Summit and Cadiallac | 18 | NF | NS | NS | Dry, No flow. Lots of construction debris trash |
| **W-076-12** | 1/25/2021 | 12:30 | Outfall St. Martins Lane and Huron St. | 66 | NF | NS | NS | Dry. No flow. Some stagnent water between bricks on floor of tunnel. |
| **W-084-04** | 3/24/2021 | 8:40 | Outfall: N. Lykens Lane & Ronnie Circle | 24 | 316.62 | 0.599 | <1 | Lots of brambles and thorns. Flow rate: 3 sec to fill 1 Liter. |
| **W-086-05** | 3/22/2021 | 11:45 | Outfall: Anderson St & Woodbrook La | 48 | NF | NS | NS | No flow |
| **W-095-02** | 3/22/2021 | 13:25 | Outfall: SE Northwestern & Stenton Aves | 16 | NF | NS | NS | Outfall pipe is clay and partially crushed at entrance. |
| **W-095-03** | 3/22/2021 | 12:50 | Outfall: Stenton Ave & Erderheim | 16 | NF | NS | NS | No Flow |
| **W-095-04** | 3/22/2021 | 12:50 | Outfall: Stenton Ave & Erderheim | 30 | NF | NS | NS | No flow |

# Table 3
# Residential Cross Connections Not Abated Within 120 Days

## A. Properties Abated & Confirmed Prior to Reporting:

| Address | Outfall Code | Complete Date | Admin. Action | Abatement Confirmation Date | Comments |
|---|---|---|---|---|---|

## B. Properties Active As Of Reporting:

| Address | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|
| 00015 Osborn St | S-052-05 | 01-17-2018 | | |
| 01941 Kentwood St | Q-109-07 | 01-19-2018 | | |
| 03411 W Penn St | S-052-04 | 02-13-2018 | | |
| 03424 W Penn St | S-052-04 | 02-17-2018 | | |
| 03433 W Penn St | S-052-04 | 02-21-2018 | | |
| 03425 Conrad St | S-052-04 | 03-01-2018 | | |
| 03530 Henry Ave | S-052-04 | 03-03-2018 | | |
| 03340 W Penn St | S-052-04 | 03-03-2018 | | |
| 03305 Tilden St | S-052-04 | 03-24-2018 | | |
| 03313 Tilden St | S-052-04 | 03-24-2018 | | |
| 03329 Tilden St | S-052-04 | 03-27-2018 | | |
| 03316 Tilden St | S-052-04 | 03-28-2018 | | |
| 03333 Tilden St | S-052-04 | 03-29-2018 | | |
| 03461 Sunnyside Ave | S-052-04 | 04-02-2018 | | |
| 03411 Osmond St | S-052-04 | 04-28-2018 | | |
| 03449 W Penn St | S-052-04 | 05-03-2018 | | |
| 03446 Crawford St | S-052-04 | 05-17-2018 | | |
| 03467 Indian Queen La | S-052-04 | 05-26-2018 | | |
| 03433 Crawford St | S-052-04 | 05-26-2018 | | |
| 03317 W Penn St | S-052-04 | 06-02-2018 | | |
| 03448 W Queen La | S-052-04 | 06-23-2018 | | |
| 03419 W Queen La | S-052-04 | 07-02-2018 | | |
| 03335 W Queen La | S-052-04 | 07-02-2018 | | |

# Table 3
## Residential Cross Connections Not Abated Within 120 Days

| Address | | | | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|---|---|---|
| 03417 | W | Queen | La | S-052-04 | 07-05-2018 | | |
| 03326 | W | Queen | La | S-052-04 | 07-12-2018 | | |
| 03452 | W | Queen | La | S-052-04 | 07-13-2018 | | |
| 03469 | W | Queen | La | S-052-04 | 07-17-2018 | | |
| 03414 | W | Queen | La | S-052-04 | 07-20-2018 | | |
| 03440 | W | Queen | La | S-052-04 | 07-21-2018 | | |
| 03474 | | Tilden | St | S-052-04 | 07-21-2018 | | |
| 03333 | W | Queen | La | S-052-04 | 07-21-2018 | | |
| 03435 | W | Queen | La | S-052-04 | 07-30-2018 | | |
| 03464 | W | Queen | La | S-052-04 | 07-30-2018 | | |
| 03429 | W | Queen | La | S-052-04 | 08-02-2018 | | |
| 03459 | W | Queen | La | S-052-04 | 08-16-2018 | | |
| 03434 | W | Queen | La | S-052-04 | 08-17-2018 | | |
| 03460 | W | Queen | La | S-052-04 | 08-24-2018 | | |
| 02612 | | Woodward | St | P-100-04 | 09-12-2018 | | |
| 04437 | | Riverview | La | S-052-03 | 09-19-2018 | | |
| 04456 | | Riverview | La | S-052-03 | 09-26-2018 | | |
| 04423 | | Driftwood | Dr | S-052-03 | 09-27-2018 | | |
| 04406 | | Driftwood | Dr | S-052-03 | 09-29-2018 | | |
| 04433 | | Driftwood | Dr | S-052-03 | 09-29-2018 | | |
| 04410 | | Driftwood | Dr | S-052-03 | 10-06-2018 | | |
| 03235 | | Comly | Pl | Q-110-09 | 10-06-2018 | | |
| 04415 | | Driftwood | Dr | S-052-03 | 10-12-2018 | | |
| 04402 | | Driftwood | Dr | S-052-03 | 10-13-2018 | | |
| 04312 | | Ashburner | St | P-083-03 | 10-20-2018 | | |
| 03454 | W | Penn | St | S-052-04 | 10-24-2018 | | |

# Table 3
## Residential Cross Connections Not Abated Within 120 Days

| Address | | | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|---|---|
| 04425 | Driftwood | Dr | S-052-03 | 10-27-2018 | | |
| 04431 | Driftwood | Dr | S-052-03 | 10-27-2018 | | |
| 04404 | Driftwood | Dr | S-052-03 | 10-31-2018 | | |
| 04412 | Driftwood | Dr | S-052-03 | 11-09-2018 | | |
| 04417 | Driftwood | Dr | S-052-03 | 11-17-2018 | | |
| 03005 | Comly | Rd | Q-110-09 | 12-10-2018 | | |
| 03700 | Falls | Cir | S-052-03 | 12-15-2018 | | |
| 08726 | Cottage | St | P-083-03 | 12-22-2018 | | |
| 03702 | Falls | Cir | S-052-03 | 12-24-2018 | | |
| 04702 | Almond | St | D-056-09 | 12-26-2018 | | |
| 03482 | Tilden | St | S-052-04 | 01-07-2019 | | |
| 03704 | Falls | Cir | S-052-03 | 01-17-2019 | | |
| 04408 | Driftwood | Dr | S-052-03 | 01-19-2019 | | |
| 03706 | Falls | Cir | S-052-03 | 01-19-2019 | | |
| 02629 | Pratt | St | D-056-09 | 01-26-2019 | | |
| 04416 | Ashburner | St | P-083-03 | 02-02-2019 | | |
| 04312 | M | St | R18 | 03-13-2019 | | |
| 04300 | M | St | R18 | 03-15-2019 | | |
| 04422 | Ashburner | St | P-083-03 | 03-22-2019 | | |
| 04337 | Glendale | St | R18 | 03-23-2019 | | |
| 04232 | O | St | R18 | 03-28-2019 | | |
| 04254 | O | St | R18 | 04-06-2019 | | |
| 00223 | Stearly | St | T-080-02 | 04-06-2019 | | |
| 04310 | Glendale | St | R18 | 04-13-2019 | | |
| 00215 | Stearly | St | T-080-02 | 04-20-2019 | | |
| 05930 | Newtown | Ave | T-080-02 | 04-22-2019 | | |

# Table 3
# Residential Cross Connections Not Abated Within 120 Days

| Address | | | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|---|---|
| 04250 | Neilson | St | R18 | 04-25-2019 | | |
| 05922 | Newtown | Ave | T-080-02 | 04-26-2019 | | |
| 04215 | Castor | Ave | R18 | 04-27-2019 | | |
| 04219 | Castor | Ave | R18 | 05-02-2019 | | |
| 04249 | Neilson | St | R18 | 05-04-2019 | | |
| 04242 | Castor | Ave | R18 | 05-11-2019 | | |
| 08336 | Ditman | St | P-083-03 | 05-18-2019 | | |
| 01434 E | Bristol | St | R18 | 05-28-2019 | | |
| 04236 | Neilson | St | R18 | 06-01-2019 | | |
| 04245 | Ormond | St | R18 | 06-08-2019 | | |
| 04309 | Glendale | St | R18 | 06-15-2019 | | |
| 04122 | M | St | R18 | 07-06-2019 | | |
| 08635 | Ditman | St | P-083-03 | 07-10-2019 | | |
| 04146 | Markland | St | R18 | 07-27-2019 | | |
| 04144 | M | St | R18 | 07-29-2019 | | |
| 04144 | Markland | St | R18 | 07-30-2019 | | |
| 04142 | Markland | St | R18 | 08-03-2019 | | |
| 04122 | Markland | St | R18 | 08-05-2019 | | |
| 01409 E | Lycoming | St | R18 | 08-13-2019 | | |
| 04114 | Markland | St | R18 | 08-17-2019 | | |
| 01413 E | Lycoming | St | R18 | 08-20-2019 | | |
| 01447 E | Lycoming | St | R18 | 08-26-2019 | | |
| 01453 E | Lycoming | St | R18 | 08-27-2019 | | |
| 04025 | Castor | Ave | R18 | 08-29-2019 | | |
| 01404 E | Lycoming | St | R18 | 08-31-2019 | | |
| 04023 | Castor | Ave | R18 | 09-04-2019 | | |

# Table 3
# Residential Cross Connections Not Abated Within 120 Days

| Address | | | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|---|---|
| 04034 | Castor | Ave | R18 | 09-06-2019 | | |
| 04051 | Castor | Ave | R18 | 09-11-2019 | | |
| 04224 | Markland | St | R18 | 09-14-2019 | | |
| 01455 E | Lycoming | St | R18 | 09-14-2019 | | |
| 04024 | Castor | Ave | R18 | 09-17-2019 | | |
| 01444 E | Lycoming | St | R18 | 09-19-2019 | | |
| 04143 | M | St | R18 | 09-21-2019 | | |
| 04215 | M | St | R18 | 09-24-2019 | | |
| 07331 | Hill | Rd | W-067-01 | 09-30-2019 | | |
| 02623 W | Allegheny | Ave | S-046-06 | 10-05-2019 | | |
| 04033 | Castor | Ave | R18 | 10-08-2019 | | |
| 04014 | Castor | Ave | R18 | 10-08-2019 | | |
| 04030 | Castor | Ave | R18 | 10-12-2019 | | |
| 03063 | Winchester | Ave | P-091-09 | 10-19-2019 | | |
| 04259 | Castor | Ave | R18 | 10-22-2019 | | |
| 04261 | Castor | Ave | R18 | 10-26-2019 | | |
| 01431 E | Lycoming | St | R18 | 11-02-2019 | | |
| 08820 | Cottage | St | P-083-03 | 11-06-2019 | | |
| 04259 | Neilson | St | R18 | 12-02-2019 | | |
| 00531 | Roxborough | Ave | W-060-01 | 12-14-2019 | | |
| 02320 | Benson | St | P-091-06 | 01-06-2020 | | |
| 01352 E | Hunting Park | Ave | R18 | 01-08-2020 | | |
| 04123 | Markland | St | R18 | 02-06-2020 | | |
| 02306 | Benson | St | P-091-06 | 02-10-2020 | | |
| 01441 E | Hunting Park | Ave | R18 | 02-29-2020 | | |
| 00038 W | Hartwell | La | W-077-02 | 03-05-2020 | | |

**Table 4**
**Spills to Storm Sewers and/or Receiving Waters**
**January 1, 2021 to March 31, 2021**

| Date | Outfall | Address | Source Code | Material Involved | Completion Date | Remarks |
|---|---|---|---|---|---|---|
| 01/25/21 | D-45 | 3, 5, 7, 9 W. Girard Ave | 3008 | Sewage | 01/25/21 | Sewer Maintenance unit flushed 21" diameter combined sewer causing approximate 1 gpm discharge and did the cleaning. Referred to customer service claims adjuster to abate and clean up basements. |
| 02/01/21 | Q-101-13 | 3955 Stevenson St | 3008 | Sewage | 02/01/21 | Sewer Maintenance unit flushed 10" diameter sanitarty sewer causing approximate 1 gpm discharge and removed debris. Sent waterways to do a cleaning of grass area. |
| 02/11/21 | PS 603 Force main | 1400 Langley Ave | 3008 | Sewage | 02/11/21 | Sewer Maintenance unit ran vactor trucks to clean up the puddle causing approximate 8 gpm discharge. Contractor JPC made the repair on the 8 inch force main. There is a design plan for the next-step replacement. |
| 02/15/21 | P-105-07 | Aston & Grant Ave | 3009 | Sewage | 02/15/21 | Sewer Maintenance unit flushed 10" diameter sanitarty sewer causing approximate 1 gpm discharge and removed debris. Sent CCTV request for the sanitary sewer and flushed storm sewer with dechlorination tablets. |
| 02/20/21 | Q-101-13 | 3900 Stevenson St Poquessing Creek | 3008 | Sewage | 02/26/21 | Industrial Waste unit investigated a report of sewage discharge on street. No observed impact on creek. Sewer Maintenance unit flushed and cleaned the sewer causing approximate 1 gpm discharge. Sent CCTV request for the sewer. |
| 02/21/21 | Q-101-13 | 3990 Stevenson St Poquessing Creek | 3008 | Sewage | 02/21/21 | Sewer Maintenance unit flushed 10" diameter sanitarty sewer causing approximate 2 gpm discharge. WRT cleaned the area. Sent survey to locate the missing manhole and CCTV request for the sewer. |
| 02/28/21 | S-051-03 | 4319 Terrace St | 3008 | Sewage | 02/28/21 | Sewer Maintenance unit flushed 10" diameter sanitarty sewer causing approximate 1 gpm discharge and cleaned manholes. Referred to customer service to clean up basement. |
| 03/26/21 | D-22 | 3469 Keim St | 3008 | Sewage | 03/26/21 | Sewer Maintenance unit flushed 2'3" x 1'6" egg-shape combined sewer causing approximate 1 gpm discharge. Refferd to customer service for basements cleaning. |

**Source Codes:**
**3008 - Spill to Ground Only** **3010 - Spill to Sanitary Sewer**
**3009 - Spill to Storm Sewer** **3011 - Spill to Receiving Stream**

**STORM WATER MANAGEMENT PROGRAM**
**NPDES PERMIT NO. PA0054712**

# DEFECTIVE LATERAL CONNECTION STATUS REPORT
**(Covering Period from April 1, 2021 to June 30, 2021)**

Submitted to

**PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION**
**BUREAU OF WATER QUALITY MANAGEMENT**

By

**CITY OF PHILADELPHIA**
**PHILADELPHIA, PA**

July 27, 2021

**DLC Program Update**
**2nd Quarter 2021**

# I. INTRODUCTION

This Defective Lateral Connection Status Report is submitted to the Pennsylvania Department of Environmental Protection (PADEP) as part of the reporting requirements of the City of Philadelphia NPDES Storm Water Management Permit No. PA 0054712. The report covers the three-month period beginning April 1, 2021 and ending June 30, 2021.

The body of this report will describe the recent activities of the City during the past quarter within the 1998 COA Priority Outfall areas and at other significant outfalls on the Stormwater Outfall Priority Score list. Additionally, goals for the next quarter will be listed.

Table 1 provides a summary of the program with respect to Complete tests, Cross-connections identified, and Abatements performed. Table 2 provides a listing of all laboratory analyses of samples taken at stormwater outfalls or within the stormwater system during the previous quarter. Table 3 provides a listing of properties with cross-connections outstanding greater than 120 days. Finally, Table 4 provides a listing of reported wastewater spills to the stormwater system or receiving streams.

# II. PAST QUARTER REVIEW

## A. Priority Outfalls

### 1. 7th & Cheltenham Outfall (T-088-01)

DLC program activities have performed 2,831 Complete tests in this sewershed, identifying 134 Cross-connections, all but one of which have been Abated.

Eight (8) sites intercepting flow are listed below.

| | | |
|---|---|---|
| 1. | CFD-01 | Plymouth St. west of Pittsville St. |
| 2. | CFD-02 | Pittsville St. south of Plymouth St. |
| 3. | CFD-03 | Elston St. east of Bouvier St. |
| 4. | CFD-04 | Ashley St. west of Bouvier St. |
| 5. | CFD-05 | Cheltenham Ave. east of 19th St. |
| 6. | CFD-06 | Verbena St. south of Cheltenham Ave. |
| 7. | CFD-07 | Cheltenham Ave. east of 7th St. |
| 8. | CFD-08 | 7th St. south of Cheltenham Ave. |

The number of inspections, blockages cleared and discharges noted during this quarter are listed below.

| Flap Gate | Inspections | Blockages | Discharges |
|---|---|---|---|
| CFD-01 | 5 | 1 | 0 |
| CFD-02 | 4 | 0 | 0 |
| CFD-03 | 3 | 0 | 0 |
| CFD-04 | 2 | 0 | 0 |
| CFD-05 | 0 | 0 | 0 |
| CFD-06 | 1 | 0 | 0 |
| CFD-07 | 9 | 2 | 0 |
| CFD-08 | 9 | 1 | 0 |

The most recent fecal sample value was 8,664 MPN per 100 ml. at the outfall on May 19, 2021.

**2. Monastery Ave. Outfall (W-060-01)**

DLC program activities have performed 632 Complete tests in this sewershed, identifying 17 Cross-connections, 16 of which have been Abated.

Two (2) sites intercepting flow are listed below.

1. MFD-01 Jannette St. west of Monastery Ave.
2. MFD-02 Green La. north of Lawnton St.

The number of inspections, blockages cleared and discharges noted during this quarter are listed below.

| Flap Gate | Inspections | Blockages | Discharges |
|---|---|---|---|
| MFD-01 | 3 | 0 | 0 |
| MFD-02 | 3 | 0 | 0 |

The most recent fecal sample value was 613.1 MPN per 100 ml. at the outfall on May 17, 2021.

**3. Monoshone Creek Outfalls (W-060-04, W-060-08, W-060-09, W-060-10, W-060-11, W-068-04 and W-068-05)**

DLC program activities have performed 2,750 Complete tests in these sewershed areas, identifying 94 Cross-connections, all of which have been Abated. The majority of the efforts have been in the W-068-05 sewershed area which is by far the largest in terms of drainage area and properties served.

The most recent fecal sample value was 708 MPN per 100 ml. at the W-068-05 outfall on April 19, 2021.

### 4. Manayunk Canal Outfalls (S-051-06, S-058-01, S-059-01 through S-059-11)

DLC program activities have performed 2,477 Complete tests in these sewershed areas, identifying 62 Cross-connections, all of which have been Abated. The majority of the efforts have been in the S-059-04 sewershed area.

The most recent fecal sample values at each outfall were:

- <100 MPN per 100 ml. at the S-058-01 outfall on May 12.
- 2,130 MPN per 100 ml. at the S-059-01 outfall on May 12.
- >24,196 MPN per 100 ml. at the S-059-02 outfall on May 17.
- 46,110 MPN per 100 ml. at the S-059-03 outfall on May 11.
- 1,100 MPN per 100 ml. at the S-059-04 outfall on May 11.
- No flow at the S-059-05 outfall on May 11.
- 61,310 MPN per 100 ml. at the S-059-09 outfall on May 11.

## B. Other Outfalls

### 1. Sandyford Run Outfall (P-090-02)

DLC program activities have performed 5,837 Complete tests in this sewershed, identifying 88 Cross-connections, all of which have been Abated.

One (1) site intercepting flow is listed below.

1. PFD-01 Sandyford Run (Brous and Lexington Aves.)

The number of inspections, blockages cleared and discharges noted during this quarter are listed below.

| Flap Gate | Inspections | Blockages | Discharges |
|---|---|---|---|
| PFD-01 | 11 | 1 | 0 |

The outfall was found dry on May 19, 2021.

### 2. Franklin and Hasbrook Outfall (T-089-04)

DLC program activities have performed 1,021 Complete tests in this sewershed, identifying 46 Cross-connections, all of which have been Abated.

One (1) site intercepting flow is listed below.

1. CFD-01 Franklin and Hasbrook Aves.

The number of inspections, blockages cleared and discharges noted during this quarter are listed below.

| Flap Gate | Inspections | Blockages | Discharges |
|---|---|---|---|
| CFD-01 | 12 | 4 | 1 |

The outfall was found dry on May 19, 2021.

**3.** A current summary of additional outfalls from the Stormwater Outfall Priority Score list that the City has performed complete testing or abatements this quarter is as follows.

| Outfall # | Complete Test | Cross Connection | Abatement |
|---|---|---|---|
| P-090-02 | 1 | 1 | 1 |
| P-091-06 | 2 | 0 | 0 |
| P-099-03 | 1 | 0 | 0 |
| P-100-11 | 6 | 1 | 1 |
| P-100-13 | 1 | 0 | 0 |
| Q-110-09 | 0 | 0 | 1 |
| Q-101-09 | 12 | 0 | 0 |
| Q-106-21 | 1 | 0 | 0 |
| Q-109-07 | 1 | 0 | 0 |
| Q-114-12 | 8 | 1 | 0 |
| R18 | 2 | 1 | 2 |
| S-052-04 | 113 | 7 | 1 |
| T-079-01 | 1 | 1 | 0 |
| T-089-01 | (1) | 0 | 0 |
| W-076-01 | 4 | 0 | 0 |
| W-077-02 | 6 | 2 | 0 |
| W-086-01 | (1) | 0 | 0 |
| W-086-02 | (27) | 3 | 0 |

## III. NEXT QUARTER GOALS

### A. Priority Outfalls

### 1. 7th & Cheltenham Outfall (T-088-01)

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatuses.
- Continue sampling at the outfall with dry-weather flow.

**2. Monastery Ave. Outfall (W-060-01)**

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatuses.
- Continue sampling at the outfall with dry-weather flow.

**3. Monoshone Creek Outfalls (W-060-04, W-060-08, W-060-09, W-060-10, W-060-11, W-068-04 and W-068-05)**

Goals for the Quarter

- Continue sampling at outfall W-068-05 with dry-weather flow.

**4. Manayunk Canal Outfalls (S-051-06, S-058-01, S-059-01 through S-059-11)**

Goals for the Quarter

- Continue sampling at the outfalls with dry-weather flow.

**B. Other Outfalls**

**1. Sandyford Run Outfall (P-090-02)**

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatus.

**2. Franklin and Hasbrook Outfall (T-089-04)**

Goals for the Quarter

- Continue to monitor the operation of the diversion apparatus.

**3.** Continue to perform abatements of identified cross-connections within the following outfalls.

- D-056-09
- P-083-03
- P-091-06
- P-091-09
- P-100-04
- Q-109-07
- Q-110-09
- Q-114-12
- R18
- S-046-06
- S-052-03
- S-052-04
- S-052-05

- T-079-01
- T-080-02
- W-067-01
- W-077-02
- W-086-02

**4.** Continue to perform property testing within the following outfalls.

- P-090-02
- P-091-06
- P-099-03
- P-100-11
- P-100-13
- Q-101-09
- Q-106-21
- Q-109-07
- Q-114-12
- R18
- S-052-04
- T-079-01
- W-076-01
- W-077-02
- W-086-02

**Table 1**
**DLC Program Summary**
**April 1, 2021 to June 30, 2021**

Complete Tests:

- 64,284 Complete tests have been performed under the DLC program
- **129 Complete tests were performed this past quarter**
- 1 Complete test was performed in outfall P-090-02
- 2 Complete tests were performed in outfall P-091-06
- 1 Complete test was performed in outfall P-099-03
- 6 Complete tests were performed in outfall P-100-11
- 1 Complete test was performed in outfall P-100-13
- 12 Complete tests were performed in outfall Q-101-09
- 1 Complete test was performed in outfall Q-106-21
- 1 Complete test was performed in outfall Q-109-07
- 8 Complete tests were performed in outfall Q-114-12
- 2 Complete tests were performed in outfall R18
- 113 Complete tests were performed in outfall S-052-04
- (1) Complete test was performed in outfall S-059-04
- 1 Complete test was performed in outfall T-079-01
- (1) Complete test was performed in outfall T-089-01
- 4 Complete tests were performed in outfall W-076-01
- 6 Complete tests were performed in outfall W-077-02
- (1) Complete test was performed in outfall W-086-01
- (27) Complete tests were performed in outfall W-086-02

Cross-Connections Found:

- 1,802 Cross-connections have been identified under the DLC program
- **17 Cross-connections were identified this past quarter**
- 1 Cross-connection was identified in outfall P-090-02
- 1 Cross-connection was identified in outfall P-100-11
- 1 Cross-connection was identified in outfall Q-114-12
- 1 Cross-connection was identified in outfall R18
- 7 Cross-connections were identified in outfall S-052-04
- 1 Cross-connection was identified in outfall T-079-01
- 2 Cross-connections were identified in outfall W-077-02
- 3 Cross-connections were identified in outfall W-086-02

Abatements:

- 1,645 Abatements have been performed under the DLC program
- **6 Abatements were performed this past quarter**
- 1 Abatement was performed in outfall P-090-02
- 1 Abatement was performed in outfall P-100-11
- 1 Abatement was performed in outfall Q-110-09
- 2 Abatements were performed in outfall R18
- 1 Abatement was performed in outfall S-052-04

Outfall/Manhole Screening and Sampling:

- 13 outfall inspections were made as part of the **Priority Outfall Inspection Program** this past quarter
- 11 outfall samples were taken due to observed dry-weather flow during the above inspections

- 65 outfall inspections were made as part of the **Permit Inspection Program** this past quarter
- 36 outfall samples were taken due to observed dry-weather flow during the above inspections

**Table 2**

**Lab Analysis of Water at Outfalls and/or in the Storm Sewers**

**April 1, 2021 to June 30, 2021**

**A. Priority Outfalls**

| Outfall | Date | Time | Location | Sewer Size (in) | Flow (gph) | Fluoride (mg/l) | Fecal Count (MPN per 100 ml) | Comments |
|---|---|---|---|---|---|---|---|---|
| **T-088-01** | 5/19/2021 | 11:50 | Outfall: 7th and Cheltenham | 84 | NR | 0.12 | 8664 | Clear, no sheen/odors |
| **W-060-01** | 5/17/2021 | 12:15 | Outfall Monastery and Jeanette | 4'4" x 5'0" | 600 | <0.1 | 613.1 | Clear flow, No sheen/odors |
| **W-060-04** | 4/19/2021 | 12:25 | Outfall: Lincoln & Harvey | 24 | 45 | 0.168 | <10 | Clear flow, no odor. Probably groundwater. |
| **W-060-10** | 5/20/2021 | 11:30 | Lincoln & Rittenhouse | 48 | 1000 | 0.165 | 359 | Clear, odorless. Large share of flow from Saylor Grove |
| **W-060-11** | 5/20/2021 | 11:40 | Lincoln & Harvey | 36 | NF | NS | NS | OF above Monoshone, observed from Lincoln Dr |
| **W-068-05** | 4/19/2021 | 12:40 | Outfall: Lincoln & Morris | 90 | NR | 0.409 | 708 | Unable to determine flow rate (subm). Sampled with jar and string flung into OF from inside culvert. |
| **S-058-01** | 5/12/2021 | 11:40 | Outfall:Umbria St. & Domino Lane | 54 | NR | 0.209 | <100 | Tan, slight suspended solids. Outfall submerged. |
| **S-059-01** | 5/12/2021 | 12:15 | Outfall:Towpath & Parker St. | 42 | 6000 | 0.296 | 2130 | Fallen tree in way of OF, must crawl under. |
| **S-059-02** | 5/17/2021 | 12:00 | Outfall:Towpath & Fountain St. | 42 | 900 | 0.219 | >24196 | Grey bacteria in OF |
| **S-059-03** | 5/11/2021 | 11:15 | Outfall:Towpath & Wright St. | 42 | 2400 | 0.16 | 46110 | Clear, No sheen/odors |
| **S-059-04** | 5/11/2021 | 11:07 | Outfall:Towpath & Leverington Ave. Bridge | 51 | NR | 0.184 | 1100 | Outfall submerged, channel influence |
| **S-059-05** | 5/11/2021 | 11:05 | Outfall:Towpath & Leverington Ave. Bridge | 4'0" x 2'8" | NF | NS | NS | Submerged. No Flow. |
| **S-059-09** | 5/11/2021 | 10:45 | Outfall:Main St. & Green Lane | 36 | 600 | 0.492 | 61310 | Outfall under boardwalk difficult to observe. |

**B. Permit Inspection Program**

| Outfall | Date | Time | Location | Sewer Size (in) | Flow (gph) | Fluoride (mg/l) | Fecal Count (MPN per 100 ml) | Comments |
|---|---|---|---|---|---|---|---|---|
| **P-090-02** | 5/19/2021 | 11:05 | Outfall Sandyford | 156 | NF | NS | NS | No Flow. |
| **P-100-01** | 4/9/2021 | 10:15 | Outfall: Winchester & Woodward | 42 | 25 | <.1 | <1 | 2 cont MH's w/ flow: MH cover on 01-0060 was stuck. Sampled from MH 01-0050. Abundant algae in creek channel. |
| **P-100-02** | 4/9/2021 | 9:15 | Outfall: Winchester & Roosevelt Blvd | 42 | NF | NS | NS | Fish in creek. No perceptible flow in pipe looking upstream of opening |
| **P-100-03** | 4/19/2021 | 10:25 | Outfall: Winchester & Roosevelt Blvd | 30 | 30 | 0.651 | 54750 | Outfall subm. Slightly cloudy; noticeable sewage smell. |
| **P-100-04** | 4/9/2021 | 8:50 | Outfall: Winchester & Blue Grass | 48 | 7.5 | <.1 | 42 | MH's 04-0010, 04-0050, & 04-0160 all dry |
| **P-100-05** | 4/5/2021 | 11:30 | Outfall: Winchester & Tolbut | 36 | NF | NS | NS | Stagnant water in pipe. No perceptible flow |
| **P-100-06** | 4/5/2021 | 12:00 | Outfall: Sperry & Macon | 21 | 15 | 0.759 | NS | Strong Cl smell. No WMB's reported at time of insp. |
| **P-100-07** | 4/5/2021 | 12:25 | Outfall: Sperry & Danbury | 24 | 112 | 0.165 | 132 | Went from trickle to ~112 gph around 12:15. Slight ferric tint; blue plastic flecks (see qual test report) |
| **Q-110-19** | 6/15/2021 | 11:55 | Outfall: Helmer & Keswick | 21 | NF | NS | NS | No Flow. |
| **Q-110-20** | 6/15/2021 | 11:50 | Outfall: Helmer & Keswick | 54 | NF | NS | NS | No flow. |
| **Q-114-01** | 5/21/2021 | 11:50 | Outfall: Byberry & Evans | 21 | NF | NS | NS | No Flow |
| **Q-114-15** | 4/14/2021 | 10:45 | Outfall: Roosevelt & Bennett | 30 | 3.75 | 0.13 | 41 | musty smell from culvert, scant green algae in OF |
| **Q-114-16** | 4/14/2021 | 10:30 | Outfall: Roosevelt & Bennett | 30 | NF | NS | NS | NPDES outfall for const site at former Nabisco Dwy |
| **Q-114-18** | 4/20/2021 | 1:30 | Outfall: Thornton & Townsend | 48 | NF | NS | NS | Channel water stagnant. Hazardous trash on hill |
| **Q-115-10** | 6/16/2021 | 11:10 | Outfall: Medfor & Vinton | 36 | NF | NS | NS | No flow. |
| **Q-115-14** | 6/16/2021 | 11:15 | Outfall: Medford & Vinton | 36 | NF | NS | NS | No Flow. |
| **Q-115-16** | 6/16/2021 | 11:00 | Outfall: Duffy & Galdi | 18 | NF | NS | NS | Observed from MH: Q115-16-0010 |
| **Q-115-17** | 6/16/2021 | 11:05 | Outfall: McCarthy & Cliffe | 24 | NF | NS | NS | Observed from MH Q117-17-0010 |
| **Q-115-18** | 6/16/2021 | 10:35 | Outfall: Knights & McCarthy | 18 | NF | NS | NS | Observed from MH: Q115-18-0010. |
| **Q-117-01** | 5/26/2021 | 12:45 | Outfall: Byberry & Audubon | 27 | 3.75 | 0.197 | <100 | Rust-colored sediments/film in pipe. |
| **Q-117-01** | 6/15/2021 | 11:20 | Outfall: Byberry & Audubon | 27 | 60 | 0.188 | 69.5 | Cloudy, tan flow. Slight suspended solids. No sheen/odors. |
| **Q-117-02** | 6/14/2021 | 11:35 | Outfall: Byberry & Audubon | 7' x 6'6" | NR | 0.1 | 2282 | Large outfall/culvert; unable to determine flow rate. |
| **Q-117-03** | 5/3/2021 | 12:55 | Outfall: Byberry & Audubon | 42 | 45 | 0.456 | 5.2 | Clear, no odor. OF in culvert under Byberry |
| **Q-117-03** | 6/14/2021 | 12:00 | Outfall: Byberry & Audubon | 42 | 600 | 0.57 | 189 | Clear, no sheen/odors |
| **Q-117-04** | 5/26/2021 | 12:15 | Outfall: Stevens & Regina | 72 | NF | NS | NS | Part submerged. Pool clear, no odor. |
| **Q-117-04** | 6/14/2021 | 12:30 | Outfall: Stevens & Regina | 72 | 900 | 0.108 | 24196 | Clear, no sheen/odors/ Frogs observed. |
| **Q-117-05** | 6/14/2021 | 11:05 | Outfall: Byberry & Trina | 48 | NR | 0.125 | 990 | Submerged outfall; unable to determine flow rate. Observed frogs & fish |
| **Q-118-01** | 4/14/2021 | 10:05 | Outfall: Roosevelt & Hornig | 42 | NF | NS | NS | Just inside culvert on W side of Roosevelt |
| **Q-118-02** | 4/14/2021 | 9:45 | Outfall: Roosevelt & Hornig | 42 | 75 | 0.173 | 20 | Foaming at point where discharge meets stream |
| **Q-118-02** | 5/25/2021 | 11:20 | Outfall: Hornig & Roosevelt Blvd | 42 | NF | NS | NS | No Flow |
| **Q-118-03** | 5/3/2021 | 11:00 | Outfall: McNulty & Southampton | 42 | 4 | <.1 | >2419.6 | Clear, odorless. Pool clear. |
| **Q-118-03** | 5/25/2021 | 10:50 | Outfall: McNulty & Southampton | 42 | NF | NS | NS | No Flow |
| **Q-118-05** | 5/3/2021 | 11:30 | Outfall: Byberry & Evans | 36 | NF | NS | NS | OF in culvert under Byberry. Spotted a turtle. |
| **Q-118-05** | 5/21/2021 | 11:45 | Outfall: Byberry & Evans | 27 | NF | NS | NS | No Flow |
| **Q-118-06** | 5/3/2021 | 12:15 | Outfall: Woodhaven & Evans | 42 | NF | NS | NS | OF accessible from side of Woodhaven Rd northbound |
| **Q-118-06** | 5/21/2021 | 11:30 | Outfall: Woodhaven & Evans | 42 | NF | NS | NS | No flow observed from MH: Q118-06-0015 |
| **Q-118-07** | 5/21/2021 | 11:20 | Oufall: Hornig & Kubach | 42 | NF | NS | NS | No Flow. |
| **Q-119-01** | 5/20/2021 | 11:20 | Oufall: Mechanicsville Rd | 36 | NF | NS | NS | No Flow. DLS description is incorrect. |
| **Q-119-02** | 5/20/2021 | 12:25 | Outfall:Maureen & Mechanicsville | 18 | NF | NS | NS | No Flow |
| **Q-120-01** | 4/8/2021 | 11:00 | Outfall: Denise & Depue | 18 | NR | 0.1 | >2419.6 | Clear, no sheen/odors. Outfall is submerged. |
| **Q-120-02** | 4/7/2021 | 11:10 | Outfall:Bustleton & Petoni | 66 | NR | 0.254 | 9804 | Slightly cloudy, light tan, no sheen/odors. Outfall is submerged. |
| **Q-120-03** | 4/7/2021 | 11:00 | Outfall: Bustelton & Station | 54 | NF | NS | NS | No Flow |
| **Q-120-04** | 4/8/2021 | 11:20 | Outfall: Bustleton & Station | 24 | NA | NA | NA | Outfall not found. No outfall located in culvert at Bustelton and Poquessing. |
| **Q-120-05** | 4/6/2021 | 10:45 | Outfall: Overhill & Count Line Rd | 36 | NF | NS | NS | No Flow |
| **Q-120-06** | 4/6/2021 | 10:30 | Outfall:Poquessing Ave. | 27 | NF | NS | NS | No Flow |
| **Q-120-07** | 4/6/2021 | 10:20 | Outfall: Maple & Trevose | 24 | NF | NS | NS | No Flow |
| **Q-120-MISC** | 4/8/2021 | 11:15 | Outfall: Bustleton & Poquesssing | 24 | 180 | 0.203 | <1 | Clear, no sheen/odors. Located north side of creek, east of Bustelton Ave. |
| **S-051-08** | 4/19/2021 | 11:55 | Outfall: Main & Shurs | 9'0" x 7'0" | 7 | 0.286 | >24196 | Outfall subm. Sampled S-051-08-0010. Slight sewage odor. |
| **S-052-05** | 4/19/2021 | 11:20 | Outfall: Sumac & Rochelle | 72 | 5 | 0.338 | 241960 | Outfall subm, inacces. Sampled S-052-05-0015 well manhole. Faint sewage odor; slight cloudiness, sediments. |
| **T-089-04** | 5/19/2021 | 11:26 | Outfall: Franklin & Hasbrook | 3'0" x 6'6" | NF | NS | NS | Flow from township side only. |
| **W-052-02** | 5/24/2021 | 11:15 | Outfall: Main & Ridge | 48 | 900 | 0.121 | 2419.6 | Some green algae growth in pipe |
| **W-060-02** | 5/24/2021 | 11:45 | Outfall: Walnut & Johnson | 30 | 4.5 | NS | NS | Headwall detached from pipe, flow observed in pipe and seeping from ground downstream of OF. No flow in upstream MH (W-060-02-003) |
| **W-060-03** | 5/24/2021 | 12:20 | Outfall: Forbidden Dr & Walnut Ln | 45 | 75 | 0.256 | >2419.6 | Slight musty smell at outfall but not sample./ |
| **W-060-05** | 5/17/2021 | 12:15 | Outfall: Forbidden Drive & Ritttenhouse | 48 | 450 | 0.167 | 93.3 | Clear, no odor. Probably groundwater/buried stream |
| **W-060-06** | 5/17/2021 | 11:45 | Outfall: Henry & Hermit | 18 | NF | NS | NS | OF appeared slightly wet, no flow. Obs from across creek |
| **W-060-07** | 5/17/2021 | 12:35 | Outfall: Lincoln & Henry | 18 | NF | NS | NS | Lots of trash in riprap in front of OF |
| **W-060-MISC** | 5/20/2021 | 11:48 | Lincoln & Harvey | 42 | 225 | 0.159 | 3230 | Slight sewage/musty odor from OF. Sample clear. OF located next to waterfall just south of Lincoln and Harvey. OF unlabeled in SERV/ERV--appears as detached outfall icon with no connecting sewer. |
| **W-068-01** | 6/7/2021 | 12:30 | Outfall: Greene & N Mt. Pleasant | 27 | NF | NS | NS | OF apron completely dry. Clear puddle observed in upstream MH; visible wetness. |
| **W-068-02** | 6/7/2021 | 12:40 | Outfall: Greene & S Mt. Pleasant | 27 | NF | NS | NS | Apron completley dry, some wetness visible from end of pipe and MH. |
| **W-068-03** | 6/7/2021 | 11:30 | Outfall: Wissahickon & N Mt. Pleasant | 21 | NF | NS | NS | Unable to determine flow; OF completely subm. (creek bed is just beneath top of OF pipe). Nearest MH is inaccesible due to heavy overgrowth; possibly buried. Next MH (W-068-03-0015) was dry. |
| **W-068-08** | 6/7/2021 | 11:00 | Outfall: Wissahickon & N Mt. Pleasant | 36 | 3 | 0.548 | 30 | Scant gray film coating path of flow in pipe. Moderate amt of water steadily dripping from above in MH riser before OF discharge point. |
| **W-076-07** | 6/2/2021 | 12:20 | Outfall: Hartwell Lane & Cherokee St. | 42 | 4 | 0.125 | 3 | Clear, odorless flow. Probably groundwater or buried stream. Rust-colored globular growth/slime. |
| **W-076-08** | 6/2/2021 | 11:20 | Outfall: Davidson Rd. & McCallum St. | 18 | 45 | <0.1 | 6.3 | Clear, odorless, steady trickle. Probably groundwater or buried stream |
| **W-076-09** | 6/2/2021 | 11:40 | Outfall: Valley Green Rd. & Wolcott Dr. | 48 | 1350 | <0.1 | 93.4 | Clear, odorless flow. Probably groundwater or buried stream |
| **W-086-05** | 4/19/2021 | 11:08 | Outfall: Anderson St & Woodbrook La | 48 | NA | 0.106 | 20 | Sewage odor from standing water. Sample taken of standing water. |

# Table 3
# Residential Cross Connections Not Abated Within 120 Days

## A. Properties Abated & Confirmed Prior to Reporting:

| Address | Outfall Code | Complete Date | Admin. Action | Abatement Confirmation Date | Comments |
|---|---|---|---|---|---|

## B. Properties Active As Of Reporting:

| Address | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|
| 00015 Osborn St | S-052-05 | 01-17-2018 | | |
| 01941 Kentwood St | Q-109-07 | 01-19-2018 | | |
| 03411 W Penn St | S-052-04 | 02-13-2018 | | |
| 03424 W Penn St | S-052-04 | 02-17-2018 | | |
| 03433 W Penn St | S-052-04 | 02-21-2018 | | |
| 03425 Conrad St | S-052-04 | 03-01-2018 | | |
| 03340 W Penn St | S-052-04 | 03-03-2018 | | |
| 03530 Henry Ave | S-052-04 | 03-03-2018 | | |
| 03313 Tilden St | S-052-04 | 03-24-2018 | | |
| 03305 Tilden St | S-052-04 | 03-24-2018 | | |
| 03329 Tilden St | S-052-04 | 03-27-2018 | | |
| 03316 Tilden St | S-052-04 | 03-28-2018 | | |
| 03333 Tilden St | S-052-04 | 03-29-2018 | | |
| 03461 Sunnyside Ave | S-052-04 | 04-02-2018 | | |
| 03411 Osmond St | S-052-04 | 04-28-2018 | | |
| 03449 W Penn St | S-052-04 | 05-03-2018 | | |
| 03446 Crawford St | S-052-04 | 05-17-2018 | | |
| 03467 Indian Queen La | S-052-04 | 05-26-2018 | | |
| 03433 Crawford St | S-052-04 | 05-26-2018 | | |
| 03317 W Penn St | S-052-04 | 06-02-2018 | | |
| 03448 W Queen La | S-052-04 | 06-23-2018 | | |
| 03335 W Queen La | S-052-04 | 07-02-2018 | | |
| 03419 W Queen La | S-052-04 | 07-02-2018 | | |

# Table 3
# Residential Cross Connections Not Abated Within 120 Days

| Address | | | | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|---|---|---|
| 03417 | W | Queen | La | S-052-04 | 07-05-2018 | | |
| 03326 | W | Queen | La | S-052-04 | 07-12-2018 | | |
| 03452 | W | Queen | La | S-052-04 | 07-13-2018 | | |
| 03469 | W | Queen | La | S-052-04 | 07-17-2018 | | |
| 03414 | W | Queen | La | S-052-04 | 07-20-2018 | | |
| 03333 | W | Queen | La | S-052-04 | 07-21-2018 | | |
| 03474 | | Tilden | St | S-052-04 | 07-21-2018 | | |
| 03440 | W | Queen | La | S-052-04 | 07-21-2018 | | |
| 03435 | W | Queen | La | S-052-04 | 07-30-2018 | | |
| 03464 | W | Queen | La | S-052-04 | 07-30-2018 | | |
| 03429 | W | Queen | La | S-052-04 | 08-02-2018 | | |
| 03459 | W | Queen | La | S-052-04 | 08-16-2018 | | |
| 03434 | W | Queen | La | S-052-04 | 08-17-2018 | | |
| 03460 | W | Queen | La | S-052-04 | 08-24-2018 | | |
| 02612 | | Woodward | St | P-100-04 | 09-12-2018 | | |
| 04437 | | Riverview | La | S-052-03 | 09-19-2018 | | |
| 04456 | | Riverview | La | S-052-03 | 09-26-2018 | | |
| 04423 | | Driftwood | Dr | S-052-03 | 09-27-2018 | | |
| 04406 | | Driftwood | Dr | S-052-03 | 09-29-2018 | | |
| 04433 | | Driftwood | Dr | S-052-03 | 09-29-2018 | | |
| 03235 | | Comly | Pl | Q-110-09 | 10-06-2018 | | |
| 04410 | | Driftwood | Dr | S-052-03 | 10-06-2018 | | |
| 04415 | | Driftwood | Dr | S-052-03 | 10-12-2018 | | |
| 04402 | | Driftwood | Dr | S-052-03 | 10-13-2018 | | |
| 04312 | | Ashburner | St | P-083-03 | 10-20-2018 | | |
| 03454 | W | Penn | St | S-052-04 | 10-24-2018 | | |

# Table 3
# Residential Cross Connections Not Abated Within 120 Days

| Address | | | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|---|---|
| 04425 | Driftwood | Dr | S-052-03 | 10-27-2018 | | |
| 04431 | Driftwood | Dr | S-052-03 | 10-27-2018 | | |
| 04404 | Driftwood | Dr | S-052-03 | 10-31-2018 | | |
| 04412 | Driftwood | Dr | S-052-03 | 11-09-2018 | | |
| 04417 | Driftwood | Dr | S-052-03 | 11-17-2018 | | |
| 03700 | Falls | Cir | S-052-03 | 12-15-2018 | | |
| 08726 | Cottage | St | P-083-03 | 12-22-2018 | | |
| 03702 | Falls | Cir | S-052-03 | 12-24-2018 | | |
| 04702 | Almond | St | D-056-09 | 12-26-2018 | | |
| 03704 | Falls | Cir | S-052-03 | 01-17-2019 | | |
| 03706 | Falls | Cir | S-052-03 | 01-19-2019 | | |
| 04408 | Driftwood | Dr | S-052-03 | 01-19-2019 | | |
| 02629 | Pratt | St | D-056-09 | 01-26-2019 | | |
| 04416 | Ashburner | St | P-083-03 | 02-02-2019 | | |
| 04312 | M | St | R18 | 03-13-2019 | | |
| 04300 | M | St | R18 | 03-15-2019 | | |
| 04422 | Ashburner | St | P-083-03 | 03-22-2019 | | |
| 04337 | Glendale | St | R18 | 03-23-2019 | | |
| 04232 | O | St | R18 | 03-28-2019 | | |
| 04254 | O | St | R18 | 04-06-2019 | | |
| 00223 | Stearly | St | T-080-02 | 04-06-2019 | | |
| 04310 | Glendale | St | R18 | 04-13-2019 | | |
| 00215 | Stearly | St | T-080-02 | 04-20-2019 | | |
| 05930 | Newtown | Ave | T-080-02 | 04-22-2019 | | |
| 04250 | Neilson | St | R18 | 04-25-2019 | | |
| 05922 | Newtown | Ave | T-080-02 | 04-26-2019 | | |

# Table 3
## Residential Cross Connections Not Abated Within 120 Days

| Address | | | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|---|---|
| 04215 | Castor | Ave | R18 | 04-27-2019 | | |
| 04219 | Castor | Ave | R18 | 05-02-2019 | | |
| 04249 | Neilson | St | R18 | 05-04-2019 | | |
| 04242 | Castor | Ave | R18 | 05-11-2019 | | |
| 08336 | Ditman | St | P-083-03 | 05-18-2019 | | |
| 01434 E | Bristol | St | R18 | 05-28-2019 | | |
| 04236 | Neilson | St | R18 | 06-01-2019 | | |
| 04245 | Ormond | St | R18 | 06-08-2019 | | |
| 04309 | Glendale | St | R18 | 06-15-2019 | | |
| 04122 | M | St | R18 | 07-06-2019 | | |
| 08635 | Ditman | St | P-083-03 | 07-10-2019 | | |
| 04146 | Markland | St | R18 | 07-27-2019 | | |
| 04144 | M | St | R18 | 07-29-2019 | | |
| 04144 | Markland | St | R18 | 07-30-2019 | | |
| 04142 | Markland | St | R18 | 08-03-2019 | | |
| 04122 | Markland | St | R18 | 08-05-2019 | | |
| 01409 E | Lycoming | St | R18 | 08-13-2019 | | |
| 04114 | Markland | St | R18 | 08-17-2019 | | |
| 01413 E | Lycoming | St | R18 | 08-20-2019 | | |
| 01447 E | Lycoming | St | R18 | 08-26-2019 | | |
| 04025 | Castor | Ave | R18 | 08-29-2019 | | |
| 01404 E | Lycoming | St | R18 | 08-31-2019 | | |
| 04023 | Castor | Ave | R18 | 09-04-2019 | | |
| 04034 | Castor | Ave | R18 | 09-06-2019 | | |
| 04051 | Castor | Ave | R18 | 09-11-2019 | | |
| 04224 | Markland | St | R18 | 09-14-2019 | | |

# Table 3
# Residential Cross Connections Not Abated Within 120 Days

| Address | | | Outfall Code | Complete Date | Admin. Action | Comments |
|---|---|---|---|---|---|---|
| 04024 | Castor | Ave | R18 | 09-17-2019 | | |
| 01444 E | Lycoming | St | R18 | 09-19-2019 | | |
| 04143 | M | St | R18 | 09-21-2019 | | |
| 04215 | M | St | R18 | 09-24-2019 | | |
| 07331 | Hill | Rd | W-067-01 | 09-30-2019 | | |
| 02623 W | Allegheny | Ave | S-046-06 | 10-05-2019 | | |
| 04033 | Castor | Ave | R18 | 10-08-2019 | | |
| 04014 | Castor | Ave | R18 | 10-08-2019 | | |
| 04030 | Castor | Ave | R18 | 10-12-2019 | | |
| 03063 | Winchester | Ave | P-091-09 | 10-19-2019 | | |
| 04259 | Castor | Ave | R18 | 10-22-2019 | | |
| 04261 | Castor | Ave | R18 | 10-26-2019 | | |
| 01431 E | Lycoming | St | R18 | 11-02-2019 | | |
| 08820 | Cottage | St | P-083-03 | 11-06-2019 | | |
| 04259 | Neilson | St | R18 | 12-02-2019 | | |
| 00531 | Roxborough | Ave | W-060-01 | 12-14-2019 | | |
| 02320 | Benson | St | P-091-06 | 01-06-2020 | | |
| 01352 E | Hunting Park | Ave | R18 | 01-08-2020 | | |
| 04123 | Markland | St | R18 | 02-06-2020 | | |
| 02306 | Benson | St | P-091-06 | 02-10-2020 | | |
| 01441 E | Hunting Park | Ave | R18 | 02-29-2020 | | |
| 00038 W | Hartwell | La | W-077-02 | 03-05-2020 | | |
| 02128 | Emerson | St | P-091-06 | 10-24-2020 | | |
| 02214 | Hoffnagle | St | P-091-06 | 10-26-2020 | | |
| 04116 | Markland | St | R18 | 11-09-2020 | | |

**Table 4**

**Spills to Storm Sewers and/or Receiving Waters**

**April 1, 2021 to June 30, 2021**

| Date | Outfall | Address | Source Code | Material Involved | Completion Date | Remarks |
|---|---|---|---|---|---|---|
| 04/05/21 | P-100-07 | Sperry St & Danbury St<br>Pennypack Creek | 3011 | Sewage | 04/09/21 | Industrial Waste unit reported approximate 2 gpm discharge to stream. Sampled for fecal coliform, fluoride, and qual test. Sample filtrate analysis yielded usual results for natural water runoff. |
| 04/12/21 | D-63 | 1000 S Fairhill St | 3008 | Sewage | 04/12/21 | Sewer Maintenance unit set up the bypass pump for choked combined sewer causing approximate 1 gpm discharge. Collapsed sewer was repaired and the entire block of sewer was referred to reconstruction. |
| 04/12/21 | D-05 | 6501 New State St<br>Delaware River | 3011 | Sewage | 04/16/21 | Flow control unit investigated a report of SWO gate opne in D-05 site. The High level float was replaced and a new emergency high trunk level was tested. New alarms to be installed. |
| 05/03/21 | S-010-09 | 1400 Langley Ave, PS 603 Force main | 3008 | Sewage | 05/03/21 | Flow control unit ran vactor trucks to bypass the pump station causing approximate 2 gpm discharge. Contractor JPC excavated and took all the contaminated material. The 8 inch force main elbow was replaced and checked for leaks. The excavation has been refilled. |
| 05/08/21 | S-010-09 | Langley Ave & Broad St, PS 603 Force main | 3008 | Sewage | 05/11/21 | Sewer Maintenance unit ran vactor trucks to bypass the pump station and clean up the puddle causing approximate 1 gpm discharge. Contractor JPC made the repair on the 8 inch force main. There is a design plan for the next-step replacement. |
| 05/11/21 | S-052-04 | Merrick Rd & Capital View Drive<br>Schuylkill River | 3009 | Sewage | 05/11/21 | Sewer Maintenance unit flushed 10 inch sanitary sewer causing approximate 1 gpm discharge. Inlet and street were cleaned. |
| 05/18/21 | D-20 | 3300 N Delaware Ave | 3009 | Sewage | 06/28/21 | Industrial Waste unit investigated a report of oil tanking leakage to the inlet. Kinder Morgan staff put absorbent material over the leak. ACV was called in to clean up the storm inlet. |
| 05/18/21 | P-099-03 | 1800 Tustin St<br>Pennypack Creek | 3011 | Sewage | 05/18/21 | Sewer Maintenance unit flushed 10 inch sanitary sewer causing approximate 1 gpm discharge. Referred to WRT for porperty and creek cleanout. |
| 05/20/21 | W-60-11 | Lincoln Dr & Harvey St<br>Monoshone Creek | 3011 | Sewage | 05/21/21 | Industrial Waste unit investigated a report of chemical pollutant clouding the creek. Outfalls were checked and appeared normal. |
| 06/03/21 | P-116-01 | 11064 Rennard Street, Rennard PS<br>Pennypack Creek | 3009 | Sewage | 06/04/21 | Sewer Maintenance unit ran vactor's jet rod to clear the sanitary sewer causing approximate 70 gpm discharge. Pump station was back in service with normal flow. |

**Source Codes:**

**3008 - Spill to Ground Only**

**3009 - Spill to Storm Sewer**

**3010 - Spill to Sanitary Sewer**

**3011 - Spill to Receiving Stream**