

# **BALTIMORE CITY MS4 ANNUAL REPORT**

**Reporting Period: July 1, 2020 to June 30, 2021**



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## 1 Introduction

This report includes the progress of compliance for the period of Fiscal Year (FY) 2021, in association with Baltimore City's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Discharge Permit (Permit Number: 11-DP-3315, MD0068292). The permit associated with the time period of this report was issued on December 27, 2013. Although that permit expired on December 27, 2018, it was administratively continued and the City remained responsible for compliance of those permit conditions. Annual report periods follow the City's fiscal calendar: July 1 to June 30. This Annual report has been formatted to match the reporting requirements as listed in Part V of the MS4 permit.

### 1.1 Permit Administration

On October 23, 2020, the City's new MS4 permit (20-DP-3315) was issued for tentative determination. A virtual, web-based public hearing for the permit was hosted by MDE on November 20, 2020. The public comment period ended on January 21, 2021. As of June 30, 2021, final determination of the permit had not been issued.

Designation of individual to act as a liaison between the City and the Maryland Department of Environment (MDE) for the implementation of this permit:

Kimberly L. Grove, P.E.  
Chief, Office of Compliance and Laboratories  
3001 Druid Park Drive, Rm 232  
Baltimore, MD 21215  
410-396-0732  
Kimberly.grove@baltimorecity.gov

Two organization charts (as of June 30, 2021) are provided in Appendix A of this report:

- City agency organization chart with designations of MS4 permit condition responsibilities.
- DPW organization chart.

In November 2020, a new mayor, city council president and comptroller were elected for the City. Brandon M. Scott was elected mayor. He created a new position of Chief Administrator Office and hired Chris Shorter. Nick Mosby was elected as city council president; 5 of the 14 City council members were also newly elected. Finally, Bill Henry was elected as comptroller.

Within the Department of Public Works, Jason Mitchell was hired as the Director; Matt Garbark resumed his role as Deputy Director. Other noted organization changes occurring in FY 2020 within DPW include the following:

- John Chalmers retired; Yvonne Moore Jackson became the acting Head of the Bureau of Solid Waste.
- Marco Merrick became acting Chief of the Office of Equity and Environmental
- The Chief of Staff position was vacated; administrative offices were re-organized to report to the Chief Administrative Officer and Deputy Director.

- The Office of Legal and Regulatory Affairs, which served as General Counsel to DPW, was moved to the City's Law Department, Environmental Division.
- The Office of Asset Management and Office of Engineering and Construction were moved to the Bureau of Water and Wastewater.
- Laboratory services were moved to the Bureau of Water and Wastewater; the Office of Compliance and Laboratories was renamed the Office of Compliance and Research.
- The Pollution Control Program was moved from the Environmental Services Division to the Wastewater Facilities Division. Environmental Services Division was renamed Water Facilities Division.

## **1.2 Legal Authority**

The City maintained adequate legal authority in accordance with NPDES regulations 40 CFR 122.26(d) (2) (i) during FY 2021.

## 2 Implementation Status

Table 2-1 is a summary of the status for implementing the components of the stormwater management program that are established as permit conditions.

**Table 2-1: Summary of Implementation Status**

Permit Condition	Component	Due	Status as of June 30, 2021
Part IV.C. Source Identification	GIS Data	Annual report	Baltimore City transitioned the source identification to the MS4 Geodatabase as part of the FY 2018 Annual Report.
Part IV.D.1 Stormwater Management	Identification of problems and modifications of ESD to MEP	Annual report	No problems identified during this reporting period.
	Modification to ordinances to eliminate impediments to ESD to MEP	Annual report	No modifications were initiated during this reporting period.
Part IV.D.2 Erosion and Sediment Control	Responsible personnel certification 3 / year	Annual Report	The City's program was replaced by MDE's on-line program.
	Inventory of projects > 1 acre	Initial 4/1/14 then quarterly	Included in Appendix C.
Part IV.D.3 Illicit Discharge Detection and Elimination	Alternative program for MDE submittal	12/27/14	The City is using the same alternative analysis (Ammonia Screening) as reported since 1998. Results are discussed in Section 5.3. Results are provided in Appendices D and L.
	Annual visual surveys of commercial / industrial areas	Annual	See Section 5.3.
Part IV.D.4 Trash and Litter	Inventory and evaluation all solid waste operations	12/27/14	Part of <i>Public Outreach Strategy for Trash and Litter Programs for the City of Baltimore</i> , submitted February 20, 2015.
	Public education and outreach strategy	12/27/14	See Section 5.5.
	Evaluation of effectiveness of education program	Annual Report	See Section 5.5.
Part IV.D.5 Property Management and Maintenance	NOIs and SWPPPs submitted for NPDES stormwater general permit coverage for industrial permits	6/30/14	NOIs and SWPPPs were submitted for the City's solid waste facilities, fleet maintenance facilities, and wastewater treatment plants.
	Alternative maintenance program	12/27/14	No alternative maintenance program is being proposed.
Part IV.D.6 Public Education	Maintain a compliance hotline for water quality complaints	Annual Report	2 customer service requests to 3-1-1 system were added in

Permit Condition	Component	Due	Status as of June 30, 2021
			November 2014. See Sections 5.2 and 5.3.
Part IV.E.1 Watershed Assessment	Detailed watershed assessments of entire City	12/27/18	Updated assessments for Baltimore Harbor and North Lower Branch of Patapsco Watersheds were submitted to MDE on December 14, 2018; the public comment period started on November 20, 2018 but was extended to January 16, 2019.
Part IV.E.2 Restoration Plans	Impervious surface assessment consistent with MDE methods = baseline	12/27/14	MDE approved the baseline impervious area on July 28, 2015. On June 6, 2019, MDE deemed that this requirement was met based on FY 2018 Annual report data.
	Restoration of 20% of City's impervious surface area	12/27/18	
	Restoration Plan for each WLA approved by EPA prior to the effective date of the permit	12/27/14	Local and Bay TMDLs for nutrients and sediments were conditionally approved by MDE on May 9, 2018; see Section 6.5 and 6.6.1 for outstanding information and revised progress estimations.  Bacteria TMDL implementation plan was approved by MDE on May 9, 2018. A modified implementation schedule, per the modified Consent Decree, was submitted to MDE on June 28, 2018. See Section 6.6.2 for progress.  A modified PCB implementation schedule was submitted to MDE on September 14, 2018. See Section 6.6.4 for progress.
	Restoration Plan for subsequent TMDL WLA	One year of approval	<i>Implementation Plan for the Middle Branch / Northwest Branch Trash TMDL in Baltimore City</i> was submitted on January 4, 2016. A clarification memo was submitted to MDE on September 14, 2018. See Section 6.6.2 for progress.

<b>Permit Condition</b>	<b>Component</b>	<b>Due</b>	<b>Status as of June 30, 2021</b>
Part IV.E.4. TMDL Compliance	Annual assessment to evaluate the effectiveness of the City's restoration plans	Annual Report	See Section 3 and 6.
Part IV.F. Assessment of Controls	Continue assessments	Annual Report	See Section 3.2 and Appendices C, F and G.
Part IV.G. Program Funding	Fiscal analysis of the capital, operation, and maintenance expenditures necessary to comply with all conditions of this permit	Annual Report	See Section 4 and Appendix I.

The MS4 geodatabase included rules for completed records related to mandatory fields. As a short-term solution to complete the database, Baltimore City used designated values as a “null” value. These values are listed in Appendix B. In March 2020, the City of Baltimore adjusted operations in response to the pandemic known as COVID-19. Specific impacts related to this event are described further in the appropriate sections of this Annual Report.

### 3 Narrative Summary of Data

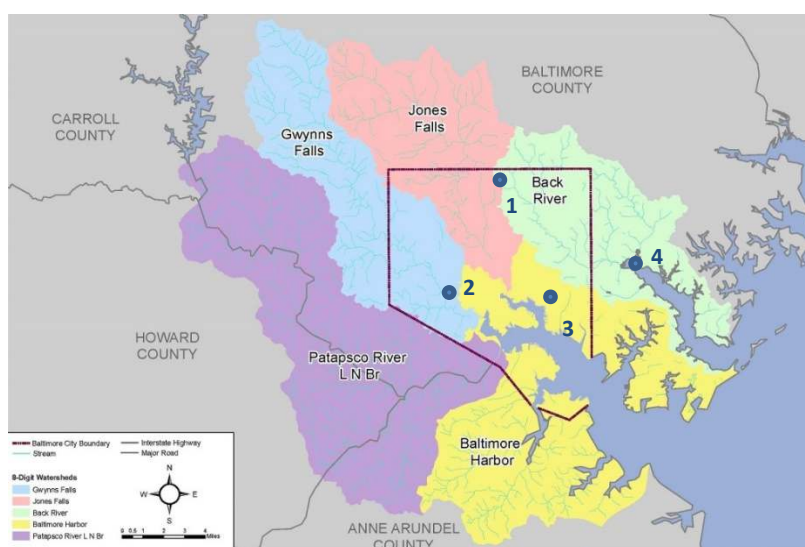
#### 3.1 Rainfall

BWI Airport is the nearest NOAA weather station to the City. Precipitation data from that weather station is shown in Table 3-1. FY 2021 had the third highest total precipitation and second highest number of rain events (daily precipitation exceeding 0.1 inch) within the fiscal year for this current permit period. Approximately 15% of the rain events exceeded 1 inch in total rainfall; the maximum daily rainfall was measured as 3.51 inches on August 12. According to Atlas 14, this 24-hour storm is equivalent to a 2-year storm.

**Table 3-1: Summary of Annual Rainfall (NOAA)**

Fiscal Year	2015	2016	2017	2018	2019	2020	2021
Rainfall, in.	55	42	38	44	68	39	53
Days > 0.1 in	85	76	73	74	96	75	89
Days > 1 in	11	8	9	13	14	8	13

DPW operates and maintains a series of rain gauges throughout the City as part of the City's Flood ALERT system. DPW uses the four gauges shown Figure 3-1 for analysis of rainfall events exceeding one inch to evaluate reported flooding events. The rainfall records for the four rain gauges demonstrate variability of rainfall across the City and compared to NOAA's BWI Airport system, as shown in Table 3-2. This variability can affect evaluations of the influence on rain events on sampling results and trash / debris collection operations.



**Figure 3-1: Daily Rainfall for FY 2021**

**Table 3-2: Summary of Variability in Rainfall Data for Baltimore in FY 2021**

Location	NOAA	DPW, 1	DPW, 2	DPW, 3	DPW, 4
<b>Total Rainfall, in</b>	53.0	50.7	47.9	57.8	52.9
<b>Days &gt; 0.1 in</b>	89	85	85	84	83
<b>Days &gt; 1.0 in</b>	13	13	11	16	11
<b>Max. Daily Rainfall</b>	3.5	2.8	2.4	3.5	4.0

## 3.2 Stream Impact Sampling

DPW continued the Stream Impact Sampling (SIS) program, which now includes monthly sampling at 33 outfall or stream locations. The SIS program was initiated in 1997; the results are available on-line at the City's website and updated quarterly. The sampling program includes sampling results for nutrients, sediment, bacteria, metals and other health indicators. The results of the sampling events for this reporting period are included in Appendix D. Starting in November 2020, DPW temporarily suspended sampling at the Reedbird Ave. site due to construction. Consequently, a new sampling site, Potee St., was established further downstream on the Patapsco River; sampling began on November 17, 2020.

### 3.2.1 Nutrient Monitoring

During FY 2021, 391 SIS samples were analyzed for nutrients (phosphorus and nitrogen). Tables 3-3 and 3-4 show the evaluation of historic nutrient analysis (2009 through the reporting period), following a concept that the State used in its Maryland Water Quality Inventory, 1993-1995. The evaluation identifies the portion of sampling results above the designed threshold for the parameter. A water quality level was then assigned for each station's sample sets compared to the prescribed threshold: "normal" if the percentage was less than 11%; "elevated" if it was between 11% and 25%; and "high" if it was greater than 25%. This assignment is color coded Tables 3-3 and 3-4.

In addition to the individual sampling results for total phosphorus and total nitrogen (Appendix D), graphs of the annual results for total phosphorus and total nitrogen (percent of samples in relation to threshold and geometric mean) from FY 2010 to FY 2021 for each station are included in Appendix E and F, respectively.

Two (2) stations, WASHINGTON BLVD. and LINWOOD & ELLIOTT, had their maximum total phosphorus sample during FY 2021. The graphs for the total phosphorus show a peak for geometric means occurred in FY 2011 and 2012; then a sharp decrease in FY 2013, reaching minimums for FY 2014; followed by an overall increase from FY 2015 to FY 2019; then the decrease for FY 2020. This pattern of a peak total phosphorus occurring in FY 2011 and 2012 was also shown in the graphs of the percentage of samples exceeding the threshold of 0.1 mg/L. Sixteen (16) stations had a lower geometric mean for total phosphorus for the samples collected during FY 2021 compared to those collected during FY 2020. Only four (4) stations have shown a decline for total phosphorus geometric mean for each of the last three years: SMITH AVE., WESTERN RUN, STONY RUN and GRUN CARROLL PARK. There has been a considerable decline for the annual geometric mean from FY 2016 (0.246 mg/L) to FY 2021 (0.097 mg/L) for station JF 11.5.

**Table 3-3: Summary of Total Phosphorus for SIS Program**

Station	Percent of Samples Total Phosphorus $\geq 0.1$ mg/L			Maximum Total Phosphorus Results	
	Pre-FY 2021 <sup>1</sup>	FY 2021	All Samples	Pre-FY 2021 <sup>1</sup>	FY 2021
Back River Watershed Herring Run Sub-watershed					
PERRING PKWY	14%	9%	14%	0.27	0.16
MT. PLEASANT GC	21%	0%	19%	0.42	0.09
CHINQUAPIN RUN	24%	0%	22%	0.46	0.08
TIFFANY RUN	12%	9%	11%	0.29	0.14
HARFORD RD.	15%	8%	14%	0.41	0.29
WRIGHT AVE.	22%	17%	21%	0.42	0.12
PULASKI HWY.	10%	0%	9%	0.51	0.07
Back River Watershed Moores Run Sub-watershed					
MARY AVE.	36%	33%	35%	0.87	0.22
HAMILTON AVE.	37%	17%	35%	0.50	0.28
RADECKE AVE.	20%	0%	18%	0.32	0.09
BIDDLE ST. & 62ND ST.	28%	0%	25%	0.40	0.10
Jones Falls Watershed					
SMITH AVE.	22%	8%	21%	0.36	0.15
WESTERN RUN	22%	0%	21%	0.52	0.09
STONY RUN	19%	0%	18%	0.33	0.09
JF 11.5 <sup>2</sup>	81%	55%	76%	3.10	0.16
LOMBARD ST.	29%	8%	27%	0.61	0.13
Gwynns Falls Watershed					
POWDER MILL	34%	33%	34%	0.94	0.66
PURNELL DR.	19%	25%	19%	16.40	0.14
DEAD RUN DNST.	25%	17%	25%	0.33	0.26
GWYNNS FALLS PKWY.	31%	25%	31%	0.42	0.15
GRUN HILTON ST.	30%	17%	29%	0.51	0.20
GF HILTON ST.	20%	25%	21%	0.34	0.18
MAIDENS CHOICE	23%	8%	22%	0.48	0.41
GRUN CARROLL PARK	55%	33%	53%	0.51	0.27
WASHINGTON BLVD.	26%	25%	26%	0.34	0.49
Baltimore Harbor Watershed					
LINWOOD & ELLIOTT <sup>3</sup>	50%	33%	48%	0.36	0.58
LAKEWOOD & HUDSON <sup>3</sup>	38%	27%	37%	0.28	0.14

Station	Percent of Samples Total Phosphorus $\geq 0.1$ mg/L			Maximum Total Phosphorus Results	
	Pre-FY 2021 <sup>1</sup>	FY 2021	All Samples	Pre-FY 2021 <sup>1</sup>	FY 2021
CENTRAL & LANCASTER <sup>4</sup>	47%	50%	47%	1.40	0.19
LIGHT ST.	36%	17%	34%	2.90	0.25
WARNER & ALLUVION	45%	17%	43%	0.77	0.16
WATERVIEW AVE.	25%	17%	24%	1.90	0.14
JANEY RUN	29%	33%	30%	0.68	0.18
Patapsco River Watershed					
REEDBIRD AVE. <sup>5</sup>	29%	25%	29%	0.37	0.15
<u>Notes:</u>					
1 Pre-FY 2021 includes samples from January 2009 to June 2020.					
2 Sampling began at JF 11.5 in January 2016.					
3 Sampling began at LINWOOD & ELLIOTT and LAKEWOOD & HUDSON in March 2013.					
4 No samples were collected at the CENTRAL & LANCASTER station from January 2017 through March 2019 because access to the station was blocked by construction.					
5 Construction near REEDBIRD AVE. blocked access to sampling site: last sample collected in October 2020.					
<u>Key</u>					
	-	-	-	-	-
	Normal: $\leq 11\%$ of Samples				
	Elevated: Between 11-25% of Samples				
	High: $>25\%$ of Samples				

Six (6) stations (PULASKI HWY., MARY AVE., HAMILTON AVE., GRUN HILTON ST., GF HILTON ST. and JANEY RUN) had their maximum total nitrogen sample during FY 2021. Fourteen (14) stations exhibited a higher percentage of total nitrogen samples above the threshold for FY 2021 compared to their pool of samples prior to FY 2021; eighteen (18) stations exhibited a lower percentage. Nine (9) stations stand out with a change of at least sixteen (16) percentage points:

- MARY AVE. had an increase of 26 percentage points;
- WATERVIEW AVE. had an increase of 25 percentage points;
- GWYNNNS FALLS PKWY. had an increase of 20 percentage points;
- TIFFANY RUN had an increase of 20 percentage points;
- LAKEWOOD & HUDSON had an increase of 18 percentage points;
- JANEY RUN had an increase of 16 percentage points;
- CHINQUAPIN RUN had a decrease of 18 percentage points;
- JF 11.5 had a decrease of 22 percentage points; and

- GRUN CARROLL PARK had a decrease of 25 percentage points.

For twenty-four (24) stations, the geometric mean of the FY 2021 total nitrogen samples decreased compared to the geometric mean for the FY 2020 samples. In FY 2021, four (4) stations had a total nitrogen geometric mean above 3 mg/L, compared to seven (7) stations which did for FY 2020. Those four (4) stations and the years for which they had geometric means above 3 mg/L are: HAMILTON AVE. (FY 2014, and FY 2016 through FY 2021); JF 11.5 (complete history of sampling FY 2016 through FY 2021); LINWOOD & ELLIOTT (complete history of sampling FY 2013 through FY 2021); and LAKEWOOD & HUDSON (complete history of sampling FY 2013 through FY 2021). Of these four (4) stations, only LINWOOD & ELLIOTT showed an increase in the geometric mean between FY 2020 and FY 2021.

**Table 3-4: Summary of Total Nitrogen for SIS Program**

Station	Percent of Samples Total Nitrogen $\geq 3$ mg/L			Maximum Total Nitrogen Results	
	Pre-FY 2021 <sup>1</sup>	FY 2021	All Samples	Pre-FY 2021 <sup>1</sup>	FY 2021
<i>Back River Watershed Herring Run Sub-watershed</i>					
PERRING PKWY	3%	0%	3%	3.74	2.73
MT. PLEASANT GC	12%	0%	11%	8.07	2.90
CHINQUAPIN RUN	26%	8%	23%	5.78	3.05
TIFFANY RUN	7%	27%	9%	4.91	3.77
HARFORD RD.	8%	17%	9%	6.86	3.98
WRIGHT AVE.	3%	0%	3%	5.49	2.75
PULASKI HWY.	8%	8%	8%	4.00	4.24
<i>Back River Watershed Moores Run Sub-watershed</i>					
MARY AVE.	16%	42%	18%	7.20	8.91
HAMILTON AVE.	57%	50%	55%	7.94	8.73
RADECKE AVE.	12%	25%	13%	7.10	3.66
BIDDLE ST. & 62ND ST.	3%	0%	2%	10.02	2.09
<i>Jones Falls Watershed</i>					
SMITH AVE.	3%	0%	3%	4.18	2.87
WESTERN RUN	3%	8%	4%	6.04	4.00
STONY RUN	30%	27%	29%	5.66	3.85
JF 11.5 <sup>2</sup>	92%	70%	89%	16.56	6.87
LOMBARD ST.	7%	0%	6%	9.99	2.95
<i>Gwynns Falls Watershed</i>					
POWDER MILL	18%	8%	17%	14.89	3.10
PURNELL DR.	2%	0%	2%	5.26	2.52
DEAD RUN DNST.	2%	8%	2%	5.69	3.09
GWYNNNS FALLS PKWY.	13%	33%	15%	6.20	6.19

Station	Percent of Samples Total Nitrogen $\geq 3$ mg/L			Maximum Total Nitrogen Results	
	Pre-FY 2021 <sup>1</sup>	FY 2021	All Samples	Pre-FY 2021 <sup>1</sup>	FY 2021
GRUN HILTON ST.	12%	8%	11%	4.30	4.63
GF HILTON ST.	2%	17%	4%	3.60	5.23
MAIDENS CHOICE	7%	17%	8%	201.07	4.40
GRUN CARROLL PARK	50%	25%	47%	4.91	4.33
WASHINGTON BLVD.	5%	0%	4%	13.00	2.34
<i>Baltimore Harbor Watershed</i>					
LINWOOD & ELLIOTT <sup>3</sup>	90%	100%	91%	7.66	4.90
LAKEWOOD & HUDSON <sup>3</sup>	82%	100%	83%	7.20	5.07
CENTRAL & LANCASTER <sup>4</sup>	18%	33%	19%	7.78	7.34
LIGHT ST.	12%	8%	11%	25.02	6.93
WARNER & ALLUVION	20%	8%	19%	8.55	3.82
WATERVIEW AVE.	25%	50%	26%	13.31	3.46
JANEY RUN	9%	25%	10%	3.80	4.79
<i>Patapsco River Watershed</i>					
REEDBIRD AVE. <sup>5</sup>	14%	0%	14%	4.54	1.99
<b>Notes:</b>					
1 Pre-FY 2021 includes samples from January 2009 to June 2020.					
2 Sampling began at JF 11.5 in January 2016.					
3 Sampling began at LINWOOD & ELLIOTT and LAKEWOOD & HUDSON in March 2013.					
4 No samples were collected at the CENTRAL & LANCASTER station from January 2017 through March 2019 because access to the station was blocked by construction.					
5 Construction near REEDBIRD AVE. blocked access to sampling site: last sample collected in October 2020.					
<b>Key</b>					
	-	-	-	-	-
	Normal: $\leq 11\%$ of Samples				
	Elevated: Between 11-25% of Samples				
	High: $>25\%$ of Samples				

Further discussion of these results in relation to the local TMDL implementation plans are provided in Section 6.6.1 of this Annual Report.

### 3.2.2 Bacteria Monitoring

#### 3.2.2.1 E. Coli Monitoring

WQMI measures fecal bacteria with e. coli most probable number (MPN) counts at twenty-four (24) stations that are in non-tidal waters. In 2017, the water quality criteria for bacteria indicators were changed in COMAR 26.08.02.03-3 as follows:

- Geometric mean (GM) for e. coli for 90+ days must be less than 126 MPN / 100 ml
- Less than 10% of single sample results of e. coli may be greater than the standard threshold value (STV) of 410 MPN / 100 ml
- Dissolved oxygen must be greater than 5 mg /L
- pH must be between 6.5 and 8.5
- Water temperature may not exceed 90°F (32° C) for Class I and 75°F (23.9°C) for Class IV waters

The most notable changes were the simplification of the STV; full-body contact thresholds are no longer used. Previous MS4 annual report evaluations with respect to the former full-body contact thresholds are no longer applicable. Table 3-5 lists the results of SIS sampling for e. coli with respect to these water quality criteria. Appendix G contains graphs of the annual GM for e. coli for each station from FY 2010 to FY 2021.

None of the stations met all of the water quality criteria for FY 2021, although Smith Avenue came very close (the e. coli samples there exceeded the STV 17% for the fiscal year). Tiffany Run and Pulaski Highway had geometric means slightly greater than the rule and percentages slightly greater than the rule. All of the stations met the dissolved oxygen criterion. The water temperature criterion was met at all fourteen (14) of the class I stations. However, the water temperature criterion was met at only one, Stony Run, of the ten (10) class IV stations. Five (5) stations failed to meet the pH criterion: Radecke Avenue for going below the minimum pH rule; and Chinquapin Run, Tiffany Run, Gwynns Falls Parkway and GF Hilton Street for exceeding the maximum pH rule.

**Table 3-5: Summary of E. Coli Sampling for SIS Program for FY 2021**

Station	Class	E. Coli (MPN/100 ml)		Min. DO (mg/L)	Max. Temp (°C)	pH Range	
		GM	% > STV				
Back River Watershed Herring Run Sub-watershed							
PERRING PKWY	IV	303	45%	7.62	26.60	7.57	to 8.18
MT. PLEASANT GC	IV	409	42%	9.01	26.63	7.54	to 8.37
CHINQUAPIN RUN	IV	184	33%	9.23	29.93	7.80	to 8.98
TIFFANY RUN	IV	160	18%	7.89	27.57	7.83	to 8.54
HARFORD RD.	IV	402	33%	8.70	27.03	7.67	to 8.49
WRIGHT AVE.	IV	412	50%	6.59	26.58	7.44	to 8.10
PULASKI HWY.	IV	196	17%	8.27	28.65	7.59	to 7.97
Back River Watershed Moores Run Sub-watershed							

Station	Class	E. Coli (MPN/100 ml)		Min. DO (mg/L)	Max. Temp (°C)	pH Range
		GM	% > STV			
MARY AVE.	I	1,748	92%	7.95	27.59	7.27 to 8.09
HAMILTON AVE.	I	1,180	92%	6.23	24.86	7.51 to 8.25
RADECKE AVE.	I	1,031	83%	5.40	26.79	6.41 to 8.32
BIDDLE ST. & 62ND ST.	I	481	50%	6.68	27.29	7.16 to 7.93
<i>Jones Falls Watershed</i>						
SMITH AVE.	I	111	17%	6.94	25.50	7.32 to 8.30
WESTERN RUN	I	262	33%	7.81	23.50	7.33 to 8.44
STONY RUN	IV	173	33%	7.32	22.40	7.20 to 7.94
JF 11.5	IV	1,659	90%	8.57	24.32	7.51 to 8.13
<i>Gwynns Falls Watershed</i>						
POWDER MILL	I	666	58%	7.24	22.53	7.15 to 8.02
PURNELL DR.	I	937	83%	7.58	24.95	7.25 to 8.23
DEAD RUN DNST.	IV	257	33%	8.12	24.68	7.31 to 8.24
GWYNNS FALLS PKWY.	I	141	42%	8.20	19.79	7.14 to 8.54
GRUN HILTON ST.	I	1,317	83%	7.99	25.63	7.06 to 8.33
GF HILTON ST.	I	1,023	75%	8.00	26.53	7.06 to 8.58
MAIDENS CHOICE	I	688	67%	8.44	26.24	7.35 to 8.32
GRUN CARROLL PARK	I	1,892	100%	6.63	24.86	7.19 to 8.48
WASHINGTON BLVD.	I	1,606	92%	8.62	25.48	7.42 to 8.31

### 3.2.2.2 Enterococci Monitoring

WQMI currently measures fecal bacteria with enterococci most probable number (MPN) counts at nine (9) stations. In 2017, the water quality criteria for bacteria indicators were changed in COMAR 26.08.02.03-3 as follows:

- Geometric mean (GM) for enterococci for 90+ days must be less than 35 MPN / 100 ml
- Less than 10% of single sample results of e. coli may be greater than the standard threshold value (STV) of 130 MPN / 100 ml
- Dissolved oxygen must be greater than 5 mg /L
- pH must be between 6.5 and 8.5
- Water temperature may not exceed 90°F (32° C) for Class I and 75°F (23.9°C) for Class IV waters

The most notable changes were the simplification of the STV; full-body contact thresholds are no longer used. Previous MS4 annual report evaluations with respect to the former full-body contact thresholds are no longer applicable. Table 3-6 lists the results of SIS sampling for enterococci with respect to these water quality criteria. Appendix G contains graphs of the annual GM for enterococci for each station from FY 2010 to FY 2021.

None of the stations met all of the water quality criteria for FY 2021. No stations had a GM for enterococci counts close to the criterion of 35 MPN/100 ml. Four (4) stations failed by falling below the dissolved oxygen minimum threshold of 5 mg/L: Warner & Alluvion, Light Street, Central & Lancaster and Janey Run. The temperature criterion was met at all of the stations. Three (3) stations failed by exceeding the maximum pH threshold of 8.5: Waterview Avenue, Light Street and Janey Run.

**Table 3-6: Summary of Enterococci Sampling for SIS Program for FY 2021**

Station	Class	Enterococci (MPN/100 ml)		Min. DO (mg/L)	Max. Temp (°C)	pH Range		
		GM	% < STV					
Jones Falls Watershed								
LOMBARD ST.	I	628	92%	5.92	26.21	7.00	t o	8.2 5
Baltimore Harbor Watershed								
WATERVIEW AVE.	I	213	67%	7.29	22.66	6.77	t o	8.8 5
WARNER & ALLUVION	I	1,126	92%	4.19	26.53	7.01	t o	8.2 8
LIGHT ST.	I	170	58%	3.22	29.11	7.02	t o	8.7 7
CENTRAL & LANCASTER	I	383	67%	3.65	28.77	6.63	t o	8.5 0
LAKEWOOD & HUDSON	I	1,581	96%	7.34	22.81	7.55	t o	8.2 3
LINWOOD & ELLIOTT	I	1,542	96%	6.94	23.28	7.32	t o	8.1 0
JANEY RUN	I	512	75%	4.46	28.33	7.23	t o	9.7 3
Patapsco River Watershed								
REEDBIRD AVE. <sup>1</sup>	I	732	88%	5.70	28.60	7.30	t o	7.6 2
POTEE ST. <sup>1</sup>	I	230	67%	6.40	22.40	7.20	t o	8.4 5
<sup>1</sup> Sampling suspended at REEDBIRD AVE. after October 2020 because of construction and started at POTEE ST. in November 2020.								

### 3.3 Biological and Habitat Monitoring

DPW uses a combination of fixed and random sampling. There are eight (8) fixed stations, two of which are associated with the long-term discharge characterization of Moores Run. The results for those two stations are discussed in Section 3.2.2 of this report. For the random sampling, one of three watersheds is completed each year. During the spring of 2020, random sampling was planned to be done in the Jones Falls watershed. DPW only collected four samples macroinvertebrate in the spring of 2020, then DPW staff were told not to report to work in response to COVID from March 23, 2020 through April 27, 2020, missing the opportunity for complete sampling for 2020.

Table 3-7 presents the benthic index of biotic integrity (BIBI) scores for 6 fixed stations from 2002 through 2020. The three stations that were sampled during 2020 were rated “very poor”; with two of the three stations achieving the lowest score possible of 1.0. Two of the three stations showed a decline in the scores from 2019 to 2020; with the remaining station keeping the same score- maintaining the lowest score.

**Table 3-7: Macroinvertebrate BIBI Scores for Fixed Stations**

Calendar Year	Gwynns Falls Watershed		Jones Falls Watershed			Back River Watershed
	Station 250 Dead Run	Station 430 Maidens Choice Run	Station 880 Stony Run	Station 949 Stony Run	Station 1053 Stony Run	Station 1235 Biddison Run
2002	1.7	NS	NS	NS	1.3	NS
2003	1.0	NS	NS	NS	1.0	3.3
2004	1.0	NS	NS	NS	1.0	1.3
2005	1.0	NS	NS	NS	1.3	1.9
2006	1.7	NS	NS	NS	NS	1.3
2007	NS	NS	NS	NS	1.0	1.3
2008	NS	NS	NS	NS	1.0	1.6
2009	1.3	NS	NS	NS	1.3	1.0
2010	1.3	1.0	1.3	1.7	2.3	1.9
2011	2.3	1.7	1.3	1.0	1.7	1.3
2012	1.0	1.0	1.0	1.0	1.0	1.6
2013	1.0	1.0	1.0	1.0	1.0	2.1
2014	1.7	1.3	1.7	1.3	2.0	1.9
2015	2.3	1.7	1.3	1.3	1.3	2.4
2016	1.0	1.3	1.0	1.0	1.0	1.9
2017	2.7	2.0	1.3	1.0	1.7	3.0
2018	1.3	1.3	1.3	1.0	1.7	2.4
2019	1.0	1.0	1.0	1.7	1.7	1.6
2020	NS	NS	1.0	1.3	1.0	NS

The BIBI, embeddedness, epifaunal and habitat scores for all fixed station and random station samples from 2020 are listed in the *Biological Monitoring* table of the *MDE NPDES MS4 Geodatabase* (Appendix C of this report).

### 3.4 Watershed Assessment at Moores Run

#### 3.4.1 Chemical Monitoring

During FY 2021, seven (7) storm events and twelve (12) base flow events were monitored at both Hamilton Avenue, the outfall station associated with the long-term discharge characterization for the Moores Run; and at Radecke Avenue, the in-stream station associated with the long-term discharge characterization for the Moores Run. In addition to the seven (7) successfully sampled storms, DPW set up the automated sampling equipment for a storm on September 10, 2020; however, there were problems that developed with the equipment during the storm at both stations, and no samples were collected.

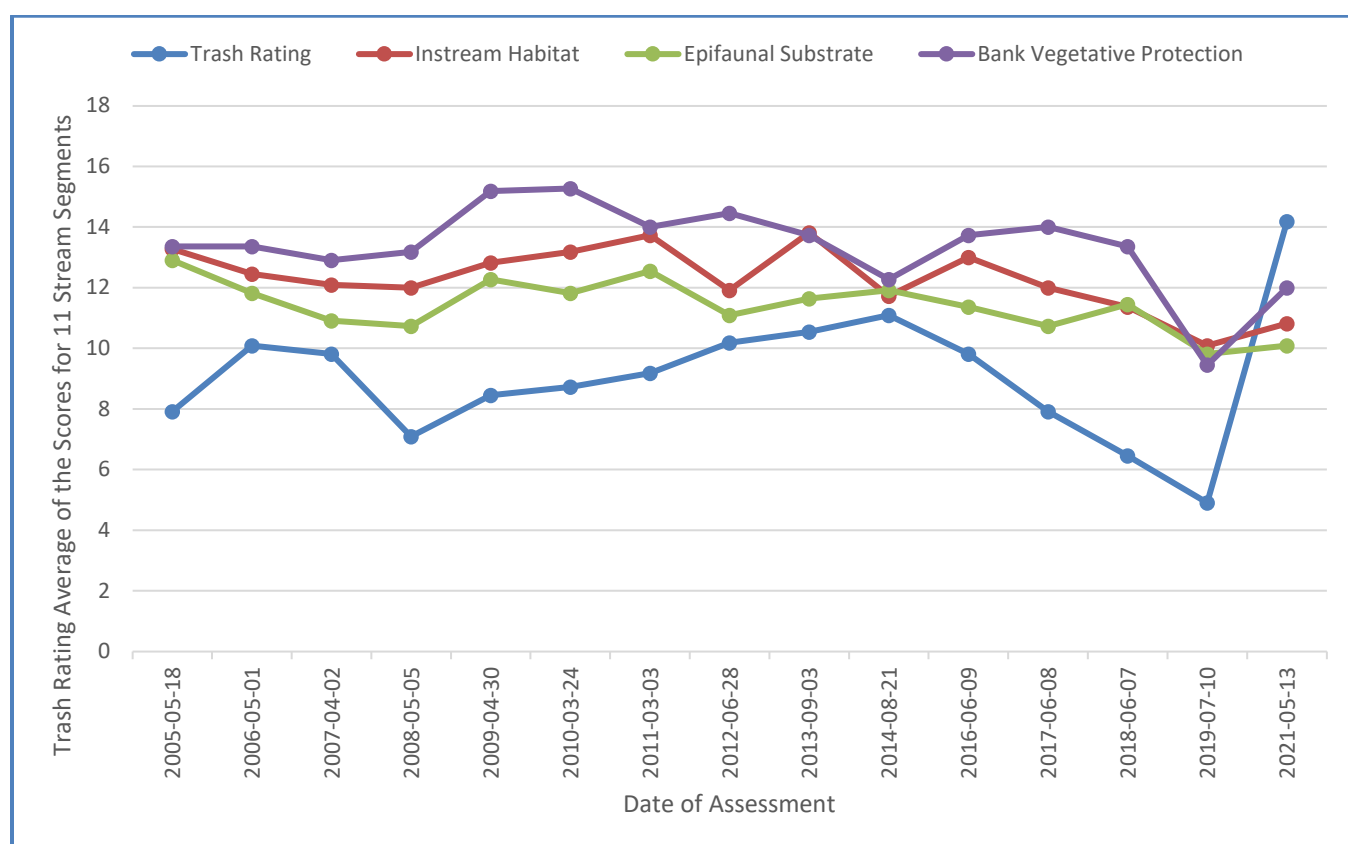
The results of the monitoring events are provided in Appendix C of this report. In addition to these monitoring events, these two locations were monitored as part of the Ammonia Screening program. The results of that monitoring are included in Appendix D of this report.

### 3.4.2 Biological Monitoring

DPW normally collects macroinvertebrate samples at two fixed locations for the long-term discharge characterization of the Moores Run during the spring. However, DPW suspended biological sampling in 2020 due to COVID safety protocols for staff from March 23, 2020 through April 27, 2020, which is the period during which samples are normally collected.

### 3.4.3 Habitat Assessment

DPW performed a habitat assessment survey of the upper Moores Run watershed on May 13, 2021. The results, along with fourteen other assessments (May 18, 2005 through July 10, 2019), are included in Appendix H of this report. The 2019 assessment had the lowest average scores for these parameters: instream habitat, epifaunal substrate, trash rating and bank vegetative protection. However, the average score for each of those parameters rebounded for the 2021 assessment. As shown in Figure 3-3, the 2021 assessment attained the highest average score for the trash rating.



**Figure 3-3: Moores Run Habitat Assessment Scores**

#### **3.4.4 Geomorphic Monitoring**

No additional activity was performed in FY 2021. During FY 2021, a consultant was contracted to train engineers and field scientist to perform geomorphic assessment training. This is a 3-course training (each course takes 2 weeks). The training is scheduled to be complete in FY 2022. The procurement process had been delayed due to limitations that resulted from COVID 19.

## 4 Expenditures and Proposed Budget

### 4.1 Expenditures and Budgets Related to MS4 Permit Compliance

DPW is predominantly responsible for compliance with the City's MS4 permit. Although the efforts of other City agency services are reported in this Annual Report for permit conditions, such as property maintenance, inspections and enforcement, the expenditure information shown in Table 4-1 is strictly limited to DPW services. Annual expenditures and budgets for FY 2021 and 2022 are summarized in Table 4-2. This information is also included in the geodatabase in Appendix C.

The expenditures and budgets shown in Tables 4-1 and 4-2 do not include debt service payments, to avoid confusion with expenditures made using debt service mechanisms like bonds. Debt service payments for the entire stormwater program (NPDES and non-NPDES projects) in FY 2021 were on the order of \$5,783,446.

**Table 4-1: Fiscal Analysis of FY 2020 Expenditures**

Description of Total Annual Cost	Actual
Source ID (Geodatabase Mgt.)	\$306,299
Stormwater management	\$571,401
Erosion and sediment	\$755,815
Illicit detection/elimination (IDDE)	\$1,630,265
Trash elimination	\$436,119
Property management	\$8,383
Inlet cleaning	\$5,092,014
Street sweeping	\$4,956,363
Public education	\$189,433
Watershed assessment	\$184,984
Watershed restoration (all projects)	\$12,822,822
Chemical monitoring	\$119,076
Biological monitoring	\$17,833
TMDL assessment	\$98,082
<b>Total NPDES program</b>	<b>\$27,188,889</b>
Other activities related to stormwater*	\$14,124,166
<b>Total Stormwater</b>	<b>\$41,313,055</b>
Funded by Stormwater Utility	\$25,382,629
Funded by W/WW Utility	\$1,912,822
Funded by Other Sources	\$14,007,459

**Note:** "Other activities" include the maintenance and remediation of stormwater infrastructure (collection system).

**Table 4-2: NPDES Program Expenditures and Budgets**

Fiscal Year	Operations	Capital	Total
<b>FY 2021 (Expenditure)</b>	\$15,497,999	\$11,690,890	\$27,188,889
<b>FY 2022 (Budget)</b>	\$17,455,199	\$4,598,346	\$22,053,545

## 4.2 Stormwater Fee and Stormwater Utility

The Stormwater Utility is an enterprise fund, established in 2013, to protect the use of revenue received from the stormwater restoration fee and other miscellaneous. The predominant source of revenue for the stormwater utility is the stormwater restoration fee. Other sources of revenue are as follows:

- Plans review fees for stormwater management and erosion and sediment control
- Penalty fines for stormwater management and erosion and sediment control
- Fees in lieu of on-site stormwater management (quantitative and qualitative control)

The stormwater restoration fee was established in the City Code in June 2013; the first bills were issued in September 2013. The fee structure and rate were established to remain constant for four years (FY 2014 through 2017) and remained the same through FY 2019. A 9% rate increase was approved by the Board of Estimates to begin in FY 2020 with additional 9% increase in FY 2021 and 2022.

The required Watershed Protection and Restoration Program report, as prescribed by MDE, is included in Appendix I of this report. Note that the stormwater fee expenditure for capital projects includes the payment of debt service mechanisms.

## 4.3 Grant Support by DPW

Since 2017, DPW has provided funding to the Chesapeake Bay Trust (CBT) Outreach & Restoration grant program to support Baltimore City community-based restoration projects and environmental education programs. The funding is from the stormwater utility fund.

In FY 2021, DPW provided \$194,000 in direct funding<sup>1</sup>, matched by \$102,232 from the Chesapeake Bay Trust, for the following projects (funding partners noted in BOLD):

- **Baltimore City Department of Planning: Increasing Tree Canopy at Racheal Wilson Memorial Park (\$21,472 DPW)** – funding to plant 32 trees that will be watered and cared for by 5 trainees in Bon Secours Community Works’ Clean and Green workforce program<sup>2</sup>.
- **Interfaith Partners for the Chesapeake (\$13,124 DPW)** – Green Team Leadership Development Program to increase the impact of the faith community on Chesapeake Bay Watershed improvements. This project will train 5 to 7 congregations with the goal of developing 3 to 5 successful green teams.
- **Civic Works Baltimore Center for Green Careers (\$30,000 DPW)** – support for a 12-month, comprehensive, certification-based occupational and essential skills training program in stormwater management for 12 underserved Baltimore City residents facing significant barriers to employment.
- **University of Maryland College Park (\$29,985 DPW)** – funding to conduct water quality testing for rain water harvesting at 20-25 urban farms and gardens in Baltimore City and provide multimedia educational workshops on rain water harvesting to 100 people.

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<sup>1</sup> DPW provided \$200,000 for Chesapeake Bay Trust’s Outreach & Restoration grant program. Three percent (3%) of the amount (\$6,000) was an administration fee for CBT to manage the grant program.

<sup>2</sup> The grantee subsequently declined the grant. The grant amount will be added to the FY 2022 funding.

- **Baltimore Green Space Springfield Woods (\$49,420 DPW)** – restoration of Springfield Woods, a 2.5-acre forest patch in North Central Baltimore that has become overgrown with invasive plant species. Funding will support the removal of 1.3 acres of invasive species and then evaluate where and how many new native trees and plants are needed.
- **Blue Water Baltimore Community Greening (\$49,999 DPW)** – funding to plant 150 new street trees in the Cherry Hill community in South Baltimore.
- **Blue Water Baltimore Lifting the Veil on Sewage (\$30,000 CBT)** – funding to plant 150 new street trees in the Cherry Hill community in South Baltimore.
- **Patterson Park Audubon Center (\$29,700 CBT)** – funding to support the Avian Ambassador program that works with the LatinX community in East Baltimore.
- **ReBUILD Metro, Inc. (\$36,775 CBT)** – East Preston Pocket Park.
- **Corner Team, Inc. (\$5,757 CBT)** – creation of a pollinator garden and environmental programs in the East Baltimore Midway neighborhood.

## 5 Enforcement Actions, Inspections and Public Education

### 5.1 Stormwater Management Program

Programmatic and implementation information for the period of this Annual Report (July 1, 2020 to June 30, 2021) is as follows:

- Number of Concept Plans received: 154
- Number of Site Development Plans received: 102
- Number of Final Plans received: 102
- Number of Redevelopment projects received: 35
- Numbers of Stormwater exemptions issued: 183

DPW received and approved as-built drawings for 21 stormwater management BMPs between July 1, 2020 and June 30, 2021. Final plan approval and surety release was delayed due to operation changes at the Court House due to COVID, impacting the recordation of declaration of covenants (easements and maintenance agreements). The required data for these BMPs are in Appendix C of this report. A summary of waivers and variances for this time period is provided in Table 5-1.

**Table 5-1: Summary of Waivers and Variances**

Description	Requested	Granted
Quantitative Control Waiver	15	15
Qualitative Control Waiver	30	30
Quantitative and Qualitative Waiver	6	6
Redevelopment Waiver	35	35
Phased Development Waiver	1	1
Administrative Waiver	3	3
Variance	3	3
<b>Total</b>	<b>138</b>	<b>138</b>

No changes to the City's ordinance or code related to the stormwater management program (Article 7, Division II) were pursued during this time.

During this reporting period, 462 inspections of ESD treatment practices and structural stormwater management facilities were conducted as part of preventive maintenance inspections. Of those inspections, no facilities required one or more follow-up inspections.

During FY 2020, DPW encountered two key issues: high staff turnover in the inspection area and COVID-19 outbreak. The inspection staff turnover included retirement, dismissal, and promotions of seasoned employees. COVID-19 resulted in hiring freezes. With the reduced inspection staff, DPW procured an On-Call consultant as staff augmentation to address the backlog of stormwater management facilities for the tri-annual maintenance inspections. Concurrent with the contracted effort, DPW filled all but two of their vacant inspector positions; one of those positions was filled in December 2021. In FY 2022, DPW plans to improve efficiency, consistency and accountability of inspection processes by developing

tablet applications for both ESC inspections and SWM BMP construction inspections. An application for the BMP maintenance inspections was developed in FY 2021, and used by the consultant assisting DPW.

## **5.2 Erosion and Sediment Control**

The City added a new customer service request for erosion and sediment control in 2014. Complaints are reported via phone, internet or mobile phone application and tracked through the 3-1-1 system. During FY 2021, a total of 32 service requests were received.

During this reporting period, 2,763 inspections were conducted for compliance with approved erosion and sediment control plans. A total of 52 violation notices were issued by the City, resulting in a sum of \$32,800 received as penalty fines (most fines are in appeal) and 22 stop work orders. The summary information regarding earth disturbances exceeding one acre is included in Appendix C of this report.

No changes to the City's ordinance or code related to the erosion and sediment control program (Article 7, Division III) were pursued during this time.

## **5.3 Illicit Discharge Detection and Elimination (IDDE)**

### **5.3.1 Routine Field Screening Locations**

WQMI conducts an MDE-approved alternative to IDDE: ammonia screening (AS) and stream impact sampling (SIS) to initiate pollution source tracking (PST) investigations. The AS and SIS sampling locations are included in the geo-reference data provided in Appendix C. The monitoring results from the surveys for the AS and SIS programs for FY 2021 are included in Appendix D of this report. These monitoring results, plus historic data, are also available on-line at the City's DPW website.

### **5.3.2 3-1-1 Customer Service Request for Polluted Water**

Complaints are reported via phone, internet or mobile phone application and tracked through the 3-1-1 system. Complaints that are designated with the type "WW Waterway Pollution Investigation" are initially assigned to the Water Quality Monitoring and Investigations (WQMI) Section of OCR. During FY 2021, a total of one hundred thirty (130) service requests were received. Ninety-four (94) complaints resulted in a pollution source tracking investigation. Twenty-three (25) of these investigations led to the discovery of an illicit discharge or activity that was removed or corrected:

- eight (8) sanitary sewage overflows entering the storm drain system;
- five (5) water distribution leaks causing discolored water or sediment to flow into a storm drain inlet;
- ten (10) sediment discharges into stream or storm drain inlets from improper sediment and erosion controls (joint efforts with SEC inspectors and MDE inspectors);
- one (1) paint chips/debris entering a storm drain inlet from pressure washing of an exterior brick wall; and
- one (1) polluted water discharge from private company that might have come from machine cleaning (joint investigation with MDE).

These illicit discharges are included among those further discussed in Section 5.3.3.

### 5.3.3 Pollution Source Tracking (PST)

WQMI initiates PST investigations based on the results of field screening, 3-1-1 customer service requests or requests from other programs (such as Blue Water Baltimore, MDE or EPA). During FY 2021, a total of 223 PST investigations were conducted: 199 PST investigations were initiated during FY 2021 and the other 24 were a continuation of PST investigations initiated prior to FY 2021. The PST investigations resulted in mobilizing to 1,048 locations in the open channel and storm drain system to conduct water quality chemical analyses, make observations, drop dye, etc. As a result of the PST investigations, the following 105 illicit discharges were identified and abated, with further details provided in Appendix J of this report:

- Forty-one (41) dry weather sanitary sewer overflows (SSOs) from the public sewer; eight (8) of these were designated as sanitary discharge of unknown origin (SDUOs) at some point during their investigations;
- fifteen (15) sewage inputs from private properties to the storm drain system; ten (10) of these were designated as sanitary discharge of unknown origin (SDUOs) at some point during their investigations;
- thirty-three (33) drinking water transmission losses; and
- sixteen (16) with other types of illicit discharge:
  - thirteen (13) sediment discharges into stream or storm drain inlets from improper sediment and erosion controls (joint efforts with SEC inspectors and MDE inspectors);
  - one (1) paint chips/debris entering a storm drain inlet from pressure washing of an exterior brick wall;
  - one (1) polluted water discharge from private company that might have come from machine cleaning (joint investigation with MDE); and
  - one (1) cement and sediment discharge from cement business (joint investigation with MDE).

Additionally, eight (8) illicit discharge sources were located and await further repairs:

- one (1) business has leak from sump getting into ground and alley not fully addressed by initial repairs;
- one (1) suspected illegal discharge to the sanitary system from a suspected sump pump discharge pipe from a basement window of a mid-sized apartment building;
- one (1) sanitary sewage discharge, which is designated as a sanitary discharge of unknown origin (SDUO); and
- five (5) drinking water transmission losses.

### 5.3.4 FOG Program

Since November 2013, DPW has conducted an inspection program to reduce fats, oils and grease (FOG) within the sanitary sewer system. The FOG Program has a two-pronged approach that manages FOG from both the private and public sides of the property line by:

- Requiring all food services establishments (FSE) that have the potential to discharge FOG-laden wastewater to have an adequate grease control device (GCD), and
- Reducing build-up of fats, oils and grease in the sewer lines using a commercial grade degreaser.

FOG education efforts are focused on both residents and owners of FSEs. Flyers are included with water bills. Outreach at festivals and community meetings have included distribution of education materials. All education materials are available on the City's DPW website.

The DPW - Pollution Control Section performs the inspections and educates FSEs about FOG best management practices. During FY 2021 there were 1,172 notices of violation (NOV) issued to the non-compliant FSEs. A breakdown by type of NOV is included in Appendix J of this Annual Report.

### **5.3.5 Exterior Lead Paint Removal Waste Control Program**

This program is administered by the DPW - Pollution Control Section. During FY 2021, there were 85 permitted sites. Inspectors made 85 site visits and issued 10 stop work notices requiring corrective action. There were no documented illegal discharges to the storm drain system.

## **5.4 NPDES Industrial Discharge Permits**

The City has fourteen (14) municipal facilities covered under the NPDES Industrial Discharge Permit. During FY 2015, NOIs for these facilities and updated stormwater pollution prevention plans (SWPPPs) were submitted to MDE. Permit conditions related to staff training and routine inspections are managed by the responsible agency.

## **5.5 Property Management and Maintenance**

### **5.5.1 Street Sweeping and Trash Reduction**

In FY 2020, the mechanical street sweepers operated by DPW- Bureau of Solid Waste removed 2,227 tons of debris while sweeping 13,878 miles of street surface. To encourage residents to remain home and practice social distancing related to COVID, street sweeping was suspended starting March 23, 2020. Street sweeping of gateways (main roadways) resumed in May 2020. Street sweeping tonnage and mileage for qualifying activities (minimum frequency of 2 passes / month) are listed in the MS4 geodatabase (Appendix C) and on Table M-2 (Appendix M) of this report. Street sweeping operations are anticipated to resume in FY 2022.

### **5.5.2 Inlet Cleaning**

In May 2016, DPW completed the installation of screens and inserts for 414 inlets as a pilot program to improve the efficiency of inlet cleaning and street sweeping by preventing trash and debris from entering the storm pipe system. Modified inlets were installed in five neighborhoods: McElderry Park, Oliver, Baltimore-Linwood, Franklin Square, and Carrollton Ridge. The modifications were only made to a portion of the 1,092 inlets located within the selected neighborhoods, based on inlet type and the proximity to routine street cleaning routes. Each of the inlets were inspected by DPW staff at least quarterly to gauge the need for cleaning. In FY 2020, a total of 19 tons of debris was collected from the inlets in the 5 targeted neighborhoods.

DPW- Utility Maintenance Division also initiated a targeted pro-active inlet cleaning program in 2017 for approximately 424 inlets, selected based on sump condition and proximity to the Mayor's Violence Reduction Initiative. Each of the inlets are cleaned quarterly, yielding a total of 217 tons of debris collection in FY 2021. Additionally, DPW- Utility Maintenance Division continued its daily reactive cleaning of the City's storm drain inlets, removing approximately 716 tons of debris from 1,422 inlets in the City's public storm drain system. Since Quarantine Road landfill prohibits the unloading of saturated debris, the weight measurement is based on the weight of the debris after it was spread and dried within a bermed area at the maintenance yard.

### **5.5.3 Integrated Pest Management**

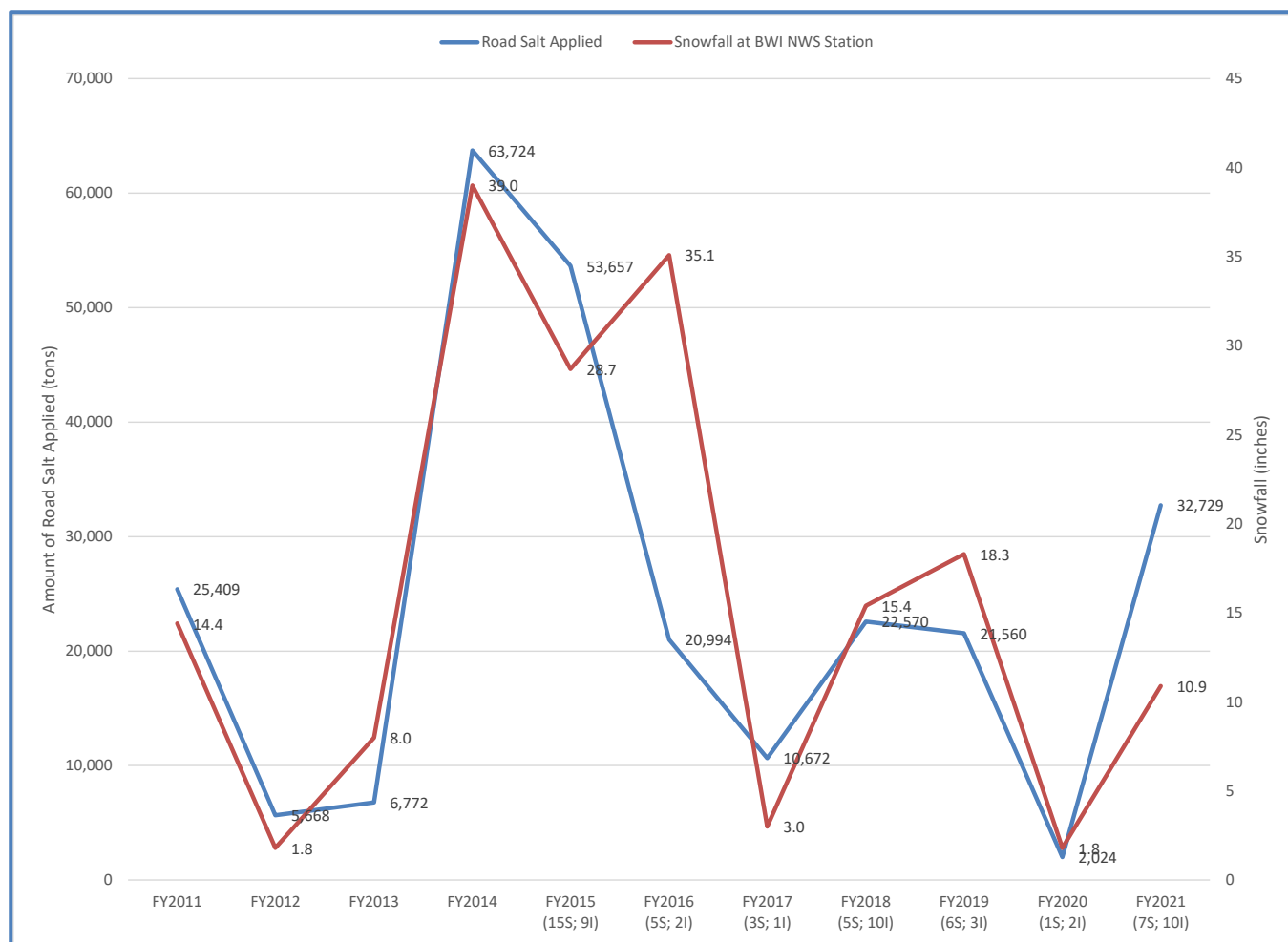
During FY 2021, the Baltimore City Department of Recreation and Parks (BCRP) Horticulture Division applied 2.5 gallons of concentrated glyphosate (Round Up equivalent), which contained 7.5 pounds of glyphosate acid, while the BCRP Forestry Division applied 15 gallons of 2% concentrated glyphosate (Rodeo, EPA Reg. # 62719-324), and 0.352 gallons of 25% concentrated triclopyr (Garlon 4 Ultra, EPA Reg. #62719-527), to various forested natural area project sites. Forestry is expanding its capacity to manage undeveloped park land using IPM. While its use of chemical, cultural, and mechanical controls is expected to increase in coming years, due to managing more of its property, the amount per acre should remain consistent. Additionally, BCRP currently has five (5) Public Agency Applicators who are certified by MDA (2 in Horticulture, 2 in Parks, and 1 in Forestry). All have attended MDA approved training to maintain their certifications. BCRP is committed to reducing the use of glyphosate and is carefully reviewing its use. For more information <https://bcrp.baltimorecity.gov/glyphosate>.

During FY 2021, the Department of Transportation (DOT) did not apply any herbicide because there was no one on staff with a license to apply herbicide. The Baltimore City Public Schools System, as well as the Department of General Services (which manages most of the City buildings), report that no herbicides were applied on properties during FY 2021. In total for these for departments, there were 53.556 pounds of glyphosate acid applied during FY 2021 compared to 54.0 pounds applied during FY 2020, which is a decrease of 0.85%.

### **5.5.4 Deicing Materials**

There were seven (7) storms and ten (10) dates of icy conditions for which DOT applied road salt (sodium chloride) during FY 2021. In addition, DOT applied a brine solution to roads just prior to those storms for six out of seven of the storms. In total, DOT applied 32,610 tons of road salt, and used an additional 119 tons of road salt to make the brine solution; for a grand total of 32,729 tons of road salt for FY 2021. This is a substantial increase of 1,517% from the 2,024 tons that were applied during FY 2020. The snowfall total recorded at BWI for FY 2021 was 10.9 inches- compared to 1.8 inches for FY 2020.

Figure 5-1 depicts the amount of road salt and the amount of snowfall recorded at the National Weather Service station at BWI Airport for each fiscal year, from FY 2011 through FY 2021. Note that 30 inches out of the 35.1 inches of snow fell in one event in FY 2016, specifically on January 21-22, 2016. That is why that pair of numbers (20,994 tons of road salt applied and 35.1 inches of snowfall) are not well related with the other pairs of numbers.



**Note:** For FY 2015 through FY 2021, S = number of snow events; I = number of Ice events

**Figure 5-1: Road Salt Applied by City of Baltimore and Snowfall at BWI by Fiscal Year**

## 5.6 Public Education and Outreach

### 5.6.1 Education and Outreach Activities

Due to COVID-19 there were few in-person outreach events in FY 2021, especially at the community level. Schools met virtually so no school presentations were given. For DPW generated events, in-person outreach required approval of the event by the City's COVID Oversight Committee to insure inclusion of COVID protocols. A summary of outreach events is provided in the following table:

**Table 5-3: Summary of Outreach Activities for FY 2019**

Description	Details
Public Presentations on the MS4 WIP	<ul style="list-style-type: none"> <li>• None</li> </ul>
School presentations providing information on trash reduction, recycling, rats, and storm drains, related to the health of the harbor	<ul style="list-style-type: none"> <li>• Hosted ECO- Warrior Competition</li> </ul>
Community events where DPW provided educational materials on environmental topics	<ul style="list-style-type: none"> <li>• Big Truck Day</li> <li>• Mayor’s Back to School Events</li> <li>• National Night Out</li> <li>• Community Relations Commission Meetings (Monthly)</li> <li>• Mayor’s Community Forums (Monthly)</li> <li>• Neighborhood Policing Policy (B-Weekly)</li> <li>• Mayor Community Walks (Weekly)</li> <li>• Community meetings and individuals upon request by phone, email, and social media</li> </ul>
Incentives related to trash reduction	<ul style="list-style-type: none"> <li>• Began implementing recommendations from the “Less Waste, Better Baltimore” Plan <a href="https://publicworks.baltimorecity.gov/Less-Waste-Better-Baltimore">https://publicworks.baltimorecity.gov/Less-Waste-Better-Baltimore</a> including composting workshops and free recycling bins.</li> <li>• Hazardous Waste Collection Events</li> <li>• Free Paper Shredding/Plastic bag takebacks</li> <li>• Trash and waste disposal service for the Trash Wheel</li> <li>• Waste disposal service for the Maryland Zoo</li> <li>• Utilized social media, community leaders, and ads to encourage trash reduction</li> <li>• Implemented the “Stop the Pollution, Be Part of the Solution” campaign. Partnered with Mass Transit Administration utilizing buses and bus shelters, Clear Channel to use Billboards, and placed campaign ads on Smart Cans.</li> <li>• Re-Launches a Commercial at the beginning of the NFL football season for the “Stop the Pollution, Be Part of the Solution” campaign.</li> </ul>

Baltimore's stormwater restoration fee has a credit program which includes a fee reduction for participation in registered stormwater participation events. These include community clean-ups, stream and harbor clean-ups, tree plantings, and installation of community BMPs. Outreach efforts and information promoting these types of trash reduction efforts and BMP installations are available on DPW's web site and provided at DPW attended events listed above.

### 5.6.2 GROW Center

In Fiscal Year 2018, DPW launched a program known as "GROW Center". GROW stands for Green Resources and Outreach for Watersheds and is envisioned to be events and places that link residents and community groups to community greening and resiliency resources and sources of free/low cost materials and technical expertise for stormwater management installation and vacant lot revitalization. The GROW Centers provide the following:

- Materials for free/purchase. Mulch, trees, chaff, native plants, and seeds have been available for free and/or for purchase to city residents and non-profits to use in micro-practice installation such as rain gardens, community gardens, tree pits, and residential gardens. Future plans are to have bricks, crushed concrete, wood products, salvaged building materials and other quality-controlled materials like bio-soils.
- Education and training. Experts provide advice and guidance on green infrastructure projects, including hands-on training sessions, workshops, and educational classes on design, the proper use of the materials, securing funds and resources, and maintenance.

DPW received a grant from the USDA Forest Service in FY 2017 to support the development of the GROW Center. Funding supports two efforts – 1) testing different delivery methods through a series of "pop-up" events and workshops, and 2) the development of an Alternatives Analysis and Business Plan.

Due to COVID-19, the GROW Center pop-ups and workshops were modified. In Fall 2020, two mini-GROW Center pop-ups were held, both in conjunction with DPW Shred events (free shredding services for residents). Only trees, mulch, and DPW information were provided. Even with the limited availability:

- 120 people attended
- 60 trees were given away along with 2 truckloads of mulch

In Spring 2021, four pop-ups were held, providing limited resources (trees, mulch, and DPW information). One of the pop-ups was in partnership with a DPW Shred event. The pop-ups were again supported by TreeBaltimore (trees) and Camp Small (mulch). Additionally, three virtual compost webinars were held, led by the Institute for Local Self Reliance. Summary results are:

- 150+ people attended from 34 different neighborhoods
- 120 trees were given away along with 4 truckloads of mulch
- 56 webinar attendees

In September 2020, DPW initiated a Feasibility Study and Business Plan for the GROW Center by the consulting firm Council Fire. In FY 2021 they completed the first two tasks: Background Research / Stakeholder Groups and Alternatives Analysis. Task 3: Business Plan will be completed in FY 2022.



**Figure 5-2: Photos of GROW Center Pop-up events from FY 2020.**

### 5.6.3 Baltimore's Cities Connecting Children to Nature (BCCCN) Initiative

In 2018, Baltimore was selected by the National League of Cities (NLC) and Children & Nature Network (C&NN) to join a cohort of 18 cities participating in the Cities Connecting Children to Nature (CCCN) initiative. The national initiative is focused on increasing equitable access to nature for all children, and aims to create systems-level change by activating City leadership and leveraging interagency and cross-sector partnerships. Baltimore CCCN (BCCCN) is led by a Core Team with representatives from the Baltimore Office of Sustainability (BOS), the Baltimore City Recreation & Parks Department (BCRP), Baltimore City Public Schools (BCPS), the National Aquarium, and the Y in Central Maryland.

Baltimore's CCCN initiative established two primary strategies to promote equitable nature access for children:

- Strategy 1: Strengthening partnerships between the health, early childhood, education, and environmental communities, including:
  - Establishing the Baltimore Children's Outdoor Bill of Rights.
  - Increasing trauma-informed care practices among the environmental community and increasing nature-based experiences among the childcare community (i.e. healthcare, early childhood, education, and out of school time).

- Creating a comprehensive plan to engage cross-sector partners to create and expand green schoolyards in Baltimore City Public Schools.
- Strategy 2: Green Career Exploration to connect youth to jobs and nature, by increasing green job opportunities and green career development for Baltimore youth through expanding the number of outdoor and nature-based partners for programs such as YouthWorks, as well as compiling and disseminating information on local green jobs training opportunities.

In 2021, BCCC held eight in-person and virtual workshops. The workshop series was designed for formal and informal educators, childcare providers, and health professionals, and included the following topics:

- Youth and mental health;
- Forest bathing;
- Working with students in outdoor spaces;
- Mindfulness for improved communities; and
- Trauma informed care and training

Given the number of stormwater BMPs that will be installed in the coming years, in particular at schools, DPW has joined the BCCC partner team to better coordinate on signage, curriculum integration, and other opportunities to help youth connect green stormwater infrastructure with watershed health.

#### **5.6.4 Effectiveness of Education Program for Trash and Litter**

Public education and outreach are essential strategies to achieve the long-term, sustained prevention of trash entering our streams and waterways. Whereas DPW is the responsible party for implementing and providing solid waste services, public education and outreach requires partnerships to be effective. Partnerships involve voluntarily actions and/or cooperation by State, federal, private, non-profits, and community groups and residents, and can be both structural and non-structural practices.

##### **5.6.4.1 B'More Beautiful**

BMORE Beautiful is a City-led peer to peer beautification program that launched in April 2017. The goal of the program is to change behaviors and attitudes towards the beautification of the City as well as encourage residents, businesses, and organizations to become directly involved in activities and projects that will keep their neighborhoods clean. To meet this goal, the City works closely with neighborhoods on beautification projects and cleanliness challenges, as well as provides educational literature, outreach materials and other resources that residents can use to Keep BMORE Beautiful.

After completing a 2-year pilot, BMORE Beautiful expanded citywide. While the interest and decision to expand citywide is ambitious, staffing limitations remain a concern. In order to join BMORE Beautiful, interested groups must meet at least 3 of the following requirements

- Identified a primary coordinator (block captain)
- Neighborhood/interested party recommended by participating captain or partnering organization
- At least five dedicated volunteers
- Completed at least 1 successful cleanup/beautification project

BMORE Beautiful is currently active in 59 neighborhoods:

- |                               |                       |                     |
|-------------------------------|-----------------------|---------------------|
| 1. 4x4                        | 21. Franklintown Road | 42. Park Heights    |
| 2. Allendale                  | 22. Franklin Square   | 43. Parklane        |
| 3. Belair Edison              | 23. Greektown         | 44. Patterson Park  |
| 4. Bocek                      | 24. Greenmount West   | 45. Pen Lucy        |
| 5. Boyd Booth                 | 25. Hampden           | 46. Penn-North      |
| 6. Broadway East              | 26. Harlem Park       | 47. Pigtown         |
| 7. Brooklyn                   | 27. Highlandtown      | 48. Remington       |
| 8. Canton                     | 28. Hopkins Bayview   | 49. Reservoir Hill  |
| 9. CARE                       | 29. Howard Park       | 50. Rosemont        |
| 10. Carrollton Ridge          | 30. Irvington         | 51. Sandtown        |
| 11. Cedonia                   | 31. Johnston Square   | Winchester          |
| 12. Center City<br>(Downtown) | 32. Langston Hughes   | 52. South Baltimore |
| 13. Cherry Hill               | 33. Matthew Henson    | 53. Upton           |
| 14. CHM                       | 34. McElderry Park    | 54. Waverly         |
| 15. Curtis Bay                | 35. Milton-Montford   | 55. West Arlington  |
| 16. Darley Park               | 36. Mondawmin         | 56. Westgate        |
| 17. Druid Heights             | 37. Morrell Park      | 57. Westport        |
| 18. Edmondson Village         | 38. Mosher            | 58. Violetville     |
| 19. Evergreen Lawn            | 39. Mt. Clare         | 59. Yale Heights    |
| 20. Forest Park               | 40. O'Donnell Heights |                     |
|                               | 41. Oliver            |                     |

In each neighborhood, a volunteer resident block captain is responsible for:

RECRUITING neighbors to sign the pledge and participate in BMORE Beautiful;

ORGANIZING ongoing beautification and cleaning activities;

LEADING others to change their negative behaviors regarding neighborhood cleanliness; and

EDUCATING their neighbors on how to comply with specific City Code requirements and how they can keep their neighborhood beautiful through simple, easy-to-follow behaviors.

BMORE Beautiful continues to support neighborhood beautification efforts through three grant programs:

- **Love Your Block Grant:** The Love Your Block Grant was designed to support the City's goals of "revitalizing and renewing" neighborhoods. Eligible groups may receive funding (\$500- \$1,500) for the purpose of enhancing neighborhood appearance.
- **Say Yes! (Youth Environmental Stewards) Grant:** The Say YES! Program was designed as a community engagement opportunity for youth to earn while they learn. Organizations may apply for a grant to engage within their community on a variety of beautification projects.

Youth are selected and supervised by community leaders. The Say YES! Program has a 10-week Spring and Fall session and a 6-week summer session. Youth are responsible for completely weekly perception surveys that are submitted at the end of the session.

- **Care-A-Lot Grant:** This grant is an opportunity for organizations to provide maintenance services for up to 25 vacant lots during the “Grow Season”. Maintenance services include mowing and removing trash and litter. This program is targeted to support the maintenance of City-owned vacant lots. In FY 2019, BMORE Beautiful introduced an equipment funding opportunity to help support community maintaining and transforming Care-A-Lot locations.

COVID-19 continued to impact BMORE Beautiful programs and activities. DPW staffing and service interruptions, a decrease in volunteer sizes, requests to extend project timelines, and cancellation of captain meetings reduced efforts, especially since a large portion of the work takes place during the Spring and Summer. While there was a flurry of activities at the beginning of the Spring, the spread of the Delta variant coupled with vaccine hesitancy impacted activities.

In FY 2021, BMORE Beautiful achieved the following:

- 3 Activate Your Space projects
- 20 BMORE Beautiful Community Clean-ups
- 4 urban garden workshops
- 1,113 Care-A-Lot vacant lots
- 175 Say YES! Participants

#### ***5.6.4.2 Mayor’s Fall and Spring Clean-ups / Community Pitch-ins***

The Mayor’s Spring and Fall Clean-ups are opportunities for residents to organize community clean-ups and beautification projects. The purpose of the clean-ups is to collect litter and trash. DPW provides bags to residents, coordinates dumpsters, and picks up the trash from each location. However, due to COVID-19, only the Spring 2021 Clean-up was held. The focus was for residents to clean-up the area around their homes. Two hundred and fifty-nine people registered. No bags or dumpsters were provided. Residents were asked to dispose of the trash in their weekly collection.

DPW also coordinates the Community Pitch-in program, which provides up to 4 dumpsters/year to community groups. As with the Mayor’s Clean-ups, the Pitch-in program was suspended until Spring 2021. Nine hundred and forty-four (949) requests were made, with 1,320 tons of debris collected.

Finally, residents registered through 311 Volunteer Clean-up Events. This allowed DPW to coordinate trash pick-up locations. During FY 2021, 91 clean-up events were registered with an estimated 1,347 volunteers (volunteer estimates are submitted as part of the service request – due to the nature of the service request, the actual number of volunteers or bags of trash collected is not collected). Stormwater participation event certificates and application information is sent to organizers that provided email addresses.

## 6 Water Quality Improvements

### 6.1 MS4 Restoration and TMDL Watershed Implementation Plan (WIP)

The City submitted its WIP to MDE on December 22, 2014. A revised calculation of the baseline impervious area, with supporting GIS files and responses to the specific MDE comments, was submitted to MDE on June 30, 2015. MDE approved the baseline impervious area and 20% restoration goal of 4,291 acres on July 28, 2015. The WIP was revised based on public and MDE comments and submitted to MDE on August 24, 2015.

### 6.2 Milestone Schedule

The WIP included programmatic and project milestones as part of an accountability framework for restoring the Chesapeake Bay; however, the original proposed milestone schedule only extended to FY 2018, which was the last anticipated fiscal year to occur before the expiration of the current permit.

### 6.3 Implementation of Projects, Programs, and Partnerships

#### 6.3.1 Project Implementation and Tracking

The progress status of the projects listed in the WIP is provided in Appendix N of this Annual Report, specifically Table L-1. The original plan scope, cost and schedule are shown in addition to the current projections. The Chinguapin Run stream restoration project completed construction in FY 2021, coinciding with sanitary system improvements. The Powder Mill Run stream restoration continued construction in FY 2021. The current projections are based on the project progress as of June 30, 2020. Each of the current proposed projects, with specific locations, is included in the restoration BMPs tables of the georeference database in Appendix C.

#### 6.3.2 Program Implementation and Tracking

The progress status of the programs listed in the WIP is provided in Appendix M of this Annual Report, specifically Table L-2. Current program implementation and corresponding georeference database records are reported, based on frequency and geographic distribution of the operation (tonnage by watershed) in the georeference database (Appendix C of this report).

IDDE efforts are also listed in Table L-2. Supporting calculations for each type of IDDE effort are included in Appendix K of this report.

#### 6.3.3 Partnership Implementation and Tracking

The progress status of the partnerships listed in the WIP is provided in Appendix N of this Annual Report, specifically Table L-3. All restoration BMPs with approved plans and status of “completed” in the georeference database (Appendix C), implemented to meet development requirements, were simply listed in the Table L-3 under development, using conservative pollutant removal efficiencies for pond and bioretention retrofits in type D soils. Specific projects completed by volunteer efforts are listed in Table L-3, in addition to the afforestation efforts by Tree Baltimore. The afforestation efforts are listed by watershed and assume that 80% of the trees were planted in pervious areas (i.e. on a grass field or in an existing tree pit).

## 6.4 Impervious Area Restoration

The progress status of implementation of proposed projects, programs, and partnerships of the WIP is provided in Appendix L. The impervious surface restoration is based on MDE's 2014 Accounting Guidance. A summary of the impervious area restoration efforts (Appendix M) for the last three fiscal years since the permit expiration is provided in Table 6-1. The table shows that the City exceeded the impervious area restoration goal (4,291 acres) in FY 2020 and 2021, but did not meet it for FY 2022 due to the decline of street sweeping operations. However, the average impervious area restoration by programs for the last three fiscal years would be 3,878 acres, providing a total of 5,294 acres when added to the projects and partnerships in FY 2021. As noted in Section 5.5.1, street sweeping operations were reduced due to COVID and will resume in FY 2022.

**Table 6-1: Summary of Impervious Surface Restoration (ISR) Efforts**

Description	ISR Completed in FY 2019 (ac)	ISR Completed in FY 2020 (ac)	ISR Completed in FY 2021 (ac)
Projects	101	102	613
Programs	6,161	3,914	1,560
Partnerships	659	733	803
<b>Total</b>	<b>6,921</b>	<b>4,749</b>	<b>2,976</b>

## 6.5 Bay TMDL Compliance

In FY 2018, MDE transitioned from the Maryland Assessment Scenario Tool (MAST) to the Chesapeake Bay Assessment Scenario Tool (CAST). As an alternative to CAST, an estimation of the pollutant removals (% reduction) using the MS4 Accounting Guidelines is provided in Appendix M, specifically Table M-2. The model was modified to calculate the baseline as the controlled impervious area (i.e. including controls in place by 2010). Street sweeping was not included in the current efforts, since the resulting mileage was less than 2009 values. The evaluation (Table M-2) showed that the City has met the Bay TMDL goal for sediment.

## 6.6 Local TMDL Compliance

### 6.6.1 Nutrients and Sediment

An analysis of the nutrient and sediment removals, based on the current implementation status, using the current MS4 Accounting Guidelines is provided in Appendix N. The analysis used a percent reduction methodology with both loads and load reductions calculated based on the 2014 MS4 Accounting Guidelines. The model was modified to calculate the baseline as the controlled impervious area (i.e. including controls in place by 2005).

The estimated baseline load for nitrogen and phosphorus were significantly higher using the loading factors from the 2014 MS4 Accounting Guidelines (Table N-1 of this report), as compared to the baseline load listed in the approved TMDL documents. None of the local nutrient TMDLs have been met with the current efforts. However, significant decreases in total phosphorus have been observed in the stream impact sampling

Contrary to the local nutrient TMDLs, the estimated baseline load for sediment was significantly lower using the loading factors for from MS4 Accounting Guidelines (Table N-1) as compared to the baseline load listed in the approved TMDL documents, which were derived from biological assessments, not direct measurements of sediment. The sediment TMDL for Back River (issued in 2018) has been added. None of the local sediment TMDLs have been met with the current efforts.

The models for the local TMDLs will be adjusted with the approval of the updated MS4 Accounting Guidance.

### **6.6.2 Bacteria**

The City is under a consent decree in Civil Action No. JFM-02-1524 for unpermitted discharges from the wastewater collection system. A modification to the consent decree was approved on October 6, 2017 in the United States District Court for the District of Maryland by the U.S. Department of Justice, the U.S. Environmental Protection Agency, and the Maryland Department of the Environment. The City submitted a modified implementation plan to reflect the schedule approved as part of the modified Consent Decree. In FY 2021, the City completed the majority of projects under Phase I of the Modified Consent Decree (including the Back River Head Works project) and initiated post-construction flow monitoring analysis, which will identify projects for Phase II. Further information on these efforts is provided in quarterly Consent Decree reports, posted on the City's website.

The results of the City's routine stream sampling for bacteria are provided in Section 3.1.2 of this Annual Report. All of the stations do not meet the criteria for recreation.

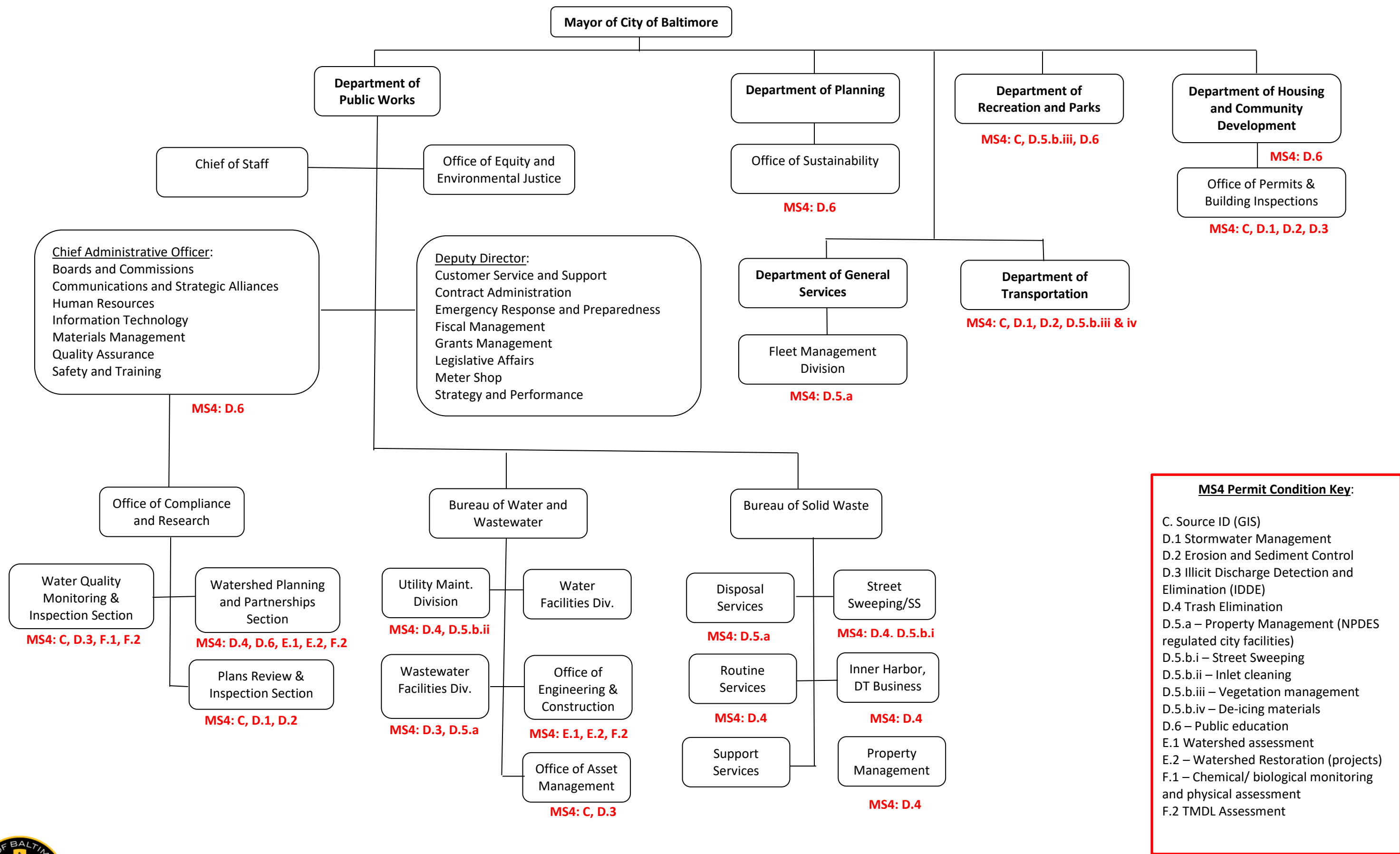
### **6.6.3 Trash**

On January 5, 2015, EPA approved the report entitled *"Total Maximum Daily Loads (TMDL) of Trash and Debris for the Middle Branch and Northwest Branch Portions of the Patapsco River Mesohaline Tidal Chesapeake Bay Segment, Baltimore City and County, Maryland"*. In compliance with the MS4 permit, the City developed the "Baltimore City Trash TMDL Implementation Plan", submitted to MDE on January 4, 2016, to present strategies to meet the TMDL waste load allocations. No milestones were proposed for FY 2021; progress from the FY 2020 MS4 Annual Report remains the same.

### **6.6.4 PCB**

The City submitted a revised PCB TMDL implementation plan to MDE in September 2018. The plan included details of a collaborative study with USGS and UMBC in the Back River watershed, which was completed by FY 2020, but has still not been published yet by USGS. The City will share the results with MDE, Baltimore County and Anne Arundel County, once available, to discuss appropriate future monitoring.

## **Appendix A: Organization Chart**



**MS4 Permit Condition Key:**

C. Source ID (GIS)  
D.1 Stormwater Management  
D.2 Erosion and Sediment Control  
D.3 Illicit Discharge Detection and Elimination (IDDE)  
D.4 Trash Elimination  
D.5.a – Property Management (NPDES regulated city facilities)  
D.5.b.i – Street Sweeping  
D.5.b.ii – Inlet cleaning  
D.5.b.iii – Vegetation management  
D.5.b.iv – De-icing materials  
D.6 – Public education  
E.1 Watershed assessment  
E.2 – Watershed Restoration (projects)  
F.1 – Chemical/ biological monitoring and physical assessment  
F.2 TMDL Assessment



# Department of Public Works Organization Chart as of June 30, 2021



**Jason Mitchell,**  
Director (Acting)

**Matt Garbark,**  
Deputy Director

Customer Service and Support, LaToya Curtis (Acting)  
Contract Administration, Tonorah Houston-Burgee  
Emergency Response & Preparedness, Anthony Galloway  
Fiscal Management, Troy Brogden  
Grants Management, Anne Haskins-Brookover  
Legislative Affairs, Marcia Collins  
Meter Shop, Steve Stricklin (Acting)  
Strategy and Performance, Krystina Bryant

**Julie Day,**  
Chief Administrative Officer

Boards and Commissions, Deena Joyce  
Communications and Strategic Alliance, Yolanda Winkler  
Compliance and Research, Kimberly Grove, P.E.  
Human Resources, Tamiko Bryant  
Information Technology, Yugandhar Narala  
Materials Management, Ingrid Rivera  
Quality Assurance, Terri Ayers  
Safety and Training, Barbara Rodgers

**Marco Merrick,**  
Chief, Office of Equity and Environmental Justice

**Vacant,**  
Chief of Staff

**Yvonne Moore-Jackson,**  
Head (Acting) of Bureau of Solid Waste

Disposal Services, James Rohrbach  
Inner Harbor, Downtown Business District, Michael Lucas  
Property Management, Toya Sykes-Coates  
Routine Services, Jerome Ragsdale  
Street Sweeping/ Special Services, Yolanda Cason  
Support Services, Kristyn Oldendorff

**Yosef Kebede,**  
Head (Acting) of Bureau of Water and Wastewater

Asset Management, Harpreet Singh (Acting)  
Chief Technical Officer, Mohammed Rahman  
Engineering and Construction, Azzam Ahmad (Acting)  
Utility Maintenance, James Patrick  
Water Facilities Services, Deborah Pitts  
Wastewater Facilities, Mike Gallagher

**Appendix B: Summary Table of Null Values in the MS4 Geodatabase**

### Summary of Null Values Used on MDE Geodatabase

Table	Field	Value	Comments	Schema
Biological Monitoring	EVENT_TIME	12:00	Not recorded in field report.	
	FIBI	-999	FIBI is not done; it is not required for this permit.	X
	EMBEDDEDNESS	-999	Not recorded in field report.	
Chemical Monitoring	WATER_TEMP	-999	Not recorded in field report.	
	pH	-999	Not recorded in field report.	
	BOD_dt	-999	Not recorded in field report.	
	BOD_EMCO	-999	Not recorded in field report.	
	BOD EMC_dt	-999	Not recorded in field report.	
	TSS_dt	-999	Not recorded in field report.	
	TSS_EMCO	-999	Not recorded in field report.	
	TSS EMC_dt	-999	Not recorded in field report.	
BMPPPOI	IMP_ACRES	-999	Data not shown on as-built plans	
	APPR_DATE	1/1/1900	Data not shown on as-built plans	
	BUILT_DATE	1/1/1900	Data not shown on as-built plans	X
RestBMP	IMP_ACRES	-999	For projects not constructed	
	BUILT_DATE	1/1/1900	For projects not constructed	
	PE_ADR	-999	For projects not constructed	
	PROJECTED_IMPL_YR	9999	For projects not constructed	
	IMPL_COST	-999	Missing data or data was not recorded	
BMP	BMP_DRAIN_AREA	-999	Data not shown on as-built plans	
	BUILT_DATE	1/1/1900	Data not shown on as-built plans	
AltBMPPoly	IMPL_COST	-999	Total program costs are shown Section 4, but not broken down by frequency / watersheds.	
Outfall	DIM_OUTFALL	-999	Missing data	
	HT_OUTFALL	-999	Missing data	
	WT_OUTFALL	-999	Missing data	
BMP_Inspections	REINSP_DATE	1/1/1900	For facilities which have been removed	X
IDDE	LAST_RAIN	1/1/1900	Data was not recorded at sampling time	
	SCREEN_TIME	1200	Data was not recorded at sampling time	
	WATER_TEMP	-999	Data was not recorded at sampling time	
	AIR_TEMP	-999	Data was not recorded at sampling time	
	ALGAEGROW	N	Data was not recorded at sampling time	
	ODOR	SE	Data was not recorded at sampling time	
	DEPOSITS	N	Data was not recorded at sampling time	
	VEG_COND	N	Data was not recorded at sampling time	
	STRUCT_COND	N	Data was not recorded at sampling time	
	EROSION	N	Data was not recorded at sampling time	
NarrativeFile	MDE_STATION_ID	-999	Document is not associated with a monitoring site.	X

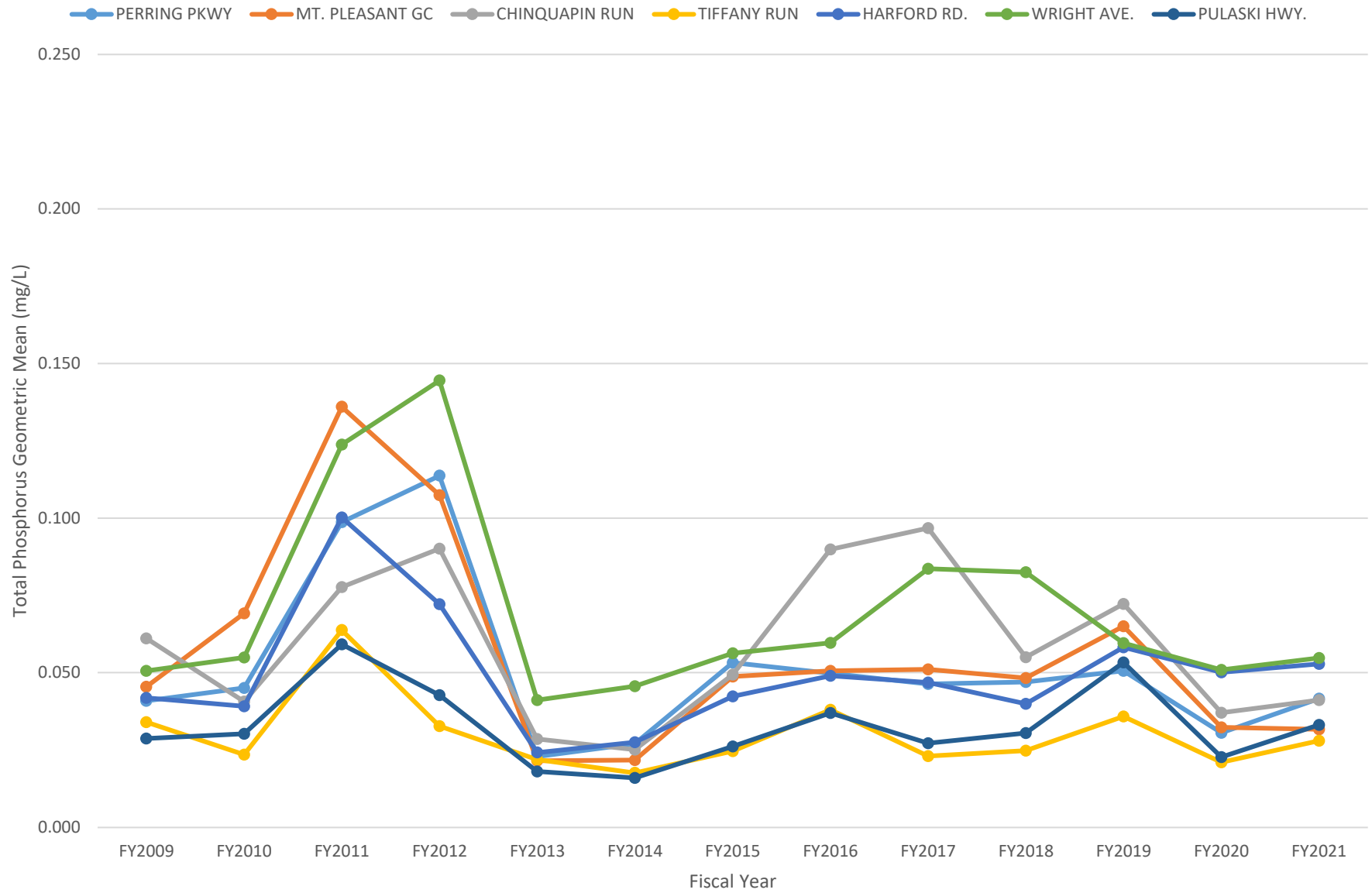
**Note:** Schema indicates MDE plans to change the field to optional in next generation of database.

**Appendix C: Source Information using MS4 Geodatabase**  
***(electronic files only)***

**Appendix D: Ammonia Screening and Stream Impact Sampling Results**  
*(electronic files only)*

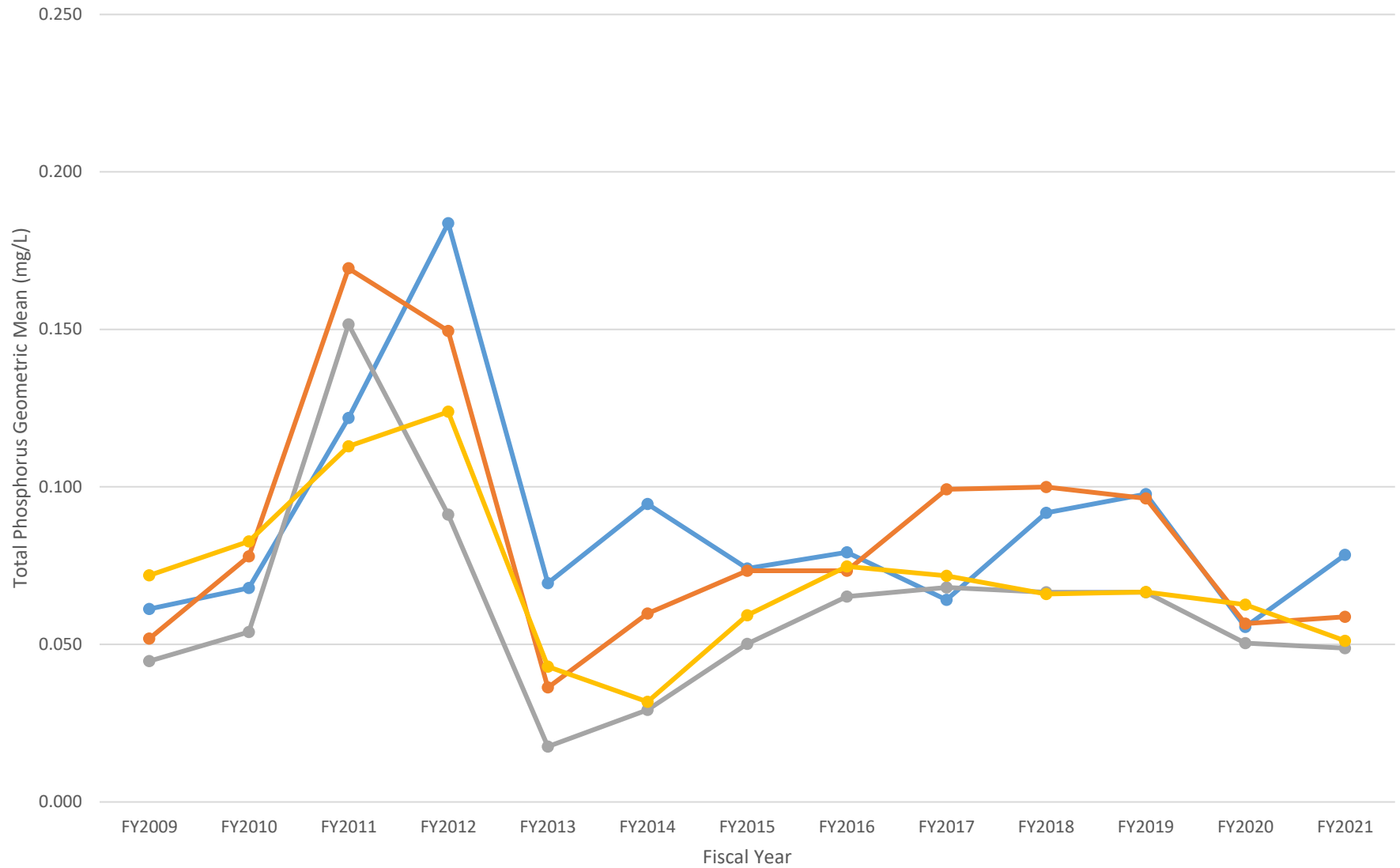
## **Appendix E: Total Phosphorus Monitoring Histograms**

# Total Phosphorus Geometric Means by Fiscal Year Back River Watershed, Herring Run Subwatershed



# Total Phosphorus Geometric Means by Fiscal Year Back River Watershed, Moores Run Subwatershed

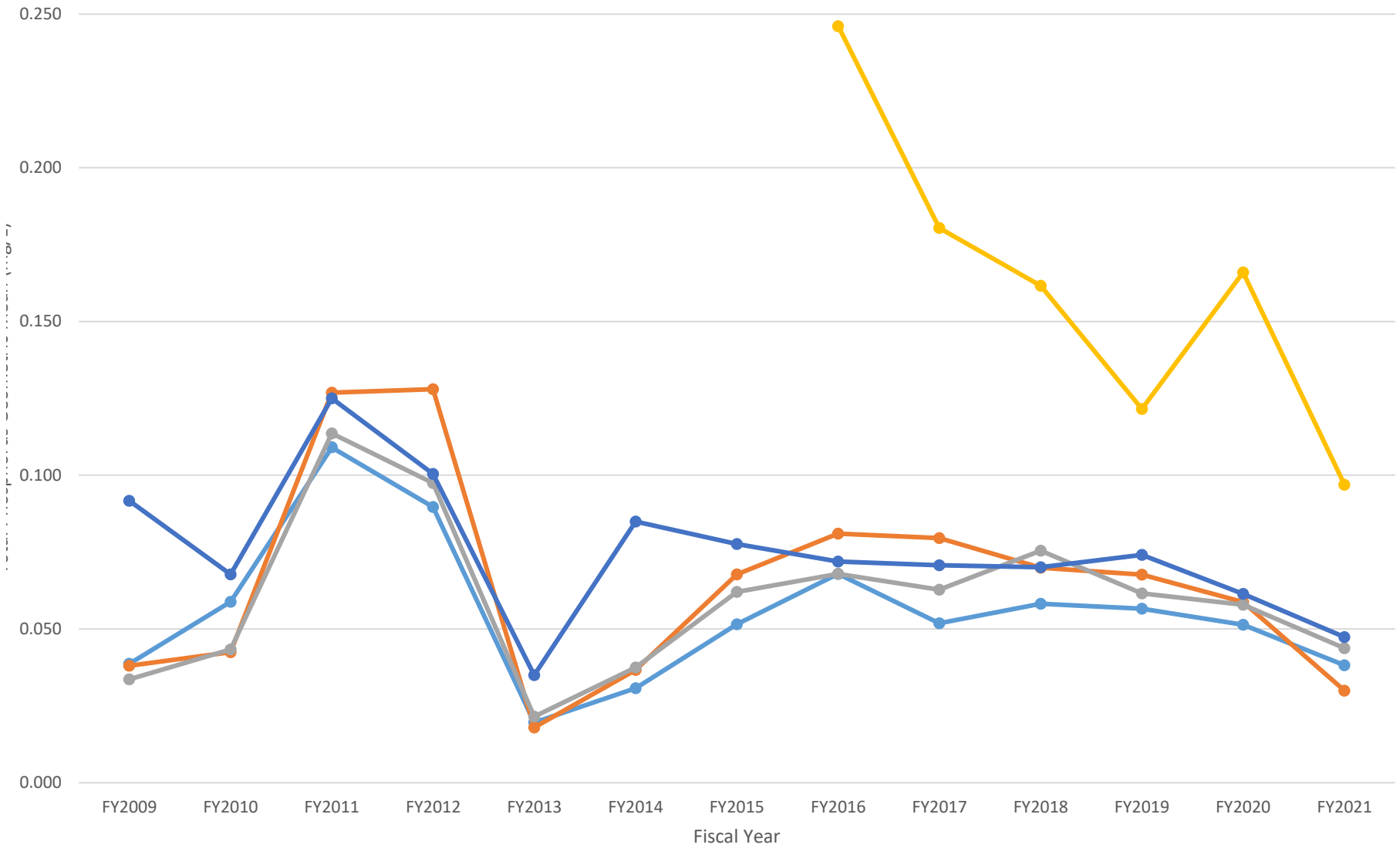
MARY AVE. HAMILTON AVE. RADECKE AVE. BIDDLE ST. & 62ND ST.



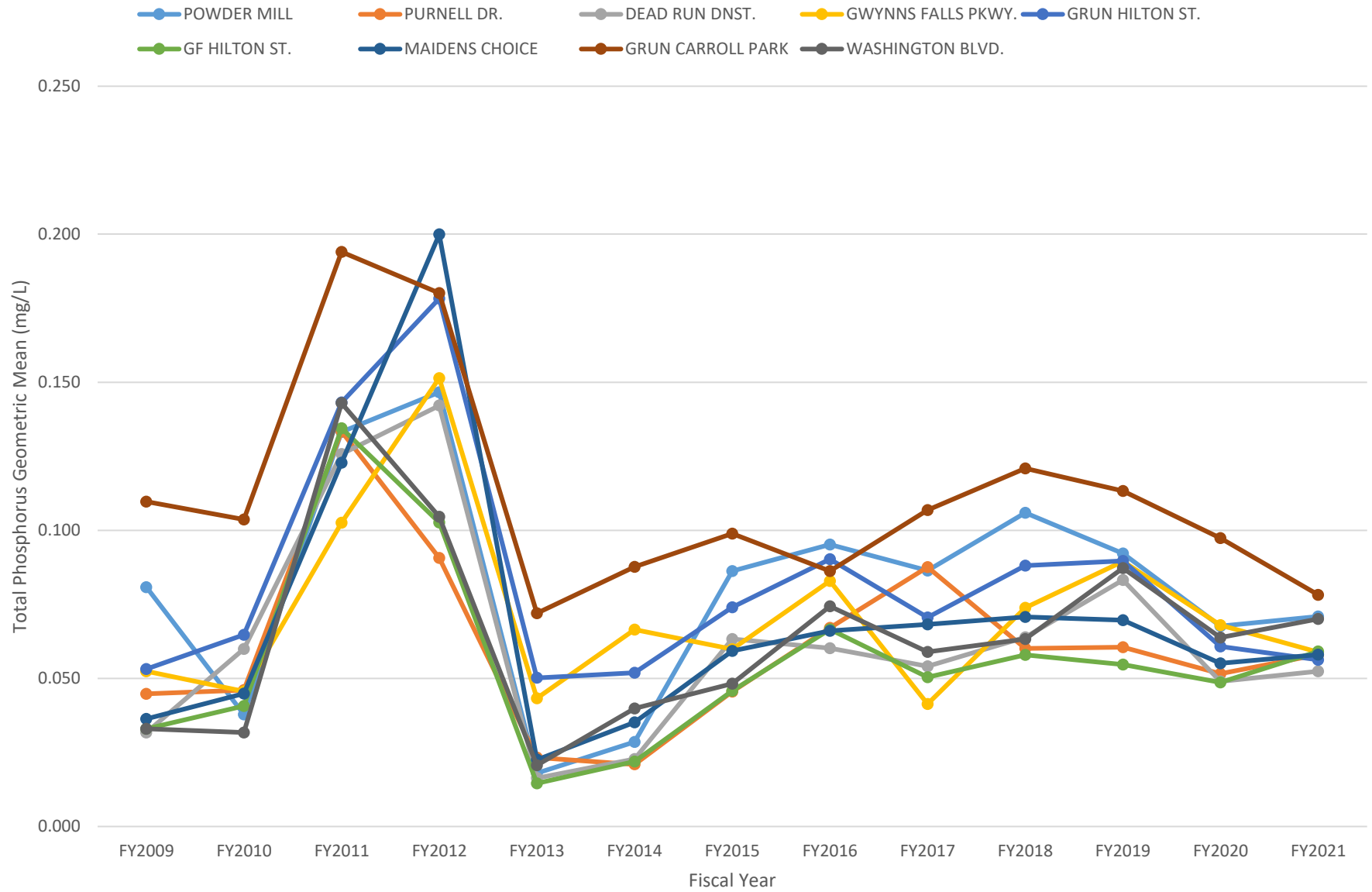
# Total Phosphorus Geometric Means by Fiscal Year

## Jones Falls Watershed

SMITH AVE. WESTERN RUN STONY RUN JF 11.5 LOMBARD ST.



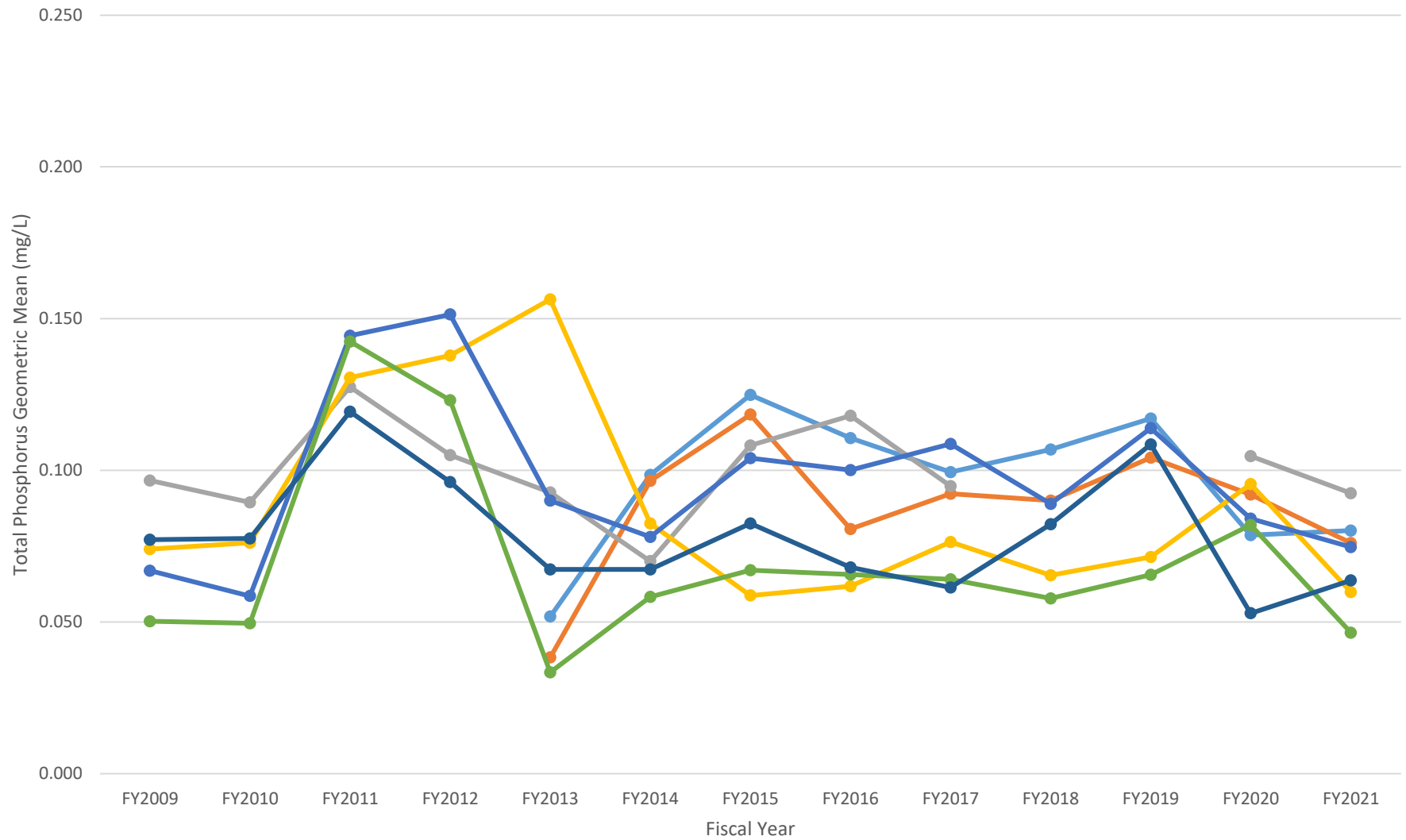
# Total Phosphorus Geometric Means by Fiscal Year Gwynns Falls Watershed



# Total Phosphorus Geometric Means by Fiscal Year

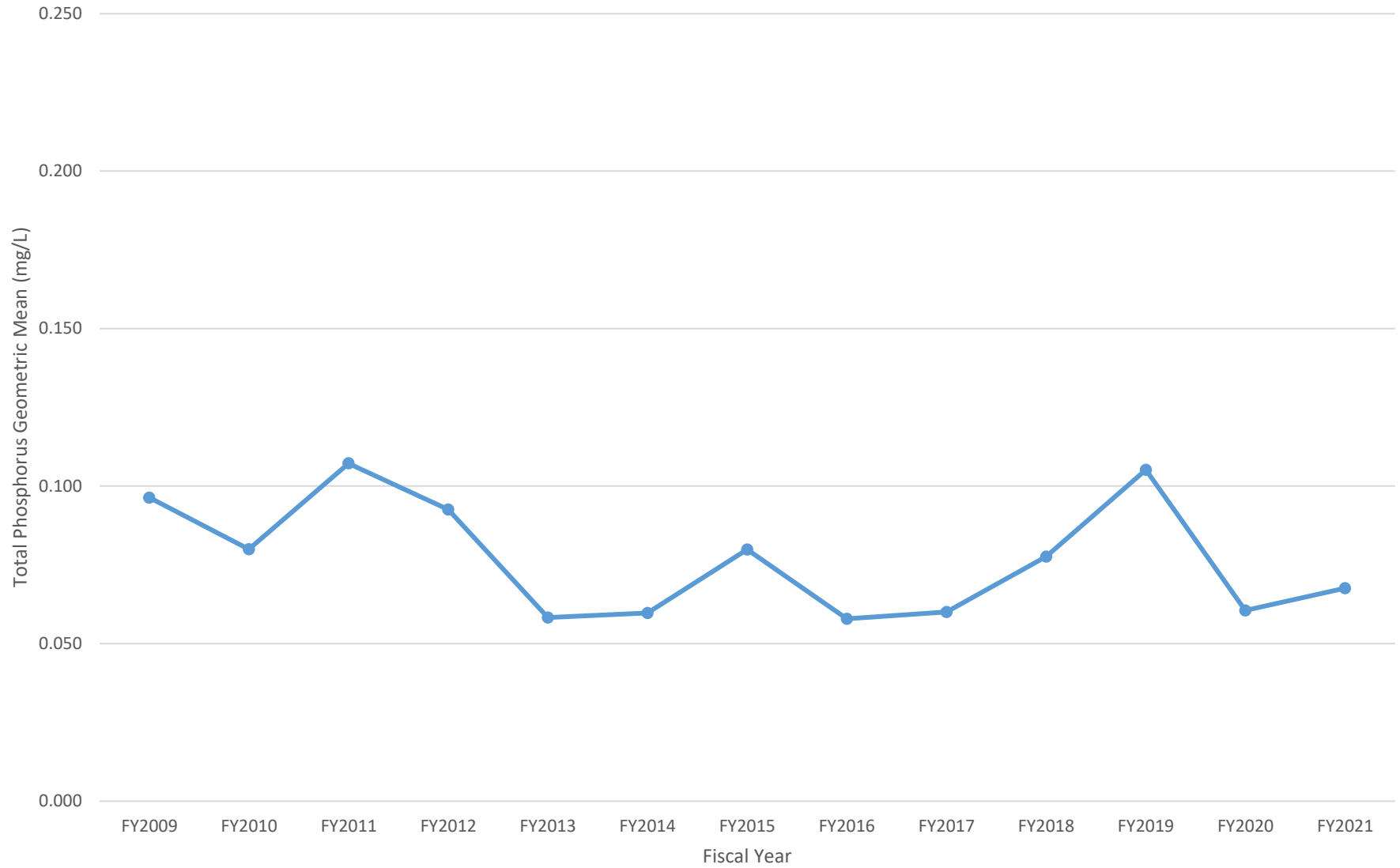
## Direct Harbor Watershed

LINWOOD & ELLIOTT LAKEWOOD & HUDSON CENTRAL & LANCASTER LIGHT ST.  
WARNER & ALLUVION WATERVIEW AVE. JANEY RUN

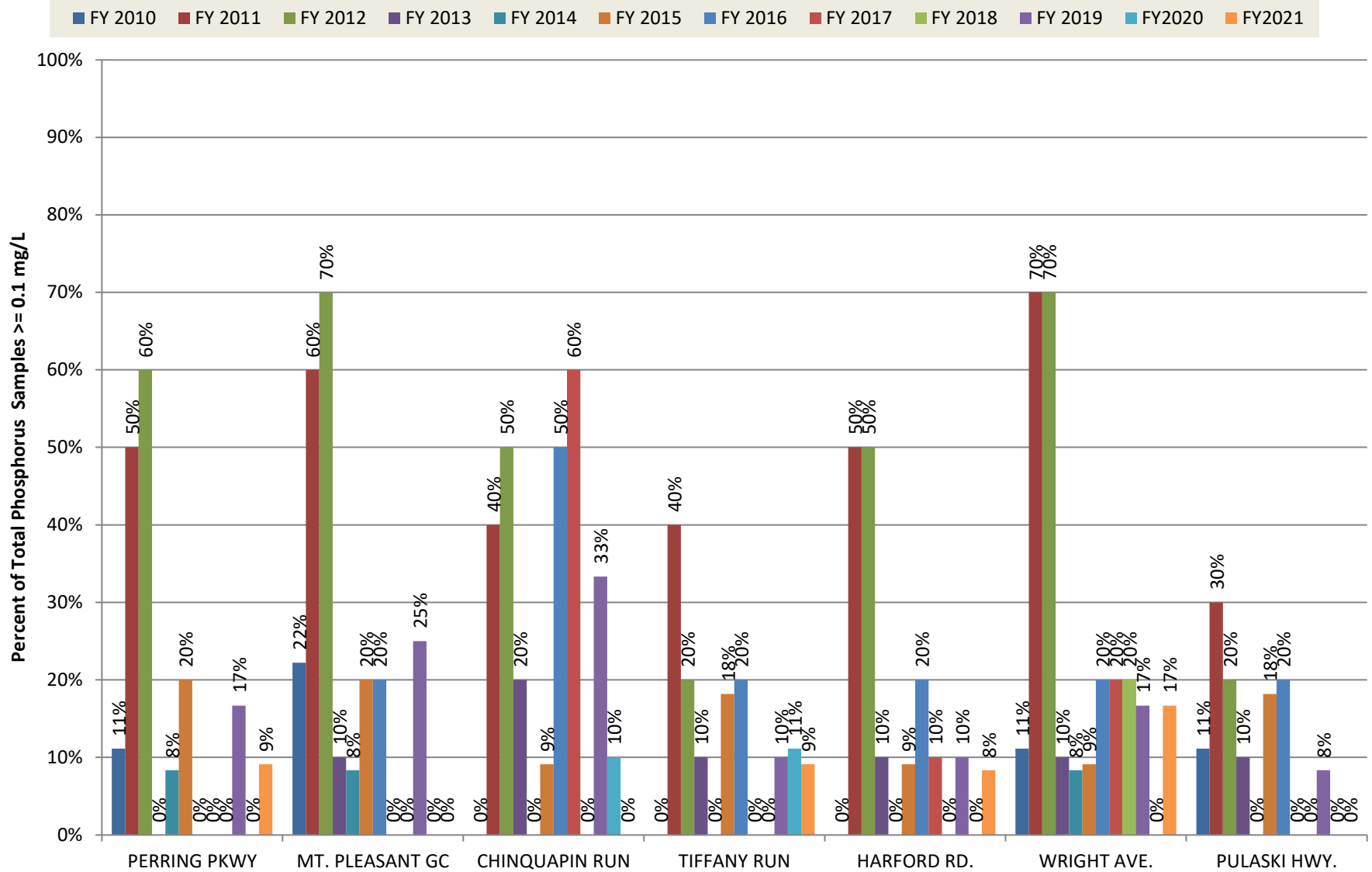


# Total Phosphorus Geometric Means by Fiscal Year Patapsco River Watershed

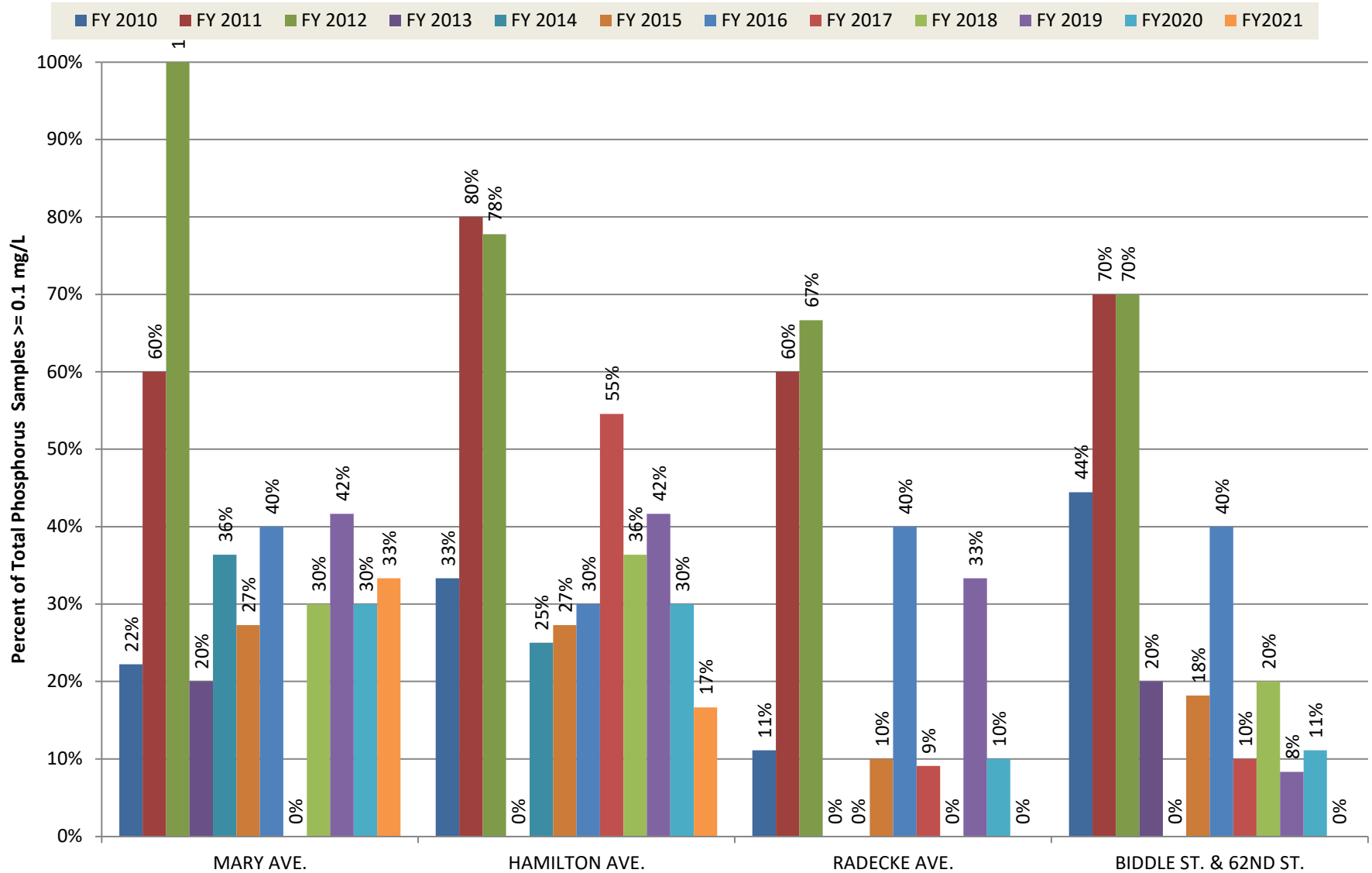
REEDBIRD AVE.



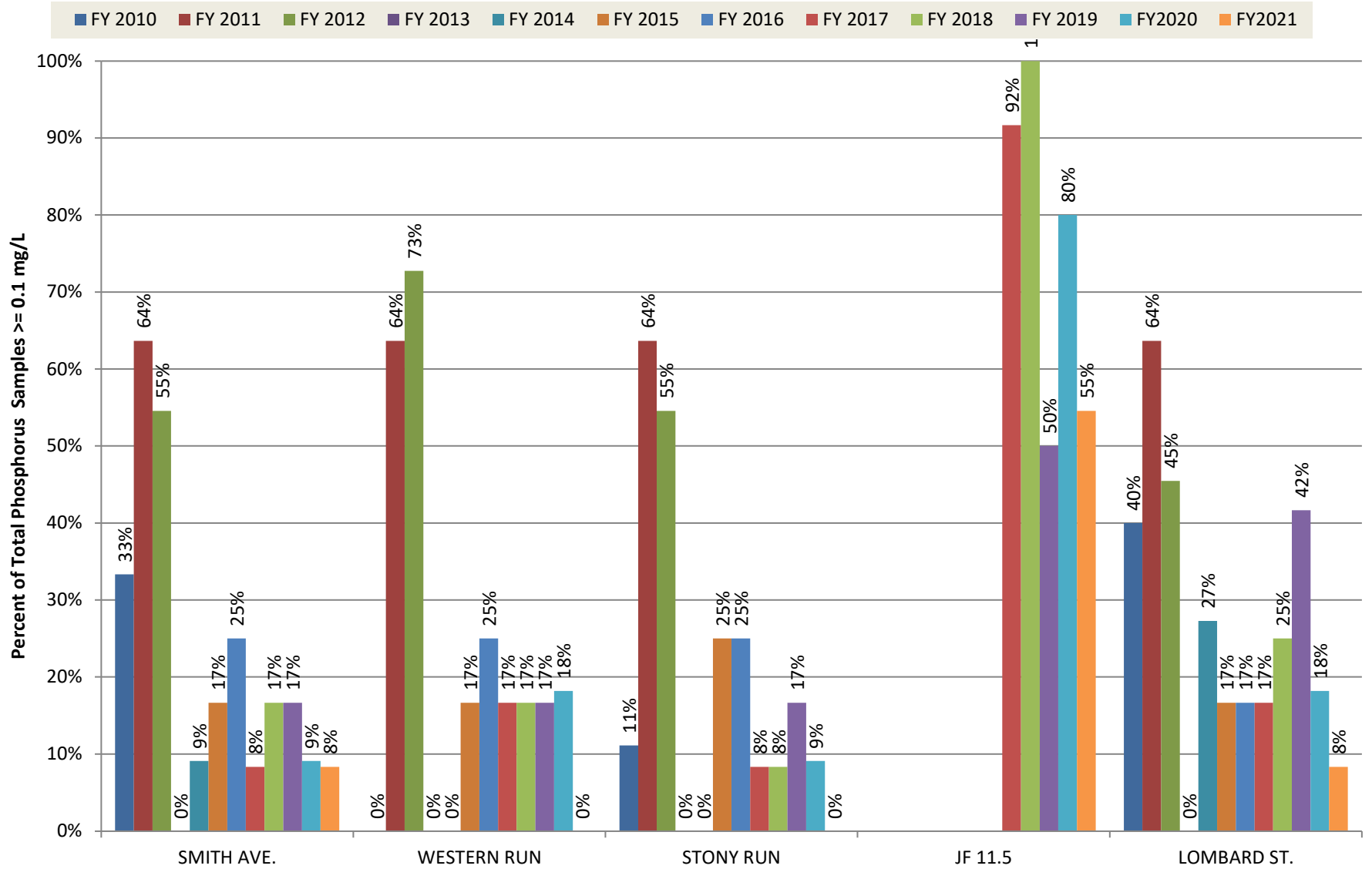
# Herring Run SIS Dry Weather Total Phosphorus Percent of Samples Greater Than or Equal to 0.1 mg/L by Fiscal Year



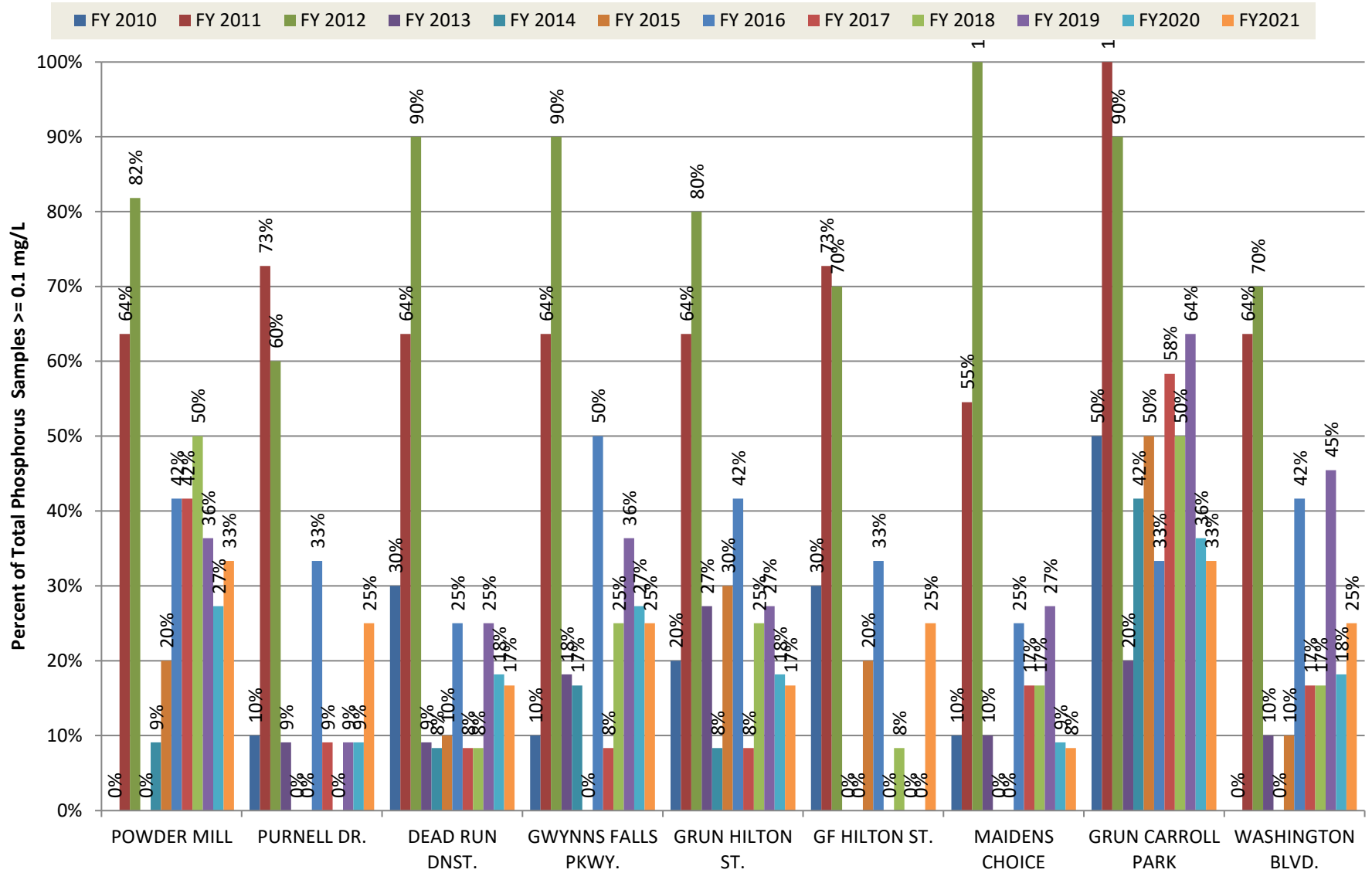
# **Moores Run SIS Dry Weather Total Phosphorus** **Percent of Samples Greater Than or Equal to 0.1 mg/L** **by Fiscal Year**



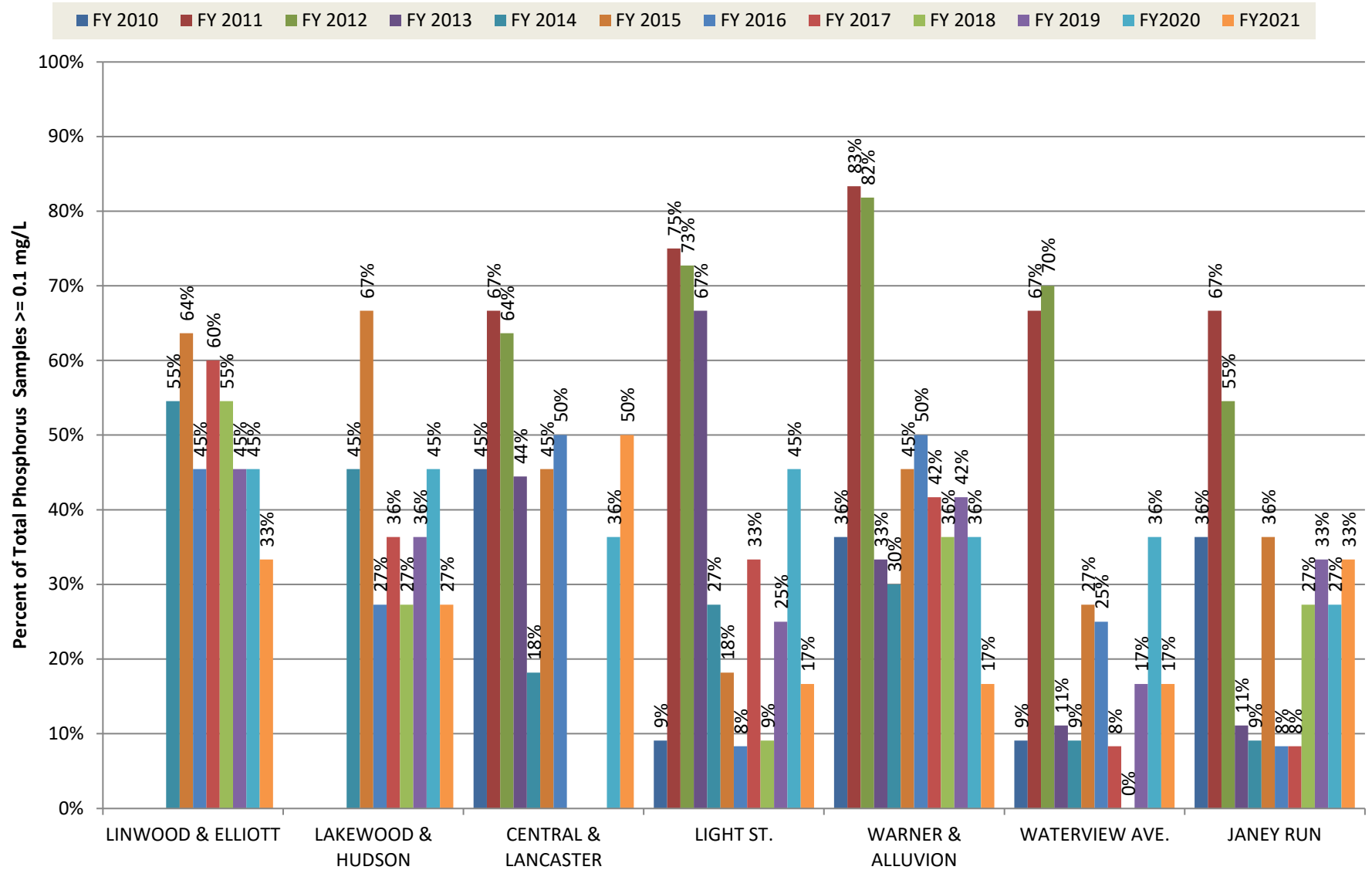
# **Jones Falls SIS Dry Weather Total Phosphorus Percent of Samples Greater Than or Equal to 0.1 mg/L by Fiscal Year**



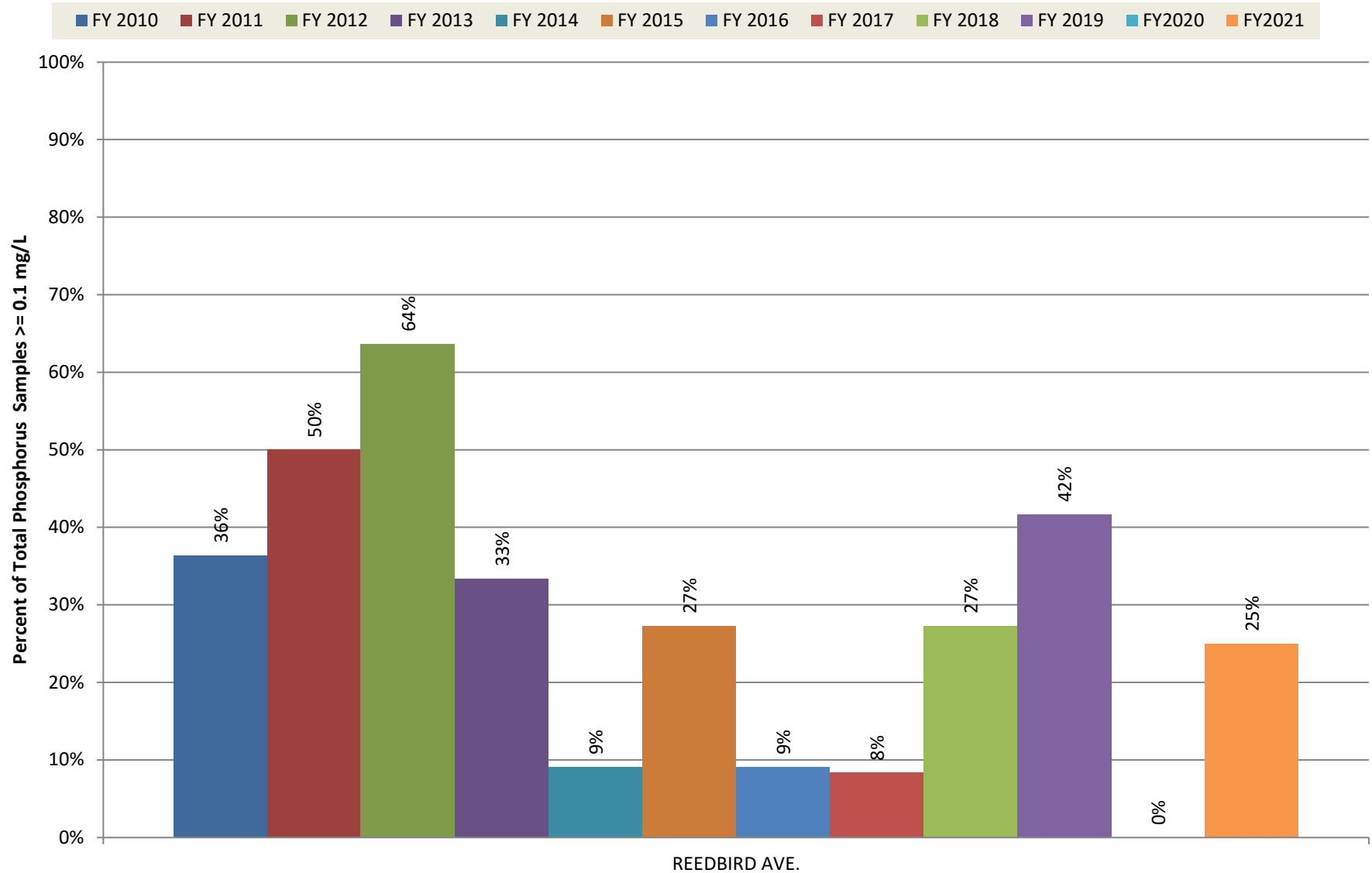
# Gwynns Falls SIS Dry Weather Total Phosphorus Percent of Samples Greater Than or Equal to 0.1 mg/L by Fiscal Year



# Harbor SIS Dry Weather Total Phosphorus Percent of Samples Greater Than or Equal to 0.1 mg/L by Fiscal Year

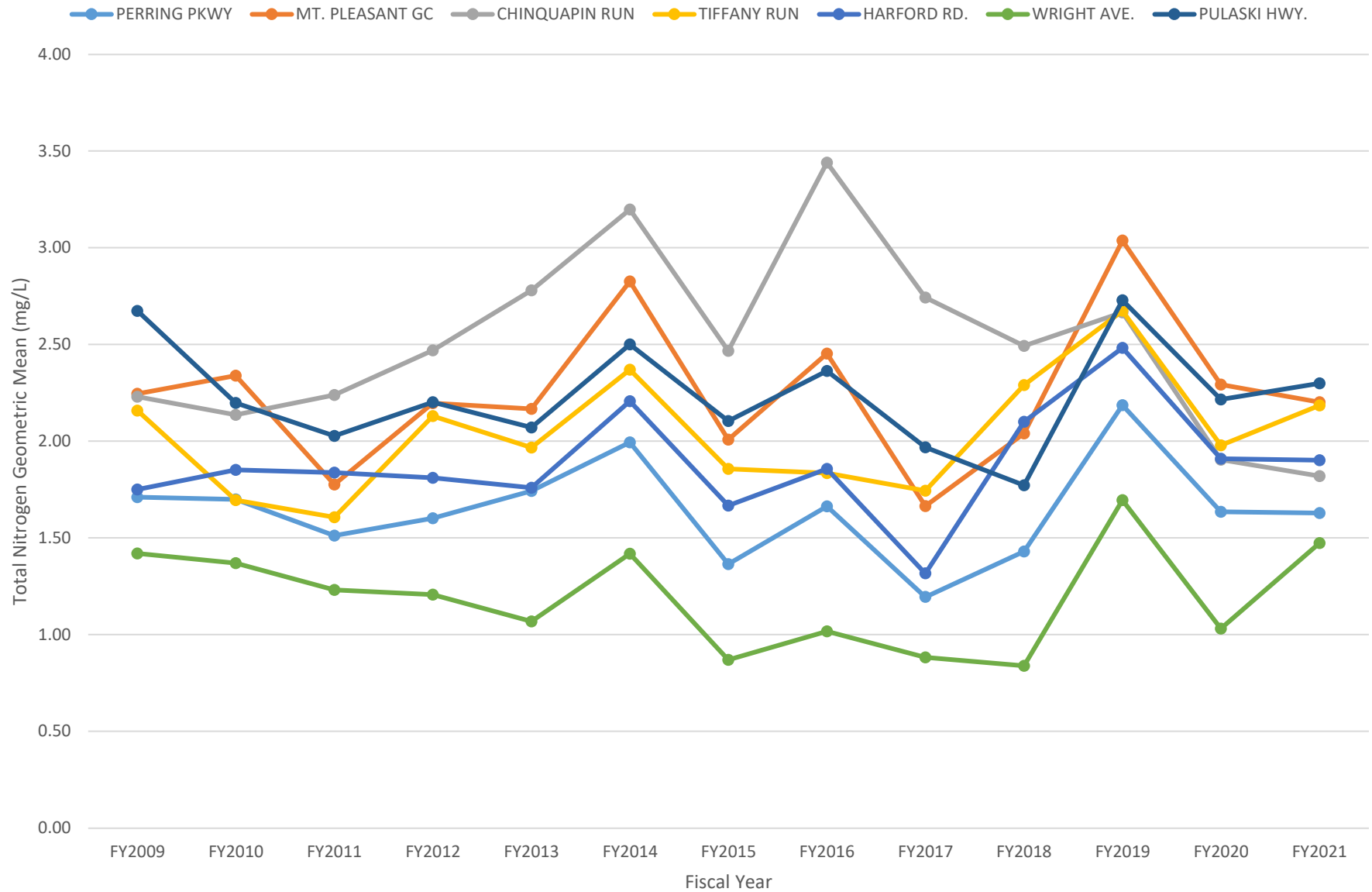


**Patapsco River SIS Dry Weather Total Phosphorus  
Percent of Samples Greater Than or Equal to 0.1 mg/L  
by Fiscal Year**



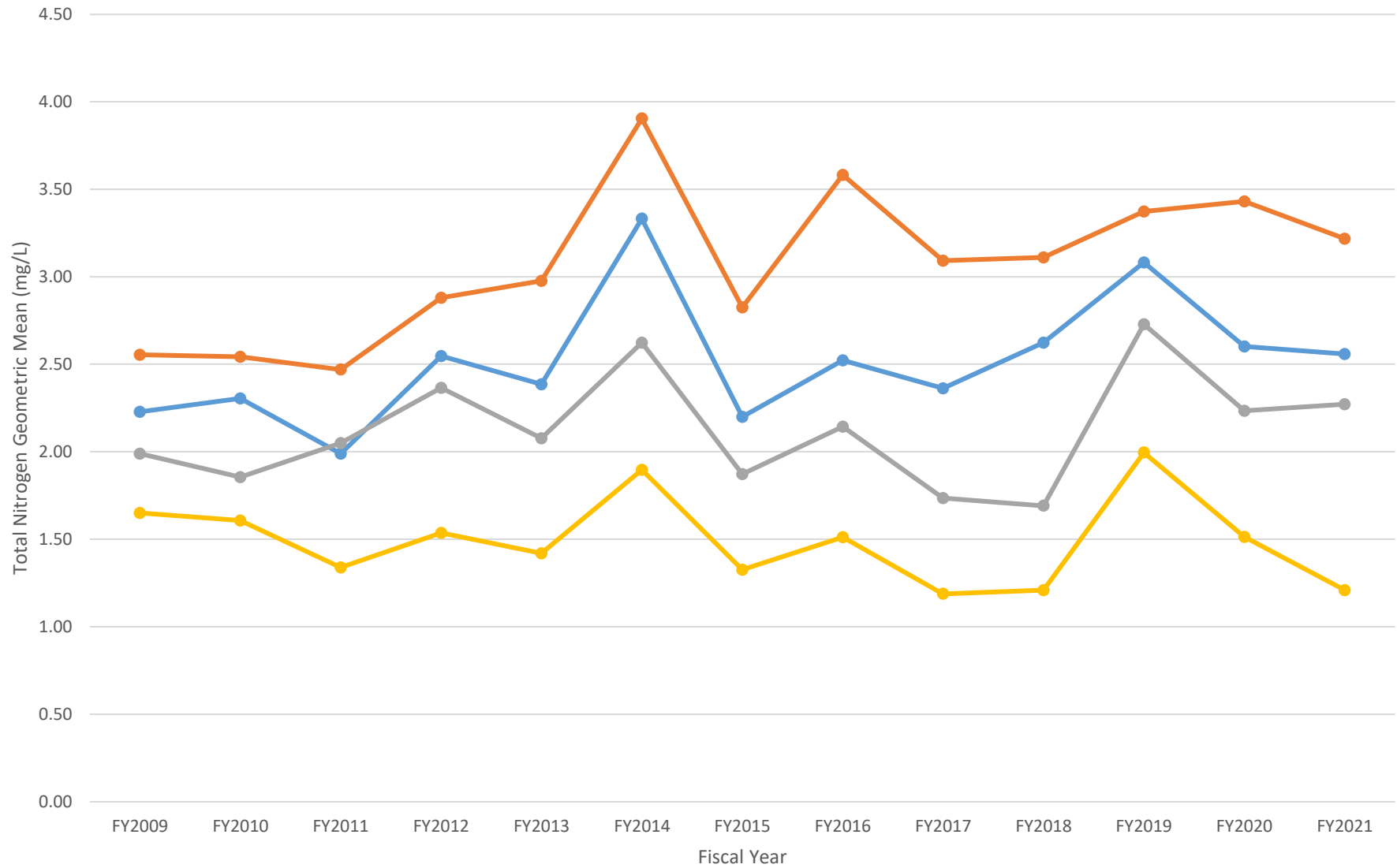
## **Appendix F: Total Nitrogen Monitoring Histograms**

# Total Nitrogen Geometric Means by Fiscal Year Back River Watershed, Herring Run Subwatershed

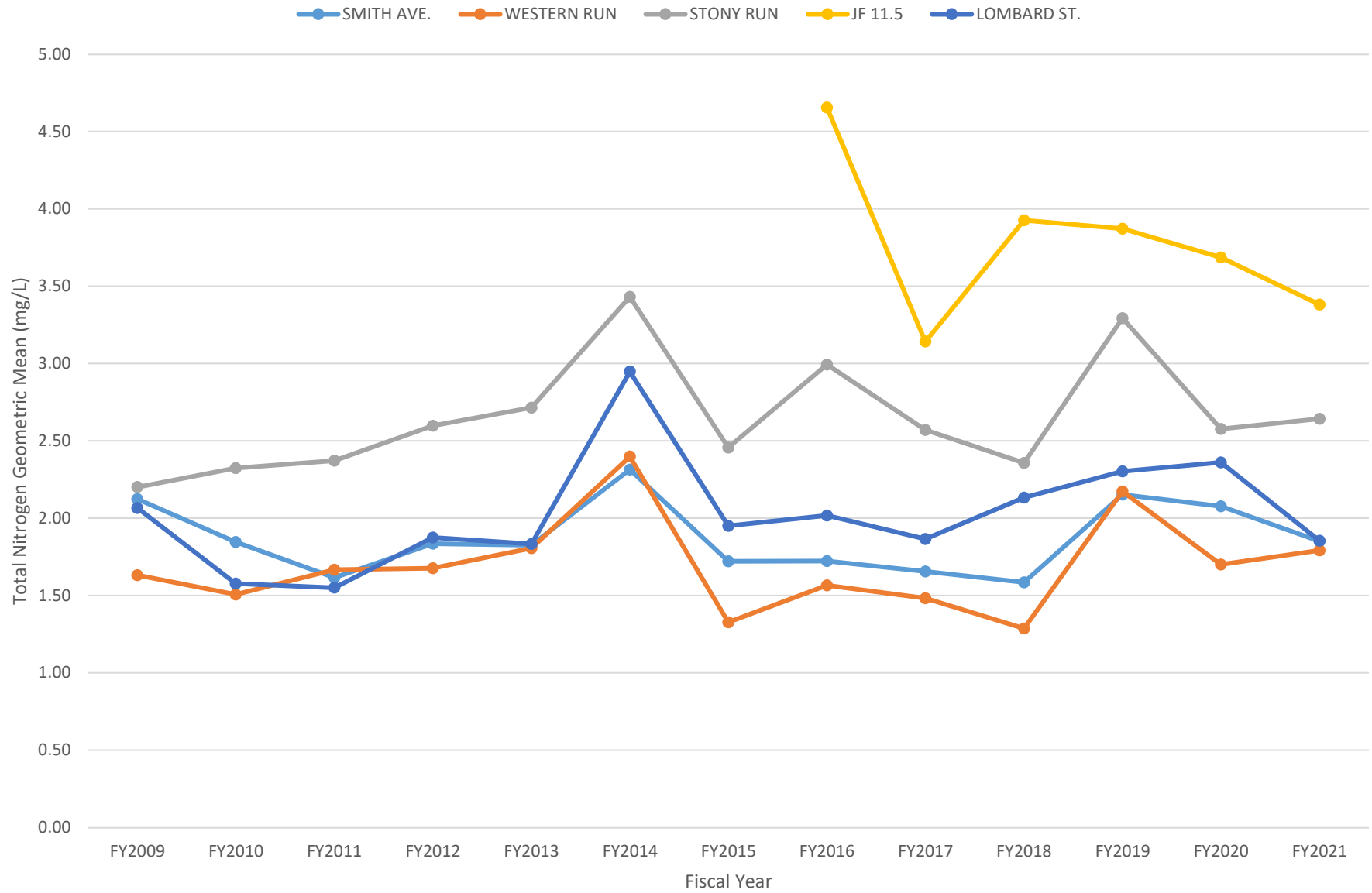


# Total Nitrogen Geometric Means by Fiscal Year Back River Watershed, Moores Run Subwatershed

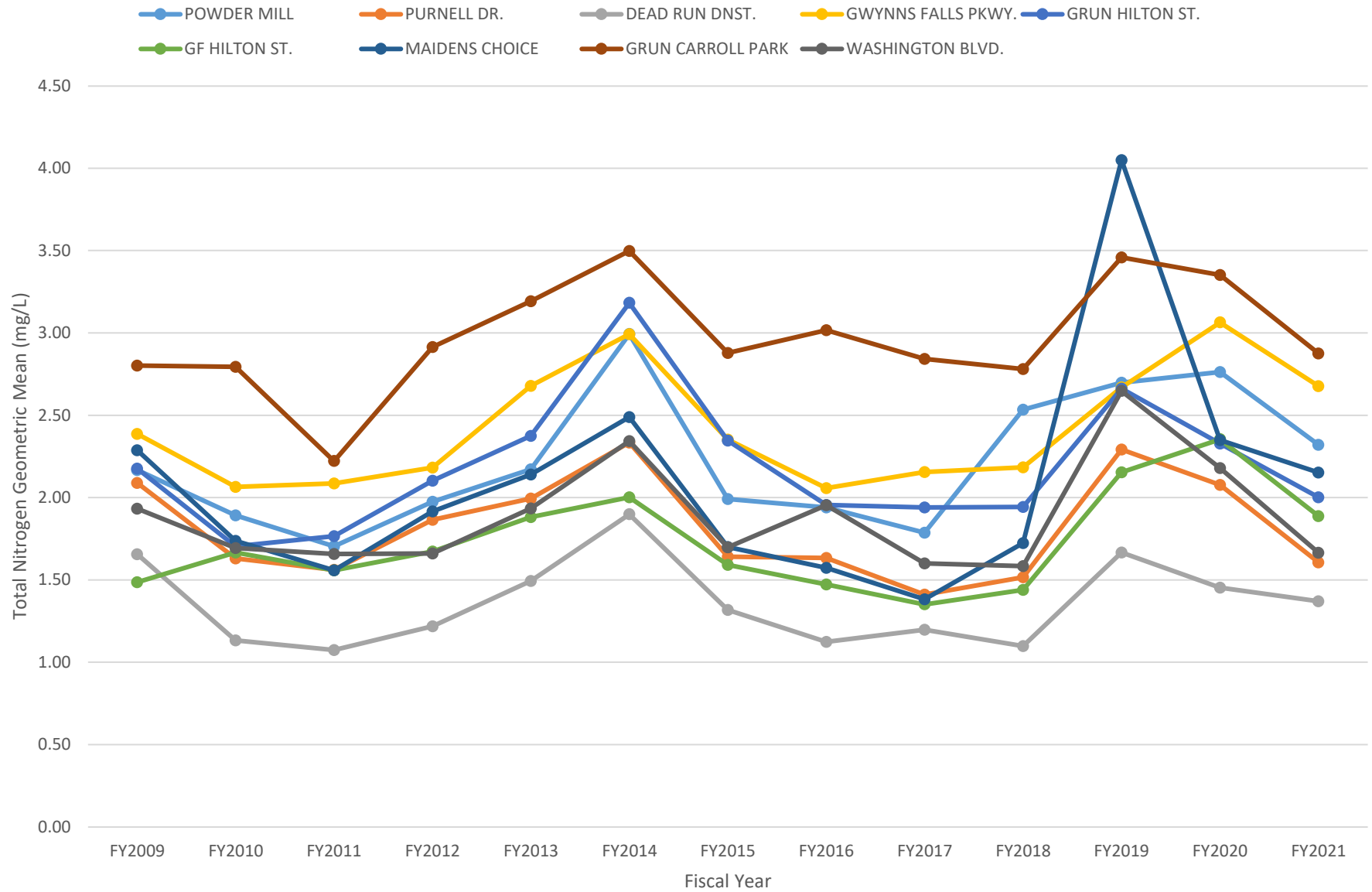
MARY AVE. HAMILTON AVE. RADECKE AVE. BIDDLE ST. & 62ND ST.



# Total Nitrogen Geometric Means by Fiscal Year Jones Falls Watershed



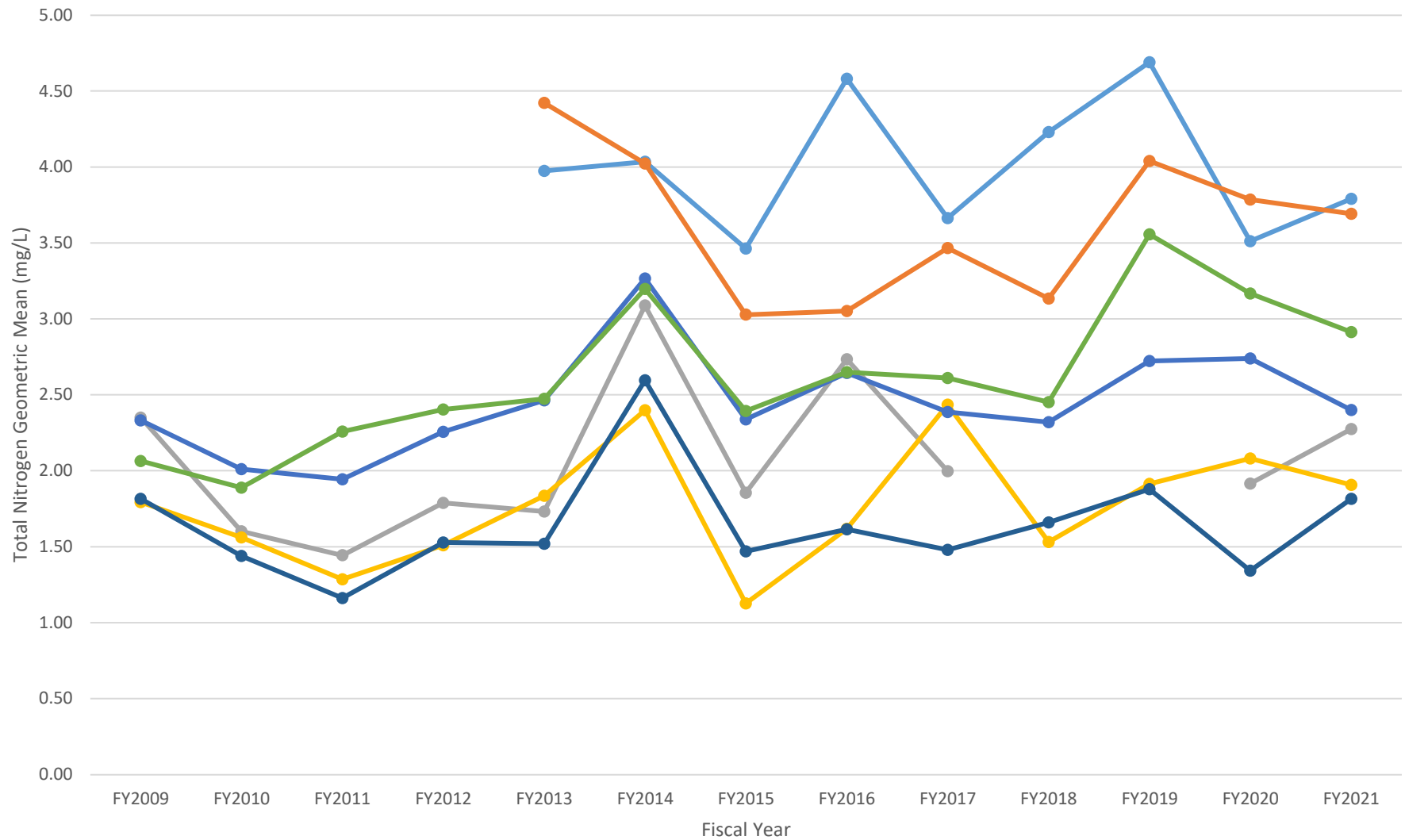
# Total Nitrogen Geometric Means by Fiscal Year Gwynns Falls Watershed



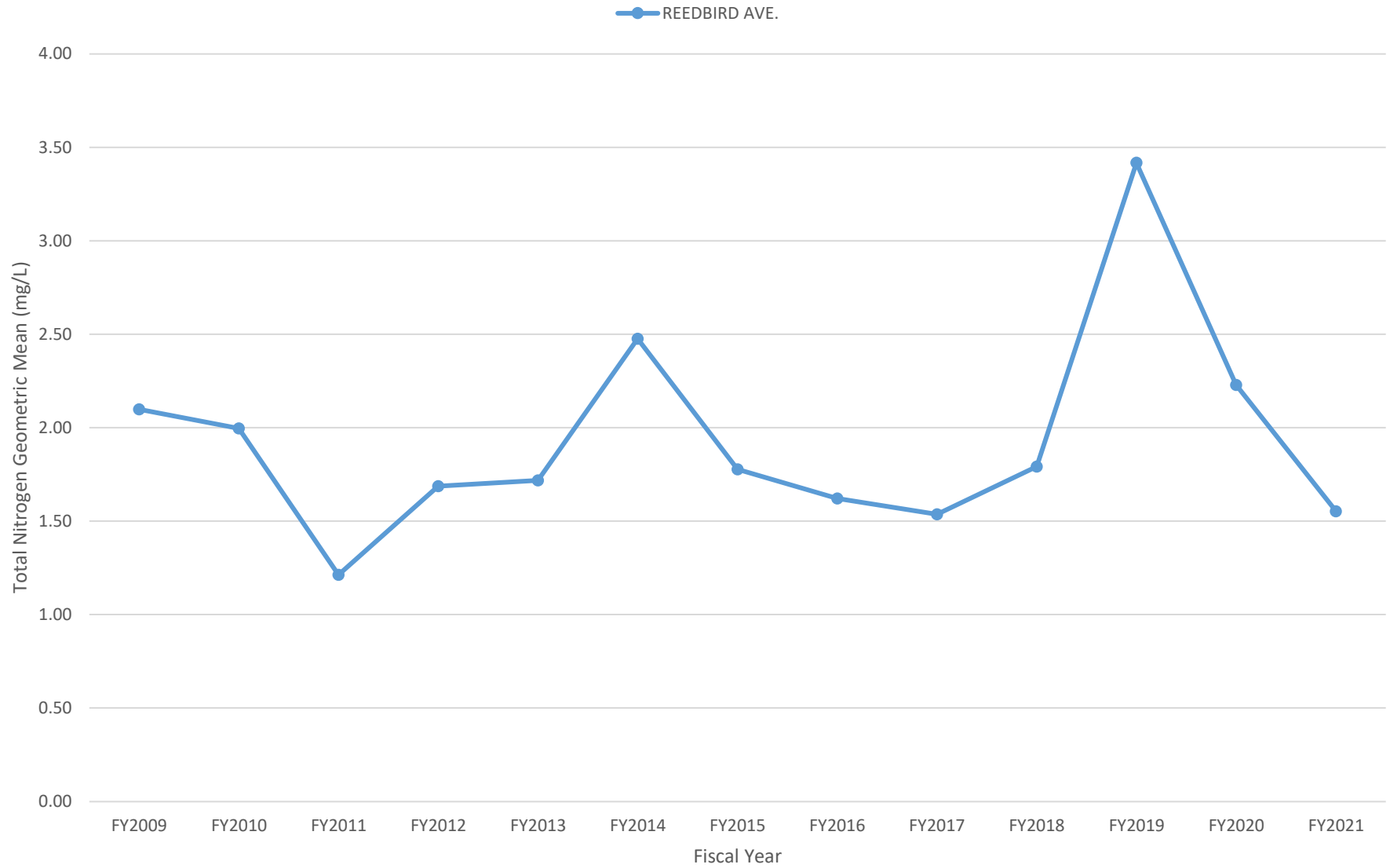
# Total Nitrogen Geometric Means by Fiscal Year

## Direct Harbor Watershed

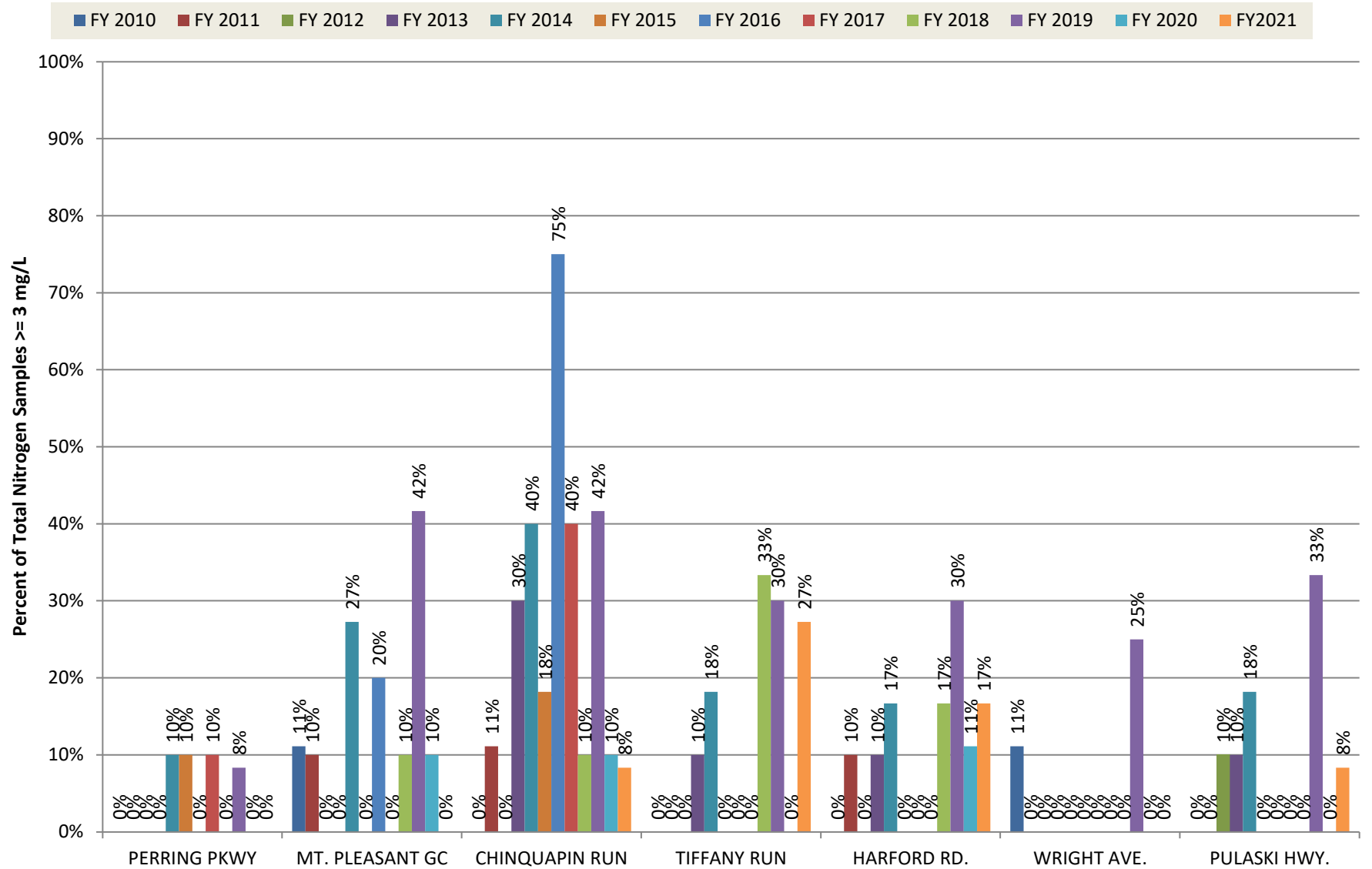
LINWOOD & ELLIOTT LAKEWOOD & HUDSON CENTRAL & LANCASTER LIGHT ST.  
WARNER & ALLUVION WATERVIEW AVE. JANEY RUN



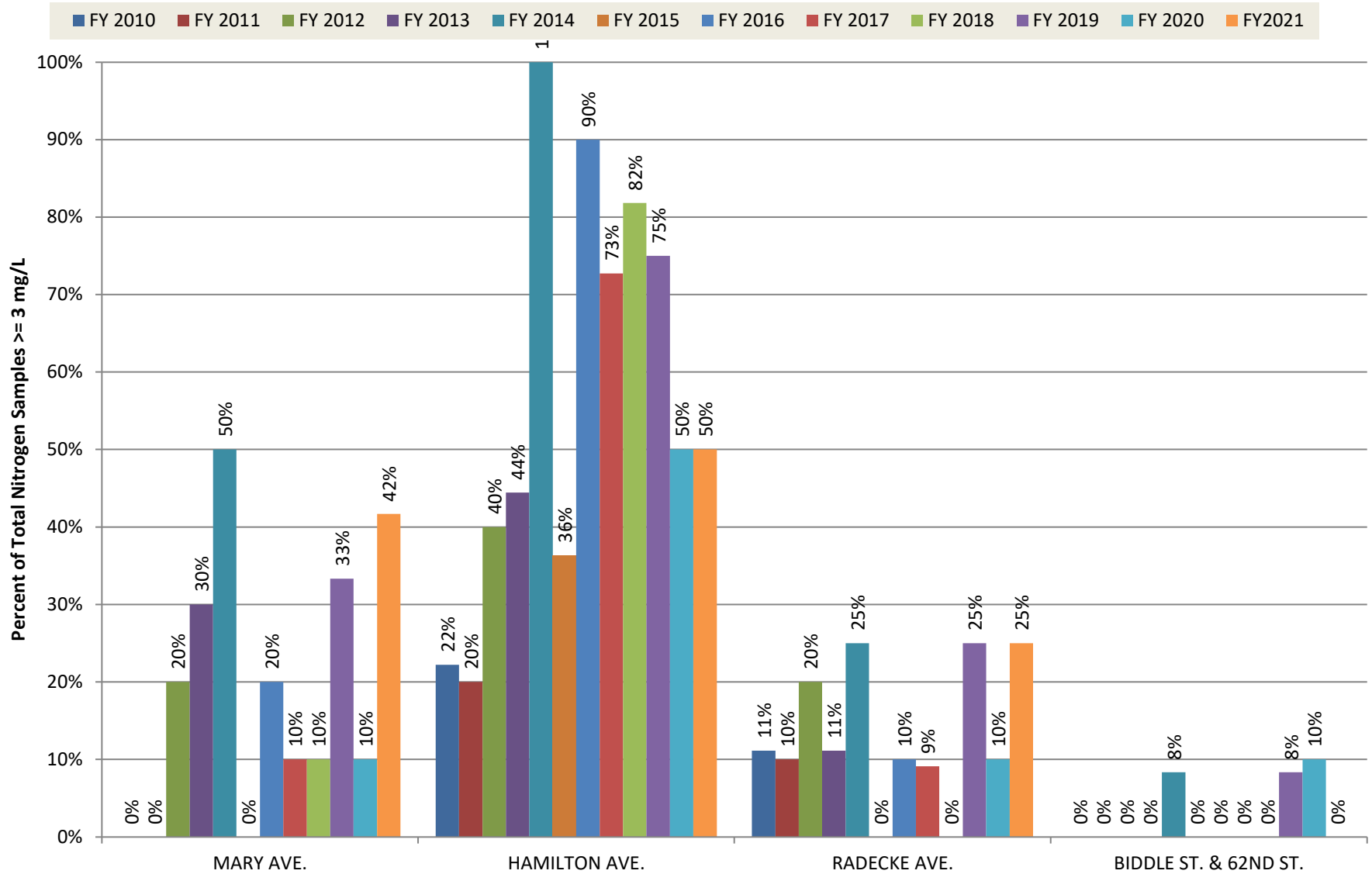
Total Nitrogen Geometric Means by Fiscal Year  
Patapsco River Watershed  
Sampling suspended at REEDBIRD AVE. in October 2020 due to construction at site.



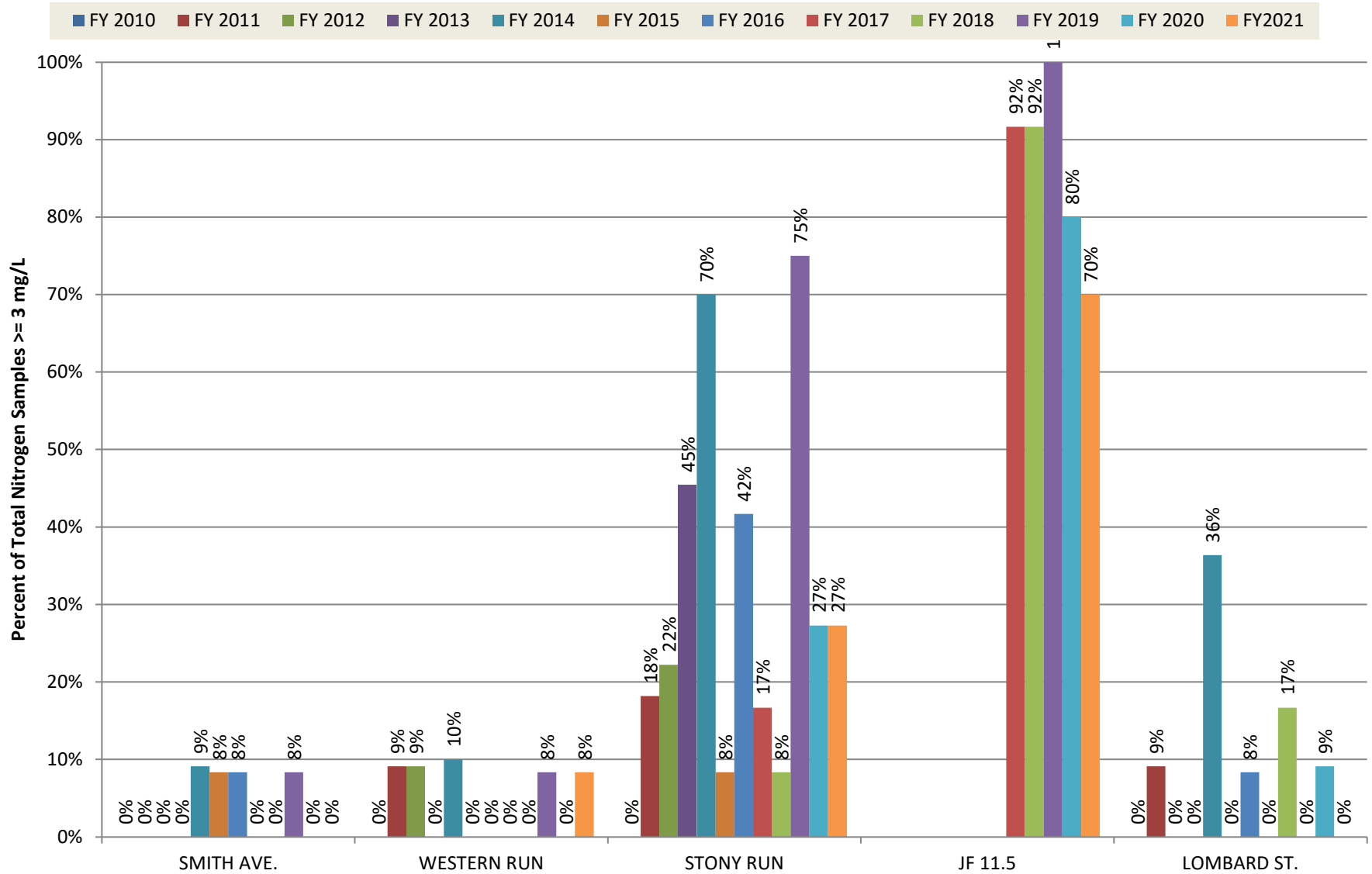
# Herring Run SIS Dry Weather Total Nitrogen Percent of Samples Greater Than or Equal to 3 mg/L by Fiscal Year



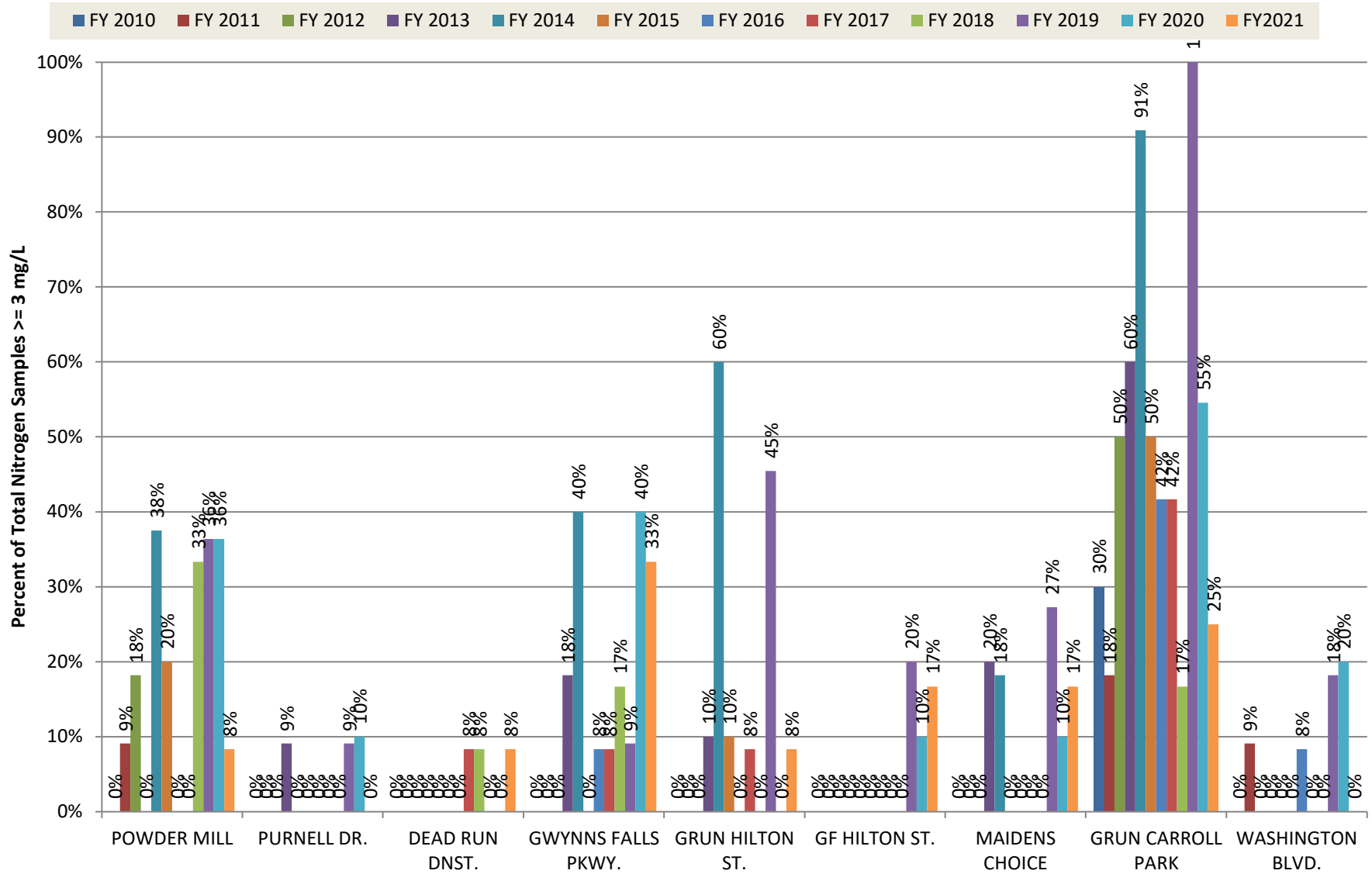
# **Moore's Run SIS Dry Weather Total Nitrogen Percent of Samples Greater Than or Equal to 3 mg/L by Fiscal Year**



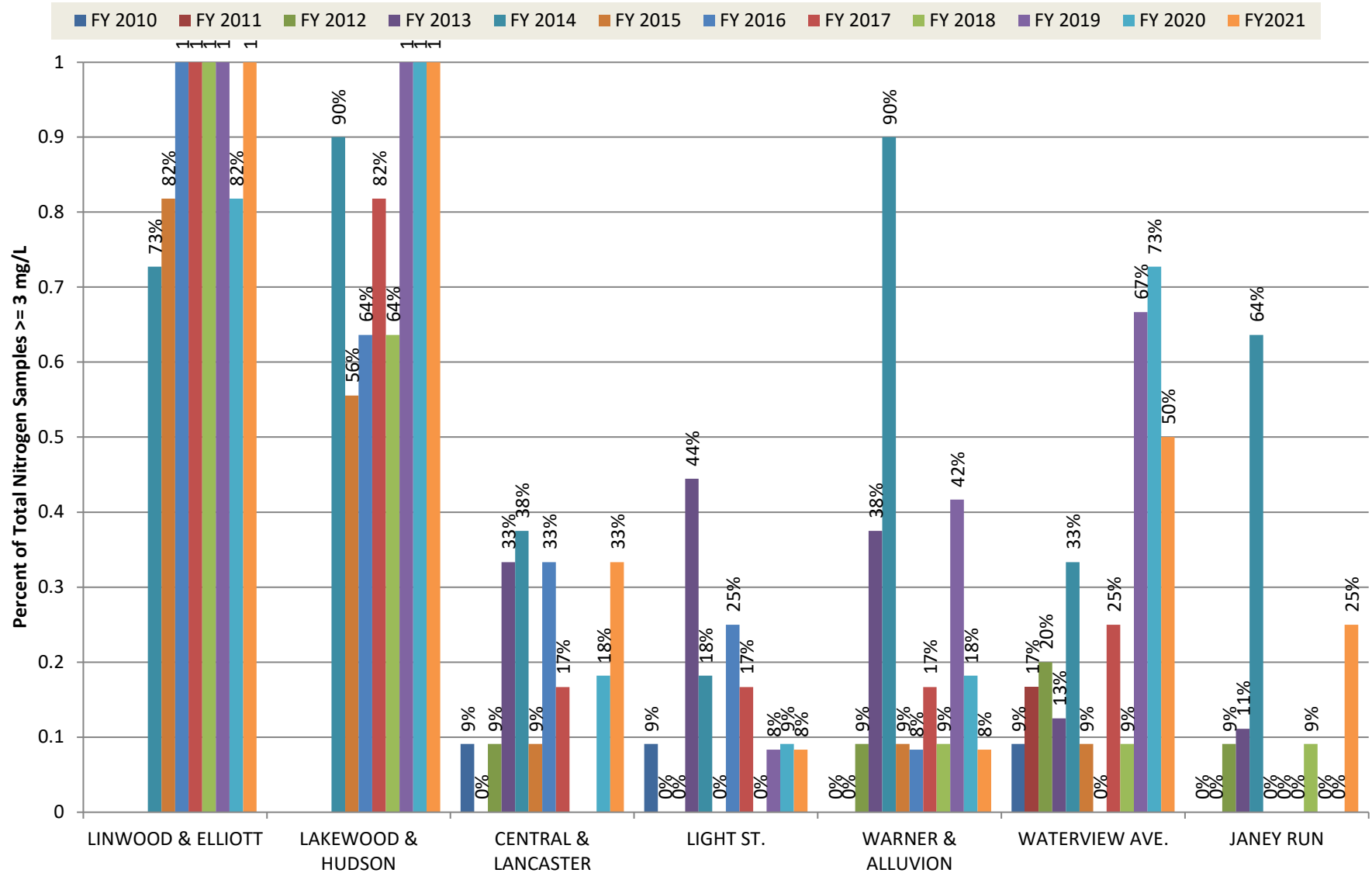
# Jones Falls SIS Dry Weather Total Nitrogen Percent of Samples Greater Than or Equal to 3 mg/L by Fiscal Year



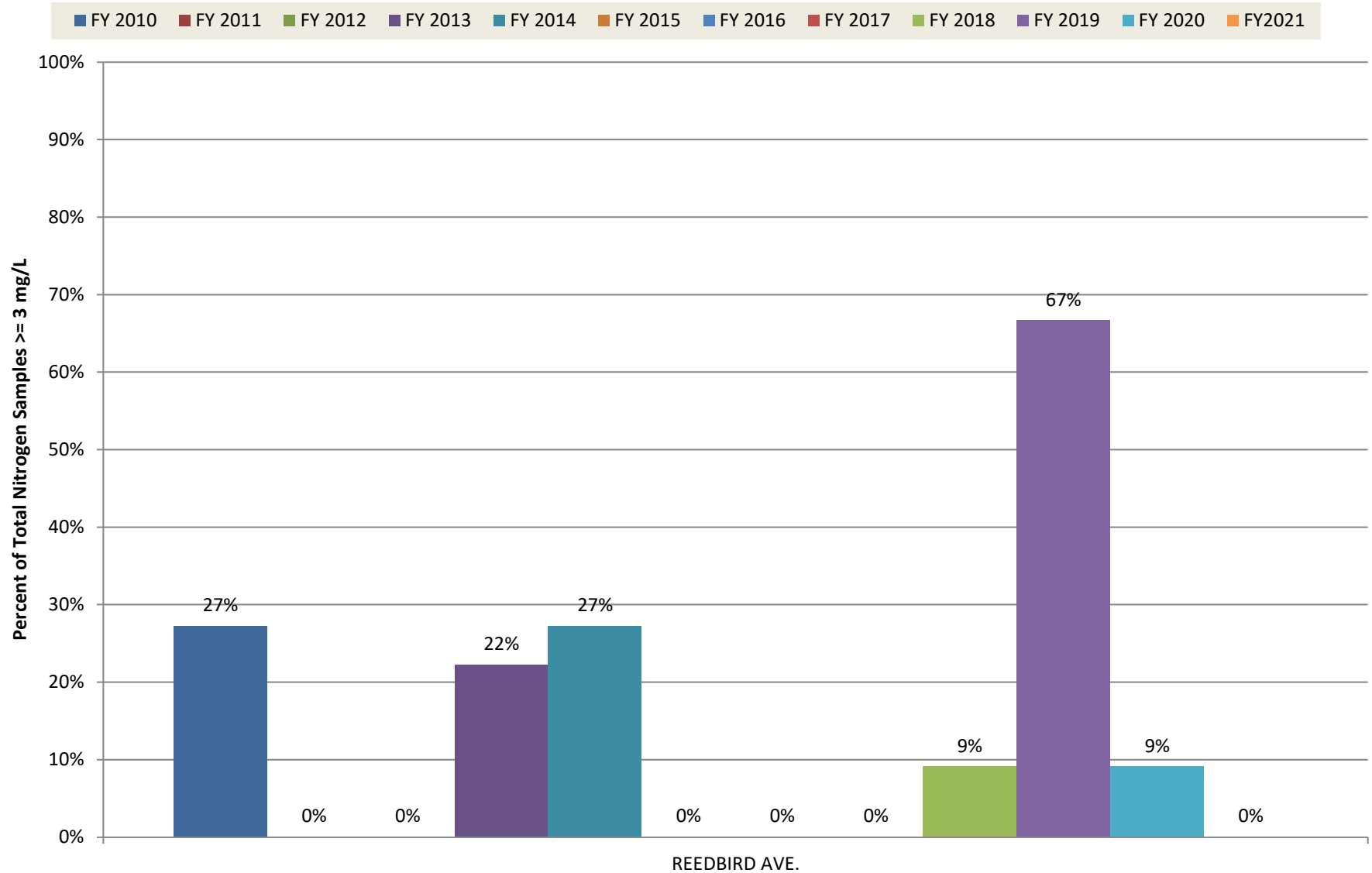
# Gwynns Falls SIS Dry Weather Total Nitrogen Percent of Samples Greater Than or Equal to 3 mg/L by Fiscal Year



**Harbor SIS Dry Weather Total Nitrogen**  
**Percent of Samples Greater Than or Equal to 3 mg/L**  
**by Fiscal Year**

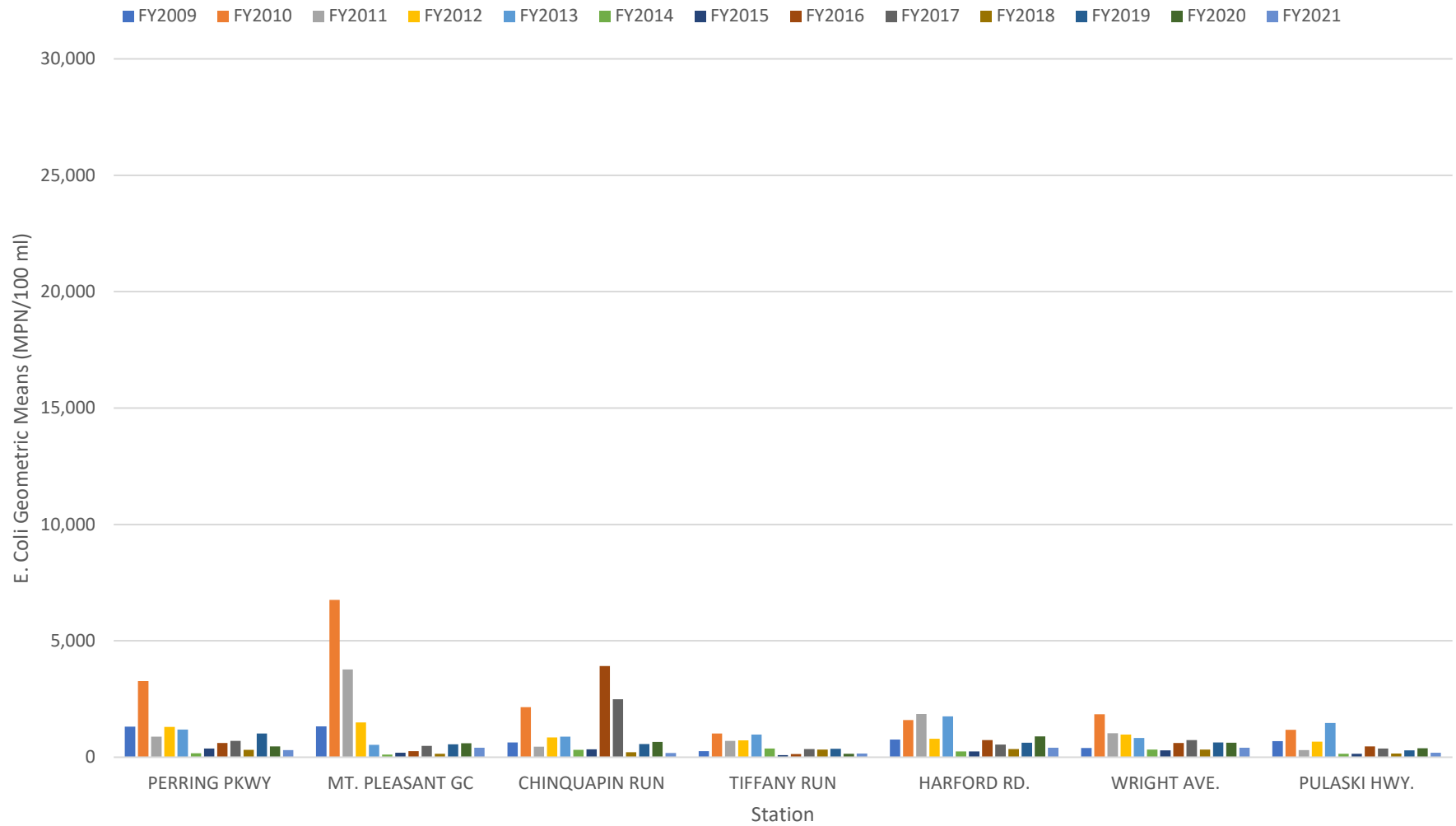


**Patapsco River SIS Dry Weather Total Nitrogen  
Percent of Samples Greater Than or Equal to 3 mg/L  
by Fiscal Year**



## **Appendix G: Bacteria Monitoring Histograms**

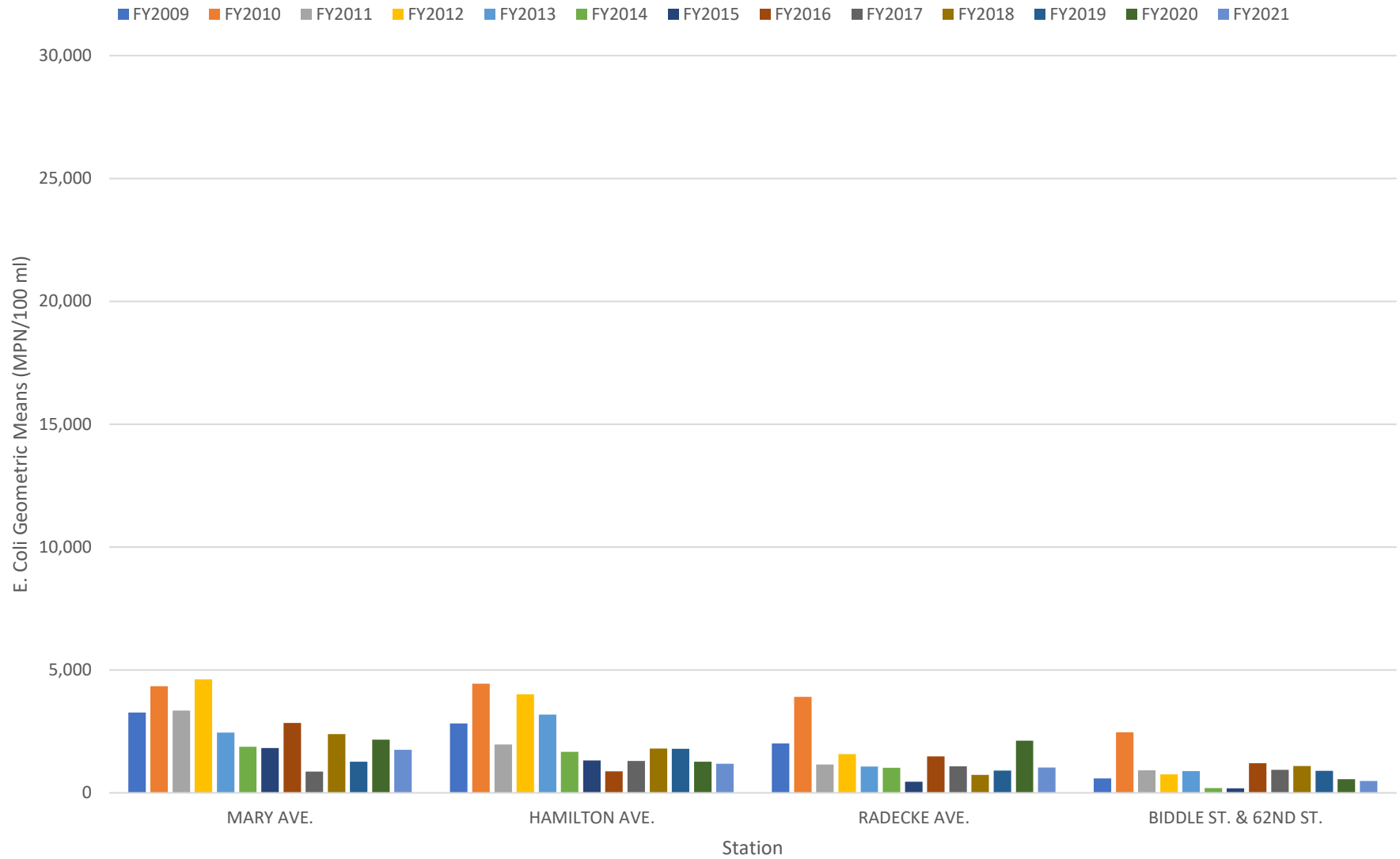
Please note: from COMAR 26.08.02.03-3 the criteria is that the Steady State Geometric Mean Indicator Density be less than or equal to 126 MPN/100 ml for freshwaters.



## Back River-Moores Run Watershed SIS E. Coli Counts

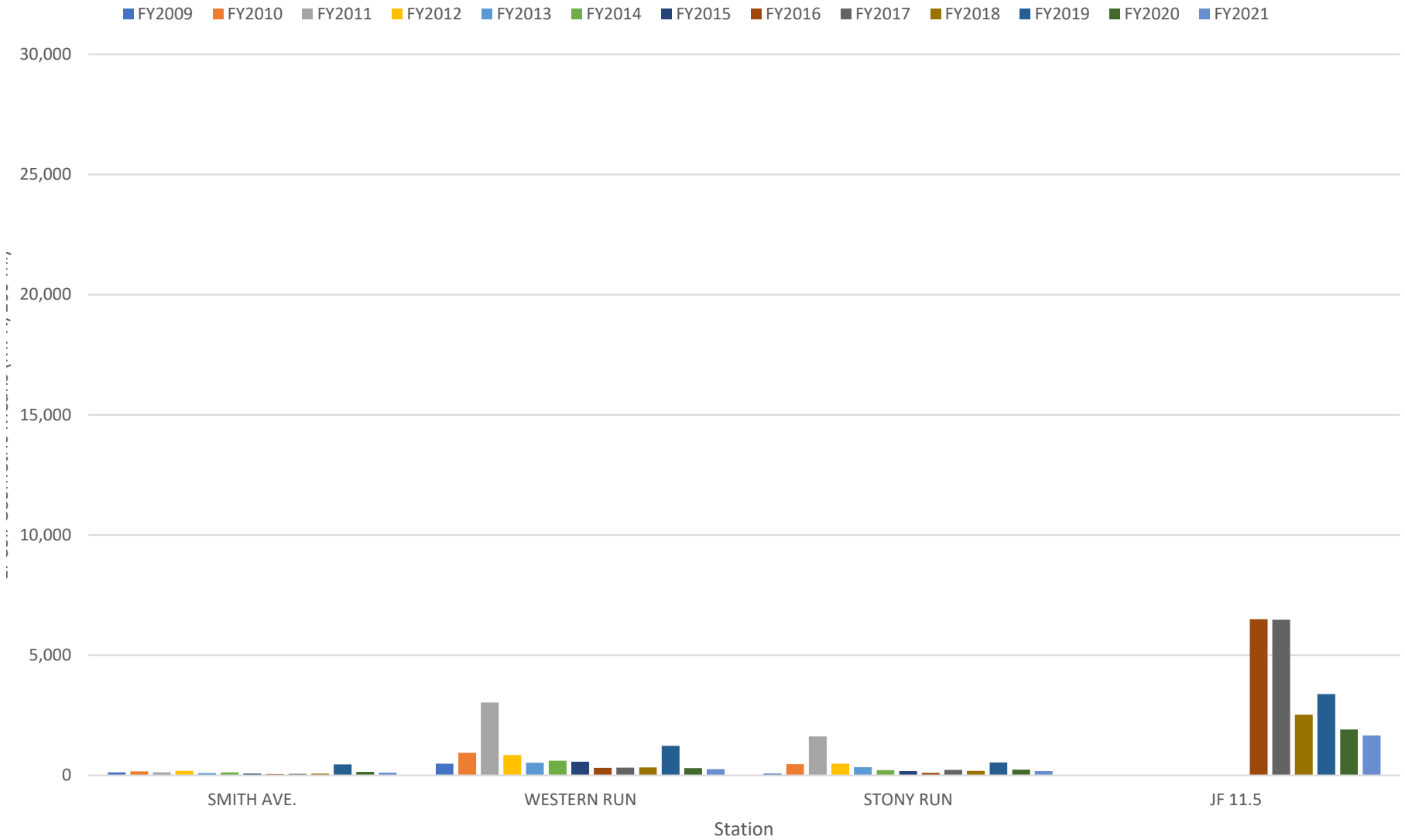
### Geometric Means by Fiscal Year

*Please note: from COMAR 26.08.02.03-3 the criteria is that the Steady State Geometric Mean Indicator Density be less than or equal to 126 MPN/100 ml for freshwaters.*



## Jones Falls Watershed SIS E. Coli Counts Geometric Means by Fiscal Year

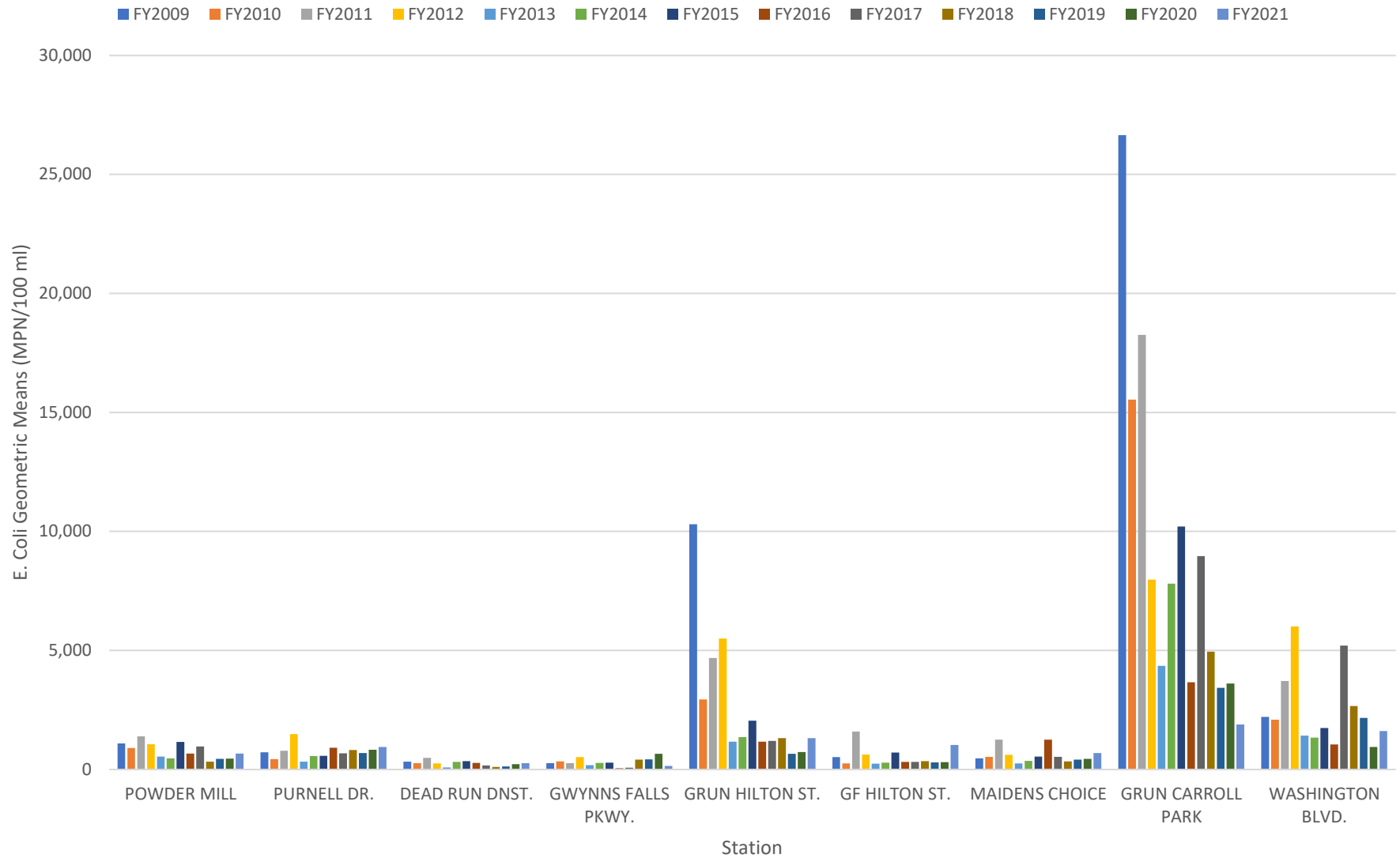
*Please note: from COMAR 26.08.02.03-3 the criteria is that the Steady State Geometric Mean Indicator Density be less than or equal to 126 MPN/100 ml for freshwaters.*



## Gwynns Falls Watershed SIS E. Coli Counts

### Geometric Means by Fiscal Year

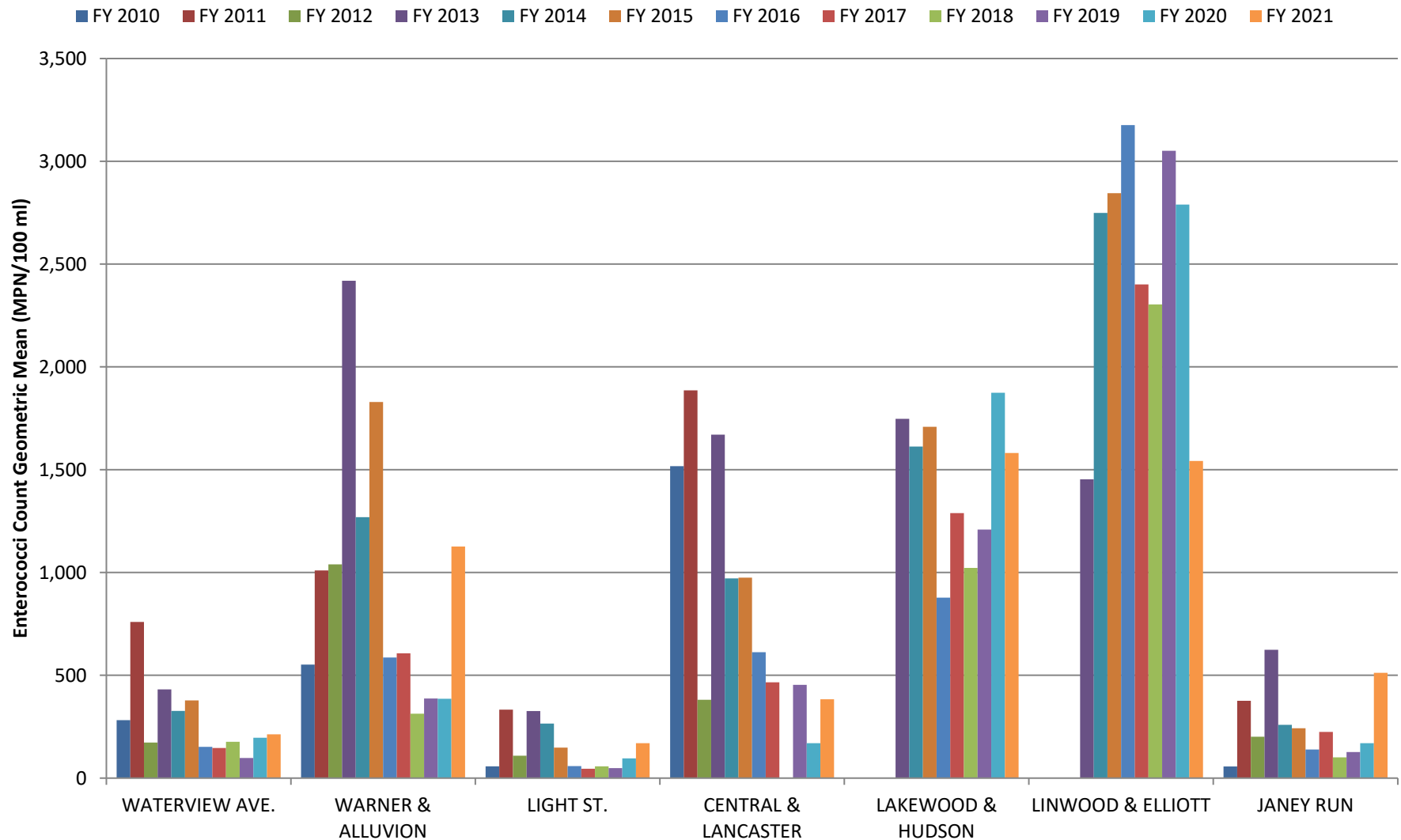
*Please note: from COMAR 26.08.02.03-3 the criteria is that the Steady State Geometric Mean Indicator Density be less than or equal to 126 MPN/100 ml for freshwaters.*



# Harbor SIS Dry Weather Enterococci MPN Count

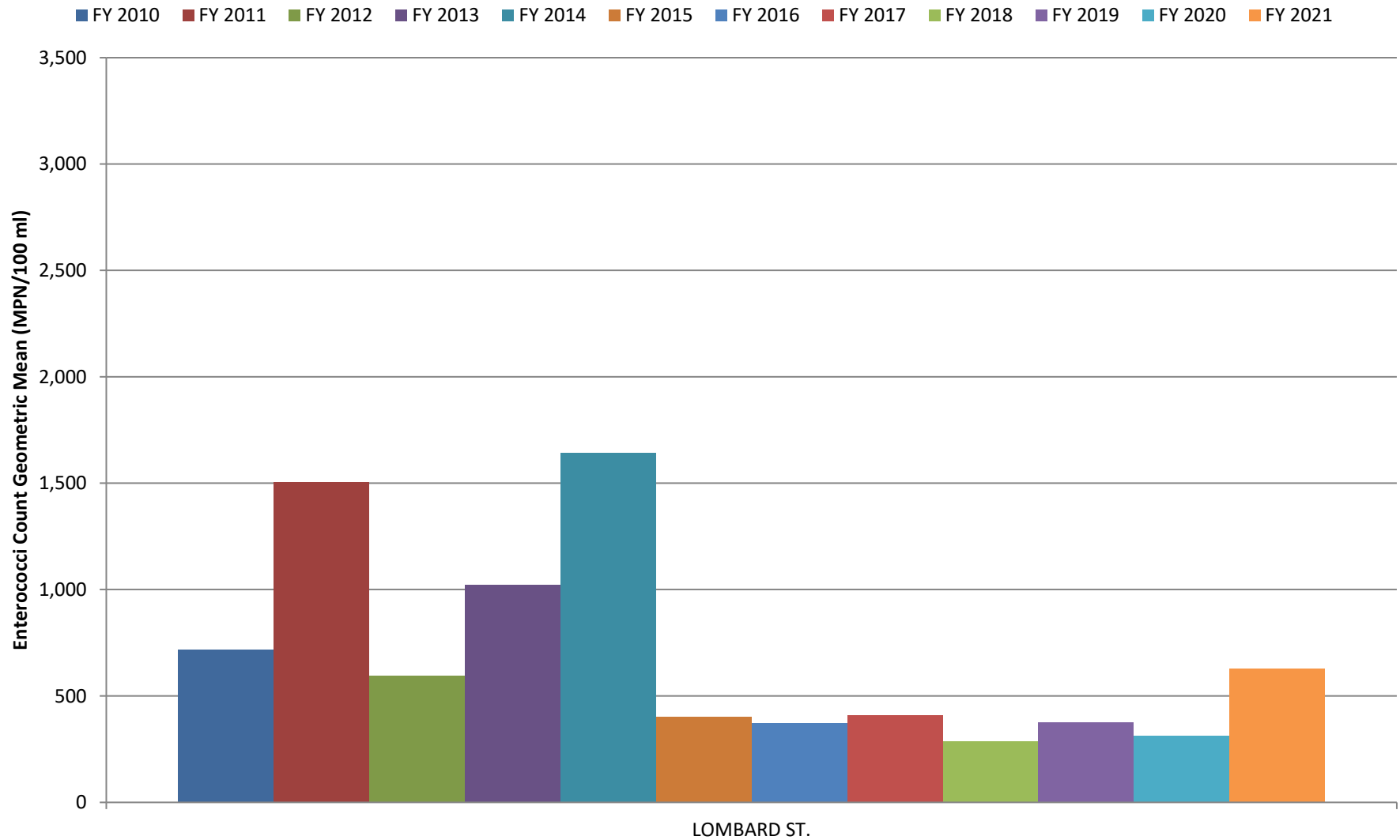
## Geometric Means by Fiscal Year

*Please note: from COMAR 26.08.02.03-3 the criteria is that the Steady State Geometric Mean Indicator Density be less than or equal to 35 MPN/100 ml for marine waters.*



# Jones Falls SIS Dry Weather Enterococci MPN Count Geometric Means by Fiscal Year

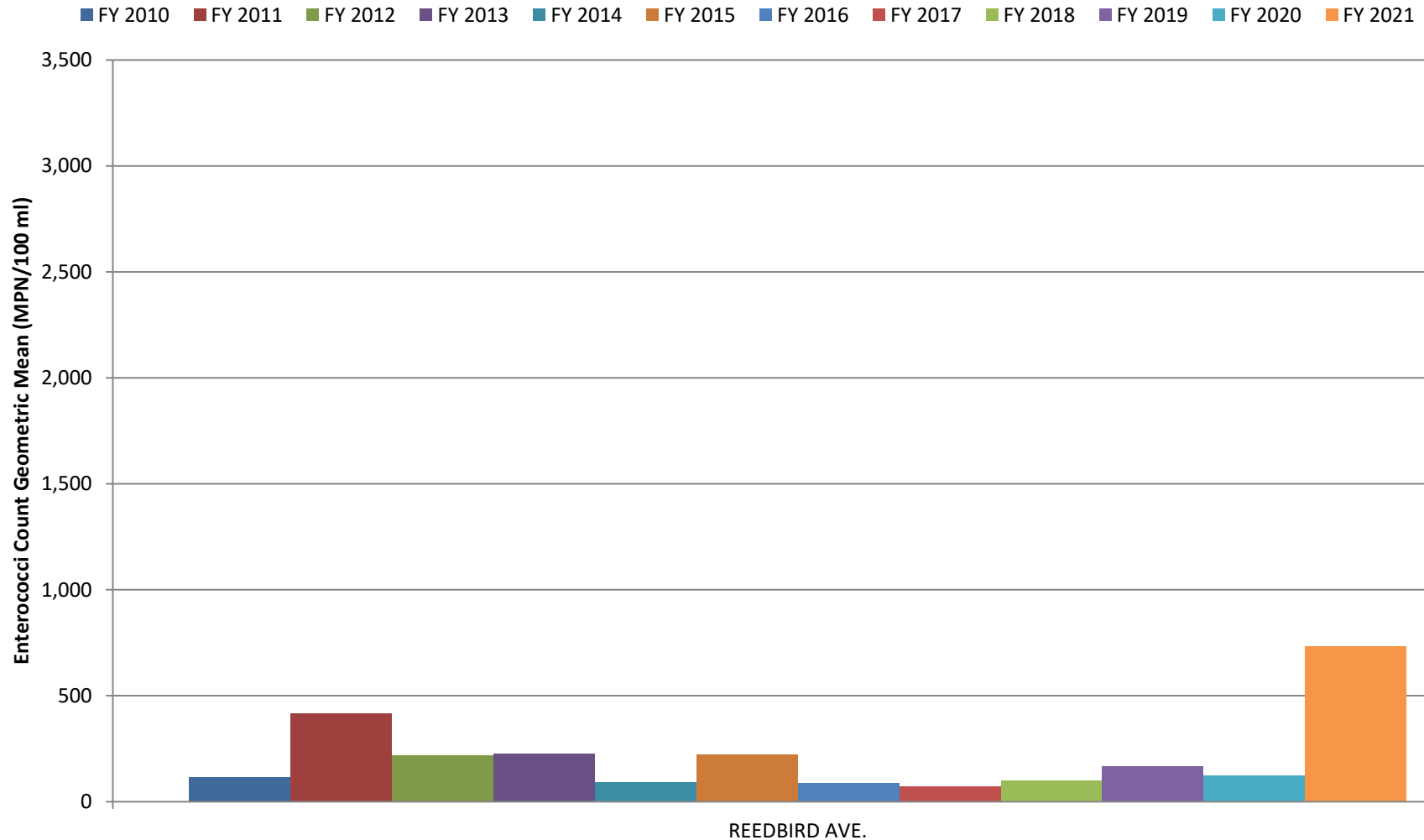
*Please note: from COMAR 26.08.02.03-3 the criteria is that the Steady State Geometric Mean Indicator Density be less than or equal to 35 MPN/100 ml for marine waters.*



# Patapsco River SIS Dry Weather Enterococci MPN Count

## Geometric Means by Fiscal Year

*Please note: from COMAR 26.08.02.03-3 the criteria is that the Steady State Geometric Mean Indicator Density be less than or equal to 35 MPN/100 ml for marine waters.*



## **Appendix H: Habitat Monitoring**

Moore's Run above Radecke Ave. Segments											Tributary
1	2	3	4	5	6	7	8	9	10	11	

**Parameter**

**Instream Habitat**

2005-05-18	16	16	16	4	16	16	16	16	13	16	1	13
2006-05-01	15	16	15	4	15	15	15	14	13	14	1	13
2007-04-02	15	14	16	4	15	11	15	14	13	15	1	15
2008-05-05	15	15	17	4	15	11	11	15	14	14	1	12
2009-04-30	12	14	13	13	13	15	15	15	13	15	3	10
2010-03-24	16	16	18	5	12	17	16	16	13	15	1	15
2011-03-03	17	18	18	6	17	14	14	16	15	15	1	14
2012-06-28	18	16	18	5	15	11	11	10	10	15	2	13
2013-09-03	13	17	16	15	14	14	14	17	14	16	2	12
2014-08-21	15	15	14	12	8	8	15	16	8	13	5	13
2016-06-09	16	17	17	8	17	7	15	16	14	15	1	10
2017-06-08	16	13	17	5	16	13	16	10	10	15	1	10
2018-06-07	16	16	18	3	14	12	12	16	5	12	1	13
2019-07-10	14	13	16	11	15	9	10	10	6	5	2	8
2021-05-13	15	12	14	6	11	15	15	10	9	9	3	15

**Epifaunal Substrate**

2005-05-18	16	16	16	1	16	16	15	16	13	16	1	14
2006-05-01	14	15	15	4	15	15	14	14	10	14	0	14
2007-04-02	15	14	15	5	15	10	12	10	10	14	0	10
2008-05-05	14	14	17	4	14	10	8	12	11	14	0	12
2009-04-30	10	12	11	11	11	15	13	14	13	15	10	7
2010-03-24	15	14	17	8	11	12	14	11	11	10	7	15
2011-03-03	16	17	17	8	16	14	13	9	12	10	6	13
2012-06-28	12	15	15	8	14	10	14	9	9	10	6	13
2013-09-03	13	16	16	6	10	11	14	15	9	10	8	11
2014-08-21	14	16	13	13	8	8	16	14	8	15	6	13
2016-06-09	15	15	17	10	15	6	8	10	11	10	8	11
2017-06-08	16	14	15	3	14	10	11	8	8	11	8	11
2018-06-07	14	16	16	3	14	12	12	16	5	12	6	9
2019-07-10	14	13	15	11	14	8	7	8	6	6	6	12
2021-05-13	15	16	13	2	11	13	15	10	8	7	1	17

**Velocity/Depth Diversity**

2005-05-18	8	10	14	6	8	8	8	10	8	9	11	8
2006-05-01	8	10	10	6	11	8	8	11	10	10	6	8
2007-04-02	10	13	12	6	6	8	8	10	9	10	6	10
2008-05-05	8	12	15	6	11	9	9	12	8	9	6	8
2009-04-30	11	11	13	8	10	15	14	15	13	15	2	10
2010-03-24	10	15	14	8	10	11	13	8	12	10	11	15
2011-03-03	10	10	10	11	10	10	14	15	15	10	12	10
2012-06-28	7	14	10	6	10	8	8	13	9	10	1	11
2013-09-03	7	14	10	6	12	8	11	14	7	10	12	10
2014-08-21	8	12	9	12	8	10	10	9	7	10	11	12
2016-06-09	8	14	14	9	16	10	10	15	12	13	11	9
2017-06-08	8	7	14	6	9	10	10	8	7	10	11	8
2018-06-07	10	13	15	6	10	10	10	14	6	10	10	10
2019-07-10	13	14	14	1	10	8	9	10	7	9	6	7
2021-05-13	8	12	14	11	12	10	13	12	12	11	2	13

**Pool/Glide/Eddy Quality**

2005-05-18	5	7	12	13	10	8	10	15	12	3	13	1
2006-05-01	5	7	10	16	10	8	10	11	12	3	8	1
2007-04-02	5	7	11	16	11	10	9	10	11	4	10	1
2008-05-05	8	14	12	17	12	12	10	14	13	3	8	1
2009-04-30	9	10	13	12	7	9	13	12	11	11	13	5

Moores Run above Radecke Ave. Segments												Tributary
	1	2	3	4	5	6	7	8	9	10	11	
2010-03-24	8	12	12	13	11	8	13	10	11	9	13	3
2011-03-03	14	14	13	17	14	13	14	15	15	13	15	3
2012-06-28	8	16	6	15	8	7	8	13	10	11	8	11

	Moore's Run above Radecke Ave. Segments											Tributary
	1	2	3	4	5	6	7	8	9	10	11	
2013-09-03	8	10	8	14	11	9	14	13	9	9	14	4
2014-08-21	8	13	7	14	7	8	10	9	8	9	13	11
2016-06-09	8	14	16	13	12	8	8	11	12	12	11	7
2017-06-08	11	16	8	17	8	0	13	8	7	10	10	6
2018-06-07	10	14	6	16	13	8	6	12	8	10	10	7
2019-07-10	8	14	16	15	10	6	6	12	7	11	11	7
2021-05-13	7	12	6	12	11	3	10	11	7	7	1	10

#### Riffle/Run Quality

2005-05-18	11	13	11	3	12	12	13	14	10	14	2	7
2006-05-01	11	13	11	2	11	13	13	14	12	14	2	7
2007-04-02	13	15	13	2	13	13	12	14	13	15	0	8
2008-05-05	13	13	13	1	15	15	14	14	13	13	1	6
2009-04-30	18	12	15	1	6	13	16	15	8	11	1	8
2010-03-24	12	12	13	1	13	13	13	13	11	10	2	9
2011-03-03	15	17	18	14	17	13	15	15	15	15	1	11
2012-06-28	10	14	15	0	15	10	11	12	10	12	0	7
2013-09-03	6	9	10	0	6	8	10	13	6	12	1	6
2014-08-21	6	14	10	8	8	11	12	9	9	12	0	7
2016-06-09	11	14	14	2	13	8	10	11	8	12	1	6
2017-06-08	12	12	14	0	13	10	11	8	8	11	0	6
2018-06-07	14	14	11	10	12	10	14	13	1	13	0	7
2019-07-10	13	10	10	0	10	7	9	9	7	11	0	7
2021-05-13	10	11	11	5	10	11	9	7	6	6	1	12

#### Embeddedness (%)

2005-05-18	50	50	50	0	60	70	50	50	70	50	0	50
2006-05-01	50	50	50	0	60	60	60	60	60	50	0	50
2007-04-02	60	60	50	75	60	60	60	50	60	50	0	50
2008-05-05	40	50	50	0	50	60	50	50	50	50	0	50
2009-04-30	10	50	50	70	50	30	20	20	30	20	0	70
2010-03-24	40	40	40	0	40	30	30	30	40	40	0	40
2011-03-03	50	50	50	50	50	60	50	50	50	50	0	50
2012-06-28	30	30	30	0	50	50	30	50	50	20	0	30
2013-09-03	50	50	50	40	50	60	50	50	50	50	0	60
2014-08-21	50	40	50	50	60	50	40	50	50	50	50	50
2016-06-09	50	50	50	50	30	75	50	50	50	50	0	50
2017-06-08	30	50	20	NA	30	60	40	60	60	40	0	50
2018-06-07	40	40	50	NA	30	50	40	40	NA	40	0	50
2019-07-10	30	50	30	NA	20	50	50	30	50	50	0	50
2021-05-13	30	30	20	30	30	30	30	30	30	30	0	40

#### Embeddedness

2005-05-18	11	11	11	0	9	7	11	11	7	11	0	11
2006-05-01	12	11	11	0	9	9	10	10	10	11	0	11
2007-04-02	10	10	11	3	10	9	10	11	10	11	0	13
2008-05-05	13	13	13	0	13	8	13	13	13	13	0	12
2009-04-30	19	11	12	7	11	14	16	16	14	17	0	7
2010-03-24	14	14	14	0	14	14	13	14	13	13	0	14
2011-03-03	14	14	14	14	14	9	14	14	14	14	0	14
2012-06-28	14	14	14	0	11	10	14	10	10	17	0	14
2013-09-03	11	11	11	13	11	9	11	11	11	11	0	13
2014-08-21	11	12	11	11	8	11	12	11	11	11	11	11
2016-06-09	11	11	11	11	13	6	11	11	11	11	0	11
2017-06-08	14	11	17	NA	14	9	13	9	9	13	0	11
2018-06-07	12	12	11	NA	14	11	14	12	12	14	0	11
2019-07-10	14	11	14	NA	16	11	11	14	11	11	0	11
2021-05-13	14	14	16	14	14	14	14	14	14	14	0	14

Shading (%)

	Moores Run above Radecke Ave. Segments											
	1	2	3	4	5	6	7	8	9	10	11	Tributary
2005-05-18	75	75	75	25	60	50	40	50	40	75	0	80
2006-05-01	50	75	60	50	80	60	25	50	40	60	0	70
2007-04-02	0	20	30	20	50	20	35	30	30	40	0	50
2008-05-05	40	50	70	70	80	40	30	70	30	50	0	70
2009-04-30	35	45	30	50	60	40	40	35	50	20	0	90
2010-03-24	20	20	20	20	30	30	30	30	30	40	0	40
2011-03-03	0	0	0	0	0	0	0	0	0	0	0	0
2012-06-28	70	50	20	20	80	40	40	50	30	50	0	80
2013-09-03	60	60	20	40	50	50	40	30	50	70	0	80
2014-08-21	70	50	40	40	30	50	40	40	30	75	0	90
2016-06-09	67	60	30	40	40	50	50	70	40	70	0	80
2017-06-08	75	50	20	60	50	30	40	80	30	90	0	75
2018-06-07	90	80	60	40	60	50	50	30	50	60	0	90
2019-07-10	80	70	60	50	40	60	40	70	30	60	0	90
2021-05-13	70	45	20	50	40	80	30	60	30	40	0	90

Moore's Run above Radecke Ave. Segments											Tributary
1	2	3	4	5	6	7	8	9	10	11	

#### Trash Rating

2005-05-18	11	8	4	8	9	8	11	7	5	7	9	11
2006-05-01	8	11	11	10	10	11	8	12	3	9	18	11
2007-04-02	8	8	7	12	11	10	9	10	5	10	18	15
2008-05-05	8	8	3	8	6	6	5	5	3	8	18	13
2009-04-30	8	8	3	9	9	8	9	8	8	10	13	6
2010-03-24	8	8	3	8	13	8	8	10	7	11	12	13
2011-03-03	6	6	8	6	13	9	10	6	7	12	18	8
2012-06-28	8	6	7	3	13	13	10	13	12	11	16	14
2013-09-03	6	7	10	13	13	14	10	7	6	12	18	7
2014-08-21	10	6	10	15	13	8	10	10	10	12	18	6
2016-06-09	14	8	3	16	11	10	8	8	6	9	15	7
2017-06-08	7	7	6	11	7	7	6	6	7	7	16	8
2018-06-07	5	5	5	8	8	8	4	2	2	8	16	5
2019-07-10	4	3	2	10	3	5	4	4	5	3	11	8
2021-05-13	16	8	15	17	15	13	9	11	16	18	18	7

#### Channel Alteration

2005-05-18	16	16	16	16	16	16	16	16	17	17	1	13
2006-05-01	16	16	16	16	16	16	16	16	17	14	1	13
2007-04-02	16	16	16	16	16	16	16	16	16	15	1	15
2008-05-05	17	17	17	17	16	17	17	17	17	15	1	13
2009-04-30	15	16	16	17	16	16	16	16	16	17	1	12
2010-03-24	18	18	18	18	16	17	18	17	18	15	2	15
2011-03-03	17	17	17	17	16	17	17	17	17	15	1	15
2012-06-28	18	18	18	15	15	16	17	18	18	18	1	14
2013-09-03	18	18	18	16	17	18	18	18	18	18	1	14
2014-08-21	18	18	17	17	16	18	18	17	18	18	1	18
2016-06-09	17	17	17	16	17	17	17	16	16	16	2	15
2017-06-08	17	17	18	17	16	18	18	18	18	16	2	15
2018-06-07	17	17	17	15	14	18	16	16	17	16	2	15
2019-07-10	18	18	18	16	13	17	17	17	17	17	2	16
2021-05-13	19	17	17	15	16	18	17	16	17	18	2	18

#### Bank Vegetative Protection

2005-05-18	11	12	15	15	15	15	18	16	17	11	2	8
2006-05-01	11	13	16	16	14	16	16	16	17	10	2	8
2007-04-02	12	12	16	16	14	14	16	14	16	10	2	10
2008-05-05	14	14	17	15	15	16	13	12	17	10	2	8
2009-04-30	20	18	18	20	16	13	19	15	14	13	1	20
2010-03-24	18	18	17	17	14	18	16	16	18	14	2	15
2011-03-03	17	16	15	17	14	13	15	16	16	13	2	16
2012-06-28	17	16	14	14	17	17	16	16	17	13	2	17
2013-09-03	15	17	17	10	15	18	14	15	16	12	2	16
2014-08-21	18	17	12	13	15	15	12	10	10	11	2	6
2016-06-09	18	17	13	16	16	17	14	12	16	10	2	18
2017-06-08	12	16	17	12	17	14	16	17	15	16	2	18
2018-06-07	18	17	12	10	16	15	12	13	16	16	2	18
2019-07-10	10	10	13	6	15	15	8	12	8	5	2	18
2021-05-13	15	15	18	10	15	18	9	14	11	5	2	17

#### Condition Of Banks

2005-05-18	18	18	14	18	18	14	16	17	16	8	20	18
2006-05-01	18	13	14	18	18	14	16	17	15	16	20	18
2007-04-02	18	14	15	18	13	14	15	16	14	15	20	16
2008-05-05	18	17	16	16	18	14	15	16	18	16	20	18
2009-04-30	17	12	13	11	17	10	10	18	15	11	20	5
2010-03-24	18	17	16	16	15	17	14	17	18	15	20	18

	Moores Run above Radecke Ave. Segments											Tributary
	1	2	3	4	5	6	7	8	9	10	11	
2011-03-03	18	16	15	16	16	14	15	16	16	16	20	14
2012-06-28	16	17	15	17	18	15	14	16	16	18	20	18
2013-09-03	18	18	17	14	16	14	14	17	16	18	20	16
2014-08-21	14	8	10	9	10	8	10	9	9	12	20	15
2016-06-09	18	16	13	14	17	15	13	15	15	17	18	16
2017-06-08	17	14	17	12	16	12	12	15	13	17	18	16
2018-06-07	17	18	16	12	18	15	16	16	17	18	18	17
2019-07-10	15	14	14	10	17	14	9	12	8	14	18	16
2021-05-13	17	12	16	12	16	16	11	16	11	17	18	16

Riparian Vegetative Zone

2005-05-18	7	7	9	12	6	6	9	11	10	9	2	2
2006-05-01	7	7	10	14	6	6	8	11	10	6	2	2
2007-04-02	7	4	8	15	6	6	11	11	10	6	2	2
2008-05-05	8	9	12	15	6	6	7	15	12	7	2	2
2009-04-30	2	4	8	13	5	4	7	10	16	16	5	4
2010-03-24	10	7	10	15	10	6	8	15	16	3	2	6
2011-03-03	4	8	8	12	8	4	9	10	7	4	2	7
2012-06-28	14	14	8	17	10	12	14	18	19	11	2	4
2013-09-03	6	6	11	14	10	5	6	10	16	9	4	3
2014-08-21	4	6	14	9	14	7	9	18	16	11	1	5
2016-06-09	10	11	16	18	14	18	15	18	18	17	4	6
2017-06-08	16	11	20	20	13	13	17	15	15	14	2	6
2018-06-07	9	7	13	18	16	15	15	15	18	15	2	10
2019-07-10	4	4	14	17	5	7	9	11	12	8	3	9
2021-05-13	5	5	17	17	13	11	12	16	10	12	2	8

Scoring Color Code		
Score	Category	Color Code
16 to 20	optimal	
11 to 15	suboptimal	
6 to 10	marginal	
0 to 5	poor	

**Appendix I: Watershed Protection and Restoration Program (WPRP)  
Annual Report**

### Watershed Protection and Restoration Program Annual Report Table

Article 4-202.1(i)(4): "The percentage and amount of funds in the local watershed protection and restoration fund spent on each of the purposes provided in subsection (h)(4) of this section;"

Program Element	Cost	Percent of WPRF
Capital Improvements for Stormwater Management	\$ 8,630,882	34.19%
O & M of SWM Systems and Facilities	\$ 12,067,289	47.81%
Public Education and Outreach	\$ 154,548	0.61%
Stormwater Management Planning (see Md. Environment Code Ann. § 4-202.1(h)(4)(iv))	\$ 1,349,927	5.35%
Review of Stormwater Management Plans and Permit Applications for New Development	\$ 1,412,480	5.60%
Grants to Nonprofit Organizations	\$ 200,000	0.79%
Adminstration of WPRF	\$ 1,426,822	5.65%
TOTAL	\$25,241,948.00	100.00%

Number of Properties Subject to Fee

237,391

Reporting Year

2021

Permit Number

11-DP-3315

Comments:

Capital improvements of stormwater  
management includes payment of debt

VERSION 2-28-18

Jurisdiction	Agency	Local Ordinance Submitted to MDE	MDE Approval of Fee Reduction Policy	Fee Reduction Amount	Rate Structures							Additional Sources of Funds			Estimated Annual Revenue	
					Annual Single Family Residential Rate	Annual Commercial Rate	Equivalent Residential Unit (ERU) Impervious	Commercial Capped Rates	Non-profits, Religious Organizations	Exemptions	Federal Facilities Status	Federal Facility Fee(s)/Rate(s)	Additional Source 1	Additional Source 2		Additional Source 3
Baltimore City	Department of Public Works	Yes	NA	NA	\$47.60 - 142.80	\$71.40 / ERU	1,050 sf	Capped at 20% of all State and local property taxes	\$12 / ERU on religious and K-12 education structures	IA permitted to public ww system; streets privately maintained and open to public in SFR communities; IA requires as a superfund cap; solar panel bases; driveways for cemeteries	Charged	\$71.40 / yr / ERU	SWM/ESC Misc. Fees for permitting and penalties as part of development			\$33,908,028.00
Directions:		Use: Yes or No	Use the approval date or N/A	Reduction amount(s), if any, with reason for reduction(s)	Use: N/A, amount of flat rate, rate amount per ERU, etc.			General description of exemption(s), if any			Use: No Facilities, Exempt, or Charged	Use: N/A or the fee and rate structures for federal facilities				

Directions:

Notes:

ERU = Equivalent residential unit

VERSION 2-28-18

**Article 4-202.1(i)(3): "The amount of money deposited into the watershed protection and restoration fund in the previous fiscal year by source;"**

Source	Amount
Annual Single Family Residential Fees Collected	\$11,178,423
Annual Commercial Fees Collected	\$19,572,129
Non-profits, Religious Orgs Fees Collected	\$2,870,772
Miscellaneous fees related to development	\$286,704
Total	\$33,908,029

VERSION 2-28-18

**Note:** Revenue by source is estimated based on the total revenue for the stormwater fee, proportional to the customer base (billing) and may not reflect actual proportion of revenue received for the fiscal year.

**All SWM Projects Implemented in Previous FY for the 20% Restoration Requirement**

REST BMP ID	REST BMP TYPE	BMP CLASS	NUM BMP	IMP ACRES	BUILT DATE	IMPL COST	IMPL STATUS	IMPL COMP YR
	VSS	A	1	948	6/30/2021	\$4,956,363	Complete	2021
	SDV	A	1	373	6/30/2021	\$5,092,014	Complete	2021
	STRE	A	1	127	5/21/2021	\$13,059,379	Complete	2021

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## **Appendix J: Summary of PST Investigations**

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
3057	3700 Block Tudor Arms Ave Water Main Break (SR#505270)	3700 Block Tudor Arms Ave	Jones Falls	Received city works complaint from Bluewater Baltimore: "at least 6-8 street level stormdrains without proper filters to prevent sediment from entering stormdrain system".  SEC inspector Carroll Brown has been deployed to ensure that maintenance crews install inlet filters.	Blue Water Baltimore	7/30/2020	Other
3082	Armistead Creek Discolored Discharge (4311 Erdman Ave)	Armistead creek from Wright Ave to the Herring Run	Herring Run	Received two cityworks complaints about "black" water in Armistead Creek from Wright Avenue to the Herring run on 9/19/20 (Saturday). Investigation on 9/21/20 (Monday) found the flowing water was running clear with low turbidity and no other alarming chemistry, therefore, no active discharge to track. However, cloudy water from the weekend's suspected event remained in some pooled areas further downstream toward the Herring Run.  On 9/23/20 OCR staff contacted MDE after it was discovered that they had investigated while the discharge was active on 9/19/20. Their report stated that a source and the composition of the discharge was not confirmed.  1/5/20 Possible source discovered at a pipe leaking to the building at 4311 Erdman Ave.  1/6/20 Confirmed still active. Heavy staining in the channel. Contacted MDE (J. Miller) who will setup a joint inspection with OCR. Contacted Pollution Control (P. Boyle) whom said that Columbia Container does not have a DPW wastewater discharge permit. An application is being sent to the business. No state permits were found for the business or address using the online portal.  1/12/21 NM met with MDE (J. Miller) and Columbia Container's Brendan Moynihan 410-467-1400 bmoynihan@columbiacontainer.net. Due to a recent Covid outbreak in the facility an inspection was not completed and will be scheduled in the near future. We did speak to Brendan about the discharge who assured us they do not have any discharges going into the storm or sanitary sewer. They do clean their ink presses in which the process is self contained. They hook the machine up to a 5 gallon bucket in which the liquid cycles through the machine then discharges back into the same bucket. He also stated that the ink they use is food grade and nontoxic. He also stated they rent the building. The property owner also uses a portion of the building for shipping. CCTV inspection of the storm in front of the property found the storm drain dyed black indicative of ink. We ran the camera in the storm drain under the building 300 ft. We located a lateral pipe 120 ft at 1 o'clock which is stained black. The Black stain stop near this location. There is also another small pipe at 11 o'clock a few feet beyond which also shows black staining. The main storm beyond this had no staining and the water is gray which needs more investigation.	Citizen	9/19/2020	Other
3083	310 S Washington St Pressure Washing/Paint Removal (Cityworks #517620)	310 S Washington St	Harbor	Cityworks complaint received about paint chips/debris entering a storm drain inlet from pressure washing of an exterior brick wall at 310 S Washington St on 9/22/20. OCR responded shortly after the complaint was received and found active pressure washing in progress. There were some controls in place to reduce the paint chips/debris in the runoff, however, more effort to contain the debris was requested. The contractors voluntarily stopped the job and added additional sediment barriers including foam wedge filters and several tarps. All of the debris will be collected on the tarps and removed from the job site daily.  Follow up on 9/23/20 found the amount of water runoff from the site has been reduced and remained	Citizen	9/22/2020	Other

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
3084	3020 W Coldspring Ln (Express Concrete)	3020 W Coldspring Ln	Gwynns Falls	<p>Grey sediment-laden water observed in Pecks Branch by OCR staff. Sediment originally believed to originate from the Hanlon Park/Ashburton Reservoir Project. SEC inspector was notified.</p> <p>On 9/24/2020 Contractors onsite contacted SEC inspector after assessing their discharge area and found no cause for the sediment in the storm drain. OCR continued the investigation on a different storm drain branch and found sediment-laden water entering from a source other than the Ashburton Reservoir project. Sediment-laden water and significant cement deposition in the storm drain was then tracked to 3020 W Coldspring Ln (Express Concrete). MDE inspector Andrea Buie-Branam was notified as this site has previously been on her watch list. She met OCR staff onsite and agreed that discharge violations existed for cement entering the storm drain and she would pursue enforcement.</p> <p>On 9/25/2020 Clean up began on the property of 3020 W Coldspring Ln to reduce their concrete from entering the storm drain. At this time it is suspected that there are additional inputs of sediment/cement into the storm drain, however, during the investigation all effected storm drain branches led to Express Concrete.</p> <p>1/5/21 Followup found inlets along East Wabash have been protected. The storm manhole in sidewalk along Coldspring Ln has heavy buildup of mud (See Picture).</p> <p>2/3/21 manhole still has mud. The pipe leading it the yard is trickling with muddy water. Spoke with Mike aka "Mo" from Express Concrete who said every week or two someone comes to clean the inlets and</p>	OCR	9/23/2020	Other
3097	MTA Rear Lot Material Storage Sediment (Cityworks SR#526033)	Rear of MTA Lot	Jones Falls	<p>Cityworks complaint received for sediment laden discharge into the Jones Falls along Falls Rd across from DOT salt storage yard on 10/20/2020. Investigation on morning of 10/21/2020 found the water flowing from the outfall clear, however, sediment deposition remained present in the stream below the outfall and in the pipe. Upstream investigation found probable source as an unprotected storm drain manhole cover in the City owned construction material storage area behind the large MTA facility at 400 W North Ave. Gravel and dust was observed entering the storm drain while vehicles and equipment passed over the manhole cover. Onsite contractors (R.E. Harrington) readily agreed to add sediment controls to the manhole cover and also clean/replace all existing inlet controls as an additional precaution.</p>	Blue Water Baltimore	10/20/2020	Other
3106	1100 S Bouldin St Sediment		Harbor	<p>Cityworks complaint received regarding sediment in an alley behind 3211 O'Donnell Street. Investigation found a sandy sediment deposition in the alley. Suspected source is a home rehabilitation project at 1100 South Bouldin St. No contractors were on site at time of investigation. Will follow up.</p> <p>12/14/20 Per Citiworks "Per Inspector Violation was found and reinspection will be conducted to ensure code compliance"</p> <p>1/20/21 Problem no longer exists.</p>	Citizen	10/31/2020	Other
3127	W Coldspring Ln & E Wabash Ave Sediment (Cityworks SR#545885)	W Coldspring Ln & E Wabash Ave	Gwynns Falls	<p>Received cityworks complaint about discolored water flowing in the Pecks Branch at Gwynns Falls Pkwy &amp; Dukeland St on 12/28/2020. Upon original visit on morning of 12/29/2020 the water was flowing clear, however, sediment deposition was present incating a previous event. Later in the afternoon on 12/29/2020 the water was again flowing with heavy sediment present.</p> <p>On 12/30/2020 the sediment was tracked through the storm drain to an utility excavation project at W Coldspring Ln &amp; E Wabash Ave where the sediment controls were overwhelmed and allowing excess sediment into a storm drain inlet. Carroll Brown of SEC was notified and he immediately sent notification to project managers to clean the site.</p> <p>2/3/21 Problem no longer exists</p>	Citizen	12/28/2020	Other

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
3135	Herring Run below Harford Rd (Sediment)	Herring Run Park footbridge below Harford Rd	Herring Run	Sediment observed in the Herring run at Sinclair Lane and other downstream ammonia screening sites during Herring run ammonia screening survey on 1/13/2021. Sediment in the stream was tracked to wet work construction in Herring run Park below the Hartford Road bridge. Excavators were being used to repair damaged shore banks along the stream. No sediment control's were observed. ESC inspector Carrol Brown was notified for enforcement actions.  2/3/21 Problem no longer active. Sediment boom around sandbags where excavator is near stream.	OCR	1/13/2021	Other
3158	Wabash Ave Tunnel Boring Project (SC940)	various excavated pits on Wabash Ave from Liberty Heights Ave to Coldspring Ln	Gwynns Falls	Reports of sediment-laden Discharge at Pecks Branch Outfall have been received. Investigation on 2/12/2021 found that the sediment discharge is intermittent and originally suspected the water discharge from an excavation pit along the 3500 block of Wabash Ave was overwhelming their sediment controls. A site visit found that no water was actively pumping. A return visit to the outfall found that there was no longer sediment present in the flow, however, the tunnel project manager was onsite. Staff stayed to observe the outfall with him while one of the tunnel pits activated its pump. Soon the outfall began discharging the heavy sediment again. The project manager (Pete Sudkamp) stated they will take responsibility for today's sediment release and temporarily stop work to further modify their sediment controls at the pit locations.	OCR	2/12/2021	Other
3160	Wabash & Coldspring Lane Construction Discharge 01222021	Intersection of Wabash & Coldspring Lane	Gwynns Falls	During routine monitoring of GFP site heavy sediment laden water and elevated chlorine levels were observed in Pecks Branch stream. While tracking, it was determined that a construction company pumping ground water out of a pit into a filtration bag was releasing sediment into a storm inlet along Wabash and Coldspring. Upon arriving on scene the city inspector for the job informed company that they had to stop pumping since the bag was overflowing with heavy sediment back into the storm drain. Chlorine issue was not related to the discharge at this location and further information can be found under investigation 3/1/21	OCR	1/22/2021	Other
3167	6152 Chinquapin Pkwy Sediment		Herring Run	Sediment bags were placed in the wrong place and not functioning properly. One had a large hole in the side and the other was placed directly in the stream. ESC inspector Carroll Brown instructed them to replace the bags and install them correctly. Bags must be placed on hay bales or a grassy area and away from the stream.	Citizen	3/8/2021	Other
3169	Herring Run @ Hillsway Ave: Baltimore Co (Cityworks SR #570234, 570404)	Herring Run @ Hillsway Ave; Baltimore County	Herring Run	Complaint received for "green" water in the Herring run. OCR staff discovered the turbid water from sediment in the Herring run earlier in the day on 3/9/2021, Prior to receiving the SR. The turbid water was tracked beyond the boundary line into Baltimore County at Hillsway Ave. Baltimore County dept of Environmental protection and Sustainability was contacted and an official report of polluted water was made on the evening of 3/9/2021.  Call number 344/58346 and the water was corrected.	Citizen	3/9/2021	Other
3180	200 Wyman Park Dr (Cityworks SR#581287)	Carnegie Way behind 200 Wyman Park Dr	Jones Falls	Cityworks complaint received regarding murky water discharge into Stony Run from someone pumping water. OCR staff found contractors (E & F Contracting) were pumping out city water from a leaking private water line on Johns Hopkins campus. The contractors were instructed to stop the pumping until sediment bags/filters can be installed on the discharge hose. Additionally, de-chlorination tablets were requested while pumping of chlorinated water continues during repairs.	Citizen	4/6/2021	Other
3218	Druid Park Lake Dr Median (Cityworks Sediment Complaint #585251)	In the median/wedge where Druid Park Lake Drive splits to I-83 on and off ramps and 28th St begins.	Jones Falls	Cityworks complaint about very turbid water discharging into the Jones Falls from the two outfalls across from 2601 Falls Rd. It was tracked to construction on Druid Park Lake Dr. They were using a filter bag but it was either full or improperly installed and spilling out of the bag at the hose connection. It was referred to Carroll Brown at Sediment and Erosion Control who said it would be addressed and corrected.	Citizen	4/16/2021	Other

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
3220	317 S Madeira St	317 S Madeira St	Harbor	<p>Cityworks SR stated; Construction crew dumping water out through hose into street and storm drain - No - Brown - Do not know - Yes - Construction crew continually dumping dirty water from house into storm drain. All kinds of sediment including sand and concrete</p> <p>5/3/21 Responded to another complaint regarding discharge from the basement. Collected a sample from the basement. Chlorine is 0.04ppm. Fluoride sample was sent to lab. Spoke to the neighbor at 315. He said he has not been getting water in his basement but his sump pump does run once and a while. Since work has been being done in 317 the sump has not been running. He stated that the basement is being excavated and lowered. The housing inspector is visiting the site on May 5th to inspect the work since excavation was not part of the permit. The houses in the neighborhood have a low ceiling, now 317 has a high ceiling. Sample was sent to the Ashburton Lab and determined to be City water. L2L WO created and sent to John McComas.</p>	Citizen	4/27/2021	Other
3225	3300 Clipper Mill Sediment		Jones Falls	<p>Citizen complaint regarding turbid water discharging from the out fall when it rains. Citizen photos show it very turbid. Investigated just after a heavy downpour and did not find the outfall any more turbid then the stream. Drove into the back side of the zoo and found two issues. The first at the Wildlife Gate does not drain tot he same outfall as the complaint. A crew was using heavy equipment to move two piles of dirt from the construction of the otter exhibit. The second location was at he the Black smith gate. The water discharging into the stream was orange. Looking at the map it looks as though the outfall drains the elephant exhibit. Plan to speak with Karl Kranz the Operating Officer. P 443.552.3350 C 717.825.0948 or Blayne Roessler 513-222-3315</p> <p>5/17/21 Met with team at the zoo. They believe the sediment is coming from the elephant enclosure. There were instances where the the pool fill was left on and eroded the ground. They believe this was the issue. They said they will not let it happen again and want to know if any future complaints come in. The otter exhibit is finished. They were told to ensure stock piles are not put on pavement and sediment control device such as fencing and hay bales are used.</p>	Citizen	5/5/2021	Other
928	400 S Highland Ave Water Leak	Last SD manhole on system @ Bank St & Highland Ave	Harbor	<p>High Chlorine (0.19mg/L) found during Linwood Ave Storm Drain Lateral survey (01/16/14) was tracked to the last manhole in storm drain system at Bank St and Highland Ave. The flow was coming from the southeastern direction. 5/21/14 Leak detection crew found broken service connection. Assigned to contractor on 5/21/14. Followup on 2/19/16 found problem still active.</p> <p>6/2/20 still active 100 gpm</p> <p>12/14/20 Per Citiworks work completed on 11/12/20</p> <p>1/4/20 still active</p> <p>1/6/21 On list sent to James Patrick. He and Kris Carter will work together to have complaints investigated and repair.</p> <p>4/1/21 Per Cityworks "We marked a box on the service line to 400 S. Highland Ave." WO#921836</p> <p>4/14/21 Per Cityworks Still in New Status for Water Service Repair</p> <p>6/1/21 Still active remarked street.</p>	OCR	1/16/2014	Potable Water

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
2299	S. Washington St. & Eastern Ave Water Leak	Between Eastern Ave & Fleet St on S. Washington St	Harbor	There is drinking water entering the storm drain line between Eastern Ave & Fleet St on S. Washington St. There is high chlorine (0.24 ppm) in the northern manhole at S. Washington St & Fleet St and low chlorine (0.08 ppm) and noticeably less flow in the northern manhole at S. Washington Eastern Ave. We couldn't open the manhole in the middle of S. Washington & Eastern Ave because it was stuck, but we were able to look in the lid and it had the same lower flow. Found during East Harbor Storm Drain Survey. Follow up on 1/20/2017 after WO closed found leak still active. We were able to narrow the leak down further to the intersection of Washington St & Eastern Ave. Name of Investigation changed from 500 blk Washington St to S Washington & Eastern Ave Water Leak. On 8/25/17 Leak detection located and marked an audible leak, repair work order created. 5/27/20 still active need new wo# created 7/6/20 On list that was sent to UMD for Leak to Locate complaints that were identified but not repair and work order was closed. 1/6/21 On list sent to James Patrick. He and Kris Carter will work together to have complaints investigated and repair.  3/29/21 No water infiltration. Abated.	OCR	7/20/2016	Potable Water
2301	Thames St & S. Wolfe St Water Leak	Locate in the northeast corner of the intersection.	Harbor	Finished water leak can be seen entering the storm drain vault in the upper south east corner. There is a water line and valve that are very close to where the water is entering. This manhole is tidally influenced and had a lot of pooled water in it. Approx 50 GPM. 12/14/20 Per Cityworks Closed 8/25/20 no water found. 1/4/21 still active 1/6/21 On list sent to James Patrick. He and Kris Carter will work together to have complaints investigated and repair.  3/29/21 Per Cityworks "...We marked a box on the 6" main at the intersection of Thames St and Wolfe St."  4/14/21 Per Cityworks Still is Referred to Construction status for Water Joint Leak  4/16/21 Per Cityworks repairs were made.  6/1/21 repairs complete abated	OCR	7/20/2016	Potable Water
2593	E. Eager St & N. Calvert St Water Leak	Intersection of N. Calvert St & E. Eager St.	Jones Falls	While working on the Jones Falls Lateral Survey 2017 we located high chlorine (0.95 ppm) at Guilford Ave & E. Eager St. It was tracked to a subsurface finished water leak at the intersection of N. Calvert St & E. Eager St. The water is infiltrating the main storm drain line as it crosses the road manhole from D35CC_091MH to D35CC_092MH. The water is entering at approx 30 GPM. This has been turned over to John McComas (OAM) for leak to locate. 5/27/20 Active at 25 gpm 12/14/20 Per Cityworks work was completed on 10/6/20.	OCR	2/8/2018	Potable Water
2961	Woodbourne & Pioneer Chlorine	Inside the 72" storm drain at the 2200 block of Woodbourne Ave., between Plymouth Rd. & Pilgrim Rd.	Herring Run	Elevated chlorine (0.17 ppm) detected at site during watershed survey. Narrowed the high chlorine between two manholes D53WW1054MH & D53111056MH, will require further investigation. On 1/9/20 conducted storm drain walk. About 180 feet from manhole D53WW1054MH (Woodbourne & Plymouth) observed several water spurts, discharging potable water from the wall and base of the storm drain, 10 GPM.	OCR	1/6/2020	Potable Water
2992	Cross keys Outfall JF105 Water Leak	outfall below corner of cross keys village and poly/western football field	Jones Falls	discovered elevated levels of chlorine during outfall inspection.  source is believed to possibly be remnants of former golf course irrigation or possible hydrant leak. This has been a known problem since 2011.  problem has been resolved as of 01/04/2021  1/5/20 Spoke to Brian Webster at BCPS Facilities and he verified they did make the repairs to the water line.	OCR	2/19/2020	Potable Water

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
2993	Poly/Western Service Rd Water Leak	Source is coming under the school, visible from a manhole near the Western side of the courtyard.	Jones Falls	<p>2/20/20: Manhole sample produced elevated levels of chlorine. Found while tracking another chlorine PST originating from outfall surveys. Tracked to Poly/Western courtyard with water originating from under school. Contacted Matthew Woolston (MWoolston@bcps.k12.md.us)- Vice Principal who would contact school repairmen.</p> <p>1/4/21: Resampled the closest manhole w/o entering school. Still high chlorine, but less than last year. Only sources from this line are from the school, so likely the problem still exists.</p> <p>1/5/21 Spoke to Brian Webster at BCPS Facilities regarding the water main leak. He said he is sending a contractor to the site to make repairs.</p> <p>Brian Webster   Project Supervisor Contract Maintenance   Baltimore City Public Schools 2200 Robb Street   Baltimore, MD 21202 (O) 443-984-3479 (C) 443-488-1209</p> <p>1/14/21 Brian stated "i found problem was solenoid valve on compressor was bad and dumping water all the time they have fixed to solve problem"</p> <p>1/20/21 Found chlorinated water still flowing in manhole. Sent email to Brian Webster whom stated he will investigate further.</p> <p>3/22/21 Emailed Brian for an update. He said it was repaired. Need to follow up.</p>	OCR	2/19/2020	Potable Water
3018	Washington St & Eager St (Water Leak in Inlet Connection)	Washington St & Eager St	Harbor	<p>High chlorine(1.01 ppm) found during Lakewood Lateral Sampling 2019/2020. Subsurface water leak entering the storm drain in the middle of the segment on the north side of the pipe in the 3 o'clock position. Needs to be reported for repair.10gpm</p> <p>12/14/20 as per Citiworks on 7/14-15, 2020 leak detection did not find the cause. Need to revisit.</p> <p>2/3/21 Still active sending back to leak detection. WO created 907432</p> <p>3/22/21 Per Citiworks "Water joint leak work order sent to Wazir Quadri on 2/18/21."</p> <p>4/14/21 Per Citiworks In Closed status. Leak was stopped. Followup found steel plates covering area of leak and manhole.</p> <p>5/4/21 RE Harrington onsite making repair.</p> <p>5/10/21 Abated</p>	OCR	3/5/2020	Potable Water
3047	932 S. Robinson St. (Cityworks #499546)	<p>Break at 932 S. Robinson St.</p> <p>Discharge at Canton Waterfront Park outfall and running down Ellwood St.</p>	Harbor	<p>Water main break on 932 S. Robinson St. Coming out of outfall near boatramp at Canton Waterfront Park. Water is bright orange due to clay and dirt.</p> <p>Cityworks complaints about water. Blue Water Baltimore also responded and called MDE and OCR. Source identified before OCR's arrival.</p>	Citizen	7/6/2020	Potable Water

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
3093	907 E 43rd St Water Main Leak	Inlet connection West of 907 E 43rd St	Herring Run	<p>hey High Turbidity value (223 NTU) received at the Northhill &amp; The Alameda Site during the BR Ammonia Screening Survey on 10/7/2020. Turbid water was tracked to a suspected water main leak near 907 E 43rd St. Despite a low Chlorine value in the field a Fluoride analysis performed by the Ashburton lab confirmed it to be City water. Referred to OAM for Leak detection.</p> <p>12/11/20 High chlorine recorded at Northhill, confirmed water main break is still active.</p> <p>12/14/20 WO created for repair. still in open status.</p> <p>2/3/21 Heavy flow in the inlet pipe. 500 gpm. Leak detection did not find a leak. Needs further investigation by using cctv into</p> <p>2/9/21 CCTV of inlet pipe found a pipe collapse. Flow increased and now with sediment. New WO 908663 created for Leak Detection.</p> <p>2/18/21 Leak Detection was lead off location by a surface leak and close WO again. Sent email to John.</p> <p>3/29/21 Pipe dry. resent patch on street. Abated.</p> <p>500 GPM</p>	OCR	10/7/2020	Potable Water
3096	5015 Boxhill Ln Water Main Leak	5015 Boxhill Ln	Jones Falls	<p>Elevated chlorine values found while investigating another PST. Chlorinated water is infiltrating two different inlet connections through segment joints. Leak detection work order created.</p> <p>12/14/20 Per Citiworks work was completed on 11/4/20</p> <p>12/15/20 Confirmed abated</p>	OCR	10/19/2020	Potable Water
3099	Cherry Hill Road fire hydrant flushing	Fire hydrant by 1401 Cherry Hill Road.	Harbor	Fire hydrant was recently opened to discharge water. Hydrant was closed when we found it.	OCR	10/28/2020	Potable Water
3101	5708 Charlestowne Dr Water Main Leak	Culdesac of 5708-5713 Charlestowne Dr	Jones Falls	<p>High turbidity (139 NTU) and elevated chlorine (0.09mg/l) during SW Ammonia Screening Survey on 11/02/2020. Investigation led to a subsurface City water infiltration into both the storm drain and sanitary sewer in front of 5708 Charlestowne Dr. Referred to OAM Leak Detection, workorder created. 250 GPM</p> <p>12/14/20 WO for repair created. Still in new status</p> <p>1/20/21 Followup found repair was made. citiwork said it was completed on 1/19.</p>	OCR	11/2/2020	Potable Water
3108	2817 Goodwood Rd Water Main Break	2800 Block of Goodwood Rd	Herring Run	<p>Very turbid water flowing from the Echodale outfall during the BR ammonia survey on 11/18/2020. Turbid water was tracked to a water main break on the 2800 block of Goodwood Rd. Water main break was undermining the street causing heavy sediment discharge and unsafe conditions. Reported as Exterior water leak. 50 GPM</p> <p>(Note: reported by BWB on 11/19/2020 SR 20-00786723 (534713) @ 5298 Herring Run Dr.)</p>	OCR	11/18/2020	Potable Water
3110	4415 Findlay Rd Water Main Break	4400 Block of Findlay Rd	Herring Run	<p>High chlorine value (0.34mg/l) during BR ammonia survey on 11/18/2020. Investigation tracked the chlorine to a water main break at 4415 Findlay Rd. Reported as Exterior water leak. 5 gpm</p> <p>11/25 Repair Completed</p>	OCR	11/18/2020	Potable Water
3119	Monterey & Delverne Water Main Break	Monterey Rd & Delverne Rd	Herring Run	<p>High turbidity (62.8 NTU) record at the 35th &amp; Alameda survey site. The sediment was tracked to a water main break at Monterey Rd &amp; Delverne Rd, approximately 30 GPM. A scout was at upon arrival at the water main break.</p>	OCR	12/10/2020	Potable Water
3138	Hamilton Ave & Greenfield Ave (Watermain Break)	Hamilton Ave & Greenfield Ave in the road	Herring Run	<p>Very turbid water observed at Radecke Ave sample site during ammonia screening survey. The turbidity was tracked to a watermain break located at Hamilton Ave &amp; Greenfield Ave.</p> <p>50 gpm</p>	OCR	1/13/2021	Potable Water
3140	3512 Northern Parkway Water Main Break	In front of 3512 Northern Parkway between curb and sidewalk. Broken hydrant line.	Herring Run	<p>During routine sampling found extremely heavy and turbid water flow smelling of chlorine at Mary Ave site. Tracked to 3512 Northern Parkway where a broken line was surfacing between sidewalk and street. ~100 GPM; DPW cones already at site. Break already listed under Cityworks.</p> <p>Per Cityworks, repaired 1/24/2021. Downstream sites back to normal.</p>	OCR	1/20/2021	Potable Water

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
3141	3500 Block of Northway Dr (Watermain Break)	3500 Block of Northway Dr	Herring Run	Very turbid water observed in the Moores Run at Radecke Ave while setting up storm samplers. Investigation lead to a watermain break at the 3500 Block of Northway Dr causing approximately 1000GPM of heavily sediment-laden water to entering several storm drain inlets. A check on the Cityworks system stated that DPW scouts had already been on location and watermain break workorders had been created.	OCR	1/15/2021	Potable Water
3142	4000 Callaway Water Leak	Boarman & Callaway Intersection	Gwynns Falls	During routine monitoring of Pecks Branch Stream elevated chlorine readings were discovered with heavy sediment in stream. PCA's initially thought sediment was coming from Ashburton Reservoir construction site as they indicated that they were cleaning their frack tanks, but it was later discovered that a construction company was discharging sediment laden ground water into storm drain up at Wabash and Cold Spring intersection (see investigation 3160 for more details). City inspector halted discharge from project until better sediment and erosion measures were installed. PCA's continued to track chlorine and discovered a water main leak seeping into a storm inlet at the top of the line on Callaway Ave. Leak to locate request submitted to John McComas on 1/22/21. Photos attached.  Work order: 903093 created 1/25/21  3/22/21 Per Citiworks "Water joint leak work order sent to Wazir Quadri on 2/22/21."  4/12/21 Pipe drv. Abated.	OCR	1/22/2021	Potable Water
3143	2701 Latona Rd Water Leak	In front of 2701 Latona Rd	Herring Run	High chlorine found at Echodale site during BR survey. Tracked to leak in front of 2701 Latona Rd. Water had surfaced, but flow still mostly underground. Reported to 311. As per Citiworks repaired on 1/29/21 70 GPM	OCR	1/22/2021	Potable Water
3145	3501 Wabash Ave Watermain Break	3501 Wabash Ave	Gwynns Falls	High chlorine (0.47mg/l) value during ammonia screening survey on 1/25/2021. Investigation lead to a watermain break at 3501 Wabash Ave causing approximately 500GPM of city water to enter the storm drain system. A check on Citiworks showed several service requests have been submitted and a work order for repairs has been made.  2/2/21 Follow up found problem still active at estimated flow of 500 GPM	OCR	1/25/2021	Potable Water
3148	4900 Alson Dr	4900 Alson Dr	Gwynns Falls	Extremely turbid water present at Briarcliff outfall during DM ammonia survey on 1/29/2021. Investigation led to emergency Watermain repair at 4900 Alson Dr. On call contractors were pumping sediment laden water from excavation site without sediment controls at 100 GPM. OCR requested onsite city inspector to stop work until contractors put sediment bags on pump discharge. The bags were quickly installed and reduced sediment entering storm drain while repairs were made.	OCR	1/29/2021	Potable Water
3154	5315 Elsrode Ave Water Leak	5315 Elsrode Ave	Herring Run	High chlorine received (0.90ppm) during BR Survey at Echodale Ave sample site and tracked to 50GPM water leak into storm drain inlet lateral connection. The leak can only be seen by entering the storm drain inlet.  3/22/21 Per Citiworks SULLIVAN, DANIEL P03/16/2021 1:40 PM work complete at this location  3/22/21 Pipe and Sealant installed. Abated.	OCR	2/8/2021	Potable Water
3162	5015 Boxhill Rd Watermain Break	5015 Boxhill Rd	Jones Falls	Cityworks request received about sediment discharge into the Stony Run from an outfall on Lawndale Ave. Sediment discharge was tracked to a watermain break at 5015 Boxhill Rd allowing 1000GPM of city water to enter the storm drain along with sediment. A work order had already been created by UMD.  3/22/21 Per Citiworks "HAMM, HAROLD C02/26/2021 6:03 PM Per R. Morton, the water main is complete at the location."	Citizen	2/24/2021	Potable Water

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
3182	3801 Belvedere Ave Water Leak	3801 Belvedere Ave (in front of KC Carry Out next to fire hydrant.)	Gwynns Falls	<p>4/7/21: Complaint from Dustin the resident inspector for the Powder Mill stream restoration. He stated the water at Kennison Outfall was a milky blue color and had a fuel smell along with a sheen. Upon arrival to the site there was no smell. The water was clear with a slight blue color. Spoke to Mike Krankota the Project supervisor on site. He stated there has been a number of time the outfall is discharging strange colors. chlorine was a bit elevated and lead us to track the high chlorine. Investigation needs to continue with a pipe walk from 5507 Kennison since all incoming branch line were sampled.</p> <p>5/12/21: Pipe walk to locate source. Walked up to manhole at Hillsdale and the Wabash-Elderon alley but stopped since pipe got smaller and couldn't see any obvious leaks. Chlorine was high on main flow up to that point and beyond. Continued tracking on the surface, locating source at 3801 Belvedere Ave inlet. Water is coming from under Belvedere Ave into the inlet. About 30 GPM. Separate chlorine issue found at 5140 Reisterstown Rd NW branch.</p> <p>6/1/21 reported to 311. Spoke to investigator on the phone. He found the leak while I was on the phone with him. NM</p> <p>6/2/21 WO was created for Leak Detection by UMD.</p> <p>6/14/21 Per Cityworks WO created for exploratory excavation.</p> <p>7/2/21 Leak still active. AV</p> <p>7/6/21 Per Cityworks, The Exploratory excavation WO is "In Progress" status</p> <p>7/16/21 Leak still active, flow rate increased to &gt;300 GPM. Various agencies notified of increased priority.</p> <p>7/20/21 Confirmed abatement of the leak, emergency on-call contractors made the necessary repairs over the weekend. Note: undermining of street and sidewalk still remain.</p>	Contractor	4/8/2021	Potable Water
3183	Echodale Ave & Tramore Rd Water Leak	Storm drain segment below Echodale Ave & Tramore Rd	Herring Run	<p>High chlorine value received (0.48ppm) during DM Survey on 4/8/2021. Investigation led to storm drain segment on Echodale Ave between Tramore Rd and Lotona Road with an estimated 10GPM of City Water infiltration. A Leak to Locate marking box was observed at the intersection of Echodale Ave &amp; Tramore Rd indicating that a water leak was already discovered. A search of workorders on Cityworks confirmed that Leak Detection did find a watermain leak at this location on 2/20/2021 and a Joint Repair workorder was created and remains open (as of 4/8/2021).</p> <p>4/14/21 Per Cityworks in Refer to Construction status for Water Joint Leak</p> <p>6/1/21 WO closed by OEC because contractor could not find water leak.</p> <p>6/2/21 Emailed Wazir and Daniel Sullivan about how to proceed.</p> <p>6/15/21 Marked street where water is entering storm. There is a large void behind an incoming pipe where the water source is.</p> <p>6/16/21 New WO was created and send to Dan Sullivan and Wazir</p> <p>6/21/21 Per Cityworks; Job was found complete. Closed.</p>	OCR	4/8/2021	Potable Water

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
3208	Parkside and Mannasota Outfall Water Leak		Herring Run	Elevated chlorine from outfall. Found pipe leading towards fire station. Spoke to staff in firehouse whom said they don't have any issues. There is water coming from the garage but the pump on their fire engine leaks.  6/8/21 Per Cityworks L@L marked a box in front of fire station.  7/6/21 The WO was closed because UMD said there was no problem found. A new WO was created and an email was sent to the supervisor, superintendent, and Division Chief.	OCR	4/26/2021	Potable Water
3211	Potomac St Water		Herring Run	Spinello discharging water bypass into street with out dechlorinating. Spoke to Luke Mulray from AECOM the consulting inspector on side. He said he will have the bypass shut down and notify the inspector in charge of bypass. He was told that every discharge point needs to have dechlorination. WC1365  Emailed Herman Guatalupe (DPW Eng II) who over sees the water contracts. He addressed the situation with the contractor and inspectors that they must dechlorinate any and all discharges into the storm. David Wiley (CPS II) is the Project Manager for the water projecp ts.  5/4/21 Followup found water discharging into storm. Bags for dechlorination tablets were empty and laying next to hose. Reported to OEC PM and the contractor. They insisted they will keep dechlorination tablets at discharge sites.  6/1/21 Work completed	OCR	4/23/2021	Potable Water
3224	5234 York Rd Water Leak		Jones Falls	City water discharging form conduit manhole. Found during drive by.  5/5/21 Tracked the high chlorine and flow to Homeland and York. BGE was doing gas work just south of the conduit manhole. They complained that the water is infiltrating there pipe. Referred to control one.  5 GPM	OCR	5/4/2021	Potable Water
3228	1824 N Chester St Water Leak		Harbor	Water leak at curb in front of vacant lot of recent demolition.  50 GPM	OCR	5/5/2021	Potable Water
3236	541 Beechfield Ave Water Main Break	On Beechfield Ave in front of Beechfield United Methodist Church	Gwynns Falls	5/27/21: Initially started as an ammonia PST from DM survey site, but after no leads, PCAs returned to Yale/Cedargarden site to resample only to find heavy turbid flow coming out of outfall into stream. Water main break must have just ruptured as PCAs had been working on the mainline just minutes before. Tracked the flow to a surfaced water main break at 541 Beechfield Ave. Notified John McComas and submitted leak to locate request via Cityworks. Surfaced flow ~50 GPM, Flow out of outfall ~200 GPM  6/2/21: Followup found problem has been abated. NM	OCR	5/27/2021	Potable Water
3240	W Coldspring Ln & Callaway Water Leak	W Coldspring Ln & Callaway Ave	Gwynns Falls	High chlorine recorded at the Gwynns Falls Pkwy site during a survey. The chlorine was tracked to the intersection of W Coldspring Ln. and Callaway Ave, where potable water was infiltrating a 15" storm drain inlet pipe, at approx. rate of 50 GPM. The problem was reported, for a Leak to Locate.  6/14/21 Per Cityworks the repair was made on 6/8/21	OCR	5/24/2021	Potable Water

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
2989	530 N Milton Ave		Jones Falls	<p>OCR received a complaint about sewage entering the basement of 530 N Milton from 528 N Milton. The sewage is entering into the sump pit from the adjacent property. I spoke with each property owner this morning. The owner of 528 (Ms. Ni Hai Yan 301-908-9577) claims that during the demolition of the interior of 530 crews damaged 528's sewer pipe. I was told by the owner of 530 (Ms. Latonya Griffin 443-604-7660) they are in fact doing renovations. Ms Griffin asked for DPW to do a dye test. I told Ms Griffon that this was not a DPW responsibility but I was willing to assist because usually the sump pump discharges directly into the storm drain pipe or street gutter. I told miss Griffin I would arrange a meeting with herself, Ms Yan, Housing Dept., and myself.</p> <p>Spoke with Plumbing Inspector Wayne Kuhn 410.361.9269 whom inspected the site and said it is a civil issue. He did see sewage entering pit.</p> <p>Meeting with Housing Superintendent Ayman Shahid on Thursday Feb 20 at 10 am on site.</p> <p>2/20/20 Conducted a joint site inspection with Housing Superintendent Ayman Shahid. Upon entering the residence a strong odor of sewage was detected. In the basement there were large square holes in the floor which have been jackhammered open. The holes were filled with water. I was shown by the contractor where the suspected sewage was entering the sump pit. The property owner of 528 brought me into her residence and showed me where sewage had been entering her basement. The tenant of 528 showed me video she had taken from January 26th in which 530's contractor was jackhammering and sewage was entering the basement of 528. I then proceeded to deploy green dye in the kitchen sink. The dye was detected in the sump pit of 530. Construction activity including basement underpinning and jackhammering at the adjoining walls of 528 and 530 appears to have damaged 528's sewer pipe. The fact that 530 has lowered their basement floor is only exacerbating the problem since the floor of 530 is lower than 528's pipe invert. The contractor and property owner of 530 is denying cause but has agreed to pay to have 528's sewer cctv'd. Since no clean out was available to cctv the pipe, the work was not completed. The owner of 530 is actively creating multiple requests to have 528's water turned off claiming the water is damaging her basement which is not the case. All water entering the basement is being discharged into the street by the sump pump. Ms Griffin and her contractor was instructed to stop the discharge into the street because this is a City Code Violation Article 25, 22-6.</p> <p>Followup on 2/24 found sewage still discharging in to the street. Citiworks says the water for 528 was turned off on 2/25 after my site visit the same day. Since it is raining on 2/25 I will followup on 2/26 at which point if collecting water from sump pit will be turned to the owner of 530.</p>	Citizen	2/7/2020	Private
3079	6318 Wirt Ave Residential Pool Draining	6318 Wirt Ave backyard	Jones Falls	High chlorine recorded at the Bancroft survey site. The chlorine was tracked to Gallagher Pool and Patio (410-876-3535) contractor drain residential pool at 6318 Wirt Ave. Upon arriving at the site the contractor had finished the draining. Gave verbal warning that draining of pool without dechlorination is illegal and could be fined.	OCR	9/15/2020	Private
3087	6713 Westbrook Residential Pool Draining	6713 Westbrook Rd	Jones Falls	High chlorine (0.33 ppm) recorded at the Labyrinth Rd. survey site. The chlorine was tracked to a contractor draining a residential pool at 6713 Westbrook Rd. Informed Pearl Pool Plastering (301-315-6601) contractor that the discharge from the pool had to be dechlorinated when releasing on to street. Contractor immediately stop draining and disconnected hose, the water level in pool was low enough for them to complete the job.	OCR	9/16/2020	Private
3199	5601 McLean Blvd	Curb drain located in front of apartments at 5601 McLean Blvd	Herring Run	While tracking a chlorine found problem at Woodbourne & Pioneer Sample Site, water was observed flowing down the street that had signs of sewage. The flow was tracked to a curb drain in front of 5601 McLean Blvd, when tested it was found to be low for chlorine but high for ammonia (7 ppm) and the sanitary main nearby was flowing properly. We then spoke with one of the apartments maintenance crew who allowed us access to the basement utility and laundry room at 5607 McLean Blvd where it was observed that a lower section of the utility room under 5605 McLean Blvd was almost completely full of sewage wall to wall multiple feet deep. We had UMD (Javon Degroat) come out to relieve our side of the lateral connection with a pressure truck. After going a little bit on to private property they broke the choke free, but sewage remained in the building and continued to come out of the curb drain. The buildings lateral connection began to then flow freely, but it wasn't until they pulled the breakers on the sump pump that the flow from the curb drain stopped. Also, the sewage pooled in the utility room needs to be pumped out and cleaned. The apartments planned to pump out all the sewage from the utility room using a vacuum truck, clean, and hire a plumber to address how it was leaving the pipe. This will require a follow up to confirm that it has been completed so they can turn their sump pumps back on.	OCR	4/7/2021	Private

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
3219	H&S Bakery	Aliceanna St @ 603 S Bond St on the wall and sidewalk of H&S Bakery.	Harbor	OCR received a request from Cathy Stump at the Directors Office of DPW about a complaint they received of a strong odor around the 1600 block of Aliceanna Street. When OCR arrived to investigate the location UMD was already on site to clean the sanitary mainline in the road which was flowing freely before and after they cleaned it. H&S Bakery also had their maintenance staff and a Pressure Jet & Camera truck already on site. It appears that the issue is on their side since the liquid is coming from mortar joints on their brick wall. The suspected private line handles only equipment and wash down discharge, no bathrooms are connected to it. The discharge was not active while I was there, but I sampled the standing water that was present and received a very low ammonia (0.07 ppm). The odor was extremely pungent of old yeast and was very unpleasant. H&S is repairing their damaged line and requires follow up to confirm the sidewalk is dry and clean. Contact at H&S Bakery is Eric Mohrmann 443-829-5003 (picture of business card in photos for extra info).	Other	4/19/2021	Private
2835	Piedmont & Allendale SDUO (2501 Elsinore Ave)		Gwynns Falls	<p>Followup to previous SSO at the Windsor School. The outfall is is elevated. Located a pipe with high ammonia but the bacteria was low. There was also a roach in the pipe. Will follow up with cctv inspection.</p> <p>10/3 ammonia and bacteria are high. Was only able to go 332 ft up the pipe because it decreased in size due to a point repair. This pipe is an old combined system in which storm water is no longer direct into except for clear water house connections.</p> <p>10/10 Continued cctv inspection from the east using a push camera. It is evident that the sewage flow is coming from the area around 2501 Elsinore Ave. This property has two clean outs in the front yard. The cleanout on the left (facing the house) has water running in it and leads to the storm. The cleanout on the right is dry and doesn't appear to have ever been used and leads to the sanitary pipe. This was determined using the push camera. A door hanger was left but no one called back.</p> <p>11/11 A Letter of Concern was mailed but no one responded.</p> <p>01/13/20 Made contact with a person in the house. She acknowledged that the door hanger and letter but claimed she didn't live there and was only there for the day.</p> <p>2/19/20 Letter of correction sent first class and certified.</p> <p>2/27/20 The 2501 Elsinore Ave property owner Carlton Alexander 443-467-7067 called after receiving the Letter of Correction and a meeting was set for Tuesday 9am. (Note: owner replied to the first class letter because the certified was never picked up at post office)</p> <p>3/3/20 Met with property owner. Confirmed with dye and cctv that house is tied to the storm. Marked location of pipes on lawn. Instructed owner to complete repairs and notify OCR once repair are complete so followup inspection can be done.</p> <p>5/11/20 Called property owner for an update and he asked me to remark the lawn. He said he will probably have it done by the end of the week (5/15). Lawn was remarked and a map of pipes on property</p>	OCR	4/29/2019	SDUO, Private

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
2857	2000 Cecil Ave (Cecil Elementary School) SDUO #1	Rear lot of school	Jones Falls	<p>Waste water debris was observed in a storm drain manhole while attempting to sample during the Jenkins Runs Storm Drain Lateral on 7/25/19.</p> <p>On 7/26/19 Dye tests of several Cecil Elementary School bathrooms were performed. Dye deployed in a girl's bathroom toilets and a boy's bathroom sinks was present in the storm drain manhole in rear lot of the school (SDUO #1).</p> <p>On 7/30/19 further investigation revealed a second wastewater connection to the storm drain in the mainline, 97' downstream of the rear lot mainline manhole (SDUO #2). Dye deployed in the Boy's bathroom toilets, both faculty bathrooms, and the faculty lounge sink was present in the storm drain. Dye deployed in several bathrooms on the East wing (original section) of the school was present in the sanitary.</p> <p>On 8/5/19 (per B Webster) BCPS plumbing CCTVed the waste line from a toilet connected 97" downstream of the rear lot manhole. They were able to locate its path through the school and found that it does travel outside of the building in a direction near an existing sanitary mainline. Additionally, they dye tested other toilets and observed the dye at this location suggesting that only one waste line leaves the building with all waste line connections.</p> <p>On 8/6/19 dye testing in the school's boiler room confirmed that the roof drain truck line was connected to the storm drain at a separate location than either SDUO. While in the boiler room more restrooms were found and dye tested. The men's and women's maintenance locker rooms were connected to the storm drain 97' downstream of the rear lot manhole (SDUO #2). BCPS personal have begun devising a plan to relocate the plumbing to the sanitary mainline.</p> <p>On 9/4/19 BCPS contractors completed sewer re-routing that would abate SDUO #2. Dye tests of several bathrooms, previously connected to the storm drain, resulted in dye present in the sanitary sewer. A low flow of clear water was still active 97' downstream of the rear lot mainline manhole, therefore, chemical testing is required before abating the SDUO. Confined space entry is needed so we will wait a week before testing to allow flushing of any previous contaminants.</p>	OCR	7/25/2019	SDUO, Private

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
2932	Overland Outfall SDUO		Herring Run	<p>Elevated ammonia discovered during recon for new ammonia screening sites. Found sewage discharging from 8inch hole on right wall. Old maps show this pipe was a combined sewer.</p> <p>5/11/20 OAM is preparing a transmittal for a test pit to be installed by Spinello.</p> <p>6/3/2020 Test pit #1 dug.</p> <p>6/4/20 TFE attempted to CCTV pit but were only able to go a short distance up pipe and found a inactive connection at 10 ft.. Problem further up pipe. The outgoing pipe showed no connections all the way to the outfall.</p> <p>6/11/2020 OCR performed CCTV of pipe and was able to travel passed the connection with the crawler. Attempt was made with push camera which went 64 ft. Problem is further up pipe. Another pit needs to be dug. Outgoing pipe showed no issues.</p> <p>6/17/2020 Pit #2 at top of alley was dug for CCTV. Pipe half full of mud. Push camera using to go 43 ft down pipe. No issues found. No evidence of sewage in pipe. Went up incoming pipe 38 ft found no connections.</p> <p>6/22/2020 Pit #3 dug for CCTV. Black muck found it pipe. Doesn't appear to be sewage, only smells of sulfar decomposition. Incoming pipe half filled with Black muck. Pushed camera 46 ft but muck continued and no clear video. Outgoing pipe if 100% blocked with a rootball 1 ft down pipe. Believe we narrowed the issue to one of three houses. which is between the extent of test pit #1 CCTV and test pit #3 at rootball.</p> <p>6/30/2020 Dye test performed at 4214 and 4218 in which dye was deployed by the resident into each toilet. A door hanger was left 4216. Later in the day re knocked on door upon noticing a car in the driveway. The resident acknowledged the door-hanger and said she wanted her husband to handle it. NM asked her to have her husband contact him to arrange a dye test.</p> <p>7/7/2020 "Notice of Concern" mailed to 4216 Hartford Ter.</p>	OCR	11/14/2019	SDUO, Private

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
2941	3935 Cloverhill Rd SDUO	3935 Cloverhill Rd Rear	Jones Falls	<p>Originating from the 3900 Block of Cloverhill Rd Alley PST</p> <p>On 12/3/2019 CCTV and dye testing identified 3935 Cloverhill Rd with a leaking sanitary house connection. The leak is infiltrating the home's clear water connection to the storm drain.</p> <p>1/21/2020 Request to UMD for Lateral launch. UMD never replied.</p> <p>2/18/2020 Request to OAM for Lateral launch.</p> <p>3/9/2020 Was told cctv would be completed this week.</p> <p>3/16/2020 Spoke with Jamison who is asking contractor for cctv. OAM will review cctv and determine if city lateral is in good condition.</p> <p>5/5/2020 CCTV received from contractor. CCTV found multiple issues on city side</p> <p>5/18/2020 Sent to contractor for CIPP of lateral</p> <p>6/11/2020 Contractor stated CIPP will be completed in 2 weeks</p> <p>7/10/2020 Contractor performed CIPP</p> <p>7/22/20 Tried to inspect the storm drain and dye test but the camera could not pass through the pipe due to gravel in the pipe.</p> <p>7/28/20 Email UMD to have the pipe cleaned.</p> <p>8/26/20 Spoke to Bilal about a contractor doing the cleaning since UMD is not responding to the request. He is looking into it.</p>	OCR	11/30/2019	SDUO, Private

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
2948	3925 Cloverhill Rd SDUO	3925 Cloverhill Rd rear alley	Jones Falls	<p>Originating from the 3900 Block of Cloverhill Rd Alley PST</p> <p>On 12/6/2019 CCTV and dye testing identified 3925 Cloverhill Rd with a leaking sanitary house connection. The leak is infiltrating the home's clear water connection to the storm drain.</p> <p>1/21/2020 Request to UMD for Lateral launch. UMD never replied.</p> <p>2/18/2020 Request to OAM for Lateral launch.</p> <p>3/9/2020 Was told cctv would be completed this week.</p> <p>3/16/2020 Spoke with Jamison who is asking contractor for cctv. OAM will review cctv and determine if city lateral is in good condition.</p> <p>5/5/2020 CCTV received from contractor. CCTV found multiple issues on city side</p> <p>5/18/2020 Sent to contractor for CIPP of lateral</p> <p>6/11/2020 Contractor stated CIPP will be completed in 2 weeks</p> <p>7/10/2020 Contractor performed CIPP</p> <p>7/22/20 Tried to inspect the storm drain and dye test but the camera could not pass through the pipe due to gravel in the pipe.</p> <p>7/28/20 Email UMD to have the pipe cleaned.</p> <p>8/26/20 Spoke to Bilal about a contractor doing the cleaning since UMD is not responding to the request. He is looking into it.</p>	OCR	11/30/2019	SDUO, Private

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
2964	Eastern Ave & S Luzerne Ave (2545 Eastern Ave SDUO)	SE corner of Eastern Ave & S Luzerne Ave	Harbor	<p>While performing the Lakewood Lateral Sampling 2019/2020 we received a high ammonia (1.68 ppm) at the SW corner of S Lakewood Ave &amp; Eastern Ave SE. We tracked the problem to the corner of Eastern Ave &amp; S Luzerne Ave where we located an unmapped 6" pipe that is discharging sewage. On 1/10/20 a letter was sent to the property owner of 2643 Eastern Ave to obtain access to a townhome that has been broken up into apartments to perform dye tests. We believe that property is the most likely culprit since the pipe enters in that direction and looking at historical plans there is a old clear water connection from that property entering the storm drain in the same way as our pipe in question.</p> <p>On 1/15/2020 dye testing of all fixtures within the property confirmed a direct wastewater connection to the storm drain using an old clear water connection. In addition, a push camera was inserted into a cleanout located in the garage and it confirmed a clear path to the sanitary mainline in the alley behind the building. Therefore, the correct sanitary house connection is present, however, it is not currently being used. Property management (Vince Spanglo) was onsite and present during all findings and will communicate with property owner (Sean Dalenberg) for abatement action.</p> <p>As of 2/12/2020 a letter of correction has been sent to the property owner via usps and emailed to an associate (Justin Gray). Property management (Vince Spannglo) has stated that plumbing estimates have been received and a plan for abatement is underway.</p> <p>On 3/19/2020 property owner notified OCR that a contract was signed with a plumber to make repairs, however, the start date was postponed due to uncertainties involving Covid 19.</p> <p>On 5/19/2020 OCR spoke to property owner and sent a second letter of correction. The owner stated that the contracted plumber has been booked and couldn't schedule the repairs until 7/1/2020. If the work can be performed earlier we will be notified.</p> <p>6/16/20 Matt C. contacted the property owner regarding a completion date. Sean Dalenburg stated the construction will begin on July 2, 2020. OCR will hold owner to the date before sending to ORLA.</p> <p>7/6/20 Property owner stated work has been completed. Follow up dye testing needed.</p>	OCR	12/20/2019	SDUO, Private

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
3013	6515 Belair Rd (Mitchell's Blind & Shade Co. Inc.) SDUO	6515 Belair Rd	Herring Run	<p>OCR supervisor received a complaint from Megan Brosh of Baltimore Co Dept. of the Environment about a stream with high E Coli bacteria levels flowing into the county. Investigation on 2/27/2020 found a suspected direct waste water connection to a storm drain line at 6515 Belair Rd.</p> <p>On 2/28/20 we attempted to camera the storm drain line but were unsuccessful due to sewage related debris in the line. James Patrick was contacted to schedule the line to be cleaned for further camera inspection.</p> <p>On 3/10/2020 the 8" storm drain line on the 6500 Block of Belair Rd was cleaned by storm drain maintenance for OCR CCTV inspection. CCTV found a connection to the storm drain at 120' and a capped "dead end" at 122' upstream from the inlet at Belair Rd and Kenwood Ave. As dye testing continued, dye from 6515 Belair Rd Front Restroom was present in the sanitary mainline at Belair Rd &amp; Kenwood Ave while dye from 6515 Belair Rd Floor Drains and both rear restrooms was present at the storm drain clear water connection.</p> <p>On 3/13/2020 6503 Belair Rd (No-Limit Co, Inc) was dye tested. Dye from all 5 currently functioning restrooms was present in the sanitary manhole at Belair Rd &amp; Kenwood Ave.</p> <p>5/20/20 met with tenant and plumber to discuss further inspection. Plumber will cctv all the pipe in the building.</p> <p>6/11/20 Received an email from Mr Sachs stating the plumber was in the process of cctv of the property</p> <p>6/23/20 Received an emailing stating cctv was complete.</p> <p>6/26/20 Received a call from Mr Sachs asking if the floor drain needs to be disconnected and directed to the sanitary sewer. NM instructed him yes but will get him a solid answer on monday.</p> <p>6/29/20 Kim verified only storm water to storm drain. Spoke with Joe Miller who stated only storm water to storm drain. Industrial discharge permit would be needed including assessment treatment if drain</p>	Baltimore County	2/24/2020	SDUO, Private

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
3054	604 Oldham ST SDUO	604 & 606 Oldham St alley	Harbor	<p>7/23/20 Complaint about possible sewage seepage at 606 Oldham St. On 7/23/20 sampled seepage at 604 and 606 Oldham St. Both samples were extremely high with ammonia and smelled like sewage. Tried to gain entrances to 604 and 606 Oldham St to conduct dye tests, no one answered doors. Later an elderly Hispanic woman exited house unto backyard at 604 Oldham St. She wouldn't allow us to enter due to lack of understanding, language differences. Recommend conducting dye test at both properties.</p> <p>7/27/20 Spoke with resident at 600 Oldham Robert Miller 443-635-2826 who stated he believes it to be 608 and he had video of the seepage when it was flowing heavy. Left door hanger on 608. Spoke to owner of 608 Oldham Steve Stelios 410-937-0140. He stated his sewer lateral was inspected and was fine and offered the video to DPW and for a dye test to be completed. Housing inspector Kevin Brown 410-545-6521 was onsite doing an inspection.</p> <p>7/28/20 Met with the owner of 604 Oldham and his son Valanti 443-253-9778. They allowed a dye test which was present at the seep. Owner contacted a plumber for repair. Dye test was done at 600/02 and 608 which were absent. 606 Oldham is vacant and water is shut off. Notified Assistant Superintendent Housing Inspections – SE Isaac Ewketu 410-545-6520 that the property was identified.</p> <p>8/11/2020 (606 dye test info)</p> <p>8/11/20 While conducting the dye test of 606 Oldham St wastewater was observed discharging from the newly installed cleanouts in the rear of 604 Oldham St (see 604 Oldham St HC SSO# 6624). Originally the wastewater was only discharging from the cleanouts and then eventually began discharging from a number of areas in the concrete behind 604, 606, and 608 Oldham St as seen in the past. UMD responded with the complaint crew and cleared a blockage in the house connection for 604 Oldham St. The overflow stopped and the seepage began to slow and some stopped. After CCTV inspection of the house connection it was observed that the connection was broken 4-5' downstream of the cleanout in the City side. UMD construction was notified by Ms. Witaker.</p> <p>9/2/20 Confirmed abated</p>	Other	7/22/2020	SDUO, Private
3111	2905 Wynham Rd (Greens at Forest Park Apartments) SDUO	The problem is on the private sanitary for Greens at Forest Park Apartments in the rear of 2905-2907 Wynham Rd.	Gwynns Falls	<p>11/19/20 high ammonia (1.41 ppm) was received at Clifton &amp; Fairfax while performing Gwynns Falls ammonia screening survey. The ammonia was tracked to sewage entering (1 GPM) the storm drain in front of Greens at Forest Park Apartments via a clearwater connection that entered in the direction of the apartments at 2907 Wynham Rd. We had UMD come out and clean the sanitary service line to confirm that the problem wasn't on the city property side. UMD jetted 100' up the sanitary service line and the sewage flow in the storm drain line did not change.</p> <p>11/20/20 we met with Dantae (Greens at Forest Park maintenance) who gave us access to the cleanouts in the basement of the apartments. We poured liquid dye into the cleanout for 2905 Wynham Rd and after 40 minutes it showed in the storm drain manhole on Wynham Rd coming from their clearwater connection. After the dye was present we showed Dantae our findings and spoke with Latonya Booze (Greens at Forest Park real estate manager 410-448-3552) to inform her of our findings and that they need to resolve the issue since it's on their property.</p> <p>11/24/20 Notice of Correction was sent.</p> <p>12/3/20 Notice of Correction delivered</p> <p>12/16/20 Met with Plumber whom explained a blockage was removed and work is needed for pipe due to root infiltration. Ammonia still elevated.</p> <p>12/29/20 Followup found low ammonia and Bacteria. Problem abated.</p>	OCR	11/19/2020	SDUO, Private

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
3149	22 Light St SDUO		Harbor	<p>OEC contacted OCR for help in handling a direct connection into the storm main. Contractor (Southway) whom is rehabilitating the building complained of a damaged sewer lateral. DPW contractor performed CCTV of the sewer lateral and found it is filled with sediment. They performed CCTV from inside the building and found the lateral is tied to the storm. Spinello SC1001 suggested to have a new lateral installed. OCR suggested clean the current sewer lateral and perform any necessary repairs then have the property reconnect to the lateral.</p> <p>2/4/21 Met onsite with contractor, owner's rep, Spinello, OEC, and UMD. All the buildings wastewater flows to the one pipe that leads to the storm. The lateral that is in Uview cannot be found inside the building. UMD did lateral launch the pipe and said they went all the way to the building and it was active. But we don't know what is services because we cannot find it in the building. The building has no roof drains in the building and they all discharge on the outside of the building (not confirmed by OCR). There is a sump pit that is connected to the lateral but there is no pump in the pit and the contractor said they are eliminating it. It was determined that the property owner's building contractor is going to hire a Bonded Drain layer to realign the sewer later and attach it to the manhole on the NE corner. They were instructed by OCR (Mitrus) to not have any storm or ground water discharge to the pipe and that it must be sealed with brick and concrete. They must contact Mitrus once work is complete so a inspection can be completed. Mitrus spoke to Rick Banks (OCR) who said the owner must contact a bonded drain layer whom will in turn contact Rick to apply for a permit. It reviewing the old maps it appears the builder originally intended to connect the building to the manhole on the corner which has a channel leading towards the building. The plans show it scratched out and omit written.</p> <p>Wayne Noseworthy Superintendent Southway Builders 443-908-0461 wnoseworthy@southwaybuilders.com</p> <p>2/11/21 Per Kim Grove; We just met with DOT and the developer. 1) Continue with the UE for both the</p>	OEC	1/29/2021	SDUO, Private

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
2880	748 E 36th St Alley SDUO	748 E 36th St Alley so far....	Jones Falls	<p>Suspected sewage odor was present in Jenkins Run storm drain mainline at 736 30th St while sampling for the lateral survey. The ammonia was sampled and it was high so an investigation began. The trail of high ammonia initially led to the intersection of 33rd St &amp; Ellerslie Ave. Further investigation will resume.</p> <p>As of 9/18/19 the ammonia values in the storm drain continue to fluctuate making tracking efforts more difficult.</p> <p>On 9/26/19 CCTV inspection of the storm drain revealed a suspicious uncharted 6" connection with flushes of paper debris behind 748 E 36th St.</p> <p>Through 10/17/19 several homes on 36th St have been dye tested and all showed the proper connection to the sanitary sewer. Source of sewage in the storm drain remains unknown.</p> <p>On 10/29/19 four homes on 36th St &amp; one on McKewin Ave were dye tested and all showed the proper connection to the sanitary sewer. Source of sewage in the storm drain remains unknown.</p> <p>On 10/30/19 one home on 36th St &amp; five on McKewin Ave were dye tested and all showed the proper connection to the sanitary sewer. Source of sewage in the storm drain remains unknown.</p> <p>On 11/5/19 one home on 36th St &amp; one on McKewin Ave were dye tested and all showed the proper connection to the sanitary sewer. Source of sewage in the storm drain remains unknown. IDDE engineer is requesting exploratory excavation at the site of the uncharted 6" connection.</p> <p>On 11/6/19 two homes on 36th St were dye tested and all showed the proper connection to the sanitary sewer. Source of sewage in the storm drain remains unknown.</p> <p>On 11/20/19 with the help from OEC we had an exploratory test pit dug at the location of the lateral connection to the storm drain main. We used the push cctv camera and went 108' up the line and the flow continued past that. Unfortunately, the locator was malfunctioning so we were not able to track the path of the line.</p>	OCR	9/12/2019	SDUO, SSO-Subsurface

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
2934	2000 Cecil Ave SDUO	Storm drain mainline below middle section of Cecil Elementary School	Jones Falls	<p>High ammonia and other sewage indicators remain at an 18" connection to the storm drain after BCPS re-routed and removed a previous illicit direct connection [2000 Cecil Ave (Cecil Elementary School) SDUO #2].</p> <p>On 11/14/2019 extensive dye testing of Cecil Elementary School confirmed that all sewage and waste water leaving the property is now entering the sanitary system. A new SDUO is open to find additional waste water sources outside of Cecil Elementary School property.</p> <p>On 1/22/2020 dye test of the only accessible residential cleanout in the area was performed. Dye was immediately present in the sanitary and remained absent in the storm drain.</p> <p>On 10/5/20 extensive dye testing of Cecil Elementary School was performed while the school was closed due to Covid-19 every single toilet, urinal, and utility sink in the building was tested. The result was that all dye was absent from the storm drain and we are able to eliminate the school as a possible candidate. Dye tests were performed on two sanitary mainlines which also were absent in the storm drain.</p> <p>10/6/20 No dye in storm after over night dye test.</p> <p>10/7/20 dye test was performed on the large sanitary mainline that runs under the west wing of the school. The dye was absent from the storm drain.</p> <p>10/28/20 Met with OEC on site. Transmittal sent to contractor to seal storm pipe.</p> <p>11/18/20 Emailed OEC (Rupak and Wazir) for an update. Contractor stated they will be onsite the week after Thanksgiving but will not enter SD until 3 days after a rain event.</p> <p>12/8/20 Civil Construction sealed storm drain pipe with bricks and hydraulic cement. Problem Abated.</p> <p>John Shuffler Operations Manager</p>	OCR	11/14/2019	SDUO, SSO-Subsurface

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
2949	3927 Cloverhill Rd SDUO	3927 Cloverhill Rd rear alley	Jones Falls	<p>Originating from the 3900 Block of Cloverhill Rd Alley PST</p> <p>On 12/6/2019 CCTV and dye testing identified 3927 Cloverhill Rd with a leaking sanitary house connection. The leak is infiltrating the home's clear water connection to the storm drain.</p> <p>1/21/2020 Request to UMD for Lateral launch. UMD never replied.</p> <p>2/18/2020 Request to OAM for Lateral launch.</p> <p>3/9/2020 Was told cctv would be completed this week.</p> <p>3/16/2020 Spoke with Jamison who is asking contractor for cctv. OAM will review cctv and determine if city lateral is in good condition.</p> <p>5/5/2020 CCTV received from contractor. CCTV found multiple issues on city side</p> <p>5/18/2020 Sent to contractor for CIPP of lateral</p> <p>6/11/2020 Contractor stated CIPP will be completed in 2 weeks</p> <p>7/10/2020 Contractor performed CIPP</p> <p>7/22/20 Tried to inspect the storm drain and dye test but the camera could not pass through the pipe due to gravel in the pipe.</p> <p>7/28/20 Email UMD to have the pipe cleaned.</p> <p>8/26/20 Spoke to Bilal about a contractor doing the cleaning since UMD is not responding to the request. He is looking into it.</p>	OCR	11/30/2019	SDUO, SSO-Subsurface
2974	Worsley St & Homewood Ave (Worsley St. and Cecil Ave SDUO)	Uncharted storm drain connection approximately 120' downstream of 2000 Cecil rear manhole	Jones Falls	<p>An uncharted 6" connection was observed discharging suspected waste water while sampling another SDUO site within the storm drain. The uncharted pipe was on the East side approximately 120' downstream from the square manhole in the rear lot of 2000 Cecil Ave.</p> <p>During abatement confirmation on 11/14/2019 of 2000 Cecil Ave (Cecil Elementary School) SDUO #1 and #2, dye testing confirmed that the school is no longer suspected as the source of any waste water directly entering the storm drain.</p> <p>On 11/14/2019 dye deployed in 3 homes along the 900 Block of 20th St remained absent in the storm drain and present in the sanitary.</p> <p>On 1/10/2020 an attempt to confirm that an 8" TC line in Worsley St was the 6" connection in the storm main with the sewage was made with a dye test of an inlet at Cecil Ave &amp; Worsley St. The dye test confirmed that the inlet was connected to an uncharted segment on Cecil Ave and traveling to another storm drain branch. There is no confirmation that the line in Worsley St is the connection with the sewage at this time.</p> <p>10/5/20 pipe wet no and no sign of activity or sewage.</p> <p>10/6/20 pipe wet no and no sign of activity or sewage.</p> <p>10/7/20 pipe wet no and no sign of activity or sewage.</p> <p>10/13/20 Due to no signs of sewage at the pipe the SDUO is determined to be abated.</p>	City	10/24/2019	SDUO, SSO-Subsurface

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
3065	3421 Olympia Ave SDUO SSO#6675		Jones Falls	<p>High ammonia reported during stony western survey on 8/5/2020 and an investigation started. The investigation led to two sewage problems. One was a choked sanitary mainline (see 7001 Reisterstown Rd) and the other was suspected sewage infiltrating at an inlet connection on Wallis Ave @ 3421 Olympia Ave. A dye test with CCTV will need to be conducted.</p> <p>8/24/20 Dye test discover 3421 later is leaking.</p> <p>9/24/2020 UMD replaced house connection for 3421 Olympia Ave. OCR dye test of the property confirmed abatement.</p> <p>Per SSO Report 0.25 GPM, 2690 gal</p>	OCR	8/5/2020	SDUO, SSO-Subsurface
3073	N. Pulaski & W Saratoga SDUO (2033 Penrose Ave)	Warwick Inlet in parking lot of church	Gwynns Falls	<p>CCTV found possible direct sewer connection to a 12 inch TC pipe at Saratoga &amp; Pulaski.</p> <p>9/17/20 CCTV of 12in pipe found sewage solids in the pipe to the 237ft mark where the crawler could not pass. Pipe is open but camera is getting stuck on something.</p> <p>10/22/20 Dye testing confirmed 2033 Penrose Ave is connected to the storm.</p> <p>11/12/20 Request sent to OEC to have a access pit dug to provide access for cctv camera to identify location where lateral is tied into the storm pipe</p> <p>11/18/2020 Emailed OEC (Rupak and Wazir) for an update. Wazir replied he is tied up and has not looked at it.</p> <p>11/30/2020 Emailed OEC (Rupak and Wazir) for an update. No reply</p> <p>12/7/20 Civil Construction created and access pit for cctv. SDC7778-transmittal No.18 John Shuffler Operations Manager Civil Construction jshuffler@civilllc.com T: (301) 341-7200 ext. 212   C: (410) 908-3242</p> <p>Resident at 2033 Penrose is Carl. Spoke to him letting him know we planned to do a dye test on 12/15 or 16. He said he will be home and would allow.</p> <p>12/21/20 CCTV was performed by OCR using a push camera. The the lateral for 2033 Penrose was located. 32 feet from curb line in rear alley. Dye testing confirmed</p> <p>1/4/21 Transmittal for suggested repairs sent to OEC (Wazir, Rupak).</p>	OCR	8/31/2020	SDUO, SSO-Subsurface

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
3226	2510 Queen Anne Rd (SDUO) (SSO #7107)	East side of 2510 Queen Anne Rd House Connection	Gwynns Falls	<p>OCR staff spoke with homeowner of 2510 Queen Anne Rd while investigating another PST (Windsor Mill Rd @ Trail Head Outfall) about reoccurring backups at his home. At the time there was no back up, however, a follow-up dye test of the house connection through a cleanout found a leak infiltrating the storm drain.</p> <p>On 5/7/2021 an offset joint in the house connection was identified with CCTV and proved to infiltrate the storm drain by dye testing. Further assessment of boundary layers needs to be done to confirm if the offset joint is on city property before reclassifying as an SSO.</p> <p>On 5/19/2021 reported as SSO</p> <p>On 5/21/21 UMD replaced house connection, abating the SSO. Dye test was performed while pit was open and dye was only present in the sanitary.</p> <p>Per SSO report 0.01 GPM Total 16 gallons Per SDUO Report 0.01 GPM Total 518 gallons</p>	Citizen	4/21/2021	SDUO, SSO-Subsurface
3080	245 S Chapel St SDUO		Harbor	<p>Housing complaint from Isaac Ewketu 410-545-6523. The sewage from 245 is leaking into 247. Sump pump is discharging sewage at the front left of the building between the two properties. Spoke with the owner of 247 Adrian Sushko 410-908-3568 whom let me inspect basement. Spoke to Leroy the tenant at 245 whom told me he has slow flowing drains and toilet paper coming from the drain pipe for the washing machine on the wall. He also said his pipes were snaked in the recent past due to a backup. The landlord is Eden 323-348-8515.</p> <p>9/22/20 Dye deployed in 245 S Chapel St and confirmed to be the source. No dye in sanitary mainline. Suspect complete blockage.</p> <p>9/23/20 Upon request send connection card information to property owner to provide to plumber.</p> <p>9/29/20 Received a call from property owner stating the plumber found the blockage is on the city side. Nick called UMD (Foster) whom dispatched a crew. CCTV identified a collapse at the mouth of lateral at the main. UMD performing repairs. SSO Report not done because there was no sewage discharge upon the discovery of the cause. Once the cause was determined actions were made to prevent the overflow. Spoke to McNair, a pump crew will visit site once per shift to pump out pit.</p> <p>9/30/20 UMD performed repair work. SSO Abated.</p> <p>10/6/20 Follow up found final patch installed. Sewage was cleaned of street. Complaint can be closed.</p> <p>SSO Report was not completed for unknown reason</p> <p>Per SDUO report 0.125 GPM, Total 3520 Gal</p>	Citizen	9/15/2020	SDUO, SSO-Surface
2824	3500 Parkdale Ave PUMP DETAILS AND OPERATION		Jones Falls	<p>If pump stops working. Need to reset the pump. Open the from of the box in the basement. Turn the silver toggle switch to OFF. There is a black dial on the inside on right. Turn to the left then back to the right until it clicks. Flip toggle to ON and the box will start to buzz indicating it is working. The toggle then should be set to AUTO which means it will tun on when float tells it to. See attached photo.</p> <p>The pump is hanging from a bar with about 8-10 inches between the bottom of the pump and the floor of the basin. The floats are attached to a metal rod that sits next to the pump along the wall of the basin.</p>	OCR	4/1/2019	SSO-Subsurface

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
3048	5224 Kelway Rd SSO#6550	Sanitary manhole on street in front of 5226 Kelway Rd.	Herring Run	High ammonia found at Chinquipin Run site during ammonia screening. Tracked up to a choked sanitary in front of 5224 Kelway Rd. UMD abated the choke at around 1:30 pm.  Per SSO Report 1 GPM, Total 151 gal	OCR	7/8/2020	SSO-Subsurface
3051	506 S Central Ave SSO#6556	Northwest corner of Fleet St & Central Ave	Harbor	High ammonia (0.60mg/l) reported during Harbor Ammonia screening survey on 7/15/2020. Sanitary mainline choke found at 506 S Central Ave. UMD could not bring flow down with pressure truck so they are attempting to contact Eastern Ave pump station to turn pumps up.  Eastern Ave pump station increased pump speed over night. Downstream flow present in sanitary and ammonia value greatly reduced at the outfall (0.21mg/l).	OCR	7/15/2020	SSO-Subsurface
3062	2500 N Ellamont SSO 6544	2500 N Ellamont	Gwynns Falls	PCA's discovered elevated ammonia readings during routine AS survey discharging into Pecks Branch stream. Sewage was determined to be infiltrating storm drain segment between Piedmont and 2500 N Ellamont via dye testing. Referred SSO to UM and sanitary line was flushed out. Confirmation of abatement via absent dye test from the sanitary into storm drain system on 7/2/20.  Per SSO Report 3GPM, 339 gal	OCR	7/1/2020	SSO-Subsurface
3064	7001 Reisterstown Road (SSO #6622)	7001 Reisterstown Road	Jones Falls	High ammonia was recorded during survey on 8/5/2020 and began the original investigation on 8/7/2020 which lead in the direction of the 7000 Block of Wallis Ave before running out of time.  On 8/10/2020 the continuing investigation followed the high ammonia in the storm drain mainline to a choked sanitary mainline and subsurface overflow at 7001 Reisterstown Rd. UMD responded and cleared the choke, abating the overflow.  An additional suspected sewage leak was discovered at an inlet connection on the corner of 3421 Olympia Ave. (see Olympia Ave & Wallis Ave PST)	OCR	8/5/2020	SSO-Subsurface
3070	5600 Harford Rd. SSO#6642	5600 Harford Rd @ Evergreen	Herring Run	During routine monitoring of Echodale Ave., PCA's discovered high ammonia levels of 10 ppm. Tracked back to choked sanitary manhole at intersection of 5600 Harford Rd. & Evergreen. Referred to UMD for abatement. 10 GPM.  Per SSO Report 10GPM, 14040 gal	OCR	8/20/2020	SSO-Subsurface
3071	506 S Central Ave SSO#6626	Northwest corner of Fleet St & Central Ave	Harbor	High ammonia (0.43mg/l) reported during Harbor Ammonia screening survey on 8/12/2020. Sanitary mainline backed up along Central Ave from Aliceanna St & Central due to heavy flow in 60" mainline toward the Eastern Ave pumping station. UMD contacted pumping station to turn up pump capacity and flow returned to the previously backed up mainline on Central.  Per SSO Report 0.5 GPM, Total 112 Gal	OCR	8/12/2020	SSO-Subsurface
3075	E Coldspring Ln & York Rd SSO#6667	West side of intersection at E Coldspring Ln & York Rd	Herring Run	High ammonia (0.37mg/l) reported during ammonia screening survey on 9/9/2020. High ammonia was tracked to a suspected broken sanitary mainline at E Coldspring Ln & York Rd. UMD is scheduling CCTV. OAM is also assisting.  On 9/30/2020 OAM notified that the sanitary mainline has been lined, Follow up found SSO abated.  Per SSO Report 0.5 GPM, 9785 gal	OCR	9/9/2020	SSO-Subsurface
3089	3500 Parkdale Ave SSO		Jones Falls	Stopped at Sanitary manhole on clipper park rd and found pump was operating at decreased capacity. OAM sent order to oncall to clean pit. Spinello used vac truck to suck out pit. Pump was removed, cleaned and put back into service. Basin did not overflow sewage into the stream.  Per SSO Report 0.5 GPM, 9785 gal	OCR	10/7/2020	SSO-Subsurface

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
3091	203 N. Central Ave SSO# 6701	On N. Central Ave next to an empty lot that has the address 203 N. Central Ave	Harbor	High ammonia (1.24ppm) was received at Central & Lancaster while performing the Harbor Survey. The high ammonia was tracked to a holding sanitary manhole located at 203 N. Central Ave which reported to Control One. Utility Maintenance relieved the holding sanitary manhole with their pressure truck.  Per SSO Report 25 GPM, Total 4325 Gal	OCR	10/9/2020	SSO-Subsurface
3095	5015 Boxhill Ln Rear SSO #6717	Alley behind 5015 Boxhill Ln	Jones Falls	High ammonia found during ammonia survey. Narrowed the problem near the end of the 5000 block of Boxhill Rd. Dye testing was inconclusive. Needs following up.  On 10/19/2020 through dye testing and CCTV the NE sanitary branch behind 5015 Boxhill Ln was found to be leaking.  On 10/20/2020 through further dye testing and CCTV the NE channel within the manhole was found to be the location of the leak. At the time of testing there was excessive paper built up in the manhole. After OCR staff cleared the paper the flow level reduced and the leak into the storm drain stopped. An SSO report was filed and Jason Locklear was notified regarding the need for manhole rehabilitation as this SSO will likely occur again, shortly.	OCR	10/13/2020	SSO-Subsurface
3125	310 N Culver St SSO #6833	Storm drain inlet across from 310 N Culver St	Gwynns Falls	High ammonia (0.91mg/l) reported during DM Survey on 12/30/2020. Ammonia was tracked to wastewater infiltration into the storm drain from the sanitary sewer in front of 310 N Culver St at 5 GPM. Wastewater was entering through a segment joint and partially visible through inlet connection across from 310 N Culver St. UMD cleaned the sanitary mainline however the overflow remained active. CCTV has been scheduled.  1/5/21 Dye tested the sanitary and CCTV'd the storm and no dye was present. Spinello on site to install bypass. OAM is recommending to OEC to have CIPP be installed.  2/3/21 Followup found CIPP installed. SSO abated.	OCR	12/29/2020	SSO-Subsurface
3126	3917 W Mulberry St (SSO #6835)	Inlet connection at 3917 W Mulberry St	Gwynns Falls	High ammonia reported (0.61mg/l) during DM Survey on 12/29/2020. High ammonia was tracked to a choked sanitary mainline causing wastewater to infiltrate an inlet connection at 3917 W Mulberry St at 3 GPM. UMD was able to clear the sanitary mainline and abate the overflow.  <del>2gpm, total 102 gal</del>	OCR	12/29/2020	SSO-Subsurface
3136	3700 Eastwood Dr SSO #6874	Alley rear of 3700 Eastwood Dr	Herring Run	Complaint received about suspected wastewater flowing from an outfall across from 3630 Eastwood Dr. Investigation found a leaking sanitary mainline infiltrating the storm drain in the alley behind 3700 Eastwood Dr. UMD cleaned the line, however, the SSO remains active at 0.5 GPM. Turned over to construction and recommended for CIPP.  2/4/21 Delay due to manhole being buried. OEC instructed Spinello to raise the manhole and install CIPP. The work is expedited.  on 2/26/2021 a follow up dye test after CIPP confirmed SSO abatement of the mainline segment. However, the upstream manhole has been found to have a leak as well. See additional PST: 3700	Citizen	1/14/2021	SSO-Subsurface
3155	3917 W Mulberry St SSO#6902	Inlet connection at 3917 W Mulberry St	Gwynns Falls	Elevated ammonia received at Franklin & Hilton Pkwy sample site (0.31mg/l) during DM Survey on 1/29/2021. High ammonia was tracked to a choked sanitary mainline causing wastewater to infiltrate an inlet connection at 3917 W Mulberry St at 1 GPM. UMD was able to clear the sanitary mainline and abate the overflow.  SSO Report 3 gpm, 645 gal	OCR	1/29/2021	SSO-Subsurface

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
3232	York Rd & E Coldspring Ln SSO#7107	York Rd & E Coldspring Ln	Herring Run	High ammonia levels (0.76ppm) detected during routine sampling at North Hill sample site. Investigation led to a choked sanitary line at York Rd & E Coldspring Ln. The wastewater was seen entering the storm drain through a pipe and mortar joints in a manhole on the NE corner of the intersection. UMD responded and cleared the line. The wastewater infiltration stopped immediately.  6/2/21 North Hill Alley Follow up found low ammonia. 0.10 at 1:40 pm 965 Argonne Ave 0.08 at 1:55  Per SSO Report 5 GPM Total 390 gal	OCR	5/14/2021	SSO-Subsurface
3246	3205 Overland Ave SSO#7133		Herring Run	Sewer over flowing into adjacent storm drain at a rate of 5 gpm. Stayed on site while UMD relieved choke.  Per SSO Report 5 gpm total 595 gal	OCR	6/9/2021	SSO-Subsurface
3250	3128 Oakfield Ave SSO# 7161	3128 Oakfield Ave	Gwynns Falls	High ammonia (4.0 mg/l) recorded at Clifton & Fairfax Site during a routine ammonia survey. The problem was tracked to a choked sanitary manhole at 3128 Oakfield Ave., causing a Subsurface-SSO.  Per SSO Report 20 GPM total 1920 gal	OCR	6/21/2021	SSO-Subsurface
3049	1301 Woodbourne Ave SSO# 6554		Herring Run	Abandoned line leaking sewage at multiple location. Estimated discharge 50-100 GPM. Dye test showed abandoned line still has sewage infiltrating. Bypass setup to dewater the pipe and abate the sewage discharge. Bypass pump install at 5pm on 7/14/20.	OCR	7/13/2020	SSO-Surface
3063	4722 York Rd SSO#6623	In the sidewalk in front of 4722 York Rd	Herring Run	8/7- High ammonia found at Northhill survey site during ammonia screening. Tracked up to York Rd area by Cold Spring, sewage apparent in storm at 4720 York Rd, but did not locate source yet.  8/10- Located choked sanitary manhole at 4722 York Rd in the sidewalk. We reported the SSO and had UMD relieve it with pressure truck. The sewage could be seen infiltrating the storm drain manhole located in the sidewalk on the south side vault wall. We followed up an hour after jetting the line and the problem was abated.	OCR	8/7/2020	SSO-Surface
3068	604 Oldham St SSO# 6624	Rear of 604 Oldham St	Harbor	OCR staff was conducting a dye test of 606 Oldham St as part of the 604 Oldham St SDUO when wastewater was observed discharging from the newly installed cleanouts in the rear of 604 Oldham St. Originally the wastewater was only discharging from the cleanouts and then eventually began discharging from a number of areas in the concrete behind 604, 606, and 608 Oldham St as seen in the past. UMD responded with the complaint crew and cleared a blockage in the house connection for 604 Oldham St. The overflow stopped and the seepages began to slow and some stopped. After CCTV inspection of the house connection it was observed that 4 - 5' below the cleanout in the City side the pipe was broken. UMD construction was notified by Ms Witaker.  8/27/20 UMD completed the repairs.  Per SSO Report 0.25 GPM, Total 40 Gal	OCR	8/11/2020	SSO-Surface

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
3074	1731 Waverly Way SSO#6659	Sanitary main line choke along Herring Run behind 1601 Waverly Way.	Herring Run	<p>Investigated a Cityworks complaint regarding milky white water in stream at Mount Pleasant Golf Course. Tracked problem to an overflowing sanitary manhole, in wooded area behind 1715 &amp; 1735 The Renaissance Club apartment buildings on Waverly Way.</p> <p>Followed up on 9/4, still surcharging. UMD thinks it may be a break or collapse in the line after CCTV. 8" sanitary line leading to manhole is filled with mud. New SSO order sent.</p> <p>9/8/20 Overflow still active. Estimate discharge at 2500GPM. Spoke with Golf course maintenance James Berry. Notified him of the sewer overflow and gave him signs to put along stream on the course. Called UMD for status update. Foster on leave and McNair not answering. Called Wazir whom is not answering. Spoke to Jovan whom said he turned over to McNair and wanted me to call him after I spoke with Wazir. Sent email to Wazir notifying him he needs to take action ASAP. He replied and said he needs to hear from UMD. Kim brought in James Patrick who told Wazir to initiate the on call.</p> <p>9/9/20 Overflow still active. OEC, UMD, and Oncall contractor had site meeting to discuss situation. Requested Bureau and OAM to contact communications office to issue a public press release.</p> <p>9/11/20 Abated</p> <p>Per SSO Report 200 GPM, 2041600 gal</p>	City	9/3/2020	SSO-Surface
3104	500 W University Pkwy SSO #6736	Rear of 500 W University Pkwy @ Stony Run	Jones Falls	<p>High ammonia (0.61 mg/l) reported during JF Ammonia Screening Survey on 11/2/2020. Investigation found the ammonia levels had reduced in the stream shortly after the original sample. It was soon discovered that UMD had responded to and abated an overflowing sanitary manhole behind 500 W University Pkwy earlier in the day. Samples taken above the overflow location were low.</p> <p>Per SSO Report 15 GPM, Total 2910 Gal</p>	OCR	11/1/2020	SSO-Surface
3122	Wilkins Park SSO 6821	Wilkins Park	Gwynns Falls	<p>While conducting routine sampling at Wilkins Ave. AS site evidence of overflow was observed. UMD notified of area to be cleaned up.</p>	OCR	12/22/2020	SSO-Surface
3123	4516 Wakefield Rd. SSO#6823	4516 Wakefield Rd.	Gwynns Falls	<p>During routine AS sampling elevated ammonia readings were observed at Clifton &amp; Fairfax sampling site (ppm). While tracking ammonia levels along storm drain line the property manager of the apartment complex in the area informed PCA's of one of their buildings discharging sewage into the rear yard which they had a plumber snake their line. Plumber did not find any blockages or damages in the line and requested the property manager get in touch with the city to check the main line in the front of the building on the street. Upon opening the main sanitary line the stack was choked up. UMD notified and cleared blockage. Discharge of sewage = around 5 gpm.</p> <p>Per SSO Report 3 GPM, Total 192 Gal</p>	OCR	12/23/2020	SSO-Surface
3130	Hartsdale Rd & Perring Pkwy (4601 Hillen Rd) SSO#6864	Herring run behind Morgan State College building across from Hartsdale Rd and Perring Pkwy	Herring Run	<p>High ammonia (0.40 mg/l) received during HR Survey on 1/11/2021. Investigation lead to an overflowing sanitary sewer manhole into the Herring Run behind Morgan State College building across from Hartsdale Rd &amp; Perring Pkwy at 150gpm. Sanitary mainline is too far in the woods for UMD to clear choke with a pressure truck. On call contractor has been notified for abatement actions.</p> <p>On 1/13/2021 contractors plugged the sanitary mainline upstream and removed debris from the line. After returning flow the pipe it no longer overflowed. SSO abated.</p> <p>150 gpm, total 451650 gal</p>	OCR	1/11/2021	SSO-Surface
3153	5302 Elsrode Ave SSO#6911	5302 Elsrode Ave	Herring Run	<p>Heavy water observed flowing from the rear of 5302 Elsrode Ave while investigating another PST. Wastewater was being pumped from the basement of the house at approximately 2 GPM due to a backup from a choked sanitary mainline. UMD cleared the choke and stopped the SSO.</p> <p>SSO Report 2 GPM, total gal</p>	OCR	2/8/2021	SSO-Surface

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
3156	3214 Belair Rd SSO# 6919	3214 Belair Rd	Herring Run	High ammonia received during BR Survey at Mannasota Ave & Shannon Dr Sample Site (0.60 ppm). High ammonia was tracked to a choked sanitary manhole at 3214 Belair Rd that was relieved by UMD. Sewage was infiltrating subsurface into the storm drain system at 5GPM.	OCR	2/10/2021	SSO-Surface
3163	3700 Eastwood Dr Rear SSO# 6944	3700 Eastwood Dr Alley	Herring Run	<p>SSO Report 5 GPM total 200 gal</p> <p>While confirming the abatement and SSO sampling for the SSO that occurred in the sanitary line segment that runs between 3700 Eastwood Dr and 3632 Eastwood Dr, we discovered the ammonia to still be high (&gt;0.60ppm) at the outfall after the sanitary segment was lined. After investigating with dye testing we were able to determine that the sanitary manhole vault directly above the recently lined sanitary pipe segment was also exfiltrating into the storm drain. Prior to abating the lower issue with CIPP the exfiltration from the manhole vault above it could not be discovered.</p> <p>3/3/21 Manhole channel still leaking into adjacent storm drain inlet. Dye testing from the 9 o'clock pipe confirmed leak is present. Notified OAM and UMD that the leak is still present. UMD sent to OEC for a contractor to make necessary repairs.</p> <p>3/30/21 Ammonia still elevated at the outfall. Does not appear to have been any work on the sanitary manhole. The leak in the storm inlet still appears to be active.</p> <p>4/13/21 According to OAM, Spinello notified City the manhole was repaired and OCPR and CIPP are scheduled for mainline. OCR notified that the SSO has reached over 16,000 gallons at the reported rate of discharge of 0.25. Need to inspect to see if this is an accurate discharge rate. The outfall does not have a high ammonia and when dye tested the sewage seen entering the inlet is nowhere near .25 gpm.</p> <p>4/20/21 Spinello notified DPW that their sub P&amp;P will grout the manhole channel on Friday 4/23. Starting 10K SSO sampling again even though results are low.</p> <p>4/21/21 CCTV of the storm found the storm pipe at the manhole is broken and deformed. This information was paced into OEC.</p> <p>4/23/21 Manhole rehab was completed on the channel. Flow still present in inlet, flushed storm drain with hydrant on Parkside.</p>	OCR	2/26/2021	SSO-Surface
3168	4603 Briarclift Rd SSO#6957		Gwynns Falls	<p>4/26/21 Ammonia was low at the outfall. There still looks to be sewage in the pipe at the inlet but very low.</p> <p>Hole in the side of the pipe that crosses the stream leading to the manhole. 2 GPM</p> <p>3/10/21 Still active. Waiting on UMD to make repair.</p> <p>3/15/21 The hole in the side of the pipe has been repaired.</p>	OCR	3/3/2021	SSO-Surface
3190	2600 N Longwood St		Gwynns Falls	<p>SSO Report 3 gpm total 133440 gal at street on 3/11/21</p> <p>Surcharging sanitary manhole.</p> <p>20 gpm</p>	OCR	4/13/2021	SSO-Surface

PST ID	PST Name	Location Description	Watershed	PST Comments	Complainant	Investigation Date	PST Discharge Classification
3217	3436 Dudley Ave	Lower end of 3400 block of Dudley Ave (3430- 3436)	Herring Run	<p>4/28: Rowhomes starting at 3436 Dudley Ave reported sewage seeping into their basements. Sewage is actively coming out of sump pump along side of 3436 Dudley Ave and out of back foundation, flowing down street into storm drain. Residents of 3434 and 3430 reported sewage, PCA entered 3434 and can confirm. 3436 is not occupied.</p> <p>MH at Brehms and Dudley intersection is dry. (Mapped incorrectly in PST app.) Suspected blockage on 8" sanitary line along front of rowhomes on Dudley Ave. Sanitary line is short and only runs in front of block. UMD notified and a crew was sent out to investigate. No SSO reported yet, awaiting confirmation that it's the main. Working to get access to 3436 Dudley Ave.</p> <p>Spoke to the resident at 3434 Crystal Brown (443) 413-1699 whom has the sewage entering her basement. She provided the information that the owner of 3436 passed away. Ms. Lynell the daughter )443-683-6542 is caring for the property which is to be taken over by the bank on 4/29/21.</p> <p>Violation was issued by Myra Parker. Reached out to her but she was out of the office, Left message for return cal.</p> <p>4/29/21 Basement of 3636 had several inches of sewage. UMD flushed main on Dudley from the upstream manhole to relieve the choke. Pipe connects to the manhole on Brehms with the 8 inch pipe not the 40 inch. Meeting setup with OEC to have pipe and manhole realigned since the incoming pipe lower than the outgoing pipe.</p> <p>5/6/21 Met with OEC Rupak and AECOM Stephen Braks to formulate and idea to rectify the backup occurring. Mr Braks will do some research and make recommendations.</p> <p>Submitted transmittal to have 8 inch connected to the mahole on the 48 inch sewer and have the base of the 8 inch manhole raised to the outgoing pipe invert.</p> <p>7/6/21 Work complete.</p>	City	4/28/2021	SSO-Surface
3222	4016 Fairfax Rd SSO #7071	4016 Fairfax Rd	Gwynns Falls	<p>Elevated ammonia discovered at Clifton &amp; Fairfax OF during routine monitoring reading .65ppm. Investigation led to sewage entering storm drain system at intersection of Fairfax and Oakfield. Sewage also surfacing on Oakfield from weep hole entering storm drain inlet. Dye test conducted at 4016 Fairfax was present at Fairfax and Oakfield intersection. UMD abated choked main.</p> <p>Per SSO Report 15 CPM total 145F</p>	OCR	4/29/2021	SSO-Surface

Table K-2: Summary of FOG Enforcement

<b>VIOLATION TYPE</b>	<b>1ST</b>	<b>2ND</b>	<b>3RD*</b>	<b>TOTAL</b>
Inaccessible GCD	13	1	0	14
Inadequate Maintenance of Waste/Recycle Grease Area	99	5	0	104
Inadequate/No Maintenance Log	368	104	17	489
Other	3	0	0	3
Plumbing Code	13	4	0	17
Refused Admittance	44	1	0	45
Unauthorized Discharge**	381	97	22	500
<b>TOTAL NOVS ISSUED</b>	<b>921</b>	<b>212</b>	<b>39</b>	<b>1,172</b>

\* Penalties Assessed

\*\* Failed 25% Rule, No or Missing Baffles, No GCD, Certain appurtenances (ex. Pre-rinse sink) require GCD coverage

## **Appendix K: Supporting calculations for IDDE Credit**

**Table K-1**  
**IDDE Calculations for Sanitary Direct Connections**

SDUO ID	Location Description	WS <sup>1</sup>	Start Date	End Date	Elimination Year	Measured In-flow (gpm)	Observed Flow consistency	Calc. Daily Flow (gpd) <sup>2</sup>	TN Red (lb / year) <sup>3</sup>	TP Red (lb / year) <sup>4</sup>	ISR (ac) <sup>5</sup>
15BR01	3018 Pinewood Avenue	BR	12/14/15	2/19/16	2016	0.03	1.0	43.2	4.34	0.79	0.2
15GF01	4500 Block of Bonner St	GF	7/20/15	9/17/15	2015	0.60	0.8	691.2	69.48	12.63	3.2
15GF02	4520 Wakefield Road	GF	7/30/15	10/22/15	2015	0.03	1.0	43.2	4.34	0.79	0.2
15HB01	707 S President St.	BH	12/4/15	1/6/16	2016	0.03	1.0	43.2	4.34	0.79	0.2
15HB02	114 E Lexington St	BH	11/18/15	5/18/16	2016	2	1.0	2880	289.48	52.63	13.3
15JF02	3731 Greenmount Ave	JF	7/10/15	3/12/16	2016	0.10	1.0	144	14.47	2.63	0.7
15JF03	3804 Juniper Road	JF	7/21/15	10/19/15	2015	0.10	1.0	144	14.47	2.63	0.7
15JF07	3501 St Paul Street	JF	12/9/15	12/19/15	2015	10	0.3	4320	434.23	78.95	19.9
16BR02	1501 Edison Highway	BR	6/14/16	8/18/16	2016	0.05	1.0	72	7.24	1.32	0.3
16JF03	Friends School (Pre-K building)	JF	4/18/16	5/31/16	2016	3	0.3	1296	130.27	23.69	6.0
16BH05	3807 Bank St	BH	11/22/2016	1/4/2017	2017	0.1	1.0	144	14.47	2.63	0.7
17BR02	6001 Harford Rd	BR	10/17/2017	11/3/2017	2017	0.22	1.0	316.8	31.84	5.79	1.5
17BH01	2024 Fleet Street	BH	4/21/2017	5/17/2017	2017	0.1	1.0	144	14.47	2.63	0.7
17JF02	101 W Read Street	JF	6/1/2017	1/19/2018	2018	3.9	1.0	5616	564.50	102.64	25.9
17JF03	217-221 W Read St	JF	6/8/2017	9/27/2017	2017	0.07	1.0	100.8	10.13	1.84	0.5
18GF05	813 Spedden St	GF	12/11/2018	8/15/2019	2019	0.1	1.0	144	14.47	2.63	0.7
19BR01 <sup>6</sup>	4505 Lasalle Ave	BR	4/26/2019	6/18/2019	2019	0.05	1	72	7.24	1.32	0.3
19BR02	4701 Hazelwood Ave	BR	8/22/2019	11/6/2019	2019	0.16	1.0	230.4	23.16	4.21	1.1
19JF01	4 Elmwood Rd	JF	3/28/2019	11/6/2019	2019	0.2	1.0	288	28.95	5.26	1.3
19JF02	211 Longwood Rd	JF	4/4/2019	9/18/2019	2019	0.13	1.0	187.2	18.82	3.42	0.9
19JF04	2000 Cecil Ave-1	JF	7/26/2019	11/5/2019	2019	0.16	1.0	230.4	23.16	4.21	1.1
19JF05	2000 Cecil Ave-2	JF	7/30/2019	11/14/2019	2019	5	1.0	7200	723.71	131.58	33.2
20BR01	6660 Belair Rd	BR	2/26/2020	6/22/2020	2020	0.17	1.0	244.8	24.61	4.47	1.1
19GF05	Piedmont Allendale	GF	10/2/2019	7/1/2020	2020	0.5	1.0	720	72.37	13.16	3.3
20BH01	2545 Eastern Ave	BH	1/15/2020	7/17/2020	2020	0.25	1.0	360	36.19	6.58	1.7
20BR02	Overland Ave Outfall	BR	3/5/2020	9/22/2020	2020	0.04	1.0	57.6	5.79	1.05	0.3
20BR03	6515 Belair Rd	BR	2/27/2020	7/7/2020	2020	0.035	1.0	50.4	5.07	0.92	0.2
21BH01	22 Light St	BH	1/29/2021	3/10/2021	2021	0.29	1.0	417.6	41.98	7.63	1.9
<b>Total Credit for Direct Connections for FY 2021:</b>				<b>28</b>					<b>2544.6</b>	<b>462.6</b>	<b>116.8</b>

**Notes**

1. WS = Watershed. BH = Baltimore Harbor, BR = Back River, GF = Gwynns Falls, JF = Jones Falls
2. Daily Flow = Measured In-flow (gpm) \* Observed Consistency \* 60 min / hr \* 24 hr / day
3. TN Red = Total Nitrogen Reduction = Daily flow \* 33 mg / L \* (8.345 x 10<sup>-6</sup> lbs\*/L/ gal\*mg) \* 365 days / year [Ref. Protocol 1, IDDE Expert Panel]
4. TP Red = Total Phosphorus Reduction = Daily flow \* 6 mg / L \* (8.345 x 10<sup>-6</sup> lbs\*/L/ gal\*mg) \* 365 days / year [Ref. Protocol 1, IDDE Expert Panel]
5. ISR = Impervious Surface Restoration = ((TN Load Reduction / 17.81 lb / acre\* year) + (TP Load Reduction / 2.23 lb / acre\* year)) /3. Different method from FY 2019 report.
6. Previously listed as SDUO in FY 2019 report.

**Table K-2**  
**Sewer Exfiltration Identified as SDUO**

SDUO ID	Location Description	WS <sup>1</sup>	Start Date	End Date	Duration (days)	Elimination Year	Measured In-flow (gpm)	Flow consistency	Calc. Daily Flow (gpd) <sup>2</sup>	Duration (days)	Limited Duration (calc) <sup>3</sup>	TN Red (lb / yr) <sup>4</sup>	TP Red (lb / yr) <sup>5</sup>	ISR (ac) <sup>6</sup>
15JF01	3513 3521 N Calvert St	JF	7/7/15	8/21/15	45	2015	0.20	1	288	45	45	1.8	0.3	0.1
15JF04	3119 N. Calvert St	JF	7/23/15	8/29/15	37	2015	0.05	0.5	36	37	37	0.2	0.0	0.0
15JF05	224 39th St	JF	7/30/15	4/20/17	630	2017	0.09	1	129.6	630	365	6.5	1.2	0.3
15JF06	2101 Rogene Drive	JF	11/14/15	12/15/15	31	2015	5	0.05	360	31	31	1.5	0.3	0.1
15PT01	Fairhaven Avenue	LBNP	7/17/15	8/5/15	19	2015	0.25	0.3	108	19	19	0.3	0.1	0.0
16BR01	1501 Hartsdale Rd	BR	3/1/16	6/6/17	462	2017	0.25	1	360	462	365	18.1	3.3	0.8
16GF01	4500 Block of Wakefield Rd	GF	11/14/2016	7/14/2017	242	2017	0.02	0.5	14.4	242	242	0.5	0.1	0.0
16GF02	2402 Talbot Road	GF	10/18/2016	12/11/2016	54	2016	1	1	1440	54	54	10.7	1.9	0.5
16HB01	Perkins Homes	BH	4/15/16	10/12/17	545	2017	0.7	1	1008	545	365	50.7	9.2	2.3
16HB02	2400 Fairmount Ave	BH	5/31/16	6/24/16	24	2016	0.1	0.05	7.2	24	24	0.0	0.0	0.0
16HB03	Perkins Homes (Ballou Court)	BH	9/2/2016	10/12/2017	405	2017	1	1	1440	405	365	72.4	13.2	3.3
16HB04	2109 E North Ave	BH	11/22/2016	1/13/2017	52	2017	0.02	1	28.8	52	52	0.2	0.0	0.0
16JF01	Dale Rd & Cross Country Blvd	JF	1/7/16	4/20/16	104	2016	1.5	1	2160	104	104	30.9	5.6	1.4
16JF02	Crest Rd & Greenspring Rd	JF	1/8/2016	11/14/2016	311	2016	1.1	1	1584	311	311	67.8	12.3	3.1
16JF04	2900 block of Woodland Ave	JF	11/1/2016	9/7/2017	310	2017	0.05	1	72	310	310	3.1	0.6	0.1
16JF05	5400 Block of Purlington Way	JF	11/21/2016	6/14/2017	205	2017	0.1	1	144	205	205	4.1	0.7	0.2
17GF01	3208 Milford Ave	GF	8/9/2017	12/7/2017	120	2017	0.16	1	230.4	120	120	3.8	0.7	0.2
17GF02	4202 Maine Ave	GF	8/15/2017	9/15/2017	31	2017	0.1	1	144	31	31	0.6	0.1	0.0
17GF03	5104 Norwood Ave	GF	9/27/2017	8/21/2018	328	2018	0.017	1	24.48	328	328	1.1	0.2	0.1
17JF01	5114 N Charles St, Friends School	JF	3/30/2017	7/26/2017	118	2017	10	0.2	2880	118	118	46.8	8.5	2.1
17JF04	1001 Wilmot Court	JF	7/14/2017	10/19/2017	97	2017	1.5	1	2160	97	97	28.8	5.2	1.3
17JF05	1035 Wilmot Court	JF	10/19/2017	1/3/2018	76	2018	1.5	1	2160	76	76	22.6	4.1	1.0
17JF06	2231 Crest Rd	JF	11/8/2017	11/22/2017	14	2017	0.05	1	72	14	14	0.1	0.0	0.0
18BR01	4206 Frankford Ave	BR	1/25/2018	1/25/2018	0.61	2018	2	1	2880	1	1	0.2	0.0	0.0
18BR02	York Rd & E Coldspring Ln (4711 York Rd)	BR	2/14/2018	8/15/2018	182	2018	0.01	1	14.4	182	182	0.4	0.1	0.0
18BR03	Kavon & Shannon Dr Outfall	BR	12/13/2018	2/6/2019	55	2019	0.05	1	72	55	55	0.5	0.1	0.0
18GF01	Frederick Ave & Catherine St	GF	6/8/2018	7/26/2018	48	2018	0.5	1	720	48	48	4.8	0.9	0.2
18GF02	2800 Block of Springhill Ave	GF	7/12/2018	11/21/2018	132	2018	0.015	1	21.6	132	132	0.4	0.1	0.0
18GF03	Artaban Townhome Sanitary	GF	9/7/2018	12/6/2018	90	2018	0.5	1	720	90	90	8.9	1.6	0.4
18GF04	5322 Frederick Ave.	GF	11/28/2018	12/12/2018	14	2018	13.64	1	19641.6	14	14	37.9	6.9	1.7
18JF01	4801 Laurel Ave.	JF	1/24/2018	11/21/2018	301	2018	0.03	1	43.2	301	301	1.8	0.3	0.1
18JF02	3316 Bancroft Road	JF	4/6/2018	10/22/2018	199	2018	1	1	1440	199	199	39.4	7.2	1.8
18JF02	3316 Bancroft Road	JF	10/22/2018	2/23/2019	123	2019	0.5	1	720	123	123	12.2	2.2	0.6
18JF03	3732 Old York Rd	JF	8/29/2018	9/5/2018	7	2018	0.167	1	240.48	7	7	0.2	0.0	0.0
18JF04	Homewood Ave & Walpert Ave	JF	11/1/2018	3/8/2019	127	2019	0.103	1	148.32	127	127	2.6	0.5	0.1
19GF01	4001 Alto Rd	GF	1/10/2019	1/18/2019	8	2019	0.10069	1	144.99	8	8	0.2	0.0	0.0
19GF02	3000 presbury st.	GF	3/13/2019	6/20/2019	99	2019	0.055	1	79.2	99	99	1.1	0.2	0.0
19GF03	1705 N Longwood st	GF	3/13/2019	6/20/2019	99	2019	0.268	1	385.92	99	99	5.3	1.0	0.2
19GF04	1701 N Longwood st	GF	4/9/2019	6/20/2019	72	2019	0.002	1	2.88	72	72	0.0	0.0	0.0
19JF03	Green spring Ave and Dupont Ave	JF	04/11/19	5/29/2019	48	2019	0.003	1	4.32	48	48	0.0	0.0	0.0
20BH02	808 N Luzerne Ave	BH	01/22/20	3/20/2020	58	2020	0.017	1	24.48	58	58	0.2	0.0	0.0
19JF07	2000 Cecil Ave	JF	11/14/19	12/8/2020	390	2020	0.25	1	360	390	365	18.1	3.3	0.8
19JF08	Worsley St. and Cecil Ave.	JF	11/14/19	10/7/2020	328	2020	0.07	1	100.8	328	328	4.6	0.8	0.2

**Table K-2**  
**Sewer Exfiltration Identified as SDUO**

SDUO ID	Location Description	WS <sup>1</sup>	Start Date	End Date	Duration (days)	Elimination Year	Measured In-flow (gpm)	Flow consistency	Calc. Daily Flow (gpd) <sup>2</sup>	Duration (days)	Limited Duration (calc) <sup>3</sup>	TN Red (lb / yr) <sup>4</sup>	TP Red (lb / yr) <sup>5</sup>	ISR (ac) <sup>6</sup>
19JF09	3935 Cloverhill Rd	JF	12/03/19	3/18/2021	471	2021	0.016	1	23.04	471	365	1.2	0.2	0.1
19JF11	3927 Cloverhill Rd	JF	12/06/19	10/22/2020	321	2020	0.07	1	100.8	321	321	4.5	0.8	0.2
20JF01	530 N Milton Ave	JF	02/20/20	12/30/2020	314	2020	0.167	1	240.48	314	314	10.4	1.9	0.5
20BH03	604 Oldham St	BH	07/23/20	8/11/2020	19	2020	0.26	1	374.4	19	19	1.0	0.2	0.0
20JF02	3421 Olympia Ave	JF	08/07/20	9/22/2020	46	2020	0.25	1	360	46	46	2.3	0.4	0.1
20GF01	N. Pulaski & W Saratoga (2033 Pen	GF	09/14/20	3/2/2021	169	2021	0.1	1	144	169	169	3.4	0.6	0.2
20BH04	247 S Chapel St	BH	09/17/20	10/6/2020	19	2020	0.125	1	180	19	19	0.5	0.1	0.0
20GF02	2905 Wynham Rd	GF	11/20/20	12/29/2020	39	2020	1	1	1440	39	39	7.7	1.4	0.4
21GF01	2510 Queen Anne Rd	GF	04/21/21	5/27/2021	36	2021	0.01	1	14.4	36	36	0.1	0.0	0.0
<b>Total Credit for Exfiltration via Sanitary Discharges of Unknown Origin for FY 2021:</b>						52						<b>542.2</b>	<b>98.6</b>	<b>24.9</b>

**Notes**

1. WS = Watershed. BH = Baltimore Harbor, BR = Back River, GF = Gwynns Falls, LNBP = Lower North Branch Patapsco, JF = Jones Falls
2. Daily Flow = Measured In-flow (gpm) \* Observed Consistency \* 60 min / hr \* 24 hr / day
3. Duration is limited to 365 days for calculation of annual load reduction.
4. TN Red =Total Nitrogen Reduction = Daily flow \* 33 mg / L \* (8.345 x 10<sup>-6</sup> lbs\*L/ gal\*mg) \* 365 days / year \* 0.5 [Ref. Protocol 2, N-6, IDDE Expert Panel]
5. TP Red = Total Phosphorus Reduction = Daily flow \* 6 mg / L \* (8.345 x 10<sup>-6</sup> lbs\*L/ gal\*mg) \* 365 days / year \* 0.5 [Ref. Protocol 2, N-6, IDDE Expert Panel]
6. ISR = Impervious Surface Restoration = ((TN Load Reduction / 17.81 lb / acre\* year) + (TP Load Reduction / 2.23 lb / acre\* year)) /3. Different method from FY 2019 report.

**Table L-3**  
**Sewer Exfiltration Reported as SSO, Found by IDDE**

<b>SSOID</b>	<b>LOCATION</b>	<b>WS<sup>1</sup></b>	<b>Report Date</b>	<b>Elimination Year</b>	<b>Reported Volume (gal)<sup>2</sup></b>	<b>TN Red (lb / yr)<sup>3</sup></b>	<b>TP Red (lb / yr)<sup>4</sup></b>	<b>ISR (ac)<sup>5</sup></b>
3498	977 Ellicott Driveway	GF	1/15/2015	2015	19,500	2.7	0.5	0.1
3512	252 N Hilton St	GF	1/25/2015	2015	46,650	6.4	1.2	0.3
3516	Greenspring Ave & Loyola Southway	JF	1/28/2015	2015	8,325	1.1	0.2	0.1
3645	Orville Ave and E Federal St	GF	4/8/2015	2015	34,940	4.8	0.9	0.2
3699	Guilford Ave and 26th St	JF	5/1/2015	2015	7,575	1.0	0.2	0.0
3702	203 Chancery Rd	JF	5/5/2015	2015	9,900	1.4	0.2	0.1
3826	4000 Edmondson Ave	GF	7/7/2015	2015	62,050	8.5	1.6	0.4
3939	5113 Falls Rd	JF	9/16/2015	2015	32,799	4.5	0.8	0.2
4036	5100 Perring Pkwy	BR	11/17/2015	2015	55,400	7.6	1.4	0.4
4074	2900 Waterview Ave & Cherry Hill Rd	LNBP	12/14/2015	2015	12,450	1.7	0.3	0.1
4107	1901 Eagle Dr	GF	1/4/2016	2016	7,860	1.1	0.2	0.0
4110	1901 Eagle Dr	GF	1/6/2016	2016	8,275	1.1	0.2	0.1
4225	5810 Greenspring Ave	JF	3/17/2016	2016	34,992	4.8	0.9	0.2
4402	N Pine St and W Saratoga St	BH	7/4/2016	2016	48,000	6.6	1.2	0.3
4449	N Pine St and W Saratoga St	BH	8/2/2016	2016	54,000	7.4	1.4	0.3
4476	1500 N Chapel St	BH	8/18/2016	2016	83,990	11.6	2.1	0.5
4538	226 S Mount Olivet Ln	GF	10/14/2016	2016	7,779	1.1	0.2	0.0
5024	2501 W Lexington St	GF	8/25/2017	2017	44,250	6.1	1.1	0.3
5051	2505 W Lexington St	GF	9/12/2017	2017	582,639	80.2	14.6	3.7
5073	3500 Parkdale Ave	JF	9/29/2017	2017	57,750	8.0	1.4	0.4
5085	3500 Parkdale Ave	JF	10/7/2017	2017	2,892	0.4	0.1	0.0
5090	508 E Preston St	JF	10/20/2017	2017	41,600	5.7	1.0	0.3
5099	2585 Edmondson Ave	GF	10/25/2017	2017	17,710	2.4	0.4	0.1
5492	301 S Beechfield Ave	GF	7/23/2018	2018	1,309,300	180.3	32.8	8.3
5906	3700 Tudor Arms Ave	JF	3/21/2019	2019	72,080	9.9	1.8	0.5
5986	2501 Shirley Ave	JF	5/9/2019	2019	7,349	1.0	0.2	0.0
6088	914 Wilmington Ave	GF	8/28/2019	2019	16,003	2.2	0.4	0.1
6099	1232 N Franklinton Rd	GF	9/13/2019	2019	1,142,800	157.4	28.6	7.2
6197	3700 Tudor Arms Ave	JF	12/1/2019	2019	194,500	26.8	4.9	1.2
6642	5600 Harford Rd	BR	8/20/2020	2020	14,040	1.9	0.4	0.1
6667	E Coldspring Ln & York Rd	BR	9/9/2020	2020	9,785	1.3	0.2	0.1

**Table L-3**  
**Sewer Exfiltration Reported as SSO, Found by IDDE**

<b>SSOID</b>	<b>LOCATION</b>	<b>WS<sup>1</sup></b>	<b>Report Date</b>	<b>Elimination Year</b>	<b>Reported Volume (gal)<sup>2</sup></b>	<b>TN Red (lb / yr)<sup>3</sup></b>	<b>TP Red (lb / yr)<sup>4</sup></b>	<b>ISR (ac)<sup>5</sup></b>
6833	310 N Culvert St	GF	12/29/2020	2020	50,295	6.9	1.3	0.3
6874	3700 Eastwood Dr	BR	2/26/2021	2021	26,282	3.6	0.7	0.2
<b>Total Credit for Exfiltration via Sanitary Sewer Overflows (SSOs) for FY 2021:</b>					<b>33</b>	<b>567.8</b>	<b>103.2</b>	<b>26.1</b>

**Notes**

1. WS = Watershed. BH = Baltimore Harbor, BR = Back River, GF = Gwynns Falls, LNBP = Lower North Branch Patapsco, JF = Jones Falls
2. Reported Volume as listed on SSO report (5-day) to MDE.
3. TN Red = Total Nitrogen Reduction =  $33 \text{ mg / L} * (8.345 \times 10^{-6} \text{ lbs}^* \text{L/ gal}^* \text{mg}) * \text{Reported Volume} * 0.5$  [Ref. Protocol 2, N-6, IDDE Expert Panel]
4. TP Red = Total Phosphorus Reduction =  $6 \text{ mg / L} * (8.345 \times 10^{-6} \text{ lbs}^* \text{L/ gal}^* \text{mg}) * \text{Reported Volume} * 0.5$  [Ref. Protocol 2, N-6, IDDE Expert Panel]
5. ISR = Impervious Surface Restoration =  $((\text{TN Load Reduction} / 17.81 \text{ lb / acre}^* \text{ year}) + (\text{TP Load Reduction} / 2.23 \text{ lb / acre}^* \text{ year})) / 3$ .

**Table K-4**  
**Drinking Water Transmission Loss**

PST ID	Location	WS <sup>1</sup>	Elimination Year	Start Date	End Date	Measured Flow (gpm)	Calc. Daily Flow (gpd) <sup>2</sup>	Duration (days)	Limited Duration (calc) <sup>3</sup>	TN Red (lb / yr) <sup>4</sup>	TP Red (lb / yr) <sup>5</sup>	ISR (ac) <sup>6</sup>
2542	2955 Frederick Ave	BR	2018	12/6/2017	3/16/2018	50	72,000	100	100	51.1	1.5	1.2
2346	5604 Hamlet Ave	BR	2017	10/14/2016	2/14/2017	50	72,000	123	123	62.8	1.8	1.5
2338	Kelly & Poplin	JF	2017	9/21/2016	4/26/2017	30	43,200	217	217	66.5	2.0	1.5
2474	3213 Southern Ave	BR	2017	6/14/2017	7/17/2017	25	36,000	33	33	8.4	0.2	0.2
2433	4000 Glenarm Ave	BR	2017	2/8/2017	12/4/2017	35	50,400	299	299	106.9	3.1	2.5
2192	901 N. Newkirk St	BR	2016	1/7/2016	5/2/2016	12.5	18,000	116	116	14.8	0.4	0.3
2012	118 W. Hamburg St	BH	2016	2/19/2015	3/25/2016	30	43,200	400	365	111.8	3.3	2.6
2286	Greenspring & Springarden	JF	2016	7/7/2016	9/5/2016	2	2,880	60	60	1.2	0.0	0.0
2057	2802 Oakford	JF	2015	6/11/2015	7/2/2015	22.5	32,400	21	21	4.8	0.1	0.1
2033	833 S Linwood	BH	2015	5/28/2015	6/18/2015	12.5	18,000	21	21	2.7	0.1	0.1
2011	23rd & Huntingdon	JF	2015	5/15/2015	12/7/2015	22.5	32,400	206	206	47.3	1.4	1.1
2029	1525 W. 41st St	JF	2015	4/23/2015	9/14/2015	50	72,000	144	144	73.5	2.2	1.7
2004	W Caton Ave & N Culver St	GF	2015	1/27/2015	3/8/2015	5	7,200	40	40	2.0	0.1	0.0
2058	3817 Clifton	GF	2015	6/18/2015	7/10/2015	5	7,200	22	22	1.1	0.0	0.0
2295	5201 Park Heights	JF	2020	10/13/2016	6/1/2020	50	72,000	1327	365	186.4	5.5	4.3
2330	5971 Western Run Dr	JF	2020	9/21/2016	6/1/2020	5	7,200	1349	365	18.6	0.5	0.4
2429	2770 Wilkens Ave	GF	2020	1/31/2017	3/17/2020	30	43,200	1141	365	111.8	3.3	2.6
2639	5609 Harford Rd	BR	2020	4/18/2018	5/10/2020	30	43,200	753	365	111.8	3.3	2.6
2864	2900 Hillsdale Rd	GF	2019	8/1/2019	8/5/2019	1000	1,440,000	4	4	40.9	1.2	0.9
2887	Rawlings Conservatory	JF	2020	9/19/2019	6/2/2020	5	7,200	257	257	13.1	0.4	0.3
2890	2558 Oswego Ave	JF	2020	9/11/2019	1/30/2020	1	1,440	141	141	1.4	0.0	0.0
2960	Harford & St. Johns	BR	2020	1/7/2020	5/12/2020	20	28,800	126	126	25.7	0.8	0.6
3017	901 N Chester St	BH	2020	3/4/2020	5/10/2020	100	144,000	67	67	68.4	2.0	1.6
928	400 S Highland Ave	BH	2021	1/16/2014	7/8/2021	100	144,000	2730	365	372.8	11.0	8.6
2299	S. Washington St. & Eastern Av	BH	2021	7/20/2016	3/29/2021	20	28,800	1713	365	74.6	2.2	1.7
2301	Thames St. & S. Wolfe St	BH	2021	7/20/2016	6/1/2021	50	72,000	1777	365	186.4	5.5	4.3
2593	E Eager St & N calvert St	JF	2021	2/8/2018	1/4/2021	25	36,000	1061	365	93.2	2.7	2.2
2992	Cross Keys OF JF105	JF	2021	2/19/2020	1/4/2021	5	7,200	320	320	16.3	0.5	0.4
3018	Washington St & Eager St	BH	2021	3/5/2020	5/10/2021	10	14,400	431	365	37.3	1.1	0.9
3093	907 E 43rd St	BR	2021	10/7/2020	3/29/2021	500	720,000	173	173	883.5	26.0	20.4
3096	5015 Boxhill Ln	JF	2020	10/19/2020	12/15/2020	10	14,400	57	57	5.8	0.2	0.1
3101	5708 Charlestowne Dr	BH	2021	11/2/2020	1/19/2021	250	360,000	78	78	199.2	5.9	4.6
3143	2701 Latona Rd	BH	2021	1/22/2021	1/29/2021	70	100,800	7	7	5.0	0.1	0.1
3154	5315 Elsrode Ave	BH	2021	2/8/2021	3/16/2021	50	72,000	36	36	18.4	0.5	0.4

**Table K-4**  
**Drinking Water Transmission Loss**

PST ID	Location	WS <sup>1</sup>	Elimination Year	Start Date	End Date	Measured Flow (gpm)	Calc. Daily Flow (gpd) <sup>2</sup>	Duration (days)	Limited Duration (calc) <sup>3</sup>	TN Red (lb / yr) <sup>4</sup>	TP Red (lb / yr) <sup>5</sup>	ISR (ac) <sup>6</sup>
3236	541 Beechfield Ave	GF	2021	5/21/2021	6/2/2021	200	288,000	12	12	24.5	0.7	0.6
3240	W Coldspring	GF	2021	5/24/2021	6/8/2021	50	72,000	15	15	7.7	0.2	0.2
<b>Total Credit for Drinking Water Transmission for FY 2021:</b>					36					<b>3,058.2</b>	<b>89.9</b>	<b>70.7</b>

**Notes**

1. WS = Watershed. BH = Baltimore Harbor, BR = Back River, GF = Gwynns Falls, LJF = Jones Falls
2. Daily Flow = Measured In-flow (gpm) \* 60 min / hr \* 24 hr / day
3. Duration is limited to 365 days for calculation of annual load reduction.
4. TN Red = Total Nitrogen Reduction = Daily flow \* 1.7 mg / L \* (8.345 x 10<sup>-6</sup> lbs\*L/ gal\*mg) \* 365 days / year \* 0.5 [Ref. Protocol 2, N-7, IDDE Expert Panel]
5. TP Red = Total Phosphorus Reduction = Daily flow \* 0.05 mg / L \* (8.345 x 10<sup>-6</sup> lbs\*L/ gal\*mg) \* 365 days / year \* 0.5 [Ref. Protocol 2, N-7, IDDE Expert Panel]
6. ISR = Impervious Surface Restoration = ((TN Load Reduction / 17.81 lb / acre\* year) + (TP Load Reduction / 2.23 lb / acre\* year)) /3.

**Appendix L: Progress Status of Projects, Programs, and Partnerships for  
20% Impervious Surface Restoration**

MS4 WIP Project ID	BMP Type	Watershed	Location	Drainage Area (ac)	Eq. Imp Area Restored (ac)	Estimated Pollutant Removal (lbs / yr)			Estimated Capital Cost	Schedule to Start (FY)		Status as of 6/30/2020	NOTES
						TN	TP	TSS		Design	Construction		
Structural / Traditional BMPs													
S01	SW Pond Retrofit	Gwynns Falls	Gwynns Run, Carrolton Park	38	25	132	17	15,525	\$505,000	2016	2018		Removed due to acces constraints with new BGE utility.
												Removed	
S02	SW Pond Retrofit	Gwynns Falls	Seton Business Park Park	62	41	214	27	25,169	\$795,000	2016	2018		Not viable based on access and potential for retro-fit.
												Removed	
S03	Pond Retrofit and New Pond	Back River	North Point Road @ Kane and Quad	92	60	317	40	37,260	\$3,290,000	2015	2016		Ex. Pond on RCRA site. Retrofit is not practicable.
												Removed	
S04	Wetland / Pond	Back River	Perring Parkway at Cloville (HR-R28B)	23	15	63	13	8,484	\$344,000	2016	2018		Access problems. Project deemed not practicable.
												Removed	
S05	Wetland / Pond	Back River	Herring Run Park below Shannon at Lyndale (HR-R15C)	31	20	84	17	11,465	\$550,000	2016	2018		Conflict with active recreation (BCRP).
												Removed	
S06	Wetland	Back River	Herring Run Park below Shannon at Kavon Ave (HR-R39)	31	20	84	17	11,465	\$550,000	2016	2018		Area restricted for horizontal expansion.
												Removed	
S07	Wetland	Back River	Herring Run Park below Parkside at Sinclair (HR-R15A)	100	65	275	56	37,260	\$1,600,000	2016	2018		Conflict with active recreation (BCRP).
												Removed	
S08	Wetland	Back River	Chinquapin Run Park between Belvedere and Alameda (CH-R6A)	69	45	190	39	25,795	\$1,840,000	2016	2018		Project was removed since A05 changed, also based on feasibility.
												Removed	
S09	Bioretention Area	Baltimore Harbor	Faring Baybrook Park Rec Center (MC- 18a)	5	3	17	3	1,702	\$160,000	2016	2018		Same contract as A23.
				5	3	17	3	1,734	\$955,080	2016	2022	Under Design	
S10	Bioretention Area	Gwynns Falls	Park Hts Virginia + Homer	3	2	11	2	1,135	\$60,000	2016	2018		Access problems.
												Removed	
S11	Shallow extended detention wetland	Jones Falls	West Coldspring and Brand Ave (LJ-R9)	14	9	46	8	4,624	\$212,000	2016	2018		Conflict with active recreation (BCRP).
												Removed	
S12	Shallow wetland	Jones Falls	Woodheights and La Plata (LJ-R38)	6	4	21	3	2,102	\$96,000	2016	2018		Access problems.
												Removed	
S13	Shallow wetland	Jones Falls	Lower Lower Stony Run	0	0	0	0	0	\$0				Part of Project A02. Total costs shown in A02.
				31	20	107	17	10,614	\$0	2016	2018	Completed	
			Subtotal Structural / Traditional (WIP):	475	309	1,455	243	181,986	\$10,002,000				
			Subtotal Structural / Traditional (Current):	36	24	124	20	12,348	\$955,080				

MS4 WIP Project ID	BMP Type	Watershed	Location	Drainage Area (ac)	Eq. Imp Area Restored (ac)	Estimated Pollutant Removal (lbs / yr)			Estimated Capital Cost	Schedule to Start (FY)		Status as of 6/30/2020	NOTES
						TN	TP	TSS		Design	Construction		
ESD Practices													
E01	Micro-bioretention	Baltimore Harbor	Cloverleaf - northwest of I-895 and Frankfurst Ave (MC-30)	0.5	0.4	2.1	0.34	217	\$50,000	2016	2019		Postponed until next permit.
												Removed	
E02	Micro-bioretention	Baltimore Harbor	Bush St. Curb bump-out	0.3	0.2	1.2	0.20	127	\$80,000	2011	2016		
				0.3	0.2	1.2	0.19	121	\$102,900	2011	2017	Completed	
E03	Micro-bioretention	Baltimore Harbor	Lafayette inner block retrofit.	0.9	0.7	4.0	0.64	411	\$240,000	2011	2016		
				0.9	0.7	4.0	0.64	411	\$308,900	2011	2017	Completed	
E14	Micro-bioretention	Baltimore Harbor	Bay Brook MS (MC-18b)	0.3	0.3	1.5	0.2	157	\$54,000	2015	2016		School scheduled for renovation
												Removed	
E15	Micro-bioretention	Baltimore Harbor	Bay Brook MS (MC-18c)	0.2	0.2	1.1	0.2	115	\$46,800	2015	2016		School scheduled for renovation
												Removed	
E16	Micro-bioretention	Baltimore Harbor	Bay Brook MS - parking lot (MC-18d)	0.2	0.2	1.1	0.2	115	\$34,800	2015	2016		School scheduled for renovation
												Removed	
E18	Micro-bioretention	Baltimore Harbor	Brooklyn / Curtis Bay	1.1	0.9	5.0	0.8	513	\$19,800	2015	2016		2 facilities
				0.9	0.7	4.2	0.7	423	\$138,728	2016	2019	Under Design	
E19	Micro-bioretention	Baltimore Harbor	Patterson Park (HA-R5A)	0.3	0.2	1.4	0.2	139	\$40,000	2016	2018		Conflict with active recreation (BCRP).
												Removed	
E20	Micro-bioretention	Baltimore Harbor	Ellwood Park (HA-R8)	0.2	0.1	0.7	0.1	72	\$21,000	2016	2018		Conflict with active recreation (BCRP).
												Removed	
E21	Micro-bioretention	Baltimore Harbor	Patterson Park Adjunct (HA-R6)	0.8	0.6	3.6	0.6	362	\$105,000	2016	2018		Conflict with active recreation (BCRP).
												Removed	
E22	Micro-bioretention	Baltimore Harbor	Patterson Park / Highlandtown / Baltimore Highlands	5.1	4.1	24.1	3.79	2,446	\$710,000	2016	2018		15 facilities
				1.6	1.3	7.7	1.22	785	\$530,276	2016	2019	Under Design	
E23	Micro-bioretention	Back River	Frankford / Greater Lauraville / Belair-Edison / Cedonia	4.6	3.6	21.6	3.40	2,198	\$671,000	2016	2018		32 facilities
				4.8	3.8	22.6	3.55	2,295	\$883,183	2016	2019	Under Design	
E24	Micro-bioretention	Back River	Erdman Avenue	1.4	1.2	6.8	1.07	694	\$128,000	2016	2018		
				0.5	0.4	2.4	0.37	242	\$129,926	2016	2019	Under Design	
E25	Micro-bioretention	Back River	Belair Road	0.3	0.2	1.2	0.20	127	\$77,000	2016	2018		
				0.3	0.2	1.2	0.20	127	\$64,693	2016	2019	Under Design	

MS4 WIP Project ID	BMP Type	Watershed	Location	Drainage Area (ac)	Eq. Imp Area Restored (ac)	Estimated Pollutant Removal (lbs / yr)			Estimated Capital Cost	Schedule to Start (FY)		Status as of 6/30/2020	NOTES
						TN	TP	TSS		Design	Construction		
E26	Micro-bioretentation	Jones Falls	Hampden / Remington / Wyman Park	6.3	5.0	29.7	4.67	3,020	\$850,000	2016	2018		11 facilities
				1.3	1.0	5.9	0.93	604	\$346,821	2016	2019	Under Design	
E27	Micro-bioretentation	Gwynns Falls	Howard Park / Grove Park / West Arlington / Fairmount	3.1	2.5	14.9	2.34	1,510	\$420,000	2016	2018		14 facilities
				2.9	2.3	13.7	2.15	1,389	\$569,043	2016	2019	Under Design	
E28	Micro-bioretentation	Gwynns Falls	Hunting Ridge / Rognel Hts / Edmondson Village / Edgewood	3.1	2.5	14.9	2.34	1,510	\$420,000	2016	2018		12 facilities
				1.9	1.5	8.9	1.40	906	\$371,114	2016	2019	Under Design	
E29	Micro-bioretentation	Baltimore Harbor	Sharp-Leadenhall / Federal Hill / Otterbein / S. Baltimore	1.6	1.3	7.4	1.17	755	\$215,000	2016	2018		7 facilities
				0.9	0.7	4.2	0.65	423	\$208,092	2016	2019	Under Design	
E30	Micro-bioretentation	L. N. Branch Patapsco	Cherry Hill	3.1	2.5	14.9	2.34	1,510	\$500,000	2016	2018		
				1.9	1.5	8.9	1.40	906	\$1,233,400	2015	2019	Under Design	
E31	Micro-bioretentation	Baltimore Harbor	Lakeland / Mt. Winans / Westport	1.6	1.3	7.4	1.17	755	\$420,000	2016	2018		
				3.3	2.6	15.4	2.43	1,570	\$408,851	2016	2019	Under Design	
E32	Micro-bioretentation	Baltimore Harbor	McElderry Park / CARE / Milton-Montford / Patterson Place	3.1	2.5	14.9	2.34	1,510	\$438,000	2016	2018		
				0.5	0.4	2.4	0.37	242	\$324,364	2016	2019	Under Design	
E33	Micro-bioretentation	Gwynns Falls	Greater Mondawmin / Walbrook / Rosemont / NW Community Action /	3.1	2.5	14.9	2.34	1,510	\$438,000	2016	2018		
				1.0	0.8	4.8	0.75	483	\$2,140,081	2016	2019	Under Design	
E34	Micro-bioretentation	Jones Falls	Mt. Washington / Glen / Cheswolde / Cross Country	6.3	5.0	29.7	4.67	3,020	\$1,350,000	2016	2018		
				0.4	0.3	1.8	0.28	181	\$1,284,405	2016	2019	Under Design	
E35	Micro-bioretentation	Back River	Cameron Village / Chinquapin Park (upstream to Chinquapin Run)	5.0	4.0	23.8	3.74	2,416	\$680,000	2017	2019		
				3.3	2.6	15.4	2.43	1,570	\$664,040	2016	2019	Under Design	
E36	Micro-bioretentation	Back River	De Wees Park	1.3	1.0	5.9	0.93	604	\$180,000	2017	2019		No viable projects founds.
												Removed	
E37	Micro-bioretentation	Back River	Orchard Ridge / Armistead Gardens / Orangeville	6.3	5.0	29.7	4.67	3,020	\$630,000	2017	2019		No viable projects founds.
												Removed	
E38	Micro-bioretentation	Jones Falls	Central Park Heights / Towanda Grantley / Lucille Park	3.1	4.0	14.9	2.34	1,510	\$513,000	2017	2019		
				5.0	4.0	23.8	3.74	2,416	\$454,742	2016	2019	Under Design	
E39	Micro-bioretentation	Gwynns Falls	Morrell Park / Wilhelm Park / Gwynns Falls / Carroll-South Hilton	3.1	6.0	14.9	2.34	1,510	\$625,000	2017	2019		
				7.5	6.0	35.6	5.61	3,623	\$1,437,153	2016	2019	Under Design	

MS4 WIP Project ID	BMP Type	Watershed	Location	Drainage Area (ac)	Eq. Imp Area Restored (ac)	Estimated Pollutant Removal (lbs / yr)			Estimated Capital Cost	Schedule to Start (FY)		Status as of 6/30/2020	NOTES
						TN	TP	TSS		Design	Construction		
E41	Micro-bioretentation	Back River	Clifton Park	0.3	0.2	1.2	0.19	121	\$35,000	2017	2019		Conflict with active recreation (BCRP).
												Removed	
E42	Micro-bioretentation	Back River	Clifton Park	2.9	2.3	13.7	2.15	1,389	\$400,000	2017	2019		Conflict with active recreation (BCRP).
												Removed	
			Subtotal ESD Practices (WIP):	69	60	328	52	33,359	\$10,391,400				
			Subtotal ESD Practices (Current):	39	31	184	29	18,715	\$11,600,712				
Alternative BMPs (Stream Restoration)-- Drainage Area = Stream Restoration Length (LF)													
A01	Stream Restoration	Gwynns Falls	Leakin Park Stream Restoration at Fairmount Storm Drain	2,080 LF	21	156	141	62,400	\$700,000	2010	2014		
				2,080 LF	21	156	141	62,400	\$700,000	2010	2014	Completed	
A02	Stream Restoration	Jones Falls	Lower Lower Stony Run	4,500 LF	45	338	306	135,000	\$4,030,000	2015	2016		Cost includes S13 and A43.
				4,600 LF	46	345	313	138,000	\$4,199,700	2015	2017	Completed	
A03	Stream Restoration	Gwynns Falls	Powder Mill Phase 1	3,900 LF	39	293	265	117,000	\$3,420,000	2009	2017		Proposed to align with sanitary improvements.
				3,900 LF	39	293	265	117,000	\$6,140,947	2009	2021	Under Construction	
A04	Stream Restoration	Jones Falls	East Stony Run Project 1	800 LF	8	60	54	24,000	\$839,000	2014	2017		
				800 LF	8	60	54	24,000	\$1,135,000	2014	2017	Completed	
A05	Stream Restoration	Back River	Chinquapin Run Project 1	2,200 LF	22	165	150	66,000	\$3,670,000	2014	2017		Increased length to coincide with sanitary replacement project.
				10,100 LF	101	758	687	303,000	\$10,447,503	2014	2021	Completed	
A06	Stream Restoration	Back River	Chinquapin Run Project 2	2,600 LF	26	195	177	78,000	\$1,772,000	2015	2017		Coincides with A06.
				2,600 LF	26	195	177	78,000	\$2,611,876	2015	2021	Completed	
A07	Stream Restoration	Gwynns Falls	Franklinton Culvert	2,400 LF	24	180	163	72,000	\$1,700,000	2015	2018		Protests from community groups related to tree removal. Alternatives analysis postponed project.
				2,900 LF	29	218	197	87,000	\$5,515,082	2015	2022	Under Design	
A08	Stream Restoration	Back River	Lower Moore's Run Project 2	2,500 LF	25	188	170	75,000	\$1,960,000	2015	2018		Project no longer.
								0				Removed	
A09	Stream Restoration	Back River	Biddison Run Project 2	3,030 LF	30	227	206	90,900	\$3,590,000	2014	2018		Pending right-of-entry agreements.
				3,060 LF	31	230	208	91,800	\$3,748,949	2014	2022	Under Design	
A10	Stream Restoration	Jones Falls	Western Run at Kelly Avenue	800 LF	8	60	54	24,000	\$1,324,600	2015	2018		FEMA review required re-design.
				2,600 LF	26	195	177	78,000	\$5,294,935	2016	2023	Under Design	
A11	Stream Restoration	Jones Falls	East Stony Run Project 2	1,340 LF	13	101	91	40,200	\$2,040,000	2015	2018		Postponed due to increased scope of A10 and access issues.
												Removed	

MS4 WIP Project ID	BMP Type	Watershed	Location	Drainage Area (ac)	Eq. Imp Area Restored (ac)	Estimated Pollutant Removal (lbs / yr)			Estimated Capital Cost	Schedule to Start (FY)		Status as of 6/30/2020	NOTES
						TN	TP	TSS		Design	Construction		
A12	Stream Restoration	Back River	Biddison Run Projects 3	3,850 LF	39	289	262	115,500	\$1,800,000	2014	2018		Will be advertised with A09 - Biddison Run Project 2.
				3,850 LF	39	289	262	115,500	\$4,726,935	2014	2022	Under design	
A13	Stream Restoration	Back River	Moore's Run Restoration Project 1	2,500 LF	25	188	170	75,000	\$1,822,000	2015	2018		Pending right-of-entry agreements.
				3,700 LF	37	278	252	111,000	\$4,909,153	2016	2022	Under Design	
A14	Stream Restoration	Back River	Moore's Run Restoration Project 2	2,800 LF	28	210	190	84,000	\$1,822,000	2015	2018		Will be advertised with A13 - Moore's Run Stream Restoration
				2,800 LF	28	210	190	84,000	\$3,681,864	2016	2022	Under Design	
A15	Stream Restoration	Back River	Herring Run stream	2,665 LF	27	200	181	79,950	\$2,702,000	2015	2018		Postponed due to increase of A05 scope
												Removed	
A16	Stream Restoration	Jones Falls	Druid Hill Park Stream Project	1,875 LF	19	141	128	56,250	\$2,702,000	2015	2018		Postponed due to increased scope of A10.
												Removed	
A17	Stream Restoration	Gwynns Falls	Dead Run (Huntington Ridge)	2,600 LF	26	195	177	78,000	\$2,702,000	2015	2018		Protests from community groups related to tree removal. Alternatives analysis postponed project.
				600 LF	6	45	41	18,000	\$2,589,956	2017	2023	Under Design	
A18	Stream Restoration	Gwynns Falls	Maiden's Choice	2,600 LF	26	195	177	78,000	\$2,702,000	2015	2018		Access problems. Project deemed not practicable.
												Removed	
A19	Stream Restoration	Gwynns Falls	Maiden's Choice Tributary (Upland)	2,300 LF	23	173	156	69,000	\$2,702,000	2015	2018		Delays due to forest mitigation approvals. Anticipate advertising in 2021.
				2,700 LF	27	203	184	81,000	\$3,112,295	2017	2022	Under design	
A20	Stream Restoration	Gwynns Falls	Dead Run	2,200 LF	22	165	150	66,000	\$2,702,000	2016	2019		Advertised with A19.
				2,700 LF	27	203	184	81,000	\$3,493,124	2017	2022	Under design	
A21	Stream Restoration	Back River	Herring Run Western Branch	2,675 LF	27	201	182	80,250	\$2,702,000	2016	2019		Advertised with A19.
				3,800 LF	38	285	258	114,000	\$4,900,000	2017	2022	Under design	
			Subtotal Alternative BMPs (Stream Restoration) (WIP):	52,215 LF	522	3,916	3,551	1,566,450	\$49,403,600				
			Subtotal Alternative BMPs (Stream Restoration) (Current):	52,790 LF	528	3,959	3,590	1,583,700	\$67,207,319				
Alternative BMPs (Other)													
A22	Regenerative Step Pool Storm Conveyance	Gwynns Falls	Seamon Avenue	20	6	139	11	5,068	\$1,168,000	2015	2017		Pending right-of-entry agreements.
				20	6	139	11	5,120	\$1,403,750	2015	2022	Under design	
A23	IA Removal, afforestation, bioretention	Baltimore Harbor	CARE Communities / McElderry Park / Milton-Montford	3.1	3.75	19.2	4.34	2,852	\$496,000	2016	2018		Delays due to design contract procurement and financing (EIB).
				0.3	0.25	1.8	0.42	274	\$48,800	2016	2022	Under Design	
A24	IA Removal, afforestation	Baltimore Harbor	Harford Hts ES (HA-R19)	0.9	0.60	3.3	0.92	523	\$110,000	2016	2018		INSPIRE School- construction conflict
												Removed	

MS4 WIP Project ID	BMP Type	Watershed	Location	Drainage Area (ac)	Eq. Imp Area Restored (ac)	Estimated Pollutant Removal (lbs / yr)			Estimated Capital Cost	Schedule to Start (FY)		Status as of 6/30/2020	NOTES
						TN	TP	TSS		Design	Construction		
A25	IA Removal, afforestation, bioretention	Back River	Northwood ES and Rec Center (CH-R2A)	2.4	2.85	14.6	3.30	2,167	\$565,000	2016	2018		INSPIRE School- construction conflict
												Removed	
A26	IA Removal, afforestation	Back River	Sinclair Lane ES (HR-R18)	1.9	1.31	7.3	2.03	1,154	\$260,400	2016	2018		Construction schedule constrained by school year calendar.
				1.4	1.00	5.6	1.54	877	\$484,417	2016	2020	Completed	
A27	IA Removal, afforestation	Back River	WEB DuBois (HR-R29A)	0.8	0.53	2.9	0.81	461	\$104,200	2016	2018		Postponed to next permit.
												Removed	
A28	IA Removal, afforestation, bioretention	Back River	Various Schools	0.5	0.6	3.1	0.70	456	\$120,000	2016	2018		Same contract as A26.
				1.0	0.54	6.2	1.39	913	\$266,985	2016	2020	Completed	
A29	IA Removal, afforestation, bioretention	Gwynns Falls	Mt. Winans	3.1	3.75	19.2	4.34	2,852	\$496,000	2016	2018		Same contract as A23.
				3.8	3	23.1	5.21	3,422	\$585,554	2016	2022	Under Design	
A30	IA Removal, afforestation, bioretention	Back River	Montebello ES (HR-R41A)	0.9	1.05	5.4	1.22	799	\$208,000	2016	2018		INSPIRE School- construction conflict
												Removed	
A31	IA Removal, afforestation, bioretention	City-wide	Various Schools	1.5	1.76	9.0	2.03	1,335	\$350,000	2016	2018		Same contract as A23.
				7.5	6.25	46.1	10.43	6,845	\$199,697	2016	2022	Under Design	
A32	IA Removal, afforestation, bioretention	Jones Falls	Pimlico ES (LJ-R6)	1.1	1.35	6.9	1.56	1,027	\$268,000	2016	2018		INSPIRE School- construction conflict
												Removed	
A33	IA Removal, afforestation, bioretention	Jones Falls	Poly Western HS (LJ-R8C)	1.4	1.65	8.5	1.91	1,255	\$328,000	2016	2018		Same contract as A23.
				0.9	0.74	5.7	1.29	844	\$1,060,164	2016	2022	Under Design	
A34	IA Removal, afforestation, bioretention	Baltimore Harbor	Duane Avenue Park - parking lot (MC-21)	0.3	0.35	1.8	0.40	262	\$42,000	2016	2018		Current demand for parking lot.
												Removed	
A35	IA Removal, afforestation	Baltimore Harbor	Oliver / Broadway East	4.0	2.8	15.6	4.32	2,461	\$496,000	2017	2019		Locations were not practicable.
												Removed	
A36	IA Removal, afforestation	Gwynns Falls	Carrollton Ridge / Shipley Hill / Mill Hill / Pigtown / New Southwest / Union	4.0	2.8	15.6	4.32	2,461	\$496,000	2017	2019		Same contract as A23.
				0.2	0.2	0.8	0.22	123	\$149,788	2016	2022	Under Design	
A37	IA Removal, afforestation	Baltimore Harbor	Harlem Park / Sandtown-Winchester / Uplands	2.0	1.40	7.8	2.16	1,230	\$248,000	2017	2019		Same contract as A23.
				4.9	4.88	19.0	5.27	3,002	\$3,609,904	2016	2022	Under Design	
A38	IA Removal, afforestation	Baltimore Harbor	Various Schools	2.0	1.40	7.8	2.16	1,230	\$248,000	2017	2019		Same contract as A23.
				2.6	2.56	10.0	2.76	1,575	\$530,083	2016	2022	Under Design	

MS4 WIP Project ID	BMP Type	Watershed	Location	Drainage Area (ac)	Eq. Imp Area Restored (ac)	Estimated Pollutant Removal (lbs / yr)			Estimated Capital Cost	Schedule to Start (FY)		Status as of 6/30/2020	NOTES
						TN	TP	TSS		Design	Construction		
A39	Aforestation of IA	Gwynns Falls	TreeBaltimore Street Trees	2.0	1.40	19.3	2.29	1,121	\$496,000	2017	2019		Shown as part of partnerships.
												Partnership	
A40	Aforestation of IA	Gwynns Falls	TreeBaltimore Street Trees	8.3	5.81	90.2	13.19	6,793	\$496,000	NA	2017		Shown as part of partnerships.
												Partnership	
A41	Aforestation of IA	Jones Falls	TreeBaltimore Street Trees	8.3	5.81	90.2	13.19	6,793	\$496,000	NA	2018		Shown as part of partnerships.
												Partnership	
A42	Aforestation of IA	City-Wide	TreeBaltimore Street Trees	4.2	2.91	45.1	6.59	3,396	\$248,000	NA	2019		Shown as part of partnerships.
												Partnership	
A43	Regenerative Step Pool Storm Conveyance	Jones Falls	Lower Lower Stony Run	0	0	0	0	0	\$0				Part of Project A02. Total costs shown in A02.
				5	5	44	6	3,080	\$0	2015	2017	Completed	
			Subtotal Alternative BMPs (Other) (WIP):	72	50	531	82	45,696	7,739,600				
			Subtotal Alternative BMPs (Other) (Current):	48	31	301	45	26,074	8,339,142				
			Total Projects (WIP):		941	6,230	3,927	1,827,491	\$77,536,600	84	Projects	Proposed	
			Total Projects (Current):		613	4,568	3,684	1,640,837	\$88,102,253	48	Projects	Proposed	
					0	0	0	0	\$0	0	Projects	Pending	
					344	2,595	2,020	902,422	\$61,704,025	36	Projects	Under Design	
					39	293	265	117,000	\$6,140,947	1	Projects	Under Construction	
					229	1,681	1,399	621,415	\$20,257,281	11	Projects	Completed	

Table L-2: Progress Status of WIP Programs

Project No. / Type	Equivalent Impervious Surface Restoration, ISR (ac)	Reference Metric	Estimated Pollutant Removal (lbs / yr)			NOTES
			TN	TP	TSS	
Street Sweeping						
Street Sweeping (Annual, as of Dec. 2005)	3,213	47,058 lane miles	14,460	1,008	2,224,560	Ref: MS4 Annual Report for CY 2005. All operations assumed as min. 2 x / month.
Street Sweeping (Annual, as of Dec. 2009)	4,790	70,143 lane miles	21,553	1,503	3,315,851	Ref: MS4 Annual Report for CY 2009. All operations assumed as min. 2 x / month.
Sub-total Street Sweeping at full expansion (WIP):	5,347	19,097 tons	46,788	18,715	5,614,518	Ref: WIP, which only listed tonnage as reference metric.
Sub-total Street sweeping (Current Annual Total):	948	13,878 lane miles	4,264	297	656,051	Equivalent ISR is based on lane miles swept min. 2x /month. See Section 6.3.2.
Inlet Cleaning & Debris Collection						
Collection within CY 2012	259	926 tons	2,269	907	272,244	Ref: MS4 Annual Report (Jan. 2011 to Dec. 2012). Inlet amount is total inlet cleaning (reactive)
Anticipated Increase after Asset Management (4% Inlets cleaned quarterly):	277	990 tons	2,426	970	291,060	Ref: Preliminary Asset Management Program and CIP Schedule for Inlet Screens.
Sub-total Inlet Cleaning (WIP):	536	1,916 tons	4,694	1,878	563,304	Both re-active and pro-active cleaning
Sub-total Inlet Cleaning (Current Annual Total):	373.2	933 tons	2,286	914	274,302	Tonnage reflects dry weight, due to procedure change in 2016. Only portion of proactive cleaning is used for TMDL compliance, Appendices O and P.
Reactive Inlet Cleaning (daily operation):	286.4	716 tons	1,754	702	210,504	
Targeted preventive cleaning (quarterly):	86.8	217 tons	532	213	63,798	
Illicit Discharge Detection and Elimination Program						
Sanitary Direct Connection	NA	10 connections	100	18	NA	
Sanitary Direct Connection (current)	117.0	28 connections	2,545	463	NA	Nutrient reductions per CBP protocol N-5, default values, see Appendix L.
Sewage Exfiltration	NA	300 miles lined	5,000	909	NA	
Sewage Exfiltration (current)	51.0	86 locations	1,110	202	NA	Nutrient reductions per CBP protocol N-6, default values, see Appendix L.
Drinking Water Transmission	NA	60 miles lined / replaced	1,500	273	NA	
Drinking Water Transmission (current)	70.7	37 locations	3,058	90	NA	Nutrient reductions per CBP protocol N-7, default values, see Appendix L.
Dry Weather SSO	NA	30 SSOs / yr red	350	64	NA	Asset management / FOG program, education, enforcement, and enhanced IDDE
Sub-total IDDE (WIP):			11,118	1,555	0	
Sub-total IDDE (Current):	238.7		6,713	755	0	See Appendix L for watershed designation used in local TMDL compliance (Appendix P).
TOTAL Programs (WIP):	5,883		62,600	22,148	6,177,822	
TOTAL Programs (Current):	1,560		13,263	1,966	930,353	

Table L-3: Progress Status of WIP Partnerships

Project No. / Type	Source ID	Watershed	Location	Eq. Imp Area Restored (ac)	Estimated Pollutant Removal (lbs / yr)		
					TN	TP	TSS
<b>Development</b>							
Impervious area to pervious	DPW-PRI	City-wide	City-wide	73.8	202	102	59,186
				5.4	11	7	3,992
Treatment by ESD	DPW-PRI	City-wide	City-wide	21.4	113	14	13,289
				300.9	1,354	189	178,942
Treatment by Standard	DPW-PRI	City-wide	City-wide	54.7	288	37	33,938
				243.2	1,094	153	144,643
			<b>Sub-total Development (WIP):</b>	<b>150</b>	<b>604</b>	<b>153</b>	<b>106,413</b>
<b>Sub-total Development (Actual Completed in Jan. 2010 to June 2021):</b>				<b>549</b>	<b>2,459</b>	<b>349</b>	<b>327,577</b>
<b>Voluntary - included in the estimate for Development</b>							
Impervious Removal	BWB	Jones Falls	Guilford ES/MS	0.28	0.4	0.1	33
	BWB			0.22	1.1	0.1	52
Impervious Removal	BWB	Gwynns Falls	Calvin Rodwell ES	0.13	1.4	0.2	106.4
Micro-bioretenation	BWB	Baltimore Harbor	Library Square	1.1	5.3	0.5	261
	BWB			0.6	2.8	0.3	139

Table L-3: Progress Status of WIP Partnerships

Project No. / Type	Source ID	Watershed	Location	Eq. Imp Area Restored (ac)	Estimated Pollutant Removal (lbs / yr)		
					TN	TP	TSS
IA Removal, Rain Garden	DOT	Baltimore Harbor	200 N. Duncan Street	0.45	2.3	0.5	342
				0.08	1.0	0.1	59
IA Removal, afforestation	DOT	Baltimore Harbor	2300-2400 Eager St	1.5	7.7	1.7	1141
IA Removal, afforestation, bioretention	GGI Design Comp	Gwynns Falls	2306-8 Riggs Street	0.81	4.2	0.9	616
	CBF			0.18	2.2	0.3	133
IA Removal, afforestation, bioretention	GGI Design Comp	Back River	CHM Gateway 32nd & Harford	0.18	0.9	0.2	137
	Civicworks			0.09	1.1	0.1	67
IA Removal, afforestation, bioretention	GGI Design Comp	Baltimore Harbor	Day Spring Green Parking 1100 block N. Bradford	0.36	1.8	0.4	274
IA Removal, afforestation	GGI Design Comp	Baltimore Harbor	Druid Heights Peace Park Bloom & Druid Hill Ave	0.15	0.8	0.2	114
	Druid Hts CDC			0.04	0.5	0.1	30
IA Removal, afforestation	GGI Design Comp	Baltimore Harbor	Hollins Roundhouse Lots of Art1218-20 W. Lombard	0.06	0.3	0.1	46
	PPF			0.2	2.4	0.3	148
IA Removal, afforestation, and rainwater harvesting	GGI Design Comp	Baltimore Harbor	Janes House of Inspiration A-maze-N Lot728 North Avenue	0.20	1.0	0.2	148

Table L-3: Progress Status of WIP Partnerships

Project No. / Type	Source ID	Watershed	Location	Eq. Imp Area Restored (ac)	Estimated Pollutant Removal (lbs / yr)		
					TN	TP	TSS
IA Removal, afforestation	GGI Design Comp	Baltimore Harbor	Flower Farm 1400 block Gay Street	0.75	3.8	0.9	570
	Civicworks			0.16	1.9	0.2	118
Aforestation of IA	Tree Baltimore	Baltimore Harbor	TBD	25.2	273.7	40.0	20,623.7
			13,949 trees	70.3	1191.2	77.0	29,571
Aforestation of IA	Tree Baltimore	Gwynns Falls	TBD	23.1	250.9	36.7	18,905.0
			10,166 trees	65.6	1109.5	71.8	27,551
Aforestation of IA	Tree Baltimore	Jones Falls	TBD	19.6	212.9	31.1	16,040.6
			9,923 trees	50.1	847.2	54.7	21,036
Aforestation of IA	Tree Baltimore	Back River	TBD	21.0	228.1	33.4	17,186.4
			8,254 trees	41.6	704.9	45.5	17,499
Not included in WIP							
Aforestation of IA	Tree Baltimore	LNBP	1,366 trees	6.9	116.6	7.5	2,896
Micro-bioretenion	BWB	Back River	Episcopal Church of the Holy Cove	0.16	0.8	0.1	38
Micro-bioretenion, Filterra, IA Removal	PPF	Baltimore Harbor	Second Chance	0.29	1.4	0.1	69
Rain Gardens	Cylburn Arboretum	Jones Falls	Cylburn Arboretum Mansion Hous	0.09	0.8	0.1	59
Rain Garden, IA Removal	BWB	LNBP	St. Johns Rain Garden	0.12	0.6	0.1	29

Table L-3: Progress Status of WIP Partnerships

Project No. / Type	Source ID	Watershed	Location	Eq. Imp Area Restored (ac)	Estimated Pollutant Removal (lbs / yr)		
					TN	TP	TSS
Micro-bioretenention	Waterfront Partnership	Baltimore Harbor	Harris Creek Bioretention	0.15	0.7	0.1	36
Micro-bioretenention	BWB	Gwynns Falls	Mt. Lebanon Stormwater Planter	0.03	0.1	0.0	7
IA Removal	PPF	Gwynns Falls	Harlem Park Inner Blocks	0.87	10.6	1.4	644
Bioretention	Green Street Academy	Gwynns Falls	Green Street Academy	0.37	1.8	0.2	88
Sidewalk planters	PPF	Jones Falls	Samuel Coleridge-Taylor	0.38	4.6	0.6	281
Micro-bioretenention	PPF	Gwynns Falls	Mt. Winans Green Space	0.41	2.0	0.2	97
Micro-bioretenention	BWB	Baltimore Harbor	Blue Alley - Bumpouts	0.63	3.0	0.3	150
Bioretention	PPF	Gwynns Falls	Baltimore Street Trolley Turnarou	0.44	2.1	0.2	105
Bioretention	BWB	Baltimore Harbor	Medstar Harbor Hospital	5.27	25.4	2.3	1,252
Bioretention	PPF	Baltimore Harbor	Ambrose Kennedy Park	0.60	2.9	0.3	143
Bioretention	Downtown Partnership	Baltimore Harbor	400 E. Pratt Street	0.13	0.6	0.1	31
Bioswales	BWB	Baltimore Harbor	Prince of Peace	0.26	1.3	0.1	62
Micro-bioretenention	BWB	Baltimore Harbor	Gallery Church	0.13	0.6	0.1	31
Micro-bioretenention	BWB	Back River	St. Anthony of Padua	0.41	2.0	0.2	97
Rain Garden	BWB	Baltimore Harbor	Amazing Gace / Port Street	0.22	1.1	0.1	52
Regenerative Stormwater Conveyance	PPF	Gwynns Falls	Gwynns Falls Millrace	0.70	10	1	500

Table L-3: Progress Status of WIP Partnerships

Project No. / Type	Source ID	Watershed	Location	Eq. Imp Area Restored (ac)	Estimated Pollutant Removal (lbs / yr)		
					TN	TP	TSS
Rain Gardens	BWB	Baltimore Harbor	St. Helena Community Association	0.35	1.7	0.2	83
			<b>Sub-total Volunteer (WIP):</b>	<b>95</b>	<b>996</b>	<b>147</b>	<b>76,545</b>
			<b>Sub-total Volunteer (Actual- Completed):</b>	<b>248</b>	<b>4057</b>	<b>265</b>	<b>103,152</b>
SW Fee Credit program							
Treatment BMPs	SAIS	City-wide	City-wide	24.0	206.7	26.5	16,157
Private tree planting (Reforestation on pervious)	SAIS	City-wide	City-wide	7.6	142.6	6.6	1596
				6.1	114.0	5.3	1277
Rain gardens	SAIS	City-wide	City-wide	2.0	17.2	2.2	1,346
Rainwater harvesting	SAIS	City-wide	City-wide	0.5	12.4	1.0	485
			<b>Subtotal SW Fee Credit (WIP):</b>	<b>34.1</b>	<b>378.9</b>	<b>36.3</b>	<b>19,584</b>
			<b>Subtotal SW Fee Credit (Actual):</b>	<b>6.1</b>	<b>114.0</b>	<b>5.3</b>	<b>1,277</b>
			<b>Total for Partnerships (WIP):</b>	<b>279</b>	<b>1,978</b>	<b>337</b>	<b>202,541</b>
	<b>Total for Partnerships (Actual Completed 1/2010 -6/2019):</b>			<b>803</b>	<b>6,630</b>	<b>620</b>	<b>432,006</b>

## **Appendix M: Progress of Chesapeake Bay TMDL**

Table M-1: Pollutant Loading Estimates

Watershed	Area within City		Imp. Area <sup>2</sup>	Forest Area <sup>3</sup>	TN (lbs)	TP (lbs)	TSS (tons)
	sq. mi.)	(acres)					
Uncontrolled Loading:							
Back River	19.1	12,224	4,584	449	149,214	10,911	2,534
Baltimore Harbor	22.5	14,400	5,949	225	180,574	13,627	3,200
Gwynns Falls	20.7	13,248	5,605	742	162,636	12,559	2,972
Jones Falls	17.5	11,200	4,816	719	137,139	10,690	2,537
LNB Patapsco	1.8	1,152	502	112	13,842	1,098	262
Uncontrolled:	81.6	52,224	21,456	2,247	643,404	48,884	11,505
Controls prior to 2010:							
Steam Restoration <sup>4</sup> :					834	757	167
BMPs installed <sup>5</sup> :					682	301	84
Street sweeping <sup>6</sup> :					21,553	1,503	1,658
Total Controls:					23,069	2,561	1,909
Total Loading with Controls:					620,335	46,323	9,595
Urban Impervious Loading Rate (/ acre) <sup>7</sup>					15.3	1.69	0.44
Urban Pervious Loading Rate (/ acre) <sup>7</sup>					10.8	0.43	0.07
Forest Loading Rate (/ acre) <sup>8</sup>					3.16	0.16	0.03

**Reference:**

1 - Baltimore City MS4 and TMDL WIP, Table 1, August 2015.

2 - Baltimore City MS4 and TMDL WIP, Table 2, 2015, total = 21,456 ac uncontrolled IA.

3 - 2009 conditions, MAST Scenario, total forest = 2,247 ac.

4 - Baltimore City MS4 and TMDL WIP, Table B-1, August 2015

4 - Baltimore City MS4 and TMDL WIP, Tables B-2 and B-3, August 2015 (

5. Table N-2 Programs, Sweeping as of 2010, FY 2020 MS4 Annual Report

6 - Table A.1, Appendix C from MS4 Accounting Guidelines, August 2014. CBWM version 5.3.2

7 - Table D.1, Appendix D from MS4 Accounting Guidelines, August 2014. CBWM version 5.3.0

Table M-2: Progress Status for Chesapeake Bay TMDL

Location	Estimated Pollutant Removal (lbs / yr)			Reference
	TN	TP	TSS	
Chesapeake Bay Loading for Baltimore City	418,243	32,870	22,025,806	Bay TMDL MAST Scenario 2010 for City
<b>Reduction Goal for Urban Stormwater:</b>	84,903	9,960	418,490	Maryland's Phase II WIP for Bay TMDL, Oct. 2012, Executive Summary
	20.3%	30.3%	1.9%	
<b>Analysis based on MS4 Accounting Guidelines</b>				
<b>Total Controlled Loading:</b>	<b>620,335</b>	<b>46,323</b>	<b>19,190,570</b>	Table O-1
<i>Reduction Goal:</i>	<i>125,928</i>	<i>14,036</i>	<i>364,621</i>	Based on % reduction goals from Bay TMDL.
<b>Projects related to current MS4 permit:</b>				
Total Projects (WIP):	6,230	3,927	1,827,491	Table N-1.
<b>Total Projects (Current Completed):</b>	<b>1,681</b>	<b>1,399</b>	<b>621,415</b>	
<b>Programs related to current MS4 permit:</b>				
Total Programs (WIP) <sup>1</sup> :	38,778	19,737	2,589,727	Table N-2.
<b>Total Programs (Current)<sup>2</sup>:</b>	<b>7,244</b>	<b>967</b>	<b>63,798</b>	
<b>Partnerships related current MS4 permit:</b>				
Total Partnerships (WIP):	1,978	337	202,541	Table N-3.
<b>Total Partnerships (Current):</b>	<b>6,630</b>	<b>620</b>	<b>432,006</b>	
Total Reduction (WIP):	46,987	24,001	4,619,759	
% Reduction (WIP):	8%	52%	24%	
<b>Total Reduction (Current):</b>	<b>15,555</b>	<b>2,986</b>	<b>1,117,219</b>	
<b>% Reduction (Current):</b>	<b>3%</b>	<b>6%</b>	<b>6%</b>	

**NOTES:**

1- Total WIP programs includes the increased street sweeping (WIP values less the CY 2009 values), ant. Increase of inlet cleaning, and WIP- IDDE estimates.

2- Total current programs only includes current proactive inlet cleaning and current IDDE values.

## **Appendix N: Progress of Local TMDLs for Nutrients and Sediment**

Table N-1: Progress Status for Nutrient TMDL for Back River

BMP Type	Estimated Pollutant Removal (lbs / yr)		NOTES
	TN	TP	
<b>TMDL Baseline Load:</b>	<b>73,429</b>	<b>8,315</b>	TMDL for Back River (2005)
<b>% Reduction Goal:</b>	15%	15%	TMDL for Back River (2005)
<b>Baseline Load using MDE-AG:</b>	<b>149,214</b>	<b>10,911</b>	Table O-1.
<b>Reduction Goal:</b>	22,382	1,637	Based on % reduction goals.
<b>BMPs installed between 2005 and 2010:</b>			
Stream Restoration	113	102	Table B-1, WIP. 1,500 LF .
Private / Other City BMPs	27	14	Tables B-2 and B-3, WIP.
<b>Total BMPs (2005 -2010):</b>	<b>139</b>	<b>116</b>	
<b>Projects related to current MS4 permit:</b>			
Total Projects (WIP):	3,011	1,895	Table N-1.
Total Projects (Current Completed):	964	867	
<b>Programs related current MS4 permit:</b>			
Total Programs (WIP) <sup>1</sup> :	1,466	268	Table N-2.
<b>Total Programs (Current)<sup>3</sup>:</b>	246	30	
<b>Partnerships related current MS4 permit:</b>			
Total Partnerships (WIP):	423	72	Table N-3.
Total Partnerships (Current):	1,257	122	
Total Reduction (WIP):	5,039	2,351	
% Reduction (WIP):	3%	22%	
<b>Total Reduction (Current):</b>	<b>2,606</b>	<b>1,134</b>	
<b>% Reduction (Current):</b>	<b>2%</b>	<b>10%</b>	

**NOTES:**

1- Total WIP programs includes the increased street sweeping (WIP values less the CY 2005 values), ant. Increase of inlet cleaning, and WIP- IDDE estimates.

2- Total current programs includes the current increased street sweeping (current less the CY 2005), current proactive inlet cleaning, and current IDDE values.

Table N-2: Progress Status for Nutrient TMDL for Baltimore Harbor

BMP Type	Estimated Pollutant Removal (lbs / yr)		NOTES
	TN	TP	
<b>TMDL Baseline Load:</b>	<b>260,323</b>	<b>28,177</b>	TMDL for Baltimore Harbor (2007), includes GF, JF, and LNBP
<b>% Reduction Goal:</b>	15%	15%	
<b>Uncontrolled Load using MDE AG:</b>	<b>494,190</b>	<b>37,973</b>	Table O-1
<b>Street Sweeping</b>	<b>14,460</b>	<b>1,008</b>	Table O-1. Assumes 100%
<b>Controlled Load:</b>	<b>479,731</b>	<b>36,965</b>	
<b>Reduction Goal:</b>	71,960	5,545	Based on % reduction goals.
<b>BMPs installed between 2005 and 2010:</b>			
Stream Restoration	722	655	Table B-1, WIP. 9625 LF
Private / Other City BMPs	655	287	Tables B-2 + B-3, WIP.
<b>Total BMPs (2005 -2010):</b>	<b>1,377</b>	<b>942</b>	Based on % reduction goals.
<b>Projects proposed related current MS4 permit:</b>			
Total Projects (WIP):	3,219	2,032	Table N-1.
Total Projects (Current Completed):	716	533	
<b>Programs proposed related to current MS4 permit:</b>			
Total Programs (WIP) <sup>1</sup> :	19,171	2,752	Table N-2
<b>Total Programs (Current)<sup>2</sup>:</b>	<b>-5,261</b>	<b>144</b>	
<b>Partnerships related to current MS4 permit:</b>			
Total Partnerships (WIP):	1,556	265	Table N-3.
Total Partnerships (Current):	<b>5,374</b>	<b>498</b>	
Total Reduction (WIP):	25,323	5,991	
% Reduction (WIP):	5%	16%	
<b>Total Reduction (Current):</b>	<b>2,207</b>	<b>2,116</b>	
<b>% Reduction (Current):</b>	<b>0%</b>	<b>6%</b>	

**NOTES:**

1- Total WIP programs includes the increased street sweeping (WIP values less the CY 2009 values), ant. Increase of inlet cleaning, and WIP- IDDE estimates.

2- Total current programs includes the current proactive inlet cleaning and current IDDE values.

Table N-3: Progress Status for Sediment TMDL for Gwynns Falls

Location	Estimated Pollutant TSS (lb/ year)	NOTES
<b>MS4 Baseline Load (TMDL Report)</b>	14,410,000	TMDL for Gwynns Falls (2010)
<b>% Reduction Goal (TMDL Report)</b>	49%	TMDL for Gwynns Falls (2010)
<b>Uncontrolled Load using MDE-AG:</b>	<b>5,943,099</b>	See Table O-1
Street Sweeping as of CY 2009	1,260,023	See Table N-2. Assumed 38% total of CY09
Stream Restoration	81,000	Table B-1, WIP. 2,700 LF .
Private / Other City BMPs	63,396	Tables B-2 and B-3, WIP.
<b>Total Controls by 2010:</b>	<b>1,404,419</b>	
<b>Controlled Load:</b>	<b>4,538,680</b>	
<b>Reduction Goal:</b>	<b>2,201,260</b>	Based on % reduction goals.
<b>Projects proposed related to current MS4 permit:</b>		
Total Projects (WIP):	608,562	Table N-1.
Total Projects (Current Completed):	62,400	
<b>Programs related to current MS4 permit:</b>		
Total Programs (WIP) <sup>1</sup> :	979,627	Table N-2.
<b>Total Programs (Current)<sup>2</sup>:</b>	<b>25,519</b>	
<b>Partnerships related current to MS4 permit:</b>		
Total Partnerships (WIP):	52,904	Table N-3
Total Partnerships (Current):	115,022	
Total Reduction (WIP):	1,641,092	
% Reduction (WIP):	36%	
<b>Total Reduction (Current):</b>	<b>202,941</b>	
<b>% Reduction (Current):</b>	<b>4%</b>	

**NOTES:**

1- Total WIP programs includes the increased street sweeping (WIP values less the CY 2009 values) and ant. increase of inlet cleaning.

2- Total current programs includes the current proactive inlet cleaning.

Table N-4: Progress Status for Sediment TMDL for Jones Falls

Location	Estimated Pollutant TSS (lb/ year)	NOTES
<b>MS4 Baseline Load (TMDL Report)</b>	9,466,000	TMDL for Jones Falls (2011)
<b>% Reduction Goal (TMDL Report)</b>	26.3%	TMDL for Jones Falls (2011)
<b>Uncontrolled Load using MDE AG:</b>	<b>5,074,317</b>	See Table O-1
<i>Street Sweeping as of CY 2009</i>	1,027,914	See Table N-2. Assumed 31% total of CY09
<i>Stream Restoration</i>	207,750	
Private / Other City BMPs	14,053	
<b>Total Controls by 2010:</b>	<b>1,249,717</b>	
<b>Baseline Load:</b>	<b>3,824,600</b>	
<b>Reduction Goal:</b>	<b>1,005,870</b>	
<b>Projects proposed within current MS4 permit:</b>		
Total Projects (WIP):	302,799	Table N-1.
Total Projects (Current Completed):	175,694	
<b>Programs related to current MS4 permit:</b>		
Total Programs (WIP) <sup>1</sup> :	513,025	Table N-2.
<b>Total Programs (Current)<sup>2</sup>:</b>	<b>10,208</b>	
<b>Partnerships related current to MS4 permit:</b>		
Total Partnerships (WIP):	45,471	Table N-3
Total Partnerships (Current):	74,221	
Total Reduction (WIP):	861,294	
% Reduction (WIP):	23%	
<b>Total Reduction (Current):</b>	<b>260,123</b>	
<b>% Reduction (Current):</b>	<b>7%</b>	

**NOTES**

1- Total WIP programs includes the increased street sweeping (WIP values less the CY 2009 values) and ant. increase of inlet cleaning.

2- Total current programs includes the current increased street sweeping and current proactive inlet cleaning.

Table N-5: Progress Status for Sediment TMDL for Lower North Branch Patapsco

Location	Estimated Pollutant TSS (lb/ year)	NOTES
<b>MS4 Baseline Load (TMDL Report)</b>	<b>1,220,000</b>	TMDL for Lower North Branch Patapsco (2011)
<b>% Reduction Goal (TMDL Report)</b>	25.1%	TMDL for Gwynns Falls (2010)
<b>Uncontrolled Load using MDE AG:</b>	<b>523,772</b>	See Table O-1. No controls assumed.
<b>Reduction Goal:</b>	<b>131,467</b>	
<b>Projects proposed related current MS4 permit:</b>		
Total Projects (WIP):	1,510	Table N-1.
Total Projects (Current Completed):	0	
<b>Programs proposed related current MS4 permit:</b>		
Total Programs (WIP) <sup>1</sup> :	51,955	Table N-2.
<b>Total Programs (Current)<sup>2</sup>:</b>	<b>5,742</b>	
<b>Partnerships proposed related current MS4 permit:</b>		
Total Partnerships (WIP):	4,739	Table N-3.
Total Partnerships (Current):	31,656	
Total Reduction (WIP):	58,205	
% Reduction (WIP):	11%	
<b>Total Reduction (Current):</b>	<b>37,398</b>	
<b>% Reduction (Current):</b>	<b>7%</b>	

**NOTES:**

1- Total WIP programs includes the increased street sweeping (WIP values less the CY 2009 values) and ant. increase of inlet cleaning.

2- Total current programs includes current proactive inlet cleaning.

Table N-6: Progress Status for Sediment TMDL for Back River

Location	Estimated Pollutant TSS (lb/ year)	NOTES
<b>MS4 Baseline Load (TMDL Report)</b>	3,661,838	TMDL for Back River (2018). 44.3% WS in City
<b>% Reduction Goal (TMDL Report)</b>	69%	TMDL for Jones Falls (2011)
<b>Uncontrolled Load using MDE AG:</b>	<b>5,067,568</b>	See Table O-1
<i>Street Sweeping as of FY 2019</i>	119,954	See Table N-2, FY 2019 Annual Report
<i>Inlet Cleaning as of FY 2019</i>	58,153	See Table N-2, FY 2019 Annual Report
<i>Stream Restoration (prior to WIP)</i>	45,000	Table B-1, WIP. 1,500 LF .
Private/Other City BMPs (prior to WIP)	8,209	Tables B-2 and B-3, WIP.
Partnerships (FY 2015- 2019)	18,980	See Table N-3, FY 2019 Annual Report
<b>Total Controls by 2010:</b>	<b>250,296</b>	
<b>Controlled Load:</b>	<b>4,817,272</b>	
<b>Reduction Goal:</b>	<b>3,332,345</b>	
<b>Restoration completed after FY 2019:</b>		
Total Projects (FY 2020):	382,789	Table N-1
Total Partnerships (Current):	68,867	Table N-3 (less the amount for FY 2019)
<b>Total Reduction (Current):</b>	<b>451,657</b>	
<b>% Reduction (Current):</b>	<b>9%</b>	