October 2021

Annual Stormwater Management Report
VSMP Permit No. 0088595 – FY 2021

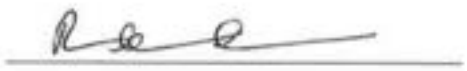
Submitted by:
Prince William County
Department of Public Works

Table of Contents

Appendices

Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."



September 23rd, 2021

Madan Mohan

Date

Chief, Watershed Management Branch

Cover Photo: Hylbrook Park Stream Restoration

I. Program Implementation

1. MS-4 Program Review and Updates

The Prince William County MS-4 Program plan describes all programs and actions taken by the County to ensure compliance with Virginia Stormwater Management Program (VSMP) MS-4 Permit # VA0088595. Prince William County permit expired on December 16th, 2019 and the County is operating under the administrative continuance of the existing Permit. The County is looking forward to working with DEQ on the upcoming new Permit.

2. Planning

The updated Program Plan can be found online at the following website:

https://www.pwcva.gov/department/environmental-services/community-ms-4-program

3. MS4 Program Implementation

a. Construction Site Runoff and Post Construction Runoff

BMP 1 – Continue to implement an Erosion and Sediment Control Program

Prince William County continues to implement the erosion and sediment control program consistent with the Virginia Erosion and Sediment Control Law §62.1-44.15:51 of the Code of Virginia and Virginia Erosion and Sediment Control Regulations 9VAC25-840 et seq. During DEQ's audit of Prince William County in November of 2017, the E&S program was thoroughly inspected and found to be in compliance. The EPA also audited Prince William County's E&S program in August of 2019, and also found the program to be in compliance. An E&S permit is required when the land disturbance exceeds 2,500 square feet.

Our stormwater management program is consistent with the Virginia Stormwater Management Act §62.1-44.15:24 of the Code of Virginia and Virginia Stormwater Management Program Regulations 9VAC25-870 et seq. The Virginia Stormwater Management Program (VSMP) regulations became effective on July 1, 2014. These regulations are contained in Section 700 of the County's Design & Construction Standards Manual (DCSM), and Chapter 23.2, Article IV – Storm Water Management in Prince William County Code. The SWM requirements for Development on Prior Developed Lands are consistent with the State regulations. The County's SWM regulations are more stringent than the State regulations only in certain areas as described below:

VSMP regulations allowed the localities to adopt criteria more stringent than VSMP with proper justification based on specific watershed studies. Alternatively, more stringent regulations that pre-existed prior to January 1, 2013 were exempt. Based on this exemption, Prince William County retained more stringent regulations on flood control in critical watersheds to control the 25-year storm to prevent localized flooding events. In addition, the County retained its authority to require the control of the 100-year flood, for proposed developments located upstream of

existing residential developments with required minimum lot sizes less than one acre and adjoining special flood hazard areas. These requirements are in addition to the required control of 2- and 10-year frequency storms per state regulations.

Prince William County employs 11 full-time site inspectors and an E&S Program Manager. In addition, the County has five full-time engineers to review the land development plans for E&S and SWM requirements. All our site inspectors and plan reviewers are duly certified for erosion and sediment control and SWM. In Prince William County, maintaining these certifications is a condition for continued employment. Prince William County is committed to providing continuing education and training to its employees on E&S and SWM. For additional information on certifications for plan reviewers and inspectors, please see Appendix A.

The land development plan review, inspection, and enforcement of E&S and SWM regulations are performed by a single agency in Prince William County. The Environmental Services Division of the Department of Public Works is directly responsible for administering the program. Having a streamlined program under one agency is very helpful in ensuring the consistent interpretation and enforcement of applicable ordinances. The County continues to require the Responsible Land Disturbance (RLD) certifications prior to issuing the land disturbance permits. The County's E&S Administrator conducts periodic joint meetings with the plan reviewers and the site inspectors for the continued improvement of the programs.

Prince William County has developed a mobile application for in E&S and VSMP inspections. This system runs on tablet devices (IPad) provided to each site inspector. Follow up inspections, violation notices, and inspection checklists are all managed through the mobile application. This application has enhanced the inspection efficiency and brought added consistency among all site inspectors.

For the period July 1, 2020 thru June 30, 2021, Prince William County approved a total of 163 land development plans with a cumulative land disturbance of 1,930.6 acres.

Table 1, presented below, summarizes the number of land disturbing activity inspections conducted and the number and type of each enforcement action taken for Erosion & Sediment Control.

Table 1 – FY21 Erosion and Sediment Control Program Summary

FY20	Site Inspections	Inspection Notice	Violations	Notice to Comply	Stop Work
Total	**11,179**	**225**	**106**	**3**	**0**

Our stormwater management program is consistent with the Virginia Stormwater Management Act §62.1-44.15:24 of the Code of Virginia and Virginia Stormwater Management Program Regulations 9VAC25-870 et seq.

Prince William County continues to implement a robust program to address the post-construction discharges from new developments and redevelopments by ensuring the long-term operation and maintenance of these SWM controls. We have a dedicated team for the inspection and maintenance of all county maintained SWM facilities. All the county-maintained and the county-owned facilities are inspected annually. The County inspects all the privately-maintained SWM facilities once within the 5-year permit cycle. The owners of these facilities receive the County's inspection reports along with the identification of deficiencies that must be corrected within the specified deadline. Our staff follows-up to ensure maintenance and seek the County Attorney's assistance as necessary for enforcement.

Prince William County's strategies to address the stormwater controls that are designed to treat the stormwater runoff solely from individual residential lot are summarized in the BMP Table included in Appendix A**.** The Table summarizes the party responsible for the maintenance and the applicable deed restrictions and agreements. For the individual infill lots outside the common plan of development, the County allows the use of the "Agreement in lieu of a SWM Plan".

b. Retrofitting on Prior Developed Lands

BMP 1 – Implementation of TMDL priority Projects

The County has completed the process of implementing all of its priority projects. A list of these projects can be found in Table 2 below. For a detailed summary, please see Section III.1.

Table 2 – Priority Projects by Completion Year

Number	Project Name	Completion Year
1	SWM Facility No. 99 – Water Quality Retrofit	FY16
2	Hylbrook Park	FY16
3	SWM Facility No. 28 – Water Quality Retrofit	FY17
4	Reach 5 Stream Restoration	FY17
5	Dewey's Creek Reach 4	FY17
6	East Longview	FY17
7	SWM Facility No. 489	FY18

BMP 2 – Implementation of Non-Priority Projects

During FY21 two additional non-priority projects were completed. See Section B for more information.

c. Roadways

BMP 1 – Maintain Accurate List of Prince William County Owned Roadways

Although the Virginia Department of Transportation (VDOT) maintains a majority of the roadways and right of way areas within Prince William County, the County is responsible for the maintenance of some roadways and parking lots. VDOT operates under its own phase II stormwater permit, and coordination regarding issues with MS-4 physical-interconnectivity is required as part of both permittee's MS-4 requirements (see section II.m). The County currently operates and maintains parking lots associated with County facilities.

As part of its permit responsibilities PWC has generated a list of all County maintained parking lots, streets, and roadways and the acres treated/not treated by BMPs. This list was updated in May, 2019 in congruence with the Program Plan. The County has 94 total parcels with impervious parking lots or roads. There are 50 parcels containing County maintained impervious roadways totaling 12.8 miles or 42.9 acres, in addition, there are 87 parcels with impervious parking lots totaling 132.5 acres. Some parcels may contain both sections of impervious roadway and parking lot space.

Table 3 – County Maintained Roadways, Streets, and Parking lots

ST NO	ST NAME	ST TYPE	DEED ACRES	DESCRIPTION	Impervious Parking Lot? (Yes=1; No=0)	Area of Imp. Parking Lot (Acres)	Impervious Road? (Yes=1; No=0)	Imp. Road (Linear Ft)	Imp. Road (Acres)	Site BMPs (Yes= 1; No=0)	Parking Lots Treated by BMPs (Acres)	Imp. Roads Treated by BMPs (Acres)	Imp. Roads Treated by BMPs (Miles)	Imp. Roads Not Treated by BMPs (Miles)
4925	CATHARPIN	RD	1.216	LAWNVALE ESTATES SEC 2 R/W PRIVATE ROAD	0		1	880	0.38	0	0	0	0.00	0.17
13001	CHINN PARK	DR	77.003	CHINN PARK	0		1	97	0.05	1	0	0.05	0.02	0.00
13131	PUBLIC SAFETY	DR	12.081	PUBLIC SAFETY FACILITY - ACREAGE	0		1	585	0.15	1	0	0.15	0.11	0.00
5049	WATERWAY	DR	8.210	MONTCLAIR LIBRARY (UNDER CONSTRUCTION)	0		1	716	0.801	1	0	0.801	0.14	0.00
8636	WELLINGTON	RD	0.857	PWC JUVENILE CTR	0		1	284	0.16	1	0	0.16	0.05	0.00
1040	EXPRESS	DR	2.538	VRE TRAIN STATION WOODBRIDGE	0		1	483	0.65	1	0	0.65	0.09	0.00
7625	AARON	LN	15.264	ELLIS L BARRON PARK	1	0.29	0			1	0.29	0	0.00	0.00
12560	ADEN	RD	97.074	NOKESVILLE COMMUNITY PARK	1	1.87	1	4393	1.4	1	1.87	1.4	0.83	0.00
5901	ANTIOCH	RD	3.800	FIRE STATION ANTIOCH ROAD/ DOMINION VALLEY	1	1.17	1	897	0.62	1	1.17	0.62	0.17	0.00
8051	ASHTON	AV	4.177	BULL RUN LIBRARY	1	1.94	1	231	0.15	1	1.94	0.15	0.04	0.00
7500	BEN LOMOND PARK	DR	240.607	BEN LOMOND PARK	1	1.92	1	1010	0.86	1	1.92	0.86	0.19	0.00
14730	BIRCHDALE	AV	8.656	BIRCHDALE PARK	1	0.77	0			0	0	0	0.00	0.00
14998	BIRCHDALE	AV	0.836	VFD FIRE STATION	1	0.33	1	58	0.038	0	0	0	0.00	0.01
15011	BIRCHDALE	AV	4.146	BIRCHDALE PARK	1	0.165	0			0	0	0	0.00	0.00
15520	BLACKBURN	RD	42.452	RIPPON LODGE	1	0.48	1	1050	0.58	1	0.48	0.58	0.20	0.00
12401	BRAEMAR	PY	15.172	BRAEMAR PARK	1	0.55	0			1	0.55	0	0.00	0.00
14418	BRISTOW	RD	132.734	HELWIG PARK & LIBRARY	1	6.5	1	3,800	2.18	1	6.5	2.18	0.72	0.00
14422	BRISTOW	RD	1.500	HELWIG PARK ENTRANCE	0		1	167	0.32	1	0	0.32	0.03	0.00
13065	CHINN PARK	DR	14.647	CHINN PARK COMPLEX (Library, Aquatic Center)	1	4.86	1	509	0.29	1	4.86	0.29	0.10	0.00
13850	CHURCH HILL	DR	5.086	COMMUNITY CENTER	1	0.49	1	547	0.25	0	0	0	0.00	0.10
15150	CLOVERDALE	RD	30.190	CLOVERDALE PARK	1	1.57	1	1122	0.49	0	0	0	0.00	0.21

ST NO	ST NAME	ST TYPE	DEED ACRES	DESCRIPTION	Impervious Parking Lot? (Yes=1; No=0)	Area of Imp. Parking Lot (Acres)	Impervious Road? (Yes=1; No=0)	Imp. Road (Linear Ft)	Imp. Road (Acres)	Site BMPs (Yes=1; No=0)	Parking Lots Treated by BMPs (Acres)	Imp. Roads Treated by BMPs (Acres)	Imp. Roads Treated by BMPs (Miles)	Imp. Roads Not Treated by BMPs (Miles)
10501	COPELAND	DR	2.974	SUDLEY MANOR COMMUNITY CENTER	1	0.74	0			0	0	0	0.00	0.00
12380	COTTON MILL	DR	4.770	LAKE RIDGE MARINA	1	1.02	1	1163	0.65	1	1.02	0.65	0.22	0.00
12371	COTTON MILL	DR	67.064	LAKE RIDGE PARK, GOLF COURSE	1	2.01	1	1179	0.66	1	2.01	0.66	0.22	0.00
12390	COTTON MILL	DR	4.675	LAKE RIDGE PARK	1	1.15	1	2430	1.16	1	1.15	1.16	0.46	0.00
7	COUNTY COMPLEX	CT	65.547	STADIUM COMPLEX	1	4.88	1	950	0.54	1	4.88	0.54	0.18	0.00
1	COUNTY COMPLEX	CT	40.676	McCOURT & DEVELOPMENT SERVICES BUILDINGS	1	7.03	1	5085	4.8	1	7.03	4.8	0.96	0.00
5180	DALE	BL	7.161	PARKS SKATE NATION	1	1.48	0			1	1.48	0	0.00	0.00
5070	DALE	BL	6.179	BOYS AND GIRLS CLUB	1	0.38	0			1	0.38	0	0.00	0.00
5100	DALE	BL	3.500	BOYS/ GIRLS CLUB/COMMUTER PARKING LOT	1	2.61	1	338	0.24	1	2.61	0.24	0.06	0.00
5301	DALE	BL	218.234	ANDREW LEITCH PARK	1	1.95	1	933	0.46	1	1.95	0.46	0.18	0.00
4249	DALE	BL	0.478	DALE CITY LIBRARY	1	0.1	0			0	0	0	0.00	0.00
14012	DAWSON BEACH	RD	6.230	COMMUNITY CENTER	1	0.16	1	1444	0.47	0	0	0	0.00	0.27
15941	DONALD CURTIS	DR	17.091	FERLAZZO BLDG	1	4.9	1	600	0.5	1	4.9	0.5	0.11	0.00
13712	DUMFRIES	RD	9.540	COLES FIRE STATION	1	0.98	0			1	0.98	0	0.00	0.00
4100	EXETER	DR	5.688	BRITTANY PARK	1	0.96	1	334	0.16	1	0.96	0.16	0.06	0.00
15611	FARM CREEK	DR	2.427	FARM CREEK VRE COMMUTER LOT	1	1.22	0			1	1.22	0	0.00	0.00
15601	FARM CREEK	DR	4.413	FARM CREEK VRE COMMUTER LOT	1	2.65	1	762	0.88	1	2.65	0.88	0.14	0.00
12993	FITZWATER	DR	0.287	NOKESVILLE LIBRARY - PCL 1	1	0.09	0			1	0.09	0	0.00	0.00
12997	FITZWATER	DR	0.287	NOKESVILLE LIBRARY - PCL 2	1	0.05	0			1	0.05	0	0.00	0.00
8900	FREEDOM CENTER	BL	15.398	WESTERN POLICE STATION	1	4.15	1	1453	1.03	1	4.15	1.03	0.28	0.00
18809	FULLER HEIGHTS	RD	42.260	FULLER HEIGHTS PARK	1	0.86	1	1137	0.52	1	0.86	0.52	0.22	0.00
13030	HARBOR	DR	2.293	COMMUTER LOT - TACKETTS MILL	1	1.47	0			1	1.47	0	0.00	0.00

ST NO	ST NAME	ST TYPE	DEED ACRES	DESCRIPTION	Impervious Parking Lot? (Yes=1; No=0)	Area of Imp. Parking Lot (Acres)	Impervious Road? (Yes=1; No=0)	Imp. Road (Linear Ft)	Imp. Road (Acres)	Site BMPs (Yes=1; No=0)	Parking Lots Treated by BMPs (Acres)	Imp. Roads Treated by BMPs (Acres)	Imp. Roads Treated by BMPs (Miles)	Imp. Roads Not Treated by BMPs (Miles)
13509	HILLENDALE	DR	3.426	COMMUTER LOT - HILLENDALE RD	1	2.23	0			1	2.23	0	0.00	0.00
13499	HILLENDALE	DR	21.901	JOHN JENKINS PARK	1	0.16	1	413	0.26	1	0.16	0.26	0.08	0.00
12940	HUNTING	CO	2.520	BROAD RUN PARK	1	0.31	0			1	0.31	0	0.00	0.00
4603	JAMES MADISON	HY	163.633	JAMES LONG PARK	1	3.55	1	3025	2.02	1	3.55	2.02	0.57	0.00
15904	JEFFERSON DAVIS	HY	0.960	EASTERN FUELING STATION	1	0.74	0			1	0.74	0	0.00	0.00
14945	JEFFERSON DAVIS	HY	5.065	HILDA BARG HOMELESS CENTER	1	0.3	1	468	0.25	1	0.3	0.25	0.09	0.00
14450	JOHN MARSHALL	HY	3.847	FIRE STATION	1	0.86	1	435	0.26	1	0.86	0.26	0.08	0.00
9250	LEE	AV	2.307	OLD COURTHOUSE/PARKING	1	0.67	0			1	0.67	0	0.00	0.00
9254	LEE	AV	0.201	OLD COURTHOUSE/PARKING	1	0.07	0			1	0.07	0	0.00	0.00
9252	LEE	AV	0.186	OLD COURTHOUSE/PARKING	1	0.05	0			1	0.05	0	0.00	0.00
9256	LEE	AV	0.154	OLD COURTHOUSE/PARKING	1	0.04	0			1	0.04	0	0.00	0.00
9258	LEE	AV	0.163	OLD COURTHOUSE/PARKING	1	0.04	0			1	0.04	0	0.00	0.00
9300	LEE	AV	8.502	OLD COURTHOUSE/PARKING	1	2.2	0			1	2.2	0	0.00	0.00
9301	LEE	AV	4.680	OLD COURTHOUSE/PARKING	1	2.03	0			1	2.03	0	0.00	0.00
14870	LIGHTNER	RD	4.248	GAINESVILLE LIBRARY	1	1.1	0			1	1.1	0	0.00	0.00
4701	LOCUST SHADE	DR	642.151	LOCUST SHADE PARK AND FOREST GREEN GOLF	1	3.9	1	7170	3.95	1	3.9	3.95	1.36	0.00
8460	MAPLEWOOD	DR	27.478	JOSEPH READING PARK	1	0.4	1	1162	0.62	1	0.4	0.62	0.22	0.00
8601	MATHIS	AV	2.748	CENTRAL LIBRARY MANASSAS	1	1.25	0			0	0	0	0.00	0.00
14716	MINNIEVILLE	RD	26.333	HOWISON HOMESTEAD PARK	1	1.3	1	899	0.53	1	1.3	0.53	0.17	0.00
14400	MINNIEVILLE	RD	0.367	DALE CITY RECREATION CENTER PARKING LOT	1	0.23	0			1	0.23	0	0.00	0.00
14300	MINNIEVILLE	RD	30.862	DALE CITY RECREATION CENTER	1	1.4	1	164	0.31	1	1.4	0.31	0.03	0.00
9320	MOSBY	ST	4.759	COURTHOUSE PARKING	1	1.85	0			1	1.85	0	0.00	0.00

ST NO	ST NAME	ST TYPE	DEED ACRES	DESCRIPTION	Impervious Parking Lot? (Yes=1; No=0)	Area of Imp. Parking Lot (Acres)	Impervious Road? (Yes=1; No=0)	Imp. Road (Linear Ft)	Imp. Road (Acres)	Site BMPs (Yes=1; No=0)	Parking Lots Treated by BMPs (Acres)	Imp. Roads Treated by BMPs (Acres)	Imp. Roads Treated by BMPs (Miles)	Imp. Roads Not Treated by BMPs (Miles)
9350	MOSBY	ST	9.452	COURTHOUSE PARKING	1	0.05	0			1	0.05	0	0.00	0.00
2081	OLD BRIDGE	RD	0.700	OLD BRIDGE COMMUTER LOT	1	0.39	0			1	0.39	0	0.00	0.00
2095	OLD BRIDGE	RD	1.138	OLD BRIDGE COMMUTER LOT	1	1.12	0			1	1.12	0	0.00	0.00
2201	OPITZ	BL	3.778	POTOMAC REGIONAL LIBRARY	1	0.93	1	53	0.038	0	0	0	0.00	0.01
9212	PEABODY	ST	3.740	COURTHOUSE PARKING	1	1.51	0			1	1.51	0	0.00	0.00
9307	PEABODY	ST	0.228	COURTHOUSE PARKING	1	0.18	0			0	0	0	0.00	0.00
9305	PEABODY	ST	0.151	COURTHOUSE PARKING	1	0.15	0			0	0	0	0.00	0.00
9303	PEABODY	ST	0.276	COURTHOUSE PARKING	1	0.12	0			0	0	0	0.00	0.00
10699	PIPER	LN	40.330	AIRPORT VRE STATION & COMMUTER LOT	1	4.44	1	1902	1.3	1	4.44	1.3	0.36	0.00
13800	POP MOUBRY	PL	20.880	LANCASTER PARK	1	0.17	1	258	0.13	1	0.17	0.13	0.05	0.00
14700	POTOMAC MILLS	RD	3.580	PRTC POTOMAC MILLS	1	1.78	1	419	0.34	1	1.78	0.34	0.08	0.00
14730	POTOMAC MILLS	RD	0.787	PRTC - HOMELESS SHELTER	1	0.35	0			1	0.35	0	0.00	0.00
14716	POTOMAC MILLS	RD	5.507	PRTC POTOMAC MILLS	1	1.9	0			1	1.9	0	0.00	0.00
13161	PUBLIC SAFETY	DR	8.276	PUBLIC SAFETY TRAINING FACILITY - PCL B	1	0.4	0			1	0.4	0	0.00	0.00
13101	PUBLIC SAFETY	DR	25.052	PUBLIC SAFETY TRAINING FACILITY - PCL A	1	2.29	1	2581	1.8	1	2.29	1.8	0.49	0.00
12731	RIDGEFIELD VILLAGE	DR	4.400	EARL CUNARD PARK	1	0.18	0			1	0.18	0	0.00	0.00
17301	RIVER RIDGE	BL	6.262	LACEY COMPTON PARK - WAYSIDE VILLAGE	1	0.35	0			1	0.35	0	0.00	0.00
16530	RIVER RIDGE	BL	5.656	RIVER OAKS FIRE STATION	1	1.03	1	854	0.57	1	1.03	0.57	0.16	0.00
16198	SILVER LAKE	RD	43.753	SILVER LAKE - EQUESTRIAN CENTER	1	0.8	0			1	0.8	0	0.00	0.00
15960	SINDLINGER	WY	4.400	FERLAZZO CENTER	1	1.42	0			1	1.42	0	0.00	0.00
13455	TELEGRAPH	RD	24.609	HORNER RD COMMUTER PARKING LOT	1	10.9	1	1531	2.3	1	10.9	2.3	0.29	0.00
12051	TYGART LAKE	DR	42.074	BROAD RUN LINEAR PARK - PUMP STATION	1	0.38	0			1	0.38	0	0.00	0.00

ST NO	ST NAME	ST TYPE	DEED ACRES	DESCRIPTION	Impervious Parking Lot? (Yes=1; No=0)	Area of Imp. Parking Lot (Acres)	Impervious Road? (Yes=1; No=0)	Imp. Road (Linear Ft)	Imp. Road (Acres)	Site BMPs (Yes=1; No=0)	Parking Lots Treated by BMPs (Acres)	Imp. Roads Treated by BMPs (Acres)	Imp. Roads Treated by BMPs (Miles)	Imp. Roads Not Treated by BMPs (Miles)
11930	VALLEY VIEW	DR	125.626	VALLEY VIEW PARK	1	5.4	1	3644	2.8	1	5.4	2.8	0.69	0.00
14300	VETERANS	DR	78.114	VETERANS MEMORIAL PARK	1	3.21	1	4221	2.3	1	3.21	2.3	0.80	0.00
14631	VINT HILL	RD	165.000	PRINCE WILLIAM GOLF COURSE	1	0.8	1	1736	0.804	1	0.8	0.804	0.33	0.00
4450	WATERWAY	DR	13.802	ANN MONCURE WALL PARK	1	1	1	1373	0.66	1	1	0.66	0.26	0.00
8642	WELLINGTON	RD	1.263	PWC JUVENILE CENTER	1	0.17	1	357	0.204	1	0.17	0.204	0.07	0.00
2430	WEST LONGVIEW	DR	4.156	HYLBROOK PARK	1	0.59	0			0	0	0	0.00	0.00
14811	DUMFRIES	RD	1061.984	FLEET BUILDING PARKING LOT ONLY	1	2.09	0			0	0	0	0.00	0.00
				TOTALS	87	132.5	50	67,302	42.9	78	122.9	41.2	12.0	0.8

BMP 2 – Good Housekeeping Practices on County Maintained Roadways

Prince William County contracts out maintenance activities for County maintained parking lots, streets, and roadways. These activities include sweeping, line painting, and asphalting. No aggregate materials are stored as part of B&G roadway maintenance activities at this time.

Asphalt maintenance to parking lots and roadways are scheduled to be performed cyclically, with the average asphalt lifespan of 17 years. Each lot and roadway is listed for evaluation every fiscal year. Paint maintenance to parking lots is performed every 4 years. Street sweeping to parking lots is scheduled to be performed every 2 years. All maintenance activates are designed to conform to good housekeeping and pollution prevention practices in a manner to minimize the discharge of pollutants.

Buildings and Grounds maintenance vehicles are stored in a manner to reduce the discharge of pollutants. Vehicles are serviced and repaired by PWC Fleet Management Division and are tracked by GPS to provide feedback on fuel usage and routing. This is designed to improve efficiency and minimize pollutant discharge.

Prince William County established a county-wide IDE (Illicit Discharge Elimination) policy to promote good housekeeping practices across all municipal facilities. A full copy of this policy can be found in Appendix I.

BMP 3 – Good Housekeeping Practices for Winter Weather Maintenance

Prince William County Buildings and Grounds and Construction Services are responsible for snow removal at all county facilities maintained by Buildings and Grounds. Snow removal activities are not performed on any other County maintained roads, streets, or parking lots. Salt, sand, and calcium chloride are the specified materials used in snow removal activities. Any materials used for deicing and sanding activities are stored and maintained in a manner to prevent runoff from precipitation.

Prince William County established a county-wide IDE policy to promote good housekeeping practices across all municipal facilities. A full copy of this policy can be found in Appendix I.

d. Pesticide, Herbicide, and Fertilizer Application

Prince William County Public Works will promote and encourage the proper use, application, and disposal of pesticides, herbicides and fertilizers by public, commercial, and private applicators and distributors.

Working with the Virginia Cooperative Extension Service, their staff help support Prince William County applicators and distributors with proper training and coordination with the Virginia Department of Agriculture and Consumer Services (VDACS)

- VDACS provides ongoing communication with all certified applicators and distributors.

- The Virginia Cooperative Extension Service provides training and education on the use, application and disposal of pesticides, herbicides and fertilizers.

There is an annual collection to properly dispose of the materials in the state. It is held in a different region each year. The Cooperative Extension works with our local applicators and distributors to ensure they are aware of the collection.

BMP 1 – Identify Nutrient Applied over County Lands

Prince William County is dedicated to minimizing the effects of pesticides, herbicides, and fertilizer use on the Chesapeake Bay. The County has identified all lands of which nutrients are applied to a contiguous area of more than one acre. The latitude and longitude of these lands will be reported to DEQ as requested. This data will be used to determine where Nutrient Management plans need to be developed. This list is displayed in the following section, along with the current status of implementation for each site.

BMP 2 – Develop and Implement Turf and Landscape Management Plans

The County has finished implementing Turf and Landscape nutrient management plans for 100% of County lands where nutrients are applied to greater than one contiguous acre. Table 4 below provides a summary of lands within the MS-4 service area of which nutrients are applied to greater than one contiguous acre and the progress of the County's NMP.

Table 4 – Nutrient Management Plan Implementation

Plan Name	Area Requiring Plan (Acres)	Latitude	Longitude	Plan Area (Acres)	Initial Plan Date	Current Plan Expiration Date
Braemar	2.46	38.7339	-77.5692	2.46	9/1/2017	8/31/2023
Fairmont	4.01	38.7817	-77.4908	4.01	10/1/2018	9/30/2021
Howison	9.82	38.6339	-77.3825	9.82	4/1/2017	3/31/2023
Western PD	7.27	38.7625	-77.5172	7.27	4/1/2015	2/11/2022
Total	**32.78**			**32.78**		

Staff certified in nutrient management planning develop turf and landscape management plans. These certifications are summarized in Table 5.

Table 5 – Name, certificate number, and expiration date of all nutrient management planners for Prince William County

Plan Writer	Certificate number	Expiration date
Julie Flanagan	#772	2/2022
Clay Morris	#757	8/2022
Paige Thacker	#759	8/2022

Plan Writer	Certificate number	Expiration date
Nancy Berlin	#801	8/2022
Thomas Bolles	#732	2/2022
Kevin Flickinger	#842	8/2022

BMP 3 – Develop and Employ Good Housekeeping Practices for storage transport and disposal of pesticides, herbicides, and fertilizers.

The County works with its Mosquito Forest Pest Management, Buildings and Grounds, and Parks and Recreation departments to ensure good housekeeping practices are followed. This includes the storage, transport, and disposal of pesticides, herbicides, and fertilizers. All County staff working with pesticides, herbicides, insecticides, and fertilizers are trained and maintain required certifications. Good housekeeping practices are further defined in the Illicit Discharge Elimination (IDE) policy. The County evaluated each of these departments for compliance with this policy through IDE compliance reports. These reports and the policy can be found in Appendix I. They are also described further in SOPs found in Appendix D.

In addition, the County works with various volunteer organizations to ensure the proper use and storage of pesticides, herbicides, and fertilizers. For instance, the Environment and Natural Resources program of Virginia Cooperative Extension Service (VCE) provides research-based information to help citizens improve their lawns and landscapes without negatively impacting the environment. Services include:

- Horticulture Help Line and Plant Clinics at local Garden Centers and farmer's market to answer questions about insect, disease or gardening problems
- BEST Lawns is a lawn education program that provides lime and fertilizer recommendations based on a soil test and lawn measurements, as well as best practices for lawn care
- Free lectures to the public
- Education for businesses and non-profit organizations in the management of storm water runoff
- Training for interested citizens who wish to become Master Gardener volunteers
- Low maintenance gardening techniques demonstrated at the Teaching Garden
- Plant a Row for the Hungry collections at local Farmer's Markets
- Cooperative Extension agent is on the board of the Prince William Soil & Water Conservation District
- Emergency management assistance to local agricultural producers
- Pesticide Safety training and best management educational workshops for the Green Industry

VCE conducts a post survey gauging awareness and behavior changes made through educational programming. It tracks program effectiveness and reach by evaluating the number of people educated and the number of people that implement the practices they learn.

The County will continue to define and promote good housekeeping practices for storage transport and disposal of pesticides, herbicides, and fertilizers.

BMP 4 – Develop and Employ Integrated Pest Management Plans

The County will track and employ Integrated Pest Management Plans where applicable. Currently the county maintains all lands under IPM with the mission of the program to survey, reduce, and control populations, when possible, of mosquitoes and forest pests. IPM programs use current, comprehensive information on the life cycles of pests and their interaction with the environment. This information, in combination with available pest control methods, is used to manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment. The data gathered in the process is analyzed and used to track population trends, determine appropriate control measures and evaluate effectiveness of the control efforts. Reduction and response consist of implementing IPM pest control measures to suppress populations of mosquitoes, gypsy moths and fall cankerworms. Selective application of environmentally compatible, EPA-registered products are utilized to control these pests. Several factors from our surveillance program and other environmental factors help in determining treatment options.

During the reporting period, the County applied larvicide to a total of 29.47 acres including 9.2 acres of stormwater management facilities and 20.27 acres of lands not designated as stormwater management facilities. In addition, the Mosquito and Forest Pest Management Branch applied adulticide to a total of 346.1 acres, bringing the total County lands treated by IPM to 375.6 acres. Also, during calendar year 2021 of the reporting period, a total of 0.0273 acres of County lands were treated using source reduction, habitat manipulation, or other non-pesticide means of IPM.

e. Illicit Discharge and Improper Disposal

BMP 1 – Elimination of Illicit Discharges and Improper Disposal

The Prince William County's Illicit Discharge Detection and Elimination (IDDE) Program consists of elements designed to identify, mitigate, and prevent the release of non-stormwater discharges into its storm sewer system, and thus into State and Federal waters. Through development of County Fire Protection, Zoning, Building Development, and Stormwater Management Ordinances; Prince William County has prohibited the discharge of any non-stormwater element determined to be contributing significant amounts of pollutants to its storm sewer system. This includes the dumping or improper disposal of motor vehicle fluids, household hazardous wastes, sanitary sewage, grass clippings, leaf litter, and animal wastes. The County defines all discharges categorized as non-stormwater discharges, as well as those discharges not addressed as illicit discharges in accordance with part I.A.1.b) in permit #VA0088595 in Article II sec. 23.2-4.1 of Prince William County's Code of Ordinances. By issuance of a Notice of Violation, illicit discharges are required to be eliminated within 30 days of discovery, unless removal is not possible within that timeframe. In these instances, reasonable and prudent measures to minimize discharge will be taken and an action plan for mitigation/removal will be required.

Table 6 below summarizes the results of the Illicit Discharge Program. The program is broken into 2 elements; Dry weather outfall inspections (see section II.1 for more details); and reported and observed discharges.

Table 6 – Illicit Discharge Program Overview (County-Wide)

Type		No.	Percentage
Dry Weather Outfall Inspections	Non-flowing	637	79.13%
	Flowing	165	20.50%
	Illicit Discharge	3	0.37%
	Total:	**805**	
Reported and Observed Discharge	Nonfounded/ Minor	12	24.49%
	Illicit Discharge	37	75.51%
	Total:	49	
Total Illicit Discharges	Closed Cases	40	100%
	Active Cases	0	0%
	Total:	40	

During the reporting period, Prince William County responded to 49 complaints of illicit discharge. All cases have been successfully closed. See Table 7 below for more detail on reported Illicit Discharge cases handled by the County in FY21.

Table 7 – Reported Illicit Discharges for FY21

Date	Discharge Description	Discharge Location	Date of initial inspection	Illicit Discharge?/ NOV Issued	Date of last Inspection	Comments/Notes	Status
7/6/2020	Dumping paint into stormwater inlet	Stormwater Inlet nearby 7419 Barbados Ln	7/6/2020	Yes, NA	NA	White paint was being dump into stormwater curb and gutter inlet located nearby 7419 Barbados Ln . Paint was dry and retain with debris at the manhole. Stormwater system was tracked and there was no mark of paint flow to the next manhole. Violator could not detect. Interaction was made with available residents and distributed education materials asking them to report us if the incident happens repeatedly.	Closed
7/22/2020	Grey discharge at York Drive	2015 York Drive	7/22/2020	Yes,NOV# 1-2021	8/12/2020	Kitchen sink discharge was found flowing into sump pit. The discharge was releasing at road curb and gutter through drainpipe. County staff was educated to the home owner. Discharge of grey water on street curb and gutter ultimately flows into the storm water system contaminating runoff and is a violation of County Code 23.2-4.1. Notice of violation (NOV# 1-2021) was issued to the owner. Follow up inspection was made[8/12]. Grey water pipe was found to be disconnected with foundation drain.	Closed
8/3/2020	ATV (All Terrain Vehicle) Wash discharge	8006 Mace Cir	8/11/2020	Yes, NA	8/11/2020	Follow up inspection was made[8/11]. Lump of mud was observed at stormwater curb and gutter inlet located nearby 8006 Mace Circle. There was no adverse impact on drainage system. Some mud debris were also observed on street. Interaction was made with Mr. Baker the owner of 8006. He took responsibility of doing ATV wash out on street, agreed to remove mud and not to repeat washing ATV nearby stormwater system.	Closed
8/6/2020	Creek discharge like "Tomato Soup" from last 3-4 month	10230 wisteria drive	8/6/2020	Yes, NA	NA	Follow-up inspection was made. Discharge tracked and sediment laden discharge was clearly observed from the active construction site 9845 Liberia Avenue. I met crews working on site and made phone conversation with the contractor, Mr. Jimmy. The case has been forwarded to Mr.Vijay to review erosion and sediment control practices and take necessary enforcement action to resolve the problem.	Closed

Date	Discharge Description	Discharge Location	Date of initial inspection	Illicit Discharge?/ NOV Issued	Date of last Inspection	Comments/Notes	Status
8/7/2020	Process water discharge from animal meat seller	Creek passed through 3521 Ingram Drive	8/17/2020, 8/25/2020	Yes,NOV# 2-2021	9/10/2020	Upon arrival animal parts, waste and process water found to be discharge as reported to stormwater system from 14850 Selter Ln. The business owner has shown his ignorance about unlawful discharge and finally came to the point to work for ceasing unlawful discharge and routing drainage pipe to the storage tank made for collection and haulage. Follow up inspection was made on 8/25/2020, but there was no progress. NOV#2-2021 was issued to the owner. Follow up inspection made on 9/10/2020. Case was found to be resolved now. The owner has sent the email with pollution prevention plan and follow up inspection will continue inspection for few months.	Closed
9/11/2020	Oily sheen on the water surface	SWMP 156	9/15/2020	Yes, NA	9/16/2020, 9/18/2020	Upon arrival, the colorful floating layer was observed on the surface of SWMP156. Discharge was discovered from surface inflow. Tracking continued along the creek and found that sanitary sewer was overflowing through manhole beside the creek behind Global Food of Woodbridge. After identifying the source, the case was reported to PWCSA for resolution. Service Authority instantly took over the case and resolved by cleaning and disinfection of the channel and pond.	
9/15/2020	Dumping cooking oil	Curb and Gutter Inlet located at left side of entrance of 5044 burnside farm place	9/17/2020	Yes, NA	9/17/2020	Dumping of cooking oil was observed into curb and gutter Inlet located at left side of entrance of 5044 burnside farm place. The violator could not identify. The resident located near by was met and educated knocking each door. The letter will be sent to all residents and HOA requesting the activity stop.	Closed

Date	Discharge Description	Discharge Location	Date of initial inspection	Illicit Discharge?/ NOV Issued	Date of last Inspection	Comments/Notes	Status
9/23/2020	Discharge automotive paint into CSWMP	CSWMP 5178, 5179	9/25/2020	Yes, NA	10/1/2020	The tenant is Inter Auto Service who has cleaned the sidewalk, entrance of front bays, re-graveled the side drain water ways. Mr. Leon said that he has spoken with the property manager and mentioned to him the need to add more gravel on the side right and left of the front of building as well as the front drain ditch.	Closed
9/29/2020	Grease container overflowing or leaking down the road	14645 Jefferson Davis Hwy	10/5/2020	Yes, NOV#3-2021	10/15/2020	Upon arrival, grease and cooking oil found to spill all around the pavement of grease collection tank. Sanitary sewage interceptor was overflowing from the lead to the road. Sewage was flowing along the curb & gutter and flowing to the landscape. Prince William County Service Authority (PWCSA) was initially informed. The staff of PWCSA instantly arrived and confirmed overflow from private interceptor of Food Lion. Interaction was made with Mr. Grimes, the manager of Food Lion and issued violation notice to the Food Lion to correct deficiencies of oil spill and sanitary sewage overflow. Sewage overflow belongs to food lion where grease and oil case was finally associated with Chinese Restaurant. Violation letter again issued to the restaurant.	Closed
10/21/2020	Silica discharge	Stormwater Inlet nearby 8104 Levi Ct.	10/23/2020	Yes, NA	10/23/2020	Made follow up inspection. Upon arrival, footprint of silica debris observed on the Chest Nut Street and Levi Court of Yorkshire areas. Silica was found to use for removing yellow paint with pressurized blow of dry silica from street curb and gutter. I have met Ms. Natasha onsite, one of the family member of HOA board member. She said, the PWC HAZMAT team has issued a violation to the contractor. Contractor has started to pull out silica from the storm drain. The pallet was observed on cul-de-sac having some bags of collected silica. The work was in progress with grooming the street.	Closed

Date	Discharge Description	Discharge Location	Date of initial inspection	Illicit Discharge?/ NOV Issued	Date of last Inspection	Comments/Notes	Status
10/27/2020	Pet poops discharge	Beside the Cul-de-sac of Struthers Glen Court Bristow VA, at the entrance of Broad Run Trail	10/27/2020	Yes, NA	NA	Upon arrival, poops bags were found to thrown on ground and tree. I talked with the local resident Mr. Mallon about this issue. We will discuss about this issue with my team to identify the way to resolve this problem. We need help from the community and local residents to identify the violator. Once we identify, we will take an enforcement action. It is under inclusive process. Ms. Wolfe of HOA has reported on 11/8/2020 that she posted a surveillance sign and camara (No sighting) on site few days ago. One of the neighbor went into the woods and clean up what he could. Now the pet waste problem has been stopped, so the case is closed.	Closed
10/30/2020	Oil and grease discharge on road	Intersection near by 8016 Folkstone Rd with Dairymaid Court	11/2/2020	Yes, NA		Upon arrival, the stain of grease and oil was observed on Dairymaid Court street. Stain retained as a dry patch on certain areas without flowing foot print into stormdrain. The automotive repair business is not allow at road curb side but incident was seemed to be happened one time. County staff met Mr. Morris of 8000 Folkstone Rd and Mrs. Pamela of 9621 Diarymaid Ct and asked them to make aware to the community members and report to the County if the same activities happen repeatedly on the street. Followup inspection made on 12/03/2020. Repair business has stopped.	Closed
11/2/2020	Petroleum Spill	10565 Poagues Battery Drive	11/2/2020	Yes, NA	11/2/2020	County staff inspected the reported site 10565 Poagues Battery Drive yesterday and met the complainant onsite who also have been involved with the Fire Marshal team. The stormwater system tracked and did not find the absorbent booms employed to capture the spill in stormwater system. The discharge was ultimately releasing through outfall (ID: 58654) in CSWMP (ID: 5831). The outfall was flowing but there was no sign of petroleum contamination at the facility. The stormwater drop inlets (ID: 53221, 53220) were free of petroleum odor. Fire Marshal may already pull out the booms after follow up. The incident was found to resolve very well.	Closed

Date	Discharge Description	Discharge Location	Date of initial inspection	Illicit Discharge?/ NOV Issued	Date of last Inspection	Comments/Notes	Status
11/4/2020	Clippings discharge	16109 Olmstead Ln	11/5/2020	Yes, NOV#5-2021	12/4/2020	Upon arrival, leaf clipping, and dust were found to retain into street curbs and gutter inlets at the location shown in map above. A similar incident occurred on 12/12/2017 at this location. Complainant reported that the landscaper is the same who did same violation in 2017. The violator is confirmed to be Mr. Wesselhoft of 16100 Kennedy Street. Notice of violation has been issued. Follow up inspection made [11/16], large previous volume did not find into stormwater system, but some clippings were observed. It could be accumulated naturally because of fall season. Follow up inspection was made on12/4/2020. Problem is found to be resolved.	Closed
11/10/2020	Blowing leaves into drain and neighboring property	13112 Bigleaf Maple Ct	11/13/2020	Yes, NA	12/2/2020	Prince William County, Environmental Services staff received an anonymous complaint with the picture regarding some residents routinely blow leaves into the cul-de-sac as an intentional means of disposing of their yard waste which ultimately flow into stormsewer system with runoff at Bigleaf Maple Ct Cul-De-Sac. Upon arrival, leaves clippings were found to blown on Cul-De-Sac and part of it observed to be deposited at storm sewer system. Interaction was made with home owners and left education material to each residents living around. Follow up inspection was made on 12/02/2020. Discharge controlled.	Closed
12/3/2020	Leaving Clippings on road	2023 York Drive	12/3/2020	Yes, NA	12/14/2020	The owner of 2023 York Drive was found to be hired a company, the Precision Mowing to mow the grass and blow out leaves into York Drive. County staff made a call to the contractors office and talked with one of the staffs Ms. Sabine Newbold and mentioned the County Code violation about blowing and leaving leaves into street. She immediately sent out crews to correct deficiencies. Follow up inspection was made on 12/14/2020. deficiencies were corrected by removing clippings.	Closed

Date	Discharge Description	Discharge Location	Date of initial inspection	Illicit Discharge?/ NOV Issued	Date of last Inspection	Comments/Notes	Status
12/10/2020	Waste fluid discharge on the street directing into stormwater inlet	12175 Hopper Ln	12/10/2020	Yes, NA	12/10/2020	Upon arrival, the contractor, the Parkleen Mobile Detailing was working to capture the fluid and cleaning and vacuuming wash water. As per the contractor, waste fluid had been released from trash truck of Republic Services during hauling trash of the community. The crews of Republic Services instantly informed to Hazmat officers and their office. The contractor was found to be employed immediately to capture fluid and clean the spot. Storm water system was tracked and did not find flow into downstream manhole. Case closed.	Closed
12/21/2020	Salt	7486 Stream Walk Lane	12/21/2020	Yes, NOV#6-2020	12/30/2020	The follow up inspection was made by the county staff on 12/21/2020. Upon arrival, salt pile was observed non-confined and salt debris were spreading wide surrounding areas. The same issue had been resolved in June, 2020. NOV#6-2020 is issued to the property owner. Follow up inspection was made on 12/30/2020. Debris were found to sweep and pile was covered with trap.	Closed
12/21/2020	Salt	11096 Bulloch Drive	12/21/2020	Yes, NA	12/29/2020	The follow up inspection was made by the county staff on 12/21/2020. Upon arrival, salt pile was observed improperly confined and rainwater getting into pile. Lumps of salt debris were spreading on wide surrounding areas. The phone interaction was made with property Manager to take improvement work very soon. Follow up inspection will do next week. Follow up inspection made on 12/29/2020. Deficiencies were found to be corrected.	Closed
12/22/2020	Salt	14085 Shopper Best Way	12/22/2020	Yes, NOV#7-2021	1/15/2021	The follow up inspection was made by the county staff on 12/22/2020. Upon arrival, salt pile was observed improperly confined and rainwater getting into pile. Lumps of salt debris were spreading on wide surrounding areas. The phone interaction made with the Property Manager Ms. Debbie to take improvement work very soon. NOV#7 is issued to the owner. Follow up inspection was made on 1/15/2021, salt pile was removed permanently.	Closed

Date	Discharge Description	Discharge Location	Date of initial inspection	Illicit Discharge?/ NOV Issued	Date of last Inspection	Comments/Notes	Status
12/22/2020	Salt	14609 Potomac Mills Rd	12/22/2020	Yes, NOV#8-2021	12/28/2020	The follow up inspection was made by the county staff on 12/22/2020. Upon arrival, salt pile was observed open and rainwater was directly getting into pile. The phone interaction made with the Property Manager Ms. Debbie to take improvement work very soon. NOV#7 is issued to the owner. Follow up inspection will do next week. Follow up inspection was made on 12/28/2020. Deficiencies were resolved by sweeping debris, pile and covering with tarp.	Closed
1/12/2021	Sewage	1530 Benita Fitzgerald Dr.	1/12/2021	Yes, NA	1/12/2021	Upon arrival, Supervisor of VA American Water Mr. Cook and some crews were flushing storm water system with clean water from the tanker. The incident was happen due to overflow of sanitary sewage from the manhole locating at 1530 Benita Fitzgerald Drive. Mr. Cook said that sewage was not flowing into storm drain. Discharge tracked and there was no significant impact at the creek.	Closed
1/19/2021	Sewage	14645 Jefferson Davis Hwy	1/19/2021	Yes, NA	1/26/2021	Upon arrival, overflow was controlled, CCTV inspection was made by PWCSA,blockage of lateral was detected toilet paper. Deficiencies mitigation were continued. County staff has suggested to the Manager Mr. Randall Grimes to take over clean up and disinfectant activities for bacteria from the ground. Follow up inspection was made and deficiencies were found to be corrected..	Closed
1/19/2021	Disel spill	Along Dale Blvd-Potomac Center Blvd-River Rock Way	1/19/2021	Yes, NA	NA	PWC, DFR team handled the case using kitty Litter. The spill was seemed to be happened through running dump truck along Dale Blvd west bound from route one to Potomac Town Center. The spill found to be captured prudently before reaching into storm drain.	Closed

Date	Discharge Description	Discharge Location	Date of initial inspection	Illicit Discharge?/ NOV Issued	Date of last Inspection	Comments/Notes	Status
2/1/2021	Petroleum Spill	13999 Hollow Trunk Court	2/1/2021	Yes, NA	2/1/2021	Prince William County, Environmental Services staff received a citizen complaint of petroleum smell on Rocky Branch via DEQ staff. Investigation was started walking through the trail started from Rocky Run Rd. Oil sheen was observed on creek. Tracking was started along the creek and County staff finally found the outfall releasing contaminated discharge. Tracking was continued until Glenkirk Rd where incident seemed to be happened earlier on road pavement. The case was instantly reported to Hazmat team of Prince William County. Captain Chris Adams took over the case for necessary containment.	Closed
2/9/2021	Oil and grease overflow from container placed over the drain inlet	4370 Kevin Walker Drive	2/9/2021	Yes. NOV#9-2021	4/13/2021	Upon arrival, the waste cooking oil receiving container was overflowing into storm drain. The container was placed over the storm water inlet. Multiple tenants of Montclair Plaza LLC were using receptacles. The violation letter has sent to owner to capture and clean spill. The receptacles need to place far from storm drain. Good housekeeping practice needs to follow to stop runoff contamination.	Closed
2/12/2021	Oil spill on loading duck of US Food	11994 Livingston Rd	2/12/2021	Yes, NA	2/12/2021	Petroleum spill found to be happened at the loading duck of US Food. The case was reported to DEQ and case was already handled by DEQ. Hydrocarbon booms and sand dykes were found to be employed to capture the spill instantly. The impact of spill on downstream creek was negligible.	Closed
2/19/2021	Sewage	3554 Melrose Avenue	2/19/2021	Yes, NA	2/19/2021	After receiving complaint, the case was forwarded to Prince William County Service Authority(PWCSA). PWCSA discovered that there is a blockage at the sewage laterals of the home 3554 Melrose Ave. The homeowner haired a plumber and fixed the problem.	Closed
2/23/2021	Petroleum Discharge	12755 Manor Hall Court	2/23/2021	Yes, NA	2/23/2021	Upon arrival, the house was observed brunt out. Two vehicles were caught on fire at garage and driveway. Prince William County Department of Fire and Rescue already handled the case. The petroleum contamination was found to be handled prudently employing earthen dikes and hydrocarbon absorbent booms.	Closed

Date	Discharge Description	Discharge Location	Date of initial inspection	Illicit Discharge?/ NOV Issued	Date of last Inspection	Comments/Notes	Status
3/2/2021	Paint spill on the ground	10052 Spindle Foot Court	3/2/2021	Yes, NA	3/2/2021	Upon arrival, paint spill spot was observed beside the house. The paint was fresh and dry. County staff had requested to clean and dispose paint debris properly. It was reported by the complainant that paint was instantly cleaned and resolved the problem.	Closed
3/15/2021	Sewage exposed through clean out	Amazon Delivery DDC building at 5533 Wellington Road	3/15/2021	Yes, NA	3/15/2021	Property was instantly inspected. The property was purchased and refurbished by Amazon and used for a month. Sewage was found to be overflow through clean out while running pump to discharge into main sanitary sewer system. Interaction was made with Mr. Bryant Stephens of Amazon, Mr. Brent Burton of PWCSA. The problem is seemed to be technical and both parties (Amazon and PWCSA) are working to resolve the problem. It could be blocked or fail to connect with the point designated by PWCSA during construction. It was suggested to Mr. Stephens to hire a vacuum truck to suck sewage from laterals and ground and use disinfectant to kill the bacteria from the ground. Mr. Stephens has taken steps as per suggestions to resolve the problem.	Closed
3/16/2021	Discharge white substance into drain	French drain located behind 8107 Lacy Drive, Unit# 204	3/16/2021	Yes, NA	3/16/2021	Inspection was made to the property 8107 Lacy Drive. The white stain was observed on the lid of chamber of French drain. The lid was opened and saw stagnant water with white debris. The interaction was made with the owner of Unit # 204. He is remolding his kitchen. He said, his construction crews washed their tools over the lid and the incident had happened due to mistake of his construction crews. He instantly agreed to clean and dispose white substance properly within an hour. Re-inspection was made after one hour and deficiencies were corrected. The drop manhole connected with French drain was receiving trickle and clean flow from french drain. The practice was wrong but there was no significant impact on downstream pond.	Closed

Date	Discharge Description	Discharge Location	Date of initial inspection	Illicit Discharge?/ NOV Issued	Date of last Inspection	Comments/Notes	Status
3/26/2021	Waste cooking oil spill/overflow from container	17171 Wayside Drive	3/26/2021	Yes, NOV#10-2021	4/28/2021	Upon arrival, waste cooking oil was being spilled over the pavement and flowing towards stormwater system. Releasing and exposing pollutants for surface runoff is a violation of County Code 23.2-4.1 and Notice of Violation (NOV# 10-2021) is issued to the owner to correct deficiencies.	Closed
4/4/2021	Disel spill finally flow into stormwater system	14700 Potomac Mills Road, Woodbridge, VA 22192	4/6/2021	Yes, NA	4/6/2021	Prince William County watershed staff received a notification that disel spill (400 Gallons) was handled by PWC DFR. Watershed staff made follow up inspection on 4/6/2021. Upon arrival, the mark of spill was noticed at gasoline fill station. Foot print of spill flow was observed on parking lot flowing towards storm water system. The mark of very negligible amount of discharge was observed at outfall. Hydrocarbon absorbent booms were placed at multiple locations across the flow path in downstream channel. The impact of spill at downstream channel was insignificant. Most of the spill may trap into multiple underground BMPs ID: 677, 678, 679, 680 and 681 located at flow path in the parking lot. The case is forward to the staff who are looking storm water management facilities to identified the requirement of immediate clean up and take a lead to coordinate with PRTC management for resolution.	Closed
5/4/2021	Waste food fluid	10320 Festival Lane	4/5/2021	Yes, NOV#11_2021	5/12/2021	Upon arriving, the compactor pad located behind the Global Food store was holding food waste with dumpster juice. The area had a very bad odor. The stain and flow path with fresh fluid flow indicate that dumpster juice was flowing continuously into the storm water system. Some of the potholes were holding fluid and spreading foul odor at the surrounding areas. The site evidence shows that either compactor was overflowing or substantially leaking. Food waste fluid was found flowing down into storm water drain. Follow up inspection was made and deficiencies were found to resolved.	Closed

Date	Discharge Description	Discharge Location	Date of initial inspection	Illicit Discharge?/ NOV Issued	Date of last Inspection	Comments/Notes	Status
5/27/2021	Commertial Vehicles wash discharge	11128 Industrial Rd	6/1/2021	Yes, NA	6/1/2021	The site was visited by IDDE staffs. The flow path of commercial vehicle wash water discharge was discovered towards new development areas. Discharge was seemed to percolate through pervious ground, so that we can not take enforcement action on this matter.	Closed
6/17/2021	Asphalt Emulsion Discharge	Drive way through road curb and gutter	6/17/2021	Yes, NA	6/17/2021	Upon arrival, asphalt emulsion was observed on the drive way and adjoining landscape. Atlas Environmental was employed to mitigate the deficiencies. Discharge was cleaned and vacuumed. there was no impact at downstream creek. The incident was happened due to leak of emulsion spreader parked in driveway on 6/16/2021. Home owner reported the case to Department of Fire and Rescue (DFR). Violation was issued by DFR to the property owner. Case was found to be resolved prudent way.	Closed

Reports for the Illicit Discharge cases above are presented in Appendix E. In FY16 the County created a hotline and email for residents to report illicit discharges. Since then, these hotlines have been distributed on outreach materials and has resulted in a significant increase in the reported number of discharges occurring in the County. The potential impact of COVID on the number of reported discharges received by the County in the next fiscal year remains to be seen. This impact could be due to COVID keeping people indoors more than usual.

BMP 2 – Sanitary Sewer Exfiltration Abatement Program

Prince William County contains a mix of sanitary sewer systems and septic fields within its jurisdiction. The sanitary sewer system is maintained and operated by the Prince William County Sanitary Sewer Service Authority (PWCSA) and Virginia American Water (formally Dale Services Corporation), both which operate under their own VPDES permit. Prince William County is not responsible for the inspection and maintenance of the sanitary sewer system; however, PWC works closely with the PWCSA to identify and correct deficiencies within the sanitary sewer network. A summary of inspection types and results can be found in Appendix M. Prince William County Service Authority has an ongoing program, the infiltration and inflow check program, for identifying and correcting defects in the County's sanitary sewer systems, such as:

- Performing detailed engineering studies to locate defects in the gravity sewer system and recommend corrective action.

- Preparing construction documents for repair of the identified defects.

- Constructing necessary improvements.

The identification and correction of deficiencies is aided by Prince William County through its Dry Weather Monitoring, Stormsewer Maintenance, General Stormwater Discharge, and Stream Restoration Programs. Cross connections, leaks, and other maintenance issues are discovered as non-stormwater discharges within the storm sewer network through the County's Dry Weather Monitoring and Stormsewer Maintenance Programs. Citizens can report leaks and cross connections discovered discharging through the storm sewer system through the County's General Discharge program. Sanitary sewer infrastructure exposed to potential damage as a result of degrading streams and waterways are protected through projects associated with the County's Stream Restoration Program. Prince William County continues to identify and report concerns to the PWCSA when sanitary sewer system maintenance and repairs are needed. The PWCSA oversees all new construction on sanitary sewer system components and is responsible for the proper installation and operation of the system.

Prince William County is actively working on establishing working relationships with Virginia American Water with regards to their Infiltration and Inflow Program as well as with all Phase II MS-4 systems within the County's Jurisdictional area.

The Prince William Health District is responsible for the oversight and regulation of certain sewage and water environmental health issues within Prince William County. The Health

Department oversees the permitting and inspection of septic systems. The Health District inspects and permits septic systems and requires onsite sewage disposal systems not requiring a Virginia Pollution Discharge Elimination System (VPDES) permit shall have pump-out accomplished at least once every five years. The Heath District also provides valuable public outreach to septic system owners, including information on septic system maintenance.

BMP 3 – Reduce the Discharge of Floatables

The Adopt-A-Spot program is a litter cleanup and recycling program sponsored by the Virginia Department of Waste Management. The Prince William County Soil & Water Conservation District (SWCD) undertakes stream cleanups under their Adopt-A-Stream program. Some stream clean-ups are done on an individual occasion basis rather than an on-going project, and these sites are often done for specific programs or purposes (Alice Ferguson Foundation, Earth Day, etc.). Adoptable areas under this program include parks, schools, vacant land and neglected public areas. Stream sites are located in the various sub-watersheds in Prince William County and some of cleaned up more than once per year.

The locations selected for the Adopt-A-Stream (AAS) clean-ups are selected from mainly public or park riparian properties, which have experienced historical problems with trash accumulation or have had specific problems in the past. Some private sites are also found in the areas. A list of potential sites is also maintained for future clean-up sites. This program not only identifies locations where floatables and trash are a concern in the County. It follows that assessment with a volunteer cleanup, which temporarily removes the trash and debris. The County's Litter Control and landfill personnel also provide assistance with picking and weighing of the trash after a cleanup to document the amount of trash removed from the site. If the cleanup is included in the AAS program, periodic clean-ups on a biannual or annual basis are conducted, thereby revisiting sites to see if the floatables condition has improved over time.
PWSWCD also administers the County's Floatables Monitoring Program. This program is designed to assess refuse loading to 5 selected stream sites throughout the County. More information on this program can be found in section II.3.

Prince William County, in coordination with the Keep Prince William Beautiful (KPWB) Organization, developed a program dedicated to the labeling of storm drains throughout the County. These labels identify a storm drain as discharging to the Chesapeake Bay, as well as remind citizens not to dump items, fluids, etc., down the storm drain. Included in this program will be public outreach initiatives focused on eliminating illicit discharge and litter. KPWB partners with local volunteers to complete program objectives, involving local citizens and providing educational services.

Prince William County Public Works play a leadership role in controlling litter, as well as promote and publicize opportunities for citizens to help with local cleanup efforts.
Public Works has established a Litter Control Crew to pick up highly traveled roadways of the county, handle cleanups of illegal dumpsites and haul material from community clean up events. In FY21, the Litter Control Crew picked up over 88.71 tons of trash and debris along 1477.8 miles of roadway. They also collected 2,663 roadside signs. Public Works also provides funding to

Prince William Soil and Water Conservation District and Keep Prince William Beautiful to lead volunteers in cleaning up litter at designated locations and along streams.

- Residents
  - Encourage residents to use litter bags and dispose of waste properly through messages on web site, local government channel and through partner agencies
  - Offer community "dumpster days" where residents can drop off unwanted items from their home
  - Recruit residents to adopt a stream through the Prince William Soil and Water Conservation District
  - Recruit residents to participate in floatables monitoring at five sites monitored quarterly conducted by the Prince William Soil and Water Conservation District
  - The Soil & Water Conservation District implemented two Virginia Conservation Assistance Program (VCAP) projects in 2021–rain gardens treating approximately 600 gallons of storm water per inch of rainfall. They plan additional projects in the future.
  - Recruit residents to adopt a spot or participate in an organized cleanup event sponsored by Keep Prince William Beautiful
  - Conduct litter survey four times a year
  - Enforce anti-littering laws
  - Ask community to report illegal dump sites so we can send Litter Control Crew out to clean them up
  - Pick up litter along highly traveled roadways on a regular annual schedule
  - Pick up trash and debris from community volunteer cleanups at a designated location after the event
  - Enforce property code requirements to eliminate dump heaps, overgrown grass and unkempt structures on residential properties

- Businesses and Industries
  - Encourage businesses and industries to provide volunteers to clean up community
  - Enforce property code requirements to eliminate dump heaps, overgrown grass and unkempt structures on commercial properties

BMP 4 – Proper Disposal of Wastes

Working with our partners, Prince William County Public Works will promote, publicize and facilitate the proper management and disposal of used oil and household hazardous waste.

Public Works has created and maintains a robust management program for the collection and disposal of household hazardous waste and collection and recycling of used oil

- Residents

- Offer twice a week collection of household hazardous waste and electronics year-round at the County Landfill and once a month at the Balls Ford Road Compost Facility (in FY20, citizens delivered 245.29 tons of household hazardous waste and electronics to our County Landfill and Balls Ford Road Compost Facility)
- Maintain a safe building for residents to drop off household hazardous waste and electronics with proper storage as needed
- Offer daily collection of used motor oil, antifreeze and car batteries
- Provide useful signs to direct residents on how to properly dispose of these materials when they arrive at the landfill and compost facility
- Provide clear and complete information about management, storage and delivery of household hazardous waste to the County landfill and compost facility through brochures and instruction sheets, web pages, public service announcements and newsletters

Future efforts: The online system created for residents will also be a useful reference for business and industry managers

- County Government
  - Provide extensive training on the proper handling and disposal of chemicals and potentially hazardous materials
  - Provide extensive training on how to respond and report a chemical spill
  - Established an effective program for handling motor oil, antifreeze and other vehicle fluids at the Fleet Maintenance Shop
  - Conducted an inventory of chemicals in use by County agencies and arranged a collection of no longer used products with a licensed handler
  - Piloted a program to collect chemicals from agencies and work with County contractor to accept them at designated intervals throughout the year

  Produced a preferred chemical list to reduce the use of potentially hazardous and harsh products

The following summarizes the County's solid waste, household hazardous waste, and recycling programs for FY21:

FY21	OTHER REFUSE					TOTAL REFUSE TO LANDFILL	TIRES		TOTAL MONTHLY REVENUE
	KEEP PW B'FUL TONS	"Overs" B.F. TONS	INCIN. ASH TONS	CONTAM. SOIL TONS	REFUSE FROM B.F. TONS	TONS	TONS	REVENUE	
Jul-20	8.63	123.32	134.91	-	532.47	33,091.68	158.03	$ 24,014.00	$ 183,168.58
Aug-20	4.65	84.50	218.42	-	518.02	32,024.95	166.90	$ 25,988.00	$ 170,553.98
Sep-20	12.94	-	-	-	465.95	31,094.38	105.88	$ 27,469.00	$ 181,450.78
Oct-20	20.08	1,128.90	85.59	-	444.85	32,776.55	145.51	$ 27,835.00	$ 175,387.40
Nov-20	15.06	1,585.33	286.25	-	418.70	33,146.81	172.41	$ 28,616.00	$ 151,994.03
Dec-20	1.09	105.11	353.96	-	433.99	31,275.15	241.35	$ 37,063.50	$ 167,310.45
Jan-21	4.31	56.24	189.22	-	373.18	28,194.75	190.72	$ 34,930.00	$ 157,022.73
Feb-21	-	124.55	33.99	-	311.37	23,556.35	116.70	$ 21,752.50	$ 121,875.70
Mar-21	-	34.22	102.78	-	505.11	31,913.44	163.51	$ 27,453.00	$ 151,747.33
Apr-21	11.35	203.63	156.19	-	542.49	33,325.89	193.76	$ 28,090.50	$ 164,688.68
May-21	21.73	489.62	210.18	-	534.50	32,933.16	176.71	$ 32,418.50	$ 170,024.45
Jun-21	41.70	485.02	363.12	-	556.53	33,558.57	234.90	$ 43,262.00	$ 180,343.57
TOTAL	141.54	4,420.44	2,134.61	-	5,637.16	376,891.68	2,066.38	$ 358,892.00	$ 1,975,567.68

Figure 1 – PWC Landfill Refuse Reduction Statistics for FY21

FY21	SCRAP METAL		ELECTRONICS		TEXTILES	DONATION PLACE	USED OIL			CAR BATTERIES			ANTIFREEZE	
	OUT		LANDFILL OUT	BALLS FORD OUT	OUT	OUT	L.F. OUT	B.F. OUT		L.F. OUT	B.F. OUT		L.F. OUT	B.F. OUT
MONTH	TONS	REVENUE	TONS	TONS	TONS		GALLONS	GALLONS	REVENUE	NO.	NO.	REVENUE	GALLONS	GALLONS
Jul-20	402.66	$ 50,937.02	52.67	-	0.00	0.00	3,771	1,335	$ (411.06)	315	40	$ 1,798.00	597	106
Aug-20	305.24	$ 42,008.18	64.09	-	0.00	0.00	2,009	995	$ -	324	49	$ 1,745.60	-	49
Sep-20	307.95	$ 46,573.90	47.59	-	0.00	0.00	4,181	986	$ -	301	47	$ 1,630.40	328	44
Oct-20	360.84	$ 55,526.89	39.74	-	0.00	0.00	5,630	1,001	$ -	306	40	$ 1,909.50	843	131
Nov-20	294.06	$ 42,412.66	39.79	-	0.00	0.00	1,859	601	$ -	210	39	$ 1,823.70	-	53
Dec-20	355.98	$ 64,507.77	44.74	-	0.00	0.00	1,548	984	$ 1,916.42	325	34	$ 1,478.20	-	127
Jan-21	115.42	$ 26,570.02	38.75	-	0.00	0.00	-	517	$ -	215	29	$ 1,745.60	-	39
Feb-21	300.25	$ 68,290.95	24.88	-	0.00	0.00	2,400	601	$ -	159	29	$ 1,122.40	498	52
Mar-21	380.70	$ 91,842.72	45.65	-	0.00	0.00	4,402	656	$ -	170	52	$ 890.60	325	62
Apr-21	369.89	$ 86,023.59	31.08	-	0.00	0.00	3,441	1,164	$ -	492	40	$ 1,399.60	371	77
May-21	338.89	$ 81,131.51	29.19	-	0.00	0.00	1,012	703	$ -	303	12	$ 2,540.70	306	76
Jun-21	321.20	$ 83,687.11	42.40	-	0.00	0.00	3,287	1,416	$ -	342	14	########	194	117
TOTAL	3,853.08	$ 739,512.32	500.57	-	0.00	0.00	33,540	10,959	$ 1,505.36	####	425	$ 16,595.50	3,462	933

Figure 2 – PWC Landfill Recycling Statistics for FY21

FY21	MONTHLY REVENUES		NEWS-PAPER	CARD-BOARD	MIXED PAPER	CO-MINGLED	GLASS	TOTAL
	COMPOST FACILITY	RECYCLABLE PROCESSING	TO Republic & American	TO Republic & American	TO Republic & American	TO Republic & American	Outbound	
MONTH	REVENUE	REVENUE	TONS	TONS	TONS	TONS	TONS	TONS
Jul-20	$ 26,783.31	$ 52,323.96	-	69.44	-	76.19	87.91	233.54
Aug-20	$ 63,062.13	$ 43,753.78	-	80.47	-	70.52	24.51	175.50
Sep-20	$ 72,085.54	$ 48,204.30	-	67.63	-	64.66	50.90	183.19
Oct-20	$ 77,145.06	$ 57,436.39	-	60.50	-	66.22	48.15	174.87
Nov-20	$ 107,556.86	$ 44,236.36	-	68.63	-	63.65	41.21	173.49
Dec-20	$ 163,023.37	$ 67,902.39	-	80.56	-	80.01	40.55	201.12
Jan-21	$ 55,077.43	$ 28,315.62	-	59.91	-	80.96	65.52	206.39
Feb-21	$ 13,066.69	$ 69,413.35	-	54.06	-	65.02	23.51	142.59
Mar-21	$ 56,644.90	$ 92,733.32	-	70.66	-	71.76	69.95	212.37
Apr-21	$ 99,303.60	$ 87,423.19	-	64.27	-	79.00	46.14	189.41
May-21	$ 109,958.79	$ 83,672.21	-	64.49	-	61.98	45.55	172.02
Jun-21	$ 108,689.39	$ 82,198.31	-	71.79	-	78.38	44.97	195.14
TOTAL	$ 952,397.07	$ 757,613.18	-	812.41	-	858.35	588.87	2,259.63

Figure 3 – PWC Recycling Statistics for FY20 (cont.)

BMP 5 - Discharge Elimination Programs

Prince William County hosts several programs under its Illicit Discharge Detection and Elimination (IDDE) program dedicated to the detection, identification, and elimination of unauthorized discharges to its MS-4 system. These programs include the Dry Weather Monitoring, General Discharge, Wet Weather Monitoring, Service Authority's Inflow and Infiltration program, and Industrial and High Risk Monitoring Programs. For more information on these programs, including program background and reporting, see section II.3.l water quality screening programs.

f. Spill Prevention and Response

BMP 1 – Coordination with FMO

The County's Fire and Rescue System is the lead County agency responsible for all aspects of spill response. Accordingly, the County has designated a full-time Hazardous Materials Officer. Prince William County participates in the Commonwealth Department of Emergency Management Services' regional Hazardous Materials response programs and maintains a National Incident Management System Type 1 HAZMAT Team for emergency response.

The County's Fire and Rescue System responds to all complaints of hazardous spills and hazardous illicit discharge. If the complaints relate to sewage, the appropriate agency, such as, Prince William County Service Authority or the Virginia American Water will be contacted. The complaints on the malfunctioning septic systems and drain fields are referred to the County's Health Department. The County staff makes every effort to direct complaints to the appropriate agency as expeditiously as possible.

For this reporting period there were 90 hazardous materials program responses with many of these instances reporting discharges that were responded to by Prince William County's Fire and Rescue System. The Fire and Rescue System team responded to these instances and provided mitigation and response services at each. Discharge Reports for these incidents are included in Appendix F.

g. Industrial and High Risk Runoff

BMP 1 – Identify all Industrial and High-Risk Dischargers

The monitoring of VPDES permitted areas of Prince William County is accomplished as part of the County's IDDE program. On a semi-annual basis, PWC examines lists provided by DEQ to assess new permitted facilities discharging to the County's stormsewer system along with their permit, and registration form. These facilities are then added to a GIS layer, and their outfalls identified for use in monitoring efforts. Outfalls are identified using a combination of facility registration statements, DMR reports, and GIS desktop analysis. Having identified its MS-4 service area, a GIS desktop analysis was completed and Permittees that discharge into the County's MS-4 service area were identified. Maps of these facilities can be seen in Appendix G.

High Risk and Industrial VPDES permitted facilities are found to be contributing significant pollutants to the stormsewer system will be referred to DEQ for compliance review. Table 8 below shows the VPDES facilities discharging into the County's MS-4 area.

In FY16, the County performed used GIS to analyze and generate a list of potential High Risk outfalls according to a probability of pollutant discharge. This probability takes in account an assumed potential for a discharge to occur, possible pollutant discharge effect according to the type of facility and its operations, and the potential for environmental damage according to the facilities proximity to environmentally sensitive areas. From this analysis, 518 outfalls were deemed as potentially High Risk. In addition, any outfalls found to be contributing a significant source of pollutants during routine Dry Weather Monitoring inspections will be added to this list and updated yearly.

Table 8 – VPDES Permitted Facilities that Discharge into the County's MS-4

	Permit No	Facility	Location Address 1	Type	Location City	Location Zip5
1	VAR052243	234 Auto and Truck Salvage Limited Liability Co.	14843 Dumfries Rd	SWGP	Manassas	20112
2	VAR051949	Chemung Contracting Corporation - Gainesville	7201 Rail Line Ct	SWGP	Gainesville	22013
3	VAR052372	Swift Auto Recycling and Salvage, Inc	14832 Dumfries Rd	SWGP	Manassas	20112
4	VAR051477	First Transit Incorporated	14700 Potomac Mills Rd	SWGP	Woodbridge	22192
5	VAR052115	Penny's Used Auto Parts	13059 Minnieville Rd	SWGP	Woodbridge	22192
6	VAR051639	Potomac Disposal Services of Virginia, LLC	9650 Hawkins Dr	SWGP	Manassas	20109
7	VAG110100	Virginia Concrete Company Inc - Gainesville	7300 Rail Line Ct	Concrete	Gainesville	20156
8	VAG110368	Superior Properties Inc.	5547 Wellington Rd	Concrete	Gainesville	20155
9	VAR052463	Landfill – PWCBCS	14811 Dumfries Rd	SWGP	Woodbridge	20112

BMP 2 – Develop Prioritized Schedule for Monitoring VPDES and High Risk Outfalls

Outfalls identified as VPDES and High Risk non-VPDES as described above are inspected according to specific protocols outlined in the Prince William County's IDDE Program. Outfall prioritization follows an iterative process that incorporates in-field observations. As outfalls are monitored under the County's Dry Weather Monitoring Program, those which are determined to have a high potential for pollutant discharge are identified as High Risk and added to the prioritized schedule the next time it is updated.

BMP 3 – Develop Program to Monitor VPDES and High Risk Outfalls

VPDES and High Risk outfalls are scheduled for inspection according to the methods described in BMP 2. Outfalls are monitored in accordance with the County's Dry Weather Monitoring Protocols. Facilities whose outfalls are found to discharge significant pollutant flows within 3 consecutive inspections (follow-up inspections are scheduled according to IDDE protocols) are referred to DEQ for compliance review (see BMP 6). Outfalls of VPDES permitted facilities are inspected once a year, while High Risk outfalls are inspected once a permit cycle (due to high volume).

Table 9 – VPDES Outfalls

Number	Outfall ID	Facility
1	49124	Chemung Contracting Corporation
2	49117	Chemung Contracting Corporation
3	49119	Chemung Contracting Corporation
4	49121	Chemung Contracting Corporation
5	53541	Chemung Contracting Corporation
6	47233	First Transit Inc
7	47271	First Transit Inc
8	35905	Potomac Disposal Services
9	35901	Potomac Disposal Services
10	35896	Potomac Disposal Services

BMP 4 – Obtain DMR Reports from VPDES Permitted Facilities

PWC receives Discharge Monitoring Reports (DMRs) from applicable (non-exempt) VPDES permitted facilities that discharge into the County's MS-4.

BMP 5 – Identify High Risk Dischargers Not Covered Under VPDES Program

As outfalls for facilities determined to have a high risk for pollutant discharge are inspected, those which do not fall under VPDES permitting requirements or Virginia State Water Control Law are identified. These facilities are included under the County's non-VPDES High Risk Designation.

Potential Non-VPDES High Risk facilities are identified, along with associated outfalls, through GIS desktop analysis. Using County land-use information land-uses that are identified to have a high potential for the discharge of pollutants are isolated. As with VPDES permitted facilities, a buffer is placed around a high risk parcel and the containing outfalls are identified. These outfalls are considered to be potentially High Risk outfalls. During Dry Weather Monitoring activities, outfalls determined to potentially contribute a significant source of pollutants to the stormsewer system are identified and added to the list of high risk discharges. These outfalls are then added to the High Risk outfall prioritization (BMP 2) list the next time it is updated. As with VPDES permitted facilities, as the County's GIS based stormsewer layer is updated, the analysis of outfalls associated with High Risk facilities will be updated. The list of high risk facilities can be found in Appendix G.

Outfalls from these facilities are included in the prioritized outfall inspection schedule described in BMP 2. Any facility found to be discharging significant pollutants to the stormsewer system will be required to adopt control measures to prevent these discharges from entering the County's MS-4 under appropriate regulatory ordinance, since they cannot be referred to DEQ for VPDES compliance review. If access to facilities that fall under these conditions cannot be obtained by watershed staff, assistance from the PWC Fire Marshal's office will be requested.

BMP 6 – Refer Facilities in Noncompliance to DEQ for Review

PWC is required to refer the following facilities to the Department of Environmental Quality, Northern Regional Office, for DEQ compliance review under the Virginia State Water Control Law:

- Facilities and operations having non-stormwater discharges that do not have coverage under an existing VPDES permit;
- Facilities and operations identified pursuant to 40 CFR Part 122.26(b)(14) with manufacturing, processing, or raw materials storage outside that do not have coverage under an existing VPDES industrial stormwater permit.
- Any VPDES industrial stormwater permit facility where there is evidence of significant pollutant loadings to the MS4.
- Facilities that do not submit signed copies of DMRs to the permittee as required under a VPDES industrial stormwater permit.

During the reporting period no facilities were deemed necessary to report to DEQ for compliance review.

h. Storm Sewer Infrastructure Management

BMP 1 – Identify MS-4 Service Area and Regulated Outfalls

An integral part of developing the County's Chesapeake Bay TMDL action plan is determining the MS-4 regulated area. Prince William County maintains a comprehensive GIS database of SWM facilities and its stormsewer system. Included in this system are approximately 648 miles of storm drainage easements, approximately 9,568 stormwater outfalls, and 2,176 private and

publicly maintained SWM facilities; however, not all these facilities are served by MS-4 regulated areas. The total number of miles of storm drainage easements that were inspected for FY21 is 358.

In May of 2019 the County updated its MS4 service area. This included the Regulated Outfalls and their associated drainage area. Information for each outfall included the individual ID number, local watershed, HUC and receiving water, and latitude/longitude for each MS-4 structure. The number of pervious and impervious acres served by the MS-4 and treated by MS-4 controls were also updated. Prince William County has a total MS-4 service area of 23,933.35 acres, with 7,127.10 acres of impervious and 16,806.24 acres of pervious area.

BMP 2 – Continue Inspection of Publicly Maintained SWM Facilities

Prince William County continues a program for the inspection and maintenance of SWM facilities maintained by the County. Publicly maintained facilities include those owned by HOA's and residential communities or by the County Board of Supervisors, and where basic maintenance responsibilities are performed by County staff. As of June 30, 2021 the County is responsible for the maintenance of approximately 1,026 facilities, most of which are dry ponds, wet ponds, infiltration trenches, or sand filter facilities. The County maintains a number of Bioretention and proprietary BMP facilities.

County Maintained SWM/BMP facilities are typically inspected under two scenarios; under the general inspection program which occurs once a year, or, as requested by an impacted property owner. Maintenance is prioritized by the severity of maintenance needs for the facility. Maintenance on publicly maintained SWM facilities is performed by Prince William County Construction Services as necessary. All applicable permitting requirements will be met during maintenance activities.

During the reporting period, the County staff conducted 997 routine inspections and 157 re-inspections of publicly maintained facilities. A list of these facilities and their inspection date are included in Appendix H.

BMP 3 – Continue Inspection of Privately Maintained SWM Facilities

The County has a program in place to inspect more than 20 percent of the privately maintained facilities annually and to pursue enforcement actions in instances where maintenance is needed. All privately maintained facilities will be inspected within the five year permit cycle. As of June 30, 2021 Prince William County encompasses approximately 1,150 privately maintained facilities. These facilities are comprised of dry ponds, wet ponds, constructed wetlands, bioretention facilities, proprietary stormwater inlet BMP facilities, underground storage facilities, infiltration trenches, and many more.

Facilities in compliance with maintenance requirements are scheduled for re-inspection during the following permit cycle. For facilities with deficiencies, the owner is provided with a detailed report outlining those deficiencies. If the deficiencies are not corrected within the time period allotted a second notice is given, and additional time is provided for repairs. If the facility is still not repaired, Prince William County Construction Services conducts maintenance on the facility and the facility

owner is required to reimburse the County for expenses. Follow up inspections are performed to ensure maintenance requirements are followed. Facility owners are urged to self-report maintenance activities to the County in the form of a detailed engineering report.

Before a privately maintained facility can be removed from bond, maintenance agreement must be recorded to ensure the proper upkeep of the facility. A majority of the privately-maintained SWM facilities have duly-recorded Maintenance Agreements that requires the owner to perform the inspection and maintenance at a frequency identified in the Agreement. For those facilities that do not have Maintenance Agreements, our County Attorney has determined that the maintenance note on the plan is still enforceable.

During the reporting period a total of 254 inspections (including re-inspections) were conducted. Facilities are expected to be brought into compliance. A table describing inspection, maintenance, and enforcement of privately maintained facilities for the reporting period can be found in Appendix H.

BMP 4 – Continue Inspection of MS-4 Stormsewer System

Prince William County conducts routine inspection of its storm drainage system, inspecting 20% of the MS-4 annually. Stormsewer is inspected using visual inspection techniques, as well as using CCTV. The County continues to implement a program to inspect all new drainage systems (eligible for County maintenance) using video cameras, prior to accepting the systems into the County's maintenance program. During FY21 the County inspected approximately 1,890,000 linear feet of it's storm sewer system.

BMP 5 – BMP/SWM Inventory

Prince William County maintains an inventory of all SWM/BMP facilities installed in the County. This list is updated as new facilities come online, and old facilities are removed or retrofitted. This list includes the facility number, type, total acres treated, impervious acres treated, HUC code, State FIPS, and latitude/longitude and is included in an electronic form submitted with this document.

In addition, 72 facilities were added to the County's inventory during the reporting period. These facilities are listed below.

Table 10 – BMPs added to County Inventory in FY21

FAC ID	FAC TYPE	FAC DESC	DATE INVEN	MAINT	COMMENTS	SWM AGREE	VAHUC6	VAHUC12 NAME
1007	SWMP/BMP	D	7/9/2020	P	2" BMP ORIFICE AT WEIR WALL	N	PL33	Kettle Run
1008	BMP	B	7/9/2020	P	BIORETENTION AREA	N	PL33	Kettle Run
1009	SWMP/BMP	W	8/21/2020	P	PWSE=263.56', 8" DRAWDOWN PIPE	N	PL34	Broad Run-Rocky Branch
1010	SWMP/BMP	D	9/18/2020	P	2.5" BMP ORIFICE AT RISER	N	PL42	Upper Bull Run

1011	SWMP/BMP	D	9/18/2020	P	2.5" BMP ORIFICE AT RISER	N	PL42	Upper Bull Run
1012	SWMP/BMP	D	9/24/2020	P	2.25" BMP ORIFICE AT EW	N	PL51	Powells Creek
1013	SWMP/BMP	D	12/2/2020	P	4" BMP ORIFICE AT RISER	N	PL34	Broad Run-Rocky Branch
1014	SWMP/BMP	W	12/11/2020	P	PWSE=240.17', WEIR SERVES AS CONTROL STRUC	N	PL34	Broad Run-Rocky Branch
1015	SWMP/BMP	D	1/22/2021	P	4.5'x11' RISER, 2.6" BMP ORIFICE AT EW	N	PL43	Little Bull Run
1016	SWMP/BMP	D	1/22/2021	P	4.5"x17' RISER, 3" BMP ORIFICE AT RISER	N	PL43	Little Bull Run
1017	SWMP/BMP	D	2/4/2021	P	3'x3' RISER, 3" BMP ORIFICE AT RISER	N	PL51	Powells Creek
1018	SWMP/BMP	W	2/4/2021	P	PWSE=315.07', 6'x8' RISER	N	PL51	Powells Creek
1019	SWMP/BMP	D	2/12/2021	P	4'x4' RISER; 3" BMP ORIFICE AT RISER	N	PL50	Potomac River-Occoquan Bay
1020	SWMP/BMP	W	2/17/2021	P	PWSE=175.15', 4'x4' RISER	N	PL49	Neabsco Creek
1021	BMP	B	2/25/2021	P	BIORETENTION FACILITY	N	PL49	Neabsco Creek
1022	BMP	B	2/25/2021	P	BIORETENTION FACILITY	N	PL49	Neabsco Creek
1023	BMP	B	2/25/2021	P	BIORETENTION FACILITY	N	PL49	Neabsco Creek
1024	BMP	B	2/25/2021	P	BIORETENTION FACILITY	N	PL49	Neabsco Creek
1025	BMP	B	2/25/2021	P	BIORETENTION FACILITY	N	PL49	Neabsco Creek
1026	SWMP/BMP	W	3/24/2021	P	PWSE=367.35', 4'x6' RISER	N	PL43	Little Bull Run
1029	SWMP/BMP	D	4/22/2021	P	1.33" BMP ORIFICE AT RISER	N	PL41	Occoquan River-Lake Jackson
1030	SWMP/BMP	D	4/22/2021	P	0.95" BMP ORIFICE AT RISER	N	PL49	Neabsco Creek
1031	BMP	B	4/22/2021	P	BIORETENTION FACILITY	N	PL49	Neabsco Creek
1032	BMP	B	4/22/2021	P	BIORETENTION FACILITY	N	PL49	Neabsco Creek
1033	BMP	B	4/22/2021	P	BIORETENTION FACILITY	N	PL49	Neabsco Creek
1034	BMP	B	4/22/2021	P	BIORETENTION FACILITY	N	PL49	Neabsco Creek
1035	SWMP/BMP	D	5/6/2021	P	2.36" BMP ORIFICE AT RISER	N	PL40	Cedar Run-Slate Run
1036	SWMP/BMP	D	5/7/2021	P	4'x6.5' RISER; 3" BMP PIPE & ORIFICE	N	PL46	Lower Bull Run
1037	SWMP/BMP	D	5/27/2021	P	TWO 1.625" BMP ORIFICES AT EW	N	PL51	Powells Creek
5333	CSWMP/BMP	W	8/5/2020	C	PWSE=346.96', 6'x4' RISER	Y	PL34	Broad Run-Rocky Branch
6152	CSWMP/BMP	U	7/15/2020	C	STORMTECH MC-3500 W/ 2 ISOLATOR CHAMBERS	Y	PL50	Potomac River-Occoquan Bay
6153	CSWMP/BMP	U	7/15/2020	C	STORMTECH MC-3500 W/ ISOLATOR CHAMBER	Y	PL50	Potomac River-Occoquan Bay

6154	CSWMP	U	7/23/2020	C	STORMCAPTURE SC1 MODULAR DETENTION SYSTEM	Y	PL46	Lower Bull Run
6155	CSWMP	U	7/23/2020	C	STORMCAPTURE SC1 MODULAR DETENTION SYSTEM	Y	PL46	Lower Bull Run
6156	CBMP	U	8/11/2020	C	CONTECH CDS2015-4-C	Y	PL43	Little Bull Run
6157	CSWMP/BMP	U	8/28/2020	C	STORMTECH DC-780 W/ ISOLATOR CHAMBER	Y	PL50	Potomac River-Occoquan Bay
6158	CSWMP/BMP	U	11/4/2020	C	STORMTECH MC-4500 W/ 2 ISOLATOR CHAMBERS	Y	PL32	Broad Run-Catletts Branch
6159	CBMP	T	11/16/2020	C	INFILTRATION TRENCH, 48" CMP	Y	PL49	Neabsco Creek
6160	CSWMP/BMP	U	11/23/2020	C	STORMTECH SC-740 W/ ISOLATOR CHAMBER	Y	PL34	Broad Run-Rocky Branch
6161	CBMP	B	11/30/2020	C	BIORETENTION FACILITY	Y	PL44	Middle Bull Run
6162	CBMP	B	11/30/2020	C	BIORETENTION FACILITY	Y	PL44	Middle Bull Run
6163	CSWMP/BMP	W	11/30/2020	C	PWSE=275.68', SEDIMENT FOREBAY	Y	PL44	Middle Bull Run
6164	CBMP	O	2/11/2021	C	MARINA HEAD/HARBOR HEAD BMP FILTRATION DEVICE	Y	PL48	Occoquan River-Belmont Bay
6165	CSWMP/BMP	U	2/23/2021	C	STORMTECH SC-740 W/ ISOLATOR CHAMBER	Y	PL44	Middle Bull Run
6166	CSWMP/BMP	D	3/10/2021	C	4'x4' RISER, 3" BMP ORIFICE AT RISER	Y	PL33	Kettle Run
6167	CBMP	U	3/19/2021	C	CONTECH JELLYFISH FILTER	Y	PL47	Occoquan River-Occoquan Reservoir
6168	CSWMP/BMP	U	3/19/2021	C	SAND FILTER	Y	PL47	Occoquan River-Occoquan Reservoir
6169	CBMP	U	4/2/2021	C	CONTECH CDS2015-4-C	Y	PL49	Neabsco Creek
6170	CSWMP	U	4/2/2021	C	3 CORRUGATED ALUMINUM PIPE ARCHES	Y	PL49	Neabsco Creek
6171	CBMP	U	4/8/2021	C	STORMCEPTOR (STC 450i), NO ESMT	Y	PL34	Broad Run-Rocky Branch
6172	CSWMP/BMP	U	4/29/2021	C	STORMTECH MC-4500 W/ 3 ISOLATOR CHAMBERS	Y	PL34	Broad Run-Rocky Branch
6173	CBMP	U	4/29/2021	C	BAYFILTER VAULT	Y	PL34	Broad Run-Rocky Branch
6174	CBMP	U	5/13/2021	C	STORMCEPTOR (STC 450i)	N	PL34	Broad Run-Rocky Branch

6175	CBMP	U	6/8/2021	C	10'x37' STORMFILTER W/ HIGH FLOW BYPASS	Y	PL34	Broad Run-Rocky Branch
6176	CSWMP	U	6/8/2021	C	BOX CULVERT CHAMBER W/ WEIR WALL	Y	PL34	Broad Run-Rocky Branch
6177	CBMP	U	6/8/2021	C	9'x15' STORMFILTER W/ HIGH FLOW BYPASS	Y	PL34	Broad Run-Rocky Branch
6178	CSWMP	U	6/8/2021	C	BOX CULVERT CHAMBER W/ WEIR WALL	Y	PL34	Broad Run-Rocky Branch
6179	CSWMP	U	6/8/2021	C	BOX CULVERT CHAMBER W/ WEIR WALL	Y	PL34	Broad Run-Rocky Branch
6180	CSWMP	U	6/8/2021	C	BOX CULVERT CHAMBER W/ WEIR WALL	Y	PL34	Broad Run-Rocky Branch
6181	CBMP	U	6/8/2021	C	CONTECH CDS3030-6-C	Y	PL34	Broad Run-Rocky Branch
6182	CBMP	U	6/24/2021	C	STORMCEPTOR (STC 450i)	Y	PL44	Middle Bull Run
9052	CBMP	B	12/11/2020	C	VEGETATED FILTER STRIP, NO ESMT	N	PL34	Broad Run-Rocky Branch
9053	CBMP	U	12/17/2020	C	STORMCEPTOR (STC 900)	N	PL34	Broad Run-Rocky Branch
9054	CSWMP/BMP	U	12/17/2020	C	STORMTECH SC-740 W/ 5 ISOLATOR CHAMBERS	N	PL34	Broad Run-Rocky Branch
9055	CBMP	U	12/17/2020	C	BAYFILTER VAULT (522 BAYFILTER)	N	PL34	Broad Run-Rocky Branch
9056	CBMP	U	12/17/2020	C	STORMCEPTOR (STC 450i), NO ESMT	N	PL34	Broad Run-Rocky Branch
9057	CSWMP/BMP	U	12/17/2020	C	STORMTECH SC-740 W/ 6 ISOLATOR CHAMBERS	N	PL34	Broad Run-Rocky Branch
9058	CBMP	U	12/17/2020	C	BAYFILTER VAULT (522 BAYFILTER)	N	PL34	Broad Run-Rocky Branch
9059	CSWMP/BMP	U	2/19/2021	C	54" CMP CHAMBER W/ WEIR WALL	N	PL52	Quantico Creek
9060	CBMP	B	3/18/2021	C	BIORETENTION FACILITY	N	PL49	Neabsco Creek
9061	CBMP	B	3/18/2021	C	BIORETENTION FACILITY	N	PL49	Neabsco Creek
9062	CSWMP/BMP	D	3/30/2021	C	4'x4' RISER, 1" BMP ORIFICE AT RISER	N	PL43	Little Bull Run

i. County Facilities

BMP 1 – Promote Good Housekeeping Practices for Municipal Facility Operations

Prince William County promotes good housekeeping practices throughout all its municipal facilities through its Environmental Management System (EMS) program and other methods. PWC Watershed Management in partnership with PWC Risk Management enforces good housekeeping at County municipal facilities. The EMS program promotes consistency and accountability in the method for addressing environmental concerns through the allocation of

resources, assignment of responsibility and ongoing evaluation of practices, procedures, and processes. This program emphasizes objectives such as the identification and prevention of spills, hazardous material storage and removal, storage tank inspection and maintenance, waste disposal and recycling, proper equipment and material storage, and many other environmental good housekeeping practices.

As the Department of Public Works split into two departments, Fleet and Buildings & Grounds were removed from the Public Works EMS E3 certification and will be applying for their own E3 certification this fall under the Fleet & Facilities Department. The Department of Parks, Recreation and Tourism received their E3 certification in FY21, moving up from E2 by expanding their program to multiple agencies including aquatics, recreation, building & maintenance and grounds.

The following list shows some of the public buildings or facilities that have the Extraordinary Environmental Enterprise (E-2/E-3/E-4) certification:

E4 – PWC Solid Waste Sanitary Landfill and PWC Balls Ford Road Recycling & Composting Facility
E3 – PWC Environmental Services Construction Services
E3 – Mosquito & Forest Pest Management
E3 – PWC Fire & Rescue
E3 – PWC Parks & Recreation
E2 – PWC Police
E2 – PWC Libraries

In addition to the EMS program, Prince William County promotes good housekeeping activities for parks and rec facilities. These facilities are inspected biennially, to ensure good housekeeping practices are being followed. This includes properly managing yard waste and grass clippings. Police and fire vehicles are required to be washed in an environmentally safe manner, allowing no wash water to enter storm drain systems. Most vehicles are washed in commercial car washing facilities. PWC Fleet Management has worked closely with Risk Management and Watershed Management to set up a system to prevent the leaking or spilling of vehicles on site waiting for maintenance.

Prince William County's storm drain labeling program targets high priority municipal facilities to maintain markings on storm drain inlets. This program not only labels inlets at high priority municipal facilities, but in multiple areas of the county including high-risk shopping centers and residential neighborhoods.

BMP 2 – Identify High Priority Municipal Facilities

The County operates many municipal facilities. Some, like the PWC landfill facility, are covered under their own VPDES permit for stormwater discharges. During FY17, the County assessed all municipal facilities within it's MS4 service area, and evaluated their need for a SWPPP. High risk facilities included composting facilities, equipment storage and maintenance facilities, materials storage yards, pesticide storage facilities, public works yards, recycling facilities, salt storage facilities, solid waste handling and transfer facilities, and vehicle storage and maintenance yards.

The following four facilities have been identified as being high risk, and are currently maintaining a SWPPP:

Table 11 – High Priority Municipal Facilities

Facility Name	SWPPP Needed	SWPPP Developed
Fleet Administration	Yes	Developed
Ben Lomond Maintenance Building	Yes	Developed
Hellwig Maintenance Building	Yes	Developed
PWC Stadium Maintenance Building	Yes	Developed

BMP 3 – Develop SWPPPs for Selected High Priority Municipal Facilities

SWPPPs will include a site description that includes site map showing all outfalls, direction of flows, existing source controls, and receiving water bodies; a checklist of potential pollutants and pollutant sources; all potential non-stormwater discharges; a maintenance schedule for all source controls; policies and procedures implemented at the facility for source reduction; an inspection schedule to ensure source reduction controls are implemented and maintained properly; training schedules for facility employees; procedures for annual evaluations of the facility; dry weather monitoring procedures; and all modifications made as a result of a spill or release of pollutant. The status of SWPPP development at High Priority Municipal Facilities is presented in Table 11 located in the above section.

j. Public Education and Participation

Prince William County strives to share relevant and useful information with our community to help protect our local waterways and natural environment. We undertake a number of projects and special events to provide citizens with the opportunity to help in these goals. Public Works also partners with residents, businesses, other government agencies and organizations to advance our goals to protect and preserve natural resources.

The public education and outreach program is reviewed on an annual basis to determine the effectiveness of the program and to identify future efforts to improve the program. Due to the nature of some of the education and outreach elements, a determination of effectiveness is more qualitative in nature and based on the number of individuals reached through the activities, as well as feedback from the staff involved with those activities. Each activity is reviewed and discussed, and recommendations for future improvements are identified in the annual report. For other program elements, included in the annual report, effectiveness is based on the results of the activity such as pounds of trash removed or percent of participants adopting recommended practices for example.

In FY20, Prince William County began posting monthly social media messages to encourage citizens to maintain a variety of good housekeeping practices. These messages are tailored to match common pollution sources by time of year. These messages can be found in Appendix J. The County also created flyers for both residents and landscapers encouraging them to exercise

proper disposal of yard waste. These flyers were distributed at the landfill, and mailed out to registered landscapers throughout the County. Additionally, flyers were made to raise awareness of how to handle used cooking oil as well as dumpsters/compactors. These flyers are handed out routinely as inspections reveal potential illicit discharges.

Table 12 – Public Outreach Events in FY21

Event	Number of participants
Number of Environmental Education Activities	64
Number of SWM Education Site Visits	29
Environmental Ed participants	3555
Number of attendees that completed seminar surveys	914
Number of individuals that reported on surveys that they intend to adopt recommended environmentally sound practices	822
Number of urban nutrient management plans written (BEST Lawns)	179
Number of surveys received concerning the adoption of recommended water quality practices from environmental education attendees	185
Number of environmental education participants adopting recommended water quality practices	140
Cleanup events by KPWB	1435
Outreach and education by KPWB	384
Biological Water Quality Monitoring Events	1536
Chemical Monitoring	77
Floatables Monitoring	88
Adopt-A-Stream	1200
Bull Run Lake Drive Reforestation	25

Garner Drive & Holly Forest Drive Reforestation	30
Total	**10,663**

BMP 1 – Promote Public Reporting and Recognition of Illicit Discharges

Prince William County Public Works offers information to define an illicit discharge, possible sources of pollutants that can enter our stormwater systems, how to prevent runoff and how to report incidents of improper dumping.

- Residents
  - Maintain several references on our website with pages focused on the MS-4 permit, TMDLs, illicit discharge, illegal dumping, storm water runoff and erosion
  - Placed articles in newsletter to HOAs and neighborhood leaders about cleaning up after pets, native plants, and proper disposal of wastes
  - Established a hotline and email address to report illegal dumping into storm drains (Staff received, inspected and took action on 49 complaints through the hotline and email in FY21)
  - Placed 1000 informational markers at selected stormwater drains throughout the community and hand out information door hangers explaining the concerns with placing materials in the storm drain

  Future efforts: Create outreach materials and distribute to businesses with high potential to discharge pollutants.

- Businesses and Industries
  - Provide online guidance for developers to protect water quality
  - Share informational materials when visiting sites in the field
  - Send educational materials with warning and violation letters

  Future efforts: Create a special sign for industries that practice best management practices for them to display, working on a program to recognize businesses with Green Business Award and seek opportunities to present information at industry meetings and educational events

- County Government
  - Created online training about illicit discharge and pollution prevention for employees (required for some and encouraged for others)
  - Established a SWPPP at four facilities identified as high-risk including park sites and Fleet
  - Established protocol for outdoor storage of equipment, materials and chemical

- Expanded program for proper collection and disposal of batteries, universal waste, printer cartridges, electronic accessories, chemicals and hazardous waste generated by County employees
- Worked with an independent vendor to inspect and make repairs to all above-ground fuel storage tanks located at PWC facilities

BMP 2 - Continue to Promote Involvement in Local Water Quality Improvement Projects

Prince William County Public Works will continue to promote individual and group involvement in local water quality improvement initiatives including the promotion of local restoration and clean-up projects, programs groups, meetings and other opportunities for public involvement.

Public Works takes the lead on water quality improvement initiatives by facilitating projects and educational events, as well as providing funds to partner agencies in the community to support public involvement and awareness.

- Residents
  - ~~Sponsor an annual Youth Conference on the Environment and Parent Symposium on a variety of Environmental Topics (we have hosted the event for 18 years and average 100 participants and 30 high school student leaders each year).~~ This event was cancelled this year due to COVID.
  - ~~Sponsor Six Weeks to Make a Difference Conservation Projects for Families to participate in a weekly project from April through mid-May including projects to pick up litter, reforest areas and help along streams (we have undertaken projects for the past 11 years with an average of 20 volunteers at each of the six events)~~ This event was cancelled this year due to COVID.
  - Create and maintain educational web pages on sound practices around the home to prevent pollution and runoff, protecting streams, rivers and wetlands, planting native species, safeguarding trees, and managing waterfront property
  - Create and maintain informational web pages on opportunities to help families volunteer, take steps to go green and reduce their impact on the environment, get outdoors and learn about conservation agencies in the community
  - Provide residents with the opportunity to drop off household hazardous waste and electronics twice a week year-round at no charge to reduce inclination to pour liquids down the storm drain, illegally dump items or throw them away in regular trash collection
  - Provide residents with the opportunity to drop off motor oil, anti-freeze and car batteries at no charge every day to reduce inclination to pour down the storm drain (33,540 gallons of motor oil, 3,462 gallons of anti-freeze and 3,462 car batteries collected in 2021)

- Provide funding to the Prince William Soil and Water Conservation District to run an Adopt-a-Stream program.
- Provide funding to the Prince William Soil and Water Conservation District to monitor floatables in the community (volunteers monitored five sites each quarter)
- Provide funding to the Prince William Soil and Water Conservation District to monitor water quality at 15 active sites and four sites to monitor E.coli, as well as offer monitoring events and outreach events for residents)
- Provided funding to Keep Prince William Beautiful to work with volunteers to apply 1,000 adhesive markers to storm drains that remind residents that the drain leads to local waters and eventually the Chesapeake Bay
- Provide funding to Keep Prince William Beautiful to organize litter clean-ups throughout the community
- Provide funding to the Virginia Tech Cooperative Extension Office to provide training for residents on a variety of environmental topics including horticulture, best lawn practices, natural resources and other lawn care recommendations
- Provide funding to the Virginia Tech Cooperative Extension office to help homeowners, businesses and houses of faith to adopt an urban nutrient management plan (There is a total of 633 active plans covering 165.25 acres under nutrient management)

Future efforts: Provide tips for inclusion in newsletters distributed by the Board of County Supervisors, and attend local festivals and farmer markets to distribute materials about illicit discharge and protecting water quality

- Businesses and Industry
  - Work with local businesses to properly maintain their stormwater management ponds
  - Work with local businesses to recruit volunteers to help with cleanup projects, particularly near their business or when companies have a corporate philosophy to volunteer in the community
  - Recognize volunteers, individuals and groups, with an annual Green Community Award
  - Provide funding to Keep Prince William Beautiful to conduct quarterly litter surveys in the community to identify problem areas with reports sent to nearby businesses asking for their assistance in cleanups and management of potential sources of litter or runoff
  - Provide funding to Keep Prince William Beautiful to conduct shopping center surveys and provide feedback to property manager to help them better maintain their center (103 shopping centers currently participate)

Future efforts: Provide sign for businesses to post that indicate they help protect local water quality and investigate creating a Green Business Award program

- County Government
  - Created online training for compliance with Resource Conservation and Recovery Act, Spill Prevention, Control and Countermeasure plans and Illicit Discharge Detection and Elimination
  - Encourage staff to conduct regular good housekeeping efforts and inspections to ensure environmental compliance as well as safety in Public Works facilities
  - Created a training for staff on best salt management practices (over 200 attended in FY21)
  - Enforce the County's Environmental Policy Statement
  - Continue a robust Environmental Management System that includes facilities awarded E2, E3, E4 and SP status by DEQ and an EMS Council that manages and expands the environmental compliance program
  - Host an annual Earth Day Festival for County Employees
  - Provide spill kits for all fuel tanks and generators at County facilities and train staff how to respond
  - Maintain compliant Spill Prevention, Control and Countermeasure plans for facilities when required and maintain training requirements for the program
  - Continue to improve housekeeping practices that will help protect water quality

Future efforts: Provide additional training and increase awareness about actions we can take as county employees to improve local water quality by implementing additional good housekeeping practices

BMP 3 – Promote Integrated Management Practice (IMP) Plans for Public and Private Golf courses

Prince William County Public Works will reach out to public and private golf courses located within the county that discharge to the permittee's MS4 that would encourage implementation of integrated management practice (IMP) plans and techniques to reduce runoff of fertilizers and pesticides.

Public Works has established a relationship with local golf course managers, particularly the public courses, to ensure they have the tools and knowledge to reduce the impact of their operations.

- Required all golf courses to have a current nutrient management plan
- Required all golf course managers to ensure staff is properly trained in IPM plans

- Required all golf course managers to ensure staff is trained in application techniques to reduce run off

BMP 4 - Continue to Promote Public Good Housekeeping Practices

Prince William County Public Works will promote and publicize good housekeeping practices including the proper disposal of pet waste, household yard waste and washing vehicles to minimize water quality impacts.

- Residents
  - Provide information online about picking up after your pets
  - Provide a pamphlet about picking up after your pets
  - County-owned compost facility accepts yard waste from residents for composting and mulching (product available for purchase from private vendor that operates the compost)
  - Provide tips and steps for grass cycling and composting at home
  - Host an annual event to highlight the benefits of composting and provide information to the community
  - Created a page on the website with tips on good practices to protect water quality
  - Created a seven steps tip sheet on protecting water quality
  - Created a flyer encouraging residents to maintain good housekeeping practices in regard to yard waste and distributed at the landfill

- Businesses and Industries
  - Created a flyer encouraging landscapers to maintain good housekeeping practices in regards to yard waste and distributed at the landfill
  - Created a flyer encouraging restaurants and shopping centers to maintain good housekeeping practices in regards to cooking oil and dumpsters/compactors.

- County Government
  - Require all standard vehicles be washed at commercial facilities
  - Established protocol for properly washing non-standard vehicles and equipment in such a way as to prevent runoff

  Future efforts: Expand composting and collection of yard waste from residents and continue to work on program to compost food wastes

BMP 5 - Encourage Private Property Owners to Implement Voluntary Stormwater Management Techniques and/or Retrofits

Prince William County will continue to develop programs to encourage private property owners to implement voluntary stormwater management retrofits. Currently, the County partners with the Prince William County Soil and Water Conservation District to encourage private property owners to implement voluntary stormwater management retrofits through the Virginia Conservation Assistance Program. This program promotes cost share incentives for private property owners looking to implement BMPs. As part of this partnership PWCSWCD looks to install at a minimum two voluntary retrofit projects per year. Two VCAP projects have been completed in FY21. We completed two rain gardens totaling 140 square feet and treating approximately 600 gallons of storm water for every inch of rainfall.

Prince William County helps private property owners implement voluntary stormwater management techniques and/or retrofits with strategies including protecting sensitive areas, reducing run off and saving trees.

- Residents
  - Created brochures for owners with waterfront property
  - Hosted a conference with information for owners with waterfront property
  - Created a brochure about the Chesapeake Bay Resource Protection Areas for distribution at events and site visits
  - Created a pamphlet on the benefits of rain gardens
  - Offer funding through the Virginia Conservation Assistance Program for non-agricultural lands to support best management practices to protect local water quality
  - Encourage residents to reduce turf on property and replace with native species and forested areas
  - Hosted a symposium about establishing native plants on private property
- Businesses and Industries
  - Encourage businesses and industries to replace turf areas with native species and forested areas to reduce use of herbicides and fertilizers, as well as reduce mowing costs
  - Offer funding through the Virginia Conservation Assistance Program for non-agricultural lands to support best management practices to protect local water quality
- County Government
  - Establish a reforestation practice for all new County construction to leave as many mature trees as feasible, save soil for planting projects and replace disturbed areas with trees and native plants to save mowing costs and reduce use of fertilizers and herbicides
  - Establish meadows and gardens at County historic sites and public facilities
  - Undertake stream restoration projects

- Retrofit existing stormwater management structures with improved structures and strategies during retrofits, repairs or maintenance

Future efforts: Increase efforts to identify opportunities to use VCAP for residential, commercial or county projects if state continues grants

BMP 6 - Continue to Promote Commercial, institutional and Industrial Good Housekeeping Practices

Prince William County Public Works will share specific information and strategies with local groups of commercial, industrial, and institutional entities likely to have significant stormwater impacts, including illicit discharge and illegal dumping concerns.

- Businesses and Industries
  - Offer an education program on Fats, Oils and Grease from food service establishments through the Prince William County Service Authority
  - Created brochures and flyers explaining good housekeeping practices to targeted businesses such as landscapers, restaurant owners, and shopping centers.
  - Met with representatives from Valley Proteins, Inc. to discuss possible ways to raise awareness to customers on how to maintain used cooking oils properly.

- County Government
  - Inspect facilities and areas at high risk for runoff to ensure best management practices in place

Future efforts: Identifying industries for future education and awareness campaign

- County Government
  - Improve best management practices by continuous review and upgrades as needed
  - Place spill kits and provide training for staff to use spill kits at all vulnerable locations
  - Conduct regular inspections of our above ground tanks to ensure there are no leaks or spills
  - Enforce and promote protocol for staff and volunteers for safety when they find tanks, suspicious bottles/jars and oil/fluid spills during inspections and cleanups
- Businesses and Industries
  - Continue to work with Valley Proteins, Inc to generate outreach materials

Future efforts: Increase awareness of all staff to recognize potential spill hazards and report any spills or runoff to the proper staff

Prince William County Public Works posts a copy of this state permit on its web page no later than 30 days after the effective date of this state permit and continue to retain a copy of the permit online for the duration of this state permit.

- Public Works has posted a copy of the state permit on its Public Works web site within the County Government pwcgov.org website. It resides on our Environmental Services pages and has its own direct link from our navigational bar at: http://www.pwcgov.org/government/dept/publicworks/environment/pages/ms-4-permit.aspx
- A printed copy of the state permit is kept in our offices for any citizen to review upon request at our service counter.

k. Training

BMP 1 – Continue to Train Staff in the Recognition of Illicit Discharges and Good Housekeeping Practices

Prince William County Staff are trained in the recognition and reporting of Illicit Discharges as well as implementation of good housekeeping practices. Currently, appropriate staff are trained on basic good housekeeping, spill prevention, and illicit discharge prevention practices through EMS training. This training is conducted biennially and is required for all staff including full time parks and rec staff.

To increase training opportunities for personnel with varying shifts and schedules, an effort was made during FY18 to offer more online environmental compliance courses. These custom courses with voice-over narration were developed internally and featured pertinent photos from County facilities to demonstrate information and relay County specific procedures for compliance and response. A test at the end of these courses ensured users remained engaged and attentive. Training records are maintained using the online SkillSoft platform that is customized for the County and named "PWC University", and attendance reports are generated by that system. Risk Management maintains a copy of sign-in sheets and course content. In FY21 COVID continued to limit the amount of in-person training opportunities, so more online training was done and some training was canceled for the year and replaced with needed and required training related to the pandemic.

Table 13 – Trainings Provided During FY21

ILT Course Title	Completed
Chemical Spill Response FY2020 (EHS 401)	10
EMS Annual Refresher Training FY2020 (EHS 441)	54
IDDE: Illicit Discharge Detection and Elimination FY2020 (EHS 451)	Online only
RCRA/ Universal Waste for Generators (EHS 146) FY2020	Online only
Spill Prevention, Control and Countermeasure Plan Annual Training FY2020 (EHS 435)	51

Introduction to RCRA Online Training(EHS 462)	89
Watershed Illicit Discharge Prevention Online Training (EHS460)	210
Spill Prevention Control and Countermeasures Plan (SPCC) Online Training EHS461	51
US DOT Hazardous Materials 3-Year Certification Training	22

BMP 2 – Continue to ensure pesticide and Herbicide Application Occurs in Accordance With Pesticide Control Board Regulations

All County staff and County contractors receive appropriate training in pesticide and herbicide application. These include staff of Parks and Recreation, as well as Environmental Services Mosquito and Forest Pest Management staff. All staff are required to stay current in applicable trainings and certifications.

BMP 3 – Continue to ensure County Staff are Trained and Certified in DEQ Stormwater, E&S, and Plan Review Courses

All our engineering staff who review E&S, SWM and VSMP plans have certifications. All our site inspectors and stormwater management facility inspectors have erosion and sediment control inspector and stormwater management inspector certifications.

BMP 4 – Continue to ensure Emergency Response Staff are Trained in Spill Response

All uniform personnel are trained to the hazmat first responder operations level. This training teaches spill control as a defensive manner. This training is regulated by 29 CFR 1910.120(q) and NFPA 472. There are 98 HAZMAT technicians or specialists and over 1,000 career and volunteer Fire and Rescue System Staff who are required to be current in this training, including annual refresher training. During the reporting period, all required personnel were current in Emergency Spill Response training.

l. Water Quality Screening Programs

BMP 1 – Develop and Maintain a Dry Weather Monitoring Program

During the reporting period, Prince William County conducted 805 Dry weather Monitoring inspections. Of the 805 outfalls monitored, 165 (20.5%) outfalls were found to be flowing; and 3 were found to be illicit in nature. Descriptions of these discharges and of follow-up can be found below. Discharge reports for each instance can be found in Appendix L. As outfalls are screened through our dry weather monitoring program, those that are found to be contributing a significant load of pollutants are toggled as being high risk.

Table 14 – Dry Weather Monitoring Illicit Discharge Summary

Outfall	Date of inspection	Description of Dishcarge	Conclusion	Case Status
15155	7/16/2020	Invisible due to bush	The source of discharge was confirmed ground water seepage into stormwater system. Ground water is a non-illicit discharge.	Closed
16540	7/30/2020	Stagnant	The source of discharge was confirmed ground water seepage into stormwater system. Ground water is a non-illicit discharge.	Closed
18080	8/11/2020	Stagnant	The source of discharge was confirmed ground water seepage into stormwater system. Ground water is a non-illicit discharge. Follow up inspection will be done in following years.	Closed
18059	8/11/2020	Trickle Flow	The source of discharge was confirmed ground water seepage into stormwater system. Ground water is a non-illicit discharge. Follow up inspection will be done in following years.	Closed
18098	8/11/2020	Flowing Outfall	The violator was identified Mr Baker. He was educated that any activities causing pollution or impeding flow into stormwater system is a violation. Mr. Baker promised to clean mud and debris from curb and gutter inlet. Discharge confirmed ground water seepage into storm sewer system.	Closed
18080	8/12/2020	Stagnant Flow	The source could be ground water seepage into storm water system.	Closed
66081	8/18/2019	Shallow	The source could be ground water seepage into storm water system.	Closed
61002	8/18/2020	Shallow	The source of discharge confirmed surface water.	Closed
20427	8/24/2020	Stagnant	The source of discharge confirmed surface water.	Closed
28455	8/24/2020	Stagnant	The source of discharge is confirmed ground water seepage. Algae bloom is seemed to be happened with natural phenomenon with ground water.	Closed
10261	9/15/2020	Flow in high volume	The source of grey water was confirmed sewage into storm water system. The coordination was made between DEQ, PWCSA, PWC DFR(Hazmat), VDH. The case was immediately handled by PWCSA and resolved with a standard procedure.	Closed
11098	9/16/2020	Flow with pipe algae	The source discharge was confirmed ground water seepage into storm water system. Cross connection did not find during inspection. Formation of algae is a natural phenomenon with the ground water. The outfall is recorded a high-risk outfall since the staff noticed paint spill into stormwater system and land is used for commercial business.	Closed

28442	9/16/2020	Ordinary flow	The source discharge was confirmed ground water seepage into storm water system.	Closed
26375	9/21/2020	Ordinary flow	The source of discharge was confirmed surface water.	Closed
14750	9/23/2020	Flow with pipe algae	The source of discharge was confirmed surface water. Formation of algae is a natural phenomenon in ground water.	Closed
20665	9/28/2020	Flow with pipe algae	The source of discharge was confirmed ground water. Formation of algae is a natural phenomenon in ground water.	Closed
20673	9/28/2020	Flow with pipe algae	The source of discharge was confirmed ground water. Formation of algae is a natural phenomenon in ground water.	Closed
2977	9/29/2020	Trickle Flow	The source of discharge was confirmed ground water seepage with surface water.	Closed
2868	9/29/2020	Trickle Flow	The source of discharge was confirmed ground water seepage with surface water.	Closed
2848	10/21/2020	Trickle Flow	The source of discharge was confirmed ground water seepage into stormwater system.	Closed
2839	10/21/2020	Trickle Flow	The source of algae is discovered ground water into stormwater system. It is a natural phenomenon.	Closed
2835	10/21/2020	Stagnant	The source of discharge is discovered ground water into stormwater system.	Closed
3586	3/9/2021	Trickle Flow	The source of discharge should be ground water seepage through joints into stormwater system.	Closed
39618	3/17/2021	Shallow	The source of discharge was discovered upstream inflow through inlet.	Closed
22153	3/17/2021	Shallow	The source of discharge was confirmed ground water seepage.	Closed
3262	4/20/2021	Shallow and natural	The source of discharge was confirmed outflow of upstream storm water management pond.	Closed

All cases of Illicit Discharge were completed satisfactorily.

BMP 2 – Develop and Maintain a Wet Weather Screening Program

Prince William County's Wet Weather Screening Program began at the end of FY16, with first sample occurring in September of 2017. Two sites were selected for sampling and sampling will occur during qualifying storms on a quarterly basis.

The year's sampling has shown fewer exceedances than most previous years. This could be a result of the outreach IDDE staff performed in those areas. In FY19, IDDE staff visited site #941 and provided educational materials to the occupants of nearby parcels. They were also advised on how to maintain good housekeeping practices. Much of the drainage area for site #4684 is an impervious parking lot. IDDE staff performed a shopping center survey at this location to identify any potential pollution sources. The shopping center survey was found to have good housekeeping

practices. PWC will consider relocating this monitoring station in the future, as further action at this location is limited in scope. Dry weather monitoring will also occur in these areas in order to trackdown pollutant sources. A description of site selection and final site locations, as well as Wet Weather Monitoring procedures and results are located in Appendix L.

Figure 4 – Exceedance tracking for the Wet Weather Monitoring Program

		2020		2021	
		Q3	Q4	Q1	Q2
Manassas (#941)	Copper	X	X	X	
	Lead				
	Nickel				
	Zinc				
	Total Suspended Solids				
	Total Nitrogen				
	Phosphorus, Total				
	Chemical Oxygen Demand				
	pH		X		
Dale City (#4684)	Copper	X	X		
	Lead				
	Nickel				
	Zinc				
	Total Suspended Solids				
	Total Nitrogen				
	Phosphorus, Total				
	Chemical Oxygen Demand				
	pH		X		

No infrastructure or outfall repairs resulted from wet weather screening in FY21.

m. Infrastructure Coordination

BMP 1 – Implement Annual Coordination Meeting with VDOT

Prince William County met with VDOT on December 17th 2020. The main discussion involved comparing and contrasting VDOT and Prince William County's MS-4 Service area. VDOT and the County also exchanged demonstrations of software applications used for stormwater management and illicit discharge inspections.

In addition to the discussion on MS-4 service area, VDOT and Prince William County shared procedures and capabilities for the reporting of Illicit Discharges.

Finally, we had preliminary discussions on TMDL action plan and implementation credits. The County has developed its TMDL action plan, but an understanding was made to look for potential projects where mutually beneficial outcomes could be made during the development process.

A meeting agenda is included in Appendix M. The County and VDOT plan to meet in FY22 in accordance with MS-4 permit requirements.

BMP 2 – Coordinate with VDOT on MS-4 Initiatives

During annual meetings with VDOT the County will discuss MS-4 interconnectivity issues such as:

Mapping – Status of mapping program and the ownership of MS-4 components

Chesapeake Bay TMDL – Means Methods and Schedule for reductions under the Chesapeake Bay TMDL special condition where impacts may occur to interconnected MS-4 areas.

Other TMDL Action Plans – Means Methods and Schedule for reductions under the other TMDL special conditions where impacts may occur to interconnected MS-4 areas.

TMDL Implementation Credit – Ensure BMP retrofits do not encounter double crediting. Discuss sharing of BMP credit if applicable.

Illicit Discharge – Share information pertaining to the County's IDDE program and coordinate with VDOT on the identification of high risk facilities. Establish procedures for reporting discharges identified from the VDOT MS-4 system.

Water Quality Monitoring – Discuss and present results of the County's water quality monitoring programs. This includes monitoring data collected from areas where the physically-interconnected MS-4 discharges to or flow is received from the VDOT MS-4.

II. Monitoring Requirements

1. Biological Stream Monitoring

Prince William County continued its Biological Monitoring Program in FY21 with its monitoring taking place in Q2 and Q4 of the reporting period. Sample collection occurred from October 5 to 7, 2020, and April 20-22, 2021 on five locations in Prince William County: Cow Branch, Dawkins

Branch, Little Bull Run, Neabsco Creek, and Purcell Branch. Benthic sampling was conducted in accordance with the Sampling Plan. The multiple habitat sampling method was used for each of the sites, consisting of a total of 20 jabs or kicks, taken from each major habitat type in the reach. Benthic macroinvertebrate samples were placed on ice in coolers and shipped overnight to Wood's benthic macroinvertebrate laboratory in Gainesville, Florida.

The RBP defines the following condition categories based on the physical habitat characterization scores, to determine the ability of the habitat to support an optimal biological community:

- **151-200 Optimal** - The physical habitat present meets natural expectations, and is capable of supporting an optimal benthic community.
- **101-150 Suboptimal** - Physical habitat is less than desirable, but satisfies expectations under most circumstances to support a benthic community.
- **51-100 Marginal** - Physical habitat has moderate levels of degradation, with a severity at frequent intervals throughout the reach, which limit the capability of supporting a benthic community.
- **0-50 Poor Physical** - habitat has been substantially altered with severe degradation to characteristics that would support a benthic community.

Table 15 below summarizes the results of the spring sampling session.

Table 15 – Fall 2020 Field Condition and Benthic Macroinvertebrate Results

Metric	Cow Branch	Dawkins Branch	Little Bull Run	Neabsco Creek	Purcell Branch
Taxa Richness	10	31	31	23	24
Abundance	186	224	194	221	196
EPT Index	4	5	7	6	4
EPT/EPT+ Chironomidae	0.97	0.62	0.62	0.86	0.81
Percent Dominant Taxon	70.97	33.93	20.10	23.08	33.67
Percent Chironomidae	2.69	23.66	23.71	10.86	14.29
BI	6.53	6.23	6.09	5.79	5.53
BI Category	Fairly Poor	Fair	Fair	Fair	Fair
PMA	32.58	57.14	73.71	53.03	52.14
PMA Category	Severely Impacted	Slightly Impacted	Non-impacted	Slightly Impacted	Slightly Impacted
VSCI	35.57	48.77	62.62	57.12	55.25
VSCI Category	Severe Stress	Stress	Good	Stress	Stress

Measured field and laboratory water quality parameters are generally within the normal ranges for shallow, cool, turbulent, piedmont Virginia streams, and generally meet Virginia's Water Quality Standards, as outlined in Section 3.

Table 16 – Spring 2021 Field Condition and Benthic Macroinvertebrate Results

Metric	Cow Branch	Dawkins Branch	Little Bull Run	Neabsco Creek	Purcell Branch
Taxa Richness	22	25	28	24	26
Abundance	181	186	208	205	210
EPT Index	2	3	3	4	5
EPT/EPT+ Chironomidae	0.06	0.09	0.12	0.14	0.06
Percent Dominant Taxon	24.86	22.58	30.29	26.83	30.48
Percent Chironomidae	88.40	48.92	65.38	80.00	84.29
BI	5.21	5.78	5.88	5.60	5.01
BI Category	Good	Fair	Fair	Fair	Good
PMA	31.60	44.84	49.13	39.76	35.71
PMA Category	Severely Impacted	Moderately Impacted	Moderately Impacted	Moderately Impacted	Moderately Impacted
VSCI	34.71	45.91	45.24	38.48	41.08
VSCI Category	Severe Stress	Stress	Stress	Severe Stress	Severe Stress

Measured field and laboratory water quality parameters are generally within the normal ranges for shallow, cool, turbulent, piedmont Virginia streams, and generally meet Virginia's Water Quality Standards, as outlined in Section 3. However, the E. coli levels at Cow Branch, Dawkins Branch, and Little Bull Run were above the Virginia Water Quality standard, which could be indicative of sewage or animal waste. Stressed conditions remain apparent, consistent with seasonal variation during spring season collections.

The measured field and laboratory water quality parameters from the fall 2020 and spring 2021 sampling results are generally comparable to the baseline sampling results, are within the normal ranges, and are below Virginia's Water Quality Standards with the exception of elevated E. coli. Monitoring efforts will be targeted to avoid collection periods following storm events to characterize the benthos and ambient water quality conditions.

Biological metrics, habitat assessments, and evaluations of the benthic macroinvertebrate communities at each site have indicated a marginal level of improvement compared to baseline conditions, though a regression from improvement in recent years at several sites. Seasonal fluctuation in benthic macroinvertebrate assessments has still shown an upward trend for most sites.

This seasonal trend allows for clear distinctions from baseline levels in fall sampling, while spring sampling only shows slight improvement in benthic health. Based on the fall 2020 and spring 2021 sampling results, stream conditions have shown slight improvement from baseline conditions, though no improvement compared to recent years of sampling. The results of this report indicate that the health of these representative monitoring sites from across Prince William County are either stable or are slightly declining.

2. In-stream Monitoring

The County has maintained an in-stream water quality monitoring program for the past 30 years. In partnership with the Virginia Tech Occoquan Laboratory, the County maintains 5 in stream water quality stations, 2 stations (Little Bull Run and Neabsco Creek) have been in operation since the early 1990s, and the remaining three stations were put on line during FY16:

1. The "Dawkins Branch Station", with drainage to be comprised of older industrial and warehouse type of land uses. This station is to represent industrial land use in the County.

2. The "Cow Branch Station" with drainage area for the proposed station originating from commercial developments, such as, Potomac Mills Mall and several other commercial and residential uses along I-95 corridor. This represents a relatively high density and highly impervious area corridor.

3. The "Purcell Branch Station" was picked to represent large-acre residential lots, which is also a representative land use in the County.

4. Neabsco Creek at Delaney Rd. – Neabsco Creek is one of the most developed watersheds in the County. This station has drainage areas from several new and much older developments in Dale City area. Continuing this station will help us further establish the water quality trends for an older developed watershed.

5. Little Bull Run at Catharpin Road – Little Bull Run has drainage areas from major known developments such as Piedmont, Dominion Valley Country Club, etc. This Station represents the current development trends of well-planned subdivisions constructed with golf course amenities in the fast growing western part of the County. Continuing this station will help us further establish water quality trends.

a. Neabsco Creek Station

The Neabsco Creek water quality monitoring station has been in operation since 1990s. It is the County's longest running water quality monitoring station for instream monitoring.

Table 17 – Neabsco Creek Station Water Quality Results

DATE	FLO cfs	TOTFLO cubic feet	OP mg/L	TP mg/L	NH3_N mg/L	TKN mg/L	NO2_N mg/L	OX_N mg/L	COD mg/L	BOD5 mg/L	TSS mg/L	FCOLI org/100mL	ECOLI org/100mL
Aug-20	43.28	56.68E5	0.03	0.17	0.02	1.25	0.02	0.36	33.9	4.3	175	92000	24200
Sep-20	20.80	69.04E4	0.02	0.09	0.01	0.81	<0.01	0.34	16.8	3.9	34.5		
Oct-20	82.53	10.06E6	0.03	0.26	0.02	1.92	<0.01	0.23	42.5	6.9	215	35000	24900
Mar-21	12.13	59.59E4	<0.01	0.03	0.03	0.55	<0.01	0.36	15.0	3.7	12.9	5400	3450

Mar-21	57.75	58.94E5	0.02	0.20	0.08	1.72	0.02	0.24	35.6	5.6	155	7900	4880
May-21	7.13	30.63E4	<0.01	0.07	0.01	0.88	0.02	0.36	28.0	11.2	10.4	1700	613
June-21	47.69	49.1E5	0.02	0.19	0.04	0.82	0.02	0.28	33.9	6.5	199	24000	12000

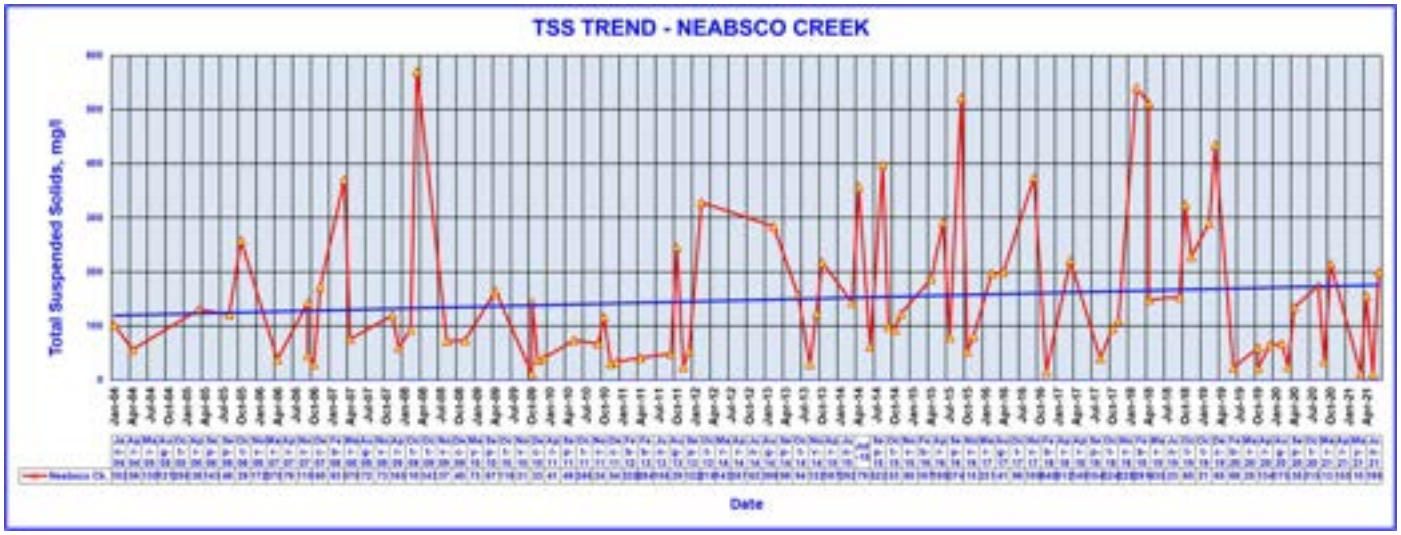


Figure 5 – Long Term TSS trends in Neabsco Creek Watershed

TSS samples show an increasing trend in the Neabsco Creek Watershed.

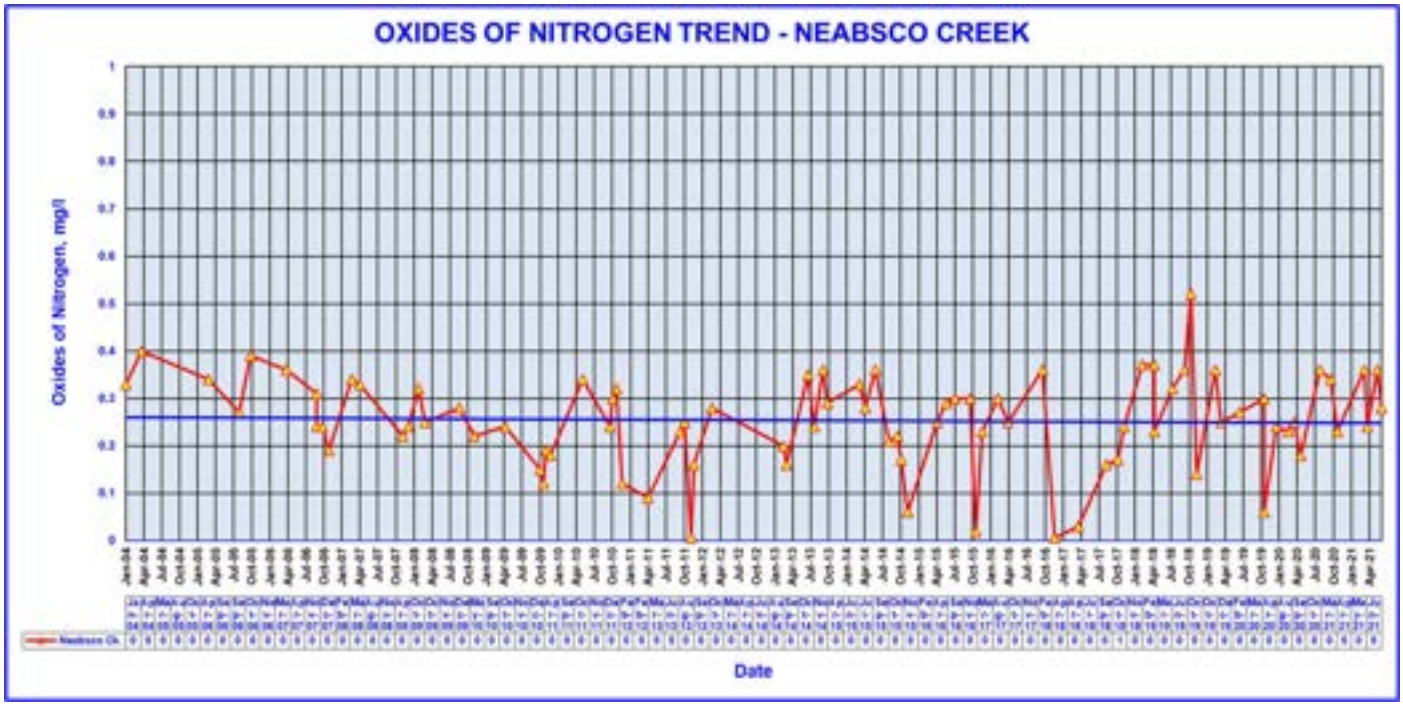


Figure 6 – Long Term Oxides of Nitrogen trends in Neabsco Creek Watershed

Nitrogen is showing a slightly decreasing trend within the Neabsco Creek Watershed. This can be interoperated that stormwater control measures are making an impact within the watershed; however, with increases in TSS it may not be the case. With stream restoration and other projects the County has undertaken, the County anticipates decline in TSS over time.

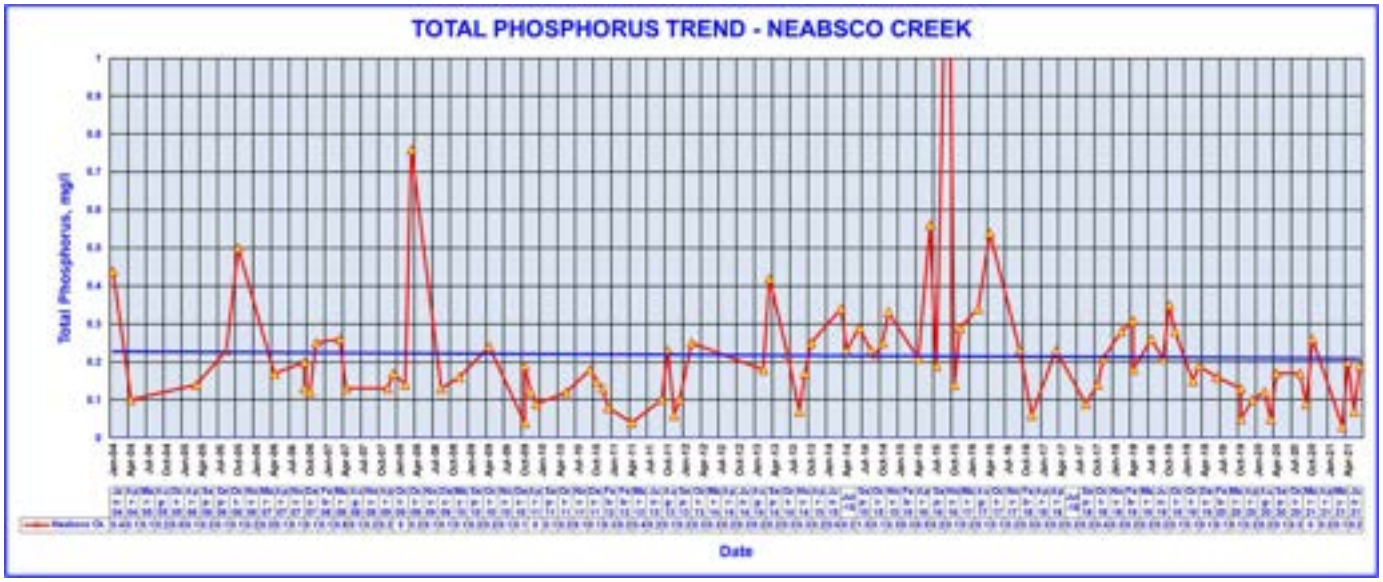


Figure 7 – Long Term TP trends in Neabsco Creek Watershed

Total Phosphorous shows a slightly decreasing trend within the Neabsco Creek Watershed. With stream restoration and other projects the County has undertaken in the watershed, the County anticipates a decline in TSS, and consequently, a decline in phosphorous over time.

b. Little Bull Run

The Neabsco Creek water quality monitoring station has been in operation since 2007. It is the County's Second longest running in stream water quality monitoring station.

Table 18 – Little Bull Run Station Water Quality Results

DATE	FLO cfs	TOTFLO cubic feet	OP mg/L	TP mg/L	NH3_N mg/L	TKN mg/L	NO2_N mg/L	OX_N mg/L	COD mg/L	BOD5 mg/L	TSS mg/L	FCOLI org/ 100mL	ECOLI org/ 100mL
Aug-20	25.33	13.16E5	0.04	0.15	0.02	1.41	<0.01	0.30	24.4	5.1	48.0	16000	8660
Sep-20	13.62	70.50E4	0.03	0.10	0.04	0.89	<0.01	0.26	20.6	5.2	16.2		
Oct-20	45.18	65.46E5	0.05	0.17	0.02	0.87	<0.01	0.42	25.4	3.8	43.6	17000	15500
Mar-21	23.33	19.24E5	0.02	0.10	0.03	1.14	0.01	0.30	22.5	4.0	48.5	130	112
Jun-21	123.3	12.7E6	0.04	0.21	0.03	1.44	0.01	0.29	29.6	5.1	147	92000	24200

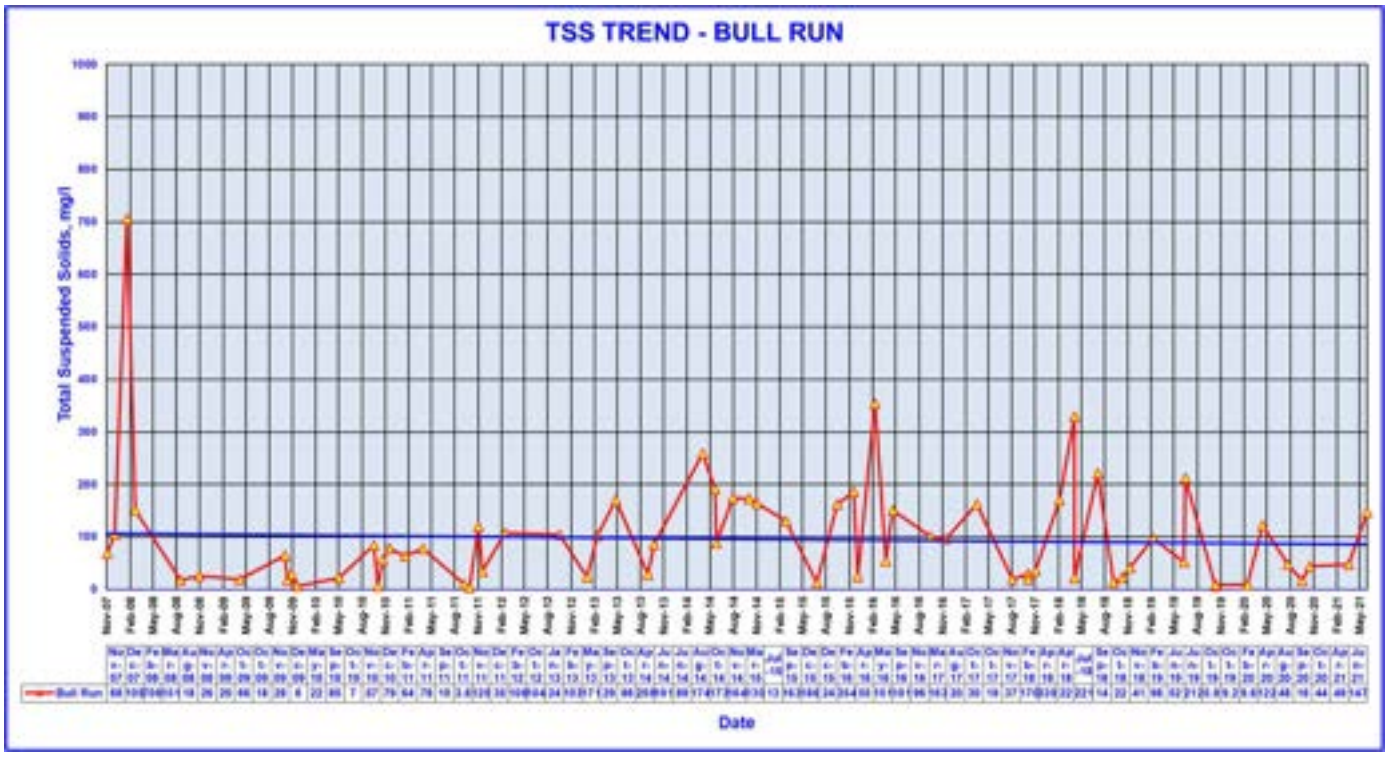


Figure 8 – Long Term TSS trends in the Bull Run Watershed

TSS in the Bull Run watershed trend is steady. This year's results showed a slight decrease in TSS.

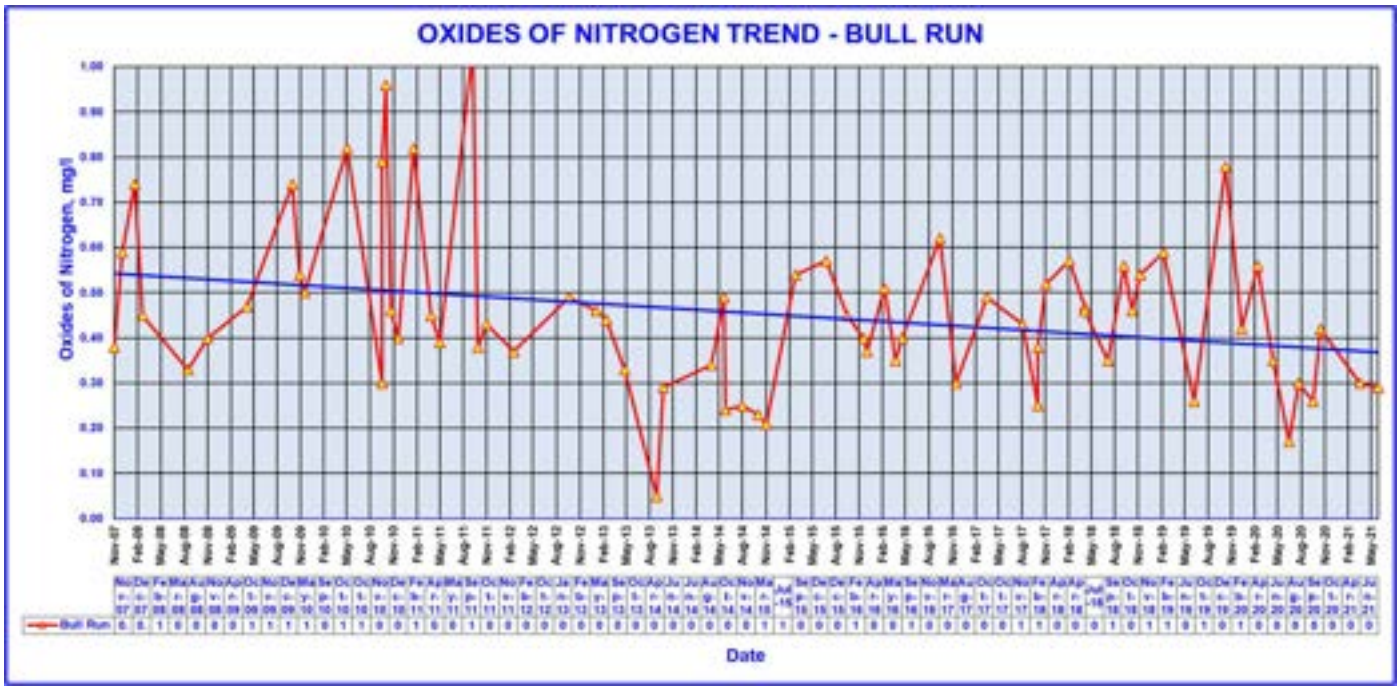


Figure 9 – Long Term Oxides of Nitrogen trends in the Bull Run Watershed

Oxides of nitrogen show a strong decreasing trend. This could indicate the effectiveness of stormwater controls.

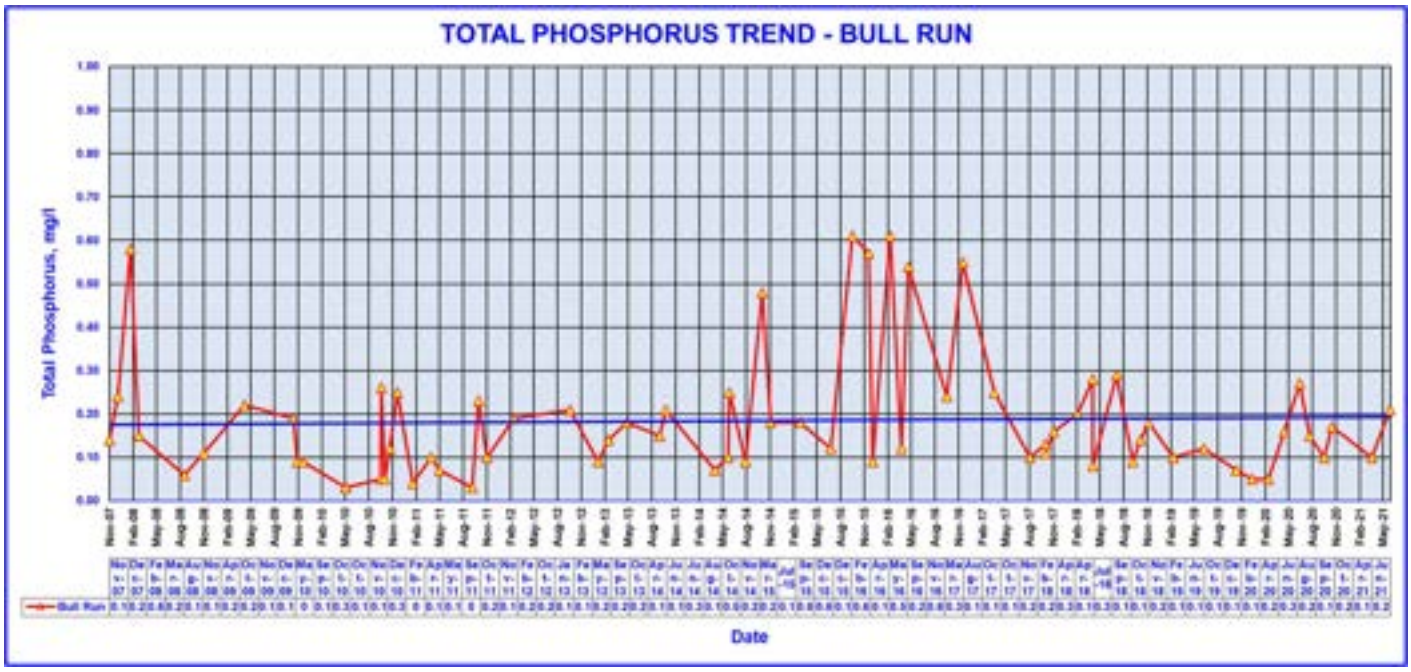


Figure 10 – Long Term TP trends in the Bull Run Watershed

TP has an increasing trend within the Bull Run watershed. The volatility observed in the Neabsco Creek watershed is again observed here.

c. Dawkins Branch

The Dawkins Branch water quality monitoring station was installed during FY16, and produced 6 samples in FY21.

Table 19 – Dawkins Branch Water Quality Results

DATE	FLO cfs	TOTFLO cubic feet	OP mg/L	TP mg/L	NH3_N mg/L	TKN mg/L	NO2_N mg/L	OX_N mg/L	COD mg/L	BOD5 mg/L	TSS mg/L	FCOLI org/ 100mL	ECOLI org/ 100mL
Sep-20	9.95	61.93E4	<0.01	0.07	0.01	0.82	<0.01	0.08	23.6	5.0	23.8		
Oct-20	37.82	51.02E5	0.02	0.10	0.02	0.79	0.01	0.18	21.9	3.6	69.5	17000	11800
Nov-20	27.21	39.55E5	0.01	0.08	0.01	0.86	<0.01	0.14	20.1	3.1	42.8	7900	4880
Mar-21	3.76	12.25E4	<0.01	0.02	0.02	0.64	<0.01	0.17	14.2	3.5	7.3	1700	1990
Mar-21	13.47	12.08E5	<0.01	0.07	0.02	0.76	<0.01	0.14	18.5	3.0	31.2	1700	310

Jun-21	29.74	44.22E5	0.01	0.12	0.02	0.88	0.01	0.12	23.6	4.0	65.5	9400	3260

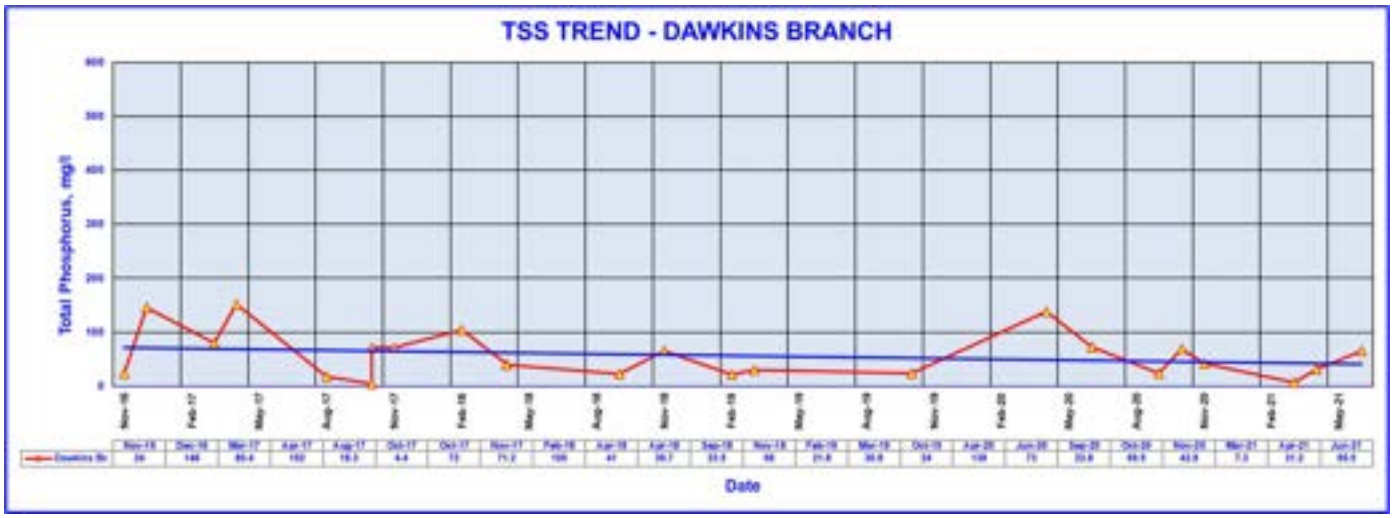


Figure 11 – Long Term TSS trends in the Dawkins Branch Watershed

TSS shows a stable to slightly decreasing trend.

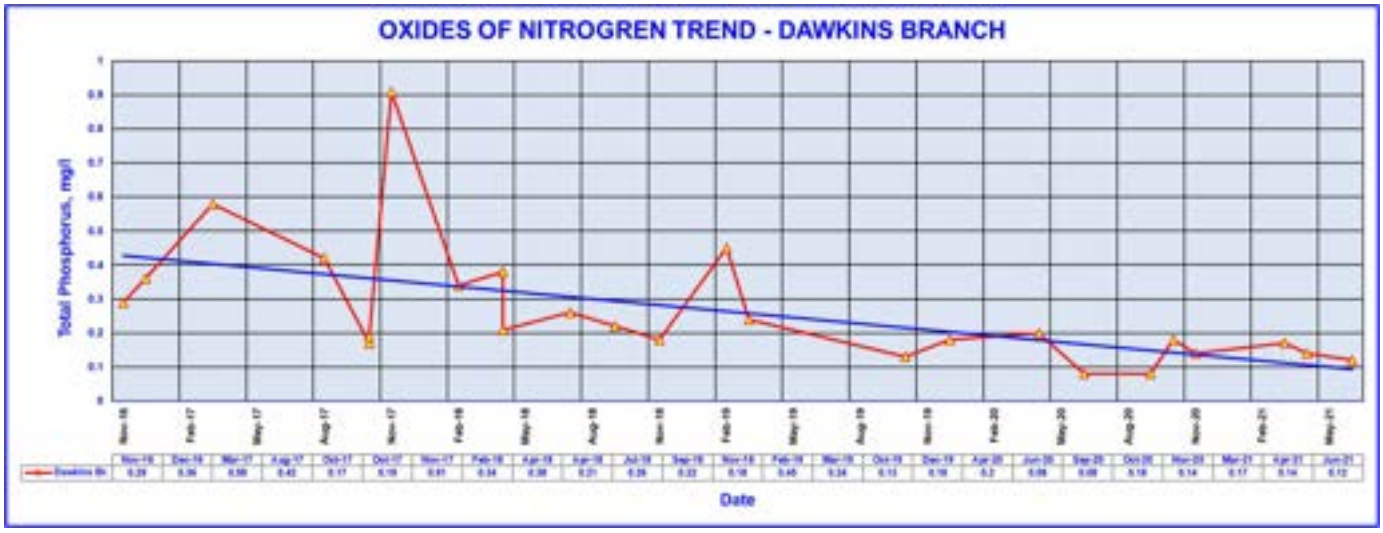


Figure 12 – Long Term Oxides of Nitrogen trends in the Dawkins Branch Watershed

Oxides of Nitrogen show a significant decreasing trend.

Figure 13 – Long Total Phosphorus trends in the Dawkins Branch Watershed

Total phosphorus shows a slightly decreasing trend.

d. Cow Branch

The Cow Branch Water Quality Monitoring Station was installed during FY16, and produced 6 samples in FY21.

Table 20 – Cow Branch Water Quality Results

DATE	FLO cfs	TOTFLO cubic feet	OP mg/L	TP mg/ L	NH3_N mg/L	TKN mg/ L	NO2_N mg/L	OX_N mg/L	COD mg/ L	BOD5 mg/L	TSS mg/ L	FCOLI org/100mL	ECOLI org/100mL
Sep-20	23.85	12.04E5	0.01	0.13	0.15	1.12	0.02	0.32	20.6	6.8	40.0		
Oct-20	102.3	12.7E6	0.01	0.11	0.02	0.84	<0.01	0.27	20.4	3.5	58.0	17000	9210
Nov-20	86.70	11.57E6	0.01	0.16	0.01	1.06	<0.01	0.18	23.6	4.5	127	17000	5480
Mar-21	37.55	31.72E5	<0.01	0.15	0.04	1.21	0.01	0.30	32.8	4.9	137	490	328
May-21	7.53	26.51E4	0.01	0.19	0.32	1.68	0.05	0.72	39.4	14.1	55.0	3500	1410
Jun-21	53.59	78.96E5	<0.01	0.13	0.04	0.73	0.01	0.24	27.8	6.8	119	35000	7700

Figure 14 – Long Term TSS trends in the Cow Branch Watershed

TSS shows a decreasing trend.

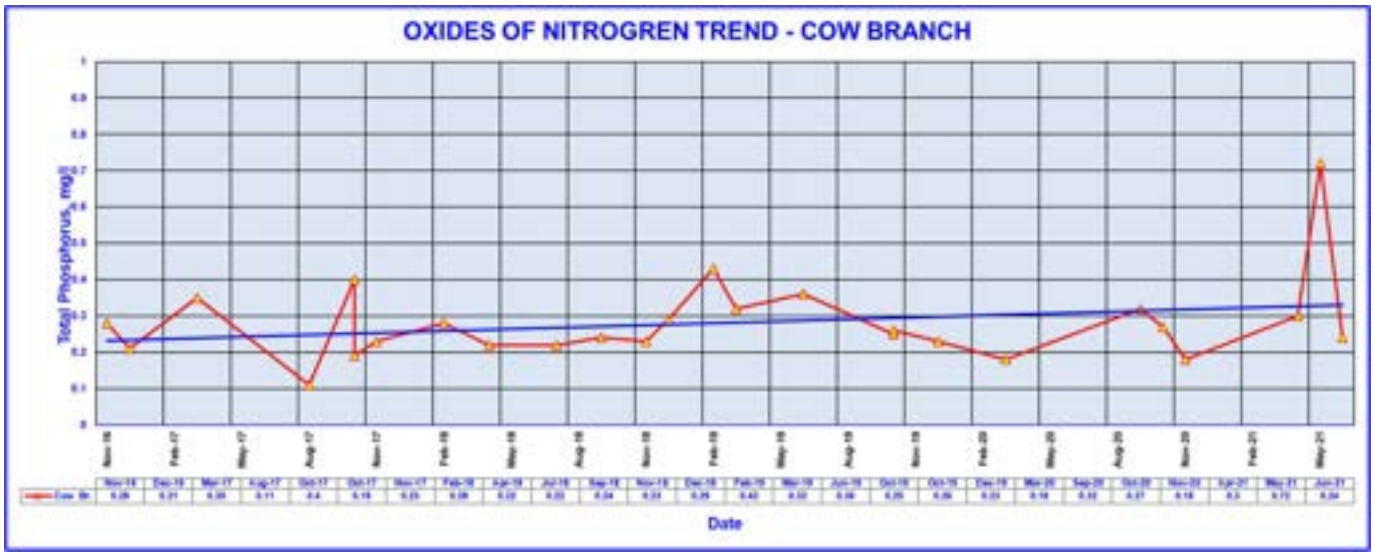


Figure 15 – Long Term Oxides of Nitrogen trends in the Cow Branch Watershed

Oxides of Nitrogen show a slightly increasing trend.

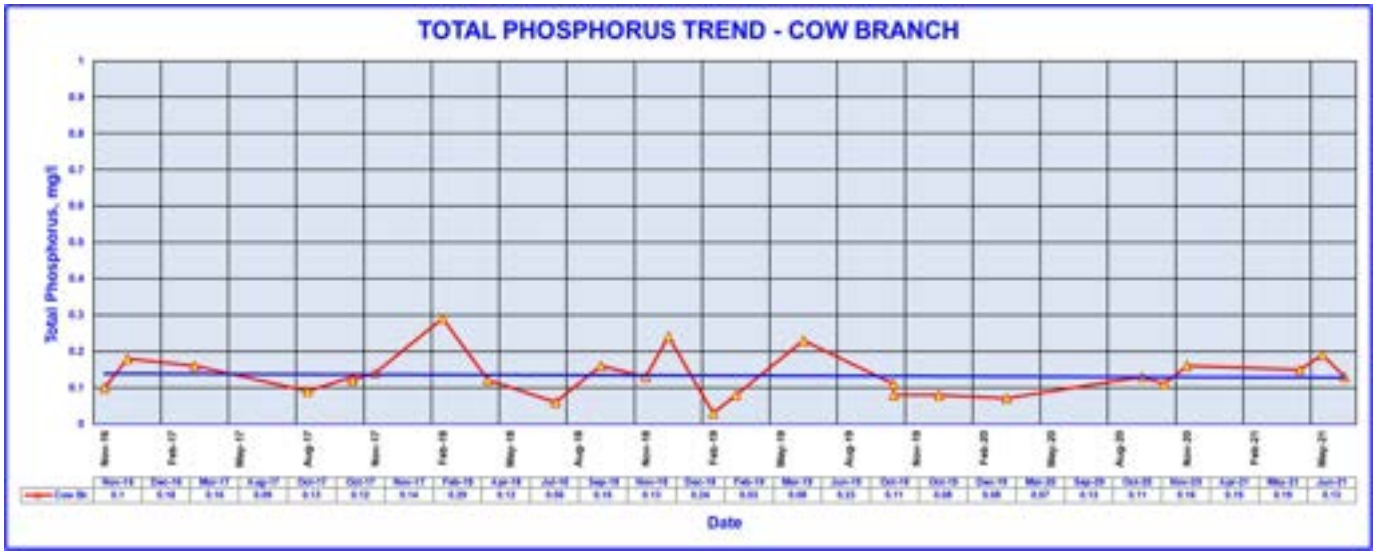


Figure 16 – Long Term Total Phosphorus trends in the Cow Branch Watershed

Total phosphorus appears to be stable.

e. Purcell Branch

The Purcell Branch Water Quality Monitoring Station was installed during FY16, and produced 6 samples in FY21.

Table 21 – Purcell Branch Water Quality Results

DATE	FLO cfs	TOTFLO cubic feet	OP mg/L	TP mg/L	NH3_N mg/L	TKN mg/L	NO2_N mg/L	OX_N mg/L	COD mg/L	BOD5 mg/L	TSS mg/L	FCOLI org/100mL	ECOLI org/100mL
Aug-20	50.64	44.24E5	0.03	0.22	0.02	1.55	0.01	0.30	40.0	5.6	207	24000	1730
Sep-20	14.13	64.48E4	0.02	0.09	0.02	0.96	<0.01	0.56	24.9	5.2	38.7		
Oct-20	39.33	41.73E5	0.02	0.20	0.01	1.60	<0.01	0.26	50.0	7.2	161	92000	34400
Nov-20	44.92	63.33E5	0.03	0.18	0.02	1.56	0.01	0.18	43.0	5.5	174	7900	7700
Mar-21	20.03	15.40E5	0.02	0.09	0.03	1.18	0.01	0.31	25.5	3.9	56.7	1100	866
Jun-21	30.38	31.85E5	0.01	0.16	0.04	1.83	0.01	0.21	40.1	6.2	260	54000	46100

Figure 17 – Long Term Total Suspended Solids Trend in the Purcell Branch Watershed

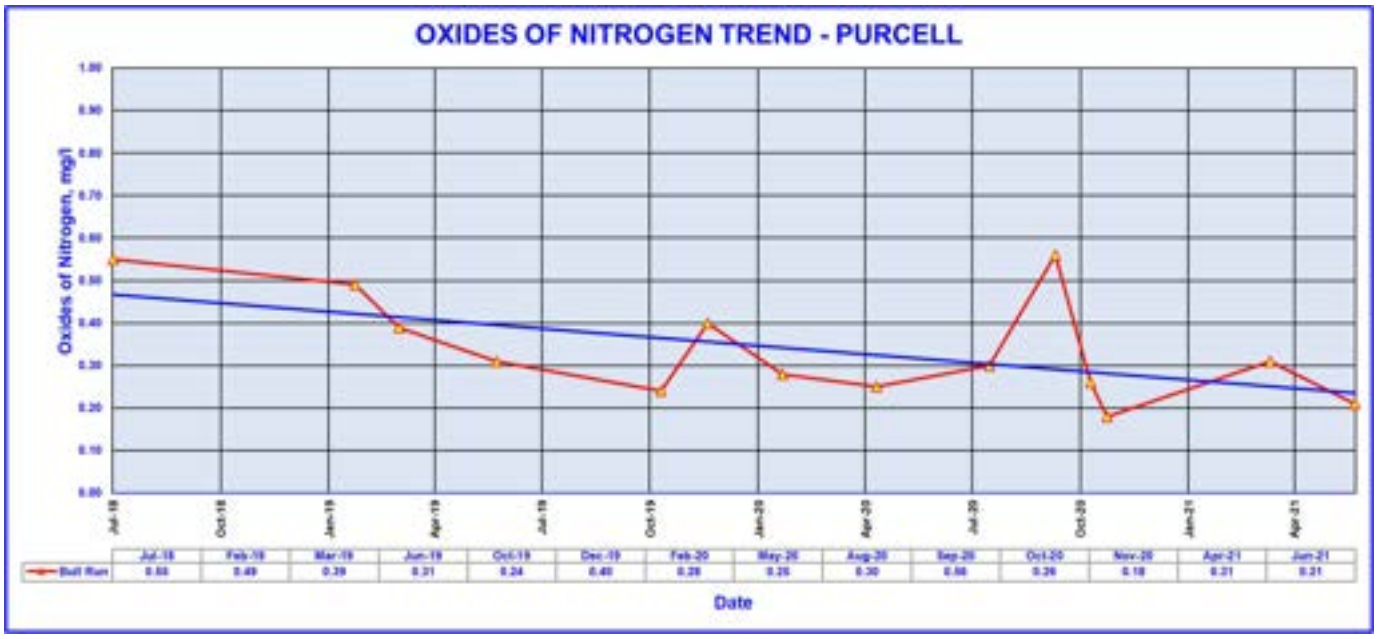


Figure 18 – Long Term Oxides of Nitrogen Trend in the Purcell Branch Watershed

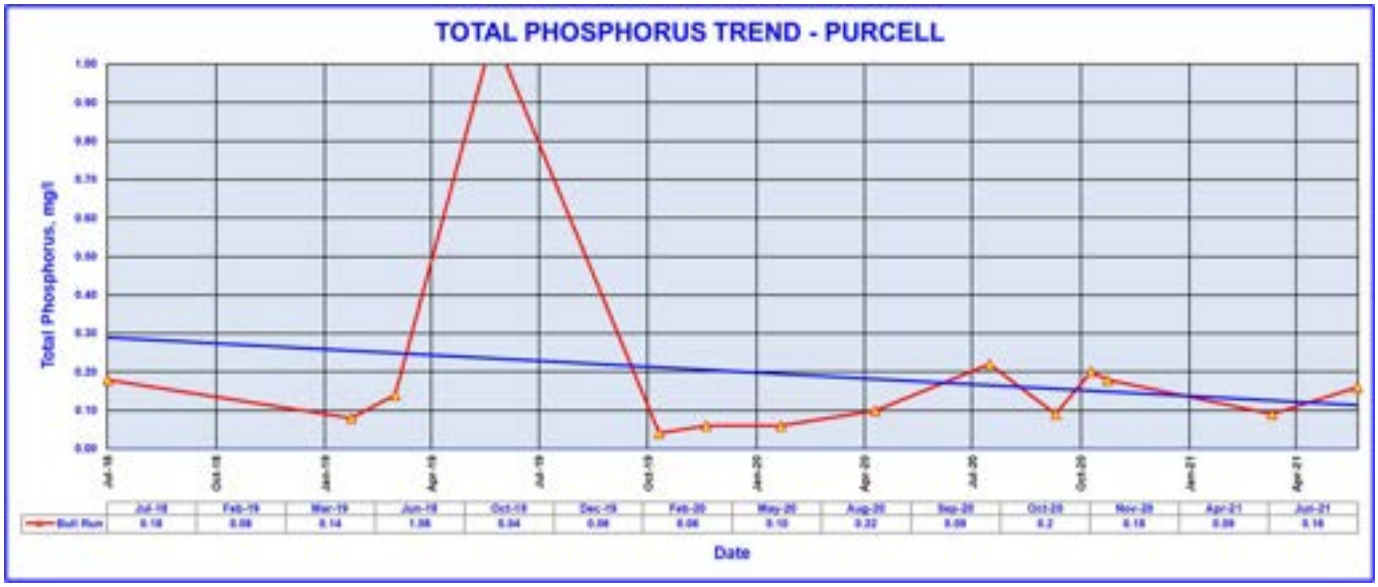


Figure 19 – Long Term Total Phosphorus Trend in the Purcell Branch Watershed

3. Floatables Solids Monitoring

The County has developed protocols for its Floatables Monitoring Program. The program began during FY17, with a pilot study used to complete the first round of monitoring during Q1. Monitoring will be completed at 5 sites throughout the County on a quarterly basis.

Table 22 – Floatable Monitoring from July-September 2020

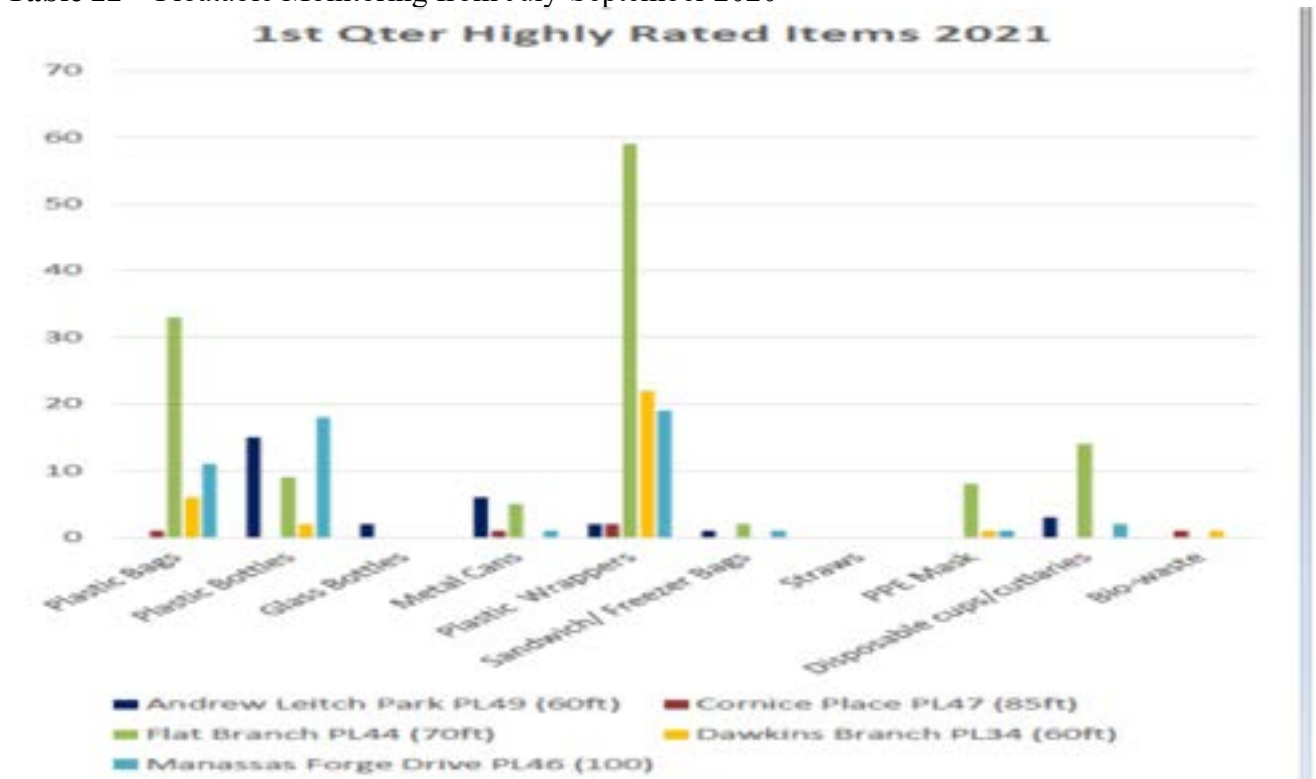


Table 23 – Floatable Monitoring from October-December 2020

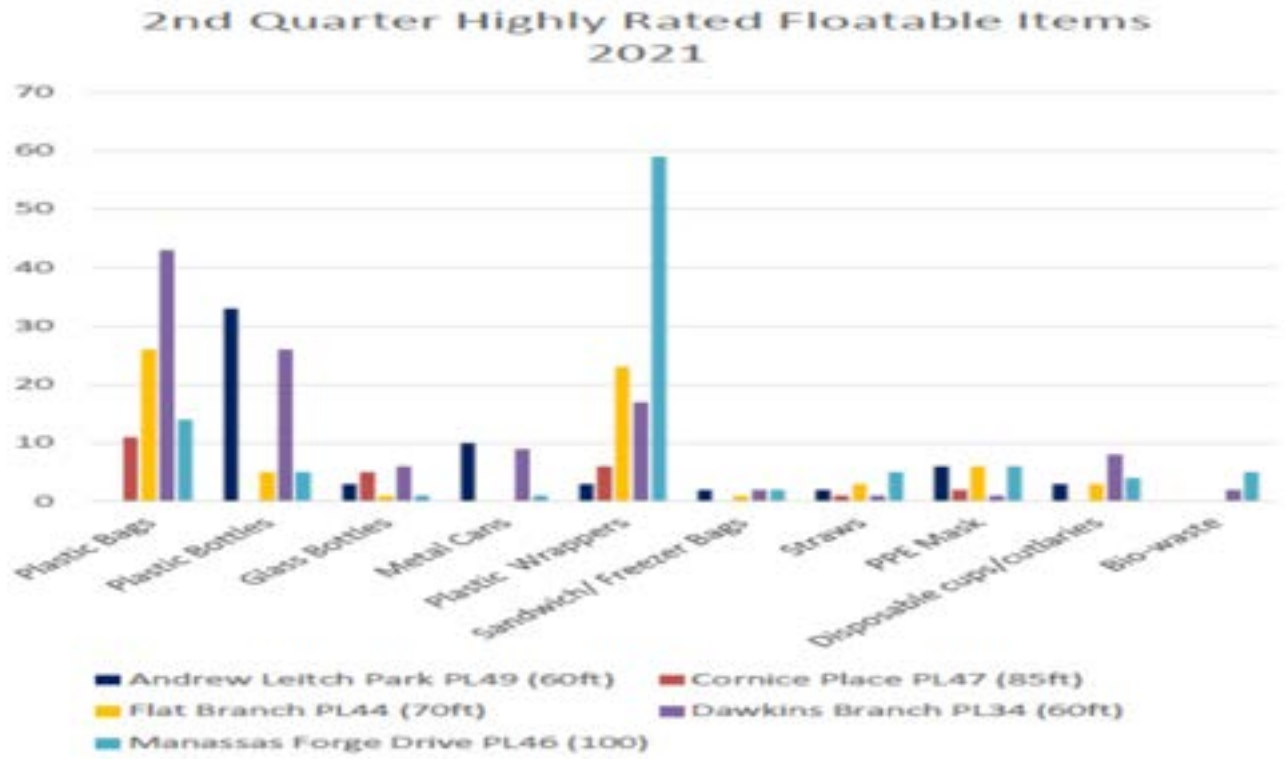


Table 24 – Floatable Monitoring from January-March 2021

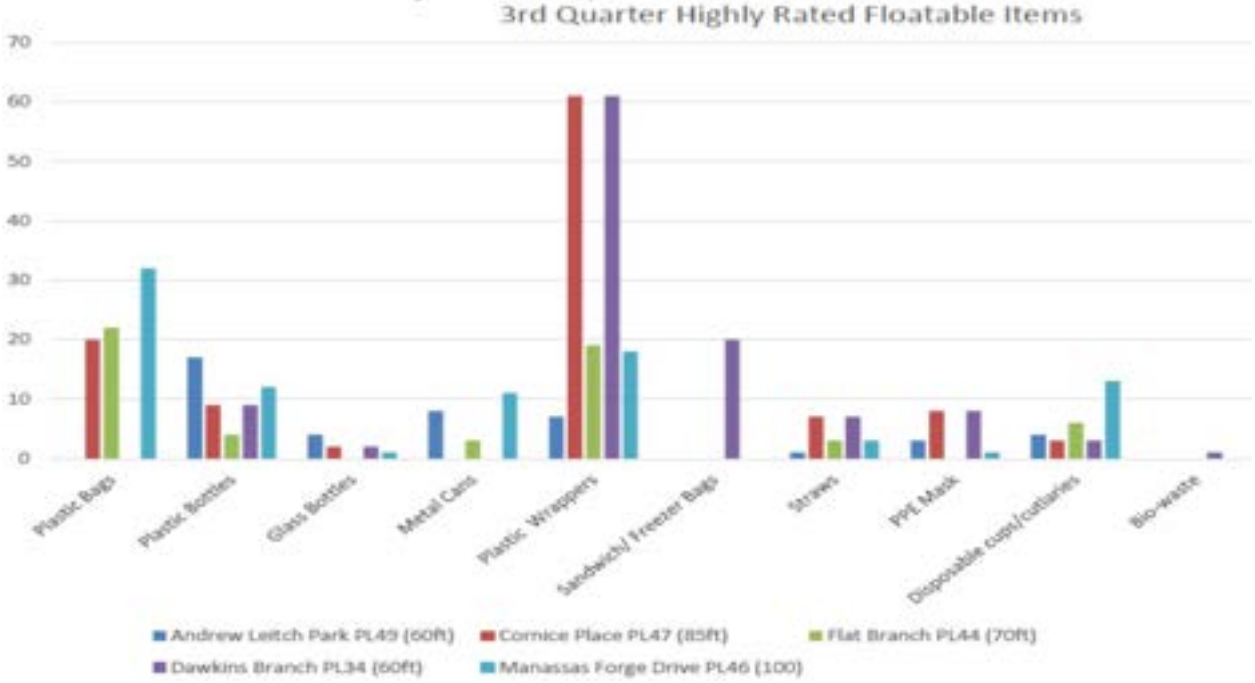
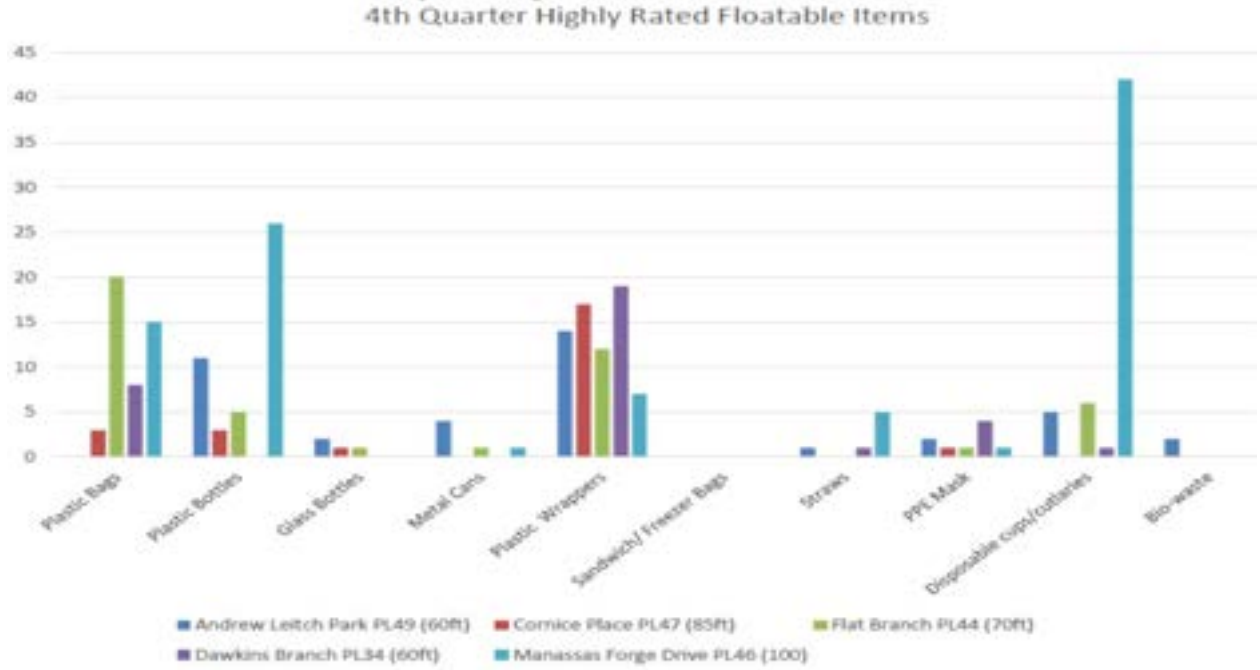


Table 25 – Floatable Monitoring from April-June 2021



The Prince William County Floatable Monitoring program which started in July 2016, has seen significant progress as it applies techniques to help capture meaningful data that reflects the types of floatable items that are dominating local waterways in Prince William County.

As efforts to support the County's Green Community Goals, every year, lessons and knowledge gained from the previous years are put in place to restructure the results of the previous years. For example, the 2019 report laid more emphases on plastic bags and plastic bottles as the dominant items recorded. In 2020, the issue of rising plastic wrappers and Personal Protective Equipment.(PPE) in waterways was identified. All these changes emphasize on the need to explore more on the impact of plastics in relation to water pollution especially at time when COVID-19 pandemic appears to be a contributing factor on how humans are currently relating to the environment and its waterbodies.

Conclusion

As Prince William County advances in floatable monitoring, the data collected is getting more meaning in addressing the growing challenges around water quality and plastic pollution.
Water pollution is an important topic relating to human vitality. Therefore, there is great need to promote this awareness for a sustainable Prince William County. This will also get more folks engage in building the County's Green Community Goals.

4. Structural and Source Controls Compliance Monitoring

An electronic database containing all BMP/SWM facilities within Prince William County will be provided with this document when submitted. The database contains information on a facilities type, latitude and longitude, impervious and total acres treated, installation date, HUC 12, privately or permittee maintained status, discharging MS-4 and dates of inspection and maintenance for all new facilities since July 2016.

Prince William County maintains a program for the inspection and maintenance of permittee and privately maintained SWM/BMP facilities. More information on these inspection programs, and a list of newly constructed SWM facilities, can be found in section II.f of this document.

III. TMDL Action Plan Implementation

1. Chesapeake Bay Watershed TMDL Planning

Prince William County submitted the required Chesapeake Bay TMDL Action Plan (Action Plan) on December 16, 2016, which was subsequently approved on June 28, 2017. A copy of the approval letter is included in Appendix III. The Action Plan documents how the County intends to meet the requirements of the Chesapeake Bay Special Condition included in the MS4 Permit.

In Section I.D.1, Chesapeake Bay Special Condition, the County is required to document the means and methods that will be utilized to meet the required reductions of specific Pollutants of Concern (POCs) allocated in the Special Condition of the Commonwealth of Virginia's Phase I and II Chesapeake Bay Total Maximum Daily Load (TMDL) Watershed Implementation Plans (WIPs). These reductions are based on the Level 2 (L2) scoping run of the Chesapeake Bay Watershed Model for existing developed lands (pervious and impervious regulated urban lands developed prior to July 1, 2009). Level 2 implementation equates to an average reduction of 9% of nitrogen loads, 16% of phosphorous loads, and 20% of sediment loads from impervious regulated areas and 6% of nitrogen loads, 7.25% of phosphorous loads, and 8.75% of sediment loads from pervious regulated acres beyond the 2009 progress run loadings.

As part of this effort, Virginia Department of Environmental Quality (VADEQ) has committed to a phased approach for MS4 permittees to implement necessary reductions. Permittees will have up to three, five-year permit cycles to achieve required reductions. Prince William County's first permit cycle (December 17, 2014 – December 16, 2019) represents implementation of 5% of the L2 as specified in the 2010 Phase I WIP. The second permit cycle will require an additional 35% of total L2 reductions (40% cumulative), while the final permit cycle will require implementation of the remaining 60% of reductions (100% cumulative).

The total reductions planned to be achieved during the first permit cycle, as identified in the approved Action Plan, are listed in Table 26. The table also identifies the percent of the L2 scoping run reductions that will be achieved after implementation of the Action Plan.

Table 26 - Planned Reductions per Approved Action Plan

Pollutant of Concern	Planned 1st Permit Cycle Load Reductions (lbs/yr)	Percentage of L2 Reduction Achieved After Implementation
Total Nitrogen (TN)	6,706.58	33.5%
Total Phosphorus (TP)	1,370.40	62.0%
Total Suspended Solids (TSS)	893,286.63	49.4%

Prince William County has a comprehensive watershed improvement program, which aims to improve water quality through the implementation of water quality improvement projects such as stormwater facility retrofits, stream restorations, and reforestation projects.

During the reporting period, construction of Powells Creek Phase 1 stream restoration was started, and the resulting reduction will be reported in the FY22 annual report. The project will restore 3,280 linear feet of stream channel and the associated reductions from the project are: 200.14 TN (lbs/yr), 181.46 TP (lbs/yr) and 119,764.84 TSS (lbs/yr). For FY20, the water quality retrofit of SWM Facility # 232 and Phase 3 reforestation at Bristoe Station Battlefield Park were completed. The associated pollutant reductions for these two projects are shown in Table 27.

Table 27 - Pollutant Reductions Achieved During Reporting Period

Project Name	Project Type	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	TSS Reduction (lbs/yr)
SWM Facility #232	Retrofit	47.59	4.22	3,365.39
Bristoe Station Battlefield Park Reforestation (Phase 3)	LUC	73.03	3.88	1,356.19
Total Reductions		**120.62**	**8.1**	**4,721.58**

For a project description, as well as before and after photographs of the project implemented this period, please refer to the next section. In addition, the updated reduction summary tables and associated reduction calculation worksheets are included as Appendix B.

Based on the reductions achieved through implementation of the above listed water quality improvement project and the previous reductions identified in the approved Action Plan, Table 28 summarizes the cumulative progress toward meeting the compliance targets. The permit requires that 5% of the L2 reductions be achieved during the first permit cycle. As shown in the table below, this requirement has been exceeded and the additional reductions will be applied toward the second permit cycle required reductions.

Table 28 - Cumulative Progress Toward Meeting Compliance Targets

Pollutant of Concern	Previous Reductions Achieved (lbs/yr)	FY20 Reductions (lbs/yr)	Total Reductions to Date (lbs/yr)	Percent of L2 Reduction Achieved to Date
Total Nitrogen (TN)	6,798.51	120.62	6,919.12	34.52%
Total Phosphorus (TP)	1,446.05	8.1	1,454.15	65.83%
Total Suspended Solids (TSS)	834,056.39	4,721.58	838,777.97	46.43%

During the next reporting period, three projects are planned for implementation. Please refer to Table 29 for the pollutant reductions associated with this project.

Table 29 - Planned Projects for FY21 Implementation

Project Name	Project Type	TN Reduction (lbs/yr)	TP Reductions (lbs/yr)	TSS Reduction (lbs/yr)
SWM Facility #386	Retrofit	284.51	35.84	27,611.25
Powells Creek Phase 1	Stream	200.14	181.46	119,764.84
SWM Facility #416	Retrofit	284.51	35.84	27,611.25
	Total	**769.16**	**253.14**	**174,987.34**

Prince William County has received nutrient and sediments credits from both UOSA and PWCSA. The County is reporting these credits as a "Reserve" and the credits have not counted towards required deductions.

SWM Facility #232

The water quality retrofit of SWM Facility #232 was completed in FY21 and entailed the conversion of a dry detention pond to a level 1, wet pond. The existing detention pond did not have a water quality BMP, lacked a sediment forebay and a micropool. The enhanced facility meets the level 1, wet pond standard with sediment forebay and micropool. The area treated is 14.76 acres and with 22% impervious surface area.

Before **After**

Before **After**

2. TMDL Action Plans other than the Chesapeake Bay TMDL

The County submitted Action Plans for bacteria, benthic, and PCB TMDL's in December of 2016. DEQ provided comments to the County on May 4th, 2018. The County provided responses to DEQ on June 29th, 2018. A copy of this response letter is included in Appendix III.

IV. Additional Reporting Requirements

1. Roles and responsibilities

Roles and responsibilities are provided as part of the County's MS4 program plan. Roles and responsibilities can be reviewed as part of each BMP section within the MS4 Program plan.

2. Non Compliance

There were no instances of non-compliance to record during the Reporting period.

3. Budget

Environmental Services Division - Watershed Management Branch

FY21 Annual Budget Summary by Activity

Stormwater Infrastructure Management	$	3,956,841
Site Development	$	3,851,207
Watershed Improvement	$	5,042,693
Total FY20 Expenditure Budget	**$**	**12,850,741**

4. Permit Fees

Permit fees for FY22 were submitted to the Department on September 9th 2021 with Check #72545.

Appendix A – Construction Site Runoff and Post Construction Runoff

4. Clay Morris – Engineer III

Authority	Title	Certification #	Expiration

5. Julia Flanagan – Arborist

Authority	Title	Certification #	Expiration
International Society of Arboriculture	ISA-Certified Arborist	MA-0045A	6/30/2021
International Society of Arboriculture	TRAQ – Tree Risk Assessment Qualified	n/a	7/16/2025
Dept. of Conservation & Recreation	Urban Nutrient Management Planner	#772	2/28/2022

SITE INSPECTOR SUPERVISORS:

6. Vijay Dindigal – Site Inspection Program Manager

Authority	Title	Certification #	Expiration
Commonwealth of Va., State Water Control Board	Dual Program Administrator	DPA0139	11-12-22
Commonwealth of Va., Dept. of Professional and Occupational Regulation – Board for Architects, Professional Engineers – Land Surveyor License	Professional Land Surveyor License	0403002810	6-30-2020
Commonwealth of Va., Dept. of Professional and Occupational Regulation – Board for Architects, Professional Engineers – Professional Engineer License	Professional Engineer License	0402048764	6-30-2021
Virginia State Water Control Board	Dual Plan Reviewer	DPR0135	10-5-23

7. Robert Cook (West County Site Inspector Supervisor)

Authority	Title	Certification #	Expiration
Commonwealth of Va.., State Water Control Board	Dual Inspector	DIN05333	7-11-22
Commonwealth of Va., State Water Control Board	Program Administrator	374	5-31-22
Commonwealth of Va., State Water Control Board	Erosion and Sediment Control Inspector	1465	11-30-22
Va., DEQ	Stormwater Management (Basic)		10-30-22
Va., DEQ	Stormwater Management (Inspector)		5-20-22

8. Shawn Wray – East County Site Inspector Supervisor

Authority	Title	Certification #	Expiration
Commonwealth of Va., State Water Control Board	Dual Inspector	DIN0927	10-15-2021
Commonwealth of Va., State Water Control Board	Program Administrator for Erosion and Sediment Control	ESPA0257	11/8/22
Americans with Disabilities Act	All Employee Online Training 1-13-17		
Commonwealth of Va., State Water Control Board	Stormwater Management (Inspector)	SWIN0360	10-15-21
Commonwealth of Va., State Water Control Board	Erosion and Sediment Control Inspector	3774	11-30-19
PWC Supervisor Equivalency Credit Program			Completed 12-14-16
Commonwealth of Virginia Department of Environmental Quality	DEQ Inspecting Non-Standard Practices 2 part series (6 contact hours)		5-6-21
Commonwealth of Virginia Department of Environmental Quality	DEQ Refresher for ESC Inspectors 2 part series (6 contact hours)		5-20-21

SITE INSPECTORS:

9. Jalal Qaradaghi – Area 1 Site Inspector

Authority	Title	Certification #	Expiration/Completion Date
Commonwealth of Va.., State Water Control Board	Dual Inspector	DIN0536	11-30-22
Commonwealth of Va., State Water Control Board	Stormwater Management Inspector	SWIN0871	11-2-19
Commonwealth of Va., State Water Control Board	Erosion and Sediment Control Inspector	3063	11-30-19

10. Stefan Gitchev – Area 2 Site Inspector

Authority	Title	Certification #	Expiration/Completion Date
Commonwealth of Va.., State Water Control Board	Erosion and Sediment Control Program Administrator	ESPA0355	6-22-24
Commonwealth of Va.., State Water Control Board	Dual Inspector	DIN0535	10-3-22
Commonwealth of Va.., State Water Control Board	Erosion and Sediment Control Inspector	ESIN0351	2-23-19

11. Mick Tilley – Area 3 Site Inspector

Authority	Title	Certification #	Expiration/Completion Date
Commonwealth of Va., State Water Control Board	Erosion and Sediment Control Inspector	ESIN1224	3-13-22
Commonwealth of Va., State Water Control Board	Stormwater Management Inspector	SWIN1799	11-4-22

Commonwealth of Va., State Water Control Board	Dual Inspector	DIN1234	11-4-22
FRACO	Platform Erection	Cert. 00107000	Expiration 8/2023
OSHA Education Center and American Safety Council	OSHA 30 Hour	OEC1030-7047399	Graduation date 1/28/2018

12. Doo Lee – Area 4 Site Inspector

Authority	Title	Certification #	Expiration/Completion Date
Commonwealth of Va., State Water Control Board	Dual Inspector	DIN0968	10-16-23
Commonwealth of Va., State Water Control Board	Stormwater Management Inspector	SWIN0580	2-18-19

13. Richmond Sagoe – Area 5 Site Inspector

Authority	Title	Certification #	Expiration/Completion Date
Commonwealth of Virginia, State Water Control Board	Dual Inspector	DIN1233	1-12-22
Commonwealth of Virginia, State Water Control Board	Stormwater Management Inspector	SWIN1560	1-12-22
Commonwealth of Virginia, State Water Control Board	Erosion and Sediment Control Inspector	ESIN0991	8-9-21

14. Philip Darko – Area 6A & 6B Site Inspector

Authority	Title	Certification #	Expiration/Completion Date
Commonwealth of Va., State Water Control Board	Dual Program Administrator	DPA0154	11-7-23

Authority	Title	Certification #	Expiration/Completion Date
Commonwealth of Va., State Water Control Board	Erosion and Sediment Control Program Administrator	ESPA0314	11-7-23
Commonwealth of Va., State Water Control Board	Stormwater Program Administrator	SWPA0214	8-4-21
Commonwealth of Va., State Water Control Board	Plan Reviewer for SWM		4-11-20
Commonwealth of Va., State Water Control Board	Dual Inspector	DIN0538	1-28-22
Commonwealth of Va., State Water Control Board	Stormwater Management (Inspector)	SWIN0528	1-28-19

15. Jeremiah Goodman – Area 6C Site Inspector

Authority	Title	Certification #	Expiration/Completion Date
Commonwealth of Va., State Water Control Board	Stormwater Management Program Administrator	SWPA0236	2-7-22
Commonwealth of Va., State Water Control Board	Stormwater Management Plan Reviewer	SWPR0335 VA DEQ 002127	7-13-21
Commonwealth of Va., State Water Control Board	Dual Combined Administrator	DCA0415	2-19-22
Commonwealth of Va., State Water Control Board	Erosion and Sediment Control – Plan Reviewer	ESPR0197	11-5-21
Commonwealth of Va., State Water Control Board	Dual Inspector	DIN0537	11-28-19
Commonwealth of Va., State Water Control Board	Stormwater Management Inspector	SWIN0889	11-28-19
PWC Supervisor Equivalency Credit Program			Completed 8/30/2017

16. Brian Srey – Area 7 Site Inspector

Authority	Title	Certification #	Expiration/Completion Date
Commonwealth of Va., State Water Control Board	Dual Inspector	DIN0306	2-23-22
Va., DEQ	Erosion and Sediment Control - Program Administrator	ESPA0350	5/21/24
Va., DEQ	Stormwater Management Program Administrator		

17. Kyle Settle – Area 8 Site Inspector

Authority	Title	Certification #	Expiration/Completion Date
Commonwealth of Virginia, State Water Control Board	Stormwater Management Program Administrator	SWPA0330	2/10/2024

PUBLIC WORKS - ENVIRONMENTAL SERVICES

Land Plans with Disturbed Area that have Land Permits Issued

07/01/2020 Through 06/30/2021

Plan Name / Plan Number / Permit Number	Parcel Number / Address	Developer / Owner	Phone	Disturbed Area	Plan Approval Date
I-66 BUSINESS CTR (PROLOGIS PARK MANASSAS) 08-00049R01S02 LND2022-00018	7597-54-1387 7300 CENTURY PARK DR	FREEDOM I-66 LAND LLC	7039065461	83.230	06/17/2021
MANASSAS BUSINESS PARK - PI PLAN 11-00064R00S03 LND2019-00149	7594-98-1801 10821 BRISTOW RD BRISTOW, VA 20136	BRISTOW MANASSAS LLC		3.350	06/07/2021
FREEDOM I-66 BUSINESS CENTER - ALBAN 15-00054R00S01 LND2022-00009	7597-54-7574 7300 CENTURY PARK DR PARCEL ADDRESS	FREEDOM I-66 LAND LLC	7037881509	23.150	06/15/2021
DOMINION VALLEY COUNTRY CLUB SEC 23-LOTS 18-22 SDR2018-00041 LND2019-00025	7299-34-2371 5170 BONNIE BRAE FARM DR HAYMARKET, VA 20169	DOMINION COUNTRY CLUB LP	7037535663	5.130	08/12/2020
CARTERS MILL PH 2 SDR2018-00086 LND2021-00117	7298-42-4228 15505 JOHN MARSHALL HWY HAYMARKET, VA 20169	PULTE HOME CORPORATION	7039349369	23.770	09/24/2020
POTOMAC SHORES LANDBAY 4 SEC 3 SDR2019-00009 LND2021-00099	8388-39-0912 18100 COCKPIT POINT RD DUMFRIES, VA 22026	HARBOR STATION COMMUNITIES, LLC	9492418466	42.840	09/03/2020
FLEETWOOD AT SLATE RUN EROSION & SED. CONTROL PLAN SDR2019-00039 LND2021-00196	7592-96-6472 13209 FLEETWOOD DR NOKESVILLE, VA 20181	ATLANTIC BUILDERS, LTD.	5408918540	4.150	11/25/2020
BRADYS HILL SDR2020-00002 LND2021-00142 LND2021-00345	8188-75-3196 3996 BRADYS HILL RD TRIANGLE, VA 22172	BRADYS HILL L.C.	7037349730	4.730	10/30/2020

PUBLIC WORKS - ENVIRONMENTAL SERVICES

Land Plans with Disturbed Area that have Land Permits Issued

07/01/2020 Through 06/30/2021

Plan Name / Plan Number / Permit Number	Parcel Number / Address	Developer / Owner	Phone	Disturbed Area	Plan Approval Date
BEACON PARK TOWNS AT BELMONT BAY SEC 2 SDR2020-00003 LND2021-00100	8492-33-9545 611 WATERMANS DR WOODBRIDGE, VA 22191	MILLER AND SMITH AT BELMONT BAY III LLC	7036153565	4.379	09/22/2020
POTOMAC SHORES LANDBAY 5 SEC 1&2 SDR2020-00022 LND2021-00059	8389-40-2291 1501 CHERRY HILL RD DUMFRIES, VA 22026	CHR PROPERTIES, LLC	9492418466	89.710	09/02/2020
POTOMAC SHORES LANDBAY 5 SEC 3 SDR2020-00028 LND2021-00168	8389-51-7110 1575 THOROUGHGOOD DR DUMFRIES, VA 22026	HARBOR STATION COMMUNITIES, LLC	9492418466	0.150	12/11/2020
WILSONS RESERVE SDR2020-00031 LND2021-00268	7794-38-1716 10550 LUCASVILLE RD MANASSAS, VA 20112	WILSON VENTURES LLC	7039730708	4.600	02/25/2021
POTOMAC TOWN CENTER LANDBAY 2 SDR2020-00035 LND2021-00116 LND2021-00128	8291-94-8456 14901 RIVER WALK WAY WOODBRIDGE, VA 22191	LENNAR	7036428080	4.150	08/25/2020
BEACON PARK TOWNS AT BELMONT BAY SEC 1 SDR2020-00038 LND2021-00082	8492-33-9545 610 WATERMANS DR WOODBRIDGE, VA 22191	MILLER AND SMITH	703821250014	3.080	09/10/2020
POTOMAC SHORES LANDBAY 5 SEC 3 SDR2020-00042 LND2021-00021	8389-51-7110 1575 THOROUGHGOOD DR DUMFRIES, VA 22026	BEAZER HOMES CORPORATION	7038983665	0.150	07/14/2020
CURRIE FARM SDR2020-00043 LND2021-00146	7297-25-4694 15658 CALUM CT HAYMARKET, VA 20169	EQUINOX INVESTMENTS LLC	7034792689	97.010	11/03/2020

PUBLIC WORKS - ENVIRONMENTAL SERVICES

Land Plans with Disturbed Area that have Land Permits Issued

07/01/2020 Through 06/30/2021

Plan Name / Plan Number / Permit Number	Parcel Number / Address	Developer / Owner	Phone	Disturbed Area	Plan Approval Date
POTOMAC SHORES LANDBAY 9 BLOCK 2 SDR2021-00002 LND2022-00012	8389-44-9146 1800 POTOMAC SHORES PKWY DUMFRIES, VA 22026	HARBOR STATION COMMUNITIES, LLC	9492418466	16.990	06/30/2021
POTOMAC SHORES LANDBAY 5 SEC 1&2 SDR2021-00009 LND2021-00260	8389-40-2291 1501 CHERRY HILL RD DUMFRIES, VA 22026	HARBOR STATION COMMUNITIES, LLC	9492418466	89.710	04/07/2021
BEACON PARK TOWNS AT BELMONT BAY SEC 1 SDR2021-00012 LND2021-00179	8492-33-9511 610 WATERMANS DR WOODBRIDGE, VA 22191	MILLER AND SMITH	703821250014	3.090	12/22/2020
BEACON PARK TOWNS AT BELMONT BAY SEC 2 SDR2021-00026 LND2021-00178	8492-33-9545 611 WATERMANS DR WOODBRIDGE, VA 22191	MILLER AND SMITH AT BELMONT BAY III LLC	7036153565	4.379	01/11/2021
RICHMOND STATION LANDBAY B SEC 2 SDR2021-00031 LND2021-00197	7896-30-4971 8160 QUARRY RD MANASSAS, VA 20110	MILLER AND SMITH LAND, INC	7035512020	7.650	01/28/2021
CARTERS MILL PH 2 SDR2021-00044 LND2021-00308	7298-21-4282 15966 SWEET VIOLET LN HAYMARKET, VA 20169	PULTE HOME COMPANY, LLC	2024200738	0.303	05/18/2021
REGENCY AT CREEKSIDE SEC 2 SDR2021-00063 LND2021-00332	7398-85-3163 13788 LONG RIDGE DR GAINESVILLE, VA 20155	TOLL VA VIII, L.P.	5712918000	35.800	05/11/2021
MDC1 CENTER SPR2017-00197 LND2017-00154	7695-50-2691 10400 HARRY J PARRISH BLVD MANASSAS, VA 20110	GORDON	7038892328	46.250	12/03/2020
SMOKETOWN ROAD/OPITZ BLVD PEDESTRIAN IMPROVEMENT SPR2017-00354	8291-57-9978 14490 SMOKETOWN RD WOODBRIDGE, VA 22192	PRINCE WILLIAM COUNTY TRANSPORTATION	7037925276	0.210	08/10/2020

Land Plans with Disturbed Area that have Land Permits Issued

07/01/2020 Through 06/30/2021

Plan Name / Plan Number / Permit Number	Parcel Number / Address	Developer / Owner	Phone	Disturbed Area	Plan Approval Date
LND2021-00079					
GARBER SHOPPING CENTER PH II SPR2017-00374 LND2021-00205	8292-55-6284 2915 GARBER WAY WOODBRIDGE, VA 22192	LIBERIA INVESTMENTS LLC	7033356060	2.120	07/24/2020
POTOMAC SHORES - BASEBALL FIELD SPR2017-00376 LND2021-00147	8289-91-0901 2301 RIVER HERITAGE BLVD DUMFRIES, VA 22026	URBAN LTD	7036428080	3.300	07/30/2020
POTOMAC SHORES - NATURAL TRAIL PH 2 SPR2017-00394 LND2021-00202	8389-18-2316 17490 APPLE LN DUMFRIES, VA 22026	BIDDLE REAL ESTATE VENTURES		6.630	10/09/2020
QUANTICO CENTER SPR2017-00422 LND2021-00098	8189-68-5008 16830 DUMFRIES RD DUMFRIES, VA 22025	CORNERSTONE DEVELOPMENT OF VIRGINIA	7035035555	5.730	09/21/2020
CARTERS MILL CLUBHOUSE SPR2018-00344 LND2021-00122	7298-11-9072 15875 ROSE ELLENE LN HAYMARKET, VA 20169	PULTE HOME CORPORATION	7039349369	3.020	07/07/2020
POTOMAC SHORES FISHING PIER AND MARINA PARK SPR2018-00432 LND2021-00169	8388-79-8558 1285 CHERRY HILL RD DUMFRIES, VA 22026	BIDDLE REAL ESTATE VENTURES		8.270	10/08/2020
BROAD RUN INDUSTRIAL PARK LOT 2D SPR2019-00002 LND2021-00148	7595-59-7124 9341 INDUSTRIAL CT MANASSAS, VA 20109	MIKE GARCIA CONSTRUCTION INC	7039061650	5.530	11/24/2020
POWELLS CREEK PH 1 - STREAM RESTORATION SPR2019-00147 LND2021-00055 LND2021-00065	8190-75-6707 3905 GREAT HARVEST CT DUMFRIES, VA 22025	PWC ENVIRONMENTAL SERVICES	7037925534	16.200	09/23/2020

Land Plans with Disturbed Area that have Land Permits Issued

07/01/2020 Through 06/30/2021

Plan Name / Plan Number / Permit Number	Parcel Number / Address	Developer / Owner	Phone	Disturbed Area	Plan Approval Date
BANK OF AMERICA AT MARKET CENTER HAYMARKET SPR2019-00214 LND2021-00216	7298-62-0503 6561 TRADING SQ HAYMARKET, VA 20169	CBRE	7033022536	0.660	01/26/2021
TRUCKERS REPAIR SHOP & PARKING SPR2019-00218 LND2021-00170	7695-01-4023 10224 RESIDENCY RD MANASSAS, VA 20110	RESIDENCY LLC	7038190583	5.330	09/01/2020
SPECTRUM AT QUANTICO CENTER SPR2019-00234 LND2021-00110	8189-75-8468 3601 FETTLER PARK DR DUMFRIES, VA 22025	VANTAGE CONSTRUCTION		4.210	08/20/2020
MAPLEDALE SELF STORAGE SPR2019-00256 LND2020-00178 LND2021-00133	8092-54-5385 13698 MAPLEDALE AVE WOODBRIDGE, VA 22193	LAND DESIGN CONSULTANTS	7033488619	3.790	09/23/2020
MADISON SQUARE LANDBAY B & C SPR2019-00314 LND2020-00139	7297-20-5229 15610 LEE HWY GAINESVILLE, VA 20155	WCLEW, PC	7036804664	24.580	10/28/2020
PROJECT DC-5 SPR2019-00375 LND2021-00151	7695-39-1147 10601 PYRAMID PL MANASSAS, VA 20110	QTS INVESTMENT PROPERTIES MANASSAS LLC	6788355215	17.940	08/06/2020
12905 FITZWATER DRIVE SPR2020-00013 LND2021-00183	7493-58-6856 12905 FITZWATER DR NOKESVILLE, VA 20181	LAUREN M SIMON (LMS) REALTY LLC	2177141229	0.987	07/08/2020
FOUR SEASONS AT VIRGINIA CROSSING SPR2020-00021 LND2021-00124 LND2021-00199	8192-91-1089 13901 MINNIEVILLE RD WOODBRIDGE, VA 22193	K HOVNANIAN HOMES	5712998746	18.140	07/22/2020

PUBLIC WORKS - ENVIRONMENTAL SERVICES

Land Plans with Disturbed Area that have Land Permits Issued

07/01/2020 Through 06/30/2021

Plan Name / Plan Number / Permit Number	Parcel Number / Address	Developer / Owner	Phone	Disturbed Area	Plan Approval Date
FREEDOM I-66 BUSINESS CENTER - SWM SPR2020-00022 LND2021-00112	7597-54-1387 7201 CENTURY PARK DR MANASSAS, VA 20109	FREEDOM I-66 LAND LLC	7039065461	3.500	08/17/2020
VIRGINIA MEADOWS INDUSTRIAL PK LOT 5A N TO N FIBER SPR2020-00049 LND2020-00129 LND2021-00254	7596-24-8037 12000 WILTON MEADOWS CT MANASSAS, VA 20109	OLDE RED LLC	7034665427	3.950	07/07/2020
ROLLINS FORD ROAD - PI PLAN SPR2020-00053 LND2021-00039	7496-47-2202 8227 LINTON HALL RD BRISTOW, VA 20136	NOVA MANGO FARMS LLC C/O BOWMAN CONSULTING GROUP	7034432400	2.000	07/27/2020
THOROUGHFARE ROAD - PI PLAN SPR2020-00061 LND2021-00230	7297-23-9798 15503 THOROUGHFARE RD GAINESVILLE, VA 20155	EQUINOX INVESTMENTS LLC	7034792689	9.650	01/19/2021
LDS GAINESVILLE WARDS STAKE SUITE ADDITION SPR2020-00076 LND2022-00003	7396-65-2789 14015 GLENKIRK RD GAINESVILLE, VA 20155	WILES MENSCH CORPORATION		0.010	04/16/2021
LINDSAY MANASSAS COLLISION CENTER SPR2020-00103 LND2021-00067	7896-18-0400 8501 MAPLEWOOD DR MANASSAS, VA 20111	SIMPSON DEVELOPMENT	7032990029	4.300	08/11/2020
BETHLEHEM CONTRACTORS OFFICE SPR2020-00106 LND2021-00083	7597-81-1147 7720 BETHLEHEM RD MANASSAS, VA 20109	M&F CONCRETE INC		4.330	09/09/2020
INDEPENDENT HILL WATER LINE EXTENSION SPR2020-00147 LND2021-00245	7891-63-1590 14780 JOPLIN RD MANASSAS, VA 20112	PWC PUBLIC SCHOOLS	7037918717	0.850	10/12/2020

PUBLIC WORKS - ENVIRONMENTAL SERVICES

Land Plans with Disturbed Area that have Land Permits Issued

07/01/2020 Through 06/30/2021

Plan Name / Plan Number / Permit Number	Parcel Number / Address	Developer / Owner	Phone	Disturbed Area	Plan Approval Date
BENEDICTINE SISTERS OF VIRGINIA MONASTERY SPR2020-00161 LND2021-00056	7495-98-0459 9535 LINTON HALL RD BRISTOW, VA 20136	RAMCO OF VA, INC	7039302003	5.890	08/04/2020
POTOMAC SHORES PARKWAY PH IV SPR2020-00166 LND2021-00325	8389-44-9146 1800 POTOMAC SHORES PY	HARBOR STATION COMMUNITIES	7034931747	59.740	06/07/2021
VIRGINIA GATEWAY PH 5 - PANDA EXPRESS SPR2020-00196 LND2021-00104	7397-71-8742 13911 PROMENADE COMMONS ST GAINESVILLE, VA 20155	CFT NV DEVELOPMENTS LLC	6263728122	1.380	09/17/2020
13TH HIGH SCHOOL - PUBLIC IMPROVEMENTS SPR2020-00210 LND2021-00314	7496-09-3583 8001 LIMESTONE DR GAINESVILLE, VA 20155	PRINCE WILLIAM COUNTY PUBLIC SCHOOLS		1.280	03/15/2021
FREEDOM I-66 BUSINESS CENTER- ALBAN - EG SPR2020-00211 LND2021-00159	7597-45-3801 7301 GROVETON RD MANASSAS, VA 20109	FREEDOM I-66 LAND LLC	7039065461	21.440	11/05/2020
TRACTOR TRAILER PARKING FACILITY SPR2020-00238 LND2022-00014	7497-11-1320 13220 UNIVERSITY BLVD GAINESVILLE, VA 20155	KARAN TRANSPORT INC	5402358900	2.300	03/15/2021
POND #232 RETROFIT SPR2020-00245 LND2021-00158	8191-70-3692 4038 CARDINAL CREST DR WOODBRIDGE, VA 22193	PWC PUBLIC WORKS	7037926865	0.250	10/07/2020
AIRPORT GATEWAY COMMERCE CENTER - PI SPR2020-00249 LND2021-00297	7694-96-3034 10849 AIRMAN AVE MANASSAS, VA 20110	CLOUD HQ	2026790683	0.610	10/15/2020
EAGLES CROSSING SPR2020-00252 LND2022-00023	7596-88-3377 8131 BETHLEHEM RD MANASSAS, VA 20109	NVP INC	7038535595	1.740	04/28/2021

Land Plans with Disturbed Area that have Land Permits Issued

07/01/2020 Through 06/30/2021

Plan Name / Plan Number / Permit Number	Parcel Number / Address	Developer / Owner	Phone	Disturbed Area	Plan Approval Date
SARATOGA LANE IMPROVEMENTS SPR2020-00260 LND2021-00089	8091-68-7544 14482 GENERAL WASHINGTON DR WOODBRIDGE, VA 22193	PWC DEPT OF TRANSPORTATION	7037928161	0.230	09/09/2020
SMOKETOWN STATION SPR2020-00262 LND2021-00044	8292-72-0277 2750 PRINCE WILLIAM PKWY WOODBRIDGE, VA 22192	KIMCO REALTY CORPORATION	2158067956	0.280	07/27/2020
BRICKYARD BUILDING A & BUILDING E (BUILDING B) SPR2020-00278 LND2021-00164	7695-62-8723 10301 TANNER WAY MANASSAS, VA 20110	AMAZON DATA SERVICES		8.230	10/16/2020
SDC XIII SUDLEY LOT 5A-2 SPR2020-00286 LND2021-00333	7495-51-1676 10215 CARNOCH WAY BRISTOW, VA 20136	SDC XIII SUDLEY, LLC	9545226010	2.450	03/22/2021
MANGO FARMS PH 1 SANITARY SEWER TRUNKLINE PI PLAN SPR2020-00287 LND2021-00248	7496-47-2202 8227 LINTON HALL RD BRISTOW, VA 20136	BOHLER ENGINEERING VA LLC	7037096500	5.500	11/10/2020
CENTERVILLE ROAD - MATHIA EVENT CENTER SPR2020-00296 LND2021-00155 LND2022-00004	7897-26-9944 7209 CENTREVILLE RD MANASSAS, VA 20111	MATHAI REAL ESTATE HOLDINGS LLC		2.006	06/16/2021
BRICKYARD - BUILDING A & BUILDING E (BUILDING C) SPR2020-00300 LND2021-00227	7695-62-8723 10000 GODWIN DR MANASSAS, VA 20110	AMAZON DATA SERVICES		8.270	12/29/2020
BENNETT ELEMENTARY SCHOOL ACTIVITY ROOM SPR2020-00303 LND2021-00315	7795-80-6926 8800 OLD DOMINION DR MANASSAS, VA 20110	PRINCE WILLIAM COUNTY SCHOOL BOARD	7037918717	0.350	09/14/2020

PUBLIC WORKS - ENVIRONMENTAL SERVICES

Land Plans with Disturbed Area that have Land Permits Issued

07/01/2020 Through 06/30/2021

Plan Name / Plan Number / Permit Number	Parcel Number / Address	Developer / Owner	Phone	Disturbed Area	Plan Approval Date
CITY OF MANASSAS WTP CLEARWELL NO 2 SPR2020-00305 LND2020-00241	7396-31-4870 14329 GLENKIRK RD NOKESVILLE, VA 20181	CITY OF MANASSAS PUBLIC WORKS	7032578471	1.700	12/17/2020
NEW BRISTOW VILLAGE COMMERCIAL CENTER PH 2 SPR2020-00307 LND2021-00177	7595-40-7644 10302 BRISTOW STATION DR BRISTOW, VA 20136	LIDL US OPERATIONS LLC	7039274890	4.980	12/11/2020
PREMIER BUSINESS PARK SPR2020-00312 LND2021-00058	7597-33-9464 11920 BALLS FORD RD MANASSAS, VA 20109	BTC LLL PREMIER BP LLC	2015076776	34.300	08/21/2020
WOODBRIDGE HIGH SCHOOL - CONCESSION BUILDING SPR2020-00313 LND2021-00057	8293-43-3723 3001 OLD BRIDGE RD WOODBRIDGE, VA 22192	PRINCE WILLIAM COUNTY SCHOOL BOARD	7037917308	0.990	08/18/2020
PRINCE WILLIAM MARINA ANNEX SPR2020-00316 LND2021-00339	8393-80-8985 1215 SWAN POINT RD WOODBRIDGE, VA 22192	PRINCE WILLIAM MARINA INC		0.990	01/04/2021
DDC9 DELIVERY STATION SPR2020-00336 LND2021-00085	7497-04-8673 5533 WELLINGTON RD GAINESVILLE, VA 20155	AMAZON.COM SERVICES LLC	8043180149	3.350	09/18/2020
PRINCE WILLIAM COMMERCE CENTER SPR2020-00337 LND2021-00014	7895-25-4520 9845 LIBERIA AV	PROGRESSIVE INVESTMENTS LLC		16.100	07/14/2020
TELEGRAPH ROAD WAREHOUSE SPR2020-00343 LND2021-00240	8392-06-3216 13405 TELEGRAPH RD WOODBRIDGE, VA 22192	THE PRUITT CORPORATION	7036319307	10.530	02/10/2021
NEW BRISTOW VILLAGE COMMERCIAL CENTER SPR2020-00344 LND2021-00252	7595-50-2842 10425 BRISTOW STATION DR BRISTOW, VA 20136	SAADEH PARTNERS II LLC	5712374347	3.860	09/03/2020

Land Plans with Disturbed Area that have Land Permits Issued

07/01/2020 Through 06/30/2021

Plan Name / Plan Number / Permit Number	Parcel Number / Address	Developer / Owner	Phone	Disturbed Area	Plan Approval Date
PARKWAY 66 SPR2020-00348 LND2021-00095	7597-03-6372 7413 CUSHING RD MANASSAS, VA 20109	MATAN PARKWAY 66 LLC	3018159984	12.560	08/03/2020
MILESTONE - T-MOBILE @ STONEWALL MIDDLE SCHOOL SPR2020-00352 LND2021-00234	7697-70-8563 10100 LOMOND DR UAN001 MANASSAS, VA 20109	MILSTONE COMMUNICATIONS	7038654697	0.220	11/17/2020
TOWNE PLACE SUITES HOTEL - ADA RAMP SPR2020-00353 LND2021-00023	8292-51-9351 14090 SHOPPERS BEST WAY WOODBRIDGE, VA 22192	MILLS GROUP LLC	5408363393	0.005	07/27/2020
WELLINGFORD INDUSTRIAL PARK LOT 34B SPR2020-00356 LND2021-00129	7597-01-6949 13015 BALLS FORD RD MANASSAS, VA 20109	ABLE MOVING & STORAGE, INC.	7033303772	3.050	07/23/2020
HARPERS STATION LOT 10A SPR2020-00361 LND2021-00025	7297-11-5315 15901 LOVES MILL LN GAINESVILLE, VA 20155	SAGE DEVELOPMENT GROUP	8502388526	7.560	07/21/2020
AVANTI AT INNOVATION SPR2020-00363 LND2021-00134	7595-85-6467 9720 HORNBAKER RD MANASSAS, VA 20109	SI NVA02 LLC	8084647844	18.500	10/29/2020
6900 WELLINGTON ROAD SPR2020-00367 LND2021-00187	7596-08-8091 6900 WELLINGTON RD MANASSAS, VA 20109	A & H WELLINGTON ASSOC LLC	7033934000	3.990	01/14/2021
SHEPHERD OF THE HILLS LUTHERAN CHURCH SPR2020-00373 LND2021-00253	7200-90-7850 4090 SUDLEY RD HAYMARKET, VA 20169	SHEPHERD OF THE HILLS LUTHERAN		0.880	11/17/2020

PUBLIC WORKS - ENVIRONMENTAL SERVICES

Land Plans with Disturbed Area that have Land Permits Issued

07/01/2020 Through 06/30/2021

Plan Name / Plan Number / Permit Number	Parcel Number / Address	Developer / Owner	Phone	Disturbed Area	Plan Approval Date
PRINCE WILLIAM COUNTY ANIMAL SHELTER SPR2020-00385 LND2021-00080	7991-09-6721 14811 DUMFRIES RD MANASSAS, VA 20112	PWC PUBLIC WORKS FACILITIES CONSTRUCTION	7037926674	6.000	10/02/2020
MANGO FARMS NOVEC DOMINION SUBSTATION SPR2020-00393 LND2021-00152	7496-47-2202 8227 LINTON HALL RD BRISTOW, VA 20136	NOVA MANGO FARMS LLC C/O BOWMAN CONSULTING GROUP	7034432400	31.700	11/19/2020
NORTHERN VIRGINIA SCIENCE CENTER SPR2020-00398 LND2021-00064 LND2021-00150	7595-87-9739 11225 ASSETT LOOP MANASSAS, VA 20109	HOLLADAY PROPERTIES	8044966182	3.020	11/04/2020
ELECTRIFY AMERICA EV CHARGING STATION SPR2020-00403 LND2021-00214	8291-79-1954 2700 POTOMAC MILLS CIR WOODBRIDGE, VA 22192	ELECTRIFY AMERICA	5716742711	0.035	08/14/2020
HYLTON HIGH SCHOOL - BUILDING ADDITION SPR2020-00407 LND2021-00317	8092-12-4102 14051 SPRIGGS RD WOODBRIDGE, VA 22193	PRINCE WILLIAM COUNTY PUBLIC SCHOOLS	7037918717	0.930	02/25/2021
VIRGINIA MEADOWS LOT 15 SPR2020-00412 LND2021-00206	7596-26-3813 8511 VIRGINIA MEADOWS DR MANASSAS, VA 20109	BECKNELL INDUSTRIAL LLC	7084439300	8.310	09/02/2020
KELLYS RIDGE CENTER SPR2021-00003 LND2021-00261	8289-27-8940.00 17000 JEFFERSON DAVIS HWY DUMFRIES, VA 22026	KELLYS RIDGE DEVELOPMENT LLC		0.856	03/29/2021
PETERBILT TRUCK STORAGE LOT SPR2021-00009 LND2021-00016	7497-04-7126 5531 WELLINGTON RD GAINESVILLE, VA 20155	SUPERIOR PROPERTIES CORP	7036310004	0.010	07/09/2020

PUBLIC WORKS - ENVIRONMENTAL SERVICES

Land Plans with Disturbed Area that have Land Permits Issued

07/01/2020 Through 06/30/2021

Plan Name / Plan Number / Permit Number	Parcel Number / Address	Developer / Owner	Phone	Disturbed Area	Plan Approval Date
SUDLEY MANOR SQUARE SPR2021-00010 LND2021-00138	7697-41-6415 7807 SUDLEY RD 150 MANASSAS, VA 20109	PRINCETON VIRGINIA LLC	2404821291	0.050	09/10/2020
PRINCE WILLIAM COMMERCE CENTER SPR2021-00011 LND2021-00034	7895-25-6962 9765 LIBERIA AVE MANASSAS, VA 20110	PROGRESSIVE INVESTMENTS LLC		1.650	08/05/2020
HOPEWELLS LANDING SEC 2 - TOT LOT SPR2021-00012 LND2021-00235	7297-73-6033 7421 NEWFOUNDLAND WAY GAINESVILLE, VA 20155	SEQUOIA MANAGEMENT	7038039641	0.010	08/20/2020
MIDWOOD CENTER I SPR2021-00013 LND2021-00144	7298-41-4524 15439 JOHN MARSHALL HWY HAYMARKET, VA 20169	VADATA, INC		36.220	11/19/2020
PLANET DIRECT - INNOVATION SPR2021-00017 LND2021-00137	7695-16-0537 9665 DISCOVERY BLVD MANASSAS, VA 20109	PLANET DIRECT	703368847412	12.100	11/19/2020
POTOMAC CLUB SEC 2 SPR2021-00019 LND2021-00217	8391-13-2483 2314 POTOMAC CLUB PKWY WOODBRIDGE, VA 22191	POTOMAC CLUB OWNERS ASSN INC	7037302671	0.060	08/31/2020
MANASSAS CORPORATE CENTER DATA CENTER BLDG 2 SPR2021-00020 LND2021-00073	7694-87-3694 10100 HARRY J PARRISH BLVD MANASSAS, VA 20110	BOURZOU VENTURES LLC		21.700	09/16/2020
PW PARKWAY INTERCHANGE @ BALLS FORD ROAD SPR2021-00025 LND2021-00060	7496-87-7828 8106 DEVLIN RD BRISTOW, VA 20136	PWC DEPARTMENT OF TRANSPORTATION	7037924228	33.000	09/01/2020
BALLS FORD RD WIDEN TO 4 LANES SPR2021-00027	7597-33-9464 11920 BALLS FORD RD MANASSAS, VA 20109	PWC DEPARTMENT OF TRANSPORTATION	7037924228	25.260	07/28/2020

PUBLIC WORKS - ENVIRONMENTAL SERVICES

Land Plans with Disturbed Area that have Land Permits Issued

07/01/2020 Through 06/30/2021

Plan Name / Plan Number / Permit Number	Parcel Number / Address	Developer / Owner	Phone	Disturbed Area	Plan Approval Date
LND2021-00037					
RIDGEFIELD VILLAGE RETAIL CENTER SPR2021-00029 LND2021-00309	8093-71-9086 12725 RIDGEFIELD VILLAGE DR WOODBRIDGE, VA 22193	NLD RIDGEFIELD LLC	6123130129	5.160	05/04/2021
PRINCE WILLIAM COMMERCE CENTER SPR2021-00035 LND2021-00233	7895-24-4670 9845 LIBERIA AV	PROGRESSIVE INVESTMENTS LLC	7033356060	16.100	03/08/2021
BULL RUN PLAZA / PARADISE - GIANT FOOD SPR2021-00036 LND2021-00176	7697-21-9518 7788 SUDLEY RD MANASSAS, VA 20109	RAPPAPORT COMPANIES	5713821233	0.010	10/06/2020
ROSEMOUNT LEWIS PARK ELEMENTARY SCHOOL SPR2021-00038 LND2021-00323	7696-28-7224 8250 ASHTON AVE MANASSAS, VA 20109	PRINCE WILLIAM COUNTY PUBLIC SCHOOLS	7037918717	19.920	06/10/2021
ROLLING BROOK APARTMENTS BUILDING #4 SPR2021-00041 LND2021-00304	8393-40-1017 1811 SUGAR HILL DR WOODBRIDGE, VA 22192	GATES HUSDON SERVICES, LLC	7038769590	0.115	04/05/2021
HAMILTON IRON WORKS SPR2021-00043 LND2021-00190	8292-80-9997 14103 TELEGRAPH RD WOODBRIDGE, VA 22192	HAMILTON IRON WORKS INC		0.057	10/02/2020
CARTERS MILL CLUBHOUSE SPR2021-00044 LND2021-00121	7298-11-9072 15875 ROSE ELLENE LN HAYMARKET, VA 20169	PULTE HOME CORPORATION	7039349369	3.020	10/19/2020
VRE QUANTICO STATION IMPROVEMENTS SPR2021-00051 LND2021-00341	8287-85-1718 575 RAILROAD AVE QUANTICO, VA 22134	VRE	7034002038	3.220	06/01/2021

Land Plans with Disturbed Area that have Land Permits Issued

07/01/2020 Through 06/30/2021

Plan Name / Plan Number / Permit Number	Parcel Number / Address	Developer / Owner	Phone	Disturbed Area	Plan Approval Date
JAMES MADISON MARKETPLACE SPR2021-00054 LND2021-00078	7298-52-5158 15410 JOHN MARSHALL HWY HAYMARKET, VA 20169	HOME DEPOT USA, INC	7703844442	23.330	09/28/2020
GAINSFORD INDUSTRIAL PARK SPR2021-00055 LND2021-00126	7496-79-1270 8000 GAINSFORD CT BRISTOW, VA 20136	NEW SKIES NETWORKS INC	7033677311	0.023	10/20/2020
PAVILION DEVELOPMENT SPR2021-00059 LND2021-00092	7595-93-8828 11015 NOKESVILLE RD MANASSAS, VA 20110	PAVILION DEVELOPMENT COMPANY	7049445962	3.700	10/09/2020
ROUTE 29 SANITARY SEWER PUBLIC IMPROVEMENT SPR2021-00060 LND2021-00209	7297-51-5436 7721 OLD CAROLINA RD GAINESVILLE, VA 20155	EQUINOX INVESTMENTS LLC	7034792689	0.600	01/05/2021
MANGO FARMS NOVEC/DOMINION SUBSTATION - EARLY GRAD SPR2021-00061 LND2021-00091	7496-47-2202 8227 LINTON HALL RD BRISTOW, VA 20136	NOVA MANGO FARMS LLC C/O BOWMAN CONSULTING GROUP	7034432400	31.700	09/16/2020
PLANET DIRECT - INNOVATION SPR2021-00071 LND2021-00093	7695-16-0437 9665 DISCOVERY BLVD MANASSAS, VA 20109	PLANET DIRECT	703368847412	13.500	09/29/2020
MERIDIAN BAY APARTMENTS SPR2021-00074 LND2021-00266	8290-52-1605 16300 JEFFERSON DAVIS HWY WOODBRIDGE, VA 22191	JTD FOX RUN LTD	8044534974	4.780	04/06/2021
STATION METRO EXPRESS AUTO WASH SPR2021-00079 LND2022-00011	7696-29-1066 11790 SUDLEY MANOR DR MANASSAS, VA 20109	SUDLEY MANOR AUTO WASH LLC	7039274405	1.120	06/08/2021
INNOVATION - CHALLENGER CT. SPR2021-00087	7695-16-0420 9665 DISCOVERY BLVD MANASSAS, VA 20109	PWC DOT	7037926826	3.800	10/29/2020

PUBLIC WORKS - ENVIRONMENTAL SERVICES

Land Plans with Disturbed Area that have Land Permits Issued

07/01/2020 Through 06/30/2021

Plan Name / Plan Number / Permit Number	Parcel Number / Address	Developer / Owner	Phone	Disturbed Area	Plan Approval Date
LND2021-00141					
HARPERS STATION LOT 10A SPR2021-00115 LND2021-00154	7297-11-5315 15901 LOVES MILL LN GAINESVILLE, VA 20155	SAGE DEVELOPMENT GROUP	8502388526	7.560	12/10/2020
MAPLEDALE SELF STORAGE SPR2021-00124 LND2021-00157	8092-54-5385 13698 MAPLEDALE AVE WOODBRIDGE, VA 22193	1555VA LLC	3018730029	3.790	12/02/2020
POSSUM PT PWR STA PONDS ABC&E CLOSURE BY REMOVAL SPR2021-00125 LND2021-00212	8288-96-2368 19000 POSSUM POINT RD DUMFRIES, VA 22026	VIRGINIA ELECTRIC AND POWER COMPANY	5402590384	98.100	02/22/2021
BETHLEHEM ROAD - STORAGE YARD SPR2021-00138 LND2021-00204	7597-72-7231 7512 BETHLEHEM RD MANASSAS, VA 20109	EURO GROUP LLC	5712200185	15.730	02/09/2021
PROJECT MANGO PH 1 SPR2021-00140 LND2022-00025	7496-47-2202 8227 LINTON HALL RD BRISTOW, VA 20136	NOVA MANGO FARMS LLC C/O BOWMAN CONSULTING GROUP	7034432400	87.700	06/28/2021
PROJECT DC-5 SPR2021-00143 LND2021-00244	7695-39-1147 9301 FREEDOM CENTER BLVD MANASSAS, VA 20110	ASHBURN ACQUISITION CO LLC & QTS INVESTMENT PROPERTIES MANASSAS II, LLC	9138149988	20.600	03/09/2021
PWCPS BRENTSVILLE TRANSPORATION CENTER SPR2021-00144 LND2021-00185	7693-36-8469 12153 HOOE RD BRISTOW, VA 20136	BAY ELECTRIC CO., INC	7578767120	0.004	01/12/2021
SPRINT WA57XC020 AT BROADSWORD DR SPR2021-00153 LND2021-00215	7495-53-1075 9933 BROADSWORD DR BRISTOW, VA 20136	WIRELESS COMMUNICATION CONSULTANTS, INC.	7179915872	0.010	01/26/2021

PUBLIC WORKS - ENVIRONMENTAL SERVICES

Land Plans with Disturbed Area that have Land Permits Issued

07/01/2020 Through 06/30/2021

Plan Name / Plan Number / Permit Number	Parcel Number / Address	Developer / Owner	Phone	Disturbed Area	Plan Approval Date
PARKSIDE MIDDLE SCHOOL FIRE PUMP ROOM ADDITION SPR2021-00163 LND2021-00256	7896-05-3215 8602 MATHIS AVE MANASSAS, VA 20110	PRINCE WILLIAM COUNT PUBLIC SHOOLS	7037917472	0.320	03/15/2021
GAINESVILLE CROSSING DATA CENTER - EARLY GRADING SPR2021-00165 LND2021-00327	7497-56-0118 13700 UNIVERSITY BLVD GAINESVILLE, VA 20155	GCDC PURCHASER LLC		65.315	04/29/2021
GAINESVILLE MIDDLE SCHOOL - BUILDING ADDITION SPR2021-00168 LND2021-00318	7496-09-3583 8001 LIMESTONE DR GAINESVILLE, VA 20155	PRINCE WILLIAM COUNTY PUBLIC SCHOOLS	7037918717	0.890	04/06/2021
REAGAN MIDDLE SCHOOL / SILVER LAKE SPR2021-00169 LND2021-00330	7299-12-8113 15801 TANNING HOUSE PL HAYMARKET, VA 20169	PRINCE WILLIAM COUNTY PUBLIC SCHOOLS	7037918717	0.350	03/05/2021
MILESTONE - AT&T AT WOODBRIDGE MIDDLE SCHOOL SPR2021-00174 LND2021-00294	8392-12-2120 2201 YORK DR WOODBRIDGE, VA 22191	MILSTONE COMMUNICATIONS	7038654697	0.208	04/27/2021
UNITED BANK MANASSAS SPR2021-00178 LND2022-00015	7696-77-3723 8323 SUDLEY RD MANASSAS, VA 20109	UNITED BANK	7032194836	0.340	05/04/2021
BETHLEHEM ROAD - STORAGE YARD SPR2021-00179 LND2021-00241	7597-72-8413 7512 BETHLEHEM RD MANASSAS, VA 20109	EURO GROUP LLC		15.860	03/15/2021
ROSEMOUNT LEWIS PARK ELEMENTARY SCHOOL SPR2021-00182 LND2021-00255	7696-28-4908 11000 CRESTWOOD DR MANASSAS, VA 20109	PRINCE WILLIAM COUNTY PUBLIC SCHOOLS	7037918717	19.920	03/22/2021
MANASSAS DC-4 SPR2021-00184	7695-38-5047 10680 UNIVERSITY BLVD MANASSAS, VA 20110	ASHBURN ACQUISITION CO LLC & QTS INVESTMENT PROPERTIES MANASSAS II, LLC	9138149988	12.350	04/01/2021

Land Plans with Disturbed Area that have Land Permits Issued

07/01/2020 Through 06/30/2021

Plan Name / Plan Number / Permit Number	Parcel Number / Address	Developer / Owner	Phone	Disturbed Area	Plan Approval Date
LND2021-00293					
MONTCLAIR GOLF COURSE - INFILL AREA SPR2021-00191 LND2021-00191	8190-85-7263 15823 LAZY DAY LN DUMFRIES, VA 22025	PWC ENVIRONMENTAL SERVICES	7037928068	2.060	02/04/2021
WOODBORNE PRESERVE - SALES TRAILER SPR2021-00194 LND2021-00213	7297-44-8030 7414 SUGAR MAGNOLIA LOOP GAINESVILLE, VA 20155	SM NORTHERN VIRGINIA LLC	7036369144	0.460	02/19/2021
INNOVATION 2 SILOS BREWING CO SPR2021-00195 LND2022-00001	7695-14-7690 9901 DISCOVERY BLVD MANASSAS, VA 20109	RINKER DESIGN ASSOCIATES	7033687373	0.030	06/02/2021
PROJECT MANGO PH 1 SPR2021-00207 LND2021-00286	7496-47-2202 8227 LINTON HALL RD BRISTOW, VA 20136	NOVA MANGO FARMS LLC C/O BOWMAN CONSULTING GROUP	7034432400	96.100	04/06/2021
WOODBRIDGE MIDDLE SCHOOL SPR2021-00211 LND2021-00229	8392-12-2120 2201 YORK DR WOODBRIDGE, VA 22191	PRINCE WILLIAM COUNTY PUBLIC SCHOOLS	7037918718	0.005	03/04/2021
BRIGHTWOOD FOREST PH 3 SEC 1 SPR2021-00220 LND2021-00301	8291-21-7856 15255 BALLERINA LOOP WOODBRIDGE, VA 22193	TAYLOE RIDGE LLC	7035901111	32.800	05/06/2021
6900 WELLINGTON ROAD SPR2021-00223 LND2021-00273	7596-08-7587 6910 WELLINGTON RD MANASSAS, VA 20109	A & H WELLINGTON ASSOC LLC	7033934000	3.990	04/05/2021
FREEDOM I-66 BUSINESS CENTER - GRADING PLAN SPR2021-00236 LND2021-00270	7597-45-3801 7301 GROVETON RD MANASSAS, VA 20109	FREEDOM I-66 LAND LLC	7039065461	25.400	04/13/2021

Land Plans with Disturbed Area that have Land Permits Issued

07/01/2020 Through 06/30/2021

Plan Name / Plan Number / Permit Number	Parcel Number / Address	Developer / Owner	Phone	Disturbed Area	Plan Approval Date
PROJECT DC-5 SPR2021-00238 LND2021-00328	7695-39-1147 9301 FREEDOM CENTER BLVD MANASSAS, VA 20110	ASHBURN ACQUISITION CO LLC & QTS INVESTMENT PROPERTIES MANASSAS II, LLC	9138149988	21.300	06/15/2021
TELEGRAPH ROAD WAREHOUSE - REVISION FOR GRADING SPR2021-00240 LND2021-00329	8392-06-3216 13405 TELEGRAPH RD WOODBRIDGE, VA 22192	THE PRUITT CORPORATION	7036319307	10.530	06/11/2021
T-MOBILE @ RIPPON BOULEVARD SPR2021-00242 LND2021-00278	8391-51-7302 1851 RIPPON BLVD WOODBRIDGE, VA 22191	NETWORK BUILDING + CONSTRUCTION	4439397278	0.010	04/08/2021
ARDOR FURNITURE SPR2021-00248 LND2021-00300	8291-88-3668 2571 DYNASTY LOOP WOODBRIDGE, VA 22192	DYNASTY, LLC	7033356060	0.040	05/07/2021
PWC WINERY LLC PROPERTY SPR2021-00255 LND2021-00344	7199-43-4890 4970 ANTIOCH RD HAYMARKET, VA 20169	BULL RUN BUILDERS, LLC	7038879482	0.998	06/11/2021
UNITED EXCAVATING FUEL TANK CORRAL SPR2021-00263 LND2021-00290	7794-78-2084 10607 DUMFRIES RD MANASSAS, VA 20112	SCHOOLS & TOWNSEND	7033688001	0.017	05/03/2021
I-66 EMP: ADMIN OPERATIONS & MAINTENANCE FACILITY SPR2021-00264 LND2021-00285	7597-53-9572 7450 CENTURY PARK DR MANASSAS, VA 20109	I-66 EXPRESS MOBILITY PARTNERS	9805224715	3.860	04/15/2021
POWELLS CREEK - DALEBROOK DR - STREAM RESTORATION SPR2021-00274 LND2021-00305	8190-85-7263 15823 LAZY DAY LN DUMFRIES, VA 22025	PRINCE WILLIAM COUNTY PUBLIC WORKS DEPT.	7037925534	0.500	05/20/2021
INDEPENDENCE PARCEL B-1 SPR2021-00289	7596-46-4743 11775 LEXINGTON VALLEY DR MANASSAS, VA 20109	RGS ENTERPRISES LLC	8668721224	4.200	06/04/2021

Land Plans with Disturbed Area that have Land Permits Issued

07/01/2020 Through 06/30/2021

Plan Name / Plan Number / Permit Number	Parcel Number / Address	Developer / Owner	Phone	Disturbed Area	Plan Approval Date
LND2021-00338					
ROLLING BROOK APARTMENTS BUILDING #4 SPR2021-00293 LND2021-00303	8393-40-1017 12926 SLEEPY CREEK WAY 101 WOODBRIDGE, VA 22192	GATES HUDSON SERVICES LLC		0.115	05/05/2021
ORCHARD BRIDGE/PWCPA BALL FIELD COMPLEX SPR2021-00294 LND2021-00310	7897-36-4699 7175 CENTREVILLE RD MANASSAS, VA 20111	DEPARTMENT OF PARKS AND RECREATION	7037924217	2,000.000	06/04/2021
MANAPORT PLAZA - DIVINE ICE - PATIO ADDITION SPR2021-00325 LND2022-00019	7696-77-3723 8319 SUDLEY RD MANASSAS, VA 20109	DIVINE ICE LLC		0.010	06/22/2021

Total Number of Land Plans: 162

Total Number of Disturbed Acres: 3,917.023

END OF REPORT

Appendix B – Retrofitting on Prior Developed Lands

FY21 Report - Reforestation: Reforestation Projects (LUC) Beginning July 1, 2009

WMB Number	Project Name	Status	Installation FY	Latitude	Longitude	BMP Type	Existing Land Use	New Land Use	Area (Ac)	Total Pollutant Reduction (lbs/yr)		
										TN	TP	TSS
Completed Projects												
229	Innovation - Area 1D	Completed	2011	38.74008	-77.53709	Land Use Change	Pervious	Forest	0.22	1.58	0.08	29.25
233	Ben Lomond Park Area A	Completed	2012	38.79833	-77.47860	Land Use Change	Pervious	Forest	0.15	1.07	0.06	19.94
234	Ben Lomond Park Area B	Completed	2013	38.79833	-77.47860	Land Use Change	Pervious	Forest	3.81	27.28	1.45	506.58
235	Ben Lomond Park Area C	Completed	2013	38.79833	-77.47860	Land Use Change	Pervious	Forest	0.23	1.65	0.09	30.58
73	Sudley Place Reforestation	Completed	2014	38.79188	-77.50187	Land Use Change	Pervious	Forest	3.17	22.70	1.20	421.48
236	Ben Lomond Park Area D	Completed	2015	38.79833	-77.47860	Land Use Change	Pervious	Forest	0.12	0.86	0.05	15.96
5	Hope Hill Crossing	Completed	2015	38.61801	-77.37752	Land Use Change	Pervious	Forest	5.09	36.44	1.93	676.77
237	Garner Drive	Completed	2016	38.78738	-77.50875	Land Use Change	Pervious	Forest	0.40	2.86	0.15	53.18
258	Hunter Ridge Estates Area A	Completed	2016	38.63727	-77.38444	Land Use Change	Pervious	Forest	5.65	40.45	2.15	751.22
269	Hunter Ridge Estates Area B	Completed	2017	38.63427	-77.38747	Land Use Change	Pervious	Forest	4.75	34.01	1.81	631.56
231	Bristoe Station Battlefield Phase 1	Completed	2017	38.72238	-77.54464	Land Use Change	Pervious	Forest	13.99	100.17	5.32	1,860.11
270	Bristoe Station Battlefield Phase 2	Completed	2018	38.72238	-77.54464	Land Use Change	Pervious	Forest	4.50	32.22	1.71	598.32
	Bristoe Station Battlefield Phase 3	Completed	2021	38.72238	-77.54464	Land Use Change	Pervious	Forest	10.20	73.03	3.88	1,356.19

FY21 Report - SWM Retrofits: Stormwater Facility Retrofits Beginning July 1, 2009

WMB Number	Project Name	Status	Installation FY	Latitude	Longitude	BMP Practice	Area Treated (Ac)	Impervious Area (Ac)	Pervious Area (Ac)	Forested Area (Ac)	Calculation Method	Estimated Total Pollutant Reduction (lbs/yr)			Precent Unregulated Area	Baseline Adjustment for Unregulated Area (lbs/yr)			Total Pollutant Reduction Achieved after Baseline Adjustment (lbs/yr)		
												TN	TP	TSS		TN	TP	TSS	TN	TP	TSS
Completed Projects																					
1	SWM Facility #257	Completed	2010	38.70846	-77.42804	Extended Detention	4.28	1.09	1.91	1.28	CBP Established Efficiency, Incremental	7.33	0.35	223.44	13.52%	0.53	0.06	52.90	6.80	0.29	170.54
21	Pond 51 - Hammill Mill Park SWMF	Completed	2011	38.66706	-77.26875	Extended Detention	7.13	2.10	2.76	2.27	CBP Established Efficiency, Incremental	12.41	0.63	406.44	3.06%	0.21	0.03	21.60	12.20	0.60	384.84
23	SWM Facility #154 - Dawson Ridge	Completed	2011	38.64959	-77.26743	Extended Detention	6.48	2.44	2.89	1.15	CBP Established Efficiency, Incremental	12.60	0.69	449.74	9.17%	0.61	0.08	69.64	11.99	0.61	380.09
24	SWM Facility #157 - Dawson Ridge	Completed	2011	38.64802	-77.26509	Extended Detention	4.86	1.56	1.46	1.83	CBP Established Efficiency, Incremental	8.38	0.44	290.67	7.23%	0.36	0.05	40.57	8.03	0.39	250.11
83	SWM Facility #363	Completed	2013	38.73062	-77.41825	Extended Detention	35.42	8.54	14.34	12.53	CBP Established Efficiency, Incremental	58.53	2.77	1,758.43	0.52%	0.18	0.02	19.30	58.35	2.75	1,739.13
129	SWM Facility #318	Completed	2013	38.56811	-77.30660	Extended Detention	17.48	3.27	9.46	4.75	CBP Established Efficiency, Incremental	28.95	1.27	763.03	0.00%	0.00	0.00	0.00	28.95	1.27	763.03
145	SWM Facility #494	Completed	2013	38.78569	-77.53199	Constructed Wetland	38.27	15.26	22.13	0.88	CBP Retrofits Expert Panel, ST, Incremental	99.20	14.00	5,442.51	5.70%	2.20	0.29	244.38	97.00	13.72	5,198.13
69	SWM Facility #77	Completed	2014	38.74038	-77.42235	Extended Detention	54.12	6.38	22.48	25.26	CBP Established Efficiency, Incremental	77.15	2.97	1,747.72	14.09%	5.89	0.55	424.59	71.26	2.42	1,323.13
85	SWM Facility #505	Completed	2014	38.56390	-77.30522	Extended Detention	16.26	4.28	7.77	4.22	CBP Established Efficiency, Incremental	28.49	1.39	872.77	3.07%	0.35	0.03	19.68	28.14	1.36	853.09
59	SWM Facility #99	Completed	2015	38.78563	-77.51022	Constructed Wetland	8.89	5.14	3.74	0.00	CBP Retrofits Expert Panel, ST, Incremental	40.20	4.84	4,319.55	81.51%	7.90	1.10	955.15	32.31	3.74	3,364.40
80	SWM Facility #98	Completed	2015	38.62455	-77.27419	Extended Detention	7.70	2.70	2.51	2.50	CBP Established Efficiency, Incremental	13.86	0.74	494.46	0.41%	0.03	0.00	3.52	13.83	0.74	490.94
169	SWM Facility #28	Completed	2017	38.68411	-77.27122	Wet Pond, L1	74.97	21.10	34.63	19.24	CBP Retrofits Expert Panel, ST, Incremental	67.40	5.81	5,409.80	8.34%	5.74	0.68	566.70	61.65	5.13	4,843.10
16	SWM Facility #147	Completed	2018	38.61010	-77.31428	Constructed Wetland, L1	45.24	15.28	24.02	5.93	CBP Retrofits Expert Panel, ST, Incremental	68.18	6.61	5,808.09	10.44%	4.17	0.47	388.79	64.01	6.14	5,419.30
173	SWM Facility #489	Completed	2018	38.68457	-77.29579	Extended Detention	82.12	32.67	36.52	12.92	CBP Established Efficiency, Incremental	162.85	9.05	5,943.86	15.04%	11.28	1.33	1,105.74	151.57	7.72	4,838.12
190	SWM Facility #109	Completed	2018	38.72093	-77.41199	Wet Pond, L1	72.52	9.79	21.94	40.78	CBP Retrofits Expert Panel, ST, Incremental	167.29	12.72	10,334.53	11.36%	7.00	0.75	611.50	160.29	11.97	9,723.03
191	SWM Facility #424	Completed	2020	38.57761	-77.30891	Constructed Wetland	92.01	39.01	41.88	11.11	CBP Retrofits Expert Panel, ST, Incremental	239.05	37.64	28,053.69	19.75%	21.34	3.14	2,763.32	217.71	31.22	25,290.37
	SWM Facility #232	Completed	2021	38.78560	-77.51020	Wet Pond	14.77	3.20	8.24	3.32	CBP Retrofits Expert Panel, ST, Incremental	47.59	4.22	3,365.39	0.00%	0.00	0.00	0.00	47.59	4.22	3,365.39

FY21 Report-Stream Restoration: Stream Restoration Projects Beginning July 1, 2009

WMB Number	Project Name	Status	Installation FY	Latitude	Longitude	Length	Pollutant Removal Rate	Physiographic Province	Estimated Total Pollutant Reduction (lbs/yr)			Percent Unregulated Area	Baseline Adjustment for Unregulated Areas (lbs/yr)			Total Pollutant Reduction Achieved After Baseline Adjustment (lbs/yr)		
									TN	TP	TSS		TN	TP	TSS	TN	TP	TSS
Completed Projects																		
76	Cow Branch Phase I	Completed	2011	38.62637	-77.27779	1,600	Interim Approved	Coastal Plain	120	108.8	24,208.00	36%	613.55	88.90	77,864.74	77.38	70.16	15,609.85
78	Cow Branch Phase II	Completed	2012	38.63309	-77.27754	1,086	Interim Approved	Coastal Plain	81.45	73.848	16,431.18	37%	533.87	77.39	67,792.77	51.44	46.64	10,377.70
81	Lower Cabin Run	Completed	2012	38.55637	-77.31275	1,073	Interim Approved	Coastal Plain	80.475	72.964	16,234.49	3%	5.42	0.57	463.86	78.40	72.39	15,815.83
11	Northgate	Completed	2013	38.60703	-77.32944	300	Interim Approved	Piedmont	22.5	20.4	13,464.00	19%	1,084.44	100.84	77,953.88	18.31	16.60	10,954.81
82	Deerfield Estates	Completed	2013	38.72890	-77.41942	225	Interim Approved	Piedmont	16.875	15.3	10,098.00	5%	2.40	0.25	204.70	16.10	15.05	9,893.30
79	Cow Branch III	Completed	2015	38.63026	-77.27800	1,000	Interim Approved	Coastal Plain	75	68	15,130.00	39%	604.15	87.75	76,896.67	45.88	41.60	9,255.93
268	Oak Street	Completed	2015	38.78353	-77.43967	200	Interim Approved	Piedmont	15	13.6	8,976.00	80%	232.74	23.42	18,609.81	3.02	2.74	1,806.18
43	Hylbrook Park	Completed	2016	38.65086	-77.26413	1,268	Interim Approved	Coastal Plain	95.1	86.224	19,184.84	27%	67.25	8.06	6,752.78	68.99	78.16	13,918.49
49	East Longview - Route 1 Restoration	Completed	2017	38.64522	-77.26070	925	Interim Approved	Coastal Plain	69.375	62.9	13,995.25	68%	95.00	11.94	10,119.16	22.52	50.96	4,543.39
100	Dewey's Creek Reach 4	Completed	2017	38.56467	-77.31045	400	Interim Approved	Coastal Plain	30	27.2	6,052.00	29%	342.39	38.66	31,845.39	21.20	19.22	4,276.94
158	Reach 5	Completed	2017	38.68478	-77.29637	2,100	Interim Approved	Piedmont	157.5	142.8	94,248.00	12%	10.24	1.25	1,056.83	147.26	141.55	93,191.17
102	Dewey's Creek Reach 1	Completed	2018	38.57572	-77.31094	1,270	Interim Approved	Coastal Plain	95.25	86.36	19,215.10	28%	277.11	32.85	27,422.95	68.35	61.97	13,788.21
99	Dewey's Creek Reach 2	Completed	2020	38.56572	-77.30986	4,865	Interim Approved	Coastal Plain	364.875	330.82	73,607.45	29%	334.00	38.01	31,377.59	259.17	292.81	52,283.42

Phase II Stormwater Retrofits
Reduction Calculation Worksheet

SWM Facility #232 **Wet Pond-Level 1**

1 Determine existing published efficency

BMP Type	Source	TN	TP	TSS
Dry Detention Pond	CBP	5%	10%	10%

2 Apply downward modification to BMP Efficiency

Facilty Name	BMP Type	Lat	Long	Modification Type	Downward Modification Applied
SWM Facility #232	Dry Detention Pond	38.7856	-77.5102	No sediment forebay	-10%
				Short circuiting	-10%
				No micropool	-10%
				Total	**-30%**

3 Calculate modified existing efficiency

		TN	TP	TSS
Published Efficiency	Step 1	5%	10%	10%
Efficiency Modification	Step 2	-30%	-30%	-30%
Modified Efficiency		**3.50%**	**7.00%**	**7.00%**

4 Determine efficiency of proposed BMP Type

Source	BMP Type	TN	TP	TSS
BMP Clearinghouse	Wet Pond-Level 1	34.31%	53.91%	68.61%

Runoff storage (acre-feet)	0.25
Impervious acres	3.2
Runoff depth	**0.94**

Retrofit Equation Results

TN	34.31%
TP	53.91%
TSS	68.61%

5 Calculate Incremental Removal Rate

		TN	TP	TSS	
Removal Rate	Wet Pond-Level 1	34.31%	53.91%	68.61%	Bay Program Retrofit Equations
Modified existing efficieny	Step 3	3.50%	7.00%	7.00%	
Incremental Removal Rate		**30.81%**	**46.91%**	**61.61%**	

6 Calculate Load Reduction

6a Characterize the Drainage Area

	Urban Impervious Acres	Pervious Acres	Forested Acres	Total
PWC Regulated Land	1.32	6.24	2.79	10.36
Other Regulated Land	1.11	0.42	0.00	1.54
Unregulated Land	0.00	0.00	0.00	0.00
	2.4361	**6.66**	**2.79**	**11.89**

6b Account for Total Baseline Reductions on Unregulated Land

	POC	Required 5% Load Reductions	Baseline Loading Rate (*20)	Acres	Baseline Reduction
Unregulated Impervious	TN	0.07587000	1.51740000	0.00	0.00
Unregulated Pervious	TN	0.03021000	0.60420000	0.00	0.00
Unregulated Impervious	TP	0.01296000	0.25920000	0.00	0.00
Unregulated Pervious	TP	0.00148625	0.02972500	0.00	0.00
Unregulated Impervious	TSS	11.71320000	234.26400000	0.00	0.00
Unregulated Pervious	TSS	0.76912500	15.38250000	0.00	0.00

6c Calculate Total Load Reduction

Land Use	Pollutant	2009 EOS Loading Rate (lbs/acre/yr)	DA	Load	Efficiency	Initial Reduction	Baseline	Total Reduction	Sub-total/POC
Urban Impervious	Nitgrogen	16.86	3.20	53.95	30.81%	16.62	0.00	16.62	
Urban Pervious	Nitgrogen	10.07	8.24	82.98	30.81%	25.56	0.00	25.56	**47.59**
Forest	Nitgrogen	5.29	3.32	17.56	30.81%	5.41	0.00	5.41	
Urban Impervious	Phosphorus	1.62	3.20	5.18	46.91%	2.43	0.00	2.43	
Urban Pervious	Phosphorus	0.41	8.24	3.38	46.91%	1.58	0.00	1.58	**4.22**
Forest	Phosphorus	0.13	3.32	0.43	46.91%	0.20	0.00	0.20	
Urban Impervious	Total Suspended Solids	1,171.32	3.20	3,748.22	61.61%	2,309.40	0.00	2,309.40	
Urban Pervious	Total Suspended Solids	175.80	8.24	1,448.59	61.61%	892.52	0.00	892.52	**3,365.39**
Forest	Total Suspended Solids	79.91	3.32	265.30	61.61%	163.46	0.00	163.46	

7 Reduction Summary Table

Project Name	BMP Type	Lat	Long	TN (lbs/yr)	TP (lbs/yr)	TSS (lbs/yr)
SWM Facility #232	Wet Pond-Level 1	38.7856	-77.5102	47.59	4.22	3,365.39

Phase II Bay TMDL Action Plan
Reduction Calculation Worksheet

Bristoe Station Battlefield Reforestation - Phase 3

BMP Type	Acreage	Latitude	Longitude
Land Use Change	10.2	38.72238	-77.54464

1 Identify acreage and land use conversion

	Acreage	Installation FY	Land Use From	Conversion
Phase 3	10.2	2020	Pervious	Forest
Total	10.2			

2 Determine land use conversion efficency from Table V.H.1 (see below)

Area	Land Use From	Conversion	TN (lbs/ac/yr)	TP (lbs/ac/yr)	TSS (lbs/ac/yr)
All areas	Pervious	Forest	7.16	0.38	132.96

Table V.H.1 - Land Use Change Conversion Efficiency Table[1]

Basin	From	To	TN (lbs/ac/yr)	TP (lbs/ac/yr)	TSS (lbs/ac/yr)
Potomac	Impervious	Forest	13.91	1.8	1252.01
Potomac	Impervious	Grass	12.56	1.34	623.28
Potomac	Impervious	Pervious	6.75	1.42	119.05
Potomac	Pervious	Forest	7.16	0.38	132.96
Potomac	Pervious	Grass	5.81	0	0

1. Appendix V.H. Land Use Change, *Chesapeake Bay TMDL Special Condition Guidance (GM15-2005)* , May 18, 2015

3 Calculate conversion reductions

		TN	TP	TSS
Acreage	Step 1	10.20	10.20	10.20
Published Efficiency	Step 2	7.16	0.38	132.96
Reduction		**73.03**	**3.88**	**1,356.19**

4 Reduction Summary Table

Project Name	BMP Type	Latitude	Longitude	TN (lbs/ac/yr)	TP (lbs/ac/yr)	TSS (lbs/ac/yr)
Bristoe Station Battlefield Reforestation - Phase 3	Land Use Change	38.72238	-77.54464	73.03	3.88	1,356.19

Appendix C - Roadways

Standard Operating Procedure

Department of Public Works

Buildings and Grounds

Title:	Grounds Maintenance Supervisor Manual
Number:	2.037.1
Subject:	Adoption of the Grounds Maintenance Supervisor Manual
Cross Reference:	APWA Management Practice Chapters 19,26 & 34
Date Issued:	December 14, 2015
Date Revised:	September 1, 2019
Date Last Reviewed:	September 1, 2019
Signature of Issuer:	Dr. Alicia Hart Buildings and Grounds Division Chief
Applicability:	Buildings and Grounds
Effective Date:	September 1, 2019

A. **Purpose**

The purpose of this Standard Operating Procedure (SOP) is to adopt the Grounds Maintenance Supervisor Manual, referred to here after as the Manual. The Manual encompasses many of the operational procedures and business practices of the Grounds staff and the Division's snow removal procedures.

B. **Applicability**

This SOP is applicable to the employees within the Buildings & Grounds Division.

C. **Manual Adoption**

This manual formally adopts the Grounds Maintenance Supervisor Manual.

D. **Authority**

Any deviations or changes to or from this SOP must be approved by the Buildings & Grounds Division Chief.

E. **Administration**

Administration of this SOP shall be the responsibility of the Buildings & Grounds Division Chief.

GROUNDS MAINTENANCE SUPERVISOR MANUAL

Department of Public Works
Buildings & Grounds Division
Prince William County, Virginia
August 2019

PRINCE WILLIAM COUNTY

This manual is updated as needed with the input of grounds maintenance workers. Grounds maintenance practices and processes are evaluated and assessed to determine the most efficient and effective means of accomplishing the County's mission of keeping exterior grounds safe while embracing the Vision to make our community the best.

TABLE OF CONTENTS

M. Tree and Shrub Planting Guidelines	19.6
N. Grounds Maintenance – Site Assessment Checklist	19.13
O. Facility Information	
P. Environmental Services Sign Shop	
Q. Personnel Contacts	26.4
R. PWC Sites Sample	26.8
S. B&G Snow and Emergency Response Plan Coversheet	26.1 & 26.4
T. Contractor Schedule	26.4 & 26.8
U. 24-hour Locations	26.8
V. Road Chemical Distribution Log	26.8
W. Map Sample	26.8
X. Point of Contact for Weather Warnings Memo	26.2
Y. Snow Removal Operations Memo	26.1
Z. Buildings & Grounds Snow Removal Equipment	26.6 & 26.7

1. PURPOSE STATEMENT

The purpose of the Grounds Maintenance Supervisor Manual is to document the processes and procedures of Grounds Maintenance. This manual is a tool for the Grounds Maintenance Supervisor for the management of Grounds Maintenance activities. Also this manual is used to document the Buildings & Grounds (B&G) landscape and snow removal management plans.

2. GOALS/MISSION/FUNCTIONS OF THE GROUNDS MAINTENANCE SUPERVISOR

GOALS

- Effectively combine and utilize in-house and contract personnel to maximize services in the most cost-effective manner
- Increase efficiency through the application of new technology and procedures
- Improve customer awareness of grounds maintenance priorities and costs

MISSION

The mission of the Grounds Maintenance Supervisor is to provide County agencies and the public with safe, well-maintained grounds around County facilities in the most expedient and cost-effective way possible. These goals are accomplished through sound management of the Grounds Maintenance team, as well as regular communication with stakeholders and customers.

FUNCTIONS

- Provide responsive action to resolve customer and grounds maintenance situations
- Accomplish planned, unplanned, and emergency grounds maintenance functions
- Complete special projects (landscape renovations and special event ceremonies) as assigned
- Administer contracts and monitor execution of services
- Effectively utilize personnel and fiscal resources that are available
- Procure supplies and vendor services through the application of purchasing procedures; coordinate requirements to ensure proper allocation of resources
- Supervise assigned staff while providing training, discipline, recognition, and evaluating performance

3. BUILDINGS & GROUNDS DIVISION POINT OF CONTACT LISTING

Division Chief	(x6379)	Dr. Alicia Hart
Facilities Maintenance Manager	(x8497)	VACANT
Administrative Support Coordinator I	(x6393)	Vanessa Duenas
Administrative Support Assistant II	(x6390)	VACANT
Administrative Support Assistant II	(x7010)	Cheryl Harris
Accounting Assistant II	(x6377)	Andrea Silva
Contract Administrator	(x5321)	Bob Fioramonti
Custodial Services Coordinator - Day	(x6391)	Laurel Rolley
Custodial Services Coordinator - Night	(x6411)	Albert Rowe
Custodial Leader	(x4898)	Jens Kjar
Grounds Maintenance Supervisor	(x8494)	Henry Smith
Mailroom Supervisor	(x5633)	Lloyd Cox
Management & Fiscal Analyst II	(x8179)	Bill Wilson
Print Shop Supervisor	(x8359)	Mercedes Matthews
Security Manager	(x6386)	Don Flory
Building Operations Supervisors (BOS)		
Central	(x6321)	Mike Rose
Eastern	(x6355)	Joseph Schaeffer
Independent Hill	(x5381)	Alan Pitt
Manassas	(x6795)	Curtis Brenner
Western	(x6686)	Mark Lesher

4. NEW EMPLOYEE INFO

Listed below is the process and items that are issued to a new Grounds Maintenance employee. The list shows what they should receive and from whom.

a) County Issued Items
1) Form from ASC I (x6393)

b) Cell Phone
1) Request from M&FAII (x8179)
2) E-mail B&G staff with new numbers for Grounds staff members (if ASA II does not)

c) Uniforms
1) Request from Contract Administrator (x5321)
   i) Rental items
      (1) Sizes needed from employee
         (a) Shirts (S/M/L/XL…); Qty. = 11 short-sleeved or 11 long-sleeved
         (b) Pants (waist inches x inseam inches); Qty. = 11
         (c) Jackets (S/M/L/XL…); Qty. = 2

      (2) Grounds Uniform Colors
         (a) Shirts tan/maroon
         (b) Pants dark blue
         (c) Jackets dark blue

      (3) Name
         (a) Full – First and Last for invoice
         (b) Preference for nametag

   ii) Coveralls Qty. = 1 (Grainger or Southern States)

2) Request from ASC I (x6393) as available
   i) B&G items
      (1) Polo shirts (5)
      (2) Windbreaker jacket (1)
      (3) Winter jacket w/ hood (1)
      (4) Ball cap, summer/winter (1 of each)

d) Safety Shoes
1) Request from ASAII (x7010)
2) Give primary and secondary shoe choices
3) Cost over $150 paid by employee
4) One per year (unless damage sustained that would make shoe unsafe to wear)

e) Hard Hat
1) Request from Grounds Maintenance Supervisor (x8494)
2) Standard are stocked in storeroom
3) Chainsaw hard hat with ear protection and face shield attached – order from Stihl

f) Safety Vest

1) Request from Grounds Maintenance Supervisor (x8494)
2) Stocked in storeroom

g) ID Badges

1) County
   i) Request from Human Resources
   ii) Full-time – during orientation

2) Police
   i) Request through Security Manager (x6386)
      (1) Security Manager will make formal request to Police Admin WH Property Evidence (x6597)
         (a) 9039 Euclid Avenue
         (b) Bring PWC ID
         (c) Before 4PM

3) **Sheriff**
   i) Request through Security Manager (x6386)
      (1) Security Manager will make formal request to Sheriff's Office (x6077)
         (a) Complete "Key Card Access Request Form"
         (b) Note that this is for a building badge only
         (c) Send completed form to JU130 for review; they will contact B&G when approved and picture ID can be scheduled
         (d) "Blue" card is temporary (for 1 year); after employee completes first year, schedule for "Green" card (no expiration date)

h) Hand Tools

1) Issued by Grounds Maintenance Supervisor (x8494)
   i) Toolbox for assigned vehicles
      (1) Pliers
      (2) Screwdrivers
      (3) Nut Drivers
      (4) Wrenches
      (5) Tape Measurer
      (6) Snips
      (7) Level
      (8) Other materials as needed

i) Keys

1) Issued by Grounds Maintenance Supervisor (x8494)
   i) #116 – B&G Front Door
   ii) #0536 – Storage lock
   iii) #190 and #0356 – B&G WH storage
   iv) #385 – PM WH storage

j) Additional items:

1) **Training**
   i) Driver Training – Risk Management website (Smith System)

ii) Employee Emergency Response Guide - Supervisor
iii) Bloodborne Pathogens – Risk Management
iv) Annual Review of Personnel Policy – Supervisor
v) "Orientation Training" – PWC University

2) **Fuel System**
   i) Request from Fleet (x5939; Ricky Peterson)
   ii) Submit name of employee

3) **Building Listing info**
   i) Request from ASCI (x6393)

4) **Security code**: see Security Manager (x6386)

5) **E-Mail Set-Up (DoIT Customer Service)**
   i) Have the employee login to the computer.
   ii) From the "Start" Menu, open "E-Mail: Microsoft Office Outlook"
   iii) Click "Next"
   iv) Click "Next"
   v) Click the circle for "Microsoft Exchange Server", then click "Next"
   vi) For the name of the Microsoft Exchange Server Computer, enter "exchange.pwc.ad"
   vii) For the User Name, enter the employee's last name, and then click the "Check Name" button. Find the employee name that you are trying to setup the e-mail system for. Highlight the correct name and click "OK". Click "Next"
      (1) NOTE: if you cannot find the employee name under the "Check Name" button, they may not be in the system yet.
   viii) You should receive a screen showing that the account has been set-up correctly. Click "Finish".
   ix) The e-mail system will open automatically for that employee.
      (1) To check e-mail from home: mail.pwcgov.org

6) **Performance Evaluation**
   i) Set evaluation goals within first fifteen (15) days
      (1) Meet with employee on evaluation goals
   ii) Formal follow-up with employee four (4) months after start date
      (1) Address any performance issues

5. REPORTS

The Grounds Maintenance Supervisor is responsible for compiling performance reports each month for the overall performance of grounds maintenance and for the work specifically completed at the Winter Shelter.

a) Performance Measures
1) "Performance Measure" report ***Appendix A***
   i) Send to others as directed each month
2) Excel spreadsheet must be updated with information compiled from work orders for each month

6. PAYROLL

The Grounds Maintenance Supervisor is responsible for compiling payroll information for the Grounds Maintenance staff.

a) Timesheets & Request for Leave

1) Payroll is done every two weeks
   i) Collect the completed time sheets from assigned staff, confirm the hours reported, and sign
   ii) Turn in all timesheets/leave slips to the ASC I (x6393) no later than 8:00 a.m. Tuesday of pay week or as directed.
   iii) Timecards and leave slips should be completed electronically using fillable PDF forms

b) Authorization for Overtime

1) "Request for Leave/Comp & OT Approval" form ***Appendix B***
   (1) Grounds Maintenance Supervisor reviews OT requests for validity
   (2) Grounds Maintenance Supervisor will receive final OT approval from Division Chief

c) Pay Advices

1) "Pay Advices"
   i) Payroll information is available electronically through the Employee Portal
   (1) Employees can access pay and benefit information under "My Pay & Leave" on PWConnects by using their six-digit employee number and password.
   (2) Pay information is listed under Payroll/Paycheck. Click on the pay date and "Pay Advice", and the pay stub generates in Adobe

7. MEETINGS

All Grounds Maintenance staff members are required to meet with the Grounds Maintenance Supervisor at the start and end of the day for updates and adjustments to priorities. The Grounds Maintenance Supervisor is required to attend/conduct the following meetings:

a) B&G Management Staff

1) Every Wednesday at 8:30AM
2) The Division Chief will relay pertinent information for all managers/supervisors to give to staff
3) Written updates are to be e-mailed to the Division Chief, ASC I, and both ASA II personnel by Noon the day before scheduled staff meeting
4) Round table style updating from everyone will occur at the meeting

b) Quarterly

1) One-on-one with each individual staff member
   i) Primary purpose is to allow employees an opportunity to express concerns or issues
   (1) Grounds Maintenance Supervisor will note issues and concerns and resolve where possible
   ii) Secondary purpose is to update evaluation target goals and measures (if applicable)

8. TRAINING

a) Calendar

1) Created for the Grounds Maintenance staff to complete daily information review
2) Updated every month. Each day covers a new topic with information taken from the Personnel Manual, Risk Management Manual, VA Cooperative Extension Agricultural and Natural Resource publications, Risk Management Safety briefs, Department safety briefs and any outside organizations safety information (ex. OSHA, SFM, FEMA, etc.)
3) Due to the timing of preparing the calendar before the end of the previous month, the final Risk Management Safety Brief for the month is usually printed after the calendar is created.
4) The completed calendar is consolidated at the beginning of the following month. A hard copy is added to each employees working file (kept by the supervisor)
   i) Employees are expected to initial on the calendar once the review is completed, and are responsible for having a general understanding of the information
      (1) ***Appendix C*** "Sample Training Calendar"
5) Video training is incorporated into the schedule – as needed. Timing should be coordinated to make sure that all staff will be on site that day

b) Classes

1) Employees are expected to provide a copy of the training certificate to the Grounds Maintenance Supervisor
2) Records for each employee should be updated as soon as the certificate is received.
   i) Add hard copy to each employee working file (kept by the Grounds Maintenance Supervisor) and Division file (kept by the ASCI (x6393).
   ii) ***Appendix D*** "Employee Training Sample"
3) Additional training requirements listed under "New Employee Information"
4) PWC University Pre-Registration Instructions are available on-line through PWC intranet

9. PERSONNAL PROTECTIVE EQUIPMENT

1. Eye and Face Protection
   a. Safety spectacles / goggles
   b. Face shield attached to chain saw hard hat
   c. Dust mask

2. Head Protection
   a. Class C chainsaw hard hat with ear protection and face shield attached
   b. Class E hard hat (standard)
   c. Full-brimmed expedition hat when working outdoors in extreme heat
   d. Insulated "skull" hat when completing snow removal activities

3. Foot and Leg Protection
   a. Safety shoes (steel toe)
   b. Leggings (chainsaw work)

4. Hand and Arm Protection
   a. Leather gloves
   b. Fabric gloves

5. Body Protection
   a. Uniform

b. Reflective safety vests
c. Coveralls- insulated for winter operations

6. Hearing Protection
    a. Ear protection attached to chain saw hard hat
    b. Headband earplugs

7. Vehicular items
    a. Seatbelt
    b. First aid kit
    c. Fire extinguisher
    d. Incident report notebook

8. Traffic cones
    a. Provided as needed for tasks

10. VEHICLE AND EQUIPMENT LISTING

a) Grounds Maintenance vehicle mileage should be compiled on the last work day of the month. Target measure – 4000 miles per year per vehicle
    1) ***Appendix E*** "Vehicles"
b) ASA II (x6390) is responsible for maintaining the official listing of B&G vehicles. A listing of B&G in-service equipment (to include vehicles) should be updated whenever changes occur
    1) ***Appendix F*** "Equipment In-Service"
c) Vehicles are turned into Fleet for all service needs and repairs
d) All B&G vehicles can be tracked using GPS Insight system (www.gpsnsight.com). This system allows the Grounds Maintenance Supervisor to track the location and speed of vehicles

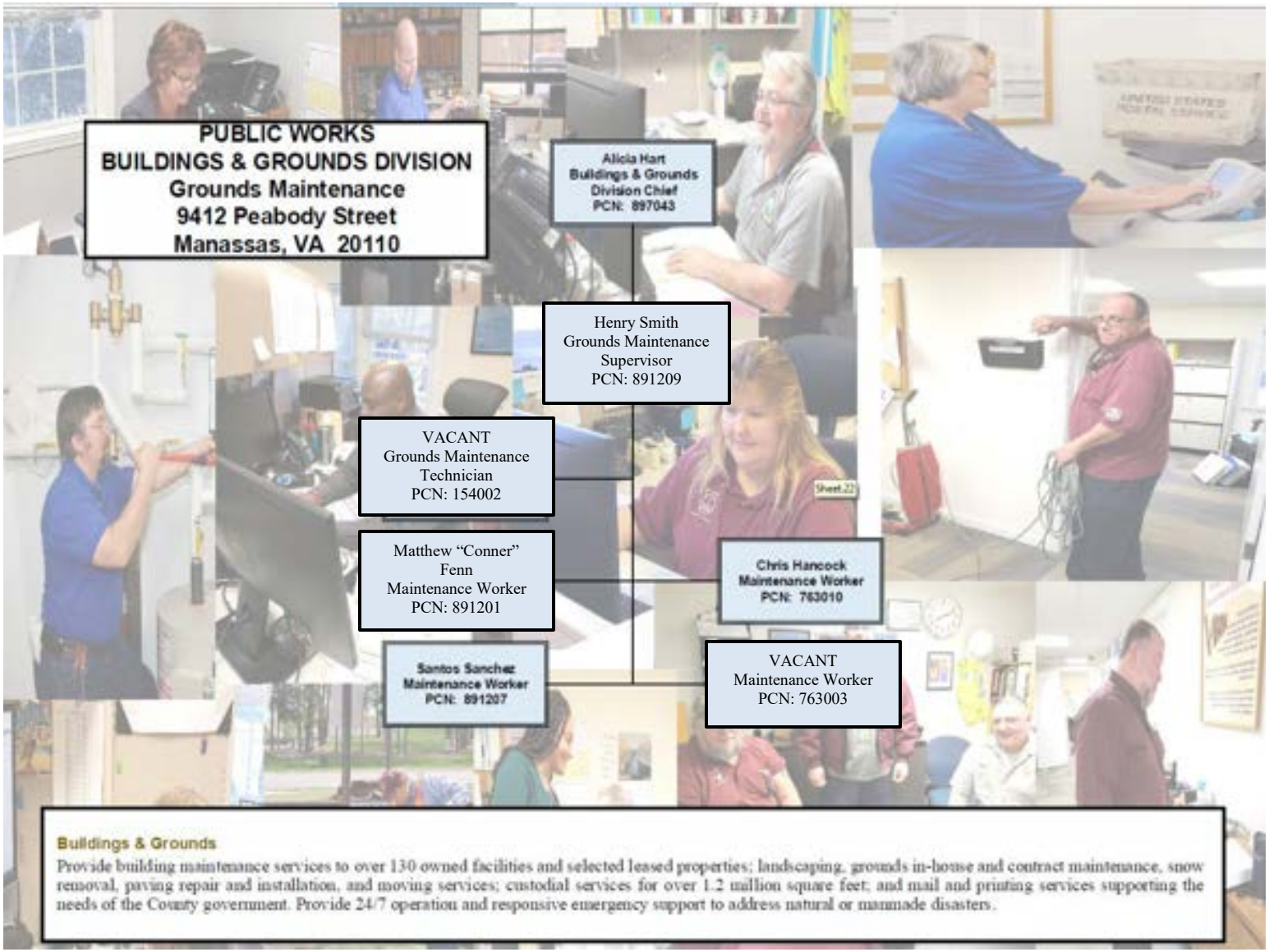
11. UNDERGROUND UTILITY LINES

Underground utility lines must be located before any work begins on County property. This must be done in conjunction with SOPs 1.004.1 Excavation and Trenching Procedures & SOP 1.004.2 Safe Excavation Around Utilities.

1. **PUBLIC LINES**
    "Miss Utility" form ***Appendix G***
        b. Complete form with needed information for the area to be marked
        c. For work to proceed, area is to be marked clear of utilities
            i. Typically, no boring, no blasting, and no trenchless technology

2. **Private Lines**
    Office of Information Technology (DoIT)
    a. If there are County lines in the area that need to be located prior to work being done, a private locator must be contacted
    b. Map is created to visually notate the specific area of work
    c. Associated charges from the company are the responsibility of the agency having the work done

3. **Aerial Pictures / Owner Information**
   Property owner information can be accessed from the DoIT website
   a. GIS => Interactive GIS => County Mapper => "I Agree" at the disclaimer message => click on the down arrow next to the "Search" box => highlight the "Locate Parcel by Address" option => input the address information
   b. As long as the property is within the County, you can find owner information. NOTE: City of Manassas/Manassas Park property will not show owner information from this website


PUBLIC WORKS
BUILDINGS & GROUNDS DIVISION
Grounds Maintenance
9412 Peabody Street
Manassas, VA 20110
Alicia Hart
Buildings & Grounds
Division Chief
PCN: 897043
Henry Smith
Grounds Maintenance
Supervisor
PCN: 891209
VACANT
Grounds Maintenance
Technician
PCN: 154002
Matthew "Conner"
Fenn
Maintenance Worker
PCN: 891201
Santos Sanchez
Maintenance Worker
PCN: 891207
Chris Hancock
Maintenance Worker
PCN: 763010
VACANT
Maintenance Worker
PCN: 763003
Buildings & Grounds
Provide building maintenance services to over 130 owned facilities and selected leased properties; landscaping, grounds in-house and contract maintenance, snow removal, paving repair and installation, and moving services; custodial services for over 1.2 million square feet; and mail and printing services supporting the needs of the County government. Provide 24/7 operation and responsive emergency support to address natural or manmade disasters.

12. GROUNDS MAINTENANCE STAFF MEMBERS

a) Grounds Maintenance Crew Composition
   1) Five (5) full-time employees
      i) Includes Grounds Maintenance Technician
   2) All Grounds Maintenance staffers are considered "Essential Personnel"
   3) Core business hours are Monday through Friday, 8AM-5PM
      i) Staff times are staggered to allow complete coverage during the 7.50-hour workday with one-hour lunch break

b) Employees respond to work requests that are approved through the B&G Work Order system and for which a Work Order (WO) has been created.
   1) Routine requests may include office moves/transfers; maintenance of asphalt, concrete, landscape, signs, and turf; snow removal; special event support; other duties as assigned
      i) Work order completion is fourteen (14) calendar days or less
      ii) Some work orders may require contractor assistance to complete. Estimated completion is thirty (30) calendar days or less, once all required contract and Purchasing items have been finalized

c) Standing work orders include work found/completed while on site or repetitive tasks. Examples include:
   1) Monthly installation and removal of Employee of the Month sign
   2) Delivery and pickup of Fleet inventoried equipment for maintenance
   3) Mow/Weed of non-contract sites
   4) Trash removal at specific sites
   5) Storm water management pond cleanup
   6) Watering of annuals; newly planted landscape plants (first year only)
   7) Clean Plaza Stage every two (2) weeks April – October
   8) Print Shop deliveries (every Thursday)

13. CONTRACTING

a) "Contract Information" form ***Appendix H***
   1) Updated throughout the year as contracts expire and changes are noted
   2) "CONTRACTS" notebook is maintained in the Grounds Maintenance Supervisor's office for reference to the hard copy documents.
      i) Contract Administrator (x5321) can help with contract questions and is the B&G liaison with Purchasing
      ii) Actual amount of work completed is based on available funding resources

b) Standard procedure once an area has been selected for contract maintenance:
   1) Contact current contractor; latest information is available from the Purchasing contract listing on-line
   2) Schedule site visit with the contractor to review the area, mark/paint damaged areas requiring special attention, and discuss opportunities to improve
   3) Contractor should provide their written estimate to complete the job within seven (7) days of site visit (turn key operation)
   4) Review contractor's estimate for accuracy
   5) Create a Task Order (TO) based on the contractor's estimate for signature
   6) Create a Purchase Order (Grounds Maintenance Supervisor)
   7) Upon receipt of the approved PO, schedule start date with the contractor
   8) Notify the stakeholders/occupants of work schedule and estimated timeframe for completion

ASPHALT MAINTENANCE

a) "Cyclic Updates – Pavement" form ***Appendix I***
    1) Update annually for budget process
    2) Asphalt maintenance to parking lots and roadways are scheduled cyclically
        i) Average lifespan is 15 years
    3) Approximately fifty (50) parking lots and roadways are currently listed for evaluation and prioritization each fiscal year
        i) Rough estimate cost planning formula: $16.50/SY
        ii) ***Appendix J*** "Asphalt"

PAVEMENT MARKINGS

a) Maintenance of paint for parking lots is scheduled every four (4) years.
    1) ***Appendix K*** "Markings"

SWEEPING

a) Sweeping maintenance to parking lots is scheduled annually; completed in halves
    1) ***Appendix L*** "Sweep"

CONCRETE MAINTENANCE

a) Concrete maintenance is scheduled as needed
    1) Will complete repairs related to safety hazards without a formal request being issued
b) Rough estimate cost planning formula: $55.00/SY

FENCE MAINTENANCE

a) Fence maintenance is scheduled as needed. NOTE: this is a Fairfax County contract
   1) Dumpster Enclosures: there should be at least one at each building
   2) Locations without dumpster enclosures
      - 102 - F&R
      - 115 – Health Department
      - 116 - B&G
      - 117 - Senior Center at Manassas
      - 311 – Central Library
      - 390 - WD Fuel Pumps
      - 401 - McCoart
      - 402 - Owens
      - 420 – Animal Shelter
      - 440 - Juvenile Detention Center
      - 620 - Human Services
      - 701 – Senior Center at Woodbridge
      - 721 - Potomac

   3) Additional structures
      - ES – chain link complex enclosure
      - Ferlazzo – chain link tennis courts
      - Gar-Field Police – brick behind building; chain link and vinyl complex enclosure
      - Gar-Field Pumps – chain link and vinyl complex enclosure
      - Hilda Barg – wooden fence behind building & chain link fence
      - IHNL – wooden fencing
      - JDC – chain link yard enclosure
      - Judicial Center – vinyl vent enclosure
      - Senior Center at Manassas – chain link SWMP
      - Senior Center at Woodbridge – chain link safety (lower and upper) fence and wooden split rail fence
      - WDP – brick and open design complex enclosure
      - WD Fuel Pumps – wooden security enclosure
      - Sam's Junkyard – wooden barrier fence around junkyard
      - Pedestrian Bridge – chain link safety fence
      - Fleet – chain link security enclosure

GROUNDS MAINTENANCE & LANDSCAPING SERVICES

a) **Parks & Recreation (P&R)**
   1) Twenty-eight (28) sites are covered by the (P&R) Memo of Understanding (MOU)
      1. Human Services Drop-In Center (HS)
      2. Bull Run Regional Library (BRRL)
      3. Central Community Library (Central)
      4. Central District Police Station (CPS)
      5. Chinn Park Regional Library (Chinn)
      6. Dale City Neighborhood Library (DCNL)
      7. Environmental Services (ES)
      8. Ferlazzo, Dr. A.J. (Ferlazzo)
      9. Gar-Field Police (Gar-Field)

10. Gar-Field Pumps (Pumps)
11. Gypsy Moth Mosquito Control (GMMC)
12. Haymarket-Gainesville Community Library (HGL)
13. Homeless Prevention Center, Hilda Barg (HPC)
14. Independent Hill Neighborhood Library (IHNL)
15. Juvenile Detention Center (JDC)
16. Molinari Juvenile Shelter (MJS)
17. Montclair Community Library
18. Manassas Complex (Manassas)
19. McCoart Complex
20. Nokesville Neighborhood Library (NNL)
21. Potomac Community Library (Potomac)
22. Public Safety Training Facility (PSTC)
23. Senior Center at Woodbridge (Sr. Ctr.)
24. Western District Police (WDP)
25. Winter Shelter Hypothermia Unit (WS)
26. Animal Shelter (AS)
27. Fleet
28. Police Impound Lot (PIL)

2) Some sites include multiple buildings
   i) Gar-Field Pumps
      - Juvenile Court Services Unit
      - Tower lot

   ii) Manassas Complex
      - Old Courthouse
      - Fire & Rescue
      - Voter Registration
      - Bennett
      - Judicial Center
      - Adult Detention Center (ADC) Annex
      - Police Evidence
      - Health Department
      - Buildings & Grounds
      - Senior Center at Manassas
      - ADC Main Facility
      - ADC Modular Facility
      - ADC Expansion

   iii) McCoart
      - Owens
      - Development Services
      - Plaza
      - SWMP

   iv) PSTC Main
      - PSTC Annex
      - Burn Building
      - Range/Shoot House

3) Contract maintenance is divided into three (3) groupings:
   i) Service Level A
      (1) Sites receive more concentrated support due to public usage/administrative usage
      (2) Includes Government Administrative and Public Safety facilities
   ii) Service Level B
      (1) Includes Libraries, Human Services and Social Services facilities
   iii) Service Level C
      (1) Includes Operational and Maintenance facilities
4) The ADC Work Crew is used to manage the turf at the Manassas Complex; below is what is completed by the work crew.
   a. Mowing
      i. Frequency: about 24 times per fiscal year
   b. Edging
      i. Frequency: about 24 times per fiscal year

	Service Level Frequency			
	A	**B**	**C**	Notes
Mulching	1	1	1	
Mowing	24	24	24	Manassas Complex completed by ADC Workforce Crew
Edging	8	8	5	Manassas Complex completed by ADC Workforce Crew
Turf Fertilization	3	3	2	
Hard Surface Weeds	5	3	3	
Broadleaf Weeds	2	2	2	
Aerate/Seed	1	1	1	
Soil Testing	1	1	1	
Prune/Shear	3	2	2	
Landscape Pests	8	7	6	
Landscape Weeds	10	8	6	
Landscape Fertilizer	1	1	1	
Goose Control	12	0	0	Only completed at McCoart Complex
SWMP	2	2	2	

TRANSPLANTS

B & G does not traditionally transplant trees. However there are times that B&G does accept donations. Below are some examples:

i) Example
   (1) Memorial trees for staff/citizens
      (a) Situation specific
      (b) Donator may pick the tree or request suggestions
      (c) Donator may pick the location or request suggestions
      (d) Tree is planted – in-house or contractor
ii) Suggestions: If Grounds Maintenance conducts transplant operations, staff will follow the recommended procedures from the following sources:
   (1) Cooperative Extension Service
      - "Tree and Shrub Planting" article, Bonnie Appleton, Publication (***Appendix M***)
   (2) State Arboretum of Virginia
      - "Memorial/Honorary Tree Policy"
      - Details their policy for selection, replacement, labeling, and donation requirements
      - http://blandy.virginia.edu/arboretum/honorary-trees

DISEASE AND INSECT CONTROL IN TREES

i) Scheduled as part of the Parks & Recreations MOU
   (1) Landscape Insect and Disease Control
      a. Contract staff perform visual inspections of the trees during the growing season (April through November)
      b. Inspection frequency is based on the rotation schedule for the site
         1. Service Level A (8 times per year)
         2. Service Level B (7 times per year)
         3. Service Level C (6 times per year)
      c. Visual inspections dictate required control measures, if needed
ii) Staff/citizen concerns about specific trees on County-owned property
   (1) Work request is received by Buildings and Grounds to review
   (2) Inspection completed by Grounds Maintenance staff
iii) Department of Forestry
   (1) E-mail response for policy information relating to insect and disease conditions and notification with advice to landowners are mandated
   (2) Code of Virginia
      (a) Titles 10.1-1177 through 10.1-1181/http://law.lis.virginia.gov/vacode/title10.1/chapter11

REMOVAL OF DISEASED AND HAZARDOUS TREES

The Department of Public Works Environmental Services Division has an Arborist on staff. When a tree is deemed diseased or hazardous, the Grounds Maintenance Supervisor may seek advice from the Arborist on how best to proceed.

SITE ASSESSMENT CHECKLIST

On an annual basis the Grounds Maintenance crew members will complete the "Site Assessment Checklist" at each B & G maintained facility. The purpose of these assessments is to conduct a systematic review of each site on a periodic basis to detect required maintenance activities. The assessment is a checklist used to review all exterior facility features such as turf, landscaping, parking lots, fencing, etc. Work orders are generated from the completed assessments to repair any found issues. ***Appendix N*** is the "Grounds Maintenance – Site Assessment Checklist."

TURF MANAGEMENT

Grounds maintenance has a multi-faceted turf management program. The turf management program includes mowing, inspection, fertilization; disease & insect control and weed control. The schedule and services, which are part of the P & R MOU, are listed in the table on page 19. Visual inspections dictate required control measures for weeds and disease if needed.

TURF INVENTORY

P & R MOU information "see Table on page 19"

- Condition is evaluated based on soil test results done regularly
- VA Tech recommendations are followed to stabilize/improve turf health
- Soil tests results May 2019

HORTICULTURAL SERVICES (INTERIOR)

- Interior plant maintenance is scheduled to be done to care for the atrium plants at the Dr. A. J. Ferlazzo and James J. McCoart buildings.
    - "Facility Information" form ***Appendix O***

14. EXTERIOR FACILITY SIGNS

- Buildings & Grounds maintains existing signs installed by B & G
- All other signs are handled by Public Works Sign Shop
    1. Pictographs will follow the Federal Highway Administration Manual on Uniform Traffic Control Devices (FHA MUTCD)
    2. Regulatory signs will adhere to County codes for highway, vehicular, parking and site regulations
    3. No signs will be placed on VDOT right of ways without prior written approval
        a. Concrete footings are not generally used
    4. All sign requests will be evaluated by PW B&G
    5. Enforcement is in alignment with Prince William County Code

Sec. 13-321. Restricted parking zones on County owned property.

http://www.municode.com/library/va/prince-william-county/codes/code_of_ordinances to PWC, VA Code of Ordinances

a. Motor Vehicles Va. Criminal & Vehicle Handbook, Sec. 46.2-1312. Size, design, and color of signs, signals, and markings erected by local authorities. http://law.justia.com/codes/virginia/2006/toc4602000/46.2-1312.html

b. Manual on Uniform Traffic Control Devices & Standard Highway Signs: latest version available on-line http://mutcd.fhwa.dot.gov/
c. ***Appendix P*** "Environmental Services Sign Shop"

15. SNOW REMOVAL

B & G is responsible for snow removal at all County facilities maintained by B & G. It is B&G's goal to have all facilities passable within 48 hours of the end of a winter weather event. Snow removal is completed with B&G staff and contractual resources.

The following B&G snow response information must be reviewed and updated annually and distributed to B&G supervisory staff:

1. "Personnel Contacts" spreadsheet, ***Appendix Q***
2. "PWC Sites" listing; compilation of B&G and Property Management (PM) building locations, ***Appendix R***

The following information is also distributed to the B&G snow removal contractor:

1. "B & G Division Snow and Emergency Response Plan" cover sheet, ***Appendix S***
2. "Contractor Schedule" – listing of locations and priorities, ***Appendix T***
3. "24-hour locations", ***Appendix U***
4. "Road Chemical Distribution Log" form – to be returned to B&G at end of shift, ***Appendix V***
5. Map – aerial views of each site, ***Appendix W***

The following informational memos/letters are also distributed to agencies outside B&G:

1. "Point of Contact for Weather Warnings – Winter Storms" memo; Emergency Services Coordinator, F&R Chief, and Police Chief, ***Appendix X***
2. "Snow Removal Operations" memo; all County Departments and Agencies, ***Appendix Y***
3. "Buildings & Grounds Snow Removal Equipment" memo, ***Appendix Z***
    a. Memo is generated by Fleet Maintenance Division Chief

APPENDIX

Appendix A

Performance Measures Report- 2019

WORK ORDERS COMPLETED WITHIN DATE RANGE AND PERCENTAGE COMPLETED WITHIN 14 DAYS

July 01, 2019 through July 31, 2019

WO #	WO Description	Work Group	Rep Type	Assigned To	Sched Start	Sched End	Completion	Duration
386198	818-POLICE: EVENT 6/20/19 (SEE COMMENTS)	GRDS	EVNT	JH4207	07/19/2019	08/02/2019	07/22/2019	3.75
386754	900:HELLWIG ADMIN BLDG-REQUEST 10 TABLES ON 7/9/19	GRDS	EVNT	JH4207	07/09/2019	07/23/2019	07/12/2019	3.82
397069	CONTRACT: 825: B&G SALT STORAGE TRANSFER OF MATERIALS	GRDS	SNOW	JH4207	05/30/2019	06/13/2019	07/25/2019	56.65
397976	818-HOUSING: RECERTIFICATION APPOINTMENTS (SEE COMMENTS)	GRDS	EVNT	JH4207	07/03/2019	07/03/2019	07/02/2019	-0.24
397977	818-HOUSING: RECERTIFICATION APPOINTMENTS (SEE COMMENTS)	GRDS	EVNT	JH4207	07/17/2019	07/31/2019	07/18/2019	1.79
398297	CONTRACT: 117-AGING: MOUNT AND INSTALL 5 NO SMOKING SIGNS OUTSIDE OF BUILDING	GRDS	SGRD	JH4207	06/07/2019	06/21/2019	07/16/2019	39.80
399516	831:MONTCLAIR LIBRARY-FLOWER GARDEN NEEDS ATTENTION(SEE COMMENTS)	GRDS	LAND	JH4207	06/21/2019	07/05/2019	07/05/2019	14.00
399517	831:MONTCLAIR LIBRARY-REMOVED PLYWOOD AND TRASH BEHIND RIGHT WALL OF ENTRANCE	GRDS	GRDM	JH4207	06/21/2019	07/05/2019	07/01/2019	10.00
399529	721:POTOMAC LIBRARY-CLEAN UP DOWN & HANGING TREE LIMBS	GRDS	LAND	JH4207	06/21/2019	07/05/2019	07/01/2019	10.00
399530	721:POTOMAC LIBRARY-REMOVE BAGS OF SAND AND STORE NEATLY IN B&G WAREHOUSE	GRDS	MOVE	JH4207	06/21/2019	07/05/2019	07/05/2019	14.00
399567	445-SIGN SHOP: MOVE ITEM TO SIGN SHOP AND TAKE ITEMS TO WAREHOUSE (SEE COMMENTS)	GRDS	MOVE	JH4207	06/24/2019	07/09/2019	07/02/2019	8.76
399573	376-SS: PLEASE TIGHTEN LOOSE STREET SIGNS IN PARKING LOT	GRDS	SGRD	JH4207	06/24/2019	07/09/2019	07/12/2019	18.82
399625	818-CSB: TRANSPORT 22 CHAIRS TO LANDFILL (SEE COMMENTS)	GRDS	MOVE	JH4207	06/25/2019	07/10/2019	07/05/2019	10.71
399667	818-CSB: TAKE ITEMS TO LANDFILL / DELIVER ITEMS FROM WAREHOUSE (SEE COMMENTS)	GRDS	MOVE	JH4207	06/26/2019	07/11/2019	07/10/2019	14.85
399670	820-POLICE: ASSIST WITH IN-HOUSE MOVE OF STAFF MEMBERS THAT ARE RELOCATING	GRDS	MOVE	JH4207	06/26/2019	07/11/2019	07/09/2019	13.85
399683	401-OEM: DELIVER ITEMS TO SURPLUS WAREHOUSE (SEE COMMENTS)	GRDS	MOVE	JH4207	06/27/2019	07/12/2019	07/10/2019	13.85
399691	215-CSB: TRANSPORT ITEMS FROM WAREHOUSE TO SUDLEY NORTH (SEE COMMENTS)	GRDS	MOVE	JH4207	06/27/2019	07/12/2019	07/18/2019	21.79
399694	458-FLEET: CUT/REMOVE WEEDS FROM BEHIND FLEET MAIN OFFICE (SEE PICTURES)	GRDS	LAND	JH4207	06/27/2019	07/12/2019	07/05/2019	8.72

Appendix B

Authorization for Overtime

REQUEST FOR LEAVE/COMP & OT APPROVAL

Name: Employee Name Employee No.: _____

Department: Public Works/B&G Pay Period End Date: _____

SECTION I - REQUEST FOR LEAVE

LEAVE TO BEGIN		LEAVE TO END		TOTAL	TYPE	COMMENTS
DATE	TIME	DATE	TIME			OTHER (SPECIFY), ADDITIONAL COMMENTS
	: AM PM		: AM PM		SL	
	: AM PM		: AM PM			
	: AM PM		: AM PM			
	: AM PM		: AM PM			
	: AM PM		: AM PM			
	: AM PM		: AM PM			
	: AM PM		: AM PM			
	: AM PM		: AM PM			
	: AM PM		: AM PM			
	: AM PM		: AM PM			

SECTION II - COMP & OT APPROVAL

DATE	OT HOURS REQUESTED	COMP HOURS REQUESTED	TOTAL	COMMENTS
07/23/2019				Note reason for OT request in this space

Additional Employee Remarks:	Supervisor Remarks:

Appendix C

Sample Training Calendar 2019

AUGUST 2019 TRAINING SCHEDULE

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
28 SS = Santos Sanchez; MF=Mathew Fenn; CH = Chris Hancock; HS = Henry Smith;	29 RM#25-RSK-	30 MAVIS BEACON / COMPUTER-BASED TRAINING CLASS / CDL permit prep / REGISTERED TECH prep	31 RM SB 8/14: Indoor Air Quality in the Workplace (SS, MF, CH, HS,)	1 **EVALUATION UPDATE:**	2 PM#3: Position Classification Plan (SS, MF, CH, HS,)	3
4	5 MAVIS BEACON / COMPUTER-BASED TRAINING CLASS / CDL permit prep / REGISTERED TECH prep (SS, CH)	6 RM SB 8/15: Fuel Pumps (SS, JM, CH, HS, JJ, JH)	7 **EVALUATION UPDATE: Henry Smith**	8 PM#2: Definitions (SS, JM, CH, HS, JJ, JH)	9 RM#25-RSK-300-305: Hot Works Permits (UPDATED) (SS, JM, CH, HS, JJ, JH)	10
11	12 RM SB 8/16: Risk Is Here For You! (SS, MF, CH, HS,)	13 **EVALUATION UPDATE: Santos Sanchez**	14 PM#1: Personnel Ordinance; General Provisions of Personnel Policy (SS, MF, CH, HS,)	15 RM#25-RSK-300-304: Confined Space (SS, MF, CH, HS,)	16 MAVIS BEACON / COMPUTER-BASED TRAINING CLASS / CDL permit prep / REGISTERED TECH prep (SS, CH)	17
18	19 **EVALUATION UPDATE: Chris Hancock**	20 Employee Grievance Procedure (SS, MF, CH, HS,)	21 RM#25-RSK-300-303: Control of Hazardous Energy (Lockout / Tagout) (SS, MF, CH, HS,)	22 MAVIS BEACON / COMPUTER-BASED TRAINING CLASS / CDL permit prep / REGISTERED TECH prep (CH)	23 RM SB 8/17: Claims 101 & Solar Eclipse; PSA - July Surge in VA Workplace Fatalities (SS, MF, CH, HS,)	24
25	26 ICC: Understanding Internal Controls (SS, MF, CH, HS,)	27 RM#25-RSK-300-302: Fall Protection (SS, MF, HS,)	28 MAVIS BEACON / COMPUTER-BASED TRAINING CLASS / CDL permit prep / REGISTERED TECH prep (CH)	29 RM SB 8/18: Vol. 1, Issue 7 Giant Hogweed (SS, MF, HS,)	30 **EVALUATION UPDATE: Jill Holley**	31

Appendix D

Employee Training Sample

Course Title	Course Date	Instructor	Location
P-Card Training	TBD	Purchasing	DSB
Personnel Policy	TBD	Henry Smith	B&G
Pesticide Applicator Certificate- Category 6	TBD	VDACS	VA
Certified Applicator Recertification Program	TBD	VA CES	Stafford, VA
EMS Refresher and Hazardous Communication	TBD	Dr. Alicia Hart	B&G Conference Room
Infection Control- The Basics	TBD	Risk Management	TBD
Skid Steer Operations	TBD	Ricky Peterson	Gar-Field Tower
Emergency Preparedness and Response	TBD	Henry Smith	B&G
EMS Annual Refresher	TBD	Henry Smith	B&G
Fluorescent Bulb Disposal	Anytime	CBT	Computer Based
DOT Drug and Alcohol Awareness	Anytime	CBT	Computer Based
Watershed Protection	Anytime	CBT	Computer Based
Universal Waste	Anytime	CBT	Computer Based
PWC Orientation Training (New Hires)	Anytime	CBT	PWC University
PWC Annual Training	Anytime	CBT	PWC University

Appendix E
Vehicles

VehiclesandMileage 080119 7/30/2019

MILEAGE	NUMBER	HUB	DESCRIPTION	COMMENTS	Oil Change
	731	CUSTODIAL	ASTRO VAN	REPLACED BG#217 (1/24/06)	gone
	849	WESTERN	DODGE VAN	reassigned from Mailroom Jan12	
	1285	MANASSAS	CHEVY VAN		
	1476	EASTERN	CHEVY P/U	w/ blade	
	1530	MAILROOM	CHEVY VAN	reassigned from BD; replaced BG#350	
	1842	CENTRAL	CHEVY BOOM TRUCK		
	1845	MAILROOM	CHEVY ASTRO VAN		
	1937	PRINT SHOP	GMC VAN		
77,157	2049	GROUNDS	CHEVY STAKE BODY 12' bed	replaced BG#365	76,671
	2186	MANASSAS	CHEVY VAN		
	2405	CENTRAL	CHEVY SILVERADO P/U	w/ blade; replaced BG#089 blade	
	2406	MANASSAS	CHEVY SILVERADO P/U	w/ blade	
	2417	CENTRAL	CHEVY VAN	in service August 2015	
	2531	MOTORPOOL		replaced MP#1388 063010	
104,961	2535	GROUNDS	CHEVY SILVERADO P/U	replaced BG#383	103,360
	2589	EASTERN	VAN	replacement for #893	
32,937	2722	ADMIN	CHEVY BLAZER	in service 1/30/06	32,056
	2774	MANASSAS	CHEVY SILVERADO P/U	w/ blade; in service 8/4/06	
	2775	MANASSAS	CHEVY SILVERADO P/U	w/ blade; in service 8/7/06	
	2782	MANASSAS	VAN	in service 9/27/06	
	2783	MANASSAS	VAN	in service 10/4/06	
30,959	2897	ADMIN	CHEVY BLAZER	in service 1/11/07	30,389
	2944	INDEPENDENT	CHEVY VAN	replacement for #212; in service 7/31/07	
	3128	EASTERN	CHEVY VAN	in service 3/6/09	
70,901	3296	GROUNDS	CHEVY VAN	replacement for BG#086	68,203
	3314	GROUNDS	CHEVY SILVERADO P/U	replacement for BG#568; w/ blade	37,361
41,578	3332	GROUNDS	CHEVY SILVERADO P/U	replacement for BG#570; w/ blade & dump bed	41,418
	3449	MAILROOM	FORD TRANSIT		
	3466	MANASSAS	ISUZU BUCKET TRUCK		
	3584	INDEPENDENT	CHEVY 2500 4x4 P/U	w/ blade; in service 2013	
	3736	MAILROOM	FORD TRANSIT	in service 2014	
39,283	3914	GROUNDS	CHEVY STAKE BODY W/ LIFT	in service 10/8/15; replaces BG#936	35,745
30,993	3917	GROUNDS	CHEVY SILVERADO P/U	in service 10/2/15; replaces BG#210	29,435
	3921	INDEPENDENT	CHEVY 2500 4x4 P/U	w/ blade; in service 2015	

Appendix F

Equipment In Service 2019

EQUIPMENT	NUMBER	POC	HUB	DESCRIPTION	YEAR	COMMENTS
BG	234	SMITH	GROUNDS	HUDSON TRAILER, LARGE	1986	NEED 2049 TO HAUL
BG	601	BRENNER	MANASSAS	GENERATOR, KATOLITE	1983	108-JC
BG	606	ROSE	CENTRAL	GENERATOR, CAT	1988	402-OWENS
BG	607	SMITH	GROUNDS	KUBOTA, L305	1984	30 HP diesel
BG	626	SMITH	GROUNDS	SNOWBLOWER JOHN DEERE 826	1989	Chico
BG	630	SCHAEFFER	EASTERN	SWEEPER	1999	2/22/07 Gar-Field Shed
BG	632	LESHER	WESTERN	WELDER	1989	
BG	637	SMITH	GROUNDS	HOMELITE CHAINSAW	1988	DEAD LINED
BG	640	ROSEE	CENTRAL	GENERATOR, LEXCO 250	1985	401-MCCOART ALLIS-CHALMERS
BG	641	SCHAEFFER	EASTERN	WHEELHORSE	1988	
BG	678	LESHER	WESTERN	GENERATOR, CUMMINS NTA-855-G2	1989	370-PSTC
BG	731	ROLLEY	CUSTODIAL	CHEVY ASTRO VAN	1988	in service 1/20/06
BG	861	SMITH	GROUNDS	TIGERLINE TRAILER, SMALL	1990	
BG	1285	SAYLOR	MANASSAS	CHEVY VAN	Dec-95	
BG	1462	SCHAEFFER	EASTERN	SNOWBLOWER JOHN DEERE 826	1996	
BG	1463	ROSE	CENTRAL	SNOWBLOWER JOHN DEERE 826	1996	
BG	1465	SCHAEFFER	EASTERN	STIHL BR400 BLOWER	1996	2/22/07 Gar-Field Shed
BG	1473	SCHAEFFER	EASTERN	GENERATOR, KOHLER	1996	820-POLICE
BG	1476	SCHAEFFER	EASTERN	CHEVY P/U	1997	w/ blade
BG	1530	COX	MAILROOM	GMC JIMMY	1997	reassigned from BD; replaced BG#350
BG	1801	COX	MAILROOM	CHEVY CAVALIER		added to mailroom 041612
BG	1842	BRENNER	MANASSAS	CHEVY BOOM TRUCK	Oct-00	transferred from Manassas Hub Sept12
BG	1845	COX	MAILROOM	CHEVY ASTRO VAN	2000	
BG	1928	SMITH	GROUNDS	CHAINSAW STIHL 036	2000	DEAD LINED
BG	1937	MATTHEWS	PRINT SHOP	GMC VAN	2000	
BG	1948	SCHAEFFER	EASTERN	SNOWBLOWER	2000	
BG	1949	SMITH	GROUNDS	SNOWBLOWER CUB CADET 1333SWE	2000	Poncho
BG	2049	SMITH	GROUNDS	CHEVY STAKE BODY 12' bed	Mar-01	replaced BG#365
BG	2150	SCHAEFFER	EASTERN	SKID STEER		in service November 2014; salt structure
BG	2186	PITT	INDEPENDENT	CHEVY/GMC VAN	Dec-02	
BG	2405	MORRISON	CENTRAL	CHEVY SILVERADO P/U	2004	w/ blade; replaced BG#089 blade
BG	2406	BRENNER	MANASSAS	CHEVY SILVERADO P/U	Feb-04	w/ blade; CIP FY04
BG	2408	BRENNER	MANASSAS	JOHN DEERE FRONTIER SNOWBLOWER	2003	108-STORAGE
BG	2417	ROSE	CENTRAL	CHEVY VAN	2015	in service August 2015
BG	2506	PITT	INDEPENDENT	GENERATOR, GENERAC 573RSL4032	2001	440-JDC
MP	2531	ADMIN	ADMIN			replaced MP#1388 063010
BG	2535	SMITH	GROUNDS	CHEVY SILVERADO P/U	Sep-05	w/ blade; replaced BG#383; w/ liftgate
BG	2589	SCHAEFFER	EASTERN	CHEVY VAN	May-05	replacement for #893
BG	2612	SMITH	GROUNDS	WEEDEATER STIHL	Apr-05	STOLEN ITEM REPLACEMENT; $200
BG	2613	SMITH	GROUNDS	WEEDEATER STIHL	Apr-05	STOLEN ITEM REPLACEMENT; $200
BG	2614	SMITH	GROUNDS	HEDGE TRIMMER STIHL	Apr-05	STOLEN ITEM REPLACEMENT; $370
BG	2664	PITT	INDEPENDENT	GENERATOR, KOHLER 400RE02D	2003	
BG	2687	SMITH	GROUNDS	MOWER TROY-BILT	Oct-05	STOLEN ITEM REPLACEMENT
BG	2722	DUENAS	ADMIN	CHEVY BLAZER	2006	in service 1/30/06
BG	2768	LESHER	WESTERN	JOHN DEERE GATOR	May-06	WD POLICE
BG	2774	LESHER	WESTERN	CHEVY SILVERADO P/U	May-06	w/ blade; in service 8/4/06
BG	2775	BRENNER	MANASSAS	CHEVY SILVERADO P/U	May-06	w/ blade; in service 8/7/06
BG	2782	LESHER	WESTERN	CHEVY VAN	Jun-06	in service 9/27/06; WDPOLICE
BG	2783	BRENNER	MANASSAS	CHEVY VAN	Jun-06	in service 10/4/06
BG	2802	ROSE	CENTRAL	KUBOTA, TRACTOR	2006	w/ blade; in service 9/15/06
BG	2897	FLORY	ADMIN	CHEVY BLAZER	2007	in service 1/11/07
BG	2944	LESHER	WESTERN	CHEVY VAN		replacement for #212; in service 7/31/07
BG	2983	SMITH	GROUNDS	HEDGE TRIMMER STIHL	2007	HS 45; 24" blade; in service 9/27/07; $310
BG	3018	SMITH	GROUNDS	CHAINSAW STIHL MS230	2008	14" blade; in service 3/24/08; $260
BG	3020	BRENNER	MANASSAS	FORKLIFT	2008	in service 5/28/08 @ 190-WH
BG	3128	SCHAEFFER	EASTERN	CHEVY VAN		in service 3/6/09
BG	3135	CASTLE	MAILROOM	HONDA CIVIC		
BG	3225	SCHAEFFER	EASTERN	JOHN DEERE GATOR		
BG	3237	ROSE	CENTRAL	JOHN DEERE GATOR		
BG	3239	LESHER	WESTERN	SNOW THROWER JOHN DEERE	2009	in service 020410
BG	3258	SMITH	GROUNDS	PRESSURE WASHER, MTM CORP 3004	Apr-10	warranty replacement of original; $4,757
BG	3259	SMITH	GROUNDS	STRIPER MACHINE	Jun-10	from Grainger
BG	3296	SMITH	GROUNDS	CHEVY CARGO VAN	Nov-10	Replaces BG#086
BG	3314	SMITH	GROUNDS	CHEVY SILVERADO P/U	Jan-11	Replaces BG#568; w/ blade
BG	3332	SMITH	GROUNDS	CHEVY SILVERADO P/U	Jan-11	Replaces BG#570; w/ blade & dump bed
BG	3362	LESHER	WESTERN	SNOW THROWER CUB CADET 945 SWE PREMIUM	Aug-11	WD POLICE
BG	3363	SMITH	GROUNDS	SNOW THROWER CUB CADET 945 SWE PREMIUM	Aug-11	
ES	3374	SMITH	GROUNDS	SANDER W/ PLOW BLADE		in service 110411
ES	3375	SMITH	GROUNDS	SANDER W/ PLOW BLADE		in service 112911
BG	3430	SMITH	GROUNDS	SNOW THROWER JOHN DEERE	2012	in service 020112
BG	3449	COX	MAILROOM	FORD TRANSIT	Mar-12	in service 030712
BG	3466	FEWELL	WESTERN	ISUZU BUCKET TRUCK	Jul-12	in service 070612
BG	3474	BRENNER	MANASSAS	HONDA GENERATOR, Model #EG 4000 CL		serial #EBGC-1002829
BG	3584	PITT	INDEPENDENT	CHEVY 2500 4x4 P/U	2013	w/ blade
BG	3636	LESHER	WESTERN	ELECTRIC SCISSOR LIFT	Jul-05	
BG	3736	COX	MAILROOM	FORD TRANSIT CONNECT XLT	2014	in service 7/22/14
BG	3749	SMITH	GROUNDS	STIHL POWERED POLE PRUNER	2014	in service 062514
BG	3769	LESHER	WESTERN	GATOR	2014	PSTC
BG	3914	SMITH	GROUNDS	CHEVY STAKE BODY 12' bed	Jun-15	in service 10/8/15; replaces BG#936
BG	3917	SMITH	GROUNDS	CHEVY SILVERADO P/U	Jun-15	w/ blade; in service 10/2/15; replaces BG#210
BG	3921	LESHER	WESTERN	CHEVY 2500 4x4 P/U	2015	
BG	3951	LESHER	WESTERN	SNOW THROWER HONDA	2015	in service 010516
BG	3996	PITT	INDEPENDENT	SNOW THROWER HONDA	2015	in service 010516
BG	4079	SCHAEFFER	EASTERN	TRAILER		in 825-Tower Lot
BG	4131			CHEVY EXPRESS VAN		
BG	4146	LESHER	WESTERN	CHEVY 2500 4x4 P/U	2016	w/ blade
BG	4147	SCHAEFFER	EASTERN	CHEVY 2500 4x4 P/U	2016	w/ blade
BG	4150	BRENNER	MANASSAS	GATOR	2017	in service 021717; w/ drop spreader & blade
BG	4151	ROSE	CENTRAL	GATOR	2017	in service 021717; w/ drop spreader & blade
BG	4152	FLORY	SECURITY	VAN		
BG	4533	SMITH	GROUNDS	STIHL CONCRETE SAW	2019	in service 0110119; $1,521.76
BG	4263	SMITH	GROUNDS	STIHL MS362CM CHAINSAW	2017	in service 103117; $750
BG	4297	SMITH	GROUNDS	STIHL BR700 BLOWER	2017	in service 120917; $499.95
BG	4389	SMITH	GROUNDS	PRESSURE WASHER, KOHLER	2018	received 042418; $1,290
BG	4390	SMITH	GROUNDS	STIHL BT131 EARTH AUGER	2018	received 042518; $531.96
BG	4391	SMITH	GROUNDS	STIHL KM131R KOMBI POWER SYSTEM	2018	received 042518; $288.76
BG	4392	SMITH	GROUNDS	STIHL FS111R STRING TRIMMER #515217118	2018	received 042518; $281.16
BG	4393	SMITH	GROUNDS	STIHL FS111R STRING TRIMMER #515217120	2018	received 042518; $281.16
BG	4394	SMITH	GROUNDS	STIHL FC111 EDGER	2018	received 042518; $379.96
BG	4515	SMITH	GROUNDS	PREDATOR GENERATOR 2000/1600W	2018	received 121418; $499.99
BG	4516	SMITH	GROUNDS	PREDATOR GENERATOR 8750/7000W	2018	received 121418; $539.99
NA	4570	SMITH	GROUNDS	GPD-45XA MULTI PRO PILE DRIVER	2019	S/N XA02864 received 040419; $2990
BG	4569	SMITH	GROUNDS	STIHL BR700 BLOWER	2019	in service 040519; $448.76

Appendix G

Miss Utility – SAMPLE 2019

MISS UTILITY 800-552-7001; prompt 1; prompt 2 {www.va811.com (single site locate)}

DATE **06/20/2019 3:25PM**

OPERATOR **Henry Smith**

ID# 703-792-6390

POC Henry Smith 571-428-3304

WORK TYPE Stump Grinding

WORK FOR PWC – Manassas Senior Center

ADDRESS 9320 Mosby St. Manassas VA 20110

INTERSECTING Peabody St.

DESCRIPTION No Parking signs and No Smoking signs are being installed on the right side of the building

MAP 5757-D10

TICKET# **A917102887**
Ticket valid for 15 business days from date of call **(07/05/2019)**
Positive response #800-552-3120

CLEAR DATE **at 7AM (06/25/2019)**
Update ticket if work not completed by the 13th business day **(07/15/2019)**

COLOR MARKINGS Columbia Gas; Comcast; Verizon; NoVEC; PWCSA; Qwest Communications; Zayo Bandwidth

Red = Electric Yellow = Gas/Oil Orange = Communications
Blue = Water Green = Sewer

PWC UTILITIES

OIT - PRIMARY Greg Hair (x4999) and Rob Rollins (x6154), and Sharlene Lin (X5289); cc: A. Jay Lowe (x4075), Javier Franco (x5474)

Secondary Insight, LLC: Dennis Showalter 703-378-9008 (office); 703-378-9033 (fax)
NOTE: if OIT requires contractor to locate County lines

BOS Curtis Brenner x6795

Appendix H

Contract Information – 2019

Contractor Name	Contractor Number	Contract Name	Contact/Phone/Fax	Expiration Date
Julius Branscome, Inc.	5000187 (Environmental Services)	Asphalt Paving Goods & Services (Primary)	David Branscome 703-335-1000 (p)	05/12/2020
Chemung Contracting Corporation	5000188 (Environmental Services)	Asphalt Paving Goods & Services (Primary)	Edward Dalrymple 540-829-7203	02/04/2019
M&F Concrete Inc.	5012352 (Environmental Services)	Curbs, Gutters, Ditches, and Sidewalks (Primary)	Marcos Silva 571-379-8761 (p) 703-330-7183 (f)	04/30/2020
Hercules Fence Co. Inc.	5033049 (Fairfax) 4400003922	Fencing, Fence Parts Purchase & Installation	Greg Stone 703-551-2609 (p) Andy Blinick 571-292-2067 (cell)	03/30/2020
PWC Park Authority/ Grounds Div.	MOU (B&G)	Grounds Maintenance & Landscaping Services	Kevin Flickinger 703-792-4220 (p) 703-792-4278 (f)	06/30/2020
PWC Solid Waste Landfill		Household Hazard Waste (electronics)	Scott MacDonald 703-792-6804 (p)	
Rentokil North American / Ambius	5011564 (B&G)	Interior Landscaping Services	Valerie Goldbeck 610-372-9700 (p)	01/26/2020
Rivas Design & Landscaping	5030462	Landscaping Services	Bridget Rivas 703-304-2025	02/29/2020
TBD	TBD	Parking Lot & Street Sweeping Services	N/A	TBD
Mullen's Marking, Inc.	5000192 (B&G)	Pavement Marking Services	Travis Mullen (#102) 540-829-7277 (p) 540-729-0295 (cell) Danielle #101; Kristen #103; Nicole #108	09/24/2019
Merrifield Garden Center	(B&G)	Plant Materials 20% off wholesale	Rob Blount 703-955-1491 (p)	
Vulcan Materials Company	5000054 (Construction Services)	Quarry Materials	Sam Roller 571-289-2916 (p) 703-793-2326 (f) 703-713-3100 (o) Dispatch 703-813-3760 (p)	07/04/2020
Nova Recon	5037887	Debris Dumping	Marcos Silva 571-379-8761	08/06/2020
PWC ES Sign Shop	Internal Services	Signs	Bud Crager 703-792-5765 (p)	N/A
TBD	TBD	Snow & Ice Removal Services	N/A	09/01/2020
Envirogrow	5000145	Soil Erosion Control Services	Larry Conrad 703-876-8470	09/30/2019
Waggy's Towing		Towing	Angela Cropper 703-670-0762 (p)	
Utilities Search Inc.	5002057	Underground Utility Locator Services	James Davis 703-369-5758 (p)	02/18/2018
Olde Towne Landscaping, Inc.	5030344	Weed, Debris, Mowing, and tree Control (Primary)	Mark Olsen 703-928-3993 (p) mbolsen@gte.net	2/29/2020

Appendix I

Cyclic Updates – Pavement

Cyclic Paving projections

As of 7/29/2019

SITE #	DESCRIPTION	SY	$16.50/SY	INSTALL YEAR	INSTALL YEAR COST	REPLACEMENT YEAR
102	F&R / VOTE	9,944	$ 164,076.00	2009	$ 71,888.00	2024
107	BENNETT	5,934	$ 97,911.00	2009	$ 31,500.00	2024
107 / 108 / 109	BENNETT	2,345	$ 38,692.50	2009	$ 53,225.00	2024
108	JUDGES	1,200	$ 19,800.00	2010	$ 19,862.00	2025
108	JURY	4,576	$ 75,504.00	2011	$ 47,018.00	2026
109	PUBLIC	4,496	$ 74,178.39	2017	$ 69,573.58	2032
109	OGV	10,950	$ 180,675.00	2002	$ 169,728.00	2017
109	CONNECTOR	3,956	$ 65,274.00	2005	$ 61,318.00	2020
109	MOSBY STREET	1,941	$ 32,026.50	2007	$ 74,000.00	2022
115	HEALTH	3,434	$ 56,661.00	2010	$ 32,904.00	2025
116	B&G	3,996	$ 65,934.00	2010	$ 21,523.00	2025
117	SENIOR CENTER	3,710	$ 61,215.00	2010	$ 35,600.00	2025
208	HGL		$ -	2015	$ -	2030
210	GNL	-	$ -	2012	$ 9,867.00	OUT OF SERVICE
214	BRRL	9,218	$ 152,097.00	2012	$ 76,319.00	2027
311	CENTRAL	7,051	$ 116,341.50	2011	$ 62,853.00	2026
340	NNL	507	$ 8,365.50	2013	$ 7,285.00	2028
370	PSTC MAIN	12,534	$ 206,811.00	2008	$ 177,395.00	2023
370	PSTC BURN	5,085	$ 83,902.50	2010	$ 50,540.00	2025
370	PSTC RANGE	5,303	$ 87,499.50	2007	$ 84,424.00	2022
376	JES / MJS	1,537	$ 25,360.50	2013	$ 37,166.00	2028
390	WDP	32,166	$ 530,739.00	2006	$ 498,573.00	2021
395	CDP			2018		2033
398	DSB	18,220	$ 300,630.00	2007	$ 282,410.00	2022
398	DSB ELLIPSE	500	$ 8,250.00	2012	$ 5,686.00	2027
398	DSB STADIUM 1/2	1,250	$ 20,625.00	2012	$ 10,989.59	2027
401	FAST TRACK	14,444	$ 238,326.00	2006	$ 223,898.00	2021
401	VISITOR	7,894	$ 130,251.00	1998	$ 122,357.00	2013
401	STADIUM ROAD	8,804	$ 145,266.00	2007	$ 137,429.00	2022
402	OWENS	5,342	$ 88,143.00	2010	$ 59,234.00	2025
420	AS	1,586	$ 26,169.00	2009	$ 27,866.00	2024
440	JDC	3,335	$ 55,027.50	2013	$ 34,404.00	2028
440	JDC ROAD	2,209	$ 36,448.50	2013	$ 23,764.00	2028
444	GMMC	930	$ 15,345.00	2008	$ 23,183.00	2023
450	IHNL	852	$ 14,058.00	2012	$ 11,147.00	2027
457	FLEET	13,000	$ 214,500.00	2009	$ 214,500.00	2024
540	CHINN	13,277	$ 219,070.50	2011	$ 113,947.00	2026
601	DCNL	559	$ 9,223.50	2007	$ 11,728.00	2022
620	HS	920	$ 15,180.00	2013	$ 9,136.00	2028
701	SENIOR CENTER	2,555	$ 42,157.50	2012	$ 26,768.00	2027
721	POTOMAC	5,950	$ 98,175.00	2011	$ 44,323.00	2026
727	HPC	2,733	$ 45,094.50	2012	$ 31,350.00	2027
810	PUMPS	5,744	$ 94,776.00	2011	$ 51,928.00	2026
815	JCSU	1,633	$ 26,944.50	2012	$ 16,527.00	2027
818	FERLAZZO	25,093	$ 414,034.50	2011	$ 209,488.00	2026
820	GAR-FIELD	5,744	$ 94,776.00	2013	$ 73,428.00	2028
820	TOWER	4,351	$ 71,791.50	2006	$ 89,250.00	2021
831	MONTCLAIR		$ -	2016	$ -	2031

Appendix J

Asphalt

YEAR		FY10	FY11	FY12	FY13	FY14	FY15	FY16
LOCATION	SIZE = SF (SY)	ASPHALT	ASPHALT	ASPHALT	ASPHALT	ASPHALT	ASPHALT	ASPHALT
		BRANSCOME	BRANSCOME	BRANSCOME	BRANSCOME	BRANSCOME	BRANSCOME	BRANSCOME
MCCOART	8,804 SY = CCC			Ellipse 6/25/12				
TOTAL				$ 5,685.72				
BULL RUN	90,108 (10,012)				Branscome - 7/6/12			
TOTAL					$ 72,177.02			
CHINN	119,235 (13,277)		Branscome					
TOTAL			$ 106,508.36					
FERLAZZO	225,836 (25,093)		Branscome					
TOTAL			$ 196,340.01					
ANIMAL SHELTER	14,268 (1,586)	Branscome						
TOTAL		$ 26,871.58						
BENNETT	33,461 (3,718)	Branscome						
TOTAL	20,424 (2,270)	$ 28,953.58						
B&G	18,786 (2,088)		Branscome					
TOTAL			$ 18,858.85					
CENTRAL	57,098 (6,345)		Branscome					
TOTAL			$ 58,656.56					
DALE CITY	5,025 (559)							
TOTAL								
DEVELOPMENT SERVICE	163,975 (18,220)				Stadium Rd. - half 12/19/12 (1,250 SY)			
TOTAL	1/2 Stadium Rd = 1,250 SY				$ 10,989.59			
FIRE & RESCUE (102)	89,494 (9,944)							
TOTAL								
FLEET	117,000 (13,000)							
TOTAL								
GAINES. NEIGHBOR.	7,947 (883)				Branscome - 10/26/12			
TOTAL					$ 9,266.82			
GAR-FIELD POLICE	51,696 (5,744)				Branscome - 5/23/13 (lot & road)			
TOTAL					$ 66,900.53			
GAR-FIELD PUMPS	51,700 (5,744)		Branscome					
TOTAL			$ 46,887.91					
GIRLS GROUP								
TOTAL								
HEALTH/JD	Lot = 30,960 (3,440);		Branscome					
TOTAL	Road = 20,085 (2,232)		$ 29,573.91					
HOMELESS PREV.	24,597 (2,733)				Branscome - 11/9/12			
TOTAL					$ 30,269.08			
BOYS GROUP / HS	8,280 (920)				Branscome - 6/25/13			
TOTAL					$ 8,466.12			
INDEP. HILL	7,668 (852)			Branscome				
TOTAL				$ 10,656.28				
JUDICIAL CENTER	Judge's = 11,216 (1,247);	Judge's	Jury					
TOTAL	Jury = 26,862 (2,985)	$ 8,033.98	$ 44,989.98					
JUV. COURT (815)	14,697 (1,633)			Branscome				
TOTAL				$ 15,153.31				
JUV. DETENTION	49,896 (5,544)				Branscome - 5/15/13 (lot & road)			
TOTAL					$ 53,969.85			
JUV. EMERGENCY	24,977 (2,776)					Branscome - 7/9/13		
TOTAL						$ 35,729.16		
MOSBY (109)	Public = 56,168 (6,241);							
	OGV = 44,488 (4,944);							
TOTAL	Back = 28,334 (3,149)							
MOSBY (109)	Road = 31,205 (3,468)							
TOTAL								
	17,469 (1,941) = Mosby							
NOKES. NEIGHBOR.	5,814 (646)				Branscome - 5/29/13			
TOTAL					$ 6,857.98			
OWENS			Branscome					
TOTAL			$ 52,553.26					
POTOMAC	53,550 (5,950)		Branscome					
TOTAL			$ 40,791.90					
PSTC			Branscome					
TOTAL			$ 50,539.32					
SR. CTR. MAN.	31,904 (3,545)		Branscome					
TOTAL			$ 33,608.47					
WEST DIST. POLICE	289,491 (32,166)							
TOTAL								
WINTER SHELTER	PRTC	PRTC	PRTC	PRTC	PRTC	PRTC		
TOTAL								
WOOD. SENIOR	22,995 (2,555)				Branscome 7/5/12			
TOTAL					$ 24,087.18			
GRAND TOTAL		$ 63,859.14	$ 679,308.53	$ 31,495.31	$ 282,984.17	$ 35,729.16	$ -	$ -

Appendix K
Markings

YEAR	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17
ACTION	MARKINGS	MARKINGS	MARKINGS	MARKINGS	MARKINGS	MARKINGS	MARKINGS	MARKINGS
	MULLEN'S	MULLEN'S	MULLEN'S	MULLEN'S	MULLEN'S	MULLEN'S	MULLEN'S	
MCCOART	Employee	Employee / Ellipse	Visitor - 6/3/12	Roadway - thermo 04/13		Employee / Ellipse - 7/3/15	Visitor	
TOTAL		$ 2,058.20	$ 1,475.00	$ 20,485.70		$ 1,633.40		
BULL RUN				Thermo - 7/6/12				
TOTAL				$ 4,141.35				
CHINN		Mullen's - thermo 9/15/11				Thermo 7/1/15		
TOTAL		$ 7,438.25				$ 8,154.40		
FERLAZZO	YES	Mullen's - thermo 11/26/11		Thermo - new HC space 06/13		Thermo		
TOTAL		$ 13,147.75		$ 698.00				
ANIMAL SHELTER	Thermo					Thermo	Thermo - 9/23/15	
TOTAL	$ 994.00						$ 1,082.70	
BENNETT				Thermo - 4/20/13				
TOTAL				$ 6,586.50				
B&G		Thermo				Thermo - 7/15/15		
TOTAL		$2,663.80				$ 4,893.70		
CENTRAL	Mullens - 10/09	Mullen's - Thermo - 05/11				Thermo - 7/12/15		
TOTAL	$ 1,552.10	$ 4,196.45				$ 4,918.00		
DALE CITY		YES - 4/10/11				Yes - 7/12/15		
TOTAL		$ 372.00				$ 700.00		
DEVELOPMENT SERVICES		YES - 07/11		Thermo HC redo - 04/13		Yes - 7/3/15, 8/16/15		
TOTAL		$ 1,738.70		$ 1,137.90		$ 2,428.00		
FIRE & RESCUE (102)				Thermo - 4/20/13				
TOTAL				$ 8,856.20				
FLEET	NEW - thermo					Paint over thermo - 10/14/14		
TOTAL						$ 2,210.50		
GAINES. NEIGHBOR.				Thermo - 11/10/12				
TOTAL				$ 600.00				
GAR-FIELD POLICE	811-YES	YES - 6/22/11		Thermo - 5/29/13 (lot & road)		811 - 7/3/15		820 - YES
TOTAL		$ 1,383.60		$ 6,475.40		$ 1,004.85		
GAR-FIELD PUMPS		Mullen's - thermo 9/16/11				Thermo		
TOTAL		$ 5,209.50						
GMMC			Thermo - 4/15 & 4/27				Thermo	
TOTAL			$ 691.65					
HEALTH/JD		Thermo				Thermo		
TOTAL		$ 3,329.35						
HOMELESS PREV.				Thermo - 11/10/12				
TOTAL				$ 1,080.20				
HUMAN SERVICES	YES			Thermo - 6/28/13				Yes
TOTAL				$ 670.00				
INDEP. HILL			Thermo - 05/15/12				Thermo	
TOTAL			$ 490.50					
JUDICIAL CENTER	Judge's - thermo	Jury - thermo - 05/11				Judge's Thermo - 7/15/15		
TOTAL	$ 11,827.80	$ 2,028.25				$ 8,872.00		
JUV. COURT (815)		YES - 8/24/11	Thermo - 05/26/12				Thermo	
TOTAL		$ 315.28	$ 1,373.30					
JUV. DETENTION		YES - 8/16/11		Thermo - 5/16/13; lot & road				Yes: lot & road - thermo
TOTAL		$ 378.20		$ 4,197.60				
JUV. EMERGENCY		YES - 8/4/11			Thermo - 7/15/13			
TOTAL		$ 368.85			$ 1,436.50			
MOSBY (109)		YES - 9/2/11				Yes		
TOTAL		$ 4,175.00						
NOKES. NEIGHBOR.			YES - 4/15/12	Thermo - 5/31/13			YES	
TOTAL			$ 300.00	$ 426.40				
OWENS		Mullen's - thermo 10/11/10				Thermo		
TOTAL		$ 6,679.75						
POTOMAC		Mullen's - thermo 9/16/11				Thermo		
TOTAL		$ 3,531.00						
PSTC	Burn = N/A	Range - thermo	Main - thermo; Range 4/27				Main - thermo; Range	
TOTAL			$ 8,016.65					
			$ 1,277.40					
SR. CTR. MAN.		Mullen's - thermo 7/9/10				Thermo	Yes	
TOTAL		$ 1,991.60						
WEST DIST. POLICE	YES	YES - 8/5/11				Yes	Paint - 10/10/15	
TOTAL		$ 2,606.02					$ 1,869.60	
WINTER SHELTER	PRTC	PRTC	PRTC	PRTC	PRTC	PRTC	PRTC	PRTC
TOTAL								
WOOD. SENIOR	Mullen's - 09/09		YES - 4/15/12	Thermo - 7/5/12			YES	
TOTAL	$ 891.45		$ 646.90	$ 2,679.95				
GRAND TOTAL	$ 15,265.35	$ 63,611.55	$ 14,271.40	$ 58,035.20	$ 1,436.50	$ 34,814.85	$ 2,952.30	$ -

Appendix L

Sweep

YEAR		FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17
LOCATION	SIZE = SF (SY)	SWEEP	SWEEP	SWEEP	SWEEP	SWEEP	SWEEP	SWEEP	SWEEP
		Sweep Rite	Sweep Rite	Sweep Rite	Sweep Rite	Sweep Rite	Sweep Rite		
MCCOART	Visitor 71,050 (7,894); Fast Track 130,000 (14,444)		Visitor / Fast Track			Visitor - 9/20/13	Fast Track - 5/1/15	Visitor	
TOTAL			$ 2,213.20 Visitor			$ 842.03	$ 1,540.69		
BULL RUN	82,956 (9,218)	YES		YES			YES		
TOTAL		$ 924.36		$ 924.36					
CHINN	119,235 (13,277)		YES			YES - 9/22/13		YES	
TOTAL			$ 1,331.39			$ 1,416.21			
FERLAZZO	225,836 (25,093)	BOTH		BOTH			BOTH		
TOTAL				$ 2,265.34					
ANIMAL SHELTER	14,268 (1,586)	NEW		YES			YES		
TOTAL				$ 159.04					
BENNETT	53,500 (5,934)		YES			YES - 9/20/13		YES	
TOTAL	21,105 (2,345)		$ 595.05			$ 632.96			
B&G	35,956 (3,996)		New			YES - 9/20/13		YES	
TOTAL						$ 426.24			
CENTRAL	63,459 (7,051)		New			YES - 9/20/13		YES	
TOTAL						$ 752.11			
DALE CITY	5,025 (559)		YES			YES - 9/20/13		YES	
TOTAL			$ 130.00			$ 140.00			
DEVELOPMENT SERVICES	163,975 (18,220)		YES - 7/8/11		YES		YES - 10/25/14	YES	
TOTAL			$ 1,820.63				$ 1,761.27		
FIRE & RESCUE (102)	89,494 (9,944)	YES		YES			YES		
TOTAL		$ 997.16		$ 997.16					
FLEET	117,000 (13,000)	NEW		YES			YES		
TOTAL				$ 1,303.61					
GAINES. NEIGHBOR.	8,430 (937)	YES		YES			YES		
TOTAL		$ 130.00		$ 130.00					
GAR-FIELD POLICE	67,884 (7,538)	YES		YES			YES		
old TOWER lot	39,159 (4,351)		YES - 7/9/11		YES		YES - 5/6/15		
TOTAL		$ 755.89	$ 436.31	$ 755.89			$ 464.11		
GAR-FIELD PUMPS	51,700 (5,744)		YES		YES		YES - 5/7/15		
TOTAL			$ 576.00				$ 612.69		
GMMC	8,371 (930)	YES		YES			YES		
TOTAL		$ 130.00		$ 130.00					
HEALTH/JD	30,900 (3,434)		YES			YES - 9/20/13		YES	
TOTAL			$ 344.35			$ 366.29			
HOMELESS PREV.	24,875 (2,764)		YES - 7/8/11		YES		YES - 5/14/15		
TOTAL			$ 277.17				$ 294.83		
HUMAN SERVICES	8,280 (920)		YES		YES		YES		
TOTAL			$ 130.00						
INDEP. HILL	6,472 (720)		YES			YES - 9/20/13		YES	
TOTAL			$ 130.00			$ 140.00			
JUDICIAL CENTER	51,980 (5,776); Judge's = 1,200 SY; Jury = 4,756 SY	JURY	JUDGES	JURY		JUDGES - 9/20/13	JURY	JUDGES	
TOTAL		$ 458.87	$ 130.00	$ 458.87		$ 140.00			
JUV. COURT (815)	15,950 (1,773)		YES			YES - 9/21/13		YES	
TOTAL			$ 177.79			$ 189.12			
JUV. DETENTION	28,632 (3,182)		YES		YES		YES		
TOTAL			$ 334.23						
JUV. EMERGENCY	13,831 (1,537)		YES		YES		YES		
TOTAL			$ 154.13						
MOSBY (109)	200,147 (22,343); Public = 7,333 SY; OGV = 10,950 SY; Back = 4,060 SY	OGV	PUBLIC	OGV & BACK		PUBLIC - 9/18/13	OGV & BACK		
TOTAL		$1,505.17	$ 735.34	$ 1,505.17		$ 782.19			
NOKES. NEIGHBOR.	5,343 (594)		YES		YES		YES		
TOTAL			$ 130.00						
OWENS	48,080 (5,342)	YES		YES			YES		
TOTAL		$ 772.54		$ 772.54					
POTOMAC	53,550 (5,950)		YES			YES - 9/21/13			
TOTAL			$ 596.65			$ 634.67			
PSTC	Range: 47,720 (5,303); Main: 112,806 (12,534)	YES		YES			YES		
TOTAL		$2,720.43		$ 2,720.43					
SR. CTR. MAN.	33,395 (3,710)		YES			YES - 9/18/13		YES	
TOTAL			$ 372.03			$ 395.73			
WEST DIST. POLICE	289,491 (32,166)		YES		YES		YES - 8/15/14		
TOTAL			$ 2,903.88				$ 3,109.38		
WINTER SHELTER	PRTC	PRTC	PRTC	PRTC	PRTC	PRTC	PRTC		
TOTAL									
WOOD. SENIOR	29,069 (3,230)		YES			YES - 9/20/13		YES	
TOTAL			$ 323.90			$ 344.53			
GRAND TOTAL		$8,394.42	$ 13,842.05	$ 12,122.41	$ -	$ 7,202.08	$ 7,782.97		

Virginia Cooperative Extension
Virginia Tech • Virginia State University

Publication 430-295

Tree and Shrub Planting Guidelines

Bonnie Lee Appleton, Extension Specialist
Susan French, Extension Technician, AREC, Hampton Roads; Virginia Tech
Reviewed by David Close, Consumer Horticulture and Master Gardener Specialist, Horticulture, Virginia Tech

Plant and Site Selection

Select trees and shrubs well-adapted to conditions of individual planting sites. Poorly-sited plants are doomed from the start, no matter how carefully they're planted.

Test soil drainage before planting. Dig a test hole as deep as your planting hole and fill with water. If water drains at a rate of less than one inch per hour, consider installing drainage to carry water away from the planting hole base, or moving or raising the planting site (berm construction).

Also consider using more water-tolerant species. For trees, try red maple, sycamore, bald cypress, willow oak, or river birch. For shrubs, try inkberry, redtwig dogwood and buttonbush. Avoid dogwoods, azaleas, boxwoods, Japanese hollies, and other plants that don't like "wet feet" where drainage is poor.

Examine soil for compaction before planting. If soils are compacted, consider replacement with a good loam soil, or incorporation of several inches of an organic material such as composted yard waste to a depth of at least 8 inches over the entire planting area. Do not incorporate small quantities of sand - compaction will increase and drainage decrease.

Site Preparation

Dig shallow planting holes two to three times as wide as the root ball. Wide, shallow holes encourage horizontal root growth that trees and shrubs naturally produce.

In well-drained soil, dig holes as deep as the root ball. In poorly-drained heavy clay soil, dig holes one to two inches shallower than the root ball. Cover the exposed root ball top with mulch.

Don't dig holes deeper than root balls or put loose soil beneath roots because loose soil will compact over time, leaving trees and shrubs planted too deep. Widen holes near the soil surface where most root growth occurs. Score walls of machine-dug (auger, backhoe) holes to prevent glazing.

Backfill holes with existing unamended soil. Do not incorporate organic matter such as peatmoss into backfill for individual planting holes. Differences in soil pore sizes will be created causing problems with water movement and root growth between the root ball, planting hole, and surrounding soil.

Backfill half the soil, then water thoroughly to settle out air pockets. Finish backfilling, then water again. Cover any exposed root ball tops with mulch.

Incorporate slow-release granular fertilizers into backfill soil to provide nitrogen, or if a soil test indicates a need for phosphorus or potassium. Avoid using fast-release agronomic fertilizers that can dehydrate tree roots. Use no more than 1# actual nitrogen per 1,000 ft. of planting hole surface. (Example - if using 18-6-12 with a 5' diameter hole, incorporate 0.3 oz. per planting hole.)

Tree and Shrub Preparation

Closely inspect the wrapping around root balls of B&B (balled and burlapped) trees and shrubs. Growers use many synthetic materials, as well as burlap treated to retard degradation, to wrap root balls. Many of these materials will not degrade. To insure root growth into surrounding soil, remove pinning nails or rope lacing, then cut away or drop the wrapping material to the bottom of the planting hole, backfilling over it.

Wire baskets used to protect root balls degrade very slowly underground. Remove the top 8-12 inches of wire to keep equipment from getting caught in wire loops, and surface roots from girdling.

Remove all rope, whether jute or nylon, from trunks. Again, degradation is slow or nonexistent, and ropes can girdle trunks and roots.

www.ext.vt.edu

Produced by Communications and Marketing, College of Agriculture and Life Sciences, Virginia Polytechnic Institute and State University, 2015

VT/0115/HORT-108P

Remove plastic containers from container-grown trees and shrubs. For plants in fiber pots, break away the top or remove the pot entirely. Many fiber pots are coated to extend their shelf life, but this slows degradation below ground and retards root extension.

If roots are circling around the root ball exterior, cut through the roots in a few places. Cutting helps prevent circling roots from eventually girdling the trunk. Select trees grown in containers with vertical ribs or a copper-treatment on the interior container wall. These container modifications and treatments minimize circling root formation.

Tree Care After Planting

Remove tags and labels from trees and shrubs to prevent girdling branches and trunks.

Good follow-up watering helps promote root growth. Drip irrigation systems and water reservoir devices can facilitate watering.

Mulch, but don't over mulch newly planted trees and shrubs. Two to three inches of mulch is best - less if a fine material, more if coarse. Use either organic mulches (shredded or chunk pine bark, pine straw, composts) or inorganic mulches (volcanic and river rocks).

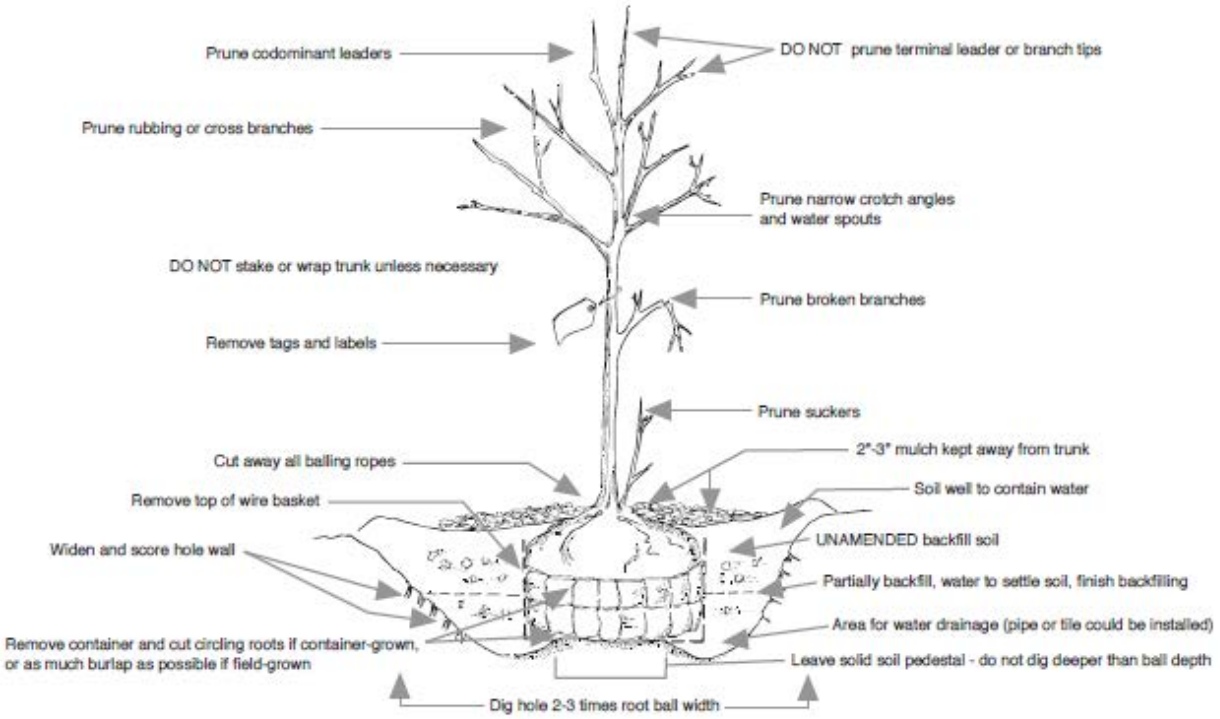
Keep mulch from touching tree trunks and shrub stems. This prevents disease and rodent problems if using organic mulches, and bark abrasion if using inorganic mulches.

Don't use black plastic beneath mulch around trees and shrubs because it blocks air and water exchange. For added weed control, use landscape fabrics that resist weed root penetration. Apply only one to two inches of mulch atop fabrics to prevent weeds from growing in the mulch.

Only stake trees with large crowns, or those situated on windy sites or where people may push them over. Stake for a maximum of one year. Allow trees a slight amount of flex rather than holding them rigidly in place. Use guying or attaching material that won't damage the bark. To prevent trunk girdling, remove all guying material after one year.

Most trees should not have their trunks wrapped. Wrapping often increases insect, disease, and water damage to trunks. Thin-barked trees planted in spring or summer into hot or paved areas may benefit from wrapping if a white wrap is used. To avoid trunk girdling, do not attach wraps with wire, nylon rope, plastic ties, or electrical tape. If wraps must be used, remove within one year.

For protection against animal or equipment damage, install guards to protect the trunk. Be sure the guards are loose-fitting and permit air circulation.



Appendix N

Site Assessment Checklist – Page 1

WORK ORDER No: 402763 DATE: 8/6/19

BUILDING NO./IDENTIFICATION: 116 BaG

BUILDINGS AND GROUNDS DIVISION
GROUNDS MAINTENANCE - SITE ASSESSMENT CHECKLIST

PURPOSE: Conduct a systematic review of each site on a periodic basis to detect required maintenance activities. Place a maintenance indicator OK or NW (Needs Work) in the respective box. Provide comments and attach photos for major areas of damage. Place the maintenance area id number in the relevant location on the attached sitemap.

ID No./Maintenance Area	OK/NW	Comments/Corrective Action Needed	Repair Date
1./Roads: Check for potholes, loose gravel, sand, salt, striping, signage.	X		
2./Curbs: Check for chips, cracks, paint, hazards, etc.	X		
3./Walkways: Check for chips, cracks, hazards, access, etc.	X		
4./Stairs: Check for slip/trip hazards, condition, railings, etc.			
5./Parking: Check for debris, potholes, cracks, striping, markings.	X		
6./Signs, Posts: Check condition, height, plumb, fading, missing. etc.	X		
7./Flags: Check condition, lighting, poles, etc.	X		
8./Fencing: Check soundness, slat/link breaks, vines, etc.	X		
9./Utilities: Check condition of sheds, dumpsters, boxes, etc.	X		
10./Trees&Shrubs: Check disease, insects, removal, trimming, pruning.	NW	Shrubs need trimming Mulch needs replaced.	8/6/19
11./Flower Beds: Check for weeding mulching, cleanup, etc.	NW	weeds need removed	8/6/19
12./Lawns: Check for disease, insects, seeding, cleanup, etc.	X		
13./Litter and Leaves: Check for necessary cleanup.	X		
14./Storm Water Management: Check sewers for proper drainage.	X		
15./Other(_____):			
16./Other(_____):			

Person(s) Conducting Assessment: Henry Smith Assessment Date: 8/5 Hours: 1.5

NOTE: Use reverse side for additional comments. Attach supporting photos and site map.

Appendix N

Site Assessment Checklist – Page 2

Page 2 (Site Assessment Continued)

WORK ORDER NO: 402763 DATE: 8/6/19

BUILDING NO./IDENTIFICATION: 116 B=G

ADDITIONAL COMMENTS:

Weeds around building were removed = areas sprayed.

FOLLOWUP WORK:

DATE	RESOURCE	HOURS	COMMENTS

Attach supporting photos and site map.

Appendix O
Facility Information – Page 1

DR. A. J. FERLAZZO BUILDING
15941 Donald Curtis Drive
Woodbridge, VA 22191

Plant Location	Description	Existing Quantity
Atrium	*Ficus benjamina* (Braided Trunk), 36" fiberglass container in planter, 1 plant per container	4 Each
Atrium	*Epipremnum aureum*, 5 per 36" container; 8" pots	20 Each
Atrium	*Schefflera arboricola*, Planter (surround 36" container), 10" grow pot	52 Each
Back Hallway	*Philodendron selloum*, 10" freestanding	1 plant
Staircase Planter	*Dracaena marginata*, 17" freestanding	1 plant
Staircase Planter	*Schefflera arboricola*, 10" grow pot	8 plants

JAMES J. McCOART BUILDING
1 County Complex Court
Prince William, VA 22192

Plant Location	Description	Existing Quantity
Atrium	*Ficus 'Midnight'*, 22" Decorated, 17" grown pot	2 Each
Atrium	*Epipremnum aureum*, 22" Decorative, 7 per *Ficus*	14 Each
Atrium (Up)	*Dracaena fragrans 'Massangeana'*, 14" grow pot	2 Each
Atrium	*Aglaonema 'Maria'*, 14" grow pot	2 Each
Atrium	*Aglaonema 'Maria'*, 12" Decorative, 8" grow pot	2 Each
Atrium	*Dracaena 'Costericana'*, 14" grow pot	2 Each

SERVICES REQUIRED

Dr. A. J. FERLAZZO BUILDING 15941 Donald Curtis Drive Woodbridge, VA 22191	
	It shall be the responsibility of the Contractor to perform the following minimum services (see Facility Inventory for details): ♦ Water Plants; ♦ Weed; ♦ Inspect/Control for insect and disease; ♦ Dust and Clean plants; ♦ Trim/Prune; and ♦ Fertilize

JAMES J. McCOART BUILDING 1 County Complex Court Prince William, VA 22191	
	It shall be the responsibility of the Contractor to perform the following minimum services (see Facility Inventory for details): ♦ Water Plants; ♦ Weed; ♦ Inspect/Control for insect and disease; ♦ Dust and Clean plants; ♦ Trim/Prune; ♦ Fertilize; and ♦ Bloom changes in accordance with facility inventory.

Appendix P
Environmental Services Sign Shop

PRINCE WILLIAM COUNTY
SIGN GRAPHICS SHOP
WORK ORDER FORM

DATE REC'D 3/4/2019
DATE COMPLETED
COMPLETED BY
CHECKED BY

CUSTOMER	Henry Smith B&G	INVOICE #
CONTACT / PHONE / E-MAIL	x8494	hsmith@pwcgov.org
COUNTY DEPT. / DIVISION	PW / B&G	
OCA FOR IDT (5 series OL3)	1001.15.160.1604.55527.000.00000000.0.0000	

SIGN SIZE / AMOUNT		SIGN SIZE / AMOUNT		SIGN SIZE / AMOUNT		OTHER SIGNAGE AVAILABLE	
12" X 12"		12" X 18"	24	FIRE LANE		DECALS *	details below
18" X 24"		12" X 24"		DRY POND		MAGNETIC*	details below
24" X 30"		18" X 24"		WET POND		A-FRAME*	details below
30" X 30"		30" STOP		24" STOP		NAMEPLATE*	details below

6" (SIX) STREET NAME	*details below	LETTER COLOR	White
9"(NINE) STREET NAME	*details below	BACKGROUND COLOR	Blue

SIGN DETAILS (Custom size, original wording, special requests or instructions) — Call 703-792-5765 w/questions

- 3 "Official Govt. Vehicle Parking" Signs with LEFT arrows
- 2 "Official Govt.Vehicle Parking" Signs with "Left/Right" Arrows
- 3 "Official Govt.Vehicle Parking" Signs with "Right" facing Arrows
- 2 "Loading Area" Signs
- 3 "BOCS Potomac" Signs
- 3 "BOCS Woodbridge" Signs
- 1 "Health Van" Sign
- 2 "Public Safety Personnel Parking" Signs
- 2 "Handicap Parking" Signs
- 3 "B&G Parking" Signs

Can we complete your order with some hardware?

Round Post - 10 ft	How Many?		Cap?		Nameplate Bracket?	
U-Channel Post - 10 ft	How Many?		Cross?		Other?	
Break-a-way Post - 10 ft	How Many?		Nuts/bolts?			

PLEASE ATTACH A DRAWING OR USE THE SPACE BELOW

all signs to be per the new standard. EXAMPLES:

CUSTOMER SIGNATURE: DATE:

PLEASE FAX FORM TO 703-792-5763

Appendix Q

Personnel Contacts

LOCATION & POC	WORK	WORK CELL	LEAVE INFO
CENTRAL HUB	**703-792-7199**	**571-329-2255**	
Mike Rose		571-238-7044	
Julius James		703-606-7631	
Devon Hite		703-789-1787	
Kevin Krause		703-789-2730	
Scott Jameson		571-221-1319	
Elvis Madina-Chevez		571-359-2773	
Info Desk	703-792-7437		
Snow blower (BG#1463)	Truck w / blade (BG#2405)		
Kubota w / blower & spreader (BG#2802)		Gator w / blade & spreader (BG#3237)	
EASTERN HUB	**703-792-6355**	**571-329-2258**	
Joe Schaeffer		571-238-7036	
Jamie Jenkins		703-479-4321	
Eddie Johnston		703-479-5286	
Steve Horn		571-316-6167	
Westley Ford		571-358-4742	
Wheelhorse tractor w / blade (BG#641)			Gator (BG#3225)
Snow blower (BG#1462)	Snow blower (BG#1948)		Skid Steer (BG#2150)
Kubota (BG#607)			
INDEPENDENT HILL HUB	**703-792-5381**	**571-329-2259**	
Alan Pitt		571-722-9204	
Mike Stutsman		571-749-7989	
Mark Cairns		571-606-7631	
	Truck w / blade (BG#1476)		
	Truck w / blade (BG#3584)		
	Snow thrower (BG#3996)		
MANASSAS HUB	**703-792-6795**	**571-329-2254**	
JUDICIAL CENTER	**703-792-6397**	**571-329-2256**	
Curtis Brenner		703-853-0474	
Kenneth Kayede		703-8533858	
Jeff Saylor		571-238-7035	
Vilasith Sananikone		571-722-9858	
(Bill) Earl Price		703-475-	
Truck w / blade (BG#2713)	Truck w / blade (BG#2775)		
Gator (BG#2768) - WDPolice	Snow thrower (BG#3362)		
Snow blower (BG#2408)	Truck w / blade (BG#2406)		
WESTERN HUB	**703-792-6686**	**571-329-2968**	
Mark Lesher		571-238-7032	
Ron Henry		571-358-4943	
Mike Fewell		571-238-7029	
Robbie Pugh		703-479-4058	
Brian Connolly		571-722-9284	
Abdellah Yasouaban		571-762-3819	
Security - PSTC	703-792-4463		
Truck w / blade (BG#1614)	Gator w / blade (BG#3769)		
Snow thrower (BG#3239)	Snow thrower (BG#3951)		

Appendix R

PWC Sites – SAMPLE 2019

#	LOCATION	ADDRESS	CONTACT	PHONE	COMMENTS	Hub	Own/Rent	Comments
101	Old Courthouse	9248 Lee Avenue	Curtis Brenner	703-792-6795	Walks	Manassas	Owned	
102	Fire & Rescue; Voter Registration	9250 Lee Avenue	Curtis Brenner	703-792-6795	Lot & Walks	Manassas	Owned	
107	Bennett Administration	9300 Lee Avenue	Brendon Hanafin	703-792-6709	Lot & Walks	Historic	Owned	
108	Judicial Center (Gate code 9933)	9311 Lee Avenue	Curtis Brenner	703-792-6397	Lot & Walks	Judicial	Owned	
109	ADC Annex	9319 Mosby Street	Sgt. John Logan	703-792-7334	Lot & Walks	Manassas	Owned	
110	Police Evidence	9303 Peabody Street	Curtis Brenner	703-792-6795	Walks	Manassas	Owned	
115	Health Department - Manassas	9301 Lee Avenue	Curtis Brenner	703-792-6397	Lot & Walks	Judicial	Owned	
116	Buildings & Grounds	9412 Peabody Street	Curtis Brenner	703-792-6795	Lot & Walks	Manassas	Owned	
117	Senior Center at Manassas	9320 Mosby Street	Curtis Brenner	703-792-6397	Lot & Walks	Judicial	Owned	
118	Adult Detention Center - Main	9320 Lee Avenue	Curtis Brenner	703-792-6795	Lot	Manassas	Owned	
118	Adult Detention Center - Main	9320 Lee Avenue	Sgt. John Logan	703-792-7334	Walks	Manassas	Owned	
120	Adult Detention Center - Modular	9320-A Lee Avenue	Curtis Brenner	703-792-6795	Lot	Manassas	Owned	
120	Adult Detention Center - Modular	9320-A Lee Avenue	Sgt. John Logan	703-792-7334	Walks	Manassas	Owned	
121	Courthouse Professional Center	9540 Center Street	Chris Daniels	703-792-4940	Lot & Walks	Manassas	Leased	
122	Courthouse Station	9309 Center Street	Chris Daniels	703-792-4940	Lot & Walks	Manassas	Leased	
124	ADC Expansion	9320 Lee Avenue	Curtis Brenner	703-792-6795	Lot	Manassas	Owned	
124	ADC Expansion	9310 Lee Avenue/ 9320 Lee Av.	Sgt. John Logan	703-792-7334	Walks	Manassas	Owned	
127	Soil & Water Conservation	8850 Rixlew Lane	Patty Cox	703-792-5175	Lot & Walks		Leased	
128	Commonwealth Attorney Victim/Witness	9300 West Courthouse Rd., #102	Chris Daniels	703-792-4940	Lot & Walks	Manassas	Leased	
138	ADC Warehouse	9023 Euclid Avenue	Patty Cox	703-792-5175	Lot & Walks		Leased	
139	Fire & Rescue Warehouse	8410 Kao Circle	Chris Daniels	703-792-4940	Lot & Walks	Manassas	Leased	
140	Adult Detention Center - Work Release	9127-B Euclid Avenue	Patty Cox	703-792-5175	Lot & Walks	Manassas	Leased	
141	Employee Health	8480 Kao Circle	Chris Daniels	703-792-4940	Lot & Walks	Manassas	Leased	
142-A	Police Warehouse	9039 Euclid Avenue	Chris Daniels	703-792-4940	Lot & Walks	Manassas	Leased	
142-B	Police WH Ext. Records Center	9033 Euclid Avenue	Chris Daniels	703-792-4940	Lot & Walks	Manassas	Leased	
143-A	Fire & Rescue Warehouse	9027 Euclid Avenue	Chris Daniels	703-792-4940	Lot & Walks	Manassas	Leased	
143-B	Fire & Rescue Warehouse Addition	9029 Euclid Avenue	Chris Daniels	703-792-4940	Lot & Walks	Manassas	Leased	
143-C	Fire & Rescue Warehouse Expansion	9031 Euclid Avenue	Chris Daniels	703-792-4940	Lot & Walks	Manassas	Leased	
144	Fire & Rescue CPAT	8492-8494 Kao Circle	Chris Daniels	703-792-4940	Lot & Walks	Manassas	Leased	
145	Police Identification	8478 Kao Circle	Chris Daniels	703-792-4940	Lot & Walks	Manassas	Leased	
146	PWC Environmental & Public Health	8468-8470 Kao Circle	Chris Daniels	703-792-4940	Lot & Walks	Manassas	Leased	
148	Fire & Rescue SCBA Shop	8488 Kao Circle	Chris Daniels	703-792-4940	Lot & Walks	Manassas	Leased	
149A	Radio Shop Headquarters	8609-8613 Quarry Road	Chris Daniels	703-792-4940	Lot & Walks	Manassas	Leased	
150	Police Administration	8400-8406 Kao Circle	Chris Daniels	703-792-4940	Lot & Walks	Manassas	Leased	
158	CSB Mental Health	10340 Butternut Circle	Debbie Negvesky	703-792-7730	Lot & Walks		Leased	Lessee
161	CSB Prince William Club	8521-8525 Phoenix Drive	Chris Daniels	703-792-4940	Lot & Walks	Manassas	Leased	
163	CSB Home	3047 Cahill Lane	Patty Cox	703-792-5175	Lot & Walks	Eastern	Leased	
190	B&G Warehouse	11492 Robertson Drive	Chris Daniels	703-792-4940	Lot & Walks	Manassas	Leased	
198	Thomasson Barn	9349 Hornbaker Road	*Mark Lesher*	703-792-6686	Unoccupied	Western	Owned	barn
203	Economic Development	13575 Heathcote Boulevard	Chris Daniels	703-792-4940	Lot & Walks	Western	Leased	
208	Haymarket Gainesville Community Library	14870 Lightner Road	Mark Lesher	703-792-6686	Lot & Walks	Western	Owned	added FY15 listing
209	CSB Home	7805 Brookview Court	Patty Cox	703-792-5175	Lot & Walks	Manassas	Leased	
210	Gainesville Neighborhood Library	4603 James Madison Hwy.	Kevin Flickinger	703-792-4220	Lot & Walks	P&R	Owned	
211	F&R Station #4	14450 John Marshall Highway	Lance McClintock	703-792-6364	Lot & Walks	Western	Owned	
213	Ozone Monitoring	4603 James Madison Hwy.	Patty Cox	703-792-5175	Lot & Walks	Western	Leased	
214	Bull Run Library	8051 Ashton Avenue	Mark Lesher	703-792-6686	Lot	Manassas	Owned	
214	Bull Run Library	8051 Ashton Avenue	L.T. Services, Inc	703-916-9008	Walks	Manassas	Owned	Miriam Herrell is library co
215	Sudley North	7987 Ashton Avenue	Chris Daniels	703-792-4940	Lot & Walks	Manassas	Leased	
219	CSB ID	7755 Ashton Avenue	Chris Daniels	703-792-5175		Manassas	Leased	
220	F & R Trailer	13101 Public Safety Drive	Mark Lesher	703-792-6686		Western	Owned	

Appendix S
Snow and ER Plan cover sheet – SAMPLE 2019

BUILDINGS AND GROUNDS DIVISION
SNOW AND EMERGENCY RESPONSE PLAN

WINTER 2019-2020

EFFECTIVE November 1, 2019

PURPOSE: To provide information to assist in safely and rapidly responding to weather related emergency situations and provide a basis for reaction to other natural or man-made disasters.

GENERAL: Under circumstances of pending unusual weather or other emergency conditions Buildings & Grounds will receive periodic updates from the Emergency Operations Center. These as well as operational messages will be forwarded to each Supervisor, the Administrative staff, and contractors.

- The Grounds Maintenance Supervisor will notify each Building Operations Supervisor by phone or email of the information from the Emergency Operations Center and direct actions in response to the situation.

- Building Operations Supervisors and staff may report to their Hub prior to the alert if in their judgment the conditions in their areas warrant a more immediate response. Building Operations Supervisors are responsible for alerting members of their staff to meet the snow removal effort.

- Contractor staff will be committed by the Grounds Maintenance Supervisor.

- A report to the Buildings & Grounds response center indicating when Hub staff is on site is required, as is communications indicating progress, changing conditions, and/or problems. A summary report is to be forwarded to Buildings & Grounds the first working day following completion of clean-up efforts, indicating the staff worked, their reporting time and their ending time, as well as resource consumption (containers of ice melt, etc.) and condition of vehicles / equipment.

Buildings & Grounds will monitor the phones from the administration area.

Appendix T

Contractor Schedule – SAMPLE 2019

	ZONE 1 (green) *Eastern, Central and IH Hubs*					
#	**LOCATION**	**ADDRESS**	**PRIORITY**	**OPENS**	**COMMENTS**	
402	Owens (Shift: 5A, 5P)	3 County Complex Court	1	24HR	Lot & Walks	
401	McCoart	1 County Complex Court	2	8AM	Lot & Walks	
395	Central District Police	5036 Davis Ford Rd.	1	24HR	Lots & Walks	new concrete 060118
398	Development Services (DSB)	5 County Complex Court	3	8AM	Lot & Walks	
P&R	Chinn Aquatics & Fitness Center	13025 Chinn Park Drive	4	5AM	Lot	added lot treatments 120613
540	Chinn Library	13065 Chinn Park Drive	5	10AM	Lot & Walks	new concrete November 2016
P&R	Sharron Baucom Dale City Rec	14300 Minnieville Road	1	6AM	Lot	added lot treatments 120613
820	New Gar-field Police Station (Shift: 7A, 4P, 9P)	15948 Donald Curtis Drive	1	24HR	Lot & Walks	
810	Gar-field Gas Station (Motorcycle Shop)	15904 Jeff. Davis Hwy.	2	24HR	Lot & Walks	
825	Tower (703-792-7200); "Sand Truck" card	15960 Sindlinger Way	3	24HR	Lot	Access: call x7200 to get gate opened
818	Ferlazzo	15941 Donald Curtis Drive	4	7AM	Lot & Walks	
815	Juvenile Court Services	15950 Sindlinger Way	5	8AM	Lot & Walks	
727	Homeless Prevention Center	14945 Jeff. Davis Hwy.	6	24HR	Lot	
620	Human Services	14716 Potomac Mills Rd.	7	8AM	Lot & Walks	
622	Hypothermia Unit - Winter Shelter	14730 Potomac Mills Rd.	8	6PM**	Lot	
721	Potomac Library	2201 Opitz Blvd.	9	10AM	Lot & Walks	new concrete October 2017
701	Woodbridge Senior Citizens Center	13850 Church Hill Drive	10	8AM	Lot & Walks	
726	Dawson Beach Transitional Housing	14012 Dawson Beach Road	11	24HR	Road (*Walks)	*Walks billed separately to Housing
			** 24HR when snows			
440	Juvenile Detention Center (Shift: 6:45A, 6:45P)	14873 Dumfries Road	1	24HR	Lot & Walks	new concrete October 2017
420	Animal Shelter	14807 Bristow Road	2	24HR	Lot & Walks	
444	Mosquito Forest Pest	14879 Dumfries Road	3	8AM	Lot & Walks	new concrete October 2017
601	Dale City Neighborhood Library	4249 Dale Blvd.	4	10AM	Lot & Walks	
831	Montclair Community Library	5049 Waterway Drive	5	10AM	Lot & Walks	January 2016 in service
457	Fleet (0911)	14809 Dumfries Road	6	8AM**	Treat lot only	
			** 24HR when snows			
	ZONE 2 (pink) *Manassas/Western Hubs*					
	LOCATION					
392	Fuel Facility	8900 Freedom Center Blvd.	1	24HR	Lot	
390	Western District Police (Shift: 7A, 4P, 9P)	8900 Freedom Center Blvd.	2	24HR	Lot & Walks	
376	Molinari Shelter (Shift: 7A, 3P, 11P)	8642 Wellington Road	3	24HR	Lot	
370-A	PSTC Joint Training Facility	13101 Public Safety Drive	4	7AM	Lot & Walks	
380	EVOC	13170 Public Safety Drive	5	7AM	Lot ONLY	*Bill Separately (No walks as of 10/31/14)
340	Nokesville Neighborhood Library	12993 Fitzwater Drive	6	10AM	Lot & Walks	
208	Haymarket Gainesville Community Library	14870 Lightner Road	7	10AM	Lot & Walks	
214	Bull Run Library	8051 Ashton Avenue	8	10AM	Lot & Walks	
118	Adult Detention Center (Shift:7A, 7P)	9320 Lee Avenue	1	24HR	Lot	
124	ADC Expansion	9320 Lee Avenue	2	24HR	Walks	
108	Judicial Center (9933)	9311 Lee Avenue	3	8AM	Lot & Walks	
109	ADC Annex	9319 Mosby Street	4	8AM	Lot & Walks	
101	Old Courthouse	9248 Lee Avenue	5	8AM	Walks	
102	Fire and Rescue / Voter Reg	9250 Lee Avenue	6	8AM	Lot & Walks	
110	Police Evidence	9303 Peabody Street	7	8AM	Walks	
115	Public Health Department	9301 Lee Avenue	8	8AM	Lot & Walks	
116	Buildings & Grounds	9412 Peabody Street	9	8AM**	Lot & Walks	
117	Senior Center at Manassas	9320 Mosby Street	10	8AM	Lot & Walks	
107	Bennett Administration	9300 Lee Avenue	11		Lot & Walks	
311	Central Library	8601 Mathis Avenue	12	10AM	Lot & Walks	
			** 24HR when snows			
B&G	**Henry Smith**	9412 Peabody Street	**office**	**703-792-8494**	**703-792-7010**	
		Manassas, VA 20110	**cell**	**571-428-3304**		
			home	540-395-6254		
			fax	703-792-6376		
	Donnie Brooks	9002 Sowder Place	**cell**	**703-906-5064**		
	1-F250 and 1-Dodge Ram 1 Ton Truck with blade	Nokesville, VA 20181-3102	home/office	703-791-5437		
	1-F350 1 Ton Truck with blade and spreader		fax	703-791-2460		subject to change, new contract OFB 080819
	4-F450 2 Ton Trucks with blade and spreader	Drivers:				
	2 snow blowers	Donnie, Patty, Jim & Louie Brooks; Steve Savage, Tony Shumate				
	3 Tractors w/ blades - too big for sidewalks	George, Mike, Duke, & Robert Tenell; Wayne May				
	5 Bobcats; 1 Backhoe	Joe Ratcliff, Doug Heath, Stevie Smith, Jim Brooks				

Appendix U

24-hour Locations –2019

#	LOCATION	ADDRESS	PRIORITY	OPENS	COMMENTS
402	Owens (Shift: 5A, 5P)	3 County Complex Court	1	24HR	Lot & Walks
820	Gar-field Police Station (Shift: 7A, 4P, 9P)	15948 Donald Curtis Drive	1	24HR	Lot & Walks
810	Gar-field Gas Station	15904 Jeff. Davis Hwy.	2	24HR	Lot & Walks
825	Tower (703-792-7200); "Sand Truck" card	15960 Sindlinger Way	3	24HR	Lot
727	Homeless Prevention Center	14945 Jeff. Davis Hwy.	4	24HR	Lot
622	Hypothermia Unit - Winter Shelter	14730 Potomac Mills Rd.	5	6PM**	Lot
726	Dawson Beach Transitional Housing	14012 Dawson Beach Road	6	24HR	Road (*Walks)
			** 24HR when snows		*Walks billed separately
440	Juvenile Detention Center (Shift: 6:45A, 6:45P)	14873 Dumfries Road	1	24HR	Lot & Walks
420	Animal Shelter	14807 Bristow Road	2	24HR	Lot & Walks
457	Fleet (0911)	14809 Dumfries Road	3	8AM**	Treat lot only
392	Fuel Facility	8900 Freedom Center Blvd	1	24HR	Lot
390	Western District Police (Shift: 7A, 4P, 9P)	8900 Freedom Center Blvd	2	24HR	Lot & Walks
395	Central Distrrict Police (Shift: 7A, 4P, 9P)	5036 Davis Ford Rd.	1	24HR	Lot & Walks
376	Molinari Shelter (Shift: 7A, 3P, 11P)	8642 Wellington Road	3	24HR	Lot
118	Adult Detention Center (Shift:7A, 7P)	9320 Lee Avenue	1	24HR	Lot
124	ADC Expansion	9320 Lee Avenue	2	24HR	Walks
116	Buildings & Grounds	9412 Peabody Street	3	8AM**	Lot & Walks
			** 24HR when snows		
B&G	**Henry Smith**	9412 Peabody Street	**office**	**703-792-8494**	**703-792-7010**
		Manassas, VA 20110	**cell**	**571-428-3304**	
			home	540-395-6254	
			fax	703-792-6376	

Appendix V

Road Chemical Distribution Log – FY19 Example

ROAD CHEMICAL DISTRIBUTION LOG
PRINCE WILLIAM COUNTY PUBLIC WORKS
BUILDINGS & GROUNDS DIVISION

RETURN FORM AT END OF SHIFT TO:
9412 PEABODY STREET
MANASSAS, VA 20110
703-792-6376 - FAX

Brooks Contracting

DATE	TIME	SALT (load)	SAND (load)	MIX (load)	DRIVER / TRUCK #
Ex. 8/12/17	5:00 PM	1			JD HOLLEY
1/12/19		3 loads			Brooks
		6 Tons			
1/13/19		6 loads			Brooks
		12 Tons			
1/13/19		3 loads			Brooks
		6 Tons			
1/14/19		6 loads			Brooks
		12 Tons			
		36 Tons			

NOTE: estimated quantity (3/16/18)
B&G = 2.00 tons/load; mix = 1.50 ton salt plus 0.50 ton sand
BROOKS = 2.00 tons/load; mix = 1.50 ton salt plus 0.50 ton sand

AS OF 12/8/17 FROM GAR-FIELD TOWER STORAGE SITE (15960 SINDLINGER WAY, WOODBRIDGE)
AS OF 12/8/17 FROM BROOKS STORAGE SITE (9002 SOWDER PLACE, NOKESVILLE)

Appendix W
Map – SAMPLE

WINTER SEASON SNOW MAPS CENTRAL HUB COUNTY COMPLEX COURT
McCoart Fast Track / Employee Parking Lot
Between Great Bridge Road and County Complex Court; includes connector road (Ricter Way).

Appendix X

Point of Contact for Weather Warnings Memo

November 14, 2018

TO: Barry M. Barnard, Police Chief

Kevin J. McGee, Fire & Rescue Chief

Brian Misner, Emergency Services Manager

FROM: Dr. Alicia Hart
Buildings & Grounds Division Chief

RE: Points of Contact for Weather Warnings- Winter Storms

Greetings,

The Buildings & Grounds Division of Public Works and the Parks, Grounds, Facility & Support Services Division of Parks & Recreation are responsible for snow removal for assigned County Government owned facilities. As weather conditions change, notification and alerts received from the County Communications Center are key to planning and accomplishing this mission. Please see the points of contact within both Divisions who should receive weather updates and notifications of hazardous road conditions:

Buildings and Grounds Division, Public Works

Primary: Dr. Alicia Hart	703-792-6379 (O)	*703-853-2264 (C)	757-701-9007 (PC)
Primary: Andy Negvesky	703-792-8497 (O)	*571-238-7034 (C)	703-590-8059 (H)
Primary: Henry Smith	703-792-8494 (O)	*571-428-3304 (C)	540-395-6254 (H)

Parks, Grounds, Facility & Support Services Division, Parks and Recreation

Primary: Kevin Flickinger	703-792-4220 (O)	*703-928-5365 (C)

** Preferred after-hours primary number*

The FAX number for B&G is 703-792-6376 and for PGFSS is 703-792-4717; these numbers are monitored during normal County business hours only. Thank you for your support of our efforts.

Respectfully Submitted,

Dr. Alicia Hart
Cc: Tom Bruun, Public Works Director
Matt Villareale, Assistant Public Works Director
Seth Hendler-Voss, Parks and Recreation Director

Appendix Y

Snow Removal Operations Memo

November 16, 2018

TO: All County Department and Agency Heads

FROM: Dr. Alicia Hart
Buildings & Grounds Division Chief

RE: Snow Removal Operations

Greetings,

The Buildings and Grounds Division is preparing for 2018/2019 snow removal operations. As we prepare for the upcoming snow season, we want to ensure that you are aware of our removal process. Please know that we will commit all available resources to keeping parking lots, sidewalks, and building entrances safe and accessible. Once snow and/or ice begins to accumulate, routine Buildings and Grounds operations will be suspended while employees and contractors work to maintain building accessibility and operational safety. In an effort to maximize our services to you, we kindly request your attention and assistance with the following items:

- Please park County vehicles close together in one designated area. Parking personal vehicles in a group is also helpful. This provides open space for plow trucks to operate safely and ultimately clear more spaces sooner.
- Please park in designated spaces only. Parking in loading zones, emergency access areas, and areas not designated for parking impedes clearing operations and creates unnecessary hazards.
- Please be aware of plowing and sanding operations occurring near your vehicle. Visibility is a concern, so please make sure the operator sees you before you pass in front of or behind a plow or sand truck.
- Please be patient and careful. Our resources are limited and workload is allocated by priority. Given that we cannot clear all areas at once, we ask you to use caution at all times until we get the opportunity to get to your building.
- Please understand that during plowing operations, your vehicle may inadvertently become surrounded by snow (based upon where you have parked). We will take every reasonable effort for this not to occur.
- As a gentle reminder, we do not dig vehicles out. Keeping a shovel and an abrasive to aid traction (kitty litter) in your vehicle during winter is a good idea for everyone.

Additional Notes:

- Property Management Division is responsible for coordination of snow removal at leased facilities. If you are located in a leased facility and would like an update on snow removal operations, please contact Chris Daniels, Leasing Agent, at 703-792-4940.
- The Parks, Grounds, Facility & Support Services Division is responsible for snow removal at Parks & Recreation sites; if you would like an update, please contact Kevin Flickinger, Recreation Grounds Services Manager, at 703-792-4220.

Your patience, understanding and support during snow and ice removal operations are appreciated. If you have questions concerning our efforts or need assistance during snow/ice events, please contact Henry Smith at ext. 8494 or the Buildings and Grounds Work Request desk at ext. 7010.

Respectfully Submitted,

Dr. Alicia Hart

Cc: Tom Bruun, Director of Public Works
Seth Hendler-Voss, Director of Parks and Recreation
Matt Villareale, Assistant Director of Public Works
Matt Corneliussen, Property Management Division Chief
Andy Negvesky, Facilities Maintenance Manager
Kevin Flickinger, Recreation Grounds Services Manager
Henry Smith, Grounds Maintenance Supervisor

Appendix Z

Snow Removal Equipment – FY19

November 19, 2018

TO: Dr. Alicia Hart
Buildings & Grounds Division Chief

FROM: Edward A. Hamilton, Sr.
Fleet Management Division Chief

RE: Buildings & Grounds Snow Removal Equipment

Fleet Management will provide Buildings & Grounds pre and post winter equipment preparation services. Below are the services that will be provided by Fleet:

- Pre-Winter Services (Prior to November 1st)
  - Go over each piece of equipment and ensure that it is functional
  - Replace cylinder oil in the truck mounted plows
  - Ensure spreaders are functional and properly installed on ES3374 & ES3375
  - Ensure spreaders are calibrated so that their spreading radius meets the demands of the operators.

- Operator Pre-Winter Services
  - Check that all lighting is functioning properly. This includes headlights, clearance marker lamps, safety lighting, hazards, brake lamps, warning lights, and turn signals.
  - Check all audible warning signals.

- Post-Winter Services
  - Go over each piece of equipment and ensure that it is functional
  - Thoroughly clean each piece of equipment
  - Spray each piece of equipment with a desalinization chemical to neutralize the salt.
  - Remove and store the spreaders from ES3374 & ES3375

- Operator Post-Winter Services
  - Once the season starts, remember to thoroughly clean the equipment with a high-pressure wash after every use or shift.
  - Take advantage of this time to also inspect components for signs of wear, cracks, leaks, or misalignment with the body.

Standard Operating Procedure

Department of Public Works

Environmental Services Division

Title:	Construction Services Snow/Ice Removal Plan
Number:	3.037.1
Subject:	Construction Services Snow/Ice Removal Procedures
Cross Reference:	APWA Management Practice(s) Chapter 26
Date Issued:	February 28, 2012
Date Revised:	December 12, 2018
Date Last Reviewed:	December 12, 2018
Signature of Issuer:	Marc T. Aveni Marc T. Aveni, Environmental Services Division Chief
Applicability:	Environmental Services Division
Effective Date:	December 12, 2018

A. **Purpose**

The purpose of this Standard Operating Procedure (SOP) is to document the snow/ice control removal plan for the Environmental Services Division Construction Services Branch. This SOP details all the facets of the snow/ice control removal plan for Construction Services.

B. **Applicability**

This SOP is applicable to the Environmental Services Division Construction Services Branch.

C. **Specifics of the SOP**

a. **Adoption of PWC EOP ESF 3B**

This plan adopts the responsibilities given to the Environmental Services Division as listed in the Prince William County Emergency Operations Plan (EOP) Emergency Support Function (ESF) 3B Snow Removal Plan. (Attachment A)

b. **Weather Monitoring**

The Construction Services Branch is responsible for monitoring the weather for the Branch. The Construction Services Branch Chief (Branch Chief) does this via the internet, local radio and TV stations. Also, the Branch Chief is on the email list of the County Emergency Services Coordinator. The emergency services coordinator tracks the weather and provides updates to employees with emergency management responsibilities throughout the County.

c. **Employee Scheduling**

The Branch Chief is responsible for mobilizing the branch for snow removal operations. Attachment B lists who is called in for snow removal operations. Snow/ice removal work is generally completed between 4:00a.m. and 7:00p.m.

d. **Snow and Ice Control Materials**

Construction Services uses a grit mixture of one (1) ton stone screenings and 50 pound of salt. The grit mixture is mixed at the Operations Building, if any is stored, it is stored in the concrete bay shown on Attachment C. The salt is purchased from local suppliers. Stone screenings are purchased from Cedar Mountain Stone or Vulcan Materials.

e. **Equipment**

Attachment D lists all of the equipment used by Construction Services for the purposes of snow/ice control. During the month of November, the crew supervisors are responsible for completing an equipment drill. At this same time, a training meeting is held with all employees to review snow removal procedures and projects for the upcoming season. As a part of this drill all the equipment is set up for snow/ice control and inspected for issues. Also, during this drill all equipment is calibrated to the proper settings. All issues identified during this must be rectified by December 15th each year.

f. **Snow Removal Projects**
Attachment E is a list of snow removal responsibilities for Construction Services. These locations are all non-primary streets or parking lots. Therefore, snow/ice responses are generally limited to the hours of 4:00 a.m. to 7 p.m. Exceptions are at the discretion of the Branch Chief.

g. **Material Loading**
Material Loading is completed at the Operations Building. Attachment F details the loading procedures. Loading procedures are reviewed during morning crew meeting prior to the start of the snow/ice season.

h. **Removal Procedures**
The Branch has a curb to curb policy for cleaning streets. After precipitation has stopped, crews must clear or treat the streets from curb to curb. Grit is applied to surfaces after the event has ended. The removal expectations are reviewed during morning crew meetings prior to the start of the snow/ice season.

D. Authority
The approving authority for this SOP is the Environmental Services Division Chief. Any changes to or deviations from this SOP must be approved by the Environmental Services Division Chief.

E. Administration
Administration of this SOP shall be the responsibility of the Environmental Services Division Chief.

Attachments
Attachment A: Prince William County EOP ESF 3B Snow Removal Plan
Attachment B: Lists who is called in for snow removal operations
Attachment C: Picture of the building at Ops in which "grit" is stored in.
Attachment D: Lists all of the equipment used by Construction Services for the purposes of snow/ice control.
Attachment E: List of snow removal responsibilities for Construction Services
Attachment F: Details the loading procedures

ESF 3B SNOW REMOVAL PLAN
TABLE OF CONTENTS

Revised: 12/08

INTRODUCTION

To remove accumulated snow from County facilities and other designated areas to ensure access by employees and citizens, to maintain normal government operations and services to the maximum extent possible. To quickly call in additional resources to supplement the routine snow plan and prepare to handle additional work assignments as directed by the Office of Emergency Services.

AUTHORITIES AND REFERENCES

A. Authorities

B. References

PURPOSE

The purpose of this appendix is to remove snow from County facilities to ensure access and maintain government.

SITUATION AND ASSUMPTIONS

A. Situation

The average seasonal snowfall for the region as measured at Washington Reagan National and Dulles Airports by the National Weather Service (NWS) is between 16.6 and 22.8 inches. Snowfall occurs several times a season and the accumulation of snow results in limited access to County facilities and interferes with transportation. Prince William County rarely experiences a major snowstorm in which the severity of the storm exceeds the capability of the County's assets to clear the snow from the County facilities in a safe and timely manner.

B. Assumptions

1. The average snowfall will be within the expected range.
2. Weather forecasts will be accurate enough to provide sufficient warning to mobilize personnel, equipment, and contractors.
3. Personnel and equipment resources required that are not currently County assets will be available from regional sources.
4. This annex would be put into effect when the routine snow removal plan becomes ineffective.
5. All available County-owned equipment assigned to the Division is being utilized.
6. Movement is affected by the nature and scope of the snow.
7. Fleet Maintenance will be available to provide vehicle maintenance support and wrecker service as necessary.

ORGANIZATION AND ASSIGNMENT OF RESPONSIBILITIES

A. Organization

1. The Director of Public Works is responsible for planning, organizing, and coordinating snow removal operations.
2. Other County departments will be prepared to provide assistance to the Department of Public Works.

B. Assignment of Responsibilities

In the event of an emergency, the Chief of the Buildings and Grounds Division will assume full responsibility for efficient coordination of the following groups that will be necessary in carrying out the mission:

1. Buildings and Grounds Administration

   Office staff will be brought in or take action from home to call contractors who have necessary equipment and material at strategic locations to assist in snow removal.

2. Courier support will be available for special assignments as directed.
3. Building Operating Engineers and staff are expected to be at their hubs or other designated locations conducting regular snow removal efforts. Upon direction they will shift priorities to support emergency operations.
4. Grounds Maintenance and Housekeeping Staff
5. It is assumed that members of this group have already put in over 8 hours in snow removal. Actions will start to rotate these employees so utilization of all available assigned equipment can be maximized and staff rotated.
6. Environmental Services Division Snow Plow Responsibility
   a. Assist VDOT
      (1) Areas designated by VDOT snow plow plan in eastern Prince William County: Dumfries, Woodbridge, Dale City, etc.
      (2) Areas designated by VDOT snow plowing plan in western Prince William County excluding: Bull Run Mountain Estates.
   b. County Designated Areas (By Priority)
      (1) Landfill and Fleet yard (sand)
      (2) Balls Ford Facility Mulch Yard
      (3) Railroad Avenue
      (4) Innovation Technology Park (Innovation Drive, Assett Loop, Discovery Boulevard, University Boulevard (Innovation section only)
      (5) Mockingbird Heights Road (South of Fuller Heights Rd.)
      (6) Defaulted Subdivisions (Palace Court, etc.)
      (7) Post Office Road (behind B.J.'s Wholesale)

(8) Rippon Lodge Driveway

7. Buildings and Grounds Division priorities during the emergency would be as follows:

   (1) Gas pumps - Gar-Field and Western District

   (2) County Complex

   (3) Police access - Gar-Field and Western District

   (4) Juvenile Detention Center

   (5) Facilities operating 24-hours per day such as: Juvenile Emergency Shelter, Animal Shelter (PW Environmental Services), Group Home for Boys and Group Home for Girls (PW Environmental Services). Hilda Barg Homeless Prevention Center, and Hypothermia Unit/Winter Shelter.

CONCEPT OF OPERATIONS

A. The Department of Public Works will coordinate snow removal activities for the County using County staff and equipment supplemented by contractors when necessary.

   1. Buildings and Grounds Division will centralize the coordination of snow removal activities for County buildings and will operate from the office at 9412 Peabody Street.

   2. Environmental Services Division will coordinate snow removal from designated areas and buildings.

   3. Property Management Division will facilitate snow removal from leased County properties through coordination with building owners/management.

   4. Department of Development Services will provide inspectors from its Building Development Division to evaluate roof loading and snow accumulation and provide advice regarding occupancy issues upon request.

B. Communications with employees will be by cell phones/Nextel radio and commercial phones, or 800 MHZ portable radio in the event of commercial/cell phone communication services are not available.

C. The Department of Public Works will provide staff personnel to the Emergency Operations Center (EOC) or other designated command centers upon request from the Office of Emergency Services.

D. The Department of Public Works will be responsible for soliciting other qualified County employees for assistance in operating and providing relief of snow removal equipment operators.

E. The Department of Public Works will re-assess priorities and respond to requests for assistance from the Office of Emergency Services/Management.

F. The Buildings and Grounds Division will centralize coordination of its staff from the building at 9412 Peabody Street, Manassas. Buildings and Grounds Operations Center - Phone 703-792-6390.

G. Additional qualified County employees would be solicited from other County agencies for assistance as required, mainly in relief operating snow removal equipment.

1. National Guard Armory (mobilization only)
2. Assist at Adult Detention Center

H. Priorities will be changed as necessary by the Office of Emergency Services and the Director of Public Works for handling facilities not listed.

ADMINISTRATION AND LOGISTICS

A. Administration

1. All records and reports will be maintained by each Public Works Division and submitted to the assigned Department Coordinator for compilation and submission to the Planning Section Documentation Unit as directed.
2. Tracking records and reports of administrative data
    a. Hours worked
    b. Location and type of the work performed
    c. Pay rate of personnel performing work
    d. Expenditures
    a. Expenditures
        (1) Purchase orders
        (2) Invoices
        (3) Vouchers
3. Detailed records regarding costs associated with snow removal operations will be maintained to provide input for requests for disaster assistance funds.
4. The Environmental Services Division has limited resources for snow removal in expanded areas of responsibility. The crew chief will decide if extended working hours may be necessary in addition to allocating the most efficient use of team members and equipment within the crew. Activity records and time sheets will be submitted daily.
    a. This organization structure will remain in effect until snow removal activities have been completed. Normal working hours will be re-established for all employees unless team members work more than a normal shift. In this instance, schedules will be adjusted to eliminate continued work in successive shifts.

b. The crew supervisor will assume responsibility of the crew team during follow-up shifts of extended involvement during scheduled absence of the crew chief.

c. The Environmental Services Division chief has the authority to reorganize/reschedule crews as the situation warrants.

d. With the director's concurrence, the Environmental Services Division Chief can authorize personnel to take a 4x4 vehicle home to shuttle the crew.

e. The Environmental Services Division chief is to be informed if the crew chief is unavailable at home in the event of snow forecast.

f. The Environmental Services Division chief is to be kept informed of field activities.

g. Crew members responsible for snow removal in designated areas will be in touch through their respective radio units. Base station #8 (OTFSS) will; however, coordinate activities with the division chief by telephone, if needed. Crew members can also be provided with "quarters" by the division secretary to make use of pay phones radio contact is lost.

h. The activation of the snow removal plan may be partial for a specific area. The crew chief will coordinate resources accordingly.

i. Crew chiefs are responsible for winterizing the equipment before November 15. Installation of snow plows is also to be completed by November 15.

B. Logistics

1. Procurement of equipment and supplies

a. The normal procurement process will be followed for each agency or organization. However, if resources are not available, the request will be processed through the Logistics Section and will follow the VDEM SALTT request process. The following information should be included in all resource requests:

(1) Size

(2) Amount

(3) Location

(4) Type of resource

(5) Time frame in which it is needed

b. Specialized equipment or supplies will also be requested through the Logistics Section.

2. Personnel

a. Requests for additional personnel will be processed through the National Capital Region (NCR) mutual aid agreements (MAAs) that are currently in place.

b. Additional personnel requests will be requested via the Statewide Mutual Aid (SMA) program. SMA information is found on the Virginia Department of Emergency Management's (VDEM's) Website at vaemergency.com (See ESF 5, Attachment A, VDEM SMA Event Agreement).

C. Excessive snow storms could be declared disasters and might fall under Category A under the Robert T. Stafford Act for Debris Removal.

D. Buildings and Grounds will maintain an initial stock of ice melting chemicals for immediate use at major County buildings. Additional supplies will be stored at the Buildings and Grounds Warehouse.

1. Material kept on hand

Buildings and Grounds (B&G) pre-positions an initial stock of ice melting chemicals at major facilities for immediate use. Backup supplies will be stored at the Bennett Administration Building.

E. Material availability - Additional and replacement materials are available and will be obtained from local sources in accordance with existing procedures.

1.Southern States - salt, shovels, winter gear, urea fertilizers

2. Virginia Department of Transportation - salt, sand

3. Local hardware stores - gloves, shovels, ice melt

4. Vulcan Quarry - sand, fine ground rock

F. B&G Snow Equipment (by Hub):

1. Manassas and Judicial Center Hubs

4x4 pickup trucks (6) with blades	Snow Scrapers
2 Sand trucks	Snow Scoops
Snow blowers (3)	De-Icer
Wheel horse tractor with blade	Ice melt spreaders

2. Central Hub:

4x4 pickup truck with blade	Snow Scrapers
Wheel horse tractor with blade	Snow Scoops
Kubota tractor with blade	Snow Blower
De-Icer	Ice Melt Spreader

3. Eastern Hub:

4x4 Pick Up truck with blade	Snow Scrapers
Wheel Horse tractor with blade	Snow Scoops
Snow Blowers (2)	De-Icer
Ice Melt Spreader	

4. B&G - Western Hub:

4X4 Pick Up with blade	Snow Scrapers
Wheel Horse tractor with blade	Snow Scoop
Ice Melt Spreader	De-Icer
Snow Blower	

5. B&G - Independent Hill Hub

Kubota tractor with blade	Snow Scrapers
Snow Blower	Snow Scoops
Ice Melt Spreader	

Environmental Services Division - Snow Equipment	
Pickup with plow & sander & plow	ES 1711 & ES 1944 & ES 124
Pickup with plow & sander & plow	ES 1710 & ES 1943 & ES 125
Boom Truck with plow & sander	ES 1565 & ES 1565 & ES 2828
Small Dump truck with plow & sander	ES 1560 & ES 128 & ES 1804
Motor Grader	ES 1027
B21 Kubota	ES 1699
Kubota Tractor	ES 2145
Backhoe	ES 1924
Skid Steer	ES 1026
Case Rubber Tire Loader	ES 2536

Snow Blower	ES 1471		
Track Bobcat	ES 2663		
Track Bobcat	ES 2797		
Vehicles 4x4	ES 1295 ES 1412 ES 1527 ES 1573 ES 1574 ES 1617 ES 1710 ES 2514	ES 1711 ES 1712 ES 1713 ES 1714 ES 1715 ES 1847 ES 1848 ES 2496	ES 1849 ES 1955 ES 2033 ES 2034 ES 2035 ES 2036 ES 2184 ES 2189

ATTACHMENT B

Employees working with County during Snow removal (not going to VDOT)
Revised 12/17/2018

Snow Team #1

Name	Cell Phone	Home Phone
Matt Bowman	571-245-6470	703-609-5052
Stanley Friend	703-855-8088	540-760-9930
Danny Garber	703-307-0452	703-497-0777

Snow Team #2

Name	Cell Phone	Home Phone
Raymond Zuspan (supervisor)	703-898-7267	540-439-5247
Bill Brooks	703-888-6974	703-754-1343
Stacey Breeding	540-718-6589	540-937-5039

When snow is forecast Lucas Hisghman will notify the supervisors of each team with the time their team is scheduled to work. The supervisors will notify the men on their teams.

The Landfill opens at 6am Saturdays, 9am Sundays and 6am weekdays.

Mulch yard opens at 7am Saturdays, 9am Sundays and 7am weekdays.

Any mechanical problems with trucks call Tim Childers at 571-238-4362. Fleet takes care of all trucks in emergencies.

Police non-emergency number to report accident in county vehicle is 703-792-6500.

If you are driving a CDL vehicle and are involved in an accident and are issued a ticket or someone is killed, you must contact your supervisor and be taken to Prince William Hospital for a drug and alcohol test immediately.

Other Numbers:

Marc Aveni	571-722-4353	703-257-1422
Lucas Hisghman	703 898-7269	540-220-9276
Ops Fax	703 792-5763	
Ops Bay Phone	703 792-5385	
Sign Shop	703 792-5765	
Police non-emergency	703 792-6500	

Attachment C

ATTACHMENT D

CONSTRUCTION SERVICE BRANCH
Revised 12/17/2018
Snow Removal Equipment

Primary Equipment

ES 3558-F750 medium dump truck (Raymond's)
ES 1805-sander for ES3558 (no remote starting)
ES 123-plow for ES 3558
ES 3557 Super duty 3500 (Matt's)
ES 2828-sander for ES 3557
ES 126-plow for ES 3557
ES 3440-super duty 3500 (Raymond's)
ES 1944-sander for ES3430
ES 125-plow for ES3430
ES 3418-super duty 3500 p/u
ES 1943-sander for ES3418
ES 124-plow for 3418

Supplemental Equipment

ES 1699-B21 Kubota
ES 2145-Kubota Tractor
ES 1450-JCB Backhoe
ES 1924-JCB 214S Backhoe
ES 2536-Case Rubber Tire Loader
ES2663-T300 Bobcat skid steer
ES2797-S300 Bobcat skid steer
ES2990-T190 Bobcat skid steer
ES3483-T750 Bobcat skid steer

All equipment for snow removal operations is to be inspected during the month of November and be fully operational by December 15.

As part of the inspection and preparation process all sanders will be calibrated to ensure they put down the proper amount of anti-icing materials. The gate opening from **the storage box to the spinner is adjustable from 1 to 4 inches. As part of the calibration process the box is loaded with material and we conduct test passes in the parking lot adjusting the gate until material is spread 12 feet wide in an even pattern. Past experience has shown that 3 inches is the best setting to use.**

ATTACHMENT E

CONSTRUCTION SERVICE BRANCH
Revised 12/17/18
Snow Removal Projects

Project Name	Priority Rating
Landfill and sand Fleet yard (807)	**1**
Balls Ford Mulch Yard (1002)	**2**
Railroad Avenue (609)	**3**
Mockingbird Heights stub (609)	**4**
Post Office Road (609)	**5**

Assignments
Team #1 – Matt Bowman

Crew	Equipment	Projects
Matt Bowman	ES 3440 Sander Plow	Mulch Yard
Danny Garber	ES3418 Sander Plow	Railroad Avenue Mockingbird Heights Post Office Road
Stanley Friend	ES3557 Plows Sanders	Landfill

Team #2 – Raymond Zuspan

Crew	Equipment	Projects
Raymond Zuspan	ES3440 Sander Plow	Mulch Yard
Stacey Breeding	ES3418 Sander Plow	Railroad Avenue Mockingbird Heights Post Office Road
Bill Brooks	ES3557 Plows & Sanders	Landfill

ATTACHMENT F

Loading Procedures for Stone Screenings/Salt Mix
Revised 12/17/18
The machines and procedures listed below will be used to load the stone screening/salt mix stored in the covered shed onto the truck mounted sanders. One 50 lb. bag of salt to be mixed with each ton of stone screenings when delivered. Look at the weigh ticket after screenings are dumped. If 12 tons were delivered, then break up 12 bags of salt on top of pile of screenings and mix together in storage bin with rubber tire loader ES 2536.

Super Duty 3500 trucks with orange painted sanders:

Truck is to be parked with brake on.
All chains and straps securing sander are to be inspected
ES 2052 Kubota tractor or the Bobcat skid steers will be used to load the sanders mounted on super duty 3500 trucks
Each bucket of screenings/salt mix loaded by the Kubota tractor weighs approximately 1500 pounds.
Each bucket loaded by the skid steers weighs approximately 1800 pounds
Maximum Load 3600 lbs. screening/salt on super duty 3500 trucks
2 buckets from the skid steers or the Kubota tractor.

ES 3558 with stainless steel sander

Truck is to be parked with brake on.
All chains and straps securing sander are to be inspected
Bobcat skid steers or JCB backhoes will be used to load the sander mounted on ES 3558
Each bucket of screenings/salt mix loaded by the skid steers weighs approx. 1800 pounds
Each bucket of screenings/salt mix loaded by JCB weighs approx. 4000 pounds
Maximum Load 8000 lbs. Screening/salt on ES3558
4 buckets from skid steer
2 buckets from JCB backhoes

All equipment used to load or mix screening/salt mix needs to be power washed as soon as event is over.

Appendix D – Pesticide Herbicide and Fertilizer Application

Fiscal Year	2021
Fiscal Quarter	**Sum of Total Acres**
1	**23.89807163**
8-Jul	5.578512397
26-Aug	6.818181818
11-Sep	9.263085399
29-Sep	2.238292011
Grand Total	**23.89807163**

19. Number of acres sprayed for mosquitoes

322.2

Mosquito Inspections and Larviciding Reporting

Date Range
7/1/2020 - 12/31/2020

Year:
None

Inspector:
None

Site Type:

None | Non-SWM | SWM

Site Name:
None

Inspection/Treatment Summary

Total Inspections

1,711

Total Applications

397

Total Area of Application

15.7

acres

Mosquito Inspections/Larviciding Overview

Filter Sites Needing Inspection...
None

Date Range:
1/1/2021 - 6/30/2021

Inspector:
None

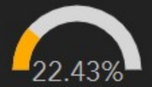
Site Type:
None | NonSWM | SWM

Site Name:
None

Week
None

Inspection/Treatment Summary

Treatment Percentage



Does not include Source Reduction

Number of Inspections

981

Number of Larvicide Applications

220

Total Area of Application

4.75

acres

Number of Source Reduction Events

24

Total Source Reduction Area

0.02

acres

Number of Applications by Product

Mosquito Inspections and Larviciding Reporting

Date Range
7/1/2020 - 12/31/2020

Year:
None

Inspector:
None

Site Type:

None | Non-SWM | SWM

Site Name:
None

Inspection/Treatment Summary

Total Inspections

1,235

Total Applications

261

Total Area of Application

5.9

acres

Mosquito Inspections/Larviciding Overview

Filter Sites Needing Inspection...
None

Date Range:
1/1/2021 - 6/30/2021

Inspector:
None

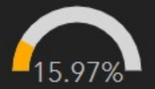
Site Type:
None | NonSWM | SWM

Site Name:
None

Week
None

Inspection/Treatment Summary

Treatment Percentage



Does not include Source Reduction

Number of Inspections

1,484

Number of Larvicide Applications

237

Total Area of Application

3.3

acres

Number of Source Reduction Events

14

Total Source Reduction Area

0

acres

Standard Operating Procedure

Department of Public Works

Environmental Services Division

Title:	Insecticide Storage, Disbursement, Transport and Inventory
Number:	3.017.7
Subject:	Procedures for Insecticide Storage, Disbursement, Transport and Inventory
Cross Reference:	APWA Management Practice (s) 28.4
Date Issued:	May 3, 2010
Date Revised:	December 12, 2018
Date Last Reviewed:	June 30, 2015
Signature of Issuer:	Marc T. Aveni, Environmental Services Division Chief
Applicability:	Environmental Services Division
Effective Date:	December 12, 2018

A. Purpose

The purpose of this Standard Operating Procedure (SOP) is to establish a guide for the storing, handling, and disbursement of insecticides.

B. Applicability

This SOP applies to all employees of the Mosquito and Forest Pest Management Branch (MFPM).

C. Guidelines

Storage: Insecticides such as solid and liquid larvicides, and insecticide tank flush used in the program are stored in the Mosquito Shed located at the MFPM building. Insecticides used on a regular basis during the mosquito season may be held in County vehicles. The liquid adulticide is stored in the Mosquito Shed located at the MFPM building in on spill containment pallets. Each drum storage pallet is properly labeled.

Disbursement: Larvicides and adulticides are distributed on an "as needed basis". Technicians pick up the larvicides or adulticide. The amount of material that is taken is recorded on an inventory sheet located at the storage sites. The inventory at the storage sites is managed by the Assistant Branch Chief.

Transport: Insecticides must be secured while being transported in County trucks.

Disposal of Empty Insecticide Containers: Empty larvicide bags can be disposed of in the trash. Empty adulticide insecticide containers are picked up by the vendor they were purchased from. Always refer to the Product Label before disposal.

Disposal of Unwanted Insecticide Material: Expired and unwanted insecticides are identified by any staff member and turned over to the County's Hazardous Waste Contractor by the Assistant Branch Chief.

Safety: Read and follow all instructions on Product Labels. SDS (see below) must also be reviewed.

Safety Data Sheets (SDS): SDS information on all insecticides in use may be found in the storage sheds, staff vehicles and in the department shared drive and the SDS online portal. The Assistant Branch Chief must ensure that all staff has access to the latest versions (in an electronic format) on an at least annual basis.

Chemical Spill: If any spill were to occur the MFPM staff member will immediately inform the on-call person and call 911 for spill cleanup.

Pesticide Accidents: Pesticide accidents or incidents that constitute a threat to any person, to public health or safety, and/or to the environment must be reported to the VDACS Office of Pesticide Services. Initial notification must be made by telephone within 48 hours of the occurrence; a written report describing the accident or incident must be filed within 10 days of the initial notification. The above is the responsibility of the Assistant Branch Chief and in his/her absence, the Branch Chief. Additionally, it is their responsibility to notify PWC Risk Management within 24 hours of a spill that is above the thresholds established by this agency.

Spill Response: All vehicles and storage facilities will contain spill kits suitable to address pesticide spills. All staff that use or may potentially come into contact with pesticides will undergo training on spill response.

D. Authority

The approving authority for this SOP is the Environmental Services Division Chief. Any changes to or deviations from this SOP must be approved by the Environmental Services Division Chief.

E. Administration

The administration of this SOP shall be the responsibility of the Mosquito and Forest Pest Management Branch Chief.

Standard Operating Procedure

Department of Public Works

Environmental Services Division

Title:	Adulticiding
Number:	3.017.2
Subject:	Adulticiding
Cross Reference:	APWA Management Practice (s) 28.2
Date Issued:	May 3, 2010
Date Revised:	December 12, 2018
Date Last Reviewed:	June 30, 2015
Signature of Issuer:	Marc T. Aveni Marc T. Aveni, Environmental Services Division Chief
Applicability:	Environmental Services Division
Effective Date:	December 12, 2018

A. **Purpose**

The purpose of this standard operating procedure (SOP) is to establish a guide to mosquito spraying operations. It is established to ensure that targeted spraying is conducted; it also ensures that adequate safety measures and EPA guidelines on the application of chemicals are followed.

B. **Applicability**

This SOP applies to all employees of the Mosquito and Forest Pest Management Branch.

C. **Specifics**

Adulticiding Process

Adulticiding may be triggered by high mosquito trap counts for specific species (mainly Culex pipiens and Cx. restuans) and positive arbovirus pools in residential areas. The decision to spray is further determined by species composition, presence or absence of non-participants, weather, location, proximity to human habitation and housing density among other factors. Adulticiding is conducted in the spray block where the infected mosquitoes were collected. Additional areas may be treated based on proximity to the trap site associated with the positive pools.

The program does not generally spray based on the density of the Asian Tiger Mosquito (Aedes albopictus) or other container breeders. In exceptional cases where highly pestiferous species are present in huge numbers (as evidenced by trap data) such as Psorophora spp., spray may also be justified. Furthermore, the branch generally does not spray if it is raining continuously, extreme heat, high winds or Code Red conditions. It is recommended that the sprayer is turned off at a distance of 300 feet from non-participants (NPs).

Citizens are allowed to opt out via email or phone call if they do not want their property to be sprayed. This non-participant database is maintained by the Assistant Branch Chief and GIS analyst and updated annually. Spray block maps include this information when it becomes available.

A public notification is published on the day of spraying once the decision is made to spray. The county's website and other notification systems are used as the media for public notification. The public notification lists the blocks to be sprayed and information on how to access spray block maps on the County Mapper XM.

The branch has two designated spray trucks both of which are equipped with a spray machine. The Assistant Branch Chief is responsible for general vehicle maintenance and spray machine calibration to ensure that the vehicles are in a state of readiness to be deployed during the mosquito season. Each vehicle is also equipped with a Spill Kit which must be checked before each spray operation by the sprayer.

Once a spray operation is assigned, the sprayer/driver may request additional staff support. The driver operates the fogger machine while the second person is required to assist with navigation and alert the driver of any impending danger that might not be immediately visible to the driver. A paper map of the spray route is prepared by the GIS Analyst and made available to the vehicle operator.

The branch uses GIS tools on mobile devices linked to the fogging equipment to track and map areas sprayed. GIS data layers (spray route, spray block & NPs) are prepared at the office by the GIS Analyst and then deployed to a handheld Field PC. This device is then attached to the vehicle's control box which is equipped with a GPS. At the end of the spray session the device is disconnected and returned to the office. The data collected is uploaded to GIS and is used to create a spray information map showing the spray line and GPS points indicating when the sprayer was turned on and off. A detailed spray report is produced after the spray operation on the quantity of chemical used, the acreage sprayed and spray activity times and made available to the Field Supervisor and Branch Chief.

D. **Chemical Spills**

If any spill were to occur the MFPM staff member will immediately inform the on-call person and call 911 for spill cleanup.

Pesticide accidents or incidents that constitute a threat to any person, to public health or safety, and/or to the environment must be reported to the VDACS Office of Pesticide Services. Initial notification must be made by telephone within 48 hours of the occurrence; a written report describing the accident or incident must be filed within 10 days of the initial notification. The above is the responsibility of the Assistant Branch Chief and in his/her absence, the Branch Chief. Additionally, it is their responsibility to notify PWC Risk Management within 24 hours of a spill that is above the thresholds established by this agency.

Spill Response

All vehicles and storage facilities will contain spill kits suitable to address pesticide spills. All staff that use or may potentially come into contact with pesticides will undergo training on spill response.

E. **Authority**

The approving authority for this SOP is the Environmental Services Division Chief. Any changes to or deviations from this SOP must be approved by the Environmental Services Division Chief.

F. **Administration**

The administration of this SOP shall be the responsibility of the Mosquito and Forest Pest Management Branch Chief.

Appendix E – Illicit Discharges and Improper Disposal

Landuse	Outfall Id	Last Inspection Date	Flow Present	Illicit Discharge	High Risk	Maintenance Required	Within PWC Service Area	VPDES Permitted
Residential	26381	9/21/2020	No	Unlikely	N	True	N	N
Residential	16864	12/30/2020	No	Unlikely	N	False	N	N
Open Space	39470	11/23/2020	Yes	Unlikely	N	False	N	N
Wholesale Warehousing	40821	1/22/2021	No	Unlikely	Y	False	N	N
Planned Industrial Park	36110	11/18/2020	No	Unlikely	N	False	Y	N
Residential	1965	4/21/2021	Yes	Unlikely	N	False	N	N
Institutional (schools/churches)	65767	4/22/2021	No	Unlikely	N	False	N	N
Planned Industrial Park	48037	8/10/2020	No	Unlikely	Y	False	N	N
Open Space	28956	8/28/2020	No	Unlikely	N	True	N	N
Residential	50726	3/17/2021	No	Unlikely	N	False	N	N
Residential	18098	8/11/2020	Yes	Unlikely	N	False	N	N
Open Space	53452	9/17/2020	Stagnant	Unlikely	N	False	N	N
Residential	51570	4/21/2021	Stagnant	Unlikely	N	False	Y	N
Residential	2072	12/30/2020	Yes	Unlikely	N	False	N	N
Planned Industrial Park	5872-001	1/25/2021	Yes	Unlikely	Y	False	N	N
Residential	5047	11/6/2020	No	Unlikely	N	True	Y	N
Other	34612	12/29/2020	Yes	Unlikely	N	False	Y	N
Residential	59415	3/8/2021	No	Unlikely	N	False	N	N
Residential	44240	1/14/2021	No	Unlikely	N	False	Y	N
Residential	23466	4/30/2021	No	Unlikely	N	False	Y	N
Residential	15980	11/9/2020	No	Unlikely	N	False	Y	N
Residential	30858	3/17/2021	No	Unlikely	N	False	Y	N
Residential	25830	4/5/2021	Yes	Unlikely	N	True	N	N
Other	65250	12/8/2020	Yes	Unlikely	N	False	N	N
Other	51906	7/21/2020	No	Unlikely	N	False	Y	N
Residential	16927	12/3/2020	Yes	Unlikely	N	False	N	N
Shopping Center	20665	9/28/2020	Yes	Unlikely	N	False	N	N
Residential	49804	5/10/2021	Yes	Unlikely	N	False	Y	N
Other	58317	4/23/2021	No	Unlikely	N	False	N	N
Residential	5040	11/6/2020	Stagnant	Unlikely	N	True	Y	N
Planned Industrial Park	52158	11/18/2020	No	Unlikely	N	False	Y	N
Residential	213	7/16/2020	No	Unlikely	N	False	N	N
Residential	28942	8/28/2020	No	Unlikely	N	True	N	N
Residential	2160	6/16/2021	Yes	Unlikely	N	False	N	N
Residential	3599	3/10/2021	No	Unlikely	N	False	N	N
Residential	14668	10/21/2020	No	Unlikely	Y	True	N	N
Residential	3591	3/10/2021	No	Unlikely	N	False	N	N
Other	5572	11/6/2020	No	Unlikely	N	False	N	N
Other	66333	4/27/2021	No	Unlikely	N	True	N	N
Planned Industrial Park	22756	10/20/2020	No	Unlikely	N	False	N	N
Residential	11434	4/5/2021	Yes	Unlikely	N	False	N	N
Other	30149	5/10/2021	Yes	Unlikely	N	False	N	N
Residential	37236	3/17/2021	No	Unlikely	N	False	N	N
Residential	2780	10/21/2020	No	Unlikely	N	False	N	N
Residential	65235	1/15/2021	No	Unlikely	N	True	N	N
Wholesale Warehousing	38682	1/21/2021	No	Unlikely	Y	False	N	N
Other	34616	12/29/2020	No	Unlikely	N	False	N	N
Residential	28940	8/28/2020	No	Unlikely	N	False	N	N
Residential	39445	11/23/2020	No	Unlikely	N	False	Y	N
Residential	42986	1/15/2021	No	Unlikely	N	False	Y	N
Residential	27047	4/13/2021	No	Unlikely	N	False	Y	N
Other	63789	12/8/2020	Yes	Unlikely	N	False	N	N
Planned Industrial Park	56030	1/22/2021	Stagnant	Unlikely	Y	False	N	N
Residential	5492	4/21/2021	Yes	Unlikely	N	False	Y	N
Residential	14664	10/21/2020	No	Unlikely	N	True	N	N
Hospital	65473	7/21/2020	No	Unlikely	Y	False	N	N
Residential	2959	9/29/2020	Stagnant	Unlikely	N	True	Y	N
Residential	2977	9/29/2020	Yes	Unlikely	N	False	N	N
Residential	30180	3/23/2021	No	Unlikely	N	True	Y	N
Wholesale Warehousing	46058	1/22/2021	No	Unlikely	Y	False	N	N
Residential	16041	11/6/2020	No	Unlikely	N	True	N	N
Research and Testing	31543	11/17/2020	Stagnant	Unlikely	N	True	N	N
Residential	52222	5/26/2021	No	Unlikely	N	False	Y	N
Residential	15063	3/9/2021	Yes	Unlikely	N	False	N	N
Residential	14094	4/5/2021	Yes	Unlikely	N	True	Y	N
Residential	6513	7/15/2020	No	Unlikely	N	False	N	N
Residential	51578	11/23/2020	No	Unlikely	N	True	Y	N
Residential	4929	11/6/2020	No	Unlikely	N	False	Y	N
Residential	8507	12/30/2020	No	Unlikely	N	True	N	N
Other	62567	4/27/2021	No	Unlikely	N	False	N	N
Open Space	35223	4/9/2021	No	Unlikely	N	False	N	N
Residential	16896	8/25/2020	No	Unlikely	N	False	N	N
Other	33704	4/21/2021	Yes	Unlikely	N	False	N	N
Residential	30891	11/9/2020	No	Unlikely	N	False	N	N
Residential	16823	1/14/2021	No	Unlikely	N	False	N	N
Planned Industrial Park	60974	1/22/2021	No	Unlikely	Y	False	N	N
Planned Industrial Park	44893	1/21/2021	Stagnant	Unlikely	Y	False	N	N
Hotel w/ Restaurant	41286	4/28/2021	No	Unlikely	N	False	N	N
Residential	2193	6/16/2021	No	Unlikely	N	False	Y	N
Residential	39645	3/17/2021	No	Unlikely	N	False	Y	N
Residential	50430	4/21/2021	Yes	Unlikely	N	False	Y	N
Other	68844	10/20/2020	No	Unlikely	N	False	N	N
Residential	63787	9/17/2020	No	Unlikely	N	True	N	N
Other	62622	4/27/2021	Yes	Unlikely	N	False	N	N
Residential	9660	12/30/2020	No	Unlikely	N	False	Y	N
Institutional (schools/churches)	22830	3/10/2021	Stagnant	Unlikely	N	False	N	N
Institutional (schools/churches)	22830	3/10/2021	Stagnant	Unlikely	N	False	N	N
Residential	35235	4/9/2021	No	Unlikely	N	False	N	N
Other	50724	3/17/2021	No	Unlikely	N	False	Y	N
Wholesale Warehousing	35892	1/22/2021	No	Unlikely	Y	True	N	N
Residential	16827	1/14/2021	No	Unlikely	N	False	N	N
Other	7480	4/28/2021	No	Unlikely	N	True	N	N
Residential	12063	12/28/2020	Yes	Unlikely	N	True	Y	N
Planned Industrial Park	46711	8/10/2020	Stagnant	Unlikely	Y	True	N	N
Residential	16939	12/30/2020	No	Unlikely	N	False	N	N
Other	50436	4/22/2021	Yes	Unlikely	N	False	Y	N
Other	62558	4/26/2021	No	Unlikely	N	False	N	N
Residential	16936	12/30/2020	No	Unlikely	N	False	Y	N

Residential	16625	7/30/2020	No	Unlikely	N	True	Y	N
Residential	2877	9/29/2020	No	Unlikely	N	True	N	N
Residential	38778	6/29/2021	Yes	Unlikely	N	False	N	N
Residential	17401	8/18/2020	No	Unlikely	N	False	N	N
Other	16049	11/6/2020	No	Unlikely	N	True	Y	N
Residential	60632	3/23/2021	No	Unlikely	N	True	Y	N
Other	62562	4/27/2021	No	Unlikely	N	False	N	N
Residential	16536	7/31/2020	No	Unlikely	N	True	Y	N
Regional Mall	59919	7/14/2020	No	Unlikely	N	True	N	N
Regional Mall	40727	10/20/2020	No	Unlikely	N	True	N	N
Residential	16866	12/30/2020	No	Unlikely	N	True	N	N
Other	60599	3/22/2021	Yes	Unlikely	N	False	N	N
Other	34602	12/29/2020	Yes	Unlikely	N	False	N	N
Residential	5470	4/20/2021	No	Unlikely	N	False	Y	N
Residential	3717	3/10/2021	No	Unlikely	N	False	Y	N
Residential	2045	6/16/2021	No	Unlikely	N	False	N	N
Residential	3593	3/9/2021	No	Unlikely	N	True	N	N
Residential	18101	8/12/2020	No	Unlikely	N	True	N	N
Residential	37218	3/17/2021	No	Unlikely	N	False	N	N
Residential	15271	11/9/2020	No	Unlikely	N	True	Y	N
Residential	25869	4/30/2021	No	Unlikely	N	False	Y	N
Residential	16987	4/12/2021	Stagnant	Unlikely	N	False	N	N
Gas Station	7478	4/28/2021	Stagnant	Unlikely	N	False	N	N
Residential	22153	3/17/2021	Yes	Unlikely	N	True	N	N
Open Space	28946	8/28/2020	No	Unlikely	N	False	N	N
Institutional (schools/churches)	10706	1/14/2021	No	Unlikely	N	False	Y	N
Residential	5612	4/20/2021	No	Unlikely	N	False	Y	N
Residential	8486	12/30/2020	No	Unlikely	N	False	Y	N
Residential	39007	3/23/2021	No	Unlikely	N	False	Y	N
Other	29708	3/8/2021	No	Unlikely	N	False	N	N
Residential	5607	4/20/2021	No	Unlikely	N	False	Y	N
Planned Industrial Park	36147	8/10/2020	No	Unlikely	Y	False	N	N
Residential	59631	8/18/2020	No	Unlikely	N	True	N	N
Residential	52500	5/10/2021	No	Unlikely	N	False	Y	N
Residential	17121	9/16/2020	No	Unlikely	N	False	N	N
Planned Industrial Park	19322	11/18/2020	No	Unlikely	Y	False	Y	N
Open Space	39474	11/23/2020	Yes	Unlikely	N	False	Y	N
Residential	18080	8/12/2020	Yes	Unlikely	N	False	Y	N
Other	10261	9/15/2020	Yes	Obvious	Y	False	N	N
Other	10261	9/15/2020	Yes	Obvious	Y	False	N	N
Vehicle Sale/Repair/Miscellaneous Automotive	70867	4/9/2021	Stagnant	Unlikely	N	True	N	N
Open Space	29714	3/8/2021	No	Unlikely	N	True	N	N
Residential	7544	12/29/2020	No	Unlikely	N	False	Y	N
Other	31560	11/17/2020	No	Unlikely	N	True	N	N
Residential	27446	9/16/2020	No	Unlikely	N	False	Y	N
Other	14673	10/21/2020	No	Unlikely	N	True	N	N
Planned Industrial Park	40783	1/21/2021	No	Unlikely	Y	True	N	N
Residential	35227	4/9/2021	No	Unlikely	N	False	N	N
Residential	28948	8/28/2020	No	Unlikely	N	False	N	N
Residential	9625	12/30/2020	No	Unlikely	N	False	N	N
Planned Industrial Park	12987	11/18/2020	No	Unlikely	Y	False	Y	N
Residential	63740	9/17/2020	No	Unlikely	N	True	N	N
Other	64290	4/13/2021	No	Unlikely	N	True	Y	N
Institutional (schools/churches)	38722	12/3/2020	No	Unlikely	N	False	N	N
Residential	2868	9/29/2020	Yes	Unlikely	Y	True	Y	N
Residential	42991	1/15/2021	No	Unlikely	N	False	Y	N
Planned Industrial Park	63045	4/28/2021	No	Unlikely	N	True	N	N
Residential	14754	9/24/2020	Stagnant	Unlikely	N	False	N	N
Planned Industrial Park	39371	1/22/2021	No	Unlikely	Y	True	N	N
Residential	24908	4/30/2021	No	Unlikely	N	False	Y	N
Planned Industrial Park	48453	8/10/2020	No	Unlikely	N	False	N	N
Residential	27468	9/16/2020	No	Unlikely	N	True	Y	N
Residential	49654	4/9/2021	Stagnant	Unlikely	N	False	N	N
Residential	15251	11/9/2020	No	Unlikely	N	True	Y	N
Hospital	59301	7/21/2020	No	Unlikely	N	False	Y	N
Residential	15052	3/10/2021	No	Unlikely	N	False	N	N
Residential	66509	11/17/2020	No	Unlikely	N	True	N	N
Residential	27005	12/29/2020	No	Unlikely	N	False	Y	N
Residential	54093	7/21/2020	No	Unlikely	N	False	Y	N
Residential	9632	12/30/2020	No	Unlikely	N	True	Y	N
Residential	11430	4/6/2021	Yes	Unlikely	N	False	Y	N
Other	31730	11/18/2020	No	Unlikely	N	False	N	N
Residential	9730	12/30/2020	Yes	Unlikely	N	False	Y	N
Planned Industrial Park	56035	1/22/2021	No	Unlikely	N	False	N	N
Residential	60626	3/22/2021	No	Unlikely	N	True	Y	N
Residential	28448	9/16/2020	No	Unlikely	N	True	N	N
Residential	788	2/2/2021	Yes	Obvious	Y	False	Y	N
Other Industrial	51058	1/21/2021	No	Unlikely	Y	False	N	Y
Other	24541	4/30/2021	No	Unlikely	N	False	Y	N
Residential	2167	6/16/2021	No	Unlikely	N	False	N	N
Residential	15054	3/10/2021	No	Unlikely	N	True	N	N
Other	50828	5/10/2021	Yes	Unlikely	N	False	Y	N
Residential	51678	3/8/2021	No	Unlikely	N	False	Y	N
Residential	2999	9/29/2020	No	Unlikely	N	True	N	N
Residential	26524	3/23/2021	No	Unlikely	N	False	Y	N
Residential	5628	4/20/2021	Stagnant	Unlikely	N	False	N	N
Residential	15195	7/16/2020	No	Unlikely	N	True	N	N
Shopping Center	12706	9/15/2020	No	Unlikely	N	False	N	N
Residential	44230	1/14/2021	No	Unlikely	N	False	Y	N
Vehicle Sale/Repair/Miscellaneous Automotive	24017	11/18/2020	No	Unlikely	Y	False	Y	N
Planned Industrial Park	31947	1/25/2021	No	Unlikely	Y	False	N	N
Other	63714	9/17/2020	No	Unlikely	N	False	N	N
Residential	21931	7/16/2020	No	Unlikely	Y	True	N	N
Residential	60049	8/18/2020	No	Unlikely	N	True	N	N
Residential	6602	3/9/2021	Stagnant	Unlikely	N	False	N	N
Other	60806	1/22/2021	Yes	Unlikely	N	False	N	N
Residential	206	7/16/2020	No	Unlikely	N	False	Y	N
Residential	14413	11/6/2020	No	Unlikely	N	False	N	N
Planned Industrial Park	68834	10/20/2020	No	Unlikely	Y	False	N	N

Residential	9663	12/30/2020	No	Unlikely	N	True	Y	N
Residential	49824	5/10/2021	No	Unlikely	N	False	Y	N
Residential	8504	12/30/2020	No	Unlikely	N	True	N	N
Residential	52207	5/26/2021	No	Unlikely	N	False	Y	N
Residential	42274	12/11/2020	No	Unlikely	N	False	Y	N
Residential	351	7/30/2020	No	Unlikely	N	False	N	N
Planned Industrial Park	30908	1/21/2021	No	Unlikely	Y	True	N	N
Residential	15296	12/31/2020	Yes	Unlikely	N	True	N	N
Planned Industrial Park	31554	11/17/2020	No	Unlikely	N	False	N	N
Residential	3569	3/10/2021	No	Unlikely	N	False	N	N
Other	12747	7/15/2020	No	Unlikely	N	True	N	N
Planned Industrial Park	50786	1/22/2021	No	Unlikely	Y	True	N	N
Residential	14750	9/23/2020	Yes	Unlikely	N	False	N	N
Residential	16983	4/13/2021	Stagnant	Unlikely	N	False	Y	N
Regional Mall	12476	7/14/2020	No	Unlikely	N	False	N	N
Planned Industrial Park	35879	1/22/2021	No	Unlikely	Y	False	N	N
Hospital	45267	7/21/2020	No	Unlikely	N	True	N	N
Other	25947	7/30/2020	Yes	Unlikely	N	False	N	N
Residential	8561	12/3/2020	Yes	Unlikely	N	False	Y	N
Residential	7545	12/29/2020	No	Unlikely	N	False	Y	N
Residential	30835	3/17/2021	Stagnant	Unlikely	N	False	Y	N
Residential	28056	10/21/2020	No	Unlikely	N	False	N	N
Residential	61160	9/17/2020	No	Unlikely	N	True	Y	N
Residential	16989	4/13/2021	No	Unlikely	N	True	Y	N
Regional Mall	59907	7/14/2020	No	Unlikely	N	False	N	N
Residential	16609	7/31/2020	No	Unlikely	N	False	Y	N
Open Space	52199	5/26/2021	Yes	Unlikely	N	False	N	N
Gas Station	34191	1/22/2021	No	Unlikely	Y	False	N	N
Residential	29964	3/23/2021	No	Unlikely	N	False	Y	N
Planned Industrial Park	38615	11/17/2020	Yes	Unlikely	Y	False	Y	N
Open Space	29712	3/8/2021	Yes	Unlikely	N	False	N	N
Planned Industrial Park	31567	11/17/2020	No	Unlikely	N	False	N	N
Residential	16664	8/12/2020	No	Unlikely	N	False	Y	N
Residential	55141	12/8/2020	No	Unlikely	N	True	Y	N
Residential	16994	4/13/2021	No	Unlikely	N	False	Y	N
Residential	37210	3/17/2021	Stagnant	Unlikely	N	False	N	N
Residential	1958	4/21/2021	Yes	Unlikely	N	True	Y	N
Residential	27463	9/16/2020	No	Unlikely	N	False	Y	N
Residential	59384	3/8/2021	No	Unlikely	N	False	Y	N
Residential	2872	9/29/2020	No	Unlikely	N	True	Y	N
Open Space	40710	11/23/2020	Yes	Unlikely	N	False	Y	N
Planned Industrial Park	30871	1/21/2021	No	Unlikely	N	True	N	N
Residential	2852	10/22/2020	No	Unlikely	N	False	N	N
Planned Industrial Park	37344	11/17/2020	No	Unlikely	Y	True	N	N
Wholesale Warehousing	12847	9/28/2020	No	Unlikely	N	False	N	N
Planned Industrial Park	66676	8/10/2020	No	Unlikely	N	False	N	N
Residential	66081	8/18/2020	Yes	Unlikely	N	False	N	N
Other	16047	11/6/2020	No	Unlikely	N	True	Y	N
Hospital	51901	7/21/2020	Stagnant	Unlikely	N	False	Y	N
Residential	28195	4/30/2021	Yes	Unlikely	N	True	Y	N
Residential	9743	6/16/2021	No	Unlikely	N	False	N	N
Open Space	68507	9/28/2020	Stagnant	Unlikely	N	False	N	N
Institutional (schools/churches)	10690	1/14/2021	No	Unlikely	N	False	N	N
Planned Industrial Park	66507	11/17/2020	No	Unlikely	N	False	N	N
Planned Industrial Park	68840	10/20/2020	No	Unlikely	N	False	N	N
Residential	66113	8/18/2020	No	Unlikely	N	False	N	N
Shopping Center	50354	4/28/2021	No	Unlikely	N	False	N	N
Residential	16540	7/30/2020	Yes	Unlikely	N	False	N	N
Residential	2848	10/21/2020	No	Unlikely	N	True	N	N
Residential	18118	8/12/2020	No	Unlikely	N	False	N	N
Institutional (schools/churches)	17663	4/21/2021	Stagnant	Unlikely	N	False	N	N
Residential	9630	12/30/2020	Yes	Unlikely	N	False	N	N
Planned Industrial Park	56039	1/22/2021	No	Unlikely	N	False	N	N
Other	21840	8/25/2020	Stagnant	Unlikely	N	False	N	N
Residential	54108	7/21/2020	No	Unlikely	N	True	N	N
Residential	60603	3/22/2021	No	Unlikely	N	False	Y	N
Residential	15263	11/9/2020	Stagnant	Unlikely	N	True	Y	N
Other	34608	12/29/2020	No	Unlikely	N	False	N	N
Vehicle Sale/Repair/Miscellaneous Automotive	62051	1/22/2021	Yes	Unlikely	Y	False	N	N
Other	60630	3/23/2021	Yes	Unlikely	N	False	N	N
Residential	3005	9/29/2020	No	Unlikely	N	False	N	N
Residential	4931	11/6/2020	No	Unlikely	N	True	Y	N
Residential	15057	3/10/2021	No	Unlikely	N	True	N	N
Residential	65233	1/15/2021	No	Unlikely	N	False	N	N
Residential	16871	12/30/2020	No	Unlikely	N	False	Y	N
Other	24532	4/30/2021	No	Unlikely	N	False	N	N
Planned Industrial Park	30902	7/20/2020	No	Unlikely	Y	False	N	N
Wholesale Warehousing	34561	1/22/2021	No	Unlikely	Y	False	N	N
Other	12919	4/5/2021	Yes	Unlikely	N	True	N	N
Open Space	39462	11/23/2020	Yes	Unlikely	N	False	Y	N
Planned Industrial Park	46720	8/10/2020	No	Unlikely	Y	True	N	N
Other	46075	4/22/2021	No	Unlikely	N	False	N	N
Residential	2846	12/31/2020	Yes	Unlikely	N	False	N	N
Other	2757	10/21/2020	Yes	Unlikely	N	False	N	N
Planned Industrial Park	40621	1/22/2021	Yes	Unlikely	Y	False	N	N
Other	59344	7/15/2020	Yes	Unlikely	N	False	N	N
Other	29772	5/26/2021	Yes	Unlikely	N	False	Y	N
Planned Industrial Park	31532	7/20/2020	No	Unlikely	Y	True	N	N
Other	68842	10/20/2020	No	Unlikely	N	False	N	N
Other	24368	8/6/2020	Yes	Unlikely	N	False	N	N
Residential	23468	4/30/2021	No	Unlikely	N	False	Y	N
Residential	39618	3/17/2021	Yes	Unlikely	N	False	N	N
Residential	16947	12/30/2020	No	Unlikely	N	False	N	N
Wholesale Warehousing	11341	1/22/2021	No	Unlikely	Y	True	N	N
Residential	25804	4/6/2021	No	Unlikely	N	False	Y	N
Planned Industrial Park	37334	11/17/2020	No	Unlikely	N	False	N	N
Restaurant	59347	7/15/2020	No	Unlikely	N	False	N	N
Residential	61174	12/8/2020	No	Unlikely	N	False	Y	N
Other	62548	4/27/2021	No	Unlikely	N	False	N	N

Other	7631	4/26/2021	No	Unlikely	N	False	N	N
Planned Industrial Park	31528	7/20/2020	No	Unlikely	Y	False	N	N
Institutional (schools/churches)	47180	8/25/2020	No	Unlikely	N	False	Y	N
Residential	23889	4/30/2021	No	Unlikely	N	False	Y	N
Other	14113	4/7/2021	Yes	Unlikely	N	False	N	N
Residential	26385	9/21/2020	No	Unlikely	N	False	N	N
Open Space	28952	8/28/2020	No	Unlikely	N	False	N	N
Residential	6090	3/10/2021	No	Unlikely	N	False	N	N
Residential	28455	8/24/2020	Yes	Unlikely	N	False	N	N
Planned Industrial Park	20584	11/17/2020	No	Unlikely	N	True	N	N
Residential	16842	4/13/2021	No	Unlikely	N	False	Y	N
Residential	44391	12/11/2020	No	Unlikely	N	False	Y	N
Planned Industrial Park	48900	1/22/2021	No	Unlikely	Y	False	N	N
Residential	15300	12/30/2020	No	Unlikely	N	True	N	N
Residential	26999	12/29/2020	Yes	Unlikely	N	False	Y	N
Residential	18052	8/12/2020	No	Unlikely	N	False	N	N
Residential	39430	11/23/2020	No	Unlikely	N	False	Y	N
Planned Industrial Park	50790	1/22/2021	No	Unlikely	Y	True	N	N
Residential	25808	4/6/2021	Stagnant	Unlikely	N	False	Y	N
Planned Industrial Park	51060	1/21/2021	No	Unlikely	Y	False	N	N
Wholesale Warehousing	25253	1/22/2021	No	Unlikely	Y	False	N	N
Residential	4933	11/6/2020	No	Unlikely	N	True	Y	N
Residential	44193	1/14/2021	No	Unlikely	N	False	Y	N
Other	26375	9/21/2020	Yes	Unlikely	N	False	N	N
Other	44155	1/15/2021	Yes	Unlikely	N	False	Y	N
Residential	6312	11/6/2020	Stagnant	Unlikely	N	False	N	N
Planned Industrial Park	12853	9/28/2020	Stagnant	Unlikely	N	False	N	N
Other	52228	5/26/2021	Yes	Unlikely	N	False	Y	N
Other Industrial	27847	6/30/2021	Yes	Unlikely	Y	False	N	N
Restaurant	59349	7/15/2020	No	Unlikely	Y	True	N	N
Other Industrial	63607	4/26/2021	No	Unlikely	Y	True	N	N
Other	1146	4/22/2021	No	Unlikely	N	False	Y	N
Planned Industrial Park	20574	11/17/2020	No	Unlikely	N	False	N	N
Residential	23476	4/30/2021	No	Unlikely	N	False	Y	N
Residential	61167	12/8/2020	Stagnant	Unlikely	N	False	Y	N
Residential	9544	8/25/2020	No	Unlikely	N	True	Y	N
Residential	8596	12/31/2020	No	Unlikely	N	False	Y	N
Residential	2893	9/29/2020	No	Unlikely	N	True	Y	N
Residential	15155	7/16/2020	Yes	Unlikely	N	True	Y	N
Residential	50514	3/17/2021	No	Unlikely	N	False	N	N
Residential	24933	4/30/2021	No	Unlikely	N	False	N	N
Residential	25796	4/5/2021	Yes	Unlikely	N	True	Y	N
Other	17255	11/9/2020	Yes	Unlikely	N	False	N	N
Residential	51675	3/8/2021	No	Unlikely	N	False	Y	N
Residential	62486	11/9/2020	No	Unlikely	N	True	N	N
Residential	50408	4/21/2021	Stagnant	Unlikely	N	False	Y	N
Residential	44383	12/11/2020	No	Unlikely	N	False	Y	N
Wholesale Warehousing	67161	1/22/2021	No	Unlikely	Y	False	N	N
Other	12485	7/14/2020	No	Unlikely	N	True	N	N
Vehicle Sale/Repair/Miscellaneous Automotive	62049	1/22/2021	Yes	Unlikely	Y	False	N	N
Residential	28950	8/28/2020	Stagnant	Unlikely	N	False	N	N
Residential	28958	8/28/2020	No	Unlikely	N	True	N	N
Residential	16919	12/3/2020	No	Unlikely	N	False	N	N
Planned Industrial Park	40780	1/21/2021	No	Unlikely	Y	False	N	N
Residential	39428	11/23/2020	No	Unlikely	N	False	Y	N
Residential	8556	12/3/2020	No	Unlikely	N	False	Y	N
Residential	8502	12/29/2020	Yes	Unlikely	N	False	N	N
Residential	26940	9/28/2020	No	Unlikely	N	False	N	N
Residential	16913	12/3/2020	No	Unlikely	N	True	Y	N
Other	20683	9/28/2020	No	Unlikely	N	False	N	N
Residential	9668	12/30/2020	No	Unlikely	N	False	Y	N
Residential	64455	4/7/2021	No	Unlikely	N	False	N	N
Other	7638	4/23/2021	No	Unlikely	N	False	N	N
Residential	2904	9/29/2020	No	Unlikely	N	False	Y	N
Other	59352	7/15/2020	Yes	Unlikely	N	False	N	N
Institutional (schools/churches)	38745	12/3/2020	No	Unlikely	N	True	N	N
Residential	15249	7/16/2020	No	Unlikely	N	False	N	N
Residential	51450	6/29/2021	No	Unlikely	N	False	N	N
Other	62553	4/27/2021	Yes	Unlikely	N	False	N	N
Residential	25825	4/6/2021	No	Unlikely	N	False	Y	N
Other	12750	7/16/2020	No	Unlikely	N	False	N	N
Residential	39567	9/21/2020	No	Unlikely	N	False	N	N
Residential	30989	4/30/2021	No	Unlikely	N	False	Y	N
Residential	9562	8/25/2020	No	Unlikely	N	True	Y	N
Residential	63742	9/17/2020	No	Unlikely	N	False	N	N
Residential	9740	12/30/2020	Yes	Unlikely	N	False	N	N
Residential	27003	12/29/2020	No	Unlikely	N	True	Y	N
Other	29710	3/8/2021	Yes	Unlikely	N	True	N	N
Open Space	47173	8/24/2020	Stagnant	Unlikely	N	True	N	N
Other	47183	8/25/2020	No	Unlikely	N	True	Y	N
Planned Industrial Park	40174	8/10/2020	No	Unlikely	Y	True	N	N
Planned Industrial Park	51063	1/21/2021	Yes	Unlikely	Y	False	N	N
Residential	28938	8/28/2020	No	Unlikely	N	False	N	N
Residential	39193	9/21/2020	No	Unlikely	N	True	N	N
Residential	13801	9/24/2020	No	Unlikely	N	True	N	N
Residential	5037	11/6/2020	No	Unlikely	N	False	Y	N
Other	62537	4/27/2021	No	Unlikely	N	True	N	N
Residential	9982	7/16/2020	No	Unlikely	N	False	N	N
Residential	26370	9/21/2020	No	Unlikely	N	True	N	N
Residential	60050	8/18/2020	No	Unlikely	N	True	N	N
Residential	6249	6/21/2021	No	Unlikely	N	False	Y	N
Residential	64469	4/7/2021	No	Unlikely	N	False	N	N
Open Space	22143	3/17/2021	No	Unlikely	N	True	Y	N
Shopping Center	11098	9/16/2020	Yes	Unlikely	Y	False	N	N
Residential	28183	4/30/2021	No	Unlikely	N	False	Y	N
Residential	8455	12/31/2020	No	Unlikely	N	False	Y	N
Residential	3714	3/10/2021	No	Unlikely	N	False	Y	N
Residential	3586	3/9/2021	Yes	Unlikely	N	False	N	N
Residential	20429	8/25/2020	No	Unlikely	N	False	N	N

Other	3007	10/21/2020	No	Unlikely	N	False	N	N
Regional Mall	31969	9/28/2020	No	Unlikely	Y	True	N	N
Wholesale Warehousing	12842	9/28/2020	No	Unlikely	N	False	N	N
Planned Industrial Park	19588	11/17/2020	No	Unlikely	N	False	N	N
Residential	22064	7/16/2020	No	Unlikely	N	False	N	N
Planned Industrial Park	34739	11/18/2020	Stagnant	Unlikely	Y	False	Y	N
Residential	30184	3/23/2021	No	Unlikely	N	False	Y	N
Shopping Center	20673	9/28/2020	Yes	Unlikely	N	False	N	N
Residential	332	11/6/2020	No	Unlikely	N	False	Y	N
Residential	22289	3/23/2021	No	Unlikely	N	False	N	N
Residential	8583	12/31/2020	Yes	Unlikely	N	False	N	N
Other	62544	4/27/2021	No	Unlikely	N	False	N	N
Residential	16839	4/13/2021	Stagnant	Unlikely	N	True	Y	N
Planned Industrial Park	60976	1/22/2021	No	Unlikely	N	False	N	N
Residential	11428	4/5/2021	Stagnant	Unlikely	N	False	Y	N
Residential	16620	7/30/2020	No	Unlikely	N	False	Y	N
Residential	16944	12/30/2020	No	Unlikely	N	False	N	N
Residential	28954	8/28/2020	No	Unlikely	N	False	N	N
Residential	15472	4/26/2021	Yes	Unlikely	N	False	Y	N
Residential	40708	11/23/2020	No	Unlikely	N	True	N	N
Residential	14099	4/7/2021	No	Unlikely	N	False	N	N
Residential	8531	12/30/2020	Yes	Unlikely	N	True	Y	N
Residential	3001	9/29/2020	No	Unlikely	N	False	Y	N
Residential	14106	4/7/2021	No	Unlikely	N	False	N	N
Institutional (schools/churches)	10715	1/15/2021	Yes	Unlikely	N	False	Y	N
Planned Industrial Park	25466	1/22/2021	No	Unlikely	Y	False	N	N
Gas Station	34203	1/22/2021	Yes	Unlikely	Y	True	N	N
Residential	30995	4/30/2021	No	Unlikely	N	False	Y	N
Residential	8464	12/31/2020	Yes	Unlikely	N	False	N	N
Other	59455	3/8/2021	Yes	Unlikely	N	False	N	N
Residential	27441	9/16/2020	No	Unlikely	N	False	Y	N
Residential	31132	7/31/2020	No	Unlikely	N	False	N	N
Residential	7549	12/29/2020	No	Unlikely	N	False	Y	N
Other	24530	4/30/2021	No	Unlikely	N	False	Y	N
Other	20675	9/28/2020	Yes	Unlikely	N	False	N	N
Residential	21942	4/20/2021	Yes	Unlikely	N	False	N	N
Residential	2993	12/30/2020	No	Unlikely	N	True	Y	N
Residential	33799	9/29/2020	No	Unlikely	N	True	N	N
Other	66329	4/27/2021	Yes	Unlikely	N	True	N	N
Planned Industrial Park	31727	11/18/2020	No	Unlikely	N	True	N	N
Regional Mall	26357	7/14/2020	No	Unlikely	N	False	N	N
Residential	8484	12/30/2020	No	Unlikely	N	False	Y	N
Planned Industrial Park	55109	1/25/2021	Yes	Unlikely	N	False	Y	N
Residential	5214	6/21/2021	No	Unlikely	N	False	N	N
Residential	16934	12/3/2020	No	Unlikely	N	True	N	N
Planned Industrial Park	31556	11/17/2020	No	Unlikely	N	True	N	N
Residential	54082	7/21/2020	No	Unlikely	N	False	Y	N
Planned Industrial Park	64173	7/20/2020	Stagnant	Unlikely	Y	False	N	N
Other	2186	6/16/2021	No	Unlikely	N	False	N	N
Other	21854	10/21/2020	No	Unlikely	N	True	N	N
Residential	7696	9/24/2020	No	Unlikely	N	False	N	N
Other	60622	3/22/2021	Yes	Unlikely	N	False	N	N
Residential	60624	3/22/2021	No	Unlikely	N	True	Y	N
Residential	9736	12/30/2020	No	Unlikely	N	False	Y	N
Residential	14109	4/7/2021	No	Unlikely	N	False	N	N
Residential	15253	11/9/2020	No	Unlikely	N	False	N	N
Residential	50684	3/17/2021	No	Unlikely	N	False	Y	N
Residential	50512	3/17/2021	No	Unlikely	N	False	N	N
Planned Industrial Park	38071	10/20/2020	No	Unlikely	Y	False	N	N
Residential	45114	12/30/2020	No	Unlikely	N	True	N	N
Planned Industrial Park	30921	1/21/2021	Yes	Unlikely	Y	False	N	N
Residential	15985	11/9/2020	Yes	Unlikely	N	False	N	N
Residential	55163	12/9/2020	No	Unlikely	N	False	Y	N
Other	60618	3/23/2021	No	Unlikely	N	False	N	N
Institutional (schools/churches)	21461	3/10/2021	Yes	Unlikely	N	False	N	N
Residential	6232	4/20/2021	Yes	Unlikely	N	False	Y	N
Planned Industrial Park	35896	1/25/2021	No	Unlikely	Y	False	Y	N
Residential	8540	12/3/2020	No	Unlikely	N	False	Y	N
Institutional (schools/churches)	46089	11/23/2020	No	Unlikely	N	False	N	N
Residential	16886	12/3/2020	Yes	Unlikely	N	False	N	N
Residential	20427	8/24/2020	Yes	Unlikely	N	False	Y	N
Open Space	59469	3/9/2021	Yes	Unlikely	N	True	Y	N
Planned Industrial Park	34353	11/17/2020	Stagnant	Unlikely	N	False	N	N
Planned Industrial Park	66681	8/10/2020	Stagnant	Unlikely	Y	False	N	N
Residential	16893	12/4/2020	No	Unlikely	N	False	N	N
Residential	464	11/6/2020	Yes	Unlikely	N	False	Y	N
Other	1926	4/22/2021	No	Unlikely	N	False	Y	N
Other	35225	4/7/2021	Yes	Unlikely	N	False	N	N
Planned Industrial Park	35901	1/25/2021	No	Unlikely	Y	False	N	N
Residential	5639-001	3/17/2021	No	Unlikely	N	False	N	N
Residential	66109	8/18/2020	Stagnant	Unlikely	N	True	N	N
Other	24538	4/30/2021	No	Unlikely	N	True	Y	N
Residential	8550	12/3/2020	Stagnant	Unlikely	N	False	N	N
Hospital	65500	7/21/2020	No	Unlikely	N	False	Y	N
Other	25810	4/6/2021	Yes	Unlikely	N	False	N	N
Residential	3601	3/10/2021	No	Unlikely	N	False	N	N
Residential	9575	8/24/2020	No	Unlikely	N	True	N	N
Residential	65217	12/8/2020	No	Unlikely	N	False	N	N
Open Space	39432	11/23/2020	Yes	Unlikely	N	False	Y	N
Residential	16174	11/9/2020	No	Unlikely	N	True	Y	N
Other	64248	4/28/2021	No	Unlikely	N	False	N	N
Residential	32499	5/10/2021	No	Unlikely	N	False	N	N
Residential	9676	12/30/2020	No	Unlikely	N	False	N	N
Other	2048	6/16/2021	No	Unlikely	N	False	N	N
Planned Industrial Park	55120	1/25/2021	No	Unlikely	Y	True	Y	N
Residential	50716	3/17/2021	No	Unlikely	N	False	Y	N
Residential	2064	12/30/2020	No	Unlikely	N	False	N	N
Residential	3854	4/5/2021	Yes	Unlikely	N	False	N	N
Residential	39636	3/17/2021	No	Unlikely	N	False	N	N

Residential	16631	7/30/2020	No	Unlikely	N	False	Y	N
Residential	63771	9/17/2020	No	Unlikely	N	False	N	N
Open Space	54543	11/17/2020	No	Unlikely	N	False	Y	N
Other	46091	11/23/2020	No	Unlikely	N	False	N	N
Residential	16821	4/13/2021	No	Unlikely	N	True	Y	N
Planned Industrial Park	40801	1/21/2021	Stagnant	Unlikely	Y	False	N	N
Residential	9382	4/20/2021	No	Unlikely	N	False	Y	N
Open Space	34600	12/28/2020	Yes	Unlikely	N	False	N	N
Planned Industrial Park	35905	1/25/2021	No	Unlikely	N	False	N	N
Other	64471	4/9/2021	No	Unlikely	N	False	N	N
Residential	2835	10/21/2020	Yes	Unlikely	N	False	N	N
Other	34606	12/29/2020	No	Unlikely	N	True	N	N
Other	29716	3/8/2021	Yes	Unlikely	N	True	Y	N
Other	64380	1/15/2021	No	Unlikely	N	False	Y	N
Residential	14111	4/5/2021	No	Unlikely	N	True	Y	N
Residential	2534	6/16/2021	No	Unlikely	N	False	N	N
Residential	27472	9/16/2020	No	Unlikely	N	True	N	N
Residential	30889	11/9/2020	No	Unlikely	N	False	N	N
Residential	39216	9/21/2020	No	Unlikely	N	False	N	N
Residential	5636	4/20/2021	Stagnant	Unlikely	N	False	Y	N
Residential	39004	3/22/2021	Yes	Unlikely	N	False	N	N
Residential	63755	9/17/2020	No	Unlikely	N	True	N	N
Residential	61171	12/8/2020	No	Unlikely	N	False	N	N
Planned Industrial Park	24899	7/20/2020	No	Unlikely	Y	False	N	N
Residential	215	7/16/2020	No	Unlikely	N	False	Y	N
Residential	34027	7/15/2020	No	Unlikely	Y	True	N	N
Other	58744	3/22/2021	Yes	Unlikely	N	False	N	N
Other	44243	1/15/2021	Yes	Unlikely	N	False	Y	N
Residential	27051	4/13/2021	No	Unlikely	N	False	Y	N
Residential	35229	4/7/2021	No	Unlikely	N	True	N	N
Residential	7551	12/29/2020	No	Unlikely	N	False	Y	N
Residential	59420	3/8/2021	No	Unlikely	N	True	N	N
Planned Industrial Park	35885	1/22/2021	No	Unlikely	Y	False	N	N
Residential	3725	3/9/2021	Yes	Unlikely	N	False	Y	N
Vehicle Sale/Repair/Miscellaneous Automotive	62053	1/21/2021	Stagnant	Unlikely	Y	False	Y	N
Planned Industrial Park	64171	7/20/2020	Stagnant	Unlikely	Y	False	N	N
Residential	59378	3/8/2021	No	Unlikely	N	True	Y	N
Residential	5044	11/6/2020	No	Unlikely	N	True	Y	N
Residential	8545	12/3/2020	No	Unlikely	N	False	Y	N
Residential	8569	12/31/2020	No	Unlikely	N	False	N	N
Residential	16891	8/25/2020	No	Unlikely	N	False	N	N
Other	2040	12/30/2020	No	Unlikely	N	False	N	N
Hotel w/ Restaurant	9395	4/28/2021	No	Unlikely	N	False	N	N
Residential	35233	4/9/2021	No	Unlikely	N	False	Y	N
Planned Industrial Park	55117	1/25/2021	No	Unlikely	N	False	Y	N
Planned Industrial Park	48896	1/22/2021	No	Unlikely	N	False	N	N
Other	61179	9/17/2020	Yes	Unlikely	N	False	N	N
Planned Industrial Park	44897	7/20/2020	No	Unlikely	Y	False	N	N
Other	64288	4/13/2021	No	Unlikely	N	False	Y	N
Wholesale Warehousing	67155	1/22/2021	No	Unlikely	Y	False	N	N
Other	64457	4/9/2021	No	Unlikely	N	False	N	N
Planned Industrial Park	44878	1/21/2021	Stagnant	Unlikely	Y	False	N	N
Other	52191	11/18/2020	No	Unlikely	N	False	Y	N
Residential	56083	5/10/2021	Yes	Unlikely	N	False	Y	N
Hotel w/ Restaurant	64246	4/28/2021	No	Unlikely	N	False	N	N
Residential	59447	3/8/2021	Stagnant	Unlikely	N	False	N	N
Residential	31708	5/26/2021	No	Unlikely	N	False	Y	N
Residential	22293	3/23/2021	No	Unlikely	N	False	Y	N
Other	42693	4/9/2021	Yes	Unlikely	N	False	N	N
Residential	14672	10/21/2020	No	Unlikely	N	True	N	N
Residential	347	7/30/2020	No	Unlikely	N	False	N	N
Residential	37231	3/17/2021	No	Unlikely	N	False	N	N
Residential	48062	5/10/2021	No	Unlikely	N	False	Y	N
Residential	5028	11/6/2020	No	Unlikely	N	False	Y	N
Planned Industrial Park	32663	1/22/2021	Yes	Unlikely	N	False	N	N
Other	10719	1/14/2021	No	Unlikely	N	False	Y	N
Other	59471	3/8/2021	Yes	Unlikely	N	False	Y	N
Residential	22071	7/16/2020	No	Unlikely	N	False	N	N
Hospital	65493	7/21/2020	No	Unlikely	N	False	Y	N
Institutional (schools/churches)	65772	4/22/2021	No	Unlikely	N	False	N	N
Residential	18059	8/11/2020	Yes	Unlikely	N	False	N	N
Residential	28442	9/16/2020	Yes	Unlikely	N	False	N	N
Wholesale Warehousing	66340	1/22/2021	No	Unlikely	Y	False	N	N
Other	12915	10/21/2020	No	Unlikely	N	False	N	N
Residential	7539	12/28/2020	No	Unlikely	N	True	Y	N
Residential	9621	12/30/2020	No	Unlikely	N	False	N	N
Residential	6247	6/21/2021	No	Unlikely	N	False	N	N
Planned Industrial Park	44895	1/21/2021	Yes	Unlikely	Y	False	N	N
Residential	65248	1/15/2021	No	Unlikely	N	False	N	N
Other	5574	11/6/2020	Yes	Unlikely	N	False	N	N
Residential	24910	4/30/2021	No	Unlikely	N	False	Y	N
Residential	54099	7/21/2020	No	Unlikely	N	True	Y	N
Residential	5826	6/21/2021	Yes	Unlikely	N	False	N	N
Residential	28438	9/16/2020	No	Unlikely	N	True	N	N
Other	61004	8/18/2020	Yes	Unlikely	N	False	N	N
Residential	16615	7/31/2020	No	Unlikely	N	True	Y	N
Planned Industrial Park	35304	1/25/2021	No	Unlikely	Y	True	N	N
Wholesale Warehousing	12844	9/28/2020	No	Unlikely	N	False	N	N
Residential	60062	5/26/2021	Yes	Unlikely	N	False	N	N
Residential	24353	8/6/2020	Stagnant	Unlikely	N	False	Y	N
Wholesale Warehousing	47039	1/22/2021	Stagnant	Unlikely	N	False	N	N
Planned Industrial Park	31569	11/17/2020	No	Unlikely	N	False	N	N
Other	32665	1/22/2021	No	Unlikely	N	False	N	N
Residential	21927	7/16/2020	No	Unlikely	N	False	N	N
Other	38695	1/21/2021	Stagnant	Unlikely	Y	False	N	N
Open Space	55147	12/9/2020	No	Unlikely	N	False	Y	N
Research and Testing	19568	11/17/2020	Stagnant	Unlikely	N	False	Y	N
Other	7629	4/26/2021	No	Unlikely	N	False	N	N
Other	28944	8/28/2020	Yes	Unlikely	N	True	N	N

Planned Industrial Park	37363	11/17/2020	No	Unlikely	N	True	N	N
Residential	30102	5/10/2021	No	Unlikely	N	False	N	N
Other	11892	7/14/2020	Yes	Unlikely	N	True	N	N
Residential	58741	3/22/2021	No	Unlikely	N	False	Y	N
Wholesale Warehousing	67159	1/22/2021	No	Unlikely	Y	False	N	N
Residential	27001	12/29/2020	No	Unlikely	N	False	Y	N
Other	60597	3/22/2021	No	Unlikely	N	True	Y	N
Residential	2154	6/16/2021	No	Unlikely	N	False	Y	N
Wholesale Warehousing	25256	1/22/2021	No	Unlikely	Y	False	N	N
Residential	50432	4/21/2021	No	Unlikely	N	False	Y	N
Other	30590	9/17/2020	No	Unlikely	N	False	Y	N
Residential	27043	4/13/2021	No	Unlikely	N	False	Y	N
Residential	14676	10/21/2020	No	Unlikely	N	True	N	N
Other	5199	7/20/2020	No	Unlikely	Y	True	N	N
Institutional (schools/churches)	10704	1/15/2021	No	Unlikely	N	False	N	N
Planned Industrial Park	66499	11/17/2020	No	Unlikely	N	False	N	N
Wholesale Warehousing	47030	1/22/2021	No	Unlikely	Y	False	N	N
Residential	6342	11/6/2020	No	Unlikely	N	False	N	N
Other	62612	4/27/2021	No	Unlikely	N	False	N	N
Residential	15280	11/9/2020	No	Unlikely	N	True	N	N
Residential	30884	11/9/2020	Stagnant	Unlikely	N	True	N	N
Residential	16639	7/30/2020	No	Unlikely	N	False	N	N
Other	10083	8/24/2020	Yes	Unlikely	N	False	Y	N
Residential	65169	12/8/2020	No	Unlikely	N	False	N	N
Regional Mall	12662	7/14/2020	No	Unlikely	N	False	N	N
Planned Industrial Park	35882	1/22/2021	No	Unlikely	Y	False	N	N
Residential	65246	1/15/2021	No	Unlikely	N	False	N	N
Planned Industrial Park	31536	11/17/2020	No	Unlikely	N	True	N	N
Residential	27438	9/16/2020	No	Unlikely	N	True	N	N
Other	7636	4/23/2021	No	Unlikely	N	False	N	N
Hotel w/ Restaurant	63494	9/28/2020	No	Unlikely	N	False	N	N
Residential	51466	6/29/2021	No	Unlikely	N	False	N	N
Open Space	55145	12/9/2020	No	Unlikely	N	False	Y	N
Other	34610	12/29/2020	Yes	Unlikely	N	False	Y	N
Other	64448	4/9/2021	Yes	Unlikely	N	False	N	N
Residential	51487	6/29/2021	Stagnant	Unlikely	N	False	N	N
Residential	5266	4/20/2021	No	Unlikely	N	False	Y	N
Other	29727	3/9/2021	Yes	Unlikely	N	False	N	N
Residential	2839	10/21/2020	Yes	Unlikely	N	True	Y	N
Residential	334	11/6/2020	No	Unlikely	N	False	Y	N
Restaurant	59342	7/15/2020	Stagnant	Unlikely	N	True	N	N
Residential	16612	7/31/2020	Stagnant	Unlikely	N	True	Y	N
Regional Mall	12640	7/14/2020	No	Unlikely	N	False	N	N
Residential	34726	4/30/2021	No	Unlikely	N	False	Y	N
Open Space	8552	12/3/2020	Yes	Unlikely	N	False	Y	N
Residential	59409	3/8/2021	No	Unlikely	N	False	Y	N
Residential	49666	4/9/2021	No	Unlikely	N	False	N	N
Planned Industrial Park	32661	1/22/2021	No	Unlikely	Y	True	N	N
Other	63773	9/17/2020	Yes	Unlikely	N	False	N	N
Institutional (schools/churches)	10713	1/14/2021	No	Unlikely	N	True	N	N
Other	61002	8/18/2020	Yes	Unlikely	N	False	N	N
Other	50209	4/28/2021	No	Unlikely	N	False	N	N
Regional Mall	12646	7/14/2020	No	Unlikely	N	False	N	N
Other	48889	9/17/2020	Yes	Unlikely	N	False	Y	N
Planned Industrial Park	64160	7/20/2020	Stagnant	Unlikely	Y	False	N	N
Residential	7542	12/29/2020	No	Unlikely	N	False	Y	N
Open Space	30502	9/17/2020	No	Unlikely	N	False	Y	N
Other	52506	5/10/2021	No	Unlikely	N	True	Y	N
Other	7627	4/23/2021	No	Unlikely	N	False	N	N
Residential	56952	12/11/2020	No	Unlikely	N	True	Y	N
Residential	219	7/16/2020	No	Unlikely	N	False	N	N
Other	2037	12/30/2020	Yes	Unlikely	N	False	N	N
Residential	38780	6/29/2021	No	Unlikely	N	False	N	N
Other	34614	12/29/2020	No	Unlikely	N	True	N	N
Residential	9389	4/20/2021	No	Unlikely	N	False	N	N
Other	9398	4/28/2021	No	Unlikely	N	False	N	N
Residential	59452	3/9/2021	Stagnant	Unlikely	N	False	N	N
Residential	15267	11/9/2020	No	Unlikely	N	True	Y	N
Residential	16607	7/31/2020	No	Unlikely	N	False	Y	N
Residential	15255	11/9/2020	No	Unlikely	N	True	Y	N
Residential	27459	9/16/2020	No	Unlikely	N	True	Y	N
Other	3006	10/21/2020	No	Unlikely	N	False	N	N
Residential	44388	12/11/2020	No	Unlikely	N	False	Y	N
Other	51903	7/21/2020	Yes	Unlikely	N	False	N	N
Residential	54103	7/21/2020	No	Unlikely	N	True	Y	N
Residential	18046	8/12/2020	No	Unlikely	N	False	Y	N
Residential	3719	3/10/2021	No	Unlikely	N	True	Y	N
Residential	15276	11/9/2020	No	Unlikely	N	True	Y	N
Planned Industrial Park	44899	7/20/2020	No	Unlikely	Y	False	N	N
Residential	15198	7/16/2020	No	Unlikely	N	True	Y	N
Regional Mall	12638	7/14/2020	No	Unlikely	N	False	N	N
Residential	9702	8/25/2020	No	Unlikely	N	False	N	N
Other	62747	11/18/2020	No	Unlikely	N	True	N	N
Residential	39557	9/21/2020	No	Unlikely	N	False	N	N
Planned Industrial Park	37374	11/17/2020	No	Unlikely	N	True	N	N
Residential	2899	9/29/2020	No	Unlikely	N	True	N	N
Residential	52216	5/26/2021	No	Unlikely	N	False	Y	N
Residential	48887	9/17/2020	No	Unlikely	Y	False	Y	N
Residential	6320	11/6/2020	No	Unlikely	N	True	N	N
Planned Industrial Park	39363	1/22/2021	No	Unlikely	Y	False	N	N
Hotel w/ Restaurant	41283	4/28/2021	No	Unlikely	N	False	N	N
Other	3840	4/7/2021	Yes	Unlikely	N	True	Y	N
Open Space	24543	4/30/2021	Yes	Unlikely	N	False	N	N
Residential	50721	3/17/2021	No	Unlikely	N	False	Y	N
Residential	16825	1/14/2021	No	Unlikely	N	False	N	N
Residential	59465	3/8/2021	Stagnant	Unlikely	N	False	Y	N
Residential	11445	4/6/2021	No	Unlikely	N	False	N	N
Residential	9686	12/30/2020	Yes	Unlikely	N	False	Y	N
Residential	9680	12/30/2020	No	Unlikely	N	False	Y	N

Residential	60047	5/26/2021	No	Unlikely	N	False	Y	N
Residential	5639-002	3/17/2021	No	Unlikely	N	False	N	N
Residential	2058	6/16/2021	No	Unlikely	N	False	N	N
Other	24534	4/30/2021	No	Unlikely	N	True	Y	N
Residential	16649	8/12/2020	No	Unlikely	N	False	N	N
Other	62569	4/27/2021	No	Unlikely	N	False	N	N
Residential	15269	11/9/2020	No	Unlikely	N	False	Y	N
Residential	16529	7/31/2020	No	Unlikely	N	False	N	N
Shopping Center	53535	7/13/2021	Stagnant	Unlikely	Y	False	Y	N
Other	44112	7/13/2021	Yes	Unlikely	N	False	N	N
Other	19970	7/13/2021	Yes	Unlikely	N	False	Y	N
Other	13641	7/13/2021	Yes	Unlikely	N	False	N	N
Other	36105	7/13/2021	Yes	Unlikely	N	False	N	N
Regional Mall	25307	7/13/2021	No	Unlikely	N	False	Y	N
Residential	5854	7/13/2021	No	Unlikely	N	False	N	N
Other	30267	7/13/2021	No	Unlikely	Y	False	N	N
Residential	5997	7/13/2021	No	Unlikely	N	False	Y	N
Residential	63258	7/13/2021	Stagnant	Unlikely	N	False	Y	N
Other	37858	7/13/2021	Yes	Unlikely	N	False	N	N
Residential	36103	7/13/2021	No	Unlikely	N	False	Y	N
Other	29004	7/13/2021	No	Unlikely	N	False	N	N
Other	30265	7/13/2021	No	Unlikely	Y	False	N	N
Residential	22716	7/13/2021	No	Unlikely	N	False	Y	N
Other	32578	7/13/2021	Yes	Unlikely	N	False	N	N
Institutional (schools/churches)	31147	7/13/2021	No	Unlikely	N	False	N	N
Other	6009	7/13/2021	Yes	Unlikely	N	False	Y	N
Residential	8248	7/13/2021	No	Unlikely	N	False	Y	N
Regional Mall	64095	7/13/2021	No	Unlikely	N	False	N	N
Residential	5831	7/13/2021	No	Unlikely	N	False	N	N
Residential	6120	7/13/2021	No	Unlikely	N	False	Y	N
Other	19254	7/13/2021	No	Unlikely	N	False	Y	N
Other	29077	7/13/2021	No	Unlikely	Y	False	N	N
Residential	5848	7/13/2021	No	Unlikely	N	False	N	N
Other	11483	7/13/2021	Yes	Unlikely	N	False	N	N
Residential	10400	7/13/2021	Yes	Unlikely	N	False	Y	N
Residential	5952	7/13/2021	No	Unlikely	N	False	Y	N
Regional Mall	18593	7/13/2021	No	Unlikely	N	False	Y	N
Residential	5443	7/13/2021	No	Unlikely	N	False	Y	N
Other	27179	7/13/2021	Yes	Unlikely	N	False	N	N
Residential	30269	7/13/2021	No	Unlikely	Y	False	N	N
Residential	17890	7/13/2021	Yes	Unlikely	N	False	Y	N
Other	17270	7/13/2021	No	Unlikely	N	False	N	N
Residential	5987	7/13/2021	No	Unlikely	N	False	Y	N
Residential	18570	7/13/2021	No	Unlikely	N	False	Y	N
Residential	22712	7/13/2021	Yes	Unlikely	N	False	N	N
Other	30254	7/13/2021	No	Unlikely	Y	False	N	N
Shopping Center	18588	7/13/2021	Stagnant	Unlikely	N	False	Y	N
Other	30250	7/13/2021	Stagnant	Unlikely	Y	False	N	N
Other	6007	7/13/2021	No	Unlikely	N	False	Y	N
Residential	530	7/13/2021	No	Unlikely	N	False	Y	N
Other	44119	7/13/2021	Yes	Unlikely	N	False	N	N
Residential	17866	7/13/2021	No	Unlikely	N	False	Y	N
Residential	22718	7/13/2021	No	Unlikely	N	False	N	N
Other	17268	7/13/2021	No	Unlikely	N	False	N	N
Other	5954	7/13/2021	Yes	Unlikely	N	False	Y	N
Residential	60134	7/13/2021	Stagnant	Unlikely	N	False	Y	N
Institutional (schools/churches)	60157	7/13/2021	Yes	Unlikely	N	False	N	N
Residential	26542	7/13/2021	No	Unlikely	N	False	Y	N
Residential	32575	7/13/2021	Stagnant	Unlikely	N	False	Y	N
Residential	44100	7/13/2021	No	Unlikely	N	False	Y	N
Residential	63262	7/13/2021	No	Unlikely	N	False	Y	N
Residential	44109	7/13/2021	No	Unlikely	N	False	N	N
Residential	532	7/13/2021	No	Unlikely	N	False	Y	N
Residential	6116	7/13/2021	No	Unlikely	N	False	Y	N
Residential	5022	7/13/2021	No	Unlikely	N	False	Y	N
Vehicle Sale/Repair/Miscellaneous Automotive	58152	7/13/2021	No	Unlikely	N	False	Y	N
Residential	37836	7/13/2021	No	Unlikely	N	False	N	N
Planned Industrial Park	51065	7/13/2021	No	Unlikely	N	False	Y	N
Open Space	28999	7/13/2021	No	Unlikely	N	False	Y	N
Regional Mall	13702	7/13/2021	No	Unlikely	N	False	Y	N
Other	11485	7/13/2021	Yes	Unlikely	N	False	N	N
Other	5024	7/13/2021	No	Unlikely	N	False	Y	N
Other	29072	7/13/2021	Yes	Unlikely	Y	False	N	N
Residential	6922	7/13/2021	No	Unlikely	N	False	Y	N
Other	13707	7/13/2021	No	Unlikely	Y	False	Y	N
Residential	40171	7/13/2021	No	Unlikely	N	False	Y	N
Residential	61029	7/13/2021	No	Unlikely	N	False	Y	N
Residential	22720	7/13/2021	No	Unlikely	N	False	N	N
Residential	5685	7/13/2021	No	Unlikely	N	False	Y	N
Open Space	29074	7/13/2021	No	Unlikely	Y	False	Y	N
Residential	739	7/13/2021	No	Unlikely	N	False	N	N
Regional Mall	25309	7/13/2021	No	Unlikely	N	False	Y	N
Other	58154	7/13/2021	Yes	Unlikely	N	False	Y	N
Residential	5994	7/13/2021	No	Unlikely	N	False	N	N
Other	51068	7/13/2021	Yes	Unlikely	N	False	N	N
Other	50891	7/13/2021	Yes	Unlikely	N	False	Y	N
Other	6098	7/13/2021	Yes	Unlikely	N	False	N	N
Institutional (schools/churches)	17260	7/13/2021	No	Unlikely	N	False	N	N
Residential	8249	7/13/2021	No	Unlikely	N	False	Y	N
Residential	34902	7/13/2021	No	Unlikely	N	False	N	N
Open Space	6002	7/13/2021	No	Unlikely	N	False	Y	N
Other	17405	7/13/2021	Yes	Unlikely	N	False	N	N
Other	8251	7/13/2021	Yes	Unlikely	N	False	Y	N
Other	60136	7/13/2021	Yes	Unlikely	N	False	Y	N
Residential	5688	7/13/2021	No	Unlikely	N	False	Y	N
Residential	60320	7/13/2021	No	Unlikely	N	False	Y	N
Other	30257	7/13/2021	No	Unlikely	Y	False	N	N
Residential	50889	7/13/2021	No	Unlikely	N	False	Y	N

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM
5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

INCIDENT INFORMATION		
Incident Report # 22-2021	Date: 10/21/2020	Time: 1:30 PM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 2835	City, State: Woodbridge, VA	Zip Code: 22193
Complain or Case Received From: Routine Inspection		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 7.5 Limit: Std.		Conductivity: 218 µS/cm Limit: Std.	Temp.: 63 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatable: NA	Stains: NA	Other: NA

Map of Trackdown Path:

Responsible Party (Owner/ Institutions)	**Other Party (Management Company)**
Name: NA	Name: NA
Company:	Company:
Address:	Address:
Phone #:	Phone #:
Note:	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: NA	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Flow was observed through the outfall. Outfall was submerged into transparent water. pH and Conductivity did not exceed the standard limits. Discharge was tracked along storm sewer marked with red line in map above. Manhole B had flow from BC direction. Stagnant water discovered with no inflow into manhole C. Cross connection of sanitary sewer did not find during inspection.

Conclusion:

The source of discharge is discovered ground water into stormwater system.

Notifications:

Citation Code Section: NA		
Citation Narration: NA		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

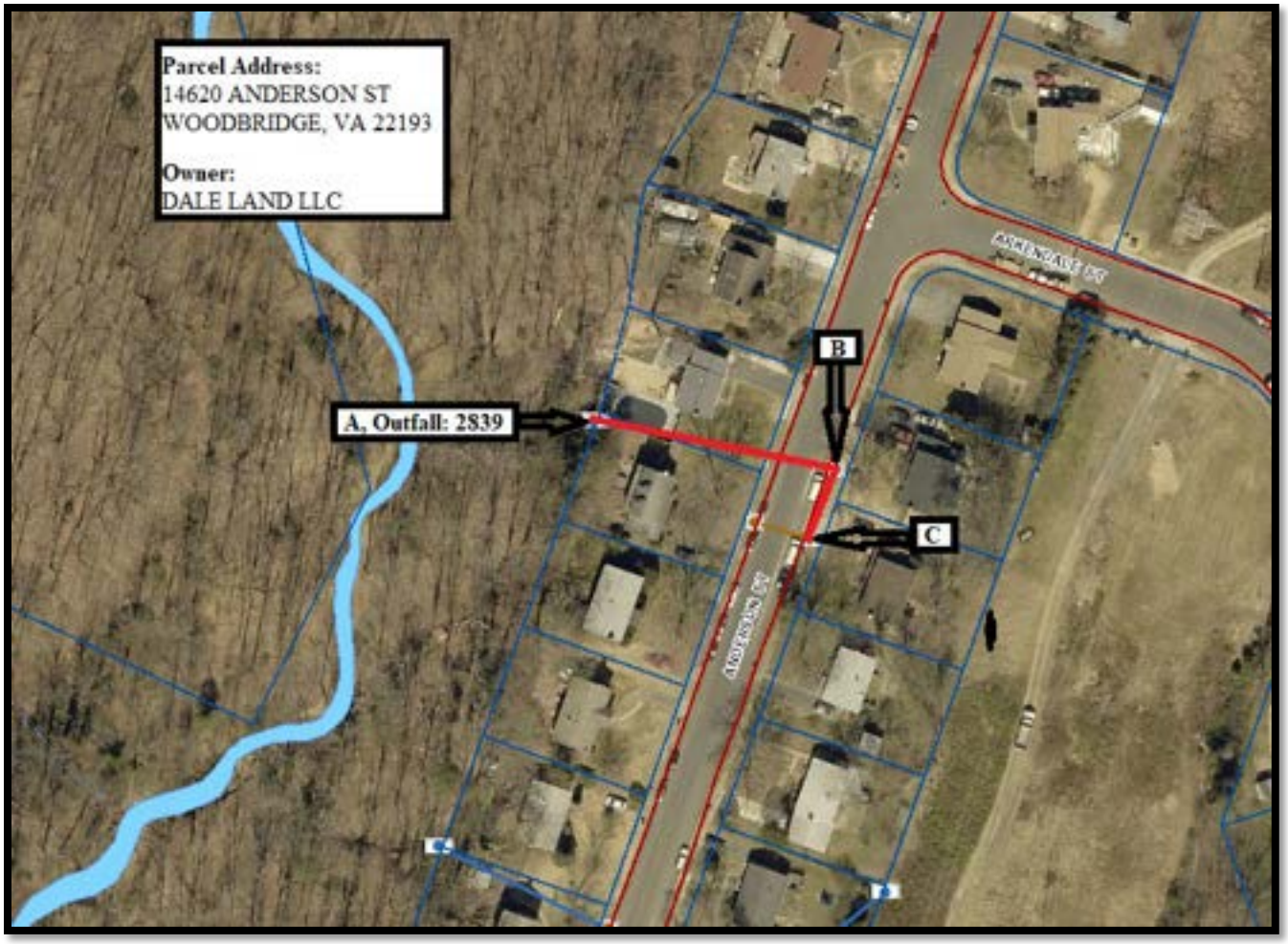
INCIDENT INFORMATION		
Incident Report # 21-2021	Date: 10/21/2020	Time: 11:30 AM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 2839	City, State: Woodbridge, VA	Zip Code: 22193
Complain or Case Received From: Routine Inspection		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 6.8 Limit: Std.		Conductivity: 410 µS/cm Limit: Std.	Temp.: 64 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatable: NA	Stains: NA	Other: NA

Map of Trackdown Path:



Responsible Party (Owner/ Institutions)	Other Party (Management Company)
Name: NA	Name: NA
Company:	Company:
Address:	Address:
Phone #:	Phone #:
Note:	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: NA	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Flow was observed through the outfall. Algae bloomed at outfall. pH and Conductivity did not exceed the standard limits. Discharge was tracked along storm sewer marked with red line in map above. Manhole B had flow from BC branch. Ground seepage was discovered at manhole C. Cross connection of sanitary sewer did not find during inspection.

Conclusion:

The source of algae is discovered ground water into stormwater system. It is a natural phenomenon.

Notifications:

Citation Code Section: NA		
Citation Narration: NA		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

INCIDENT INFORMATION		
Incident Report # 20-2021	Date: 10/21/2020	Time: 10:20 AM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 2848	City, State: Woodbridge, VA	Zip Code: 22193
Complain or Case Received From: Routine Inspection		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 7.7 Limit: Std.		Conductivity: 315 µS/cm Limit: Std.	Temp.: 63 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatable: NA	Stains: NA	Other: NA

Map of Trackdown Path:

Responsible Party (Owner/ Institutions)	Other Party (Management Company)
Name: NA	Name: NA
Company:	Company:
Address:	Address:
Phone #:	Phone #:
Note:	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: NA	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Flow was observed through the outfall. pH and Conductivity did not exceed the standard limits. Discharge was tracked along storm sewer marked with red line in map above. Manhole B was found dry. Cross connection of sanitary sewer did not find during inspection.

Conclusion:
The source of discharge was confirmed ground water seepage into stormwater system.

Notifications:

Citation Code Section: NA		
Citation Narration: NA		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM
5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

INCIDENT INFORMATION		
Incident Report # 19-2021	Date: 9/29/2020	Time: 11:20 AM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 2868	City, State: Woodbridge, VA	Zip Code: 22193
Complain or Case Received From: Routine Inspection		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 6.6 Limit: Std.		Conductivity: 417 µS/cm Limit: Std.	Temp.: 64 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatable: NA	Stains: NA	Other: NA

Map of Trackdown Path:

Responsible Party (Owner/ Institutions)	Other Party (Management Company)
Name: NA	Name: NA
Company:	Company:
Address:	Address:
Phone #:	Phone #:
Note:	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: NA	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Flow was observed through the outfall. pH and Conductivity did not exceed the standard limits. Discharge was tracked along storm sewer marked with red line in map above. Manhole B was receiving discharge from BC direction. Tracking was continued until point E. Manhole E was receiving discharge from open channel. Manholes were found with minor ground water seepage. Cross connection of sanitary sewer did not find during inspection.

Conclusion:
The source of discharge was confirmed ground water seepage with surface water.

Notifications:

Citation Code Section: NA		
Citation Narration: NA		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM
5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

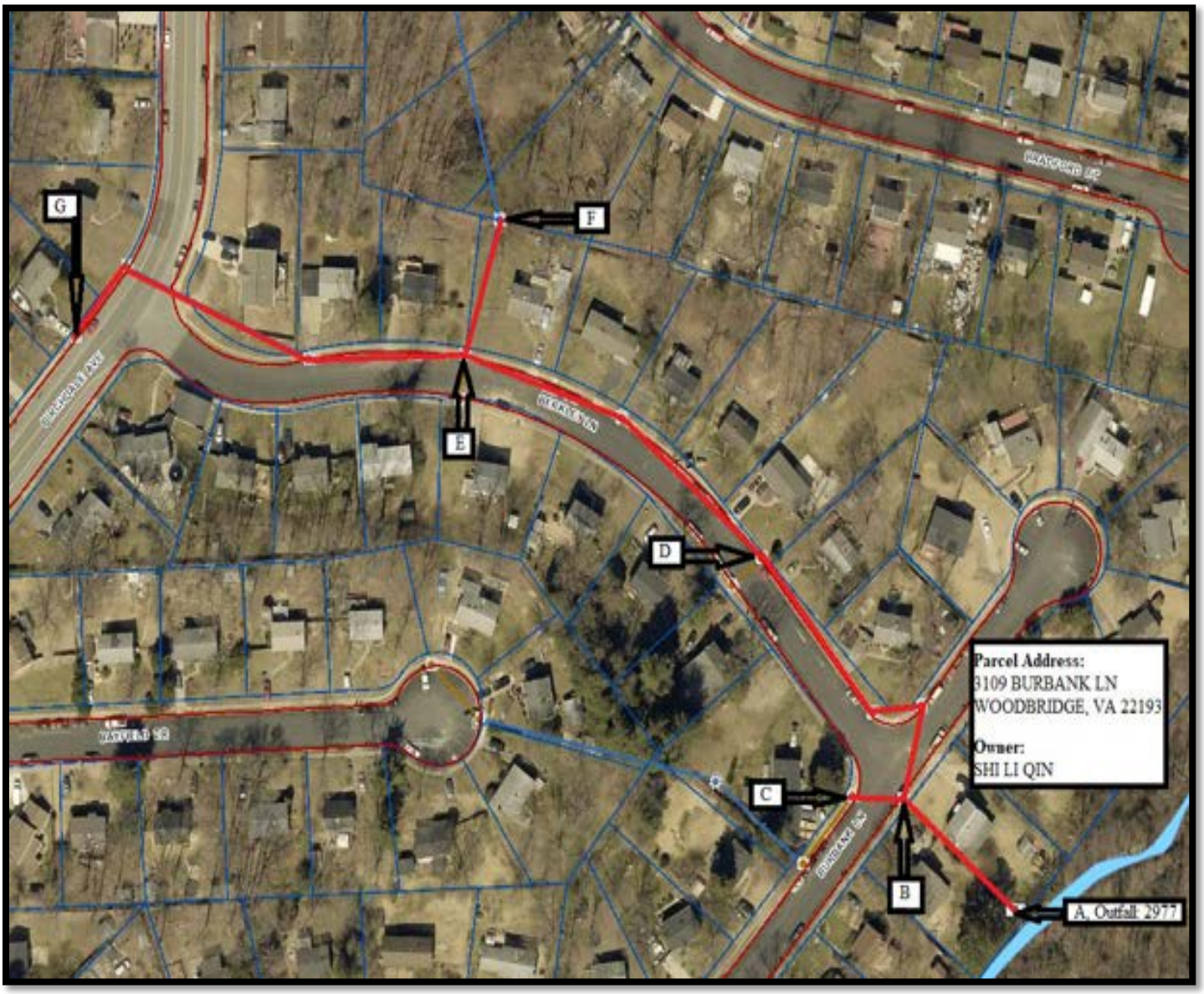
INCIDENT INFORMATION		
Incident Report # 18-2021	Date: 9/29/2020	Time: 10:20 AM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 2977	City, State: Woodbridge, VA	Zip Code: 22193
Complain or Case Received From: Routine Inspection		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 6.9 Limit: Std.		Conductivity: 418 µS/cm Limit: Std.	Temp.: 67 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatable: NA	Stains: NA	Other: NA

Map of Trackdown Path:



Responsible Party (Owner/ Institutions)	Other Party (Management Company)
Name: NA	Name: NA
Company:	Company:
Address:	Address:
Phone #:	Phone #:
Note:	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: NA	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Flow was observed through the outfall. pH and Conductivity did not exceed the standard limits. Discharge was tracked along storm sewer marked with red line in map above. Manhole B was receiving discharge from BC and BD directions. Tracking was continued until point G. Manhole F was receiving discharge from open channel. Manhole G was found with minor ground water seepage. Cross connection of sanitary sewer did not find during inspection.

Conclusion:

The source of discharge was confirmed ground water seepage with surface water.

Notifications:

Citation Code Section: NA		
Citation Narration: NA		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

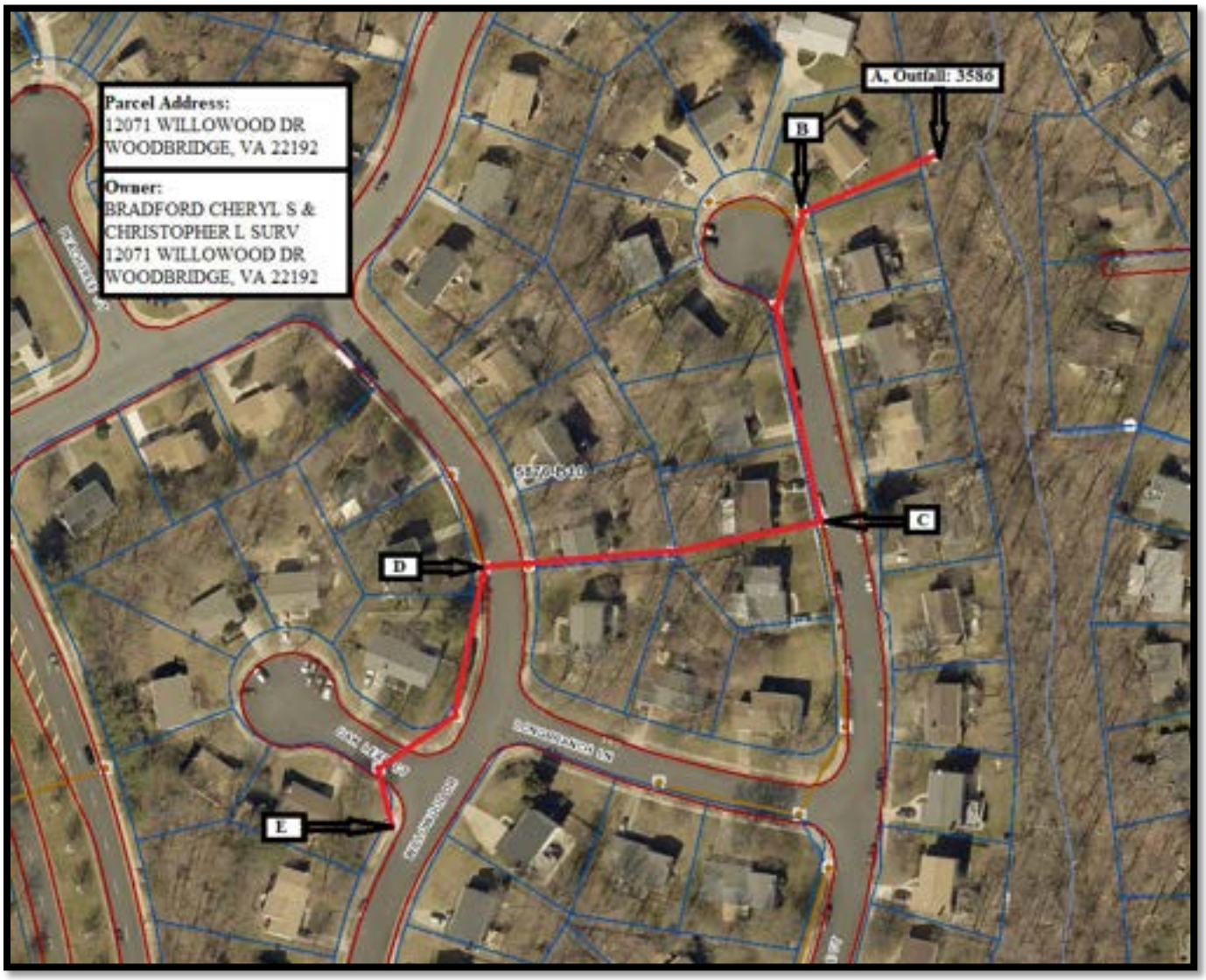
INCIDENT INFORMATION		
Incident Report # 23-2021	Date: 3/9/2021	Time: 1:30 PM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 3586	City, State: Woodbridge, VA	Zip Code: 22192
Complain or Case Received From: Routine Inspection		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 7.9 Limit: Std.		Conductivity: 510 µS/cm Limit: Std.	Temp.: 53 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatable: NA	Stains: NA	Other: NA

Map of Trackdown Path:



Responsible Party (Owner/ Institutions)	Other Party (Management Company)
Name: NA	Name: NA
Company:	Company:
Address:	Address:
Phone #:	Phone #:
Note:	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: NA	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Flow was observed through the outfall. pH and Conductivity did not exceed the standard limits. Stagnant pool was observed at outfall. Oil scene was developed on pool surface due to bacteria.

Discharge was tracked along storm sewer marked with red line in map above. Manhole B had flow from BC direction and tracking was continued along CDE. At curb and gutter at E was dry. Cross connection of sanitary sewer did not find during inspection. Discharge was gradually reducing upstream until point E.

Conclusion:

The source of discharge should be ground water seepage through joints into stormwater system.

Notifications:

Citation Code Section: NA		
Citation Narration: NA		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

INCIDENT INFORMATION		
Incident Report # 26-2021	Date: 4/20/2021	Time: 10:30 AM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 6232	City, State: Woodbridge, VA	Zip Code: 20192
Complain or Case Received From: Routine Inspection		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 7.8 Limit: Std.		Conductivity: 315 µS/cm Limit: Std.	Temp.: 56 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatable: NA	Stains: NA	Other: NA

Map of Trackdown Path:

Responsible Party (Owner/ Institutions)	Other Party (Management Company)
Name: NA	Name: NA
Company:	Company:
Address:	Address:
Phone #:	Phone #:
Note:	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: NA	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Flow was observed through the outfall. pH and Conductivity did not exceed the standard limits. Stagnant pool was observed at the outfall.

Discharge was tracked along storm sewer marked with red line in the map above. Manhole B had flow from BC direction, and continued tracking along BCDE. E is the outlet of underground storm water outlet. Source of discharge is water holding by upstream pond during rainfall.

Conclusion:
The source of discharge was confirmed outflow of upstream storm water management pond.

Notifications:

Citation Code Section: NA		
Citation Narration: NA		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

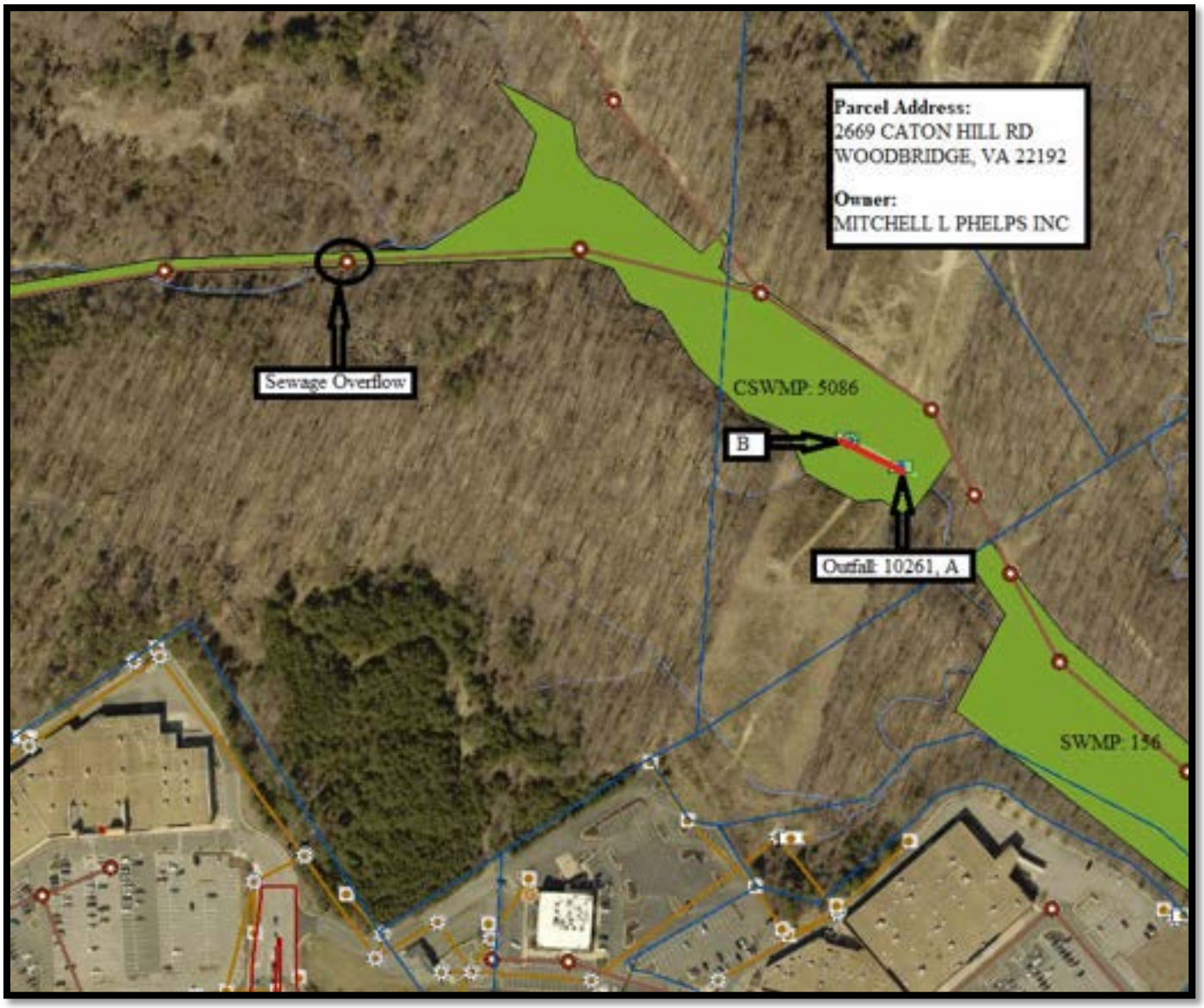
INCIDENT INFORMATION		
Incident Report # 11 -2021	Date: 9/15/2020	Time: 10.20 AM
Business: Commercial plus Forested	Report Completed By: Prem Poudel	
Outfall ID# 10261	City, State: Woodbridge, VA	Zip Code: 22192
Complain or Case Received From: Routine Inspection		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 4.2 Limit: Std.		Conductivity: 989 µS/cm Limit:Std.	Temp.: 67 °F Limit: Std.
Discharge related Indicators	Odor: Sewage	Color: Gray	Turbidity: Cloudy
	Floatables: NA	Stains: Waste	Other:

Map of Trackdown Path:



Responsible Party (Owner/ Institutions)	**Other Party (Management Company)**
Name: Mr. Glenn Pearson	Name: NA
Company: Service Authority	Company:
Address: 4 County Complex Court	Address:
Phone #:	Phone #:
Note: gpearson@pwcsa.org	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date: 09/15/2020	Date: 09/15/2020
Time: 10:57 AM	Time: 10:57 AM
Name: Mr. Steven Fontenot (Pollution Response Coordinator)	Name: Mr. Adkins, Matthew (Chief of PWC Hazmat Branch)
Company/Agency: DEQ	Company/Agency: PWC, Hazmat Team
Notes: steven.fontenot@deq.virginia.gov, Cell: (571) 287-0629 Office: (703) 583-3815	Notes: MAdkins@pwcgov.org Cell: (571) 393-8105 Office: (703) 792-7405

Comments/ Deficiencies:

Outfall is an outlet of CSWMP 5086. Discharge was observed at outfall A with sewage smell. pH and Conductivity exceeded the standard limits. The pond was receiving grey water from the creek. Discharge was tracked along the creek. At the upstream catchment, sanitary manhole was overflowing from the broken lid.

Conclusion:

The source of grey water was confirmed sewage into storm water system. The coordination was made between DEQ, PWCSA, PWC DFR(Hazmat), VDH immediately. The case was handled by PWCSA and resolved with a standard procedure without delay.

Notifications:

Citation Code Section: Chapter 23.2 STORMWATER MANAGEMENT, ARTICLE II. STORMWATER POLLUTION		
Citation Narration: Sec. 23.2-4.1, Unlawful discharge to the stormwater system and water of the county.		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:


SWMP: 156

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

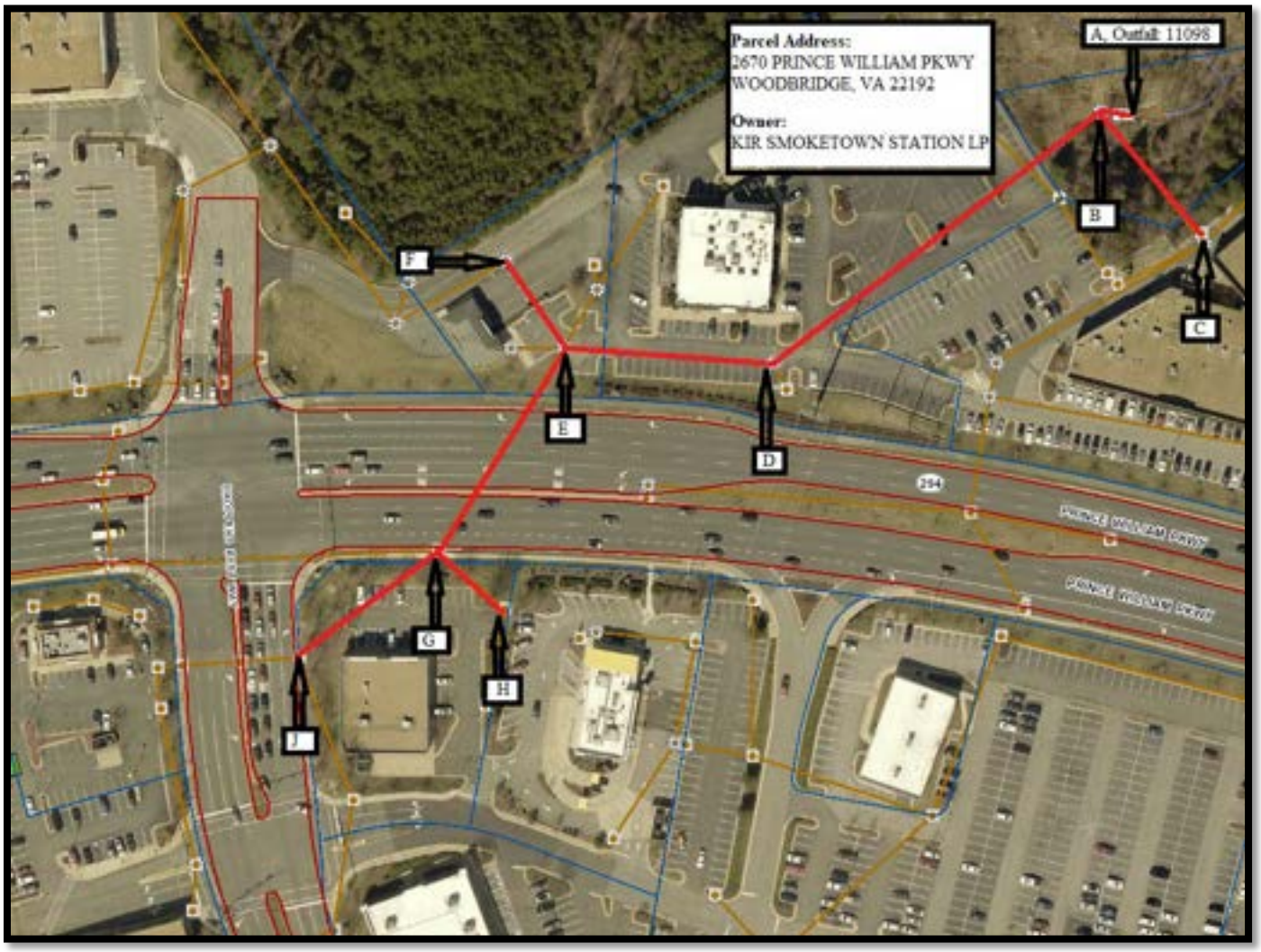
INCIDENT INFORMATION		
Incident Report # 12 -2021	Date: 9/16/2020	Time: 11:38 AM
Business: Commercial, Shopping Center	Report Completed By: Prem Poudel	
Outfall ID# 11098	City, State: Woodbridge, VA	Zip Code: 22192
Complain or Case Received From: Routine Inspection		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 6.5Limit: Std.		Conductivity: 510 µS/cm Limit: Std.	Temp.: 66 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: Orange	Turbidity: Slight Cloudiness
	Floatable: Suds	Stains: Paint	Other: NA

Map of Trackdown Path:



Responsible Party (Owner/ Institutions)	Other Party (Management Company)
Name: NA	Name: NA
Company:	Company:
Address:	Address:
Phone #:	Phone #:
Note:	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: NA	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Discharge observed with algae at outfall and downstream channel. pH and Conductivity did not exceed the standard limits. Discharge was tracked along storm sewer marked with red line. Manhole B was inaccessible due to dense vegetation. Tracking was continued to manhole C. Manhole was dry, but the curb and gutter and lid of manhole was colored with paint. Though paint was dry, somebody already spilled paint in the past. Tracking was continued at branch BD. Manhole D had a significant flow from DE branch. At E, flow was observed from EF and EG directions. Manhole F was dry. At G, trickle flow was observed from both GH an GJ branch. Manhole H and J were found dry. Flow was gradually reduced in upstream system until finding dry manhole.

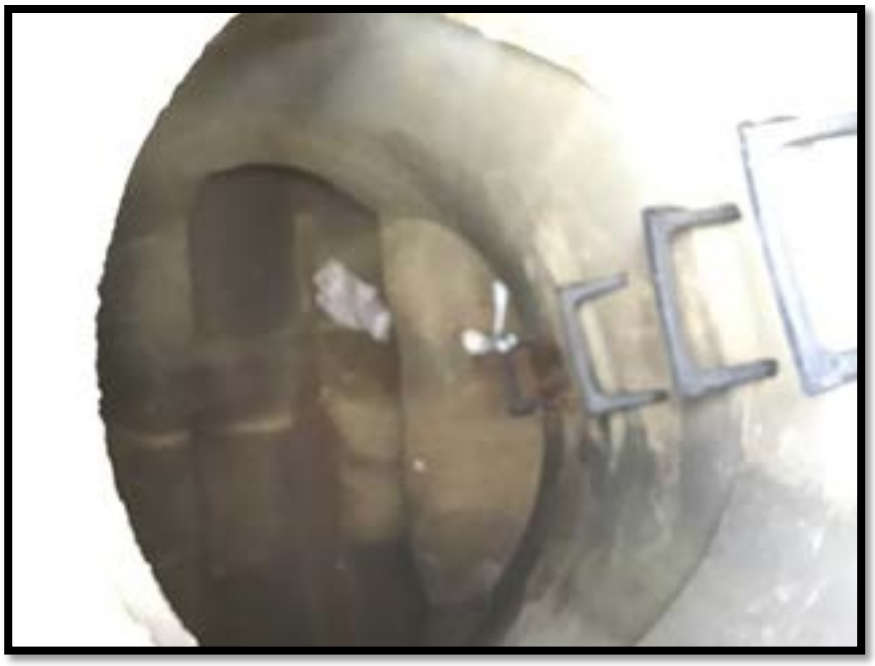
Conclusion:

The source discharge was confirmed ground water seepage into storm water system. Cross connection did not find during inspection. Formation of algae is a natural phenomenon with the ground water.

Notifications:

Citation Code Section: NA		
Citation Narration: NA		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:



SWMP: 156

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM
5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

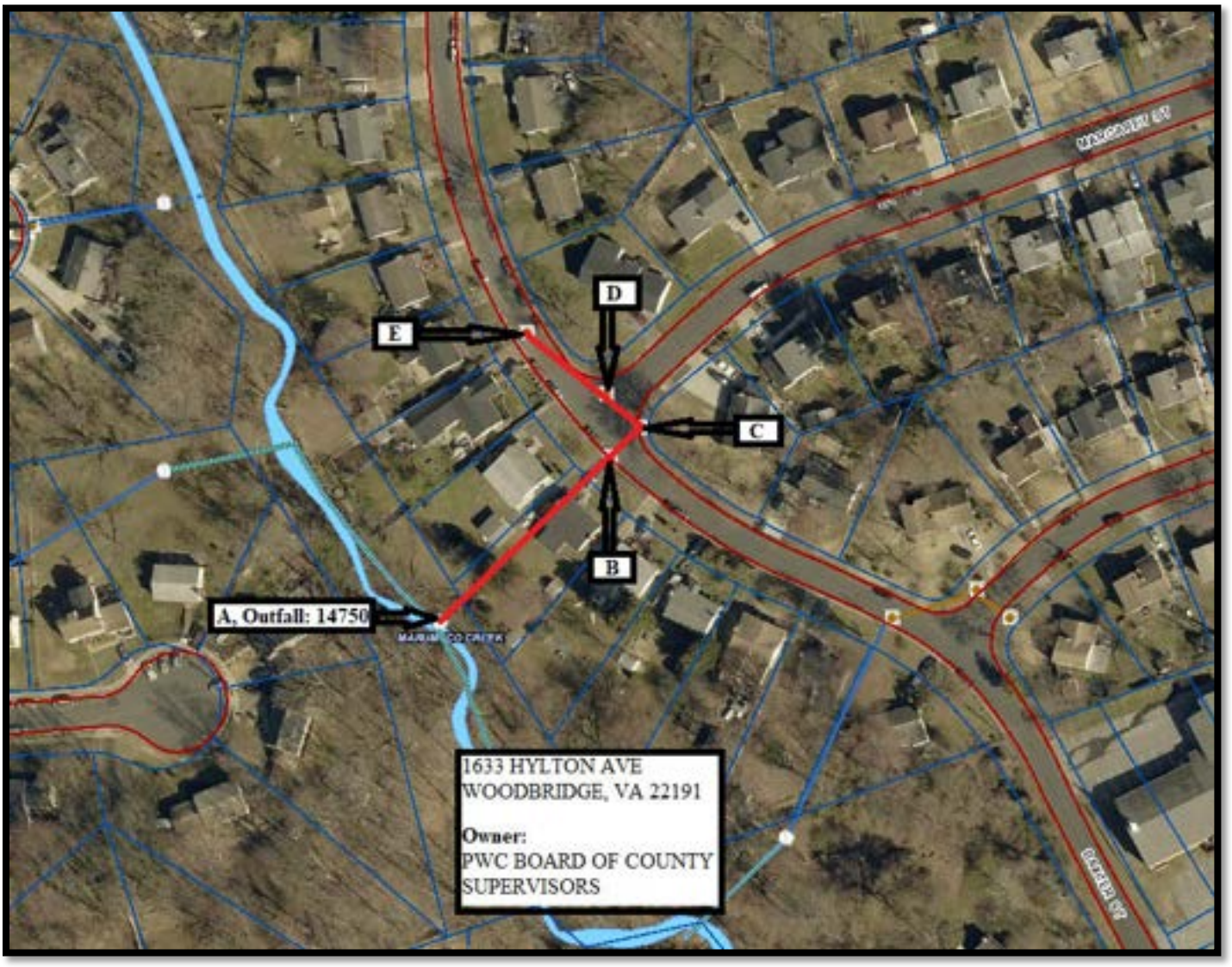
INCIDENT INFORMATION		
Incident Report # 15-2021	Date: 9/23/2020	Time: 10:40 AM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 14750	City, State: Woodbridge, VA	Zip Code: 22191
Complain or Case Received From: Routine Inspection		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 8.2 Limit: Std.		Conductivity: 570 µS/cm Limit: Std.	Temp.: 62 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatable: NA	Stains: NA	Other: Orange Algae

Map of Trackdown Path:



Responsible Party (Owner/ Institutions)	Other Party (Management Company)
Name: NA	Name: NA
Company:	Company:
Address:	Address:
Phone #:	Phone #:
Note:	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: NA	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Flow was observed with algae through the outfall. pH and Conductivity did not exceed the standard limits. Discharge was tracked along storm sewer marked with red line in map above. Manhole B was receiving discharge from BC. Tracking was continued until point D. Manhole D was found dry. Cross connection of sanitary sewer did not find during inspection.

Conclusion:

The source of discharge was confirmed surface water. Formation of algae is a natural phenomenon in ground water.

Notifications:

Citation Code Section: NA		
Citation Narration: NA		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:

Outfall

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM
5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

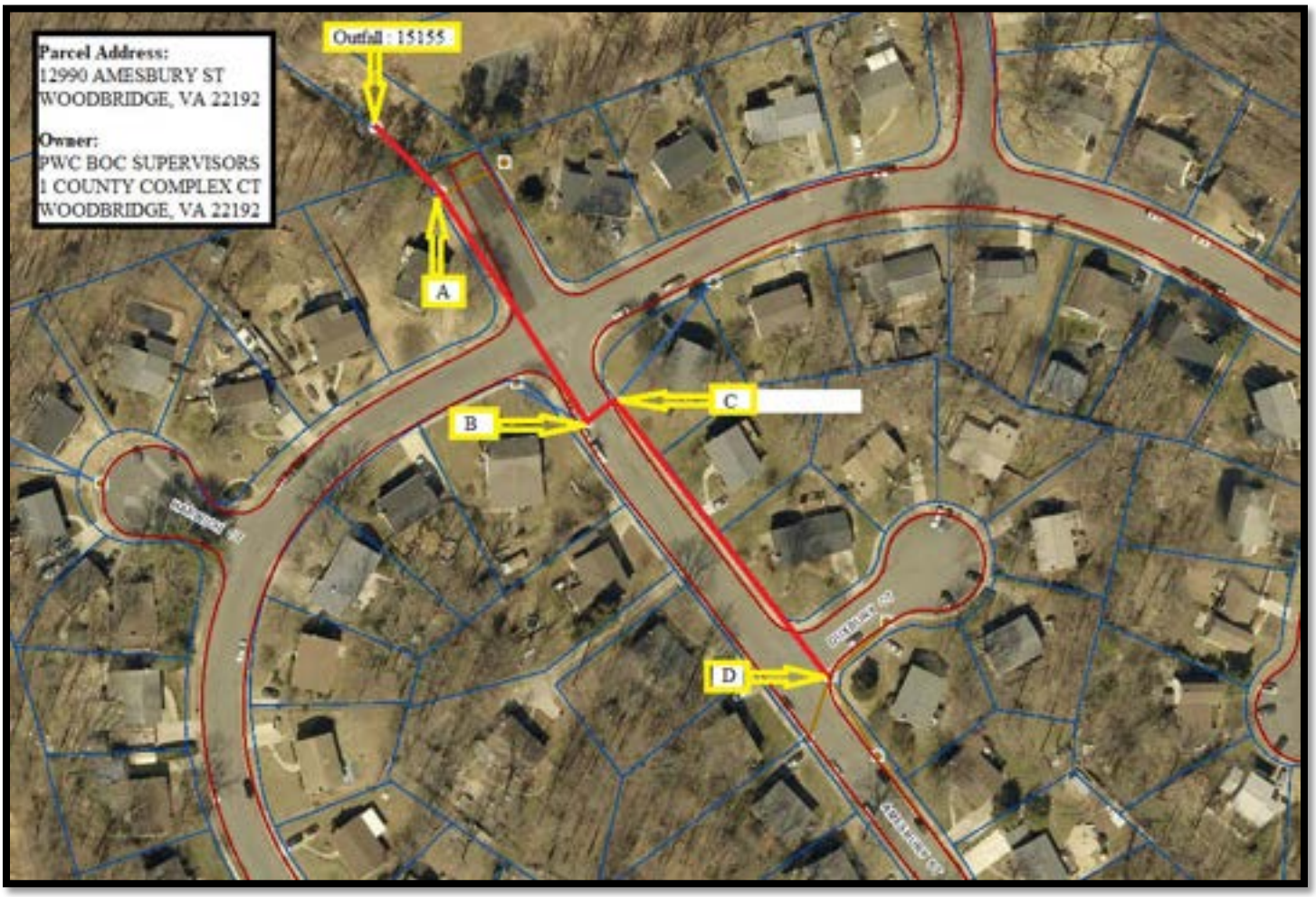
INCIDENT INFORMATION		
Incident Report #: 1 -2021	Date: 7/16/2020	Time: 11:00 AM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 15155/ Address: 12990 Amesbury St.	City, State: Woodbridge, VA	Zip Code: 22192
Complain or Case Received From: Routine Inspection.		

Photo of discharge:

Onsite Water Quality Test performed: NA If yes, observed results:

pH: NA Limit: NA		Conductivity: NA µS/cm Limit: NA	Temp.: 0 °F Limit: NA
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatables: NA	Stains: NA	Other: NA

Map of Trackdown Path:



Responsible Party (Owner/ Institutions)	Other Party (Management Company)
Name: NA	Name: NA
Company: PWC BOC Supervisor	Company:
Address: 1 County Complex Court	Address:
Phone #: NA	Phone #:
Note: NA	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: TBD	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Access could not get to inspect outfall due to overgrown vegetation. Inspection was made at upstream Manhole A. Sample could not grab due to very trickle flow. Orange algae was being developed at the beneath of Manhole. Discharge was tracked along sewer line ABCD. Volume of discharge was gradually reducing in upstream line and Manhole D was discovered completely dry. Cross connection with stormwater system did not find.

Conclusion:

The source of discharge was confirmed ground water seepage into stormwater system. Ground water is a non-illicit discharge. Follow up inspection will be done in following years.

Notifications:

Citation Code Section:		
Citation Narration:		
NOV Issued: N/Y	NOV #: NA	EnerGov Case # : NA

Photos:

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM
5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

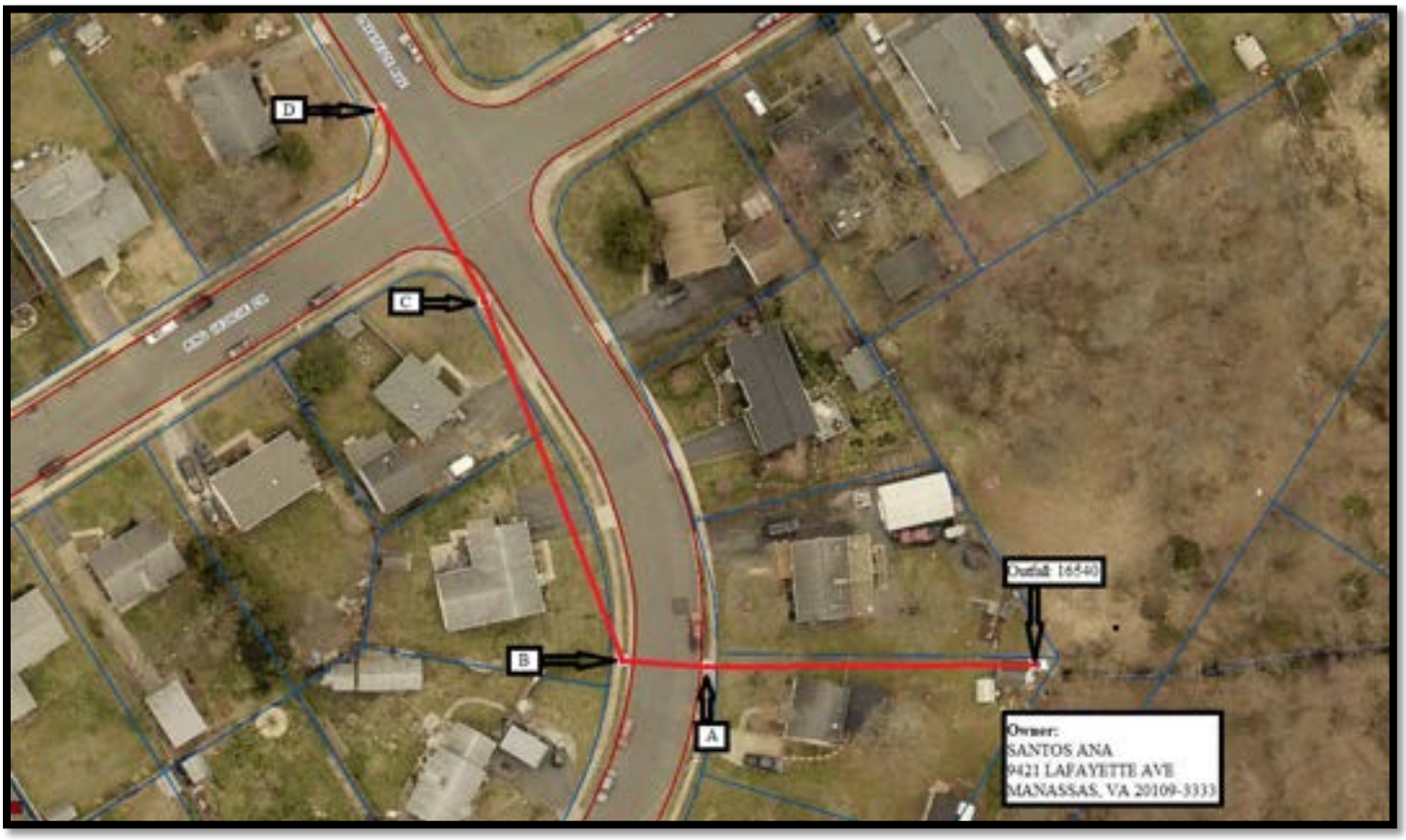
INCIDENT INFORMATION		
Incident Report #: 2 -2021	Date: 7/30/2020	Time: 1:00 PM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 16540/ Address: 9421 Lafayette Ave	City, State: Manassas, VA	Zip Code: 20109
Complain or Case Received From: Routine Inspection.		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 7.7 Limit: Std.		Conductivity: 310 µS/cm Limit: Std.	Temp.: 67 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatables: NA	Stains: NA	Other: NA

Map of Trackdown Path:



Responsible Party (Owner/ Institutions)	**Other Party (Management Company)**
Name: Santos Ana	Name: NA
Company: NA	Company:
Address: 9421 Lafayette Ave	Address:
Phone #: NA	Phone #:
Note: NA	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: TBD	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Upon arrival, very transparent stagnant pool was observed at outfall. Sample was taken very close to outfall and tested for pH and conductivity. Both parameters did not exceed the standard limits. Discharge was tracked along sewer line ABCD. Discharge was stagnant at Manhole A as well. Volume of discharge was gradually reducing in upstream line and Manhole D was discovered moist only. Cross connection with stormwater system did not find.

Conclusion:

The source of discharge was discovered ground water seepage into stormwater system. Ground water is a non-illicit discharge. Follow up inspection will be done in following years.

Notifications:

Citation Code Section:		
Citation Narration:		
NOV Issued: N/Y	NOV #: NA	EnerGov Case # : NA

Photos:

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM
5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

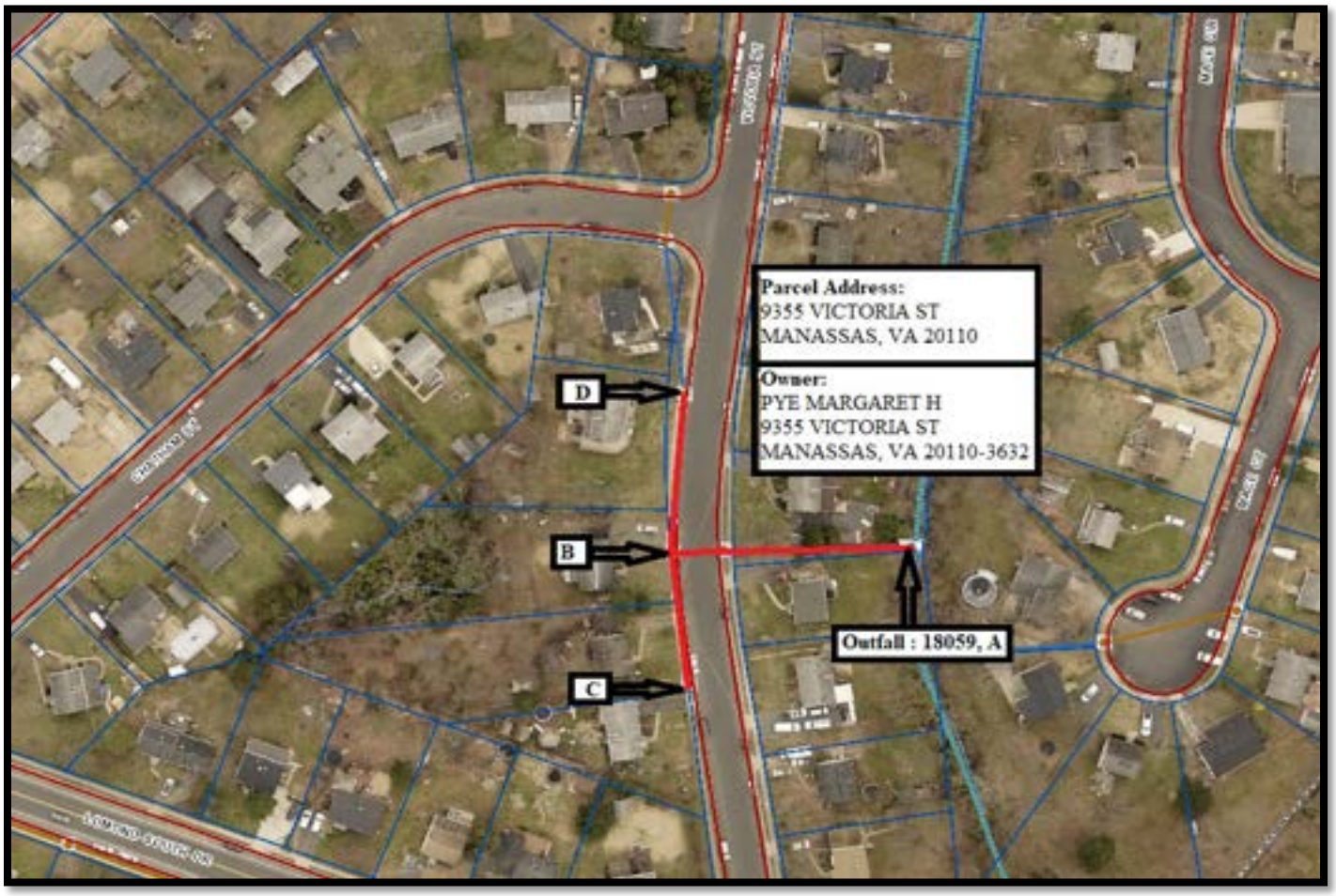
INCIDENT INFORMATION		
Incident Report #: 4 -2021	Date: 8/11/2020	Time: 10:45 AM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 18059/ Address: 9355 Victoria Street	City, State: Manassas, VA	Zip Code: 20110
Complain or Case Received From: Routine Inspection.		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 7.2 Limit: Std.		Conductivity: 219 µS/cm Limit: Std.	Temp.: 65 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatables: NA	Stains: NA	Other: NA

Map of Trackdown Path:



Responsible Party (Owner/ Institutions)	**Other Party (Management Company)**
Name: Margaret Pye	Name: NA
Company: NA	Company:
Address: 9355 Victoria Street	Address:
Phone #: NA	Phone #:
Note: NA	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: TBD	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Upon arrival, discharge was found through outfall. The outfall was slightly hanging on stream. Sample was tested for pH and conductivity. Both parameters did not exceed the standard limits. Discharge was tracked along sewer line ABC and BD respectively. The cover of Manhole B was attached with frame and could not open. Tracking performed in BC and BD respectively and both Manholes C and D were found dry. Cross connection with stormwater system did not find. Discharge confirmed ground water seepage into storm sewer system.

Conclusion:

The source of discharge was confirmed ground water seepage into stormwater system. Ground water is a non-illicit discharge. Follow up inspection will be done in following years.

Notifications:

Citation Code Section:		
Citation Narration:		
NOV Issued: N/Y	NOV #: NA	EnerGov Case # : NA

Photos:

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM
5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

INCIDENT INFORMATION		
Incident Report #: 3 -2021	Date: 8/11/2020	Time: 10:30 AM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 18080/ Address: 8026 Lomond S Dr	City, State: Manassas, VA	Zip Code: 20110
Complain or Case Received From: Routine Inspection.		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 7.7 Limit: Std.		Conductivity: 402 µS/cm Limit: Std.	Temp.: 64 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatables: NA	Stains: NA	Other: NA

Map of Trackdown Path:

Responsible Party (Owner/ Institutions)	Other Party (Management Company)
Name: Robert Douglas	Name: NA
Company: NA	Company:
Address: 8026 Lomond S Dr	Address:
Phone #: NA	Phone #:
Note: NA	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: TBD	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Upon arrival, very transparent stagnant pool was observed at outfall. The outfall lies in City of Manassas. Sample was taken very close to outfall and tested for pH and conductivity. Both parameters did not exceed the standard limits. Discharge was tracked along sewer line ABCEF and CD respectively. Volume of discharge was gradually reducing in upstream line and Manholes F and D were discovered moist only. Cross connection with stormwater system did not find.

Conclusion:

The source of discharge was confirmed ground water seepage into stormwater system. Ground water is a non-illicit discharge. Follow up inspection will be done in following years.

Notifications:

Citation Code Section:		
Citation Narration:		
NOV Issued: N/Y	NOV #: NA	EnerGov Case # : NA

Photos:

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM
5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

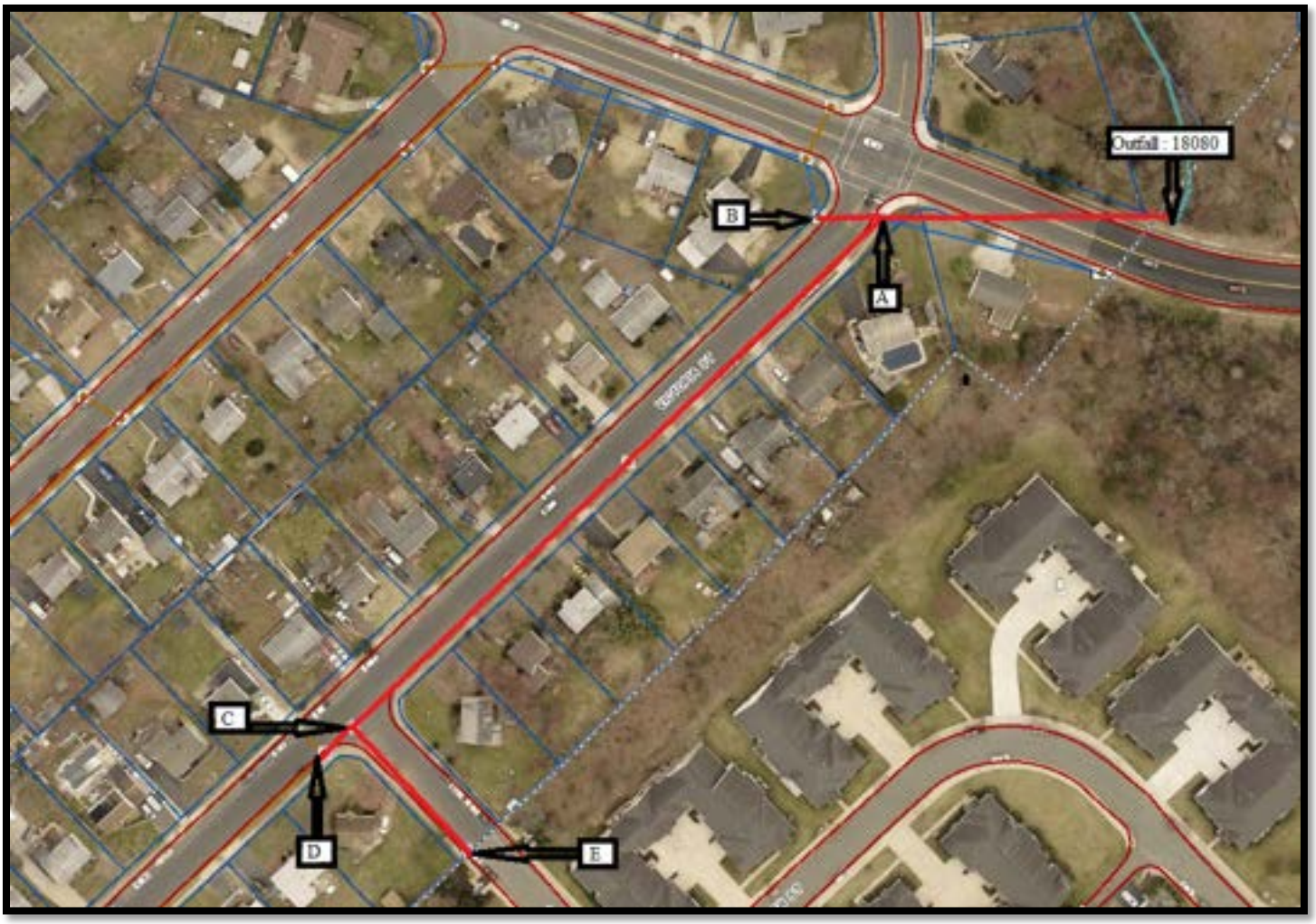
INCIDENT INFORMATION		
Incident Report #: 6 -2021	Date: 8/12/2021	Time: 11.00 AM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 18080	City, State: Manassas	Zip Code: 20109
Complain or Case Received From:		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 7.7 Limit: Std.		Conductivity: 402 µS/cm Limit:Std.	Temp.: 64 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatables: NA	Stains: NA	Other: NA

Map of Trackdown Path:



Responsible Party (Owner/ Institutions)	**Other Party (Management Company)**
Name: NA	Name: NA
Company:	Company:
Address:	Address:
Phone #:	Phone #:
Note:	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: TBD	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Discharge was tracked along red line sewer. Manhole A has flow from AB and AC direction. Manhole B was in dry condition. Manhole C could not open since the lead has stuck with the frame. Manhole D and E were found dry. Volume of flow was gradually reducing until getting dry manhole. The source could be ground water seepage into storm water system. There were no additional signs of illicit discharge at outfall and channel.

Conclusion:
The source of discharge confirmed ground water seepage.

Notifications:

Citation Code Section: NA		
Citation Narration: NA		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM
5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

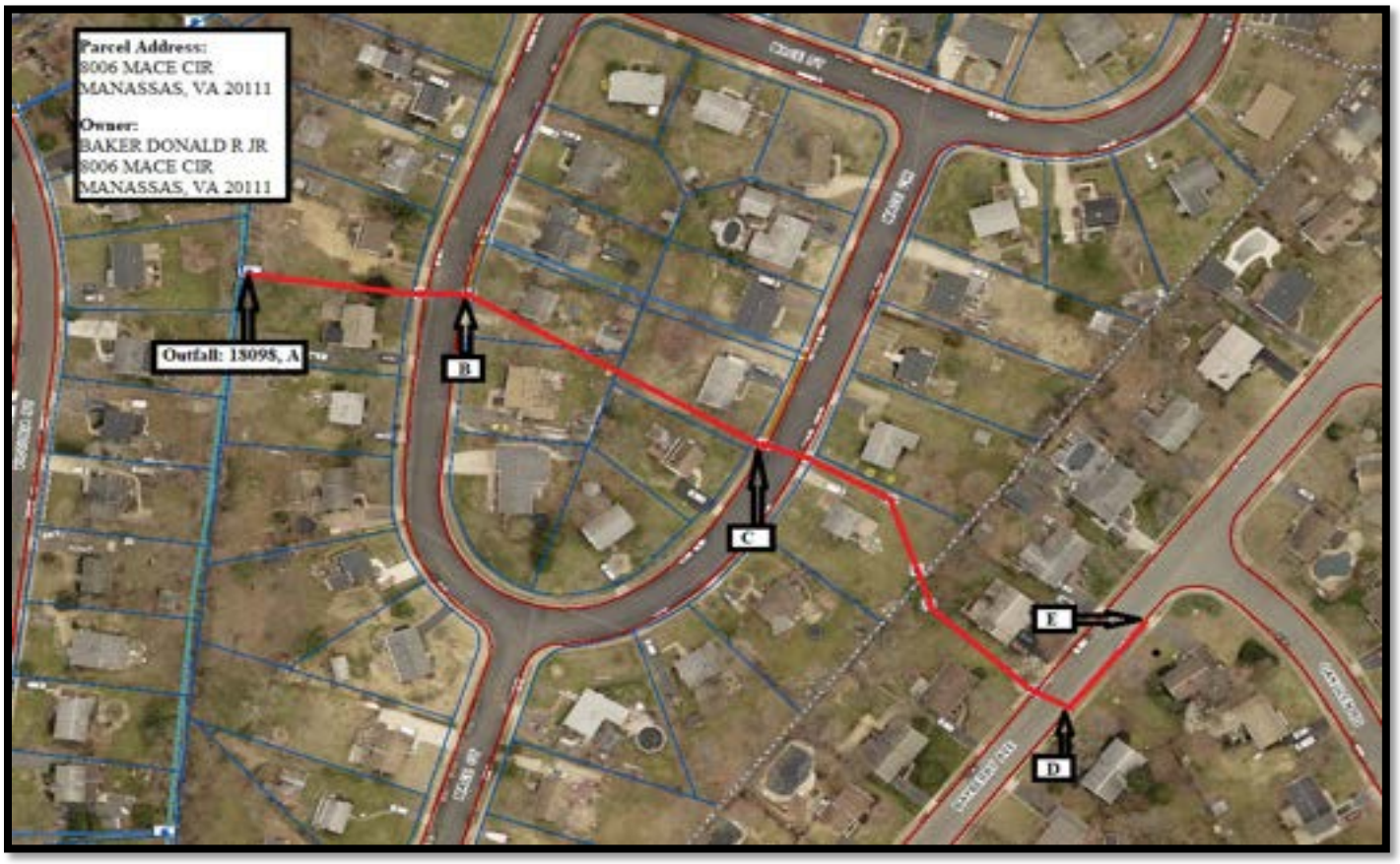
INCIDENT INFORMATION		
Incident Report #: 5 -2021	Date: 8/11/2020	Time: 11:45 AM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 18098/ Address: 8006 Mace Circle	City, State: Manassas, VA	Zip Code: 20111
Complain or Case Received From: Routine Inspection.		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 8.2 Limit: Std.		Conductivity: 415 µS/cm Limit: Std.	Temp.: 64 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatables: NA	Stains: NA	Other: NA

Map of Trackdown Path:



Responsible Party (Owner/ Institutions)	Other Party (Management Company)
Name: Donald Baker	Name: NA
Company: NA	Company:
Address: 8006 Mace Circle	Address:
Phone #: NA	Phone #:
Note: NA	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: TBD	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Upon arrival, discharge was found through outfall. Sample was tested for pH and conductivity. Both parameters did not exceed the standard limits. Discharge was tracked along sewer line ABCDE. There was a trickle flow at manhole E. Point E lies in City of Manassas so further tracking was disregarded. It was reported that ATV was washed on street nearby storm water inlet and mud was discharged into storm water system. The complaint found to be real and Mr. Donald Baker had accepted by ATV washing and discharging mud into system. He was educated that any activities causing pollution or impeding flow into stormwater system or water of the County is a violation. Mr. Baker promised to clean mud and debris from curb and gutter inlet and street as well. Cross connection with stormwater system did not find. Discharge confirmed ground water seepage into storm sewer system from neighboring jurisdiction.

Conclusion:

The source of discharge was located at the City of Manassas and seemed like ground water; further tracking was stopped. Ground water is a non-illicit discharge. Follow up inspection will be done in following years.

Notifications:

Citation Code Section:		
Citation Narration:		
NOV Issued: N/Y	NOV #: NA	EnerGov Case # : NA

Photos:

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM
5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

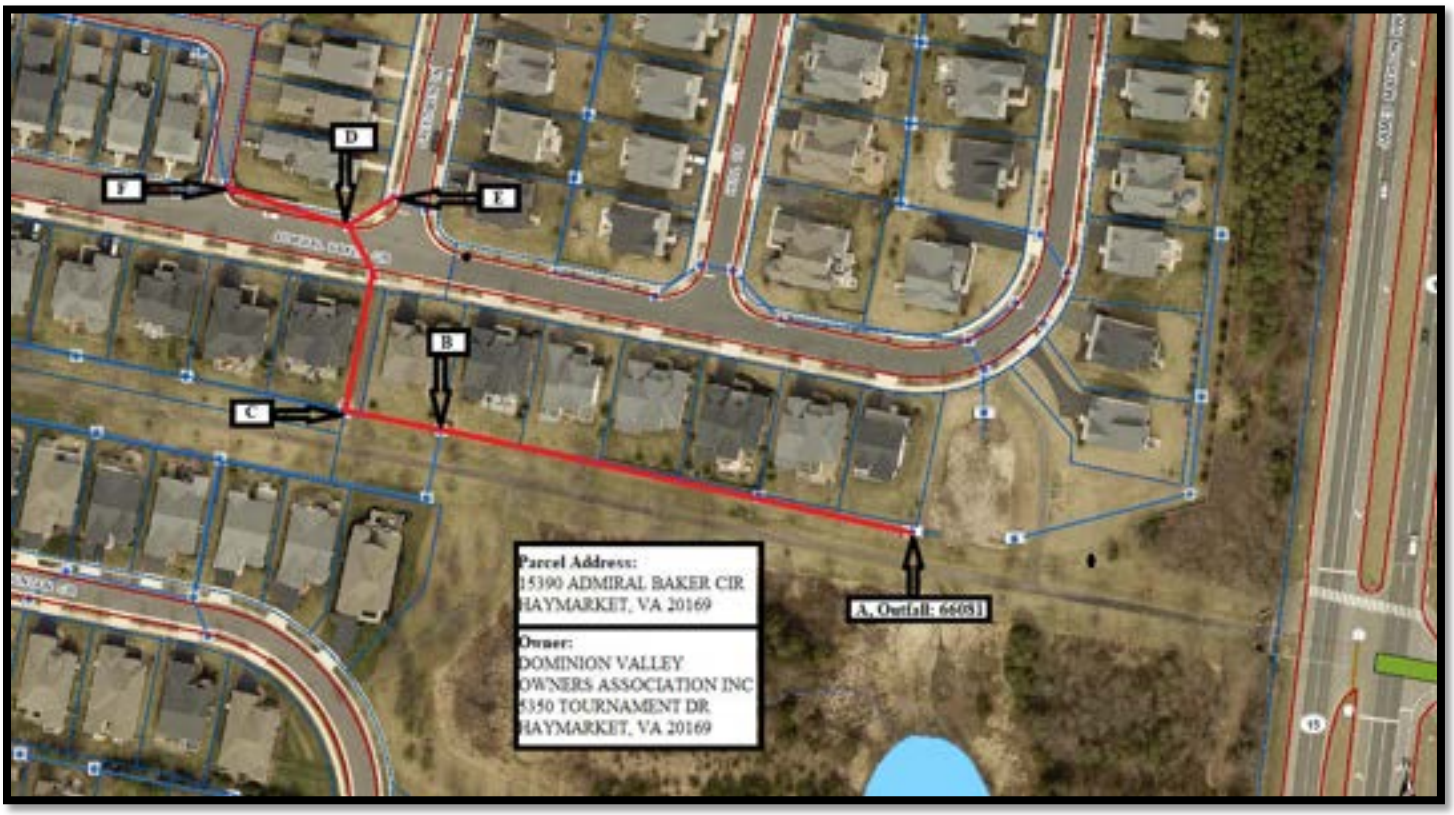
INCIDENT INFORMATION		
Incident Report #: 7 -2021	Date: 8/18/2020	Time: 10.00 AM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 66081	City, State: Haymarket	Zip Code: 20169
Complain or Case Received From:		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 7.7 Limit: Std.		Conductivity: 561 µS/cm Limit:Std.	Temp.: 64 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatables: NA	Stains: NA	Other: NA

Map of Trackdown Path:



Responsible Party (Owner/ Institutions)	**Other Party (Management Company)**
Name: NA	Name: NA
Company:	Company:
Address:	Address:
Phone #:	Phone #:
Note:	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: TBD	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Discharge was observed at outfall A. Discharge was tracked along red sewer line. Manhole B had flow from BC direction only. Manhole C had flow from CD direction. Manhole D had flow from both DE and DF directions, but manholes E and F were discovered dry. Volume of flow was gradually reducing until getting dry manhole. The source could be ground water seepage into storm water system. There were no additional signs of illicit discharge at outfall and channel.

Conclusion:

The source of discharge confirmed ground water seepage.

Notifications:

Citation Code Section: NA		
Citation Narration: NA		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

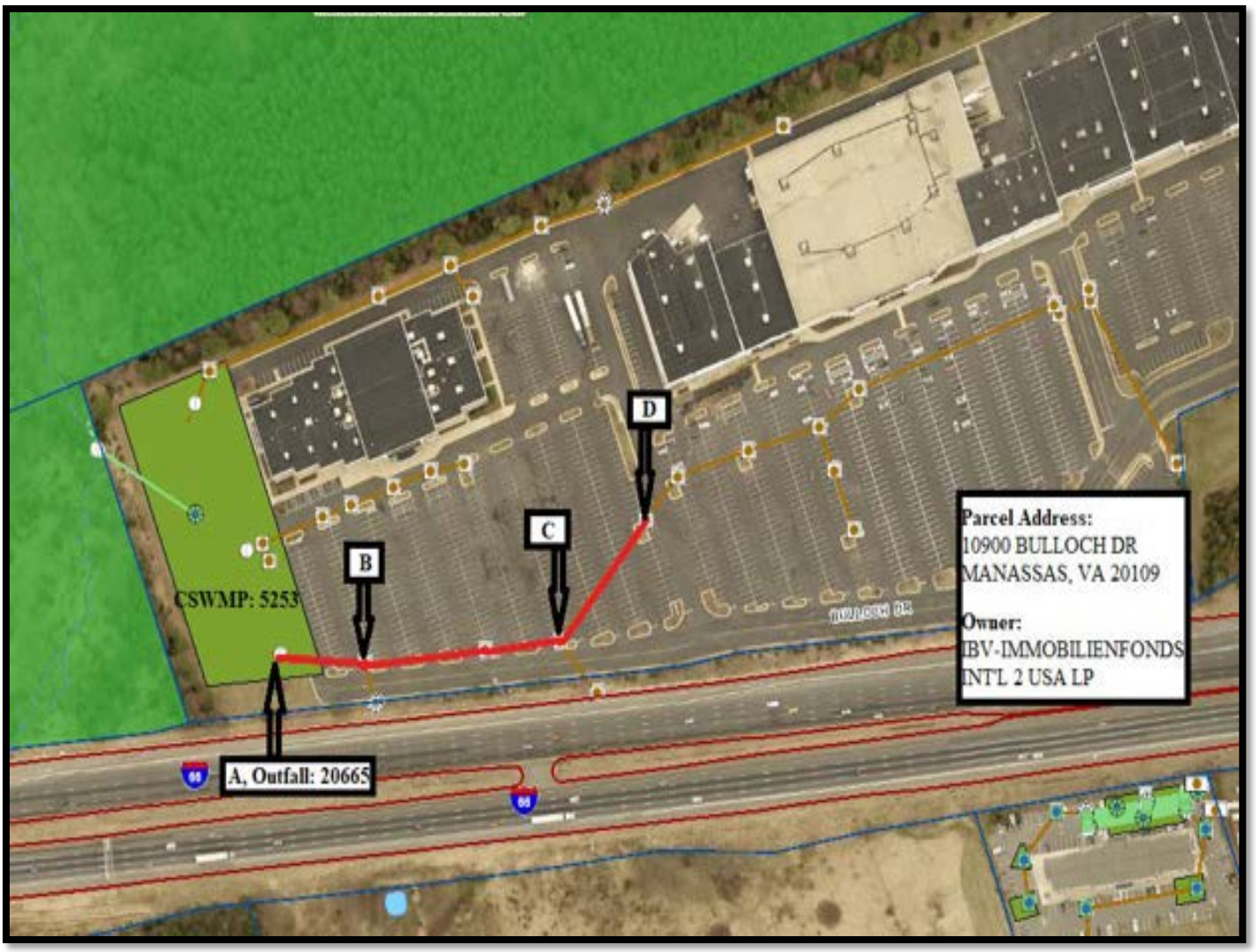
INCIDENT INFORMATION		
Incident Report # 16-2021	Date: 9/28/2020	Time: 10:40 AM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 20665	City, State: Manassas, VA	Zip Code: 20109
Complain or Case Received From: Routine Inspection		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 7.10 Limit: Std.		Conductivity: 319 µS/cm Limit: Std.	Temp.: 65 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatable: NA	Stains: NA	Other: Green Algae

Map of Trackdown Path:



Responsible Party (Owner/ Institutions)	Other Party (Management Company)
Name: NA	Name: NA
Company:	Company:
Address:	Address:
Phone #:	Phone #:
Note:	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: NA	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Flow was observed with algae through the outfall. pH and Conductivity did not exceed the standard limits. Discharge was tracked along storm sewer marked with red line in map above. Manhole B was receiving discharge from BC. Tracking was continued until point D. Manhole D was found dry. Cross connection of sanitary sewer did not find during inspection.

Conclusion:

The source of discharge was confirmed ground water seepage. Formation of algae is a natural phenomenon in ground water.

Notifications:

Citation Code Section: NA		
Citation Narration: NA		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:

Outfall

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM
5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

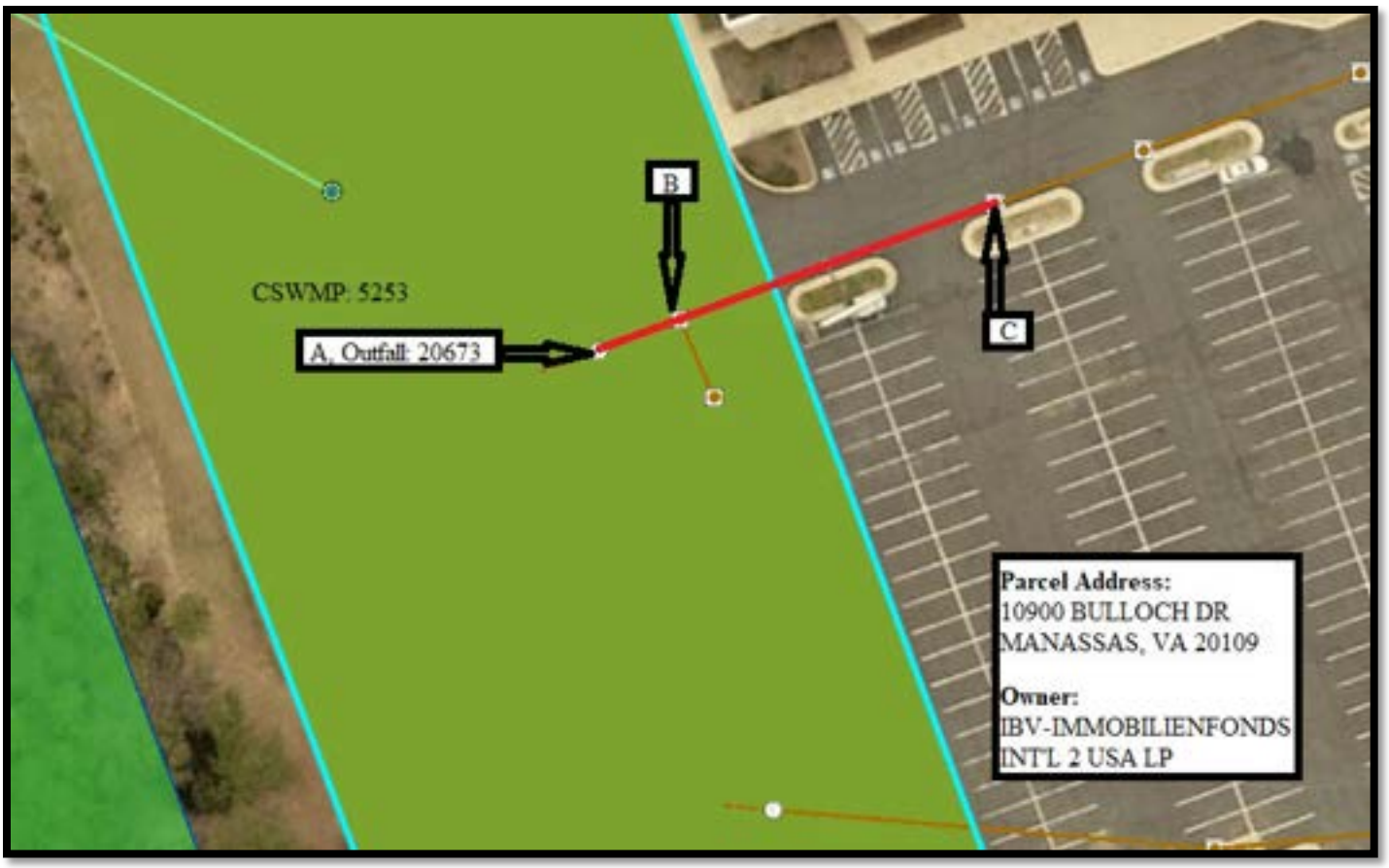
INCIDENT INFORMATION		
Incident Report # 17-2021	Date: 9/28/2020	Time: 11:20 AM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 20673	City, State: Manassas, VA	Zip Code: 20109
Complain or Case Received From: Routine Inspection		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 7.8 Limit: Std.		Conductivity: 631 µS/cm Limit: Std.	Temp.: 68 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatable: NA	Stains: NA	Other: Green Algae

Map of Trackdown Path:



Responsible Party (Owner/ Institutions)	**Other Party (Management Company)**
Name: NA	Name: NA
Company:	Company:
Address:	Address:
Phone #:	Phone #:
Note:	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: NA	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Flow was observed with algae through the outfall. pH and Conductivity did not exceed the standard limits. Discharge was tracked along storm sewer marked with red line in map above. Manhole B was receiving discharge from BC. Tracking was continued until point C. Manhole C was found dry. Cross connection of sanitary sewer did not find during inspection.

Conclusion:
The source of discharge was confirmed ground water seepage. Formation of algae is a natural phenomenon in ground water.

Notifications:

Citation Code Section: NA		
Citation Narration: NA		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:

Outfall

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM
5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

INCIDENT INFORMATION		
Incident Report # 25-2021	Date: 3/17/2021	Time: 10:30 AM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 22153	City, State: Gainesville, VA	Zip Code: 20155
Complain or Case Received From: Routine Inspection		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 7.7 Limit: Std.		Conductivity: 318 µS/cm Limit: Std.	Temp.: 47 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatable: NA	Stains: NA	Other: NA

Map of Trackdown Path:

Responsible Party (Owner/ Institutions)	Other Party (Management Company)
Name: NA	Name: NA
Company:	Company:
Address:	Address:
Phone #:	Phone #:
Note:	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: NA	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Flow was observed through the outfall. pH and Conductivity did not exceed the standard limits. Stagnant pool with orange algae was observed at the outfall.

Discharge was tracked along storm sewer marked with red line in the map above. Manhole B had flow from BC direction, and continued tracking along BC. Manhole C was found dry.

Conclusion:
The source of discharge was confirmed ground water seepage into storm water system from Golf-Course.

Notifications:

Citation Code Section: NA		
Citation Narration: NA		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM
5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

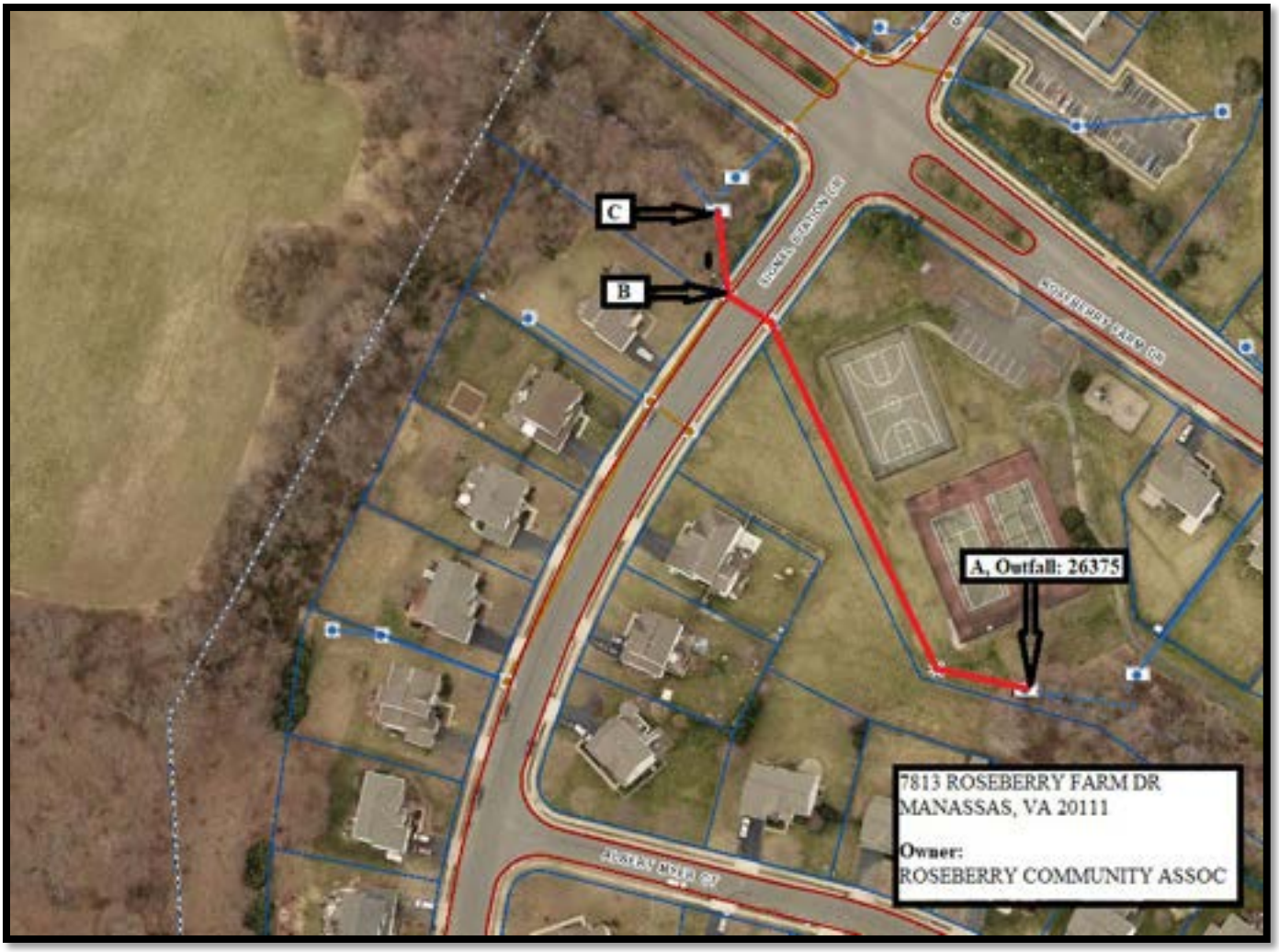
INCIDENT INFORMATION		
Incident Report # 14 -2021	Date: 9/21/2020	Time: 10:40 AM
Business: Residential Plus Open Space	Report Completed By: Prem Poudel	
Outfall ID# 26375	City, State: Manassas, VA	Zip Code: 20111
Complain or Case Received From: Routine Inspection		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 7.4 Limit: Std.		Conductivity: 309 µS/cm Limit: Std.	Temp.: 64 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatable: NA	Stains: NA	Other: NA

Map of Trackdown Path:



Responsible Party (Owner/ Institutions)	**Other Party (Management Company)**
Name: NA	Name: NA
Company:	Company:
Address:	Address:
Phone #:	Phone #:
Note:	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: NA	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Flow was observed through outfall. pH and Conductivity did not exceed the standard limits. Discharge was tracked along storm sewer marked with red line in map above. Manhole B was receiving discharge from BC. C is an inlet receiving discharge from open channel. Cross connection of sanitary sewer did not find during inspection.

Conclusion:

The source of discharge was confirmed surface water.

Notifications:

Citation Code Section: NA		
Citation Narration: NA		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:

Outfall

Upstream Inflow

Upstream Channel

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

INCIDENT INFORMATION		
Incident Report # 13 -2021	Date: 9/16/2020	Time: 1:38 PM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 28442	City, State: Woodbridge, VA	Zip Code: 22193
Complain or Case Received From: Routine Inspection		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 7.0 Limit: Std.		Conductivity: 219 µS/cm Limit: Std.	Temp.: 70 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatable: NA	Stains: NA	Other: NA

Map of Trackdown Path:

Responsible Party (Owner/ Institutions)	**Other Party (Management Company)**
Name: NA	Name: NA
Company:	Company:
Address:	Address:
Phone #:	Phone #:
Note:	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: NA	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Trickle flow was observed through outfall. pH and Conductivity did not exceed the standard limits. Discharge was tracked along storm sewer marked with red line. Manhole B was receiving discharge from BC and BD directions. Both manhole C and D were found completely dry. Cross connection of sanitary sewer did not find during inspection.

Conclusion:
The source discharge was confirmed ground water seepage into storm water system.

Notifications:

Citation Code Section: NA		
Citation Narration: NA		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM
5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

INCIDENT INFORMATION		
Incident Report # 10 -2021	Date: 8/24/2020	Time: 11.10 AM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 28455	City, State: Woodbridge, VA	Zip Code: 22193
Complain or Case Received From: Routine Inspection		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 7.5 Limit: Std.		Conductivity: 319 µS/cm Limit:Std.	Temp.: 68 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatables: NA	Stains: NA	Other: Algae Bloom

Map of Trackdown Path:

Responsible Party (Owner/ Institutions)	Other Party (Management Company)
Name: NA	Name: NA
Company:	Company:
Address:	Address:
Phone #:	Phone #:
Note:	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: TBD	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Discharge was observed at outfall A. Orange algae was observed at outfall and downstream channel. pH and Conductivity did not exceed the limit. Discharge was tracked along red sewer line. Manhole B had flow from BC direction only. Manhole C had flow from CD direction. Drop inlet D was dry and located in forested areas for receiving runoff during rainfall. Volume of flow was gradually reducing until getting dry drop inlet D. The source could be ground water seepage into storm water system.

Conclusion:

The source of discharge confirmed ground water seepage. Source of algae bloom is ground water.

Notifications:

Citation Code Section: NA		
Citation Narration: NA		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

INCIDENT INFORMATION		
Incident Report # 24-2021	Date: 3/17/2021	Time: 11:30 AM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 39618	City, State: Gainesville, VA	Zip Code: 20155
Complain or Case Received From: Routine Inspection		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 8.4 Limit: Std.		Conductivity: 310 µS/cm Limit: Std.	Temp.: 48 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatable: NA	Stains: NA	Other: NA

Map of Trackdown Path:

Responsible Party (Owner/ Institutions)	**Other Party (Management Company)**
Name: NA	Name: NA
Company:	Company:
Address:	Address:
Phone #:	Phone #:
Note:	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: NA	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Flow was observed through the outfall. pH and Conductivity did not exceed the standard limits. Stagnant pool was observed with green algae at the outfall.

Discharge was tracked along storm sewer marked with red line in the map above. Manhole B had flow from BC direction and tracking was continued along BCD. D is the inlet receiving discharge from open channel. Cross connection of sanitary sewer did not find during inspection.

Conclusion:

The source of discharge was discovered upstream inflow through inlet.

Notifications:

Citation Code Section: NA		
Citation Narration: NA		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

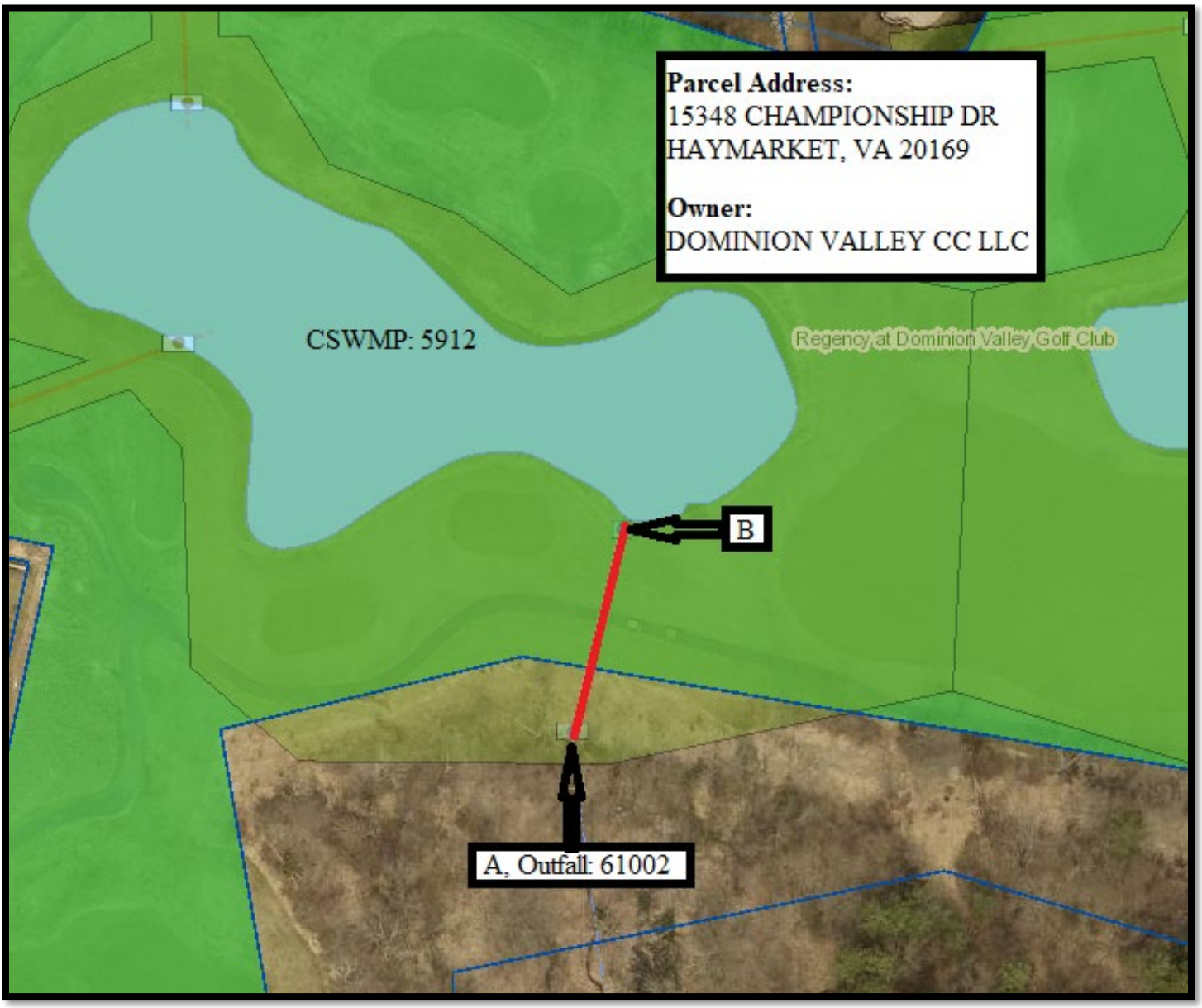
INCIDENT INFORMATION		
Incident Report #: 8 -2021	Date: 8/18/2020	Time: 11.00 AM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 61002	City, State: Haymarket	Zip Code: 20169
Complain or Case Received From:		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 7.2 Limit: Std.		Conductivity: 487 µS/cm Limit:Std.	Temp.: 67 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatables: NA	Stains: NA	Other: NA

Map of Trackdown Path:



Responsible Party (Owner/ Institutions)	Other Party (Management Company)
Name: NA	Name: NA
Company:	Company:
Address:	Address:
Phone #:	Phone #:
Note:	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: TBD	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:
Discharge was observed at outfall A. Discharge was tracked and the outflow of CSWMP 5912 is discovered the source. The pond is located at the middle of community and surrounded with gulf course.
Conclusion: The source of discharge confirmed surface water.

Notifications:

Citation Code Section: NA		
Citation Narration: NA		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:

PRINCE WILLIAM COUNTY DEPARTMENT OF PUBLIC WORKS
WATERSHED BRANCH
ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

5 COUNTY COMPLEX COURT, SUITE 170
PRINCE WILLIAM, VA 22192-5308
OFFICE: 703-792-7070 FAX: 703-792-6297

INCIDENT/TRACKDOWN REPORT- Dry Weather Monitoring

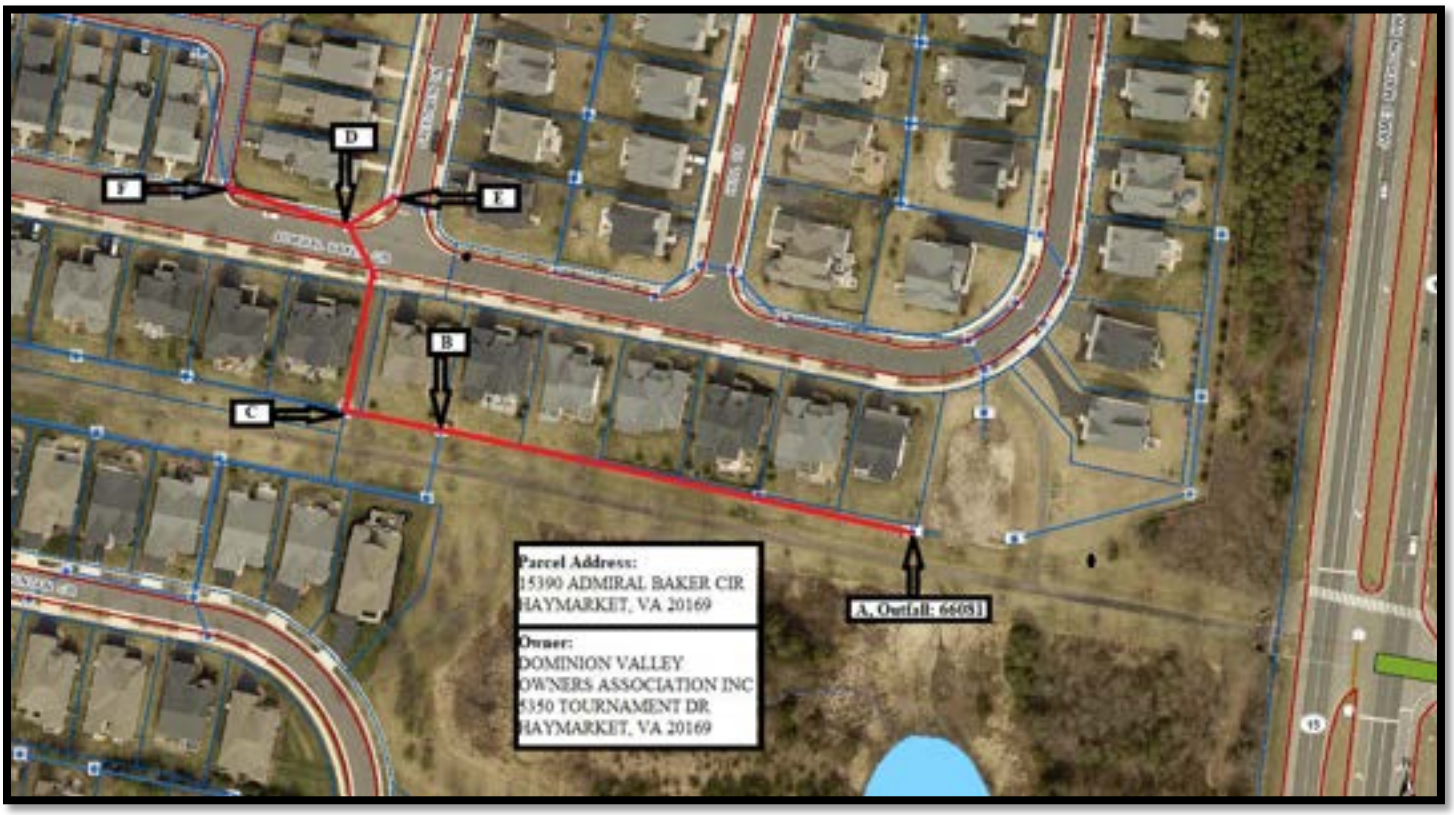
INCIDENT INFORMATION		
Incident Report #: 7 -2021	Date: 8/18/2020	Time: 10.00 AM
Business: Residential	Report Completed By: Prem Poudel	
Outfall ID# 66081	City, State: Haymarket	Zip Code: 20169
Complain or Case Received From:		

Photo of discharge:

Onsite Water Quality Test performed: Yes If yes, observed results:

pH: 7.7 Limit: Std.		Conductivity: 561 µS/cm Limit:Std.	Temp.: 64 °F Limit: Std.
Discharge related Indicators	Odor: NA	Color: NA	Turbidity: NA
	Floatables: NA	Stains: NA	Other: NA

Map of Trackdown Path:



Responsible Party (Owner/ Institutions)	**Other Party (Management Company)**
Name: NA	Name: NA
Company:	Company:
Address:	Address:
Phone #:	Phone #:
Note:	Note:
Notification/Contact (Other agencies contacted (DEQ, NS, FMO?) NA	
Date:	Date:
Time:	Time:
Name: TBD	Name:
Company/Agency:	Company/Agency:
Notes:	Notes:

Comments/ Deficiencies:

Discharge was observed at outfall A. Discharge was tracked along red sewer line. Manhole B had flow from BC direction only. Manhole C had flow from CD direction. Manhole D had flow from both DE and DF directions, but manholes E and F were discovered dry. Volume of flow was gradually reducing until getting dry manhole. The source could be ground water seepage into storm water system. There were no additional signs of illicit discharge at outfall and channel.

Conclusion:

The source of discharge confirmed ground water seepage.

Notifications:

Citation Code Section: NA		
Citation Narration: NA		
NOV Issued: N	NOV #: NA	EnerGov Case # : NA

Photos:

Appendix F – Spill Prevention and Response

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: Fd21021200006455	Date/Time: 2/12/2021 00:00
Location: 12351 Randolph Ridge Lane	
Report Completed by: Capt. Chris Adams	Incident Commander: NA

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: NA
HS516 Unit personnel: NA
Other HM Personnel: HMO502 Capt Chris Adams

INCIDENT NARRATIVE
Station 6 personnel received a phone call from Scott Williams of Atlantic Emergency Solutions. He reported they had a spill of diesel fuel in their apparatus yard. He stated they had placed down some absorbent and wanted to follow up with Fire and Rescue to ensure the proper notifications where made. The Duty Hazmat Officer contacted the Uniform Hazmat officer to investigate. Uniform Hazmat Officer was notified at 1439 hrs. Capt Adams arrived on the scene to meet with Scott Williams. Scott stated that a tow truck driver delivered a fire truck to the yard and informed the personnel at Atlantic that he had damaged a hydraulic line. Atlantic personnel placed a pan under the truck to collect the fluid and returned to work elsewhere in the yard. Atlantic personnel returned a few hours later to discover the pan had been overwhelmed and the fluid was in fact diesel, not hydraulic fluid. Personnel immediately placed down absorbent to mitigate the spill. Personnel believe the spill of diesel release to be between 40 and 50 gallons, with about 300 pounds of absorbent used in clean up efforts. Capt. Adams examined the site and found that some of the product could have made it to the street side draining system. Capt. Adams notified Mr. Williams that he was the responsible party and gave him the LEPC form for proper clean up. Mr. Williams notified Atlas environmental and they were scheduled to arrive on site around 1800hrs. Mitigation efforts by Atlantic where very effective and there was no need for FD Hazmat Response.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 2/12/2021
Name: Scott Williams
Company/Agency: Atlantic Emergency Solutions
Address: 12351 Randolph Ridge Lane
Phone/Email: 703 396 4977
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: NO Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 2/12/2021 Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD200022212	Date/Time: 7/15/2020 11:23
Location: Express Dr. / Dawson Beach Rd.	
Report Completed by: Captain Robert Moreau	Incident Commander: BC502 Captain Paul Hebert

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Captain Robert Moreau, Technician II John Sawicki, Technicain I Stephen Mickle (Operations Level), Technicain II Davin Hoffman, Technicain II Mike Militello, Technicain I Matt Waln, Technicain I Lee Bergstreser
HS516 Unit personnel: N/A
Other HM Personnel: N/A

INCIDENT NARRATIVE
Responded to above location for a report of a “tank truck” dumping unknown liquid into storm drain. Caller reported that the tank truck had flammable written on the side of the truck. E512 arrived on scene and reported no trucks in the area matching the descriotion. BC502 arrived on scene and placed all responding units in service under good intent. BC502 reported that there were water trucks in the area and that no hazmat had occurred. E506 went direct to BC502 and asked if storm drains had been checked and if any odor was present in the area. BC502 stated that there was no oder, that storm drains had been checked, and no hazmat had occurred. Hazmat units went ready. No EOC notifications were made dut to good intent nature of the call.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:

Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: ___ Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD200022274	Date/Time: 7/15/2020 21:35
Location: 8659 Diane Court Manassas VA 20110	
Report Completed by: Captain Robert Moreau	Incident Commander: BC581 (Manassas City)

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Captain Robert Moreau, Technician II John Sawicki, Technician I Stephen Mickle (Operations Level), Technicain II Davin Hoffman, Technician II Mike Militello, Technician I Matt Waln, Technician I Lee Bergstreser
HS516 Unit personnel: N/A
Other HM Personnel: N/A

INCIDENT NARRATIVE
HM506 and HS506 were dispatched to the above noted address for a HAZMAT. E506 and R506 were requested by Technician II Hoffman to be added to the incident. HS506 was placed in service. Units responded without incident. CAD comments noted that the caller had received a suspicious letter in the mail. After opening the letter he began to feel sick. Upon arrival, a face to face was performed with first arriving engine officer and command (BC581). Recommendation was made to command to request City of Manassas Police representative to the scene due to the potential criminal nature of the call as. First arriving engine officer reported that the patient was sitting on the back of the medic unit and was complaiing of difficulty breathing and lightheadness. He reported that they looked at the envelope through a window but did not enter the basement of the house. Engine officer reported not seeing any power, liquid, or gels on the floor around the envelope. Patient was interviewed to obtain threat profile. Patient worked for Amazon Web Services (AWS) and stated he had a security clearance through AWS. Patient also reported that he has been looking for jobs and was contacted by the individual who sent the evelope yesterday. He stated they were trying to get ahold of his personal information and that the envelope they sent told him to deposit a check. Patient appeared anxious and emotionaly upset. He did not display any SLUDGE signs. Vitals were stable and medics were treating patient as a BLS patient. Patient stated he wanted to go to the hospital for further evaluation. M501B was consulted and advised that best course of action would be for patient to be gross decontaminated with water and placed into a redress suit. Patient was gross deconed with hose line and then provided redress kit. Patient changed in back of M501B. Patient transported for further evaluation. Entry team one (Hoffman, Waln), Entry Team two (Militello, Sawiki), Research (Berstreser), and Safety were identified. Decon was identified as E501B. Entry team one was to make a recon entry and identify possibility and need for testing of substances. Entry team one made entry and noted that readings were background on four gas, Ludlum showed no Alpha or Beta readings. PRD showed no readings and no changes were noted on “bear claw” of paper tests. Entry team one identified that there was not product to sample. They noted no power, liquids, or gels were present. Entry team one overpacked the envelope into a large selabale plastic bag. Entry team one exitied the structure. Captain Moreau performed face-to-face with command as well as Manassas PD represntaivte on scene. They were advised of readings and that no hazard was present. Manassas PD was uncertain of the next step. Manassas PD was

advised that the patient reported a threating letter had arrived with the envelope. PD was advised that due to their being no identified hazard, that the collection and retention of the evidence was their responsibility. Incident was scaled down and E506 remained on scene to provide assistance for Manassas PD. US Postal Service (USPS) Instpector was conted to ensure mixed mail and the envelop from Fed Ex did not fall under their perview (Fed Ex Letter was overpacked with USPS mail). Inpector was notifed by USPS Field Office. Sgt. Smith with US Postal Police contacted Captain Moreau via mobile. She advised that the postal inspector would not be on scene tonight and would reach out the the City of Manassas PD the following day. Manassas PD eventually took possession of the overpacked envelope and mail. They advised they were going to the hospital and that they would return the envelope and mail to the patient due to no hazard being present. E506 cleared the incident.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 07-15-2020 22:42
Name:
Company/Agency: VA EOC
Address:
Phone/Email:
Notes: Contacted @ 10:42 to obtain POC for US Postal Police. No resources requested from VA EOC. Return call @ 01:18 on 7-16-2020 to close out notification and obtain report number. Report number VDEM-2020-07-15-851.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 07-15-2020
Name: Sgt. Heinke
Company/Agency: Manassas City Police Department
Address:
Phone/Email: 703-257-8000
Notes: Representative for Manassas City Police.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 07-15-2020 22:52
Name: Operator 3133
Company/Agency: US Postal Police Field Office
Address:
Phone/Email: 877-876-2455
Notes: Contacted to file report and requested representative contact Captain Moreau. Operator 3133 received the report @ 2252. Sgt. Smith with US Postal Police returned phone call @ 00:07 hours on 7/16/2020.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 07-16-2020 00:07
Name: Sgt. Smith
Company/Agency: US Postal Police
Address:
Phone/Email: 202-636-2220
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: NO Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time: 7/15/2019 22:42	Name: Will/ Tyler

photos: View from outside of the basement.

Repeating Section Click + to add additional entries:

photos: View from inside of the basement.

Repeating Section Click + to add additional entries:

photos: View from inside of the basement.

Repeating Section Click + to add additional entries:

photos: View from inside of the basement.

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 200022338	Date/Time: 7/16/2020 12:35
Location: I-66 E @ 40.6	
Report Completed by: Snitwongse	Incident Commander: Lt. Schwab

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Lt. Schwab
HS516 Unit personnel: N/A
Other HM Personnel: N/A

INCIDENT NARRATIVE
On 7/16/2020 at 12:35, E524 Initiated a phone consultation with R506 and E506. E524 was on the scene of a dump truck located on the shoulder of I-66 that had leaked approximately 1 gallon of hydraulic fluid onto the roadway shoulder and onto the birm of the road. Lt. Schwab was on scene and indicated that the leak was contained and was not affecting any waterways and was contained. Lt. Schwab advised that he was going to issue the responsible party a LEPC form for cleanup. And notify the tow company of the spill. Hazmat units concurred with the actions taken by E524 and we concluded the phone consult. VA EOC was notifed and no further actions were deemed necessary.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 7/16/2020 12:35 Provided to Name:	
VA EOC Notified Date/Time: 7/16/2020 14:50	Name: Moore

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 200023518	Date/Time: 7/25/2020 13:50
Location: Wellington Rd./ Hornabaker Rd.	
Report Completed by: Lt. Mark Nicol	Incident Commander: BC Kevin Artone

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Lt. Nicol – Phone Consult.
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
I conducted a phone consult with BC Artone in regards to approximately 10 gallons of diesel fuel that had spilled from forklift that tipped while being trailered. I was told that the forklift has a 10 gallon tank and that some of the product got into a nearby storm drain. E525 used daming and diking to stop any further product from entering the storm drain and the fuel spill had stopped leaking from the forklift. Given that the product had stopped leaking and only 10 gallons or less made it's way into the storm drain; I recommended that units on scene provide the responsible party who remained on scene a copy of the LEPC and explain the necessity for them to have a contracted cleaning company do the cleanup. BC Artone and Lt. Jeremy Moore provided Mr. Steven Crawley (VA. Sign and Lighting – Safety Supervisor), with a copy of the LEPC and they were going to use their own contracted cleanup company for the job. All notifications have been made.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 07/25/2020 14:05
Name: Steven Crawley
Company/Agency: Virginia sign and Lighting with Lane Construction Company
Address:
Phone/Email: (703)222-5670 office, (571)408-6104 cell
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Other
Date/Time: 07/25/2020 14:21
Name: David Ungar
Company/Agency: PWC Storm Water / Environmental Services
Address:
Phone/Email: (703)792-7104

Notes: Left voice mail.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Other
Date/Time: 07/25/2020 14:25
Name: Charlie Fitzsimmons
Company/Agency: US EPA
Address:
Phone/Email: (410)305-3027
Notes: Left voice mail.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 07/25/2020 14:05 Provided to Name: Steven Crawley	
VA EOC Notified Date/Time: 7/25/2020 14:20	Name: Brendon Wykert

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD200023838	Date/Time: 7/28/2020 11:59
Location: River Heritage Blvd/ Meldrim st	
Report Completed by: J. Knight	Incident Commander: Captain Faye

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Kwak, Gibson, Shatzer, Mirabile, Knight
HS516 Unit personnel:
Other HM Personnel: Cramsey, Pistole

INCIDENT NARRATIVE
On 07/28/2020 Co. 506 was dispatched to a Hazmat at the above location. Upon arrival found a landscaping truck that the diesel tank had fallen out. The vehicle did not stop immediately. T523 was the first arriving unit and began damming the product flowing into the storm drain. Co. 506 traced product to a culvert. Placed booms at the outflow of the culvert. HLS contacted Atlas per HMO502.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 07/28/2020 1240
Name: Alan Lacy
Company/Agency: Va. DEQ
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 07/28/2020 Storm water Management
Name: Message Left
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party

Date/Time: 07/28/2020
Name: Cory Lainer
Company/Agency: HLS
Address: 8001 Industrial Park Court Bristow
Phone/Email: 703-928-0783
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name: SGT. Jacobs

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 200025894	Date/Time: 8/14/2020 18:06
Location: 13717 Aden Rd. Nokesville, VA. 20181	
Report Completed by: Lt. Mark NIcol	Incident Commander: BC Tom Clark

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Lt. M. Nicol, T-I E. Spangler, T-I T. Heard, T-I K. Adzemovic
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
We had a phone consult with BC Tom Clark in regards to a gasoline spill located in the gravel parking lot of Aden Grocery. Approximately 20 – 30 gallons of gasoline were spilled when the fuel tank fell off of a Ford F150 belonging to Mr. Donnie Brooks of Brooks Lawn Care. Mr. Brooks said that "his employee Mr. Chris Fick was driving the vehicle and as he got to the intersection of Aden Rd and Fleetwood Dr. the fuel tank fell to the ground"; Mr. Fick then pulled the truck into the parking lot and notified the property owner that he had a problem with the fuel tank and that he spilled some gas. Mr. Brooks then said, "that Mr. Fick waited for someone with a trailer to come to the location and pick up the truck". Mr. Brooks said that the truck was last fueled up on Wednesday and that the tank holds 26 – 30 gallons of fuel. It was undetermined how much fuel was spilled and daming was done around the area of concern. An LEPC was given to Mr. Donnie Brooks as the responsible party and to Mr. Rodney Jones as the property owner, (prior to Mr. Brooks arrival to the scene). The scene was turned over to the Fire Marshall, Lt. John Hornaday.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 8/14/2020 18:45
Name: Donnie Brooks
Company/Agency: Brooks Lawn Care
Address: 9002 Sowder Pl. Nokesville, VA. 20181
Phone/Email: (703)906-5064 (cell)
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Property Owner
Date/Time: 8/14/2020
Name: Rodney Jones
Company/Agency: Aden Grocery Owner
Address: 13717 Aden Rd. Nokesville, VA. 20181

Phone/Email: (703)463-1959
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information: There are 7 photos on R506 Apple IPAD that I cannot transfer over to this report.	
HAZMAT Officer Comments:	
Fire Marshal Assigned: YES Lead Officer: Lt. John Hornaday	
Discharge/LEPC Form Provided: ☒ Date/Time: 8/14/2020 19:00 Provided to Name: Donnie Brooks and Rodney Jones	
VA EOC Notified Date/Time: 8/14/2020 20:48	Name: Mr. Hughes

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 200027296	Date/Time: 8/27/2020 01:17
Location: 66W @ 44.3	
Report Completed by: Captain Jason Knight	Incident Commander: BC Barbachano

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Horvath, Kwak
HS516 Unit personnel: Favole, Shatzer
Other HM Personnel: Knight, Mirabile

INCIDENT NARRATIVE
Dispatched for a Hazmat at the above location. Upon arrival found a late model tractor trailer leaking diesel fuel. Damming measures were being conducted by Co. 511 units. Stay dry was being applied and a 20 gallon pop up pool deployed as soon as we arrived. A moderate leak was discovered on the passenger side saddle tank. A wax ring was applied to the gash in the tank and leak stopped. Appeared to have lost 50 gallons approximately. Contact was made with the Responsible Company and they immediately contacted their contracted environmental company. Contact was made with the local contractor and advised of 1.5hr ETA. VSP was notified and the scene was turned over to VSP. Units used 4 bags of absorbent, 2 level B suits, 1 20 gallon pop up pool and one toilet bowl ring. Upon calling VOC the clean up contractor had already contacted them.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 08-27-2020 / 0125
Name: Van Lewis
Company/Agency: Knight Refrigerated, LLC
Address: 20002 N 19th Ave., Phoenix, AZ
Phone/Email: 1-888-214-9815
Notes: DRIVER

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 08-27-2020 / 0130
Name: Jerry Parks
Company/Agency: Knight Refrigerated, LLC
Address: 20002 N 19th Ave., Phoenix, AZ
Phone/Email: 602-239-4700
Notes: Emergency center / Clean-up contact @ Knight

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 08-27-2020 / 0150
Name: Michael Phelps
Company/Agency: First Call Enviromental / Area Manager
Address: 11008 Richardson Rd. Ashland, VA 23005
Phone/Email: 703-593-2881 / mphelps@firstcallenviromental.com
Notes: Area manager

Repeating Section Click + to add additional entries:

Additional Notes/Information: Supplies Used: 1 x wax rings , 1 x 20 gallon pop- up pool, 2 x Level B suits- XL	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 08-27-2020 / 0127 Provided to Name: Van Lewis	
VA EOC Notified Date/Time: 8/27/2020 03:34	Name: Tyler

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

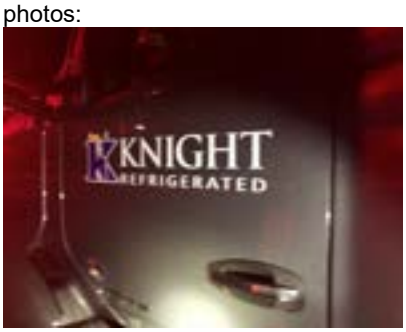
photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:



Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD200027794	Date/Time: 8/31/2020 15:52
Location: Interstate 95 NB @ mile marker 150.7	
Report Completed by: Captain Robert Moreau	Incident Commander: Battalion Chief Craig Beavers

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Captain Robert Moreau, Technician II John Sawicki, Technician I Stephen Mickle (operations level), Lieutenant Dylan Moore, Techniciain II Davin Hoffman, Technicain I Jason Kolbas, Technician I Matt Waln
HS516 Unit personnel: N/A
Other HM Personnel: Captain Chirs Adams

INCIDENT NARRATIVE
E506, R506, and HM506 responded to Interstate 95 NB at the 150.7 mile marker for an auto accident. E523 arrived on scene of an auto hauler, carrying three cars, which had overturned. E523 noted a large amount of oil on the ground and upgraded the incident to a hazmat. While responding, it was noted that there were two locations that needed hazmat response and oversight. R506 and HM506 responded to Inn Street to assist T523 with damming of runoff. E506 responded to the incident scene and evaluated the overturned auto hauler. It is estimated that no more than 10 gallons of oil and vehicle fuel had leaked. The saddle tank for the auto hauler was intact and not ruptured. Heavy rain made it difficult to make effective dams and oil dry was not able to be placed on the ground. VDOT traffic management was requested to the scene through command. VA State Police were already on scene along with Waggy's Towing. Contact was made with the driver of the auto hauler and he identified the owner of the company and provided contact information. The owner was contacted via phone and provided a verbal notification that he would need to identify a cleanup contractor to clean up the incident site per VDOT standards. An LEPC form was emailed to the owner and the owner stated that the driver of the truck could pick a company. The driver of the truck identified Atlas as the cleanup contractor and the information was relayed to the owner to contact Atlas to begin the process of securing them for the cleanup. Hazmat units remained on scene while Waggy's up righted the auto hauler. The saddle tanks remained intact and no further leaks were identified. Face to face was performed with VDOT who advised they could handle remaining traffic hazards and would get a sand truck on scene for the roadway. VDOT was advised that Atlas was identified as the cleanup contractor but were not responding until tomorrow. Hazmat units cleared the incident and turned it over to VDOT.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Property Owner
Date/Time: 08/31/2020 16:40 hours
Name: Jay Solano

Company/Agency: Solano Auto Transport
Address: 101 North Maryland Ave. Wilmington DE 19804
Phone/Email: 302-293-5812 / solanoautotransport@gmail.com
Notes: Owner of Solano Auto Transport. Owner was not on scene. USDOT 3403157 / MC1095775. LEPC was provided to the owner via email.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 08/31/2020
Name: Justin Owen Parker
Company/Agency: Driver of the auto hauler
Address: 191 Harbor Drive APT 10 Claymont DE 19703
Phone/Email: 267-323-8589
Notes: Driver of the auto hauler.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 08/31/2020
Name: John Stafford
Company/Agency: VDOT
Address:
Phone/Email: 571-238-4871
Notes: VDOT traffic management representative.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 08/31/2020 19:31
Name: Alan Lacy and Steven Fontenot
Company/Agency: DEQ
Address:
Phone/Email:
Notes: Courtesy email notification.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 08/31/2020 19:37
Name:
Company/Agency: VAEOC
Address:

Phone/Email:
Notes: Notification only. No resources requested. Report number VDEM202008311157

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: NO Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 08/31/2020 16:49 Provided to Name: Jay Solano	
VA EOC Notified Date/Time: 8/31/2020 19:37	Name: Tyler McConnon

photos: Accident

Repeating Section Click + to add additional entries:

photos: Accident

Repeating Section Click + to add additional entries:

photos: Accident

Repeating Section Click + to add additional entries:

photos: Accident

Repeating Section Click + to add additional entries:

photos: Accident

Repeating Section Click + to add additional entries:

photos: Accident

Repeating Section Click + to add additional entries:

photos: Oil Sheen

Repeating Section Click + to add additional entries:

photos: Oil Sheen

Repeating Section Click + to add additional entries:

photos: Truck Door

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 200027979	Date/Time: 9/2/2020 09:45
Location: 14608 Tazewell Ct. Woodbridge, VA 22191	
Report Completed by: Lt. Stephen Horvath	Incident Commander: BC503

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Horvath, Favole
HS516 Unit personnel: Mirabile
Other HM Personnel: Williams, Walsh, Gibson

INCIDENT NARRATIVE
Placed in Service by BC503. No Haz-Mat services needed per E512, only an EMS call. BC503 Placed ALL Haz-Mat units in-service.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD200028831	Date/Time: 9/9/2020 11:06
Location: 13600 Dabney Road Woodbridge VA 22191	
Report Completed by: Captain Robert Moreau	Incident Commander: Captain Dustin Miner

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Captain Robert Moreau, Technician II John Sawicki, Technician I Stphen Mickle (Ops), Technician I Tyler Barnikel (Ops), Technicain II Jenifer Delp (Ops), Lieutenant Dylan Moore (Ops), Technicain II Luis Luis (Ops), Technicain I Jason Kolbas, Technicain I Lee Bergstresser
HS516 Unit personnel: N/A
Other HM Personnel: None

INCIDENT NARRATIVE
Request was received from Fire Marshal's office to assist in decontamination of three Fire Marshals and one building inspector. Health and Safety BC also contacted DHM and reported that the FM's had become invested with fleas during and investigation and requested our assistance with redress and denomination if needed. E506, R506, and HM506 responded to the dispatched address priority two. Face to face performed with Captain Dustin Miner. Decision was made to gross wash the individuals and have then redress in an enclosed tent. The FM's were advised to wipe down their equipment and secure and clothing in over pack trash bags. Gross was performed and then each individual redressed inside enclosed tent. FM's were advised to follow up with H&S regarding laundering of clothing as well as exposure reporting. Over pack trash bags were sealed and not stored inside of department vehicles.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: YES Lead Officer: Captain Dustin Miner	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 200029518	Date/Time: 9/15/2020 10:46
Location: 2630 Prince William Parkway	
Report Completed by: Knight	Incident Commander: Knight

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Walsh,Horvath, Knight
HS516 Unit personnel:
Other HM Personnel: Adams

INCIDENT NARRATIVE
Dispatched to the above location for an investigation. The pond that borders the above address was reported to have a large fish kill. Arrived to find a pond with sewage smell and a brownish foamy substance on the surface. We investigated the area and noted one dead fish. While walking around we encountered agency reps for PWC service authority and Storm water management. It was determined that the substance was sewage that was leaking from up stream. All needed agancies were aware of the situation. No further department resources needed.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 20003110	Date/Time: 9/28/2020 21:50
Location: 3649 Dahlgren Pl. Dumfries, VA. 22026	
Report Completed by: Lt. Mark Nicol	Incident Commander: BC Brian Ross

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Nicol, Snitwongse, Cone, Adzemovic
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
HZ506 was dispatched and cancelled in route by BC503. Nothing to report because we did not make it on scene of the incident.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 200032017	Date/Time: 10/6/2020 16:57
Location: Prince William Pkwy / Balls Ford Rd.	
Report Completed by: Hoffman	Incident Commander: N/A

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Hoffman, Waln, Bergstresser
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
DHM received request for phone consult from E525. They had a garbage truck involved in an accident with a diesel tank leaking. It was reported to be approximately 2/3 full with a quantity of about 50 gallons left in the tank. Some product (approx.. 10 gals.) had already leaked out The leak had occurred on the side of the road into the dirt with no water ways affected and all product contained to dirt area. E525 advised they had already put down absorbant to help with clean up. DHM advised we would enroute to take pictures and document event. E525 asked if they could use putty to attempt to stop leak which was coming from a brass fitting that was damaged. DHM said that was okay. Upon arrival hazmat determined the leak had been stopped but the damaged tank needed to be removed from the vehicle and then transported from scene. The trucking company representative advised they would take care of disconnecting and removing tank. They also advised they would clean up the dirt and absorbant and dispose of properly. Hazmat remained on scene until the tank was removed to confirm no other leaks present. With no other actions needed hazmat resources returned to service.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 10/6/2020 17:30
Name: Terry
Company/Agency: American Disposal Services
Address:
Phone/Email: 703-368-0500
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:
HAZMAT Officer Comments:
Fire Marshal Assigned: Lead Officer:
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:

VA EOC Notified Date/Time: 10/6/2020 19:51	Name: Shawn

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 200032529	Date/Time: 10/11/2020 11:53
Location: 1214 Swan Point Woodbridge VA 22192	
Report Completed by: Hoffman	Incident Commander: N/A

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Hoffman, Waln, Bergstresser
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
VDEM received complaint about a sheen on the water at the marina at the above listed address. The request for investigation trickled down to station 6 and subsequently led to the DHM deciding to go out to investigate. Initially an engine company was sent to investigate and they requested a phone consult which led to hazmat responding. Upon arrival hazmat personnel were met by the representative of the marina. They had a suspicion of where the sheen was coming from but there was no way to determine it completely. The DHM requested the FM to the scene in case there was a dispute of who the responsible party was going to be. The sheen was spread out over an area of approximately 200 yards with no single area being more concentrated than another. Hazmat personnel tested the water with oil finding paper and ph paper with the results being, no oil present and a ph of 7. Upon further investigation it was determined that the sheen was moving and dissipating. There was no way to determine exactly where it was or did come from. After speaking with multiple people at DEQ and VDEM hazmat officer it was decided that because there was no recoverable product or responsible party there were no actions needed.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 10/11/2020 12:43
Name: Steve Fontenot
Company/Agency: VA DEQ
Address:
Phone/Email: 703-583-3815
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 10/11/2020 12:46
Name: Alan Lancy
Company/Agency: VA DEQ

Address:
Phone/Email: 804-396-0150
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 10/11/2020 13:06
Name: John Higgenbotham
Company/Agency: VDEM
Address:
Phone/Email: 804-339-3135
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 10/11/2020 12:51
Name: Joe Hoffmaster
Company/Agency: Hoffmaster Marina
Address:
Phone/Email: 703-408-9365
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time: 10/11/2020 18:46	Name: Teresa Malone

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 200033145	Date/Time: 10/16/2020 17:43
Location: 157.5 NB I95	
Report Completed by: Lt. Mark Nicol	Incident Commander: BC Reese

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Newell, Nicol, Snitwongse, Gonzalez, Budkiewicz, Cone, Heard, Adzemovic
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
HM506 was dispatched for a fuel truck leaking fuel on I95 at the 157/5 NB. Dispatched units checked both north and southbound lanes with nothing found. All units were placed in service by BC503.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 200033471	Date/Time: 10/19/2020 14:15
Location: 7582 Pine Street (actual location Chestnut Street and Levi Court	
Report Completed by: Capt. Chris Adams	Incident Commander: NA

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: NA
HS516 Unit personnel: NA
Other HM Personnel: HMO 502

INCIDENT NARRATIVE
On 10/19/2020 at approximately 1300hrs The Prince William County Fire Marshall's Office received a citizen complaint pertaining to a illicit discharge along their street. The Community's HOA had hired a Contractor to remove yellow curb paint from the communities curbs, on both Chestnut Street and Levi Court. Workman in the area were accomplishing this task with the use of a sand blaster and silicate based medium. Contractors were seen by the citizen sweeping the used medium down the storm drains. FM Smiljanch and FM Bloedel arrived on the scene to find large amounts of medium covering the streets, homeowners lawns, and drainage routes. FM Smiljanch immediately contacted Uniform Hazmat Officer Captain Chris Adams to inquire about run off concerns. E508 was requested to the scene to assist with opening up manhole covers for investigation purposes. FM Smiljanch made contact with the local HOA president and the Contractor supervisor to advise them of the situation. Apon investigation of the drains throughout the community, it was noted a large amount of medium at times up to two feet deep. Capt. Adams notified DEQ, PWC Storm Water Services, and PWC Service Authority to inform them of the situation. FM Smiljanch issued a notice of violation to Timothy Water (Responsibility Party) 540 360-8880. Mr Water had not identified a clean up party, but a LEPC was provided to him. Scene was turned over to the FM on the scene.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 10/19/2020
Name: Timothy Water
Company/Agency:
Address: PO Box 59 Barboursville VA 22923
Phone/Email: 540 360-8880
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:
HAZMAT Officer Comments:

DEQ, PWC Storm Water Services, and PWC Service Authority notified on scene, follow up report sent.	
Fire Marshal Assigned: YES Lead Officer: Paul Smiljanch	
Discharge/LEPC Form Provided: ☒ Date/Time: 10/19/2020 1500hrs Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD200033582	Date/Time: 10/20/2020 16:53
Location: Interstate 95 SB at Truck Rest Area	
Report Completed by: Captain Robert Moreau	Incident Commander: Captain Robert Moreau

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Captain Robert Moreau, Technician II John Sawicki, Technician I Jenifer Delp (Ops Level), Technician I Stephen Mickle (Ops Level), Technician II Davin Hoffman, Technician I Matt Waln, Technician I Jason Kolbas, Technician I Tyler Barnikel (Ops Level)
HS516 Unit personnel: N/A
Other HM Personnel: Captain Chris Adams

INCIDENT NARRATIVE
Captain Adams received a phone call from PWC PD who was on scene of a MC331 with a malfunctioning valve. Truck was transporting CO2 and was returning from a delivery. Truck operator stated that he had no product on board and was at residual pressure. The valve that was malfunctioning was noted as a violation by PWCPD and the vehicle was not allowed to travel. In order for the valve to be fixed, the pressure behind the valve had to be released. Hazmat units responded to investigate. Response was priority two. Units arrived on scene and made contact with county PD and the operators of the truck. Operators were very knowledgeable of the truck and provided and overview of the truck as well as the malfunctioning valve. They stated that in order to get the valve replaced, they would need to release the pressure. They stated they do this frequently at the "customer" and it involved the release of CO2. We discussed how the release would be performed as well as the risks and hazards. After discussion with the vehicle operators, county PD, and Hazmat Team, the truck operators were allowed to release the pressure behind the valve. The truck rest area was shut down for the release. E506 had two firefighters in full structural turnout with SCBA for precaution. Vehicle operators performed the release without any issues. The release allowed the trucks valve to be repaired at the rest area and prevent further hazards.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 10/20/2020
Name: Jamar E Hatcher
Company/Agency: Ultra-Cool Corporation (Air Gas)
Address: 1901 Bell Ave Ste 2 Des Moines IA 50315-1067
Phone/Email: 515-243-7509
Notes: Courtesy Notification via Email

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 10/20/2020
Name: J. Lewton
Company/Agency: Prince William County Police Motor Inspection
Address:
Phone/Email:
Notes: On scene officer who initiated phone consult with Captain Adams.

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD200033790	Date/Time: 10/22/2020 10:34
Location: 16551 River Ridge Blvd Dumfries VA 22191	
Report Completed by: Captain Robert Moreau	Incident Commander: BC Craig Beavers

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Captain Robert Moreau
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
Received a phone consult request through PWC PSCC from BC503 (BC Craig Beavers). Units were on scene of a trash truck fire. BC Beavers stated the fire was isolated to the trash and did not involve the truck. The trash truck company had dumped the load onto the ground and contacted 911. Units arrived on scene and began fire suppression of the trash fire. Trash appeared to be residential in nature. BC Beavers stated no chemical containers, paint, or other hazardous waste appeared to be in the trash. BC Beavers wanted to ensure the runoff that was entering the storm drain was properly addressed. Advised BC Beavers that runoff from operations is allowed. No LEPC to be issued as long as the trash company was cleaning the trash up. BC beavers confirmed that the company had clean up services on the way. BC Beavers advised to contact us if he noted any hazardous waste. Notifications to be made by Hazmat include DEQ and Storm Water Management.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 10/22/2020 12:20
Name:
Company/Agency: PWC Storm Water Servies
Address:
Phone/Email:
Notes: Courtesy email notification only.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 10/22/2020 15:00
Name:
Company/Agency: VA DEQ
Address:
Phone/Email:

Notes: Courtesy email notification only.

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: NO Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD200034084	Date/Time: 10/24/2020 17:31
Location: 3513 Aviary Way Woodbridge VA 22192	
Report Completed by: Captain Moreau	Incident Commander: N/A

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Captain Robert Moreau, Technician II Brendan Hayes, Technician I Matt Waln
HS516 Unit personnel: N/A
Other HM Personnel: N/A

INCIDENT NARRATIVE

Captain Moreau received OWL Assistant Chief Ryan William. He stated that he was at a coworker's house who was complaining of a paint thinner like odor in his basement. AC Williams is also an Arlington County EOD Police Officer and Hazmat Technician. He was able to provide an assessment of the house as well as a VOC reading of 12-14 ppm via a Multi Rae Pro. It was reported that the homeowner was having his deck replaced and that the deck company had used a sealant on the exterior of the house. He sent a picture of the sealant (see attached photos). The house was a middle of the row town house with two floors in the front, three in the rear, with a walk out basement. AC Williams stated that he got the highest readings in the laundry room which was in the alpha delta quadrant of the basement. The deck was located on the charlie side of the structure. AC Williams had concern that with laundry room not sharing a common wall that it may not be the issue. I requested AC Williams to contact BC502 to request us. E506 and HM506 responded to the address priority two. R506 was on another call and did not respond to this incident. Upon arrival, Captain Moreau spoke with the homeowner and AC Williams. A 360 of the structure performed. Readings were obtained on the exterior of the house. 4-gas readings were background at 20.9% O2, 0 ppm CO, 0 ppm SO2, 0% LEL (methane). PID background was 0 ppb. Gamma was background at 2 (multiRae pro). PPE was level C. Homeowners and AC Williams were not experiencing any symptoms and assessment of situation did not warrant an additional level of PPE. House was labeled basement, first floor, second floor. Entry was made onto the 1st floor of the house. Chemical odor was noted. Readings obtained on all 3 floors. 4-gas and gamma remained at background. PID readings were as follows; Basement = 14 ppm in laundry room and 10 ppm at basement door; first floor 6500 ppb; second floor 2000 ppb. Laundry room was investigated and it was noted that the floor joist ran perpendicular to the side charlie wall. This created a direct chase for odor of the adhesive to travel. The laundry room did not have drywall to the ceiling, leaving an opening to the floor joist. Readings on the PID peaked at 15ppm at the joist. Basement was ventilated with fans. Basement was then closed up and the first and second floors were ventilated. Readings post ventilation were as follows. 4-gas and Gama remained background. PID readings in basement were 3500pb; first floor 688ppb and 30ppb on second floor. Spoke with homeowner and updated them. A copy of the sealant data sheet was sent to the homeowner. Cure time for this product was 7-14 days. Homeowner was advised to ventilate their house with vans if the odor returned. Homeowner advised that readings were elevated but within acceptable ranges to be in the house. Homeowner advised to contact 911 if anything changed and was provided contact information for Captain Moreau if they had any further questions.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Property Owner
Date/Time: 10/24/2020
Name: Brian Murray
Company/Agency:
Address: 3513 Aviary Way Woodbridge VA 22192
Phone/Email: 571-212-2118
Notes: Home owner

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes: Report Number VDEM-2020-10-24-1532

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time: 10/24/2020 22:16	Name: Brian

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD200034121	Date/Time: 10/24/2020 23:23
Location: 10126 Lomond Drive Manassas 20109	
Report Completed by: Captain Robert Moreau	Incident Commander: BC508 Rutherford

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Captain Robert Moreau, Technician II Brendan Hayes, Technician II John Sawicki, Technician I Matt Waln, Lieutenant Dylan Moore, Technician II Davin Hoffman, Techniciain I Lee Bergstresser, Technician I Jason Kolbas
HS516 Unit personnel: N/A
Other HM Personnel: N/A

INCIDENT NARRATIVE
Captain Moreau received a request through PWCPSCC for a phone consult with BC508X. BC508X stated that company 11 units had arrived on scene to a two vehicle accident that resulted in a vehicle fire. Both vehicles were involved in the fire. There was only one occupant and he had already been detained by police and taken to jail. During firefighting operations, crews noted that the fuel line was leaking and an unknown amount of fuel had gone into the storm drain. Due to the possibility of an active leak from the fuel tank of the vehicle, hazmat units responded priority 2 to the incident. BC508X also advised to request a FM to assist with issuing a LEPC for to the detained individual. FM518 was assigned but stated he would be delayed due to being on a fire investigation. Upon arrival, face-to-face was performed with BC508X. Photos were obtained of the vehicles. Hazmat crews checked the vehicles and found neither vehicle to be actively leaking fuel. No hydrocarbons were detected in storm drain (tested with hydrocarbon paper). It had rained prior to Hazmat's arrival on scene. Visible water could be seen running through the storm drain. County mapper was utilized to trace the storm drains route of travel and potential end point. Unable to determine the travel of the water. Two oil only socks placed in front of storm drain. FM518 was still not enroute and was not responding to text messages. Request was made through communications to have FM518 contact Captain Moreau. FM was needed to assist in issuing an LEPC form to the driver of the vehicle. At the conclusion of this report, FM518 had not made contact with Captain Moreau.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 10/25/2020 00:42
Name:
Company/Agency: PWC Stormwater Management
Address:
Phone/Email:
Notes: Courtesy email notification only.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 10/25/2020 00:43
Name:
Company/Agency: VA DEQ
Address:
Phone/Email:
Notes: Courtesy email notification only.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 10/25/2020 00:37
Name: Brian
Company/Agency: VAEOC
Address:
Phone/Email:
Notes: Report number VDEM-2020-10-25-1533

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: YES Lead Officer: FM 518	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time: 10/25/2020 00:37	Name: Brian

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 200034502	Date/Time: 10/28/2020 00:00
Location: 13712 Dumfries Rd.	
Report Completed by: Lt. Stephen Horvath	Incident Commander: BC502 – Capt. Hunt

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel:
HS516 Unit personnel:
Other HM Personnel: HM502 – Adams, Horvath, Williams, Walsh, Mirabile, Kwak, Favole

INCIDENT NARRATIVE
CNG powered trash truck caught on fire. Units attempted to extinguish the fire but propane system was leaking and then vented and turned into a blow torch off the passangers side CNG tank. Units colled the trash via remote deck gun and vehicle mounted deck gun. Proane bunred until there was no more and fire went out. Had a small hydraulic leak mixed with the water that was used to extinguish the fire. Water ran into a culvert next to the trash truck and into a storm drain. Water retention ponds down stream were checked and no evidence of petroleum products were found. HM502 was on the scene to assist.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 10/28/2020 / 1320
Name: Carlos Vager
Company/Agency: American Disposal
Address: 10370 Central Park, Manassas, VA
Phone/Email: 703-368-0500
Notes: Mechanic, driver had already left the scene

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 10-28-2020 / 1315
Name: David Unger
Company/Agency: PWC Storm Water Management
Address:
Phone/Email:
Notes: Notified by Captain Adams

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS

Notification/Contact Type:Agency Represenative
Date/Time: 10-28-2020 / 1320
Name: Alan Lacy
Company/Agency: DEQ
Address:
Phone/Email:
Notes: Captain Adfams left a voicemail

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 10-28-2020 / 1327
Name: Joe Warren
Company/Agency: VDOT
Address:
Phone/Email:
Notes: Captain Adams notified

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 10-28-2020 /
Name: Will Clark
Company/Agency: Atlas
Address:
Phone/Email:
Notes: Captain Adams Spoke with, they will handle clean-up

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: ___ Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 10-28-2020 / 1315 Provided to Name: Carlos Vargar	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD200034885	Date/Time: 10/31/2020 16:47
Location: 10565 Poagues Battery Drive Bristow VA 20136	
Report Completed by: Captain Robert Moreau	Incident Commander: Captain Matt Smallwood

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Captain Robert Moreau, Technican I Tyler Barnikel (OPS), TE Technicain I Gina C. (OPS), Lieutenant Dylan Moore (OPS), Technicain I Lee Bergstreser, Technicain I Matt Waln
HS516 Unit personnel: NA
Other HM Personnel: NA

INCIDENT NARRATIVE
Captain Moreau received a request from PWCPSCC for a phone consult with PE505. PE505 was on scene of an investigation with a report of a gasoline odor in a storm drain. Phone consult performed. PE505 stated that they arrived on scene to the dispatch address and had a strong odor of gasoline at the storm drain. They were unable to isolate the source but were getting readings with their gas track in the storm drain. E506, R506, and HM506 responded to the scene. Upon arrival, face to face was performed with PE505's officer. He identified the storm drain where the odor of gasoline was coming from. This storm drain was located in front of 10565 Poagues Battery Drive. Homeowners of the address were the 911 callers. They stated they noticed the odor approximately 10 minutes before the initial call to 911. Investigation of the streets that were parallel and perpendicular to the dispatched address revealed no elevated 4-gas or PID readings as well as no odor. County mapper was utilized to trace storm water drains. Drains did not terminate in a storm water retention pond. Prior to identifying this, 1 universal sock and 3 oil only pads had been placed near the outflow of the retention pond by a R506 crew member. Readings at the storm water grate at the dispatched address were 4-gas (20.9% O2, 0ppm CO, 0ppm SO2, 0% LEL) PID 40ppm. 4-gas LEL measurement was changed to ethanol and benzene with LEL remaining at 0%. Dispatched address was investigated with 4-gas and PID. Readings remained at background. No odor present in house. Approximately 5 gallons of oil dry placed in storm drain to absorb visible liquid at base of drain. Three attempts were made to contact storm water management with no success. VA DEQ Representative Steven Fontenot was contacted and advised of the situation. He stated he would submit a report and follow up with PWC Storm Water Management.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 10/31/2020 21:58
Name:
Company/Agency: PWC Stormwater Management
Address:

Phone/Email:
Notes: Courtesy notification via email.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 10/31/2020 21:59
Name:
Company/Agency: VA DEQ
Address:
Phone/Email:
Notes: Courtesy notification via email. Phone call to discuss incident with Steven Fontenot occurred prior to leaving the scene.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 10/31/2020
Name:
Company/Agency: VA EOC
Address:
Phone/Email:
Notes: Notification only, no resources requested. Report number VDEM 2020-10-31-1592

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: NO Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time: 10/31/2020 22:03	Name: Hughes

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 200035463	Date/Time: 11/5/2020 04:44
Location: I95S @148mm	
Report Completed by: Lt. Horvath	Incident Commander: BC503

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Horvath, Kwak
HS516 Unit personnel: N/A
Other HM Personnel: Williams, Mirabile,Walsh

INCIDENT NARRATIVE
Received a phone consult from E503 officer. He stated they had a Penske box truck overturned on I95 at location listed above. He stated that there was an oil leak and a diesel leak. I asked if it was contained to the road way and he replied, yes. I asked him if they had a pop up pool to catch the leak and he said no and the way the truck is laying it wouldn't work. He stated the absorbent was holding the leak at the time but the fuel level was risining and they would be able to do anything after that. I advised we would be enroute. HM506, R506 and E506 arrived onscene. Box truck was laying on the drivers side. Oil leak had been contained by the kitty litter utilized by E503 as well as the fuel leak. The driver and passanger of the penske truck had already been transported by M503. VSP contacted Redmans for the tow and were already on scene working when haz-mat units arrived. Redmans stated the tow truck could/would clean up the small oil leak and fuel leak. Advised BC503 of the situation and he cleared all haz-mat units.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 11/05/2020 - 0515
Name: SGT. A.D. Jones #251
Company/Agency: VSP
Address:
Phone/Email:
Notes: Tropper stated they have NO driver info.

Repeating Section Click + to add additional entries:

Additional Notes/Information: HM502 is going to try and track down driver info from M503. NO LEPC handed out due to Redmans saying the tow truck could handle the small spill. No VAEOC contact due to being such a small leak of both products. Cleared both with HM502.
HAZMAT Officer Comments:
Fire Marshal Assigned: Lead Officer:
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:

VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 200035606	Date/Time: 10/6/2020 11:14
Location: 13325 Baxter Street Woodbridge Va 22191	
Report Completed by: Knight	Incident Commander: Fugate

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Knight
HS516 Unit personnel:
Other HM Personnel:

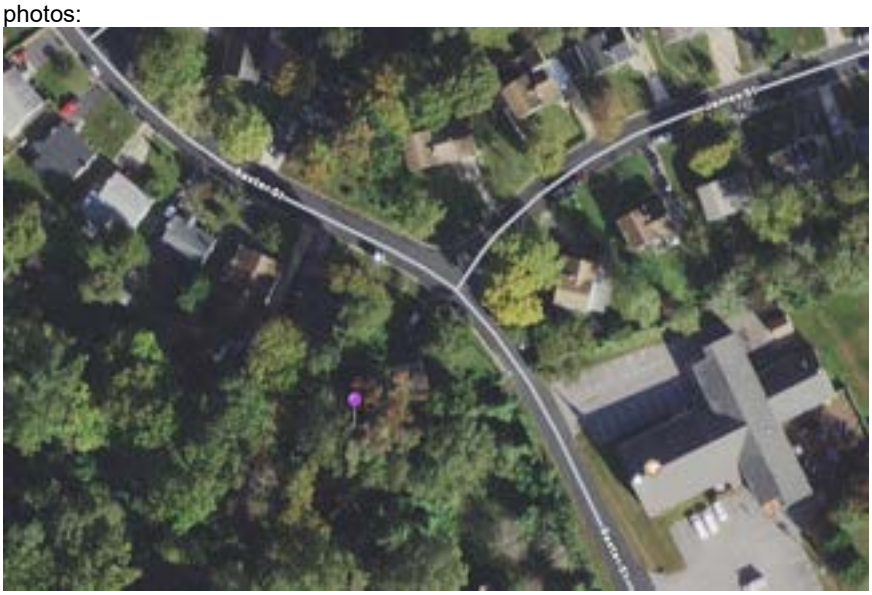
INCIDENT NARRATIVE
Phone Consult only. Contacted by E502 for the above address. Communications was contacted by Atlas Environmental to advise them they were cleaning a fuel oil release that they were remediating. Communications dispatched E502 to investigate a hazard. The home at the above address had a fuel oil tank that began to leak approximately 40 gallons. The home owner contacted Atlas environmental to remediate the situation upon discovering the issue. E502 confirmed and contacted Hazmat resources. The appropriate state agencies were notified by Atlas. No further services necessary.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:



Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD200036456	Date/Time: 11/13/2020 08:32
Location: Rumson Pl/ Davis Ford Rd	
Report Completed by: Knight	Incident Commander: Howard

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Knight, Kwak, Horvath, Walsh, Williams
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
Requested for a phone consult by C516 for a car fire. C516 discribed the scene where oil and fuel were going into storm drain. Arrived to investigate. Arrived to find a minor sheen on the asphalt that was consistant with hoses and fuel lines failing from an engine compartment fire. The products did NOT reach any storm drains or any waterways. Advised E516 to apply more stay dry and advise the tow company to clean up. No further notifications or services nessessary. Returned to service.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD200038072	Date/Time: 11/27/2020 14:59
Location: 9423 Brentsville Road Manassas VA 20112	
Report Completed by: Captain Robert Moreau	Incident Commander: Captain Johnthan Moore (BC504)

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Captain Robert Moreau, Technician II Jenifer Delp (OPS) Technician I Tyler Barnikel (OPS), Technician I Stephen Mickle (OPS), Lieutenant Dylan Moore (Ops), Technician II Davin Hoffman, Technician II Dan Williams, Technician I Jasonb Kolbas
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE

E506, R506, and HM506 responded to 9423 Brentsville Road for a report of “diesel fuel” in a pond along with an odor. Units arrived on scene and met with the homeowner. Small pond in front of address had sheen on it and odor of hydrocarbon fuel was noted. Homeowner noted the odor this morning and noted the sheen on her pond later in the day. Defensive measures were taken to prevent spread of the fuel. The pond had an outflow that went to a neighboring property and eventually Broad Run Creek. Large hydrophobic boom placed on outflow side of pond with 5 pads. Six hydrophobic oil only socks were placed along side of pond where overflow location was noted. Dirt placed in location as well to limit spillover of the pond. Hydrocarbon paper was used to test outflow and no fuel was noted to have made it past the pond. Source of the fuel was traced to 9419 Brentsville Road via use of hydrocarbon paper. Small puddle of fuel was noted behind a shed where several pieces of equipment were being stored. Perimeter of 9419 was investigated and no sources were noted to account for fuel coming into the property. Resident of the house was contacted who stated he was the son of the homeowner. He was able to contact his mother, who was the homeowner, and she was enroot from Fairfax County. Son stated that he was home from college and that he didn’t know anything about the fuel. He stated that his brother does a lot of work on vehicles back there but didn’t know anything else. Request was made through command for an FM to come to the scene. FM512 responded after phone conversation with Captain Moreau. VA DEQ representative, Alan Lacy, was notified via phone as well. No assistance needed from VA DEQ. FM512 was provided an overview of the incident walked all three addresses involved. FM512 stated he would be issuing a summons as a result and would remain on scene until the homeowner arrived on scene. Second son arrived on scene and stated that he was chopping wood near the area but did not dump any fuel. Homeowner arrived on scene and FM512 issued summons. LEPC form was issued to homeowner via email. Captain Moreau assisted homeowner in understanding the cleanup processes and the need to establish a cleanup contractor. One of the sons stated he had a friend with a tractor and they could take care of it. It was explained to the son and homeowner that the cleanup would require someone licensed to do the work and that due to the involvement of multiple addressed, the use of a cleanup contractor would be required. Homeowner was able to contact her homeowners insurance, Nationwide Insurance, and received a claim number for the incident. Her insurance stated they could not issue approval to clean up the incident until a claims adjuster reviewed the claim. They stated an

adjuster would not receive the claim until the next business day which would be Monday, November 30, 2020. Homeowner was provided business card for FM512, Captain Moreau, and phone number for Hazmat Coordinator via LEPC. Homeowner was advised to contact any of the numbers if she had any questions or concerns. It is expected that a cleanup contractor will be identified by her homeowners insurance on Monday, November 30, 2020.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 11/27/2020
Name: Maria Virginia Barahona De Paz
Company/Agency:
Address: 9419 Brentsville Road Manassas VA 20112
Phone/Email: 703-898-2780 / virginiabarahona21@gmail.com
Notes: Homeowner of 9419 Brentsville Road.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Property Owner
Date/Time: 11/27/2020
Name: Christy Lynn Halko
Company/Agency:
Address: 9423 Brentsville Road Manassas VA 20112
Phone/Email: 703-785-9070
Notes: Homeowner of 9423 Brentsville Road. Pond is located at this address.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 11/27/2020 @ 1612
Name: Alan Lacey
Company/Agency: DEQ
Address:
Phone/Email:
Notes: Notified via phone from the scene. No resources requested. Courtesy email also sent.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 11/27/2020 @ 2036
Name: Shawn McKay
Company/Agency: VAEOC
Address:

Phone/Email:
Notes: Report number VDEM-2020-11-27-1753

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: YES Lead Officer: Lieutenant Hinson FM512	
Discharge/LEPC Form Provided: ☒ Date/Time: 11/27/2020 @ 1730 Provided to Name: Maria Virginia Barahona De Paz	
VA EOC Notified Date/Time: 11/27/2020 20:36	Name: Shawn McKay

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 200038183	Date/Time: 11/28/2020 15:50
Location: 9423 Brentsville Rd.	
Report Completed by: Tech II Cone, Matthew	Incident Commander: Lt. M. Pullen

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: T-II M. Cone, T-I T. Heard, T-I K. Adzemovic, T-I T. Scheatzle
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
R506 responded to a call of diesel on the surface of a home owners man made pond. The call for previous hasmat call from the day prior. R506 went out to place additional booms(13) and pads (20) to aid in diesel retainment. The homeowner was given a LEPC form at their own request. No further notifications made.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 200038354	Date/Time: 11/30/2020 06:00
Location: 149 - I95 S.	
Report Completed by: Mark Nicol	Incident Commander:

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Capt. J. Newell, Lt. M. Nicol, T-II J. Snitwongse, T-II M. Gonzalez, T-II N. Budkiewicz, T-II M. Cone, T-I K. Adzemovic,
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
HM506 arrived on scene of a tractor trailer overturned in the median at 149 – I95 South bound lanes. Suppression units on scene were damming and diking to capture leaking diesel fuel from the saddle tank of the overturned vehicle. The drivere recently filled up both saddle tank and was carrying approximately 500 gallons of which maybe 20 gallons leaked prior to our arrival to the scene. HM506 personnel placed (14) booms down at an interval of approximately every 10 – 15 feet and used plug -n' dike puddy to contain the diesel fuel to the saddle tank. There was no damage to the saddle tank, fuel was leaking from the cap. An LEPC form was given to the driver of the vehicle, Mr. Bert R. Rash at 06:50 A.M. Mr. Rash spoke with his supervisor and decided to use Atlas for any clean-up associated with the fuel spill.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 11/30/2020 06:50
Name: Bert Riley Rash
Company/Agency: Automatic Rolls Bread Company Baltimore, Md.
Address:
Phone/Email:
Notes: Driver of the vehicle chose Atlas for clean-up.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 11/30/2020 10:30
Name: David Ungar
Company/Agency: PWC Storm Water/Environmental Services
Address:
Phone/Email: (703)792-7104
Notes: Left voicemail

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 11/30/2020 10:35
Name: Alan Lacy
Company/Agency: DEQ
Address:
Phone/Email: (703)583-3864
Notes: Left voicemail

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 11/30/2020 10:40
Name: Charlie Fitzsimmons
Company/Agency:
Address:
Phone/Email: (410)305-3027
Notes: Left Voicemail

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: ☐ Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 11/30/2020 06:50 Provided to Name:	
VA EOC Notified Date/Time: 11/30/2020 10:30	Name: Mr. Morris

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

photos:

Repeating Section Click + to add additional entries:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD200039565	Date/Time: 12/10/2020 11:59
Location: 12175 Hopper Lane Bristow	
Report Completed by: Knight	Incident Commander: Forbes

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Horvath, Walsh, Williams
HS516 Unit personnel:
Other HM Personnel: Knight, Favole

INCIDENT NARRATIVE
Arrived on scene to find a trash truck broken down in the road. The vehicle was owned by republic services. The truck had a mechanical failure that caused a rip in the radiator. The truck leaked approximately 6 gallons of coolant. Approximatly 2 gallons of coolant ran into the storm drain. Initial units arrived and initiated damming operations. Leaves were located in the storm drain limiting the transfer of product to lower storm drains. RP initiated a clean up contractor and the scene was turned over to them.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 12/10/2020 12:30
Name: Alex Gonzalez
Company/Agency: Republic waste
Address: West ox Rd. Fairfax Va.
Phone/Email: 703-818-8222
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Other
Date/Time: 12/10/2020 12:30
Name: Sam
Company/Agency: Sparklean
Address:
Phone/Email: 703-626-5116
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative

Date/Time: 12/10/2020 1620
Name: David Unger
Company/Agency: Storm water
Address:
Phone/Email: 703-792-7104
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 12/10/2020 Provided to Name:	
VA EOC Notified Date/Time: 12/10/2020 17:30	Name:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD200039774	Date/Time: 12/11/2020 20:45
Location: 2522 Oak Tree Lane Woodbridge Va 22191	
Report Completed by: Newell	Incident Commander: Ross

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Newell, Snitwongse, Heard, Spangler
HS516 Unit personnel: Gonzalez, Sheedy, Boggs
Other HM Personnel: None

INCIDENT NARRATIVE
E523 was dispatched to an inside gas leak at an end-of-the-row townhouse. After they arrived onscene they noted a strong gasoline smell inside the residence and the delta exposure residence. The owner of the address stated he was cleaning paint brushes with gasoline outside in a walk up basement stairwell over a drian pipe. He stated that he used appox two cups of gasoline. E523 requested a consult. After receiving information from them we responded to assess the situation. PID in the residence was 6107 PPB and normal atmospheric readings on the 4 gas. Delta 1 exposure readings was 696 PPB on PID and normal atmospheric on the 4 gas. Delta 2 exposure was 329 PPB and normal atmospheric on the 4 gas. E523 and T523 vented the structure and readings diminished to 2500 PPB on PID and normal atmospheric on 4 gas. Exposures were 93 on PID and normal atmospheric readings. The hydrocarbon (oil finding) paper was negative in sump pump well and positive in 5 gallon bucket that was used to wash the paint brushes. FM512 was notified. Owner was given LEPC and they contacted Paul from Atlas for clean up. Scene tunred over to FM512.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 12/11/2020 21:10
Name: Alfred Kusi
Company/Agency:
Address: 2524 Oak Tree Lane Woodbridge Va 22191
Phone/Email: None
Notes: DL #T61344480

Repeating Section Click + to add additional entries:

Additional Notes/Information: VDEM #VDEN202012111828
HAZMAT Officer Comments:
Fire Marshal Assigned: YES Lead Officer: Lt. Hinson FM512
Discharge/LEPC Form Provided: ☒ Date/Time: 12/11/2020 21:10 Provided to Name: Alfred Kusi

VA EOC Notified Date/Time: 12/11/2020 23:05	Name: Morrisette

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 200040351	Date/Time: 12/16/2020 11:59
Location: Centreville Rd./Fairfax County Line	
Report Completed by: Mark Nicol	Incident Commander: LT. Thiel

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Lt. Nicol, T-II cone, T-I Adzemovic
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
Took a phone consult from E508 who was dispatched to a pickup size plow, who ran off the roadway and punctured the fuel tank on a piece of pipe. The driver recently fueled up approximately a 26 gallon tank just prior to the accident and E508 was able to dam and dike the fuel spill until the leak stopped. Less than 15 gallons spilled onto the roadway and was cleaned up by E508. HM506 was dispatched and then placed in service prior to our arrival to the scene. E508 mitigated the problem and HM506 has nothing further to report.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time: 12/16/2020 21:00	Name: William Morrissette

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD200041646	Date/Time: 12/26/2020 17:15
Location: 314 Mill Street Occoquan VA	
Report Completed by: Captain Robert Moreau	Incident Commander: N/A

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Captain Robert Moreau
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
Received phone call from PWCPSCC regarding notification that they received from the EPA Region 3 office. EPA Region 3 office received a phone call from a concerned citizen regarding a sheen on the Occoquan River, parallel to the Occoquan Police Station. Captain Moreau advised Fire Supervisor to send an Engine to investigate the hazard and to provide DHM contact number in the comments so they could contact DHM. E502 investigated and met with Occoquan PD. E502 contacted Captain Moreau via mobile and stated that Occoquan PD reported that when they receive heavy rain, "sea foam" floats down the river and is believed to be caused by Fairfax Water Authority. Occoquan PD reports this happens frequently. No sheen was visible on the water, E502 did report "sea foam". Captain Moreau advised no need to have Hazmat units come out. He would notify proper agencies for follow up. VAEOC report number VDEM 2020-12-26-1911.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 12/26/2020 20:23
Name: Alan Lacy / Steven Fontenot
Company/Agency: : VADEQ
Address:
Phone/Email:
Notes: Courtesy email notification

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 12/26/2020 20:20
Name: Charlie Fitzsimmons
Company/Agency: US EPA Coordinator
Address:
Phone/Email:

Notes: Courtesy email notification

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: NO Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time: 12/26/2020 00:00	Name: Jacob

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 210000231	Date/Time: 1/3/2021 09:25
Location: 16205 Tiffany Ln. Haymarket, Va.20169	
Report Completed by: Lt. Mark Nicol	Incident Commander: BC504 Clark

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Captain Newell, Lt. Nicol, T-II Budkiewicz, T-II Gonzalez, T-II Cone, T-I Heard, T-I Adzemovic, T-I Hufford, T-I Sheedy
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
HM506 Units arrived on scene of a heating fuel tank that leaked all of the fuel out of the tank from a recent delivery on December 30, 2020. The tank held approximately 275 gallons and was completely empty. It was witnessed by units on scene that the fuel oil leaked into the soil beneath the tank and per the first arriving units investigation none of the fuel leaked inside of the residence, but there was a slight odor of fuel inside a mud room in the vicinity of the area where the leak happened. Normal background QRAE 4-Gas readings were taken inside of the home and all below grade rooms were searched for traces of the leak. We also checked a nearby creek that was located on the opposite side of the home, for any indications of the fuel and nothing was found. An LEPC Form was given to Mr. & Mrs. Steven Corbin at the scene and they were on the phone with their insurance company to try and resolve the issue. HM506 went ready with nothing further to report.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 1/03/2021 10:30
Name: Steven and Courtney Corbin
Company/Agency:
Address: 16205 Tiffany Ln. Haymarket, Va. 20169
Phone/Email:
Notes: Given an LEPC Form.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 1/03/2021 10:35
Name: Alan Lacy
Company/Agency: Virginia DEQ
Address:
Phone/Email: (703)583-3864

Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 1/03/2021 10:35
Name: Charlie Fitzsimmons
Company/Agency: EPA
Address:
Phone/Email: (410)305-3027
Notes: Left voicemail.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 1/03/2021 10:35
Name: Matt Adkins
Company/Agency: DFR Hazmat Coordinator
Address:
Phone/Email: (703)663-0056
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 1/03/2021 10:30 Provided to Name: Steven & Courtney Corbin	
VA EOC Notified Date/Time: 1/3/2021 16:00	Name: Mr. Morris

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

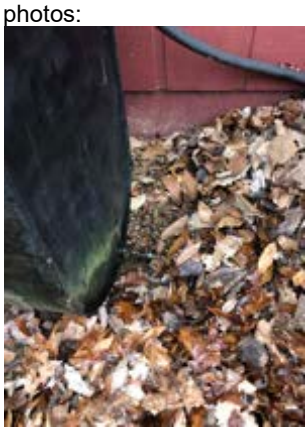
photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:



Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

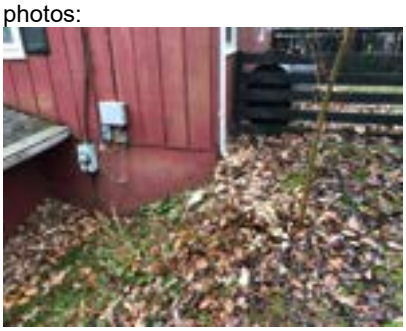
photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:



Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 210000728	Date/Time: 1/7/2021 00:00
Location: PW Parkway/ Cloverhill Rd	
Report Completed by: C. Adams	Incident Commander:

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: NA
HS516 Unit personnel: NA
Other HM Personnel: HMO 502 Chris Adams

INCIDENT NARRATIVE
Station 6 received a phone consult from E507. While dealing with a motor vehicle accident, E507 found a placarded box in the back of a pick up truck. The box was placarded 7 Radioactive II. E507 asked the driver what was in the box, and driver responded Radioactive soil. E507 cared for the patients on the scene, acquired the Bill of Lading, and performed a phone consult with station 6 personnel. Duty Hazmat Officer Newell contacted the Uniform Hazmat Officer Adams to inform him of the situation. Capt. Adams advised Capt. Newell that HMO 502 would investigate the scene. HMO 502 arrived on the scene to find a undamaged Soil Density Gauge in the back of a pickup truck owned by Terracon. Driver was transported to the hospital prior to HMO 502's arrival. The on scene BC had contacted Corporate Radiation Safety Officer Adam Maler, and was advised someone was being sent to the scene to pick up the equipment. HMO 502 reached out to Mr. Maler to gather more information about eta. HMO 502 performed a 360 evaluation to assess container. Marking stated .3 transportation index. HMO 502 found highest reading with PRD at 1 meter from container to be well within the expected range. HMO 502 remained on scene until a representative from Terracon arrived and took position of the device. nter text.

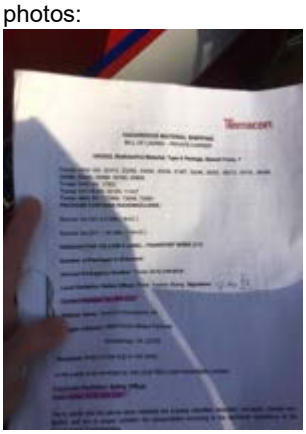
NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 1/7/2021
Name: Adam Maler
Company/Agency: Terracon Safety Officer
Address:
Phone/Email: 913 433-3387
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:
HAZMAT Officer Comments:
Fire Marshal Assigned: NO Lead Officer:

Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:



Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD210000823	Date/Time: 1/8/2021 10:07
Location: 7532 Gardner Park Dr.	
Report Completed by: Lt. Horvath	Incident Commander: BC Barbachano

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Lt. Horvath, Walsh, Cramsey
HS516 Unit personnel:
Other HM Personnel: Mirabile, Favole, Gibson

INCIDENT NARRATIVE
Dispatched for mail that was opened and had a clear plastic bag of pills and white powder inside of it. Arrived on scene and meet up with BC501 and HM502. HM502 requested that we go inside, monitor the area, take photos and then double bag the envelope and the bag full of white pills and powder. Had the crew put on full firefighter PPE and SCBA and enter the structure. We had a RIT crew standing by and a line pulled for emergency decon off of E504 if needed. Crew had all normal readings on the 4-gas, PID and PRD. Crew then double bagged both items and exited the structure. Upon exiting the structure the return address (a PO BOX in Gainesville, VA) was given to PD. Requested PD to goto the post office and see if they could find out who the owner of the PO box was. They were able to and contacted them. Per PD the sender said the contants was narco 325mg pills. We researched Narco 325mg and found out that they are a controlled substance (hydrocodone acetaminophen and bitatrate). HM502 made notifications and we remained on-scene until released by HM502.

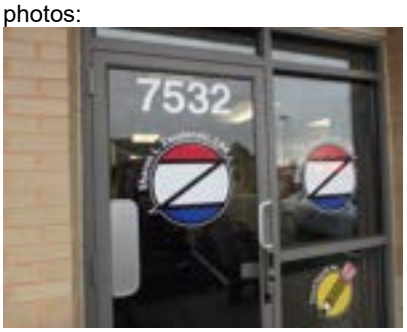
NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:
HAZMAT Officer Comments:
Fire Marshal Assigned: Lead Officer:
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:

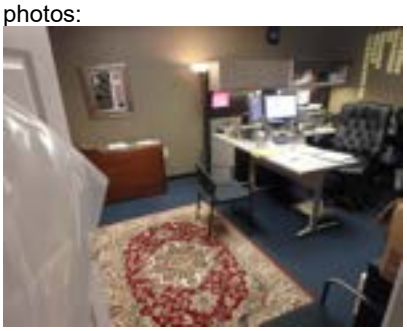
VA EOC Notified Date/Time:	Name:

photos:



Repeating Section Click + to add additional entries:

photos:



Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD210000848	Date/Time: 1/8/2021 15:04
Location: 1635 Woodside Dr.	
Report Completed by: Lt. Horvath	Incident Commander: E512 officerH

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Horvath, Walsh, Cramsey
HS516 Unit personnel:
Other HM Personnel: Mirabile, Favole, Gibson

INCIDENT NARRATIVE
Dispatched for a white/grey substance in a bag with skull and bones on it. Started enroute but was placed inservice by E512. Per PD it was an illegal substance and they would handle. Notified HM502.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 210001113	Date/Time: 1/11/2021 00:00
Location: 10562 Redoubt Road, Manassas, VA 20110	
Report Completed by: TII Brendan Hayes	Incident Commander: BC W. Smith (BC581)

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Lt. Moore, TII Hayes, TII Sawicki, TII White, TII Podobed, TI Bergstreser, TI Waln, TI Menard
HS516 Unit personnel:
Other HM Personnel: Captain Adams

INCIDENT NARRATIVE
Captain Halman of Rescue Engine 521 (RE521) contacted DHM Hayes via a phone consult for a truck fire rekindle incident at 10562 Redoubt Rd. in Manassas. Captain Halman stated that the previous shift in the course of putting out the fire from the initial fire incident at approximately 0300 this morning and his efforts to extinguish the rekindle, they had used a lot of water and even some foam. This created a lot of runoff that was mixed with the diesel fuel from the saddletanks of the two tractor trailers that were involved. Captain Halman noted that an excessive amount of runoff was flowing off the incident property and into an adjacent field and wooded area. E506, R506, and K506 added to the call and responded to the scene. Co. 6 units arrived on scene and began to assess the situation. The fireground was a fenced in dirt and gravel lot used for parking tractor trailers and other work vehicles. There was considerable runoff from the two trucks that had been extinguished and there was a sheen and odor of diesel fuel on the water. The runoff began to pool naturally at the base of a small berm at the fence line of the property. Approximately 100 gallons of water had pooled at the berm and had flowed around the side of the berm and off the property into the adjacent grassy field. RE521 and Tower 501 (TW501) had used an excavator from the business next door to reinforce the berm and make it bigger to dam any remaining runoff before Co. 6 personnel arrived. HM personnel were sent into the adjacent field and wooded area to see how far the runoff extended. The runoff skirted the wooded area and ran approximately a quarter mile reaching to a trio of large culverts. The runoff was flowing slowly toward the culverts but had not reached them yet. HM Personnel placed absorbant booms and pads in front of the culverts (see photos). The runoff was tested positive for hydrocarbons with hydrocarbon paper at various points along its route to the culverts. Normal readings of the pooled runoff at the berm were obtained with Qrae 4-gas monitors. Absorbant pads were placed on the ground around the four saddletanks of the burned vehicles. HMO Adams was notified and reported to the scene. BC581 Smith discovered that the property was owned by a Bill Quinn and both he and HMO Adams contacted Mr. Quinn and notified him that he, as property owner, would be responsible for the cleanup. Mr. Quinn stated that he would report to the scene. HMO Adams also sent Mr. Quinn his business card and a copy of the LEPC electronically. BC Smith

notified the Manassas City Fire Department Fire Marshal, Manassas City Fire Safety Officer and attempted to notify the City of Manassas Storm Water Management Personnel. RE521, TW501, BC581, FM581, R506, E506, and K506 were released. HMO Adams remained on scene to wait for Mr. Quinn and to make the required notifications.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 1-11-2021 1013
Name: David Unger
Company/Agency: PWC Stormwater
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 1-11-2021 1020
Name: Allen Lacey
Company/Agency: DEQ
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 1-11-2021 1002
Name: Bill Quinn
Company/Agency:
Address:
Phone/Email: 703-906-2777
Notes: Apex Environmental Services is handling cleanup

Repeating Section Click + to add additional entries:

Additional Notes/Information: Justin Hruneni Assistant Fire Marshal, City of Manassas (Office: 703-257-8455, Cell: 571-719-0763)
HAZMAT Officer Comments:
Fire Marshal Assigned: Lead Officer:
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:

VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 210001317	Date/Time: 1/12/2021 19:51
Location: 160 I95 S HWY Woodbridge 22192	
Report Completed by: Lt. Mark Nicol	Incident Commander: BC Godin (BC506)

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Captain Newell, Lt. Nicol, T-II Snitwongse, T-II Gonzalez, T-II Cone, T-I Spangler, T-I Hufford, T-I Adzemovic
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
Dispatched and placed in service by command. Fire was extinguished with no fire impingement on the 44,770 pounds of car batteries being hauled on the tractor trailer. HM506 and HMS506 went ready prior to our arrival on the scene with nothing to report.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 1-12-2021 20:05
Name: BC Godin
Company/Agency: DCVFD BC506
Address:
Phone/Email:
Notes: Captain Newell spoke over the radio with Command.

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: MNSS210001365	Date/Time: 3/30/2021 11:29
Location: 9021 Whispering Pine Court	
Report Completed by: Knight	Incident Commander: E501B

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Knight
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
Phone Consult only: E501B called to advise of a 100 gallon diesel tank that was leaking at a fuel line. Driver secured leak with approximatley 5 gallons of product lost. Units onscene handled material with absorbant. No further services needed.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD210002011	Date/Time: 1/19/2021 09:20
Location: River Rock Way/Potomac Center Blvd Woodbridge Va.	
Report Completed by: Knight	Incident Commander: Wyks

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Horvath, Walsh
HS516 Unit personnel: Pistole
Other HM Personnel: Knight, Favole

INCIDENT NARRATIVE
Requested for a Hazmat by SAF502. SAF502 was traveling in Woodbridge and saw a dump truck leaking a signifagant amount of fuel. Arrivel to find a dump truck with a fuel leak. The leak was considerably smaller than it was initially according to SAF502. Stay dry was applied by E512 to protect the storm drains. No product entered the storm drain. A 50 gallon pop up pool was deployed. The vehicle owner arrived and applied more stay dry and repaired the vehicle. The owner was given an LEPC and contacted Atlas environmental. One pop up pool and 2 bags of stay dry used.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 01/19/2021 0940
Name: Johnny Sejas
Company/Agency: ST Services of VA LLC
Address:
Phone/Email: 571-208-3328c 703-932-5288w
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 01/19/2021 0940 Provided to Name: Johnny Sejas	
VA EOC Notified Date/Time: 1/19/2021 00:00	Name: Malone

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

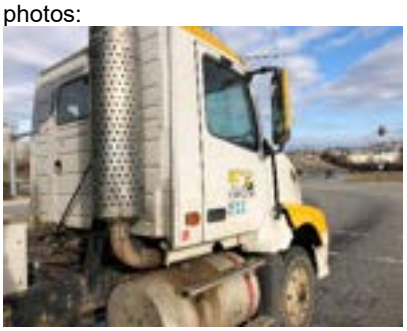
photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:



Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 210002017	Date/Time: 1/19/2021 11:15
Location: Smoketown / North Bonnie Rd.	
Report Completed by: Lt. Horvath	Incident Commander: BC502 Wyks

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Horvath, Walsh, Cramsey
HS516 Unit personnel: Pistole
Other HM Personnel: Knight, Gibson, Favole

INCIDENT NARRATIVE
Dispatched to a porta john truck that had rolled over and then landed on all 4 tires. When rolling over some off the blue liquid and gray water had spilled on the road. It was stopped just as it started to enter a catch basin for a storm drain. The owner was already on scene when we arrived on-scene. He was starting to clean up. I met with him and gave him a LEPC form and explained what he was responsible to do. He tried calling APEX but no one answered. So he tried Atlas. Atlas told him that he was capable to do the clean up and they weren't coming. HM502 was contacted and he contacted Atlas to make sure that was the case. HM502 also came to the scene to witness the cleanup was done properly. Scene was turned over to HM502. No further notifications were needed.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Other
Date/Time: 01-19-2021
Name: Greg Walbridge - Owner
Company/Agency: Patriot Potty
Address: 9115 Industry Dr. Manassas Park
Phone/Email: Cell; 7030-763-6723
Notes: Blue porta-john liquid and gray water

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: ☐ Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 01-19-2021/1135 Provided to Name: Greg Walbridge	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

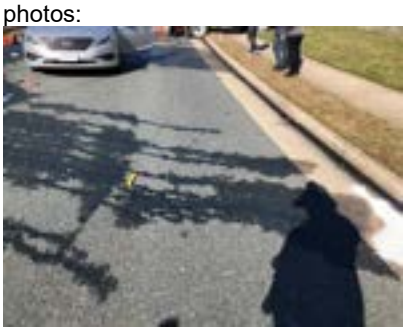
photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:



Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 210002857	Date/Time: 1/26/2021 20:51
Location: 15701 Carrs Brooke Way	
Report Completed by: Lt. Horvath	Incident Commander: N/A

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Horvath, Shatzer
HS516 Unit personnel:
Other HM Personnel: Favole

INCIDENT NARRATIVE
Received a phone consult from FM510: Schultz. He stated a fuel spill and oil were all over the entire parking lot of the Exxon gas station. The station had turned off the pumps and no cars were being allowed onto the property. HM506, E506 and R506 respond to survey the scene. Units arrived onscene to find oil streaks in the parking lot as well as a pool of oil by the curb. Two oil dry cubs were made to make sure no more oil would run down the parking lot. We had rain most of the day today so the fuel spill and oil had spread all over the property. FM stated they also had two hoses torn off when vechicles drove off yesterday still in there tank. Gave the manager on duty a LEPC form and explained the process. Duty manager had already contacted 7-Elevens emengency contact number to report the incident. The emergency center stated a clean-up contractor would be out within 3 hrs. They didn't give the manager the name of the cleanp contractor so he called back and they were able to supply that info. Scene was turned over to FM510. Email sent to DEQ. No other notificatins were made.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 01-26-2021 / 2118
Name: Joshua Collinsa
Company/Agency: 7-11
Address: 15701 carrs Brooke Way
Phone/Email: 571-599-0386
Notes: Store Associate / Cashier

Repeating Section Click + to add additional entries:

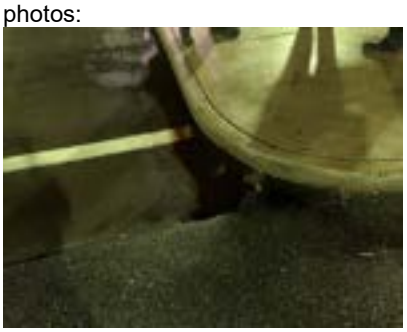
NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 01-26-2021
Name:
Company/Agency: Aecom (Clean-Up Contractor)
Address:

Phone/Email: 440-666-5489 or 216-622-2300
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: YES Lead Officer: FM510	
Discharge/LEPC Form Provided: ☒ Date/Time: 01-26-2021 / 2117 Provided to Name: Joshua Collins	
VA EOC Notified Date/Time:	Name:

photos:

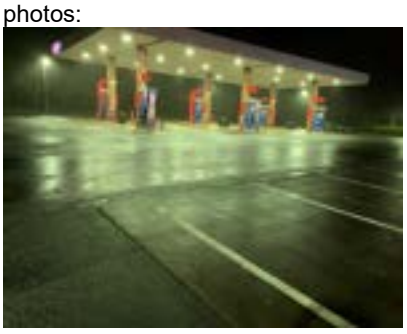


Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:



Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 210003504	Date/Time: 2/1/2021 00:00
Location: Linton Hall Rd / Glenkirk Rd	
Report Completed by: Capt. Chris Adams	Incident Commander: NA

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: NA
HS516 Unit personnel: NA
Other HM Personnel: HMO 502

INCIDENT NARRATIVE
Hazmat Coordinator received a DEQ report of a possible sheen and smell in the creek near the intersection of Linton Hall and Glenkirk in Gainesville. DEQ representative Steven Fontenot was notified, and in turn notified PWCDFR. Capt. Adams went to the scene to investigate and spoke with Fontenot who was also on the scene. Both individuals looked in all water sources in the area and found nothing. Capt Adams noticed a abundance of waterfowl, which helped to justify that the area water was clean and healthy. Fontenot, followed up with citizen who made the complaint and gathered no further information. No Hazmat follow up was required

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 2/1/2021
Name: Steven Fontenot
Company/Agency: DEQ
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 210003548	Date/Time: 2/1/2021 16:43
Location: 14001 Dancing Twig Drive Gainesville, Va. 20155	
Report Completed by: Mark Nicol	Incident Commander: Captain Chris Adams

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Mark Nicol, James Snitwongse, Eric Spangler, David Hufford
HS516 Unit personnel:
Other HM Personnel: Captain Chris Adams

INCIDENT NARRATIVE
R506 assisted HMO502 with investigating the smell of gasoline in the area of Dancing Twig Drive and Crackling Fire Drive. A storm drain washout was located behind 14001 Crackling Fire Drive that had an odor of gasoline and a sheen on top of the water coming from the storm drain system. We put down multiple sock booms to prevent the petroleum based product from going any further. We were unable to locate the source of an undetermined amount or the responsible party for the cleanup, but have isolated it to the drain system. The call for the investigation was directed to VADEQ and routed through PWC Storm Water and Environmental Services. The location was originally located by a representative from PWC Storm Water and Environmental Services. No cleanup company was called while on scene.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: YES Lead Officer: Lt. Paul Smiljanich	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time: 2/1/2021 23:15	Name: Mr. Hughes

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

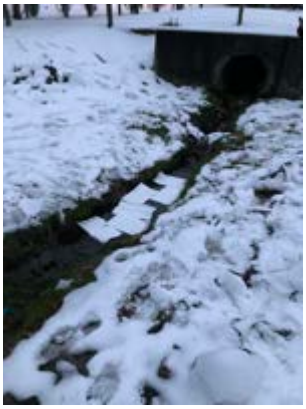
photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:



Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD210003621	Date/Time: 2/2/2021 00:00
Location: 8217 Crackling Fire Dr.	
Report Completed by: Capt Chris Adams	Incident Commander: NA

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Horvath, Walsh
HS516 Unit personnel: NA
Other HM Personnel: Capt. Chris Adams

INCIDENT NARRATIVE
This was a next day follow up from an illicit discharge the day before. DEQ Representative Fontenot requested additional booms be deployed to aid in the action performed the night before. HM506 arrived on the scene to deploy 3 more sets of booms across strategic points down stream to capture product missed up stream. Clean up crews will be handled by DEQ and/or Environmental services.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 2/2/2021
Name: Steven Fontenot
Company/Agency: DEQ
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: YES Lead Officer: Smiljanich	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 210004161	Date/Time: 2/7/2021 04:38
Location: Sudley Manor Dr. & Braemar Village Plz.	
Report Completed by: Lt. Horvath	Incident Commander: Lt. Horvath

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Horvath, Mirabile
HS516 Unit personnel: N/A
Other HM Personnel: Gant, Gibson, Pistole, Kwak

INCIDENT NARRATIVE
Received a phone consult from E525 officer. They advised they had motor fluids on the roadway from an overtuned plow truck. They stated they used the absorbent they had on E525 and the salt that had spilled out of the plow truck to stop all the fluids but some got into the storm drain due to the rain. I advised they needed to dig some dirt up from the road side and put it behind the salt to assure due to the rain the dams don't fail, the officer replied ok. I advised we were on the way to the scene. HM506, E506 and R506 arrived on scene and did a face to face with E525 officer. They advised that the snow plow driver didn't realize the road ended and turned quickly which caused the plow truck to overturn. When HM506, E506 and R506 arrived on scene Aarons towing was already in the process of uprighing the truck. The plow trucks motor oil and other fluids had spilled onto the roadway. The weather was a steady rain. E525 crew added more salt to daming that they did but no dirt. Co. 506 units put absorbent behind the salt burms and the placed booms down where the flow was going off the road toward the storm drain. Did a face to face with the plow co. supervisor, explained and gave her a LEPC form. She stated she was calling APEX to respond for the cleanup. Released E525 and E506. She had trouble reaching APEX but said she was able to get ahold of them and the dispatcher said she was dispatching a crew and they would call back if they had any questions. HM506 and R506 remained on scene to await Apex arrival. The rain volume picked up and became heavy at times before switching to snow. A – Shift Captain Moreau and E506 came to scene to releave us. R506 cleared the scene and the scene was turned over to E506 (A-Shift) Captain Moreau and HM506 remained on the scene waiting for Apex to arrive.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 02-07-2021 / 0501
Name: Tiphanie Gregory

Company/Agency: Bryant's
Address: 9529 Elk Run Rd. Cattlettet, VA
Phone/Email: 703-594-3040
Notes: Supervisor

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Other
Date/Time: 02-07-2021 / 0501
Name: Kyle Shrader
Company/Agency: Bryant's
Address: 9529 Elk Run Rd. Cattlettet, VA
Phone/Email: 703-594-3040
Notes: Plow Truck Driver

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Other
Date/Time: 02-07-2021 / 0627
Name: Joe Warner
Company/Agency: VDOT
Address:
Phone/Email: 703-638-8324
Notes: Supervisor came to the scene since it was a VDOT contractor

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Other
Date/Time: 02-07-2021 / 0815
Name:
Company/Agency: PWC STORM WATER/ Environmental Services
Address:
Phone/Email:
Notes: Sent Email

Repeating Section Click + to add additional entries:

Additional Notes/Information: Used 5 x white booms & 2 x orange booms and 5 bags of absorbent	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 02-07-2021 / 0504 Provided to Name:	
VA EOC Notified Date/Time: 2/7/2021 05:25	Name: Thelma Blair

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD210005032	Date/Time: 2/15/2021 00:00
Location: 7925 Willow Pond Ct Manassas	
Report Completed by: Knight	Incident Commander: Knight

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Walsh, Horvath, Knight, Mirabile
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
Hazmat phone consult requested by E516. They were dispatched to the above scene for an investigation. Upon arrival they found a box stored in the rafters of a home. The boxes appeared to have spilt open and a white corrsive looking substance was coming out and sliding down the wall. The substance appeared to be dried and also appeared to have been there for years. When hazmat units arrived information was gathered and we bagan to sample and test to determine the material and its leval of hazard. HMO 502 arrived. It was determined the material was not explosive or flammable. The substance was later determined to likely be sodium carbonate. No further Hazmat services or notification were needed. The home owner was advised of findings and proper disposal. Returned to service.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 210005608	Date/Time: 2/21/2021 00:00
Location: 12755 Manor Hall Ct, Bristow, Va	
Report Completed by: Jeff Kwak	Incident Commander: Barbarachano

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Joe Mirabile, John Cramsey, Ricardo Gibson, Marc Walsh
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
Structure Fire/car fire. Fire out on Arrival of H506. H506 requested due to fuel leak from cars going into drain and into retention pond. Rough estimate of 20-30 gallons of fuel into retention pond. Damming performed prior to arrival FMO Hinson on scene to interview property owner. LEPC form was given to property owner as the responsible party. FM's will follow up.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Property Owner
Date/Time: 2/21/21
Name: Damon Hutchins
Company/Agency:
Address: 12755 Manor Hall Ct, Bristow, VA
Phone/Email: 571-358-5321
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: YES Lead Officer: Hinson	
Discharge/LEPC Form Provided: ☒ Date/Time: 2.21.21 @0500 Provided to Name:	
VA EOC Notified Date/Time: 2/21/2021 00:00	Name: Blair, Themla

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

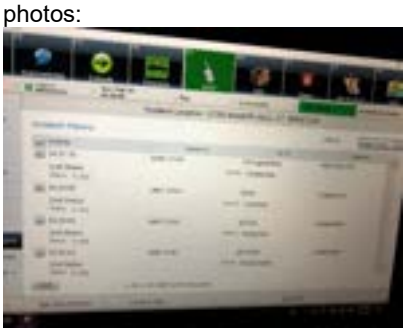
photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:



Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD210005954	Date/Time: 2/24/2021 22:50
Location: 2942 Madeira Ct Woodbridge, Va 22192	
Report Completed by: Dylan Moore	Incident Commander: T2 Greg Thomas

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: T1 Matt Waln, T2 Semyon Podobed, T1 Lee Berstreger, Lt Dylan Moore
HS516 Unit personnel:
Other HM Personnel: T2 John Sawicki, T1 Stephen Mickle, T1 Tyler Barnikel, T2 Jennifer Delp

INCIDENT NARRATIVE
E514 requested a Haz Mat consult due to a smell in the area of 2942 Mediera Court, they also reported that their 4 gas monitor had shown a low O2 level of 19% in the area of the smell. E506, R506 and HM506 went en route to the scene and found a sulfur like smell in the area of the dispatched address. Units checked the house at 2942, the houses on either side as well as the surrounding area including sewer and storm drains using 4 gas, PID and Multi Rae monitors. No abnormal readings were found and the low O2 readings could not be duplicated and were attributed to monitor issues. Nothing was found beyond the smell, strongest in front of 2942. Occupants were advised to call back if anything changed or worsened. EOC notified at 1234, Specialist Malone. Report # VDEM 2021-02-24-2232

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 2/24/2021 00:34
Name: Specialist Malone
Company/Agency: Va EOC
Address:
Phone/Email: Phone
Notes: Courtesy Notification

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 210006712	Date/Time: 3/3/2021 13:09
Location: 15405 Fleetwood Drive Nokesville Va.	
Report Completed by: Knight	Incident Commander: Barbachano

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Gibson
HS516 Unit personnel:
Other HM Personnel: Mirable, Walsh, Pistole*,Cramsey*, Renfro*

INCIDENT NARRATIVE
R506 was dispatched to an AccX. Arrived on scene to find a DOA MVC with entrapment. While on scene they discovered an involved dump truck leaking diesel fuel. Approximately 40 Gallons are estimated to have been lost. The product was dammed to prevent further travel. LEPC form was given to the RP and RP contacted Atlas environmental. R506's officer requested level B suits and boots for protection due to the location to where they would be operating there was standing water contaminated with diesel and body fluids. After the Crash and ME investigation Rescue 506's crew removed the body from the vehicle in Level B suits with tingley boots. Prior to leaving Atlas Environmental arrived and removed the material. Items used: Tingley boots (size 10)1 (size 11)3, 2 L/XL encapsulated level B suits. 2 L/XL non-encapsulated level B suits. 1 roll chem tape.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 03/03/2021 1400
Name: Julio Hernandez
Company/Agency: J&S enterprise services LLC
Address: 116 Wing Edward Court Culpeper Va 22701
Phone/Email: 703-861-1003
Notes: DL# T62766635

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Property Owner
Date/Time: 03/03/2021 1400
Name: Glen Gill
Company/Agency: VDOT
Address: N/A
Phone/Email: 571-221-6074
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 03/03/2021 1420
Name:
Company/Agency: Atlas Environmental
Address:
Phone/Email:
Notes: Arrived prior to clearing scene

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: ___ Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 03/03/2021 1440 Provided to Name: Julio Hernandez	
VA EOC Notified Date/Time: 3/3/2021 20:00	Name: Malone

photos:

Repeating Section Click + to add additional entries:

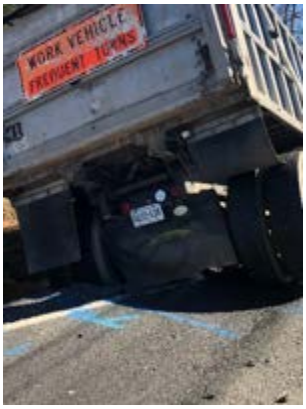
photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:



Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD210007311	Date/Time: 3/8/2021 17:09
Location: Featherbed Lane and Lee Highway, Manassas, Va 20109	
Report Completed by: Lt Dylan Moore	Incident Commander: BC Scott Arft

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Lt Dylan Moore, T2 Podobed, T1 Menard, T1 Bergstreser, T2 Hayes, T2 Sawicki, T1 Mickle
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE

Engine, Rescue and Haz Mat 506 were dispatched to assist with an auto accident involving an overturned dump truck on the Bull Run Battlefield at the intersection of Lee Highway and Groveton Road. On the way to the call Lt Moore spoke with BC Arft who stated the vehicle had leaked up to 80 gallons of hydraulic fluid, diesel and engine oil, primarily into the grass but also on the roadway. He stated that VDOT had been notified and was sending a sand truck to treat the road and that no waterways were threatened. Lt Moore also spoke with Matt Adkins who stated that the Park Rangers would be the only point of contact for the Federal government that needed to be notified. BC Arft had already requested that Rangers respond to the scene.

When company 6 units arrived on scene they found the dump truck on its side in the grass after having traveled through a wooden fence onto the battlefield. There was a slick of oil and other fluids on the road and a slow active leak still coming from the truck, flowing into the grass. The driver of the truck had contacted the responsible party, Betsy Bonilla, who had already been notified and received an LEPC. She selected Atlas to be the clean up company, although this would later change due to Federal regulations. Tow ruck operators were already working on uprighting the vehicle. The majority of the spilled fluids had been absorbed into the grassy ground and were not travelling anywhere. To be safe a nearby creek was checked both visually and with oil finding paper but there was no evidence that any of the spill had come close to reaching it. While uprighting the vehicle a small fire started behind the driver's side front wheel, but it was quickly extinguished with a dry chemical extinguisher. After the vehicle was uprighted haz mat technicians checked the area to verify there was no further leakage or unobserved fluids.

Ranger Luke McHale then arrived on scene and spoke with Technician 2 Hayes. He stated that because this was federal property special rules involving soil testing and clean up needed to be followed and that he would provide a list of acceptable companies for the actual clean up. He was placed in direct contact with the responsible party and took possession of the scene. Lt Moore, after speaking with Captain Adams, informed Ranger McHale that Captain Adams would follow up with him in a week or so to see if anything else was needed from PWC DFR.

VA EOC Report Number: VDEM-2021-03-08-2315

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 3/8/2021 17:50
Name: Betsy Bonilla
Company/Agency:
Address:
Phone/Email: 703 801 9992
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 3/8/2021 18:30
Name: Ranger Luke McHale
Company/Agency: National Park Service
Address:
Phone/Email: 571 237 8131 luke_mchale@nps.gov
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 3/8/2021 18:30
Name: John Stafford
Company/Agency: VDOT
Address:
Phone/Email: 571 238 4871 john.stafford@vdot.virginia.gov
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information: VA EOC Report Number: VDEM-2021-03-08-2315	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 3/8/2021 17:50 Provided to Name: Betsy Bonilla	
VA EOC Notified Date/Time: 3/8/2021 20:35	Name: Tyler

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD210007512	Date/Time: 3/10/2021 12:34
Location: 8909 Euclid Ave Manassas VA 20111	
Report Completed by: Technician II Favole	Incident Commander: BC Tucker

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: N/A
HS516 Unit personnel: N/A
Other HM Personnel: N/A

INCIDENT NARRATIVE
BC 504 called the Duty HM for a phone consult regarding a "small hydraulic spill". BC 504 was running command on a rescue at Osbourn Park H.S. A worker got stuck 70 feet in the air while changing lights at the football field. BC 504 stated that "A small amount of hydraulic fluid leaked onto the football field but was contained. BC 504 also stated that a school official was on scene and was already notified that they had to have it cleaned." The duty HM confirmed that the school was going to clean it up and that nothing was actively leaking. The duty HM told BC 504 to call back if anything changed. No hazmat services required.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD210007914	Date/Time: 3/13/2021 20:50
Location: 9432 King George Dr, Manassas, Va 20109	
Report Completed by: Lt Dylan Moore	Incident Commander: T2 Oscar Urbina

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Lt Dylan Moore. T2 Hayes, T2 Sawicki
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
Haz Mat Consult Only: E511 called to report about 1 gallon of motor oil had been thrown onto a vehicle and was running off onto the ground. The oil did not enter any waterways and E511 put down absorbent to capture what was on the ground. They were advised to tell the vehicle owner to take the vehicle to a car wash to clean it off so that any runoff could be captured. No further action from HazMat. PD was also dispatched on the call to investigate the incident as vandalism. E511 agreed to bag up the absorbent and keep it at station 11 until Captain Adams could pick it up.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 03/13/2021 21:13
Name: Shawn McKay
Company/Agency: VA EOC
Address:
Phone/Email: 800 468 8892
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: YES Lead Officer: Lt Bloedel	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time: 3/13/2021 21:13	Name: Shawn McKay

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 210008043	Date/Time: 3/14/2021 21:43
Location: Lynhurst Dr/ Linsey Ct.	
Report Completed by: Knight	Incident Commander: Hunt

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Knight
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
Phone Consult only. E518 requested a phone consult for a hit and run accident that ruptured the fuel tank of a Toyota RAV4. Research provided the vehicle had a 14.5 gallon fuel tank. The owner did say the fuel tank was topped off prior to the incident. E518 mitigation measures were damming the fuel prior to storm drain and collecting fuel with Chimney bucket. Some fuel did enter the storm drain but it appeared minimal. Due to the current humitiy and wind it was determined the fuel would likely evaporate relitivly quickly. E518 officer was advised to attempt to get rid of the collected fuel with the tow company. No further hazmat services or notification needed.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 210008644	Date/Time: 3/20/2021 10:18
Location: Maple Branch Ln./Devlin Grove	
Report Completed by: Lt. Mark Nicol	Incident Commander: Lt. Jeremy Moore

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: N/A
HS516 Unit personnel:
Other HM Personnel: T-II Kristen Greiner, Lt. Michael Hauser

INCIDENT NARRATIVE
Phone consult for a diesel fuel spill on the road way. Less than 20 gallons with no pooling, was found in the roadway and E525's crew placed absorbent on the spill. There was no identified responsible party and no waterways were affected by the spill.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 210008781	Date/Time: 3/21/2021 14:25
Location: 8621 Deckert P	
Report Completed by: Jeff Kwak	Incident Commander: David Halman

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Joe Mirabile, John Cramsey, Joe Renfrow, Chuck Pistole
HS516 Unit personnel:
Other HM Personnel: Jeff Kwak, Marc Walsh, Mike Favole

INCIDENT NARRATIVE
HazMat 506 AOR to find Manassas City units controlling the scene and with home owner. Capt. David Halman was running battallion. Captain Halman states that the home owner's father passed away a couple years ago and they found a letter describing a silver suit case with a red "X". The letter stated that the suitcase had some dangerous chemicals in it and that it should be disposed of properly. Nancy the home owner found the case and called 911. City units found normal readings withe thier 4 gas. Hazmat 506 made entry with a team of 4 in structural PPE and SCBA. No abnormal readings found with Ludlum, Radeagle, PID, thermal gun, thermal imager, bear claw and MulitRae. Homeowner was given LEPC and directed to call someone on the list for removal. Suit case was not opened or discurbed in any way. Homeowner was also advised to keep garage open, make sure to keep out of garage until item is picked up and to call if they need us again

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Property Owner
Date/Time: 3/21/21
Name: Nancy M Rickey
Company/Agency:
Address: 8621 Deckert Pl
Phone/Email: 703-615-5205
Notes:

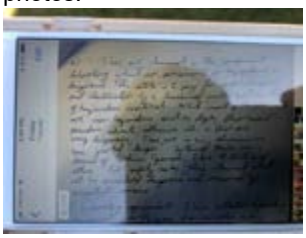
Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: NO Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 3.21.21 @1500 Provided to Name: Nancy Rickey	
VA EOC Notified Date/Time: 3/21/2021 16:48	Name: Hughes

photos:

Repeating Section Click + to add additional entries:

photos:



Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:


No change from Background

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD21032300012615	Date/Time: 3/23/2021 00:00
Location: 14455 Jefferson Davis hwy	
Report Completed by: Capt. Chris Adams	Incident Commander: NA

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: NA
HS516 Unit personnel: NA
Other HM Personnel: HMO 502

INCIDENT NARRATIVE
Hazmat Officer 502 arrived on an investigation of contaminated material that was unearthed by Shirley Contracting on the Rt 1 road widening project. The contaminated soil was discovered at the project site next to 144455 Jefferson Davis Hwy. At approximately 1230 on March 23, 2021 Captain Chris Adams arrived at the site to investigate the situation and materiall. Capt. Adams spoke to the lead foreman on site who directed him to a large pile of material that was totally encompassed in 10 mil plastic sheeting. Investigating the material was a group of men from Shirley Contracting who were testing the soil with a PID Photo Ionization detector. They advised they were getting VOC reading of 11 ppm, which was in their range of acceptable limits. These findings led them to believe that the soil could be placed back into the hole. Hazmat Officer 502 was then informed that on March 22, 2021 Atlas Environmental Services had been out to the site and had taken samples. Capt. Adams then advised Shirley Contracting to not move or do anything with the pile until they heard back from Atlas Environmental Services. Capt. Adams reached out to Atlas for follow up. Paul from Atlas, advised that they had been out to the site and the samples were sent out but they had not received any information on the samples at this time. The size of the pile is approximately 100 tons and according to Atlas it has some level of fuel contamination. Paul advised the site was once a gas station that they had been contracted to work on in the past.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Other
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

HAZMAT Officer Comments: This was a investigation follow up for county Risk Management	
Fire Marshal Assigned: ___ Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD210009896	Date/Time: 3/31/2021 06:00
Location: 131010 Public Safety Drive	
Report Completed by: Captain Robert Moreau	Incident Commander: N/A

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Captain Robert Moreau
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
Received a phone call from the training academy regading a POV that had a cracked oil pan. This was the cause of a reruit who had an accident while coming into work. Advised academy staff to place oil dry down to soak up the oil. Advised them to place contaminated oil in clean up bin used for this purpose. No waterway or storm drains impacted. Academy staff completed PWC spill report form. No notifications made to EOC or other agencies.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:
HAZMAT Officer Comments:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 210010555	Date/Time: 4/6/2021 03:10
Location: 150 I95 N Hwy Triangle, Va. 22172	
Report Completed by: Mark Nicol	Incident Commander: Capt. Matt Greenfield

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel:
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
Phone consult from E503B about a tractor trailer that hit the guardrail and punctured a 50 gallon saddle tank that was full. The puncture was near the top of the tank and the leak subsided. Engine 503's crew dammed and diked around approximately 1 quart of product that spilled onto the roadway/shoulder. A tow company was notified by VSP to remove remainder of fuel from the tank and tow the truck for repairs from damage sustaind in the crash. The scene was then turned over to VSP and E503B went ready with nothing further to report.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 4/6/2021 03:15
Name: S. West
Company/Agency: ABF Freight Systems Inc.
Address:
Phone/Email: SWest2@triad.rr.com
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: ___ Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 4/6/2021 03:45 Provided to Name: S. West	
VA EOC Notified Date/Time: 4/6/2021 03:30	Name: S. McCay

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD210010650	Date/Time: 4/6/2021 18:19
Location: Wakewater Way/ Barge Cir Woodbridge	
Report Completed by: Knight	Incident Commander: Darabond

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel:
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
Phone consult. Contacted by E523 for service call. E523 found a helium tank on the side of the road. The tank was intact and the weight of the tank implied it was empty. E523 was advised to take the tank back to the station to avoid further calls. C-shift will recover the tank and render it safe to recycle. No further services or notifications needed.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD210012148	Date/Time: 4/19/2021 14:41
Location: Sudley Manor rd/Prince William Pkwy	
Report Completed by: Knight	Incident Commander: Uribe

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Knight
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
Phone Consult: Contacted by R522 for an oil spill. R522 was dispatched to the intersection of Sudley Manor Dr and Prince William Pkwy. Upon arrival they found several motor oil containers. Two containers were intact and two appeared to have been run over and created an oil coating on Sudley Manor Rd. R522 had the road closed due to slick conditions and applied stay-dry to prevent the spill from going any further. Total product lost was approx.. 10qts. VDOT notified for clean-up. No further contacts or Hazmat services needed.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 4/16/2021 1500
Name: Joe Warner
Company/Agency: VDOT
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: ☐ Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD2100012210	Date/Time: 4/20/2021 07:07
Location: 8041 Sudley Rd. Manassas VA. 20109	
Report Completed by: Technician II Austin Davis	Incident Commander: Captain Mohr (E511B)

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Captain Robert Moreau, Technician II Austin Davis, Seymon Podobed, Jennifer Delp, Technician I Tyler Barnikel, Stephen Mickle, Steven Menard
HS516 Unit personnel: N/A
Other HM Personnel: N/A

INCIDENT NARRATIVE
On April 20, 2021 E511B Was dispatched to a trash truck that was leaking approximately 20 gallons of hydraulic fluid at 8410 Sudley Rd. Manassas, VA 20109. Driver from the trash truck attempted to stop the spread of the fluid with booms and absorbent pads.. E511B requested a phone consult with DHM. E511B added a dam, using dirt, to the edge of the fluid to stop the spread of the hydraulic fluid from entering the grass. E506, R506, HM506, HMS506 notified and proceeded to scene priority 2. Station 506 crews arrived on scene and placed aproximamtly 20 bags of oil dry on the hydraulic fluid. No waterways or storm drains were impacted from the leak. LEPC was issued to Republic Services supervisor. Cleanup contractor Sparkleen was on retainer from Republic Sercives. Contacted the cleanup company to make sure they were enroute. The cleanup company arrived on scene was notified of the situation and advised HM team the course of action for cleanup. DEQ notified via courtesy email. EOC incident #VDEM-2021-04-20-2593

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 4/20/21
Name: Louie Rodriguez
Company/Agency: Republic Services
Address: 7488 Covent Wood Ct. Annadale, VA 22003
Phone/Email:
Notes: Driver of the trash truck.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 4/20/21
Name: Nate Littner
Company/Agency: Republic Services

Address:
Phone/Email: 912-460-8887
Notes: Supervisor of the trash truck driver. Also the individual who was provided with the LEPC form via email on 4/20/21 @ 0811 hours.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Other
Date/Time: 4/20/21
Name: Sam Baghadadi
Company/Agency: Sparkleen
Address:
Phone/Email: 703-626-5116
Notes: Claernup contractor for Republic Service

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 04/20/2021 20:09
Name: Alan Lacy / Steven Fontenot
Company/Agency: DEQ
Address:
Phone/Email:
Notes: Email courtesy notification.

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: NO Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 04/20/2021 / 0811 Provided to Name: Nate Littner	
VA EOC Notified Date/Time: 4/20/2021 21:31	Name: Thelma Blair

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD210012702	Date/Time: 4/24/2021 11:03
Location: Sudley/ Bulloch	
Report Completed by: Knight	Incident Commander: B. Mountain

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Knight
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
Phone Consult: Contacted by E522 for anti-freeze/collant leak. E504 was dispatched to the intersection of Sudley Rd and Bulloch Dr. Upon arrival they found a dump truck that rear ended another dump truck. The incident caused a coolant leak from the radiator. The spill was being contained and managed with sta dry. E522 had PD request VDOT for spill clean up. No further notifications needed.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD210012945	Date/Time: 4/26/2021 05:46
Location: 14920 Farm Creek Dr. Woodbridge	
Report Completed by: Knight	Incident Commander: BC506

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Knight, Mirabile, Pistole, Kwak, Renfro, Cramsey
HS516 Unit personnel:
Other HM Personnel: Lind

INCIDENT NARRATIVE
Requested to the scene of a Truck Fire by BC506. Arrived on scene to find two tractor trailers destroyed by fire. In the process of the fire the fuel tanks and some fuel lines failed on both truck and began leaking. The leak was compounded by the water flowed on the fire. The runoff from the suppression operations began to flow into a storm. Approximately 50 gallons was lost. Damming was deployed along with small and large booms. Under the vehicles pop-up pools were deployed. The supplies used are listed below. The responsible party was given an LEPC form and instructed to contact a verified clean-up company listed on the form. Atlas Environmental was contacted to ensure contact was made and the cleanup process would be completed. VA EOC notified. No further contacts were necessary. Equipment used: 3) LG booms 8)SM booms 1)Wax ring 1)Tingly Boots Size 11 1)Level B suit 1)LG pop-up pool 1)Small Pop up pool 12)Bags Absorbant

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 04/26/2021 0710
Name: Abraham, Carcamo
Company/Agency: Abraham Trucking
Address: 3422 Grouse Ct. Woodbridge Va. 22192
Phone/Email: 703-987-9262
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 04/26/2021 0800
Name: Paul
Company/Agency: Atlas Environmental
Address: Lorton
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: YES Lead Officer: Reubens	
Discharge/LEPC Form Provided: ☒ Date/Time: 04/26/2021 Provided to Name: Abraham Carcamo	
VA EOC Notified Date/Time: 4/26/2021 19:25	Name: Shawn

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 210013833	Date/Time: 5/3/2021 01:40
Location: 10971 Wild Ginger Circle	
Report Completed by: LT. Mark Nicol	Incident Commander: LT. Jimmy Campbell

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel:
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
Phone Consult for a CO alarm in a three story apartment building effecting one unit on the second floor end unit. E522 and R522 arrived on scene and immediately obtained readings as high as 20 PPM for Carbon Monoxide. After ventilating the structure and taking new measurements they got readings reaching 3 – 5 PPM. All of the surrounding units, above and below, attic spaces, and outside storage/furnace closets were checked and all had readings of 0 PPM. Only the stove and fireplace were gas operated and neither had been used recently, with readings of 0 PPM. All areas of concern were checked by units on the scene and the scene was turned over to property management.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD210014431	Date/Time: 5/7/2021 00:00
Location: 12301 Randolph Ridge Ln., Manassas, VA 20109	
Report Completed by: James Lind	Incident Commander: Battalion 504

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Favole
HS516 Unit personnel:
Other HM Personnel: Lind

INCIDENT NARRATIVE
Engine 522's OIC requested a Hazmat Consult through PWC PSCC. Lt. Davis on E522 advised that in the process of extinguishing a trailer fire, they used approx. 30 gallons of foam. He just wanted to confirm with the Duty HM that this did not require a Hazmat response. He also advised that there were no other fluids leaking from any vehicles and that the trailer was the only part involved. No further notifications were required.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Other
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information: Business Owner Information: C & D Recovery LLC	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD210014538	Date/Time: 5/8/2021 14:56
Location: 4100 Talon Dr. Dumfries, VA. 22025	
Report Completed by: Technician II Austin Davis	Incident Commander: Technician II McKinnion

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Technician II Austin Davis, Seymon Podobed, Technician I Matt Waln, Sebastian Tornee
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
On May 8, 2021, E523 was dispatched to a fuel spill of roughly 30 gallons of gas and oil mix at 4100 Talon Dr. Dumfries, VA. 22025. Upon arrival E523 coned off the affected area where the fuel was spilled. E523 officer requested a phone consult with DHM. R506 and HM506 responded to the location, E506 was on scene of another call. Upon arrival absorbent was placed down by E523 and HM506 crews. Approximately 10 bags of absorbent placed on the spill. LEPC form was given to Seven 11 franchisee. Property owner contacted Seven 11 Corporation for a cleanup contractor. The affected area was lined off for no access until the cleanup company arrived to clean up the spill. No waterways or storm drains were affected. DEQ notified via courtesy email. VDEM-2021-05-08-2717

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Property Owner
Date/Time: 5/8/21 14:56
Name: Tahira Sheikh
Company/Agency: Seven 11 Franchisee
Address: 4100 Talon Dr. Dumfries, VA. 22025
Phone/Email: 703-221-5634
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 05/08/2021
Name: Alam Lacy and Steven Fontenot
Company/Agency: DEQ
Address:
Phone/Email: alan.lacy@deq.virginia.gov steven.fontenot@deq.virginia.gov
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: ___ Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 5/8/21 15:00 Provided to Name: Tahira Sheikh	
VA EOC Notified Date/Time: 5/8/2021 17:30	Name: Hennessy

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

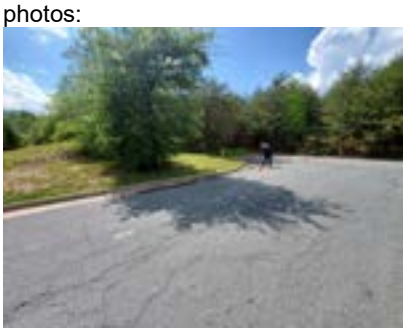
photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:



Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD 210015048	Date/Time: 5/13/2021 00:00
Location: 12950 Troupe Street	
Report Completed by: Capt. Chris Adams	Incident Commander: NA

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel:
HS516 Unit personnel:
Other HM Personnel: Capt. Chris Adams

INCIDENT NARRATIVE

Hazmat Officer 502 received a phone call from the Duty Hazmat Officer informing him of a phone consult he had just received. E514 was on the scene of a Hazard in which a twenty gallon bucket of Asphalt sealant had been spilled in a parking lot. This spill posed a hazard in that vehicles, citizens and animals were walking thru the area. The Duty Hazmat Officer asked HMO502 to assist, as engine 506 and rescue 506 were preoccupied. HMO502 placed himself on the call and responded to the scene.

E514 informed HMO502 that they had arrived on the scene to find a overturned Can of what appears to be approximately 10 -15 gallons of asphalt sealant spilling from the area of the trash bin. Crew members turned the can over to mitigate more material from leaking out of the can and blocked off the area. HMO502 spoke to the manager of Crossroads Animal Care Center. Heather Gonzales stated this spill was seen when workers noticed animals arriving at the clinic arriving with oily substance on their feet. HMO502 gave Ms. Gonzales a copy of the LEPC form and advised due to the thickness of the product, it would remain sticky for some period of time. The spill was contained to the parking lot area and was NOT entering any water sources. E514 crew was directed to spread some kitty litter down to ensure product did not spread any farther. HMO502 requested FMO to the scene to aid in investigation. Can was determined to be left by a party that should not be using that dumpster. FMO will investigate cameras in the area to find possible responsible party.

While waiting for FMO to arrive HMO502 noted two Compressed gas cylinders next to the dumpster. Both were of different sizes and due to the amount of rust, appeared to have been there for some time. Ms. Gonzales was questioned as to the reason for them to be there and she stated she did not know they were there. FMO served a NOV for the cylinders and the responsible party was informed they would have to be removed. LEPC form was referenced with approved vendors. Scene was turned over to the FMO and HMO502 returned to service. At which point Ms. Gonzales had not confirmed a clean up company. HMO502 will follow up with FMO for clean up vendor.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Property Owner
Date/Time: 5/13/2021
Name: Heather Gonzales

Company/Agency:
Address: 12950 Troupe Street Woodbridge VA
Phone/Email: 571 420 7900
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: YES Lead Officer: Lt. Reubens	
Discharge/LEPC Form Provided: ☒ Date/Time: 5/13/2021 on scene Provided to Name: Heather Gonzales	
VA EOC Notified Date/Time: 5/13/2020 00:00	Name:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 210015689	Date/Time: 5/18/2021 15:32
Location: PWPKWY/Clover Hill Manassas, VA. 20112	
Report Completed by: Cone, Matt	Incident Commander: BC 581 Franzello, Kevin

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Lt. Nicol, Mark/ Tech II Cone, Matt/ Tech II Budkiewics, Nick/ Tech I Penry, Logan
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
HM506 Was dispatched for a rolled over dump truck carrying gravel that was leaking fluids. Upon arriving on seen HM506 investigated and noted that the dump truck was on its drivers' side with its load of gravel dumped across the roadway. The truck was actively leaking hydraulic fluid from the filler neck of its 50-gallon hydraulic tank. The oil had also leaked out from the engine. Engine 507 and Rescue Engine 521 had arrived on scene first and created a dam utilizing absorbent as well as some of the gravel and dirt that had been dumped from the trucks bed. The spill was contained to the roadway with no impingement to storm drains or water ways. HM506 placed a pop-up pool under the leaking tank and covered the filler neck with a wax rings stopping the leak. HM 506 placed additional absorbent down to help contain the spill. The responsible party contacted Waggy's who handled both the righting and towing the dump truck as well as the cleanup. The owner of the company was presented with an LEPC form at 16:20. After the dump truck was righted and the spill was being cleaned the scene was turned over to PD and R506 cleared the call and returned to service.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Other
Date/Time: 5/18/2021 15:32
Name: Thorpe Jr., James
Company/Agency: RC Hawkins Construction Co. Inc.
Address: PO Box 7442 Fredricksburg, VA. 22404
Phone/Email:
Notes: Driver

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time:
Name: Hawkins, Michael

Company/Agency: RC Hawkins Construction Co. Inc.
Address: PO Box 22, Cattlet Va. 20119
Phone/Email: 202) 957-1356
Notes: Owner of company

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: NO Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 5/18/2021 16:20 Provided to Name: Thorpe Jr., James	
VA EOC Notified Date/Time: 5/18/2021 21:21	Name: McKay, Shawn

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

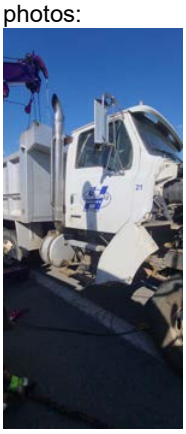
photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:



Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 210016253	Date/Time: 5/23/2021 00:00
Location: 9280 Wellington Rd. Manassas, Va. 20110	
Report Completed by: LT. Mark Nicol	Incident Commander: BC Ferguson

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Capt. Newell, Lt. Nicol, T-II Budkowski, T-II Gonzalez, T-I Heard, T-I Adzemovic, T-I Sheedy
HS516 Unit personnel:
Other HM Personnel: Matt Adkins (HMO501)

INCIDENT NARRATIVE
Dispatched for potential Radiation monitoring. We arrived on scene and were directed by command to stage. Fire was found on the exterior of the structure with no extension into the building and no HAZMAT Hazards to mitigate. The fire was from a properly disposed of battery located in a metal drum outside of the loading dock.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time: 5/23/2021 01:05	Name: Thelma Blair

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD210016309	Date/Time: 5/23/2021 15:30
Location: 3049 Antrim Cir., Dumfries, VA 22026	
Report Completed by: James Lind	Incident Commander: N/A

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Knight, Renfro, Cramsey, Mirabile, Pistole, Walsh
HS516 Unit personnel:
Other HM Personnel: Lind, Bonilla, Evans

INCIDENT NARRATIVE
Consult requested by T523 regarding a leaking 20lb lpg cylinder. The homeowner stated that it was blowing off propane from the relief valve. T523 had removed the cylinder from the rear of the townhome and placed it on Side Alpha. HM506, E506 and R506 AOS and evaluated the cylinders condition. The determination was made to use our flaring kit to flare off the remaining propane inside of the cylinder. The flaring operation was set up in a safe area/common area on Side Alpha with no hazards in the direct vicinity. Company 506 units remained on scene until the flaring operation was complete. The empty cylinder was turned back over to the home occupant and was advised to return the cylinder. Units cleared the scene.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time:
Name: Alex Martinez
Company/Agency:
Address: 3049 Antrim Cir., Dumfries, VA 22026
Phone/Email: 703-400-1976
Notes: Occupant/Owner

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD210016451	Date/Time: 5/24/2021 14:46
Location: 9304 Prescott Ave. Manassas, VA 20110	
Report Completed by: Captain Robert Moreau	Incident Commander: BC581 Manassas City

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Captain Robert Moreau, Technician II John Sawicki, Technician I Tyler Barnikel, Technician I Stephen Mickle, Lieutenant Dylan Moore, Technician II Austin Davis, Technician I Matt Waln, Technician Cameron Malone, Technician II Semyon Podobed
HS516 Unit personnel: NA
Other HM Personnel: HM502 Captain Chris Adams

INCIDENT NARRATIVE
Hazmat units received a dispatch at 1446 to respond to the noted address for a letter with Anthrax. Manassas City PD were already on scene and requested FD resources for further investigation. E506, R506, HM506, and HS506 responded priority one. K506 unstaffed to provide additional a Hazmat Technician. Upon arrival, BC581 briefed Captain Moreau and Lieutenant Moore on the situation. The homeowner reported she found the letter sitting on an outside seat on her patio. The envelope read “Open Please Anthrax Inside”. The homeowner contacted the non-emergency line for Manassas PD which resulted in the subsequent dispatch. Captain Moreau interviewed the homeowner with reference to employment and recent history of threats. A family member who resided at the residence was an IT contractor who worked at the Pentagon, but it did not appear to be the cause of the letter. Residents were denying any symptoms. Captain Adams was on scene and coordinated with the FBI. Hazmat units prepared for entry with a team of two in Level B and appropriate atmospheric monitoring and Bio Testing. Prior to entry a neighbor contacted PD and reported that he placed the letter there as a joke and that it was a common thing him and the neighbor did. Incident was scaled down and Hazmat units went ready.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time:
Name:
Company/Agency: FBI
Address:
Phone/Email:
Notes: Contact made by Captain Chris Adams

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification

Date/Time: 05/24/2021 20:22
Name: Shawn
Company/Agency: VAEOC
Address:
Phone/Email:
Notes: Notificaiton only. No resources Requested. Report # VDEM-2021-05-24-2845

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Property Owner
Date/Time: 05/24/2021
Name: Kerry Ickrath
Company/Agency:
Address: 9304 Prescott Ave. Manassas VA 20110
Phone/Email: 540-699-7941
Notes: Homeowner

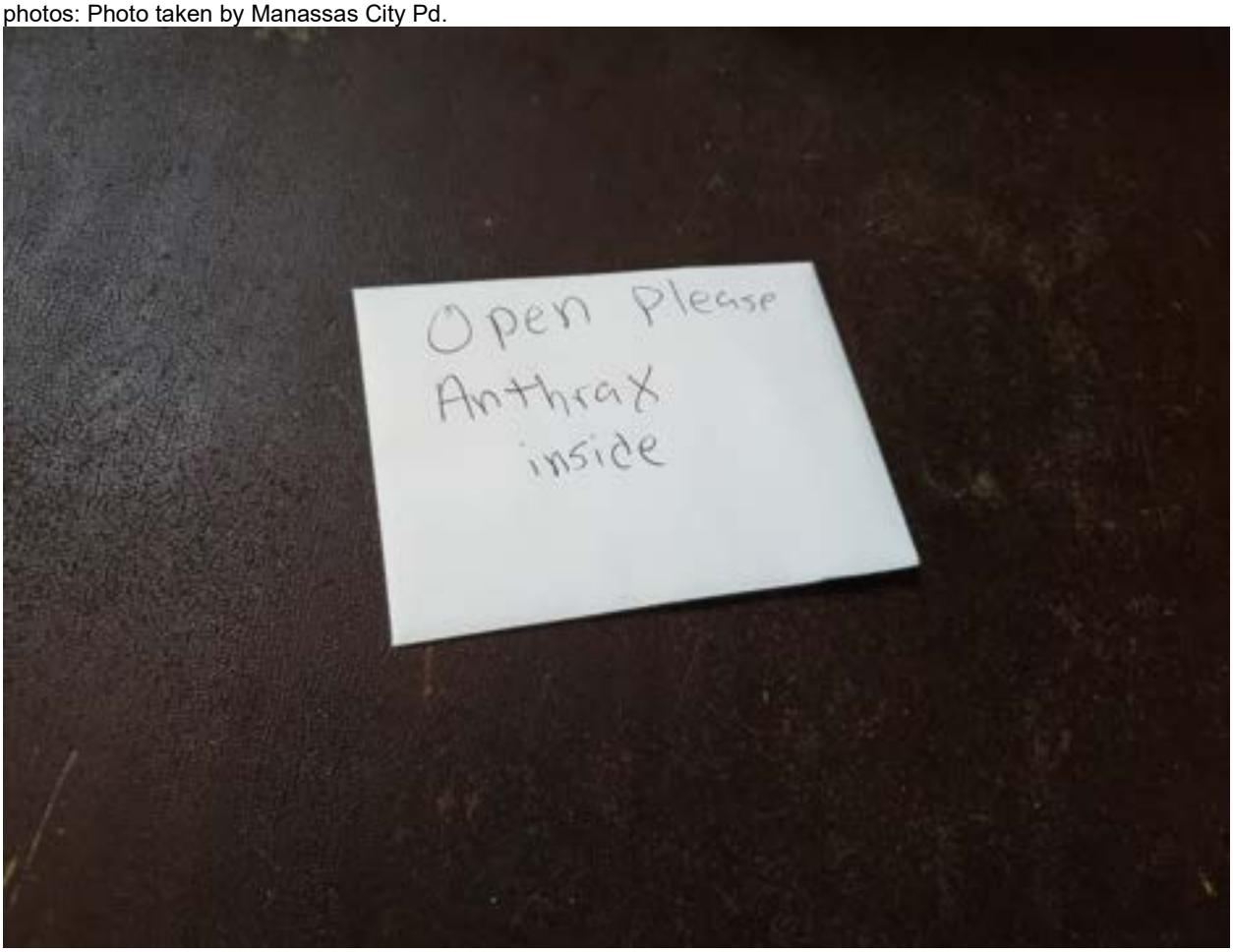
Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 05/24/2021
Name: Detective Petitt
Company/Agency: Manassas City PD
Address:
Phone/Email: 703-257-8059
Notes: Lead Detective for this incident.

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: NO Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time: 7/24/2019 20:22	Name: Shawn

photos: Photo taken by Manassas City Pd.



Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 210017258	Date/Time: 5/30/2021 04:26
Location: Easy St/Jeff Davis Hwy	
Report Completed by: LT. Mark NIcol	Incident Commander: BC506 Kurt Bolland

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Lt. Nicol, T-II Cone, T-I Adzemovic,
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
HM506 was dispatched for air quality monitoring for a confined space rescue and when we arrived on scene the victim was just being located. It was determined that the victim crawled into a hole from the root ball of a fallen tree and there was no IDLH atmosphere. HM506 personnel were assigned the task of assisting T523 with cutting vegetation from around the area where the victim was located. We provided scene lighting, manpower, and equipment to assist with removing the intoxicated victim from within the overgrown vegetation. HM506 went ready with nothing further to report.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD210020253	Date/Time: 6/22/2021 11:58
Location: MM43 I 66 E Hwy	
Report Completed by: Captain Moreau	Incident Commander: Chief Arft

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Captain Robert Moreau, Technician II John Sawicki, Austin Davis, Jennifer Delp Technician I Cameron Malone, Stephen Mickle, Matt Waln
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
On June 22, 2021 E504 arrived on scene of tractor trailer leaking approximately 50 gallons of fuel from a ruptured saddle tank at MM43 I 66E Hwy.E506, R506, and HM506 dispatched because the fuel was entering the storm drains. E504 and T504 began the process of damming and diking the storm drains to prevent the oil and fuel mixture entering the drains. Waggys towing placed buckets under the leaking saddle tank to prevent more fuel entering the storm drains. E506, R506 and HM506 arrived on scene placed absorbent booms and pads down by the storm drains. HM crews also tested the water entering the storm drains with oil test paper. R506 crew checked storm drains a mile down the road eastbound for contamination in retention ponds. Nothing was found. Waggys handled clean up of fuel leak at the truck and offloading of saddle tanks. Atlas was the clean up contractor contacted by the trucking company to handle environmental clean up. Written by DHM intern reviewed by Moreau. Report Number VDEM-2021-06-22-3066

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 6/22/2021
Name: Myron Barber
Company/Agency: JCColley Trucking
Address: 4100 GA Highway #103 West Point GA 31833
Phone/Email: 706-412-9395 / myronbarber@gmail.com
Notes: Driver of truck.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 6/22/2021

Name: Blake Hunt
Company/Agency: JCColley Trucking
Address: 212 Jarret Street Valley Alabama 36854
Phone/Email: 706-594-8089
Notes: Manager of trucking company. Mr. Hunt identified Atlas as clean up contractor.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 6/22/2021 12:50
Name: David Ungar
Company/Agency: PWC Storm Water Management
Address:
Phone/Email:
Notes: Phone call notification. Voicemail left by Captain Chris Adams.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 6/22/2021 13:00
Name: Alan Lacey
Company/Agency: DEQ
Address:
Phone/Email:
Notes: Phone call notification by Captain Chris Adams.

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 12:39 Provided to Name: Truck driver and Manager for company.	
VA EOC Notified Date/Time: 6/22/2021 21:58	Name: Luke Routzon

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD210020253	Date/Time: 6/22/2021 11:58
Location: MM43 I 66 E Hwy	
Report Completed by: Captain Moreau	Incident Commander: Chief Arft

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Captain Robert Moreau, Technician II John Sawicki, Austin Davis, Jennifer Delp Technician I Cameron Malone, Stephen Mickle, Matt Waln
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
On June 22, 2021 E504 arrived on scene of tractor trailer leaking approximately 50 gallons of fuel from a ruptured saddle tank at MM43 I 66E Hwy.E506, R506, and HM506 dispatched because the fuel was entering the storm drains. E504 and T504 began the process of damming and diking the storm drains to prevent the oil and fuel mixture entering the drains. Waggys towing placed buckets under the leaking saddle tank to prevent more fuel entering the storm drains. E506, R506 and HM506 arrived on scene placed absorbent booms and pads down by the storm drains. HM crews also tested the water entering the storm drains with oil test paper. R506 crew checked storm drains a mile down the road eastbound for contamination in retention ponds. Nothing was found. Waggys handled clean up of fuel leak at the truck and offloading of saddle tanks. Atlas was the clean up contractor contacted by the trucking company to handle environmental clean up. Written by DHM intern reviewed by Moreau. Report Number VDEM-2021-06-22-3066

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 6/22/2021
Name: Myron Barber
Company/Agency: JCColley Trucking
Address: 4100 GA Highway #103 West Point GA 31833
Phone/Email: 706-412-9395 / myronbarber@gmail.com
Notes: Driver of truck.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 6/22/2021

Name: Blake Hunt
Company/Agency: JCColley Trucking
Address: 212 Jarret Street Valley Alabama 36854
Phone/Email: 706-594-8089
Notes: Manager of trucking company. Mr. Hunt identified Atlas as clean up contractor.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 6/22/2021 12:50
Name: David Ungar
Company/Agency: PWC Storm Water Management
Address:
Phone/Email:
Notes: Phone call notification. Voicemail left by Captain Chris Adams.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 6/22/2021 13:00
Name: Alan Lacey
Company/Agency: DEQ
Address:
Phone/Email:
Notes: Phone call notification by Captain Chris Adams.

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 12:39 Provided to Name: Truck driver and Manager for company.	
VA EOC Notified Date/Time: 6/22/2021 21:58	Name: Luke Routzon

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 2000020437	Date/Time: 7/1/2020 06:38
Location: 14752 Lee Hwy Gainesville Va.	
Report Completed by: Knight	Incident Commander: Barbachino

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Horvath, Shatzer, Williams, Mirabile14752
HS516 Unit personnel: Kwak,Gibson
Other HM Personnel:

INCIDENT NARRATIVE
Requested to the scene at the above location for a tractor trailer that was involved in a MVC. The truck lot the entire contents of his diesel tank estimated to be approximately 70 gallons. Upon arrival damming was being conducted using earth. Measures were reinforced with absorbant. Booms were placed on effected storm drains and down stream of the incident. It did not appear the product went beyond the run off. 11 bags of stay dry and 6 booms were used in this incident.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 7/1/2020 0710
Name: Matt Maiorana
Company/Agency: VDOT
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Represenative
Date/Time: 07/1/2020 0720
Name: Alan Lacy
Company/Agency: Va. DEQ
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS

Notification/Contact Type:Agency Represenative
Date/Time: 7/1/2020 0726
Name: David Unger
Company/Agency: Storm Water
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 7/1/2020 0720
Name:
Company/Agency: Paper Impex USA
Address:
Phone/Email: 917-691-1940
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: ... Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time: 7/1/2020 15:15	Name: Ward

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 200033251	Date/Time: 10/17/2020 00:00
Location: 6205 Portal Ct.	
Report Completed by: Lt. Stephen Horvath	Incident Commander: Lt. Antes

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Lt. Horvath
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
E518 requested a phone conult with duty Haz-Mat tech. E518 officer stated it's a 20lb propane bottle in a compartment on an RV that you can drive. Owner states for the past two to three weeks he gets a whiff of propane so he decided to call toady. E518 utilized there 4 gas monitor to check the area and all reading were within normal limits. Home owner checked the fitting with soap just prior to E518 arrival and stated he saw NO bubbles. Home ownere wanted E518 to tell him it was safe to go camping. I advidsed E518 officer that they should advise the home owner that they have no evidence of a leak currently but that doesn't mean there isn't an issue. I also advised E518 officer to tell the owner he needs to take it into a RV repair shop and have them inspect the system before he goes camping with it.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information: No further notifications were made	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time:	Name:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD21062900029033	Date/Time: 6/29/2021 13:52
Location: 10700 Kettle Run Road and 10200 Schaeffer Road	
Duty HM Officer/Tech: Adkins	Incident Commander: Adkins

HAZMAT PERSONNEL ON SCENE
Station 6 HAZMAT personnel: N/A
Other HM Personnel: Matt Adkins HAZMAT Officer 501

INCIDENT NARRATIVE
During paving operations on Kettle Run, Geo-Technical Inc of Chantilly was conducting density testing using a density meter with a Cs-137 soure. A vehicle approached the area and then ran over the gauge and left the scene. Police Department was contacted, and Officer C. Gray contacted HAZMAT for consultation. I met Officer Gray at the site confirmed with a Ludlum and PRD there were no materials left at the site. I made contact with Mr. Jeremy Edlind and Mr. Shadi Taha with Geotechincal. Mr. Taha advises that the source is secure and they have made contact with Virginia Radiatoin Health. Police Department Report Number is PD210018430.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 6/29/2021
Name: Shadi Taha
Company/Agency: GeoTechnical Inc
Address:
Phone/Email: 5712385442
Notes: Spoke to Mr. Taha and confirmed source was secure and that Radiation Health was contacted due to licensing requirements.

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 6/29/2021
Name: Jermey Edlind
Company/Agency: GeoTechnical
Address:
Phone/Email: 540-421-6434
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Other
Date/Time: 6/29/2021
Name: Officer C. Gray
Company/Agency: PWC Policew
Address:
Phone/Email: 571-398-7162
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time: 6/29/2021 15:30	Name: Brian

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD21042200017379	Date/Time: 4/22/2021 00:00
Location: 4304 Dale Blvd. Woodbridge VA. 22193	
Report Completed by: Technician II Austin Davis	Incident Commander: Lt. Ahmady

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Lt. Dylan Moore, TII Austin Davis, Seymon Podobed, Jennifer Delp, Brendan Hayes, TI Steven Menard, Stephen Mickle, Tyler Barnikel, Matt Waln
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
E513 Crew was dispatched for a CO detector. DHM took phone consult for a possible CO2 leak at 4304 Dale Blvd. Woodbridge VA 22193. E513 reported readings of 18% O2 and evacuated structure. HM506, E506, and K506 dispatched and responded to the location. Crews enter location with monitoring devices with all normal readings inside of the structure. Alarm panel showed CO2 sensor malfunction. No active leak detected. The power was secured to the possible location of the leak. Manager advised to contact service company to resolve the issue. VAOEC report number: VDEM-2021-04-22-2601.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Responsible Party
Date/Time: 04/22/21
Name: Crystal Richardson (Manager)
Company/Agency: Amf Bowling
Address: 4031 Dale Blvd. Wood
Phone/Email: 540-621-7465
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time: 4/22/2021 13:00	Name: Shannon Sullivan

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: 20120200051564	Date/Time: 12/2/2020 15:58
Location: 66E mm44	
Report Completed by: Cpt. M. Newell	Incident Commander: Cpt. J. Melvin

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: Cpt. J. Newell, TII M. Gonzalez, TI I. Sheedy
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
E 506 and HM 506 were dispactched for a possible fuel leak from a cement truck. Prior to arriving on scene all units were placed in service. E511 discovered that a water tank was leaking on the cement truck and not the fuel tank. VA EOC was notifed. No hazards involved, no responsible party, no LEPC form handed out.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: NO Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time: 12/2/2020 18:00	Name: Mr. McKay

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: FD21032600013184	Date/Time: 3/26/2021 16:37
Location: 5014 Linfield Dr, Woodbridge Va 22192	
Report Completed by: Lt Dylan Moore	Incident Commander: BC Kim Stewart

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel: T2 Hayes, T1 Barnikel, T2 Delp, Lt Moore, T2 Bergstreser, T1 Waln, T2 Podobed
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE

Company 6 units were dispatched for a report of a leaking propane cylinder after conducting a phone consult with Lt Samuels on E518. Lt Samuels stated there were two 500 gallon tanks and one of them was leaking from a screw at the top of the tank. The tanks had been filled about 1 month ago when the temperatures were much lower and the temperatures had reached 82 degrees. Units arrived on scene to find E518 crew had tightened the screw, which turned out to be a relief valve. There was no obvious leak at the time of arrival. Company 6 units checked for propane using 4 gases, one set for propane, and PID. Readings were normal inside the house and around the tanks. Elevated readings of up to 700 ppb were detected at the top of the cylinders, fluctuating periodically. A sniffer was also used to check and slightly elevated readings were detected in the same area. Finally, A TIC was used to check levels on the tanks which appeared equal and stable without any unusual temperature readings.

After examining the valves and the situation in general Lt Moore suggested that the relief valve which E518 had adjusted was not functioning properly and that the relief valve on the second cylinder was functioning for both. This was tested by closing the connection between the cylinders and taking readings. This showed higher levels of gas on the unaffected cylinder when the connection was open which disappeared when it was closed. Lt Moore consulted with T2 Hayes and the rest of the technicians present and agreement was reached to leave the connection open between the cylinders and allow them to equalize and vent as needed. There was no audible venting or smell and readings never exceeded 800ppb. There was no sign of an active leak when company 6 units left. The homeowner was advised of the situation and told not to use her propane, which was shut off to the house by Company 6, until a repair person had examined the tanks. She stated Ferrel Gas was on the way and she was fine with the situation. She was also told to call us back if the smell returned or the situation changed.

EOC Notified 1900 Report # VDEM 2021 03 26 2433

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Property Owner

Date/Time: 03/26/2021 17:20
Name: Nicole Turner
Company/Agency:
Address: : 5014 Linfield Dr, Woodbridge Va 22192
Phone/Email: 703 586 0144
Notes:

Repeating Section Click + to add additional entries:

NOTIFICATIONS/CONTACTS
Notification/Contact Type:Agency Notification
Date/Time: 03/26/2021 1900
Name: Hughes
Company/Agency: Va EOC
Address:
Phone/Email: 800 468 8892
Notes: Report # VDEM 2021 03 26 2433

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☐ Date/Time: Provided to Name:	
VA EOC Notified Date/Time: 3/26/2021 00:00	Name: Hughes

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

photos:

Repeating Section Click + to add additional entries:

PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
HAZARDOUS MATERIALS INCIDENT RESPONSE REPORT

INCIDENT INFORMATION	
Incident #: PD21051100104539	Date/Time: 5/11/2021 16:10
Location: 15200 Kapp Valley Way Haymarket, Va. 20169	
Report Completed by: LT. Mark Nicol	Incident Commander: FMO - Lt. LeFever

HAZMAT PERSONNEL ON SCENE
HM506 Unit personnel:
HS516 Unit personnel:
Other HM Personnel:

INCIDENT NARRATIVE
Phone Consult – FMO follow-up investigation. Lieutenant LeFever requested a phone consult when he noticed a 55 gallon drum overturned and leaking what appeared to be 2.5 – 5 gallons of fuel oil onto the ground. No waterways were affected. Lt. Lefever issued an LEPC form to the property owner and they contracted Apex as the clean-up company.

NOTIFICATIONS/CONTACTS
Notification/Contact Type:
Date/Time:
Name:
Company/Agency:
Address:
Phone/Email:
Notes:

Repeating Section Click + to add additional entries:

Additional Notes/Information:	
HAZMAT Officer Comments:	
Fire Marshal Assigned: Lead Officer:	
Discharge/LEPC Form Provided: ☒ Date/Time: 5/11/2021 16:20:00 Provided to Name: Property Owner – see FMO report.	
VA EOC Notified Date/Time: 5/11/2021 16:30	Name: Nancy Morey

photos:

Repeating Section Click + to add additional entries:

Appendix G – Industrial and High Risk Runoff

GPIN	ST_NO	ST_NAME	ST_TYPE	CITY	ZIP	NAME	PWC_MAP	usecode	use_descri	Use_Probab	owner_cur	BuildingNa
8390-06-4290	15801	NEABSCO	RD	WOODBRIDGE	22191	PWC SERVICE AUTHORITY	8390NW	224	Sewage	2	PWC SERVICE AUTHORITY	MAINT BLDG
8391-59-7928	14227	JEFFERSON DAVIS	HY	WOODBRIDGE	22191	JD HWY LLC	8391NE	361	Motor Vehicle Sales	3	JD HWY LLC	LUSTINE TOYOTA
7697-42-3704	7681	SUDLEY	RD	MANASSAS	20109	BTR MANASSAS INC	7697SW	313	Shopping Center	3	SUDLEY TOWNE PLAZA LLC	SUDLEY TOWNE PLAZA
8192-50-4578	14150	MINNIEVILLE	RD	WOODBRIDGE	22193	MINNIEVILLE PLAZA LTD PTNSHP	8192SE	312	Shopping Center	3	MINNIEVILLE PLAZA LLC	MINNIEVILLE PLAZA
8292-81-3425	14050	TELEGRAPH	RD	WOODBRIDGE	22192	SUSA PARTNERSHIP LP	8292SE	151	Mini Warehousing	3	ESS PRISA LLC	STORAGE USA-BLDG C
8192-50-8821	14119	MINNIEVILLE	RD	WOODBRIDGE	22193	REGENCY REALTY GROUP INC	8192SE	313	Shopping Center	3	SVAP CHESHIRE LP	CHESHIRE W/ PETCO & SAFEWAY
8492-43-4786.01	559	HARBOR SIDE	ST	WOODBRIDGE	22191	MARINA LANDING ASSOCIATES LLC	8492SW	318	Shopping Center	3	MARINA LANDING ASSOCIATES LLC	
8492-43-5380.01	551	HARBOR SIDE	ST	WOODBRIDGE	22191	MARINA LANDING ASSOCIATES LLC	8492SW	318	Shopping Center	3	MARINA LANDING ASSOCIATES LLC	
8492-43-4192.01	567	HARBOR SIDE	ST	WOODBRIDGE	22191	MARINA LANDING ASSOCIATES LLC	8492SW	318	Shopping Center	3	MARINA LANDING ASSOCIATES LLC	
8492-43-3795.01	571	HARBOR SIDE	ST	WOODBRIDGE	22191	MARINA LANDING ASSOCIATES LLC	8492SW	318	Shopping Center	3	MARINA LANDING ASSOCIATES LLC	
8492-43-4489.01	563	HARBOR SIDE	ST	WOODBRIDGE	22191	MARINA LANDING ASSOCIATES LLC	8492SW	318	Shopping Center	3	MARINA LANDING ASSOCIATES LLC	
8492-43-5083.01	555	HARBOR SIDE	ST	WOODBRIDGE	22191	MARINA LANDING ASSOCIATES LLC	8492SW	318	Shopping Center	3	MARINA LANDING ASSOCIATES LLC	
7696-59-1631	8025	SUDLEY	RD	MANASSAS	20109	WESTGATE SHOPPING CENTER LLC	7696NE	311	Small Shopping Center	3	WESTGATE MZL LLC	WESTGATE
7397-28-0270	6876	PIEDMONT CENTER	PZ	GAINESVILLE	20155	PIEDMONT COMMERCIAL CENTER INC	7397NW	311	Small Shopping Center	3	PIEDMONT PLAZA LLC	PIEDMONT CTR Pcl B *see notes
7896-19-8912	8030	CENTREVILLE	RD	MANASSAS	20111	SCHICK RORY LEE	7896NW	216	Auto Parking	3	SCHICK RORY LEE	
8193-19-4944	4650	ASDEE	LN	WOODBRIDGE	22192	OLD HICKORY GOLF CLUB LLC	8193NW	832	Golf Course	2	OLD HICKORY GOLF CLUB LLC	
8292-71-6115	14001	WORTH	AV	WOODBRIDGE	22192	ARI POTOMAC MILLS AND D LLC ETAL	8292SE	312	Shopping Center	3	ALLIANCE HSP POTOMAC MILLS LLC	GANDER MOUNTAIN
7595-57-4944	9435	CONTRACTORS	CT	MANASSAS	20109	SWAN ROBERT E TR	7595NE	150	Wholesale Warehousing	4	GRR LAND OF VIRGINIA LLC	
7497-02-6514.01	7689	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2	GATEWAY BUSINESS CENTER	BLDG D UNIT 100
8292-66-4137	13270	MINNIEVILLE	RD	WOODBRIDGE	22192	GARBER PROPERTIES LLC	8292NE	390	Retail	3	GARBER PROPERTIES LLC	Holly Acres Marine
8292-56-8930	2826	GARBER	WY	WOODBRIDGE	22192	MINNIEVILLE ROAD DEVELOPMENT CO LLC	8292NE	311	Small Shopping Center	3	LIBERIA INVESTMENTS LLC	GARBER SHOPPING CENTER
7497-02-7698	5524	WELLINGTON	RD	GAINESVILLE	20155	CRABTREE ROBERT ROSANNA CRABTREE	7497SW	190	Other Industrial	4	FULL OF SUNSHINE LLC	MASTERCRAFT AUTO
7497-23-0068	7300	RAIL LINE	CT	GAINESVILLE	20155	DALRYMPLE REALTY CORPORATION	7497SW	121	Durable Manufacturing	4	DALRYMPLE REALTY CORPORATION	NEWINGTON CONCRETE PLANT
8393-11-3391	12730	HARBOR	DR	WOODBRIDGE	22192	MCDONALDS CORPORATION	8393SW	354	Restaurant	3	MCDONALDS CORPORATION	MCDONALDS- HARBOR
7892-54-6381	13641	DUMFRIES	RD	MANASSAS	20112	VARGAS FERNANDO R & GRACIELLA VARGAS	7892SE	312	Shopping Center	3	VARGAS FERNANDO R & GRACIELLA VARGAS	BRADFORD SQUARE
8192-58-7724	4071	PRINCE WILLIAM	PY	WOODBRIDGE	22193	STOR ALL LIPD LLC	8192NE	151	Mini Warehousing	3	PS WOODBRIDGE PRINCE WILLIAM 2013 LLC	PUBLIC STORAGE A
7397-45-1913	14251	JOHN MARSHALL	HY	GAINESVILLE	20155	CPC GAINESVILLE LLC	7397NW	190	Other Industrial	4	CPC-GAINESVILLE LLC	ATLANTIC COAST COTTON
7595-68-1509	9449	HAWKINS	DR	MANASSAS	20109	ROSS HAROLD M	7595NE	121	Durable Manufacturing	4	ROSS DAVID L	H.M. ROSS PAVING
8192-67-1576	4021	PRINCE WILLIAM	PY	WOODBRIDGE	22192	STEICO INCORPORATED	8192NE	344	Convienience Store with Gas	4	STEICO INCORPORATED	SHEETZ - PW PKWY & HILLENDALE
8192-77-7307	3908	PRINCE WILLIAM	PY	WOODBRIDGE	22192	3908 PRINCE WILLIAM LLC	8192NE	351	Restaurant	3	DJASSEBI JOE MEHRDAD & NORMA ISABEL SURV	JOE'S AMERICAN DINER
7697-33-9426	7500	BROKEN BRANCH	LN	MANASSAS	20109	LOWES HOME CENTERS INC	7697SW	320	Building Materials	3	LOWES HOME CENTERS INC	LOWE'S HOME CENTER
8093-52-8034	5304	HOADLY	RD	MANASSAS	20112	CHRISTOPHER CLAYTON C AND DORIS N	8093SE	911	Agricultural Resources	3	CHRISTOPHER CLAYTON C & DORIS N	
8289-35-3480	17247	WAYSIDE	DR	DUMFRIES	22026	ATLANTIC INVESTMENT CORPORATION	8289NW	311	Small Shopping Center	3	PREMIER SOUTHBRIDGE LLC	
7697-32-9173	7501	BROKEN BRANCH	LN	MANASSAS	20109	GENERAL MILLS RESTAURANTS INC	7697SW	351	Restaurant	3	ARCP RL/OG MANASSAS VA LLC	RED LOBSTER
7696-76-9773	8345	SUDLEY	RD	MANASSAS	20109	MANAPORT PLAZA LLC	7696NE	313	Shopping Center	3	MANAPORT PLAZA LLC	MANAPORT S C
7497-01-6194.01	7689	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2	INDIE LLC	BLDG D UNIT 125
7497-02-6302.01	7689	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2	GATEWAY BUSINESS CENTER	BLDG D UNIT 120
7497-02-3717.01	7679	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2	BLUE LABEL CUSTOMS LLC	BLDG B UNIT 120
7497-02-2519.01	7679	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2	NATIVE VENTURES LLC	BLDG B UNIT 140
7695-28-5649	10801	UNIVERSITY	BL	MANASSAS	20110	PWC BOARD OF COUNTY SUPERVISORS	7695NW	140	Research and Testing	2	PWC BOARD OF COUNTY SUPERVISORS	AMERICAN TYPE CULTURE (ATCC)
7594-91-5941	11507	VALLEY VIEW	DR	BRISTOW	20136	BRISTOW MANOR PARTNERSHIP	7594SE	832	Golf Course	2	BRISTOW MANOR PARTNERSHIP	Bristow Estates Manor House
8292-55-1036	13356	MINNIEVILLE	RD	WOODBRIDGE	22192	FARM LLC	8292NE	311	Small Shopping Center	3	FARM LLC	SHOPS AT MADISON FARM
7892-55-2432	13550	DUMFRIES	RD	MANASSAS	20112	WOODBINE SHOPPING CENTER ASSOCS LLC	7892NE	313	Shopping Center	3	WOODBINE SHOPPING CENTER ASSOCS LLC	WOODBINE S C
8292-23-8176	13540	MINNIEVILLE	RD	WOODBRIDGE	22192	DOMINION CENTER LLC	8292SW	312	Shopping Center	3	DOMINION CENTER TWO LLC	DOMINION CENTER
8188-64-1129	18638	TRIANGLE	ST	TRIANGLE	22172	CHOI SUNG KUL HAI SUN SURV	8188SE	216	Auto Parking	3	CHOI JASON SUNG KUL TR & HAI SUN	
7794-93-8087	8675	PLANT	PL	MANASSAS	20112	MEADOWS MERLIN GILVEN	7794SE	390	Retail	3	MEADOWS MERLIN W TR & STAN L TR	GIL MEADOWS NURSERIES INC
8090-48-6613	15701	CARRS BROOKE	WY	MANASSAS	20112	EXXON MOBIL CORPORATION	8090NE	344	Convienience Store with Gas	4	MACS RETAIL LLC	CAR WASH
8190-34-9190	4370	KEVIN WALKER	DR	DUMFRIES	22025	MONTCLAIR PLAZA LLC	8190SW	312	Shopping Center	3	MONTCLAIR PLAZA LLC	MONTCLAIR PL I
8193-11-8551	12730	BLACK FOREST	LN	WOODBRIDGE	22192	RENSCHLER ROLF MARGARETE K TRS	8193SW	351	Restaurant	3	RENSCHLER ROLF & MARGARETE K TRS	QUEEN'S GAMBIT
7397-18-6524	14670	GAP	WY	GAINESVILLE	20155	EXXONMOBIL OIL COPORATION	7397NW	311	Small Shopping Center	3	GAP WAY LLC	GREENHILL COMMERCIAL
8289-36-4320	17171	WAYSIDE	DR	DUMFRIES	22026	ATLANTIC INVESTMENT CORPORATION	8289NW	311	Small Shopping Center	3	PREMIER SOUTHBRIDGE LLC	SOUTHBRIDGE PLAZA
8393-12-2614	2201	OLD BRIDGE	RD	WOODBRIDGE	22192	TACKETTS MILL CENTER LLC	8393SW	353	Restaurant	3	TACKETT'S MILL CENTER LLC	Dunkin Donuts
8190-85-7263	15823	LAZY DAY	LN	DUMFRIES	22025	U S GOLF PROPERTIES L P	8190NE	832	Golf Course	2	CJ EAGLE LLC	
8188-64-2402	18723	FULLER HEIGHTS	RD	TRIANGLE	22172	HEPBURN ANDREW PHILLIP	8188SE	390	Retail	3	HEPBURN ANDREW PHILLIP	
7493-86-1936	12026	ADEN	RD	NOKESVILLE	20181	COWNE FAMILY LP	7493NE	224	Sewage	2	PWC SERVICE AUTHORITY	
8190-87-4542	3802	DALEBROOK	DR	DUMFRIES	22025	U S GOLF PROPERTIES L P	8190NE	832	Golf Course	2	CJ EAGLE LLC	
7299-71-8268	5200	MERCHANTS VIEW	SQ	HAYMARKET	20169	DOMINION COUNTRY CLUB LP	7299SE	311	Small Shopping Center	3	DOMINION VALLEY OWNER LLC	BUILDING ""M""
7497-01-4392.01	7699	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2	GATEWAY BUSINESS CENTER	BLDG C UNIT 140
7497-01-3294.01	7699	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2	GATEWAY BUSINESS CENTER	BLDG C UNIT 125
8492-53-7716	401	BELMONT BAY	DR	WOODBRIDGE	22191	BELMONT BAY LC	8492SE	831	Golf Course	2	BELMONT BAY LC	BELMONT BAY GOLF CLUBHOUSE
7696-86-5847	8441	IRONGATE	WY	MANASSAS	20109	IRONGATE GROUP LLC	7696NE	351	Restaurant	3	IRON GATE GROUP LLC	GUNNI'S RESTAURANT & GRILL
7497-02-4315.01	7679	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2	GATEWAY BUSINESS CENTER	BLDG B UNIT 110
8190-97-0062	3702	DALEBROOK	DR	DUMFRIES	22025	U S GOLF PROPERTIES L P	8190NE	832	Golf Course	2	CJ EAGLE LLC	
7497-12-4811	7805	PROGRESS	CT	GAINESVILLE	20155	PLEIN SCOTT AND INGRID SURV	7497SW	150	Wholesale Warehousing	4	PROSPECT COURT LLC	TOTAL DEVELOPMENT SOLUTIONS
8292-34-9675	13430	MINNIEVILLE	RD	WOODBRIDGE	22192	SULLINS THURMAN D TR	8292SW	150	Wholesale Warehousing	4	FORECLOSURE DEVELOPMENT CO LLC	SULLINS FURNITURE
7595-57-4598	9401	CONTRACTORS	CT	MANASSAS	20109	CRONIN DANIEL SHARON CRONIN SURV	7595NE	190	Other Industrial	4	CRONIN DANIEL & SHARON CRONIN SURV	CRONIN FLOORS
8192-57-9857	13131	HILLENDALE	DR	WOODBRIDGE	22193	TRAVERS ROBERT L TR	8192NE	343	Convienience Store	2	TRAVERS ROBERT L TR	7-ELEVEN
8292-82-0694	13798	TELEGRAPH	RD	WOODBRIDGE	22192	SHURGARD FREMONT PARTNERS I	8292SE	151	Mini Warehousing	3	SHURGARD/FREMONT PARTNERS I	SHURGARD STORAGE
8292-82-2050	2600	PRINCE WILLIAM	PY	WOODBRIDGE	22192	MOTIVA ENTERPRISES LLC	8292SE	344	Convienience Store with Gas	4	PMG NORTHERN VIRGINIA LLC	SHELL- PW PKWY & TELEGRAPH RD
8291-65-7904	14700	POTOMAC MILLS	RD	WOODBRIDGE	22192	PWC	8291NE	213	Bus	4	PWC BOARD OF COUNTY SUPERVISORS	PRTC
8292-45-9012	13360	MINNIEVILLE	RD	WOODBRIDGE	22192	PARCEL C2 LLC	8292NE	344	Convienience Store with Gas	4	PARCEL C-2 LLC	7-ELEVEN - MADISON FARM
7397-92-9807.01	7669	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2	GATEWAY BUSINESS CENTER	BLDG A UNIT 115
7497-02-0122.01	7669	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	354	Restaurant	3	S & J ENTERPRISE INC	BLDG A UNIT 110

7994-94-6606	5901	DAVIS FORD	RD	MANASSAS	20112	OCCOQUAN FOREST SANITARY DISTRICT	7994SE	190	Other Industrial	4 PWC SERVICE AUTHORITY	
7697-60-2801	10309	LOMOND	DR	MANASSAS	20109	NORTHERN VIRGINIA ELECTRIC COOP	7697SE	216	Auto Parking	3 NORTHERN VIRGINIA ELECTRIC COOP	
7895-71-8052	10404	MOORE	DR	MANASSAS	20111	MCGARRY ALLAN D & KIL S MCGARRY	7895SE	390	Retail	3 KONDOLOJY ROSTAM	BUCKHALL GENERAL STORE
8292-23-6078	13550	MINNIEVILLE	RD	WOODBRIDGE	22192	DOMINION CENTER LLC	8292SW	312	Shopping Center	3 DOMINION CENTER LLC	DOMINION CENTER - RETAIL
7694-24-6033	11713	BRISTOW	RD	BRISTOW	20136	JOHN RUFF AND PHILLIP WHEELER PTNSHP	7694SW	910	Agricultural Resources	3 BRISTOW BROADRUN LLC	
8492-43-8235	499	HARBOR SIDE	ST	WOODBRIDGE	22191	HARBOR VIEW ASSOCIATES LLC	8492SW	841	Swimming Pool	3 UNIT OWNERS HARBOR VIEW CONDO AT	
8189-69-1607	4100	TALON	DR	DUMFRIES	22025	7 ELEVEN INC	8189NE	344	Convenience Store with Gas	4 SEJ ASSET MANAGEMENT & INVESTMENT CO	7-ELEVEN
7896-18-7963	8104	CENTREVILLE	RD	MANASSAS	20111	RESTLESS WHEELS INC	7896NW	390	Retail	3 RESTLESS WHEELS INC	RESTLESS WHEELS CAMPER SALES
7497-02-2220.01	7679	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2 VG 145 LLC	BLDG B UNIT 145
7497-01-3993.01	7699	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2 GATEWAY BUSINESS CENTER	BLDG C UNIT 135
7497-01-2895.01	7699	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2 GATEWAY BUSINESS CENTER	BLDG C UNIT 120
7497-02-2818.01	7679	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2 FOUR CORNERS REAL ESTATE INVESTMENT GROUP	BLDG B UNIT 135
7496-07-8757	8217	LINTON HALL	RD	BRISTOW	20136	AMERICA ONLINE INC	7496NW	191	Technology Services	1 PORPOISE VENTURES LLC	AOL II
8092-54-6085	13698	MAPLEDALE	AV	WOODBRIDGE	22193	HYLTON CECIL D ESTATE	8092SE	354	Restaurant	3 HYLTON CONRAD C TR & MALCOLM W COOK TR &	MCDONALD'S @ MAPLEDALE
7396-83-1971	13900	ESTATE MANOR	DR	GAINESVILLE	20155	TOWER GROUP LLC	7396SE	311	Small Shopping Center	3 GLENKIRK RETAIL CENTER LLC	FAMILY MART
7696-77-3723	8319	SUDLEY	RD	MANASSAS	20109	MANAPORT PLAZA LLC	7696NE	313	Shopping Center	3 MANAPORT PLAZA LLC	MANAPORT S C
8192-05-3469	4802	DALE	BL	WOODBRIDGE	22193	DELANEY PLAZA LLC	8192NW	312	Shopping Center	3 WOODBRIDGE VILLAGE LLC	DELANEY PLAZA
7595-66-6386	9650	HAWKINS	DR	MANASSAS	20109	NEWBILL HOLDINGS LLC	7595NE	190	Other Industrial	4 ASHLAND INVESTMENTS LLC	NEWBILL HOLDINGS
8193-50-0347	4255	SEETON	SQ	WOODBRIDGE	22192	EXXON CORP	8193SE	344	Convenience Store with Gas	4 SOUTHSIDE OIL LLC	EXXON - THE GLEN SHOP CTR
8292-72-9509	2651	PRINCE WILLIAM	PY	WOODBRIDGE	22192	BRINKER VIRGINIA INC	8292SE	351	Restaurant	3 COLE OB WOODBRIDGE VA LLC	ON THE BORDER
8292-51-4135	13901	SMOKETOWN	RD	WOODBRIDGE	22192	MINI U STORAGE WOODBRIDGE LTD PTNSHP ET	8292SE	151	Mini Warehousing	3 MINI U STORAGE WOODBRIDGE LTD PTNSHP ET AL	MINI-U-STORAGE - OFFICE/APT
8292-23-2492	3340	ELM FARM	RD	WOODBRIDGE	22192	LORD FAIFAX COMMUNITY COLLEGE	8292SW	151	Mini Warehousing	3 POTOMAC MILLS LAND LLLP	EZ SELF STORAGE
8190-62-6732	4202	FORTUNA CENTER	PZ	DUMFRIES	22025	FORTUNA REGENCY LLC	8190SE	313	Shopping Center	3 BRE DDR CROCODILE FORTUNA CENTER LLC	FORTUNA CENTER - SHOPPERS, etc
8393-22-9054	2010	OLD BRIDGE	RD	WOODBRIDGE	22192	BOROCZI SCOTT TR	8393SW	366	Service Station	5 RUBY & HARRY LLC	SUNOCO-OLD BRIDGE & CLIPPER
8292-55-3681	13606	FOWKE	LN	WOODBRIDGE	22192	GARBER J MANLEY JEANETTE ESTATE	8292NE	361	Motor Vehicle Sales	3 GARBER DANIEL C	Lake Ridge Auto Sales
7298-37-4137	5942	INTERLACHEN	CT	HAYMARKET	20169	DOMINION COUNTRY CLUB LP	7298NW	831	Golf Course	2 DOMINION VALLEY COUNTRY CLUB I LLC	
7298-77-8242	15191	GOLF VIEW	DR	HAYMARKET	20169	DOMINION COUNTRY CLUB LP	7298NE	831	Golf Course	2 DOMINION VALLEY COUNTRY CLUB I LLC	
7298-79-3018	15201	ARNOLD PALMER	DR	HAYMARKET	20169	DOMINION COUNTRY CLUB LP	7298NE	831	Golf Course	2 DOMINION VALLEY COUNTRY CLUB I LLC	
7595-57-0682	9400	CONTRACTORS	CT	MANASSAS	20109	L F JENNINGS INC	7595NE	190	Other Industrial	4 L F JENNINGS INC	L F JENNINGS INC
7497-12-2047	7750	PROGRESS	CT	GAINESVILLE	20155	POTOMAC GAINESVILLE PROPERTY LLC	7497SW	160	Industrial Service Garage	4 POTOMAC GAINESVILLE PROPERTY LLC	POTOMAC MACK SALES/SERVICE
8190-66-1721	16500	EDGEWOOD	DR	DUMFRIES	22025	U S GOLF PROPERTIES L P	8190NE	832	Golf Course	2 CJ EAGLE LLC	MONTCLAIR COUNTY CLUB
8190-52-9272	4406	FORTUNA CENTER	PZ	DUMFRIES	22025	FORTUNA REGENCY LLC	8190SE	352	Restaurant	3 BRE DDR CROCODILE FORTUNA CENTER LLC	PANERA BREAD & STARBUCKS
8193-40-9299	4350	PRINCE WILLIAM	PY	WOODBRIDGE	22192	LEOPOLD CHARLES W JACQUELINE M SURV	8193SE	190	Other Industrial	4 G & L ENTERPRISES LLC	MAINTENANCE BLDG @ THE GLEN
7696-84-7480	8621	SUNNYGATE	DR	MANASSAS	20109	SUNNYGATE DRIVE SELF STORAGE LLC	7696NE	151	Mini Warehousing	3 U-STORE-IT LP	CUBESMART
7497-24-9109	7201	RAIL LINE	CT	GAINESVILLE	20155	DALRYMPLE REALTY CORP	7497SW	121	Durable Manufacturing	4 DALRYMPLE REALTY CORPORATION	CHEMUNG ASPHALT PLANT
7397-20-9268	7754	VIRGINIA OAKS	DR	GAINESVILLE	20155	NGP REALTY SUB LP	7396SE	832	Golf Course	2 VIRGINIA OAKS LLC	
7595-57-1046	9430	CONTRACTORS	CT	MANASSAS	20109	9430 INC	7595NE	190	Other Industrial	4 9430 INC	A
8492-44-5722	530	HARBOR SIDE	ST	WOODBRIDGE	22191	BELMONT TOWN CENTER ASSOCS LLC	8492NE	851	Marina	3 BELMONT TOWN CENTER ASSOCS LLC	BELMONT BAY CENTER MARINA
7595-67-6742	9489	HAWKINS	DR	MANASSAS	20109	TOUSHA NOBLE A ROBIN	7595NE	150	Wholesale Warehousing	4 TOUSHA NOBLE A & ROBIN	EQUIPMENT SPECIALISTS
8391-88-6685	14398	MELBOURNE	AV	WOODBRIDGE	22191	PWC PARK AUTHORITY	8391NE	224	Sewage	2 PWC BOARD OF COUNTY SUPERVISORS	
7596-24-1508	12021	WILTON MEADOWS	CT	MANASSAS	20109	BENFIELD AND DRESSLER LLC	7596NW	150	Wholesale Warehousing	4 NAGEOTTE RICHARD R V LLC	BENFIELD ELECTRIC
8391-59-8873	14211	JEFFERSON DAVIS	HY	WOODBRIDGE	22191	JD HWY LLC	8391NE	361	Motor Vehicle Sales	3 JD HWY LLC	LUSTINE DODGE - JEEP
7396-59-3972	7689	VIRGINIA OAKS	DR	GAINESVILLE	20155	NGP REALTY SUB LP	7396SE	832	Golf Course	2 VIRGINIA OAKS LLC	
7595-56-9398	11331	INDUSTRIAL	RD	MANASSAS	20109	HUGHES EDDY W	7595NE	150	Wholesale Warehousing	4 DAVID RAMOS FAMILY LLC	MIKE & BRYAN CONTRACTORS
8192-41-7315	4326	DALE	BL	WOODBRIDGE	22193	TRUSTEES OF THE IRENE V HYLTON CHARITABL	8192SW	312	Shopping Center	3 GLENDALE PLAZA LLC	GLENDALE PLAZA
7596-14-5500	8780	VIRGINIA MEADOWS	DR	MANASSAS	20109	PEREIRA ANTONIO AND MARIO RAMOS ETAL	7596NW	190	Other Industrial	4 PEREIRA ANTONIO & MARIO RAMOS ETAL	POTOMAC CONCRETE
7697-50-9508	10319	LOMOND	DR	MANASSAS	20109	NORTHERN VIRGINIA ELECTRIC COOP	7697SE	216	Auto Parking	3 NORTHERN VIRGINIA ELECTRIC COOP	
7595-67-8821	9651	HAWKINS	DR	MANASSAS	20109	HAMP WILLIAM A III TR	7595NE	190	Other Industrial	4 HAWKINS DRIVE LLC	CALVERT MASONRY
7496-50-4931	12912	HUNTING COVE	PL	BRISTOW	20136	BIRCHWOOD AT BRIDLEWOOD MANOR ASSOC LLC	7496SE	841	Swimming Pool	3 BRIDLEWOOD MANOR COMMUNITY ASSN	
7993-01-0402	12805	DUSTY WILLOW	RD	MANASSAS	20112	OAK RIDGE SWIM CLUB INC	7993SW	841	Swimming Pool	3 OAK RIDGE SWIM CLUB INC	
8391-56-6917	1551	FEATHERSTONE	RD	WOODBRIDGE	22191	HALL MICHAEL T TR	8391NE	343	Convenience Store	2 THE KENTLAND FOUNDATION INC	7 MARKET FOOD STORE
8193-37-0594	4600	ASDEE	LN	WOODBRIDGE	22192	OLD HICKORY GOLF CLUB LLC	8193NW	832	Golf Course	2 OLD HICKORY GOLF CLUB LLC	OLD HICKORY GOLF CLUB STOR/BAT
7497-02-0329.01	7669	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2 TEAMC PROPERTIES LLC	BLDG A UNIT 100
8293-04-3660	3310	OLD BRIDGE	RD	WOODBRIDGE	22192	OLD BRIDGE RETAIL INVESTMENTS LLC	8293SW	313	Shopping Center	3 OLD BRIDGE RETAIL INVESTMENTS LLC	FESTIVAL-OLD BRIDGE
7497-01-6089.01	7689	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2 DLE LLC	BLDG D UNIT 135
7497-01-3594.01	7699	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2 GATEWAY BUSINESS CENTER	BLDG C UNIT 130
7497-01-1299.01	7699	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2 GATEWAY BUSINESS CENTER	BLDG C UNIT 100
7497-02-3417.01	7679	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2 GATEWAY BUSINESS CENTER	BLDG B UNIT 120
8391-58-3691	14335	JEFFERSON DAVIS	HY	WOODBRIDGE	22191	LYNWOOD SHOPPING CENTER LLC	8391NE	312	Shopping Center	3 LYNWOOD SHOPPING CENTER LLC	LYNWOOD SHOPPING CENTER
8193-93-5944	3514	OLD BRIDGE	RD	WOODBRIDGE	22192	EXXON CORP	8193SE	344	Convenience Store with Gas	4 SOUTHSIDE OIL LLC	EXXON-OLD BRIDGE & SMOKETOWN
8293-04-2352	3312	OLD BRIDGE	RD	WOODBRIDGE	22192	OLD BRIDGE RETAIL INVESTMENTS LLC	8293SW	313	Shopping Center	3 OLD BRIDGE RETAIL INVESTMENTS LLC	FESTIVAL-OLD BRIDGE FOOD LION
8191-35-7187	14797	DARBYDALE	AV	WOODBRIDGE	22193	TRAVERS ROBERT L TR	8191NW	343	Convenience Store	2 TRAVERS ROBERT L TR	7-ELEVEN
8293-03-0262	3318	OLD BRIDGE	RD	WOODBRIDGE	22192	STORAGE SQUIREBAC 101 LTD PTNSHP	8293SW	151	Mini Warehousing	3 STORAGE SQUIREBAC 101 LTD PTNSHP	STORAGE USE - BLDG D
8292-88-9614	13059	MINNIEVILLE	RD	WOODBRIDGE	22192	ARCHIE HENRY E SR & ANNIE WILLIAMS	8292NE	369	Other Automotive	4 ARCHIE HENRY ELVIN JR	Penny's Used Auto Parts
8193-93-0718	12576	GRAND TARGHEE	DR	WOODBRIDGE	22192	AMOCO OIL CO	8193SE	344	Convenience Store with Gas	4 OLD BRIDGE 101 LLC	Car Wash
8293-05-8957	3500	COMMISSION	CT	WOODBRIDGE	22192	COMMISSION COURT LLC	8293NW	151	Mini Warehousing	3 COMMISSION COURT LLC	ATLANTIC STORAGE
8193-92-0448	3705	OLD BRIDGE	RD	WOODBRIDGE	22192	MICHAEL R VANDERPOOL ET ALL	8193SE	390	Retail	3 JVG LLC	LOW ROOFED GREENHOUSE
7595-68-5645	11141	INDUSTRIAL	RD	MANASSAS	20109	S S REAL ESTATE HOLDINGS L L C	7595NE	150	Wholesale Warehousing	4 11141 INDUSTRIAL ROAD LLC	S & S REAL ESTATE
8392-88-5002	13244	PUTNAM	CL	WOODBRIDGE	22191	GREENWICH HILL HOMEOWNERS ASSOC	8392NE	841	Swimming Pool	3 GREENWICH HILL HOMEOWNERS ASSOC	
8292-80-9997	14103	TELEGRAPH	RD	WOODBRIDGE	22192	HAMILTON C ISAAC TR & JUDITH TR	8292SE	131	NonDurable Manufacturing	4 TELEGRAPH MANAGEMENT GROUP LLC	HAMILTON IRON WORKS
8292-51-2288	13889	SMOKETOWN	RD	WOODBRIDGE	22192	PUBLIC STORAGE INC	8292SE	151	Mini Warehousing	3 PUBLIC STORAGE INC	PUBLIC STORAGE BLDG A
8391-82-5162	15060	FARM CREEK	DR	WOODBRIDGE	22191	TRIDEX ASSOCIATES INC	8391SE	150	Wholesale Warehousing	4 TRIDEX ASSOCIATES INC	TRIDEX MACHINE SHOP/WAREHOUSE
8193-30-7146	4383	RIDGEWOOD CENTER	DR	WOODBRIDGE	22192	PFITZNER G RICHARD TR	8193SW	216	Auto Parking	3 PFITZNER G RICHARD TR	
7595-58-6956	11250	INDUSTRIAL	RD	MANASSAS	20109	KALOS PETER VERON L KALOS	7595NE	190	Other Industrial	4 COSTA ENTERPRISES LLC	

8393-11-6795	12721	HARBOR	DR	WOODBRIDGE	22192	TACO BELL OF AMERICA INC	8393SW	354	Restaurant	3 TACO BELL OF AMERICA INC	TACO BELL
7896-19-9330	8028	CENTREVILLE	RD	MANASSAS	20111	AKSOYLU AHMET	7896NW	150	Wholesale Warehousing	4 AKSOYLU AHMET	VAMAC PLUMBING SUPPLIES
8392-51-7103	1641	WIGGLESWORTH	WY	WOODBRIDGE	22191	PEP BOYS MANNY MOE JACK	8392SE	369	Other Automotive	4 PEP BOYS MANNY MOE & JACK	Pep Boys
8292-83-0326	13790	TELEGRAPH	RD	WOODBRIDGE	22192	PASCAVAGE JOAN	8292SE	150	Wholesale Warehousing	4 PERRY FAMILY LIMITED PARTNERSHIP LLP	AIRECO, VAMAC, JACKSON TRANSPO
8292-90-3172	14105	TELEGRAPH	RD	WOODBRIDGE	22192	HARRISON KIMBERLY C STEVEN H	8292SE	369	Other Automotive	4 VROOM VROOM HOLDINGS LLC	COLEMAN POWERSPORT
8292-23-4763	13598	MINNIEVILLE	RD	WOODBRIDGE	22192	DOMINION CENTER LLC	8292SW	312	Shopping Center	3 DOMINION CENTER TWO LLC	DOMINION CENTER - RETAIL
8292-72-9845	2630	PRINCE WILLIAM	PY	WOODBRIDGE	22192	EKW ENTERPRISES LLC	8292SE	351	Restaurant	3 HO AMY Y & JAMES HO ETAL T-C	HOOTERS
8292-82-6528	2631	PRINCE WILLIAM	PY	WOODBRIDGE	22192	JBAC L L C	8292SE	344	Convienience Store with Gas	4 JBAC L L C	7-ELEVEN
7497-01-2097.01	7699	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2 GATEWAY BUSINESS CENTER	BLDG C UNIT 110
7497-01-1698.01	7699	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2 GATEWAY BUSINESS CENTER	BLDG C UNIT 105
7497-02-4714.01	7679	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2 GATEWAY BUSINESS CENTER	BLDG B UNIT 105
7497-02-4016.01	7679	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2 GATEWAY BUSINESS CENTER	BLDG B UNIT 115
7497-02-3118.01	7679	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2 GATEWAY BUSINESS CENTER	BLDG B UNIT 130
7497-01-5983.01	7689	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2 GATEWAY BUSINESS CENTER	BLDG D UNIT 140
8191-94-0237	14820	CLOVERDALE	RD	WOODBRIDGE	22193	TRAVERS ROBERT L TR	8191SE	343	Convienience Store	2 TRAVERS ROBERT L TR	7-ELEVEN
7595-67-5757	9479	HAWKINS	DR	MANASSAS	20109	HAWKINS ROAD ASSOCIATES LLC	7595NE	150	Wholesale Warehousing	4 DOBYNS PROPERTIES LLC	DOBYN'S CONSTRUCTION
7596-14-7467	8713	VIRGINIA MEADOWS	DR	MANASSAS	20109	GRC LLC	7596NW	150	Wholesale Warehousing	4 GRC LLC	COASTAL ELECTRIC
7497-02-0225.01	7669	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2 GATEWAY BUSINESS CENTER	
7596-13-8198	8760	VIRGINIA MEADOWS	DR	MANASSAS	20109	AMERICAN MANAGEMENT ENTERPRISES	7596SW	150	Wholesale Warehousing	4 8760 LLC	Helpcomm, Inc.
8392-29-7921	13065	LUPINE	TN	WOODBRIDGE	22192	PWC BOARD OF COUNTY SUPERVISORS	8392NW	224	Sewage	2 PWC BOARD OF COUNTY SUPERVISORS	SEWAGE PUMPING STATION
7991-05-2666	14823	DUMFRIES	RD	MANASSAS	20112	VENABLE JEAN S	7991NW	369	Other Automotive	4 KELLY SCOTT D	ASAP AUTO RECYCLING CENTER
8393-11-6935	2211	TACKETTS MILL	DR	WOODBRIDGE	22192	DOMINION FOODS LTD	8393SW	354	Restaurant	3 BRC TACKETTS MILL LAND LLC	BURGER KING
8289-36-2339	17165	WAYSIDE	DR	DUMFRIES	22026	ATLANTIC INVESTMENT CORPORATION	8289NW	311	Small Shopping Center	3 PREMIER SOUTHBRIDGE LLC	AUTO ZONE
8292-82-5976	13851	TELEGRAPH	RD	WOODBRIDGE	22192	PARKWAY CROSSING LLC	8292SE	150	Wholesale Warehousing	4 PARKWAY CROSSING LLC	P.W. COUNTY ARCHIVES
8190-45-6117	4413	ASHGROVE	DR	DUMFRIES	22025	U S GOLF PROPERTIES L P	8190NW	832	Golf Course	2 CJ EAGLE LLC	
8193-50-7773	13211	TOUCHSTONE	CL	WOODBRIDGE	22192	SAUL HOLDINGS LIMITED PARTNERSHIP	8193SE	311	Small Shopping Center	3 SAUL HOLDINGS LIMITED PARTNERSHIP	THE GLEN
7497-02-1720.01	7679	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2 GATEWAY BUSINESS CENTER	BLDG B UNIT 150
8190-66-9015	16066	DEER PARK	DR	DUMFRIES	22025	U S GOLF PROPERTIES L P	8190NE	832	Golf Course	2 CJ EAGLE LLC	
8293-25-1320	12241	HEDGES RUN	DR	WOODBRIDGE	22192	LAKE RIDGE E AND A LLC	8293NW	311	Small Shopping Center	3 LAKE RIDGE (E&A) LLC	GIANT'S HEDGES RUN/LAKE RIDGE
8190-39-3819	15516	GOLF CLUB	DR	DUMFRIES	22025	U S GOLF PROPERTIES L P	8190NW	832	Golf Course	2 CJ EAGLE LLC	
8190-35-4496	4412	ASHGROVE	DR	DUMFRIES	22025	U S GOLF PROPERTIES L P	8190NW	832	Golf Course	2 CJ EAGLE LLC	
8190-54-0778	16225	EDGEWOOD	DR	DUMFRIES	22025	U S GOLF PROPERTIES L P	8190SE	832	Golf Course	2 CJ EAGLE LLC	
8190-77-2247	15870	NORTHGATE	DR	DUMFRIES	22025	U S GOLF PROPERTIES L P	8190NE	832	Golf Course	2 CJ EAGLE LLC	
7595-56-7123	9515	CONTRACTORS	CT	MANASSAS	20109	BROAD RUN DEVELOPMENT LLC	7595NE	190	Other Industrial	4 EURO GROUP LLC	
8193-50-3541	13261	TOUCHSTONE	CL	WOODBRIDGE	22192	MCDONALDS CORPORATION	8193SE	354	Restaurant	3 MCDONALDS CORPORATION	MCDONALD'S
7497-01-2496.01	7699	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2 GATEWAY BUSINESS CENTER	BLDG C UNIT 115
7497-02-6408.01	7689	LIMESTONE	DR	GAINESVILLE	20155	GATEWAY BUSINESS CENTER LP	7497SW	156	Wholesale Warehousing (Condo)	2 GATEWAY BUSINESS CENTER	BLDG D UNIT 110
7299-40-8683	15251	WEISKOPF	CT	HAYMARKET	20169	DOMINION VALLEY COUNTRY CLUB LP	7299SW	831	Golf Course	2 THE REGENCY GOLF CLUB I LLC	
8190-46-3671	15915	DOLPHIN	DR	DUMFRIES	22025	U S GOLF PROPERTIES L P	8190NW	832	Golf Course	2 CJ EAGLE LLC	
8090-96-0386	5055	WATERWAY	DR	DUMFRIES	22025	E&A ACQUISITION LTD PTSHP	8090NE	313	Shopping Center	3 LAKE MONTCLAIR-DUMFRIES VA LLC	LAKE MONTCLAIR SHOPPING CENTER
8190-48-2675	15601	RHAME	DR	DUMFRIES	22025	U S GOLF PROPERTIES L P	8190NW	832	Golf Course	2 CJ EAGLE LLC	
8292-60-8719	2850	POTOMAC MILLS	CL	WOODBRIDGE	22192	BURLINGTON COAT REALTY POTOMAC INC	8292SE	314	Large Mall	3 BURLINGTON COAT REALTY POTOMAC INC	POTOMAC MILLS-BURLINGTON COAT
7696-76-6475	8375	SUDLEY	RD	MANASSAS	20109	PADILLA LOUIS A CHARLOTTE M	7696NE	344	Convienience Store with Gas	4 PADILLA LOUIS A & CHARLOTTE M	7-ELEVEN
7794-18-3364	10501	CEDAR CREEK	DR	MANASSAS	20112	COUNTRY ROADS HOMEOWNERS ASSOC	7794NW	841	Swimming Pool	3 COUNTRY ROADS HOMEOWNERS ASSOC	
7992-89-0253	7001	DALE	BL	WOODBRIDGE	22193	7 ELEVEN INC	7992NE	344	Convienience Store with Gas	4 SEJ ASSET MANAGEMENT & INVESTMENT CO	7-ELEVEN
7797-53-8297	7420	BEN LOMOND PARK	DR	MANASSAS	20109	UPPER OCCOQUAN SEWAGE AUTHORITY	7797SE	224	Sewage	2 UPPER OCCOQUAN SEWAGE AUTHORITY	SEWAGE TREATMENT/NOVEC
8292-82-1711	2641	PRINCE WILLIAM	PY	WOODBRIDGE	22192	BRINKER VIRGINIA INC	8292SE	351	Restaurant	3 BARBERS LLC	MACARONI GRILL
7596-24-0125	8740	VIRGINIA MEADOWS	DR	MANASSAS	20109	BENFIELD AND DRESSLER LLC	7596NW	190	Other Industrial	4 BENFIELD & DRESSLER LLC	PERMNT SEAL, BENEFIELD ELECTRC
7497-13-3145	5579	WELLINGTON	RD	GAINESVILLE	20155	PRESIDENTIAL PROPERTIES USA LLC	7497SW	151	Mini Warehousing	3 PRESIDENTIAL PROPERTIES USA LLC	PRESIDENTIAL STORAGE
7196-84-1142	8230	BUCKLAND MILL	RD	GAINESVILLE	20155	BUCKLAND FARM LLC	7196SE	911	Agricultural Resources	3 BUCKLAND FARM LLC	
7896-18-5692	8100	CENTREVILLE	RD	MANASSAS	20111	SCHICK RORY LEE	7896NW	361	Motor Vehicle Sales	3 SCHICK RORY LEE	MANASSAS CHRYSLER
7497-02-1157	7645	LIMESTONE	DR	GAINESVILLE	20155	PROSPERITY INVESTORS LLC	7497SW	150	Wholesale Warehousing	4 PROSPERITY INVESTORS LLC	UNITED STATES POSTAL SERVICE
8393-10-4281	12831	HARBOR	DR	WOODBRIDGE	22192	KIM HAK K OK J	8393SW	369	Other Automotive	4 SHAD HOLDING LLC	TACKETTS MILL CAR WASH
7296-19-8769	15694	LEE	HY	GAINESVILLE	20155	STRINGER RODNEY B AND CORA R A SURV	7296NW	351	Restaurant	3 STRINGER INVESTMENT GROUP LLLP	BLUE RIDGE SEA FOOD RESTAURANT
7397-43-5429	7500	ALEXANDER SOPHIA	CT	GAINESVILLE	20155	GAINESVILLE 29 LLC	7397SW	150	Wholesale Warehousing	4 CRAIG ENTERPRISES LLC	
7696-49-6563	8001	SUDLEY	RD	MANASSAS	20109	EXXON CORP	7696SW	344	Convienience Store with Gas	4 MACS RETAIL LLC	EXXON
7595-68-8696	11128	INDUSTRIAL	RD	MANASSAS	20109	WISE GUYS CONTRACTING INC	7595NE	121	Durable Manufacturing	4 INDUSTRIAL ROAD REALTY LLC	WISE GUYS CONSTRUCTION
8390-30-3120	16656	RADCLIFFE	LN	WOODBRIDGE	22191	PWC SERVICE AUTHORITY	8390SW	224	Sewage	2 PWC SERVICE AUTHORITY	SEWAGE PUMP STATION
8289-49-8567	16555	RIVER RIDGE	BL	WOODBRIDGE	22191	LSB WHEATON LLC KODIAK RIVER OAKS LLC	8289NE	311	Small Shopping Center	3 LSB WHEATON LLC & KODIAK RIVER OAKS LLC	RIVER OAKS SC
7599-33-0540	5003	SUDLEY	RD	CATHARPIN	20143	POAGUE JOHN R	7599SW	390	Retail	3 POAGUE JOHN R & JEAN C SURV	SUDLEY GARDEN CENTER
7595-78-1595	11120	INDUSTRIAL	RD	MANASSAS	20109	PAVONE VINCENT F CHARLOTTE C	7595NE	150	Wholesale Warehousing	4 11120 LLC	V.F. PAVONE
7991-25-7431	7044	COLCHESTER PARK	DR	MANASSAS	20112	RIDGE LONG LTD CO	7991NW	150	Wholesale Warehousing	4 L & R REAL ESTATE LLC	RIDGE AND LONG LIMITED LLC
8191-22-5293	3541	WATERWAY	DR	WOODBRIDGE	22193	KEENE MILL CORP	8191SW	312	Shopping Center	3 AHNS REAL ESTATE INC & HEI SIL AHN	MONTCLAIR
7396-59-8754	7950	VIRGINIA OAKS	DR	GAINESVILLE	20155	NGP REALTY SUB LP	7396NE	832	Golf Course	2 VIRGINIA OAKS LLC	VIRGINIA OAKS CLUBHOUSE
8190-44-1875	16160	COUNTRY CLUB	DR	DUMFRIES	22025	SOUTHLAND CORP	8190NE	312	Shopping Center	3 SOUTHLAND CORP	MONTCLAIR 7-11
8193-50-0968	4245	SEETON	SQ	WOODBRIDGE	22192	BNE LLC	8193SE	369	Other Automotive	4 BNE LLC	Lakeridge Auto Care
7298-71-0059	6450	TRADING	SQ	HAYMARKET	20169	HAYMARKET E A LLC	7298SE	313	Shopping Center	3 HAYMARKET (E&A) LLC	BUILDING 4
7298-56-1368	5943	INTERLACHEN	CT	HAYMARKET	20169	DOMINION COUNTRY CLUB LP	7298NE	831	Golf Course	2 DOMINION VALLEY COUNTRY CLUB I LLC	
8192-67-9463	13295	TROWBRIDGE	DR	WOODBRIDGE	22192	PW PETROLEUM INC	8192NE	344	Convienience Store with Gas	4 PW PETROLEUM INC	VALERO PW PARKWAY
7594-17-9564	12108	NOKESVILLE	RD	BRISTOW	20136	NOKESVILLE LIVESTOCK AUCTION INC	7594NW	390	Retail	3 NOKESVILLE LIVESTOCK AUCTION INC	
7595-31-6547	10500	BRISTOW CENTER	DR	BRISTOW	20136	BLJV	7595SW	311	Small Shopping Center	3 BLJV LLC	BLDG C 10410-10418 BRISTOW CTR
7296-49-9598	7900	STONEWALL SHOPS	SQ	GAINESVILLE	20155	STONEWALL REGENCY LLC	7297SW	313	Shopping Center	3 STONEWALL REGENCY LLC	
7296-68-0445	15601	TURTLE POINT	DR	GAINESVILLE	20155	LAKE MANASSAS LIMITED LIABILITY CO	7296NE	832	Golf Course	2 STONEWALL GOLF CLUB AT LAKE MANASSAS INC	STONEWALL GOLF/CLUBHOUSE
8292-60-5581	14050	WORTH	AV	WOODBRIDGE	22192	SAMS REAL ESTATE BUSINESS TRUST	8292SE	390	Retail	3 SAMS REAL ESTATE BUSINESS TRUST	SAM'S CLUB GAS

7896-17-1798	8501	MAPLEWOOD	DR	MANASSAS	20111	BEATTY FAMILY LP	7896NW	216	Auto Parking	3	BEATTY FAMILY L P	
8393-01-9573	2219	OLD BRIDGE	RD	WOODBRIDGE	22192	TACKETTS MILL CENTER LLC	8393SW	311	Small Shopping Center	3	TACKETT'S MILL CENTER LLC	TACKETTS MILL
7697-14-7746	7651	STREAM WALK	LN	MANASSAS	20109	E A SOUTHEAST LTD PTNSHP	7697NW	313	Shopping Center	3	AMCB MANASSAS PROMENADE LLC	MANASSAS PROMENADE
8291-58-4206	14142	SMOKETOWN	RD	WOODBRIDGE	22192	PRINCE WILLIAM SQUARE INVESTORS LLC	8291NE	313	Shopping Center	3	PRINCE WILLIAM SQUARE INVESTORS LLC	PW SQUARE
8392-05-3846	13455	TELEGRAPH	RD	WOODBRIDGE	22192	PWC BOARD OF COUNTY SUPERVISORS	8392NW	216	Auto Parking	3	PWC BOARD OF COUNTY SUPERVISORS	
8392-87-7647	13249	OCCOQUAN	RD	WOODBRIDGE	22191	AMETHYST COMPANY LLC	8392NE	311	Small Shopping Center	3	AMETHYST COMPANY LLC	WOODBRIDGE SQUARE
7300-54-9159	14050	SHELTER	LN	HAYMARKET	20169	LATHAM CARROLL H AND MARY ANNE L	7300SE	911	Agricultural Resources	3	LATHAM FAMILY LAND LLC	
8192-40-8479	4300	DALE	BL	WOODBRIDGE	22193	TRUSTEES OF THE IRENE V HYLTON CHARITABL	8192SW	351	Restaurant	3	GLENDALE PLAZA LLC	PIZZA HUT
8393-11-8693	12700	MINNIEVILLE	RD	WOODBRIDGE	22192	EXXON CORPORATION	8393SW	344	Convienience Store with Gas	4	SOUTHSIDE OIL LLC	CAR WASH
7595-83-2458	10040	SOWDER VILLAGE	SQ	MANASSAS	20109	INNOVATION E AND A LLC	7595SE	313	Shopping Center	3	INNOVATION (E&A) LLC	RED ROBIN
7595-46-9946	9480	CONTRACTORS	CT	MANASSAS	20109	BROAD RUN DEVELOPMENT LLC	7595NE	190	Other Industrial	4	TRANSATLANTIC REALTY LLC	INDUSTRIAL SHELL
7595-56-3112	9520	CONTRACTORS	CT	MANASSAS	20109	BROAD RUN DEVELOPMENT LLC	7595NE	190	Other Industrial	4	FMJS COMMERCIAL PROPERTIES LLC	BROAD RUN BUSINESS
8191-59-7049	4176	DALE	BL	WOODBRIDGE	22193	TRUSTEES OF THE IRENE V HYLTON CHARITABL	8191NE	312	Shopping Center	3	FORESTDALE PLAZA LLC	FORESTDALE PLAZA
8092-43-9145	5301	DALE	BL	WOODBRIDGE	22193	PWC PARK AUTHORITY	8092SW	841	Swimming Pool	3	PWC BOARD OF COUNTY SUPERVISORS	DALE CITY
8292-70-7645	2860	POTOMAC MILLS	CL	WOODBRIDGE	22192	POTOMAC MILLS OPERATING CO LLC	8292SE	315	Large Mall	3	MALL AT POTOMAC MILLS LLC	POTOMAC MILLS PHASE 3
8292-70-0588	14070	WORTH	AV	WOODBRIDGE	22192	RED ROBIN INTERNATIONAL INC	8292SE	351	Restaurant	3	RED ROBIN INTERNATIONAL INC	RED ROBIN
8291-79-1954	2700	POTOMAC MILLS	CL	WOODBRIDGE	22192	POTOMAC MILLS OPERATING CO LLC	8291NE	315	Large Mall	3	MALL AT POTOMAC MILLS LLC	POTOMAC MILLS I&II
8091-45-7860	14640	MINNIEVILLE	RD	WOODBRIDGE	22193	ZP NO 44 LLC	8091NW	311	Small Shopping Center	3	ZP NO. 44 LLC	STAPLES MILL SC
7896-16-8253	8391	CENTREVILLE	RD	MANASSAS	20111	ABDI PARVIZ AND MAHBOUBEH SAEEDI	7896NW	390	Retail	3	8391 CENTERVILLE ROAD LLC	CARPET GALLERY
7495-77-7361	12691	BRAEMAR VILLAGE	PZ	BRISTOW	20136	BRAEMAR SHOPPING CENTER LLC	7495NE	311	Small Shopping Center	3	CAR BRAEMAR VILLAGE LLC	BRAEMAR SHOPPING CTR
8293-04-2120	3314	OLD BRIDGE	RD	WOODBRIDGE	22192	OLD BRIDGE RETAIL INVESTMENTS LLC	8293SW	313	Shopping Center	3	OLD BRIDGE RETAIL INVESTMENTS LLC	FESTIVAL AT OLD BRIDGE
7696-30-1623	10850	PYRAMID	PL	MANASSAS	20110	ARE VIRGINIA NO 2 LLC	7696SW	140	Research and Testing	2	COMMONWEALTH OF VA DEPT OF FORENSIC SCIENCE	VIRGINIA FORENSICS LAB
7496-60-1866	9100	DEVLIN	RD	BRISTOW	20136	BRISTOW COMMONS LLC	7496SE	313	Shopping Center	3	BC PLAZA LLC	Building 3
7497-12-0220	7800	PROGRESS	CT	GAINESVILLE	20155	WMB LC	7497SW	190	Other Industrial	4	WMB LC	BERGER BUILDING
8093-72-2873	12601	GALVESTON	CT	MANASSAS	20112	HOADLY REGENCY LLC	8093SE	311	Small Shopping Center	3	HOADLY REGENCY LLC	HARRIS TEETER
7296-19-0372	7900	CRESCENT PARK	DR	GAINESVILLE	20155	MADISON CRESCENT RETAIL LLC	7296NW	313	Shopping Center	3	MADISON CRESCENT RETAIL LLC	MADISON CRESCENT BUILDING B
7595-58-7311	11301	INDUSTRIAL	RD	MANASSAS	20109	TECHNOLOGY LEASING CONSULTANTS INC	7595NE	190	Other Industrial	4	TECHNOLOGY & LEASING CONSULTANTS INC	ACUITY AUDIO VISUAL
8291-94-2928	2401	OPITZ	BL	WOODBRIDGE	22191	DIAMOND POTOMAC TOWN CENTER LLC	8291SE	314	Large Mall	3	DIAMOND POTOMAC TOWN CENTER LLC	BLDG 1 - EYE DOCTOR
8393-23-6788	12500	CLIPPER	DR	WOODBRIDGE	22192	THOUSAND OAKS TOWNHOUSE ASSOC	8393SW	841	Swimming Pool	3	THOUSAND OAKS TOWNHOUSE ASSOC	COMMUNITY POOL
7696-85-6632	8500	SUDLEY	RD	MANASSAS	20109	ABEL FAMILY LTD PARTNERSHIP LLP	7696NE	361	Motor Vehicle Sales	3	ABEL FAMILY LIMITED PARTNERSHIP LLP	MILLER TOYOTA
7497-12-6630	7755	PROGRESS	CT	GAINESVILLE	20155	BILLYS LLC	7497SW	190	Other Industrial	4	PROGRESS COURT LLC	FANNON OIL
8391-51-7302	1851	RIPPON	BL	WOODBRIDGE	22191	PWC SERVICE AUTHORITY	8391SE	224	Sewage	2	PWC SERVICE AUTHORITY	H.L. MOONEY
8292-34-8341	13470	MINNIEVILLE	RD	WOODBRIDGE	22192	SOLANO NELIDA & ITALO F TRS	8292SW	352	Restaurant	3	SOLANO NELIDA J & ITALO F SOLANO TRS	EL POLLO RICO
8191-06-5175	14410	MINNIEVILLE	RD	WOODBRIDGE	22193	TRAVERS GUY CHRISTOPHER	8191NW	343	Convienience Store	2	TRAVERS GUY CHRISTOPHER	7-ELEVEN
8093-73-7672	5019	DAVIS FORD	RD	WOODBRIDGE	22192	CREST LIMITED PARTNERSHIP	8093SE	150	Wholesale Warehousing	4	CREST LIMITED PARTNERSHIP	PALM POOLS

FID	STRUC_ID	OUTFALL
41	21270	24
158	21517	15
534	20186	30
536	20188	24
652	19942	36
655	19950	24
818	20789	15
827	17878	0
852	30228	15
1059	18570	21
1065	18576	12
1070	18588	36
1075	18593	27
1630	16261	30
1886	15542	0
1944	14926	0
2176	15305	15
2570	32176	18
2756	11631	0
2764	12308	0
2798	12353	21
2800	12355	15
3013	60379	36
3301	11361	18
3304	11366	8
3382	11707	15
3561	27032	0
3682	4722	15
3683	4724	18
3947	9761	15
3969	9843	15
3972	10321	36
3973	10322	0
3974	10323	36
3975	10324	0
3976	10325	12
3978	10327	30
4101	10033	48
4186	9482	42
4789	2279	228
5004	36226	18
5007	34453	24
5662	36869	24
5671	36828	15
6267	37801	0
6291	37374	24

6426	27777	0
6543	36874	15
6545	37690	27
6565	37660	15
6848	8399	15
7291	32345	15
7369	61713	0
7378	61717	0
7426	61707	0
7430	61711	0
8067	956	0
8457	4429	36
8932	35986	42
8937	36087	24
8939	36069	18
8966	35934	0
8974	35905	21
9532	2295	15
9533	2311	24
9620	30650	66
9696	37976	15
9740	37973	0
9741	18854	0
9807	30709	0
9818	30720	60
9890	25177	15
9899	25199	36
10012	38703	0
10047	37974	15
10056	37986	15
10145	40728	0
10146	40729	15
10267	31940	0
10268	31942	0
10372	39737	18
10376	39743	15
10381	40742	36
10412	14975	36
10476	25755	0
10538	26012	0
10539	26014	0
10540	26017	0
10593	33082	48
10623	39748	15
10632	39699	18
10637	39753	15
10639	39705	15

10648	39714	24
10653	39719	15
10876	34159	41
10877	34163	42
10970	39722	15
11006	39413	15
11164	26774	42
11165	26776	36
11439	26876	0
11555	41239	48
11811	36824	42
12124	36793	15
12413	28284	60
12445	39375	24
12457	37980	12
12786	37964	15
12794	19553	0
12805	34733	0
12811	37975	0
12970	23443	36
13366	39287	36
13611	24019	36
13731	38247	21
13894	2394	18
14069	19554	15
14268	30155	42
14565	51105	30
14799	7558	18
14805	7574	0
15254	51141	30
15363	19919	36
15379	19946	18
15397	11488	0
15413	4263	18
15420	4368	0
15429	4437	18
15434	4457	0
15855	19316	15
15874	13639	48
15888	13580	15
15933	26655	135
16198	13811	24
16199	13813	15
16225	30625	0
16226	30626	80
16594	9759	21
16618	9795	33

16619	9797	15
16650	9871	42
16658	9882	21
16668	9874	15
16800	27474	23
17106	41551	0
17526	9465	21
17845	8397	15
18366	21282	36
18513	16264	0
18517	16270	36
18518	16272	30
19626	11009	0
19847	34739	27
19854	38615	42
20770	34735	0
20797	18855	15
20807	38073	21
21437	31024	0
21438	31025	48
21570	27139	15
21671	35935	121
21686	35932	18
21688	35896	21
21698	39443	15
21803	46092	0
21821	46110	24
21829	46112	36
21940	36025	15
21950	35901	18
21959	12262	21
21964	36061	24
22059	40053	15
22267	36341	18
22356	39906	15
22572	36424	47
22970	37363	48
22980	36822	15
23029	30174	27
23064	12987	18
23073	13004	0
23221	37720	42
23283	37344	24
23522	2278	0
23961	30159	0
24637	1922	54
24873	31736	0

25400	28274	15
25458	31943	21
25536	42081	30
25543	42088	18
25545	42090	30
25893	24764	36
26387	34160	0
26388	34161	18
26463	42330	42
26468	42335	18
26481	42348	21
26490	42357	24
26567	25183	24
26568	25185	36
26633	10042	84
26650	10046	0
26655	10051	0
27012	35487	15
27013	35489	15
27199	25756	53
27259	29576	27
27400	23686	30
27527	26013	24
27528	26016	0
27529	26015	18
27530	26018	36
27542	971	84
28494	26767	0
28499	26775	0
28533	30153	0
28621	41817	72
28749	26873	0
28751	26877	18
29074	27126	0
29075	27128	48
29773	14979	15
30528	22257	24
30529	22350	0
30531	22352	24
30549	22373	15
30550	22374	0
30552	22376	24
30733	14388	24
30734	14391	15
31063	31048	72
31463	12795	60
31545	45846	0

31546	45847	24
31547	45848	0
31551	45852	18
31554	45855	15
31555	45856	0
32076	19769	30
32079	19772	21
32080	19789	0
32081	19796	46
32082	19809	30
32083	19822	18
32287	43448	30
32288	43449	0
32289	43450	0
32290	43451	0
32428	31941	18
32715	29827	24
32820	42563	36
32822	42565	36
32958	44481	15
33105	45337	0
33106	45338	15
33111	45341	0
33112	45342	15
33248	34912	18
33351	23727	0
33381	12969	18
33397	32955	0
33487	8392	15
33637	44484	0
33648	36533	15
33649	36534	0
33658	44485	0
33968	36535	18
33985	36110	15
33986	36532	0
34139	16557	15
34142	16575	36
34292	44480	0
34361	45552	30
34438	16580	18
34439	25950	0
34440	25951	15
34442	16564	42
34514	43862	48
34517	43865	15
34555	43903	48

34556	43904	0
34637	47379	4
34643	14335	18
34646	14338	42
34748	21193	27
34749	21195	15
35455	4615	15
35481	4641	36
35484	4644	15
35491	4651	15
35499	4659	27
36491	7220	0
36493	13197	0
36494	13198	15
36501	13205	21
36505	13210	15
36933	31045	21
38013	46739	0
38014	46740	15
38016	46742	15
38293	27770	0
38297	27775	60
38462	33077	48
38479	48353	15
38488	48362	21
38525	48403	39
38528	48406	15
38740	42743	18
38747	42751	54
39023	43434	48
39046	47150	18
39344	47232	0
39345	47233	15
39464	5523	24
39466	11353	8
39555	10459	21
39556	10460	0
39621	5371	30
39805	10513	0
39807	10521	15
40166	4019	15
40486	4151	27
40496	4161	27
40497	4162	0
40498	4163	15
40508	4173	15
40509	4174	0

40517	4182	0
40519	4184	0
40536	4201	0
40811	4226	66
40816	4231	0
40833	4250	15
41158	21416	27
41159	21418	15
41160	21419	0
41161	21421	15
41167	21427	0
41168	21428	8
41169	15585	0
41171	21430	15
41226	12068	0
41227	12069	21
41244	14627	0
41245	14628	22
41246	14629	0
41247	14630	30
41267	19259	0
41577	27006	0
41578	27007	12
42453	4511	0
42455	4513	0
42469	4527	54
42475	4533	15
42480	4493	18
42483	4485	15
42690	49117	21
42692	49119	15
42694	49121	18
42697	49124	30
42699	49126	60
43025	4305	24
43028	4308	15
43032	4312	15
43036	4373	15
43038	4375	15
43047	4420	24
43051	4424	15
43137	26667	15
43138	26672	15
43139	26678	15
43140	26750	15
43178	30025	0
43243	25901	0

43245	25903	56
43304	4427	0
43314	4441	15
43316	4535	144
43319	4538	21
43527	2673	33
43528	2677	15
43529	2678	0
43530	2679	15
43531	2680	0
43532	2681	18
43753	5181	15
43838	6023	0
43839	6024	24
44145	22746	15
44368	1952	15
44423	2007	18
44432	2016	21
44554	17235	0
44682	3188	0
44683	3189	60
44980	50778	24
45069	51726	30
46008	30262	0
46009	30266	0
46010	30267	30
46011	30268	0
46012	30269	15
46271	31028	72
46415	40175	48
46506	53535	54
46555	32959	36
46751	52159	0
46783	52191	15
46901	25533	56
46904	25531	53
46945	28197	48
46947	28286	15
47230	29072	48
47231	29073	0
47232	29074	15
47235	29077	18
47239	30238	18
47250	30249	0
47251	30250	48
47255	30254	21
47258	30257	21

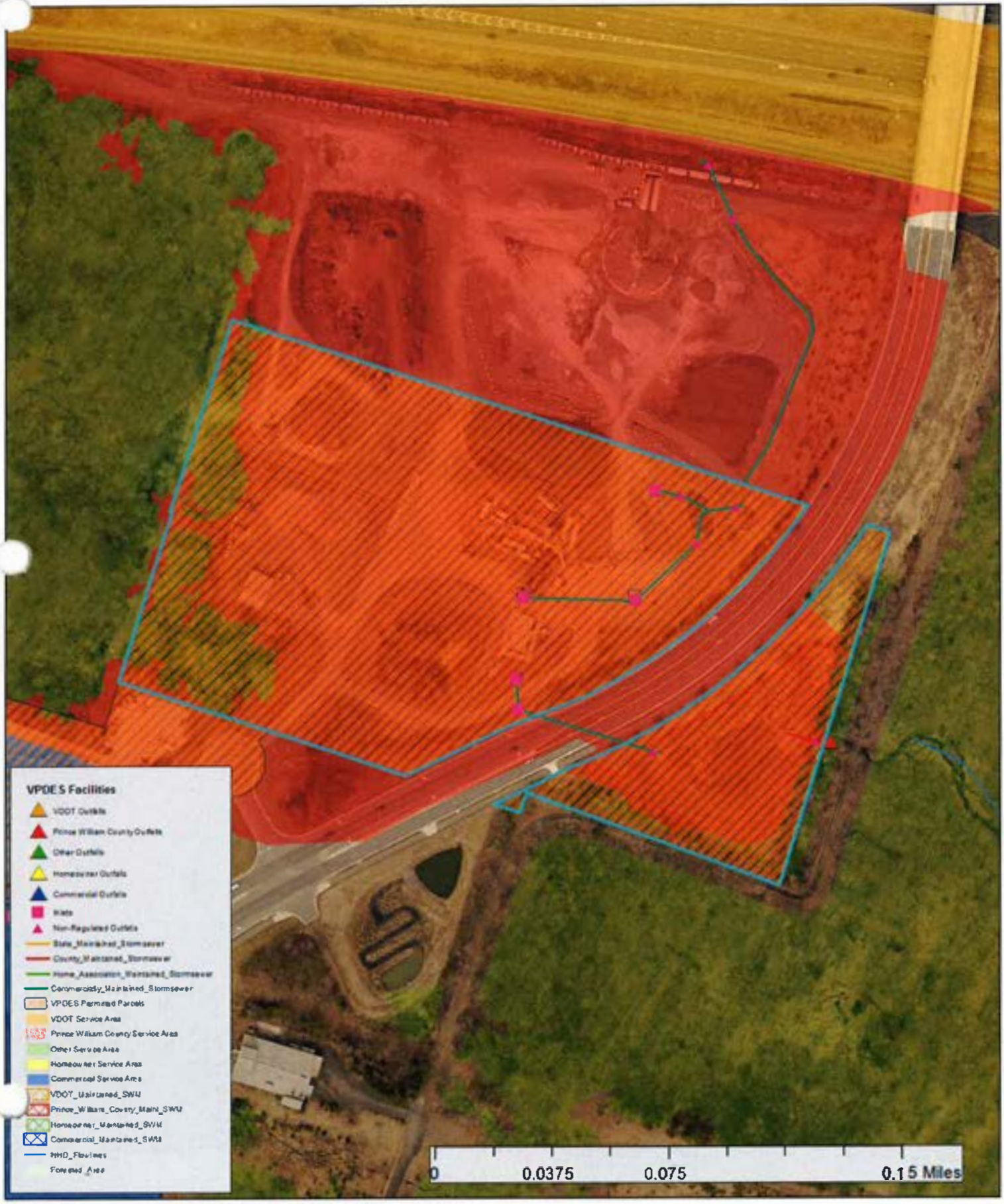
47259	30265	48
47454	10227	0
47463	10236	42
48070	53210	120
48821	3557	15
49195	25525	0
49198	25528	53
49207	52334	0
49223	52352	0
49225	52354	0
49459	13815	18
50890	57621	18
50893	57625	15
50896	57628	15
51180	57668	30
51186	57674	15
51195	57683	18
51468	36819	15
51751	56828	0
51752	56829	42
51753	56830	0
51755	56832	36
52396	30865	84
53255	28093	15
53263	28418	0
53460	19564	48
53461	19565	0
53464	19568	48
53543	54844	15
53546	54847	24
53552	54853	0
53553	54854	24
54045	57613	33
54167	54992	24
54169	54999	15
54341	4139	15
54351	5280	21
54499	55102	24
54502	55105	0
54505	55109	54
54509	55113	18
54513	55117	18
54516	55120	18
54517	55121	0
54519	55123	48
54942	11621	96
55457	59703	48

55654	30226	15
55851	58310	15
55855	58321	0
56325	23726	18
56610	10477	0
56708	59624	15
56718	46352	0
56724	10475	0
56894	59620	15
56910	59544	15
57208	58075	0
57314	30230	15
57527	58076	15
58015	4718	0
58064	16738	0
58292	10508	42
58537	59734	36
58625	19287	18
58736	60935	24
58758	60957	0
58805	10480	15
58853	59055	0
58952	26037	0
58954	26038	15
58981	26054	0
59182	59639	24
59587	46351	18
59971	55000	0
60191	26101	15
60193	26103	12
60194	26104	0
60196	26106	15
60376	64095	21
60535	64179	27
60536	64180	24
60537	64181	21
60709	27141	48
60735	63043	54
61074	52341	0
61543	62841	24
61788	62906	54
62021	62984	54
62036	62994	30
62396	8565	15
62877	14650	18
63079	63185	36
63263	63203	30

63566	63338	0
63568	63340	15

VPDES Permitted Facilities

Chemung Contracting Corporation - Gainesville
Permit No: VAR051949



VPDES Permitted Facilities

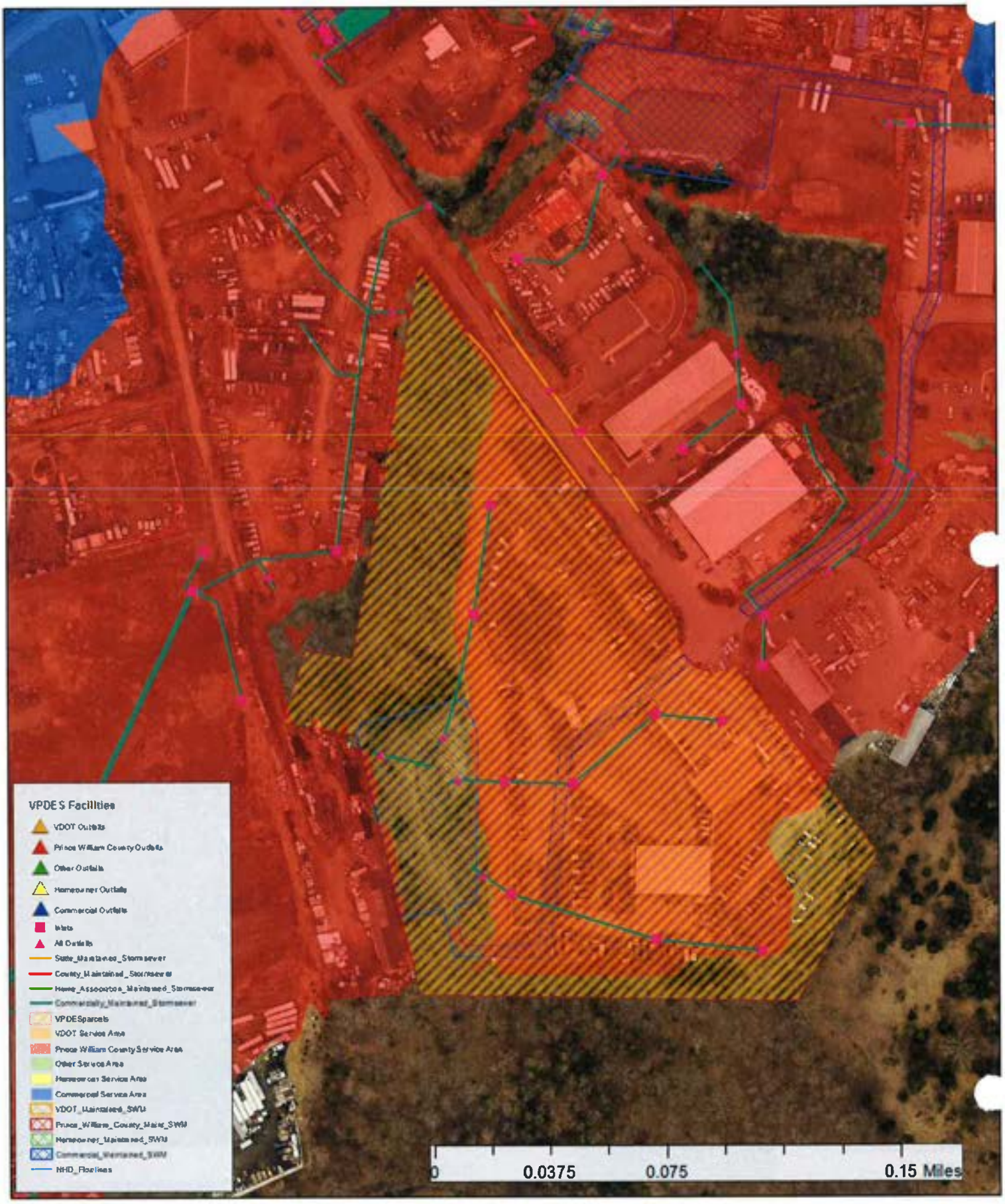
First Transit Incorporated
Permit No: VAR051477

VPDES Permitted Facilities

Penny's Used Auto Parts
Permit No: VAR052115

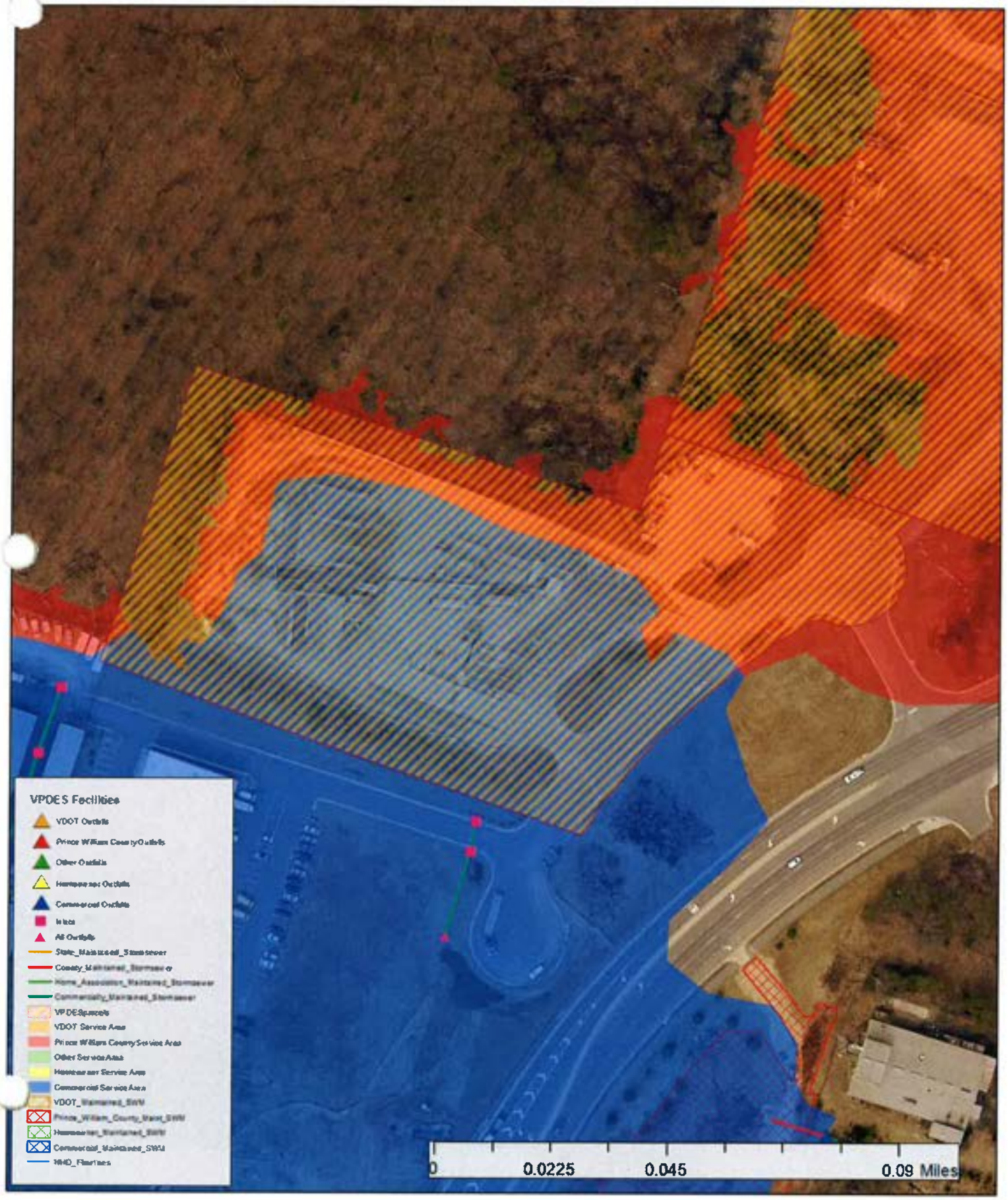
VPDES Permitted Facilities

Potomac Disposal Services of Virginia, LLC
Permit No: VAR051639



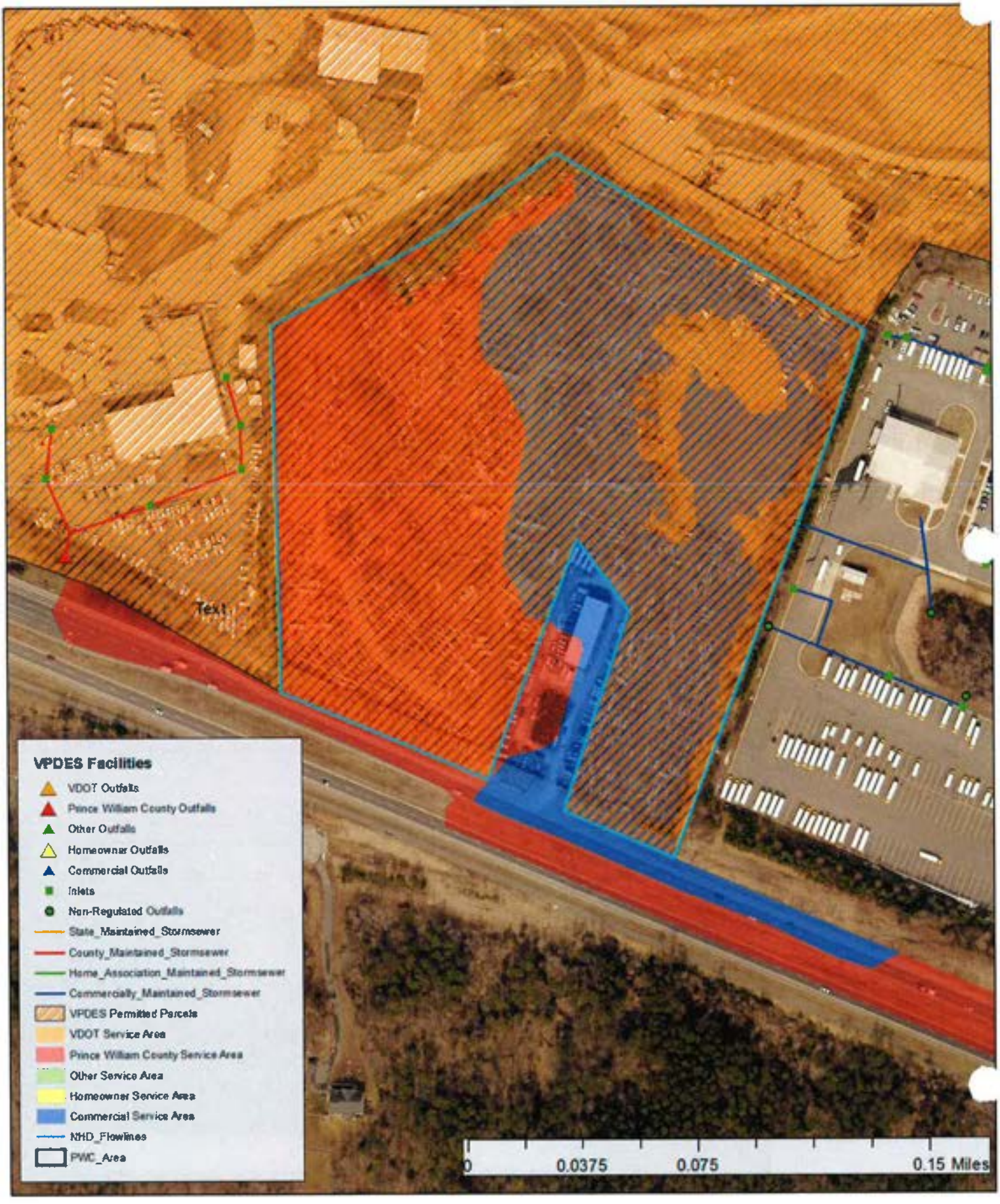
VPDES Permitted Facilities

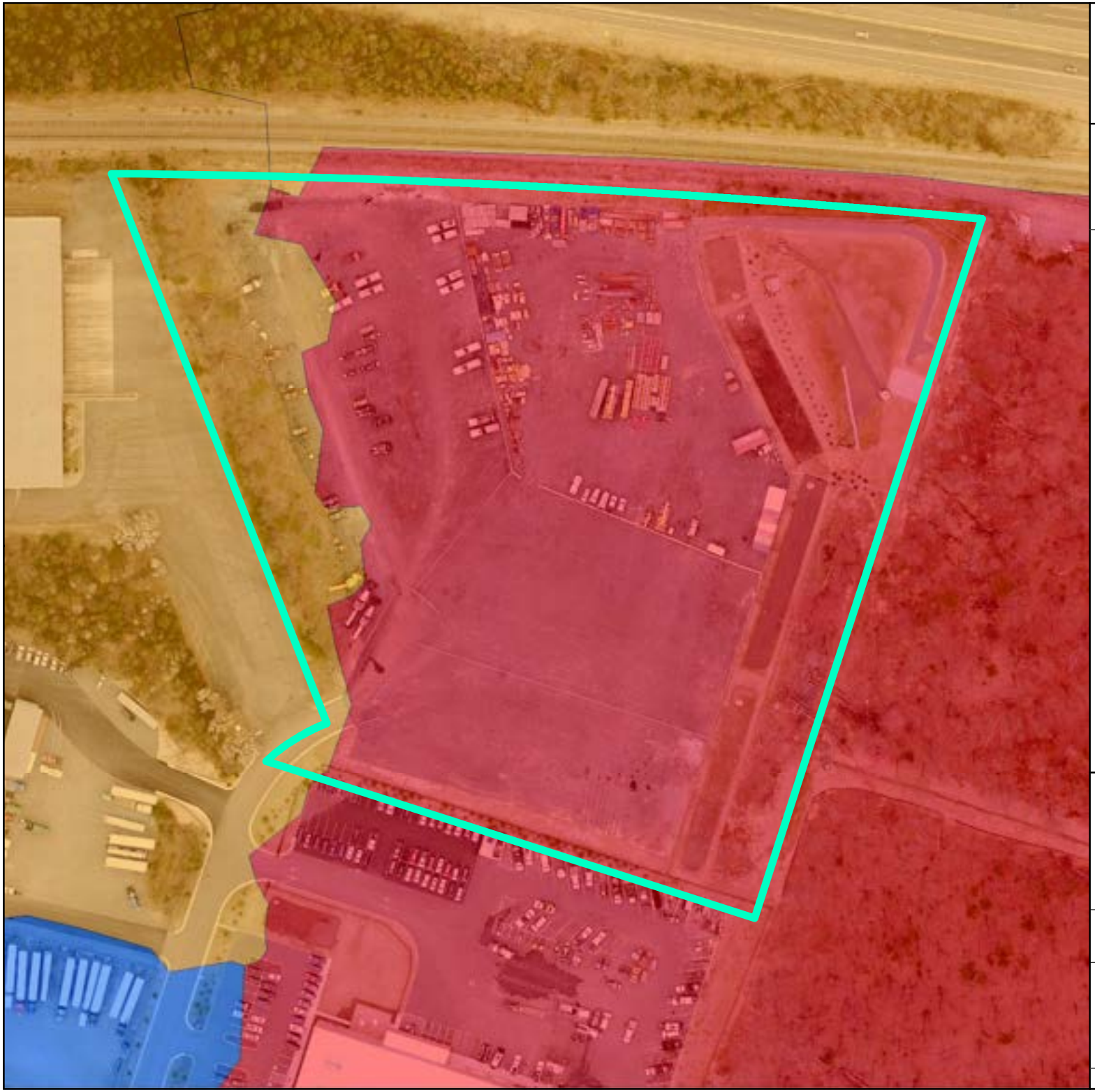
Virginia Concrete Company Inc - Gainesville
Permit No: VAG110100



VPDES Permitted Facilities

234 Auto and Truck Salvage Limited Liability Company
Permit No: VAR052243





Prince William County, Virginia

VPDES Permitted Facilities

SUPERIOR PROPERTIES INC

Address: 5547 Wellington Rd, GAINESVILLE,

Permit No: VAG110368

VPDES Permitted Parcel

Commercial Service

Prince William County Service

VDOT Service

N

W E

S

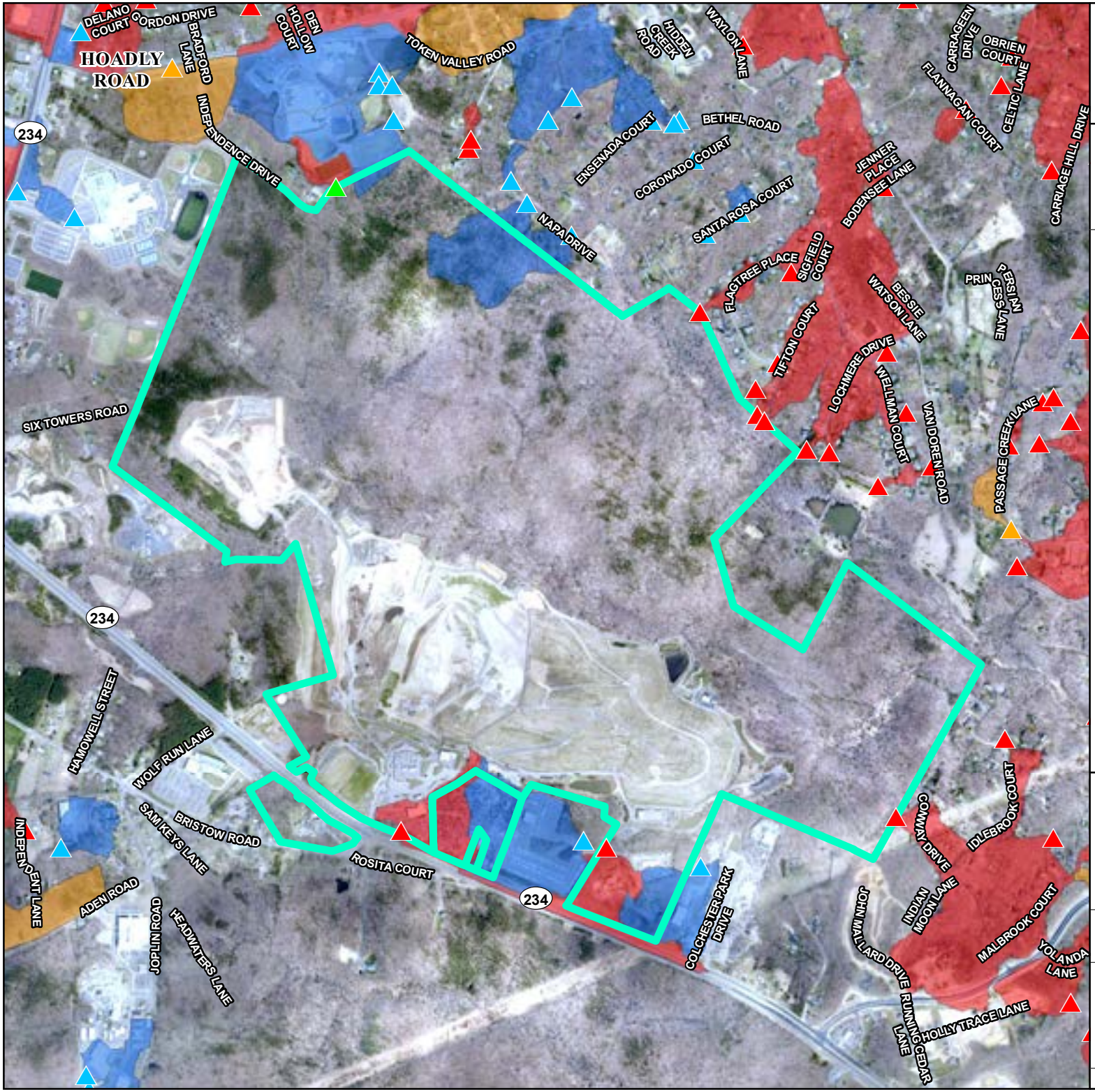
0 170 340

Feet

Any determination of topography or contours or any depiction of physical improvements, property lines or boundaries is for general information only and shall not be used for the design modification or construction of improvements to real property or for floodplain determination.

Prepared by:

Department of Public Works
Environmental Services Division
Watershed Management Branch
5 County Complex Court Suite 170
Prince William, VA 22192



Prince William County, Virginia

VPDES Permitted Facilities

PWC BOARD OF COUNTY SUPERVISORS
Address: 14811 Dumfries Rd, WOODBRIDGE,
Permit No: VAR052463

- VPDES Permitted Parcel
- Commercial Outfall
- Others Outfall
- Prince William County Outfall
- VDOT Outfall
- Commercial Service
- Prince William County Service
- VDOT Service Area

N
W E
S

0 1,600 3,200
Feet

Any determination of topography or contours or any depiction of physical improvements, property lines or boundaries is for general information only and shall not be used for the design modification or construction of improvements to real property or for floodplain determination.

Prepared by:

Department of Public Works
Environmental Services Division
Watershed Management Branch
5 County Complex Court Suite 170
Prince William, VA 22192

Prince William County, Virginia

VPDES Permitted Facilities

Swift Auto Recycling and Salvage, Inc

Address: 14832 Dumfries Rd, Manassas, 20112

Permit No: VAR052372

VPDES Permitted Parcel

Commercial Service Area

Prince William County Service Area

N

W E

S

0 80 160

Feet

Any determination of topography or contours or any depiction of physical improvements, property lines or boundaries is for general information only and shall not be used for the design modification or construction of improvements to real property or for floodplain determination.

Prepared by:

Department of Public Works
Environmental Services Division
Watershed Management Branch
5 County Complex Court Suite 170
Prince William, VA 22192

Appendix H – Stormsewer Infrastructure Management

SWM/BMP - Private Facility Compliance Report

	Facility Id	Inspection Date	Inspection Type	Facility In Compliance?	Notes	Owner 60 Day Ltr (Y/N)	CAO 30 Day Ltr	CAO 15 Day Ltr
1	5858	7/8/2020	Other	No	Maintenance needed.	No	No	No
2	6146	7/23/2020	Routine	Yes	No maintenance needed.	No	No	No
3	5731	8/4/2020	Other	No	Meeting	No	No	No
4	5732	8/4/2020	Other	No	Meeting	No	No	No
5	5733	8/4/2020	Other	No	Meeting	No	No	No
6	5734	8/4/2020	Other	No	Meeting	No	No	No
7	5735	8/4/2020	Other	No	Meeting	No	No	No
8	6148	8/4/2020	Routine	No	Maintenance needed.	No	No	No
9	6145	8/4/2020	Routine	Yes	No maintenance needed.	No	No	No
10	6147	8/4/2020	Routine	Yes	No maintenance needed.	No	No	No
11	6149	8/4/2020	Routine	Yes	No maintenance needed.	No	No	No
12	6150	8/4/2020	Routine	Yes	No maintenance needed.	No	No	No
13	6151	8/4/2020	Routine	Yes	No maintenance needed.	No	No	No
14	5119	8/11/2020	Routine	No	Maintenance needed.	Yes	No	No
15	5366	8/11/2020	Routine	No	Maintenance needed.	Yes	No	No
16	5542	8/11/2020	Routine	No	Maintenance needed.	Yes	No	No
17	6010	8/11/2020	Routine	Yes	No maintenance needed.	No	No	No
18	6011	8/11/2020	Routine	Yes	No maintenance needed.	No	No	No
19	6012	8/11/2020	Routine	Yes	No maintenance needed.	No	No	No
20	6013	8/11/2020	Routine	Yes	No maintenance needed.	No	No	No
21	6014	8/11/2020	Routine	Yes	No maintenance needed.	No	No	No
22	6015	8/11/2020	Routine	Yes	No maintenance needed.	No	No	No
23	6016	8/11/2020	Routine	Yes	No maintenance needed.	No	No	No
24	6017	8/11/2020	Routine	Yes	No maintenance needed.	No	No	No
25	5537	8/12/2020	60-day reinspection	Yes	No maintenance needed.	No	No	No
26	5541	8/12/2020	60-day reinspection	Yes	No maintenance needed.	No	No	No
27	5107	8/13/2020	Routine	No	Maintenance needed.	Yes	No	No
28	5510	8/13/2020	Routine	No	Maintenance needed.	Yes	No	No
29	5538	8/14/2020	60-day reinspection	Yes	No maintenance needed.	No	No	No
30	5331	8/17/2020	Routine	No	Maintenance needed.	Yes	No	No
31	5475	8/17/2020	Routine	No	Maintenance needed.	Yes	No	No
32	5611	8/17/2020	Routine	No	Maintenance needed.	Yes	No	No
33	5889	8/17/2020	Routine	Yes	No maintenance needed.	No	No	No
34	5890	8/17/2020	Routine	Yes	No maintenance needed.	No	No	No
35	6000	8/17/2020	Routine	Yes	No maintenance needed.	No	No	No
36	6001	8/17/2020	Routine	Yes	No maintenance needed.	No	No	No
37	6002	8/17/2020	Routine	Yes	No maintenance needed.	No	No	No
38	5585	8/18/2020	Routine	No	Maintenance needed.	Yes	No	No
39	5586	8/18/2020	Routine	No	Maintenance needed.	Yes	No	No
40	5995	8/18/2020	Routine	Yes	No maintenance needed.	No	No	No
41	5999	8/18/2020	Routine	Yes	No maintenance needed.	No	No	No
42	5365	8/19/2020	Routine	No	Maintenance needed.	Yes	No	No
43	5992	8/20/2020	Routine	Yes	No maintenance needed.	No	No	No
44	5993	8/20/2020	Routine	Yes	No maintenance needed.	No	No	No
45	5994	8/20/2020	Routine	Yes	No maintenance needed.	No	No	No
46	5996	8/20/2020	Routine	Yes	No maintenance needed.	No	No	No
47	5997	8/20/2020	Routine	Yes	No maintenance needed.	No	No	No
48	5998	8/20/2020	Routine	Yes	No maintenance needed.	No	No	No
49	5667	8/21/2020	Routine	No	Maintenance needed.	Yes	No	No
50	5874	8/21/2020	Routine	Yes	No maintenance needed.	No	No	No
51	5540	8/25/2020	Routine	No	Maintenance needed.	Yes	No	No
52	5875	8/25/2020	Routine	Yes	No maintenance needed.	No	No	No
53	5876	8/25/2020	Routine	Yes	No maintenance needed.	No	No	No
54	5195	8/26/2020	Routine	No	Maintenance needed.	Yes	No	No
55	5526	8/26/2020	Routine	No	Maintenance needed.	Yes	No	No
56	5037	8/28/2020	Complaint Based	No	Maintenance needed.	Yes	No	No
57	5535	8/28/2020	Routine	No	Maintenance needed.	Yes	No	No

58	5536	8/28/2020	Routine	No	Maintenance needed.	Yes	No	No
59	5539	8/28/2020	Routine	No	Maintenance needed.	Yes	No	No
60	5976	8/28/2020	Routine	Yes	No maintenance needed.	No	No	No
61	6117	9/1/2020	Other	No	Maintenance needed.	Yes	No	No
62	5322	9/2/2020	Other	No	Maintenance needed.	Yes	No	No
63	5882	9/9/2020	Other	No	Maintenance needed.	Yes	No	No
64	5883	9/9/2020	Other	No	Maintenance needed.	Yes	No	No
65	6117	9/9/2020	Other	No	Maintenance needed.	Yes	No	No
66	5331	9/9/2020	60-day reinspection	Yes	No maintenance needed.	No	No	No
67	5521	9/10/2020	Routine	No	Maintenance needed.	Yes	No	No
68	5522	9/10/2020	Routine	No	Maintenance needed.	Yes	No	No
69	5693	9/10/2020	Routine	No	Maintenance needed.	Yes	No	No
70	5694	9/10/2020	Routine	No	Maintenance needed.	Yes	No	No
71	5695	9/10/2020	Routine	No	Maintenance needed.	Yes	No	No
72	5505	9/16/2020	Other	No	Maintenance needed.	Yes	No	No
73	5785	9/18/2020	Routine	No	Maintenance needed.	Yes	No	No
74	5976	9/21/2020	60-day reinspection	No	Maintenance needed.	No	No	No
75	5269	9/22/2020	Complaint Based	No	Maintenance needed.	Yes	No	No
76	5132	9/22/2020	Routine	No	Maintenance needed.	Yes	No	No
77	5166	9/22/2020	Routine	No	Maintenance needed.	Yes	No	No
78	5167	9/22/2020	Routine	No	Maintenance needed.	Yes	No	No
79	5173	9/22/2020	Routine	No	Maintenance needed.	Yes	No	No
80	5174	9/22/2020	Routine	No	Maintenance needed.	Yes	No	No
81	5175	9/22/2020	Routine	No	Maintenance needed.	Yes	No	No
82	5176	9/22/2020	Routine	No	Maintenance needed.	Yes	No	No
83	5177	9/22/2020	Routine	No	Maintenance needed.	Yes	No	No
84	5178	9/22/2020	Routine	No	Maintenance needed.	Yes	No	No
85	5179	9/22/2020	Routine	No	Maintenance needed.	Yes	No	No
86	5194	9/22/2020	Routine	No	Maintenance needed.	Yes	No	No
87	5264	9/22/2020	Routine	No	Maintenance needed.	Yes	No	No
88	5265	9/22/2020	Routine	No	Maintenance needed.	Yes	No	No
89	5266	9/22/2020	Routine	No	Maintenance needed.	Yes	No	No
90	5270	9/22/2020	Routine	No	Maintenance needed.	Yes	No	No
91	5813	9/22/2020	Routine	No	Maintenance needed.	Yes	No	No
92	5814	9/22/2020	Routine	Yes	No maintenance needed.	No	No	No
93	5815	9/22/2020	Routine	Yes	No maintenance needed.	No	No	No
94	5816	9/22/2020	Routine	Yes	No maintenance needed.	No	No	No
95	5901	9/22/2020	Routine	Yes	No maintenance needed.	No	No	No
96	6003	9/23/2020	Complaint Based	No	Maintenance needed.	Yes	No	No
97	5302	9/23/2020	Routine	No	Maintenance needed.	Yes	No	No
98	5501	9/23/2020	Routine	No	Maintenance needed.	Yes	No	No
99	5613	9/23/2020	Routine	No	Maintenance needed.	Yes	No	No
100	5666	9/23/2020	Routine	No	Maintenance needed.	Yes	No	No
101	5956	9/23/2020	Routine	Yes	No maintenance needed.	No	No	No
102	6004	9/23/2020	Routine	Yes	No maintenance needed.	No	No	No
103	5063	9/24/2020	Routine	No	Maintenance needed.	Yes	No	No
104	5063	9/24/2020	Routine	No	Maintenance needed.	Yes	No	No
105	5469	9/24/2020	Routine	No	Maintenance needed.	Yes	No	No
106	5524	9/24/2020	Routine	No	Maintenance needed.	Yes	No	No
107	5596	9/24/2020	Routine	No	Maintenance needed.	Yes	No	No
108	5850	9/24/2020	Routine	Yes	No maintenance needed.	No	No	No
109	5851	9/24/2020	Routine	Yes	No maintenance needed.	No	No	No
110	6123	9/28/2020	Routine	Yes	No maintenance needed.	No	No	No
111	6122	9/29/2020	Routine	No	Maintenance needed.	No	No	No
112	5645	9/30/2020	Routine	No	Maintenance needed.	Yes	No	No
113	5508	10/1/2020	Routine	No	Maintenance needed.	Yes	No	No
114	5646	10/1/2020	Routine	No	Maintenance needed.	Yes	No	No
115	5646	10/1/2020	Routine	No	Maintenance needed.	Yes	No	No
116	5242	10/5/2020	Routine	No	Maintenance needed.	Yes	No	No
117	5418	10/5/2020	Routine	No	Maintenance needed.	Yes	No	No
118	5575	10/5/2020	Routine	No	Maintenance needed.	Yes	No	No

119	5331	10/5/2020	60-day reinspection	Yes	No maintenance needed.	No	No	No
120	5896	10/5/2020	Routine	Yes	No maintenance needed.	No	No	No
121	5915	10/5/2020	Routine	Yes	No maintenance needed.	No	No	No
122	5037	10/6/2020	Other	No	Maintenance needed.	Yes	No	No
123	6003	10/6/2020	Other	No	Maintenance needed.	Yes	No	No
124	5139	10/7/2020	Routine	No	Maintenance needed.	Yes	No	No
125	6003	10/8/2020	Other	No	Maintenance needed.	Yes	No	No
126	5193	10/9/2020	Routine	No	Maintenance needed.	Yes	No	No
127	5296	10/9/2020	Routine	No	Maintenance needed.	Yes	No	No
128	5243	10/13/2020	Routine	No	Maintenance needed.	Yes	No	No
129	6009	10/13/2020	Routine	Yes	No maintenance needed.	No	No	No
130	5302	10/16/2020	60-day reinspection	Yes	No maintenance needed.	No	No	No
131	6117	10/19/2020	60-day reinspection	No	Maintenance needed.	No	No	No
132	6003	10/19/2020	Other	No	Maintenance needed.	Yes	No	No
133	5136	10/19/2020	Routine	No	Maintenance needed.	Yes	No	No
134	5137	10/19/2020	Routine	No	Maintenance needed.	Yes	No	No
135	5138	10/19/2020	Routine	No	Maintenance needed.	Yes	No	No
136	5206	10/19/2020	Routine	No	Maintenance needed.	Yes	No	No
137	5671	10/19/2020	Routine	No	Maintenance needed.	Yes	No	No
138	5184	10/22/2020	Routine	No	Maintenance needed.	Yes	No	No
139	5810	10/22/2020	Routine	No	Maintenance needed.	Yes	No	No
140	5369	10/22/2020	60-day reinspection	Yes	No maintenance needed.	No	No	No
141	5818	10/22/2020	Routine	Yes	No maintenance needed.	No	No	No
142	5908	10/26/2020	Other	No	Maintenance needed.	Yes	No	No
143	5575	10/28/2020	Other	No	Maintenance needed.	Yes	No	No
144	5136	10/30/2020	Other	No	Meeting	No	No	No
145	5501	10/30/2020	Routine	No	Maintenance needed.	Yes	No	No
146	5715	10/30/2020	Routine	No	Maintenance needed.	Yes	No	No
147	5985	10/30/2020	Routine	Yes	No maintenance needed.	No	No	No
148	5997	11/4/2020	60-day reinspection	No	Maintenance needed.	No	No	No
149	5999	11/4/2020	60-day reinspection	No	Maintenance needed.	No	No	No
150	5588	11/10/2020	60-day reinspection	Yes	No maintenance needed.	No	No	No
151	5385	11/13/2020	Routine	No	Maintenance needed.	Yes	No	No
152	5397	11/13/2020	Routine	No	Maintenance needed.	No	No	No
153	5398	11/13/2020	Routine	No	Maintenance needed.	No	No	No
154	5410	11/13/2020	Routine	No	Maintenance needed.	No	No	No
155	5694	11/23/2020	Other	No	Meeting	No	No	No
156	5695	11/23/2020	Other	No	Meeting	No	No	No
157	5851	11/23/2020	Other	No	Meeting	No	No	No
158	5505	11/23/2020	60-day reinspection	Yes	No maintenance needed.	No	No	No
159	5284	11/24/2020	Routine	No	Maintenance needed.	No	No	No
160	6130	12/1/2020	Other	No	Maintenance needed.	No	No	No
161	6131	12/1/2020	Other	No	Maintenance needed.	No	No	No
162	6132	12/1/2020	Other	No	Maintenance needed.	No	No	No
163	6133	12/1/2020	Other	No	Maintenance needed.	No	No	No
164	6003	12/2/2020	Other	No	Maintenance needed.	No	No	No
165	5321	12/7/2020	Routine	No	Maintenance needed.	No	No	No
166	5896	12/9/2020	Other	No	Meeting	No	No	No
167	6156	12/15/2020	Routine	Yes	No maintenance needed.	No	No	No
168	6152	12/16/2020	Routine	Yes	No maintenance needed.	No	No	No
169	6153	12/16/2020	Routine	Yes	No maintenance needed.	No	No	No
170	6157	12/16/2020	Routine	Yes	No maintenance needed.	No	No	No
171	6146	12/17/2020	60-day reinspection	No	Maintenance needed.	No	No	No
172	5083	1/5/2021	Routine	No	Maintenance needed.	No	No	No
173	5084	1/5/2021	Routine	No	Maintenance needed.	No	No	No
174	5551	1/5/2021	Routine	No	Maintenance needed.	No	No	No
175	5666	1/6/2021	60-day reinspection	Yes	No maintenance needed.	No	No	No
176	5006	1/7/2021	Routine	No	Maintenance needed.	No	No	No
177	5688	1/7/2021	60-day reinspection	Yes	No maintenance needed.	No	No	No
178	5995	1/8/2021	60-day reinspection	No	Maintenance needed.	No	No	No
179	6154	1/8/2021	Routine	Yes	No maintenance needed.	No	No	No

180	6155	1/8/2021	Routine	Yes	No maintenance needed.	No	No	No
181	5690	1/11/2021	Other	No	Meeting	No	No	No
182	5689	1/11/2021	60-day reinspection	Yes	No maintenance needed.	No	No	No
183	6131	1/12/2021	Other	No	Maintenance needed.	No	No	No
184	6133	1/12/2021	Other	No	Maintenance needed.	No	No	No
185	6160	1/13/2021	Routine	No	Maintenance needed.	No	No	No
186	6158	1/13/2021	Other	Yes	Meeting	No	No	No
187	6003	1/21/2021	60-day reinspection	No	Maintenance needed.	No	No	No
188	6004	1/21/2021	60-day reinspection	No	Maintenance needed.	No	No	No
189	6159	1/21/2021	Routine	No	Maintenance needed.	No	No	No
190	5502	1/27/2021	Routine	No	Maintenance needed.	No	No	No
191	5057	1/28/2021	Routine	No	Maintenance needed.	No	No	No
192	5182	1/28/2021	Routine	No	Maintenance needed.	No	No	No
193	5183	1/28/2021	Routine	No	Maintenance needed.	No	No	No
194	5234	1/28/2021	Routine	No	Maintenance needed.	No	No	No
195	5592	1/28/2021	Routine	No	Maintenance needed.	No	No	No
196	5991	1/28/2021	Routine	Yes	No maintenance needed.	No	No	No
197	5525	1/29/2021	Complaint Based	No	Maintenance needed.	No	No	No
198	5884	1/29/2021	Complaint Based	No	Maintenance needed.	No	No	No
199	5818	1/29/2021	Other	No	Meeting	No	No	No
200	5206	1/29/2021	60-day reinspection	Yes	No maintenance needed.	No	No	No
201	5198	2/4/2021	60-day reinspection	Yes	No maintenance needed.	No	No	No
202	5242	2/5/2021	60-day reinspection	Yes	No maintenance needed.	No	No	No
203	5198	2/8/2021	Other	No	Maintenance needed.	No	No	No
204	6163	2/8/2021	Routine	No	Maintenance needed.	No	No	No
205	6162	2/9/2021	Routine	No	Maintenance needed.	No	No	No
206	5096	2/10/2021	Other	No	Maintenance needed.	No	No	No
207	5010	2/10/2021	Routine	No	Maintenance needed.	No	No	No
208	5011	2/10/2021	Routine	No	Maintenance needed.	No	No	No
209	5012	2/10/2021	Routine	No	Maintenance needed.	No	No	No
210	5013	2/10/2021	Routine	No	Maintenance needed.	No	No	No
211	5014	2/10/2021	Routine	No	Maintenance needed.	No	No	No
212	5015	2/10/2021	Routine	No	Maintenance needed.	No	No	No
213	5720	2/10/2021	Routine	No	Maintenance needed.	No	No	No
214	5722	2/10/2021	Routine	No	Maintenance needed.	No	No	No
215	5723	2/10/2021	Routine	No	Maintenance needed.	No	No	No
216	5716	2/11/2021	Routine	No	Maintenance needed.	No	No	No
217	5717	2/11/2021	Routine	No	Maintenance needed.	No	No	No
218	5718	2/11/2021	Routine	No	Maintenance needed.	No	No	No
219	5719	2/11/2021	Routine	No	Maintenance needed.	No	No	No
220	6161	2/11/2021	Routine	No	Maintenance needed.	No	No	No
221	5095	2/17/2021	Other	No	Maintenance needed.	No	No	No
222	5369	2/17/2021	Other	No	Maintenance needed.	No	No	No
223	5046	2/17/2021	Routine	No	Maintenance needed.	No	No	No
224	5489	2/17/2021	Routine	No	Maintenance needed.	No	No	No
225	6152	2/22/2021	60-day reinspection	No	Maintenance needed.	No	No	No
226	5990	2/23/2021	Routine	Yes	No maintenance needed.	No	No	No
227	5503	2/25/2021	Routine	No	Maintenance needed.	No	No	No
228	6131	2/25/2021	Routine	Yes	No maintenance needed.	No	No	No
229	5083	3/5/2021	Other	No	Meeting	No	No	No
230	5575	3/5/2021	60-day reinspection	Yes	No maintenance needed.	No	No	No
231	6164	3/22/2021	Routine	No	Maintenance needed.	No	No	No
232	5360	3/26/2021	Other	No	Maintenance needed.	No	No	No
233	5009	3/31/2021	Complaint Based	No	Maintenance needed.	No	No	No
234	5184	4/1/2021	Other	No	Maintenance needed.	No	No	No
235	5216	4/5/2021	60-day reinspection	Yes	No maintenance needed.	No	No	No
236	5611	4/6/2021	60-day reinspection	Yes	No maintenance needed.	No	No	No
237	6154	4/26/2021	60-day reinspection	No	Maintenance needed.	No	No	No
238	6155	4/26/2021	60-day reinspection	No	Maintenance needed.	No	No	No
239	5333	4/29/2021	60-day reinspection	Yes	No maintenance needed.	No	No	No
240	6131	5/12/2021	60-day reinspection	No	Maintenance needed.	No	No	No

241	6132	5/12/2021	60-day reinspection	No	Maintenance needed.	No	No	No
242	6167	5/13/2021	Routine	No	Maintenance needed.	No	No	No
243	6168	5/13/2021	Routine	No	Maintenance needed.	No	No	No
244	5143	5/18/2021	Routine	No	Maintenance needed.	No	No	No
245	6165	5/18/2021	Routine	No	Maintenance needed.	No	No	No
246	6169	5/18/2021	Routine	No	Maintenance needed.	No	No	No
247	6170	5/18/2021	Routine	No	Maintenance needed.	No	No	No
248	6171	5/19/2021	Routine	No	Maintenance needed.	No	No	No
249	6166	6/3/2021	Routine	No	Maintenance needed.	No	No	No
250	5092	6/4/2021	Complaint Based	No	Maintenance needed.	No	No	No
251	6161	6/8/2021	60-day reinspection	No	Maintenance needed.	No	No	No
252	6162	6/8/2021	60-day reinspection	No	Maintenance needed.	No	No	No
253	6163	6/8/2021	60-day reinspection	No	Maintenance needed.	No	No	No
254	5107	6/21/2021	60-day reinspection	No	Maintenance needed.	No	No	No
					TOTAL:	**85**	**0**	**0**

SWM/BMP - Public Facility Compliance Report

Count	Facility Id	Inspection Date	Inspection Type	Facility In Compliance?	Comments	Maintenance Required	
						Minor	Major
1	666	7/7/2020	Routine	No	Maintenance needed.	No	Yes
2	682	7/7/2020	Routine	No	Maintenance needed.	No	Yes
3	951	7/7/2020	Routine	No	Maintenance needed.	No	Yes
4	952	7/7/2020	Routine	No	Maintenance needed.	No	Yes
5	435	7/7/2020	Routine	No	Maintenance needed.	No	No
6	191	7/7/2020	Routine	No	Maintenance needed.	No	Yes
7	665	7/7/2020	Routine	No	Maintenance needed.	Yes	No
8	281	7/7/2020	Routine	No	Maintenance needed.	Yes	No
9	657	7/7/2020	Routine	No	Maintenance needed.	Yes	No
10	888	7/7/2020	Routine	No	Maintenance needed.	Yes	No
11	667	7/7/2020	Routine	No	Maintenance needed.	Yes	No
12	686	7/7/2020	Routine	No	Maintenance needed.	Yes	No
13	929	7/7/2020	Routine	No	Maintenance needed.	Yes	No
14	394	7/7/2020	Routine	No	Maintenance needed.	Yes	No
15	192	7/7/2020	Routine	No	Maintenance needed.	Yes	No
16	446	7/7/2020	Routine	No	Maintenance needed.	Yes	No
17	445	7/7/2020	Routine	No	Maintenance needed.	Yes	No
18	210	7/7/2020	Routine	Yes	No maintenance is needed at this time.	No	No
19	190	7/7/2020	Routine	Yes	No maintenance is needed at this time.	No	No
20	816	7/8/2020	Routine	No	Maintenance needed.	No	Yes
21	650	7/8/2020	Routine	No	Maintenance needed.	Yes	No
22	649	7/8/2020	Routine	No	Maintenance needed.	Yes	No
23	629	7/8/2020	Routine	No	Maintenance needed.	Yes	No
24	628	7/8/2020	Routine	No	Maintenance needed.	Yes	No
25	610	7/8/2020	Routine	No	Maintenance needed.	Yes	No
26	889	7/8/2020	Routine	No	Maintenance needed.	Yes	No
27	817	7/8/2020	Routine	No	Maintenance needed.	Yes	No
28	326	7/8/2020	Other	No	Meeting.		
29	820	7/9/2020	Routine	No	Maintenance needed.	No	No
30	624	7/9/2020	Routine	No	Maintenance needed.	Yes	No
31	891	7/9/2020	Routine	No	Maintenance needed.	Yes	No
32	538	7/9/2020	Routine	No	Maintenance needed.	Yes	No
33	557	7/9/2020	Routine	No	Maintenance needed.	Yes	No
34	570	7/9/2020	Routine	No	Maintenance needed.	Yes	No
35	587	7/9/2020	Routine	No	Maintenance needed.	Yes	No
36	890	7/9/2020	Routine	No	Maintenance needed.	Yes	No
37	822	7/9/2020	Routine	No	Maintenance needed.	Yes	No
38	821	7/9/2020	Routine	No	Maintenance needed.	Yes	No
39	789	7/9/2020	Routine	No	Maintenance needed.	Yes	No
40	954	7/9/2020	Routine	No	Maintenance needed.	Yes	No
41	808	7/9/2020	Routine	No	Maintenance needed.	Yes	No
42	864	7/9/2020	Routine	No	Maintenance needed.	Yes	No
43	561	7/9/2020	Routine	Yes	No maintenance is needed at this time.	No	No
44	684	7/9/2020	Routine	Yes	No maintenance is needed at this time.	No	No
45	406	7/10/2020	Routine	No	Maintenance needed.	No	No
46	492	7/10/2020	Routine	No	Maintenance needed.	Yes	No
47	695	7/10/2020	Routine	No	Maintenance needed.	Yes	No
48	974	7/10/2020	Routine	No	Maintenance needed.	Yes	No
49	973	7/10/2020	Routine	No	Maintenance needed.	Yes	No
50	975	7/10/2020	Routine	No	Maintenance needed.	Yes	No
51	832	7/10/2020	Other	No	Meeting.		
52	651	7/10/2020	Routine	Yes	No maintenance is needed at this time.	No	No
53	185	7/10/2020	Routine	Yes	No maintenance is needed at this time.	No	No
54	479	7/13/2020	Routine	No	Maintenance needed.	No	No
55	159	7/13/2020	Routine	No	Maintenance needed.	No	No
56	52	7/13/2020	Routine	No	Maintenance needed.	No	Yes
57	310	7/13/2020	Routine	No	Maintenance needed.	Yes	No
58	309	7/13/2020	Routine	No	Maintenance needed.	Yes	No
59	795	7/13/2020	Routine	No	Maintenance needed.	Yes	No
60	859	7/13/2020	Routine	No	Maintenance needed.	Yes	No

61	884	7/13/2020	Routine	No	Maintenance needed.	Yes	No
62	652	7/13/2020	Routine	No	Maintenance needed.	Yes	No
63	669	7/13/2020	Routine	No	Maintenance needed.	Yes	No
64	476	7/13/2020	Routine	Yes	No maintenance is needed at this time.	No	No
65	209	7/14/2020	Routine	No	Maintenance needed.	No	Yes
66	197	7/14/2020	Routine	No	Maintenance needed.	No	Yes
67	528	7/14/2020	Routine	No	Maintenance needed.	Yes	No
68	99	7/14/2020	Routine	No	Maintenance needed.	Yes	No
69	270	7/14/2020	Routine	No	Maintenance needed.	Yes	No
70	823	7/14/2020	Routine	No	Maintenance needed.	Yes	No
71	61	7/14/2020	Routine	No	Maintenance needed.	Yes	Yes
72	196	7/14/2020	Routine	No	Maintenance needed.	Yes	Yes
73	858	7/14/2020	Routine	No	Maintenance needed.	Yes	No
74	667	7/14/2020	Other	No	Meeting.		
75	491	7/14/2020	Routine	Yes	No maintenance is needed at this time.	No	No
76	412	7/14/2020	Routine	Yes	No maintenance is needed at this time.	No	No
77	474	7/17/2020	Routine	No	Maintenance needed.	No	Yes
78	631	7/17/2020	Routine	No	Maintenance needed.	Yes	No
79	630	7/17/2020	Routine	No	Maintenance needed.	Yes	Yes
80	910	7/17/2020	Routine	No	Maintenance needed.	Yes	Yes
81	911	7/17/2020	Routine	Yes	No maintenance is needed at this time.	No	No
82	912	7/17/2020	Routine	Yes	No maintenance is needed at this time.	No	No
83	867	7/20/2020	Routine	No	Maintenance needed.	No	Yes
84	866	7/20/2020	Routine	No	Maintenance needed.	Yes	No
85	868	7/20/2020	Routine	No	Maintenance needed.	Yes	No
86	563	7/20/2020	Routine	Yes	No maintenance is needed at this time.	No	No
87	566	7/21/2020	Routine	No	Maintenance needed.	Yes	Yes
88	318	7/21/2020	Routine	No	Maintenance needed.	Yes	Yes
89	505	7/21/2020	Routine	No	Maintenance needed.	Yes	No
90	564	7/21/2020	Routine	No	Maintenance needed.	Yes	No
91	424	7/21/2020	Routine	No	Maintenance needed.	Yes	Yes
92	552	7/21/2020	Routine	No	Maintenance needed.	Yes	Yes
93	553	7/21/2020	Routine	No	Maintenance needed.	Yes	No
94	28	7/21/2020	Routine	No	Maintenance needed.	Yes	Yes
95	551	7/21/2020	Routine	No	Maintenance needed.	Yes	Yes
96	590	7/21/2020	Routine	No	Maintenance needed.	Yes	Yes
97	283	7/21/2020	Other	No	Meeting.		
98	427	7/23/2020	Routine	No	Maintenance needed.	No	Yes
99	1004	7/23/2020	Routine	No	Maintenance needed.	Yes	No
100	608	7/23/2020	Routine	No	Maintenance needed.	Yes	Yes
101	609	7/23/2020	Routine	No	Maintenance needed.	Yes	Yes
102	1006	7/23/2020	Routine	No	Maintenance needed.	Yes	Yes
103	77	7/23/2020	Routine	No	Maintenance needed.	Yes	Yes
104	855	7/23/2020	Routine	No	Maintenance needed.	Yes	No
105	856	7/23/2020	Routine	No	Maintenance needed.	Yes	No
106	857	7/24/2020	Routine	No	Maintenance needed.	No	No
107	363	7/24/2020	Routine	No	Maintenance needed.	Yes	Yes
108	462	7/24/2020	Routine	No	Maintenance needed.	Yes	No
109	967	7/24/2020	Routine	No	Maintenance needed.	Yes	No
110	482	7/24/2020	Routine	No	Maintenance needed.	Yes	No
111	129	7/24/2020	Routine	Yes	No maintenance is needed at this time.	No	No
112	131	7/24/2020	Routine	Yes	No maintenance is needed at this time.	No	No
113	130	7/24/2020	Routine	Yes	No maintenance is needed at this time.	No	No
114	968	7/24/2020	Routine	Yes	No maintenance is needed at this time.	No	No
115	150	7/24/2020	Routine	Yes	No maintenance is needed at this time.	No	No
116	149	7/24/2020	Routine	Yes	No maintenance is needed at this time.	No	No
117	148	7/24/2020	Routine	Yes	No maintenance is needed at this time.	No	No
118	434	7/24/2020	Routine	Yes	No maintenance is needed at this time.	No	No
119	623	7/28/2020	Routine	No	Maintenance needed.	Yes	No
120	622	7/28/2020	Routine	No	Maintenance needed.	Yes	No
121	597	7/28/2020	Routine	No	Maintenance needed.	Yes	No
122	477	7/28/2020	Routine	No	Maintenance needed.	Yes	Yes
123	84	7/28/2020	Routine	No	Maintenance needed.	Yes	No
124	974	7/28/2020	Other	No	Meeting.		

125	973	7/28/2020	Other	No	Meeting.		
126	60	7/28/2020	Complaint Based	Yes	Meeting.		
127	975	7/28/2020	Other	Yes	Meeting.		
128	565	7/28/2020	Routine	Yes	No maintenance is needed at this time.	No	No
129	86	7/28/2020	Routine	Yes	No maintenance is needed at this time.	No	No
130	81	7/29/2020	Routine	No	Maintenance needed.	Yes	No
131	80	7/29/2020	Routine	No	Maintenance needed.	Yes	No
132	503	7/29/2020	Routine	Yes	No maintenance is needed at this time.	No	No
133	85	7/29/2020	Routine	Yes	No maintenance is needed at this time.	No	No
134	41	7/30/2020	Routine	No	Maintenance needed.	Yes	No
135	143	7/30/2020	Routine	No	Maintenance needed.	Yes	No
136	501	7/30/2020	Routine	No	Maintenance needed.	Yes	Yes
137	142	7/30/2020	Routine	No	Maintenance needed.	Yes	No
138	141	7/30/2020	Routine	No	Maintenance needed.	Yes	Yes
139	405	8/3/2020	Routine	No	Maintenance needed.	Yes	No
140	144	8/3/2020	Routine	No	Maintenance needed.	Yes	No
141	207	8/4/2020	Routine	No	Maintenance needed.	No	Yes
142	208	8/4/2020	Routine	No	Maintenance needed.	No	Yes
143	632	8/4/2020	Routine	No	Maintenance needed.	Yes	No
144	633	8/4/2020	Routine	No	Maintenance needed.	Yes	No
145	63	8/4/2020	Routine	No	Maintenance needed.	Yes	No
146	935	8/5/2020	Routine	No	Maintenance needed.	Yes	No
147	155	8/5/2020	Routine	No	Maintenance needed.	Yes	No
148	251	8/5/2020	Routine	No	Maintenance needed.	Yes	No
149	527	8/5/2020	Routine	No	Maintenance needed.	Yes	No
150	458	8/5/2020	Other	No	Meeting.		
151	459	8/5/2020	Other	No	Meeting.		
152	789	8/5/2020	Other	No	Meeting.		
153	885	8/5/2020	Routine	Yes	No maintenance is needed at this time.	No	No
154	964	8/6/2020	Routine	No	Maintenance needed.	No	No
155	925	8/6/2020	Routine	No	Maintenance needed.	No	No
156	880	8/6/2020	Routine	No	Maintenance needed.	Yes	No
157	965	8/6/2020	Routine	No	Maintenance needed.	Yes	Yes
158	918	8/6/2020	Routine	No	Maintenance needed.	Yes	No
159	190	8/6/2020	Complaint Based	Yes	No maintenance is needed at this time.	No	No
160	917	8/6/2020	Routine	Yes	No maintenance is needed at this time.	No	No
161	926	8/6/2020	Routine	Yes	No maintenance is needed at this time.	No	No
162	936	8/6/2020	Routine	Yes	No maintenance is needed at this time.	No	No
163	235	8/7/2020	Routine	No	Maintenance needed.	Yes	Yes
164	232	8/7/2020	Routine	No	Maintenance needed.	Yes	Yes
165	916	8/7/2020	Routine	No	Maintenance needed.	Yes	Yes
166	390	8/7/2020	Routine	No	Maintenance needed.	Yes	Yes
167	535	8/7/2020	Routine	No	Maintenance needed.	Yes	Yes
168	56	8/7/2020	Routine	No	Maintenance needed.	Yes	No
169	556	8/7/2020	Routine	No	Maintenance needed.	Yes	No
170	15	8/7/2020	Routine	Yes	No maintenance is needed at this time.	No	No
171	133	8/7/2020	Routine	Yes	No maintenance is needed at this time.	No	No
172	87	8/7/2020	Routine	Yes	No maintenance is needed at this time.	No	No
173	571	8/10/2020	Routine	No	Maintenance needed.	Yes	No
174	907	8/10/2020	Routine	No	Maintenance needed.	Yes	No
175	887	8/10/2020	Routine	No	Maintenance needed.	Yes	No
176	909	8/10/2020	Routine	No	Maintenance needed.	Yes	No
177	908	8/10/2020	Routine	No	Maintenance needed.	Yes	No
178	906	8/10/2020	Routine	No	Maintenance needed.	Yes	Yes
179	455	8/11/2020	Routine	No	Maintenance needed.	Yes	No
180	805	8/11/2020	Routine	No	Maintenance needed.	Yes	No
181	686	8/12/2020	Complaint Based	No	Maintenance needed.	Yes	No
182	22	8/12/2020	Routine	Yes	No maintenance is needed at this time.	No	No
183	298	8/13/2020	60-day reinspection	No	Maintenance needed.	No	No
184	657	8/13/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
185	339	8/14/2020	Routine	No	Maintenance needed.	Yes	Yes
186	338	8/14/2020	Routine	No	Maintenance needed.	Yes	No
187	336	8/14/2020	Routine	No	Maintenance needed.	Yes	No
188	559	8/14/2020	Routine	No	Maintenance needed.	Yes	No

189	340	8/14/2020	Routine	No	Maintenance needed.	Yes	No
190	195	8/14/2020	Routine	No	Maintenance needed.	Yes	Yes
191	299	8/14/2020	Routine	Yes	No maintenance is needed at this time.	No	No
192	554	8/14/2020	Routine	Yes	No maintenance is needed at this time.	No	No
193	1003	8/14/2020	Routine	Yes	No maintenance is needed at this time.	No	No
194	688	8/17/2020	Routine	No	Maintenance needed.	Yes	No
195	689	8/17/2020	Routine	No	Maintenance needed.	Yes	No
196	584	8/17/2020	Routine	No	Maintenance needed.	Yes	Yes
197	654	8/17/2020	Routine	No	Maintenance needed.	Yes	No
198	167	8/17/2020	Routine	No	Maintenance needed.	Yes	No
199	801	8/17/2020	Routine	No	Maintenance needed.	Yes	No
200	802	8/17/2020	Routine	No	Maintenance needed.	Yes	No
201	47	8/17/2020	Routine	No	Maintenance needed.	Yes	Yes
202	899	8/17/2020	Routine	No	Maintenance needed.	Yes	Yes
203	1005	8/18/2020	Routine	Yes	No maintenance is needed at this time.	No	No
204	919	8/19/2020	Routine	No	Maintenance needed.	Yes	Yes
205	927	8/19/2020	Routine	No	Maintenance needed.	Yes	No
206	303	8/19/2020	Complaint Based	Yes	No maintenance is needed at this time.	No	No
207	184	8/20/2020	Routine	No	Maintenance needed.	Yes	Yes
208	111	8/20/2020	Routine	No	Maintenance needed.	Yes	No
209	313	8/21/2020	Complaint Based	No	Maintenance needed.	Yes	Yes
210	283	8/24/2020	60-day reinspection	No	Maintenance needed.	No	No
211	343	8/24/2020	Routine	No	Maintenance needed.	No	No
212	837	8/24/2020	Routine	No	Maintenance needed.	Yes	No
213	894	8/24/2020	Routine	No	Maintenance needed.	Yes	Yes
214	532	8/25/2020	Routine	No	Maintenance needed.	No	No
215	533	8/25/2020	Routine	No	Maintenance needed.	No	No
216	216	8/25/2020	Routine	No	Maintenance needed.	No	No
217	217	8/25/2020	Routine	No	Maintenance needed.	No	Yes
218	960	8/25/2020	Routine	No	Maintenance needed.	Yes	No
219	1006	8/25/2020	Other	No	Meeting.		
220	40	8/26/2020	Routine	No	Maintenance needed.	Yes	Yes
221	882	8/26/2020	Routine	No	Maintenance needed.	Yes	No
222	874	8/26/2020	Routine	No	Maintenance needed.	Yes	No
223	881	8/26/2020	Routine	Yes	No maintenance is needed at this time.	No	No
224	848	8/27/2020	Routine	No	Maintenance needed.	Yes	No
225	108	8/27/2020	Routine	No	Maintenance needed.	Yes	No
226	694	8/27/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
227	975	8/27/2020	Other	Yes	No maintenance is needed at this time.	No	No
228	668	8/28/2020	Routine	No	Maintenance needed.	Yes	No
229	963	8/28/2020	Routine	No	Maintenance needed.	Yes	No
230	791	8/28/2020	Routine	No	Maintenance needed.	Yes	Yes
231	790	8/28/2020	Routine	No	Maintenance needed.	Yes	Yes
232	974	8/28/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
233	973	8/28/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
234	843	8/31/2020	Routine	No	Maintenance needed.	Yes	No
235	844	8/31/2020	Routine	No	Maintenance needed.	Yes	Yes
236	818	8/31/2020	Routine	No	Maintenance needed.	Yes	No
237	618	8/31/2020	Routine	No	Maintenance needed.	Yes	No
238	813	9/1/2020	Routine	No	Maintenance needed.	Yes	Yes
239	814	9/1/2020	Routine	No	Maintenance needed.	Yes	Yes
240	815	9/1/2020	Routine	No	Maintenance needed.	Yes	Yes
241	233	9/1/2020	Routine	No	Maintenance needed.	Yes	Yes
242	897	9/1/2020	Routine	No	Maintenance needed.	Yes	Yes
243	896	9/1/2020	Routine	No	Maintenance needed.	Yes	Yes
244	147	9/1/2020	Routine	No	Maintenance needed.	Yes	No
245	62	9/1/2020	Other	No	Meeting.		
246	895	9/2/2020	Routine	No	Maintenance needed.	Yes	No
247	334	9/2/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
248	346	9/3/2020	Routine	No	Maintenance needed.	No	Yes
249	583	9/3/2020	Routine	No	Maintenance needed.	Yes	No
250	345	9/3/2020	Routine	No	Maintenance needed.	Yes	Yes
251	957	9/3/2020	Routine	No	Maintenance needed.	Yes	No
252	16	9/3/2020	Routine	No	Maintenance needed.	Yes	No

253	690	9/3/2020	Routine	No	Maintenance needed.	Yes	Yes
254	627	9/3/2020	Routine	No	Maintenance needed.	Yes	No
255	536	9/3/2020	Routine	No	Maintenance needed.	Yes	Yes
256	807	9/4/2020	Routine	No	Maintenance needed.	Yes	No
257	806	9/4/2020	Routine	No	Maintenance needed.	Yes	No
258	126	9/4/2020	Routine	No	Maintenance needed.	Yes	No
259	158	9/8/2020	Routine	No	Maintenance needed.	Yes	No
260	793	9/8/2020	Routine	No	Maintenance needed.	Yes	No
261	234	9/8/2020	Routine	No	Maintenance needed.	Yes	No
262	543	9/8/2020	Routine	No	Maintenance needed.	Yes	No
263	692	9/8/2020	Routine	No	Maintenance needed.	Yes	No
264	144	9/8/2020	Other	No	Meeting.		
265	898	9/9/2020	Routine	No	Maintenance needed.	Yes	No
266	493	9/9/2020	Routine	No	Maintenance needed.	Yes	Yes
267	284	9/9/2020	Routine	Yes	No maintenance is needed at this time.	No	No
268	263	9/10/2020	Complaint Based	No	Maintenance needed.	No	Yes
269	1006	9/10/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
270	17	9/11/2020	Routine	No	Maintenance needed.	No	Yes
271	321	9/11/2020	Routine	No	Maintenance needed.	Yes	Yes
272	253	9/11/2020	Routine	No	Maintenance needed.	Yes	Yes
273	252	9/11/2020	Routine	Yes	No maintenance is needed at this time.	No	No
274	214	9/14/2020	Routine	No	Maintenance needed.	Yes	Yes
275	189	9/14/2020	Routine	No	Maintenance needed.	Yes	No
276	410	9/14/2020	Routine	No	Maintenance needed.	Yes	No
277	53	9/15/2020	Routine	No	Maintenance needed.	Yes	No
278	922	9/15/2020	Routine	No	Maintenance needed.	Yes	No
279	55	9/15/2020	Routine	No	Maintenance needed.	Yes	Yes
280	54	9/15/2020	Routine	No	Maintenance needed.	Yes	No
281	30	9/15/2020	Routine	No	Maintenance needed.	Yes	Yes
282	113	9/15/2020	Routine	No	Maintenance needed.	Yes	No
283	501	9/15/2020	Other	Yes	Meeting.		
284	877	9/16/2020	Routine	No	Maintenance needed.	Yes	No
285	878	9/16/2020	Routine	No	Maintenance needed.	Yes	Yes
286	990	9/16/2020	Routine	No	Maintenance needed.	Yes	No
287	991	9/16/2020	Routine	No	Maintenance needed.	Yes	No
288	999	9/16/2020	Routine	No	Maintenance needed.	Yes	No
289	1000	9/16/2020	Routine	No	Maintenance needed.	Yes	No
290	989	9/16/2020	Routine	No	Maintenance needed.	Yes	No
291	655	9/16/2020	Routine	No	Maintenance needed.	Yes	Yes
292	238	9/16/2020	Routine	No	Maintenance needed.	Yes	Yes
293	388	9/16/2020	Routine	No	Maintenance needed.	Yes	No
294	387	9/16/2020	Routine	No	Maintenance needed.	Yes	No
295	640	9/17/2020	Routine	No	Maintenance needed.	No	Yes
296	581	9/17/2020	Routine	No	Maintenance needed.	Yes	Yes
297	863	9/17/2020	Routine	No	Maintenance needed.	Yes	No
298	661	9/17/2020	Routine	No	Maintenance needed.	Yes	Yes
299	950	9/17/2020	Routine	No	Maintenance needed.	Yes	No
300	641	9/17/2020	Routine	No	Maintenance needed.	Yes	Yes
301	206	9/17/2020	Routine	No	Maintenance needed.	Yes	Yes
302	530	9/17/2020	Routine	No	Maintenance needed.	Yes	Yes
303	494	9/17/2020	Routine	No	Maintenance needed.	Yes	No
304	849	9/17/2020	Routine	No	Maintenance needed.	Yes	Yes
305	656	9/17/2020	Routine	No	Maintenance needed.	Yes	Yes
306	686	9/17/2020	Other	No	Meeting.		
307	321	9/17/2020	Complaint Based	Yes	Meeting.		
308	371	9/18/2020	Routine	No	Maintenance needed.	No	Yes
309	399	9/18/2020	Routine	No	Maintenance needed.	Yes	No
310	992	9/18/2020	Routine	No	Maintenance needed.	Yes	Yes
311	993	9/18/2020	Routine	No	Maintenance needed.	Yes	No
312	939	9/18/2020	Routine	No	Maintenance needed.	Yes	Yes
313	369	9/18/2020	Routine	No	Maintenance needed.	Yes	No
314	375	9/18/2020	Routine	No	Maintenance needed.	Yes	No
315	581	9/18/2020	Other	No	Meeting.		
316	813	9/18/2020	Other	Yes	Meeting.		

317	146	9/18/2020	Other	Yes	Meeting.		
318	791	9/18/2020	Other	Yes	Meeting.		
319	668	9/18/2020	Other	Yes	Meeting.		
320	892	9/18/2020	Routine	Yes	No maintenance is needed at this time.	No	No
321	370	9/18/2020	Routine	Yes	No maintenance is needed at this time.	No	No
322	372	9/18/2020	Routine	Yes	No maintenance is needed at this time.	No	No
323	322	9/21/2020	Routine	No	Maintenance needed.	No	Yes
324	46	9/21/2020	Routine	No	Maintenance needed.	No	Yes
325	839	9/21/2020	Routine	No	Maintenance needed.	Yes	Yes
326	998	9/21/2020	Routine	No	Maintenance needed.	Yes	Yes
327	638	9/21/2020	Routine	No	Maintenance needed.	Yes	Yes
328	637	9/21/2020	Routine	No	Maintenance needed.	Yes	Yes
329	58	9/21/2020	Routine	No	Maintenance needed.	Yes	Yes
330	332	9/21/2020	Routine	No	Maintenance needed.	Yes	Yes
331	545	9/21/2020	Routine	No	Maintenance needed.	Yes	No
332	544	9/21/2020	Routine	No	Maintenance needed.	Yes	No
333	687	9/21/2020	Routine	No	Maintenance needed.	Yes	Yes
334	501	9/21/2020	Other	No	Meeting.		
335	373	9/21/2020	Routine	Yes	No maintenance is needed at this time.	No	No
336	374	9/21/2020	Routine	Yes	No maintenance is needed at this time.	No	No
337	422	9/21/2020	Routine	Yes	No maintenance is needed at this time.	No	No
338	389	9/21/2020	Routine	Yes	No maintenance is needed at this time.	No	No
339	5756-011	9/22/2020	Routine	No	Maintenance needed.	Yes	No
340	901	9/22/2020	Routine	No	Maintenance needed.	Yes	Yes
341	879	9/22/2020	Routine	No	Maintenance needed.	Yes	No
342	902	9/23/2020	Routine	No	Maintenance needed.	Yes	No
343	903	9/23/2020	Routine	No	Maintenance needed.	Yes	No
344	477	9/23/2020	Other	No	Meeting.		
345	482	9/23/2020	Other	No	Meeting.		
346	995	9/24/2020	Routine	No	Maintenance needed.	Yes	No
347	997	9/24/2020	Routine	No	Maintenance needed.	Yes	Yes
348	219	9/24/2020	Routine	No	Maintenance needed.	Yes	Yes
349	937	9/24/2020	Routine	No	Maintenance needed.	Yes	No
350	883	9/25/2020	Routine	No	Maintenance needed.	No	Yes
351	271	9/25/2020	Routine	No	Maintenance needed.	No	Yes
352	405	9/25/2020	60-day reinspection	No	Maintenance needed.	No	Yes
353	239	9/25/2020	Routine	No	Maintenance needed.	Yes	Yes
354	240	9/25/2020	Routine	No	Maintenance needed.	Yes	Yes
355	519	9/25/2020	Routine	No	Maintenance needed.	Yes	No
356	616	9/25/2020	Routine	No	Maintenance needed.	Yes	Yes
357	314	9/25/2020	Routine	No	Maintenance needed.	Yes	Yes
358	144	9/25/2020	60-day reinspection	No	Meeting.		
359	5873-007	9/25/2020	Routine	Yes	No maintenance is needed at this time.	No	No
360	582	9/28/2020	Routine	No	Maintenance needed.	No	Yes
361	529	9/28/2020	Routine	No	Maintenance needed.	No	Yes
362	577	9/28/2020	Routine	No	Maintenance needed.	Yes	Yes
363	576	9/28/2020	Routine	No	Maintenance needed.	Yes	Yes
364	579	9/28/2020	Routine	No	Maintenance needed.	Yes	Yes
365	578	9/28/2020	Routine	No	Maintenance needed.	Yes	Yes
366	788	9/28/2020	Routine	No	Maintenance needed.	Yes	No
367	151	9/28/2020	Routine	No	Maintenance needed.	Yes	No
368	451	9/28/2020	Routine	Yes	No maintenance is needed at this time.	No	No
369	411	9/29/2020	Routine	No	Maintenance needed.	Yes	No
370	144	9/29/2020	Other	No	Meeting.		
371	580	9/29/2020	Routine	Yes	No maintenance is needed at this time.	No	No
372	517	9/30/2020	Routine	No	Maintenance needed.	Yes	No
373	176	9/30/2020	Routine	No	Maintenance needed.	Yes	Yes
374	432	9/30/2020	Routine	No	Maintenance needed.	Yes	Yes
375	972	9/30/2020	Routine	No	Maintenance needed.	Yes	Yes
376	433	9/30/2020	Routine	Yes	No maintenance is needed at this time.	No	No
377	296	10/1/2020	Routine	No	Maintenance needed.	No	Yes
378	490	10/1/2020	Routine	No	Maintenance needed.	Yes	Yes
379	604	10/1/2020	Routine	No	Maintenance needed.	Yes	Yes
380	431	10/1/2020	Routine	No	Maintenance needed.	Yes	Yes

381	626	10/1/2020	Routine	No	Maintenance needed.	Yes	Yes
382	398	10/1/2020	Routine	No	Maintenance needed.	Yes	Yes
383	509	10/1/2020	Routine	No	Maintenance needed.	Yes	No
384	853	10/1/2020	Routine	No	Maintenance needed.	Yes	No
385	508	10/1/2020	Routine	No	Maintenance needed.	Yes	Yes
386	854	10/1/2020	Routine	No	Maintenance needed.	Yes	No
387	970	10/1/2020	Routine	No	Maintenance needed.	Yes	No
388	418	10/1/2020	Routine	Yes	Meeting.		
389	417	10/1/2020	Routine	Yes	No maintenance is needed at this time.	No	No
390	890	10/2/2020	60-day reinspection	No	Maintenance needed.	Yes	Yes
391	90	10/2/2020	Routine	No	Maintenance needed.	Yes	No
392	220	10/2/2020	Routine	No	Maintenance needed.	Yes	Yes
393	470	10/2/2020	Routine	No	Maintenance needed.	Yes	Yes
394	524	10/2/2020	Routine	No	Maintenance needed.	Yes	Yes
395	297	10/2/2020	Routine	No	Maintenance needed.	Yes	No
396	381	10/2/2020	Routine	No	Maintenance needed.	Yes	Yes
397	891	10/2/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
398	789	10/2/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
399	953	10/2/2020	Routine	Yes	No maintenance is needed at this time.	No	No
400	413	10/2/2020	Routine	Yes	No maintenance is needed at this time.	No	No
401	421	10/5/2020	Routine	No	Maintenance needed.	Yes	No
402	225	10/5/2020	Routine	No	Maintenance needed.	Yes	No
403	62	10/5/2020	Other	Yes	Meeting.		
404	48	10/6/2020	Routine	No	Maintenance needed.	Yes	No
405	475	10/6/2020	Routine	No	Maintenance needed.	Yes	No
406	920	10/6/2020	Routine	No	Maintenance needed.	Yes	Yes
407	442	10/6/2020	Routine	No	Maintenance needed.	Yes	No
408	376	10/6/2020	Routine	No	Maintenance needed.	Yes	No
409	882	10/6/2020	Other	No	Meeting.		
410	874	10/6/2020	Other	No	Meeting.		
411	805	10/6/2020	Other	No	Meeting.		
412	455	10/6/2020	Other	No	Meeting.		
413	884	10/8/2020	Other	No	Maintenance needed.	Yes	No
414	938	10/8/2020	Routine	No	Maintenance needed.	Yes	Yes
415	988	10/8/2020	Routine	No	Meeting.		
416	1004	10/12/2020	Other	No	Meeting.		
417	997	10/12/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
418	634	10/13/2020	Routine	No	Maintenance needed.	No	Yes
419	635	10/13/2020	Routine	No	Maintenance needed.	No	Yes
420	800	10/13/2020	Routine	No	Maintenance needed.	Yes	No
421	932	10/13/2020	Routine	No	Maintenance needed.	Yes	Yes
422	275	10/13/2020	Routine	No	Maintenance needed.	Yes	Yes
423	276	10/13/2020	Routine	No	Maintenance needed.	Yes	Yes
424	931	10/13/2020	Routine	Yes	No maintenance is needed at this time.	No	No
425	971	10/13/2020	Routine	Yes	No maintenance is needed at this time.	No	No
426	921	10/13/2020	Routine	Yes	No maintenance is needed at this time.	No	No
427	924	10/14/2020	Routine	No	Maintenance needed.	Yes	Yes
428	870	10/14/2020	Routine	No	Maintenance needed.	Yes	No
429	842	10/15/2020	Routine	No	Maintenance needed.	No	Yes
430	281	10/15/2020	60-day reinspection	No	Maintenance needed.	Yes	No
431	840	10/15/2020	Routine	No	Maintenance needed.	Yes	Yes
432	841	10/15/2020	Routine	No	Maintenance needed.	Yes	No
433	523	10/15/2020	Routine	No	Maintenance needed.	Yes	No
434	522	10/15/2020	Routine	No	Maintenance needed.	Yes	No
435	461	10/15/2020	Routine	No	Maintenance needed.	Yes	No
436	313	10/15/2020	Routine	No	Maintenance needed.	Yes	Yes
437	439	10/15/2020	Routine	No	Maintenance needed.	Yes	Yes
438	624	10/15/2020	Other	Yes	Meeting.		
439	803	10/16/2020	Routine	No	Maintenance needed.	Yes	Yes
440	997	10/16/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
441	193	10/19/2020	Routine	No	Maintenance needed.	Yes	No
442	79	10/19/2020	Routine	No	Maintenance needed.	Yes	Yes
443	599	10/19/2020	Routine	No	Maintenance needed.	Yes	No
444	593	10/19/2020	Routine	No	Maintenance needed.	Yes	No

445	74	10/19/2020	Routine	No	Maintenance needed.	Yes	Yes
446	935	10/20/2020	60-day reinspection	No	Maintenance needed.	Yes	No
447	64	10/20/2020	Routine	No	Maintenance needed.	Yes	Yes
448	697	10/20/2020	Routine	No	Maintenance needed.	Yes	No
449	67	10/20/2020	Routine	No	Maintenance needed.	Yes	No
450	88	10/20/2020	Routine	No	Maintenance needed.	Yes	No
451	469	10/21/2020	Routine	No	Maintenance needed.	No	Yes
452	467	10/21/2020	Routine	No	Maintenance needed.	Yes	No
453	468	10/21/2020	Routine	No	Maintenance needed.	Yes	Yes
454	845	10/21/2020	Other	No	Meeting.		
455	654	10/21/2020	Other	Yes	Meeting.		
456	624	10/23/2020	Other	No	Meeting.		
457	322	10/26/2020	Routine	No	Maintenance needed.	Yes	No
458	535	10/27/2020	Other	No	Meeting.		
459	235	10/27/2020	Other	No	Meeting.		
460	390	10/27/2020	Other	Yes	Meeting.		
461	613	10/28/2020	Routine	No	Maintenance needed.	Yes	Yes
462	5	10/28/2020	Other	No	Meeting.		
463	647	10/28/2020	Other	No	Meeting.		
464	455	10/28/2020	Other	No	Meeting.		
465	805	10/28/2020	Other	No	Meeting.		
466	874	10/28/2020	Other	No	Meeting.		
467	882	10/28/2020	Other	No	Meeting.		
468	850	10/28/2020	Routine	Yes	No maintenance is needed at this time.	No	No
469	898	10/29/2020	Routine	No	Meeting.		
470	899	10/29/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
471	624	10/30/2020	Other	Yes	Maintenance needed.	No	Yes
472	493	10/30/2020	60-day reinspection	No	Maintenance needed.	Yes	Yes
473	520	10/30/2020	Routine	No	Maintenance needed.	Yes	No
474	836	10/30/2020	Routine	No	Maintenance needed.	Yes	No
475	340	10/30/2020	Other	No	Meeting.		
476	339	10/30/2020	Other	No	Meeting.		
477	559	10/30/2020	Other	No	Meeting.		
478	336	10/30/2020	Other	No	Meeting.		
479	338	10/30/2020	Other	No	Meeting.		
480	158	10/30/2020	Other	Yes	Meeting.		
481	627	10/30/2020	Other	Yes	No maintenance is needed at this time.	No	No
482	545	10/30/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
483	536	11/2/2020	60-day reinspection	No	Maintenance needed.	Yes	Yes
484	608	11/2/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
485	609	11/2/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
486	1008	11/5/2020	Routine	No	Maintenance needed.	Yes	No
487	1007	11/5/2020	Routine	No	Maintenance needed.	Yes	No
488	1009	11/5/2020	Routine	No	Maintenance needed.	Yes	No
489	1012	11/6/2020	Routine	No	Maintenance needed.	Yes	No
490	73	11/6/2020	Routine	No	Maintenance needed.	Yes	Yes
491	957	11/6/2020	Other	No	Meeting.		
492	312	11/6/2020	Routine	Yes	Meeting.		
493	368	11/6/2020	Routine	Yes	Meeting.		
494	884	11/6/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
495	870	11/9/2020	60-day reinspection	No	Maintenance needed.	No	Yes
496	1004	11/9/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
497	788	11/9/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
498	258	11/10/2020	Routine	No	Maintenance needed.	Yes	No
499	43	11/10/2020	Routine	No	Maintenance needed.	Yes	No
500	1010	11/10/2020	Routine	No	Maintenance needed.	Yes	No
501	1011	11/10/2020	Routine	No	Maintenance needed.	Yes	No
502	637	11/13/2020	Other	No	Meeting.		
503	638	11/13/2020	Other	No	Meeting.		
504	570	11/13/2020	Other	No	Meeting.		
505	998	11/13/2020	Other	No	Meeting.		
506	161	11/17/2020	Routine	No	Maintenance needed.	Yes	Yes
507	125	11/17/2020	Routine	No	Maintenance needed.	Yes	No
508	166	11/17/2020	Routine	No	Maintenance needed.	Yes	No

509	145	11/17/2020	Routine	Yes	No maintenance is needed at this time.	No	No
510	819	11/18/2020	Routine	No	Maintenance needed.	Yes	No
511	155	11/18/2020	60-day reinspection	No	Maintenance needed.	Yes	No
512	237	11/18/2020	Routine	No	Maintenance needed.	Yes	No
513	81	11/20/2020	60-day reinspection	No	Maintenance needed.	Yes	No
514	477	11/20/2020	60-day reinspection	No	Maintenance needed.	Yes	Yes
515	477	11/20/2020	60-day reinspection	No	Maintenance needed.	Yes	Yes
516	482	11/20/2020	60-day reinspection	No	Maintenance needed.	Yes	No
517	84	11/20/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
518	80	11/20/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
519	908	11/20/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
520	909	11/20/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
521	107	11/24/2020	Routine	No	Maintenance needed.	Yes	Yes
522	606	11/24/2020	Routine	No	Maintenance needed.	Yes	Yes
523	607	11/24/2020	Routine	No	Maintenance needed.	Yes	No
524	848	11/24/2020	60-day reinspection	No	Maintenance needed.	Yes	No
525	869	11/25/2020	Routine	No	Maintenance needed.	Yes	Yes
526	595	12/2/2020	Routine	No	Maintenance needed.	No	Yes
527	234	12/2/2020	60-day reinspection	No	Maintenance needed.	Yes	Yes
528	411	12/2/2020	Other	No	Meeting.		
529	141	12/2/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
530	143	12/2/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
531	142	12/2/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
532	793	12/2/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
533	594	12/2/2020	Routine	Yes	No maintenance is needed at this time.	No	No
534	992	12/3/2020	Other	Yes	No maintenance is needed at this time.	No	No
535	993	12/3/2020	Other	Yes	No maintenance is needed at this time.	No	No
536	5824	12/4/2020	Routine	No	Maintenance needed.	No	Yes
537	104	12/4/2020	Routine	No	Maintenance needed.	Yes	No
538	128	12/4/2020	Routine	No	Maintenance needed.	Yes	Yes
539	453	12/4/2020	Routine	No	Maintenance needed.	Yes	No
540	452	12/4/2020	Routine	No	Maintenance needed.	Yes	No
541	426	12/4/2020	Routine	No	Maintenance needed.	Yes	Yes
542	531	12/4/2020	Routine	No	Maintenance needed.	Yes	No
543	59	12/4/2020	Routine	No	Maintenance needed.	Yes	Yes
544	809	12/4/2020	Routine	Yes	No maintenance is needed at this time.	No	No
545	881	12/7/2020	Complaint Based	No	Maintenance needed.	No	Yes
546	414	12/7/2020	Routine	No	Maintenance needed.	Yes	No
547	98	12/7/2020	Routine	No	Maintenance needed.	Yes	No
548	483	12/7/2020	Routine	No	Maintenance needed.	Yes	No
549	874	12/7/2020	Complaint Based	Yes	No maintenance is needed at this time.	No	No
550	418	12/8/2020	Complaint Based	No	Maintenance needed.	No	Yes
551	914	12/8/2020	Routine	No	Maintenance needed.	Yes	No
552	915	12/8/2020	Routine	No	Maintenance needed.	Yes	No
553	933	12/8/2020	Routine	Yes	No maintenance is needed at this time.	No	No
554	956	12/8/2020	Routine	Yes	No maintenance is needed at this time.	No	No
555	628	12/9/2020	60-day reinspection	No	Maintenance needed.	No	Yes
556	629	12/9/2020	60-day reinspection	No	Maintenance needed.	No	Yes
557	596	12/9/2020	Routine	No	Maintenance needed.	Yes	No
558	298	12/9/2020	Routine	No	Maintenance needed.	Yes	No
559	794	12/10/2020	Routine	No	Maintenance needed.	Yes	No
560	484	12/10/2020	Routine	No	Maintenance needed.	Yes	Yes
561	471	12/10/2020	Routine	No	Maintenance needed.	Yes	Yes
562	234	12/10/2020	Other	No	Meeting.		
563	793	12/10/2020	Other	Yes	Meeting.		
564	141	12/10/2020	Other	Yes	Meeting.		
565	142	12/10/2020	Other	Yes	Meeting.		
566	143	12/10/2020	Other	Yes	Meeting.		
567	121	12/10/2020	Routine	Yes	No maintenance is needed at this time.	No	No
568	612	12/11/2020	Routine	No	Maintenance needed.	Yes	Yes
569	611	12/11/2020	Routine	No	Maintenance needed.	Yes	No
570	523	12/11/2020	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
571	639	12/11/2020	Routine	Yes	No maintenance is needed at this time.	No	No
572	923	12/15/2020	Routine	No	Maintenance needed.	Yes	No

573	900	12/15/2020	Routine	Yes	No maintenance is needed at this time.	No	No
574	151	12/17/2020	60-day reinspection	No	Maintenance needed.	Yes	Yes
575	913	12/17/2020	Routine	No	Maintenance needed.	Yes	No
576	146	12/17/2020	60-day reinspection	Yes	Meeting.		
577	272	12/17/2020	Routine	Yes	No maintenance is needed at this time.	No	No
578	81	12/17/2020	30-day reinspection	Yes	No maintenance is needed at this time.	No	No
579	482	12/17/2020	30-day reinspection	Yes	No maintenance is needed at this time.	No	No
580	345	12/18/2020	60-day reinspection	No	Maintenance needed.	No	Yes
581	1002	12/18/2020	Routine	No	Maintenance needed.	Yes	No
582	1001	12/18/2020	Routine	No	Maintenance needed.	Yes	No
583	685	12/18/2020	Routine	No	Maintenance needed.	Yes	Yes
584	325	12/22/2020	Routine	No	Maintenance needed.	Yes	No
585	317	12/30/2020	Routine	No	Maintenance needed.	Yes	No
586	478	12/30/2020	Routine	Yes	No maintenance is needed at this time.	No	No
587	122	12/31/2020	Routine	No	Maintenance needed.	Yes	No
588	5877	1/4/2021	Routine	No	Maintenance needed.	No	Yes
589	848	1/4/2021	30-day reinspection	Yes	No maintenance is needed at this time.	No	No
590	555	1/5/2021	Routine	No	Maintenance needed.	No	Yes
591	444	1/5/2021	Routine	No	Maintenance needed.	No	Yes
592	588	1/6/2021	Routine	No	Maintenance needed.	Yes	Yes
593	979	1/6/2021	Routine	No	Maintenance needed.	Yes	No
594	134	1/6/2021	Routine	No	Maintenance needed.	Yes	No
595	340	1/6/2021	60-day reinspection	No	Maintenance needed.	Yes	No
596	91	1/6/2021	Routine	No	Maintenance needed.	Yes	No
597	336	1/6/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
598	339	1/6/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
599	338	1/6/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
600	559	1/6/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
601	622	1/7/2021	60-day reinspection	No	Maintenance needed.	No	Yes
602	447	1/7/2021	Routine	No	Maintenance needed.	No	Yes
603	598	1/7/2021	Routine	No	Maintenance needed.	Yes	No
604	69	1/7/2021	Routine	No	Maintenance needed.	Yes	No
605	105	1/7/2021	Routine	No	Maintenance needed.	Yes	No
606	449	1/7/2021	Routine	Yes	No maintenance is needed at this time.	No	No
607	448	1/7/2021	Routine	Yes	No maintenance is needed at this time.	No	No
608	450	1/7/2021	Routine	Yes	No maintenance is needed at this time.	No	No
609	764	1/8/2021	Complaint Based	No	Maintenance needed.	No	Yes
610	311	1/8/2021	Routine	No	Maintenance needed.	No	Yes
611	103	1/8/2021	Routine	No	Maintenance needed.	No	Yes
612	509	1/11/2021	60-day reinspection	No	Maintenance needed.	No	Yes
613	698	1/11/2021	Routine	No	Maintenance needed.	No	No
614	161	1/11/2021	Other	No	Maintenance needed.	Yes	No
615	27	1/11/2021	Routine	No	Maintenance needed.	Yes	No
616	443	1/11/2021	Routine	Yes	No maintenance is needed at this time.	No	No
617	330	1/11/2021	Routine	Yes	No maintenance is needed at this time.	No	No
618	792	1/11/2021	Routine	Yes	No maintenance is needed at this time.	No	No
619	472	1/11/2021	Routine	Yes	No maintenance is needed at this time.	No	No
620	164	1/11/2021	Routine	Yes	No maintenance is needed at this time.	No	No
621	838	1/12/2021	Routine	No	Maintenance needed.	Yes	No
622	976	1/12/2021	Routine	No	Maintenance needed.	Yes	No
623	385	1/12/2021	Routine	No	Maintenance needed.	Yes	No
624	384	1/12/2021	Routine	No	Maintenance needed.	Yes	No
625	383	1/12/2021	Routine	No	Maintenance needed.	Yes	No
626	653	1/12/2021	Routine	No	Maintenance needed.	Yes	No
627	337	1/12/2021	Routine	No	Maintenance needed.	Yes	No
628	882	1/14/2021	60-day reinspection	No	Maintenance needed.	No	No
629	627	1/14/2021	60-day reinspection	No	Maintenance needed.	Yes	No
630	437	1/19/2021	Routine	No	Maintenance needed.	No	Yes
631	438	1/19/2021	Routine	No	Maintenance needed.	Yes	Yes
632	254	1/19/2021	Routine	No	Maintenance needed.	Yes	Yes
633	256	1/19/2021	Routine	No	Maintenance needed.	Yes	No
634	255	1/19/2021	Routine	No	Maintenance needed.	Yes	No
635	549	1/19/2021	Routine	No	Maintenance needed.	Yes	No
636	187	1/19/2021	Routine	No	Maintenance needed.	Yes	Yes

637	550	1/19/2021	Routine	No	Maintenance needed.	Yes	Yes
638	518	1/19/2021	Routine	No	Maintenance needed.	Yes	Yes
639	488	1/19/2021	Routine	No	Maintenance needed.	Yes	Yes
640	67	1/20/2021	60-day reinspection	No	Maintenance needed.	Yes	Yes
641	202	1/20/2021	Routine	No	Maintenance needed.	Yes	No
642	460	1/20/2021	Routine	No	Maintenance needed.	Yes	Yes
643	68	1/20/2021	Routine	No	Maintenance needed.	Yes	No
644	521	1/20/2021	Routine	No	Maintenance needed.	Yes	Yes
645	810	1/20/2021	Routine	No	Maintenance needed.	Yes	No
646	589	1/21/2021	Routine	No	Maintenance needed.	Yes	Yes
647	315	1/21/2021	Routine	No	Maintenance needed.	Yes	Yes
648	602	1/21/2021	Routine	No	Maintenance needed.	Yes	Yes
649	291	1/22/2021	Routine	No	Maintenance needed.	No	Yes
650	290	1/22/2021	Routine	No	Maintenance needed.	Yes	Yes
651	289	1/22/2021	Routine	No	Maintenance needed.	Yes	Yes
652	288	1/22/2021	Routine	No	Maintenance needed.	Yes	Yes
653	396	1/22/2021	Routine	No	Maintenance needed.	Yes	Yes
654	397	1/22/2021	Routine	No	Maintenance needed.	Yes	Yes
655	292	1/22/2021	Routine	No	Maintenance needed.	Yes	Yes
656	340	1/22/2021	Other	No	Meeting.		
657	836	1/22/2021	Other	No	Meeting.		
658	535	1/25/2021	60-day reinspection	No	Maintenance needed.	Yes	Yes
659	235	1/25/2021	60-day reinspection	No	Maintenance needed.	Yes	Yes
660	589	1/26/2021	Other	No	Meeting.		
661	793	1/26/2021	Other	Yes	Meeting.		
662	141	1/26/2021	Other	Yes	Meeting.		
663	142	1/26/2021	Other	Yes	Meeting.		
664	143	1/26/2021	Other	Yes	Meeting.		
665	234	1/26/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
666	1009	1/27/2021	60-day reinspection	No	Maintenance needed.	Yes	Yes
667	1011	1/27/2021	60-day reinspection	No	Maintenance needed.	Yes	No
668	654	1/27/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
669	501	1/28/2021	60-day reinspection	No	Meeting.		
670	1010	1/28/2021	60-day reinspection	No	Meeting.		
671	521	1/29/2021	Other	No	Meeting.		
672	589	1/29/2021	Other	No	Meeting.		
673	325	1/29/2021	Other	No	Meeting.		
674	602	1/29/2021	Other	No	Meeting.		
675	880	1/29/2021	Other	No	Meeting.		
676	927	1/29/2021	Other	No	Meeting.		
677	926	1/29/2021	Other	No	Meeting.		
678	918	1/29/2021	Other	No	Meeting.		
679	917	1/29/2021	Other	No	Meeting.		
680	936	1/29/2021	Other	No	Meeting.		
681	488	1/29/2021	Other	No	Meeting.		
682	518	1/29/2021	Other	No	Meeting.		
683	493	1/29/2021	Other	No	Meeting.		
684	637	2/5/2021	60-day reinspection	No	Maintenance needed.	No	Yes
685	1014	2/5/2021	Routine	No	Maintenance needed.	Yes	Yes
686	522	2/5/2021	60-day reinspection	No	Maintenance needed.	Yes	No
687	1013	2/5/2021	Routine	No	Maintenance needed.	Yes	No
688	998	2/5/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
689	839	2/5/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
690	638	2/5/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
691	587	2/5/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
692	939	2/5/2021	60-day reinspection	Yes	No maintenance needed at this time.	No	No
693	961	2/9/2021	Routine	No	Maintenance needed.	Yes	Yes
694	463	2/9/2021	Routine	No	Maintenance needed.	Yes	No
695	786	2/9/2021	Routine	No	Maintenance needed.	Yes	Yes
696	475	2/9/2021	60-day reinspection	No	Maintenance needed.	Yes	Yes
697	977	2/9/2021	Routine	Yes	No maintenance is needed at this time.	No	No
698	787	2/9/2021	Routine	Yes	No maintenance is needed at this time.	No	No
699	978	2/9/2021	Routine	Yes	No maintenance is needed at this time.	No	No
700	376	2/9/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No

701	521	2/11/2021	Complaint Based	No	Maintenance needed.	No	Yes
702	624	2/11/2021	Complaint Based	No	Maintenance needed.	No	Yes
703	399	2/16/2021	Other	No	Maintenance needed.	No	Yes
704	116	2/16/2021	Routine	No	Maintenance needed.	No	Yes
705	484	2/16/2021	Other	No	Maintenance needed.	Yes	No
706	859	2/16/2021	60-day reinspection	No	Maintenance needed.	Yes	Yes
707	660	2/16/2021	60-day reinspection	No	Maintenance needed.	Yes	Yes
708	227	2/16/2021	Routine	No	Maintenance needed.	Yes	Yes
709	226	2/16/2021	Routine	No	Maintenance needed.	Yes	Yes
710	117	2/16/2021	Routine	No	Maintenance needed.	Yes	Yes
711	140	2/17/2021	Routine	No	Maintenance needed.	No	Yes
712	119	2/17/2021	Routine	No	Maintenance needed.	Yes	Yes
713	135	2/17/2021	Routine	No	Maintenance needed.	Yes	Yes
714	228	2/17/2021	Routine	No	Maintenance needed.	Yes	No
715	118	2/17/2021	Routine	No	Maintenance needed.	Yes	No
716	115	2/17/2021	Routine	No	Maintenance needed.	Yes	No
717	136	2/17/2021	Routine	No	Maintenance needed.	Yes	No
718	397	2/17/2021	Other	No	Meeting.		
719	187	2/17/2021	Other	No	Meeting.		
720	275	2/17/2021	Other	No	Meeting.		
721	139	2/19/2021	Routine	No	Maintenance needed.	No	Yes
722	138	2/19/2021	Routine	No	Maintenance needed.	Yes	No
723	137	2/19/2021	Routine	Yes	No maintenance is needed at this time.	No	No
724	546	2/23/2021	Routine	No	Maintenance needed.	No	Yes
725	294	2/23/2021	Routine	No	Maintenance needed.	No	Yes
726	386	2/23/2021	Routine	No	Maintenance needed.	Yes	Yes
727	39	2/23/2021	Routine	No	Maintenance needed.	Yes	Yes
728	865	2/23/2021	Routine	No	Maintenance needed.	Yes	Yes
729	404	2/23/2021	Routine	No	Maintenance needed.	Yes	Yes
730	497	2/23/2021	Routine	No	Maintenance needed.	Yes	No
731	568	2/23/2021	60-day reinspection	No	Maintenance needed.	Yes	Yes
732	496	2/23/2021	Routine	No	Maintenance needed.	Yes	Yes
733	495	2/23/2021	Routine	No	Maintenance needed.	Yes	No
734	500	2/23/2021	Routine	No	Maintenance needed.	Yes	No
735	499	2/23/2021	Routine	No	Maintenance needed.	Yes	No
736	498	2/23/2021	Routine	No	Maintenance needed.	Yes	No
737	293	2/23/2021	Routine	Yes	No maintenance needed at this time.	No	No
738	178	2/24/2021	Routine	No	Maintenance needed.	Yes	Yes
739	179	2/24/2021	Routine	No	Maintenance needed.	Yes	Yes
740	169	2/24/2021	Routine	No	Maintenance needed.	Yes	No
741	223	2/24/2021	Routine	No	Maintenance needed.	Yes	No
742	327	2/24/2021	Routine	No	Maintenance needed.	Yes	Yes
743	277	2/24/2021	Routine	No	Maintenance needed.	Yes	No
744	198	2/24/2021	60-day reinspection	No	Maintenance needed.	Yes	No
745	979	2/24/2021	Other	No	Meeting.		
746	642	2/24/2021	Routine	Yes	No maintenance is needed at this time.	No	No
747	183	2/24/2021	Routine	Yes	No maintenance is needed at this time.	No	No
748	182	2/24/2021	Routine	Yes	No maintenance is needed at this time.	No	No
749	893	2/25/2021	Routine	No	Maintenance needed.	No	Yes
750	574	2/25/2021	Routine	No	Maintenance needed.	Yes	Yes
751	643	2/25/2021	Routine	No	Maintenance needed.	Yes	No
752	199	2/25/2021	Routine	No	Maintenance needed.	Yes	Yes
753	251	2/25/2021	60-day reinspection	No	Maintenance needed.	Yes	No
754	863	2/25/2021	Other	No	Meeting.		
755	573	2/25/2021	Routine	Yes	No maintenance is needed at this time.	No	No
756	572	2/25/2021	Routine	Yes	No maintenance is needed at this time.	No	No
757	619	2/25/2021	Routine	Yes	No maintenance is needed at this time.	No	No
758	935	2/25/2021	15-day reinspection	Yes	No maintenance is needed at this time.	No	No
759	575	2/25/2021	Routine	Yes	No maintenance needed at this time.	No	No
760	101	2/26/2021	Routine	No	Maintenance needed.	No	Yes
761	102	2/26/2021	Routine	No	Maintenance needed.	No	Yes
762	632	2/26/2021	60-day reinspection	No	Maintenance needed.	No	Yes
763	571	2/26/2021	60-day reinspection	No	Maintenance needed.	Yes	No
764	106	2/26/2021	Routine	No	Maintenance needed.	Yes	Yes

765	416	2/26/2021	Routine	No	Maintenance needed.	Yes	Yes
766	586	2/26/2021	Routine	No	Maintenance needed.	Yes	Yes
767	487	2/26/2021	Routine	No	Maintenance needed.	Yes	No
768	486	2/26/2021	Routine	No	Maintenance needed.	Yes	No
769	485	2/26/2021	Routine	No	Maintenance needed.	Yes	No
770	958	2/26/2021	Routine	No	Maintenance needed.	Yes	No
771	76	2/26/2021	Routine	No	Maintenance needed.	Yes	No
772	601	2/26/2021	Routine	No	Maintenance needed.	Yes	Yes
773	600	2/26/2021	Routine	No	Maintenance needed.	Yes	No
774	633	2/26/2021	60-day reinspection	No	Maintenance needed.	Yes	No
775	556	2/26/2021	Routine	Yes	No maintenance is needed at this time.	No	No
776	969	2/26/2021	Routine	Yes	No maintenance needed at this time.	No	No
777	959	2/26/2021	Routine	Yes	No maintenance needed at this time.	No	No
778	527	3/1/2021	60-day reinspection	No	Maintenance needed.	No	Yes
779	399	3/1/2021	60-day reinspection	No	Maintenance needed.	Yes	No
780	562	3/2/2021	Routine	No	Maintenance needed.	No	Yes
781	859	3/2/2021	Other	No	Maintenance needed.	Yes	Yes
782	996	3/2/2021	Routine	No	Maintenance needed.	Yes	No
783	377	3/2/2021	Routine	No	Maintenance needed.	Yes	Yes
784	329	3/2/2021	Routine	No	Maintenance needed.	Yes	Yes
785	218	3/2/2021	Routine	No	Maintenance needed.	Yes	No
786	562	3/3/2021	Other	No	Maintenance needed.	No	Yes
787	567	3/3/2021	Routine	No	Maintenance needed.	Yes	Yes
788	89	3/3/2021	Routine	No	Maintenance needed.	Yes	Yes
789	317	3/3/2021	Routine	No	Maintenance needed.	Yes	No
790	157	3/3/2021	Routine	No	Maintenance needed.	Yes	Yes
791	154	3/3/2021	Routine	No	Maintenance needed.	Yes	Yes
792	904	3/3/2021	Routine	No	Maintenance needed.	Yes	No
793	905	3/3/2021	Routine	No	Maintenance needed.	Yes	Yes
794	321	3/3/2021	60-day reinspection	No	Maintenance needed.	Yes	No
795	375	3/3/2021	60-day reinspection	No	Maintenance needed.	Yes	No
796	369	3/3/2021	60-day reinspection	No	Maintenance needed.	Yes	No
797	69	3/3/2021	Other	No	Meeting.		
798	852	3/3/2021	Routine	Yes	No maintenance is needed at this time.	No	No
799	806	3/3/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
800	807	3/3/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
801	165	3/4/2021	Routine	No	Maintenance needed.	No	Yes
802	644	3/4/2021	Complaint Based	No	Maintenance needed.	No	Yes
803	871	3/4/2021	Routine	No	Maintenance needed.	Yes	Yes
804	526	3/4/2021	Routine	No	Maintenance needed.	Yes	No
805	525	3/4/2021	Routine	No	Maintenance needed.	Yes	No
806	605	3/4/2021	Routine	No	Maintenance needed.	Yes	No
807	811	3/4/2021	Routine	No	Maintenance needed.	Yes	No
808	548	3/4/2021	Routine	No	Maintenance needed.	Yes	Yes
809	872	3/4/2021	Routine	No	Maintenance needed.	Yes	Yes
810	664	3/4/2021	Routine	No	Maintenance needed.	Yes	No
811	873	3/4/2021	Routine	No	Maintenance needed.	Yes	Yes
812	641	3/4/2021	Other	No	Meeting.		
813	930	3/4/2021	Routine	Yes	No maintenance needed at this time.	No	No
814	111	3/5/2021	60-day reinspection	No	Maintenance needed.	No	Yes
815	300	3/5/2021	Routine	No	Maintenance needed.	No	Yes
816	285	3/5/2021	Routine	No	Maintenance needed.	No	Yes
817	876	3/5/2021	Routine	No	Maintenance needed.	No	Yes
818	418	3/5/2021	60-day reinspection	No	Maintenance needed.	No	Yes
819	286	3/5/2021	Routine	No	Maintenance needed.	Yes	Yes
820	184	3/5/2021	60-day reinspection	No	Maintenance needed.	Yes	No
821	48	3/5/2021	60-day reinspection	No	Maintenance needed.	Yes	No
822	294	3/5/2021	Other	No	Meeting.		
823	258	3/9/2021	Complaint Based	No	Maintenance needed.	No	Yes
824	645	3/9/2021	Routine	No	Maintenance needed.	No	Yes
825	177	3/9/2021	Routine	No	Maintenance needed.	Yes	No
826	341	3/9/2021	Routine	No	Maintenance needed.	Yes	Yes
827	342	3/9/2021	Routine	No	Maintenance needed.	Yes	Yes
828	928	3/9/2021	Routine	No	Maintenance needed.	Yes	No

829	95	3/9/2021	Routine	No	Maintenance needed.	Yes	No
830	862	3/9/2021	Routine	No	Maintenance needed.	Yes	Yes
831	112	3/9/2021	Routine	No	Maintenance needed.	Yes	No
832	980	3/9/2021	Routine	No	Maintenance needed.	Yes	No
833	646	3/9/2021	Routine	No	Maintenance needed.	Yes	Yes
834	49	3/9/2021	Routine	No	Maintenance needed.	Yes	No
835	331	3/9/2021	Routine	Yes	Meeting.		
836	347	3/9/2021	Routine	Yes	No maintenance is needed at this time.	No	No
837	96	3/9/2021	Routine	Yes	No maintenance needed at this time.	No	No
838	114	3/10/2021	Routine	No	Maintenance needed.	No	Yes
839	97	3/10/2021	60-day reinspection	No	Maintenance needed.	No	Yes
840	93	3/10/2021	Routine	No	Maintenance needed.	No	Yes
841	8	3/10/2021	Routine	No	Maintenance needed.	Yes	No
842	7	3/10/2021	Routine	No	Maintenance needed.	Yes	No
843	636	3/10/2021	Routine	No	Maintenance needed.	Yes	No
844	23	3/10/2021	Routine	No	Maintenance needed.	Yes	Yes
845	647	3/10/2021	Routine	No	Maintenance needed.	Yes	No
846	6	3/10/2021	Routine	No	Maintenance needed.	Yes	No
847	107	3/10/2021	60-day reinspection	No	Meeting.		
848	94	3/10/2021	Routine	Yes	No maintenance needed at this time.	No	No
849	245	3/11/2021	Routine	No	Maintenance needed.	No	Yes
850	72	3/11/2021	Routine	No	Maintenance needed.	Yes	No
851	224	3/11/2021	Routine	No	Maintenance needed.	Yes	No
852	246	3/11/2021	Routine	Yes	No maintenance needed at this time.	No	No
853	278	3/12/2021	Routine	No	Maintenance needed.	Yes	No
854	29	3/12/2021	Routine	No	Maintenance needed.	Yes	Yes
855	797	3/15/2021	Routine	No	Maintenance needed.	Yes	No
856	19	3/15/2021	Routine	No	Maintenance needed.	Yes	Yes
857	489	3/15/2021	Routine	No	Maintenance needed.	Yes	Yes
858	82	3/15/2021	Routine	Yes	No maintenance is needed at this time.	No	No
859	83	3/15/2021	Routine	Yes	No maintenance is needed at this time.	No	No
860	553	3/16/2021	Complaint Based	No	Maintenance needed.	No	Yes
861	465	3/16/2021	Routine	No	Maintenance needed.	Yes	No
862	235	3/16/2021	Other	No	Maintenance needed.	Yes	No
863	955	3/16/2021	Routine	Yes	No maintenance is needed at this time.	No	No
864	531	3/16/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
865	92	3/17/2021	Routine	No	Maintenance needed.	Yes	Yes
866	200	3/17/2021	Routine	No	Maintenance needed.	Yes	No
867	201	3/17/2021	Routine	No	Maintenance needed.	Yes	No
868	163	3/17/2021	Routine	No	Maintenance needed.	Yes	Yes
869	457	3/17/2021	Routine	No	Maintenance needed.	Yes	No
870	691	3/17/2021	Routine	No	Maintenance needed.	Yes	Yes
871	481	3/17/2021	Routine	No	Maintenance needed.	Yes	Yes
872	272	3/17/2021	Other	No	Meeting.		
873	820	3/18/2021	60-day reinspection	No	Maintenance needed.	No	Yes
874	91	3/18/2021	60-day reinspection	No	Maintenance needed.	Yes	No
875	325	3/18/2021	Other	No	Meeting.		
876	525	3/18/2021	Other	No	Meeting.		
877	605	3/18/2021	Other	Yes	Meeting.		
878	526	3/18/2021	Other	Yes	Meeting.		
879	535	3/18/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
880	358	3/19/2021	Routine	No	Maintenance needed.	No	Yes
881	78	3/19/2021	Routine	No	Maintenance needed.	No	Yes
882	356	3/19/2021	Routine	No	Maintenance needed.	No	Yes
883	376	3/19/2021	Complaint Based	No	Maintenance needed.	Yes	No
884	175	3/19/2021	Routine	No	Maintenance needed.	Yes	Yes
885	174	3/19/2021	Routine	No	Maintenance needed.	Yes	No
886	173	3/19/2021	Routine	No	Maintenance needed.	Yes	No
887	100	3/19/2021	Routine	No	Maintenance needed.	Yes	Yes
888	172	3/19/2021	Routine	No	Maintenance needed.	Yes	Yes
889	473	3/19/2021	Routine	No	Maintenance needed.	Yes	No
890	601	3/19/2021	Other	No	Meeting.		
891	42	3/19/2021	Routine	No	Meeting.		
892	304	3/19/2021	Routine	Yes	No maintenance is needed at this time.	No	No

893	603	3/19/2021	Routine	Yes	No maintenance is needed at this time.	No	No
894	502	3/19/2021	Routine	Yes	No maintenance needed at this time.	No	No
895	625	3/19/2021	Routine	Yes	No maintenance needed at this time.	No	No
896	1019	3/22/2021	Routine	Yes	No maintenance is needed at this time.	No	No
897	395	3/25/2021	Routine	No	Maintenance needed.	Yes	Yes
898	400	3/25/2021	Routine	No	Maintenance needed.	Yes	No
899	367	3/25/2021	Routine	No	Maintenance needed.	Yes	No
900	366	3/25/2021	Routine	No	Maintenance needed.	Yes	No
901	365	3/25/2021	Routine	No	Maintenance needed.	Yes	No
902	364	3/25/2021	Routine	No	Maintenance needed.	Yes	No
903	249	3/25/2021	Routine	No	Maintenance needed.	Yes	No
904	250	3/25/2021	Routine	No	Maintenance needed.	Yes	No
905	248	3/25/2021	Routine	No	Maintenance needed.	Yes	No
906	247	3/25/2021	Routine	No	Maintenance needed.	Yes	No
907	242	3/25/2021	Routine	No	Maintenance needed.	Yes	Yes
908	243	3/25/2021	Routine	No	Maintenance needed.	Yes	Yes
909	215	3/25/2021	Routine	No	Maintenance needed.	Yes	Yes
910	241	3/25/2021	Routine	No	Maintenance needed.	Yes	Yes
911	244	3/25/2021	Routine	Yes	No maintenance needed at this time.	No	No
912	337	3/26/2021	60-day reinspection	No	Maintenance needed.	Yes	No
913	385	3/26/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
914	653	3/26/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
915	615	3/26/2021	Routine	Yes	No maintenance needed at this time.	No	No
916	614	3/26/2021	Routine	Yes	No maintenance needed at this time.	No	No
917	1018	3/28/2021	Routine	No	Maintenance needed.	No	Yes
918	749	3/29/2021	Routine	No	Maintenance needed.	No	Yes
919	756	3/29/2021	Routine	No	Maintenance needed.	No	Yes
920	753	3/29/2021	Routine	No	Maintenance needed.	No	Yes
921	744	3/29/2021	Routine	No	Maintenance needed.	No	Yes
922	774	3/29/2021	Routine	No	Maintenance needed.	Yes	No
923	783	3/29/2021	Routine	No	Maintenance needed.	Yes	Yes
924	782	3/29/2021	Routine	No	Maintenance needed.	Yes	No
925	750	3/29/2021	Routine	No	Maintenance needed.	Yes	No
926	751	3/29/2021	Routine	No	Maintenance needed.	Yes	No
927	728	3/29/2021	Routine	No	Maintenance needed.	Yes	No
928	726	3/29/2021	Routine	No	Maintenance needed.	Yes	No
929	727	3/29/2021	Routine	No	Maintenance needed.	Yes	No
930	784	3/29/2021	Routine	No	Maintenance needed.	Yes	No
931	1017	3/29/2021	Routine	No	Maintenance needed.	Yes	No
932	748	3/29/2021	Routine	Yes	No maintenance is needed at this time.	No	No
933	755	3/29/2021	Routine	Yes	No maintenance is needed at this time.	No	No
934	780	3/29/2021	Routine	Yes	No maintenance is needed at this time.	No	No
935	779	3/29/2021	Routine	Yes	No maintenance is needed at this time.	No	No
936	752	3/29/2021	Routine	Yes	No maintenance is needed at this time.	No	No
937	742	3/29/2021	Routine	Yes	No maintenance is needed at this time.	No	No
938	741	3/29/2021	Routine	Yes	No maintenance is needed at this time.	No	No
939	785	3/29/2021	Routine	Yes	No maintenance is needed at this time.	No	No
940	765	3/29/2021	Routine	Yes	No maintenance is needed at this time.	No	No
941	775	3/29/2021	Routine	Yes	No maintenance is needed at this time.	No	No
942	754	3/29/2021	Routine	Yes	No maintenance is needed at this time.	No	No
943	724	3/29/2021	Routine	Yes	No maintenance needed at this time.	No	No
944	747	3/29/2021	Routine	Yes	No maintenance needed at this time.	No	No
945	781	3/30/2021	Routine	No	Maintenance needed.	Yes	No
946	776	3/30/2021	Routine	No	Maintenance needed.	Yes	No
947	777	3/30/2021	Routine	No	Maintenance needed.	Yes	No
948	778	3/30/2021	Routine	No	Maintenance needed.	Yes	No
949	773	3/30/2021	Routine	No	Maintenance needed.	Yes	No
950	746	3/30/2021	Routine	No	Maintenance needed.	Yes	No
951	769	3/30/2021	Routine	No	Maintenance needed.	Yes	No
952	768	3/30/2021	Routine	No	Maintenance needed.	Yes	No
953	740	3/30/2021	Routine	No	Maintenance needed.	Yes	No
954	1016	3/30/2021	Routine	No	Maintenance needed.	Yes	Yes
955	760	3/30/2021	Routine	No	Maintenance needed.	Yes	No
956	700	3/30/2021	Routine	No	Maintenance needed.	Yes	No

957	708	3/30/2021	Routine	No	Maintenance needed.	Yes	No
958	1015	3/30/2021	Routine	No	Maintenance needed.	Yes	Yes
959	739	3/30/2021	Routine	No	Maintenance needed.	Yes	No
960	134	3/30/2021	60-day reinspection	No	Maintenance needed.	Yes	No
961	620	3/30/2021	Routine	Yes	No maintenance is needed at this time.	No	No
962	743	3/30/2021	Routine	Yes	No maintenance is needed at this time.	No	No
963	745	3/30/2021	Routine	Yes	No maintenance is needed at this time.	No	No
964	771	3/30/2021	Routine	Yes	No maintenance is needed at this time.	No	No
965	770	3/30/2021	Routine	Yes	No maintenance is needed at this time.	No	No
966	767	3/30/2021	Routine	Yes	No maintenance is needed at this time.	No	No
967	701	3/30/2021	Routine	Yes	No maintenance is needed at this time.	No	No
968	719	3/30/2021	Routine	Yes	No maintenance is needed at this time.	No	No
969	1021	3/30/2021	Routine	Yes	No maintenance is needed at this time.	No	No
970	718	3/30/2021	Routine	Yes	No maintenance is needed at this time.	No	No
971	718	3/30/2021	Routine	Yes	No maintenance is needed at this time.	No	No
972	631	3/30/2021	Complaint Based	Yes	No maintenance is needed at this time.	No	Yes
973	91	3/30/2021	30-day reinspection	Yes	No maintenance is needed at this time.	No	No
974	1025	3/31/2021	Routine	No	Maintenance needed.	No	Yes
975	709	3/31/2021	Routine	No	Maintenance needed.	Yes	No
976	705	3/31/2021	Routine	No	Maintenance needed.	Yes	No
977	704	3/31/2021	Routine	No	Maintenance needed.	Yes	No
978	702	3/31/2021	Routine	No	Maintenance needed.	Yes	No
979	703	3/31/2021	Routine	No	Maintenance needed.	Yes	No
980	707	3/31/2021	Routine	No	Maintenance needed.	Yes	No
981	714	3/31/2021	Routine	No	Maintenance needed.	Yes	No
982	729	3/31/2021	Routine	No	Maintenance needed.	Yes	No
983	730	3/31/2021	Routine	No	Maintenance needed.	Yes	No
984	731	3/31/2021	Routine	No	Maintenance needed.	Yes	No
985	732	3/31/2021	Routine	No	Maintenance needed.	Yes	No
986	1024	3/31/2021	Routine	No	Maintenance needed.	Yes	Yes
987	1023	3/31/2021	Routine	No	Maintenance needed.	Yes	Yes
988	1022	3/31/2021	Routine	No	Maintenance needed.	Yes	Yes
989	706	3/31/2021	Routine	Yes	No maintenance is needed at this time.	No	No
990	757	3/31/2021	Routine	Yes	No maintenance is needed at this time.	No	No
991	758	3/31/2021	Routine	Yes	No maintenance is needed at this time.	No	No
992	759	3/31/2021	Routine	Yes	No maintenance is needed at this time.	No	No
993	940	4/1/2021	Routine	No	Maintenance needed.	Yes	Yes
994	942	4/1/2021	Routine	No	Maintenance needed.	Yes	Yes
995	947	4/1/2021	Routine	No	Maintenance needed.	Yes	No
996	943	4/1/2021	Routine	No	Maintenance needed.	Yes	Yes
997	948	4/1/2021	Routine	No	Maintenance needed.	Yes	No
998	946	4/1/2021	Routine	No	Maintenance needed.	Yes	No
999	945	4/1/2021	Routine	No	Maintenance needed.	Yes	Yes
1000	944	4/1/2021	Routine	No	Maintenance needed.	Yes	No
1001	105	4/1/2021	60-day reinspection	No	Maintenance needed.	Yes	No
1002	949	4/1/2021	Routine	No	Maintenance needed.	Yes	Yes
1003	69	4/1/2021	60-day reinspection	No	Maintenance needed.	Yes	No
1004	1020	4/1/2021	Routine	No	Maintenance needed.	Yes	Yes
1005	75	4/1/2021	Routine	No	Maintenance needed.	Yes	No
1006	188	4/1/2021	Routine	No	Maintenance needed.	Yes	Yes
1007	547	4/1/2021	Routine	No	Maintenance needed.	Yes	No
1008	941	4/1/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1009	51	4/2/2021	Routine	No	Maintenance needed.	No	Yes
1010	685	4/2/2021	Other	No	Maintenance needed.	No	Yes
1011	122	4/2/2021	Routine	No	Maintenance needed.	No	Yes
1012	154	4/2/2021	Other	No	Meeting.		
1013	157	4/2/2021	Other	No	Meeting.		
1014	337	4/2/2021	Other	No	Meeting.		
1015	385	4/2/2021	Other	No	Meeting.		
1016	541	4/2/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1017	478	4/2/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1018	411	4/5/2021	60-day reinspection	No	Maintenance needed.	No	Yes
1019	860	4/5/2021	Routine	No	Maintenance needed.	Yes	No
1020	861	4/5/2021	Routine	No	Maintenance needed.	Yes	No

1021	124	4/5/2021	Routine	No	Maintenance needed.	Yes	No
1022	123	4/5/2021	Routine	No	Maintenance needed.	Yes	No
1023	454	4/5/2021	Routine	No	Maintenance needed.	Yes	Yes
1024	379	4/5/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1025	722	4/6/2021	Routine	No	Maintenance needed.	Yes	No
1026	762	4/6/2021	Routine	No	Maintenance needed.	Yes	No
1027	18	4/6/2021	Routine	No	Maintenance needed.	Yes	Yes
1028	70	4/6/2021	Routine	No	Maintenance needed.	Yes	Yes
1029	186	4/6/2021	Routine	No	Maintenance needed.	Yes	No
1030	772	4/6/2021	Routine	No	Maintenance needed.	Yes	No
1031	763	4/6/2021	Routine	No	Maintenance needed.	Yes	No
1032	847	4/6/2021	Routine	No	Maintenance needed.	Yes	No
1033	761	4/6/2021	Routine	No	Maintenance needed.	Yes	No
1034	723	4/6/2021	Routine	No	Maintenance needed.	Yes	No
1035	725	4/6/2021	Routine	No	Maintenance needed.	Yes	No
1036	662	4/6/2021	Routine	No	Maintenance needed.	Yes	No
1037	721	4/6/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1038	453	4/6/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
1039	617	4/6/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1040	57	4/6/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1041	212	4/7/2021	Routine	No	Maintenance needed.	No	Yes
1042	127	4/7/2021	Routine	No	Maintenance needed.	Yes	Yes
1043	204	4/7/2021	Routine	No	Maintenance needed.	Yes	No
1044	205	4/7/2021	Routine	No	Maintenance needed.	Yes	No
1045	213	4/7/2021	Routine	No	Maintenance needed.	Yes	Yes
1046	846	4/7/2021	Routine	No	Maintenance needed.	Yes	No
1047	592	4/7/2021	Routine	No	Maintenance needed.	Yes	Yes
1048	393	4/7/2021	Routine	No	Maintenance needed.	Yes	Yes
1049	391	4/7/2021	Routine	No	Maintenance needed.	Yes	Yes
1050	378	4/7/2021	Routine	No	Maintenance needed.	Yes	No
1051	403	4/7/2021	Routine	No	Maintenance needed.	Yes	Yes
1052	402	4/7/2021	Routine	No	Maintenance needed.	Yes	No
1053	392	4/7/2021	Routine	No	Maintenance needed.	Yes	Yes
1054	1024	4/7/2021	Other	No	Meeting.		
1055	1023	4/7/2021	Other	No	Meeting.		
1056	1022	4/7/2021	Routine	No	Meeting.		
1057	1012	4/7/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
1058	66	4/8/2021	Routine	No	Maintenance needed.	Yes	Yes
1059	269	4/8/2021	Routine	No	Maintenance needed.	Yes	No
1060	558	4/8/2021	Routine	No	Maintenance needed.	Yes	Yes
1061	335	4/8/2021	Routine	No	Maintenance needed.	Yes	No
1062	50	4/8/2021	Routine	No	Maintenance needed.	Yes	Yes
1063	484	4/8/2021	Other	No	Meeting.		
1064	1022	4/8/2021	Other	Yes	No maintenance is needed at this time.	No	No
1065	699	4/9/2021	Routine	No	Maintenance needed.	Yes	Yes
1066	812	4/9/2021	Routine	No	Maintenance needed.	Yes	No
1067	560	4/9/2021	Routine	No	Maintenance needed.	Yes	Yes
1068	851	4/9/2021	Routine	No	Maintenance needed.	Yes	Yes
1069	798	4/9/2021	Routine	No	Maintenance needed.	Yes	No
1070	766	4/9/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1071	764	4/9/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1072	712	4/11/2021	Routine	No	Maintenance needed.	Yes	No
1073	733	4/11/2021	Routine	No	Maintenance needed.	Yes	No
1074	734	4/11/2021	Routine	No	Maintenance needed.	Yes	No
1075	736	4/11/2021	Routine	No	Maintenance needed.	Yes	No
1076	717	4/11/2021	Routine	No	Maintenance needed.	Yes	No
1077	738	4/11/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1078	735	4/11/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1079	737	4/11/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1080	710	4/11/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1081	711	4/11/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1082	712	4/11/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1083	716	4/11/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1084	713	4/11/2021	Routine	Yes	No maintenance is needed at this time.	No	No

1085	720	4/11/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1086	132	4/12/2021	Routine	No	Maintenance needed.	No	Yes
1087	430	4/12/2021	Routine	No	Maintenance needed.	Yes	Yes
1088	11	4/12/2021	Routine	No	Maintenance needed.	Yes	Yes
1089	456	4/12/2021	Routine	No	Maintenance needed.	Yes	Yes
1090	425	4/12/2021	Routine	No	Maintenance needed.	Yes	No
1091	333	4/12/2021	Routine	No	Maintenance needed.	Yes	No
1092	382	4/12/2021	Routine	No	Maintenance needed.	Yes	Yes
1093	436	4/12/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1094	423	4/13/2021	Routine	No	Maintenance needed.	Yes	No
1095	324	4/13/2021	Routine	No	Maintenance needed.	Yes	Yes
1096	323	4/13/2021	Routine	No	Maintenance needed.	Yes	Yes
1097	305	4/13/2021	Routine	No	Maintenance needed.	Yes	No
1098	648	4/13/2021	Routine	No	Maintenance needed.	Yes	No
1099	306	4/13/2021	Routine	No	Maintenance needed.	Yes	No
1100	10	4/13/2021	Routine	No	Maintenance needed.	Yes	Yes
1101	886	4/13/2021	Routine	No	Maintenance needed.	Yes	No
1102	12	4/13/2021	Routine	No	Maintenance needed.	Yes	No
1103	923	4/13/2021	Other	No	Meeting.		
1104	715	4/13/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1105	222	4/13/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1106	221	4/13/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1107	295	4/13/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1108	236	4/14/2021	Routine	No	Maintenance needed.	No	Yes
1109	34	4/14/2021	Routine	No	Maintenance needed.	No	Yes
1110	33	4/14/2021	Routine	No	Maintenance needed.	No	Yes
1111	172	4/14/2021	Routine	No	Maintenance needed.	Yes	Yes
1112	473	4/14/2021	60-day reinspection	No	Maintenance needed.	Yes	No
1113	671	4/14/2021	Routine	No	Maintenance needed.	Yes	No
1114	875	4/14/2021	Routine	No	Maintenance needed.	Yes	No
1115	670	4/14/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1116	621	4/14/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1117	862	4/15/2021	60-day reinspection	No	Maintenance needed.	No	Yes
1118	31	4/15/2021	Routine	No	Maintenance needed.	No	Yes
1119	32	4/15/2021	Routine	No	Maintenance needed.	Yes	Yes
1120	585	4/15/2021	Routine	No	Maintenance needed.	Yes	Yes
1121	38	4/15/2021	Routine	No	Maintenance needed.	Yes	No
1122	180	4/15/2021	Routine	No	Maintenance needed.	Yes	No
1123	37	4/15/2021	Routine	No	Maintenance needed.	Yes	No
1124	350	4/15/2021	60-day reinspection	No	Maintenance needed.	Yes	No
1125	351	4/15/2021	Routine	No	Maintenance needed.	Yes	No
1126	410	4/15/2021	Other	Yes	Meeting.		
1127	214	4/15/2021	60-day reinspection	Yes	Meeting.		
1128	189	4/15/2021	60-day reinspection	Yes	Meeting.		
1129	36	4/15/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1130	35	4/15/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1131	611	4/16/2021	60-day reinspection	No	Maintenance needed.	Yes	Yes
1132	612	4/16/2021	60-day reinspection	No	Maintenance needed.	Yes	Yes
1133	913	4/16/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
1134	796	4/21/2021	Routine	No	Maintenance needed.	No	Yes
1135	65	4/21/2021	Routine	No	Maintenance needed.	Yes	Yes
1136	658	4/21/2021	Routine	No	Maintenance needed.	Yes	Yes
1137	171	4/21/2021	Routine	No	Maintenance needed.	Yes	No
1138	170	4/21/2021	Routine	No	Maintenance needed.	Yes	No
1139	659	4/21/2021	Routine	No	Maintenance needed.	Yes	Yes
1140	189	4/21/2021	Other	Yes	Meeting.		
1141	696	4/21/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1142	981	4/21/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1143	982	4/21/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1144	985	4/21/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1145	983	4/21/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1146	984	4/21/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1147	283	4/22/2021	Routine	No	Maintenance needed.	No	Yes
1148	462	4/22/2021	Routine	No	Maintenance needed.	Yes	No

1149	303	4/22/2021	Routine	No	Maintenance needed.	Yes	No
1150	302	4/22/2021	Routine	No	Maintenance needed.	Yes	Yes
1151	109	4/22/2021	Routine	No	Maintenance needed.	Yes	No
1152	282	4/22/2021	Routine	No	Maintenance needed.	Yes	No
1153	301	4/22/2021	Routine	No	Maintenance needed.	Yes	Yes
1154	274	4/22/2021	Routine	No	Maintenance needed.	Yes	No
1155	67	4/26/2021	60-day reinspection	Yes	Meeting.		
1156	797	4/26/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
1157	1014	4/26/2021	Other	Yes	No maintenance is needed at this time.	No	No
1158	266	4/28/2021	Routine	No	Maintenance needed.	No	Yes
1159	260	4/28/2021	Routine	No	Maintenance needed.	No	Yes
1160	979	4/28/2021	60-day reinspection	No	Maintenance needed.	Yes	No
1161	280	4/28/2021	Routine	No	Maintenance needed.	Yes	Yes
1162	265	4/28/2021	Routine	No	Maintenance needed.	Yes	No
1163	88	4/28/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
1164	279	4/28/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1165	267	4/28/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1166	261	4/28/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1167	259	4/29/2021	Routine	No	Maintenance needed.	No	Yes
1168	262	4/29/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1169	264	4/29/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1170	257	4/29/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1171	268	4/29/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1172	320	4/30/2021	Routine	No	Maintenance needed.	Yes	No
1173	194	4/30/2021	Routine	No	Maintenance needed.	Yes	No
1174	527	4/30/2021	Other	No	Meeting.		
1175	945	4/30/2021	Other	No	Meeting.		
1176	942	4/30/2021	Other	Yes	Meeting.		
1177	319	4/30/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1178	539	4/30/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1179	92	5/4/2021	Other	No	Meeting.		
1180	163	5/4/2021	Other	No	Meeting.		
1181	335	5/4/2021	Routine	No	Meeting.		
1182	232	5/4/2021	Other	Yes	No maintenance is needed at this time.	No	No
1183	326	5/4/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
1184	26	5/5/2021	Routine	No	Maintenance needed.	No	Yes
1185	24	5/5/2021	Routine	No	Maintenance needed.	Yes	No
1186	534	5/5/2021	Routine	No	Maintenance needed.	Yes	Yes
1187	380	5/5/2021	Routine	No	Maintenance needed.	Yes	Yes
1188	25	5/5/2021	Routine	No	Maintenance needed.	Yes	Yes
1189	168	5/5/2021	Routine	No	Maintenance needed.	Yes	Yes
1190	534	5/5/2021	Routine	No	Maintenance needed.	Yes	No
1191	385	5/5/2021	Other	No	Meeting.		
1192	337	5/5/2021	Other	No	Meeting.		
1193	4	5/6/2021	Routine	No	Maintenance needed.	No	Yes
1194	3	5/6/2021	Routine	No	Maintenance needed.	Yes	Yes
1195	934	5/6/2021	Routine	No	Maintenance needed.	Yes	Yes
1196	44	5/6/2021	Routine	No	Maintenance needed.	Yes	Yes
1197	45	5/6/2021	Routine	No	Maintenance needed.	Yes	No
1198	328	5/6/2021	Routine	No	Maintenance needed.	Yes	No
1199	2	5/6/2021	Routine	No	Maintenance needed.	Yes	No
1200	122	5/6/2021	Other	No	Meeting.		
1201	127	5/6/2021	Complaint Based	Yes	No maintenance is needed at this time.	No	Yes
1202	428	5/11/2021	Routine	No	Maintenance needed.	Yes	Yes
1203	429	5/11/2021	Routine	No	Maintenance needed.	Yes	Yes
1204	154	5/11/2021	60-day reinspection	No	Maintenance needed.	Yes	No
1205	484	5/11/2021	60-day reinspection	No	Maintenance needed.	Yes	No
1206	157	5/11/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
1207	344	5/12/2021	Routine	No	Maintenance needed.	No	Yes
1208	231	5/12/2021	Routine	No	Maintenance needed.	Yes	Yes
1209	307	5/12/2021	Routine	No	Maintenance needed.	Yes	Yes
1210	203	5/12/2021	Routine	No	Maintenance needed.	Yes	Yes
1211	401	5/12/2021	Routine	No	Maintenance needed.	Yes	Yes
1212	230	5/12/2021	Routine	No	Maintenance needed.	Yes	No

1213	419	5/12/2021	Routine	No	Maintenance needed.	Yes	No
1214	92	5/12/2021	Other	Yes	Meeting.		
1215	361	5/13/2021	Routine	No	Maintenance needed.	Yes	Yes
1216	360	5/13/2021	Routine	No	Maintenance needed.	Yes	Yes
1217	359	5/13/2021	Routine	No	Maintenance needed.	Yes	Yes
1218	962	5/13/2021	Routine	No	Meeting.		
1219	513	5/14/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1220	507	5/14/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1221	506	5/14/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1222	838	5/18/2021	60-day reinspection	No	Maintenance needed.	Yes	No
1223	475	5/18/2021	30-day reinspection	No	Maintenance needed.	Yes	No
1224	376	5/18/2021	30-day reinspection	No	Maintenance needed.	Yes	No
1225	600	5/19/2021	60-day reinspection	No	Maintenance needed.	Yes	No
1226	122	5/19/2021	Other	No	Maintenance needed.	Yes	No
1227	156	5/19/2021	Routine	No	Maintenance needed.	Yes	Yes
1228	6007	5/19/2021	Routine	No	Maintenance needed.	Yes	No
1229	275	5/19/2021	Complaint Based	Yes	No maintenance is needed at this time.	No	No
1230	635	5/19/2021	Complaint Based	Yes	No maintenance is needed at this time.	No	No
1231	514	5/20/2021	Routine	No	Maintenance needed.	No	Yes
1232	515	5/20/2021	Routine	No	Maintenance needed.	No	Yes
1233	569	5/20/2021	Routine	No	Maintenance needed.	No	Yes
1234	510	5/20/2021	Routine	No	Maintenance needed.	Yes	No
1235	353	5/20/2021	Routine	No	Maintenance needed.	Yes	Yes
1236	352	5/20/2021	Routine	No	Maintenance needed.	Yes	Yes
1237	441	5/20/2021	Routine	No	Maintenance needed.	Yes	No
1238	440	5/20/2021	Routine	No	Maintenance needed.	Yes	Yes
1239	512	5/20/2021	Routine	No	Maintenance needed.	Yes	No
1240	516	5/20/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1241	804	5/20/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1242	511	5/20/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1243	120	5/24/2021	Routine	No	Maintenance needed.	No	Yes
1244	611	5/25/2021	60-day reinspection	No	Maintenance needed.	Yes	No
1245	612	5/25/2021	60-day reinspection	No	Maintenance needed.	Yes	No
1246	218	5/25/2021	60-day reinspection	No	Maintenance needed.	Yes	No
1247	1008	5/25/2021	Other	No	Meeting.		
1248	1007	5/25/2021	Other	No	Meeting.		
1249	915	5/25/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
1250	914	5/25/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
1251	344	5/26/2021	Routine	No	Maintenance needed.	No	Yes
1252	153	5/26/2021	Routine	No	Maintenance needed.	Yes	No
1253	152	5/26/2021	Routine	No	Maintenance needed.	Yes	No
1254	240	5/27/2021	Complaint Based	No	Maintenance needed.	No	Yes
1255	1009	5/27/2021	Complaint Based	No	Maintenance needed.	No	Yes
1256	605	5/27/2021	Complaint Based	Yes	No maintenance is needed at this time.	No	No
1257	979	5/27/2021	30-day reinspection	Yes	No maintenance is needed at this time.	No	No
1258	615	6/1/2021	60-day reinspection	No	Maintenance needed.	Yes	Yes
1259	615	6/1/2021	60-day reinspection	No	Maintenance needed.	Yes	Yes
1260	344	6/1/2021	60-day reinspection	No	Maintenance needed.	Yes	Yes
1261	625	6/1/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
1262	614	6/1/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
1263	1036	6/2/2021	Routine	No	Maintenance needed.	Yes	No
1264	66	6/2/2021	60-day reinspection	No	Maintenance needed.	Yes	Yes
1265	466	6/2/2021	Routine	No	Maintenance needed.	Yes	No
1266	663	6/2/2021	Routine	No	Maintenance needed.	Yes	No
1267	316	6/2/2021	Routine	No	Maintenance needed.	Yes	Yes
1268	537	6/2/2021	Routine	No	Maintenance needed.	Yes	No
1269	409	6/2/2021	Routine	No	Maintenance needed.	Yes	Yes
1270	464	6/2/2021	Routine	No	Maintenance needed.	Yes	No
1271	591	6/2/2021	Routine	No	Maintenance needed.	Yes	No
1272	349	6/2/2021	Routine	No	Maintenance needed.	Yes	No
1273	683	6/2/2021	Routine	No	Maintenance needed.	Yes	Yes
1274	110	6/2/2021	Routine	No	Maintenance needed.	Yes	No
1275	920	6/2/2021	Other	No	Meeting.		
1276	105	6/2/2021	30-day reinspection	Yes	No maintenance is needed at this time.	No	No

1277	69	6/2/2021	30-day reinspection	Yes	No maintenance is needed at this time.	No	No
1278	273	6/3/2021	Routine	No	Maintenance needed.	Yes	No
1279	357	6/3/2021	Routine	No	Maintenance needed.	Yes	No
1280	362	6/3/2021	Routine	No	Maintenance needed.	Yes	No
1281	354	6/3/2021	Routine	No	Maintenance needed.	Yes	No
1282	355	6/3/2021	Routine	No	Maintenance needed.	Yes	No
1283	996	6/3/2021	60-day reinspection	No	Maintenance needed.	Yes	No
1284	160	6/3/2021	Routine	No	Maintenance needed.	Yes	Yes
1285	280	6/3/2021	Routine	No	Meeting.		
1286	265	6/3/2021	Other	No	Meeting.		
1287	592	6/3/2021	Other	No	Meeting.		
1288	232	6/3/2021	Other	Yes	No maintenance is needed at this time.	No	No
1289	348	6/4/2021	Routine	No	Maintenance needed.	Yes	No
1290	13	6/4/2021	Routine	No	Maintenance needed.	Yes	No
1291	14	6/4/2021	Routine	No	Maintenance needed.	Yes	No
1292	408	6/4/2021	Routine	No	Maintenance needed.	Yes	No
1293	407	6/4/2021	Routine	No	Maintenance needed.	Yes	No
1294	9	6/4/2021	Routine	No	Maintenance needed.	Yes	No
1295	106	6/4/2021	Other	No	Meeting.		
1296	693	6/4/2021	Complaint Based	Yes	Meeting.		
1297	548	6/4/2021	60-day reinspection	Yes	No maintenance is needed at this time.	No	No
1298	20	6/4/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1299	200	6/7/2021	Other	No	Maintenance needed.	Yes	No
1300	161	6/7/2021	60-day reinspection	No	Maintenance needed.	Yes	No
1301	955	6/7/2021	Other	Yes	Meeting.		
1302	122	6/7/2021	Other	Yes	No maintenance is needed at this time.	No	No
1303	923	6/11/2021	60-day reinspection	No	Maintenance needed.	Yes	No
1304	92	6/14/2021	Other	No	Maintenance needed.	Yes	No
1305	1029	6/14/2021	Routine	No	Maintenance needed.	Yes	Yes
1306	251	6/14/2021	30-day reinspection	Yes	No maintenance is needed at this time.	No	No
1307	1034	6/15/2021	Routine	No	Maintenance needed.	Yes	Yes
1308	1032	6/15/2021	Routine	No	Maintenance needed.	Yes	Yes
1309	124	6/15/2021	Other	No	Meeting.		
1310	1030	6/15/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1311	208	6/16/2021	Other	No	Maintenance needed.	No	Yes
1312	1033	6/16/2021	Routine	No	Maintenance needed.	Yes	Yes
1313	1031	6/16/2021	Routine	No	Maintenance needed.	Yes	No
1314	207	6/16/2021	Other	Yes	No maintenance is needed at this time.	No	No
1315	269	6/17/2021	Complaint Based	No	Maintenance needed.	No	Yes
1316	1033	6/17/2021	Other	No	Maintenance needed.	No	Yes
1317	1026	6/17/2021	Routine	No	Maintenance needed.	Yes	No
1318	861	6/21/2021	60-day reinspection	No	Maintenance needed.	Yes	No
1319	68	6/21/2021	60-day reinspection	No	Maintenance needed.	Yes	No
1320	860	6/21/2021	60-day reinspection	No	Maintenance needed.	Yes	No
1321	229	6/24/2021	Routine	No	Maintenance needed.	No	Yes
1322	21	6/24/2021	Routine	Yes	No maintenance is needed at this time.	No	No
1323	480	6/25/2021	Routine	No	Maintenance needed.	Yes	No
1324	124	6/28/2021	Other	No	Meeting.		
1325	1035	6/29/2021	Routine	No	Maintenance needed.	Yes	Yes
1326	265	6/29/2021	60-day reinspection	Yes	Meeting.		

Inspection Schedule			
Schedule	**Facility #**	**Plan Year**	**Inspection Type**
9/4/2021	5753	2008	Routine
9/4/2021	5757	2008	Routine
9/4/2021	5758	2008	Routine
9/5/2021	5756	2008	Routine
9/5/2021	5755	2008	Routine
9/5/2021	5754	2008	Routine
9/5/2021	5761	2008	Routine
9/5/2021	5760	2008	Routine
9/5/2021	5759	2008	Routine
9/6/2021	5242	1996	Routine
9/6/2021	5521	2006	Routine
9/20/201	5522	2006	Routine
9/30/2021	5325	2001	Routine
9/30/2021	5932	1985	Routine
10/1/2021	5889	2015	Routine
10/4/2021	5890	2015	Routine
10/4/2021	5502	2002	Routine
10/4/2021	5503	2002	Routine
10/4/2021	5711	2007	Routine
10/4/2021	5421	2007	Routine
10/4/2021	5007	2006	Routine
10/4/2021	5236	2005	Routine
10/24/2021	5237	2005	Routine
10/25/2021	6051	2014	Routine
10/30/2021	6052	2014	Routine
10/31/2021	6048	2014	Routine
10/31/2021	6053	2014	Routine
11/4/2021	6047	2014	Routine
11/5/2021	6049	2014	Routine
11/5/2021	6050	2014	Routine
11/6/2021	5262	1999	Routine
11/6/2021	5299	1988	Routine
11/6/2021	5383	1989	Routine
11/6/2021	5986	2015	Routine
11/6/2021	5987	2015	Routine
11/8/2021	5279	2004	Routine
11/8/2021	5278	2004	Routine
11/8/2021	5240	2004	Routine
11/8/2021	5964	2008	Routine
11/8/2021	5631	2008	Routine
11/8/2021	5624	2004	Routine
11/15/2021	5916	2013	Routine
11/27/2021	5099	1986	Routine

Technical Manual
MS4 Delineation & Stormwater Tool

Prepared for:

Prince William County Department of Public Works
Prince William, Virginia

Prepared by:

Amec Foster Wheeler Environment & Infrastructure, Inc.
14424 Ablemarle Point Place, Suite 115
Chantilly, Virginia 20151
703-488-3700

April 21, 2016

Project No. 151270001

1 Introduction

Prince William County (the County) hired Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) to analyze geospatial data depicting the County's stormwater network in order to delineate the total area drained by their Municipal Separate Stormsewer System (MS4). This process involved the identification of regulated MS4 outfalls – that is, stormwater outfalls owned or operated by Prince William County that discharge to waters of the United States. Amec Foster Wheeler assigned one of five ownership classes to each outfall: County, Homeowners, Commercial entities, Virginia Department of Transportation (VDOT), and Other owners. Typically, regulated MS4 outfalls were placed at the terminus of infrastructure (e.g. stormsewers, BMPs) and ownership was assigned using classification codes stored within the attribute tables of the spatial data provided by the County. Stormsewer ownership was determined using the coded values within the "SYM" field, while BMP ownership was determined using the "MAINT" field values. Regulated MS4 outfalls were placed before the terminus of the infrastructure if terminal placement would result in drainage area delineations that ernoeously captured jurisdictional waters and their riparian areas (rather than solely MS4 service area). Secondarily, parcel ownership and easement records were used to determine ownership if existing infrastructure data was not available.

Over 4,800 outfalls were identified, 3,495 of which were assigned County ownership. Based on this regulated MS4 outfall determination, the County's MS4 service area totals 23,156 acres. These regulated MS4 outfalls serve as a crucial input for the Stormwater Tool to function. The Stormwater Tool delineates the pervious and impervious drainage area to each outfall, creating a dataset that can be analyzed by the user to determine the County's MS4 service area as infrastructure is added to the County's database. Specifically, the Stormwater Tool provides the necessary information to meet *Part I.B.2.h) 3-4* of the County's MS4 Permit (Permit No: VA0088595).

2 Purpose and Objectives

This manual provides a guide for using the Stormwater Tool to delineate Prince William County's MS4 service area. The following sections of the report explain:

1) The structure of the Stormwater Tool and pertinent spatial data;
2) The three scripts composing the Stormwater Tool;
3) Maintining the data utilized by the Stormwater Tool allowing for future integration in stormwater planning activities as the County's network expands;
4) An example exercise for a small region of the County's stormwater network.

The objective of this document is to provide any potential user with basic GIS experience the ability to use the Stormwater Tool and receive an output of the MS4 drainage area for selected outfalls. Users with a stronger background in GIS and geospatial processing will be able to further

customize the Stormwater Tool, if desired, by modfying the source code provided to the County. Amec Foster Wheeler has provided a functional, efficient tool that automates a laborious, yet critical step in ensuring the County meets its regulatory requirements and ultimately improves water quality within the Chesapeake Bay.

3 Stormwater Tool Structure

Amec Foster Wheeler provided the finished tool to the County on a flashdrive. A folder titled "MS4" houses the complete Stormwater Tool. The ArcGIS processing component of the Stormwater Tool consists of three scriptsstored in the "Stormwater Tool" toolbox. The folder also contains the primary geodatabase, "MS4.gdb", and a scratch geodatabase, "scratch.gdb". Note that scratch.gdb is created upon running any of the three scripts in the Stormwater Tool. Three source code python scripts are stored within MS4.gdb and are utilized by scripts in the toolbox. The location of the source code scripts is paramount because the scripts rely on relative pathname connections to interact with relevant data stored in the MS4 geodatabase. Moving the scripts to a new location without further modification to the source code will cause the Stormwater Tool to fail.

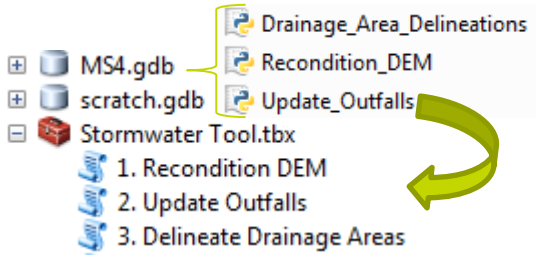


Figure 1 Python Script Storage Location

Users can interact with the three scripts in the Stormwater Tool toolbox directly in ArcMap. The scripts open like native ArcGIS tools and should be run in sequential order:

1. Recondition DEM
2. Update Outfalls
3. Delineate Drainage Areas

NOTE: This document will refer to the Stormwater Tool, which is the suite of ArcGIS tools developed by Amec Foster Wheeler for the County to delineate their MS4 Service Area. The three scripts within this suite will be referred to as "components". Also, one should not confuse the Stormwater Tool or its components with the native ArcGIS tools alluded to further on in this manual.

4 Geodatabase Setup

There are two geodatabases contained within the Stormwater Tool folder:

- **MS4.gdb** contains the necessary inputs (both native and user-specified) as well as the final outputs of the Stormwater Tool. Contained within MS4.gdb are several feature datasets and feature classes the user should familiarize themselves with before using the Stormwater Tool:

- **Interconnected** contains areas that should not be included in the County's MS4 area because they are either excluded per the DEQ Guidance Memo No 15-2005 or regulated under a separate MS4 permit.
  - *VPDES* – Parcels that are regulated under General or individual VPDES permits.
  - *VDOT* – Right-of-way that VDOT claimed as their MS4 area within the County.
  - *GMU* – George Mason University parcel which is regulated by a separate MS4 permit.
  - *Schools* – Parcels owned by Prince William County Public Schools, which are regulated by a separate MS4 permit.
  - *NOVA* – Northern Virginia Community College parcel which is regulated by a separate MS4 permit.
  - *Forested* - Forested lands excluded from the MS4 regulated area. These were delineated from 4-band multispectral imagery at 1 meter spatial resolution. See Appendix B for further information.

NOTE: There are other interconnected MS4s (City of Manassas, Marine Corps Base Quantico, et al.) whose MS4 service area was not available. These can be incorporated into the tool at a later date. Amec Foster Wheeler determined that the County MS4 Service Area did not capture any significant area that would be "double counted".

- **LandUse** contains the impervious surface area for the County. These areas are used to calculate the percent of delineated MS4 drainage areas that are impervious.
  - *Impervious2009* – Impervious surface feature class for Prince William County as of June 30th, 2009. This feature class should be used to meet Phase 1 of the Chesapeake Bay TMDL.
  - *Impervious2012* – Current impervious surface feature class available for Prince William County. This feature class could be used in MS4 service area delineations for future TMDL action plans, as needed.
- **Network** contains two polyline files: the County stormwater network and customized NHD Flowlines. Both of these polylines are used to recondition the DEM and form a unified drainage network.
  - *Amec_Single_Network* – Modified County stormsewer feature class that establishes hydrologic connectivity between the County stormsewer

system and the stream network. It includes both the County stormsewer system and hydrologic connections to the stream network, both of which were edited by Amec Foster Wheeler under direction from the County. MS4 and BMP outfalls are snapped to this feature class.

- *NHD_flowlines* – Modified version of the NHD high-resolution (24K) flowlines. This feature class serves as the unidirectional stream network for Prince William County. Each segment of the NHD contains a unique identifier, or "REACHCODE" as it is stored within the attribute table, which is identified as the downstream receiving waterbody in the "2. Update Outfalls" script. Modification of the original NHD flowlines involved deleting specific segments that were either buried or heavily modified with BMPs during development. The position of NHD flowlines were occasionally adjusted to reflect more accurate flow patterns apparent within the LiDAR DEM.

- **Outfalls** contains feature classes that can be used as drainage delineation points for delineating drainage areas. The Stormwater Tool will update the attribute data for each outfall to include a unique ID, its latitude and longitude in decimal degrees, the local watershed (WTRSHD_ID), the 5th and 6th order VA HUC, the HUC12, and the waterbody receiving outflow (listed as a REACHCODE). Outfalls also contain ownership and maintenance responsibility information.

  - *ms4_outfalls* – Feature class consisting of points demarcating where MS4 discharges to waters of the United States. Outfall ownership and "origin" (referring to the infrastructure or data that characterized the point as an MS4 outfall, ex. rip-rap ditch) are assigned upon creation by the user according to preset domains.

  - *BMPs* – Feature class containing the outfalls for the County's legacy BMPs. While the Stormwater Tool was designed for determining the MS4 Service Area, it can also be used for determining drainage areas for each historic BMP. Care should be taken when using the Stormwater Tool for the BMPs to ensure proper drainage area delineation.

- **Polygons** contains several feature classes including MS4 drainage areas and watersheds. Important outputs can be stored in this feature dataset.

  - *Subwatersheds* – Input for the "2. Update Outfalls" script that provides the local watershed draining each outfall (WTRSHD_ID).

  - *HUC12* – Input for the "2. Update Outfalls" script that provides the HUC 12 from the NHD draining each outfall.

- *BMP_da* – Pervious and impervious drainage area for each BMP. Note that several BMPs capture entire stream valleys which would not be considered regulated MS4 service area.
- *MS4_Service_Area* – Total MS4 service area in the County attributed to the five ownership & maintenance classes. Each delineated MS4 area includes: ownership, origin, corresponding outfall ID, HUC12, local watershed (WTRSHD_ID), total drainage area (acres), pervious drainage area (acres), and impervious drainage area (acres).

- **Raster data** contains inputs and outputs (in raster format) utilized for delineating drainage areas.
  - *burned* – Hydrologically conditioned 3-meter resolution DEM. NHD_flowlines and Amec_Single_Network are "burned" into this DEM to enforce proper hydrologic routing of the stormsewer network. This process is explained in Section 5.1.
  - *Dem_3 meter* – 3-meter resolution digital elevation model for the County obtained from the National Elevation Dataset (NED). The NED is a seamless mosaic of best-available elevation data that is maintained by the USGS. This high-resolution elevation data provides a realistic depiction of the County's topography and serves as the basis for hydrologic routing in the Stormwater Tool.
  - *Flow_acc* – Flow accumulation raster based on the burned, hydrologically reconditioned DEM created during the "1. Recondition DEM" script. Information stored within each cell provides the accumulated flow upstream of that point.
  - *Flow_dir* - Flow direction raster based on the burned, hydrologically reconditioned DEM created during the "1. Recondition DEM" script. The D8 flow algorithm is used to assign flow direction to each cell. The resulting flow direction grid is used to assign drainage areas to each outfall.

- **Scratch.gdb** contains intermediate outputs of the Stormwater Tool, and can be cleared out after each run if desired. This serves as a "background" where these intermediate outputs can be accessed by the Stormwater Tool without creating clutter within MS4.gdb.

5 Stormwater Tool Components

5.1 DEM Reconditioning

A digital elevation model (DEM) is a 3-D representation of the Earth's surface. DEMs have been used for a number of geospatial applications, including modeling surface water hydrology. Surface water hydrology is relatively easy to model in natural environments; however, urban environments present additional challenges. Namely, manmade infrastructure (i.e. stormwater pipes, curb inlets, and drainage ditches) substantially alters the natural drainage network and can transfer water between subwatersheds.

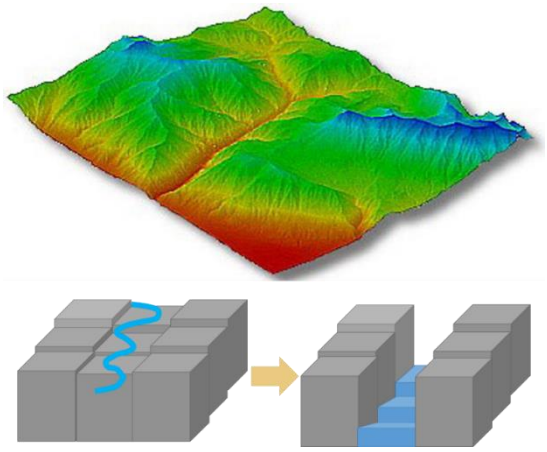


Figure 2 Burning in Hydrologic Network

Since a DEM depicts the Earth's surface using a rectangular grid of cells, it struggles to depict the below ground stormwater network and small hydrologic features that often drain urban environments. Consequently, it's necessary to lower the elevation of cells in the DEM containing urban hydrologic features to ensure accurate flowpaths are reflected across the County. This elevation modification is often referred to as "burning".

This DEM reconditioning process can be achieved using the *"1. Recondition DEM"* component in the Stormwater Tool toolbox. It merges the vector NHD flowlines and Amec Single Network to create a rasterized version of this contiguous hydrologic network. The rasterized hydrologic network serves as a mask, and each hydrologic network grid cell is lowered (-3000 feet for stream cells and -2000 feet for Amec Single Network cells) in the DEM relative to neighboring cells that are not within the hydrologic network (i.e. land not within a streamchannel). Essentially, this process cuts a network of canyons into the DEM surface along cells coincident with the merged hydrologic network, which then serves to redirect local drainage into these digitally carved hydrologic network channels.

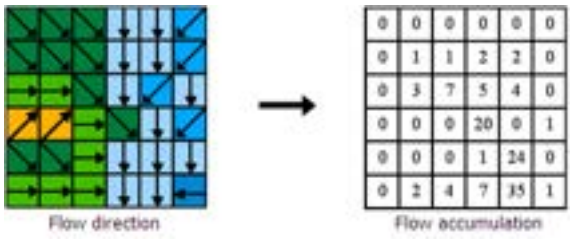


Figure 3 Source: ArcGIS Resources

Depressions and flat areas are then removed using a depression filling technique to create a hydrologically corrected DEM. The corrected DEM reflects a continuously, monotonically descending flowpath connecting each grid cell to the data edge, with burned-in canyons coincident with the mapped hydrologic network. The hydrologically corrected DEM is then used to determine local drainage direction and flow accumulation (upslope drainage area). The local drainage direction, or flow direction, is calculated using an algorithm, which

directs flow from each cell to its steepest downslope neighboring cell. This flow algorithm uses information about local surface gradient and orientation, calculated from the DEM, to model spatial patterns of flow direction. Flow accumulation is then calculated for each cell by summing the number of cells that flow into each downslope cell. This component creates three outputs: a flow direction raster, a flow accumulation raster, and a hydrologically corrected DEM. These outputs are all stored in MS4.gdb and are used by subsequent components in the Stormwater Tool toolbox.

5.2 Update Outfalls

The County is responsible for mapping the MS4 service area and each MS4 outfall in accordance with *Part I.B.2.h)* of MS4 Permit No. VA0088595. Specifically, the County must track the information contained in Figure 4 for each MS4 outfall and its corresponding drainage area.The *"2. Update Outfalls"* component in the Stormwater Tool toolbox updates this information for each outfall and stores the data in the attribute table as shown below.

Figure 4 Outfall Attribution

Reporting Requirement	Field Name in Attribute Table
Individual Identification Number	"Outfall_ID"
Local Watershed	"WTRSHD_ID"
Sixth Order HUC	"VAHU6"
Receiving Water	"REACHCODE"
Latitude in Decimal Degrees	"Lat_DD"
Longitude in Decimal Degrees	"Long_DD"

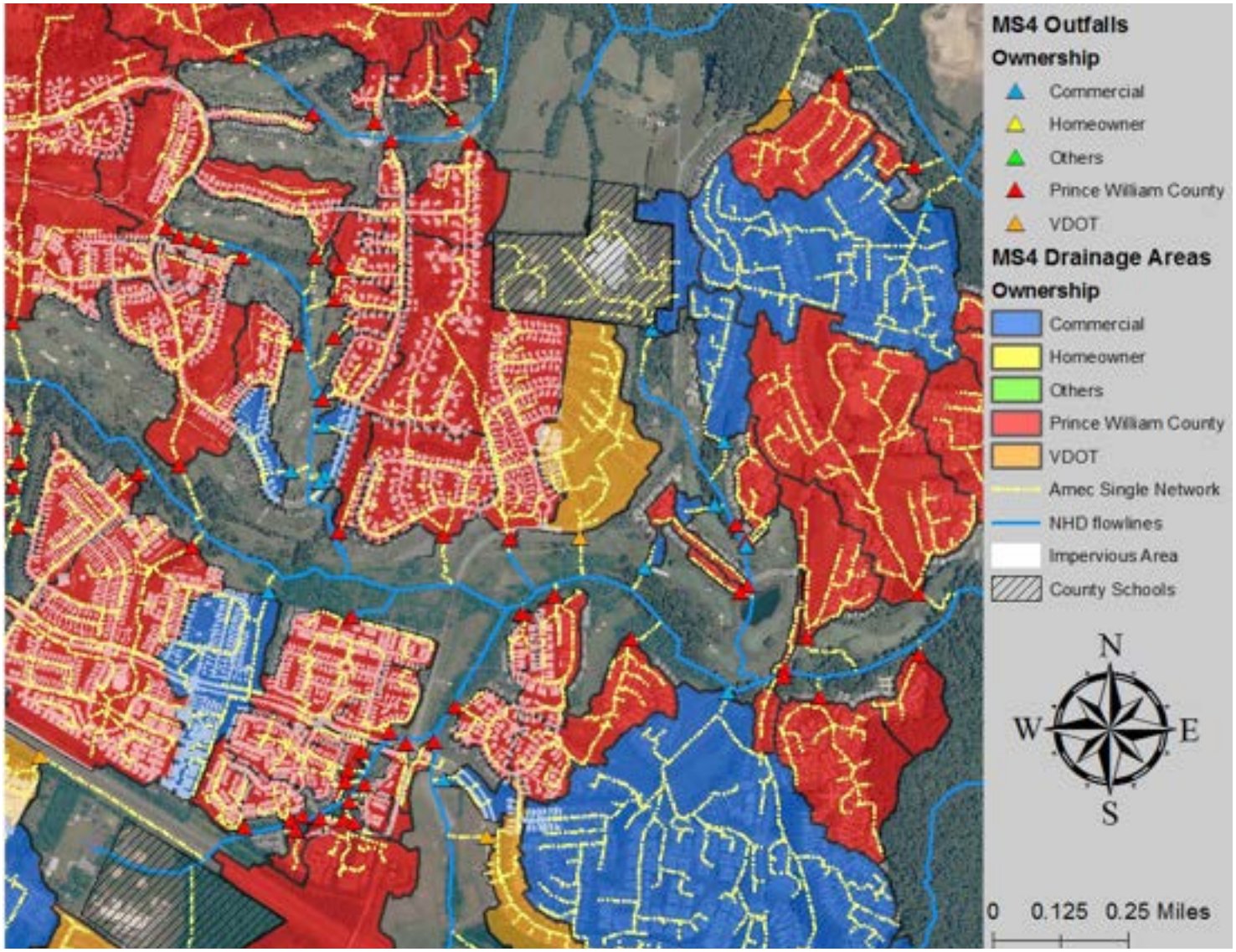


Figure 5 MS4 Outfall Drainage Area Delineation

5.3 Delineate Drainage Areas

Drainage areas for each MS4 outfall can be delineated once the DEM is hydrologically corrected and the outfall information is updated. Each outfall point location is adjusted using the Snap Pour Point tool to be coincident with the neighboring cell with the largest flow accumulation value. Snap distance is set according to DEM resolution, so outfalls can only be moved to a cell in the surrounding 3 meter x 3 meter cell window. Once the adjacent cell with the largest flow accumulation value is identified, the outfall point feature is converted to a raster and given a value based on the outfall's Individual Identification Number. The Watershed tool then calculates the upslope drainage area contributing flow to a common outlet as concentrated drainage (in the case of the Stormwater Tool, each MS4 outfall). Flow is routed from the upslope area to each outfall using the flow direction grid created in the *"1. Recondition DEM"* component. Unique raster drainage areas are then delineated for each outfall and coverted to vector polygons.

Polygon drainage areas are dissolved based on their outfall identification number (*"Outfall_ID"*), to eliminate tiny, illegitimate watersheds that are a relic of the raster-vector conversion process. The Calculate Field Management tool then calculates the total drainage area, in acres, via field geometry. Next, impervious surface data (represented by *Impervious2009*) is removed from the dissolved polygon drainage areas with the Erase tool, which produces pervious surface poylgons. Interconnected MS4s can then optionally be erased from the drainage areas, as well, if the user chooses. The interconnected MS4s are first merged and then erased from the pervious surface area. Then the pervious surface area is calculated in acres with the Calculate Field Management tool. The pervious acres field is then joined back to the dissolved drainage area polygons with the Add Join Management tool. Fields with each drainage area's local watershed and sixth order HUC are also added. Impervious surface area is then determined for each drainage area by subtracting attribute data for pervious acreage from total acreage. The resulting polygon feature class contains the impervious, pervious, and total acreage for each MS4 drainage area stored within attribute data. Additionally, the feature class contains pertinent information for *Part I.B.2.h) 4)* of the County's MS4 permit as of June 30th, 2009, displayed below.

Figure 6 Drainage Area Attribution

Reporting Requirement	Field Name in Attribute Table
Total MS4 Acres Served	"TotAcres"
Pervious MS4 Acres Served	"PervAcres"
Impervious MS4 Acres Served	"ImpAcres"
Individual Identification Number	"Outfall_ID"
Local Watershed	"WTRSHD_ID"
Sixth Order HUC	"VAHU6"
Receiving Water	"REACHCODE"
Individual Identification Number	"Outfall_ID"

5.4 Data Maintenance & Updates

Data can be updated to incorporate area added from new development within the County. The County's existing procedures for cataloging stormwater infrastructure are thorough; however, they will need to be supplemented to accommodate the Stormwater Tool. Specifically, three feature classes will require updates, which should be conducted as follows:

1. *Amec_Single_Network*[1] – New County stormsewer lines should be loaded into the Amec_Single_Network feature class in ArcCatalog. Users should then connect the new features to the existing NHD_flowlines using a DEM to determine the downslope flowpath to the stream. Additionally, there are several considersations to make when adding segments to the Amec Single Network:
    a. Avoid hydrologic loops (i.e. flow should travel downstream in a single path and avoid braiding).
    b. Do not create Amec_Single_Network segments that are closer to each other than the DEM resolution you plan to use in the Stormwater Tool. For instance if you plan to use a 10 foot resolution DEM (~3 meter), segments should be at least 10.1 feet away from one another.
    c. Check that all Amec_Single_Network segments are connected and snapped to the NHD-flowlines, otherwise they will be filled during the "1. Recondition DEM" component run. This can be verified using the Topology toolset within ArcGIS.
2. *ms4_outfalls*[2] - MS4 outfalls should be added when new manmade infrastructure is integrated into the County's stormsewer lines data. The outfalls should be placed at the end of manmade infrastructure (i.e. new stormsewer lines), but far enough away (3.5 times the DEM resolution) from the NHD_flowlines to avoid being snapped to the stream network during the processing for the "3. Delineate Drainage Areas" component. The "Ownership" and "Origin" fields need to be input as well. "Ownership" is assigned based on the "MAINT" code for each terminal segment of new infrastructure (i.e. the last stormsewer segment) and "Origin" is determined by the terminal segment's "SYM" code.

1 This is a modified County stormsewer feature class that establishes hydrologic connectivity between the County stormsewer system and the stream network. It includes both the County modified stormsewer system and user-created hydrologic connections to the stream network.

2 A feature class containing points demarcating where the municipal separate stormsewer (MS4) discharges to waters of the United States. Outfall ownership and origin (origin refers to the infrastructure or data that identified the point as an MS4 outfall, ex. rip-rap ditch) are assigned upon creation by the user according to preset domains.

3. *BMPs*[3] - BMP outfalls need to be added when new stormwater management facilities are added to the existing inventory. Outfalls should be placed at the terminus of the BMP and snapped to either Amec Single Network or the NHD flowlines.

5.5 Demonstration: Expanding the Infrastructure Network

The Stormwater Tool operates using its own geodatabase, which was based on the County's existing stormwater data, as its data source. As development occurs in the County, new stormwater infrastructure will continue to be integrated into the County's data through the existing data entry tool. **This new data still needs to be incorporated into the Stormwater Tool's geodatabase.** This section provides a step-by-step illustration of how to: 1) load new stormwater infrastructure into the Stormwater Tool's geodatabase, 2) add and assign MS4 outfalls, and 3) run the Stormwater Tool. This process will compliment the County's robust data entry tool and also allow the County to produce an updated MS4 service area throughout permit phases.

5.5.1 Loading New Infrastructure into the Stormwater Tool's Geodatabase

Amec Foster Wheeler received stormwater infrastructure data from the County in October of 2015. Existing stormsewer data from this time served as the basis for the creation of the Amec Single Network[4]. Since the County's existing stormsewer system lacked hydrologic connections to the stream network, Amec Foster Wheeler edited the stormsewer system to create hydrologic connections between the stream network and stormwater infrastructure. Additional data editing - such as eliminating hydrologic loops, clarifying flowpaths, etc. - further modified the County's existing stormsewer network. The result of these efforts was the creation of the Amec Single Network, which represents a contiguous, hydrologically connected stormsewer system.

Figure 7 New Urban Development

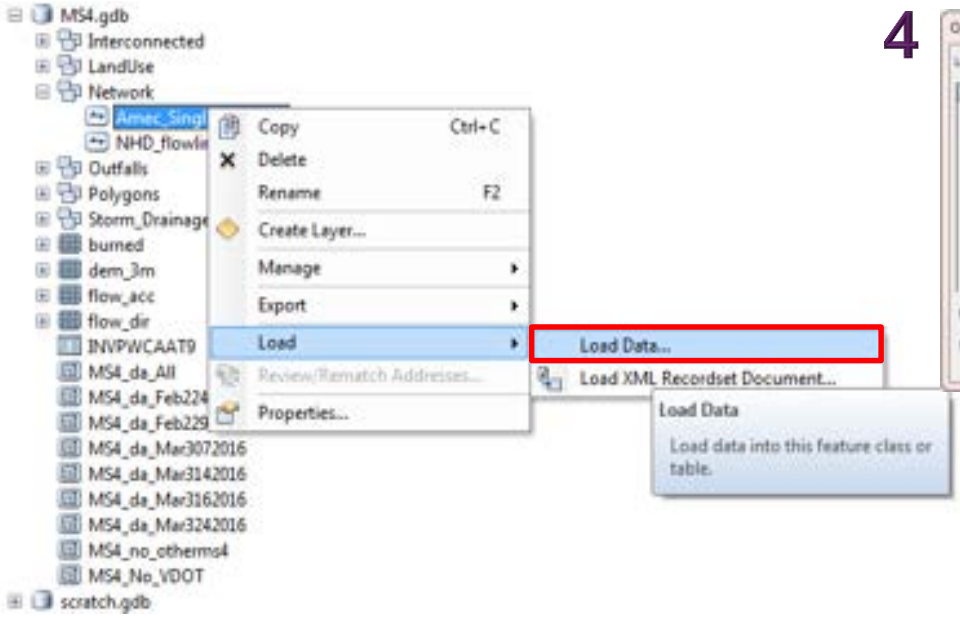
New areas of stormwater infrastructure should be added to the Amec Single Network by replicating this process. The first step in replicating this process is to load newly entered stormwater infrastructure datainto the Stormwater Tool's geodatabase. Note that this data was first entered into the County's system using the data entry tool. Figures below demonstrate how to complete the loading process in ArcCatalog.

3 A feature class containing the outfalls for the historic best management practices (BMPs) in Prince William County.

4 Modified County stormsewer feature class that establishes hydrologic connectivity between the County stormsewer system and the stream network. It includes both the County stormsewer system and hydrologic connections to the stream network, both of which were edited by Amec Foster Wheeler under direction from the County. MS4 and BMP outfalls are snapped to this feature class.

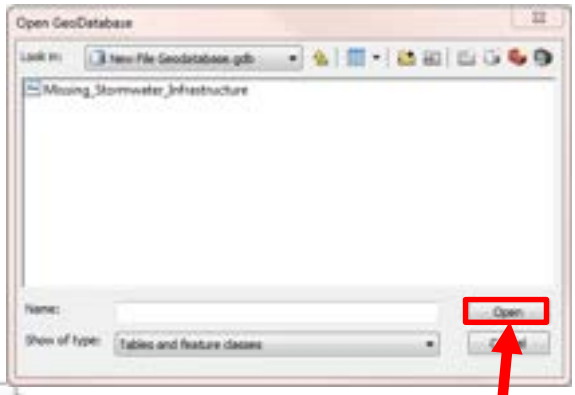
Beginning: Open ArcCatalog and navigate to MS4.gdb

1



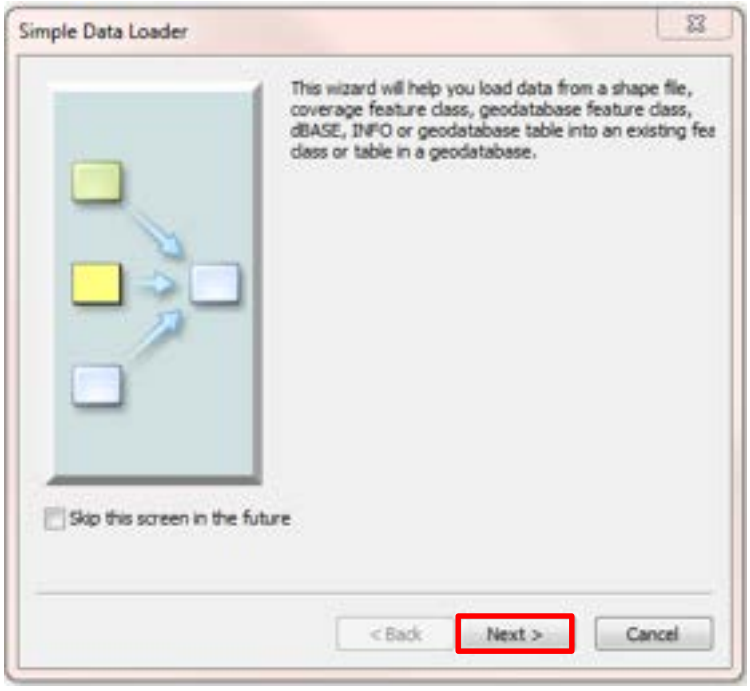
Load the new stormwater infrastructure data into the appropriate feature class in ArcCatalog. For instance for new stormsewer lines data, right click on Amec_Single_Network, then select “Load” and then follow the navigation arrow to “Load Data…”

4



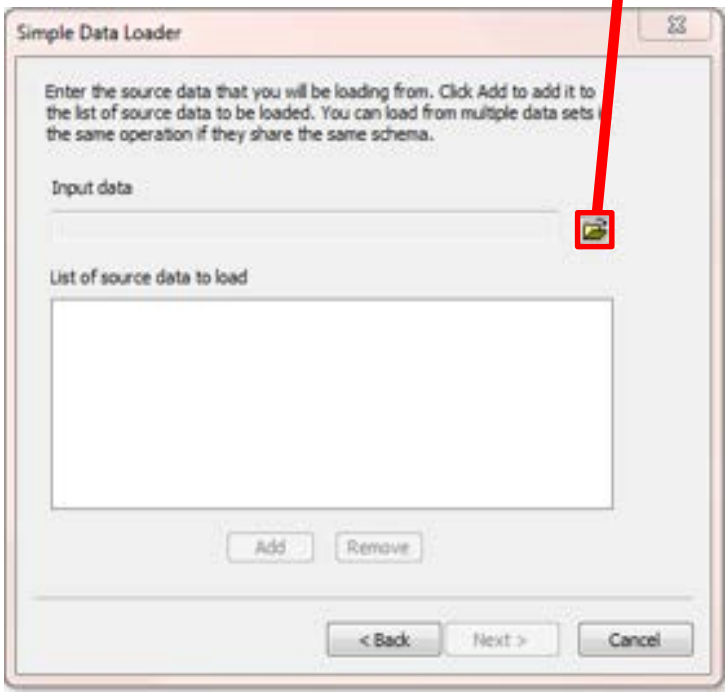
Navigate to the file pathname of the new or missing data you would like to load into the existing feature class. Select the data and then click ‘Open’.

2



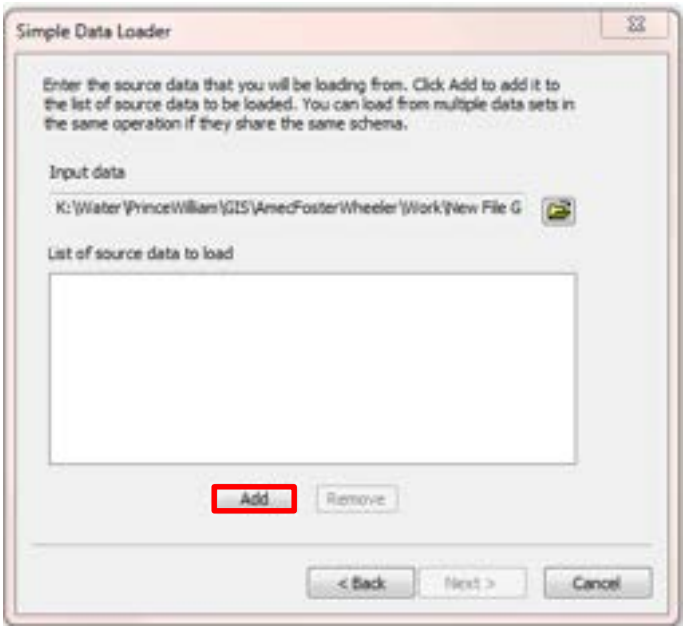
Simple Data Loader wizard opens, click ‘Next >’.

3



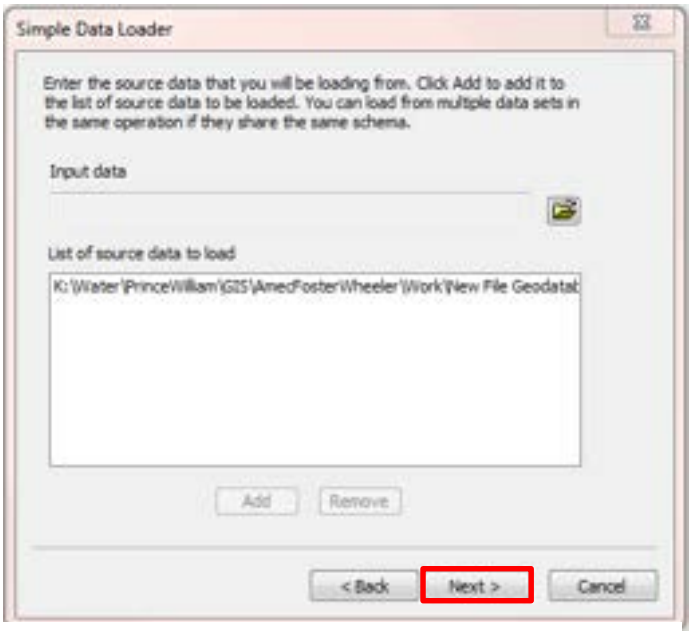
Under ‘Input Data’ click the open folder button.

5



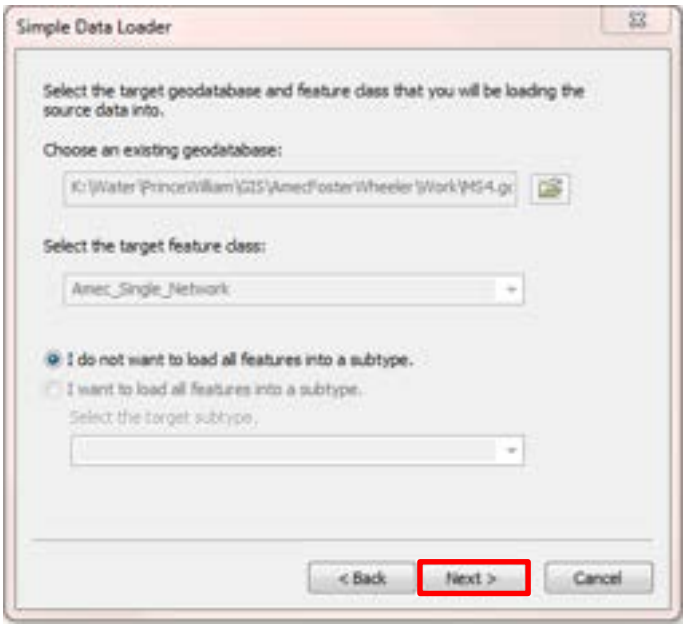
If the “Input Data” file pathname is correct, click the “Add” button.

6



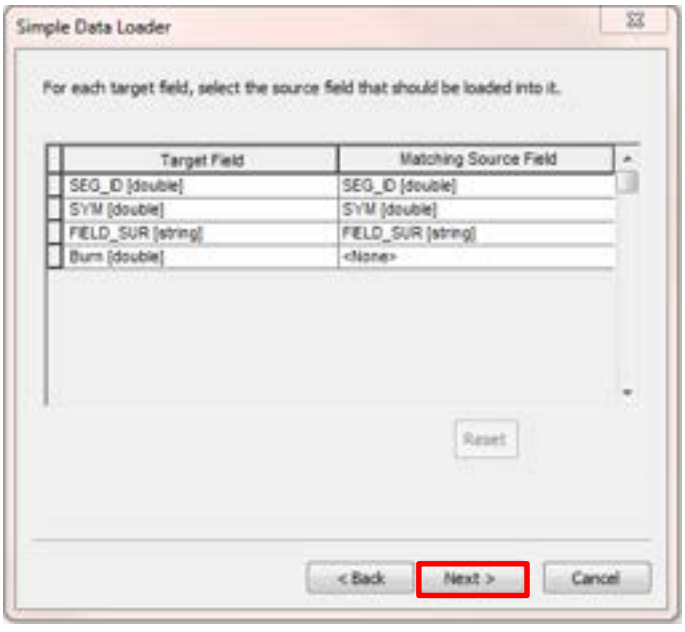
The pathname to the new or missing data should now be listed under ‘List of source data to load’. More than one data source can be loaded into an existing feature class by repeating steps 3 - 5.

7



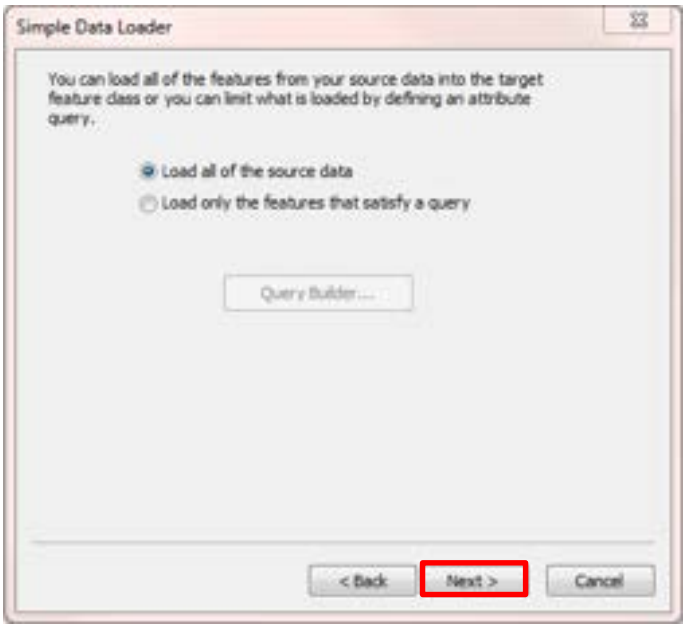
Select ‘Next’.

8



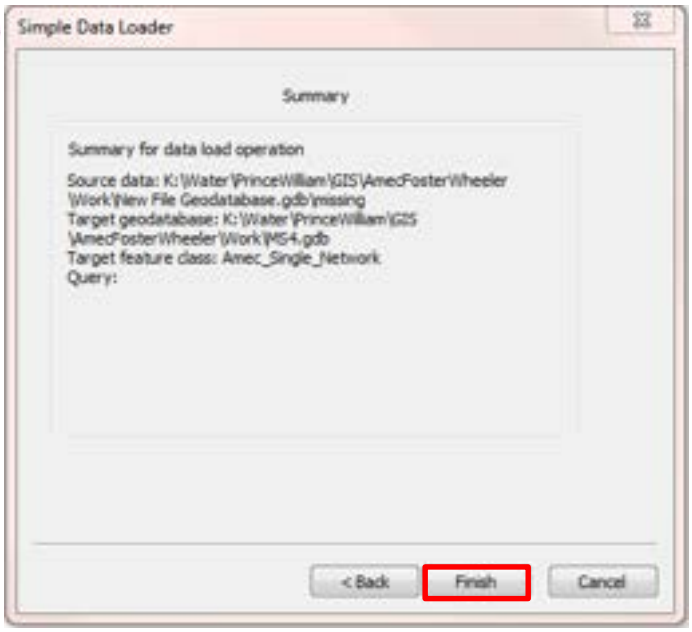
Make sure that the relevant fields from the new or missing data (‘Matching Source Field’) match the existing feature class (‘Target Field’).

9



Click the 'Load all of the source data' radio button. Then select 'Next >'.

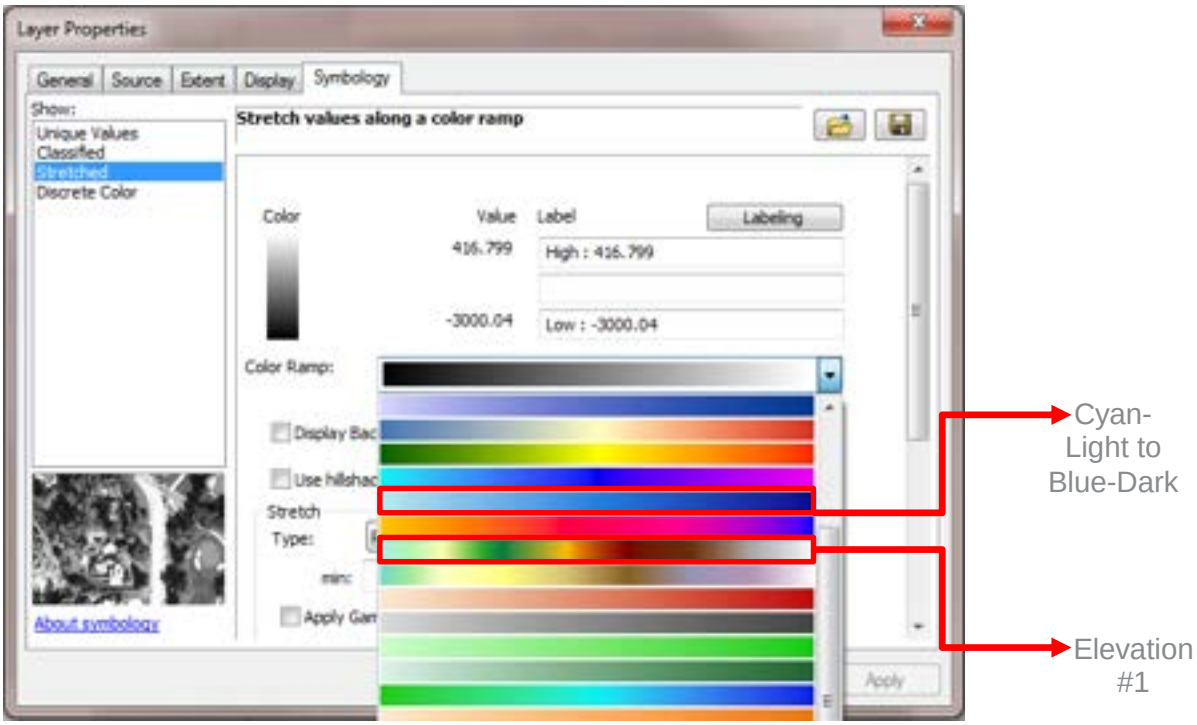
10



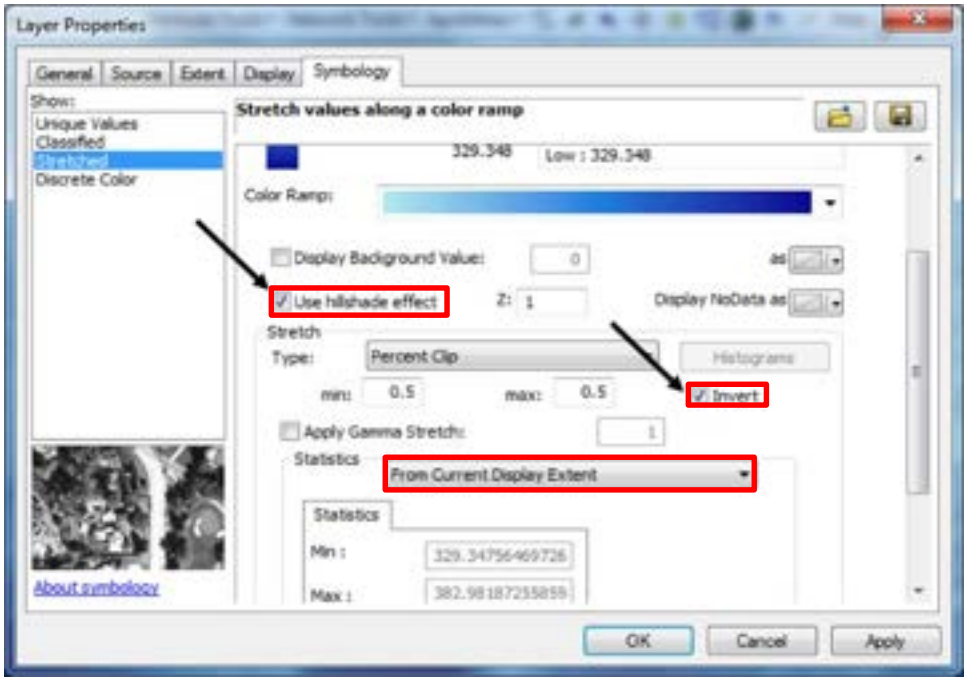
Select 'Finish'.

Figure 8. Depicts post-2009 development along Highway 15 and I-66 in Haymarket, VA. The image on the left shows the location in 2009, while the image on the right shows the area in 2015 after loading the new data into the Amec Single Network. Newly added segments still require editing to create a hydrologic connection. Editing procedures for creating this hydrologic connection are described below.

5.5.1 Recommendations for Setting DEM Symbology Prior to Editing

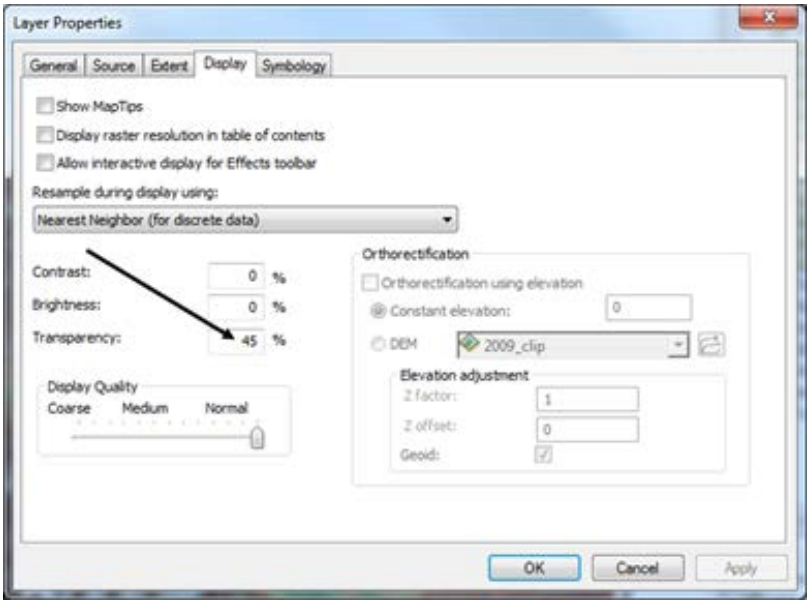


Under the Symbology tab, select the Elevation #1 color ramp. Alternatively, using the Cyan-Light to Blue-Dark color ramp is helpful when visualizing river valleys.

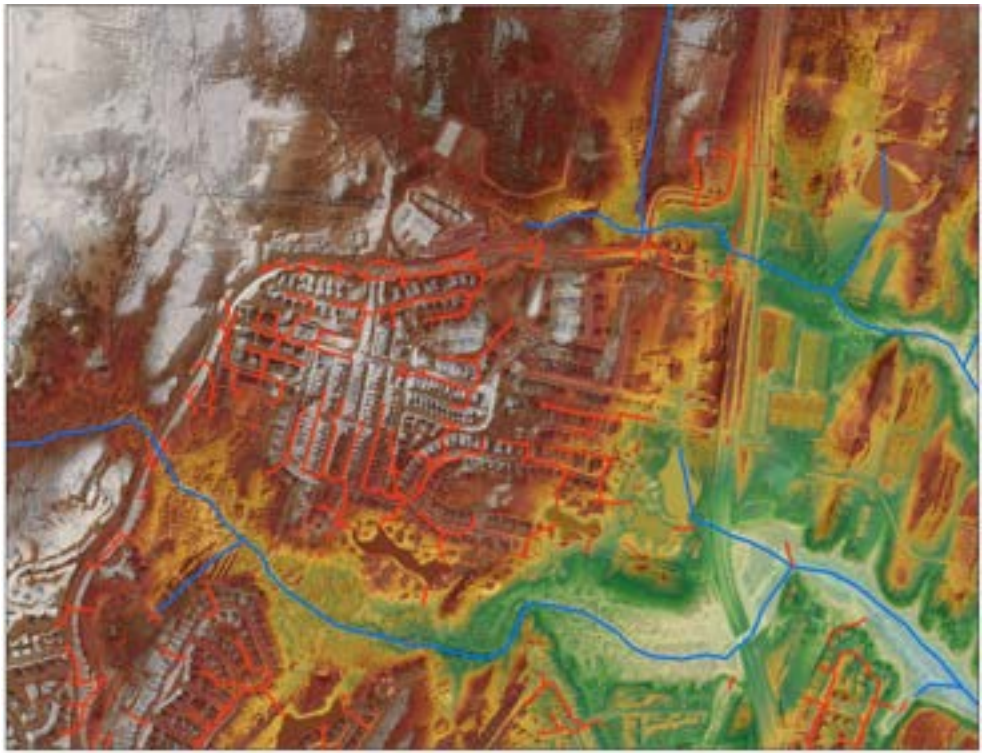


Scrolling down within the window of the Symbology tab will bring up the 'Stretch' menu. Under 'Statistics', select 'From Current Display Extent'. This will create a dynamic DEM display within

the map document, allowing for easier visualization of local flow patterns. Additionally, select the check boxes for “Use hillshade effect”. If using the blue color ramp, select “Invert”.



Adjusting the transparency of the DEM makes the layer a useful overlay to get a sense of the topography in relation to what’s displayed in the aerial imagery. Within the Display tab, set the Transparency level to a value that allows for the aerial imagery to be clearly visible through the DEM surface (45% is recommended, see above). The resulting DEM symbology should be similar to what is shown below.



5.5.2 Assign Jurisdictional Outfalls

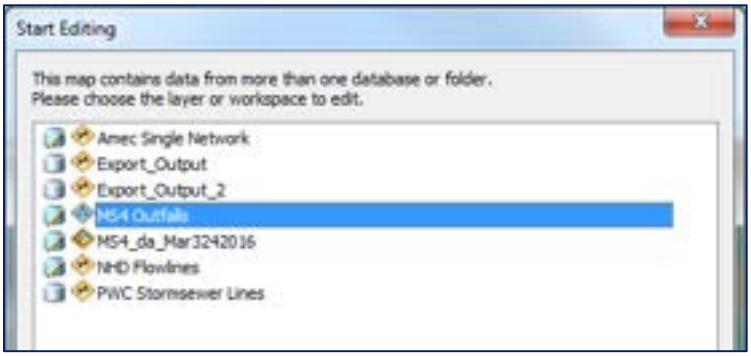
Figure 9. This view shows what the user would see after loading in a new set of stormwater infrastructure into the geodatabase. MS4 outfalls and hydrologic connections still need to be added by the user. Note the stormwater infrastructure is a disconinuous network within itself, but also lacks continuity with the NHD Flowlines.

The first step in preparing the newly loaded infrastructure for analysis within the Stormwater Tool is identifying jurisdictional outfalls and assigning proper ownership. The following examples illustrate two common situations a user may encounter where a jurisdictional outfall must be assigned: BMPs (Figure 10) and grass swales or ditches extending from subsurface pipes (Figure 11). Before we add outfalls, we must begin an editing session that will allow us to add to the infrastructure network.

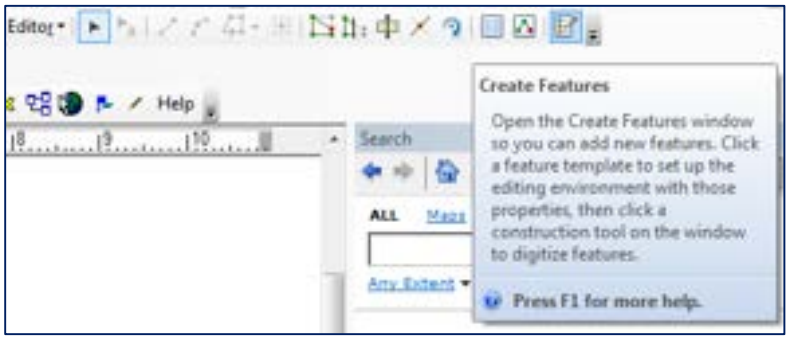
Starting an editing session

From the top ribbon within ArcMap, select Customize → Toolbars → Editor. The Editor Toolbar will appear. Click on the Editor drop down menu and select “Start Editing”.

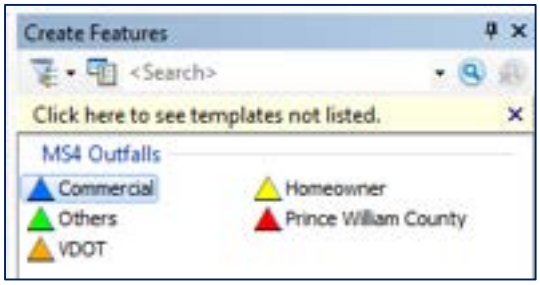
Within the Start Editing window, select the layer you will be editing. For the next session, you will be adding outfalls, so select MS4 Outfalls (or the name of the layer as it appears in the ArcMap window). You will be adding new outfalls to the layer of outfalls that have been already mapped by Amec Foster Wheeler.



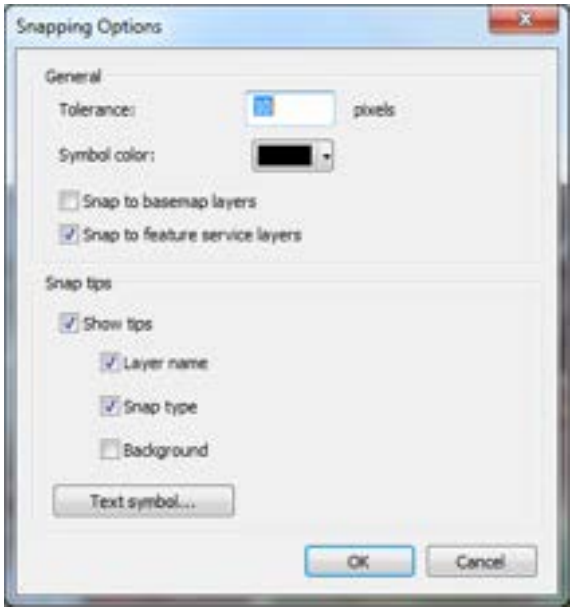
Returning to the Editor drop down menu, select Editing Windows → Create Features. The Create Features window can also be accessed from the Editor Toolbar.



Within the Create Features window, you can select which type of outfall you would like to add, by Ownership. This is explained in greter detailed previously in this document. The first outfall we will be assigning is for a commercial BMP, so select “Commercial”.



It is important to check that the points are snapping to stormwater infrastructure segments. You can access Snapping Options from the Editor drop down menu (Editor → Snapping → Snapping Options). Verify that “Snap to feature service layers” is selected.



You can now assign the commercial outfall for the BMP of interest.

Outfall Addition Example 1: BMPs

Consider the position of the BMP within the stormwater drainage network. There are two stormwater pipes draining to the pond, with flow direction heading south. This infrastructure will be connected at a later step, but for now we are concerned with assigning the outfall at the terminus of this system. Examining the NHD confirms that flow is draining south of the BMP, and an outfall is added (Figure 9).

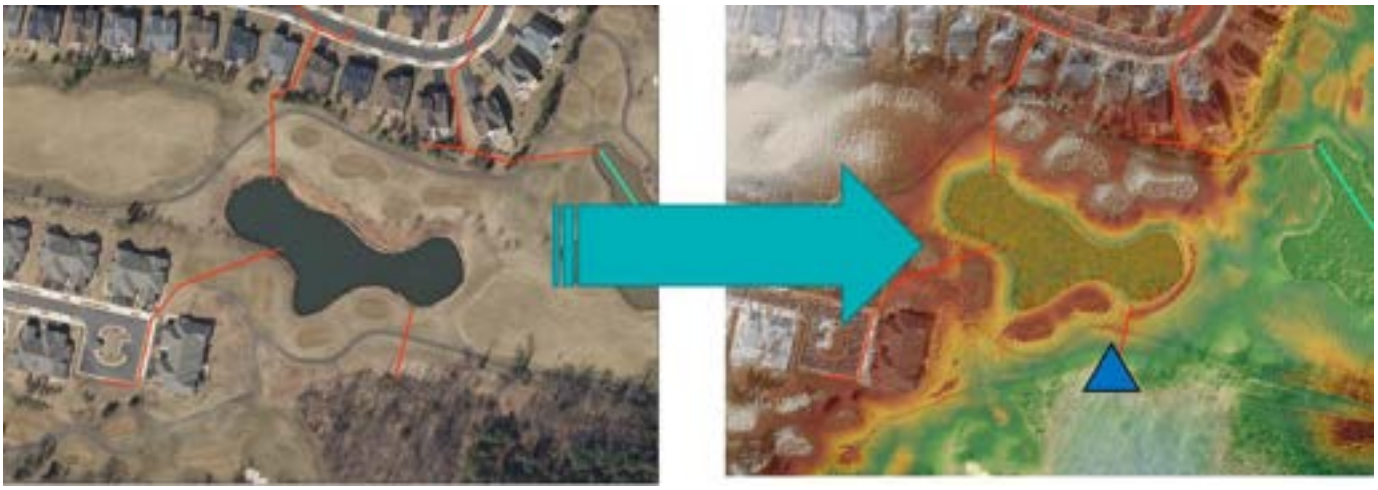


Figure 10. BMP outfall assignment. Note that the two upstream segments are not assigned outfalls, as they do not lie at the terminus of the stormsewer system.

Outfall Addition Example 2: Ditches

While the rationale behind this assignment is straightforward (the outfall is placed at the end of the line segment), it is important to note that line segments within the Stormsewer Lines or Amec

Single Network layers are not all representative of 'solid' infrastructure, such as pipes, grates, and culverts, but can represent the drainage ditches that were excavated out of the sides of hillslopes for facilitiating storm drainage to river valleys. Further aerial imagery analysis can assist in clarifying any uncertain areas.

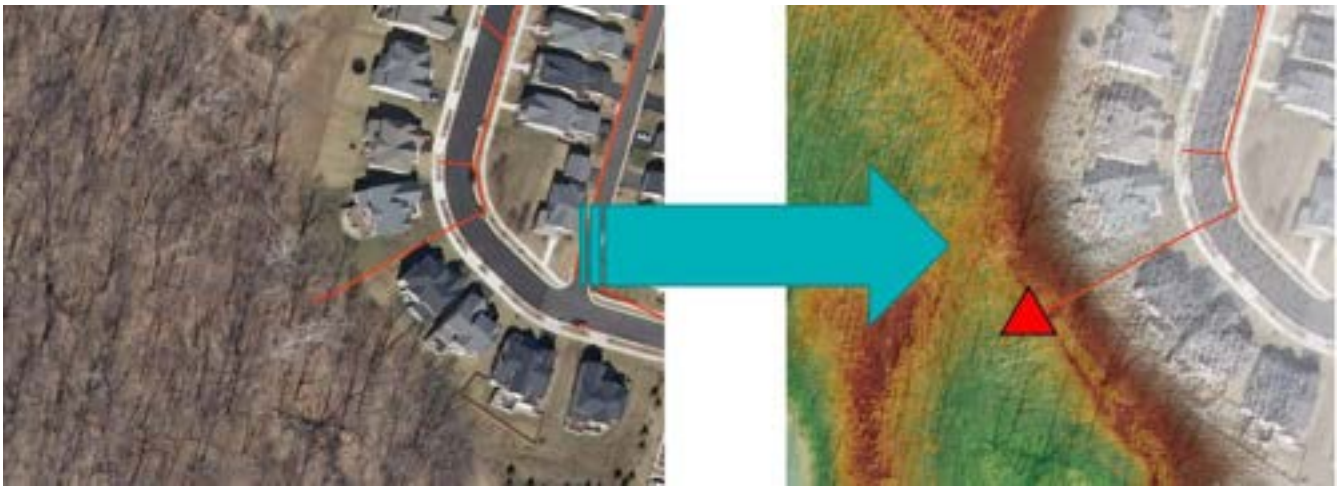


Figure 11 Rip rap ditch outfall assignment. Note that the outfall has been placed at the end of the line segment. Outfall location can be verified using other aerial imagery services, such as Bing or Google Maps.

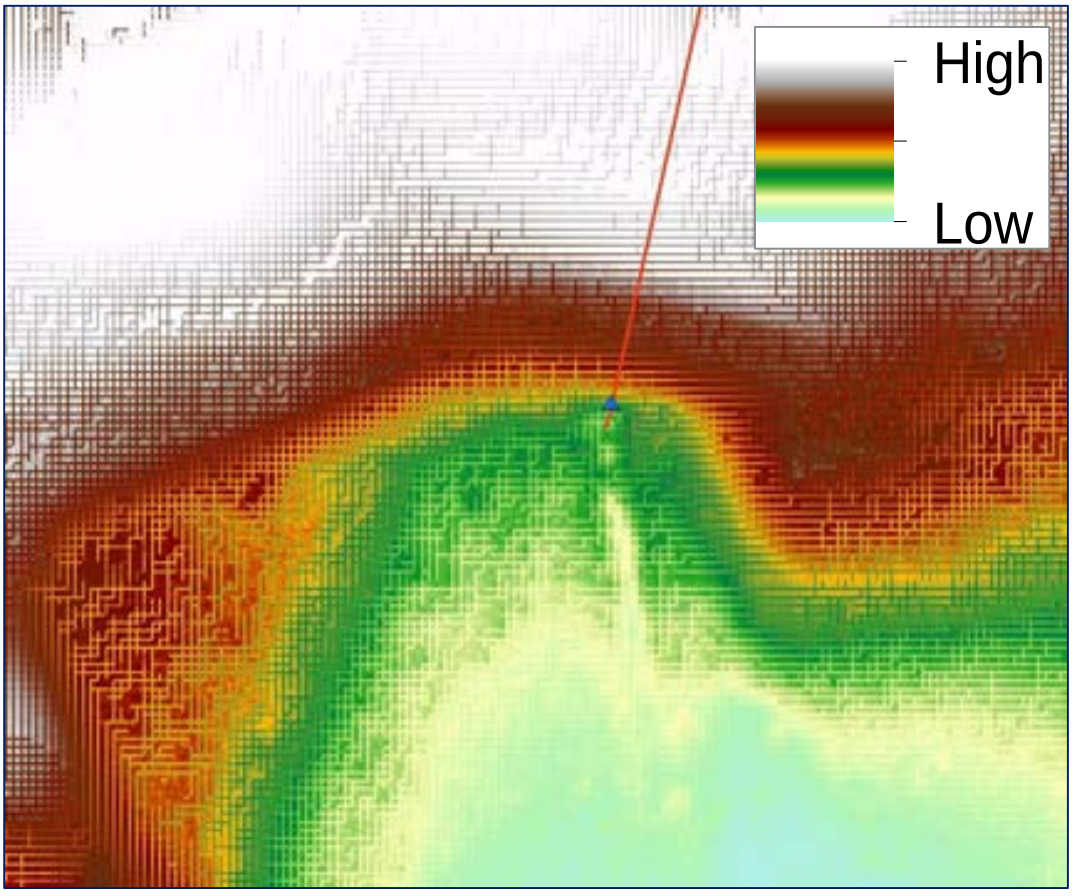


Figure 12 Enhanced view of Figure 10. It is critical to understand the rationale behind outfall placement.

Figure 12 illustrates an important point in placing outfalls. The user must not place an outfall where it will capture upstream flow that does not originate from the MS4 (i.e. river valleys). Figure 12 is an enlarged image from Example 1 from this exercise: at the terminal point of the commercial BMP drainage system. Careful outfall placement will provide the most precise results.

5.5.3 Add Hydrologic Connection

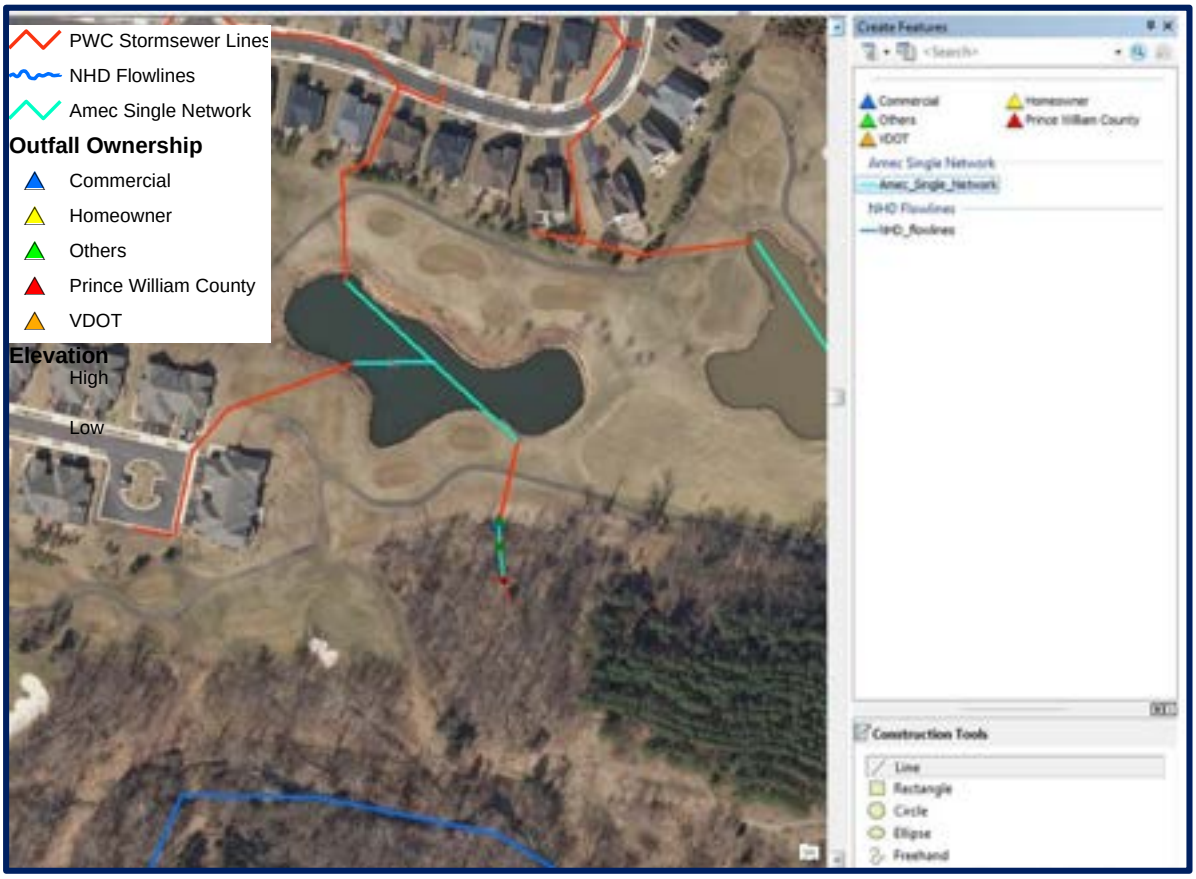


Figure 13 Opening the Create Features Toolbar will allow the user to draw segments connecting the infrastcture to NHD flowlines.

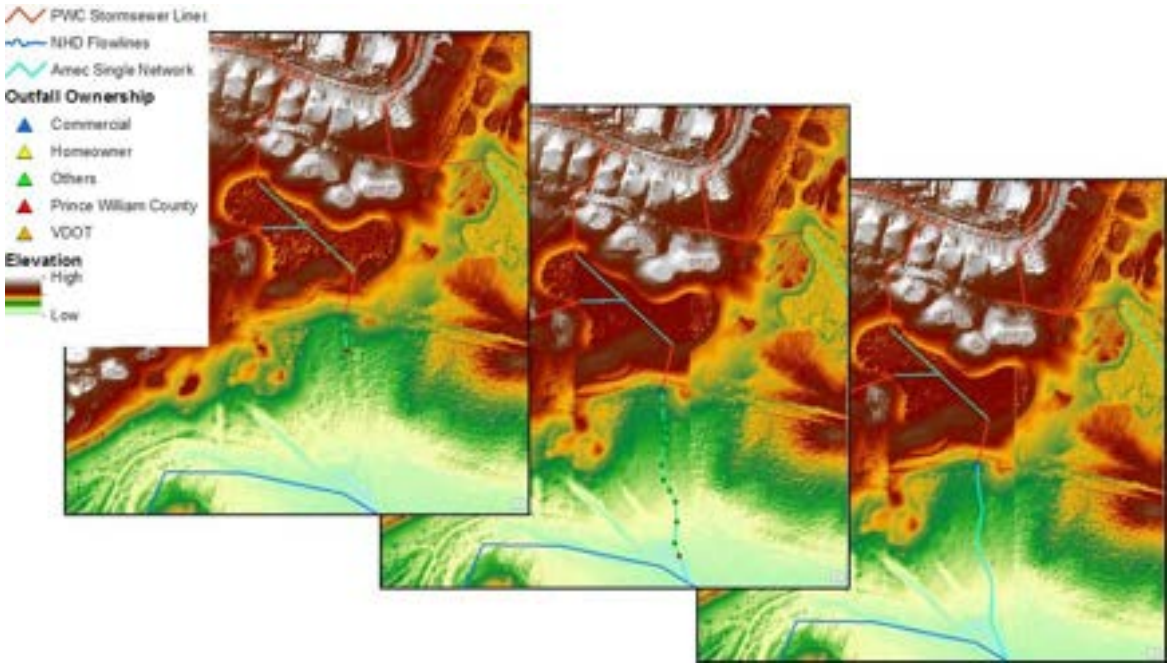


Figure 14 Addition of hydrologic connection segment originating from a BMP.

Maintaining a contiguous network of stormwater flow patters is necessary for reconditioning the DEM in a later processing step. These concepts are further explained in Sections 5.1 and 5.3. Check that the Spatial Analyst extension for your ArcMap license is enabled (Customize → Extensions → Spatial Analyst) and the Editor Toolbar is open (Customize → Toolbars → Editor). Start editing Amec_Single_Network by adding new segments connecting stormwater infrastructure to the NHD Flowlines. Use the 1 meter DEM as a reference to check that the new network is reflecting local hydrologic flow patterns. Results can be seen in Figures 14 and 15.

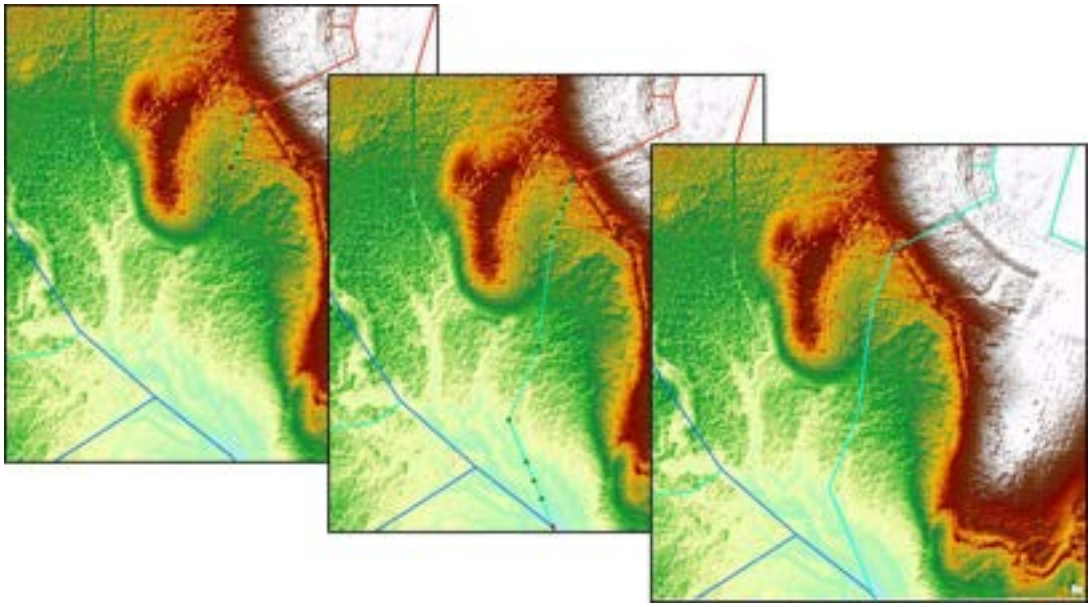


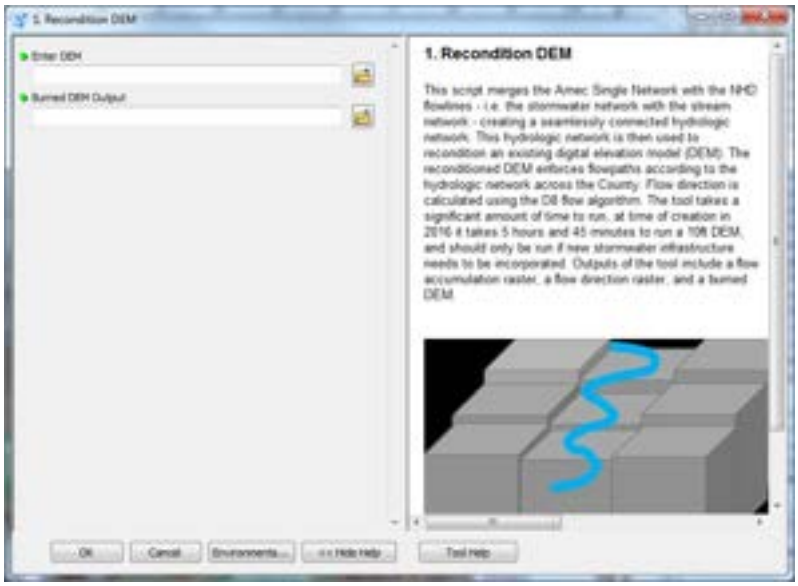
Figure 15 Addition of hydrologic connection segment originating from a drainage ditch.

5.6 Demonstration: Running the Stormwater Tool

Open a new map document without loading in any layers. Any layers that are in use during the time of the Stormwater Tool run will create a schema lock and prevent it from functioning. Navigate to “Stormwater Tool.tbx” within the catalog, and open up the first component script, “1. Recondition DEM”.

5.6.1 Recondition DEM

This component merges the stormwater network with the NHD flowlines, creating a contiguous network in order to accurately capture localized flow patterns in the reconditioned DEM. This allows for the Stormwater Tool to effectively model stormwater flow at a county-wide scale using simple surface flow hydrology principles.



Enter DEM: Specifies the DEM to be reconditioned. Any DEM can be used; however, the resolution should be at least 10 feet (or 3 meters). Increases in resolution will result in longer processing time. A suitable 3 meter DEM of the County is included in the MS4.gdb.

Burned DEM Output: Specifies the output location for the reconditioned DEM. Select “scratch.gdb” and name the output “burned”. Alternatively, it can be stored wherever the user desires.After the desired input and output locations are specified, click ‘OK’ to begin processing. The reconditioned DEM should display a network of cells that overlaps with the NHD and

Stormwater Network polylines. Overlaying the 'burned' DEM with the demonstaration area will show a similar visual as seen below:

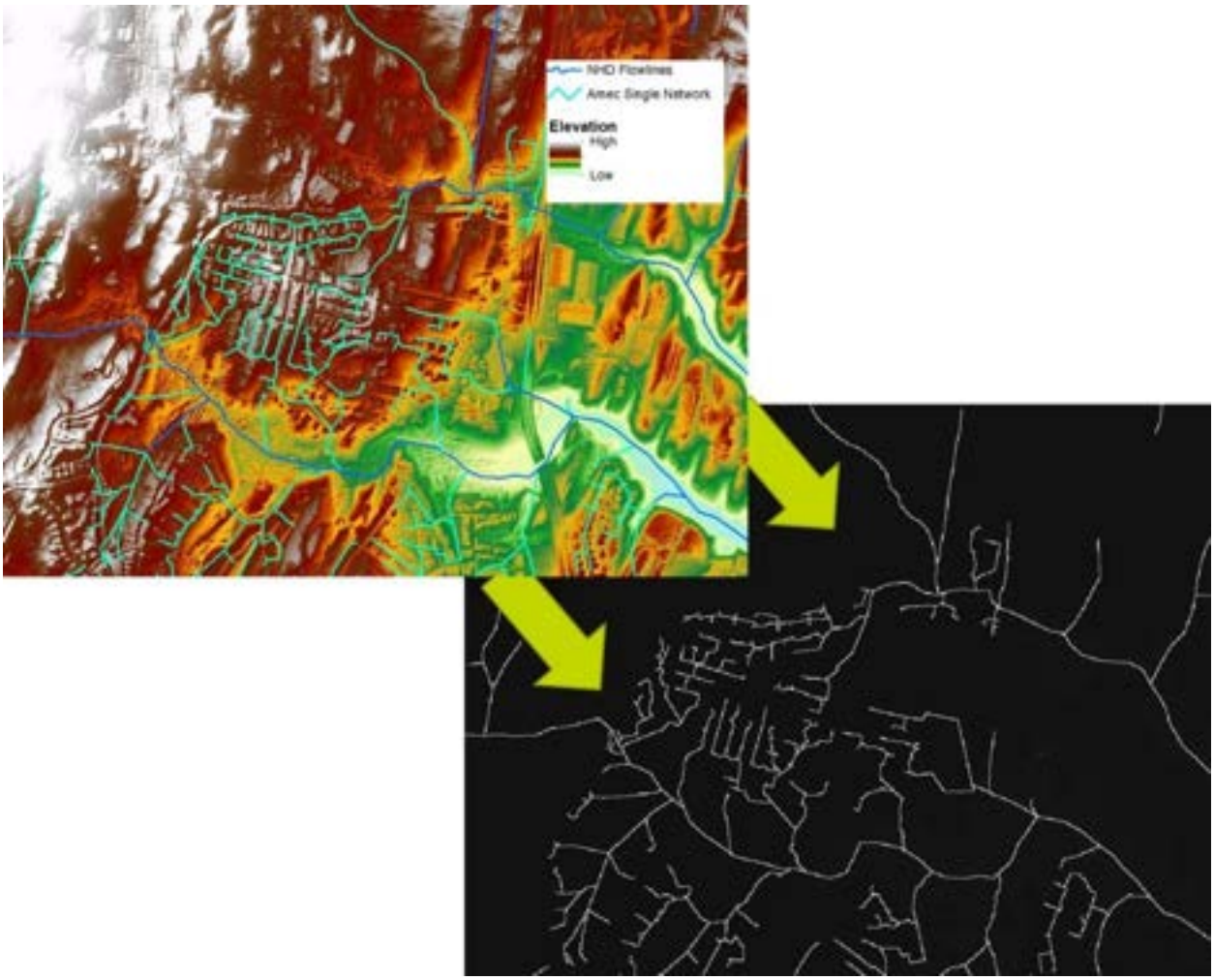
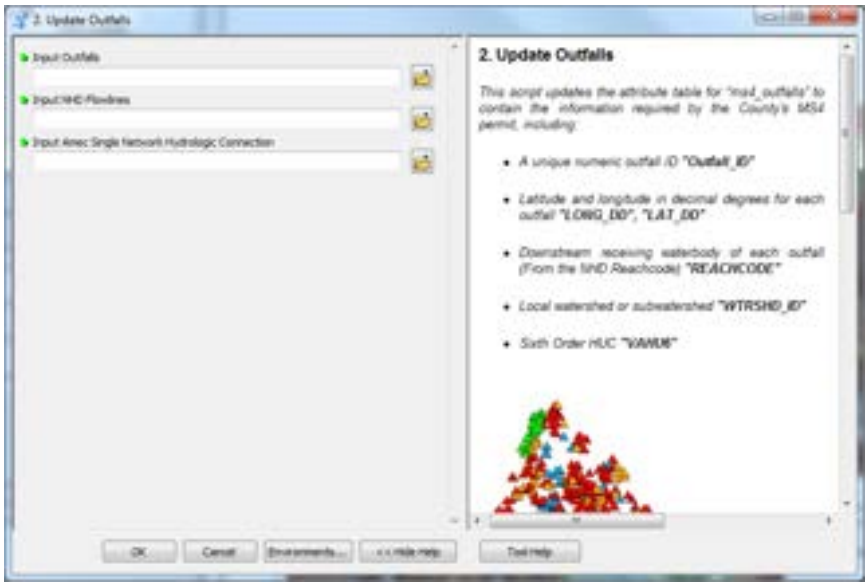


Figure 16 The DEM displays the merged stormwater infrastructure and hydrologic connection networks and NHD Flowlines (collectively known as the Amec Single Network) that were burned into the DEM raster surface. The stark contrast in elevation shows the 'canyons' created by the DEM reconditioning. Using this reconditioned DEM ensures the calculated flow accumulation captures accurate storm flow overland into stormwater conveyances.

5.6.2 Update Outfalls



This component does not produce any new layers that can be observed. Outfall attribute data are being updated to serve in the County's record keeping as required by *Part I.B.2.h) 4)* of their VSMP Permit.

This component uses "joins" to update the attribute table for "ms4_outfalls" so that the Stormwater Tool outputs contain information required by the County's MS4 permit.

- It assigns a unique outfall ID to each point for use in later tool functions
- It finds the points of intersection between the County's stormwater network and NHD flowlines to identify receiving waterbodies for each outfall, performs a watershed delineation to these points, and then spatially joins the Reach Code for each relevant branch with its outfall.
- It identifies the lat/long for each outfall
- It identifies the HUC12 and Local Watershed (fifth and sixth order) that each outfall discharges stormwater

Input Outfalls: Input the outfall point feature class to assign information. To input the County's MS4 outfalls, navigate to the "Outfalls" feature dataset in the MS4.gdb and select "ms4_outfalls"

Input NHD Flowlines: Specifies the NHD flowlines used to assign receiving waterbody information. Navigate to the "Network" feature dataset and select "NHD_flowlines".

Input Amec Single Network Hydrologic Connection: Specifies the stormwater network to be used. Navigate to the "Network" feature dataset and select "Amec_Single_Network".

The following information has been added to the attribute data for "ms4_outfalls": receiving waterbody, local watershed (Virginia Sixth Order), HUC12, and latitude/longitude coordinates. You can verifiy this by opening the attribute table (Figure 17).

Table

OBJECTID *	SHAPE *	Ownership	Origin	Outfall_ID	REACHCODE	VAHU5	VAHU6	HUC_12
1	Point	Prince William County	BMP	1	02070010003058	PL-O	PL41	020700100801
2	Point	Commercial	RRD	2	02070010001992	PL-N	PL42	020700100701
3	Point	Prince William County	GD	3	02070010001981	PL-N	PL42	020700100701
4	Point	Prince William County	GD	4	02070010001977	PL-N	PL42	020700100701
5	Point	Prince William County	GD	5	02070010002023	PL-N	PL42	020700100701
6	Point	Prince William County	GD	6	02070010000835	PL-N	PL42	020700100701
7	Point	Commercial	BMP	7	02070010000835	PL-N	PL42	020700100701
8	Point	Others	STP	8	02070010000849	PL-N	PL42	020700100701
9	Point	VDOT	STP	9	02070010002060	PL-N	PL42	020700100701
10	Point	Commercial	BMP	10	02070010000848	PL-N	PL42	020700100701
11	Point	Commercial	BMP	11	02070010000848	PL-N	PL42	020700100701

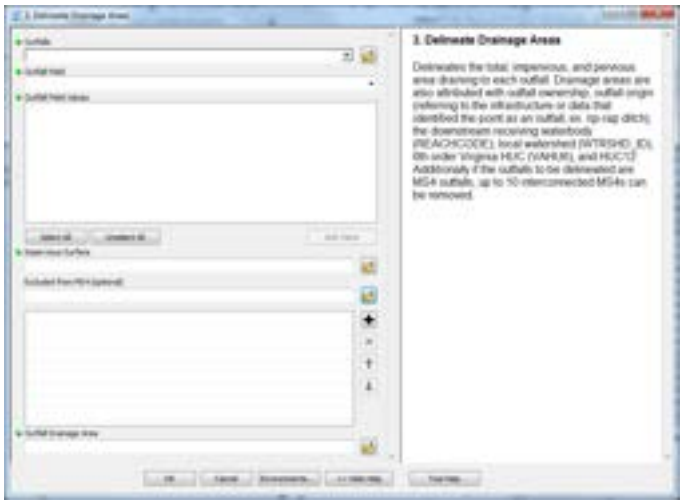
1 (0 out of 4841 Selected)

Amec Single Network | PWC Stormsewer Lines

Figure 17 Attribute table for resulting updated outfall information.

5.6.3 Delineate Drainage Areas

This component delineates the drainage area to each outfall, and then assigns the relevant data mentioned in 'Update Outfalls' tool from the corresponding outfalls.



- After performing the watershed delineation for each outfall in ms4_outfalls, it converts the resulting rasters to polygons
- It calculates the total pervious area contributing runoff within each drainage area by erasing the impervious area from the total drainage area
- It calculates the total impervious area contributing runoff by subtracting the pervious area from the total area for each drainage area polygon
- It spatially joins the attribute information from "ms4_outfalls" to the drainage area polygons by identifying each polygons' corresponding outfall that lies "within" the polygon.

Note that use of this component will cause the Frequency tool to concurrently run as the user makes a selection of Field categories to select outfall ownership types. This is due to validation Python code that interacts with ArcMap and updates field values to be selectable for the user.

Input Outfall Points: Requires the drainage delineation point input file. Attribute information for *"ms4_outfalls"* has now been updated. Navigate to the "Outfalls" feature dataset and select it.

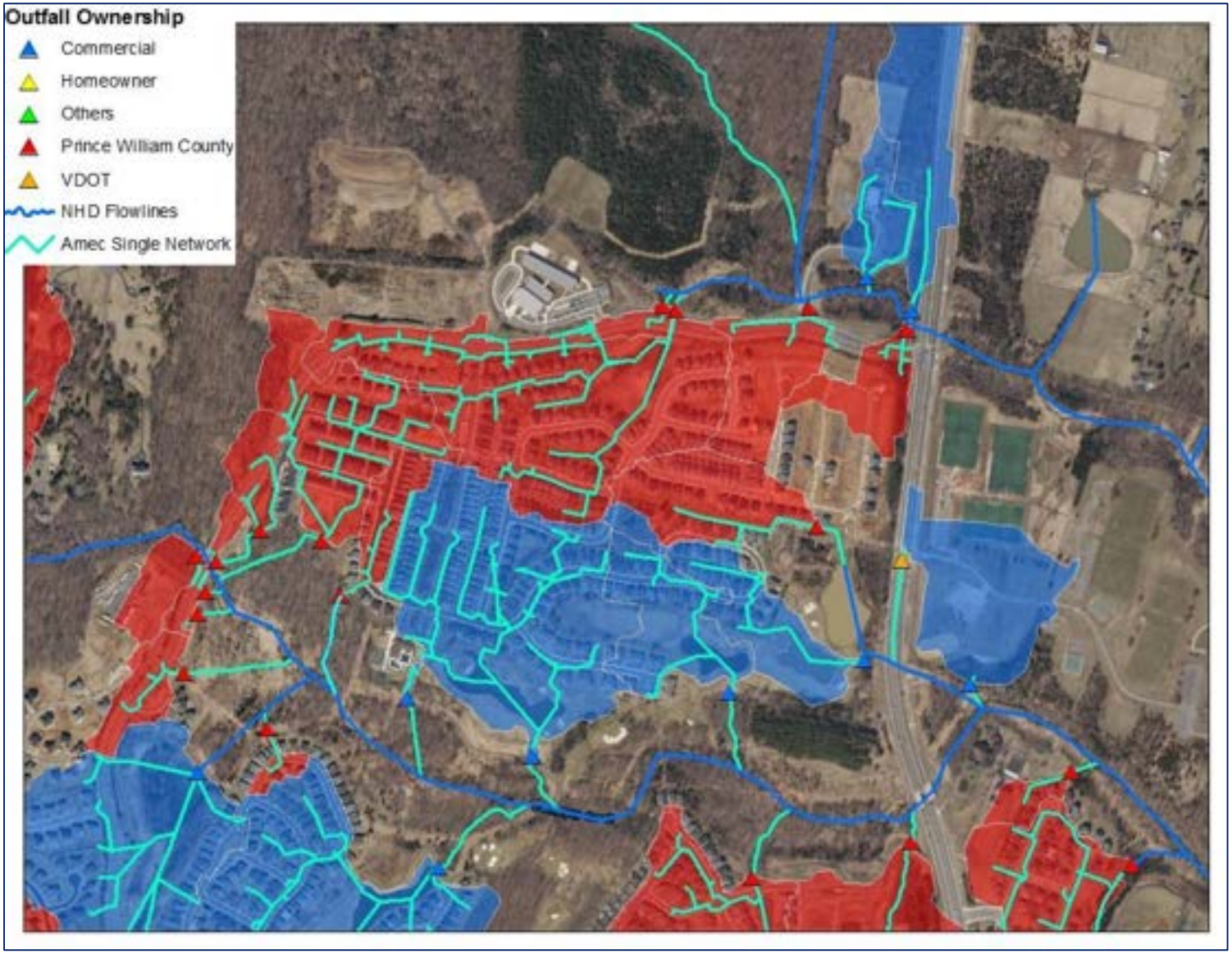
Outfall Field: Specifies the field from the attribute table that the MS4 drainage area selection will use. Choose *"Ownership"* from the drop-down menu.

Outfall Field Values: Allows the user to select which values to select from the specified field in the "ms4_outfalls" attribute table. The subarea for this exercise only contains outfalls owned and maintained by the County and Other entities. Select "County" and "Other".

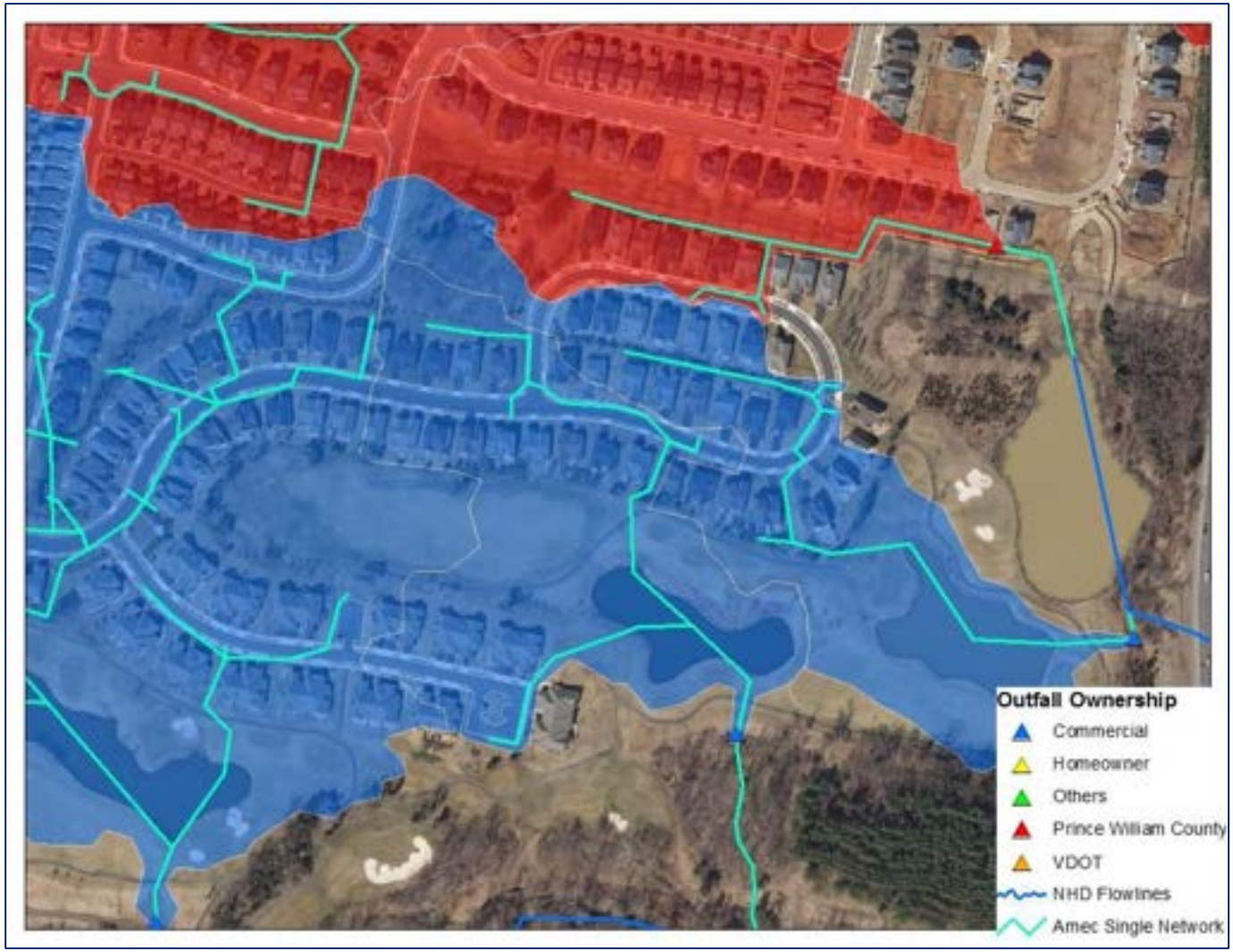
Impervious Surface: Lets the user specify which impervious surface data to use to determine the impervious area for each drainage area. This allows the County to update their drainage areas with each permit cycle (impervious data from 2009 will be used in phase 1 of the cycle).

Excluded from MS4: Permits the user to remove areas that should be excluded from the MS4 drainage area calculations. This includes interconnected MS4s (e.g. VDOT) and areas specifically excluded from regulated urban impervious and pervious cover, such as forested lands. These are all contained in the feature dataset "Interconnected".

Outfall Drainage Area: Specifies the file name and location for the output of the component. Once a filename is specified, the 'Delineate Drainage Areas' tool may be run.


Outfall Ownership
Commercial
Homeowner
Others
Prince William County
VDOT
NHD Flowlines
Amec Single Network

Focusing in on a familiar area can reveal more about the particular details of the contributing stormsewer system. Notice that the area drained by the Amec Single Network and the NHD flowlines are flowing to the outfalls, which serve as accumulation nodes for those upstream networks of pipes, streams, and BMPs.



Finally, users attempting to determine the MS4 service area should remove all excluded lands contained in the 'Interconnected' feature dataset. This can be achieved in the *'Delineate Drainage Areas'* component in the *'Excluded from MS4'* parameter. The result of removing these areas from the MS4 service area (undeveloped forested land, interconnected MS4s, and VPDES permitted entities) is depicted below.

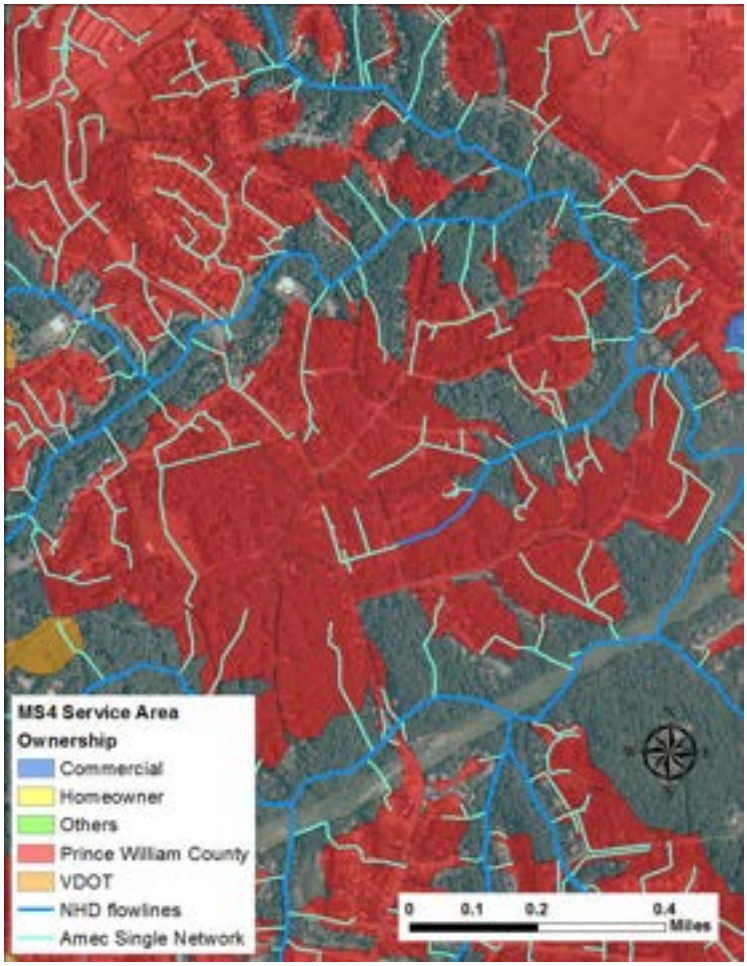


Figure 18 MS4 Service Area Before Removing Excluded Areas

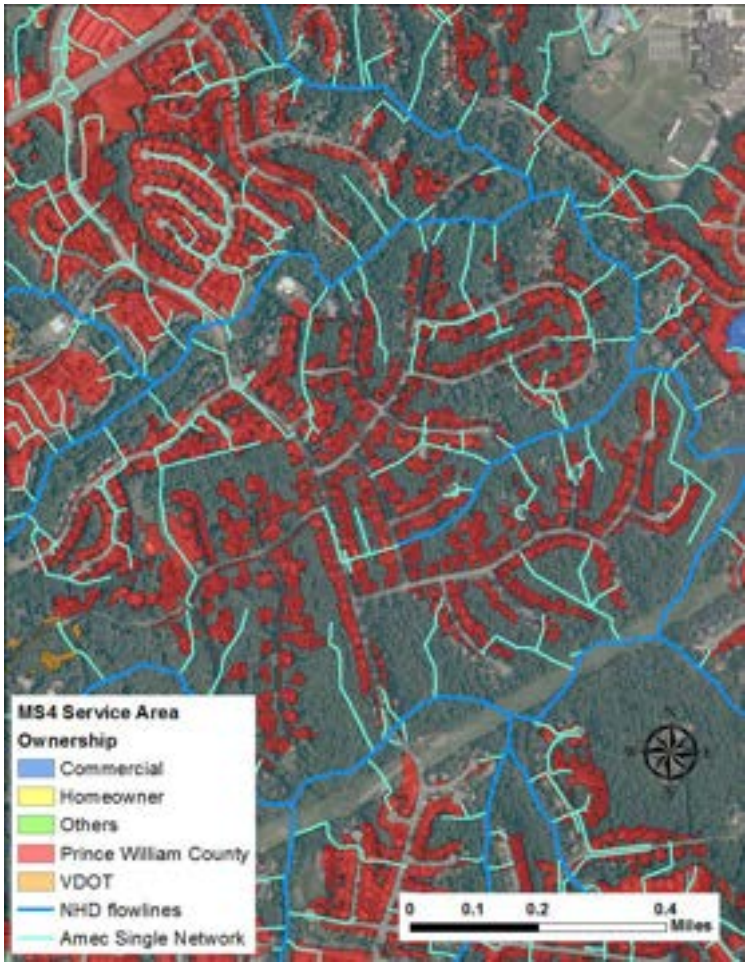


Figure 19 MS4 Service Area After Removing Excluded Areas

6 Appendix A: Source Code

```
# ---------------------------------------------------------------------------------------------------------------------
# Name:                 Recondition_DEM.py
# Purpose:              This tool reconditions a digital elevation model (DEM) to include new
                        segments of the stormwater network.
# Author:               John P. Miller
# Copyright:(c)         Amec Foster Wheeler | Prince William County, Virginia
# ArcGIS Version:       10.2
# Python Version:       2.7.3
# ---------------------------------------------------------------------------------------------------------------------

# Import the Modules
import arcpy, sys, os
from arcpy import env
from arcpy.sa import *

# Checkout Spatial License (Required!)
arcpy.CheckOutExtension("spatial")

# Overwrite Existing Files!
arcpy.env.overwriteOutput = True

# Get Relative Paths
rootWS = os.path.dirname(sys.path[0])
MS4 = os.path.join(rootWS,'MS4.gdb')

# Set Env Variables
arcpy.env.workspace = MS4
arcpy.env.scratchWorkspace = rootWS

# Prompt User for DEM Pathname
DEM = arcpy.GetParameterAsText(0)
if (not DEM):
    arcpy.AddMessage("Select your DEM")
    DEM = raw_input("Enter the DEM File Pathway")

# Project DEM to "NAD_1983_StatePlane_Virginia_North_FIPS_4501_Feet"
DEM_proj = os.path.join(arcpy.env.scratchGDB,"DEM_proj")
spatialRef =
"PROJCS['NAD_1983_StatePlane_Virginia_North_FIPS_4501_Feet',GEOGCS['GCS_North_America
n_1983',DATUM['D_North_American_1983',SPHEROID['GRS_1980',6378137.0,298.257222101]],PRI
MEM['Greenwich',0.0],UNIT['Degree',0.0174532925199433]],PROJECTION['Lambert_Conformal_Co
nic'],PARAMETER['False_Easting',11482916.66666666],PARAMETER['False_Northing',6561666.666
666666],PARAMETER['Central_Meridian',-
78.5],PARAMETER['Standard_Parallel_1',38.03333333333333],PARAMETER['Standard_Parallel_2',
```

```
39.2],PARAMETER['Latitude_Of_Origin',37.66666666666666],UNIT['Foot_US',0.3048006096012192]
]"
arcpy.ProjectRaster_management(DEM, DEM_proj, spatialRef, "BILINEAR")

# Set Raster Environment Settings
arcpy.env.snapRaster = DEM_proj
arcpy.env.cellSize = DEM_proj
arcpy.env.mask = DEM_proj

# Local Variables:
Network = os.path.join(MS4,'Network')
NHD_flowlines = os.path.join(Network,"NHD_flowlines")
Amec_Single_Network = os.path.join(Network,"Amec_Single_Network")
merged_network = os.path.join(arcpy.env.scratchGDB, "merged_network")
merged_stormwater_raster = os.path.join(arcpy.env.scratchGDB, "merge_storm")
assignmentType = "Maximum_Combined_Length"
priorityField = "Shape_Length"
DEM_resolution = arcpy.Describe(DEM_proj).meanCellHeight

# Geoprocessing
# Add "Burn" Field and Calculate Burn Depth for Amec_Single_Network
arcpy.AddField_management(Amec_Single_Network, 'Burn', 'Double')    # Add 'Burn' field to
Amec_Single_Network
arcpy.CalculateField_management(Amec_Single_Network, "Burn", -2000) # Calculate 'Burn' value of
-2000 feet for stormsewer infrastructure and hydrologic connections

# Add "Burn" Field and Calculate Burn Depth for NHD_flowlines
arcpy.AddField_management(NHD_flowlines, 'Burn', 'Double')        # Add 'Burn' field to
NHD_flowlines
arcpy.CalculateField_management(NHD_flowlines, "Burn", -3000) # Calculate 'Burn' value of -2000
feet for streams

# Merge Amec_Single_Network with the Modified NHD_flowlines
arcpy.Merge_management([Amec_Single_Network, NHD_flowlines], merged_network)

# Convert Merged Network to Raster with Burn Depth as the Value and the Cellsize Based on the
DEM
arcpy.PolylineToRaster_conversion(merged_network, "Burn", merged_stormwater_raster,
assignmentType, priorityField, DEM_resolution)

# Reclassify NoData Cells to Zero
reclass_dem = Reclassify(merged_stormwater_raster, "Value",
                                                    RemapValue([[-3000,-3000],[-2000,-
2000],["NODATA", 0]])) # NHD Flowlines at -3000, Amec_Single_Network at -2000 and Everything
Else (land cells) at 0
reclass_dem.save(os.path.join(arcpy.env.scratchGDB,"reclass_dem"))
          # Save reclassified DEM as "reclass_dem" in scratchGDB
```

```
# Burn the Streams into the Original DEM by Dropping the Stream and Stormsewer Network
Burned_DEM = arcpy.GetParameterAsText(1)                                    # Set the
hydrologically reconditioned DEM as the second parameter
if (not Burned_DEM):                                                        # If
statement to prompt for file pathway to save the hydrologically reconditioned DEM
   arcpy.AddMessage("Enter Output Location for Burned DEM") # Python message to appear when
running as standalone script
   Burned_DEM = raw_input("Enter Burned DEM Ouput")          # Prompts second parameter
outPlus = Plus(DEM_proj, reclass_dem)                                       # Use raster math
to add the burned DEM with the original DEM. Results in a hydrologically reconditioned DEM
outPlus.save(Burned_DEM)                                                    # Save the
hydrologically reconditioned DEM

# Fill DEM
Fill_DEM = Fill(outPlus)                                                    # Fill pits
and depressions
Fill_DEM.save(os.path.join(arcpy.env.scratchGDB,"fill"))    # Save filled DEM as "fill" in scratchGDB

# Flow Direction
Flow_Dir = FlowDirection(Fill_DEM,"NORMAL") # Calculate the flow direction of each cell using the
D8 algorithm from O'Callaghan & Mark, 1984
Flow_Dir.save(os.path.join(MS4,"flow_dir")) # Save flow direction as "flow_dir" in MS4.gdb

# Flow Accumulation
Flow_Acc = FlowAccumulation(Flow_Dir)          # Calculate the number of upstream cells that flow
into each cell using the flow accumulation tool
Flow_Acc.save(os.path.join(MS4,"flow_acc"))    # Save flow accumulation as "flow_acc" in
MS4.gdb

# ---------------------------------------------------------------------------------------------------------------------
# Name:                 Update_Outfalls.py
# Purpose:              This tool updates the latitude, longitude, unique ID, receiving waterbody,
                        local watershed, and 6th order HUC
#                       for each outfall.
# Author:               John P. Miller
# Copyright:(c)         Amec Foster Wheeler | Prince William County, Virginia
# ArcGIS Version:       10.2
# Python Version:       2.7.3
# ---------------------------------------------------------------------------------------------------------------------
# Import the Modules
import arcpy, sys, os
from arcpy import env
from arcpy.sa import *

# Checkout Spatial License (Required!)
arcpy.CheckOutExtension("spatial")

# Overwrite Existing Files!
```

```
arcpy.env.overwriteOutput = True

# Get Relative Paths
rootWS = os.path.dirname(sys.path[0])
MS4 = os.path.join(rootWS,'MS4.gdb')

# Set Environment Variables
arcpy.env.workspace = MS4
arcpy.env.scratchWorkspace = rootWS

# Set Globals Variables
inFlowDirection = os.path.join(MS4,"flow_dir")
inFlowAccum = os.path.join(MS4,"flow_acc")
Outfalls = os.path.join(MS4,"Outfalls")
DEM_proj = os.path.join(arcpy.env.scratchGDB,"DEM_proj")
DEM_resolution = arcpy.Describe(DEM_proj).meanCellHeight
InputFeatureClass_copy = os.path.join(arcpy.env.scratchGDB, "InputFeatureClass_copy")
outfall_WB = os.path.join(arcpy.env.scratchGDB, "outfall_WB")
outfall_ReceivingWB = os.path.join(arcpy.env.scratchGDB, "Outfall_ReceivingWB")
ReceivingWB_Pts = os.path.join(arcpy.env.scratchGDB, "ReceivingWB_Pts")
WB_pourpoints = os.path.join(arcpy.env.scratchGDB,"WB_pourpoints")
WB_outfall_poly = os.path.join(arcpy.env.scratchGDB, "WB_outfall_poly")
WB_outfall_da_ras = os.path.join(arcpy.env.scratchGDB,"WB_outfall_da_ras")
WB_sheds = os.path.join(arcpy.env.scratchGDB, "WB_sheds")
WB_da = os.path.join(arcpy.env.scratchGDB, "WB_da")
Polygons = os.path.join(MS4,"Polygons")
HUC12 = os.path.join(Polygons,"HUC12")
outfall_HUC = os.path.join(arcpy.env.scratchGDB,"outfall_HUC")
Subwatersheds = os.path.join(Polygons,"Subwatersheds")
outfall_sheds = os.path.join(arcpy.env.scratchGDB,"outfall_sheds")
outfall_layer = os.path.join(arcpy.env.scratchGDB,"outfall_layer")

# Prompt User for Outfalls Pathname
InputFeatureClass = arcpy.GetParameterAsText(0)
                                # Set outfalls as first parameter
if (not InputFeatureClass):
                                                # If statement to prompt for outfall feature class
   arcpy.AddMessage("Select the points you want to delineate")
        # Python message to appear when running as standalone script
   InputFeatureClass = raw_input("Enter the File Pathway for Your Delineation Points") # Prompts first
parameter

# Prompt User for NHD Flowline Pathname
nhdInput = arcpy.GetParameterAsText(1)                  # Set NHD_flowlines as second parameter
if (not nhdInput):                                                      # If statement to prompt for
polyline feature class
   arcpy.AddMessage("Select NHD Flowlines")      # Python message to appear when running as
standalone script
```

```
    nhdInput = raw_input("Enter NHD Flowlines") # Prompts second parameter

# Prompt User for Stormwater Network Pathname
networkInput = arcpy.GetParameterAsText(2)                                  # Set
Amec_Single_Network as third parameter
if (not networkInput):                                                      # If
statement to prompt for polyline feature class
    arcpy.AddMessage("Select Stormwater Network")                           # Python message to
appear when running as standalone script
    networkInput = raw_input("Enter Amec Single Network") # Prompts third parameter

# Add Unique IDs to Drainage Points Using "Outfall_ID" Field Name, Sequentially Created
existingFields = []                                                         # Empty list
for field in arcpy.ListFields(InputFeatureClass):       # Iterate over fields
    existingFields.append(field.name)                       # Add the attribute name to list for each
field

# Create String to Use as Field Name
Outfall_ID = "Outfall_ID"
if Outfall_ID not in existingFields:                                        #
Verify if field "Outfall_ID" exists
    arcpy.AddField_management(InputFeatureClass, 'Outfall_ID', 'LONG')  # If field "Outfall_ID" doesn't
exists, create it
else:
                                # If above statement is false, then
    print "Outfall_ID field already exists, no need to add"                 # If field "Outfall_ID" does
exist, do nothing

# Calculate a Unique Identifier for Each Outfall Missing an ID in the 'Outfall_ID' Field (1, 2, 3, etc.)
with arcpy.da.UpdateCursor(InputFeatureClass, Outfall_ID) as rows:      # Create an update cursor
to go through each row in the Outfall_ID field
    for i, row in enumerate(rows, start=1):                 # For each value in row, a tuple is produced
with (counter, row); the for loop binds that to variable 'i' and row respectively
        if row[0] is None:                              # If an outfall ID has not been assigned (in attribute
table as <NULL>)
            row[0] = i                              # Substitute the index counter value (1, 2, 3, etc.) for
Outfall_ID value in each row
        elif row[0] is not None:                        # If an outfall ID has already been assigned (i.e. not
<NULL>)
            print "No IDs to add"                       # Do nothing
        rows.updateRow(row)                             # Update this row in the table

# Create Points at the Intersection of the Stormwater and Stream Network
arcpy.Intersect_analysis([nhdInput, networkInput], ReceivingWB_Pts, "No_FID", DEM_resolution,
"point")

# Add Unique IDs to the Intersection Points Using "WB_Pt_ID" Field Name
WB_Fields = []                                                              # Empty list
```

```
for field in arcpy.ListFields(ReceivingWB_Pts):        # Iterate over fields
   WB_Fields.append(field.name)                              # Add the attribute name to list for each
field

WB_Pt_ID = "WB_Pt_ID"
                  # Create field name as string
if WB_Pt_ID not in WB_Fields:
         # Check if an ID number for the intersection points exists
   arcpy.AddField_management(ReceivingWB_Pts, 'WB_Pt_ID', 'LONG')  # If ID number does not
exist already, create field in attribute table
else:
                           # Otherwise
   print "WB_Pt_ID exists"
         # If field already exists skip

# Calculate a Unique Value for Each Receiving Waterbody Point (ReceivingWB_Pts) Starting with 1
(1, 2, 3, etc.)
with arcpy.da.UpdateCursor(ReceivingWB_Pts, WB_Pt_ID) as rows:                # Create an update
cursor to go through each row in the Outfall_ID field
   for i, row in enumerate(rows,1):                                                    # For each
value in row, a tuple is produced with (counter, row); the for loop binds that to variable 'i' and row
respectively
      row[0] = i
         # Substitute the index counter value (1, 2, 3, etc.) for Outfall_ID value in each row
      rows.updateRow(row)
         # Update this row in the table

# Snap Intersecting Points to Flow Accumulation Pathway to Ensure Proper Delineation
if arcpy.Exists(WB_pourpoints):                    # Check if this snap pour points raster already
exists
   arcpy.Delete_management(WB_pourpoints)       # If it already exists, delete it
else:                                                                  # Otherwise
   print "Snap pour points"                          # Do nothing

# Snap the points created from intersecting the Amec_Single_Network and NHD_flowlines to the
adjacent cell in the 3 x 3 cell window with the highest flow accumulation value
WB_outSnapPour = SnapPourPoint(ReceivingWB_Pts, inFlowAccum, DEM_resolution, "WB_Pt_ID")
WB_outSnapPour.save(WB_pourpoints) # Save output as WB_pourpoints

# Delineate Drainage Area to WB Points
if arcpy.Exists(WB_outfall_da_ras):                                          # Check if the
drainage area raster for the intersecting points exists
   arcpy.Delete_management(WB_outfall_da_ras)                        # If it already exists, delete
it
else:
         # Otherwise
  print "Delineate Receiving Water Body Drainage Areas"   # Do nothing
```

```
# Delineate the upstream watersheds for each downstream receiving waterbody
WB_outfall_da_ras = Watershed(inFlowDirection, WB_outSnapPour, "VALUE")
WB_outfall_da_ras.save(os.path.join(arcpy.env.scratchGDB,"WB_outfall_da_ras")) # Save output as
WB_outfall_da_ras

# Convert Raster Drainage Areas to Polygons
arcpy.RasterToPolygon_conversion(WB_outfall_da_ras, WB_outfall_poly, "SIMPLIFY", "VALUE")

# Dissolve Watersheds by Gridcode to Eliminate Tiny Watersheds
arcpy.Dissolve_management(WB_outfall_poly, WB_da, ["gridcode"], "", "MULTI_PART",
"DISSOLVE_LINES")

# Add Receiving Waterbody information to the Waterbody Drainage Area
arcpy.MakeFeatureLayer_management(WB_da, "Waterbody_area")                # Create feature
layer for dissolved polygon upstream watersheds for receiving waterbodies
arcpy.MakeFeatureLayer_management(ReceivingWB_Pts, "WB_points") # Create feature layer for
receiving waterbody points

arcpy.JoinField_management("Waterbody_area", "gridcode", "WB_points", "WB_Pt_ID") # Join
receiving waterbody point IDs to receiving waterbody drainage areas based on "gridcode"
arcpy.CopyFeatures_management("Waterbody_area", WB_sheds)
                        # Save a copy of the feature layer as a feature class named "WB_sheds"

# Create a Copy MS4 Outfalls to Facilitate Join
arcpy.CopyFeatures_management(InputFeatureClass, InputFeatureClass_copy) # Create a copy of
the outfalls
arcpy.MakeFeatureLayer_management(InputFeatureClass_copy, "CopyLayer")          # Make
feature layer from copy of outfalls
arcpy.DeleteField_management(InputFeatureClass_copy, ["REACHCODE"])                  # In
feature class that is a copy of the outfalls

#Use Spatial Join to Add Waterbody Drainage Area to User Selected Outfall Points
arcpy.SpatialJoin_analysis(InputFeatureClass_copy, WB_sheds, outfall_WB, "", "", "",
"COMPLETELY_WITHIN")    # Join attribute table from receiving waterbody drainage areas to the
copy of the outfalls
arcpy.JoinField_management(outfall_WB, "WB_Pt_ID", "CopyLayer", "Outfall_ID")
                                        # Join Outfall ID field from feature layer of outfalls

#Delete Unnecessary Fields
fields = arcpy.ListFields(outfall_WB)
                            # Create a list with all of the fields in new outfalls feature class that
contains the receiving waterbody "REACHCODE"
WBkeepFields = ["SHAPE", "OBJECTID", "Ownership", "Origin", "Outfall_ID", "REACHCODE"]  #
Create list with these relevant field names. "Shape" and "OBJECTID" required!
WBdropFields = [x.name for x in fields if x.name not in WBkeepFields]
        # Identify fields in outfall_WB that are not in the WBkeepFields list created above.
arcpy.DeleteField_management(outfall_WB, WBdropFields)
                            # Delete fields in outfall_WB not listed in WBkeepFields
```

```
# Use Spatial Join to Add 6th Order HUC Data
arcpy.SpatialJoin_analysis(outfall_WB, HUC12, outfall_HUC, "", "", "", "WITHIN")

# Remove Unneccessary Fields
arcpy.DeleteField_management(HUC12, ["Join_Count", "TARGET_FID"])

# Use Spatial Join to Add Local Watershed
arcpy.SpatialJoin_analysis(outfall_HUC, Subwatersheds, outfall_sheds, "", "", "", "WITHIN")

# Remove Unneccessary Fields
arcpy.DeleteField_management(outfall_sheds, ["Join_Count", "TARGET_FID", "Join_Count_1",
"TARGET_FID_1", "OBJECTID_1", "AREA", "PERIMETER", "SUBAREA", "SUBAREA_",
"SUBAREA_ID", "SYMBOL", "WMPLAN", "ACRES", "MAJSHED", "SHAPE_LENG", "SHD_NAME" ])

# Overwrite Initial Outfalls Feature Class (First Parameter)
arcpy.CopyFeatures_management(outfall_sheds, InputFeatureClass)

# Add Latitude and Longitude Fields to Outfalls
LONG_DD = "LONG_DD"

if LONG_DD in existingFields:
                        # If LONG_DD field exists
   arcpy.DeleteField_management(InputFeatureClass, ["LONG_DD", "LAT_DD"])# Delete Lat/Long
Fields
else:
                                    # Otherwise
   print "Need to add Lat/Long"
                # Do nothing

# Add Outfall Location in Decimal Degrees
arcpy.AddField_management(InputFeatureClass, 'LONG_DD', 'FLOAT', 7, 5)      # Add field for
longitude in decimal degrees
LAT_DD = "LAT_DD"
                        # Create string for field
arcpy.AddField_management(InputFeatureClass, 'LAT_DD', 'FLOAT', 7, 5)        # Add field for
latitude in decimal degrees

# Calculate Latitude and Longitude Decimal Degree Coordinates for the Outfall Points
dsc = arcpy.Describe(InputFeatureClass)
                        # Use "Describe" function to determine the shape type
prjFile = os.path.join(arcpy.GetInstallInfo()["InstallDir"],
        r"Coordinate Systems\Geographic Coordinate Systems\World\WGS 1984.prj") # Datum of
data for spatial reference
spatialRef = arcpy.SpatialReference(prjFile)
                        # Coordinate system that defines what map projection options are used to
define horizontal coordinates
```

```
updCursor = arcpy.UpdateCursor(InputFeatureClass,"", spatialRef)          # Establish read-write
access for outfalls
for row in updCursor:
        # Loop through each row in the outfall feature class
    shape = row.getValue(dsc.shapeFieldName)                                    # Create
geometry object 'shape'
    geom = shape.getPart(0)
        # Read geometry of each point
    x = geom.X
            # Store x from spatial reference
    y = geom.Y
            # Store y from spatial reference
    row.setValue('LONG_DD', x)
        # Add x value from spatial reference to the point in the field LONG_DD
    row.setValue('LAT_DD', y)                                                   # Add
y value from spatial reference to the point in the field LAT_DD
    updCursor.updateRow(row)
        # Updates the current row in the outfalls table

del updCursor, row # Close loop and delete cursor

# ---------------------------------------------------------------------------------------------------------------
# Name:                 Drainage_Area_Delineations.py
# Purpose:              This tool delineates the upstream area to a set of user defined points
                        and determines the percent of the
#                       drainage area that is pervious and impervious
# Author:               John P. Miller
# Copyright:(c)         Amec Foster Wheeler | Prince William County, Virginia
# ArcGIS Version:       10.2
# Python Version:       2.7.3
# ---------------------------------------------------------------------------------------------------------------

# Import the Modules
import arcpy, sys, os
from arcpy import env
from arcpy.sa import *

# Checkout Spatial License (Required!)
arcpy.CheckOutExtension("spatial")

# Overwrite Existing Files!
arcpy.env.overwriteOutput = True

# Get Relative Paths
rootWS = os.path.dirname(sys.path[0])
MS4 = os.path.join(rootWS,'MS4.gdb')

# Set Environment Variables
```

```
arcpy.env.workspace = MS4
arcpy.env.scratchWorkspace = rootWS

# Set Globals Variables
inFlowDirection = os.path.join(MS4,"flow_dir")
inFlowAccum = os.path.join(MS4,"flow_acc")
Polygons = os.path.join(MS4,"Polygons")
Outfalls = os.path.join(MS4,"Outfalls")
Interconnected = os.path.join(MS4,"Interconnected")
DEM_proj = os.path.join(arcpy.env.scratchGDB,"DEM_proj")
DEM_resolution = arcpy.Describe(DEM_proj).meanCellHeight
outfall_poly = os.path.join(arcpy.env.scratchGDB,"outfall_poly")
dis_outfall_da = os.path.join(arcpy.env.scratchGDB,"dis_outfall_da")
LandUse = os.path.join(MS4,"LandUse")
GMU = os.path.join(Interconnected,"GMU")
NOVA = os.path.join(Interconnected,"NOVA")
Schools = os.path.join(Interconnected,"Schools")
VDOT = os.path.join(Interconnected,"VDOT")
VPDES = os.path.join(Interconnected,"VPDES")
interconnected_ms4 = os.path.join(arcpy.env.scratchGDB,"interconnected_ms4")
Phase1_MS4 = os.path.join(arcpy.env.scratchGDB,"Phase1_MS4")
pervious_da = os.path.join(arcpy.env.scratchGDB,"pervious_da")
pervious_layer = os.path.join(arcpy.env.scratchGDB,"pervious_layer")
drainage_area = os.path.join(arcpy.env.scratchGDB,"drainage_area")
drainage_area_layer = os.path.join(arcpy.env.scratchGDB,"da_layer")
join_da = os.path.join(arcpy.env.scratchGDB,"join_da")
outfall_layer = os.path.join(arcpy.env.scratchGDB,"outfall_layer")
area_layer = os.path.join(arcpy.env.scratchGDB,"area_lyr")
all_areas = os.path.join(arcpy.env.scratchGDB,"all_areas")
drainage_area_selection = os.path.join(arcpy.env.scratchGDB,"drainage_area_selection")

# Set Raster Environment Settings
arcpy.env.snapRaster = DEM_proj
arcpy.env.cellSize = DEM_proj
arcpy.env.extent = DEM_proj

# Prompt User for Outfalls Pathname
InputFeatureClass = arcpy.GetParameterAsText(0) # Set outfalls as first parameter
if (not InputFeatureClass): # If statement to prompt for outfall feature class
   arcpy.AddMessage("Select your the points you want to delineate") # Python message to appear
when running as standalone script
   InputFeatureClass = raw_input("Enter the File Pathway for Your Delineation Points") # Prompts first
parameter

# Prompt User for Attribute Field
InputField = arcpy.GetParameterAsText(1) # Set 'user' selected field name as second parameter
if (not InputField): # If statement to prompt users to decide which field they would like to select outfalls
by
```

```
        arcpy.AddMessage("Select Input Field") # Python message to appear when running as
standalone script
        InputField = raw_input("Enter Input Field") # Prompts second parameter

# This Choice List is Populated Dynamically from Unique Values in the Input Field Defined in the
Second Parameter (InputField)
InputValue = arcpy.GetParameterAsText(2) # Select field values for the third parameter
if (not InputValue): # If statement to prompt for values
        arcpy.AddMessage("Select Areas to Delineate") # Python message to appear when running
as standalone script
        InputValue = raw_input("Enter Subset") # Prompts third parameter

# The Selected Value of Parameter 2 is Passed to Set Parameter 3 Output
arcpy.SetParameter(3, InputValue)

# Prompt User for Representative Impervious Cover (i.e. 2009 for Phase 1)
impervious_area = arcpy.GetParameterAsText(4) # Select impervious cover dataset for the fifth
parameter
if (not impervious_area): # If statement to prompt for feature class
   arcpy.AddMessage("Select the impervious cover") # Python message to appear when running as
standalone script
   impervious_area = raw_input("Enter the File Pathway for Your Impervious Area") # Prompts fifth
parameter

# Prompt User for Interconnected MS4s
other_ms4s = arcpy.GetParameterAsText(5) # Select impervious cover dataset for the fifth parameter
if (not other_ms4s): # If statement to prompt for feature class
   arcpy.AddMessage("Select all other MS4s from 'Interconnected' folder") # Python message to
appear when running as standalone script
   other_ms4s = raw_input("Enter interconnected MS4s") # Prompts sixth parameter

# Prompt User for Delineated Areas Output Location
outfall_area = arcpy.GetParameterAsText(6) # Select output location for the fifth parameter
if (not outfall_area): # If statement to prompt for pathname
   arcpy.AddMessage("Add Delineated Areas Output Location") # Python message to appear when
running as standalone script
   outfall_area = raw_input("Enter Output Location") # Prompts seventh parameter

# Snap Drainage Delineation Points to Flow Accumulation Pathway to Ensure Proper Delineation
Outfall_ID = "Outfall_ID" # Create Outfall_ID string for field name
outSnapPour = SnapPourPoint(InputFeatureClass, inFlowAccum, DEM_resolution, Outfall_ID) # Snap
outfalls to the adjacent cell in the 3 x 3 cell window with the highest flow accumulation value
outSnapPour.save(os.path.join(arcpy.env.scratchGDB,"pourpoints")) # Save snap pour points output
as "pourpoints"

# Delineate Drainage Area to MS4 Outfalls
outfall_da_ras = Watershed(inFlowDirection, outSnapPour, "VALUE") # Delineate upstream
contributing area to each snapped outfall
```

```
outfall_da_ras.save(os.path.join(arcpy.env.scratchGDB,"outfall_da")) # Save drainage areas

# Convert Raster Drainage Areas to Polygons
arcpy.RasterToPolygon_conversion(outfall_da_ras, outfall_poly, "SIMPLIFY", "VALUE")

# Dissolve Watersheds by Gridcode to Eliminate Tiny Watersheds
arcpy.Dissolve_management(outfall_poly, drainage_area, ["gridcode"], "", "MULTI_PART",
"DISSOLVE_LINES")

# Merge Interconnected MS4s.
splitMS4s = other_ms4s.split(";")
if splitMS4s ==['']:
   z = 0
else :
   z = len(splitMS4s)

if z == 0 : # If no interconnected MS4s are selected
        Phase1_MS4 = drainage_area # Skip merging interconnected MS4 polygons
elif z == 1: # If there is 1 other MS4
   arcpy.Merge_management([splitMS4s[0]], interconnected_ms4)
elif z == 2: # If there are 2 other MS4s
   arcpy.Merge_management([splitMS4s[0], splitMS4s[1]], interconnected_ms4)
elif z == 3: # If there are 3 other MS4s
   arcpy.Merge_management([splitMS4s[0], splitMS4s[1], splitMS4s[2]], interconnected_ms4)
elif z == 4: # If there are 4 other MS4s
   arcpy.Merge_management([splitMS4s[0], splitMS4s[1], splitMS4s[2], splitMS4s[3]],
interconnected_ms4)
elif z == 5: # If there are 5 other MS4s
   arcpy.Merge_management([splitMS4s[0], splitMS4s[1], splitMS4s[2], splitMS4s[3], splitMS4s[4]],
interconnected_ms4)
elif z == 6:  # If there are 6 other MS4s
   arcpy.Merge_management([splitMS4s[0], splitMS4s[1], splitMS4s[2], splitMS4s[3], splitMS4s[4],
splitMS4s[5]], interconnected_ms4)
elif z == 7: # If there are 7 other MS4s
   arcpy.Merge_management([splitMS4s[0], splitMS4s[1], splitMS4s[2], splitMS4s[3], splitMS4s[4],
splitMS4s[5], splitMS4s[6]], interconnected_ms4)
elif z == 8: # If there are 8 other MS4s
   arcpy.Merge_management([splitMS4s[0], splitMS4s[1], splitMS4s[2], splitMS4s[3], splitMS4s[4],
splitMS4s[5], splitMS4s[6], splitMS4s[7]], interconnected_ms4)
elif z == 9: # If there are 9 other MS4s
   arcpy.Merge_management([splitMS4s[0], splitMS4s[1], splitMS4s[2], splitMS4s[3], splitMS4s[4],
splitMS4s[5], splitMS4s[6], splitMS4s[7], splitMS4s[8]], interconnected_ms4)
else:
   print "Other MS4s not selected"
   arcpy.AddError("No other MS4s selected, output will not reflect interconnected MS4s")

# Erase Interconnected MS4's from MS4 Area
if z > 0: # If there are interconnected ms4s
```

```
    arcpy.Erase_analysis(drainage_area, interconnected_ms4, Phase1_MS4) # Erase them from the
outfall drainage area
else: # If there are not interconnected ms4s
    print "No interconnected MS4s" # Skip this step
    arcpy.AddError("No other MS4s selected, output will not reflect interconnected MS4s")

# Calculate Total Acres in Each Drainage Area
arcpy.AddField_management(Phase1_MS4, 'TotAcres', 'DOUBLE') # Add field for total acres in each
drainage area
arcpy.CalculateField_management(Phase1_MS4, 'TotAcres', '!shape.area@acres!', 'PYTHON') #
Calculate total drainage area in acres and store in 'TotAcres' field

# Erase Impervious Area from Drainage Area
arcpy.Erase_analysis(Phase1_MS4, impervious_area, pervious_da)

# Add Pervious Acres Field and Calculate Geometry
arcpy.AddField_management(pervious_da, 'PervAcres', 'DOUBLE') # Add field for pervious acres in
each drainage area (i.e. area remaining after erasing impervious area from each drainage area)
arcpy.CalculateField_management(pervious_da, 'PervAcres', '!shape.area@acres!', 'PYTHON') #
Calculate pervious drainage area in acres and store in 'PervAcres' field

# Create Feature Layers for Join
arcpy.MakeFeatureLayer_management(Phase1_MS4, drainage_area_layer) # Create feature layer of
total drainage areas for each outfall
arcpy.MakeFeatureLayer_management(pervious_da, pervious_layer) # Create feature layer of
pervious drainage areas for each outfall

# Join Pervious Area to the Dissolved MS4 Drainage Areas
arcpy.AddJoin_management(drainage_area_layer, "gridcode", pervious_layer, "gridcode") # Join
pervious area feature layer to total drainage area layer based on gridcode
arcpy.CopyFeatures_management(drainage_area_layer, join_da) # save joined pervious/total
drainage feature layer as feature class named 'join_da'

# Remove Attribute Table Fields That Are Not Necessary
arcpy.DeleteField_management(join_da, ["pervious_da_OBJECTID", "pervious_da_gridcode",
"pervious_da_TotAcres"])

# Remove Any <Null> Values and Replace with 0
codeblock = """def calc(pervious_da_PervAcres):
    if pervious_da_PervAcres is None:
        return 0
    else:
        return pervious_da_PervAcres"""
arcpy.CalculateField_management(join_da, 'pervious_da_PervAcres',
"calc(!pervious_da_PervAcres!)", 'PYTHON', codeblock) # Inserts codeblock SQL statement to
change any Null pervious area value to 0 to facilitate impervious area calculation

# Calculate Impervious Area
```

```
arcpy.AddField_management(join_da, 'ImpAcres', 'DOUBLE') # Add field for impervious acres named 'ImpAcres'
arcpy.CalculateField_management(join_da, 'ImpAcres', '!Phase1_MS4_TotAcres!-!pervious_da_PervAcres!', 'PYTHON') # Calculate impervious area by subtracting pervious drainage area from the total drainage area for each outfall

# Create Feature Layers for Join
arcpy.MakeFeatureLayer_management(InputFeatureClass, outfall_layer) # Create feature layer from outfall feature class
arcpy.MakeFeatureLayer_management(join_da, area_layer) # Create feature layer from drainage area polygon feature class containing total, impervious, and pervious for each outfall

# Join Outfall Ownership and Origin Information
arcpy.JoinField_management(area_layer, "Phase1_MS4_gridcode", outfall_layer, Outfall_ID, InputField + ";Origin;Outfall_ID;VAHU6;HUC_12;WTRSHD_ID;REACHCODE") # Join outfall information to the drainage area feature class and keep relevant field for the permit
arcpy.CopyFeatures_management(area_layer, all_areas) # Create a feature class for drainage area feature class containing all relevant information for outfalls and drainage areas
arcpy.DeleteField_management(all_areas, "Phase1_MS4_gridcode") # Delete unnecessary field that resulted from join

# Split User Input Into List
InputString = str(InputValue) # Create string from the third parameter to be parsed through statement below
SaveSplit = InputString.split(";") # Split string from the third parameter, so that each value in the field is it's own string

# Create Variable to be Used in Logical Statement to Build SQL statement
x = len(SaveSplit) # Calculate how many unique values are in the field from parameter 3 (e.g. if Ownership is the field and it has County, Homeowner, & Commercial as possible values the length would be 3)
exp1 = str(InputField) + " = '" + str(SaveSplit[0]) + "'" # SQL statement that selects the first value (SaveSplit[0]) from the field selected in parameter 3

# Logical Sequence Building SQL Expression, Based upon Number of User Inputs for the Third Parameter (GetParameterAsText(2)) (x)
if x <2 : # if the number of unique values selected by the user is 1
        sql_exp = exp1 # SQL selection statement takes the selected field (second parameter) and selects the first field value (third parameter)
elif 3> x >1: # if the number of unique values selected by the user is 2
    sql_exp = exp1 + " OR " + str(InputField) + " = '" + str(SaveSplit[1]) + "'"  # SQL selection statement takes the selected field (second parameter) and selects the first and second field value (third parameter)
elif 4> x >2: # if the number of unique values selected by the user is 3
    sql_exp = exp1 + " OR " + str(InputField) + " = '" + str(SaveSplit[1]) + "'" + " OR " + str(InputField) + " = '" + str(SaveSplit[2]) + "'" # SQL selection statement takes the selected field (second parameter) and selects the first, second, & third field value (third parameter)
elif 5> x >3: # if the number of unique values selected by the user is 4
```

```
    sql_exp = exp1 + " OR " + str(InputField) + " = '" + str(SaveSplit[1]) + "'" + " OR " + str(InputField) +
" = '" + str(SaveSplit[2]) + "'" + " OR " + str(InputField) + " = '" + str(SaveSplit[3]) + "'" # SQL selection
statement takes the selected field (second parameter) and selects the first, second, third, & fourth
field value (third parameter)
elif 6> x >4: # if the number of unique values selected by the user is 5
    sql_exp = exp1 + " OR " + str(InputField) + " = '" + str(SaveSplit[1]) + "'" + " OR " + str(InputField) +
" = '" + str(SaveSplit[2]) + "'" + " OR " + str(InputField) + " = '" + str(SaveSplit[3]) + "'" + " OR " +
str(InputField) + " = '" + str(SaveSplit[4]) + "'" # SQL selection statement takes the selected field
(second parameter) and selects the first, second, third, fourth, & fifth field value (third parameter)
elif 7> x >5: # if the number of unique values selected by the user is 6
    sql_exp = exp1 + " OR " + str(InputField) + " = '" + str(SaveSplit[1]) + "'" + " OR " + str(InputField) +
" = '" + str(SaveSplit[2]) + "'" + " OR " + str(InputField) + " = '" + str(SaveSplit[3]) + "'" + " OR " +
str(InputField) + " = '" + str(SaveSplit[4]) + "'" + " OR " + str(InputField) + " = '" + str(SaveSplit[5]) + "'"
elif 8> x >6: # if the number of unique values selected by the user is 7
    sql_exp = exp1 + " OR " + str(InputField) + " = '" + str(SaveSplit[1]) + "'" + " OR " + str(InputField) +
" = '" + str(SaveSplit[2]) + "'" + " OR " + str(InputField) + " = '" + str(SaveSplit[3]) + "'" + " OR " +
str(InputField) + " = '" + str(SaveSplit[4]) + "'" + " OR " + str(InputField) + " = '" + str(SaveSplit[5]) + "'"
+ " OR " + str(InputField) + " = '" + str(SaveSplit[6]) + "'"
elif 9> x >7: # if the number of unique values selected by the user is 8
    sql_exp = exp1 + " OR " + str(InputField) + " = '" + str(SaveSplit[1]) + "'" + " OR " + str(InputField) +
" = '" + str(SaveSplit[2]) + "'" + " OR " + str(InputField) + " = '" + str(SaveSplit[3]) + "'" + " OR " +
str(InputField) + " = '" + str(SaveSplit[4]) + "'" + " OR " + str(InputField) + " = '" + str(SaveSplit[5]) + "'"
+ " OR " + str(InputField) + " = '" + str(SaveSplit[6]) + "'" + " OR " + str(InputField) + " = '" +
str(SaveSplit[7]) + "'"
elif 10> x >8: # if the number of unique values selected by the user is 9
    sql_exp = exp1 + " OR " + str(InputField) + " = '" + str(SaveSplit[1]) + "'" + " OR " + str(InputField) +
" = '" + str(SaveSplit[2]) + "'" + " OR " + str(InputField) + " = '" + str(SaveSplit[3]) + "'" + " OR " +
str(InputField) + " = '" + str(SaveSplit[4]) + "'" + " OR " + str(InputField) + " = '" + str(SaveSplit[5]) + "'"
+ " OR " + str(InputField) + " = '" + str(SaveSplit[6]) + "'" + " OR " + str(InputField) + " = '" +
str(SaveSplit[7]) + "'" + " OR " + str(InputField) + " = '" + str(SaveSplit[8]) + "'"
elif 10> x >8: # if the number of unique values selected by the user is 10
    sql_exp = exp1 + " OR " + str(InputField) + " = '" + str(SaveSplit[1]) + "'" + " OR " + str(InputField) +
" = '" + str(SaveSplit[2]) + "'" + " OR " + str(InputField) + " = '" + str(SaveSplit[3]) + "'" + " OR " +
str(InputField) + " = '" + str(SaveSplit[4]) + "'" + " OR " + str(InputField) + " = '" + str(SaveSplit[5]) + "'"
+ " OR " + str(InputField) + " = '" + str(SaveSplit[6]) + "'" + " OR " + str(InputField) + " = '" +
str(SaveSplit[7]) + "'" + " OR " + str(InputField) + " = '" + str(SaveSplit[8]) + "'" + " OR " + str(InputField)
+ " = '" + str(SaveSplit[9]) + "'"
elif x > 10: # if the number of unique values is more than 10, all values will be selected.
        sql_exp = InputField
else:
    print "Too many unique values to select"
    arcpy.AddError("No outfalls selected, output will be empty")

# Select Choice List Selections from the Input Feature Class
arcpy.Select_analysis(all_areas, drainage_area_selection, sql_exp)

arcpy.CopyFeatures_management(drainage_area_selection, outfall_area) # Save output of drainage
areas with user selected field values (e.g. County owned outfalls)
```

7 Appendix B: Forested Lands Delineation Process

PURPOSE

In order to support service area delineation and the land use change BMP, forested areas were quickly delineated from 4-band multispectral imagery at 1 meter spatial resolution. Existing available land cover information for Prince William County is available from the Multi-Resolution Land Characteristics Consortium (MRLC), National Land Cover Database (NLCD). However, the NLCD products were derived at 30m spatial resolution, limiting detail and potentially including a very large amount of estimation error when considering BMP's at a local scale. For example, when considering 900m^2 contiguous forested area, 2 pixel results at 30m resolution would be identified as a forested area from the NLCD dataset. Unfortunately, most remote sensing processes may take effort in reducing such small classification results as anomalous, and therefore remove small, but in this case, significant contiguous pixel results. By utilizing 1 meter resolution imagery products tree canopy detection was rapidly delineated, and higher resolution allowed multiple pixel clusters to be identified meeting the 900m^2 minimum mapping unit with higher confidence. Image processing was conducted using ERDAS Imagine, ArcGIS, and Feature Analyst software packages.

IMAGERY

The United States Department of Agriculture (USDA), National Agricultural Inventory Program (NAIP) provides ortho-corrected multispectral imagery with 1 meter spatial resolution at no cost over most of the United States. The multispectral imagery consists of typical blue, green, and red imagery bands for natural color representation, along with 4th band that covers the near infrared part of the electromagnetic spectrum. The near infrared band allows rapid vegetation detection through indices and classification techniques due to its sensitive response to chlorophyll from plant material. Healthy plants absorb red, green, and blue light, and reflects higher levels of infrared energy. Additionally, the near infrared bands allows the ability to segregate healthy from stressed vegetation by detecting different levels of near infrared reflection after identifying the presence of chlorophyll initially.

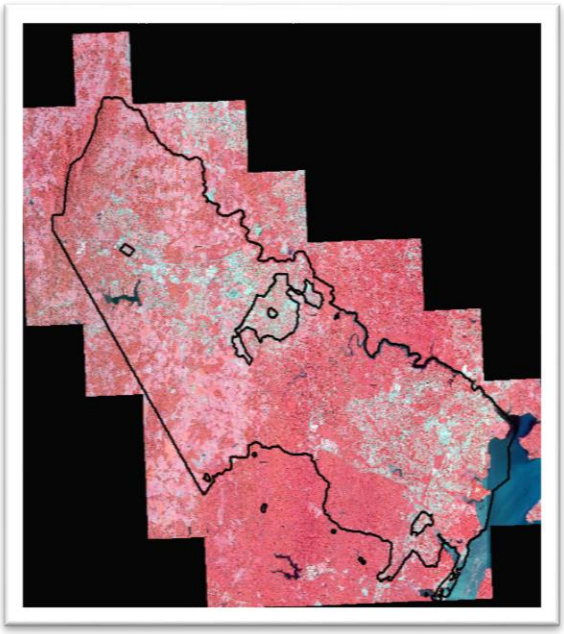
PROCESSING

The image processing used for this delineation consisted of three primary steps: 1) Image Pre-Processing, 2) Image Processing, and 3) Image Post-Processing. The area of interest (AOI) utilized consisted of areas within the Prince William County service area alone. No other MS4 areas were included in this delineation.

7.0.1 Image Pre-Processing

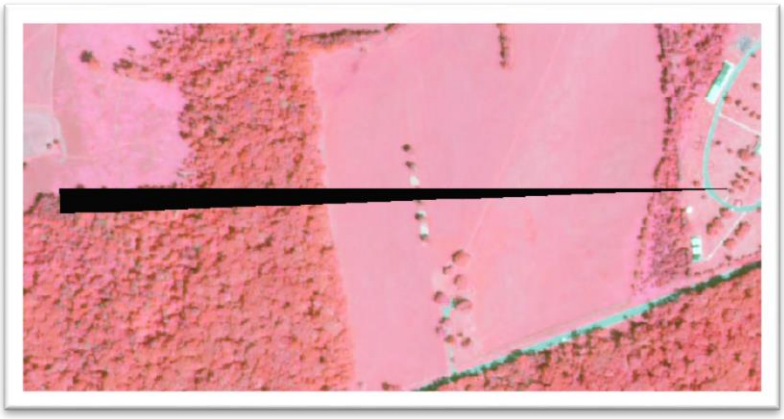
Pre-Processing tasks include AOI delineation, image collection, imagery quality review, and initial vegetation extraction. A buffer of 500ft around the study AOI prior to image processing in order to account for edge detection anomalies that typically occur with automated image extraction. Once complete, NAIP imagery was collected at the extent of the buffer to ensure complete coverage as

available. NAIP imagery at 4-band resolution is provided at DOQQ extents and readily available from the USGS EarthExplorer website (http://earthexplorer.usgs.gov/). A total of 43 NAIP tiles were downloaded and produced into a seamless mosaic product covering the AOI, and were collected in August, 2014:



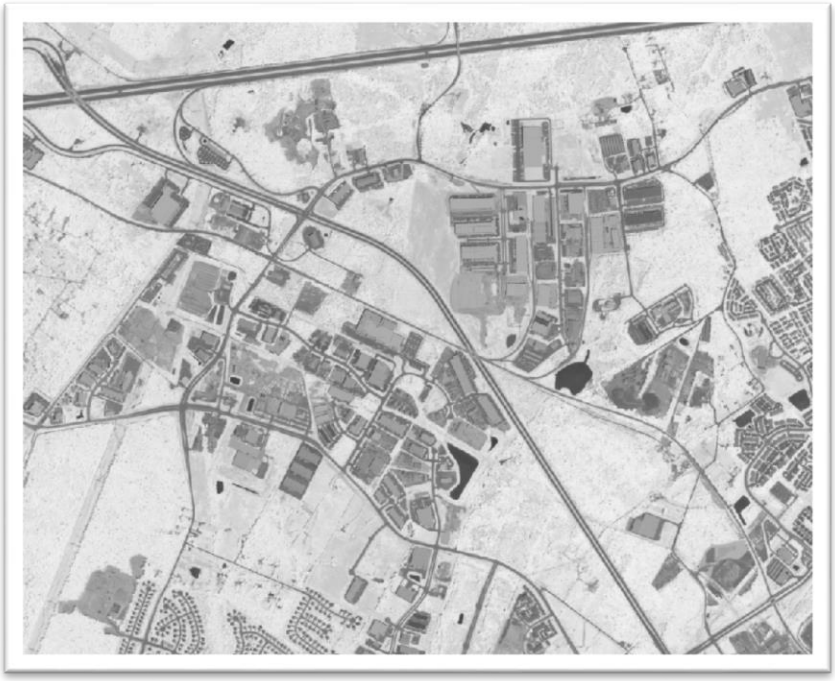
(*Mosaic NAIP imagery with Color Infrared Representation)*

The mosaic product was reviewed for seamlines and raw data anomalies such as band striping or dropped pixels. No band striping or seamlines were found in the mosaic dataset, and only minor areas of dropped pixels were identified. However, the areas with dropped pixels were not covering vast areas and did not require additional image datasets to rectify; dropped pixels were accounted for in the post processing phase due to limited impact on initial classification:



The final step of the pre-processing phase utilized the Normalized Difference Vegetation Index (NDVI) to segregate the image between vegetation and non-vegetation features. This is rapidly done due to

the way chlorophyll reflects energy in the near infrared band by using band math which results in a new raster data set with pixels containing values ranging from -1 to 1. Pixels with values closer to 1 represent vegetation, while those closer to -1 are non-vegetation.

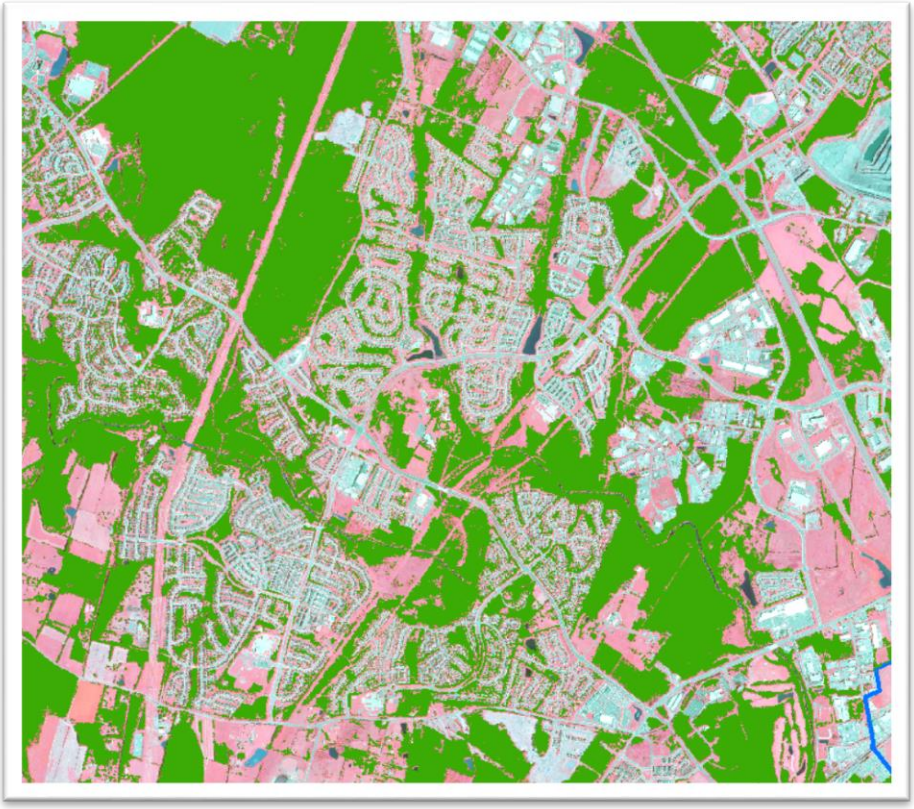


(NDVI Result showing vegetation and non-vegetation)

The NDVI result was then reviewed to locate the correct threshold where a representative split between vegetation and non-vegetation could be identified. Once determine, the NDVI dataset was rendered to a 2-class result, where vegetation pixels were utilized as an analysis mask where tree canopy could be identified. The threshold was set a bit higher for this study since trees tend to reflect much higher values (i.e. much closer to 1) given their height and foliage. This result also reduces false detections within open fields, dry grasslands, and shorter shrub areas:

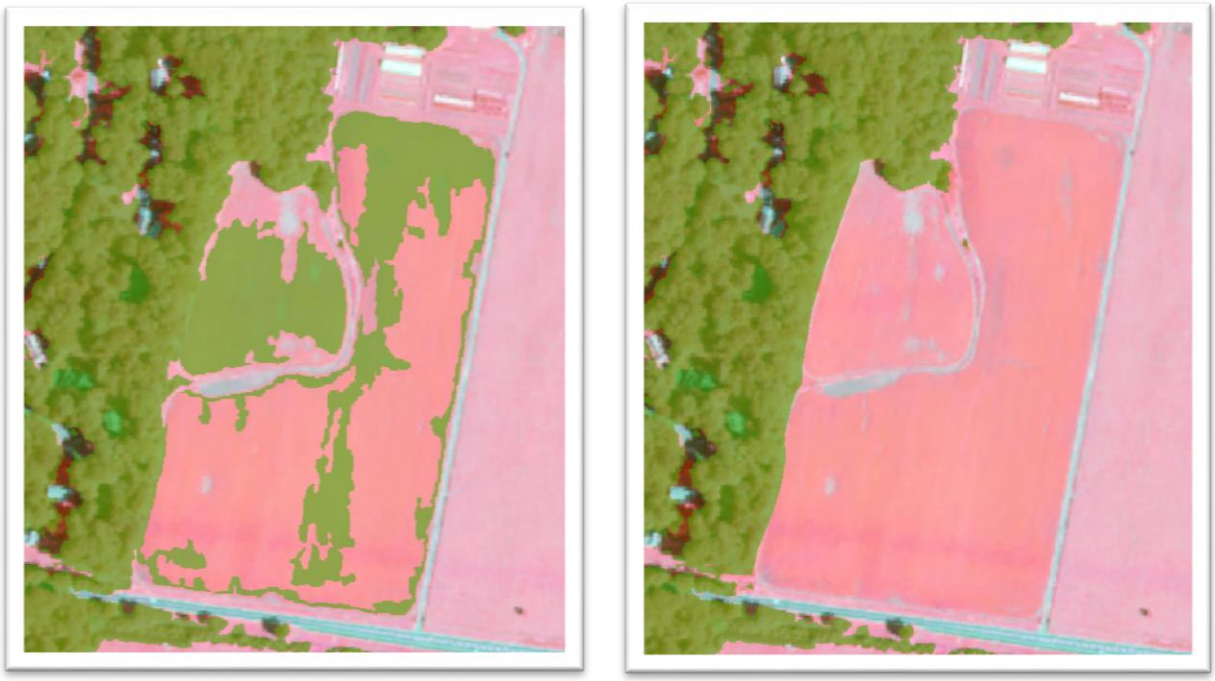
7.0.2 Image Processing

In order to identify tree canopy in Prince William County, multiple processing techniques and software packages were used to gain the best possible results. Initially, unsupervised image classification was performed, segregating the raw image into 50 different classes of statistically similar pixels. The 50 class clusters were reviewed and identified as belonging to tree canopy, water, grass, impervious surfaces, and unclassified (shadow) areas. The tree canopy clusters were then saved as new AOI's within ERDAS Imagine, and augmented with digitized samples in all locations of the study area. These samples were then supplied in the Maximum Likelihood Supervised Classification algorithm, with 2 – class fuzzy results and distance layers being produced. "Fuzzy" pixel results showed similarity between 2 possible land cover classes, and the distance result was utilized to effectively place the fuzzy pixels in the more statistically correct class. Feature Analyst is a separate classification algorithm that focuses more on feature shape along with spectral variability. Training samples were then applied to Feature Analyst, where iterations of results were performed to obtain the cleanest results. By utilizing shape as a detection method, similar patterns can be segregated in the image, also allowing for the reduction in misclassification from shadows. Once complete, all results were then merged into a single layer and clipped to the NDVI vegetation results and non-buffered MS4 AOI.



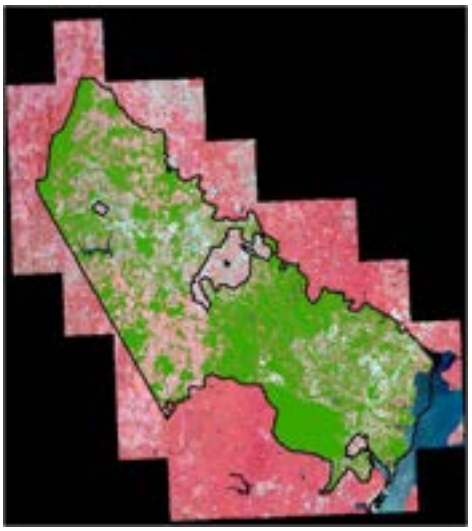
7.0.3 Image Post-Processing

Post processing tasks included image result aggregation and manual QA/QC procedures. Image processing result aggregation is a procedure used to fill small holes in otherwise continuous features and remove salt-and-pepper results by defining an arbitrary minimum mapping unit. The results from this process further clean extracted features of interest which can substantially improve estimations and metrics performed across the dataset. The manual QA/QC period performed looked for final anomalies in the resulting dataset that should not exist. Such anomalies include misclassification of commission and omission. In these cases, either polygons were added to fill in a missing area or polygons were trimmed to remove unnecessary features. Typical errors of omission exist in the middle of large forests, where trees cast shadows amongst each other. Typical errors of commission tend to exist in agricultural areas and golf courses where grasses and fields are very lush and mowed with varying patterns.



7.0.4 FINAL DATA SET DESCRIPTION AND ACCURACY STATEMENT

The final data set was produced using remote sensing techniques, which represent target features with a reasonable estimation or approximation. This is due to the possibility of remaining errors of omission and commission, spatial resolution limitations, and temporal capabilities. The estimations and representation of these results is based on the surface conditions at the time of imagery collection (8/2014). Polygon features are dissolved and exploded to ensure continuous feature representation, while maintaining topology with non-multipart feature representation. Estimated accuracy of the forest area delineation is approximately 80-85%. This is reasonable for the purposes of the service area delineation and land use BMP study. It is recommended that additional manual QA/QC be performed if this dataset is needed for official UTC classification, along with a minimum of 5-Class land cover computation



Appendix I – County Facilities

Table of Contents

100 INTRODUCTION

Pursuant to the federal Clean Water Act, 33 U.S.C. § 1251, *et seq.*, the Virginia Stormwater Management Act, Va. Code § 62.1-44.15:24, *et seq.*, and Prince William County Code of Ordinances Chapter 23.2 and regulations adopted pursuant thereto, Prince William County is authorized to discharge in accordance with the effluent limitations, monitoring requirements, and other conditions set forth in state permit No. VA0088595.

100.1 PURPOSE

This policy establishes methods for controlling the discharge of pollutants from the municipal separate storm sewer system (MS4) into state waters, in compliance with requirements of Virginia Stormwater Management Program permit issued to Prince William County government (PWC).

100.2 SCOPE

The following written illicit discharge policy has been established for all County locations and applies to any potential discharge or pollutant which could be generated during the normal course of business.

100.3 AUTHORIZATION

This policy is authorized by the County Executive.

100.4 APPLICABILITY

This policy applies to all County agencies/departments including those with Independent Boards, with the exception of the Prince William County Schools and Prince William County Service Authority.

100.5 RESPONSIBILITY

Agency/Department Directors or designees shall:

- Ensure department specific standard operating procedures (SOPs) are developed, implemented and maintained for activities impacted by this policy.
- Ensure all MS4 SOPs are internally approved by the Department of Public Works, Environmental Services Division.
- Ensure all applicable policies, procedures and internal SOPs are available to impacted agencies and personnel responsible for monitoring and ensuring compliance.

- Assign roles and responsibilities as applicable, for all policies, procedures and SOPs under the "control" or "ownership" of his/her individual agency/department,
- Ensure all training requirements are met.
- Report any noncompliance issues including any spill or discharge.

Department of Public Works, Environmental Services Division shall:

- Provide support to departments and agencies in the implementation of this policy.
- Submit annual reports and any other formal communications that reference MS4 activities to regulatory bodies.
- Disseminate information, updates, and responsibilities to departments and agencies concerning compliance with permit requirements.
- Approve department specific SOPs pertaining to MS4 compliance.
- In conjunction with Risk Management periodically inspect high-risk facilities.
- Respond to specific departmental compliance inquiries and provide technical knowledge.
- Notify impacted departments of annual reporting requirements

Risk Management shall:

- Ensure that all departments are aware of and comply with this policy through inspection and program audits.
- Provide technical assistance to departments and agencies for all aspects of this policy when requested.
- Assist agencies and departments in facilitating pertinent training.
- Notify Environmental Services of any reported noncompliance issues at County facilities including fuel spills and illicit discharges, along with any follow up actions taken.

Employees shall:

- Comply with this policy and SOPs set forth by department management.
- Attend all required training.
- Inform supervisor of spills and discharges.

100.6 EXCEPTIONS

Exceptions to this policy must be approved in writing by the County Executive or designee.

100.7 DEFINITIONS

Allowable Discharge - any direct or indirect discharge that is authorized by the MS4 permit.

Contractor - an individual or company, including a subcontractor, hired by PWC government to perform services within PWC.

Clean Water Act (CWA)- the federal Clean Water Act (33 U.S.C. §1251 et seq.) and any subsequent amendments thereto

Discharge – allowable liquid, gas, or other substances that enter a storm drainage system.

Hazardous Material Personnel- County personnel responsible for responding to incidents related to hazardous materials.

Illicit Discharge- any direct or indirect non-stormwater discharge into the storm drain system not authorized by the MS4 permit.

Illicit Connections- either of the following: (1) any drain or conveyance, whether on the surface or subsurface, which allows an illicit discharge to enter the storm drain system including but not limited to any conveyances which allow any non-stormwater discharge including sewage, process waste water, and wash water to enter the storm drain system and any connections to the storm drain system from indoor drains to sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved, by the County or, (2) any drain or conveyance connected from a commercial or industrial land use to the storm drain system which has not been documented in plans, maps, or equivalent records and approved by the County.

MS4 (Municipal Separate Storm Sewer System) - a conveyance or system of conveyances, otherwise known as a municipal separate storm sewer system or "MS4" including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains, designed or used for collecting and conveying stormwater.

MS4 Permit- a permit issued to Prince William County that authorizes the discharge of stormwater from all existing and new municipal separate stormsewer point source discharges to surface waters of the State and includes a comprehensive planning process involving public participation and intergovernmental coordination, to reduce the discharge of pollutants to the maximum extent practicable, to protect water quality, and to satisfy the appropriate water quality requirements of the CWA and regulations, and this article and its

attendant regulations, using management practices, control techniques, and system, design, and engineering methods, and such other provisions that are appropriate.

Pollutant – anything which causes or contributes to pollution. This may include but is not limited to: paints, chemicals, soap, wash water, oil, automotive fluids, non-hazardous liquid and solid wastes, yard wastes, garbage, pesticides, herbicides, fertilizers, hazardous substances and wastes, animal wastes, dissolved and particulate metals, leaves and yard clippings, and particulates such as soil, sand and salt.

Potable Water- water that is deemed safe to drink or to use for food preparation, without risk of health problems.

Spill Prevention Control and Countermeasure (SPCC) Plan - a federally required and defined plan for facilities storing over 1,320 gallons of oil (fuel) cumulatively at a site including tanks, generators, and drums of oil (fuel).

Standard Operating Procedure (SOP) – SOPs are those policies/procedures related only to the internal operations of an agency/department, division or other sub-unit thereof. SOPs are not communicated or meant to provide direction to any external agency/department. Other names for SOPs include, but are not limited to: general orders, desk manuals, procedures, field guides, process flowcharts, and checklists, etc.

Storm Drainage System- facilities by which stormwater is collected and/or conveyed including but not limited to any roads with drainage systems, streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detentions basins, natural and human made or altered drainage channels, reservoirs, and other drainage structures.

Storm Water – precipitation that is discharged across the land surface of through conveyances to one or more waterways and that may include stormwater runoff, snow melt runoff, and surface runoff and drainage.

Policy – Policies are directives for the conduct of County business affairs and are often in support of higher level of authority dictates such as County Code or Ordinance; Board of County Supervisor Resolutions, County Executive Order, the County's Strategic Plan, compliance with federal laws and standards, the Code of Virginia or other regulatory agency as defined by law or contract.

Procedure – Procedures are the steps required to ensure policies are followed. Procedures are more detailed in nature and communicate operational requirements to internal and external staff for a specific transaction or a business cycle.

100.8 KEY RISK FACTORS

1. Policies, procedures and internal SOPs are inconsistent or not properly documented, approved and disseminated.
2. Policies, procedures and internal SOPs are not reviewed and updated on a systematic basis.
3. Departments and agencies may overlook responsibilities and fail to report permit violations or annual reporting requirements.

200 ILLICID DISCHARGE ELIMINATION AND MS4 PERMIT COMPLIANCE POLICY

200.1 ILLICIT DISCHARGES

No County employee, visitor, contractor, department, or agency shall cause or allow discharges into the PWC storm drainage system which are not composed entirely of stormwater, except for the allowed discharges listed below in Section 200.2. Prohibited discharges include, but are not limited to: paints, chemicals, soap, wash water, oil, automotive fluids, non-hazardous liquid and solid wastes, yard wastes, garbage, pesticides, herbicides, fertilizers, hazardous substances and wastes, animal wastes, dissolved and particulate metals, leaves and yard clippings, and particulates such as soil, sand and salt.

200.2 ALLOWABLE DISCHARGES

Allowable discharges are identified in the MS4 permit and include, but are not limited to the following:

- Landscape irrigation (sprinklers) and other potable water discharges
- Air conditioning condensation
- Fire-fighting emergency activities
- Other unforeseen activities that Environmental Services deems as allowable under the permit

200.3 ILLICIT CONNECTIONS

The construction, use, maintenance, or continued existence of illicit connections to the storm drain system is prohibited. This expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

200.4 GOOD HOUSEKEEPING REQUIREMENTS

200.4.1 VEHICLE AND EQUIPMENT WASHING AND MAINTAINANCE

County vehicles shall be washed at a commercial car wash facility whenever possible. For oversize or specialty equipment and vehicles that require specialty cleaning, washing must be done in a way that prevents runoff water from entering storm drains. This includes:

- Using waterless washing products or a phosphate-free, pH neutral soap, and
- Washing on a grassy area or gravel, where all runoff water infiltrates the ground, or
- Capturing all runoff so no discharge occurs

Should site-specific issues prevent all of the above conditions from being met, a SOP approved by Public Works Environmental Services is required to be adopted and posted at the site.

200.4.2 VEHICLE AND EQUIPMENT FUELING

All fuel tanks, generators, and fueling stations at Prince William County facilities must have a spill response kit that is labeled, visible to users, and stocked at all times.

County personnel must remain at the pump during vehicle and equipment fueling. Should a spill occur or be discovered, personnel must respond by:

- utilizing a clean-up kit,
- notifying the County's fuel vendor via self-dial phones posted at Garfield and Western District fueling stations, and/or
- dialing 911 for significant or hazardous spills

For spills of all sizes, a spill report form must be completed following protocol found in section 200.6.

All spent cleanup supplies must be properly disposed. Risk Management can assist departments in making arrangements.

200.4.3 OUTDOOR STORAGE OF EQUIPMENT AND MATERIALS

Outdoor storage of equipment and materials not in regular use should be temporary and kept to a minimum. When storing equipment and materials outdoors, the following conditions must be met:

- Store materials and equipment as far away from storm drains and water bodies as feasible
- Cover and protect materials stored outside from rainfall and wind dispersal
- Keep outdoor storage containers in good condition
- Conduct regular inspections of storage areas

Should site-specific issues prevent all of the above conditions from being met, a SOP approved by Public Works Environmental Services is required to be adopted and posted at the site.

200.4.4 OUTDOOR STORAGE OF CHEMICALS

Outdoor storage of chemicals should be temporary and kept to a minimum. When storing chemicals outside, the following conditions must be met:

- Store chemicals as far away from storm drains and water bodies as feasible
- Seal storage containers and ensure they are impervious to rainfall
- Keep outdoor storage containers properly labeled and in good condition
- Store containers so they are not in direct contact with the ground
- Store containers in a way that prevents damage from vehicle and equipment impacts, wind damage, or any other external force
- Conduct regular inspections of storage areas

Should site-specific issues prevent all of the above conditions from being met, a SOP approved by Public Works Environmental Services is required to be adopted and posted at the site.

200.4.5 ROAD, STREET, AND PARKING LOT DEICING/MAINTAINANCE

Deicing and other maintenance activities performed in roads, streets, and parking lots must be done in a way to minimize discharge. When performing these activities, the following conditions must be met:

- Deicing
    - Store and transfer de/anti-icing materials on an impervious containment pad or an equivalent containment area and/or under cover
    - Do not use deicing agents containing urea, or other forms or nitrogen or phosphorus
    - Avoid applying chemical deicing agents when the temperature is less than 15ºF
    - Use the lowest application rate of deicing chemicals possible to loosen snow and ice for further removal by shovel or plow
- Maintenance
    - Use an approved vendor for parking lot sweeping services and, per the contract requirements, confirm the collected debris is:
        - removed from the property within 4 hours of collection (no stockpiling),
        - kept out of storm drains, and

- properly disposed of at an approved site

Should site-specific issues prevent all of the above conditions from being met, a SOP approved by Public Works Environmental Services is required to be adopted and posted at the site.

200.4.6 PESTICIDE, HERBICIDE, FERTILIZER APPLICATION, STORAGE, TRANSPORT AND DISPOSAL

Application, storage, transport, and disposal of any pesticide, herbicide, and fertilizer products must be done in a manner that minimizes the impact to the environment to the greatest extent practicable. When performing these activities, the following conditions must be met:

Application

- Apply materials on an as needed basis only
- Do not exceed application rates defined on packaging
- Utilize only properly trained or certified personnel to perform applications of these chemicals

Storage

- Store all pesticide, herbicides and fertilizer indoors or under covered areas, with proper labeling on both the containers and the storage structure
- Conduct regular inspections of storage areas

Transport

- Secure materials during transport to prevent spills and/or utilize secondary containment
- Equip vehicles that transport liquid products with a spill kit

Disposal

- Dispose of expired and unwanted materials through a qualified, contracted County vendor
- Maintain records of material disposal indefinitely

Should site-specific issues prevent all of the above conditions from being met, a SOP approved by Public Works Environmental Services is required to be adopted and posted at the site.

200.4.7 FIRE-FIGHTING TRAINING

Fire-fighting training activities must be performed in a manner that minimizes the impact to the environment to the greatest extent practicable. When performing these activities, the following conditions must be met:

- Direct water flows to grass or gravel areas or contain the water onsite and allow it to evaporate and infiltrate
- Block off all potentially affected storm drain inlets and direct or pump water to sanitary sewer or grass or gravel infiltration area

Should site-specific issues prevent all of the above conditions from being met, a SOP approved by Public Works Environmental Services is required to be adopted and posted at the site.

200.4.8 FUEL TANKS, GENERATORS AND OTHER OIL/FUEL STORAGE

All oil (including cooking oil) and fuel containers must be maintained and utilized in a manner that prevents leaks, spills and discharges. All drums, tanks, generators or other outdoor oil/fuel storage containers must comply with the following:

- With the exception of cooking oil storage, ensure secondary containment is utilized, either through container design or added structure
- Properly label equipment and containers and ensure they are free of drips, leaks, and film, and that the ground/pavement around it is, too
- Ensure filling and dispensing by vendors is done in accordance with County policy and that any spill is reported in accordance with 200.6 of this policy
- Inspect equipment and containers regularly and ensure any needed repairs are made in a timely manner
- Place a spill response kit near the equipment or container and ensure it is labeled, stocked, and visible to others at all times

200.4.9 SWIMMING POOL DE-CHOLORINATION

During daily back-washing operations and annual flushing, steps must be taken to minimize the level of chlorine in discharge water to the greatest extent practicable. This can be achieved by:

- Direct water flows to grass or gravel areas or contain the water onsite and allow it to evaporate and infiltrate
- For annual flushing, de-chlorinate the water either chemically with appropriate products, or naturally through a 10-day retention period with no chlorine addition prior to release
- Verify chlorine and pH levels prior to release during annual flushing, with pH levels falling between 6.0 and 8.0 and free chlorine levels of 0.01 mg/l or less
- Release discharge from annual flushing at a controlled rate, as slowly as reasonably feasible

Should site-specific issues prevent all of the above conditions from being met, a SOP approved by Public Works Environmental Services is required to be adopted and posted at the site.

200.5 TRAINING

200.5.1 GENERAL TRAINING

The following personnel must receive stormwater training biennially (every two years):

- Field personnel
- Personnel responsible for road, street, and parking lot maintenance
- Personnel working in and around recreation, public works, and maintenance facilities
- County plan reviewers, inspectors, emergency response employees, and construction site operators
- Any additional personnel deemed necessary by the permit

Training must include, at a minimum: MS4 requirements, recognition and reporting of illicit discharges, and good housekeeping and pollution prevention practices.

200.5.2 PESTICIDE AND HERBICIDE APPLICATION TRAINING

Employees and contractors who apply pesticides and herbicides must be properly trained or certified per the Virginia Pesticide Control Act (§3.2-3900 et seq. of the Code of Virginia).

200.5.3 EROSION AND SEDIMENT CONTROL TRAINING

County plan reviewers, inspectors, program administrators, and construction site operators must be trained and obtain appropriate certifications as required under Virginia Erosion and Sediment Control Law and attendant regulations.

200.5.4 SPILL RESPONSE TRAINING

All County personnel with responsibilities for complying with a facility's Spill Prevention Control and Countermeasure Plan (SPCC) must receive annual spill response training.

All Department of Fire & Rescue uniformed personnel must be trained to the level of Hazardous Materials First Responder Operations as required by OSHA standards (29 CFR 1910.120(q)(6)(ii). Annual refresher training is required and must, at a minimum, meet requirements of OSHA Standards (29 CFR 1910.120(q)(8)(ii).

The Department of Fire and Rescue's Hazardous Materials Response Team must consist of at least 10% of the Uniform personnel that are trained to the Hazardous Materials Technician

Level (29 CFR 1910.120(q)(6)(iil). Annual refresher training is required and must meet the requirements of OSHA Standards (29 CFR 1910.120(q)(8)(ii).

200.6 NOTIFICATION OF SPILLS AND/OR ILLICIT DISCHARGES

If an illicit discharge is observed or created, departments are responsible for immediately reporting the incident to PWC Hazardous Material Personnel by calling 911 or non-emergency number at (703) 792-6700. Details such as location of the incident and description of the discharge should be conveyed. Secondary notification should be made to Environmental Services and Risk Management via the Spill Report Form located on the Risk Management intranet home page.

200.7 RECORD KEEPING/ ANNUAL REPORTING

Public Works Environmental Services will notify all impacted departments of annual reporting requirements in the first quarter of each fiscal year. Within the first 30 days following the close of that fiscal year, Departments will provide Environmental Services all required data, reports, and other deliverables assigned to them at the start of the year. Should a new or revised requirement be imposed, Environmental Services will notify impacted departments within 30 days.

200.8 SWPPP

Facilities that have been identified as high priority through the MS4 permitting process will be notified by Environmental Services and required to develop and implement a Storm Water Pollution Prevention Plan (SWPPP). Departments are responsible for complying with all SWPPP requirements including good housekeeping, record keeping, training, and inspections.

200.9 OVERSIGHT

Risk Management and Environmental Services will audit records and inspect facilities for compliance with the MS4 permit on an annual basis. Results of audits and inspections will be reported to department management and executive management.

Appendix J – Public Education/Participation

Please help us protect and improve our waterways.

pwcgov.org/cleanwaters

Proper disposal of cooking oil and grease keeps it out of our storm drains and waterways, preventing pollution and violations of County ordinances.

BEST MANAGEMENT PRACTICES

Locate containers away from storm drains.

If possible, locate them to an enclosed area.

Do NOT place containers near storm drains.

Keep the lid closed.

If the container is full, immediately call the vendor for servicing.

Do NOT overfill.

Do NOT leave lid open

Before a spill occurs:
Have a spill kit on site.
Train staff on how to use the kit.

After a spill has been cleaned:
Properly dispose absorbent materials after use.

Do NOT wash away the grease. Impervious surfaces lead to storm drains. This is prohibited per County Code *Article II. Sec. 23.2- 4.1.*

Anything that enters a storm drainage system that isn't storm water is NOT treated and flows directly into our waterways causing pollution.

Additionally, used cooking oil smells, creates a slipping hazard, and attracts rats and insects. By implementing best management practices you can keep your establishment in compliance and safe for employee.

Environmental Services Division
For more information, visit us at pwcgov.org/cleanwaters
Report violations to 703-792-7070 or illicitdischarge@pwcgov.org

PRINCE WILLIAM
Public Works

Don't Blow It!

- Prevent yard waste and debris of any kind from entering the storm drain.
- Keep all ditches and drainage ways clear of obstructions so stormwater can flow freely.
- Blow yard waste back onto a landscaped area, not the street, drain, ditch, pond, creek, etc.
- Collect and contain yard waste. Do not dispose in the regular trash.

REPORT VIOLATIONS

Prince William County
Watershed Management Branch
703-792-7070
illicitdischarge@pwcgov.org

PRINCE WILLIAM COUNTY

FOR MORE INFORMATION

www.pwcgov.org/cleanwaters

¡No Soplen Basura al Drenaje!

- Prevengan que la basura y los recortes del jardín entren en los drenajes o alcantarillas.
- Mantengan todas las zanjas, cunetas y drenajes limpios de obstrucción, de manera que las aguas pluviales puedan fluir libremente.
- Soplen la basura del jardín hacia dentro del área del jardín, nunca hacia la calle, la cuneta, el drenaje, el estanque, el arroyo o riachuelo, etc.
- Recojan y contengan separadamente la basura del jardín; no la mezclen con la basura regular.

REPORTAR VIOLACIONES A:

Prince William County
Watershed Management Branch
703-792-7070
illicitdischarge@pwcgov.org

PRINCE WILLIAM COUNTY

PARA OBTENER MÁS INFORMACIÓN

www.pwcgov.org/cleanwaters

Please help us protect and improve our waterways.

PRINCE WILLIAM
Public Works

Keeping YARD WASTE out of storm drains helps to protect water quality and ensure the storm drainage system functions properly. Here are several things you can do to help.

- **Prevent yard waste and debris of any kind from entering the storm drain.**
- **Keep all ditches and drainage ways clear of obstructions so storm-water can flow freely.**
- **Blow yard waste back onto a landscaped area, not the street, drain, ditch, pond, creek, etc.**
- **Collect and contain yard waste. Do not dispose in the regular trash.**

In addition to potentially clogging the drain, excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. Yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.

For more information, visit us at www.pwcgov.org/cleanwaters

Prince William County
Environmental Services Division

Violations can be reported at
703-792-7070 or
illicitdischarge@pwcgov.org

Por favor ayúdenos a proteger y mejorar nuestras fuentes acuíferas.

PRINCE WILLIAM
Public Works

Mantener la BASURA DEL JARDÍN fuera de los drenajes ayuda a proteger la calidad del agua y asegura que el sistema de alcantarillado funcione apropiadamente. Aquí damos una lista de cosas que ustedes pueden hacer para ayudar.

- **Prevengan que la basura y los recortes del jardín entren en los drenajes o alcantarillas.**
- **Mantengan todas las zanjas, cunetas y drenajes limpios de obstrucción, de manera que las aguas pluviales puedan fluir libremente.**
- **Soplen la basura del jardín hacia dentro del área del jardín, nunca hacia la calle, la cuneta, el drenaje, el estanque, el arroyo o riachuelo, etc.**
- **Recojan y contengan separadamente la basura del jardín; no la mezclen con la basura regular.**

Además de potencialmente tapar los drenajes, el exceso de fertilizantes y pesticidas aplicados a la grama y en jardines termina lavándose y contaminando arroyos y riachuelos. Los recortes del jardín y las hojas pueden lavarse hacia dentro de los drenajes y alcantarillas y depositar nutrientes y materia orgánica en los arroyos y riachuelos.

Para obtener más información, visítenos en www.pwcgov.org/cleanwaters

Prince William County
Environmental Services Division

Reportar violaciones al teléfono
703-792-7070 o al email
illicitdischarge@pwcgov.org

ARTICLE II. STORMWATER POLLUTION

Sec. 23.2-4.1. Unlawful discharge to the stormwater system and waters of the county

(a) It shall be a violation of this article for any person to discharge:

(1) Any wastes, trash, garbage, or any matter causing or aiding pollution on any property in the County in any manner so as to allow such to be washed into any stormwater system by storm or floodwater.

(2) Any grass clippings, mulch, or yard waste, animal carcasses and other wastes into the stormwater system, or do any injury to the stormwater system or in any manner pollute the stormwater system.

(3) Any discharge of gasoline, oil waste, antifreeze, or other automotive, motor or equipment fluids into the stormwater system.

(4) Any commercial, industrial, or manufacturing entity to discharge process water, wash water, or unpermitted discharge into any stormwater system.

(5) Any person to throw, place, or deposit, or cause to be thrown, placed or deposited, in any gutter, ditch, storm drain or other drainage area in the county, anything that impedes or interferes with the free flow of stormwater therein.

(6) Chlorinated swimming pool water without dissipating chlorine.

(b) Subject to the provisions of subsection (c) below, the following activities shall not be unlawful discharges:

(1) Discharges pursuant to a VPDES or NPDES permit;

(2) Discharges resulting from fire fighting activities;

(3) Water line flushing;

(4) Landscape irrigation;

(5) Diverted stream flows or rising groundwater;

(6) Infiltration of uncontaminated groundwater;

(7) Pumping of uncontaminated groundwater;

(8) Discharges from potable water sources, foundation drains, irrigation water, springs, water from crawl spaces or footing drains;

(9) Air conditioning condensation;

(10) Lawn watering;

(11) Residential car washing;

(12) Dechlorinated swimming pool discharges; and

(13) Public street washing.

(Ord. 03-87, 9-16-03)

Sec. 23.2-4.2. Inspecting and monitoring stormwater discharge.

The director shall have the authority to inspect and monitor discharges and sources of potential discharge to the storm sewer system to ensure compliance with this article, including the authority to enter upon private property to inspect or monitor such discharges or sources of potential discharge. The director shall also have the authority to initiate enforcement actions in accordance with section 23.2-4.3.

(Ord. 03-87, 9-16-03)

Sec. 23.2-4.3. Notice to correct violations.

If any activity listed in subsection 23.2-4.1(b) of this chapter is found by the director to be a source of pollutants to waters of the United States, the director shall serve a written notice on the party responsible for the activity which orders that the activity be ceased or conducted in a manner that will avoid the discharge of pollutants to the stormwater system. The notice shall state the date by which the activity shall cease or be conducted without pollution. Failure to comply with any such order within the time stated in the notice shall constitute a violation.

For any violations of this chapter, the owner must comply with the director's orders within the time specified in the notice. Failure to comply with such order shall constitute a violation of this chapter. In addition to any penalty imposed for each violation, a judge hearing the case may direct the person responsible to remediate or correct, and each day's default in such remediation or correction shall constitute a violation of and a separate offense under this section.

(Ord. 03-87, 9-16-03)

Sec. 23.2-4.4. Penalties for violations of article.

(a) Any person who knowingly violates any provision of this article shall be guilty of a Class 1 misdemeanor. Each day that such violation is committed, and each day that such violation is permitted to remain uncorrected shall constitute a separate offense.

(b) Any person who otherwise violates any provision of this article shall be subject to civil penalty between $250.00 and $1,000.00 for each day that the violation continues. The court assessing such civil penalty may order the penalty to be paid into the treasury of the county and designated for the purpose of minimizing, preventing, managing or mitigating pollution of the waters of the county.

(c) Any person who violates any provision of this article shall be responsible for testing, containing cleaning up, abating, removing and disposing of any substance unlawfully discharged into the storm sewer system or into waters of the county, or, if the director determines that correction of the violation can best be accomplished by the county, shall be liable to the county for all costs of testing, containment, cleanup, abatement, removal and disposal of any substance unlawfully discharged into the storm sewer system or into waters of the county.

(Ord. 03-87, 9-16-03)

Appendix K - Training

Prince William County Government
Board of County Supervisors

Illicit Discharge Detection

David Ungar – Environmental Engineer,
Watershed Management

Definitions

- Municipal Separate Storm Sewer System (MS4): Conveyance or system of conveyances that discharge into local water bodies.
  - These discharges are NOT treated!

- Illicit Discharge: Any discharge to the MS4 that is not composed entirely of storm water.
  - There are exceptions to this.

The difference between spills and illicit discharges

- Spills are typically accidental discharges, whereas illicit discharges are done on purpose or through negligence.
- Spill examples:
  - Hydraulic hose burst
  - Automotive fluids from car crash
- Report spills:
  - Fire Marshal's Office at 703-792-6360
  - Risk Management at 703-792-6741

Examples of Discharges

- Allowed
  - Residential car washing
  - Lawn watering
  - Air conditioning condensation
  - Fire fighting activities
  - Water line flushing
  - Uncontaminated ground water
- Prohibited
  - Commercial car washing
  - Chlorinated swimming pool water
  - Motor vehicle fluids
  - Cooking oil
  - Paint
  - Litter
  - Salt stockpiles
  - Yard waste
  - Wash water

Negative impacts

- Can produce health risks to people coming into contact with the water and shutdown public recreational facilities.
- Increase cost to treat water before being used for drinking and irrigation.
- Organic matter provides nutrients that cause algal blooms. Algal blooms deplete oxygen and can kill aquatic organisms.
- Can contaminate fish, crabs, clams, and other potential food sources.

Enforcement: County Ordinance

ARTICLE II. STORMWATER POLLUTION

Sec. 23.2-4.1. Unlawful discharge to the stormwater system and waters of the county

(a) It shall be a violation of this article for any person to discharge:

(1) Any wastes, trash, garbage, or any matter causing or aiding pollution on any property in the County in any manner so as to allow such to be washed into any stormwater system by storm or floodwater.

(2) Any grass clippings, mulch, or yard waste, animal carcasses and other wastes into the stormwater system, or do any injury to the stormwater system or in any manner pollute the stormwater system.

(3) Any discharge of gasoline, oil waste, antifreeze, or other automotive, motor or equipment fluids into the stormwater system.

(4) Any commercial, industrial, or manufacturing entity to discharge process water, wash water, or unpermitted discharge into any stormwater system.

(5) Any person to throw, place, or deposit, or cause to be thrown, placed or deposited, in any gutter, ditch, storm drain or other drainage area in the county, anything that impedes or interferes with the free flow of stormwater therein.

(6) Chlorinated swimming pool water without dissipating chlorine.

(b) Subject to the provisions of subsection (c) below, the following activities shall not be unlawful discharges:

(1) Discharges pursuant to a VPDES or NPDES permit;

(2) Discharges resulting from fire fighting activities;

(3) Water line flushing;

(4) Landscape irrigation;

(5) Diverted stream flows or rising groundwater;

(6) Infiltration of uncontaminated groundwater;

(7) Pumping of uncontaminated groundwater;

(8) Discharges from potable water sources, foundation drains, irrigation water, springs, water from crawl spaces or footing drains;

(9) Air conditioning condensation;

(10) Lawn watering;

(11) Residential car washing;

(12) Dechlorinated swimming pool discharges; and

(13) Public street washing.

(Ord. 03-87, 9-16-03)

Enforcement: County Ordinance

Sec. 23.2-4.4. Penalties for violations of article.

(a) Any person who knowingly violates any provision of this article shall be guilty of a Class 1 misdemeanor. Each day that such violation is committed, and each day that such violation is permitted to remain uncorrected shall constitute a separate offense.

(b) Any person who otherwise violates any provision of this article shall be subject to civil penalty between $250.00 and $1,000.00 for each day that the violation continues. The court assessing such civil penalty may order the penalty to be paid into the treasury of the county and designated for the purpose of minimizing, preventing, managing or mitigating pollution of the waters of the county.

(c) Any person who violates any provision of this article shall be responsible for testing, containing cleaning up, abating, removing and disposing of any substance unlawfully discharged into the storm sewer system or into waters of the county, or, if the director determines that correction of the violation can best be accomplished by the county, shall be liable to the county for all costs of testing, containment, cleanup, abatement, removal and disposal of any substance unlawfully discharged into the storm sewer system or into waters of the county.

(Ord. 03-87, 9-16-03)


STOP


SWMP: 5509
Outfall: 35409
Outfall: 24409
C
D
B
A
MENDOZA LN
STOCKHOLM WAY
ROTTERDAM LOOP
LANDINGS POINT LOOP
TASSIN LN
Cooking oil dumping inlet

Reporting

- If the discharge poses a direct threat to public health, call 911.
- Phone: 703-792-7104
- Email: illicitdischarge@pwcgov.org
- Learn more at www.pwcgov.org/cleanwaters

Appendix L – Water Quality Programs

Wet Weather Monitoring Report

Third Quarter 2020 (July 1 – September 30)
Event Date: September 29, 2020

Prepared for:

Prince William County Department of Public Works
5 County Complex Court, Suite 170
Prince William, Virginia 22192

Prepared by:

Wood Environment & Infrastructure Solutions, Inc.
4795 Meadow Wood Lane, Suite 310E
Chantilly, VA 20151
(703) 488-3700

November 13, 2020
Project No. 151270004

1.0 INTRODUCTION

Wood Environment & Infrastructure Solutions, Inc. (Wood) is pleased to provide this report of wet weather monitoring for compliance with the requirements of the Virginia Stormwater Management Program (VSMP) Municipal Separate Storm Sewer System (MS4) Permit (Number VA0088595), issued by the Virginia Department of Environmental Quality (VDEQ) to Prince William County, Virginia. This report discusses the results of the Q3 sampling event conducted on September 29, 2020, as well as the findings from the water quality analysis results of those sampling events.

2.0 METHODS

Flow rate data were collected at the outfalls by an ISCO 6712 automated sampler coupled with an ISCO 730 bubbler flow module, installed with a Scissors Ring. Flow rate over the course of the sampling events were electronically calculated using ISCO Flowlink 5.1 software, which utilizes the Manning Equation to convert flow level and velocity to flow rate.

SITE #941; MANASSAS, VA

Site #941 is located near 11850 Livingston Road. The site receives a total of 52 acres of upstream drainage area from a land surface that is 34% impervious. County data documents that the pipe is 54 inches in diameter with a slope of 0.03437. This site is subject to backwater conditions as water levels within the downstream pond have risen over the past year. Maintenance is recommended to ensure the continued efficacy of the monitoring program at this site.

SITE #4684; DALE CITY, VA

Site #4684 is located near the corner of Potomac Center Blvd. and Sheffield Hill Way, north of Eastbourne Drive. It drains into a BMP for the Potomac Club residential development. Upstream drainage totaled 51 acres, 21% of which is from impervious surfaces. The pipe is 54 inches in diameter with a slope of 0.002593. Storm events at this site are flashy in nature, accounted for by programming shorter sample intervals, if necessary based upon forecast conditions.

The automated samplers were deployed when a qualifying storm event (>0.3 inches precipitation) was forecast for the two monitoring sites. On September 29, 2020, Wood staff deployed the samplers at both field sites and programmed the samplers' automated, discrete sampling sequence to initiate upon flow levels exceeding current water levels in each pipe. The samplers were programmed to collect 24 discrete 800 mL samples to be collected every 30 or 40 minutes over a 12- or 16-hour duration. Rain gage data were compiled for monitoring stations in the Weather Underground monitoring network. The data were easily accessible online and provided hourly precipitation totals over the monitoring period. Gages were prioritized based on the makeup of the data record (reporting interval) and proximity to monitoring locations.

Following the storm event, staff retrieved the samples and prepared them for shipment to Pace Environmental for water quality analysis. To compile the complete set of discrete samples into a single flow-weighted composite, Flowlink software calculated the storm event discharge using the Manning Equation:

$$Q = VA = \left(\frac{1.49}{n}\right) A R^{\frac{2}{3}} \sqrt{S} \text{ [US]}$$

Q = Flow rate
A = Flow area
V = Avg. velocity
S = Water surface slope
R = Hydraulic Radius
n = Roughness coefficient
1.49 = English units conversion factor

Channel slopes were determined using invert elevations reported in the stormwater infrastructure geospatial data provided by Prince William County. Using flow levels reported by the ISCO samplers, the area and hydraulic radius inside the sampled outfalls could be computed for a given time interval. A Manning's *n* value of 0.013 was assumed for the concrete pipes. Discrete samples collected over the duration of the storm event were then mixed based on their representative weight within the cumulative flow curve for each storm event. This flow weighted composite sample was provided to the laboratory for analysis. The resulting analysis is considered the event mean concentration (EMC) of the individual analyte.

3.0 RESULTS

SITE #941; MANASSAS, VA

Sampling occurred from 16:20 September 29 – 03:50 September 30, 2020. The Global Historical Climatology Network (GHCN) daily gauge in Manassas, VA (USC00445204) 0.62 inches of precipitation for the 24-hour period over which the storm occurred. The previous precipitation event was recorded on September 27, totaling 0.45 inches.

SITE #4684; DALE CITY, VA

Sampling occurred from 21:20 September 29 – 04:50 September 30, 2020. Upon initiation, the ISCO sampler did not collect a full sample, likely due to initially low flow conditions. Global Historical Climatology Network (GHCN) daily gauge in Woodbridge, VA (US1VAPW0010) recorded 0.54 inches of precipitation for the 24-hour period over which the storm occurred. The previously recorded event measured 0.52 inches of precipitation on September 26. The sampler installation has been altered to incorporate a low flow probe that is positioned at a lower profile. This will ensure that samples are collected when the sampler is triggered.

Samples were retained under refrigeration until they were composited and shipped overnight to Pace Analytical on September 30.

3.1 FLOW DATA

SITE #941; MANASSAS, VA

Flow ranged from 0.15 – 6.18 cfs. The storm event hydrograph compared with cumulative volume can be seen in Figure 1. Table 1 lists the proportion of each sample mixed with the flow-weighted composite.

Flow rate and volume are calculated by measuring changes in water level over time. Backwater effects at the pond have rendered the current monitoring setup ineffective. These shifting flow rate levels are indicative of faults with the flow meter, and Wood is recommending the County send the bubbler module to ISCO for maintenance.

Figure 1: Flow data over time for the storm event at Site #941 on September 30, 2020.

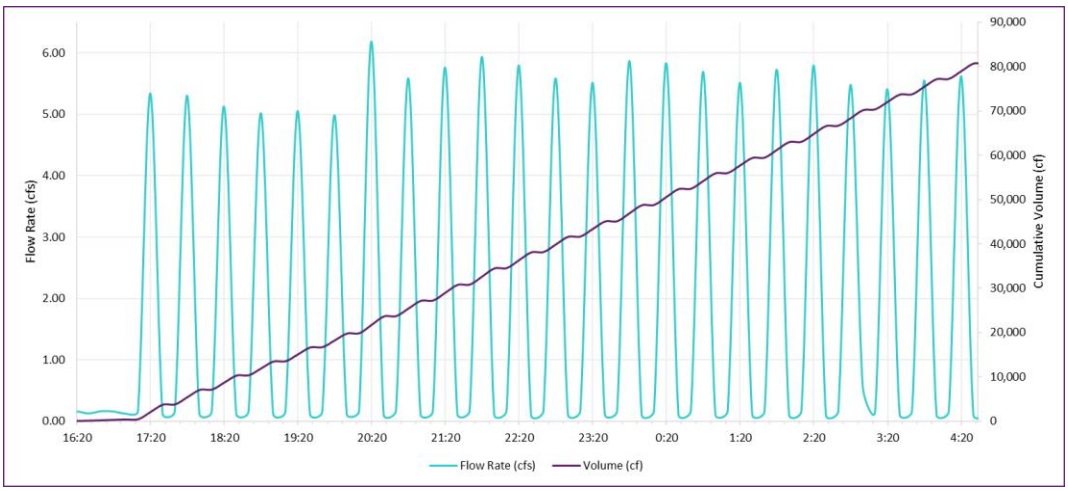


Table 1: Summary of Flow Weighted Composite – Site #941

Bottle #	Time of Sample	Volume (cf)	% of Flow	Flow Weighted Volume (L)*
1	9/29/2020; 16:20	92.4	0.24	0.01
2	16:50	93.0	0.25	0.01
3	17:20	1646.6	4.36	0.22
4	17:50	1634.8	4.33	0.22
5	18:20	1580.9	4.18	0.21
6	18:50	1549.4	4.10	0.20
7	19:20	1559.1	4.12	0.21
8	19:50	1538.5	4.07	0.20
9	20:20	1902.9	5.03	0.25
10	20:50	1722.8	4.56	0.23
11	21:20	1773.1	4.69	0.23
12	21:50	1829.1	4.84	0.24
13	22:20	1786.4	4.73	0.24
14	22:50	1721.3	4.55	0.23
15	23:20	1699.5	4.50	0.22
16	23:50	1806.4	4.78	0.24
17	9/30/2020; 0:20	1795.8	4.75	0.24
18	0:50	1754.0	4.64	0.23
19	1:20	1699.8	4.50	0.22
20	1:50	1762.5	4.66	0.23
21	2:20	1784.3	4.72	0.24
22	2:50	1688.3	4.47	0.22
23	3:20	1667.1	4.41	0.22
24	3:50	1709.2	4.52	0.23

**5.0 L Sample*

SITE #4684; DALE CITY, VA

Flow ranged from 0.07 – 0.25 cfs. The storm event hydrograph compared with cumulative volume can be seen in Figure 2. Table 2 lists the proportion of each sample mixed with the flow-weighted composite. The flow-weighted composite volume was adjusted to incorporate representative volumes from the collected samples. The sampler failed to collect full samples after approximately 05:00 on September 30, when the flow rate fell below 0.10 cfs. As previously mentioned in this report, a low flow sampler probe has been purchased to account for this issue.

Figure 1: Flow data over time for the storm event at Site #4684 on September 30, 2020.

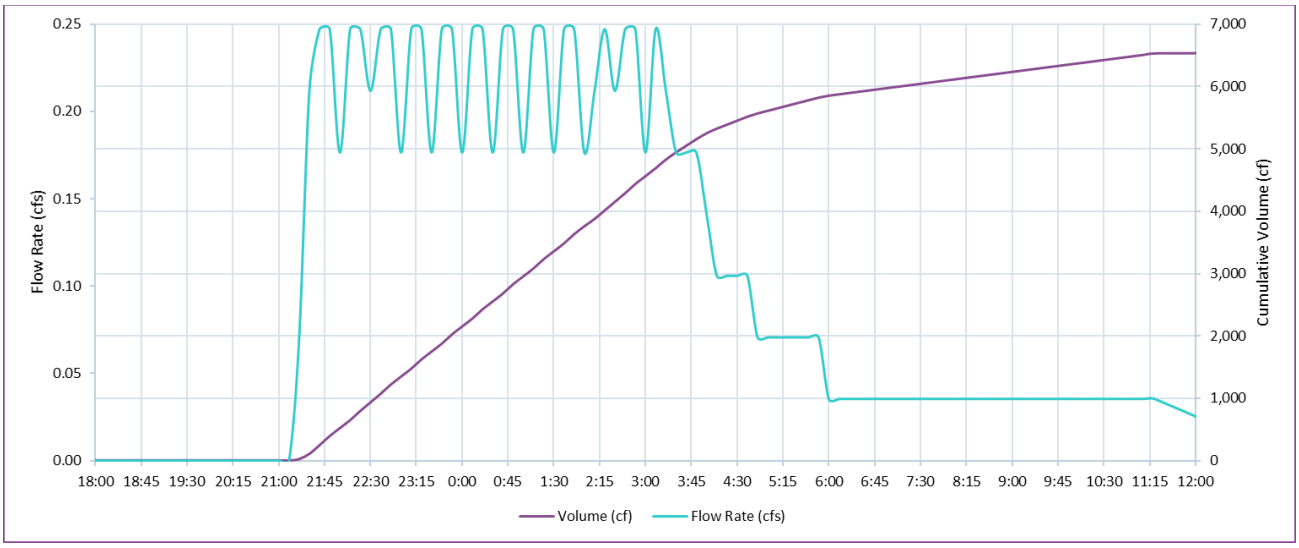


Table 2: Summary of Flow Weighted Composite – Site #4684

Bottle #	Time of Sample	Volume (cf)	% of Flow	Flow Weighted Volume (L)*
1	**9/29/2020;** 21:20	21.2	1.67	0.08
2	22:00	127.1	10.00	0.50
3	22:50	148.3	11.67	0.58
4	23:30	127.1	10.00	0.50
5	**9/30/2020;** 00:20	148.3	11.67	0.58
6	01:00	127.1	10.00	0.50
7	01:50	148.3	11.67	0.58
8	02:30	137.7	10.83	0.54
9	03:20	137.7	10.83	0.54
10	04:00	95.3	7.50	0.38
11	04:50	53.0	4.17	0.21

**5.0 L Sample*

3.2 LABORATORY ANALYTICAL RESULTS

Samples were sent to Pace Analytical Services, Inc. lab in Asheville, NC for analysis, with Analytical Parameters tested listed in **Table 3**.

Table 3: Analytical Parameters

Analyte	Analysis Method
Copper	EPA 200.7
Lead	EPA 200.7
Nickel	EPA 200.7
Zinc	EPA 200.7
Total Suspended Solids	SM 2540D
pH	EPA 9040
Ammonia	EPA 350.1 1993 Rev 2.0
Total Kjeldahl Nitrogen	EPA 351.2
Nitrate + Nitrite Nitrogen	EPA 353.2
Total Phosphorus	EPA 365.1
Chemical Oxygen Demand	SM 5220D

Table 4: Results of Water Quality Analysis

	Analyte	Analyte Value*	Analyte Unit	Detection Limit	Exceedance Criterion	Criterion Basis
Manassas (#941)	Copper	22.6	µg/L	5	13	a
	Lead	ND	µg/L	5	120	a
	Nickel	ND	µg/L	5	180	a
	Zinc	57.8	µg/L	10	120	a
	Total Suspended Solids	20.1	mg/L	10	100	b
	Nitrogen, Ammonia	ND	mg/L	0.1		-
	Nitrogen, Kjeldahl, Total	0.7	mg/L	0.5		-
	Nitrogen, NO^2 plus NO^3	0.6	mg/L	0.02		-
	Total Nitrogen	1.4	mg/L	-	2.2	c
	Phosphorus, Total	0.10	mg/L	0.05	2	b
	Chemical Oxygen Demand	31.9	mg/L	25	120	b
	pH	6.6	Std. Units	0.1	6.0-9.0	d
Dale City (#4684)	Copper	ND	µg/L	5	13	a
	Lead	ND	µg/L	5	120	a
	Nickel	ND	µg/L	5	180	a
	Zinc	27.9	µg/L	10	120	a
	Total Suspended Solids	3.3	mg/L	10	100	b
	Nitrogen, Ammonia	ND	mg/L	0.1		-
	Nitrogen, Kjeldahl, Total	0.6	mg/L	0.5		-
	Nitrogen, NO^2 plus NO^3	0.3	mg/L	0.02		-
	Total Nitrogen	0.9	mg/L	-	2.2	c
	Phosphorus, Total	ND	mg/L	0.05	2	b
	Chemical Oxygen Demand	ND	mg/L	25	120	b
	pH	4.3	Std. Units	0.1	6.0-9.0	d

[a]State Water Quality Control Board Acute Standards for Surface Water Quality. Value is based on an assumed hardness of 100mg/L.
[b]Based on benchmark criteria for the VPDES Industrial Stormwater General Permit.
[c]The sum of Nitrogen as Ammonia, NO^2, NO^3, and Total Kjeldahl Nitrogen.
[d]Based on numeric effluent limitations noted in the VPDES Permit for Discharge of Stormwater Associated with Industrial Activity.
*Values highlighted in red were found to be in exceedance of their respective criterion.

4.0 SUMMARY

As indicated in **Table 4,** exceedances occurred for Copper at Site #941, measuring 22.6 µg/L, and for pH at Site #4684, reading 4.3 when received by the lab. Copper exceedances remains persistent at the Manassas site. Exceedance tracking for parameters of concern are illustrated in **Figure 3** below.

Figure 2: Exceedance tracking for the Wet Weather Monitoring Program.

Manassas (#941)	2016		2017				2018				2019				2020		
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Copper	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x
Lead																	
Nickel																	
Zinc	x		x	x	x	x	x	x							x	x	
Total Suspended Solids						x	x								x	x	
Total Nitrogen					x	x	x				x						
Phosphorus, Total																	
Chemical Oxygen Demand		x				x	x								x		
pH						x											

Dale City (#4684)	2016		2017				2018				2019				2020		
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2*	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Copper	x		x	x	x	x	x	--		x	x						
Lead								--									
Nickel								--									
Zinc			x		x	x	x	--									
Total Suspended Solids						x		--									
Total Nitrogen	x	x	x	x		x	x	--			x						
Phosphorus, Total								--									
Chemical Oxygen Demand						x	x	--									
pH		x		x		x		--									x

* No sample collected at #4684 during Q2 2018.

APPENDIX A

SITE CONDITIONS

Manassas (#941)

Site #941 is located within the Bull Run watershed. It receives drainage from an industrial use area and parking lots with frequent truck traffic. Water levels are persistently found to be above 6 – 10 inches in the monitoring outfall.

Dale City (#4684)

Site #4684 receives flow from Neabsco Mills Road and the Stonebridge at Potomac Town Center development. It is a 54” concrete pipe that drains to a deep scour pool before draining to a large BMP that collects drainage for the Potomac Club development. The bottom photo shows low flow levels falling below the suction line of the standard flow probe previously used in the sampler installation at the Dale City site.

APPENDIX B

WATER QUALITY LABORATORY RESULTS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

October 07, 2020

Benjamin Green
WOOD E&I
14424 Albemarle Point Place
Suite 115
Chantilly, VA 20151

RE: Project: PRINCE WILLIAM CO Q3 2020
Pace Project No.: 92498247

Dear Benjamin Green:

Enclosed are the analytical results for sample(s) received by the laboratory on October 01, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Amanda Payne
amanda.payne@pacelabs.com
(704)875-9092
Project Manager

Enclosures

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: PRINCE WILLIAM CO Q3 2020
Pace Project No.: 92498247

Pace Analytical Services Asheville
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE SUMMARY

Project: PRINCE WILLIAM CO Q3 2020
Pace Project No.: 92498247

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92498247001	**MAN 0929**	Water	09/30/20 03:50	10/01/20 10:20
92498247002	**DAL 0929**	Water	09/30/20 04:50	10/01/20 10:20

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE ANALYTE COUNT

Project: PRINCE WILLIAM CO Q3 2020
Pace Project No.: 92498247

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92498247001	**MAN 0929**	EPA 200.7 Rev 4.4 1994	RDT	4	PASI-A
		SM 2540D-2011	RED	1	PASI-A
		EPA 9040C	SMK	1	PASI-A
		EPA 350.1 Rev 2.0 1993	JKG	1	PASI-A
		EPA 351.2 Rev 2.0 1993	MFO	1	PASI-A
		EPA 353.2 Rev 2.0 1993	KDF1	1	PASI-A
		EPA 365.1 Rev 2.0 1993	KDF1	1	PASI-A
		SM 5220D-2011	MDW	1	PASI-A
92498247002	**DAL 0929**	EPA 200.7 Rev 4.4 1994	RDT	4	PASI-A
		SM 2540D-2011	RED	1	PASI-A
		EPA 9040C	SMK	1	PASI-A
		EPA 350.1 Rev 2.0 1993	JKG	1	PASI-A
		EPA 351.2 Rev 2.0 1993	MFO	1	PASI-A
		EPA 353.2 Rev 2.0 1993	KDF1	1	PASI-A
		EPA 365.1 Rev 2.0 1993	KDF1	1	PASI-A
		SM 5220D-2011	MDW	1	PASI-A

PASI-A = Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: PRINCE WILLIAM CO Q3 2020
Pace Project No.: 92498247

Sample: MAN 0929 **Lab ID: 92498247001** Collected: 09/30/20 03:50 Received: 10/01/20 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Rev 4.4 1994 Preparation Method: EPA 200.7 Rev 4.4 1994 Pace Analytical Services - Asheville							
Copper	**22.6**	ug/L	5.0	1	10/03/20 00:46	10/03/20 20:16	7440-50-8	
Lead	ND	ug/L	5.0	1	10/03/20 00:46	10/03/20 20:16	7439-92-1	
Nickel	ND	ug/L	5.0	1	10/03/20 00:46	10/03/20 20:16	7440-02-0	
Zinc	**57.8**	ug/L	10.0	1	10/03/20 00:46	10/03/20 20:16	7440-66-6	
2540D TSS, Low-Level	Analytical Method: SM 2540D-2011 Pace Analytical Services - Asheville							
Total Suspended Solids	**20.1**	mg/L	1.5	1		10/05/20 18:33		
9040 pH	Analytical Method: EPA 9040C Pace Analytical Services - Asheville							
pH at 25 Degrees C	**6.6**	Std. Units	0.10	1		10/04/20 14:17		H3
350.1 Ammonia	Analytical Method: EPA 350.1 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, Ammonia	ND	mg/L	0.10	1		10/03/20 13:10	7664-41-7	
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2 Rev 2.0 1993 Preparation Method: EPA 351.2 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, Kjeldahl, Total	**0.73**	mg/L	0.50	1	10/07/20 01:38	10/07/20 08:20	7727-37-9	
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, NO2 plus NO3	**0.64**	mg/L	0.040	1		10/05/20 11:19		
365.1 Phosphorus, Total	Analytical Method: EPA 365.1 Rev 2.0 1993 Preparation Method: EPA 365.1 Rev 2.0 1993 Pace Analytical Services - Asheville							
Phosphorus	**0.096**	mg/L	0.050	1	10/06/20 08:06	10/06/20 11:56	7723-14-0	
5220D COD	Analytical Method: SM 5220D-2011 Preparation Method: SM 5220D-2011 Pace Analytical Services - Asheville							
Chemical Oxygen Demand	**31.9**	mg/L	25.0	1	10/06/20 21:10	10/07/20 00:41		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: PRINCE WILLIAM CO Q3 2020
Pace Project No.: 92498247

Sample: DAL 0929 **Lab ID: 92498247002** Collected: 09/30/20 04:50 Received: 10/01/20 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Rev 4.4 1994 Preparation Method: EPA 200.7 Rev 4.4 1994 Pace Analytical Services - Asheville							
Copper	ND	ug/L	5.0	1	10/03/20 00:46	10/03/20 20:19	7440-50-8	
Lead	ND	ug/L	5.0	1	10/03/20 00:46	10/03/20 20:19	7439-92-1	
Nickel	ND	ug/L	5.0	1	10/03/20 00:46	10/03/20 20:19	7440-02-0	
Zinc	**27.9**	ug/L	10.0	1	10/03/20 00:46	10/03/20 20:19	7440-66-6	
2540D TSS, Low-Level	Analytical Method: SM 2540D-2011 Pace Analytical Services - Asheville							
Total Suspended Solids	**3.3**	mg/L	1.0	1		10/05/20 18:34		
9040 pH	Analytical Method: EPA 9040C Pace Analytical Services - Asheville							
pH at 25 Degrees C	**4.3**	Std. Units	0.10	1		10/04/20 14:22		D6,H3
350.1 Ammonia	Analytical Method: EPA 350.1 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, Ammonia	ND	mg/L	0.10	1		10/03/20 13:11	7664-41-7	
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2 Rev 2.0 1993 Preparation Method: EPA 351.2 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, Kjeldahl, Total	**0.58**	mg/L	0.50	1	10/07/20 01:38	10/07/20 08:22	7727-37-9	
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, NO2 plus NO3	**0.30**	mg/L	0.040	1		10/05/20 11:20		
365.1 Phosphorus, Total	Analytical Method: EPA 365.1 Rev 2.0 1993 Preparation Method: EPA 365.1 Rev 2.0 1993 Pace Analytical Services - Asheville							
Phosphorus	ND	mg/L	0.050	1	10/06/20 08:06	10/06/20 11:57	7723-14-0	
5220D COD	Analytical Method: SM 5220D-2011 Preparation Method: SM 5220D-2011 Pace Analytical Services - Asheville							
Chemical Oxygen Demand	ND	mg/L	25.0	1	10/06/20 21:10	10/07/20 00:41		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q3 2020
Pace Project No.: 92498247

QC Batch: 570700
QC Batch Method: EPA 200.7 Rev 4.4 1994
Analysis Method: EPA 200.7 Rev 4.4 1994
Analysis Description: 200.7 MET
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92498247001, 92498247002

METHOD BLANK: 3023360 Matrix: Water
Associated Lab Samples: 92498247001, 92498247002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper	ug/L	ND	5.0	10/03/20 18:59	
Lead	ug/L	ND	5.0	10/03/20 18:59	
Nickel	ug/L	ND	5.0	10/03/20 18:59	
Zinc	ug/L	ND	10.0	10/03/20 18:59	

LABORATORY CONTROL SAMPLE: 3023361

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	500	501	100	85-115	
Lead	ug/L	500	482	96	85-115	
Nickel	ug/L	500	488	98	85-115	
Zinc	ug/L	500	465	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3023362 3023363

Parameter	Units	92496991001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper	ug/L	0.39 mg/L	500	500	894	905	101	103	70-130	1	20	
Lead	ug/L	ND	500	500	499	508	100	101	70-130	2	20	
Nickel	ug/L	ND	500	500	504	514	101	103	70-130	2	20	
Zinc	ug/L	0.054 mg/L	500	500	546	554	98	100	70-130	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3023364 3023365

Parameter	Units	92498025002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper	ug/L	ND	500	500	516	508	103	101	70-130	2	20	
Lead	ug/L	ND	500	500	500	491	100	98	70-130	2	20	
Nickel	ug/L	ND	500	500	504	494	101	99	70-130	2	20	
Zinc	ug/L	ND	500	500	495	486	99	97	70-130	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q3 2020
Pace Project No.: 92498247

QC Batch: 570970
QC Batch Method: SM 2540D-2011
Analysis Method: SM 2540D-2011
Analysis Description: 2540D Total Suspended Solids
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92498247001, 92498247002

METHOD BLANK: 3024466 Matrix: Water
Associated Lab Samples: 92498247001, 92498247002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	1.0	10/05/20 18:29	

LABORATORY CONTROL SAMPLE & LCSD: 3024467 3024668

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	250	234	270	94	108	90-110	14	10	R1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q3 2020
Pace Project No.: 92498247

QC Batch: 570768
QC Batch Method: EPA 9040C
Analysis Method: EPA 9040C
Analysis Description: 9040 pH
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92498247001, 92498247002

SAMPLE DUPLICATE: 3023544

Parameter	Units	92497700014 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.7	7.8	1	9	H3

SAMPLE DUPLICATE: 3023545

Parameter	Units	92498247002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	4.3	4.4	3	9	D6,H3

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q3 2020
Pace Project No.: 92498247

QC Batch: 570733
QC Batch Method: EPA 350.1 Rev 2.0 1993
Analysis Method: EPA 350.1 Rev 2.0 1993
Analysis Description: 350.1 Ammonia
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92498247001, 92498247002

METHOD BLANK: 3023434 Matrix: Water
Associated Lab Samples: 92498247001, 92498247002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.10	10/03/20 12:32	

LABORATORY CONTROL SAMPLE: 3023435

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3023436 3023437

Parameter	Units	92497773001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	6.1	5	5	10.9	11.0	97	97	90-110	0	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3023438 3023439

Parameter	Units	92497787001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	36.6	5	5	41.5	41.5	98	98	90-110	0	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q3 2020
Pace Project No.: 92498247

QC Batch: 571077
QC Batch Method: EPA 351.2 Rev 2.0 1993
Analysis Method: EPA 351.2 Rev 2.0 1993
Analysis Description: 351.2 TKN
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92498247001, 92498247002

METHOD BLANK: 3024790 Matrix: Water
Associated Lab Samples: 92498247001, 92498247002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	ND	0.50	10/07/20 07:54	

LABORATORY CONTROL SAMPLE: 3024791

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	10	9.3	93	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3024792 3024793

Parameter	Units	92497222001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Kjeldahl, Total	mg/L	0.66	10	10	9.8	10.4	92	97	90-110	5	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3024794 3024795

Parameter	Units	92498226003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Kjeldahl, Total	mg/L	1.3	10	10	10.8	10.7	95	93	90-110	1	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q3 2020
Pace Project No.: 92498247

QC Batch: 570810
QC Batch Method: EPA 353.2 Rev 2.0 1993
Analysis Method: EPA 353.2 Rev 2.0 1993
Analysis Description: 353.2 Nitrate + Nitrite, preserved
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92498247001, 92498247002

METHOD BLANK: 3023645 Matrix: Water
Associated Lab Samples: 92498247001, 92498247002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	ND	0.040	10/05/20 10:50	

LABORATORY CONTROL SAMPLE: 3023646

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2.5	2.6	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3023647 3023648

Parameter	Units	92498487017 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	1.4	2.5	2.5	3.8	3.8	99	98	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3023649 3023650

Parameter	Units	92498487018 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	0.13	2.5	2.5	2.7	2.7	103	103	90-110	0	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q3 2020
Pace Project No.: 92498247

QC Batch: 570877
QC Batch Method: EPA 365.1 Rev 2.0 1993
Analysis Method: EPA 365.1 Rev 2.0 1993
Analysis Description: 365.1 Phosphorus, Total
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92498247001, 92498247002

METHOD BLANK: 3024043 Matrix: Water
Associated Lab Samples: 92498247001, 92498247002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Phosphorus	mg/L	ND	0.050	10/06/20 11:42	

LABORATORY CONTROL SAMPLE: 3024044

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	2.5	2.5	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3024045 3024046

Parameter	Units	92497945001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phosphorus	mg/L	2.3	2.5	2.5	4.8	4.8	101	100	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3024047 3024048

Parameter	Units	92497955001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phosphorus	mg/L	19.2	2.5	2.5	22.0	22.7	110	139	90-110	3	10	M1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q3 2020
Pace Project No.: 92498247

QC Batch: 571297
QC Batch Method: SM 5220D-2011
Analysis Method: SM 5220D-2011
Analysis Description: 5220D COD
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92498247001, 92498247002

METHOD BLANK: 3025947 Matrix: Water
Associated Lab Samples: 92498247001, 92498247002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	25.0	10/07/20 00:38	

LABORATORY CONTROL SAMPLE: 3025948

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	750	754	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3025951 3025952

Parameter	Units	92497967002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	ND	100	100	121	116	107	102	90-110	4	3	R1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3026249 3026250

Parameter	Units	92497722001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	38.7	100	100	148	146	109	107	90-110	2	3	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALIFIERS

Project: PRINCE WILLIAM CO Q3 2020
Pace Project No.: 92498247

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
H3	Sample was received or analysis requested beyond the recognized method holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PRINCE WILLIAM CO Q3 2020
Pace Project No.: 92498247

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92498247001	**MAN 0929**	EPA 200.7 Rev 4.4 1994	570700	EPA 200.7 Rev 4.4 1994	570721
92498247002	**DAL 0929**	EPA 200.7 Rev 4.4 1994	570700	EPA 200.7 Rev 4.4 1994	570721
92498247001	**MAN 0929**	SM 2540D-2011	570970		
92498247002	**DAL 0929**	SM 2540D-2011	570970		
92498247001	**MAN 0929**	EPA 9040C	570768		
92498247002	**DAL 0929**	EPA 9040C	570768		
92498247001	**MAN 0929**	EPA 350.1 Rev 2.0 1993	570733		
92498247002	**DAL 0929**	EPA 350.1 Rev 2.0 1993	570733		
92498247001	**MAN 0929**	EPA 351.2 Rev 2.0 1993	571077	EPA 351.2 Rev 2.0 1993	571389
92498247002	**DAL 0929**	EPA 351.2 Rev 2.0 1993	571077	EPA 351.2 Rev 2.0 1993	571389
92498247001	**MAN 0929**	EPA 353.2 Rev 2.0 1993	570810		
92498247002	**DAL 0929**	EPA 353.2 Rev 2.0 1993	570810		
92498247001	**MAN 0929**	EPA 365.1 Rev 2.0 1993	570877	EPA 365.1 Rev 2.0 1993	571132
92498247002	**DAL 0929**	EPA 365.1 Rev 2.0 1993	570877	EPA 365.1 Rev 2.0 1993	571132
92498247001	**MAN 0929**	SM 5220D-2011	571297	SM 5220D-2011	571363
92498247002	**DAL 0929**	SM 5220D-2011	571297	SM 5220D-2011	571363

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
Asheville [X] Eden [ ] Greenwood [ ] Huntersville [ ] Raleigh [ ] Mechanicsville [ ]

Sample Condition Upon Receipt

Client Name: Wood E&I Chantilly

Project #: WO# : 92498247

92498247

Courier: [ ] Commercial [X] Fed Ex [ ] Pace [ ] UPS [ ] USPS [ ] Other: [ ] Client

Custody Seal Present? [ ] Yes [X] No Seals Intact? [ ] Yes [X] No

Date/Initials Person Examining Contents: 10-1-20 AR

Packing Material: [ ] Bubble Wrap [ ] Bubble Bags [X] None [ ] Other

Biological Tissue Frozen? [ ] Yes [ ] No [X] N/A

Thermometer: [X] IR Gun ID: 93-T061

Type of Ice: [X] Wet [ ] Blue [ ] None

Cooler Temp (°C): 2.8 Correction Factor: Add/Subtract (°C) 0

Cooler Temp Corrected (°C): 2.8

Temp should be above freezing to 6°C
[ ] Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil ([X] N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? [ ] Yes [X] No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? [ ] Yes [X] No

				Comments/Discrepancy:
Chain of Custody Present?	[X] Yes	[ ] No	[ ] N/A	1.
Samples Arrived within Hold Time?	[X] Yes	[ ] No	[ ] N/A	2.
Short Hold Time Analysis (<72 hr.)?	[ ] Yes	[X] No	[ ] N/A	3.
Rush Turn Around Time Requested?	[ ] Yes	[X] No	[ ] N/A	4.
Sufficient Volume?	[X] Yes	[ ] No	[ ] N/A	5.
Correct Containers Used?	[X] Yes	[ ] No	[ ] N/A	6.
-Pace Containers Used?	[X] Yes	[ ] No	[ ] N/A	
Containers Intact?	[X] Yes	[ ] No	[ ] N/A	7.
Dissolved analysis: Samples Field Filtered?	[ ] Yes	[ ] No	[X] N/A	8.
Sample Labels Match COC?	[X] Yes	[ ] No	[ ] N/A	9.
-Includes Date/Time/ID/Analysis Matrix: WT				
Headspace in VOA Vials (>5-6mm)?	[ ] Yes	[ ] No	[X] N/A	10.
Trip Blank Present?	[ ] Yes	[ ] No	[X] N/A	11.
Trip Blank Custody Seals Present?	[ ] Yes	[ ] No	[X] N/A	

Field Data Required? [ ] Yes [ ] No

COMMENTS/SAMPLE DISCREPANCY

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: Date/Time:

Project Manager SCURF Review: Date:

Project Manager SRF Review: Date:

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Project # WO# : 92498247

PM: AP Due Date: 10/08/20

CLIENT: 92-Amec VA

Items	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass Jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-V/H/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved Vials (N/A)	VSGU-20 mL Scintillation Vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1	1			1	2	1																							
2	1			1	2	1																							
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers.

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page : 1 Of 1

Section A – Required Client Information:	Section B – Required Project Information:	Section C – Invoice Information:
Company: Wood E&I - Chantilly	Report To: Benjamin Green	Attention:
Address: 14024 Albemarle Point Place	Copy To:	Company Name:
Chantilly, VA 20151		Address:
Email: benjamin.green@amecfw.com	Purchase Order #:	Pace Quote:
Phone: (703)488-3795 Fax:	Project Name: PRINCE WILLIAM CO Q3 2020	Pace Project Manager: amanda.payne@pacelabs.com,
Requested Due Date:	Project #:	Pace Profile #: 8125-1

Regulatory Agency: State / Location: VA

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample IDs must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analysis Test (Y/N)	pH	Metals	TSS	Ammonia/Phosphorus/COD	TKN + Nitrate+Nitrite	Residual Chlorine (Y/N)	92758247
1	MAN 0929	WT	G	09/29	1600	9/30	0350		5	2	2	1	-	-	-	-		Y	Y							01
2	DAL 0929	WT	G	9/29	2100	9/30	0450		5	1	2	1	-	-	-	-		Y	Y							02
3																										
4																										
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										

MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Benjamin Green	9/30	0850	A.Rucker/PACE/AVL	1020	1020	2.8 Y N Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Ben Green

SIGNATURE of SAMPLER: Benjamin Green DATE Signed: 9/30

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Wet Weather Monitoring Report

Fourth Quarter 2020 (October 1 – December 31)
Event Date: November 30, 2020

Prepared for:

Prince William County Department of Public Works
5 County Complex Court, Suite 170
Prince William, Virginia 22192

Prepared by:
Wood Environment & Infrastructure Solutions, Inc.
4795 Meadow Wood Lane, Suite 310E
Chantilly, VA 20151
(703) 488-3700

January 4, 2021
Project No. 151270004

1.0 INTRODUCTION

Wood Environment & Infrastructure Solutions, Inc. (Wood) is pleased to provide this report of wet weather monitoring for compliance with the requirements of the Virginia Stormwater Management Program (VSMP) Municipal Separate Storm Sewer System (MS4) Permit (Number VA0088595), issued by the Virginia Department of Environmental Quality (VDEQ) to Prince William County, Virginia. This report discusses the results of the Q4 sampling event conducted on November 30, 2020 as well as the findings from the water quality analysis results of those sampling events.

2.0 METHODS

Flow rate data were collected at the outfalls by an ISCO 6712 automated sampler coupled with an ISCO 730 bubbler flow module, installed with a Scissors Ring. Flow rate over the course of the sampling events were electronically calculated using ISCO Flowlink 5.1 software, which utilizes the Manning Equation to convert flow level and velocity to flow rate.

SITE #941; MANASSAS, VA

Site #941 is located near 11850 Livingston Road. The site receives a total of 52 acres of upstream drainage area from a land surface that is 34% impervious. County data documents that the pipe is 54 inches in diameter with a slope of 0.03437. This site is subject to backwater conditions as water levels within the downstream pond have risen over the past year. Maintenance is recommended to ensure the continued efficacy of the monitoring program at this site.

SITE #4684; DALE CITY, VA

Site #4684 is located near the corner of Potomac Center Blvd. and Sheffield Hill Way, north of Eastbourne Drive. It drains into a BMP for the Potomac Club residential development. Upstream drainage totaled 51 acres, 21% of which is from impervious surfaces. The pipe is 54 inches in diameter with a slope of 0.002593. Storm events at this site are flashy in nature, accounted for by programming shorter sample intervals, if necessary based upon forecast conditions.

The automated samplers were deployed when a qualifying storm event (>0.3 inches precipitation) was forecast for the two monitoring sites. On November 29, Wood staff deployed the samplers at both field sites and programmed the samplers' automated, discrete sampling sequence to initiate upon flow levels exceeding current water levels in each pipe. The samplers were programmed to collect 24 discrete 800 mL samples to be collected every 40 minutes, over 16 hours. Rain gage data were compiled for monitoring stations in the Weather Underground monitoring network. The data were easily accessible online and provided hourly precipitation totals over the monitoring period. Gages were prioritized based on the makeup of the data record (reporting interval) and proximity to monitoring locations.

Following the storm event, staff retrieved the samples and prepared them for shipment to Pace Environmental for water quality analysis. To compile the complete set of discrete samples into a single flow-weighted composite, Flowlink software calculated the storm event discharge using the Manning Equation:

$$Q \quad VA \quad (\tfrac{1.49}{n})AR^{\frac{2}{3}}\sqrt{S}\ [\text{US}]$$

Q = Flow rate
A = Flow area
V = Avg. velocity
S = Water surface slope
R = Hydraulic Radius
n = Roughness coefficient
1.49 = English units conversion factor

Channel slopes were determined using invert elevations reported in the stormwater infrastructure geospatial data provided by Prince William County. Using flow levels reported by the ISCO samplers, the area and hydraulic radius inside the sampled outfalls could be computed for a given time interval. A Manning's *n* value of 0.013 was assumed for the concrete pipes. Discrete samples collected over the duration of the storm event were then mixed based on their representative weight within the cumulative flow curve for each storm event. This flow weighted composite sample was provided to the laboratory for analysis. The resulting analysis is considered the event mean concentration (EMC) of the individual analyte.

3.0 RESULTS

SITE #941; MANASSAS, VA

Sampling occurred from 23:00 on 11/29 – 14:30 11/30. The Global Historical Climatology Network (GHCN) daily gauge in Manassas, VA (USC00445204) recorded 1.00 inches of precipitation over the 48-hour period from 11/29-11/30, with temperatures ranging from 33 – 56 degrees Fahrenheit during the sample collection period. The previous storm event was recorded on 11/23, producing 0.1 inches of precipitation.

SITE #4684; DALE CITY, VA

Sampling occurred from 03:30 – 19:00 on 11/30. The Global Historical Climatology Network (GHCN) daily gauge in Woodbridge, VA (US1VAPW0010) recorded 2.24 inches of precipitation over this same period. The previous storm event was recorded on 11/26, producing 0.09 inches of precipitation.

Samples from both sites were retained under refrigeration until they were composited and shipped overnight to Pace Analytical Services in Asheville, NC on 12/2.

3.1 FLOW DATA

SITE #941; MANASSAS, VA

Flow rate reached 0.388 cfs, and oscillated throughout the course of the storm. The storm event hydrograph compared with cumulative volume can be seen in Figure 1. Table 1 lists the proportion of each sample mixed with the flow-weighted composite.

Flow rate and volume are calculated by measuring changes in water level over time. Backwater effects at the pond have rendered the current monitoring setup ineffective. This explains the inflated values listed for cumulative volume and flow rate.

Figure 1: Flow data over time for the storm event at Site #941 on November 29 – 30, 2020.

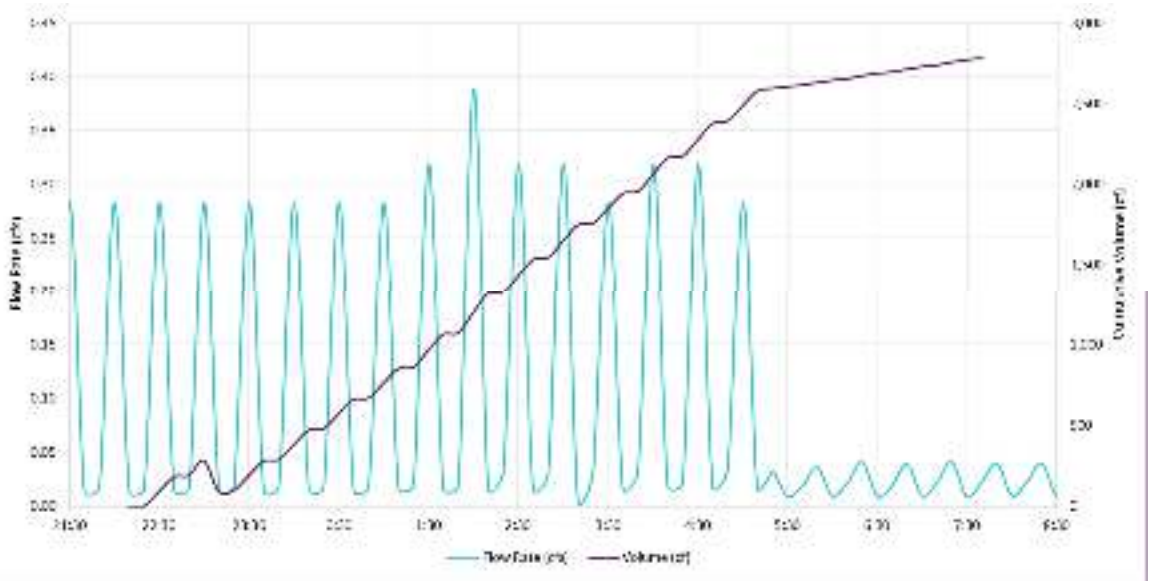


Table 1: Summary of Flow Weighted Composite – Site #941

Bottle #	Time of Sample	Volume (cf)	% of Flow	Flow Weighted Volume (L)*
1	23:10	89.6	9.90	0.49
2	23:50	9.9	1.09	0.05
3	0:30	90.2	9.97	0.50
4	1:10	89.9	9.93	0.50
5	1:50	10.5	1.16	0.06
6	2:30	104.6	11.57	0.58
7	3:10	97.2	10.74	0.54
8	3:50	14.7	1.62	0.08
9	4:30	101.9	11.27	0.56
10	5:10	89.9	9.93	0.50
11	5:50	16.5	1.82	0.09
12	6:30	15.3	1.69	0.08
13	7:10	9.6	1.06	0.05
14	7:50	18.6	2.06	0.10
15	8:30	15.0	1.66	0.08
16	9:10	9.3	1.03	0.05
17	9:50	16.5	1.82	0.09
18	10:30	17.4	1.92	0.10
19	11:10	10.8	1.19	0.06
20	11:50	18.9	2.09	0.10
21	12:30	14.4	1.59	0.08
22	13:10	10.8	1.19	0.06
23	13:50	18.3	2.02	0.10
24	14:30	15.0	1.66	0.08

**5.0 L Sample*

SITE #4684; DALE CITY, VA

Flow rate reached 0.52 cfs. The apparent oscillation in water level could be a result of the suction line sampling drawing down low flow levels. The storm event hydrograph compared with cumulative volume can be seen in Figure 2. Table 2 lists the proportion of each sample mixed with the flow-weighted composite. The flow-weighted composite volume was adjusted to incorporate representative volumes from the collected samples.

Figure 1: Flow data over time for the storm event at Site #4684 on November 30, 2020.

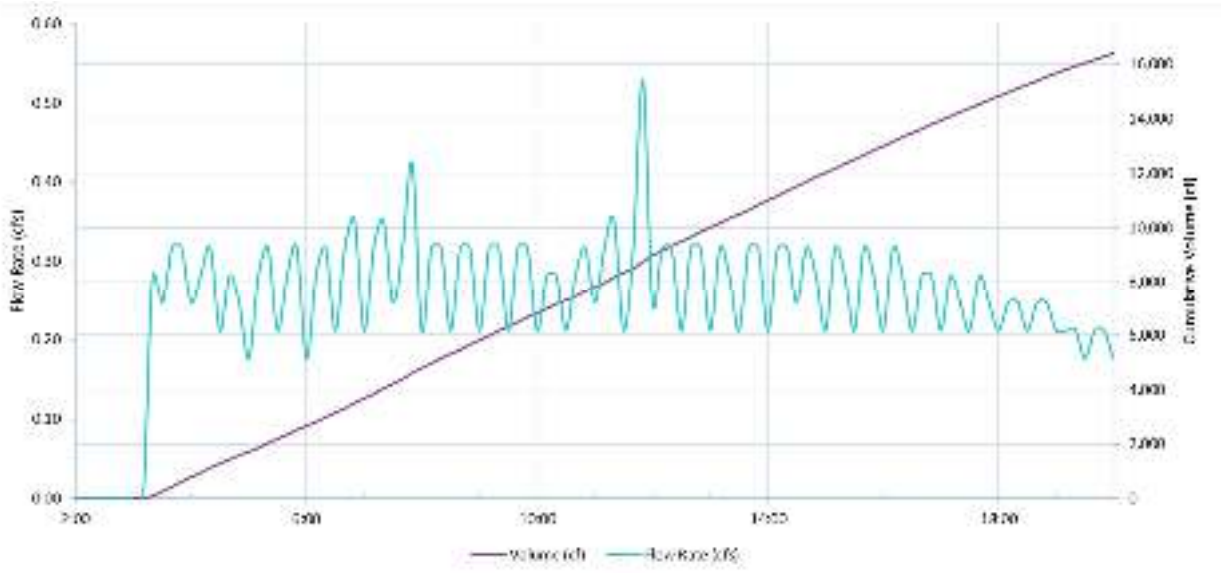


Table 2: Summary of Flow Weighted Composite – Site #4684

Bottle #	Time of Sample	Volume (cf)	% of Flow	Flow Weighted Volume (L)*
1	3:20	84.8	2.14	0.11
2	4:00	169.5	4.29	0.21
3	4:40	148.3	3.75	0.19
4	5:20	180.1	4.56	0.23
5	6:00	148.3	3.75	0.19
6	6:40	158.9	4.02	0.20
7	7:20	201.3	5.09	0.25
8	8:00	190.7	4.83	0.24
9	8:40	158.9	4.02	0.20
10	9:20	190.7	4.83	0.24
11	10:00	158.9	4.02	0.20
12	10:40	148.3	3.75	0.19
13	11:20	201.3	5.09	0.25
14	12:00	233.1	5.90	0.29
15	12:40	158.9	4.02	0.20
16	13:20	180.1	4.56	0.23
17	14:00	158.9	4.02	0.20
18	14:40	169.5	4.29	0.21
19	15:20	180.1	4.56	0.23
20	16:00	148.3	3.75	0.19
21	16:40	148.3	3.75	0.19
22	17:20	158.9	4.02	0.20
23	18:00	137.7	3.49	0.17
24	18:40	137.7	3.49	0.17

**5.0 L Sample*

3.2 LABORATORY ANALYTICAL RESULTS

Samples were sent to Pace Analytical Services, Inc. lab in Asheville, NC for analysis, with Analytical Parameters tested listed in **Table 3**.

Table 3: Analytical Parameters

Analyte	Analysis Method
Copper	EPA 200.7
Lead	EPA 200.7
Nickel	EPA 200.7
Zinc	EPA 200.7
Total Suspended Solids	SM 2540D
pH	EPA 9040
Ammonia	EPA 350.1 1993 Rev 2.0
Total Kjeldahl Nitrogen	EPA 351.2
Nitrate + Nitrite Nitrogen	EPA 353.2
Total Phosphorus	EPA 365.1
Chemical Oxygen Demand	SM 5220D

Table 4: Results of Water Quality Analysis

	Analyte	Analyte Value*	Analyte Unit	Detection Limit	Exceedance Criterion	Criterion Basis
Manassas (#941)	Copper	29.7	µg/L	5	13	a
	Lead	9.7	µg/L	5	120	a
	Nickel	ND	µg/L	5	180	a
	Zinc	85.1	µg/L	10	120	a
	Total Suspended Solids	41.3	mg/L	10	100	b
	Nitrogen, Ammonia	0.10	mg/L	0.1		-
	Nitrogen, Kjeldahl, Total	0.71	mg/L	0.5		-
	Nitrogen, NO^2 plus NO^3	0.59	mg/L	0.02		-
	Total Nitrogen	1.40	mg/L	-	2.2	c
	Phosphorus, Total	0.16	mg/L	0.05	2	b
	Chemical Oxygen Demand	31.3	mg/L	25	120	b
	pH	9.2	Std. Units	0.1	6.0-9.0	d
Dale City (#4684)	Copper	8.3	µg/L	5	13	a
	Lead	ND	µg/L	5	120	a
	Nickel	ND	µg/L	5	180	a
	Zinc	48.3	µg/L	10	120	a
	Total Suspended Solids	23.1	mg/L	10	100	b
	Nitrogen, Ammonia	0.1	mg/L	0.1		-
	Nitrogen, Kjeldahl, Total	0.9	mg/L	0.5		-
	Nitrogen, NO^2 plus NO^3	0.5	mg/L	0.02		-
	Total Nitrogen	1.46	mg/L	-	2.2	c
	Phosphorus, Total	0.14	mg/L	0.05	2	b
	Chemical Oxygen Demand	ND	mg/L	25	120	b
	pH	6.3	Std. Units	0.1	6.0-9.0	d

[a]State Water Quality Control Board Acute Standards for Surface Water Quality. Value is based on an assumed hardness of 100mg/L.
[b]Based on benchmark criteria for the VPDES Industrial Stormwater General Permit.
[c]The sum of Nitrogen as Ammonia, NO^2, NO^3, and Total Kjeldahl Nitrogen.
[d]Based on numeric effluent limitations noted in the VPDES Permit for Discharge of Stormwater Associated with Industrial Activity.
*Values highlighted in red were found to be in exceedance of their respective criterion.

4.0 SUMMARY

As indicated in **Table 4,** exceedances occurred for Copper at Site #941, and pH measuring and 29.7 µg/L and 9.2 standard units, respectively. Copper exceedances remains persistent at the Manassas site. Exceedance tracking for parameters of concern are illustrated in **Figure 3** below.

Figure 2: Exceedance tracking for the Wet Weather Monitoring Program.

Manassas (#941)	2016		2017				2018				2019				2020			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Copper	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x
Lead																		
Nickel																		
Zinc	x		x	x	x	x	x	x							x	x		
Total Suspended Solids						x	x								x	x		
Total Nitrogen					x	x	x				x							
Phosphorus, Total																		
Chemical Oxygen Demand		x				x	x								x			
pH						x												x

Dale City (#4684)	2016		2017				2018				2019				2020			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2*	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Copper	x		x	x	x	x	x	--		x	x							
Lead								--										
Nickel								--										
Zinc			x		x	x	x	--										
Total Suspended Solids						x		--										
Total Nitrogen	x	x	x	x		x	x	--			x							
Phosphorus, Total								--										
Chemical Oxygen Demand						x	x	--										
pH		x		x		x		--									x	

* No sample collected at #4684 during Q2 2018.

APPENDIX A

SITE CONDITIONS

Manassas (#941)

Site #941 is located within the Bull Run watershed. It receives drainage from an industrial use area and parking lots with frequent truck traffic. Water levels are persistently found to be above 6 – 10 inches in the monitoring outfall.

Dale City (#4684)

Site #4684 receives flow from Neabsco Mills Road and the Stonebridge at Potomac Town Center development. It is a 54" concrete pipe that drains to a deep scour pool before draining to a large BMP that collects drainage for the Potomac Club development. Erosion around the headwall and apron of the outfall at this site continues to pose a risk during sampler deployment and retrieval.

APPENDIX B

WATER QUALITY LABORATORY RESULTS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

December 15, 2020

Benjamin Green
WOOD E&I
14424 Albemarle Point Place
Suite 115
Chantilly, VA 20151

RE: Project: Prince William CO Q4 2020
Pace Project No.: 92509437

Dear Benjamin Green:

Enclosed are the analytical results for sample(s) received by the laboratory on December 03, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Amanda Payne
amanda.payne@pacelabs.com
(704)875-9092
Project Manager

Enclosures

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: Prince William CO Q4 2020
Pace Project No.: 92509437

Pace Analytical Services Asheville
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE SUMMARY

Project: Prince William CO Q4 2020
Pace Project No.: 92509437

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92509437001	**MAN 1130**	Water	11/30/20 19:00	12/03/20 10:35
92509437002	**DAL 1130**	Water	11/30/20 19:00	12/03/20 10:35

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE ANALYTE COUNT

Project: Prince William CO Q4 2020
Pace Project No.: 92509437

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92509437001	**MAN 1130**	EPA 200.7 Rev 4.4 1994	SH1	4	PASI-A
		SM 2540D-2011	ALP	1	PASI-A
		EPA 9040C	SMK	1	PASI-A
		TKN+NO3+NO2 Calculation	EWS	1	PASI-A
		EPA 350.1 Rev 2.0 1993	JKG	1	PASI-A
		EPA 351.2 Rev 2.0 1993	MFO	1	PASI-A
		EPA 353.2 Rev 2.0 1993	KDF1	1	PASI-A
		EPA 365.1 Rev 2.0 1993	MDW	1	PASI-A
		SM 5220D-2011	NAL	1	PASI-A
92509437002	**DAL 1130**	EPA 200.7 Rev 4.4 1994	SH1	4	PASI-A
		SM 2540D-2011	ALP	1	PASI-A
		EPA 9040C	SMK	1	PASI-A
		TKN+NO3+NO2 Calculation	EWS	1	PASI-A
		EPA 350.1 Rev 2.0 1993	JKG	1	PASI-A
		EPA 351.2 Rev 2.0 1993	MFO	1	PASI-A
		EPA 353.2 Rev 2.0 1993	KDF1	1	PASI-A
		EPA 365.1 Rev 2.0 1993	MDW	1	PASI-A
		SM 5220D-2011	NAL	1	PASI-A

PASI-A = Pace Analytical Services - Asheville

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: Prince William CO Q4 2020
Pace Project No.: 92509437

Sample: MAN 1130 **Lab ID: 92509437001** Collected: 11/30/20 19:00 Received: 12/03/20 10:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Rev 4.4 1994 Preparation Method: EPA 200.7 Rev 4.4 1994 Pace Analytical Services - Asheville							
Copper	**29.7**	ug/L	5.0	1	12/08/20 02:00	12/15/20 14:06	7440-50-8	
Lead	**9.7**	ug/L	5.0	1	12/08/20 02:00	12/15/20 14:06	7439-92-1	
Nickel	ND	ug/L	5.0	1	12/08/20 02:00	12/15/20 14:06	7440-02-0	
Zinc	**85.1**	ug/L	10.0	1	12/08/20 02:00	12/15/20 14:06	7440-66-6	
2540D TSS, Low-Level	Analytical Method: SM 2540D-2011 Pace Analytical Services - Asheville							
Total Suspended Solids	**41.3**	mg/L	2.2	1		12/04/20 10:53		
9040 pH	Analytical Method: EPA 9040C Pace Analytical Services - Asheville							
pH at 25 Degrees C	**9.2**	Std. Units	0.10	1		12/07/20 14:49		H3
Total Nitrogen Calculation	Analytical Method: TKN+NO3+NO2 Calculation Pace Analytical Services - Asheville							
Total Nitrogen	**1.3**	mg/L	0.52	1		12/09/20 17:16		
350.1 Ammonia	Analytical Method: EPA 350.1 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, Ammonia	**0.10**	mg/L	0.10	1		12/08/20 13:12	7664-41-7	
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2 Rev 2.0 1993 Preparation Method: EPA 351.2 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, Kjeldahl, Total	**0.71**	mg/L	0.50	1	12/07/20 18:11	12/08/20 02:15	7727-37-9	
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, NO2 plus NO3	**0.59**	mg/L	0.040	1		12/07/20 12:21		
365.1 Phosphorus, Total	Analytical Method: EPA 365.1 Rev 2.0 1993 Preparation Method: EPA 365.1 Rev 2.0 1993 Pace Analytical Services - Asheville							
Phosphorus	**0.16**	mg/L	0.050	1	12/08/20 19:07	12/09/20 19:19	7723-14-0	
5220D COD	Analytical Method: SM 5220D-2011 Preparation Method: SM 5220D-2011 Pace Analytical Services - Asheville							
Chemical Oxygen Demand	**31.3**	mg/L	25.0	1	12/06/20 17:34	12/07/20 14:11		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: Prince William CO Q4 2020
Pace Project No.: 92509437

Sample: DAL 1130 **Lab ID: 92509437002** Collected: 11/30/20 19:00 Received: 12/03/20 10:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Rev 4.4 1994 Preparation Method: EPA 200.7 Rev 4.4 1994 Pace Analytical Services - Asheville							
Copper	**8.3**	ug/L	5.0	1	12/08/20 02:00	12/15/20 08:12	7440-50-8	
Lead	ND	ug/L	5.0	1	12/08/20 02:00	12/15/20 08:12	7439-92-1	
Nickel	ND	ug/L	5.0	1	12/08/20 02:00	12/15/20 08:12	7440-02-0	
Zinc	**48.3**	ug/L	10.0	1	12/08/20 02:00	12/15/20 08:12	7440-66-6	
2540D TSS, Low-Level	Analytical Method: SM 2540D-2011 Pace Analytical Services - Asheville							
Total Suspended Solids	**23.1**	mg/L	1.7	1		12/04/20 10:53		
9040 pH	Analytical Method: EPA 9040C Pace Analytical Services - Asheville							
pH at 25 Degrees C	**6.3**	Std. Units	0.10	1		12/07/20 14:55		H3
Total Nitrogen Calculation	Analytical Method: TKN+NO3+NO2 Calculation Pace Analytical Services - Asheville							
Total Nitrogen	**1.4**	mg/L	0.52	1		12/09/20 17:16		
350.1 Ammonia	Analytical Method: EPA 350.1 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, Ammonia	**0.11**	mg/L	0.10	1		12/08/20 13:14	7664-41-7	
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2 Rev 2.0 1993 Preparation Method: EPA 351.2 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, Kjeldahl, Total	**0.87**	mg/L	0.50	1	12/07/20 18:11	12/08/20 02:16	7727-37-9	
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, NO2 plus NO3	**0.48**	mg/L	0.040	1		12/07/20 12:22		
365.1 Phosphorus, Total	Analytical Method: EPA 365.1 Rev 2.0 1993 Preparation Method: EPA 365.1 Rev 2.0 1993 Pace Analytical Services - Asheville							
Phosphorus	**0.14**	mg/L	0.050	1	12/08/20 19:07	12/09/20 19:20	7723-14-0	
5220D COD	Analytical Method: SM 5220D-2011 Preparation Method: SM 5220D-2011 Pace Analytical Services - Asheville							
Chemical Oxygen Demand	ND	mg/L	25.0	1	12/06/20 17:34	12/07/20 14:11		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: Prince William CO Q4 2020
Pace Project No.: 92509437

QC Batch: 585186
QC Batch Method: EPA 200.7 Rev 4.4 1994
Analysis Method: EPA 200.7 Rev 4.4 1994
Analysis Description: 200.7 MET
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92509437001, 92509437002

METHOD BLANK: 3093264 Matrix: Water
Associated Lab Samples: 92509437001, 92509437002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper	ug/L	ND	5.0	12/15/20 01:33	
Lead	ug/L	ND	5.0	12/15/20 01:33	
Nickel	ug/L	ND	5.0	12/15/20 01:33	
Zinc	ug/L	ND	10.0	12/15/20 01:33	

LABORATORY CONTROL SAMPLE: 3093265

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	250	264	105	85-115	
Lead	ug/L	250	258	103	85-115	
Nickel	ug/L	250	263	105	85-115	
Zinc	ug/L	250	256	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3093266 3093267

Parameter	Units	92508642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper	ug/L	ND	250	250	281	281	112	112	70-130	0	20	
Lead	ug/L	ND	250	250	285	282	113	112	70-130	1	20	
Nickel	ug/L	ND	250	250	291	282	116	112	70-130	3	20	
Zinc	ug/L	ND	250	250	286	277	113	110	70-130	3	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3093268 3093269

Parameter	Units	92509257001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper	ug/L	ND	250	250	290	282	115	112	70-130	3	20	
Lead	ug/L	ND	250	250	264	268	105	106	70-130	1	20	
Nickel	ug/L	6.66	250	250	273	275	107	107	70-130	1	20	
Zinc	ug/L	ND	250	250	262	265	104	105	70-130	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: Prince William CO Q4 2020
Pace Project No.: 92509437

QC Batch: 584604
QC Batch Method: SM 2540D-2011
Analysis Method: SM 2540D-2011
Analysis Description: 2540D Total Suspended Solids
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92509437001, 92509437002

METHOD BLANK: 3090207 Matrix: Water
Associated Lab Samples: 92509437001, 92509437002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	1.0	12/04/20 10:51	

LABORATORY CONTROL SAMPLE: 3090208

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	250	238	95	90-110	

SAMPLE DUPLICATE: 3090273

Parameter	Units	92509474001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	82.9	107	26	10	D6

SAMPLE DUPLICATE: 3090274

Parameter	Units	92509484001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	49.4	48.8	1	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: Prince William CO Q4 2020
Pace Project No.: 92509437

QC Batch: 584845
QC Batch Method: EPA 9040C
Analysis Method: EPA 9040C
Analysis Description: 9040 pH
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92509437001, 92509437002

SAMPLE DUPLICATE: 3091619

Parameter	Units	92506960001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.3	6.0	6	9	D6,H1

SAMPLE DUPLICATE: 3091620

Parameter	Units	92507789002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	5.2	5.0	2	9	D6,H3

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: Prince William CO Q4 2020
Pace Project No.: 92509437

QC Batch: 585246
QC Batch Method: EPA 350.1 Rev 2.0 1993
Analysis Method: EPA 350.1 Rev 2.0 1993
Analysis Description: 350.1 Ammonia
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92509437001, 92509437002

METHOD BLANK: 3093441 Matrix: Water
Associated Lab Samples: 92509437001, 92509437002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.10	12/08/20 12:55	

LABORATORY CONTROL SAMPLE: 3093442

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.2	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3093443 3093444

Parameter	Units	92509379003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	ND	5	5	5.2	5.2	104	104	90-110	0	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3093445 3093446

Parameter	Units	92509381001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	1.3	5	5	6.4	6.4	103	102	90-110	1	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: Prince William CO Q4 2020
Pace Project No.: 92509437

QC Batch: 585077
QC Batch Method: EPA 351.2 Rev 2.0 1993
Analysis Method: EPA 351.2 Rev 2.0 1993
Analysis Description: 351.2 TKN
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92509437001, 92509437002

METHOD BLANK: 3092855 Matrix: Water
Associated Lab Samples: 92509437001, 92509437002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	ND	0.50	12/08/20 01:44	

LABORATORY CONTROL SAMPLE: 3092856

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	10	10.9	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3092879 3092880

Parameter	Units	92508720001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Kjeldahl, Total	mg/L	7.5	10	10	19.2	17.0	117	95	90-110	12	10	M1,R1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3092881 3092882

Parameter	Units	92508725001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Kjeldahl, Total	mg/L	ND	10	10	11.3	11.0	111	109	90-110	2	10	M1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: Prince William CO Q4 2020
Pace Project No.: 92509437

QC Batch: 584895
QC Batch Method: EPA 353.2 Rev 2.0 1993
Analysis Method: EPA 353.2 Rev 2.0 1993
Analysis Description: 353.2 Nitrate + Nitrite, preserved
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92509437001, 92509437002

METHOD BLANK: 3091764 Matrix: Water
Associated Lab Samples: 92509437001, 92509437002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	ND	0.040	12/07/20 11:56	

LABORATORY CONTROL SAMPLE: 3091765

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2.5	2.5	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3091766 3091767

Parameter	Units	92509701009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	2.6	2.5	2.5	4.8	4.7	89	88	90-110	1	10	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3091768 3091769

Parameter	Units	92509701010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	2.9	2.5	2.5	5.2	5.2	91	89	90-110	1	10	M1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: Prince William CO Q4 2020
Pace Project No.: 92509437

QC Batch: 585399
QC Batch Method: EPA 365.1 Rev 2.0 1993
Analysis Method: EPA 365.1 Rev 2.0 1993
Analysis Description: 365.1 Phosphorus, Total
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92509437001, 92509437002

METHOD BLANK: 3094253 Matrix: Water
Associated Lab Samples: 92509437001, 92509437002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Phosphorus	mg/L	ND	0.050	12/09/20 18:47	

LABORATORY CONTROL SAMPLE: 3094254

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	2.5	2.5	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3094255 3094256

Parameter	Units	92508911001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phosphorus	mg/L	3.4	2.5	2.5	5.9	5.9	98	101	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3094257 3094258

Parameter	Units	92508911002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phosphorus	mg/L	1.4	2.5	2.5	3.9	3.9	102	101	90-110	0	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: Prince William CO Q4 2020
Pace Project No.: 92509437

QC Batch: 584862
QC Batch Method: SM 5220D-2011
Analysis Method: SM 5220D-2011
Analysis Description: 5220D COD
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92509437001, 92509437002

METHOD BLANK: 3091658 Matrix: Water
Associated Lab Samples: 92509437001, 92509437002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	25.0	12/07/20 14:04	

LABORATORY CONTROL SAMPLE: 3091659

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	750	748	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3091660 3091661

Parameter	Units	92508173001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	60200 ug/L	100	100	164	159	103	99	90-110	3	3	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3091662 3091663

Parameter	Units	92508189001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	36.2	100	100	142	142	106	106	90-110	0	3	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALIFIERS

Project: Prince William CO Q4 2020
Pace Project No.: 92509437

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
H1	Analysis conducted outside the EPA method holding time.
H3	Sample was received or analysis requested beyond the recognized method holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Prince William CO Q4 2020
Pace Project No.: 92509437

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92509437001	**MAN 1130**	EPA 200.7 Rev 4.4 1994	585186	EPA 200.7 Rev 4.4 1994	585205
92509437002	**DAL 1130**	EPA 200.7 Rev 4.4 1994	585186	EPA 200.7 Rev 4.4 1994	585205
92509437001	**MAN 1130**	SM 2540D-2011	584604		
92509437002	**DAL 1130**	SM 2540D-2011	584604		
92509437001	**MAN 1130**	EPA 9040C	584845		
92509437002	**DAL 1130**	EPA 9040C	584845		
92509437001	**MAN 1130**	TKN+NO3+NO2 Calculation	585824		
92509437002	**DAL 1130**	TKN+NO3+NO2 Calculation	585824		
92509437001	**MAN 1130**	EPA 350.1 Rev 2.0 1993	585246		
92509437002	**DAL 1130**	EPA 350.1 Rev 2.0 1993	585246		
92509437001	**MAN 1130**	EPA 351.2 Rev 2.0 1993	585077	EPA 351.2 Rev 2.0 1993	585185
92509437002	**DAL 1130**	EPA 351.2 Rev 2.0 1993	585077	EPA 351.2 Rev 2.0 1993	585185
92509437001	**MAN 1130**	EPA 353.2 Rev 2.0 1993	584895		
92509437002	**DAL 1130**	EPA 353.2 Rev 2.0 1993	584895		
92509437001	**MAN 1130**	EPA 365.1 Rev 2.0 1993	585399	EPA 365.1 Rev 2.0 1993	585513
92509437002	**DAL 1130**	EPA 365.1 Rev 2.0 1993	585399	EPA 365.1 Rev 2.0 1993	585513
92509437001	**MAN 1130**	SM 5220D-2011	584862	SM 5220D-2011	585030
92509437002	**DAL 1130**	SM 5220D-2011	584862	SM 5220D-2011	585030

Pace Analytical®	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: October 28, 2020 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.07	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
Asheville [X] Eden [ ] Greenwood [ ] Huntersville [ ] Raleigh [ ] Mechanicsville [ ] Atlanta [ ] Kernersville [ ]

Sample Condition Upon Receipt

Client Name: Wood E+I Chantilly

Project #:

WO# : 92509437

92509437

Courier: [X] Fed Ex [ ] UPS [ ] USPS [ ] Client [ ] Commercial [ ] Pace [ ] Other:

Custody Seal Present? [ ] Yes [X] No Seals Intact? [ ] Yes [X] No

Date/Initials Person Examining Contents:

Packing Material: [ ] Bubble Wrap [ ] Bubble Bags [X] None [ ] Other

Biological Tissue Frozen? [ ] Yes [ ] No [X] N/A

Thermometer: [X] IR Gun ID: 93-7061

Type of Ice: [X] Wet [ ] Blue [ ] None

Cooler Temp: 4.8 Correction Factor: Add/Subtract (°C) 0

Temp should be above freezing to 6°C
[ ] Samples out of temp criteria. Samples on ice, cooling process has begun

Cooler Temp Corrected (°C): 4.8

USDA Regulated Soil ([X] N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? [ ] Yes [X] No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? [ ] Yes [X] No

				Comments/Discrepancy:
Chain of Custody Present?	[X] Yes	[ ] No	[ ] N/A	1.
Samples Arrived within Hold Time?	[X] Yes	[ ] No	[ ] N/A	2.
Short Hold Time Analysis (<72 hr.)?	[ ] Yes	[X] No	[ ] N/A	3.
Rush Turn Around Time Requested?	[ ] Yes	[X] No	[ ] N/A	4.
Sufficient Volume?	[X] Yes	[ ] No	[ ] N/A	5.
Correct Containers Used?	[X] Yes	[ ] No	[ ] N/A	6.
-Pace Containers Used?	[X] Yes	[ ] No	[ ] N/A	
Containers Intact?	[X] Yes	[ ] No	[ ] N/A	7.
Dissolved analysis: Samples Field Filtered?	[ ] Yes	[ ] No	[X] N/A	8.
Sample Labels Match COC?	[X] Yes	[ ] No	[ ] N/A	9.
-Includes Date/Time/ID/Analysis Matrix: WT				
Headspace in VOA Vials (>5-6mm)?	[ ] Yes	[ ] No	[X] N/A	10.
Trip Blank Present?	[ ] Yes	[ ] No	[X] N/A	11.
Trip Blank Custody Seals Present?	[ ] Yes	[ ] No	[X] N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? [ ] Yes [ ] No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: Date/Time:

Project Manager SCURF Review: Date:

Project Manager SRF Review: Date:

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottles

Project # **WO#: 92509437**

PM: AP Due Date: 12/10/20

CLIENT: 92-Amec VA

Items	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-MPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH4)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1				1	2	1																							
2				1	2	1																							
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers.

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page : 1 Of 1

Section A — Required Client Information:

Company:	Wood E&I - Chantilly
Address:	14424 Albemarle Point Place
	Chantilly, VA 20151
Email:	benjamin.green@woodplc.com
Phone:	(703)488-3795 Fax:
Requested Due Date:	

Section B — Required Project Information:

Report To:	Benjamin Green
Copy To:	
Purchase Order #:	
Project Name:	PRINCE WILLIAM CO Q4 2020
Project #:	

Section C — Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	amanda.payne@pacelabs.com,
Pace Profile #:	8125-1

Regulatory Agency:

State / Location: VA

Matrix codes: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

SAMPLE ID — One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	START TIME	END DATE	END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	pH	Metals	TSS	Ammonia/Phosphorus/COD	TKN + Nitrate+Nitrite	Residual Chlorine (Y/N)	92509437
1	MAN1130	WT		11/30	1900	—	—			\	N	\							-	-	-	-	-		001
2	DAL1130	WT		11/30	1900	—	—			\	N	\							-	-	-	-	-		002
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	[illegible] / Wood plc	12/2	[illegible]:00	Rachel Delgro / Pace	12/2	1035	4.8	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Benjamin Green

SIGNATURE of SAMPLER: [illegible] DATE Signed: 12/2

Wet Weather Monitoring Report

First Quarter 2021 (January 1 – March 31)
Event Date: March 19, 2021

Prepared for:

Prince William County Department of Public Works
5 County Complex Court, Suite 170
Prince William, Virginia 22192

Prepared by:
Wood Environment & Infrastructure Solutions, Inc.
4795 Meadow Wood Lane, Suite 310E
Chantilly, VA 20151
(703) 488-3700

May 11, 2021
Project No. 151270004

1.0 INTRODUCTION

Wood Environment & Infrastructure Solutions, Inc. (Wood) is pleased to provide this report of wet weather monitoring for compliance with the requirements of the Virginia Stormwater Management Program (VSMP) Municipal Separate Storm Sewer System (MS4) Permit (Number VA0088595), issued by the Virginia Department of Environmental Quality (VDEQ) to Prince William County, Virginia. This report discusses the results of the Q1 sampling event conducted on March 19, 2021 as well as the findings from the water quality analysis results of those sampling events.

2.0 METHODS

Flow rate data were collected at the outfalls by an ISCO 6712 automated sampler coupled with an ISCO 730 bubbler flow module, installed with a Scissors Ring. Flow rate over the course of the sampling events were electronically calculated using ISCO Flowlink 5.1 software, which utilizes the Manning Equation to convert flow level and velocity to flow rate.

SITE #941; MANASSAS, VA

Site #941 is located near 11850 Livingston Road. The site receives a total of 52 acres of upstream drainage area from a land surface that is 34% impervious. County data documents that the pipe is 54 inches in diameter with a slope of 0.03437. This site is subject to backwater conditions as water levels within the downstream pond have risen over the past year. Maintenance is recommended to ensure the continued efficacy of the monitoring program at this site.

SITE #4684; DALE CITY, VA

Site #4684 is located near the corner of Potomac Center Blvd. and Sheffield Hill Way, north of Eastbourne Drive. It drains into a BMP for the Potomac Club residential development. Upstream drainage totaled 51 acres, 21% of which is from impervious surfaces. The pipe is 54 inches in diameter with a slope of 0.002593. Storm events at this site are flashy in nature, accounted for by programming shorter sample intervals, if necessary based upon forecast conditions.

The automated samplers were deployed when a qualifying storm event (>0.3 inches precipitation) was forecast for the two monitoring sites. On March 17, Wood staff deployed the samplers at both field sites and programmed the samplers' automated, discrete sampling sequence to initiate upon flow levels exceeding current water levels in each pipe. The samplers were programmed to collect 24 discrete 800 mL samples to be collected every hour. Rain gage data were compiled for monitoring stations in the Weather Underground monitoring network. The data were easily accessible online and provided hourly precipitation totals over the monitoring period. Gages were prioritized based on the makeup of the data record (reporting interval) and proximity to monitoring locations.

Following the storm event, staff retrieved the samples and prepared them for shipment to Pace Environmental for water quality analysis. To compile the complete set of discrete samples into a single flow-weighted composite, Flowlink software calculated the storm event discharge using the Manning Equation:

$$Q = VA = \left(\frac{1.49}{n}\right) A R^{\frac{2}{3}} \sqrt{S} \text{ [US]}$$

Q = Flow rate
A = Flow area
V = Avg. velocity
S = Water surface slope
R = Hydraulic Radius
n = Roughness coefficient
1.49 = English units conversion factor

Channel slopes were determined using invert elevations reported in the stormwater infrastructure geospatial data provided by Prince William County. Using flow levels reported by the ISCO samplers, the area and hydraulic radius inside the sampled outfalls could be computed for a given time interval. A Manning's *n* value of 0.013 was assumed for the concrete pipes. Discrete samples collected over the duration of the storm event were then mixed based on their representative weight within the cumulative flow curve for each storm event. This flow weighted composite sample was provided to the laboratory for analysis. The resulting analysis is considered the event mean concentration (EMC) of the individual analyte.

3.0 RESULTS

SITE #941; MANASSAS, VA

Sampling occurred from 03:00 on 3/18 – 02:00 on 3/19. The Global Historical Climatology Network (GHCN) daily gauge in Manassas, VA (USC00445204) recorded 0.5 inches of precipitation over that period with temperatures ranging from 41-55 degrees Fahrenheit. The previous storm event was recorded on 3/2, producing 1.0 inch of precipitation.

SITE #4684; DALE CITY, VA

Sampling occurred from 04:45 on 3/18 – 03:45 on 3/19. The Global Historical Climatology Network (GHCN) daily gauge in Woodbridge, VA (US1VAPW0010) recorded 0.48 inches of precipitation over this same period. The previous storm event was recorded on 3/1, producing 1 inch of precipitation.

Samples from both sites were retained under refrigeration until they were composited and shipped overnight to Pace Analytical Services in Asheville, NC on 3/22.

3.1 FLOW DATA

SITE #941; MANASSAS, VA

Flow rate reached 0.896 cfs, and oscillated throughout the course of the storm. The storm event hydrograph compared with cumulative volume can be seen in Figure 1. Table 1 lists the proportion of each sample mixed with the flow-weighted composite.

Flow rate and volume are calculated by measuring changes in water level over time. Backwater effects at the pond have rendered the current monitoring setup ineffective. This explains the inflated values listed for cumulative volume and flow rate.

Figure 1: Flow data over time for the storm event at Site #941 on March 18 - 19 2021.

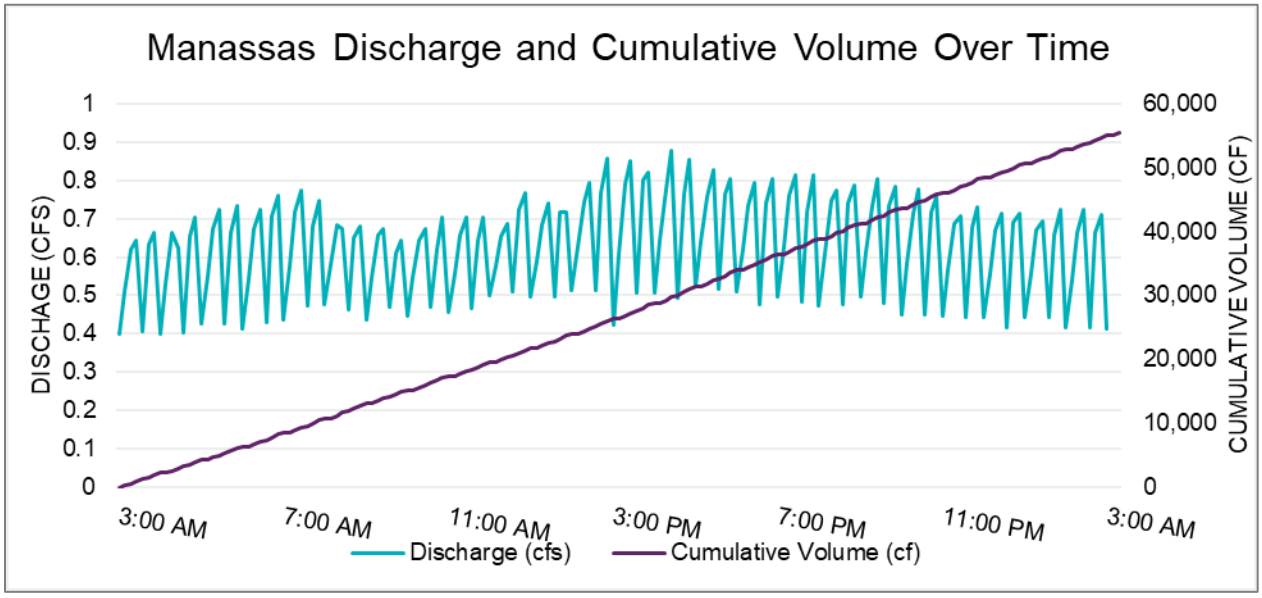


Table 1: Summary of Flow Weighted Composite – Site #941

Bottle #	Time of Sample	Volume (cf)	% of Flow	Flow Weighted Volume (mL)*
1	3/18/21 3:02	2,254.2	4.1%	205
2	4:01	2,018.4	3.7%	184
3	5:01	2,082.6	3.8%	189
4	6:01	2,179.8	4.0%	198
5	7:01	2,239.8	4.1%	204
6	8:01	2,320.2	4.2%	211
7	9:01	2,154.0	3.9%	196
8	10:01	2,103.6	3.8%	191
9	11:01	2,142.6	3.9%	195
10	12:01	2,206.2	4.0%	201
11	13:01	2,301.6	4.2%	209
12	14:01	2,320.2	4.2%	211
13	15:01	2,457.6	4.5%	224
14	16:01	2,564.4	4.7%	233
15	17:01	2,572.2	4.7%	234
16	18:01	2,505.6	4.6%	228
17	19:01	2,425.2	4.4%	221
18	20:01	2,436.6	4.4%	222
19	21:01	2,410.2	4.4%	219
20	22:01	2,390.4	4.3%	217
21	23:01	2,319.6	4.2%	211
22	3/19/21 0:01	2,213.4	4.0%	201
23	1:01	2,191.2	4.0%	199
24	2:01	2,162.4	3.9%	197

**5.0 L Sample*

SITE #4684; DALE CITY, VA

Flow rate reached 0.245 cfs. The apparent oscillation in water level could be a result of the suction line sampling drawing down low flow levels. The storm event hydrograph compared with cumulative volume can be seen in Figure 2. Table 2 lists the proportion of each sample mixed with the flow-weighted composite. The flow-weighted composite volume was adjusted to incorporate representative volumes from the collected samples.

Figure 1: Flow data over time for the storm event at Site #4684 on November 30, 2020.

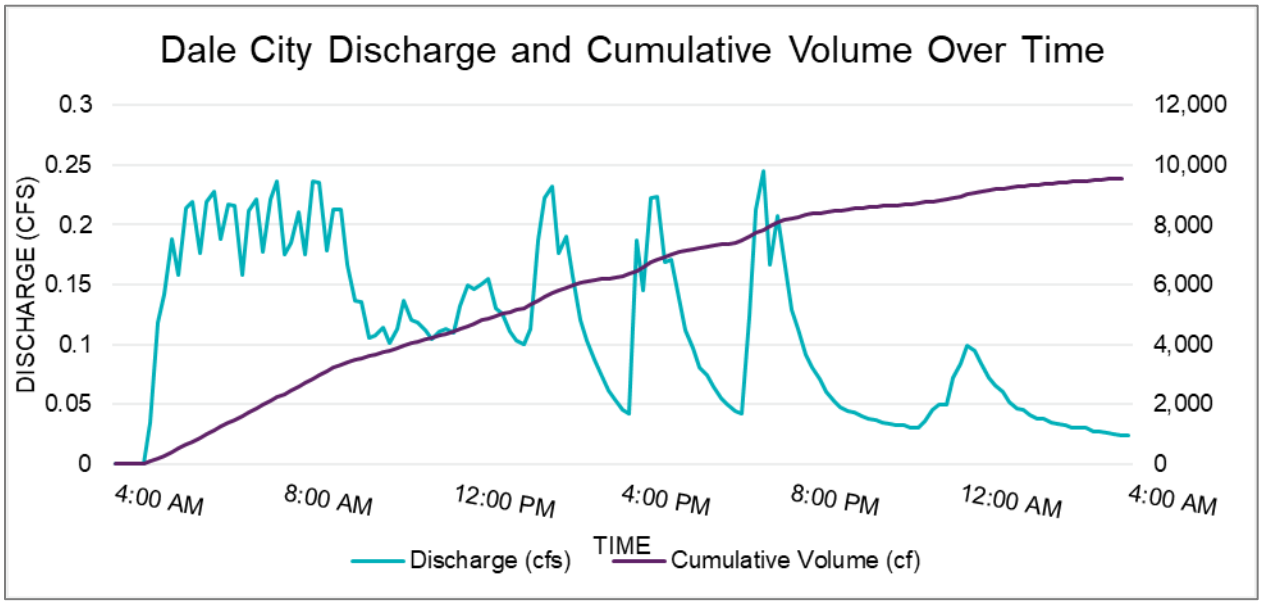


Table 2: Summary of Flow Weighted Composite – Site #4684

Bottle #	Time of Sample	Volume (cf)	% of Flow	Flow Weighted Volume (mL)*
1	4:50	21.5	0.2%	11
2	5:50	624.1	6.5%	327
3	6:50	746.1	7.8%	391
4	7:50	735.6	7.7%	385
5	8:50	731.0	7.7%	383
6	9:50	627.1	6.6%	329
7	10:50	407.4	4.3%	213
8	11:50	409.1	4.3%	214
9	12:50	506.7	5.3%	265
10	13:50	410.3	4.3%	215
11	14:50	699.0	7.3%	366
12	15:50	301.7	3.2%	158
13	16:50	519.4	5.4%	272
14	17:50	460.9	4.8%	241
15	18:50	198.5	2.1%	104
16	19:50	676.7	7.1%	355
17	20:50	328.9	3.4%	172
18	21:50	159.5	1.7%	84
19	22:50	122.496	1.3%	64
20	23:50	171.045	1.8%	90
21	0:50	300.071	3.1%	157
22	1:50	170.822	1.8%	89
23	2:50	119.952	1.3%	63
24	3:50	96.036	1.0%	50

**5.0 L Sample*

3.2 LABORATORY ANALYTICAL RESULTS

Samples were sent to Pace Analytical Services, Inc. lab in Asheville, NC for analysis, with Analytical Parameters tested listed in **Table 3**.

Table 3: Analytical Parameters

Analyte	Analysis Method
Copper	EPA 200.7
Lead	EPA 200.7
Nickel	EPA 200.7
Zinc	EPA 200.7
Total Suspended Solids	SM 2540D
pH	EPA 9040
Ammonia	EPA 350.1 1993 Rev 2.0
Total Kjeldahl Nitrogen	EPA 351.2
Nitrate + Nitrite Nitrogen	EPA 353.2
Total Phosphorus	EPA 365.1
Chemical Oxygen Demand	SM 5220D

Table 4: Results of Water Quality Analysis

	Analyte	Analyte Value*	Analyte Unit	Reporting Limit	Exceedance Criterion	Criterion Basis
Manassas (#941)	Copper	33.1	µg/L	5	13	a
	Lead	ND	µg/L	5	120	a
	Nickel	ND	µg/L	5	180	a
	Zinc	83.9	µg/L	10	120	a
	Total Suspended Solids	51.7	mg/L	3.4	100	b
	Nitrogen, Ammonia	ND	mg/L	0.1		-
	Nitrogen, Kjeldahl, Total	1.1	mg/L	0.5		-
	Nitrogen, NO^2 plus NO^3	0.86	mg/L	0.04		-
	Total Nitrogen	1.96	mg/L	-	2.2	c
	Phosphorus, Total	0.10	mg/L	0.05	2	b
	Chemical Oxygen Demand	58.7	mg/L	25	120	b
	pH	7.1	Std. Units	0.1	6.0-9.0	d
Dale City (#4684)	Copper	8.8	µg/L	5	13	a
	Lead	ND	µg/L	5	120	a
	Nickel	ND	µg/L	5	180	a
	Zinc	58.8	µg/L	10	120	a
	Total Suspended Solids	22.8	mg/L	2	100	b
	Nitrogen, Ammonia	0.24	mg/L	0.1		-
	Nitrogen, Kjeldahl, Total	1.0	mg/L	0.5		-
	Nitrogen, NO^2 plus NO^3	0.68	mg/L	0.04		-
	Total Nitrogen	1.92	mg/L	-	2.2	c
	Phosphorus, Total	ND	mg/L	0.05	2	b
	Chemical Oxygen Demand	42.4	mg/L	25	120	b
	pH	6.5	Std. Units	0.1	6.0-9.0	d

[a]State Water Quality Control Board Acute Standards for Surface Water Quality. Value is based on an assumed hardness of 100mg/L.
[b]Based on benchmark criteria for the VPDES Industrial Stormwater General Permit.
[c]The sum of Nitrogen as Ammonia, NO^2, NO^3, and Total Kjeldahl Nitrogen.
[d]Based on numeric effluent limitations noted in the VPDES Permit for Discharge of Stormwater Associated with Industrial Activity.
*Values highlighted in red were found to be in exceedance of their respective criterion.

4.0 SUMMARY

As indicated in **Table 4,** exceedances occurred for Copper at Site #941, and pH measuring and 29.7 µg/L and 9.2 standard units, respectively. Copper exceedances remains persistent at the Manassas site. Exceedance tracking for parameters of concern are illustrated in **Figure 3** below.

Figure 2: Exceedance tracking for the Wet Weather Monitoring Program.

Manassas (#941)	2016		2017				2018				2019				2020				2021
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Copper	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x
Lead																			
Nickel																			
Zinc	x		x	x	x	x	x	x							x	x			
Total Suspended Solids						x	x								x	x			
Total Nitrogen					x	x	x				x								
Phosphorus, Total																			
Chemical Oxygen Demand		x				x	x								x				
pH						x												x	

Dale City (#4684)	2016		2017				2018				2019				2020				2021
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2*	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Copper	x		x	x	x	x	x	--		x	x				x	x	x	x	
Lead								--											
Nickel								--											
Zinc			x		x	x	x	--							x	x			
Total Suspended Solids						x		--							x	x			
Total Nitrogen	x	x	x	x		x	x	--			x								
Phosphorus, Total								--											
Chemical Oxygen Demand						x	x	--							x				
pH		x		x		x		--										x	

* No sample collected at #4684 during Q2 2018.

APPENDIX A

SITE CONDITIONS

Manassas (#941)

Site #941 is located within the Bull Run watershed. It receives drainage from an industrial use area and parking lots with frequent truck traffic. Water levels are persistently found to be above 6 – 10 inches in the monitoring outfall.

Dale City (#4684)

Site #4684 receives flow from Neabsco Mills Road and the Stonebridge at Potomac Town Center development. It is a 54" concrete pipe that drains to a deep scour pool before draining to a large BMP that collects drainage for the Potomac Club development. Erosion around the headwall and apron of the outfall at this site continues to pose a risk during sampler deployment and retrieval.

APPENDIX B

WATER QUALITY LABORATORY RESULTS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

March 29, 2021

Benjamin Green
WOOD E&I
14424 Albemarle Point Place
Suite 115
Chantilly, VA 20151

RE: Project: PRINCE WILLIAM
Pace Project No.: 92529084

Dear Benjamin Green:

Enclosed are the analytical results for sample(s) received by the laboratory on March 23, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ryan Brumfield
ryan.brumfield@pacelabs.com
(770)734-4200
Project Manager

Enclosures

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: PRINCE WILLIAM
Pace Project No.: 92529084

Pace Analytical Services Asheville
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE SUMMARY

Project: PRINCE WILLIAM
Pace Project No.: 92529084

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92529084001	**MAN0318**	Water	03/19/21 06:00	03/23/21 11:00
92529084002	**DAL0318**	Water	03/19/21 06:00	03/23/21 11:00

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE ANALYTE COUNT

Project: PRINCE WILLIAM
Pace Project No.: 92529084

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92529084001	**MAN0318**	EPA 200.7 Rev 4.4 1994	SH1	4	PASI-A
		SM 2540D-2011	RED	1	PASI-A
		EPA 9040C	SMK	1	PASI-A
		EPA 350.1 Rev 2.0 1993	KDF1	1	PASI-A
		EPA 351.2 Rev 2.0 1993	MFO	1	PASI-A
		EPA 353.2 Rev 2.0 1993	KDF1	1	PASI-A
		EPA 365.1 Rev 2.0 1993	MFO	1	PASI-A
		SM 5220D-2011	JP1	1	PASI-A
92529084002	**DAL0318**	EPA 200.7 Rev 4.4 1994	SH1	4	PASI-A
		SM 2540D-2011	RED	1	PASI-A
		EPA 9040C	SMK	1	PASI-A
		EPA 350.1 Rev 2.0 1993	KDF1	1	PASI-A
		EPA 351.2 Rev 2.0 1993	MFO	1	PASI-A
		EPA 353.2 Rev 2.0 1993	KDF1	1	PASI-A
		EPA 365.1 Rev 2.0 1993	MFO	1	PASI-A
		SM 5220D-2011	JP1	1	PASI-A

PASI-A = Pace Analytical Services - Asheville

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: PRINCE WILLIAM
Pace Project No.: 92529084

Sample: MAN0318 **Lab ID: 92529084001** Collected: 03/19/21 06:00 Received: 03/23/21 11:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Rev 4.4 1994 Preparation Method: EPA 200.7 Rev 4.4 1994 Pace Analytical Services - Asheville							
Copper	**33.1**	ug/L	5.0	1	03/25/21 02:10	03/26/21 02:56	7440-50-8	
Lead	ND	ug/L	5.0	1	03/25/21 02:10	03/26/21 02:56	7439-92-1	
Nickel	ND	ug/L	5.0	1	03/25/21 02:10	03/26/21 02:56	7440-02-0	
Zinc	**83.9**	ug/L	10.0	1	03/25/21 02:10	03/26/21 02:56	7440-66-6	
2540D TSS, Low-Level	Analytical Method: SM 2540D-2011 Pace Analytical Services - Asheville							
Total Suspended Solids	**51.7**	mg/L	3.4	1		03/24/21 21:26		
9040 pH	Analytical Method: EPA 9040C Pace Analytical Services - Asheville							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		03/28/21 18:59		H3
350.1 Ammonia	Analytical Method: EPA 350.1 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, Ammonia	ND	mg/L	0.10	1		03/26/21 12:09	7664-41-7	
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2 Rev 2.0 1993 Preparation Method: EPA 351.2 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, Kjeldahl, Total	**1.1**	mg/L	0.50	1	03/25/21 21:57	03/27/21 01:49	7727-37-9	
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, NO2 plus NO3	**0.86**	mg/L	0.040	1		03/25/21 10:10		
365.1 Phosphorus, Total	Analytical Method: EPA 365.1 Rev 2.0 1993 Preparation Method: EPA 365.1 Rev 2.0 1993 Pace Analytical Services - Asheville							
Phosphorus	**0.10**	mg/L	0.050	1	03/25/21 22:57	03/26/21 03:53	7723-14-0	
5220D COD	Analytical Method: SM 5220D-2011 Preparation Method: SM 5220D-2011 Pace Analytical Services - Asheville							
Chemical Oxygen Demand	**58.7**	mg/L	25.0	1	03/27/21 01:39	03/27/21 07:15		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: PRINCE WILLIAM
Pace Project No.: 92529084

Sample: DAL0318 **Lab ID: 92529084002** Collected: 03/19/21 06:00 Received: 03/23/21 11:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Rev 4.4 1994 Preparation Method: EPA 200.7 Rev 4.4 1994 Pace Analytical Services - Asheville							
Copper	**8.8**	ug/L	5.0	1	03/25/21 02:10	03/26/21 02:59	7440-50-8	
Lead	ND	ug/L	5.0	1	03/25/21 02:10	03/26/21 02:59	7439-92-1	
Nickel	ND	ug/L	5.0	1	03/25/21 02:10	03/26/21 02:59	7440-02-0	
Zinc	**58.8**	ug/L	10.0	1	03/25/21 02:10	03/26/21 02:59	7440-66-6	
2540D TSS, Low-Level	Analytical Method: SM 2540D-2011 Pace Analytical Services - Asheville							
Total Suspended Solids	**22.8**	mg/L	2.0	1		03/24/21 21:26		
9040 pH	Analytical Method: EPA 9040C Pace Analytical Services - Asheville							
pH at 25 Degrees C	**6.5**	Std. Units	0.10	1		03/28/21 19:05		H3
350.1 Ammonia	Analytical Method: EPA 350.1 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, Ammonia	**0.24**	mg/L	0.10	1		03/26/21 12:11	7664-41-7	
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2 Rev 2.0 1993 Preparation Method: EPA 351.2 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, Kjeldahl, Total	**1.0**	mg/L	0.50	1	03/25/21 21:57	03/27/21 01:50	7727-37-9	
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, NO2 plus NO3	**0.68**	mg/L	0.040	1		03/25/21 10:12		
365.1 Phosphorus, Total	Analytical Method: EPA 365.1 Rev 2.0 1993 Preparation Method: EPA 365.1 Rev 2.0 1993 Pace Analytical Services - Asheville							
Phosphorus	ND	mg/L	0.050	1	03/25/21 22:57	03/26/21 03:54	7723-14-0	
5220D COD	Analytical Method: SM 5220D-2011 Preparation Method: SM 5220D-2011 Pace Analytical Services - Asheville							
Chemical Oxygen Demand	**42.4**	mg/L	25.0	1	03/27/21 01:39	03/27/21 07:15		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM
Pace Project No.: 92529084

QC Batch: 609065
QC Batch Method: EPA 200.7 Rev 4.4 1994
Analysis Method: EPA 200.7 Rev 4.4 1994
Analysis Description: 200.7 MET
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92529084001, 92529084002

METHOD BLANK: 3208131 Matrix: Water
Associated Lab Samples: 92529084001, 92529084002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper	ug/L	ND	5.0	03/26/21 01:34	
Lead	ug/L	ND	5.0	03/26/21 01:34	
Nickel	ug/L	ND	5.0	03/26/21 01:34	
Zinc	ug/L	ND	10.0	03/26/21 01:34	

LABORATORY CONTROL SAMPLE: 3208132

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	500	508	102	85-115	
Lead	ug/L	500	487	97	85-115	
Nickel	ug/L	500	485	97	85-115	
Zinc	ug/L	500	474	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3208133 3208134

Parameter	Units	92527847001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper	ug/L	102	500	500	619	616	103	103	70-130	0	20	
Lead	ug/L	ND	500	500	480	481	96	96	70-130	0	20	
Nickel	ug/L	ND	500	500	486	481	96	95	70-130	1	20	
Zinc	ug/L	97.4	500	500	593	588	99	98	70-130	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3208135 3208136

Parameter	Units	92527923001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper	ug/L	34.7	500	500	536	540	100	101	70-130	1	20	
Lead	ug/L	ND	500	500	461	467	92	93	70-130	1	20	
Nickel	ug/L	41.4	500	500	499	501	92	92	70-130	0	20	
Zinc	ug/L	60.2	500	500	546	548	97	97	70-130	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM
Pace Project No.: 92529084

QC Batch: 609001
QC Batch Method: SM 2540D-2011
Analysis Method: SM 2540D-2011
Analysis Description: 2540D Total Suspended Solids
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92529084001, 92529084002

METHOD BLANK: 3207958 Matrix: Water
Associated Lab Samples: 92529084001, 92529084002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	1.0	03/24/21 21:22	

LABORATORY CONTROL SAMPLE & LCSD: 3207959 3208093

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	250	238	236	95	95	90-110	1	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM
Pace Project No.: 92529084

QC Batch: 609822
QC Batch Method: EPA 9040C
Analysis Method: EPA 9040C
Analysis Description: 9040 pH
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92529084001, 92529084002

SAMPLE DUPLICATE: 3211788

Parameter	Units	92527681002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.6	7.5	1	10	D6,H3

SAMPLE DUPLICATE: 3211789

Parameter	Units	92527990004 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.4	6.2	3	10	D6,H3

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM
Pace Project No.: 92529084

QC Batch: 609438
QC Batch Method: EPA 350.1 Rev 2.0 1993
Analysis Method: EPA 350.1 Rev 2.0 1993
Analysis Description: 350.1 Ammonia
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92529084001, 92529084002

METHOD BLANK: 3210034 Matrix: Water
Associated Lab Samples: 92529084001, 92529084002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.10	03/26/21 11:53	

LABORATORY CONTROL SAMPLE: 3210035

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3210036 3210037

Parameter	Units	92528775001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	0.14	5	5	5.2	5.2	100	100	90-110	0	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3210038 3210039

Parameter	Units	92528784001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	9.7	5	5	14.8	14.8	102	101	90-110	0	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM
Pace Project No.: 92529084

QC Batch: 609243
QC Batch Method: EPA 351.2 Rev 2.0 1993
Analysis Method: EPA 351.2 Rev 2.0 1993
Analysis Description: 351.2 TKN
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92529084001, 92529084002

METHOD BLANK: 3208916 Matrix: Water
Associated Lab Samples: 92529084001, 92529084002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	ND	0.50	03/27/21 01:34	

LABORATORY CONTROL SAMPLE: 3208917

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	10	9.5	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3208918 3208919

Parameter	Units	92528758001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Kjeldahl, Total	mg/L	0.97	10	10	1.8	0.90	8	-1	90-110	64	10	M1,R1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3208920 3208921

Parameter	Units	92528774001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Kjeldahl, Total	mg/L	ND	10	10	0.52	.46J	1	0	90-110		10	M1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM
Pace Project No.: 92529084

QC Batch: 609117
QC Batch Method: EPA 353.2 Rev 2.0 1993
Analysis Method: EPA 353.2 Rev 2.0 1993
Analysis Description: 353.2 Nitrate + Nitrite, preserved
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92529084001, 92529084002

METHOD BLANK: 3208240 Matrix: Water
Associated Lab Samples: 92529084001, 92529084002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	ND	0.040	03/25/21 09:51	

LABORATORY CONTROL SAMPLE: 3208241

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2.5	2.5	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3208244 3208245

Parameter	Units	92528744001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	0.46	2.5	2.5	2.8	2.8	94	95	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3208259 3208260

Parameter	Units	92528750001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	3.2	2.5	2.5	5.5	5.5	90	92	90-110	1	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM
Pace Project No.: 92529084

QC Batch: 609338
QC Batch Method: EPA 365.1 Rev 2.0 1993
Analysis Method: EPA 365.1 Rev 2.0 1993
Analysis Description: 365.1 Phosphorus, Total
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92529084001, 92529084002

METHOD BLANK: 3209646 Matrix: Water
Associated Lab Samples: 92529084001, 92529084002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Phosphorus	mg/L	ND	0.050	03/26/21 03:40	

LABORATORY CONTROL SAMPLE: 3209647

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	2.5	2.6	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3209648 3209649

Parameter	Units	92528548001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phosphorus	mg/L	0.067	2.5	2.5	2.6	2.6	102	101	90-110	0	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3209650 3209651

Parameter	Units	92528548002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phosphorus	mg/L	0.067	2.5	2.5	2.6	2.6	101	102	90-110	1	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM
Pace Project No.: 92529084

QC Batch: 609735
QC Batch Method: SM 5220D-2011
Analysis Method: SM 5220D-2011
Analysis Description: 5220D COD
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92529084001, 92529084002

METHOD BLANK: 3211552 Matrix: Water
Associated Lab Samples: 92529084001, 92529084002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	25.0	03/27/21 07:10	

LABORATORY CONTROL SAMPLE: 3211553

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	750	759	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3211554 3211555

Parameter	Units	92528004002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	26.1	100	100	133	133	107	107	90-110	0	3	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3211556 3211557

Parameter	Units	92528910001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	28.4	100	100	129	131	100	102	90-110	2	3	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALIFIERS

Project: PRINCE WILLIAM
Pace Project No.: 92529084

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
H3	Sample was received or analysis requested beyond the recognized method holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PRINCE WILLIAM
Pace Project No.: 92529084

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92529084001	**MAN0318**	EPA 200.7 Rev 4.4 1994	609065	EPA 200.7 Rev 4.4 1994	609105
92529084002	**DAL0318**	EPA 200.7 Rev 4.4 1994	609065	EPA 200.7 Rev 4.4 1994	609105
92529084001	**MAN0318**	SM 2540D-2011	609001		
92529084002	**DAL0318**	SM 2540D-2011	609001		
92529084001	**MAN0318**	EPA 9040C	609822		
92529084002	**DAL0318**	EPA 9040C	609822		
92529084001	**MAN0318**	EPA 350.1 Rev 2.0 1993	609438		
92529084002	**DAL0318**	EPA 350.1 Rev 2.0 1993	609438		
92529084001	**MAN0318**	EPA 351.2 Rev 2.0 1993	609243	EPA 351.2 Rev 2.0 1993	609743
92529084002	**DAL0318**	EPA 351.2 Rev 2.0 1993	609243	EPA 351.2 Rev 2.0 1993	609743
92529084001	**MAN0318**	EPA 353.2 Rev 2.0 1993	609117		
92529084002	**DAL0318**	EPA 353.2 Rev 2.0 1993	609117		
92529084001	**MAN0318**	EPA 365.1 Rev 2.0 1993	609338	EPA 365.1 Rev 2.0 1993	609416
92529084002	**DAL0318**	EPA 365.1 Rev 2.0 1993	609338	EPA 365.1 Rev 2.0 1993	609416
92529084001	**MAN0318**	SM 5220D-2011	609735	SM 5220D-2011	609766
92529084002	**DAL0318**	SM 5220D-2011	609735	SM 5220D-2011	609766

Pace Analytical®

CHAIN-OF-CUSTODY Analytical Request Document

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

WO# : 92529084

92529084

Company: Wood Plc
Address: 4795 Meadow Wood Ln
Report To: Ben Green
Copy To:
Billing Information:
Email To:
Site Collection Info/Address: PWC

Customer Project Name/Number: Benjamin Green

State: VA / County/City: Prince Wm / Time Zone Collected: [ ]PT [ ]MT [ ]CT [x]ET

Phone: 630-326-6217
Email: benjamin.green@woodplc.com

Site/Facility ID #:
Compliance Monitoring? [x] Yes [ ] No

Collected By (print): Ben Green
Purchase Order #: 92509457
Quote #:
DW PWS ID #:
DW Location Code:

Collected By (signature): [signature]
Turnaround Date Required: Normal
Immediately Packed on Ice: [x] Yes [ ] No

Sample Disposal: [x] Dispose as appropriate [ ] Return [ ] Archive: [ ] Hold:
Rush: (Expedite Charges Apply) [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day
Field Filtered (if applicable): [ ] Yes [x] No
Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Time	Composite End Date	Time	Res Cl	# of Ctns	Container Type: Plastic (P) or Glass (G)	pH	Metals	TSS	Ammonia/Phosphorus/COD	TKN+Nitrate+Nitrite	Lab Sample # / Comments
MAN0318	WT	COMP	18-Mar	600	19-Mar	600		5	P	x	x	x	x	x	001
DAL0318	WT	COM	18-Mar	600	19-Mar	600		5	P	x	x	x	x	x	002

Lab Project Manager:

Lab Profile/Line:

Lab Sample Receipt Checklist:
Custody Seals Present/Intact: Y N NA
Custody Signatures Present: Y N NA
Collector Signature Present: Y N NA
Bottles Intact: Y N NA
Correct Bottles: Y N NA
Sufficient Volume: Y N NA
Samples Received on Ice: Y N NA
VOA - Headspace Acceptable: Y N NA
USDA Regulated Soils: Y N NA
Samples in Holding Time: Y N NA
Residual Chlorine Present: Y N NA
Cl Strips: 0295
Sample pH Acceptable: Y N NA
pH Strips: 2335 MAN
Sulfide Present: Y N NA
Lead Acetate Strips:

AR 3-23-21

LAB USE ONLY:
Lab Sample # / Comments: 92529084

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None
Packing Material Used: Air Pack
Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A
Lab Tracking #:
Samples received via: FEDEX UPS Client Courier Pace Courier

LAB Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: 92-T071
Cooler 1 Temp Upon Receipt: 4.8 oC
Cooler 1 Therm Corr. Factor: 0 oC
Cooler 1 Corrected Temp: 4.8 oC
Comments:

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
[signature]	3/22/ 18:00	A.Rucker/PACE/AV	3-23-21 1100
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO
Page: ____ of: ____

**Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottles

Project #

WO# : 92529084

PM: RNB Due Date: 03/30/21

CLIENT: 92-Amec VA

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1	1			1	2	1																							
2	1			1	2	1																							
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers.

Wet Weather Monitoring Report

Second Quarter 2021 (April 1 – June 30)
Event Date: March July 1 & July 12, 2021

Prepared for:

Prince William County Department of Public Works
5 County Complex Court, Suite 170
Prince William, Virginia 22192

Prepared by:
Wood Environment & Infrastructure Solutions, Inc.
4795 Meadow Wood Lane, Suite 310E
Chantilly, VA 20151
(703) 488-3700

August 26, 2021
Project No. 151270004

1.0 INTRODUCTION

Wood Environment & Infrastructure Solutions, Inc. (Wood) is pleased to provide this report of wet weather monitoring for compliance with the requirements of the Virginia Stormwater Management Program (VSMP) Municipal Separate Storm Sewer System (MS4) Permit (Number VA0088595), issued by the Virginia Department of Environmental Quality (VDEQ) to Prince William County, Virginia. This report discusses the results of the Q2 sampling events conducted on July 1, 2021 and July 12, 2021 as well as the findings from the water quality analysis results of those sampling events.

2.0 METHODS

Flow rate data were collected at the outfalls by an ISCO 6712 automated sampler coupled with an ISCO 730 bubbler flow module, installed with a Scissors Ring. Flow rate over the course of the sampling events were electronically calculated using ISCO Flowlink 5.1 software, which utilizes the Manning Equation to convert flow level and velocity to flow rate.

SITE #941; MANASSAS, VA

Site #941 is located near 11850 Livingston Road. The site receives a total of 52 acres of upstream drainage area from a land surface that is 34% impervious. County data documents that the pipe is 54 inches in diameter with a slope of 0.03437. This site is subject to backwater conditions as water levels within the downstream pond have risen over the past year. Maintenance is recommended to ensure the continued efficacy of the monitoring program at this site.

SITE #4684; DALE CITY, VA

Site #4684 is located near the corner of Potomac Center Blvd. and Sheffield Hill Way, north of Eastbourne Drive. It drains into a BMP for the Potomac Club residential development. Upstream drainage totaled 51 acres, 21% of which is from impervious surfaces. The pipe is 54 inches in diameter with a slope of 0.002593. Storm events at this site are flashy in nature, accounted for by programming shorter sample intervals, if necessary based upon forecast conditions.

The automated samplers were deployed when a qualifying storm event (>0.3 inches precipitation) was forecast for the two monitoring sites. On July 1, Wood staff deployed the samplers at both field sites and programmed the samplers' automated, discrete sampling sequence to initiate upon flow levels exceeding current water levels in each pipe. The samplers were programmed to collect 24 discrete 800 mL samples to be collected every hour. Rain gage data were compiled for monitoring stations in the Weather Underground monitoring network. The data were easily accessible online and provided hourly precipitation totals over the monitoring period. Gages were prioritized based on the makeup of the data record (reporting interval) and proximity to monitoring locations. Sampling was unsuccessful at the Manassas site, where no samples were collected. The sampler was redeployed on July 8, and samples were successfully collected.

Following the storm event, staff retrieved the samples and prepared them for shipment to Pace Environmental for water quality analysis. To compile the complete set of discrete samples into a single flow-weighted composite, Flowlink software calculated the storm event discharge using the Manning Equation:

$$Q = VA = \left(\frac{1.49}{n}\right) A R^{\frac{2}{3}} \sqrt{S} \text{ [US]}$$

Q = Flow rate
A = Flow area
V = Avg. velocity
S = Water surface slope
R = Hydraulic Radius
n = Roughness coefficient
1.49 = English units conversion factor

Channel slopes were determined using invert elevations reported in the stormwater infrastructure geospatial data provided by Prince William County. Using flow levels reported by the ISCO samplers, the area and hydraulic radius inside the sampled outfalls could be computed for a given time interval. A Manning's *n* value of 0.013 was assumed for the concrete pipes. Discrete samples collected over the duration of the storm event were then mixed based on their representative weight within the cumulative flow curve for each storm event. This flow weighted composite sample was provided to the laboratory for analysis. The resulting analysis is considered the event mean concentration (EMC) of the individual analyte.

3.0 RESULTS

SITE #941; MANASSAS, VA

Following redeployment, sampling occurred from 17:10 on 7/8/21 – 04:40 on 7/9/21. The Global Historical Climatology Network (GHCN) daily gauge in Manassas, VA (USC00445204) recorded 0.25 inches of precipitation over that period with temperatures ranging from 67-92 degrees Fahrenheit. The previous storm event was recorded on 7/4/21, producing 0.05 inch of precipitation.

SITE #4684; DALE CITY, VA

Sampling occurred from 21:10 on 7/1/21 – 13:10 on 7/2/21. The Global Historical Climatology Network (GHCN) daily gauge in Woodbridge, VA (US1VAPW0010) recorded 1.09 inches of precipitation over this same period. The previous storm event was recorded on 6/23/21, producing 0.35 inch of precipitation.

Samples from both sites were retained under refrigeration until they were composited and shipped overnight to Pace Analytical Services in Asheville, NC. The Dale City sample was shipped 7/7/21, received on 7/12/21.The Manassas sample was shipped on 7/9 after they were composited, arriving on 7/10/21.

3.1 FLOW DATA

SITE #941; MANASSAS, VA

Flow rate reached 5.56 cfs and oscillated throughout the course of the storm. The storm event hydrograph compared with cumulative volume can be seen in Figure 1. Table 1 lists the proportion of each sample mixed with the flow-weighted composite.

Flow rate and volume are calculated by measuring changes in water level over time. Backwater effects at the pond have rendered the current monitoring setup ineffective. This explains the inflated values listed for cumulative volume and flow rate.

Figure 1: Flow data over time for the storm event at Site #941 on July 8 - 9 2021.

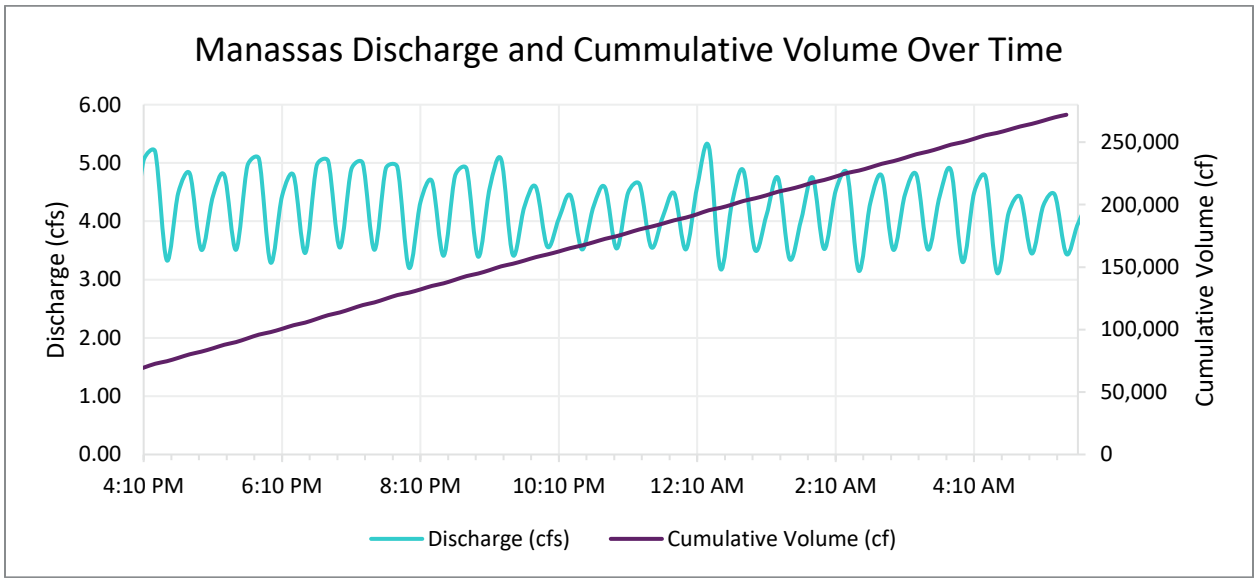


Table 1: Summary of Flow Weighted Composite – Site #941

Bottle #	Time of Sample	Volume (cf)	% of Flow	Flow Weighted Volume (mL)*
1	7/8/21, 17:10	7,651.25	4.2%	168
2	17:40	7,951.51	4.4%	174
3	18:10	7,678.54	4.2%	168
4	18:40	7,918.72	4.3%	173
5	19:10	8,081.34	4.4%	177
6	19:40	8,046.30	4.4%	176
7	20:10	7,476.29	4.1%	164
8	20:40	7,724.58	4.2%	169
9	21:10	7,716.95	4.2%	169
10	21:40	7,635.53	4.2%	167
11	22:10	7,319.42	4.0%	160
12	22:40	7,328.44	4.0%	161
13	23:10	7,560.47	4.1%	166
14	23:40	7,356.99	4.0%	161
15	7/9/21, 0:10	7,561.92	4.1%	166
16	0:40	7,662.76	4.2%	168
17	1:10	7,492.06	4.1%	164
18	1:40	7,270.84	4.0%	159
19	2:10	7,680.71	4.2%	168
20	2:40	7,367.67	4.0%	161
21	3:10	7,645.08	4.2%	167
22	3:40	7,639.60	4.2%	167
23	4:10	7,596.83	4.2%	166
24	4:40	7,213.92	4.0%	158

**4.0 L Sample*

SITE #4684; DALE CITY, VA

Flow rate reached 0.204 cfs. The apparent oscillation in water level could be a result of the suction line sampling drawing down low flow levels. The storm event hydrograph compared with cumulative volume can be seen in Figure 2. Table 2 lists the proportion of each sample mixed with the flow-weighted composite. The flow-weighted composite volume was adjusted to incorporate representative volumes from the collected samples.

Figure 2: Flow data over time for the storm event at Site #4684 on July 1 - 2, 2021.

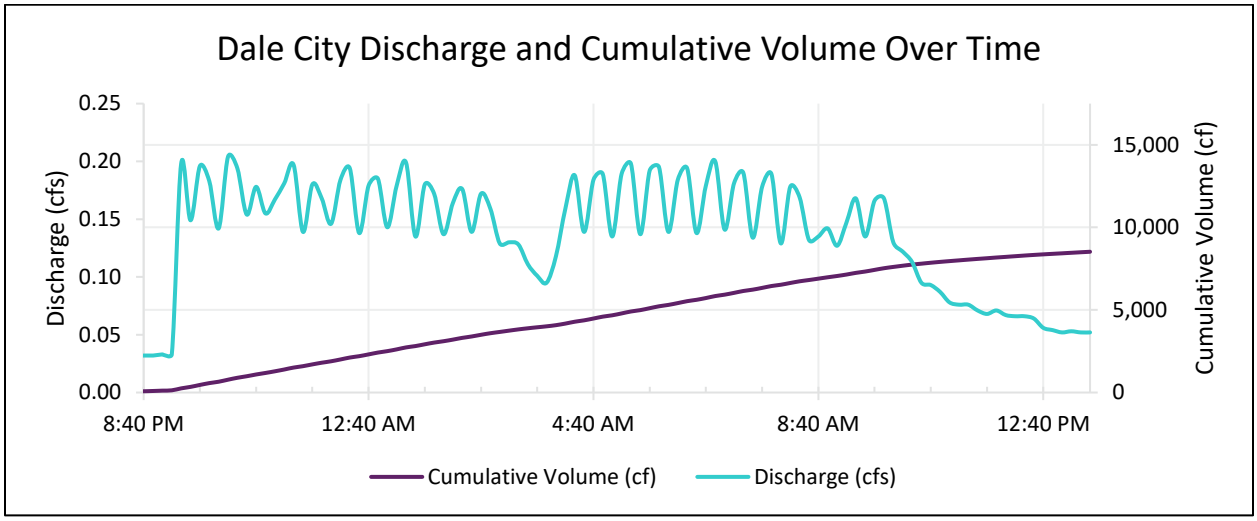


Table 2: Summary of Flow Weighted Composite – Site #4684

Bottle #	Time of Sample	Volume (cf)	% of Flow	Flow Weighted Volume (mL)*
1	7/1/21, 21:10	133.42	1.6%	79
2	22:10	643.45	7.6%	380
3	23:10	617.07	7.3%	365
4	7/2/21, 0:10	608.49	7.2%	359
5	1:10	610.76	7.2%	361
6	2:10	591.63	7.0%	349
7	3:10	543.01	6.4%	321
8	4:10	427.83	5.1%	253
9	5:10	614.70	7.3%	363
10	6:10	626.63	7.4%	370
11	7:10	619.29	0.07	366
12	8:10	598.59	7.1%	354
13	9:10	511.29	6.0%	302
14	10:10	534.04	6.3%	315
15	11:10	325.13	3.8%	192
16	12:10	251.75	0.03%	149
17	13:10	207.14	0.02%	122

**5.0 L Sample*

3.2 LABORATORY ANALYTICAL RESULTS

Samples were sent to Pace Analytical Services, Inc. lab in Asheville, NC for analysis, with Analytical Parameters tested listed in **Table 3**.

Table 3: Analytical Parameters

Analyte	Analysis Method
Copper	EPA 200.7
Lead	EPA 200.7
Nickel	EPA 200.7
Zinc	EPA 200.7
Total Suspended Solids	SM 2540D
pH	EPA 9040
Ammonia	EPA 350.1 1993 Rev 2.0
Total Kjeldahl Nitrogen	EPA 351.2
Nitrate + Nitrite Nitrogen	EPA 353.2
Total Phosphorus	EPA 365.1
Chemical Oxygen Demand	SM 5220D

Table 4: Results of Water Quality Analysis

	Analyte	Analyte Value*	Analyte Unit	Reporting Limit	Exceedance Criterion	Criterion Basis
Manassas (#941)	Copper	9.5	µg/L	5	13	a
	Lead	ND	µg/L	5	120	a
	Nickel	ND	µg/L	5	180	a
	Zinc	35.9	µg/L	10	120	a
	Total Suspended Solids	4.1	mg/L	1	100	b
	Nitrogen, Ammonia	ND	mg/L	0.52		-
	Nitrogen, Kjeldahl, Total	ND	mg/L	0.5		-
	Nitrogen, NO^2 plus NO^3	1.5	mg/L	0.04		-
	Total Nitrogen	1.5	mg/L	0.52	2.2	c
	Phosphorus, Total	0.066	mg/L	0.05	2	b
	Chemical Oxygen Demand	ND	mg/L	25	120	b
	pH	7.7	Std. Units	0.1	6.0-9.0	d
Dale City (#4684)	Copper	6.4	µg/L	5	13	a
	Lead	ND	µg/L	5	120	a
	Nickel	ND	µg/L	5	180	a
	Zinc	51.7	µg/L	10	120	a
	Total Suspended Solids	12.5	mg/L	1	100	b
	Nitrogen, Ammonia	ND	mg/L	0.1		-
	Nitrogen, Kjeldahl, Total	0.52	mg/L	0.5		-
	Nitrogen, NO^2 plus NO^3	0.44	mg/L	0.04		-
	Total Nitrogen	0.96	mg/L	-	2.2	c
	Phosphorus, Total	0.066	mg/L	0.05	2	b
	Chemical Oxygen Demand	32.6	mg/L	25	120	b
	pH	7.4	Std. Units	0.1	6.0-9.0	d

[a]State Water Quality Control Board Acute Standards for Surface Water Quality. Value is based on an assumed hardness of 100mg/L.
[b]Based on benchmark criteria for the VPDES Industrial Stormwater General Permit.
[c]The sum of Nitrogen as Ammonia, NO^2, NO^3, and Total Kjeldahl Nitrogen.
[d]Based on numeric effluent limitations noted in the VPDES Permit for Discharge of Stormwater Associated with Industrial Activity.
*Values highlighted in red were found to be in exceedance of their respective criterion.

4.0 SUMMARY

As indicated in **Table 4,** no exceedances occurred at Site #941 or Site #4684.Exceedance tracking for parameters of concern are illustrated in **Figure 3** below.

Figure 3: Exceedance tracking for the Wet Weather Monitoring Program.

Manassas (#941)	2016		2017				2018				2019				2020				2021	
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Copper	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Lead																				
Nickel																				
Zinc	x		x	x	x	x	x	x							x	x				
Total Suspended Solids						x	x								x	x				
Total Nitrogen					x	x	x				x									
Phosphorus, Total																				
Chemical Oxygen Demand		x				x	x								x					
pH						x												x		

Dale City (#4684)	2016		2017				2018				2019				2020				2021	
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2*	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Copper	x		x	x	x	x	x	--		x	x				x	x	x	x		
Lead								--												
Nickel								--												
Zinc			x		x	x	x	--							x	x				
Total Suspended Solids						x		--							x	x				
Total Nitrogen	x	x	x	x		x	x	--			x									
Phosphorus, Total								--												
Chemical Oxygen Demand						x	x	--							x					
pH		x		x		x		--										x		

* No sample collected at #4684 during Q2 2018.

APPENDIX A

SITE CONDITIONS

Manassas (#941)

Site #941 is located within the Bull Run watershed. It receives drainage from an industrial use area and parking lots with frequent truck traffic. Water levels are persistently found to be above 6 – 10 inches in the monitoring outfall.

Dale City (#4684)

Site #4684 receives flow from Neabsco Mills Road and the Stonebridge at Potomac Town Center development. It is a 54” concrete pipe that drains to a deep scour pool before draining to a large BMP that collects drainage for the Potomac Club development. Erosion around the headwall and apron of the outfall at this site continues to pose a risk during sampler deployment and retrieval.

APPENDIX B

WATER QUALITY LABORATORY RESULTS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

July 20, 2021

Benjamin Green
WOOD E&I
4795 Meadow Wood Lane
Suite 310E
Chantilly, VA 20151

RE: Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548854

Dear Benjamin Green:

Enclosed are the analytical results for sample(s) received by the laboratory on July 12, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ryan Brumfield
ryan.brumfield@pacelabs.com
(770)734-4200
Project Manager

Enclosures

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548854

Pace Analytical Services Asheville
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE SUMMARY

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548854

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92548854001	**DAL07012021**	Water	07/01/21 21:10	07/12/21 11:45

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE ANALYTE COUNT

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548854

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92548854001	**DAL07012021**	EPA 200.7 Rev 4.4 1994	SH1	4	PASI-A
		SM 2540D-2011	ZMC	1	PASI-A
		EPA 9040C	SMK	1	PASI-A
		EPA 350.1 Rev 2.0 1993	NGP	1	PASI-A
		EPA 351.2 Rev 2.0 1993	MFO	1	PASI-A
		EPA 353.2 Rev 2.0 1993	DMN	1	PASI-A
		EPA 365.1 Rev 2.0 1993	KDF1	1	PASI-A
		SM 5220D-2011	JP1	1	PASI-A

PASI-A = Pace Analytical Services - Asheville

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548854

Sample: DAL07012021 **Lab ID: 92548854001** Collected: 07/01/21 21:10 Received: 07/12/21 11:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Rev 4.4 1994 Preparation Method: EPA 200.7 Rev 4.4 1994 Pace Analytical Services - Asheville							
Copper	**6.4**	ug/L	5.0	1	07/14/21 13:25	07/15/21 01:37	7440-50-8	
Lead	ND	ug/L	5.0	1	07/14/21 13:25	07/15/21 01:37	7439-92-1	
Nickel	ND	ug/L	5.0	1	07/14/21 13:25	07/15/21 01:37	7440-02-0	
Zinc	**51.7**	ug/L	10.0	1	07/14/21 13:25	07/15/21 01:37	7440-66-6	
2540D TSS, Low-Level	Analytical Method: SM 2540D-2011 Pace Analytical Services - Asheville							
Total Suspended Solids	**12.5**	mg/L	1.0	1		07/13/21 18:18		H3
9040 pH	Analytical Method: EPA 9040C Pace Analytical Services - Asheville							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		07/19/21 15:07		H3
350.1 Ammonia	Analytical Method: EPA 350.1 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, Ammonia	ND	mg/L	0.10	1		07/16/21 11:46	7664-41-7	
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2 Rev 2.0 1993 Preparation Method: EPA 351.2 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, Kjeldahl, Total	**0.52**	mg/L	0.50	1	07/15/21 21:06	07/16/21 08:51	7727-37-9	
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, NO2 plus NO3	**0.44**	mg/L	0.040	1		07/13/21 18:24		
365.1 Phosphorus, Total	Analytical Method: EPA 365.1 Rev 2.0 1993 Preparation Method: EPA 365.1 Rev 2.0 1993 Pace Analytical Services - Asheville							
Phosphorus	**0.066**	mg/L	0.050	1	07/15/21 13:40	07/16/21 09:55	7723-14-0	
5220D COD	Analytical Method: SM 5220D-2011 Preparation Method: SM 5220D-2011 Pace Analytical Services - Asheville							
Chemical Oxygen Demand	**32.6**	mg/L	25.0	1	07/17/21 00:19	07/17/21 07:00		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548854

QC Batch: 633330
QC Batch Method: EPA 200.7 Rev 4.4 1994
Analysis Method: EPA 200.7 Rev 4.4 1994
Analysis Description: 200.7 MET
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92548854001

METHOD BLANK: 3326536 Matrix: Water
Associated Lab Samples: 92548854001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper	ug/L	ND	5.0	07/15/21 01:31	
Lead	ug/L	ND	5.0	07/15/21 01:31	
Nickel	ug/L	ND	5.0	07/15/21 01:31	
Zinc	ug/L	ND	10.0	07/15/21 01:31	

LABORATORY CONTROL SAMPLE: 3326537

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	500	518	104	85-115	
Lead	ug/L	500	481	96	85-115	
Nickel	ug/L	500	497	99	85-115	
Zinc	ug/L	500	465	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3326538 3326539

Parameter	Units	92548854001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper	ug/L	6.4	500	500	506	506	100	100	70-130	0	20	
Lead	ug/L	ND	500	500	461	466	92	93	70-130	1	20	
Nickel	ug/L	ND	500	500	477	481	95	96	70-130	1	20	
Zinc	ug/L	51.7	500	500	507	510	91	92	70-130	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548854

QC Batch: 633090
QC Batch Method: SM 2540D-2011
Analysis Method: SM 2540D-2011
Analysis Description: 2540D Total Suspended Solids
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92548854001

METHOD BLANK: 3325405 Matrix: Water
Associated Lab Samples: 92548854001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	1.0	07/13/21 18:16	

LABORATORY CONTROL SAMPLE & LCSD: 3325406 3325991

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	250	248	248	99	99	90-110	0	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548854

QC Batch: 634132
QC Batch Method: EPA 9040C
Analysis Method: EPA 9040C
Analysis Description: 9040 pH
Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92548854001

SAMPLE DUPLICATE: 3330590

Parameter	Units	92548854001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.3	1	10	H3

SAMPLE DUPLICATE: 3330591

Parameter	Units	92548961001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.5	6.5	0	10	H3

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548854

QC Batch: 633716
QC Batch Method: EPA 350.1 Rev 2.0 1993
Analysis Method: EPA 350.1 Rev 2.0 1993
Analysis Description: 350.1 Ammonia
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92548854001

METHOD BLANK: 3328480 Matrix: Water
Associated Lab Samples: 92548854001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.10	07/16/21 10:52	

LABORATORY CONTROL SAMPLE: 3328481

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3328482 3328483

Parameter	Units	92548356001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	31.2	5	5	36.0	35.9	95	94	90-110	0	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3328484 3328485

Parameter	Units	92548356002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	5.5	5	5	10.3	10.2	96	93	90-110	2	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548854

QC Batch: 633671
QC Batch Method: EPA 351.2 Rev 2.0 1993
Analysis Method: EPA 351.2 Rev 2.0 1993
Analysis Description: 351.2 TKN
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92548854001

METHOD BLANK: 3328276 Matrix: Water
Associated Lab Samples: 92548854001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	ND	0.50	07/16/21 08:19	

LABORATORY CONTROL SAMPLE: 3328277

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	10	10.3	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3328278 3328279

Parameter	Units	92547972001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Kjeldahl, Total	mg/L	26.2	10	10	43.4	42.5	172	163	90-110	2	10	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3328280 3328281

Parameter	Units	92548055002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Kjeldahl, Total	mg/L	2.2	10	10	15.1	14.5	129	123	90-110	4	10	M1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548854

QC Batch: 633050
QC Batch Method: EPA 353.2 Rev 2.0 1993
Analysis Method: EPA 353.2 Rev 2.0 1993
Analysis Description: 353.2 Nitrate + Nitrite, preserved
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92548854001

METHOD BLANK: 3325191 Matrix: Water
Associated Lab Samples: 92548854001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	ND	0.040	07/13/21 17:51	

LABORATORY CONTROL SAMPLE: 3325192

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2.5	2.5	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3325193 3325194

Parameter	Units	92548692001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	0.17	2.5	2.5	2.5	2.5	95	95	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3325195 3325196

Parameter	Units	92548692002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	1.2	2.5	2.5	3.5	3.5	92	92	90-110	0	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548854

QC Batch: 633527
QC Batch Method: EPA 365.1 Rev 2.0 1993
Analysis Method: EPA 365.1 Rev 2.0 1993
Analysis Description: 365.1 Phosphorus, Total
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92548854001

METHOD BLANK: 3327577 Matrix: Water
Associated Lab Samples: 92548854001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Phosphorus	mg/L	ND	0.050	07/16/21 09:37	

LABORATORY CONTROL SAMPLE: 3327578

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	2.5	2.5	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3327579 3327580

Parameter	Units	92547715001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phosphorus	mg/L	9.7	2.5	2.5	12.2	12.5	101	113	90-110	3	10	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3327581 3327582

Parameter	Units	92547721004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phosphorus	mg/L	ND	2.5	2.5	2.5	2.6	101	102	90-110	1	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548854

QC Batch: 633828
QC Batch Method: SM 5220D-2011
Analysis Method: SM 5220D-2011
Analysis Description: 5220D COD
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92548854001

METHOD BLANK: 3329092 Matrix: Water
Associated Lab Samples: 92548854001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	25.0	07/17/21 06:57	

LABORATORY CONTROL SAMPLE: 3329093

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	750	771	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3329094 3329095

Parameter	Units	92547735001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	ND	100	100	125	118	109	102	90-110	6	3	R1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALIFIERS

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548854

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

H3	Sample was received or analysis requested beyond the recognized method holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548854

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92548854001	**DAL07012021**	EPA 200.7 Rev 4.4 1994	633330	EPA 200.7 Rev 4.4 1994	633421
92548854001	**DAL07012021**	SM 2540D-2011	633090		
92548854001	**DAL07012021**	EPA 9040C	634132		
92548854001	**DAL07012021**	EPA 350.1 Rev 2.0 1993	633716		
92548854001	**DAL07012021**	EPA 351.2 Rev 2.0 1993	633671	EPA 351.2 Rev 2.0 1993	633809
92548854001	**DAL07012021**	EPA 353.2 Rev 2.0 1993	633050		
92548854001	**DAL07012021**	EPA 365.1 Rev 2.0 1993	633527	EPA 365.1 Rev 2.0 1993	633681
92548854001	**DAL07012021**	SM 5220D-2011	633828	SM 5220D-2011	634101

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: October 28, 2020 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.07	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
Asheville ☑ Eden ☐ Greenwood ☐ Huntersville ☐ Raleigh ☐ Mechanicsville ☐ Atlanta ☐ Kernersville ☐

Sample Condition Upon Receipt

Client Name: Wood E&I - Chantilly

Project #

WO# : 92548854

92548854

Courier: ☐ Commercial ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ Other:

Custody Seal Present? ☐ Yes ☑ No Seals Intact? ☐ Yes ☑ No

Date/Initials Person Examining Contents: 7/12/21 YG

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other

Biological Tissue Frozen? ☐ Yes ☐ No ☑ N/A

Thermometer: ☐ IR Gun ID: 93071

Type of Ice: ☐ Wet ☐ Blue ☑ None melted

Cooler Temp: 21.1 Correction Factor: Add/Subtract (°C) 0

Temp should be above freezing to 6°C
☐ Samples out of temp criteria. Samples on ice, cooling process has begin

Cooler Temp Corrected (°C): 21.1

USDA Regulated Soil (☑ N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

				Comments/Discrepancy:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☑ Yes	☐ No	☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	4.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	5.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	6.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes	☐ No	☑ N/A	8.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	9.
-Includes Date/Time/ID/Analysis Matrix: WT				
Headspace in VOA Vials (>5-6mm)?	☐ Yes	☐ No	☑ N/A	10.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	11.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? ☐ Yes ☐ No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: Date/Time:

Project Manager SCURF Review: Date:

Project Manager SRF Review: Date:

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: October 28, 2020 Page 2 of 2
	Document No.: F-CAR-CS-033-Rev.07	Issuing Authority:

WO# : 92548854

PM: RNB Due Date: 07/19/21

CLIENT: 92-Amec VA

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottles

Project

Items	BP4U-125 mL Plastic Unpreserved (N/A) (CL)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BPKS-125 mL Plastic H2SO4 (pH < 2) (CL)	BPSN-250 mL plastic HNO3 (pH < 2)	BPME-125 mL Plastic ZN Acetate & NaOH (>9)	BPAC-125 mL Plastic NaOH (pH > 12) (CL)	WGFU-Wide-mouthed Glass Jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (CL)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (CL)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(CL)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1	1			1	2	1																							
2																													
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers).

Pace Analytical®

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at https://info.pacelabs.com/hubfs/pas-standard-terms.pdf.

Page : 1 Of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Wood E&I - Chantilly	Report To: Benjamin Green	Attention:
Address: 4795 Meadow Wood Lane	Copy To:	Company Name:
Chantilly, VA 20151		Address:
Email: benjamin.green@woodplc.com	Purchase Order #:	Pace Quote:
Phone: (703)488-3795 Fax:	Project Name: PRINCE WILLIAM CO Q2 2021	Pace Project Manager: ryan.brumfield@pacelabs.com
Requested Due Date:	Project #:	Pace Profile #: 8125-1

State: VA

MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Other OT, Tissue TS

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	START TIME	END DATE	END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	pH	Metals	TSS	Ammonia/Phosphorus/COD	TKN + Nitrate+Nitrite	Residual Chlorine (Y/N)	
1	DAL07012021	3	J	7/1	21:10					2		1	1					Y	Y	Y	Y	Y		92548854 001
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	B. Green	7/7	18:30	M. Cunningham(?) Pace	7/12/21(?)	11:45	21.1 melted	N	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Ben Green

SIGNATURE of SAMPLER: [signature]

DATE Signed: 7/7/21

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

July 19, 2021

Benjamin Green
WOOD E&I
4795 Meadow Wood Lane
Suite 310E
Chantilly, VA 20151

RE: Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548764

Dear Benjamin Green:

Enclosed are the analytical results for sample(s) received by the laboratory on July 10, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ryan Brumfield
ryan.brumfield@pacelabs.com
(770)734-4200
Project Manager

Enclosures

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548764

Pace Analytical Services Asheville
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE SUMMARY

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548764

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92548764001	**MAN07082021**	Water	07/08/21 17:10	07/10/21 11:00

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE ANALYTE COUNT

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548764

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92548764001	**MAN07082021**	EPA 200.7 Rev 4.4 1994	SH1	4	PASI-A
		SM 2540D-2011	MJP	1	PASI-A
		EPA 9040C	SMK	1	PASI-A
		TKN+NO3+NO2 Calculation	DMN	1	PASI-A
		EPA 350.1 Rev 2.0 1993	NGP	1	PASI-A
		EPA 351.2 Rev 2.0 1993	MFO	1	PASI-A
		EPA 353.2 Rev 2.0 1993	DMN	1	PASI-A
		EPA 365.1 Rev 2.0 1993	KDF1	1	PASI-A
		SM 5220D-2011	MDW	1	PASI-A

PASI-A = Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548764

Sample: MAN07082021 **Lab ID: 92548764001** Collected: 07/08/21 17:10 Received: 07/10/21 11:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Rev 4.4 1994 Preparation Method: EPA 200.7 Rev 4.4 1994 Pace Analytical Services - Asheville							
Copper	**9.5**	ug/L	5.0	1	07/14/21 13:25	07/15/21 02:07	7440-50-8	
Lead	ND	ug/L	5.0	1	07/14/21 13:25	07/15/21 02:07	7439-92-1	
Nickel	ND	ug/L	5.0	1	07/14/21 13:25	07/15/21 02:07	7440-02-0	
Zinc	**35.9**	ug/L	10.0	1	07/14/21 13:25	07/15/21 02:07	7440-66-6	
2540D TSS, Low-Level	Analytical Method: SM 2540D-2011 Pace Analytical Services - Asheville							
Total Suspended Solids	**4.1**	mg/L	1.0	1		07/14/21 14:19		
9040 pH	Analytical Method: EPA 9040C Pace Analytical Services - Asheville							
pH at 25 Degrees C	**7.7**	Std. Units	0.10	1		07/19/21 15:37		H3
Total Nitrogen Calculation	Analytical Method: TKN+NO3+NO2 Calculation Pace Analytical Services - Asheville							
Total Nitrogen	**2.0**	mg/L	0.52	1		07/16/21 16:48		
350.1 Ammonia	Analytical Method: EPA 350.1 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, Ammonia	ND	mg/L	0.10	1		07/15/21 14:08	7664-41-7	
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2 Rev 2.0 1993 Preparation Method: EPA 351.2 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, Kjeldahl, Total	ND	mg/L	0.50	1	07/15/21 21:06	07/16/21 08:50	7727-37-9	
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Rev 2.0 1993 Pace Analytical Services - Asheville							
Nitrogen, NO2 plus NO3	**1.5**	mg/L	0.040	1		07/13/21 18:02		
365.1 Phosphorus, Total	Analytical Method: EPA 365.1 Rev 2.0 1993 Preparation Method: EPA 365.1 Rev 2.0 1993 Pace Analytical Services - Asheville							
Phosphorus	**0.066**	mg/L	0.050	1	07/15/21 09:15	07/15/21 12:09	7723-14-0	
5220D COD	Analytical Method: SM 5220D-2011 Preparation Method: SM 5220D-2011 Pace Analytical Services - Asheville							
Chemical Oxygen Demand	ND	mg/L	25.0	1	07/15/21 20:00	07/15/21 23:04		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548764

QC Batch: 633323
QC Batch Method: EPA 200.7 Rev 4.4 1994
Analysis Method: EPA 200.7 Rev 4.4 1994
Analysis Description: 200.7 MET
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92548764001

METHOD BLANK: 3326493 Matrix: Water
Associated Lab Samples: 92548764001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper	ug/L	ND	5.0	07/15/21 01:54	
Lead	ug/L	ND	5.0	07/15/21 01:54	
Nickel	ug/L	ND	5.0	07/15/21 01:54	
Zinc	ug/L	ND	10.0	07/15/21 01:54	

LABORATORY CONTROL SAMPLE: 3326494

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	500	518	104	85-115	
Lead	ug/L	500	482	96	85-115	
Nickel	ug/L	500	498	100	85-115	
Zinc	ug/L	500	465	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3326495 3326496

Parameter	Units	92548764001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper	ug/L	9.5	500	500	505	511	99	100	70-130	1	20	
Lead	ug/L	ND	500	500	446	455	89	90	70-130	2	20	
Nickel	ug/L	ND	500	500	462	469	92	93	70-130	1	20	
Zinc	ug/L	35.9	500	500	477	482	88	89	70-130	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548764

QC Batch: 633382
QC Batch Method: SM 2540D-2011
Analysis Method: SM 2540D-2011
Analysis Description: 2540D Total Suspended Solids
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92548764001

METHOD BLANK: 3326926 Matrix: Water
Associated Lab Samples: 92548764001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	1.0	07/14/21 14:15	

LABORATORY CONTROL SAMPLE: 3326927

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	250	230	92	90-110	

SAMPLE DUPLICATE: 3326928

Parameter	Units	92548705001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	22.7	24.3	7	10	

SAMPLE DUPLICATE: 3326929

Parameter	Units	92548705003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	43.5	46.0	6	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548764

QC Batch: 634132
QC Batch Method: EPA 9040C
Analysis Method: EPA 9040C
Analysis Description: 9040 pH
Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 92548764001

SAMPLE DUPLICATE: 3330590

Parameter	Units	92548854001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.3	1	10	H3

SAMPLE DUPLICATE: 3330591

Parameter	Units	92548961001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.5	6.5	0	10	H3

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548764

QC Batch: 633532
QC Batch Method: EPA 350.1 Rev 2.0 1993
Analysis Method: EPA 350.1 Rev 2.0 1993
Analysis Description: 350.1 Ammonia
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92548764001

METHOD BLANK: 3327601 Matrix: Water
Associated Lab Samples: 92548764001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.10	07/15/21 13:33	

LABORATORY CONTROL SAMPLE: 3327602

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.0	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3327603 3327604

Parameter	Units	92548199001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	0.24	5	5	5.0	5.0	96	96	90-110	0	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3327605 3327606

Parameter	Units	92548199002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	<0.10	5	5	4.9	4.9	98	98	90-110	0	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548764

QC Batch: 633671
QC Batch Method: EPA 351.2 Rev 2.0 1993
Analysis Method: EPA 351.2 Rev 2.0 1993
Analysis Description: 351.2 TKN
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92548764001

METHOD BLANK: 3328276 Matrix: Water
Associated Lab Samples: 92548764001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	ND	0.50	07/16/21 08:19	

LABORATORY CONTROL SAMPLE: 3328277

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	10	10.3	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3328278 3328279

Parameter	Units	92547972001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Kjeldahl, Total	mg/L	26.2	10	10	43.4	42.5	172	163	90-110	2	10	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3328280 3328281

Parameter	Units	92548055002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Kjeldahl, Total	mg/L	2.2	10	10	15.1	14.5	129	123	90-110	4	10	M1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548764

QC Batch: 633050
QC Batch Method: EPA 353.2 Rev 2.0 1993
Analysis Method: EPA 353.2 Rev 2.0 1993
Analysis Description: 353.2 Nitrate + Nitrite, preserved
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92548764001

METHOD BLANK: 3325191 Matrix: Water
Associated Lab Samples: 92548764001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	ND	0.040	07/13/21 17:51	

LABORATORY CONTROL SAMPLE: 3325192

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2.5	2.5	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3325193 3325194

Parameter	Units	92548692001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	0.17	2.5	2.5	2.5	2.5	95	95	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3325195 3325196

Parameter	Units	92548692002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	1.2	2.5	2.5	3.5	3.5	92	92	90-110	0	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548764

QC Batch: 633517
QC Batch Method: EPA 365.1 Rev 2.0 1993
Analysis Method: EPA 365.1 Rev 2.0 1993
Analysis Description: 365.1 Phosphorus, Total
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92548764001

METHOD BLANK: 3327559 Matrix: Water
Associated Lab Samples: 92548764001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Phosphorus	mg/L	ND	0.050	07/15/21 11:49	

LABORATORY CONTROL SAMPLE: 3327560

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	2.5	2.5	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3327561 3327562

Parameter	Units	92548201002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phosphorus	mg/L	0.11	2.5	2.5	2.6	2.7	101	102	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3327563 3327564

Parameter	Units	92548099001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phosphorus	mg/L	11.4	2.5	2.5	13.6	13.6	91	90	90-110	0	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548764

QC Batch: 633211
QC Batch Method: SM 5220D-2011
Analysis Method: SM 5220D-2011
Analysis Description: 5220D COD
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92548764001

METHOD BLANK: 3326137 Matrix: Water
Associated Lab Samples: 92548764001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	25.0	07/15/21 22:58	

LABORATORY CONTROL SAMPLE: 3326138

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	750	761	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3326139 3326140

Parameter	Units	92547966001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	231	100	100	323	323	92	92	90-110	0	3	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3326141 3326142

Parameter	Units	92548093001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	321	100	100	409	418	88	97	90-110	2	3	M1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALIFIERS

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548764

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

H3	Sample was received or analysis requested beyond the recognized method holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PRINCE WILLIAM CO Q2 2021
Pace Project No.: 92548764

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92548764001	**MAN07082021**	EPA 200.7 Rev 4.4 1994	633323	EPA 200.7 Rev 4.4 1994	633424
92548764001	**MAN07082021**	SM 2540D-2011	633382		
92548764001	**MAN07082021**	EPA 9040C	634132		
92548764001	**MAN07082021**	TKN+NO3+NO2 Calculation	634055		
92548764001	**MAN07082021**	EPA 350.1 Rev 2.0 1993	633532		
92548764001	**MAN07082021**	EPA 351.2 Rev 2.0 1993	633671	EPA 351.2 Rev 2.0 1993	633809
92548764001	**MAN07082021**	EPA 353.2 Rev 2.0 1993	633050		
92548764001	**MAN07082021**	EPA 365.1 Rev 2.0 1993	633517	EPA 365.1 Rev 2.0 1993	633582
92548764001	**MAN07082021**	SM 5220D-2011	633211	SM 5220D-2011	633790

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at https://info.pacelabs.com/hubfs/pas-standard-terms.pdf.

Page : 1 Of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Wood E&I - Chantilly	Report To: Benjamin Green	Attention:
Address: 4795 Meadow Wood Lane	Copy To:	Company Name:
Chantilly, VA 20151		Address:
Email: benjamin.green@amecfw.com	Purchase Order #:	Pace Quote:
Phone: (703)488-3795 Fax	Project Name: PRINCE WILLIAM CO Q2 2021	Pace Project Manager: ryan.brumfield@pacelabs.com,
Requested Due Date:	Project #:	Pace Profile #: 8125-1

Regulatory Agency	State / Location
	VA

SAMPLE ID
One Character per box.
(A-Z, 0-9 / , -)
Sample Ids must be unique

MATRIX	CODE
Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Other	OT
Tissue	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	pH	Metals	TSS	Ammonia/Phosphorus/COD	TKN + Nitrate+Nitrite	Residual Chlorine (Y/N)
1	MANO7082021	SL	C	7/8	1710				5	2	2	1							X	X	X	X	X	
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	F. Gallegos	7/9	1700	A. Rheker / PACE / AA	7-10-21	1100	3.7	Y	N	Y

WO# : 92548764

92548764

SAMPLER NAME AND SIGNATURE				
PRINT Name of SAMPLER: Francisco Gallegos				
SIGNATURE of SAMPLER:	DATE Signed: 7/8/21 7/9/21	TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: October 28, 2020 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.07	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
Asheville ☒ Eden ☐ Greenwood ☐ Huntersville ☐ Raleigh ☐ Mechanicsville ☐ Atlanta ☐ Kernersville ☐

Sample Condition Upon Receipt

Client Name: Wood E+I Chantilly

Project #

WO#: 92548764

PM: RNB Due Date: 07/19/21

CLIENT: 92-Amec VA

Courier: ☐ Commercial ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ Other:____

Custody Seal Present? ☐ Yes ☒ No Seals Intact? ☐ Yes ☒ No

Date/Initials Person Examining Contents: 7-10-21 AR

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other

Biological Tissue Frozen? ☐ Yes ☐ No ☒ N/A

Thermometer: ☒ IR Gun ID: 93T071

Type of Ice: ☒ Wet ☐ Blue ☐ None

Cooler Temp: 3.7 Correction Factor: Add/Subtract (°C) 0

Cooler Temp Corrected (°C): 3.7

Temp should be above freezing to 6°C
☐ Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil (☒ N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☒ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

				Comments/Discrepancy:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes	☒ No	☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	4.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	5.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	6.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes	☐ No	☒ N/A	8.
Sample Labels Match COC?	☒ Yes	☐ No	☐ N/A	9.
-Includes Date/Time/ID/Analysis Matrix: WT				
Headspace in VOA Vials (>5-6mm)?	☐ Yes	☐ No	☒ N/A	10.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	11.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? ☐ Yes ☐ No

PH is in the BP4U.

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: _____ Date: _____

Project Manager SRF Review: _____ Date: _____

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottles

Project # WO#: 92548764

PM: RNB Due Date: 07/19/21

CLIENT: 92-Amec VA

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1	1			1	2	1																							
2																													
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers.

Prince William County

Wet Weather Screening Program

Permit No.
VA0088595

Prince William County Department of Public Works
Watershed Management Branch
5 County Complex Court, Suite 170
Prince William, Virginia 22192

12/1/2015

Table of Contents

I. Introduction

Prince William County is dedicated to providing its citizens with the healthiest environment possible. It is with this goal the County establishes programs aimed at reducing pollutant impacts from heavily urbanized and industrialized areas. Non-point source pollution from urban and industrial areas within the County is a great concern due to its potential to impact water quality. Pollutants are transported from these areas during rain events and often deposited untreated into nearby streams and rivers. To mitigate this issue, the Environmental Protection Agency (EPA) and Virginia Department of Environmental Quality (VA-DEQ) have instituted programs aimed at reducing the potential impact of pollutants from urban areas.

Under the Virginia Pollutant Discharge Elimination System Permit Program (VPDS) and Virginia Stormwater Management Program (VSMP) permits are issued aimed at reducing pollution runoff from industrial and urban areas containing Municipal Separate Storm Sewers Systems or MS-4s. These systems transport water from urbanized areas to streams and rivers and are a major concern of point and non-point source pollution. Discharges from MS4s are regulated under the Virginia Stormwater Management Act and Clean Water Act (CWA) through permits issued by DEQ and the EPA. Through this program, Prince William County maintains a Phase 1 VSMP MS-4 permit (Permit No. VA0088595).

Through its VSMP permit, the County is required to monitor pollutants from areas suspected to be contributing excess levels of pollutants to its MS-4 by implementing a Wet Weather Screening Program. Unlike the Dry Weather Monitoring Program, the Wet Weather Screening Program is aimed at assessing pollutant load and composition during rain events. Using information obtained through this program, the County is to then develop strategies to reduce this pollutant load from these areas. The County's MS-4 permit, issued on December 17th, 2014, outlines requirements for the Wet Weather Screening Program as follows:

> ***I.B.l).2) Wet Weather Screening Program****:* In addition to the monitoring required in Part I.C., the permittee shall continue to investigate, and address areas within their jurisdiction that are suspected to be contributing excessive levels of pollutants to the MS4. No later than 12 months after the effective date of this permit, the permittee shall develop written procedures for a wet weather screening program which shall include standard operating procedures to be used for initial screening and follow-up purposes. The written procedures shall be incorporated as part of the MS4 Program Plan.

The County has identified potential high risk discharge sites through its hotspot analysis GIS model. This model will be used to guide site location through the identification of areas designated for further research during the field screening stage of the program. A qualified laboratory or contractor will be chosen to perform field sampling, and to present results to the County

This program manual describes the methods and procedures for Prince William County's Wet Weather Screening Program. All procedures are subject to modification as program feasibility and applicability are assessed during program implementation. All program modifications will be noted as part of the County's Program Plan.

II. Wet Weather Monitoring Site Selection

Using the IDDE hotspot Identification and Analysis Model as a basis, locations for Wet Weather monitoring are to be assessed and selected by County personnel. Initial screening locations will be selected using the Hotspot Identification tool and additional GIS desktop analysis. Sites selected in initial screening will be investigated further through field screening activities. Final sites for Wet Weather Screening will be identified using results from the field screening process.

i. Initial Site Screening

The IDDE Hotspot Identification and Analysis model is a tool used by the County to determine where to focus Dry Weather Monitoring Activities. The tool uses several metrics to determine where the highest probability of illicit discharges and discharge of pollutants are to occur. The tool breaks down the County into ADC zones and prioritizes those ADC zones with the highest probability for pollutant discharge to occur. These zones are then used to schedule which outfalls to screen during Dry Weather Monitoring activities. The Hotspot Identification and Analysis Modeling process can be viewed in the document located in Appendix A, but is explained in lesser detail in the following section.

a) Hotspot ADC Zone selection

The Hotspot ID model uses various GIS data layers to determine pollutant discharge potential. Layers depicting Land Use, Residential development, VPDES permitted facilities, High Risk Land Use, Sanitary Sewer Cross Points, Impervious Area, Outfall Locations, Waterways, and 303(d) listed Impaired waterways are incorporated in the analysis. Each feature within a layer is assigned a probability of discharge, pollutant discharge, or component score according to a perceived ability to pollute (potential of discharge to occur, and potential for that discharge to cause harm to the environment, or in the case of an outfall, the number of potential pollution discharge locations). These probabilities of discharge are then summed within a defined area, in this case ADC zones, in order to determine where in the County illicit or other pollutant discharges are likely to occur.

Land uses are analyzed according to use code. High risk use codes were determined from parcels throughout Prince William County and assigned a relative probability of discharge from 1-5 according to their perceived discharge potential (1 being low, 5 being high).

Table 1 - Probability of Discharge According to Use Code

Use code	Use description	Use Probability
191	Technology Services	1
229	Other Utilities	1
349	Food Stores	1
140	Research and Testing	2
156	Wholesale Warehousing (Condo)	2
224	Sewage	2

343	Convenience Store	2
831	Golf Course	2
832	Golf Course	2
112	Industrial Conglomeration	3
151	Mini Warehousing	3
216	Auto Parking	3
311	Small Shopping Center	3
312	Shopping Center	3
313	Shopping Center	3
314	Large Mall	3
315	Large Mall	3
317	Shopping Center	3
318	Shopping Center	3
320	Building Materials	3
351	Restaurant	3
352	Restaurant	3
353	Restaurant	3
354	Restaurant	3
361	Motor Vehicle Sales	3
520	Barber/laundry/cleaners/etc	3
590	Barber/laundry/cleaners/etc	3
841	Swimming Pool	3
851	Marina	3
910	Agricultural Resources	3
911	Agricultural Resources	3
930	Agricultural Resources	3
121	Durable Manufacturing	4
126	Durable Manufacturing (Condo)	4
131	NonDurable Manufacturing	4
150	Wholesale Warehousing	4
160	Industrial Service Garage	4
190	Other Industrial	4
211	Railroad	4
212	Rail Rapid Transit	4
213	Bus	4
214	Motor Freight Transportation	4
219	Other Transportation	4
225	Solid Waste Disposal	4
344	Convenience Store with Gas	4
362	Gas and Service Station	4
363	Gas Station	4
369	Other Automotive	4
540	Other Repair	4

973	Storage Yard	4
366	Service Station	5
530	Motor Vehicle Repair	5

Also included in the analysis are parcels for which VPDES permits are associated. Permitted sites were screened for those which discharge into Prince William County's MS-4 and assigned a probability of discharge in the same manner as high risk parcels above. The results of this analysis are displayed below.

Table 2 - Probability of Discharge Scores for VPDES Permitted facilities

NAME	Permit No.	Score
PWCBOCS	VAR051078	0
CHASE DAVID D	VAG830458	1
GENERAL DYNAMICS LAND SYSTEMS INC	VAR051293	1
OVERNITE TRANSPORTATION CO	VAR051030	1
US FOODSERVICE INC	VAR051117	1
OLD DOMINION FREIGHT LINE INC	VAR051476	1
REMODELERS CREDIT CORP	VAR051996	2
PWC	VAR051477	2
FURR FLOYD H AND BARBARA J	VAG750237	2
SUPPORT TERMINALS OPERATING PTNSHP	VAR051039	2
7905 LC	VAR052008	2
W M TINDER INC	VAR052074	2
EVERED INC	VAR052190	3
POTOMAC & RAPPAHANNOCK TRANSPORTATION E	VAR051886	3
LAND VENTURE ONE L C	VAR051295	3
DALRYMPLE REALTY CORPORATION	VAG110100	3
THIRD GENERATION L P	VAR051085	3
KRAUSS RICHARD L TR	VAR050983	3
NEWBILL HOLDINGS LLC	VAR051639	3
ARCHIE HENRY E SR & ANNIE WILLIAMS	VAR052115	3
BURBAGE J E JR E M BURBAGE	VAR051939	3
VENABLE JEAN S	VAR052243	3
HOFFMASTERS MARINA INC	VAR051183	3
SLURRY PAVERS INC	VAR051911	3
DAVIS TEDDY R JR HELEN M ETAL	VAR052014	3
ENNSTONE INC	VAG110111	4
COSNER MEDFORD R	VAR051009	4
VIRGINIA CONCRETE CO INC	VAG110083	4
DALRYMPLE REALTY CORP	VAR051949	4
JULIUS BRANSCOME INC	VAR050908	4
JONES SAMUEL M ESTATE	VAR051298	4
CONCRETE PIPE AND PRODUCTS CO INC OF	VAG110313	4

ARBAN CAROSI INC	VAG110068	4
HARD ROCK CONCRETE LLC	VAG110067	4
SUPERIOR PROPERTIES INC	VAR051992	4
SUPERIOR PAVING CORP	VAR050901	4
POTOMAC LANDFILL INC	VAR051073	5

Additional values scored in the analysis include outfalls, cross connection points, residential development, impervious area, streams, and impaired waterways. These features are scored as described in the table below.

Table 3 - Discharge Probability Scores for other Features

NAME	Score
Outfalls - Standard	10
- **VPDES Outfalls**	30
- **High Risk Outfalls**	30
Cross Connection Points	20
Residential Areas	1
Impervious Area	1
Streams and Waterways	1
Impaired Streams and waterways	2

As stated above, scores where then summed within an ADC index area. The ADC index is a mapping tool used by the County for navigation. The ADC index's break the County into equal area blocks which are assigned alpha-numeric values that help identify their location within the County for mapping. These equal area blocks are ideal for use in segmenting the County for stormwater analysis and Dry Weather Monitoring activities. The top 20 ADC indexes are to be selected for further analysis as described below.

b) Field Screening Site Selection

Once the initial 20 ADC zones are selected for potential field screening they will be narrowed down to a final 5 for field screening. The 20 ADC zones selected in the first screening are sufficient for Dry Weather Monitoring activities, but need to be further analyzed for use in the Wet Weather Monitoring program due to different constraints on the program. ADC zones will be scored according to the worksheet in Appendix B. The Desktop analysis worksheet analyzes the following aspects of each ADC zone:

- **Ms-4 service area** – The focus of the Wet Weather Monitoring Program is to assess pollutant discharges within areas covered under its VSMP MS-4 Permit. For this reason ADC zones with drainage areas discharging to the County's MS-4 will be required.

- **Size of drainage system** – Drainage systems in Prince William County can span many acres. It is important to select candidate sites with drainage systems that allow the County to focus on a particular type of land use category. Monitoring larger drainage systems is also complicated due

to the increased probability of MS-4 interconnectivity. Monitoring drainage catchments that include VDOT or other MS-4s can reduce the value of results by convoluting the identification of pollutant sources. Although such data may be valuable in some circumstances, it is not the County's goal for this program.

- **Location of drainage system** – Identifying which land uses drain into candidate sites allows for a better characterization of the pollutant-land use relationship. Selecting candidate sites that involve succinct, identifiable drainage locations is a priority.

- **Land use, VPDES permits** – Areas with a high density of high risk land use and/or VPDES permits will be preferred. These areas have a higher probability of pollutant discharge, and therefore are of particular interest to the County. A more homogeneous mixture of land use is preferred. This gives the County a better understanding of the types of pollutants discharged from a particular land use, and helps develop better strategies for reducing pollutant loadings. For example, a site which drains mostly from commercial land uses will give the County a better understanding of the discharges coming from these areas, as opposed to a mixture of many different land uses (Commercial/industrial/residential), where the pollutants identified during monitoring cannot be as easily attributed to their sources.

- **County Easements** – In order to be able to run the monitoring station, the County must have legal authority to place it within the stormsewer system. Candidate sites must have access through County maintenance and repair easements. Proper permissions must be given by any stakeholders that may be attached to the site. Sites are preferred to be easily and safely accessible to staff and lab officials collecting samples.

- **Potential Monitoring sites** – Due to time constraints to County staff, sites which have more potential monitoring sites will be preferred. A site which contains more potential monitoring sites reduces the amount of travel and assessment time as opposed to visiting ADC zones with only one potential monitoring site. This also gives the County more choices to find an acceptable Wet Weather Monitoring location.

ii. Final Site Selection

The final sites selected will be evaluated further through a field assessment. Potential sites will be evaluated using the scoring matrix provided in Appendix C. This form incorporates all aspects of final site selection protocol in order to quantifiably compare potential monitoring locations. Factors that influence final site selection are as follows:

Evaluate environmental impact of site – Identify and locate areas where aggregate materials are stored, vehicles are permanently parked, the location of dumpsters and grease traps, locations where spills may occur. Identify potential pollutants that could enter the environment for the sampling site.

Evaluate outfall locations for potential sampling – Locate outfalls and further evaluate ability to facilitate sampling equipment. It is difficult for a desktop analysis to full convey outfall conditions including ease of access and its ability to house sampling equipment. Assess whether the outfall is in good condition, headwalls are intact, and if the outfall is submerged or blocked by sediment. Assess potential security issues for sampling equipment. Identify all potential monitoring sites.

Evaluate Drainage Systems for overall sampling impact – more specifically identify areas from which the monitoring site drains. Confirm land use for businesses/industry contributing to runoff.

The top two scoring sites will be selected for Wet Weather Monitoring. Sites selected will be gauged to determine flow rates, and measured for the retrofit of sampling equipment.

III. Wet Weather Monitoring Field Procedures

i. Sampling Methods

Sampling will be accomplished using an automated sampler. The sampler is an electronic sampling device which collects discrete samples of stormwater runoff at intervals throughout a storm event. Flow rates will be recorded in order to compute flow weighted composite samples. This should provide the County with an idea of how pollutant concentrations change during the length of a storm event.

Samplers will be attached to outfalls of sampling sites as selected in the above protocol. When applicable, grab samples may be utilized in order to gather analyte data such as TPH. The specific model of sampler will be determined by the contractor or contracted laboratory when selected to perform modeling activities.

ii. Analytes

The Wet Weather Monitoring Program will test for a host of analytes commonly found in stormwater runoff. These include various nutrients, metals, hydrocarbons, and sediments. Many of these analytes are also measured as part of the County's Dry Weather and In-Stream Monitoring programs. A list of these analytes can be seen below.

Table 4 - Wet Weather Program Monitoring Analytes

Analyte
pH
COD
Zinc
Copper
Led
Nickel
Total Phosphorous
Total Kjeldahl Nitrogen
Nitrate and Nitrite
TSS
Ammonia as Nitrogen

This list will be modified during the life of the program. Analytes may be added/removed according to results obtained during monitoring according to the effectiveness of monitoring efforts. Analytes will also be added or removed as recommended by assigned contractor or laboratory responsible for monitoring efforts.

iii. Sampling Schedule

There is no specific sampling schedule or threshold presented in the County's MS-4 Permit. The County would like to assess two Wet Weather Monitoring sites on a biennial basis. This allows the County to assess the concentration of pollutants during the first yearly cycle, install appropriate BMP's designed to reduce pollutants, and finally use the second yearly monitoring cycle to assess the installed BMPs effectiveness. Samples will be taken at the two sites on a quarterly basis. Once the two year monitoring cycle is complete, two additional sites will be selected for Wet Weather Monitoring activities using the protocols described in the preceding sections. During this time, program procedures will be re-evaluated and updated as needed.

IV. Documentation and Reporting

This section will describe the documentation and reporting processes for the County's Wet Weather Monitoring Program.

i. Site Selection

Results of site selection will be presented in the County's Annual Report once complete. This includes procedures for the desktop and field analysis protocols presented in this document. All applicable forms, site plans, photos, diagrams, and calculations will be included in this analysis. All procedures dealing with site selection should be completed by the County's next annual reporting period (June 30TH, 2016). Information detailing the sites location (latitude and longitude), internal ID number,

ii. Monitoring Station Construction

Processes detailing monitoring site installation and construction will be included in the County's Annual Report when completed. Details on the type of automatic sampling hardware, including in depth procedures dealing with the sampling and transportation of samples, as well as analyte processing procedures will be included in the updated manual once determined by contractor or certified laboratory. All maintenance activities on monitoring hardware will be reported as completed.

iii. Annual Reporting

As required by the County's MS-4 permit, each annual report will include a list of locations Wet Weather Screening has occurred and the results of monitoring samples. In addition, the County will include as part of each annual report the weather conditions, date and time, and time of most recent storm event for each discrete sample taken. Meteorological data associated with the most recent storm event to the time of sample taken will be gathered from weatherunderground.com.

iv. Trends and Long Term Analysis and Program Follow-up

As the County is proposing to monitor sites on a biennial basis, each annual report will present monitoring trends. This will include a trends analysis as samples are processed quarterly for the year, as well as an assessment of effectiveness of BMP's installed as part of the biennial monitoring process. Results from year 1 of monitoring efforts will be used to implement BMP's in the monitoring site drainage area aimed at reducing critical pollutants. The effectiveness of those BMP's will be evaluated in year 2 of the Wet Weather Monitoring Program. All results of this analysis will be presented in the County's Annual Report.

Appendix A – Hotspot Identification and Analysis Model

Prince William County

Wet Weather Screening Program

12/1/2015

Introduction

As a requirement for meeting guidelines mandated by the USEPA (Part 1.B.2.I)1) of Permit No VA0088595), Prince William County must identify and inventory "areas of concern" or areas predisposed to illicit discharges within its Municipal Separate Storm Sewer system (MS4). These "areas of concern" include: areas such as car washes, car dealerships, pet kennels, and restaurants; sites with previously occurring illicit discharges; areas of older development; areas representing the general land use of the county; sites with a history of citizen complaint; and areas located near environmentally sensitive features. Previously the County identified areas for dry weather monitoring by using a schedule of grids and a subjective assessment of areas of interest. In an attempt to generate a more quantitative assessment of illicit discharge "hot spots" around the County, a GIS based risk assessment was developed.

Variables

GIS layers

- County Municipal boundaries and ADC Index
- Land Use
- Residential Development
- VPDES Permitted Facilities
- High Risk Land Use Facilities
- Sanitary Sewer Cross Points
- Impervious Area
- County Outfall locations (outfalls >15in)
- County Streams
- 303(d) listed Impaired Virginia Waterways
- Raster based County imagery

Data

- Previous discharges according to land use
- History of citizen complaint according to land use

Procedures

Data Collection

Data layers were collected from the County GIS system via database linkage within version 10.3 of ArcGIS, with the exception of the 303(d) listed impaired streams data, which was acquired through the DEQ website.

Initial Layer Synthesis and Input

In order to complete the hotspot analysis, data layers must be modified to yield the information needed. First, use codes were assessed for various land uses of interest and used to select a subset of parcels which could be determined as "high risk" land uses. A "use probability" was applied to each land use, which characterizes a land use's probability for a discharge to occur, and potential severity of that discharge should it occur. This "use probability" is initially applied subjectively, but will be further defined as more data from the IDDE program is gathered and can be re-input into the model. Figure 1 displays the location of various land uses of interest of Prince William County.

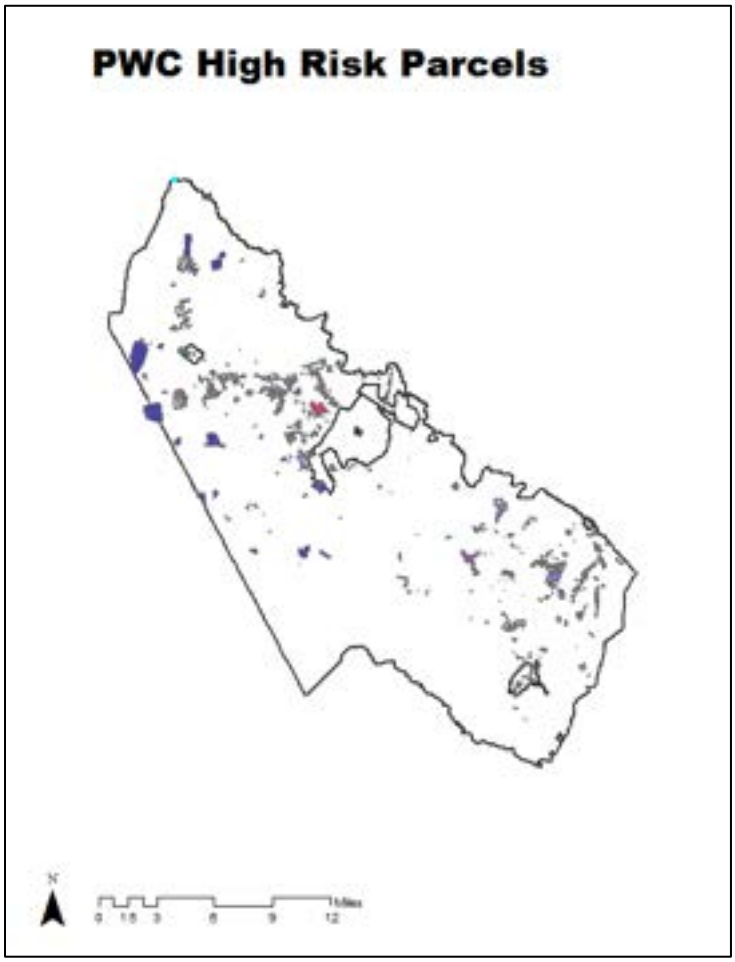


Figure 1: High Risk Parcels hotspot identification map

The impact value is a number from 1 to 5 characterizing each land use according to the potential of illicit discharge occurrence (determined from historical discharge data, low probability denotes low risk) and potential discharge severity (an assumption of the possible damage that may occur from a discharge). A list of land uses, use codes, and the initial scores given to the land uses can be seen below in Table 1.

Table 5: Impact values for Land Use hotspot identification

Use code	Use description	Use Probability
191	Technology Services	1
229	Other Utilities	1
349	Food Stores	1
140	Research and Testing	2
156	Wholesale Warehousing (Condo)	2
224	Sewage	2
343	Convienience Store	2
831	Golf Course	2
832	Golf Course	2
112	Industrial Conglomeration	3
151	Mini Warehousing	3
216	Auto Parking	3
311	Small Shopping Center	3
312	Shopping Center	3
313	Shopping Center	3
314	Large Mall	3
315	Large Mall	3
317	Shopping Center	3
318	Shopping Center	3
320	Building Materials	3
351	Restaurant	3
352	Restaurant	3
353	Restaurant	3
354	Restaurant	3
361	Motor Vehicle Sales	3
520	Barber/laundry/cleaners/etc	3
590	Barber/laundry/cleaners/etc	3
841	Swimming Pool	3
851	Marina	3
910	Agricultural Resources	3
911	Agricultural Resources	3
930	Agricultural Resources	3
121	Durable Manufacturing	4
126	Durable Manufacturing (Condo)	4
131	NonDurable Manufacturing	4
150	Wholesale Warehousing	4
160	Industrial Service Garage	4
190	Other Industrial	4
211	Railroad	4
212	Rail Rapid Transit	4

213	Bus	4
214	Motor Freight Transportation	4
219	Other Transportation	4
225	Solid Waste Disposal	4
344	Convienience Store with Gas	4
362	Gas and Service Station	4
363	Gas Station	4
369	Other Automotive	4
540	Other Repair	4
973	Storage Yard	4
366	Service Station	5
530	Motor Vehicle Repair	5

The same process was used for VPDES general stormwater discharge permit holders within the County. VPDES permitted facilities were identified using data obtained from DEQ. A determination on which VPDES permittees discharged into the County's MS-4 system was made, and a score (discharge probability) was assigned to each facility according to its assumed probability to discharge pollutants.

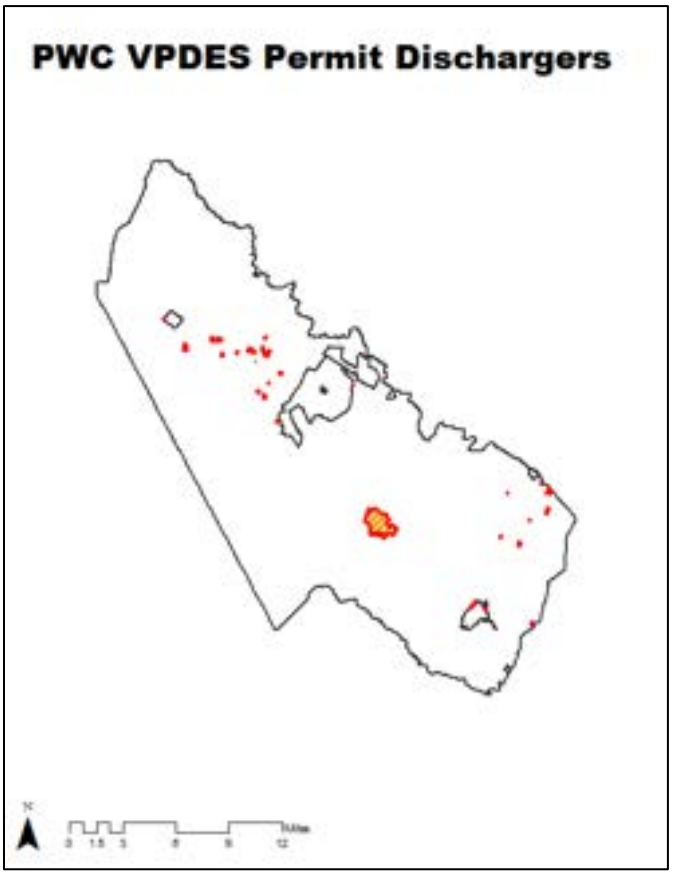


Figure 22: VPDES permitted facilities hotspot identification map

Table 2: Impact values for VPDES hotspot identification

NAME	Permit_No	Score
PWCBOCS	VAR051078	0
CHASE DAVID D	VAG830458	1
GENERAL DYNAMICS LAND SYSTEMS INC	VAR051293	1
OVERNITE TRANSPORTATION CO	VAR051030	1
US FOODSERVICE INC	VAR051117	1
OLD DOMINION FREIGHT LINE INC	VAR051476	1
REMODELERS CREDIT CORP	VAR051996	2
PWC	VAR051477	2
FURR FLOYD H AND BARBARA J	VAG750237	2
SUPPORT TERMINALS OPERATING PTNSHP	VAR051039	2
7905 LC	VAR052008	2
W M TINDER INC	VAR052074	2
EVERED INC	VAR052190	3
POTOMAC & RAPPAHANNOCK TRANSPORTATION E	VAR051886	3
LAND VENTURE ONE L C	VAR051295	3
DALRYMPLE REALTY CORPORATION	VAG110100	3
THIRD GENERATION L P	VAR051085	3
KRAUSS RICHARD L TR	VAR050983	3
NEWBILL HOLDINGS LLC	VAR051639	3
ARCHIE HENRY E SR & ANNIE WILLIAMS	VAR052115	3
BURBAGE J E JR E M BURBAGE	VAR051939	3
VENABLE JEAN S	VAR052243	3
HOFFMASTERS MARINA INC	VAR051183	3
SLURRY PAVERS INC	VAR051911	3
DAVIS TEDDY R JR HELEN M ETAL	VAR052014	3
ENNSTONE INC	VAG110111	4
COSNER MEDFORD R	VAR051009	4
VIRGINIA CONCRETE CO INC	VAG110083	4
DALRYMPLE REALTY CORP	VAR051949	4
JULIUS BRANSCOME INC	VAR050908	4
JONES SAMUEL M ESTATE	VAR051298	4
CONCRETE PIPE AND PRODUCTS CO INC OF	VAG110313	4
ARBAN CAROSI INC	VAG110068	4
HARD ROCK CONCRETE LLC	VAG110067	4
SUPERIOR PROPERTIES INC	VAR051992	4
SUPERIOR PAVING CORP	VAR050901	4
POTOMAC LANDFILL INC	VAR051073	5

Since the point of discharge is the ultimate target of the analysis, outfalls greater than 15 inches were identified through Prince William County. Applicable outfalls were identified and isolated using the feature selection tool and processed into an individual layer. The greater the density of outfalls within

an area the larger the chance of a discharge occurring. Outfalls associated with VPDES and High Risk facilities were also determined by creating a buffer around VPDES and High Risk parcels, and capturing all outfalls within the buffer. Outfalls were given a uniform impact value and factor in during the overall hotspot analysis (Standard outfall = 10, VPDES outfall = 30, High Risk Outfall = 30). Figure 3 displays the location of outfalls within the county.

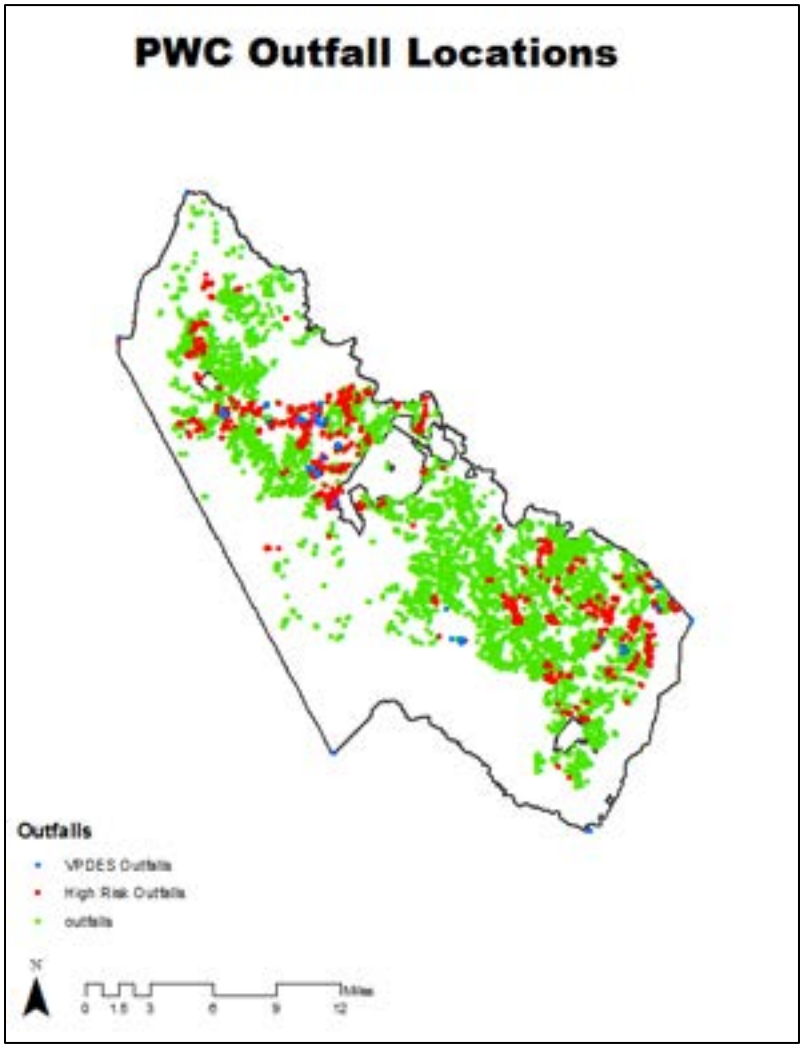


Figure 3: Location of outfalls within Prince William County

To address the potential impact of illicit discharge on environmentally sensitive areas, a streams and water body layer was included in the analysis (Figure 3). Major streams and rivers were isolated from man-made ditches and conveyances within the layer. These streams were given a uniform impact value. The area of stream within a region influences the potential discharge probability score by quantifying the amount of environmentally sensitive features in an area. Streams listed on the EPA 303(d) list of impaired water bodies have a greater potential of impact from illicit discharges and are therefore given an additional weight in model outputs.

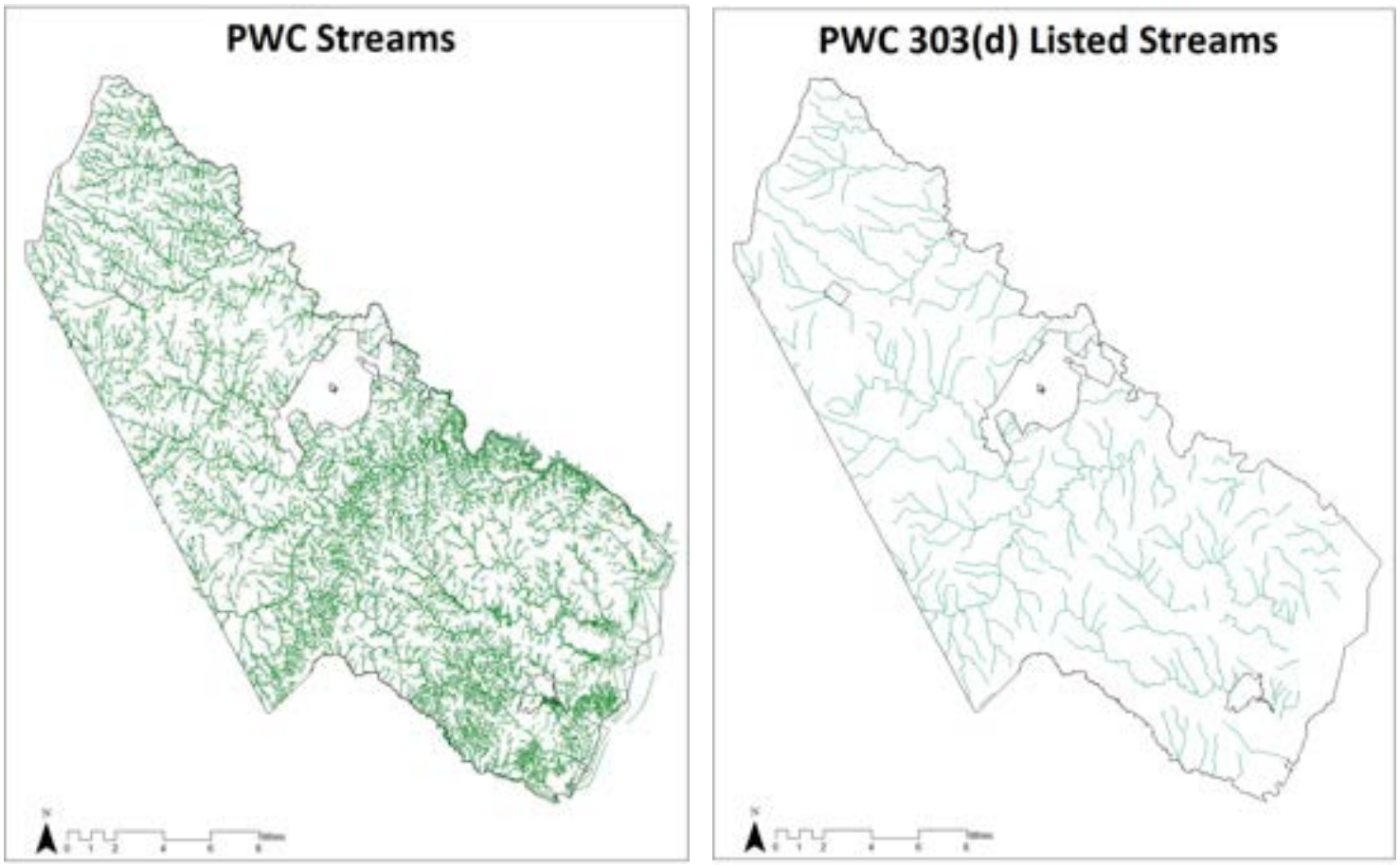


Figure 4: Streams and impaired streams within Prince William County's jurisdictional area

Next an assessment of potential areas for cross connections between the storm sewer and sanitary sewer system was performed. Areas where the storm and sanitary sewer system overlap create potential for cross contamination due to leaking sanitary sewer infrastructure. This analysis was accomplished by overlaying the storm and sanitary sewer layers using GIS, and isolating the locations where they overlap. These locations were turned into point features and assigned a uniform potential discharge probability score (20). This analysis is displayed below in Figure 5.

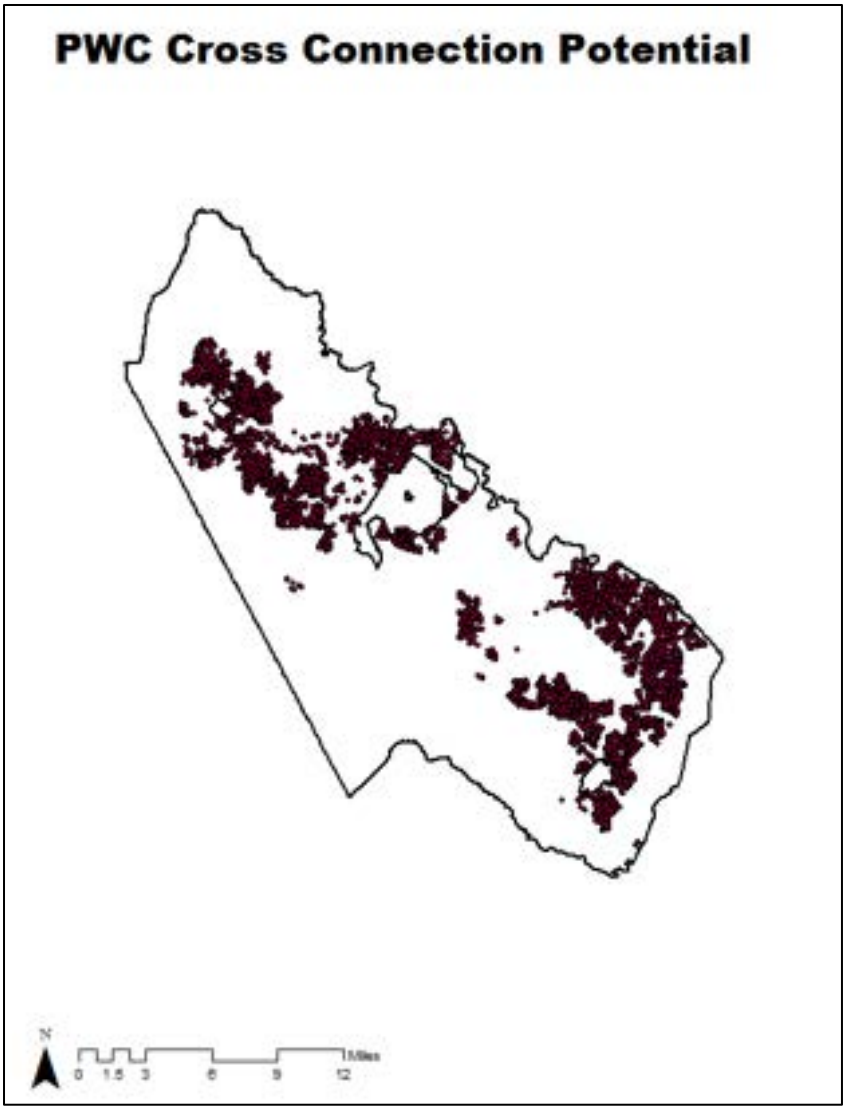


Figure 5: Location of potential cross connection sites within Prince William County

Often, areas with a higher percentage of impervious surfaces tend to contribute greater to pollutant loads. To account for this, a layer depicting impervious surface within the County was incorporated in the model. Impervious surface area is assigned a discharge score of 1. A low score was selected because the large areas covered by impervious surface can cause large impacts to model outputs. A score which balances the impact of impervious surface on pollutant output without weighing too much into model outcomes was desired. Figure 6 below shows impervious area within the County.

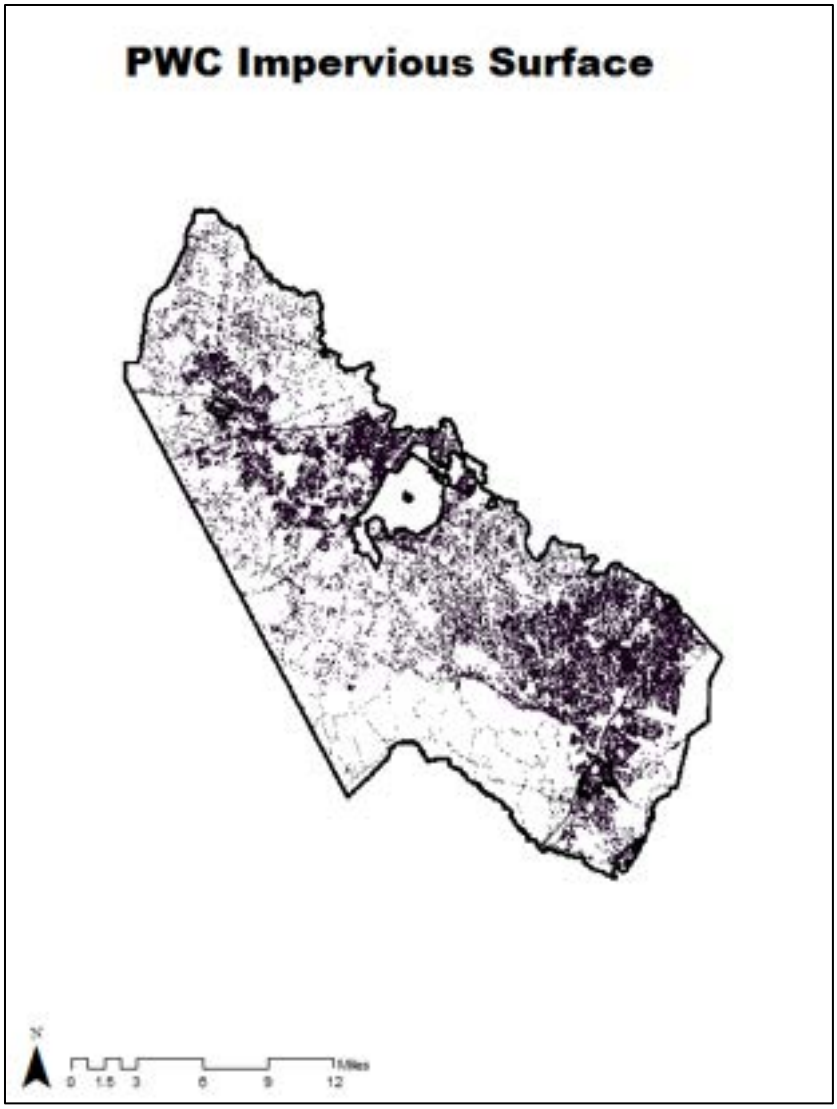


Figure 6: Impervious surface in Prince William County

Lastly, discharges from residential areas had to be accounted for. Although commercial and industrial areas were well represented in the hotspot analysis, residential areas within the County were lacking sufficient input into the model. Using a layer depicting the residential development in the County, these areas were isolated and assigned a discharge score of 1. This gives residential areas a proportioned impact on hotspot scores.

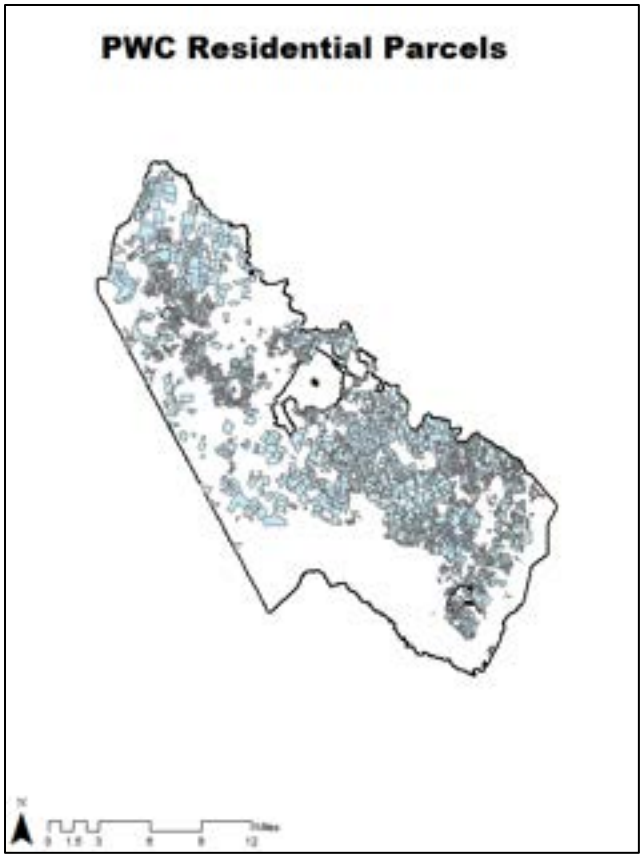


Figure 7: Impervious surface in Prince William County

Hotspot Analysis

Once the layers were manipulated to yield the desired data they had to be combined to produce the final hotspot analysis. Layers were converted from a polygon, line, or point to a raster format to allow for easier compatibility of the various data layers. The Raster format represents data in small cells, allowing for a point by point analysis of each location on the map. It facilitates the ability for data with different layer types (i.e. polygon, line, point) to be combined simply, since they are not compatible otherwise due to differences in shape, size, and location. Areas within a layer where empty space exists cause discontinuity when trying to combine them into the overall analysis. To remedy this, the Reclassify Raster tool was used. This tool removes the "Nodata" classification automatically applied to empty spots in the layer during the raster conversion, allowing a numerical value to be assigned in its place (0). Without this step, only the overlapping areas of data in each layer would be included in the analysis and an incomplete assessment of discharge probability would result.

Each layer was combined for hotspot analysis using the Raster Calculator tool. This tool preforms simple mathematical operations at the cellular level, to combine the data into an overall assessment of County hotspots. The tool essentially adds together each included layer combining the discharge probability scores from each cell. Figure 8 below shows a simple representation of this process.

Data is then transposed to the ADC index and watershed maps of the County through simple Spatial Statistics tool. The Spatial Statistics tool performs a basic statistical analysis on raster cells within a specified polygon. For the purpose of this study the mean and sum of probabilities within both the

ADC index areas and sub-watersheds of the County were assessed.

Analysis using Mean vs. Area (Average) Score

There are various ways to interoperate the data output from the model. A score had to be generated for each ADC Index number and watershed in order to effectively assess and utilize model outputs; however, this presented a problem as to what mathematical method of assessment should be

used. The ArcGIS model is generated to output values for the mean, median, minimum, maximum, and sum of each individual ADC index area and watershed. As stated before, for the purpose of this analysis, only the sum and mean probability of discharge are of interest. The sum is the result of all cells within the identified area added together, while the mean is the average cell value within the area. For a watershed scale analysis, the mean probability of discharge must be used. This is because the area of each watershed differs, leaving the sum of the probabilities of each watershed highly dependent on its size. Larger watersheds will accommodate more cells leading to a larger overall probability of discharge. The ADC index, on the other hand has a uniform area removing the effect of size on the output. This allows for the sum of probabilities to be used, which gives a better overall assessment of the characteristics within that area.

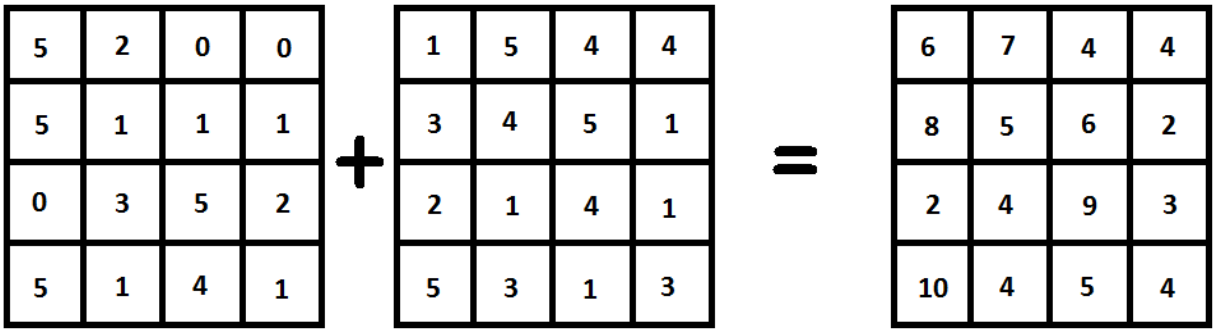


Figure 8: Raster Calculator Example

Isolation of Hotspots and Identification of Outfalls of interest

The first step in using hotspot analysis to identify outfalls for field inspection is to select the ADC index number with the highest probability of discharge is selected from the generated list. The ADC index was chosen as a basis for field analysis for a few reasons: it is easy to navigate to, being the basis for street map navigation; it encompasses a relatively small area, typically containing 8-10 outfalls per Index which is a good size for a day's field assessment; and, it can be combined easily to into a larger area allowing for an broader perspective on illicit discharge trends. Assessing discharges on a watershed scale would incorporate too large of an area and would not be suitable for a quality comparison

between areas of the County. Once an index number is selected, then an index area map is generated showing all outfalls, storm sewer system, roads, and land uses of interest. Each map is created using ArcGIS tools to zoom to the applicable map location (ADC Index number), and to highlight all applicable features. From this map, a list of all outfalls and their size can be created. This map, with outfall information, can then be used as a field guide for the outfall monitoring.

Model Calibration

Model calibration is an important step in model development. Model outputs must be adjusted to more closely portray actual conditions. Since the raster layers used to sum severities in the model skew the data by giving more weight to larger polygons, point-sized items like outfalls must be given a larger value to compensate and allow ADC areas to more closely reflect the desired weight proportion between inputs. The value given to outfalls was adjusted so that their impact on model outputs was more representative of actual conditions.

Originally, some areas of the map contained a high probability of discharge, despite being located in more rural areas. This was found to be due to an increased proportion of streams meandering throughout the grid. In order to correct this, a balance was struck between the impact value given to streams, and their actual impact on real-world conditions. Similarly, rural areas were triggering high probabilities of discharge due to the age of parcel development despite not having substantial storm sewer systems. To remedy this, the residential and commercial layers were given a larger score to better reflect in-situ conditions.

The model will continue to be adjusted as more data becomes available pertaining to discharges within the County. Data will be used to validate and or adjust assumptions made in this version of the model.

Results and Conclusions

The results of the analysis showed areas with the greatest probability of discharge within Prince William County were consistent with previous field observations and expectations. The Route 1 corridor, Bull Run commercial area, and Potomac Mills Mall all generated high probabilities of discharge. Residential areas had a fairly constant probability of discharge. The highest probability of discharge was located around the specified land uses of interest including shopping centers and auto-related industrial areas. Rural areas with little to no storm sewer system recorded the lowest probability if discharge, as would be expected. A detailed map displaying parcel-based discharge probability was created using the methods described above (see figure 9). The land uses of interest are distinctly represented in red describing the highest discharge potential. Residential areas shown primarily in yellow present a moderate discharge potential. Rural areas are mostly indicated in blue, describing a low discharge potential which are most likely out of the scope for dry weather discharge monitoring. Outfall locations and numbers are not factored in this analysis.

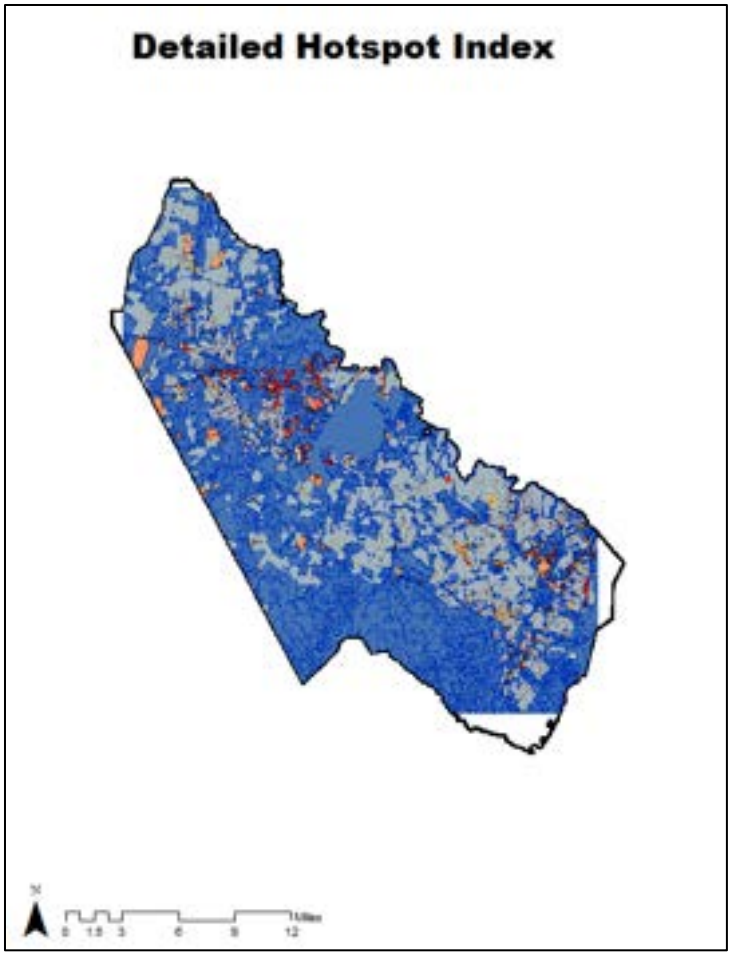


Figure 9: Detailed Discharge Probability

Previously a hotspot analysis was performed on a watershed scale. However, a watershed approach to discharge monitoring tends to skew the data, since discharge probabilities are averaged over the entire watershed making smaller pockets with high discharge; therefore, the ADC index method was determined to be the best.

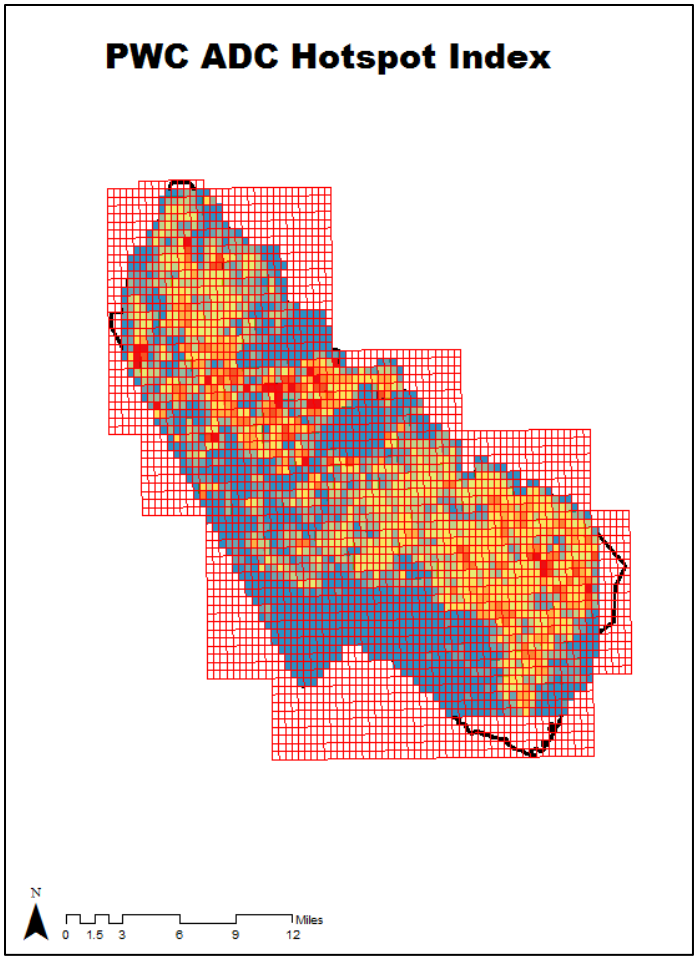


Figure 10: ADC index probability of discharge

The ADC index hotspot map, shown above (figure 10), is used for the inspection scheduling and field analysis of outfalls. As indicated in the parcel and watershed level assessments, County hotspots exist along the Route 1 corridor, Bull Run commercial area, and Town of Haymarket. Unlike the parcel and watershed level assessments, the ADC hotspot map provides a more thorough analysis of where the most probable locations for illicit discharge might actually be present. Table 3, shown below, displays the 50 ADC index areas with the highest probability of discharge. Sorted from highest to lowest, the table serves as the basis for the scheduling of dry weather outfall monitoring in the County.

Table6: Sum and mean probability of discharge scores by ADC index number

ADC_ID	MEAN	SUM
5992-C8	34916	56459172
5990-K5	34175	54919225
5756-G7	31523	51130306
5756-H7	30976	50243072
5991-A6	28771	46896730
5756-G3	27086	43879320
5992-C7	25886	42427154

5992-D7	24576	39641088
6110-G2	24456	39349704
5756-J7	24228	39322044
5757-A2	24170	39227910
5992-A6	23838	39189672
5991-A7	23096	37461712
5992-B6	22846	36782060
5991-A5	22637	36694577
5756-H4	22435	36322265
5992-G9	21579	35605350
5992-H8	21376	35270400
5756-K7	20886	33918864
5874-H7	20478	33542964
5638-G10	20215	33132385
5756-H5	20055	32609430
5756-K6	19838	32097884
5755-C4	19460	31914400
5872-C1	18951	30814326
5992-D8	18811	30624308
5874-J7	18896	30592624
5992-H7	18536	29842960
5756-H8	18295	29839145
5991-G7	18524	29675448
5756-J5	18332	29624512
5992-K10	17877	29211018
5990-C9	17834	29087254
5991-F7	17543	29033665
5992-E10	17820	28921860
5872-H10	17359	28746504
5756-G10	17724	28624260
5756-J6	17357	28222482
5991-B7	17339	28193214
5754-F5	17186	28167854
5756-C10	17250	28031250
5638-H10	17069	27839539
5756-G8	17085	27677700
5992-K6	16869	27597684
5755-E4	16728	27233184
5872-D1	16318	26777838
6110-E3	16210	26762710
5757-H6	16567	26623169
5991-K1	16215	26527740

Future Development of Model

The model will be updated as more detailed discharge information is gathered through the county monitoring program. In addition, updated data layers pertaining to the storm sewer system, outfalls, impaired stream listings, age of development, county land use, and parcel location will continually be introduced to the model. If more specific data on the age of storm sewer infrastructure becomes available, this will also be included in the model. Also, when the extent of the County's MS4 system is identified, model data will be adjusted accordingly. Finally, methods to incorporate the history of complaints and poorly maintained commercial areas will be evaluated and incorporated, if possible, into the assessment. All steps to increase the accuracy of the hotspot analysis will be evaluated for the model on an annual basis, and the model outputs will be re-assessed. An evaluation of the accuracy of the hotspot analysis, as well as verification of model outputs will be conducted on an annual basis.

Appendix B – Desktop Analysis Scoring Worksheet

Appendix C – Field Assessment Scoring Worksheet

Appendix M – Infrastructure Coordination

Infrastructure Coordination Meeting Agenda

December 17, 2020

Teleconference

1. Mapping Updates
2. Illicit Discharge Detection Elimination
3. Ches Bay and Local TMDL Action Plans
    a. Salt Management Strategy
4. Credits for TMDL Implementation
5. Water Quality Monitoring
6. Updates from November 2019 Meeting
7. Annual Coordination Meetings moving forward
    a. Inclusion of information into annual report

4 County Complex Court
P. O. Box 2266
Woodbridge, VA 22195-2266

Phone (703) 335-7900
Fax (703) 335-7905
www.pwcsa.org

Service Authority

March 24, 2021

Madan R. Mohan, PE, CFM
Chief, Watershed Management Branch
Environmental Services Division
Prince William County
5 County Complex
Prince William, VA 22192

Dear Mr. Mohan:

Attached please find the signed Annual Credit Transfer Form for 2020 in accordance with the Prince William County Service Authority Water Quality Credit Exchange Agreement executed January 7, 2019, as approved by the Prince William County Service Authority Board of Directors on July 12, 2018 and the Prince William Board of County Supervisors on July 17, 2018.

Please contact me if you should have any questions.

Sincerely,

Dean Dickey
General Manager

Enclosure

cc: Don Pannell, Deputy General Manager, Planning & Program Management
Shannon Spence, Acting Director of Environmental Services & Water Reclamation
Maureen O'Shaughnessy, Process Engineer

PRINCE WILLIAM COUNTY SERVICE AUTHORITY

WATER QUALITY CREDIT EXCHANGE AGREEMENT

ATTACHMENT A

Annual Water Quality Credit Transfer Form

Instructions: To be completed and executed by PWCSA and delivered to PWC on or before each April 1 immediately following the calendar year of credit generation by PWCSA.

By execution and delivery of this Annual Credit Transfer Form, PWCSA transfers the following water quality credits in the amounts specified to PWC in accordance with, and for the specific and limited purposes of, the Prince William County Service Authority Water Quality Credit Exchange Agreement.

Transferor:	**Prince William County Service Authority**
Transferee (MS4):	Prince William County, Virginia
Calendar Year Credits Generated:	2020
Date Credits Transfer:	March 25, 2021
TN (lbs/yr)	3,006
TP (lbs/yr)	201
TSS (lbs/yr)	186,099

Signed (for Transferor): _____

Name (Print): Dean Dickey

Title: General Manager

Appendix 1 – Biological Stream Monitoring

Benthic Macroinvertebrate Population and Water Quality Monitoring Report

Fall 2020 and Spring 2021

Prepared for:

Prince William County Department of Public Works
5 County Complex Court, Suite 170
Prince William, Virginia 22192

Prepared by:
Wood Environment & Infrastructure Solutions, Inc.
4795 Meadow Wood Lane, Suite 310E
Chantilly, VA 20151
(703) 488-3700

August 31, 2021
Project No. 151270003

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

LIST OF ACRONYMS

BI	Biotic Index
°C	Degrees Celsius
CWA	Clean Water Act
DO	Dissolved Oxygen
E. coli	*Escherichia coli*
EPT	Ephemeroptera/Plecoptera/Trichoptera
m	Meter
mg/L	Milligrams per Liter
µS/cm	Microsiemens per Centimeter
MPN/100mL	Most Probable Number of Coliform per 100 Milliliters
m/s	Meters per Second
MS4	Municipal Separate Storm Sewer System
NTU	Nephelometric Turbidity Units
PMA	Percent Model Affinity
RBP	USEPA Rapid Bioassessment Protocol
SU	Standard Units
TKN	Total Kjeldahl Nitrogen
TSS	Total Suspended Solids
USEPA	United States Environmental Protection Agency
VDEQ	Virginia Department of Environmental Quality
VSCI	Virginia Stream Condition Index
VSMP	Virginia Stormwater Management Program

1.0 INTRODUCTION

Wood Environment & Infrastructure Solutions, Inc. (Wood) has prepared this report for ongoing benthic macroinvertebrate sampling for compliance with the requirements of the Virginia Stormwater Management Program (VSMP) Permit, Municipal Separate Storm Sewer System (MS4) Permit Number VA0088595, issued by the Virginia Department of Environmental Quality (VDEQ) to Prince William County, Virginia. This report presents the results of the 2020 fall and 2021 spring sampling events, which were conducted in accordance with the *Sampling Plan for Benthic Macroinvertebrate Population and Water Quality Monitoring* (Sampling Plan) (Amec Foster Wheeler 2015). This report provides detailed descriptions of the sampling and analysis activities conducted, as well as the water quality analytical results and benthic macroinvertebrate results. In addition, this report provides a comparison summary with the baseline results from the 2016 spring and fall sampling events (spring and fall baselines).

1.1 Background

The U.S. Environmental Protection Agency (USEPA) delegated the authority to implement Section 402 of the Clean Water Act (CWA) to the Commonwealth of Virginia on March 31, 1975. Subsequently, Section 62.1-44.15:25 of the Virginia Stormwater Management Act authorizes VDEQ to issue, deny, amend, revoke, terminate, and enforce permits for the control of stormwater discharges from MS4s. The VSMP Permit Number VA0088595 authorizes point source discharges of stormwater runoff and certain non-stormwater discharges from the MS4 operated or owned by Prince William County. Part I.C of the VSMP permit outlines the monitoring requirements guided by Section 9VAC25-870-380 C.2.c.(4) of the VSMP regulations. As stipulated in the permit, benthic macroinvertebrate and surface water monitoring is conducted at five locations in Prince William County: Cow Branch, Dawkins Branch, Little Bull Run, Neabsco Creek, and Purcell Branch (Figures 1 through 5).

1.2 Purpose

The purpose of this sampling report is to provide data that will be used to comply with the biological stream (Part I.C.1) and in-stream monitoring (Part I.C.2) requirements outlined in Prince William County's permit. The specific objectives are to gather sufficient data to evaluate, and subsequently demonstrate, the effectiveness of upstream best management practices. The results presented in this report will be compared to baseline conditions to evaluate trends in benthic health and stream ecosystem conditions at each site.

2.0 METHODS

Sample collection occurred from October 5 to 7, 2020, and from April 20-22, 2021, in accordance with the Sampling Plan. Benthic macroinvertebrate and surface water samples were collected by Wood personnel from five locations in Prince William County: Cow Branch, Dawkins Branch, Little Bull Run, Neabsco Creek, and Purcell Branch (Figures 1 through 5). The field team prepared Physical Characterization/Water Quality Field Data Sheets and Habitat Assessment Field Data Sheets for High Gradient Streams, as specified in USEPA Rapid Bioassessment Protocol (RBP) (Barbour et al. 1999; Appendix A). In-situ water quality data were collected using a YSI 556 water quality meter for dissolved oxygen (DO), pH, conductivity, and temperature. Turbidity was measured using a LaMotte 2020e meter in Nephelometric Turbidity Units (NTU).

Approximate stream width, water depth, and transparency (as measured with a Secchi disk) were measured in meters (m). Water velocity was measured with a Marsh-McBirney Flo-Mate current meter in meters per second (m/s). Upstream and downstream photographs were also taken for each site (Appendix A). Grab water samples were collected for ammonia, *Escherichia coli* (*E. coli*), nitrate/nitrite, orthophosphate, total Kjeldahl nitrogen (TKN), total nitrogen, total phosphorus, and total suspended solids (TSS) analyses.

Benthic macroinvertebrate sampling was conducted in accordance with the Sampling Plan. The multiple habitat sampling method was used for each of the sites. This method consists of a total of 20 jabs or kicks, taken from each major habitat type in the reach. Benthic macroinvertebrate samples were placed on ice in coolers and shipped overnight to Wood's benthic macroinvertebrate laboratory in Gainesville, Florida. The laboratory sorted, mounted, identified, enumerated, evaluated, and classified benthic macroinvertebrates according to Section 7.2 of the RBP (Barbour et al. 1999). Eight metrics were calculated including the Hilsenhoff Biotic Index (HBI) (1987); the Percent Model Affinity (PMA) from Novak and Bode (1992); and the Virginia Stream Condition Index (VSCI) using guidance from TetraTech (2003) and VDEQ (2008).

It should be noted that HBI, PMA, and VSCI represent various ways to assess stream condition; as a result, score categories will not always agree among assessments. HBI estimates the overall tolerance of the community in a sampled area, weighted by the relative abundance of each taxonomic group (e.g., family), and the group's predetermined tolerance level. PMA is an index of percentage similarity, used to measure the affinity of various metrics (e.g., species richness) from the sample reach to that of the expected model community. VSCI is an index designed specifically for streams and small rivers in Virginia. The index utilizes eight scoring metrics, comparing monitored site metrics to the metrics of a designated reference condition.

3.0 RESULTS

Sampling was conducted from October 5-7, 2020, and from April 20-22, 2021 in accordance with the Sampling Plan and is summarized in the following sections.

3.1 Field Condition and Parameter Results

Assessing physical habitat quality is an integral component of the final evaluation of impairment. The RBP matrix used to assess habitat quality is based on 10 visual physical characteristics of the waterbody and surrounding land, particularly the catchment of the site under investigation. The habitat parameters evaluated are related to overall aquatic life use and are a potential source of limitation to the aquatic biota; the scoring of each of these characteristics is included as page 4 of the site datasheets in Appendix A, while score totals and the resulting condition categories are summarized in Table 1 for the fall 2020 event and Table 2 for spring 2021 event. The RBP defines the following condition categories based on the physical habitat characterization scores, to determine the ability of the habitat to support an optimal biological community:

151-200	Optimal	The physical habitat present meets natural expectations, and is capable of supporting an optimal benthic community.
101-150	Suboptimal	Physical habitat is less than desirable, but satisfies expectations under most circumstances to support a benthic community.
51-100	Marginal	Physical habitat has moderate levels of degradation, with a severity at frequent intervals throughout the reach, which limit the capability of supporting a benthic community.
0-50	Poor	Physical habitat has been substantially altered with severe degradation to characteristics that would support a benthic community.

Water quality is also an integral component of stream evaluation and the ability of a stream to support biological communities. Surface waters should meet Virginia's Water Quality Standards, as outlined in Section 9VAC25-260. However, these standards represent limits not to be exceeded. For a general comparison, the following bullets summarize typical conditions for piedmont streams.

- A pH range of 6.5 to 8.0 standard units (SU) is optimal for most organisms, as a pH outside this range reduces the diversity in the stream because it stresses the physiological systems of most organisms and can reduce reproduction.
- Distilled water has conductivity in the range of 0.5 to 3 microsiemens per centimeter (µS/cm). The conductivity of streams generally range from 0 to 1500 µS/cm, while studies of inland fresh waters indicate that streams supporting mixed fisheries have a range between 50 and 500 µS/cm.

- Temperature affects feeding, reproduction and metabolism of aquatic animals. A week or two of high temperatures may make a stream unsuitable for sensitive aquatic organisms; the maximum temperature of nontidal (piedmont) streams should not exceed 32 degrees Celsius (°C).
- DO is an important measure of stream water quality, as aquatic organisms need DO to live. DO in the water varies greatly with stream characteristics, temperature, and time, but a minimal DO level of 5 milligrams per liter (mg/L) is usually required to maintain healthy growth and activity.
- Turbidity is a measure of water clarity, and though Virginia water quality standards do not include guidelines for turbidity. As a general guide, water begins to appear cloudy when the turbidity is greater than 5 NTU.

3.1.1 Fall 2020

RBP physical habitat assessment scores ranged from 109 (Cow Branch) to 142 (Little Bull Run). The scores indicated that all sites exhibited suboptimal habitat for supporting benthic communities.

As shown in Table 1, the physical water quality characteristics of the five sites meet the typical water quality conditions described above except for pH at Cow Branch which is lower than the optimal pH range. Specific conductance at Little Bull Run is slightly higher than the upper limit of the range for inland fresh water streams supporting mixed fisheries, however, it is well within the broader range for typical conductivity of streams.

Table 1. Fall 2020 Field Condition and Parameter Results.

Parameter	Units	Cow Branch	Dawkins Branch	Little Bull Run	Neabsco Creek	Purcell Branch
RBP Habitat Assessment/ Characterization Score	--	109	120	142	121	114
RBP Habitat Condition Category	--	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Suboptimal
pH	SU	5.66	7.92	7.87	7.06	7.61
Specific Conductance	µS/cm	311	403	518	185	179
Temperature	°C	14.79	17.89	14.47	14.59	12.17
DO	mg/L	11.94	6.98	8.52	12.70	9.75
Turbidity	NTU	NR	2.90	1.10	1.31	0.40
Water Depth	m	0.22	0.27	0.14	0.24	0.12
Secchi Depth	m	0.22	0.27	0.14	0.24	0.12
Reach Length	m	100	100	100	100	100
Reach Width	m	4.27	4.12	8.23	6.71	7.93
Surface Velocity	m/s	0.11	0.05	0.55	0.47	0.16

Abbreviations:
NR = Not Reported
°C = degrees Celsius
mg/L = milligrams per liter

Prepared by: CCD
Checked by: INT

3.1.2 Spring 2021

RBP physical habitat assessment scores ranged from 103 (Dawkins Branch) to 138 (Little Bull Run). The scores indicated that all five sites had suboptimal habitat for supporting benthic communities.

A summary of physical water quality data is shown in Table 2. Specific conductance of Dawkins Branch is above the range for inland fresh water streams supporting mixed fisheries, however, it is well within the broader range for typical conductivity of streams. Turbidity at Cow Branch was elevated and appeared very cloudy in the field. Measured pH was elevated at Dawkins Branch and Little Bull Run. The YSI meters were tested with pH standards after sampling and were found to give readings much higher than the standards. Because of this, the high pH values at Dawkins Branch and Little Bull Run may be due to drift in the YSI pH calibration. The dissolved oxygen sensor was not working at Purcell Branch, so DO is not reported for that site.

Table 2. Spring 2021 Field Condition and Parameter Results.

Parameter	Units	Cow Branch	Dawkins Branch	Little Bull Run	Neabsco Creek	Purcell Branch
RBP Habitat Assessment/ Characterization Score	--	122	103	138	114	117
RBP Habitat Condition Category	--	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Suboptimal
pH	SU	6.98	8.98	10.19	7.61	7.35
Specific Conductance	µS/cm	403	840	407	189	200
Temperature	°C	14.9	19.1	10.8	14.7	16.4
DO	mg/L	11.95	8.64	12.55	10.89	NR
Turbidity	NTU	32	3.09	0.89	0.62	0.375
Water Depth	m	0.46	0.30	0.18	0.21	0.18
Secchi Depth	m	0.46	0.30	0.18	0.21	0.18
Reach Length	m	100	100	100	100	100
Reach Width	m	4.11	4.88	9.14	7.01	6.71
Surface Velocity	m/s	0.23	0.06	0.26	0.34	0.49

Abbreviations:
NR = Not Reported
°C = degrees Celsius
mg/L = milligrams per liter

Prepared by: CCD
Checked by: INT

3.2 Water Quality Laboratory Results

The laboratory analytical reports are provided in Appendix B. As mentioned in the previous section, following bullets represent typical conditions provide a general indication of stream health.

- Ammonia is toxic to fish and other types of aquatic life. Ammonia's toxicity depends on both the temperature and pH of the water, but chronic levels above 3.0 mg/L exceed water quality standards.

- *E. coli* can be used as an indicator of stream impairment from sewage and animal waste. The Virginia Water Quality Standard is 126 most probable number of coliform per 100 milliliters (MPN/100mL).
- Nitrate stimulates plant growth, and excessive plant growth can impact DO levels. Streams in areas with little human impact have less than 0.6 mg/L nitrate.
- Phosphates act as a nutrient for plant growth similar to nitrate. Streams in areas with little human impact have less than 0.1 mg/L. There is no Virginia Water Quality Standard for phosphate. Orthophosphate serves as an indicator of biologically available Phosphorus within streams.
- TKN is the sum of organic nitrogen, ammonia, and ammonium. Though there is no Virginia Water Quality Standard for TKN, it can be used as an indicator for stream impairment.
- There are no Virginia Water Quality standards for total phosphorus or nitrogen. However, total phosphorus levels higher than 0.1 mg/L may stimulate plant growth sufficiently to surpass natural growth rates. Levels in excess of 0.1 mg/L indicate a potential human source such as industrial soaps, sewage, fertilizers, disturbance of soil, animal waste, or industrial effluent.
- TSS, similar to turbidity, is a quantitative measurement of sediment and other particles found in surface water. Though there is no Virginia Water Quality Standard for TSS, it can be used as an indicator for erosion and sedimentation.

3.2.1 Fall 2020

As shown in Table 3, the water quality results for the five sites meet the typical water quality conditions described above, except for nitrate + nitrite at Purcell Branch which is only slightly past the threshold that may indicate human impact to the stream. While this is not an exceedance of a Virginia water quality standard, it indicates increased potential for excessive plant growth impacting DO levels.

Table 3. Fall 2020 Water Quality Results.

Parameter	Units	Cow Branch	Dawkins Branch	Little Bull Run	Neabsco Creek	Purcell Branch
Ammonia as N	mg/L	0.02	0.02	0.01	0.02	<0.01
E. coli	MPN/100mL	90.8	43.5	95.8	57.1	79.8
Nitrate+Nitrite	mg/L	0.47	0.03	0.46	0.40	0.63
Orthophosphate as P	mg/L	<0.01	<0.01	0.01	0.01	<0.01
TKN	mg/L	<0.5	0.58	<0.50	<0.5	<0.50
Total Phosphorus	mg/L	0.02	0.02	0.03	0.02	0.01
TSS	mg/L	1.0	5.0	1.2	2.4	2.9

Abbreviations: *Prepared by: CCD*
< = not detected at the associated reporting limit *Checked by: INT*
mg/L = milligrams per liter
bold *indicates a result exceeding the VA water quality standards*

The laboratory analytical report for the fall 2020 sampling is provided in Appendix B.

3.2.2 Spring 2021

As shown in Table 4, the water quality results for the five sites meet the typical water quality conditions described above, with the exception of elevated *E. coli* levels recorded at Cow Branch, Dawkins Branch, and Little Bull Run. Samples at these three sites exceed the Virginia Water Quality Standard of 126 MPN/100mL. Elevated E. coli levels are typically associated with sewage and animal waste. Also notable, though not exceeding a standard, is TSS at Cow Branch. Large amounts of sediment can suffocate macroinvertebrate habitat in a stream which may decrease biodiversity and richness of species..

Table 4. Spring 2021 Water Quality Results.

Parameter	Units	Cow Branch	Dawkins Branch	Little Bull Run	Neabsco Creek	Purcell Branch
Ammonia as N	mg/L	0.12	0.02	0.02	0.02	0.01
E. coli	MPN/100mL	**488**	**548**	**291**	51.2	28.8
Nitrate+Nitrite	mg/L	0.49	0.02	0.45	0.22	0.64
Orthophosphate as P	mg/L	<0.01	<0.01	0.01	<0.01	<0.01
TKN	mg/L	0.66	0.58	<0.5	<0.5	<0.5
Total Phosphorus	mg/L	0.10	0.04	0.03	0.03	0.02
TSS	mg/L	33.6	3.4	<1.0	1.3	<1.0

Abbreviations: *Prepared by: CCD*
< = not detected at the associated reporting limit *Checked by: INT*
mg/L = milligrams per liter
bold *indicates a result exceeding the VA water quality standards*

The laboratory analytical report for the spring 2021 sampling is provided in Appendix B.

3.3 Benthic Macroinvertebrate Results

Terms such as “tolerant” and “intolerant” taxa are used to describe benthic communities in this document without the negative or positive lay connotations of such language. Tolerant taxa are benthic species adapted to survive in a broad range of environmental conditions, whereas intolerant taxa are adapted to more limited range of environmental conditions. The term “impairment” has a negative connotation with its lay usage; in this document, the term is used to describe the nature and composition of a benthic community. The scientific “impairment” conditions are classified into four categories:

No Impairment	Similar to the reference conditions; the benthic community is of excellent quality.
Slight Impairment	Sustaining a diverse and abundant benthic community with some intolerant taxa; the benthic community is of good quality.
Moderate Impairment	Not having a highly diverse and abundant community, but having taxa present in several major groups, generally a few intolerant taxa and one taxa being dominant; the community has been impacted.
Severe Impairment	Few, if any, benthic invertebrate taxa are present, all tolerant taxa, low diversity, and often one taxa is very abundant; the benthic community has been severely impacted.

Wood’s laboratory sorted and identified the organisms in the benthic macroinvertebrate samples and provided reports dated December 30, 2020 and July 30, 2021 for the fall 2020 and the spring 2021 sampling events, respectively (Appendix C). The results of the sampling are provided in the Tables 5 and 6 below and summarized in this section.

3.3.1 Fall 2020

A total of 62 taxa were identified from the fall samples. Among the five sites, taxa richness ranged from 10 - 31, while abundance ranged from 186 - 224. This metric indicated no impairment. EPT taxa ranged from 4 to 7 among the sites.

The percentage of the top taxa ranged from 20.10 to 70.97%. Percentage of the top two taxa combined, which is a VSCI metric, ranged from 36.60 to 81.18%.

The HBI ranged from 5.53 to 6.53 for the sites, with corresponding HBI Category scores of “Fair” and “Fairly Poor”. The PMA ranged from 32.58 – 73.71 for the sites, indicating levels of impactedness ranging from “Severely Impacted” at Cow Branch, to “Non-impacted” at Little Bull Run.

Results from the calculation of the VSCI for the individual sample sites ranged from 35.57 (Cow Branch) to 62.62 (Little Bull Run).Compared to Fall 2019, Purcell Branch and Dawkins Branch have shifted VSCI categories from Good to Stress, Neabsco Creek and Little Bull Run have

stayed constant at Stress and Good, respectively, and Cow Branch has shifted from Stress to Severe Stress.

Table 5. Fall 2020 Benthic Macroinvertebrate Results.

Metric	Cow Branch	Dawkins Branch	Little Bull Run	Neabsco Creek	Purcell Branch
Taxa Richness	10	31	31	23	24
Abundance	186	224	194	221	196
EPT Index	4	5	7	6	4
EPT/EPT+ Chironomidae	0.97	0.62	0.62	0.86	0.81
Percent Dominant Taxon	70.97	33.93	20.10	23.08	33.67
Percent Chironomidae	2.69	23.66	23.71	10.86	14.29
BI	6.53	6.23	6.09	5.79	5.53
BI Category	Fairly Poor	Fair	Fair	Fair	Fair
PMA	32.58	57.14	73.71	53.03	52.14
PMA Category	Severely Impacted	Slightly Impacted	Non-impacted	Slightly Impacted	Slightly Impacted
VSCI	35.57	48.77	62.62	57.12	55.25
VSCI Category	Severe Stress	Stress	Good	Stress	Stress

Abbreviations:
BI = Biotic Index
EPT = Ephemeroptera, Plecoptera, and Trichoptera
PMA = percent model affinity
VSCI = Virginia Stream Condition Index

Prepared by: CCD
Checked by: INT

3.3.2 Spring 2021

A total of 61 taxa were identified from the spring samples. Among the five sites, taxa richness ranged from 22 to 28, while abundance ranged from 181 to 210. This metric indicated no impairment for the samples. EPT taxa ranged from 2 to 5 among the sites.

The percentage of the top taxa ranged from 22.58% to 30.48%. Percentage of the top two taxa combined, which is a VSCI metric, ranged from 34.41% to 48.62%. The HBI ranged from 5.01 to 5.88 for the sites, with corresponding HBI Category scores of "Fair" at Dawkins Branch, Little Bull Run, and Neabsco Creek to "Good" at Cow Branch and Purcell Branch. The PMA ranged from 31.60 to 49.13 for the sites, with corresponding PMA Category scores of "Severely Impacted" to "Moderately Impacted".

Results from the calculation of the VSCI for the individual sample sites ranged from 34.71 (Cow Branch) to 45.91 (Dawkins Branch). This corresponds to "Severe Stress" and "Stress" stream quality conditions under the VSCI assessment. Compared to results from Fall 2020, Purcell Branch, Neabsco Creek, Dawkins Branch, and Little Bull Run were more stressed in the Spring. Cow Branch VSCI category remained the same as the category in Fall 2020.

Table 6. Spring 2021 Benthic Macroinvertebrate Results.

Metric	Cow Branch	Dawkins Branch	Little Bull Run	Neabsco Creek	Purcell Branch
Taxa Richness	22	25	28	24	26
Abundance	181	186	208	205	210
EPT Index	2	3	3	4	5
EPT/EPT+ Chironomidae	0.06	0.09	0.12	0.14	0.06
Percent Dominant Taxon	24.86	22.58	30.29	26.83	30.48
Percent Chironomidae	88.40	48.92	65.38	80.00	84.29
BI	5.21	5.78	5.88	5.60	5.01
BI Category	Good	Fair	Fair	Fair	Good
PMA	31.60	44.84	49.13	39.76	35.71
PMA Category	Severely Impacted	Moderately Impacted	Moderately Impacted	Moderately Impacted	Moderately Impacted
VSCI	34.71	45.91	45.24	38.48	41.08
VSCI Category	Severe Stress	Stress	Stress	Severe Stress	Severe Stress

Abbreviations:
BI = Biotic Index
EPT = Ephemeroptera, Plecoptera, and Trichoptera
PMA = percent model affinity
VSCI = Virginia Stream Condition Index

Prepared by:CCD
Checked by: INT

3.4 Comparison to Baseline Results

In the assessment of measured field and laboratory water quality parameters, the fall 2020 and spring 2021 sampling results have shown slight improvements compared to the fall and spring baseline sampling results from 2016, are within or slightly above the normal ranges, and are below Virginia's Water Quality Standards, with the exception of *E. coli* results. Three of five sites were found to be in exceedance of the state water quality standard in the Spring. There were no exceedances in the Fall, but *E. coli* results should remain a focus of monitoring efforts.

The habitat and benthic community results among the events are summarized below in Table 7. Habitat assessment scores at Dawkins Branch have stabilized year over year, after a decline from baseline events. Steady increases in metrics assessing the health of the benthos at each site now appear to have regressed, with VSCI scores dropping or staying constant for Spring and Fall sampling. The only improvement was at Dawkins Branch that improved from "Severe Stress" in the spring of 2020 to "Stress" in the spring of 2021.

Table 7. Habitat and Benthic Community Comparison Summary

Parameter	Event	Cow Branch	Dawkins Branch	Little Bull Run	Neabsco Creek	Purcell Branch
RBP Habitat Score	Baseline (Spring)	94	126	120	134	103
	Baseline (Fall)	104	147	110	136	87
	2017 (Spring)	98	134	94	123	108
	2017 (Fall)	101	116	98	114	80
	2018 (Spring)	93	126	103	113	106
	2018 (Fall)*	106	114	126	129	105
	2019 (Spring)*	113	99	124	117	103
	2019 (Fall)	132	134	120	136	117
	2020 (Spring)	107	106	102	127	89
	2020 (Fall)	109	120	142	121	114
	2021 (Spring)	122	103	138	114	117
RBP Habitat Category	Baseline (Spring)	Marginal	Suboptimal	Suboptimal	Suboptimal	Suboptimal
	Baseline (Fall)	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Marginal
	2017 (Spring)	Marginal	Suboptimal	Marginal	Suboptimal	Suboptimal
	2017 (Fall)	Suboptimal	Suboptimal	Marginal	Suboptimal	Marginal
	2018 (Spring)	Marginal	Suboptimal	Suboptimal	Suboptimal	Suboptimal
	2018 (Fall)	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Suboptimal
	2019 (Spring)	Suboptimal	Marginal	Suboptimal	Suboptimal	Suboptimal
	2019 (Fall)	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Suboptimal
	2020 (Spring)	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Marginal
	2020 (Fall)	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Suboptimal
	2021 (Spring)	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Suboptimal
BI Category	Baseline (Spring)	Fair	Fair	Good	Good	Good
	Baseline (Fall)	Good	Fair	Fair	Fair	Fair
	2017 (Spring)	Fairly Poor	Good	Fair	Fair	Good
	2017 (Fall)	Fair	Fair	Fair	Fair	Good
	2018 (Spring)	Fair	Fairly Poor	Fair	Fairly Poor	Good
	2018 (Fall)*	Fair	Good	Good	Good	Good
	2019 (Spring)*	Fair	Good	Fair	Fair	Good
	2019 (Fall)	Fairly Poor	Fairly Poor	Fair	Fair	Fair
	2020 (Spring)	Fairly Poor	Good	Good	Fair	Good
	2020 (Fall)	Fairly Poor	Fair	Fair	Fair	Fair
	2021 (Spring)	Good	Fair	Fair	Fair	Good
PMA Category	Baseline (Spring)	Severely Impacted	Moderately Impacted	Moderately Impacted	Severely Impacted	Moderately Impacted
	Baseline (Fall)	Slightly Impacted	Moderately Impacted	Moderately Impacted	Slightly Impacted	Slightly Impacted
	2017 (Spring)	Moderately Impacted	Slightly Impacted	Moderately Impacted	Moderately Impacted	Moderately Impacted
	2017 (Fall)	Moderately Impacted	Slightly Impacted	Non-Impacted	Slightly Impacted	Slightly Impacted
	2018 (Spring)	Moderately Impacted	Moderately Impacted	Slightly Impacted	Moderately Impacted	Moderately Impacted
	2018 (Fall)*	Moderately Impacted	Moderately Impacted	Slightly Impacted	Moderately Impacted	Slightly Impacted
	2019 (Spring)*	Moderately Impacted	Moderately Impacted	Moderately Impacted	Slightly Impacted	Non-impacted
	2019 (Fall)	Moderately Impacted	Slightly Impacted	Non-impacted	Slightly Impacted	Slightly Impacted
	2020 (Spring)	Moderately Impacted	Moderately Impacted	Slightly Impacted	Slightly Impacted	Slightly Impacted
	2020 (Fall)	Severely Impacted	Slightly Impacted	Non-impacted	Slightly Impacted	Slightly Impacted
	2021 (Spring)	Severely Impacted	Moderately Impacted	Moderately Impacted	Moderately Impacted	Moderately Impacted

Parameter	Event	Cow Branch	Dawkins Branch	Little Bull Run	Neabsco Creek	Purcell Branch
VSCI Score	Baseline (Spring)	27.85	35.67	39.29	32.96	46.40
	Baseline (Fall)	36.54	49.42	56.59	39.44	57.34
	2017 (Spring)	37.17	39.85	38.66	47.03	41.71
	2017 (Fall)	41.78	49.71	61.83	58.67	63.60
	2018 (Spring)	40.61	48.25	52.47	42.94	48.40
	2018 (Fall)*	49.91	52.64	74.17	60.74	64.67
	2019 (Spring)*	37.33	45.35	49.27	44.68	47.14
	2019 (Fall)	42.95	62.99	67.99	56.10	60.76
	2020 (Spring)	34.52	41.42	42.77	47.03	47.53
	2020 (Fall)	35.57	48.77	62.62	57.12	55.25
	2021 (Spring)	34.71	45.91	45.24	38.48	41.08
VSCI Category	Baseline (Spring)	Severe Stress	Severe Stress	Severe Stress	Severe Stress	Stress
	Baseline (Fall)	Severe Stress	Stress	Stress	Severe Stress	Stress
	2017 (Spring)	Severe Stress	Severe Stress	Severe Stress	Stress	Severe Stress
	2017 (Fall)	Severe Stress	Stress	Good	Stress	Good
	2018 (Spring)	Severe Stress	Stress	Stress	Stress	Stress
	2018 (Fall)*	Stress	Stress	Excellent	Good	Good
	2019 (Spring)*	Severe Stress	Stress	Stress	Stress	Stress
	2019 (Fall)	Stress	Good	Good	Stress	Good
	2020 (Spring)	Severe Stress	Severe Stress	Stress	Stress	Stress
	2020 (Fall)	Severe Stress	Stress	Good	Stress	Stress
	2021 (Spring)	Severe Stress	Stress	Stress	Severe Stress	Stress

***Previously reported VSCI Scores for Fall 2018 and Spring 2019 have shifted slightly due to a calculation error.**

Prepared by: CCD
Checked by: INT

The PMA category has marginally improved from baseline; two of the five sites received scores of “Severely Impacted” during the baseline sampling. Cow Branch was scored as “Severely Impacted” for both the Fall and Spring sampling events indicating a regression from its score of “Moderately Impacted” in previous years. The other three sites stayed constant from previous years in the Fall. All but Dawkins Branch changed from “Slightly Impacted” to “Moderately Impacted” in the Spring.

4.0 SUMMARY AND CONCLUSIONS

The following sections present a summary of the fall 2020 and spring 2021 sampling events and compare the results with the previous sampling events conducted in 2016, 2017, 2018, and 2019. This section also provides conclusions for the current report period. It should be noted that there are biological changes associated with seasonality, with taxa emerging in the spring, and transitional life stages (e.g., metamorphosis) during and between events that may account for benthic community dynamics.

4.1 Summary

4.1.1 Fall 2020

Measured field and laboratory water quality parameters are generally within the normal ranges for shallow, cool, turbulent, piedmont Virginia streams, and generally meet Virginia's Water Quality Standards, as outlined in Section 3.

4.1.2 Spring 2021

Measured field and laboratory water quality parameters are generally within the normal ranges for shallow, cool, turbulent, piedmont Virginia streams, and generally meet Virginia's Water Quality Standards, as outlined in Section 3. However, the *E. coli* levels at Cow Branch, Dawkins Branch, and Little Bull Run were above the Virginia Water Quality standard, which could be indicative of sewage or animal waste. Stressed conditions remain apparent, consistent with seasonal variation during spring season collections.

4.2 Conclusions

The measured field and laboratory water quality parameters from the fall 2020 and spring 2021 sampling results are generally comparable to the baseline sampling results, are within the normal ranges, and are below Virginia's Water Quality Standards with the exception of elevated *E. coli*. Monitoring efforts will be targeted to avoid collection periods following storm events to characterize the benthos and ambient water quality conditions.

Biological metrics, habitat assessments, and evaluations of the benthic macroinvertebrate communities at each site have indicated a marginal level of improvement compared to baseline conditions, though a regression from improvement in recent years at several sites. Seasonal fluctuation in benthic macroinvertebrate assessments has still shown an upward trend for most sites.

This seasonal trend allows for clear distinctions from baseline levels in fall sampling, while spring sampling only shows slight improvement in benthic health. Based on the fall 2020 and spring 2021 sampling results, stream conditions have shown slight improvement from baseline conditions, though no improvement compared to recent years of sampling. The results of this report indicate that the health of these representative monitoring sites from across Prince William County are either stable or are slightly declining.

5.0 REFERENCES

Amec Foster Wheeler, 2015. Sampling Plan for Benthic Macroinvertebrate and Water Quality Monitoring, Prince William County, Virginia. December 29, 2015.

Barbour, M. T., J. Gerritsen, B. D. Snyder, and J. B. Stribling, 1999. Rapid bioassessment protocols for use in streams and wadeable rivers: periphyton, benthic macroinvertebrates, and fish. 2nd ed. EPA 841-B-99-002. U.S. Environmental Protection Agency, Office of Water, Washington, DC.

Hilsenhoff, W. L., 1987. An improved biotic index of organic stream pollution. The Great Lakes Entomologist. 20:31-39.

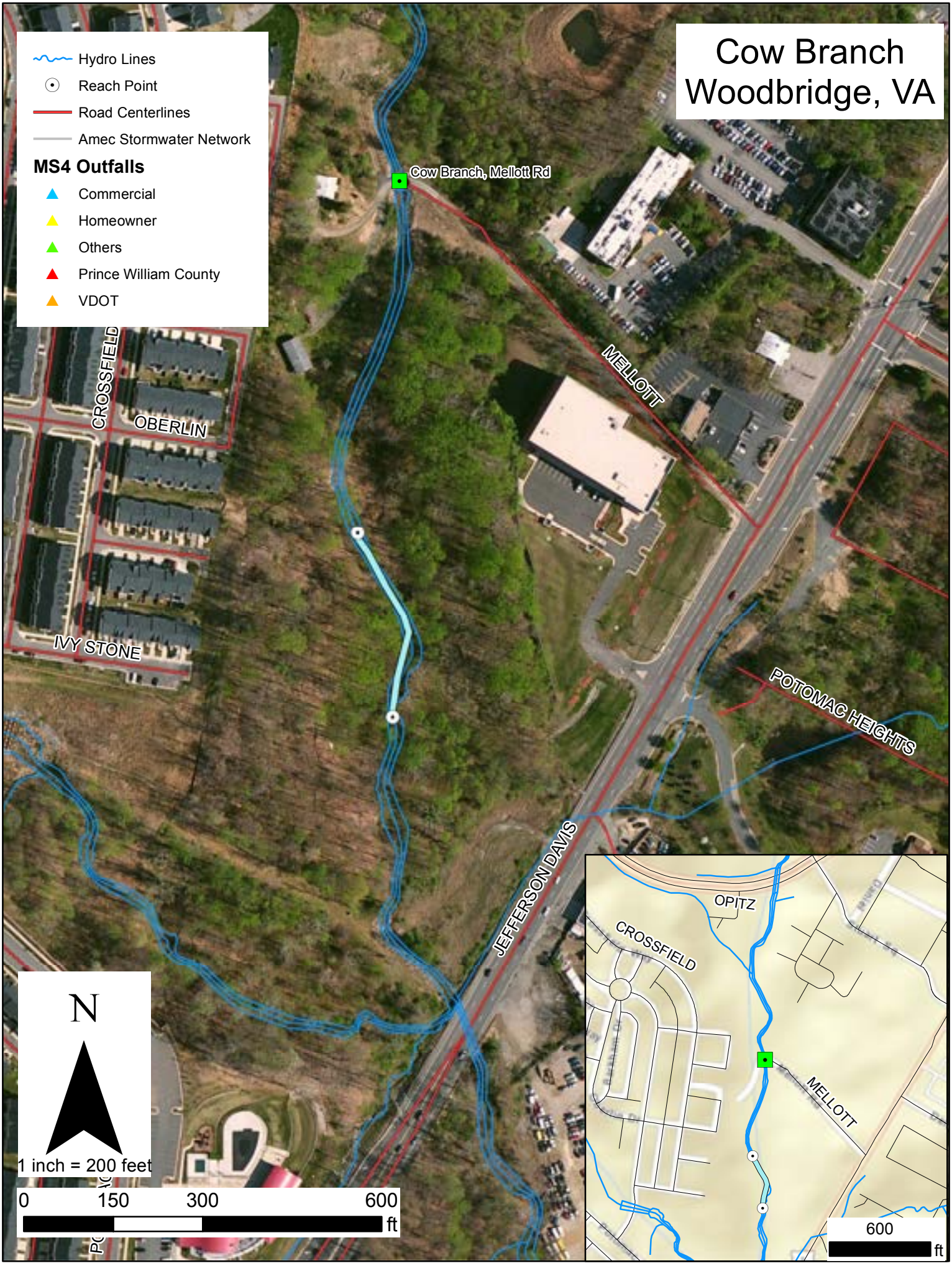
Novak, M. A. and R. W. Bode. 1992. Percent model affinity: a new measure of macroinvertebrate community composition. Journal of North American Benthological Society 11 (1): 80-85.

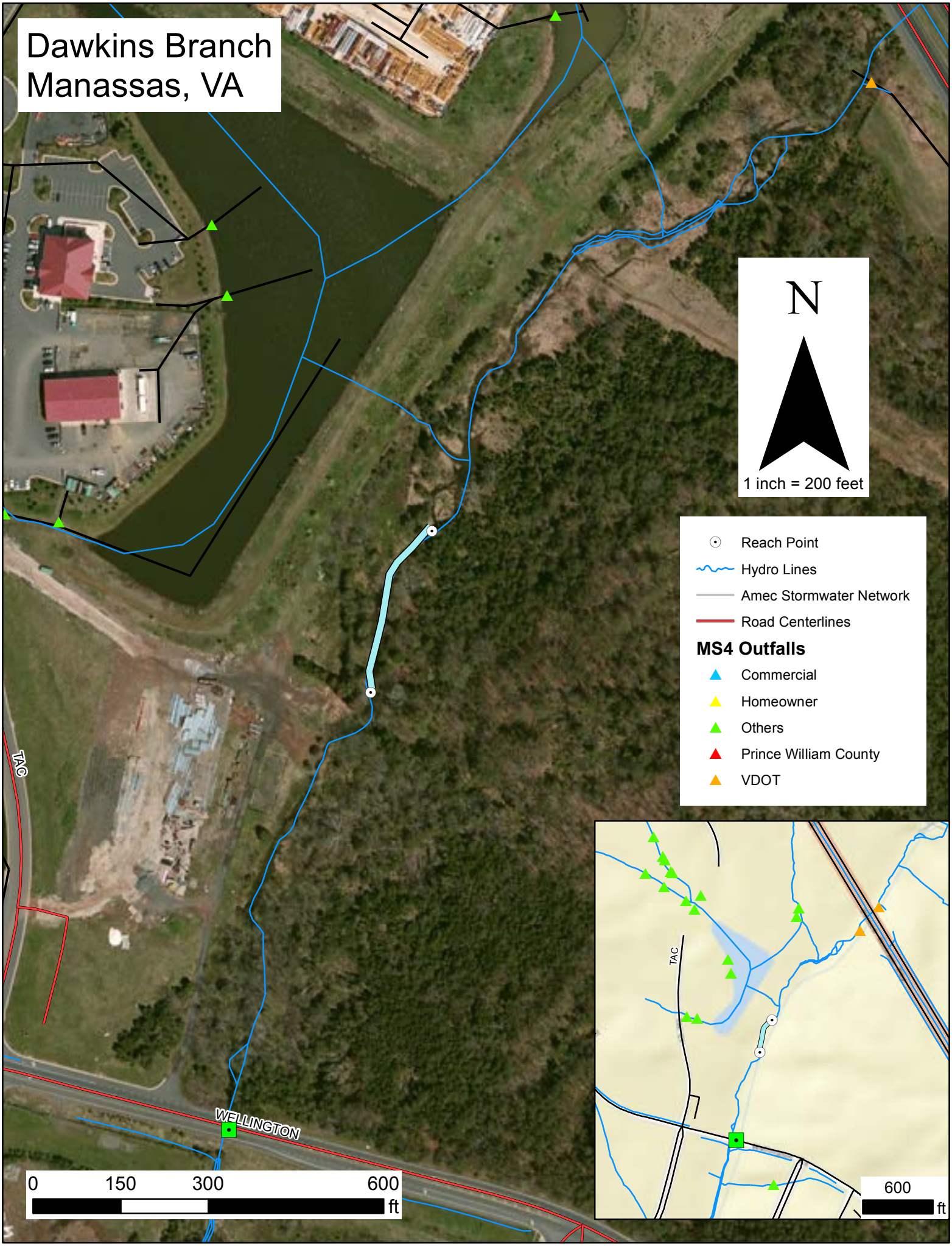
TetraTech, 2003. A Stream Condition Index for Virginia Non-Coastal Streams. Owings Mill, MD. September 2003.

VDEQ, 2008. Biological Monitoring Program Quality Assurance Project Plan for Wadeable Streams and Rivers. Division of Water Quality, Office of Water Quality Monitoring and Assessment Programs, VA. August 2008. Available at: http://www.deq.virginia.gov/Portals/0/DEQ/Water/WaterQualityMonitoring/BiologicalMonitoring/BioMonQAPP_13Aug2008.pdf.

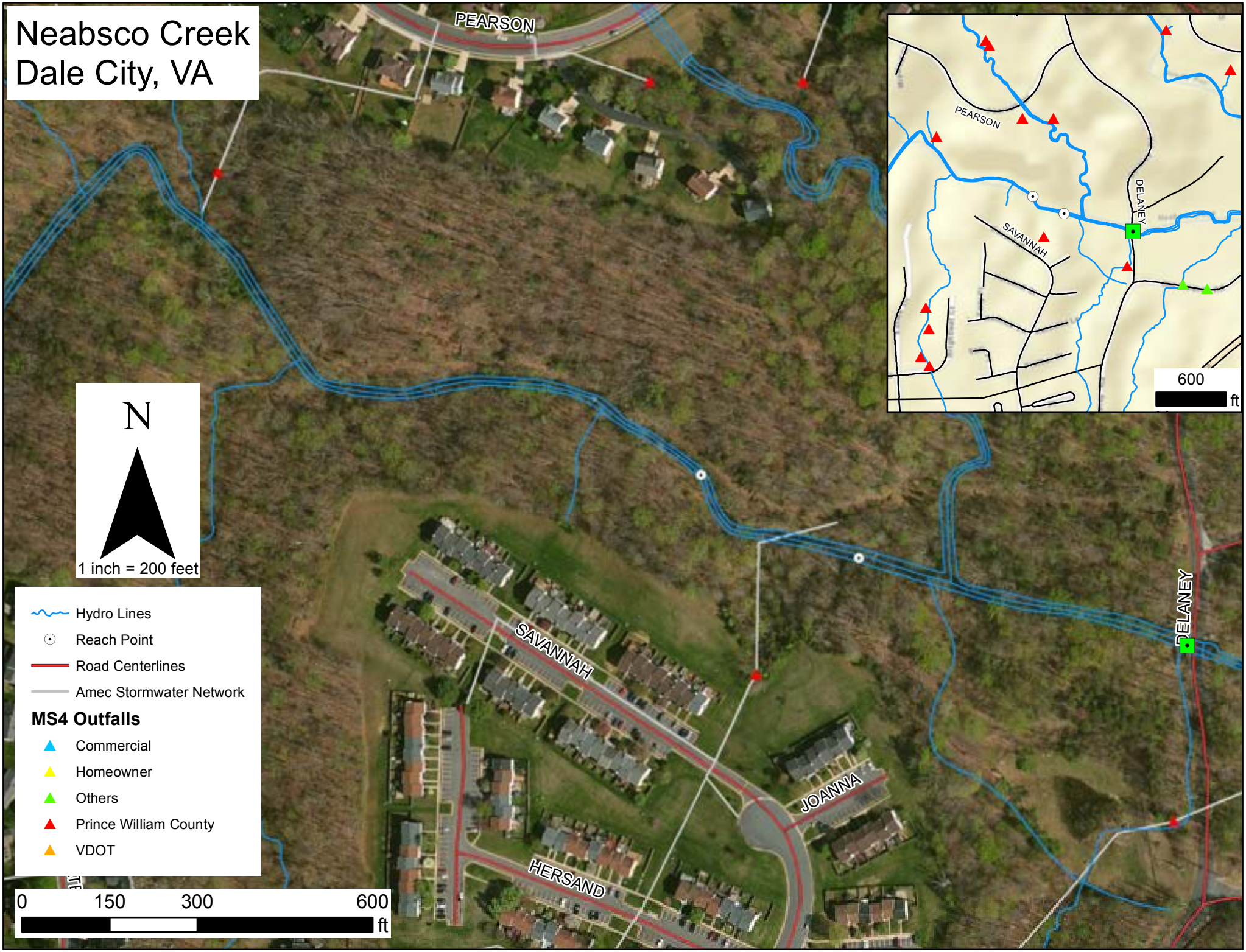
Virginia's Legislative Information System (LIS). 2017. 9VAC25-260-50. Numerical Criteria for Dissolved Oxygen, Ph, and Maximum Temperature. Available at: http://law.lis.virginia.gov/admincode/title9/agency25/chapter260/section50/. Accessed July 12, 2017.

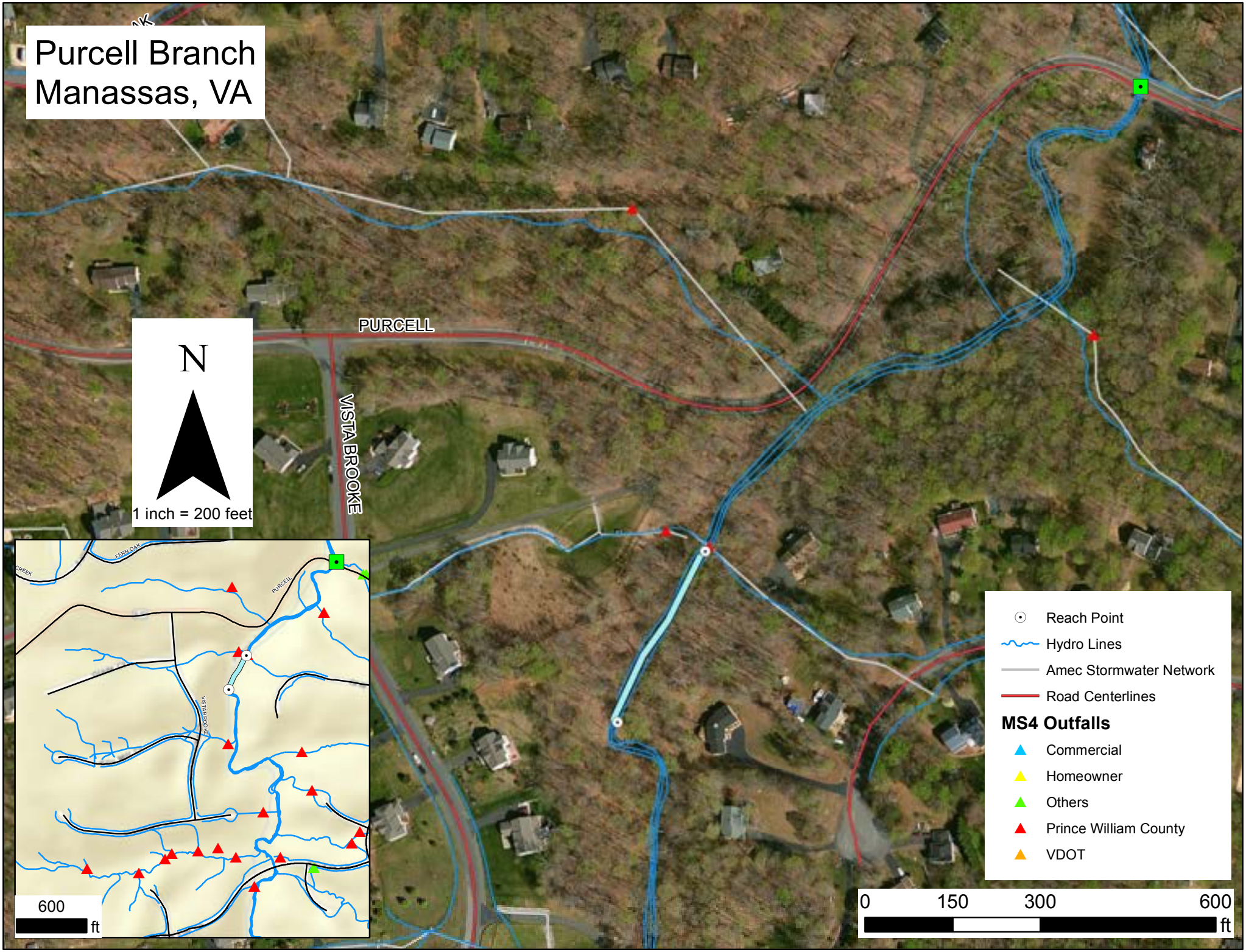
FIGURES


Cow Branch
Woodbridge, VA
Hydro Lines
Reach Point
Road Centerlines
Amec Stormwater Network
MS4 Outfalls
Commercial
Homeowner
Others
Prince William County
VDOT
Cow Branch, Mellott Rd
MELLOTT
CROSSFIELD
OBERLIN
IVY STONE
POTOMAC HEIGHTS
JEFFERSON DAVIS
OPITZ
CROSSFIELD
MELLOTT
N
1 inch = 200 feet
0
150
300
600
ft
600
ft


Dawkins Branch
Manassas, VA
N
1 inch = 200 feet
Reach Point
Hydro Lines
Amec Stormwater Network
Road Centerlines
MS4 Outfalls
Commercial
Homeowner
Others
Prince William County
VDOT
TAC
WELLINGTON
0
150
300
600
ft
TAC
600
ft


Little Bull Run
Gainesville, VA
PIEDMONT VISTA
SNICKERSVILLE
HUNTERS RUN
600
ft
N
1 inch = 200 feet
Reach Point
Hydro Lines
Amec Stormwater Network
Road Centerlines
MS4 Outfalls
Commercial
Homeowner
Others
Prince William County
VDOT
HUNTERS RUN
EMMANUEL
FALLSMERE
0
150
300
600
ft


Neabsco Creek
Dale City, VA
PEARSON
SAVANNAH
JOANNA
HERSAND
DELANEY
N
1 inch = 200 feet
Hydro Lines
Reach Point
Road Centerlines
Amec Stormwater Network
MS4 Outfalls
Commercial
Homeowner
Others
Prince William County
VDOT
0
150
300
600
ft
600
ft


Purcell Branch
Manassas, VA
PURCELL
VISTA BROOKE
N
1 inch = 200 feet
600
ft
Reach Point
Hydro Lines
Amec Stormwater Network
Road Centerlines
MS4 Outfalls
Commercial
Homeowner
Others
Prince William County
VDOT
0
150
300
600
ft

APPENDIX A

SITE DATA SHEETS

Prince William Biological Monitoring Form

Stream Name	Neabsco
Location	Joanna Ct.
River Basin	Potomac
Investigators	Ben Green and John Miller
Date	10/05/2020
Time	01:42 PM GMT-04:00
Reason for Survey	PWC Biological Monitoring
Weather Conditions	Clear / Sunny

RIPARIAN VEGETATION
(18 meter buffer)

Dominant Type	Trees

INSTREAM FEATURES

Est. Stream Width (ft)	22.0
Est. Stream Depth (ft)	0.8
Surface Velocity (ft/sec at thalweg)	1.55
Canopy Cover	Partly shaded
High Water Mark (ft)	5.5
Channelized	○ Yes ◉ No
Dam Present	○ Yes ◉ No
Proporation of Reach by Stream Morphology Types	
Riffle (%)	40
Run (%)	10
Pool (%)	50

AQUATIC VEGETATION

Dominant Type	Attached Algae
Portion of reach with aquatic veg	35

WATER QUALITY

Temperature	14.59
Specific Conductance	0.185
Dissolved Oxygen	12.7
pH	7.06
Turbidity	1.31
WQ Instrument Used	YSI 556
Water Odors	☐ Normal / None ☑ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other

Water Surface Oils	
	☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☐ None ☑ Other

Inorganic Substrate Components

(should add up to 100%)

Substrate Type	Diameter	% Composition in sampling reach
Bedrock		15.0
Boulder	**>256 mm** (10")	10.0
Cobble	**64 - 256 mm** (2.5" - 10")	25.0
Gravel	**2 - 64 mm** (0.1" - 2.5")	5.0
Sand	**0.06 - 2 mm** (gritty)	25.0
Silt	**0.004 - 0.06 mm**	15.0
Clay	**< 0.004 mm** (slick)	5.0

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category
Epifaunal Substrate / Available Cover	15
Embeddedness	11
Velocity / Depth Regime	13
Sediment Deposition	11
Channel Flow Status	13

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category
Channel Alteration	12
Frequency of Riffles (or Bends)	9
Bank Stability (LEFT BANK)	6
Bank Stability (RIGHT BANK)	5
Vegetative Protection (LEFT BANK)	4
Vegetative Protection (RIGHT BANK)	4
Riparian Vegetative Zone Width (LEFT BANK)	8
Riparian Vegetative Zone Width (RIGHT BANK)	10

Field Photography

Image 1

Caption for Image 1

Downstream

Image 2

Caption for Image 2

Upstream of starting point

Image 3

Caption for Image 3

Tire in stream

Image 4

Caption for Image 4
Upstream extent

Report completed by:
BTG

Signature


Signature Date/Time
10/05/2020 03:05 PM GMT-04:00

Please use the upper-right menu to "Save as complete and exit" to place this finalized form in the upload queue.

Prince William Biological Monitoring Form

Stream Name	Cow Branch
Location	Mellow Road
River Basin	Potomac
Investigators	Ben Green and John Miller
Date	10/05/2020
Time	10:11 AM GMT-04:00
Reason for Survey	PWC Biological Monitoring
Weather Conditions	Clear / Sunny

GPS location

RIPARIAN VEGETATION
(18 meter buffer)

Dominant Type	Grasses

INSTREAM FEATURES

Est. Stream Width (ft)	14.0
Est. Stream Depth (ft)	0.72
Surface Velocity (ft/sec at thalweg)	0.35
Canopy Cover	Partly shaded
High Water Mark (ft)	4.0
Channelized	○ Yes ◉ No
Dam Present	○ Yes ◉ No
Proporation of Reach by Stream Morphology Types	
Riffle (%)	60
Run (%)	20
Pool (%)	20

AQUATIC VEGETATION

Dominant Type	Attached Algae
Portion of reach with aquatic veg	30

WATER QUALITY

Temperature	14.79
Specific Conductance	0.311
Dissolved Oxygen	11.94
pH	5.66
Turbidity	
WQ Instrument Used	YSI 556
Water Odors	☑ Normal / None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other

Water Surface Oils	
	☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other

Inorganic Substrate Components
(should add up to 100%)

Substrate Type	Diameter	% Composition in sampling reach
Bedrock		5.0
Boulder	**>256 mm** (10")	10.0
Cobble	**64 - 256 mm** (2.5" - 10")	35.0
Gravel	**2 - 64 mm** (0.1" - 2.5")	10.0
Sand	**0.06 - 2 mm** (gritty)	20.0
Silt	**0.004 - 0.06 mm**	15.0
Clay	**< 0.004 mm** (slick)	5.0

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category
Epifaunal Substrate / Available Cover	11
Embeddedness	7
Velocity / Depth Regime	10
Sediment Deposition	9
Channel Flow Status	11

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category
Channel Alteration	6
Frequency of Riffles (or Bends)	13
Bank Stability (LEFT BANK)	6
Bank Stability (RIGHT BANK)	7
Vegetative Protection (LEFT BANK)	5
Vegetative Protection (RIGHT BANK)	5
Riparian Vegetative Zone Width (LEFT BANK)	9
Riparian Vegetative Zone Width (RIGHT BANK)	10

Field Photography

Image 1

Image 2

Image 3

Report completed by:
BTG

Signature


Signature Date/Time
10/05/2020 11:03 AM GMT-04:00

Please use the upper-right menu to "Save as complete and exit" to place this finalized form in the upload queue.

Prince William Biological Monitoring Form

Stream Name	Purcell Branch
Location	Purcell Rd.
River Basin	Potomac
Investigators	Ben Green and Chris Tashman
Date	10/06/2020
Time	12:08 PM GMT-04:00
Reason for Survey	PWC Biological Monitoring
Weather Conditions	Clear / Sunny

GPS location

RIPARIAN VEGETATION
(18 meter buffer)

Dominant Type	Trees

INSTREAM FEATURES

Est. Stream Width (ft)	26.0
Est. Stream Depth (ft)	0.4
Surface Velocity (ft/sec at thalweg)	0.52
Canopy Cover	Shaded
High Water Mark (ft)	6.0
Channelized	○ Yes ○ No
Dam Present	○ Yes ○ No
Proporation of Reach by Stream Morphology Types	
Riffle (%)	50
Run (%)	40
Pool (%)	10

AQUATIC VEGETATION

Dominant Type	Attached Algae
Portion of reach with aquatic veg	20

WATER QUALITY

Temperature	12.17
Specific Conductance	.179
Dissolved Oxygen	9.75
pH	7.61
Turbidity	0.40
WQ Instrument Used	YSI 556
Water Odors	☑ Normal / None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other

Water Surface Oils	
	☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other

Inorganic Substrate Components
(should add up to 100%)

Substrate Type	Diameter	% Composition in sampling reach
Bedrock		30.0
Boulder	**>256 mm** (10")	10.0
Cobble	**64 - 256 mm** (2.5" - 10")	15.0
Gravel	**2 - 64 mm** (0.1" - 2.5")	5.0
Sand	**0.06 - 2 mm** (gritty)	20.0
Silt	**0.004 - 0.06 mm**	15.0
Clay	**< 0.004 mm** (slick)	5.0

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category
Epifaunal Substrate / Available Cover	12
Embeddedness	8
Velocity / Depth Regime	10
Sediment Deposition	13
Channel Flow Status	12

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category
Channel Alteration	13
Frequency of Riffles (or Bends)	9
Bank Stability (LEFT BANK)	4
Bank Stability (RIGHT BANK)	6
Vegetative Protection (LEFT BANK)	6
Vegetative Protection (RIGHT BANK)	5
Riparian Vegetative Zone Width (LEFT BANK)	9
Riparian Vegetative Zone Width (RIGHT BANK)	7

Field Photography

Image 1

Caption for Image 1

Upstream for mid

Image 2

Caption for Image 2

Downstream from midpoint

Image 3

Caption for Image 3

Downstream from downstream end

Image 4

Caption for Image 4
Upstream from downstream end of reach.

Report completed by:
BTG

Signature


Signature Date/Time
10/06/2020 11:54 AM GMT-04:00

Please use the upper-right menu to "Save as complete and exit" to place this finalized form in the upload queue.

Prince William Biological Monitoring Form

Stream Name	Dawkins Branch
Location	Tax Ct.
River Basin	Potomac
Investigators	Ben Green and Chris Tashman
Date	10/06/2020
Time	02:13 PM GMT-04:00
Reason for Survey	PWC Biological Monitoring
Weather Conditions	Clear / Sunny

GPS location

RIPARIAN VEGETATION
(18 meter buffer)

Dominant Type	Trees

INSTREAM FEATURES

Est. Stream Width (ft)	13.5
Est. Stream Depth (ft)	0.9
Surface Velocity (ft/sec at thalweg)	0.17
Canopy Cover	Partly shaded
High Water Mark (ft)	7.0
Channelized	○ Yes ◉ No
Dam Present	○ Yes ◉ No
Proporation of Reach by Stream Morphology Types	
Riffle (%)	35
Run (%)	40
Pool (%)	25

AQUATIC VEGETATION

Dominant Type	Rooted emergent
Portion of reach with aquatic veg	25

WATER QUALITY

Temperature	17.89
Specific Conductance	0.403
Dissolved Oxygen	6.98
pH	7.92
Turbidity	2.90
WQ Instrument Used	YSI 556
Water Odors	☑ Normal / None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other

Water Surface Oils	
	☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other

Inorganic Substrate Components
(should add up to 100%)

Substrate Type	Diameter	% Composition in sampling reach
Bedrock		10.0
Boulder	**>256 mm** (10")	5.0
Cobble	**64 - 256 mm** (2.5" - 10")	25.0
Gravel	**2 - 64 mm** (0.1" - 2.5")	10.0
Sand	**0.06 - 2 mm** (gritty)	20.0
Silt	**0.004 - 0.06 mm**	25.0
Clay	**< 0.004 mm** (slick)	5.0

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category
Epifaunal Substrate / Available Cover	14
Embeddedness	6
Velocity / Depth Regime	8
Sediment Deposition	5
Channel Flow Status	13

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category
Channel Alteration	15
Frequency of Riffles (or Bends)	7
Bank Stability (LEFT BANK)	9
Bank Stability (RIGHT BANK)	8
Vegetative Protection (LEFT BANK)	9
Vegetative Protection (RIGHT BANK)	9
Riparian Vegetative Zone Width (LEFT BANK)	8
Riparian Vegetative Zone Width (RIGHT BANK)	9

Field Photography

Image 1

Caption for Image 1
Looking upstream from sample point

Image 2

Caption for Image 2
Looking downstream from Monitoring point.

Report completed by:
BTG

Signature


Signature Date/Time
10/06/2020 04:56 PM GMT-04:00

Please use the upper-right menu to "Save as complete and exit" to place this finalized form in the upload queue.

Prince William Biological Monitoring Form

Stream Name	Little Bull Run
Location	Catharine Rd.
River Basin	Potomac
Investigators	Ben Green and Anna Allie
Date	10/07/2020
Time	10:37 AM GMT-04:00
Reason for Survey	PWC Biological Monitoring
Weather Conditions	Clear / Sunny

GPS location

RIPARIAN VEGETATION
(18 meter buffer)

Dominant Type	Shrubs

INSTREAM FEATURES

Est. Stream Width (ft)	27.0
Est. Stream Depth (ft)	0.45
Surface Velocity (ft/sec at thalweg)	1.8
Canopy Cover	Partly shaded
High Water Mark (ft)	6.0
Channelized	○ Yes ◉ No
Dam Present	○ Yes ◉ No
Proporation of Reach by Stream Morphology Types	
Riffle (%)	30
Run (%)	50
Pool (%)	20

AQUATIC VEGETATION

Dominant Type	Attached Algae
Portion of reach with aquatic veg	50

WATER QUALITY

Temperature	14.47
Specific Conductance	0.518
Dissolved Oxygen	8.52
pH	7.87
Turbidity	1.10
WQ Instrument Used	YSI 556
Water Odors	☑ Normal / None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other

Water Surface Oils	
	☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other

Inorganic Substrate Components

(should add up to 100%)

Substrate Type	Diameter	% Composition in sampling reach
Bedrock		15.0
Boulder	**>256 mm** (10")	5.0
Cobble	**64 - 256 mm** (2.5" - 10")	25.0
Gravel	**2 - 64 mm** (0.1" - 2.5")	25.0
Sand	**0.06 - 2 mm** (gritty)	5.0
Silt	**0.004 - 0.06 mm**	20.0
Clay	**< 0.004 mm** (slick)	5.0

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category
Epifaunal Substrate / Available Cover	11
Embeddedness	16
Velocity / Depth Regime	13
Sediment Deposition	14
Channel Flow Status	18

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category
Channel Alteration	15
Frequency of Riffles (or Bends)	6
Bank Stability (LEFT BANK)	7
Bank Stability (RIGHT BANK)	6
Vegetative Protection (LEFT BANK)	8
Vegetative Protection (RIGHT BANK)	9
Riparian Vegetative Zone Width (LEFT BANK)	9
Riparian Vegetative Zone Width (RIGHT BANK)	10

Field Photography

Image 1

Caption for Image 1
Downstream from downstream point of reach.

Image 2

Caption for Image 2
Looking upstream from downstream point of reach.

Report completed by:
BTG

Signature


Signature Date/Time
10/07/2020 12:45 PM GMT-04:00

Please use the upper-right menu to "Save as complete and exit" to place this finalized form in the upload queue.

Prince William Biological Monitoring Form

Stream Name	Cow Branch
Location	
River Basin	Potomac
Investigators	Ben Green and Christina Davis
Date	04/20/2021
Time	03:23 PM GMT-04:00
Reason for Survey	PWC Biological Monitoring
Weather Conditions	Clear / Sunny

GPS location

RIPARIAN VEGETATION
(18 meter buffer)

Dominant Type	Trees

INSTREAM FEATURES

Est. Stream Width (ft)	13.5
Est. Stream Depth (ft)	1.5
Surface Velocity (ft/sec at thalweg)	0.75
Canopy Cover	Partly open
High Water Mark (ft)	5.5
Channelized	○ Yes ◉ No
Dam Present	○ Yes ◉ No
Proporation of Reach by Stream Morphology Types	
Riffle (%)	60
Run (%)	30
Pool (%)	10

AQUATIC VEGETATION

Dominant Type	Attached Algae
Portion of reach with aquatic veg	40

WATER QUALITY

Temperature	58.8
Specific Conductance	0.403 mS/cm
Dissolved Oxygen	11.95 mg/L
pH	6.98
Turbidity	32 NTU
WQ Instrument Used	YSI Pro Plus
Water Odors	☑ Normal / None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other

Water Surface Oils	
	☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other

Inorganic Substrate Components

(should add up to 100%)

Substrate Type	Diameter	% Composition in sampling reach
Bedrock		5.0
Boulder	**>256 mm** (10")	10.0
Cobble	**64 - 256 mm** (2.5" - 10")	35.0
Gravel	**2 - 64 mm** (0.1" - 2.5")	25.0
Sand	**0.06 - 2 mm** (gritty)	15.0
Silt	**0.004 - 0.06 mm**	7.5
Clay	**< 0.004 mm** (slick)	2.5

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category
Epifaunal Substrate / Available Cover	12
Embeddedness	11
Velocity / Depth Regime	13
Sediment Deposition	10
Channel Flow Status	15

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category
Channel Alteration	13
Frequency of Riffles (or Bends)	14
Bank Stability (LEFT BANK)	7
Bank Stability (RIGHT BANK)	6
Vegetative Protection (LEFT BANK)	3
Vegetative Protection (RIGHT BANK)	3
Riparian Vegetative Zone Width (LEFT BANK)	6
Riparian Vegetative Zone Width (RIGHT BANK)	9

Field Photography

Image 1

Caption for Image 1
Downstream. From downstream extent.

Image 2

Caption for Image 2
Upstream. From downstream extent.

Report completed by:
Christina Davis

Signature


Signature Date/Time
04/20/2021 01:45 PM GMT-04:00

Please use the upper-right menu to "Save as complete and exit" to place this finalized form in the upload queue.

Prince William Biological Monitoring Form

Stream Name	Purcell Branch
Location	
River Basin	
Investigators	Ben Green and Christina Davis
Date	04/20/2021
Time	06:00 PM GMT-04:00
Reason for Survey	PWC Biological Monitoring
Weather Conditions	

RIPARIAN VEGETATION
(18 meter buffer)

Dominant Type	Trees

INSTREAM FEATURES

Est. Stream Width (ft)	22.0
Est. Stream Depth (ft)	0.6
Surface Velocity (ft/sec at thalweg)	1.6
Canopy Cover	Partly shaded
High Water Mark (ft)	4.0
Channelized	○ Yes ◉ No
Dam Present	○ Yes ◉ No
Proporation of Reach by Stream Morphology Types	
Riffle (%)	50
Run (%)	40
Pool (%)	10

AQUATIC VEGETATION

Dominant Type	Attached Algae
Portion of reach with aquatic veg	30

WATER QUALITY

Temperature	61.5
Specific Conductance	.200 mS/cm
Dissolved Oxygen	--
pH	7.35
Turbidity	.375 NTU
WQ Instrument Used	YSI Pro Plus
Water Odors	☑ Normal / None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other

Water Surface Oils	
	☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other

Inorganic Substrate Components
(should add up to 100%)

Substrate Type	Diameter	% Composition in sampling reach
Bedrock		10.0
Boulder	**>256 mm** (10")	10.0
Cobble	**64 - 256 mm** (2.5" - 10")	20.0
Gravel	**2 - 64 mm** (0.1" - 2.5")	25.0
Sand	**0.06 - 2 mm** (gritty)	25.0
Silt	**0.004 - 0.06 mm**	5.0
Clay	**< 0.004 mm** (slick)	5.0

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category
Epifaunal Substrate / Available Cover	12
Embeddedness	15
Velocity / Depth Regime	8
Sediment Deposition	13
Channel Flow Status	7

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category
Channel Alteration	16
Frequency of Riffles (or Bends)	10
Bank Stability (LEFT BANK)	6
Bank Stability (RIGHT BANK)	5
Vegetative Protection (LEFT BANK)	5
Vegetative Protection (RIGHT BANK)	6
Riparian Vegetative Zone Width (LEFT BANK)	8
Riparian Vegetative Zone Width (RIGHT BANK)	6

Field Photography

Image 1

Caption for Image 1

Looking downstream from upstream extent.

Image 2

Caption for Image 2

Looking upstream from upstream exten.

Image 3

Caption for Image 3

Looking upstream from downstream extent.

Image 4

Caption for Image 4
Looking downstream from downstream extent.

Report completed by:
Ben Green

Signature


Signature Date/Time
04/20/2021 06:01 PM GMT-04:00

Please use the upper-right menu to "Save as complete and exit" to place this finalized form in the upload queue.

Prince William Biological Monitoring Form

Stream Name	Dawkins Branch
Location	Manassas
River Basin	Potomac
Investigators	Ben Green and Christina Davis
Date	04/21/2021
Time	05:55 PM GMT-04:00
Reason for Survey	PWC Biological Monitoring
Weather Conditions	Clear / Sunny

GPS location

RIPARIAN VEGETATION
(18 meter buffer)

Dominant Type	Shrubs

INSTREAM FEATURES

Est. Stream Width (ft)	16.0
Est. Stream Depth (ft)	1.0
Surface Velocity (ft/sec at thalweg)	0.2
Canopy Cover	Partly open
High Water Mark (ft)	4.0
Channelized	○ Yes ◉ No
Dam Present	○ Yes ◉ No
Proporation of Reach by Stream Morphology Types	
Riffle (%)	40
Run (%)	50
Pool (%)	10

AQUATIC VEGETATION

Dominant Type	Attached Algae
Portion of reach with aquatic veg	60

WATER QUALITY

Temperature	66.4
Specific Conductance	.84 mS/cm
Dissolved Oxygen	8.64 mg/L
pH	8.98
Turbidity	3.09
WQ Instrument Used	YSI Pro Plus
Water Odors	☑ Normal / None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other

Water Surface Oils	
	☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other

Inorganic Substrate Components
(should add up to 100%)

Substrate Type	Diameter	% Composition in sampling reach
Bedrock		5.0
Boulder	**>256 mm** (10")	5.0
Cobble	**64 - 256 mm** (2.5" - 10")	10.0
Gravel	**2 - 64 mm** (0.1" - 2.5")	15.0
Sand	**0.06 - 2 mm** (gritty)	20.0
Silt	**0.004 - 0.06 mm**	25.0
Clay	**< 0.004 mm** (slick)	20.0

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category
Epifaunal Substrate / Available Cover	8
Embeddedness	6
Velocity / Depth Regime	9
Sediment Deposition	9
Channel Flow Status	9

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category
Channel Alteration	7
Frequency of Riffles (or Bends)	8
Bank Stability (LEFT BANK)	8
Bank Stability (RIGHT BANK)	7
Vegetative Protection (LEFT BANK)	8
Vegetative Protection (RIGHT BANK)	6
Riparian Vegetative Zone Width (LEFT BANK)	9
Riparian Vegetative Zone Width (RIGHT BANK)	9

Field Photography

Image 1

Caption for Image 1

Looking upstream, apparent tree loss.

Image 2

Caption for Image 2

Looking downstream from downstream extent. Increasing number of trees falling into stream.

Image 3

Image 4

Report completed by:
Ben Green

Signature


Signature Date/Time
04/21/2021 03:17 PM GMT-04:00

Please use the upper-right menu to "Save as complete and exit" to place this finalized form in the upload queue.

Prince William Biological Monitoring Form

Stream Name	Neabsco
Location	
River Basin	Potomac
Investigators	Ben Green and Christina Davis
Date	04/21/2021
Time	11:31 AM GMT-04:00
Reason for Survey	PWC Biological Monitoring
Weather Conditions	% Cloud Cover

GPS location

RIPARIAN VEGETATION
(18 meter buffer)

Dominant Type	Trees

INSTREAM FEATURES

Est. Stream Width (ft)	23.0
Est. Stream Depth (ft)	0.7
Surface Velocity (ft/sec at thalweg)	1.1
Canopy Cover	Partly shaded
High Water Mark (ft)	5.0
Channelized	○ Yes ◉ No
Dam Present	○ Yes ◉ No
Proporation of Reach by Stream Morphology Types	
Riffle (%)	60
Run (%)	25
Pool (%)	15

AQUATIC VEGETATION

Dominant Type	Attached Algae
Portion of reach with aquatic veg	45

WATER QUALITY

Temperature	14.7
Specific Conductance	0.189 mS/cm
Dissolved Oxygen	10.89 mg/L
pH	7.61
Turbidity	.62 NTU
WQ Instrument Used	YSI Pro Plus
Water Odors	☑ Normal / None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other

Water Surface Oils	
	☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other

Inorganic Substrate Components
(should add up to 100%)

Substrate Type	Diameter	% Composition in sampling reach
Bedrock		15.0
Boulder	**>256 mm** (10")	15.0
Cobble	**64 - 256 mm** (2.5" - 10")	25.0
Gravel	**2 - 64 mm** (0.1" - 2.5")	10.0
Sand	**0.06 - 2 mm** (gritty)	30.0
Silt	**0.004 - 0.06 mm**	2.5
Clay	**< 0.004 mm** (slick)	2.5

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category
Epifaunal Substrate / Available Cover	12
Embeddedness	11
Velocity / Depth Regime	13
Sediment Deposition	12
Channel Flow Status	15

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category
Channel Alteration	7
Frequency of Riffles (or Bends)	12
Bank Stability (LEFT BANK)	4
Bank Stability (RIGHT BANK)	3
Vegetative Protection (LEFT BANK)	6
Vegetative Protection (RIGHT BANK)	5
Riparian Vegetative Zone Width (LEFT BANK)	7
Riparian Vegetative Zone Width (RIGHT BANK)	7

Field Photography

Image 1

Caption for Image 1

Looking upstream of the upstream extent of reach

Image 2

Caption for Image 2

Looking downstream of upstream extent of reach

Image 3

Caption for Image 3

Looking upstream from downstream extent of reach

Image 4

Caption for Image 4
Looking downstream from downstream extent of reach

Report completed by:
Christina Davis

Signature


Signature Date/Time
04/21/2021 01:37 PM GMT-04:00

Please use the upper-right menu to "Save as complete and exit" to place this finalized form in the upload queue.

Prince William Biological Monitoring Form

Stream Name	Little Bull Run
Location	
River Basin	Potomac
Investigators	Ben Green and Christina Davis
Date	04/22/2021
Time	12:13 PM GMT-04:00
Reason for Survey	PWC Biological Monitoring
Weather Conditions	% Cloud Cover

GPS location

RIPARIAN VEGETATION
(18 meter buffer)

Dominant Type	Shrubs

INSTREAM FEATURES

Est. Stream Width (ft)	30.0
Est. Stream Depth (ft)	0.6
Surface Velocity (ft/sec at thalweg)	0.85
Canopy Cover	Partly shaded
High Water Mark (ft)	2.5
Channelized	○ Yes ◉ No
Dam Present	○ Yes ◉ No
Proporation of Reach by Stream Morphology Types	
Riffle (%)	35
Run (%)	60
Pool (%)	5

AQUATIC VEGETATION

Dominant Type	Attached Algae
Portion of reach with aquatic veg	55

WATER QUALITY

Temperature	10.8
Specific Conductance	0.407 ms/cm
Dissolved Oxygen	12.55 mg/l
pH	10.19
Turbidity	.89
WQ Instrument Used	YSI Pro Plus
Water Odors	☑ Normal / None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other

Water Surface Oils	
	☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other

Inorganic Substrate Components
(should add up to 100%)

Substrate Type	Diameter	% Composition in sampling reach
Bedrock		10.0
Boulder	**>256 mm** (10")	5.0
Cobble	**64 - 256 mm** (2.5" - 10")	30.0
Gravel	**2 - 64 mm** (0.1" - 2.5")	25.0
Sand	**0.06 - 2 mm** (gritty)	15.0
Silt	**0.004 - 0.06 mm**	10.0
Clay	**< 0.004 mm** (slick)	5.0

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category
Epifaunal Substrate / Available Cover	13
Embeddedness	14
Velocity / Depth Regime	13
Sediment Deposition	11
Channel Flow Status	14

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category
Channel Alteration	16
Frequency of Riffles (or Bends)	7
Bank Stability (LEFT BANK)	7
Bank Stability (RIGHT BANK)	6
Vegetative Protection (LEFT BANK)	9
Vegetative Protection (RIGHT BANK)	9
Riparian Vegetative Zone Width (LEFT BANK)	9
Riparian Vegetative Zone Width (RIGHT BANK)	10

Field Photography

Image 1

Caption for Image 1

Looking upstream from downstream extent of reach. New fallen tree.

Image 2

Caption for Image 2

Looking downstream of downstream extent of reach.

Image 3

Caption for Image 3

Looking upstream from upstream extent of reach.

Image 4

Caption for Image 4
Looking downstream from upstream extent of reach.

Report completed by:
Christina Davis

Signature


Signature Date/Time
04/22/2021 12:13 PM GMT-04:00

Please use the upper-right menu to "Save as complete and exit" to place this finalized form in the upload queue.

APPENDIX B

WATER QUALITY LABORATORY RESULTS

Occoquan Watershed Monitoring Laboratory

9408 Prince William St.

Manassas, VA 20110

Tel: (703) 361-5606

Virginia Laboratory ID: 460026

Att: Mr. Benjamin Green

Wood www.woodplc.com

14424 Albemarle Point Place, Suite 115
Chantilly, VA 20151

Analysis Report

Report #20200527

Description	Sample Date	Sample ID	Result	Unit	Reporting Limit	Method	Analysis Date
Ammonia as N	10/5/2020	20-2951 PC20	0.02	mg/L	0.01	SM4500-NH3 G	10/20/2020
E. coli	10/5/2020	20-2951 PC20	90.8	MPN/100mL	1.80	SM9221 B(LT)E(EC)C MPN	10/13/2020
Nitrate+nitrite as N	10/5/2020	20-2951 PC20	0.47	mg/L	0.01	SM4500-NO3-F	10/20/2020
Orthophosphate as P	10/5/2020	20-2951 PC20	<0.01	mg/L	0.01	SM4500-P F	10/20/2020
Total Kjeldahl Nitrogen	10/5/2020	20-2951 PC20	<0.5	mg/L	0.50	Lachat 10-107-06-2D	5/20/2020
Total Phosphorus	10/5/2020	20-2951 PC20	0.02	mg/L	0.01	SM4500-P F, 4500-P J	11/6/2020
Total Suspended Solids	10/5/2020	20-2951 PC20	1.0	mg/L	<1.0	SM2540D	10/19/2020
Ammonia as N	10/5/2020	20-2952 PC60	0.02	mg/L	0.01	SM4500-NH3 G	10/20/2020
E. coli	10/5/2020	20-2952 PC60	57.1	MPN/100mL	1.80	SM9221 B(LT)E(EC)C MPN	10/13/2020
Nitrate+nitrite as N	10/5/2020	20-2952 PC60	0.40	mg/L	0.01	SM4500-NO3-F	10/20/2020
Orthophosphate as P	10/5/2020	20-2952 PC60	0.01	mg/L	0.01	SM4500-P F	10/20/2020
Total Kjeldahl Nitrogen	10/5/2020	20-2952 PC60	<0.5	mg/L	0.50	Lachat 10-107-06-2D	5/20/2020
Total Phosphorus	10/5/2020	20-2952 PC60	0.02	mg/L	0.01	SM4500-P F, 4500-P J	11/6/2020
Total Suspended Solids	10/5/2020	20-2952 PC60	2.4	mg/L	<1.0	SM2540D	10/19/2020
Ammonia as N	10/6/2020	20-2965 PC10	<0.01	mg/L	0.01	SM4500-NH3 G	10/20/2020
E. coli	10/6/2020	20-2965 PC10	79.8	MPN/100mL	1.80	SM9221 B(LT)E(EC)C MPN	10/13/2020
Nitrate+nitrite as N	10/6/2020	20-2965 PC10	0.63	mg/L	0.01	SM4500-NO3-F	10/20/2020
Orthophosphate as P	10/6/2020	20-2965 PC11	<0.01	mg/L	0.01	SM4500-P F	10/20/2020
Total Kjeldahl Nitrogen	10/6/2020	20-2965 PC12	<0.5	mg/L	0.50	Lachat 10-107-06-2D	5/20/2020
Total Phosphorus	10/6/2020	20-2965 PC13	0.01	mg/L	0.01	SM4500-P F, 4500-P J	11/6/2020
Total Suspended Solids	10/6/2020	20-2965 PC10	2.9	mg/L	<1.0	SM2540D	10/21/2020
Ammonia as N	10/6/2020	20-2966 PC30	0.02	mg/L	0.01	SM4500-NH3 G	10/20/2020
E. coli	10/6/2020	20-2966 PC30	43.5	MPN/100mL	1.80	SM9221 B(LT)E(EC)C MPN	10/13/2020
Nitrate+nitrite as N	10/6/2020	20-2966 PC30	0.03	mg/L	0.01	SM4500-NO3-F	10/20/2020
Orthophosphate as P	10/6/2020	20-2966 PC30	<0.01	mg/L	0.01	SM4500-P F	10/20/2020
Total Kjeldahl Nitrogen	10/6/2020	20-2966 PC30	0.58	mg/L	0.50	Lachat 10-107-06-2D	5/20/2020
Total Phosphorus	10/6/2020	20-2966 PC30	0.02	mg/L	0.01	SM4500-P F, 4500-P J	11/6/2020
Total Suspended Solids	10/6/2020	20-2966 PC30	5.0	mg/L	<1.0	SM2540D	10/21/2020
Ammonia as N	10/7/2020	20-2967 PC90	0.01	mg/L	0.01	SM4500-NH3 G	10/20/2020
E. coli	10/7/2020	20-2967 PC90	95.8	MPN/100mL	1.80	SM9221 B(LT)E(EC)C MPN	10/13/2020
Nitrate+nitrite as N	10/7/2020	20-2967 PC90	0.46	mg/L	0.01	SM4500-NO3-F	10/20/2020
Orthophosphate as P	10/7/2020	20-2967 PC90	0.01	mg/L	0.01	SM4500-P F	10/20/2020
Total Kjeldahl Nitrogen	10/7/2020	20-2967 PC90	<0.5	mg/L	0.50	Lachat 10-107-06-2D	5/20/2020
Total Phosphorus	10/7/2020	20-2967 PC90	0.03	mg/L	0.01	SM4500-P F, 4500-P J	11/6/2020
Total Suspended Solids	10/72020	20-2967 PC90	1.2	mg/L	<1.0	SM2540D	10/21/2020

Note: TKN samples were contracted to NELAC certified lab at Prince William County Service Authority

Prepared by:

Dongmei Alvi (Wang)

Laboratory Supervisor

Occoquan Watershed Monitoring Laboratory

9408 Prince William St.

Manassas, VA 20110

Tel: (703) 361-5606

Virginia Laboratory ID: 460026

Att: Mr. Benjamin Green

Wood www.woodplc.com

14424 Albemarle Point Place, Suite 115
Chantilly, VA 20151

Analysis Report

Report #20200527

Description	Blank	LCS, %R	Duplicate, RPD	Spike, %R	Matrix Spike, %R	Method	Analysis Date
Ammonia as N	0.007	102	n.a.	103	103	SM4500-NH3 G	5/20/2020
Accepted Range	-0.01~0.01	100±10		100±10	100±10		
E. coli	n.a.	n.a.	0.00	n.a.	n.a.	SM9221 B(LT)E(EC)C MPN	10/13/2020
Accepted Range							
Nitrate+nitrite as N	-0.004	97	n.a.	91	92	SM4500-NO3-F	5/20/2020
Accepted Range	-0.01~0.01	100±10		100±10	100±10		
Orthophosphate as P	0.007	96	n.a.	90	92	SM4500-P F	5/20/2020
Accepted Range	-0.01~0.01	100±10		100±10	100±10		
Total Kjeldahl Nitrogen	n.a.	n.a.	n.a.	n.a.	n.a.	Lachat 10-107-06-2D	5/20/2020
Accepted Range							
Total Phosphorus	0.007	107	3.4	108	n.a.	SM4500-P F, 4500-P J	11/6/2020
Accepted Range	-0.01~0.01	100±10	±10	100±10	100±10		
Total Suspended Solids	-0.10	n.a.	10	n.a.	n.a.	SM2540D	10/21/2020
Accepted Range	-1.0~1.0		±20				

n.a.= not applicable

Note: TKN samples were contracted to NELAC certified lab at Prince William County Service Authority

Prepared by:

Dongmei Alvi (Wang)

Laboratory Supervisor

Att: Mr. Benjamin Green

Wood www.woodplc.com

14424 Albemarle Point Place, Suite 115
Chantilly, VA 20151

Analysis Report

Report #20200527

Description	Sample Date	Sample ID	Result	Unit	Reporting Limit	Method	Analysis Date
Ammonia as N	4/20/2021	21-0810 PC20	0.12	mg/L	0.01	SM4500-NH3 G	4/26/2021
E. coli	4/20/2021	21-0810 PC20	488	MPN/100mL	1.80	SM9221 B(LT)E(EC)C MPN	4/21/2021
Nitrate+nitrite as N	4/20/2021	21-0810 PC20	0.49	mg/L	0.01	SM4500-NO3-F	4/26/2021
Orthophosphate as P	4/20/2021	21-0810 PC20	<0.01	mg/L	0.01	SM4500-P F	4/26/2021
Total Kjeldahl Nitrogen	4/20/2021	21-0810 PC20	0.66	mg/L	0.50	Lachat 10-107-06-2D	5/20/2021
Total Phosphorus	4/20/2021	21-0810 PC20	0.10	mg/L	0.01	SM4500-P F, 4500-P J	4/30/2021
Total Suspended Solids	4/20/2021	21-0810 PC20	33.6	mg/L	<1.0	SM2540D	4/26/2021
Ammonia as N	4/20/2021	21-0811 PC10	0.01	mg/L	0.01	SM4500-NH3 G	4/26/2021
E. coli	4/20/2021	21-0811 PC10	28.8	MPN/100mL	1.80	SM9221 B(LT)E(EC)C MPN	4/21/2021
Nitrate+nitrite as N	4/20/2021	21-0811 PC10	0.64	mg/L	0.01	SM4500-NO3-F	4/26/2021
Orthophosphate as P	4/20/2021	21-0811 PC10	<0.01	mg/L	0.01	SM4500-P F	4/26/2021
Total Kjeldahl Nitrogen	4/20/2021	21-0811 PC10	<0.5	mg/L	0.50	Lachat 10-107-06-2D	5/20/2021
Total Phosphorus	4/20/2021	21-0811 PC10	0.02	mg/L	0.01	SM4500-P F, 4500-P J	4/30/2021
Total Suspended Solids	4/20/2021	21-0811 PC10	<1.0	mg/L	<1.0	SM2540D	4/26/2021
Ammonia as N	4/21/2021	21-0814 PC60	0.02	mg/L	0.01	SM4500-NH3 G	4/26/2021
E. coli	4/21/2021	21-0814 PC60	51.2	MPN/100mL	1.80	SM9221 B(LT)E(EC)C MPN	4/22/2021
Nitrate+nitrite as N	4/21/2021	21-0814 PC60	0.22	mg/L	0.01	SM4500-NO3-F	4/26/2021
Orthophosphate as P	4/21/2021	21-0814 PC60	<0.01	mg/L	0.01	SM4500-P F	4/26/2021
Total Kjeldahl Nitrogen	4/21/2021	21-0814 PC60	<0.5	mg/L	0.50	Lachat 10-107-06-2D	5/20/2021
Total Phosphorus	4/21/2021	21-0814 PC60	0.03	mg/L	0.01	SM4500-P F, 4500-P J	4/30/2021
Total Suspended Solids	4/21/2021	21-0814 PC60	1.3	mg/L	<1.0	SM2540D	4/26/2021
Ammonia as N	4/21/2021	21-0815 PC30	0.02	mg/L	0.01	SM4500-NH3 G	4/26/2021
E. coli	4/21/2021	21-0815 PC30	548	MPN/100mL	1.80	SM9221 B(LT)E(EC)C MPN	4/22/2021
Nitrate+nitrite as N	4/21/2021	21-0815 PC30	0.02	mg/L	0.01	SM4500-NO3-F	4/26/2021
Orthophosphate as P	4/21/2021	21-0815 PC30	<0.01	mg/L	0.01	SM4500-P F	4/26/2021
Total Kjeldahl Nitrogen	4/21/2021	21-0815 PC30	0.58	mg/L	0.50	Lachat 10-107-06-2D	5/20/2021
Total Phosphorus	4/21/2021	21-0815 PC30	0.04	mg/L	0.01	SM4500-P F, 4500-P J	4/30/2021
Total Suspended Solids	4/21/2021	21-0815 PC30	3.4	mg/L	<1.0	SM2540D	4/26/2021
Ammonia as N	4/22/2021	21-0816 PC90	0.02	mg/L	0.01	SM4500-NH3 G	4/26/2021
E. coli	4/22/2021	21-0816 PC90	291	MPN/100mL	1.80	SM9221 B(LT)E(EC)C MPN	4/23/2021
Nitrate+nitrite as N	4/22/2021	21-0816 PC90	0.45	mg/L	0.01	SM4500-NO3-F	4/26/2021
Orthophosphate as P	4/22/2021	21-0816 PC90	0.01	mg/L	0.01	SM4500-P F	4/26/2021
Total Kjeldahl Nitrogen	4/22/2021	21-0816 PC90	<0.5	mg/L	0.50	Lachat 10-107-06-2D	5/20/2021
Total Phosphorus	4/22/2021	21-0816 PC90	0.03	mg/L	0.01	SM4500-P F, 4500-P J	4/30/2021
Total Suspended Solids	4/22/2021	21-0816 PC90	<1.0	mg/L	<1.0	SM2540D	4/26/2021

Note: TKN samples were contracted to NELAC certified lab at Prince William County Service Authority

Prepared by:

Dongmei Alvi (Wang)

Laboratory Supervisor

Occoquan Watershed Monitoring Laboratory

9408 Prince William St.

Manassas, VA 20110

Tel: (703) 361-5606

Virginia Laboratory ID: 460026

Att: Mr. Benjamin Green

Wood www.woodplc.com

14424 Albemarle Point Place, Suite 115
Chantilly, VA 20151

Analysis Report

Report #20200527

Description	Blank	LCS, %R	Duplicate, RPD	Spike, %R	Matrix Spike, %R	Method	Analysis Date
Ammonia as N	0.004	101	n.a.	96	104	SM4500-NH3 G	4/26/2021
Accepted Range	-0.01~0.01	100±10		100±10	100±10		
E. coli	n.a.	n.a.	0.00	n.a.	n.a.	SM9221 B(LT)E(EC)C MPN	4/21/2021
Accepted Range							
Nitrate+nitrite as N	-0.003	102	n.a.	98	98	SM4500-NO3-F	4/26/2021
Accepted Range	-0.01~0.01	100±10		100±10	100±10		
Orthophosphate as P	0.005	95	n.a.	90	92	SM4500-P F	4/26/2021
Accepted Range	-0.01~0.01	100±10		100±10	100±10		
Total Kjeldahl Nitrogen	n.a.	n.a.	n.a.	n.a.	n.a.	Lachat 10-107-06-2D	5/20/2020
Accepted Range							
Total Phosphorus	0.007	102	5.3	93	n.a.	SM4500-P F, 4500-P J	4/30/2021
Accepted Range	-0.01~0.01	100±10	±10	100±10	100±10		
Total Suspended Solids	-0.10	n.a.	0	n.a.	n.a.	SM2540D	4/26/2021
Accepted Range	-1.0~1.0		±20				

n.a.= not applicable

Note: TKN samples were contracted to NELAC certified lab at Prince William County Service Authority

Prepared by:

Dongmei Alvi (Wang)

Laboratory Supervisor

APPENDIX C

BENTHIC MACROINVERTEBRATE LABORATORY RESULTS

Wood Environment & Infrastructure Solutions, Inc.
404 SW 140th Terrace
Newberry, FL 32669
USA
T: 352.332.3318
www.woodplc.com

December 30, 2020

Mr. Benjamin Green
Wood Environment & Infrastructure Solutions, Inc.
14424 Albemarle Point Place, Suite 115
Chantilly, VA 20151

Subject: Prince William County Multiple Habitat Sampling Method Report
Wood Project No.: 151270003

Dear Mr. Green,

Wood Environment & Infrastructure Solutions, Inc. (Wood) (Gainesville office) completed benthic macroinvertebrate determinations for samples collected by Wood (Chantilly office), in October 2020. Wood (Gainesville office) received a total of five samples, one from each of the following locations: Cow Branch, Dawkins Branch, Little Bull Run, Neabsco Creek, and Purcell Branch. The results of the taxonomic analyses are presented in this report.

1.0 Multiple Habitat Sampling Method

1.1 Methods and Procedures

All samples collected by Wood, Chantilly office, in October 2020, were received by Wood's taxonomy laboratory at Newberry, Florida, where they were logged in and processed. The samples were sorted (i.e. organisms removed from debris) and organisms were identified and enumerated by a qualified taxonomist according to Section 7.2 of the U.S. Environmental Protection Agency's (USEPA) "*Rapid Bioassessment Protocol for Use in Wadeable Streams and Rivers*" (RBP) (Barbour *et al.*, 1999). Eight metrics were calculated including the Biotic Index, using guidance from Hilsenhoff (1987); the Percent Model Affinity (PMA), using guidance from Novak and Bode (1992); and the Virginia Stream Condition Index, using guidance from Virginia Department of Environmental Quality (2008). The scraper taxa and tolerance values were identified according to life history information from RBP (Barbour *et al.*, 1999); "*An Introduction to the Aquatic Insects of North America"* (Merritt *et al.*, 2008); "*Quality System Standard Operating Procedure for Macroinvertebrate Stream Surveys*" (Tennessee Department of Environment and Conservation, 2011); and "*Standard Operating Procedures for the Collection and Analysis of Benthic Macroinvertebrates*" (North Carolina Department of Environmental Quality, 2016). Quality assurance and quality control checks were conducted according to the EPA RBP on Laboratory Quality Control for Macroinvertebrate Taxonomic Identification (Barbour *et al.*, 1999). Quality assurance/quality control requirements for sample picking and taxonomic identification were conducted by a Wood Senior Taxonomist.

1.2 Benthic Macroinvertebrate Results

The benthic macroinvertebrate community data were used to generate metrics outlined in the Wood draft sampling plan. The Multiple Habitat Sampling assessments conducted for the five samples are summarized below in Table 1.

Table 1. Summary of Results of Multiple Habitat Samples

Metric	Site Locations				
	Cow Branch	Dawkins Branch	Little Bull Run	Neabsco Creek	Purcell Branch
Taxa Richness	10	31	31	23	24
Abundance	186	224	194	221	196
EPT Index	4	5	7	6	4
EPT/EPT + Chironomidae Ratio	0.97	0.62	0.62	0.86	0.81
Percent Dominant Taxon	70.97	33.93	20.10	23.08	33.67
Percent Chironomidae	2.69	23.66	23.71	10.86	14.29
Biotic Index (BI)	6.53	6.23	6.09	5.79	5.53
BI Category	Fairly Poor	Fair	Fair	Fair	Fair
Percent Model Affinity (PMA)	32.58	57.14	73.71	53.03	52.14
PMA Category	Severely Impacted	Slightly Impacted	Non-impacted	Slightly Impacted	Slightly Impacted
VSCI	35.57	48.77	62.62	57.12	55.25

Source: Wood, 2020 Prepared By: NFP Checked By: SEM

Taxonomic identifications and abundances of the benthic macroinvertebrates and metric calculations for each sample are included in Attachment 1. References are listed in Attachment 2.

Closing

We appreciate the opportunity to provide ecological services to you. Please do not hesitate to contact me if you have questions or need to request further information. You can reach me by phone at (352) 333-3634, or via email at shannon.mcmorrow@woodplc.com.

Sincerely
Wood Environment & Infrastructure Solutions, Inc.

Nichole Panico
Biologist
Direct Tel: + 1 352 333 3629
Fax: +1 352 333 6622
E-mail: Nichole.panico@woodplc.com

Shannon McMorrow, PWS
Senior Scientist
Mobile: +1 352 284 7094
Fax: +1 352 333 6622
Email: shannon.mcmorrow@woodplc.com

Attachments:
Attachment 1: Tabulated Data
Attachment 2: References

Attachment 1
Tabulated Data

Multiple Habitat Sampling
Samples Collected: October 2020
Project #: 151270003

Metrics	Site Locations				
	Cow Branch	**Dawkins Branch**	**Little Bull Run**	**Neabsco Creek**	**Purcell Branch**
Taxa Richness	10	31	31	23	24
Abundance	186	224	194	221	196
EPT Index	4	5	7	6	4
EPT/EPT + Chironomidae Ratio	0.97	0.62	0.62	0.86	0.81
Percent Dominant Taxon	70.97	33.93	20.10	23.08	33.67
Percent Chironomidae	2.69	23.66	23.71	10.86	14.29
Biotic Index (BI)	6.53	6.23	6.09	5.79	5.53
Biotic Index (BI) Category	Fairly Poor	Fair	Fair	Fair	Fair
Percent Model Affinity (PMA)	32.58	57.14	73.71	53.03	52.14
Percent Model Affinity (PMA) Category	Severely Impacted	Slightly Impacted	Non-impacted	Slightly Impacted	Slightly Impacted
VSCI	35.57	48.77	62.62	57.12	55.25

Created By: NFP
Checked By: SEM
Source: Wood, 2020

Cow Branch
Multiple Habitat Sampling
Sample Collected: 5-Oct-2020
Project #: 151270003

Results for Cow Branch

Phylum	Subphylum	Class	Subclass	Order	Family	Taxa	Raw Abundance	Ephemeroptera	Plecoptera	Trichoptera	Chironomidae	Dominant Taxon	Tolerance Values	Tolerance Values * Individual Abundance/Total Abundance	Coleoptera	Oligochaeta	Other	Plecoptera & Trichoptera (less Hydropsychidae)	Scrapers	Top 2 Dominant Taxa
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Nais pardalis*	2	0	0	0	0		8.7	0.09	0	2	0	0		
Annelida		Clitellata	Oligochaeta	Crassiclitellata		Lumbricina spp.	4	0	0	0	0		8	0.17	0	4	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	Baetidae spp.	19	19	0	0	0		6.1	0.62	0	0	0	0		19
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	*Baetis* spp.	12	12	0	0	0		4.51	0.29	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Cheumatopsyche* spp.	132	0	0	132	0	132	6.6	4.68	0	0	0	0		132
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Hydropsyche betteni/depravata/potomacensis*	12	0	0	12	0		7.9	0.51	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Chironomidae spp.	1	0	0	0	1		6.2	0.03	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Orthocladiinae spp.	1	0	0	0	1		5	0.03	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheotanytarsus* spp.	2	0	0	0	2		6.5	0.07	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheocricotopus* spp.	1	0	0	0	1		4.7	0.03	0	0	0	0		

Percent Model Affinity		Difference from Model %
Model % Ephemeroptera	40	23.33
Model % Plecoptera	5	5.00
Model % Trichoptera	10	67.42
Model % Chironomidae	20	17.31
Model % Coleoptera	10	10.00
Model % Oligochaeta	5	1.77
Model % Other	10	10.00
Sum of Difference		134.84
Sum of Difference * 0.5		67.42
Percent Model Affinity		32.58
Percent Model Affinity Category		Severely Impacted

Metric	Value	VSCI metrics	Adjusted VSCI metrics
Species Richness	10	45.45	45.45
Total Abundance	186		
% Ephemeroptera	16.67	27.19	27.19
% Plecoptera	0.00		
% Trichoptera	77.42		
% Chironomidae	2.69	97.31	97.31
% Dominant Taxon	70.97		
Biotic Index	6.53	51.05	51.05
% Coleoptera	0.00		
% Oligochaeta	3.23		
% Other	0.00		
% Plecoptera + Trichoptera (less Hydropsychidae)	0.00	0.00	0.00
% Scrapers	0.00	0.00	0.00
% Top 2 Dominant Taxa	81.18	27.19	27.19
EPT Index	4	36.36	36.36
EPT/EPT + Chironomidae Ratio	0.97		

Hilsenhoff Biotic Index Category	Fairly Poor

Final VSCI score	35.57

Created By: NFP
Checked By: SEM
Source: Wood, 2020

Dawkins Branch
Multiple Habitat Sampling
Sample Collected: 6-Oct-2020
Project #: 151270003

Results for Dawkins Branch

Phylum	Subphylum	Class	Subclass	Order	Family	Taxa	Raw Abundance	Ephemeroptera	Plecoptera	Trichoptera	Chironomidae	Dominant Taxon	Tolerance Values	Tolerance Values * Individual Abundance/Total Abundance	Coleoptera	Oligochaeta	Other	Plecoptera & Trichoptera (less Hydropsychidae)	Scrapers	Top 2 Dominant Taxa
Platyhelminthes						Platyhelminthes spp.	15	0	0	0	0			0.00	0	0	15	0		
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	Tubificinae spp.	5	0	0	0	0		9.5	0.21	0	5	0	0		
Annelida		Clitellata	Oligochaeta	Crassiclitellata		Lumbricina spp.	2	0	0	0	0		8	0.07	0	2	0	0		
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Ancylidae	Ancylidae spp.	1	0	0	0	0		7	0.03	0	0	1	0	1	
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Physidae	*Physa acuta*	1	0	0	0	0		8.84	0.04	0	0	1	0	1	
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Planorbidae	*Menetus dilatatus*	1	0	0	0	0		7.6	0.03	0	0	1	0	1	
Mollusca		Bivalvia	Autobranchia	Venerida	Cyrenidae	*Corbicula* spp.	10	0	0	0	0		6.12	0.27	0	0	10	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Caenidae	*Caenis* spp.	6	6	0	0	0		6.8	0.18	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	Baetidae spp.	3	3	0	0	0		6.1	0.08	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Coenagrionidae	Coenagrionidae spp.	1	0	0	0	0		6.1	0.03	0	0	1	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Coenagrionidae	*Argia* spp.	2	0	0	0	0		8.3	0.07	0	0	2	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Coenagrionidae	*Argia fumipennis*	4	0	0	0	0		8.17	0.15	0	0	4	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Coenagrionidae	*Enallagma* spp.	3	0	0	0	0		8.5	0.11	0	0	3	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Cheumatopsyche* spp.	76	0	0	76	0	76	6.6	2.24	0	0	0	0		76
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Hydropsyche betteni/depravata/potomacensis*	1	0	0	1	0		7.9	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydroptilidae	*Hydroptila* spp.	2	0	0	2	0		6.5	0.06	0	0	0	2	2	
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Dubiraphia* spp.	3	0	0	0	0		5.5	0.07	3	0	0	0	3	
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Stenelmis* spp.	24	0	0	0	0		5.6	0.60	24	0	0	0	24	
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Hydrophilidae	*Berosus* spp.	1	0	0	0	0		8.8	0.04	1	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Hydrophilidae	*Enochrus* spp.	1	0	0	0	0		8.5	0.04	1	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum flavum*	2	0	0	0	2		5.7	0.05	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum illinoense* group	14	0	0	0	14		8.7	0.54	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheotanytarsus* spp.	30	0	0	0	30		6.5	0.87	0	0	0	0		30
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Dicrotendipes* spp.	1	0	0	0	1		7.2	0.03	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cricotopus* spp.	5	0	0	0	5		5.78	0.13	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheocricotopus* spp.	1	0	0	0	1		4.7	0.02	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Ceratopogonidae	*Atrichopogon* spp.	1	0	0	0	0		6.1	0.03	0	0	1	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Tipulidae	Tipulidae spp.	1	0	0	0	0		4.9	0.02	0	0	1	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Simuliidae	*Simulium* spp.	4	0	0	0	0		4.9	0.09	0	0	4	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Psychodidae	Psychodidae spp.	1	0	0	0	0		6.9	0.03	0	0	1	0		
Nematoda						Nematoda spp.	2	0	0	0	0		5	0.04	0	0	2	0		

Percent Model Affinity		Difference from Model %
Model % Ephemeroptera	40	35.98
Model % Plecoptera	5	5.00
Model % Trichoptera	10	25.27
Model % Chironomidae	20	3.66
Model % Coleoptera	10	2.95
Model % Oligochaeta	5	1.88
Model % Other	10	10.98
Sum of Difference		85.71
Sum of Difference * 0.5		42.86
Percent Model Affinity		57.14
Percent Model Affinity Category		Slightly Impacted

Metric	Value	VSCI metrics	Adjusted VSCI metrics
Species Richness	31	140.91	100.00
Total Abundance	224		
% Ephemeroptera	4.02	6.55	6.55
% Plecoptera	0.00		
% Trichoptera	35.27		
% Chironomidae	23.66	76.34	76.34
% Dominant Taxon	33.93		
Biotic Index	6.23	55.45	55.45
% Coleoptera	12.95		
% Oligochaeta	3.13		
% Other	20.98		
% Plecoptera + Trichoptera (less Hydropsychidae)	0.89	2.51	2.51
% Scrapers	14.29	27.69	27.69
% Top 2 Dominant Taxa	47.32	76.13	76.13
EPT Index	5	45.45	45.45
EPT/EPT + Chironomidae Ratio	0.62		

Hilsenhoff Biotic Index Category	Fair

Final VSCI score	48.77

Created By: NFP
Checked By: SEM
Source: Wood, 2020

Little Bull Run
Multiple Habitat Sampling
Sample Collected: 7-Oct-2020
Project #: 151270003

Results for Little Bull Run

Phylum	Subphylum	Class	Subclass	Order	Family	Taxa	Raw Abundance	Ephemeroptera	Plecoptera	Trichoptera	Chironomidae	Dominant Taxon	Tolerance Values	Tolerance Values * Individual Abundance/Total Abundance	Coleoptera	Oligochaeta	Other	Plecoptera & Trichoptera (less Hydropsychidae)	Scrapers	Top 2 Dominant Taxa
Nemertea		Hoplonemertea		Monostilifera	Prostomatidae	*Prostoma* spp.	2	0	0	0	0		6.1	0.06	0	0	2	0		
Annelida		Clitellata	Oligochaeta	Crassiclitellata		Lumbricina spp.	2	0	0	0	0		8	0.08	0	2	0	0		
Mollusca		Gastropoda				Gastropoda spp.	1	0	0	0	0		7	0.04	0	0	1	0		
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Planorbidae	*Menetus dilatatus*	4	0	0	0	0		7.6	0.16	0	0	4	0	4	
Mollusca		Bivalvia	Autobranchia	Venerida	Cyrenidae	*Corbicula* spp.	1	0	0	0	0		6.12	0.03	0	0	1	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Caenidae	*Caenis* spp.	39	39	0	0	0	39	6.8	1.37	0	0	0	0		39
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	*Baetis* spp.	1	1	0	0	0		4.51	0.02	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Heptageniidae	Heptageniidae spp.	4	4	0	0	0		4	0.08	0	0	0	0	4	
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Coenagrionidae	Coenagrionidae spp.	3	0	0	0	0		6.1	0.09	0	0	3	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Coenagrionidae	*Argia* spp.	4	0	0	0	0		8.3	0.17	0	0	4	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Coenagrionidae	*Enallagma* spp.	4	0	0	0	0		8.5	0.18	0	0	4	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Leptoceridae	*Oecetis* spp.	1	0	0	1	0		5.1	0.03	0	0	0	1		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Cheumatopsyche* spp.	17	0	0	17	0		6.6	0.58	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Hydropsyche betteni/depravata/potomacensis*	2	0	0	2	0		7.9	0.08	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Philopotamidae	*Chimarra* spp.	10	0	0	10	0		3.3	0.17	0	0	0	10		
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Dubiraphia* spp.	11	0	0	0	0		5.5	0.31	11	0	0	0	11	
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Stenelmis* spp.	32	0	0	0	0		5.6	0.92	32	0	0	0	32	32
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Ancyronyx variegatus*	1	0	0	0	0		6.8	0.04	1	0	0	0	1	
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Psephenidae	*Psephenus* spp.	7	0	0	0	0		2.35	0.08	7	0	0	0	7	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera		Diptera spp.	1	0	0	0	0		7	0.04	0	0	1	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Orthocladiinae spp.	1	0	0	0	1		5	0.03	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus* spp.	2	0	0	0	2		6.6	0.07	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum flavum*	1	0	0	0	1		5.7	0.03	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum illinoense* group	1	0	0	0	1		8.7	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheotanytarsus* spp.	24	0	0	0	24		6.5	0.80	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Dicrotendipes* spp.	2	0	0	0	2		7.2	0.07	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Thienemanniella xena*	1	0	0	0	1		8	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Paratanytarsus dissimilis*	4	0	0	0	4		8.45	0.17	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cricotopus* or *Orthocladius*	9	0	0	0	9		4.86	0.23	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Endochironomus* spp.	1	0	0	0	1		7.79	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Heteroptera	Veliidae	*Microvelia* spp.	1	0	0	0	0		6	0.03	0	0	1	0		

Percent Model Affinity		Difference from Model %
Model % Ephemeroptera	40	17.32
Model % Plecoptera	5	5.00
Model % Trichoptera	10	5.46
Model % Chironomidae	20	3.71
Model % Coleoptera	10	16.29
Model % Oligochaeta	5	3.97
Model % Other	10	0.82
Sum of Difference		52.58
Sum of Difference * 0.5		26.29
Percent Model Affinity		73.71
Percent Model Affinity Category		Non-impacted

Metric	Value	VSCI metrics	Adjusted VSCI metrics
Species Richness	31	140.91	100.00
Total Abundance	194		
% Ephemeroptera	22.68	37.00	37.00
% Plecoptera	0.00		
% Trichoptera	15.46		
% Chironomidae	23.71	76.29	76.29
% Dominant Taxon	20.10		
Biotic Index	6.09	57.51	57.51
% Coleoptera	26.29		
% Oligochaeta	1.03		
% Other	10.82		
% Plecoptera + Trichoptera (less Hydropsychidae)	5.67	15.93	15.93
% Scrapers	30.41	58.94	58.94
% Top 2 Dominant Taxa	36.60	91.62	91.62
EPT Index	7	63.64	63.64
EPT/EPT + Chironomidae Ratio	0.62		

Hilsenhoff Biotic Index Category	Fair

Final VSCI score	62.62

Created By: NFP
Checked By: SEM
Source: Wood, 2020

Neabsco Creek
Multiple Habitat Sampling
Sample Collected: 5-Oct-2020
Project #: 151270003

Results for Neabsco Creek

Phylum	Subphylum	Class	Subclass	Order	Family	Taxa	Raw Abundance	Ephemeroptera	Plecoptera	Trichoptera	Chironomidae	Dominant Taxon	Tolerance Values	Tolerance Values * Individual Abundance/Total Abundance	Coleoptera	Oligochaeta	Other	Plecoptera & Trichoptera (less Hydropsychidae)	Scrapers	Top 2 Dominant Taxa
Nemertea		Hoplonemertea		Monostilifera	Prostomatidae	*Prostoma* spp.	1	0	0	0	0		6.1	0.03	0	0	1	0		
Mollusca		Gastropoda	Heterobranch	Hygrophila	Ancylidae	Ancylidae spp.	2	0	0	0	0		7	0.06	0	0	2	0	2	
Mollusca		Gastropoda	Heterobranch	Hygrophila	Planorbidae	*Menetus dilatatus*	1	0	0	0	0		7.6	0.03	0	0	1	0	1	
Mollusca		Bivalvia	Autobranchia	Sphaeriida	Sphaeriidae	Sphaeriidae spp.	1	0	0	0	0		6.6	0.03	0	0	1	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	Baetidae spp.	35	35	0	0	0		6.1	0.97	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	*Baetis* spp.	13	13	0	0	0		4.51	0.27	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Libellulidae	Libellulidae spp.	1	0	0	0	0		6.7	0.03	0	0	1	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	Hydropsychidae spp.	3	0	0	3	0		4	0.05	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Cheumatopsyche* spp.	51	0	0	51	0	51	6.6	1.52	0	0	0	0		51
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Hydropsyche betteni/depravata/potomacensis*	26	0	0	26	0		7.9	0.93	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Philopotamidae	*Chimarra* spp.	21	0	0	21	0		3.3	0.31	0	0	0	21		
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Stenelmis* spp.	1	0	0	0	0		5.6	0.03	1	0	0	0	1	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Tanypodinae spp.	1	0	0	0	1		7	0.03	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum flavum*	16	0	0	0	16		5.7	0.41	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheotanytarsus* spp.	1	0	0	0	1		6.5	0.03	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cricotopus* spp.	1	0	0	0	1		5.78	0.03	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Orthocladius* spp.	2	0	0	0	2		4.4	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Thienemanniella xena*	1	0	0	0	1		8	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Paratanytarsus* spp.	1	0	0	0	1		8	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tvetenia* spp.	1	0	0	0	1		3.65	0.02	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Dolichopodidae	Dolichopodidae spp.	1	0	0	0	0		7	0.03	0	0	1	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Simuliidae	*Simulium* spp.	39	0	0	0	0		4.9	0.86	0	0	39	0		39
Arthropoda	Hexapoda	Insecta	Pterygota	Lepidoptera	Crambidae	Crambidae spp.	1	0	0	0	0			0.00	0	0	0	1	0		

Percent Model Affinity		Difference from Model %
Model % Ephemeroptera	40	18.28
Model % Plecoptera	5	5.00
Model % Trichoptera	10	35.70
Model % Chironomidae	20	9.14
Model % Coleoptera	10	9.55
Model % Oligochaeta	5	5.00
Model % Other	10	11.27
Sum of Difference		93.94
Sum of Difference * 0.5		46.97
Percent Model Affinity		53.03
Percent Model Affinity Category		Slightly Impacted

Metric	Value	VSCI metrics	Adjusted VSCI metrics
Species Richness	23	104.55	100.00
Total Abundance	221		
% Ephemeroptera	21.72	35.43	35.43
% Plecoptera	0.00		
% Trichoptera	45.70		
% Chironomidae	10.86	89.14	89.14
% Dominant Taxon	23.08		
Biotic Index	5.79	61.95	61.95
% Coleoptera	0.45		
% Oligochaeta	0.00		
% Other	21.27		
% Plecoptera + Trichoptera (less Hydropsychidae)	9.50	26.69	26.69
% Scrapers	1.81	3.51	3.51
% Top 2 Dominant Taxa	40.72	85.66	85.66
EPT Index	6	54.55	54.55
EPT/EPT + Chironomidae Ratio	0.86		

Hilsenhoff Biotic Index Category	Fair

Final VSCI score	57.12

Created By: NFP
Checked By: SEM
Source: Wood, 2020

Purcell Branch
Multiple Habitat Sampling
Sample Collected: 6-Oct-2020
Project #: 151270003

Results for Purcell Branch

Phylum	Subphylum	Class	Subclass	Order	Family	Taxa	Raw Abundance	Ephemeroptera	Plecoptera	Trichoptera	Chironomidae	Dominant Taxon	Tolerance Values	Tolerance Values * Individual Abundance/Total Abundance	Coleoptera	Oligochaeta	Other	Plecoptera & Trichoptera (less Hydropsychidae)	Scrapers	Top 2 Dominant Taxa
Annelida		Clitellata	Oligochaeta	Crassiclitellata		Lumbricina spp.	2	0	0	0	0		8	0.08	0	2	0	0		
Mollusca		Gastropoda	Heterobranch	Hygrophila	Physidae	*Physa acuta*	1	0	0	0	0		8.84	0.05	0	0	1	0	1	
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	Baetidae spp.	15	15	0	0	0		6.1	0.47	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	*Baetis* spp.	1	1	0	0	0		4.51	0.02	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Cheumatopsyche* spp.	66	0	0	66	0	66	6.6	2.22	0	0	0	0		66
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Philopotamidae	*Chimarra* spp.	39	0	0	39	0		3.3	0.66	0	0	0	39		39
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Stenelmis* spp.	17	0	0	0	0		5.6	0.49	17	0	0	0	17	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Chironomidae spp.	3	0	0	0	3		6.2	0.09	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Orthocladiinae spp.	1	0	0	0	1		5	0.03	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum flavum*	11	0	0	0	11		5.7	0.32	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum illinoense* group	1	0	0	0	1		8.7	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheotanytarsus* spp.	1	0	0	0	1		6.5	0.03	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Ablabesmyia mallochi*	1	0	0	0	1		7.4	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cricotopus* spp.	2	0	0	0	2		5.78	0.06	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Orthocladius* spp.	2	0	0	0	2		4.4	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Paratanytarsus dissimilis*	1	0	0	0	1		8.45	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Thienemannimyia* grp. sp.	1	0	0	0	1		8.4	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Parametriocnemus* spp.	2	0	0	0	2		3.9	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheocricotopus* spp.	1	0	0	0	1		4.7	0.02	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Endochironomus* spp.	1	0	0	0	1		7.79	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Simuliidae	*Simulium* spp.	24	0	0	0	0		4.9	0.60	0	0	24	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Empididae	*Hemerodromia* spp.	1	0	0	0	0		7.57	0.04	0	0	1	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Heteroptera	Veliidae	*Microvelia* spp.	1	0	0	0	0		6	0.03	0	0	1	0		
Nematoda						*Nematoda* spp.	1	0	0	0	0		5	0.03	0	0	1	0		

Percent Model Affinity		Difference from Model %
Model % Ephemeroptera	40	31.84
Model % Plecoptera	5	5.00
Model % Trichoptera	10	43.57
Model % Chironomidae	20	5.71
Model % Coleoptera	10	1.33
Model % Oligochaeta	5	3.98
Model % Other	10	4.29
Sum of Difference		95.71
Sum of Difference * 0.5		47.86
Percent Model Affinity		52.14
Percent Model Affinity Category		Slightly Impacted

Metric	Value	VSCI metrics	Adjusted VSCI metrics
Species Richness	24	109.09	100.00
Total Abundance	196		
% Ephemeroptera	8.16	13.32	13.32
% Plecoptera	0.00		
% Trichoptera	53.57		
% Chironomidae	14.29	85.71	85.71
% Dominant Taxon	33.67		
Biotic Index	5.53	65.81	65.81
% Coleoptera	8.67		
% Oligochaeta	1.02		
% Other	14.29		
% Plecoptera + Trichoptera (less Hydropsychidae)	19.90	55.89	55.89
% Scrapers	9.18	17.80	17.80
% Top 2 Dominant Taxa	53.57	67.09	67.09
EPT Index	4	36.36	36.36
EPT/EPT + Chironomidae Ratio	0.81		

Hilsenhoff Biotic Index Category	Fair

Final VSCI score	55.25

Created By: NFP
Checked By: SEM
Source: Wood, 2020

Attachment 2
References

Attachment 2 - References

Barbour, M. T., J. Gerritsen, B. D. Snyder and J. B. Stribling. 1999. Rapid bioassessment protocols for use in wadeable streams and rivers: periphyton, benthic macroinvertebrates, and fish. 2nd ed. EPA 841-B-99-002. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.

Hilsenhoff, W. L. 1987. An improved biotic index of organic stream pollution. The Great Lakes Entomologist 20 (1): 31-39.

Merritt, R. W., K. W. Cummings and M. B. Berg. 2008. An introduction to the aquatic insects of North America. 4th ed. Kendall Hunt Publishing Company, Dubuque, IA.

North Carolina Department of Environmental Quality. 2016. Standard operating procedures for the collection and analysis of benthic macroinvertebrates. Division of Water Resources. Raleigh, North Carolina. February 2016.

Novak, M. A. and R. W. Bode. 1992. Percent model affinity: a new measure of macroinvertebrate community composition. Journal of North American Benthological Society 11 (1): 80-85.

Tennessee Department of Environment and Conservation. 2011. Quality system standard operating procedure for macroinvertebrate stream surveys. Division of Water Pollution Control. Nashville, Tennessee.

Virginia Department of Environmental Quality. 2008. Biological monitoring program: quality assurance project plan for wadeable streams and rivers. Division of Water Quality, Office of Water Quality Monitoring and Assessment Programs, Richmond, VA.

Wood Environment & Infrastructure Solutions, Inc.
404 SW 140th Terrace
Newberry, FL 32669
USA
T: 352.332.3318
www.woodplc.com

July 30, 2021

Mr. Benjamin Green
Wood Environment & Infrastructure Solutions, Inc.
14424 Albemarle Point Place, Suite 115
Chantilly, VA 20151

Subject: Prince William County Multiple Habitat Sampling Method Report
Wood Project No.: 151270003.003

Dear Mr. Green,

Wood Environment & Infrastructure Solutions, Inc. (Wood) (Gainesville office) completed benthic macroinvertebrate determinations for samples collected by Wood (Chantilly office), in April 2021. Wood (Gainesville office) received a total of five samples, one from each of the following locations: Cow Branch, Dawkins Branch, Little Bull Run, Neabsco Creek, and Purcell Branch. The results of the taxonomic analyses are presented in this report.

1.0 Multiple Habitat Sampling Method

1.1 Methods and Procedures

All samples collected by Wood, Chantilly office, in April 2021, were received by Wood's taxonomy laboratory at Newberry, Florida, where they were logged in and processed. The samples were sorted (i.e. organisms removed from debris) and organisms were identified and enumerated by a qualified taxonomist according to Section 7.2 of the U.S. Environmental Protection Agency's (USEPA) "*Rapid Bioassessment Protocol for Use in Wadeable Streams and Rivers*" (RBP) (Barbour *et al.*, 1999). Eight metrics were calculated including the Biotic Index, using guidance from Hilsenhoff (1987); the Percent Model Affinity (PMA), using guidance from Novak and Bode (1992); and the Virginia Stream Condition Index, using guidance from Virginia Department of Environmental Quality (2008). The scraper taxa and tolerance values were identified according to life history information from RBP (Barbour *et al.*, 1999); "*An Introduction to the Aquatic Insects of North America"* (Merritt *et al.,* 2008); "*Quality System Standard Operating Procedure for Macroinvertebrate Stream Surveys*" (Tennessee Department of Environment and Conservation, 2011); and "*Standard Operating Procedures for the Collection and Analysis of Benthic Macroinvertebrates*" (North Carolina Department of Environmental Quality, 2016). Quality assurance and quality control checks were conducted according to the EPA RBP on Laboratory Quality Control for Macroinvertebrate Taxonomic Identification (Barbour *et al.*, 1999). Quality assurance/quality control requirements for sample picking and taxonomic identification were conducted by a Wood Senior Taxonomist.

1.2 Benthic Macroinvertebrate Results

The benthic macroinvertebrate community data were used to generate metrics outlined in the Wood draft sampling plan. The Multiple Habitat Sampling assessments conducted for the five samples are summarized below in Table 1.

Table 1. Summary of Results of Multiple Habitat Samples

Metric	Site Locations				
	Cow Branch	Dawkins Branch	Little Bull Run	Neabsco Creek	Purcell Branch
Taxa Richness	22	25	28	24	26
Abundance	181	186	208	205	210
EPT Index	2	3	3	4	5
EPT/EPT + Chironomidae Ratio	0.06	0.09	0.12	0.14	0.06
Percent Dominant Taxon	24.86	22.58	30.29	26.83	30.48
Percent Chironomidae	88.40	48.92	65.38	80.00	84.29
Biotic Index (BI)	5.21	5.78	5.88	5.60	5.01
BI Category	Good	Fair	Fair	Fair	Good
Percent Model Affinity (PMA)	31.60	44.84	49.13	39.76	35.71
PMA Category	Severely Impacted	Moderately Impacted	Moderately Impacted	Moderately Impacted	Moderately Impacted
VSCI	34.71	45.91	45.24	38.48	41.08

Source: Wood, 2021 Prepared By: JSD Checked By: SEM

Taxonomic identifications and abundances of the benthic macroinvertebrates and metric calculations for each sample are included in Attachment 1. References are listed in Attachment 2.

Closing

We appreciate the opportunity to provide ecological services to you. Please do not hesitate to contact me if you have questions or need to request further information. You can reach me by phone at (352) 333-3634, or via email at shannon.mcmorrow@woodplc.com.

Sincerely
Wood Environment & Infrastructure Solutions, Inc.

Jennifer S. Davenport, M.Sc.
Senior Biologist, Taxonomist
Direct Tel: + 1 352 333 7618
Fax: +1 352 333 6622
E-mail: Jennifer.davenport@woodplc.com

Shannon McMorrow, PWS
Senior Scientist
Mobile: +1 352 284 7094
Fax: +1 352 333 6622
Email: shannon.mcmorrow@woodplc.com

Attachments:
Attachment 1: Tabulated Data
Attachment 2: References

Attachment 1
Tabulated Data

Multiple Habitat Sampling
Samples Collected: April 2021
Project #: 151270003.003

Metrics	Site Locations				
	Cow Branch	Dawkins Branch	Little Bull Run	Neabsco Creek	Purcell Branch
Taxa Richness	22	25	28	24	26
Abundance	181	186	208	205	210
EPT Index	2	3	3	4	5
EPT/EPT + Chironomidae Ratio	0.06	0.09	0.12	0.14	0.06
Percent Dominant Taxon	24.86	22.58	30.29	26.83	30.48
Percent Chironomidae	88.40	48.92	65.38	80.00	84.29
Biotic Index (BI)	5.21	5.78	5.88	5.60	5.01
Biotic Index (BI) Category	Good	Fair	Fair	Fair	Good
Percent Model Affinity (PMA)	31.60	44.84	49.13	39.76	35.71
Percent Model Affinity (PMA) Category	Severely Impacted	Moderately Impacted	Moderately Impacted	Moderately Impacted	Moderately Impacted
VSCI	34.71	45.91	45.24	38.48	41.08

Created By: JSD
Checked By: SEM
Source: Wood, 2021

Cow Branch
Multiple Habitat Sampling
Sample Collected: 20-Apr-2021
Project #: 151270003.003

Results for Cow Branch

Phylum	Subphylum	Class	Subclass	Order	Family	Taxa	Raw Abundance	Ephemeroptera	Plecoptera	Trichoptera	Chironomidae	Dominant Taxon	Tolerance Values	Tolerance Values * Individual Abundance/Total Abundance	Coleoptera	Oligochaeta	Other	Plecoptera & Trichoptera (less Hydropsychidae)	Scrapers	Top 2 Dominant Taxa
Annelida		Clitellata	Oligochaeta	Tubificida		Tubificinae spp.	1	0	0	0	0		9.5	0.05	0	1	0	0		
Annelida		Clitellata	Oligochaeta	Crassiclitellata	Sparganophilidae	*Sparganophilus* spp.	5	0	0	0	0			0.00	0	5	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Cheumatopsyche* spp.	4	0	0	4	0		6.6	0.15	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Hydropsyche betteni/depravata/potomacensis*	6	0	0	6	0		7.9	0.26	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Stenelmis* spp.	2	0	0	0	0		5.6	0.06	2	0	0	0	2	
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Psephenidae	*Psephenus* spp.	1	0	0	0	0		2.35	0.01	1	0	0	0	1	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Orthocladiinae spp.	5	0	0	0	5		5	0.14	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Chironomus* spp.	1	0	0	0	1		9.3	0.05	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum halterale* group	3	0	0	0	3		7.4	0.12	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum scalaenum* group	4	0	0	0	4		8.5	0.19	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Glyptotendipes* spp.	1	0	0	0	1		8.6	0.05	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cricotopus* spp.	45	0	0	0	45	45	5.78	1.44	0	0	0	0		45
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Corynoneura* spp.	1	0	0	0	1		5.7	0.03	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Larsia* spp.	1	0	0	0	1		6.5	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Orthocladius* spp.	35	0	0	0	35		4.4	0.85	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Thienemanniella* spp.	1	0	0	0	1		8	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Thienemanniella xena*	2	0	0	0	2		8	0.09	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Parametriocnemus* spp.	2	0	0	0	2		3.9	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheocricotopus* spp.	15	0	0	0	15		4.7	0.39	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Krenosmitta* spp.	1	0	0	0	1		0	0.00	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cricotopus* or *Orthocladius*	43	0	0	0	43		4.86	1.15	0	0	0	0		43
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Simuliidae	*Simulium* spp.	2	0	0	0	0		4.9	0.05	0	0	2	0		

Percent Model Affinity		Difference from Model %
Model % Ephemeroptera	40	40.00
Model % Plecoptera	5	5.00
Model % Trichoptera	10	4.48
Model % Chironomidae	20	68.40
Model % Coleoptera	10	8.34
Model % Oligochaeta	5	1.69
Model % Other	10	8.90
Sum of Difference		136.80
Sum of Difference * 0.5		68.40
Percent Model Affinity		31.60
Percent Model Affinity Category		Severely Impacted

Metric	Value	VSCI metrics	Adjusted VSCI metrics
Species Richness	22	100.00	100.00
Total Abundance	181		
% Ephemeroptera	0.00	0.00	0.00
% Plecoptera	0.00		
% Trichoptera	5.52		
% Chironomidae	88.40	11.60	11.60
% Dominant Taxon	24.86		
Biotic Index	5.21	70.42	70.42
% Coleoptera	1.66		
% Oligochaeta	3.31		
% Other	1.10		
% Plecoptera + Trichoptera (less Hydropsychidae)	0.00	0.00	0.00
% Scrapers	1.66	3.21	3.21
% Top 2 Dominant Taxa	48.62	74.25	74.25
EPT Index	2	18.18	18.18
EPT/EPT + Chironomidae Ratio	0.06		

Hilsenhoff Biotic Index Category	Good

Final VSCI score	34.71

Created By: JSD
Checked By: SEM
Source: Wood, 2021

Dawkins Branch
Multiple Habitat Sampling
Sample Collected: 21-Apr-2021
Project #: 151270003.003

Results for Dawkins Branch

Phylum	Subphylum	Class	Subclass	Order	Family	Taxa	Raw Abundance	Ephemeroptera	Plecoptera	Trichoptera	Chironomidae	Dominant Taxon	Tolerance Values	Tolerance Values * Individual Abundance/Total Abundance	Coleoptera	Oligochaeta	Other	Plecoptera & Trichoptera (less Hydropsychidae)	Scrapers	Top 2 Dominant Taxa
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Physidae	*Physa* spp.	1	0	0	0	0		8.84	0.05	0	0	1	0	1	
Mollusca		Bivalvia				Bivalvia spp.	1	0	0	0	0			0.00	0	0	1	0		
Mollusca		Bivalvia	Autobranchia	Venerida	Cyrenidae	*Corbicula* spp.	1	0	0	0	0		6.12	0.03	0	0	1	0		
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Decapoda	Cambaridae	Cambaridae spp.	1	0	0	0	0		7.5	0.04	0	0	1	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Caenidae	*Caenis* spp.	2	2	0	0	0		6.8	0.07	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Caenidae	*Caenis diminuta*	6	6	0	0	0		6.8	0.22	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Coenagrionidae	*Argia* spp.	1	0	0	0	0		8.3	0.04	0	0	1	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Cheumatopsyche* spp.	1	0	0	1	0		6.6	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Dubiraphia* spp.	1	0	0	0	0		5.5	0.03	1	0	0	0	1	
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Stenelmis* spp.	22	0	0	0	0		5.6	0.66	22	0	0	0	22	
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Hydrophilidae	*Berosus* spp.	2	0	0	0	0		8.8	0.09	2	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Haliplidae	*Peltodytes* spp.	1	0	0	0	0		8.4	0.05	1	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Chironomidae spp.	1	0	0	0	1		6.2	0.03	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Orthocladiinae spp.	13	0	0	0	13		5	0.35	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus* spp.	1	0	0	0	1		6.6	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum flavum*	18	0	0	0	18		5.7	0.55	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum illinoense* group	4	0	0	0	4		8.7	0.19	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheotanytarsus* spp.	21	0	0	0	21		6.5	0.73	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cricotopus* spp.	22	0	0	0	22		5.78	0.68	0	0	0	0		22
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Orthocladius* spp.	7	0	0	0	7		4.4	0.17	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Paratanytarsus* spp.	1	0	0	0	1		8	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Parametriocnemus* spp.	3	0	0	0	3		3.9	0.06	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Ceratopogonidae	*Bezzia/Palpomyia* spp.	3	0	0	0	0		5.7	0.09	0	0	3	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Simuliidae	*Simulium* spp.	42	0	0	0	0	42	4.9	1.11	0	0	42	0		42
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Empididae	*Hemerodromia* spp.	10	0	0	0	0		7.57	0.41	0	0	10	0		

Percent Model Affinity		Difference from Model %
Model % Ephemeroptera	40	35.70
Model % Plecoptera	5	5.00
Model % Trichoptera	10	9.46
Model % Chironomidae	20	28.92
Model % Coleoptera	10	3.98
Model % Oligochaeta	5	5.00
Model % Other	10	22.26
Sum of Difference		110.32
Sum of Difference * 0.5		55.16
Percent Model Affinity		44.84
Percent Model Affinity Category		Moderately Impacted

Metric	Value	VSCI metrics	Adjusted VSCI metrics
Species Richness	25	113.64	100.00
Total Abundance	186		
% Ephemeroptera	4.30	7.02	7.02
% Plecoptera	0.00		
% Trichoptera	0.54		
% Chironomidae	48.92	51.08	51.08
% Dominant Taxon	22.58		
Biotic Index	5.78	62.11	62.11
% Coleoptera	13.98		
% Oligochaeta	0.00		
% Other	32.26		
% Plecoptera + Trichoptera (less Hydropsychidae)	0.00	0.00	0.00
% Scrapers	12.90	25.01	25.01
% Top 2 Dominant Taxa	34.41	94.79	94.79
EPT Index	3	27.27	27.27
EPT/EPT + Chironomidae Ratio	0.09		

Hilsenhoff Biotic Index Category	Fair

Final VSCI score	45.91

Created By: JSD
Checked By: SEM
Source: Wood, 2021

Little Bull Run
Multiple Habitat Sampling
Sample Collected: 22-Apr-2021
Project #: 151270003.003

Results for Little Bull Run

Phylum	Subphylum	Class	Subclass	Order	Family	Taxa	Raw Abundance	Ephemeroptera	Plecoptera	Trichoptera	Chironomidae	Dominant Taxon	Tolerance Values	Tolerance Values * Individual Abundance/Total Abundance	Coleoptera	Oligochaeta	Other	Plecoptera & Trichoptera (less Hydropsychidae)	Scrapers	Top 2 Dominant Taxa
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Physidae	*Physa* spp.	7	0	0	0	0		8.84	0.30	0	0	7	0	7	
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Planorbidae	Planorbidae spp.	1	0	0	0	0		6.3	0.03	0	0	1	0	1	
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Caenidae	*Caenis punctata*	14	14	0	0	0		6.8	0.46	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Coenagrionidae	*Enallagma* spp.	1	0	0	0	0		8.5	0.04	0	0	1	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Leptoceridae	*Triaenodes* spp.	1	0	0	1	0		4.1	0.02	0	0	0	1		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Philopotamidae	*Chimarra* spp.	4	0	0	4	0		3.3	0.06	0	0	0	4		
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Dubiraphia* spp.	2	0	0	0	0		5.5	0.05	2	0	0	0	2	
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Stenelmis* spp.	22	0	0	0	0		5.6	0.59	22	0	0	0	22	
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Macronychus glabratus*	1	0	0	0	0		4.7	0.02	1	0	0	0	1	
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Psephenidae	*Psephenus* spp.	6	0	0	0	0		2.35	0.07	6	0	0	0	6	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Chironomidae spp.	3	0	0	0	3		6.2	0.09	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Orthocladiinae spp.	5	0	0	0	5		5	0.12	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus* spp.	2	0	0	0	2		6.6	0.06	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum flavum*	7	0	0	0	7		5.7	0.19	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum illinoense* group	2	0	0	0	2		8.7	0.08	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Procladius* spp.	1	0	0	0	1		8.8	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheotanytarsus* spp.	63	0	0	0	63	63	6.5	1.97	0	0	0	0		63
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Pentaneura inconspicua*	1	0	0	0	1		5	0.02	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cricotopus* spp.	22	0	0	0	22		5.78	0.61	0	0	0	0		22
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Corynoneura* spp.	1	0	0	0	1		5.7	0.03	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Orthocladius* spp.	2	0	0	0	2		4.4	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Thienemanniella* spp.	1	0	0	0	1		8	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Thienemanniella xena*	1	0	0	0	1		8	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Thienemannimyia* grp. sp.	2	0	0	0	2		8.4	0.08	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Parametriocnemus* spp.	5	0	0	0	5		3.9	0.09	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheocricotopus* spp.	6	0	0	0	6		4.7	0.14	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cricotopus* or *Orthocladius*	12	0	0	0	12		4.86	0.28	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Simuliidae	*Simulium* spp.	13	0	0	0	0		4.9	0.31	0	0	13	0		

Percent Model Affinity		Difference from Model %
Model % Ephemeroptera	40	33.27
Model % Plecoptera	5	5.00
Model % Trichoptera	10	7.60
Model % Chironomidae	20	45.38
Model % Coleoptera	10	4.90
Model % Oligochaeta	5	5.00
Model % Other	10	0.58
Sum of Difference		101.73
Sum of Difference * 0.5		50.87
Percent Model Affinity		49.13
Percent Model Affinity Category		Moderately Impacted

Metric	Value	VSCI metrics	Adjusted VSCI metrics
Species Richness	28	127.27	100.00
Total Abundance	208		
% Ephemeroptera	6.73	10.98	10.98
% Plecoptera	0.00		
% Trichoptera	2.40		
% Chironomidae	65.38	34.62	34.62
% Dominant Taxon	30.29		
Biotic Index	5.88	60.54	60.54
% Coleoptera	14.90		
% Oligochaeta	0.00		
% Other	10.58		
% Plecoptera + Trichoptera (less Hydropsychidae)	2.40	6.75	6.75
% Scrapers	18.75	36.34	36.34
% Top 2 Dominant Taxa	40.87	85.45	85.45
EPT Index	3	27.27	27.27
EPT/EPT + Chironomidae Ratio	0.12		

Hilsenhoff Biotic Index Category	Fair

Final VSCI score	45.24

Created By: JSD
Checked By: SEM
Source: Wood, 2021

Neabsco Creek
Multiple Habitat Sampling
Sample Collected: 21-Apr-2021
Project #: 151270003.003

Results for Neabsco Creek

Phylum	Subphylum	Class	Subclass	Order	Family	Taxa	Raw Abundance	Ephemeroptera	Plecoptera	Trichoptera	Chironomidae	Dominant Taxon	Tolerance Values	Tolerance Values * Individual Abundance/Total Abundance	Coleoptera	Oligochaeta	Other	Plecoptera & Trichoptera (less Hydropsychidae)	Scrapers	Top 2 Dominant Taxa
Annelida		Clitellata	Oligochaeta	Enchytraeida	Enchytraeidae	Enchytraeidae spp.	1	0	0	0	0		9.84	0.05	0	1	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	Baetidae spp.	5	5	0	0	0		6.1	0.15	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Calopterygidae	*Calopteryx* spp.	1	0	0	0	0		7.5	0.04	0	0	1	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Cheumatopsyche* spp.	12	0	0	12	0		6.6	0.39	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Hydropsyche betteni/depravata/potomacensis*	7	0	0	7	0		7.9	0.27	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Philopotamidae	*Chimarra* spp.	2	0	0	2	0		3.3	0.03	0	0	0	2		
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Ancyronyx variegatus*	2	0	0	0	0		6.8	0.07	2	0	0	0	2	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Chironomidae spp.	3	0	0	0	3		6.2	0.09	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Orthocladiinae spp.	4	0	0	0	4		5	0.10	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum flavum*	39	0	0	0	39		5.7	1.08	0	0	0	0		39
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum illinoense* group	11	0	0	0	11		8.7	0.47	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheotanytarsus* spp.	6	0	0	0	6		6.5	0.19	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Ablabesmyia mallochi*	2	0	0	0	2		7.4	0.07	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cricotopus* spp.	9	0	0	0	9		5.78	0.25	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Orthocladius* spp.	10	0	0	0	10		4.4	0.21	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Thienemanniella* spp.	1	0	0	0	1		8	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Thienemannimyia* grp. sp.	1	0	0	0	1		8.4	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Parametriocnemus* spp.	13	0	0	0	13		3.9	0.25	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheocricotopus* spp.	4	0	0	0	4		4.7	0.09	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cricotopus* or *Orthocladius*	55	0	0	0	55	55	4.86	1.30	0	0	0	0		55
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Brillia* spp.	5	0	0	0	5		5.7	0.14	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Omisus* spp.	1	0	0	0	1		4	0.02	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Simuliidae	*Simulium* spp.	10	0	0	0	0		4.9	0.24	0	0	10	0		
Nematoda						Nematoda spp.	1	0	0	0	0		5	0.02	0	0	1	0		

Percent Model Affinity		Difference from Model %
Model % Ephemeroptera	40	37.56
Model % Plecoptera	5	5.00
Model % Trichoptera	10	0.24
Model % Chironomidae	20	60.00
Model % Coleoptera	10	9.02
Model % Oligochaeta	5	4.51
Model % Other	10	4.15
Sum of Difference		120.49
Sum of Difference * 0.5		60.24
Percent Model Affinity		39.76
Percent Model Affinity Category		Moderately Impacted

Metric	Value	VSCI metrics	Adjusted VSCI metrics
Species Richness	24	109.09	100.00
Total Abundance	205		
% Ephemeroptera	2.44	3.98	3.98
% Plecoptera	0.00		
% Trichoptera	10.24		
% Chironomidae	80.00	20.00	20.00
% Dominant Taxon	26.83		
Biotic Index	5.60	64.66	64.66
% Coleoptera	0.98		
% Oligochaeta	0.49		
% Other	5.85		
% Plecoptera + Trichoptera (less Hydropsychidae)	0.98	2.74	2.74
% Scrapers	0.98	1.89	1.89
% Top 2 Dominant Taxa	45.85	78.25	78.25
EPT Index	4	36.36	36.36
EPT/EPT + Chironomidae Ratio	0.14		

Hilsenhoff Biotic Index Category	Fair

Final VSCI score	38.48

Created By: JSD
Checked By: SEM
Source: Wood, 2021

Purcell Branch
Multiple Habitat Sampling
Sample Collected: 20-Apr-2021
Project #: 151270003.003

Results for Purcell Branch

Phylum	Subphylum	Class	Subclass	Order	Family	Taxa	Raw Abundance	Ephemeroptera	Plecoptera	Trichoptera	Chironomidae	Dominant Taxon	Tolerance Values	Tolerance Values * Individual Abundance/Total Abundance	Coleoptera	Oligochaeta	Other	Plecoptera & Trichoptera (less Hydropsychidae)	Scrapers	Top 2 Dominant Taxa
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Nais communis*	1	0	0	0	0		8.7	0.04	0	1	0	0		
Annelida		Clitellata	Oligochaeta	Crassiclitellata	Sparganophilidae	*Sparganophilus* spp.	1	0	0	0	0			0.00	0	1	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	Baetidae spp.	4	4	0	0	0		6.1	0.12	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	*Baetis intercalaris*	1	1	0	0	0		5	0.02	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Cheumatopsyche* spp.	4	0	0	4	0		6.6	0.13	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Hydropsyche betteni/depravata/potomacensis*	1	0	0	1	0		7.9	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Philopotamidae	*Chimarra* spp.	2	0	0	2	0		3.3	0.03	0	0	0	2		
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Stenelmis* spp.	12	0	0	0	0		5.6	0.32	12	0	0	0	12	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Chironomidae spp.	5	0	0	0	5		6.2	0.15	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Orthocladiinae spp.	1	0	0	0	1		5	0.02	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum scalaenum* group	2	0	0	0	2		8.5	0.08	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum flavum*	12	0	0	0	12		5.7	0.33	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum illinoense* group	1	0	0	0	1		8.7	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheotanytarsus* spp.	5	0	0	0	5		6.5	0.15	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Ablabesmyia mallochi*	1	0	0	0	1		7.4	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Ablabesmyia rhamphe* group	1	0	0	0	1		6.8	0.03	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Pentaneura inconspicua*	3	0	0	0	3		5	0.07	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cricotopus* spp.	18	0	0	0	18		5.78	0.50	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Corynoneura* spp.	1	0	0	0	1		5.7	0.03	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Orthocladius* spp.	27	0	0	0	27		4.4	0.57	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Thienemanniella xena*	1	0	0	0	1		8	0.04	0	0	0	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Parametriocnemus* spp.	35	0	0	0	35		3.9	0.65	0	0	0	0		35
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheocricotopus* spp.	64	0	0	0	64	64	4.7	1.43	0	0	0	0		64
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Tipulidae	*Tipula* spp.	2	0	0	0	0		7.5	0.07	0	0	2	0		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Simuliidae	*Simulium* spp.	4	0	0	0	0		4.9	0.09	0	0	4	0		
Nematoda						Nematoda spp.	1	0	0	0	0		5	0.02	0	0	1	0		

Percent Model Affinity		Difference from Model %
Model % Ephemeroptera	40	37.62
Model % Plecoptera	5	5.00
Model % Trichoptera	10	6.67
Model % Chironomidae	20	64.29
Model % Coleoptera	10	4.29
Model % Oligochaeta	5	4.05
Model % Other	10	6.67
Sum of Difference		128.57
Sum of Difference * 0.5		64.29
Percent Model Affinity		35.71
Percent Model Affinity Category		Moderately Impacted

Metric	Value	VSCI metrics	Adjusted VSCI metrics
Species Richness	26	118.18	100.00
Total Abundance	210		
% Ephemeroptera	2.38	3.88	3.88
% Plecoptera	0.00		
% Trichoptera	3.33		
% Chironomidae	84.29	15.71	15.71
% Dominant Taxon	30.48		
Biotic Index	5.01	73.43	73.43
% Coleoptera	5.71		
% Oligochaeta	0.95		
% Other	3.33		
% Plecoptera + Trichoptera (less Hydropsychidae)	0.95	2.68	2.68
% Scrapers	5.71	11.07	11.07
% Top 2 Dominant Taxa	47.14	76.38	76.38
EPT Index	5	45.45	45.45
EPT/EPT + Chironomidae Ratio	0.06		

Hilsenhoff Biotic Index Category	Good

Final VSCI score	41.08

Created By: JSD
Checked By: SEM
Source: Wood, 2021

Attachment 2
References

Attachment 2 - References

Barbour, M. T., J. Gerritsen, B. D. Snyder and J. B. Stribling. 1999. Rapid bioassessment protocols for use in wadeable streams and rivers: periphyton, benthic macroinvertebrates, and fish. 2nd ed. EPA 841-B-99-002. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.

Hilsenhoff, W. L. 1987. An improved biotic index of organic stream pollution. The Great Lakes Entomologist 20 (1): 31-39.

Merritt, R. W., K. W. Cummings and M. B. Berg. 2008. An introduction to the aquatic insects of North America. 4th ed. Kendall Hunt Publishing Company, Dubuque, IA.

North Carolina Department of Environmental Quality. 2016. Standard operating procedures for the collection and analysis of benthic macroinvertebrates. Division of Water Resources. Raleigh, North Carolina. February 2016.

Novak, M. A. and R. W. Bode. 1992. Percent model affinity: a new measure of macroinvertebrate community composition. Journal of North American Benthological Society 11 (1): 80-85.

Tennessee Department of Environment and Conservation. 2011. Quality system standard operating procedure for macroinvertebrate stream surveys. Division of Water Pollution Control. Nashville, Tennessee.

Virginia Department of Environmental Quality. 2008. Biological monitoring program: quality assurance project plan for wadeable streams and rivers. Division of Water Quality, Office of Water Quality Monitoring and Assessment Programs, Richmond, VA.

Sampling Plan
Benthic Macroinvertebrate Population and Water Quality Monitoring

Prepared for:

Prince William County Department of Public Works
Virginia

Prepared by:

Amec Foster Wheeler Environment & Infrastructure, Inc.
1075 Big Shanty Road NW, Suite 100
Kennesaw, Georgia 30144
(770) 421-3400

December 29, 2015

Project No. 151270003.0001

TABLE OF CONTENTS

Page

APPENDICES

LIST OF ACRONYMS

Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc.
BI	Biotic Index
cm	Centimeter
COC	Chain of Custody
CWA	Clean Water Act
CFR	Code of Federal Regulations
DO	Dissolved Oxygen
E. coli	*Escherichia coli*
EPT	Ephemeroptera/Plecoptera/Tricoptera
GPS	Global Positioning System
m	Meter
µm	Micrometer
MS4	Municipal Separate Storm Sewer System
PMA	Percent Model Affinity
RBP	USEPA Rapid Bioassessment Protocol
TKN	Total Kjeldahl Nitrogen
TSS	Total Suspended Solids
USEPA	United States Environmental Protection Agency
VDEQ	Virginia Department of Environmental Quality
VDGIF	Virginia Department of Game and Inland Fisheries
VSCI	Virginia Stream Condition Index
VSMP	Virginia Stormwater Management Program

1.0 INTRODUCTION

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) has prepared this sampling plan for compliance with the requirements of the Virginia Stormwater Management Program (VSMP) Permit, Municipal Separate Storm Sewer System (MS4) Permit Number VA0088595, issued by the Virginia Department of Environmental Quality (VDEQ) to Prince William County, Virginia. Section I.C.1 of the permit requires the continued implementation of a biological stream monitoring program that includes an assessment of the habitat and benthic macroinvertebrate community of select Prince William County streams. This sampling plan provides detailed descriptions of the sampling and analytical activities, as well as a technical approach and methods to scientifically evaluate natural conditions in Prince William County streams.

1.1 BACKGROUND

The United States Environmental Protection Agency (USEPA) delegated the authority to implement Section 402 of the Clean Water Act (CWA) to the Commonwealth of Virginia on March 31, 1975. Subsequently, Section 62.1-44.15:25 of the Virginia Stormwater Management Act authorizes VDEQ to issue, deny, amend, revoke, terminate, and enforce permits for the control of stormwater discharges from MS4s. The VSMP Permit Number VA0088595 authorizes point source discharges of stormwater runoff and certain non-stormwater discharges from the MS4 operated or owned by Prince William County. Part I.C of the VSMP permit outlines the monitoring requirements guided by Section 9VAC25-870-380 C.2.c.(4) of the VSMP regulations.

1.2 PURPOSE AND OBJECTIVES

The purpose of this sampling plan is to outline a plan of study that will be used to comply with the biological stream (Part I.C.1) and in-stream monitoring (Part I.C.2) requirements outlined in Prince William County's permit. The specific objectives are to gather sufficient data to evaluate, and subsequently demonstrate, upstream best management practices effectiveness.

2.0 SITE BACKGROUND AND SETTING

A MS4 is a system of conveyances which may include roads with drainage systems, municipal streets, catch basins, ditches, gutters, curbs, man-made channels, or storm drains. It is designed to collect or convey stormwater. The Prince William County MS4 is composed of numerous sites throughout Prince William County and contains over 11,000 miles of stormwater conveyance structures. The Prince William County MS4 discharges stormwater into 24 6th order hydrologic units within 9 major watersheds of the Potomac River Basin.

Prince William County is 338 square miles in area and is bordered by the Potomac River to the east, Fairfax and Loudoun Counties to the north, Fauquier and Stafford Counties to the south, and Fauquier County to the west. The majority of Prince William County is located in the Piedmont Province with the remainder in the Atlantic Coastal Plain province. The Piedmont Province is an eastward sloping plateau characterized by moderate to very steep slopes. The Atlantic Coastal Plain province has primarily flat terrain with elevations ranging from sea level to about 300 feet. The Fall Line is a transitional area where the softer, less consolidated rocks of the Coastal Plain to the east intersect with harder and more resistant metamorphic rocks of the Piedmont to the west, forming an area of ridges, waterfalls and rapids. Land use surrounding the proposed sampling locations includes residential, undeveloped, commercial and recreational areas.

3.0 SAMPLING, ANALYSIS, AND REPORTING

This section describes the activities for the biological stream monitoring and in-stream monitoring required by Part I.C.1 and I.C.2 of VSMP MS4 Permit VA0088595.

3.1 SAMPLING LOCATIONS

Benthic macroinvertebrate and surface water samples will be collected from five locations in Prince William County (Appendix A).

- Little Bull Run, Catharpin Road, Gainesville, Virginia;
- Dawkins Branch, Wellington Road, Manassas, Virginia;
- Purcell Branch, Purcell Road, Manassas, Virginia;
- Neabsco Creek, Delaney Road, Dale City, Virginia;
- Cow Branch, Mellott Road, Woodbridge, Virginia.

Benthic macroinvertebrate sampling reaches will be 100 meters (m) long, ideally located 100 m upstream from road or bridge crossings, and have no major tributaries discharging to the reach. Sample locations will be verified using a handheld global positioning system (GPS) unit. The limits will marked in the field using survey stakes, pins, or an appropriate alternative for subsequent sampling events. Sample stations and their limits will be re-verified each sampling event using a handheld GPS and will be re-marked, if necessary.

3.2 SAMPLING AND FIELD DATA COLLECTION ACTIVITIES

Sampling and field data collection activities will include physical and chemical data collection, habitat assessment and benthic macroinvertebrate sampling. Sampling will be conducted following the requirements of VSMP MS4 Permit VA0088595 and procedures outlined in the USEPA Rapid Bioassessment Protocol (RBP) (Barbour et al. 1999).

3.2.1 Physical and Chemical Data Collection

Physical and chemical data collection includes collection of in-situ water quality readings, collection of surface water samples, and documentation of stream characteristics. The equipment needed for collection of these data includes a YSI Model 556 water quality meter (or equivalent), Lamotte 2020 turbidity meter (or equivalent), sample collection bottles, gloves, RBP Physical Characterization and Water Quality Field Data Sheets (Appendix B), a camera, a 100-m tape measure, and a flow meter (such as the Marsh-McBirney Flo-Mate). Field activities, measurements and observations will be recorded in indelible ink in a bound field logbook.

3.2.1.1 Water Quality

Water quality readings and surface water samples will be collected prior to disturbance of the sample reach. In-stream monitoring is required to be conducted at 5 stream sites for the following parameters per VSMP MS4 Permit VA0088595:

- pH,
- dissolved oxygen (DO),
- temperature,
- total suspended solids (TSS),
- ammonia as nitrogen,
- nitrate plus nitrite nitrogen,
- total Kjeldahl nitrogen (TKN),
- total nitrogen (calculation),
- dissolved phosphorus,
- total phosphorus, and
- *Escherichia (E.) coli.*

The RBP Physical Characterization and Water Quality Field Data Sheet (Appendix B) requires the measurement of pH, DO, and temperature as well as the following parameters in addition to those required by VSMP MS4 Permit VA0088595:

- conductivity or specific conductance, and
- turbidity.

In-situ water quality data will be collected using a multiprobe water quality meter (YSI Model 556 or equivalent) and a handheld turbidity meter (Lamotte 2020 or equivalent). The multiprobe will be calibrated daily using standard solutions. A calibration form is included in Appendix B. Multiprobe readings are taken mid-channel and the unit should be allowed to stabilize before recording readings.

Grab surface water samples to be collected for laboratory analysis of TSS, ammonia, nitrate/nitrite, total Kjeldahl nitrogen (TKN), dissolved phosphorus, total phosphorus, and *E. coli* should be collected at mid-channel at the zero mark of the reach in an area with cross-sectional homogeneity, and well mixed water. The samples will be placed in coolers on ice and shipped overnight under chain-of-custody (COC) procedures to a qualified laboratory licensed in the Commonwealth of Virginia. Custody seals will be employed to check for tampering during shipment. Samples will be analyzed in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30-46, Accreditation for Commercial

Environmental Laboratories. Methods used for sample analysis will be those approved by Title 40 Code of Federal (CFR) Regulations Part 136 or alternative methods approved by USEPA.

3.2.1.2 Stream Characteristics

Upstream and downstream photographs will be taken at each sampling location to document conditions at the time of sampling. Physical characteristics of the streams will be recorded on the Physical Characterization and Water Quality Field Data Sheet of the RBP (Appendix B). This field sheet includes a description of the sample location, weather conditions, stream characterization, watershed features (surrounding land use, non-point source pollution, erosion), riparian vegetation, instream features (high water mark, width, depth, morphology, velocity, canopy cover, channelization, and dams), large woody debris, aquatic vegetation, water quality, and substrate (odors, oils, deposits, components). The high water mark to be recorded on the form is defined as the vertical distance from the bankfull margin of the stream bank to the peak overflow level, as indicated by debris hanging in riparian or floodplain vegetation and deposition of silt or soil.

An estimate of large woody debris in contact with the stream water is recorded on the Physical Characterization and Water Quality Field Data Sheet (Appendix B). Each woody debris formation with a surface area in the plane of the water surface that is greater than 0.25 square m is recorded on the stream reach drawing with the size of the woody debris estimated to the nearest 0.5 m. Only the portion in contact with the water is measured. Woody debris with a length or width less than 0.5 m is not counted. Root wads and logs/limbs in the water margin that are in contact with the water are arbitrarily given a width of 0.5 m. The length and width of each formation are multiplied and the resulting products are summed to give the aquatic habitat area influenced. This area is divided by the water surface area within the reach to obtain the large woody debris density.

3.2.2 Habitat Assessment

Habitat characteristics will be assessed using the Habitat Assessment Field Data Sheet (Appendix B), as specified in the RBP. The habitat assessment is performed along the 100-m reach from which the biological sampling is to be conducted. Care will be taken not to disturb the benthic macroinvertebrate sampling habitat during the habitat assessment.

The Habitat Assessment Field Data Sheet (Appendix B) of the RBP will be completed at each location. There are high gradient stream and low gradient stream versions of this form. The high gradient form is used for streams located in moderate to high gradient landscapes with coarse substrates. The low gradient form is used for streams that are located in low to moderate

gradient landscapes and have fine substrates. The appropriate data form for each sampling location will be determined during the site reconnaissance.

The habitat assessment incorporates features of the entire sampling reach. The form rates ten parameters as optimal, suboptimal, marginal, or poor. The parameters to be rated include epifaunal substrate, embeddedness or pool substrate characterization, velocity/depth regime or pool variability, sediment deposition, channel flow status, channel alteration, riffle frequency or channel sinuosity, bank stability, bank vegetative protection, and riparian zone. The Habitat Assessment Field Data Sheet should be completed by a team of 2 or more qualified personnel that come to a consensus on determination of quality.

3.2.3 Benthic Macroinvertebrate Sample Collection

Biological stream monitoring will be conducted twice per year, spring and fall, at 5 locations (Appendix B). The collection of wildlife for scientific and/or educational purposes in Virginia requires a scientific collection permit. Permit applications are available from the Virginia Department of Game and Inland Fisheries (VDGIF) and should be submitted at least 1 month prior to benthic macroinvertebrate sample collection. The permit requires annual renewal and submittal of annual catch report. VDGIF requests to be notified seven days in advance of each sampling event.

The multiple habitat sampling method will be used to characterize the benthic macroinvertebrate community, as outlined in USEPA RBP Section 7.2. This method is used to collect benthic macroinvertebrates from various substrate types and micro-habitats available within a 100-m sampling reach. Sampling begins at the downstream end of the reach and proceeds upstream. Habitats will be sampled be using a 0.3-m wide, 500-micrometer (µm) mesh, D-frame dip net. A total of 20 jabs or kicks are taken from all major habitat types in the reach. A jab consists of forcefully thrusting the net into a productive habitat for a linear distance of 0.5 m. A kick is accomplished by positioning the net and disturbing the substrate for a distance of 0.5 m upstream of the net.

Different types of habitat are to be sampled in approximate proportion to their representation of surface area of total macroinvertebrate habitat in the reach. The habitats sampled typically consist of loose cobble, fallen logs and tree limbs (snags), vegetated banks or undercut banks with exposed plant root material, sand and silt bottom materials, and submerged macrophytes. Other habitats that may be sampled include bedrock, large rocks, boards and litter; and detrital pockets of twigs and leaves. The RBP Benthic Macroinvertebrate Field Data Sheet (Appendix B) will be completed for each sample. This form includes a summary of the percent of each

habitat type present, the number of jabs or kicks taken in each habitat type, and field observations of aquatic biota.

The jab or kick method varies with habitat type. Shallow areas with coarse substrates are sampled by holding the bottom of the dip net against the substrate and kicking the substrate upstream of the net. Submerged woody debris can be sampled by kicking while placing a net downstream, jabbing directly into medium-sized woody debris or by rinsing the woody debris directly into the sieve bucket. Sample submerged undercut banks by jabbing into the habitat. Bump or jab the net along the bottom of plants in the stream to sample rooted macrophytes. Sand and soft sediment can be sampled by bumping the net along the surface of the substrate.

The 20 jabs and kicks will be composited into a 0.5-µm mesh sieve bucket to obtain a single homogenous sample. The net will be thoroughly back-washed into the sieve bucket every few jabs to facilitate collection of benthic macroinvertebrates that are not readily visible. Large debris will be rinsed and removed from the sieve bucket. Observable benthic macroinvertebrates will be collected from the net with forceps and placed in a labeled, sample container. Small debris will be transferred from the sieve bucket to the sample container. An index card indicating the sample identification, date, stream name, sample location, and sampler name will be placed inside each sample container. The index card will be printed in pencil to prevent dissolution of the label by preservative which will be added by the analytical laboratory.

Benthic macroinvertebrate samples will be placed on ice in coolers and shipped overnight under COC procedures to an accredited benthic macroinvertebrate laboratory. Custody seals will be employed to check for tampering during shipment.

3.2.4 Field Duplicates

Duplicates are collected in the field for surface water analytical samples and benthic macroinvertebrate samples at a frequency of 1 per ten samples. Since there are five sample locations, duplicates will be collected every other sampling event at one sample location. Surface water duplicates will be collected by filling extra grab sample bottles for each analysis. The benthic macroinvertebrate duplicates will be collected from a sample location with habitat available for 2 sets of 20 jabs within the sample reach.

3.3 BENTHIC MACROINVERTEBRATE SAMPLE SORTING

The laboratory will sort, mount, identify, enumerate, evaluate, and classify benthic macroinvertebrates. In addition to sorting and identification of benthic macroinvertebrates, the laboratory staff will perform appropriate benthic macroinvertebrate index calculations and will perform and interpret statistical analyses of the benthic macroinvertebrate database. The

laboratory staff will also utilize the habitat descriptions and evaluations and the field physical/chemical water data parameters collected by field sampling personnel in the evaluation of benthic macroinvertebrates in the context of their physical/chemical habitats at the sampling location.

Samples should be logged in on a designated form or logbook such as the RBP Benthic Macroinvertebrate Sample Log-In Sheet (Appendix C). The login should contain the information from the sample label and the number of containers. A minimum of 200 ± 20 percent organisms will be sorted from each benthic macroinvertebrate sample, using the Caton subsampler (Caton 1991). This subsampler consists of square metal frame with a gridded mesh bottom (screen), a plastic tray that accommodates the frame, a square metal "cookie cutter" (cutter), and a metal scoop. The sample will be emptied onto the 500-µm mesh screen and washed to remove fixative and excess detritus. The sample and screen will then be placed into the tray and enough water added to cover the sample contents. The contents will be evenly distributed over the screen, which will then be lifted from the tray of water so the sample contents will settle onto the screen, which is divided into 6 centimeter (cm) by 6 cm portions (grids). After randomly-selecting four grids and locating them using an alphanumeric designation and crosspieces on the top of the screen, the contents of each grid will be removed using a scoop and a brush. A minimum of four grids will be used to obtain the specified number. If the four grids do not contain 200 ± 20 percent organisms, enough grids will be examined to acquire this number. If the four grids contain too many organisms, they will be emptied into a smaller subsampler of similar design, and four grids randomly chosen for sorting.

The contents from each grid will be transferred to a container, and enough water will be added to keep the organisms moist during the sorting process. The selected subsample will then be taken to the sorting station. Small aliquots of sample will be put into a gridded Petri dish, and the organisms removed, counted and placed into patent lip vials containing 70 percent ethanol by major group (e.g., Trichoptera, Ephemeroptera, Bivalvia, etc.). Vials will be labeled with site, date, major group, number of individuals, and size of subsample. The RBP Benthic Macroinvertebrate Laboratory Bench Sheet (Appendix C) should be completed. The sorted and unsorted portions of the sample will be preserved separately using the original fixative.

Organisms will be identified to the generic/specific level, except for groups such as nematodes, and damaged or very small individuals. Organisms, except oligochaetes and chironomid larvae, will be identified using a stereomicroscope. Oligochaetes and chironomid larvae will be mounted on microscope slides using CMC mounting medium prior to identification using a compound microscope.

3.3.1 Quality Assurance/Quality Control Procedures

Subsequent to benthic macroinvertebrate sample sorting, the residue from a minimum of 10 percent of the samples will be rechecked to document that 95 percent of the total number of organisms has been removed. If there is an error of greater than 5 percent, then all of the samples completed by that particular sorter will be re-examined. The results from these checks will be recorded on the laboratory bench sheets (Appendix C) and will be presented with the other data in the report.

A voucher collection for Prince William County dataset, consisting of one to three specimens for each taxon will be prepared in accordance with the RBP. These slides will be labeled, kept separate from the remaining identifications, and noted on the laboratory bench sheets. A taxonomist not responsible from the original identifications should spot check samples according to the identifications on the bench sheet.

Data will be entered into a standardized Excel spreadsheet and double-checked for accuracy.

3.3.2 Benthic Macroinvertebrate Sample Results Evaluation

Metrics are biological attributes that represent elements of the structure and function of the bottom-dwelling macroinvertebrate assemblage. Metrics are specific measures of diversity, composition, and tolerance to pollution, and when combined into a multimetric index can integrate biological community characteristics and measure the overall response of the community to environmental stressors. Biological metrics include:

- **Taxa Richness –** The number of taxa reflects the health of the community through a measurement of the variety of taxa present. This measure generally increases with increasing water quality, habitat diversity, and/or habitat suitability.

- **Abundance –** The number of individual organisms found at each location. This measure can indicate whether an area is supporting a large, and when coupled with taxa richness, diverse community.

- **EPT Index (Ephemeroptera/Plecoptera/Tricoptera [mayflies/stoneflies/ caddisflies]) –** The EPT Index is the total number of distinct taxa within these three orders. This value summarizes taxa richness within the insect orders that are generally considered to be the most sensitive to pollution.

- **EPT/EPT + Chironomidae (midgeflies) Ratio –** A measure of abundance ratio of these two groupings indicates the balance of the benthic community diversity.

- **Percent Dominant Taxon –** This measure is the percentage occurrence of the most dominant taxon for each location. This measure is based on the assumption that dominance by a single taxon reflects an impaired community.

- **Percent Chironomidae --** This measure is the ratio of the abundance of Chironomidae to the total number of organisms found in a replicate. The response of this measure is to increase with increased perturbation.
- **Biotic Index (BI) –** The BI assigns tolerance values to individual taxa ranging from 0 to 10, with 0 being intolerant of pollution and 10 being very tolerant of pollution. The tolerance values assigned to the various taxa are taken from a variety of sources that best reflect the area sampled, such as Bode et al. (2002), Klemm et al. (1990), Hilsenhoff (1987), North Carolina Department of Environment, Health, and Natural Resources (2003), and the Tennessee Department of Environment and Conservation (2011). The formula for calculating the BI is:

  $BI = \sum [(tv)_i n_i/N]$
  where:
  $(tv)_i$ = the tolerance value of the i^{th} taxon,
  n_i = the abundance of the i^{th} taxon, and
  N = the total number of individuals in the sample.

- **Percent Model Affinity (PMA) –** The PMA expresses the sample as the percentage composition of seven major organism groups (Chironomidae, Trichoptera, Ephemeroptera, Plecoptera, Coleoptera [beetles], Oligochaeta [aquatic segmented worms], and others) and compares it to an ideal community composition derived from data from unpolluted streams (Bode et al., 2002). The degree of affinity of the sample percentage composition with that of the ideal is used to make a judgment about the water quality of the stream being studied.

Additional biological metrics will be used, if appropriate, such as:

- percentage oligochaetes + chironomids,
- percentage scrapers/scrapers + filterers,
- percentage clingers
- percentage EPT,
- percentage Oligochaeta,
- percentage Hydropsychidae/Trichoptera, and
- number of taxa in each tolerance category.

VDEQ has developed the Virginia Stream Condition Index (VSCI) (TetraTech 2003) that predicts the health of Virginia's non-coastal streams. The VSCI uses biological, physical, and chemical conditions from a least disturbed reference site within the region and has been statistically calibrated by VDEQ data. Eight VSCI metrics are combined in a multimetric approach to identify biological impairment as discussed in the VDEQ 2008 Quality Assurance Project Plan (VDEQ 2008). The eight biological measures used in the VSCI are: total taxa, EPT taxa, percent Ephemeroptera, percent Plecoptera-Trichoptera less Hydropsychidae, percent scrapers, percent Chironomidae, percent top 2 dominant taxa, and biotic index. Prince William County benthic macroinvertebrate samples will be evaluated using the VSCI.

3.3 REPORTING

An annual summary report will be prepared following each year of sampling. This report will summarize the macroinvertebrate and in-stream monitoring results and analyses, and include an interpretation of the data with respect to long-term patterns and trends. Initial or first year results from sampling and analysis will serve as a benchmark at each station for subsequent sampling events, and for comparative analysis performed on a station-by-station basis. Report appendices will include data and documentation from that year of sampling events.

4.0 REFERENCES

Barbour, M. T., J. Gerritsen, B. D.Snyder, and J. B. Stribling. 1999. Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates, and Fish. 2nd ed. EPA 841-B-99-002. U.S. Environmental Protection Agency, Office of Water, Washington, DC.

Bode, R. W., M. A. Novak, L. E. Abele, D. L. Heitzman, and A. J. Smith. 2002. Quality Assurance Work Plan for Biological Stream Monitoring in New York State. NYS Dept. Environ. Conserv., Division of Water Albany. 115 pp.

Caton, L. W. 1991. Improved Subsampling Methods for the EPA “Rapid Bioassessment” Benthic Protocols. Bull. N. Amer. Benthological Soc. 8: 317-319.

Hilsenhoff, W. L., 1987. An Improved Biotic Index of Organic Stream Pollution. The Great Lakes Entomologist. 20:31-39.

Klemm, D. J., P. A. Lewis, F. Fulk, and J. M. Lazorchak, 1990. Macroinvertebrate Field and Laboratory Methods for Evaluating the Biological Integrity of Surface Waters. EPA/600/4-90/030. U.S. Environmental Protection Agency, Cincinnati. 256 pp.

North Carolina Department of Environment, Health, and Natural Resources. 2003. Standard Operating Procedures for Benthic Invertebrates. NCDENR Biological Assessment Unit.

Tennessee Department of Environment and Conservation. 2011. Division of Water Pollution Control. Quality System Standard Operating Procedure for Macroinvertebrate Stream Surveys.

TetraTech, 2003. A Stream Condition Index for Virginia Non-Coastal Streams. Owings Mill, MD. September 2003.

Virginia Department of Environmental Quality, 2008. Biological Monitoring Program Quality Assurance Project Plan for Wadeable Streams and Rivers. Division of Water Quality, Office of Water Quality Monitoring and Assessment Programs, VA. August 2008.

APPENDIX A

SAMPLING STATIONS


SNICKERSVILLE DR
LITTLE BULL RUN
LITTLE BULL RUN
EMMANUEL CT
HUNTERS RUN WY
RODERICK LP
CATHARPIN RD
CARTERWOOD DR
TOWN COMMONS WAY
Little Bull Run - Catharpin Road
N
1 in = 200 ft
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


Little Bull Run - Catharpin Road
N
1 in = 400 ft
LITTLE BULL RUN
CAMDENHURST DR
SHERINGHAM WY
DANEHURST CL
SELBOURNE LN
ELDERMIELL LN
SKIPTON WY
HEATHCOTE BL
WITTON CL
NEWBERN LP
LEGEND DR
HUNTERS RUN WY
EMMANUEL CT
FALLSMERE CL
INNESFREE WY
SUTTON OAKS WY
CATHARPIN RD
DEBHILL LN
SNICKERSVILLE DR
KANAWHA WY
CHELMSFORD DR
STREET CRY CT
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


TAC CT
WELLINGTON RD
DAWKINS BRANCH
DAWKINS BRANCH
250
240
230
260
270
280
Dawkins Branch - Wellington Road
N
1 in = 200 ft
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

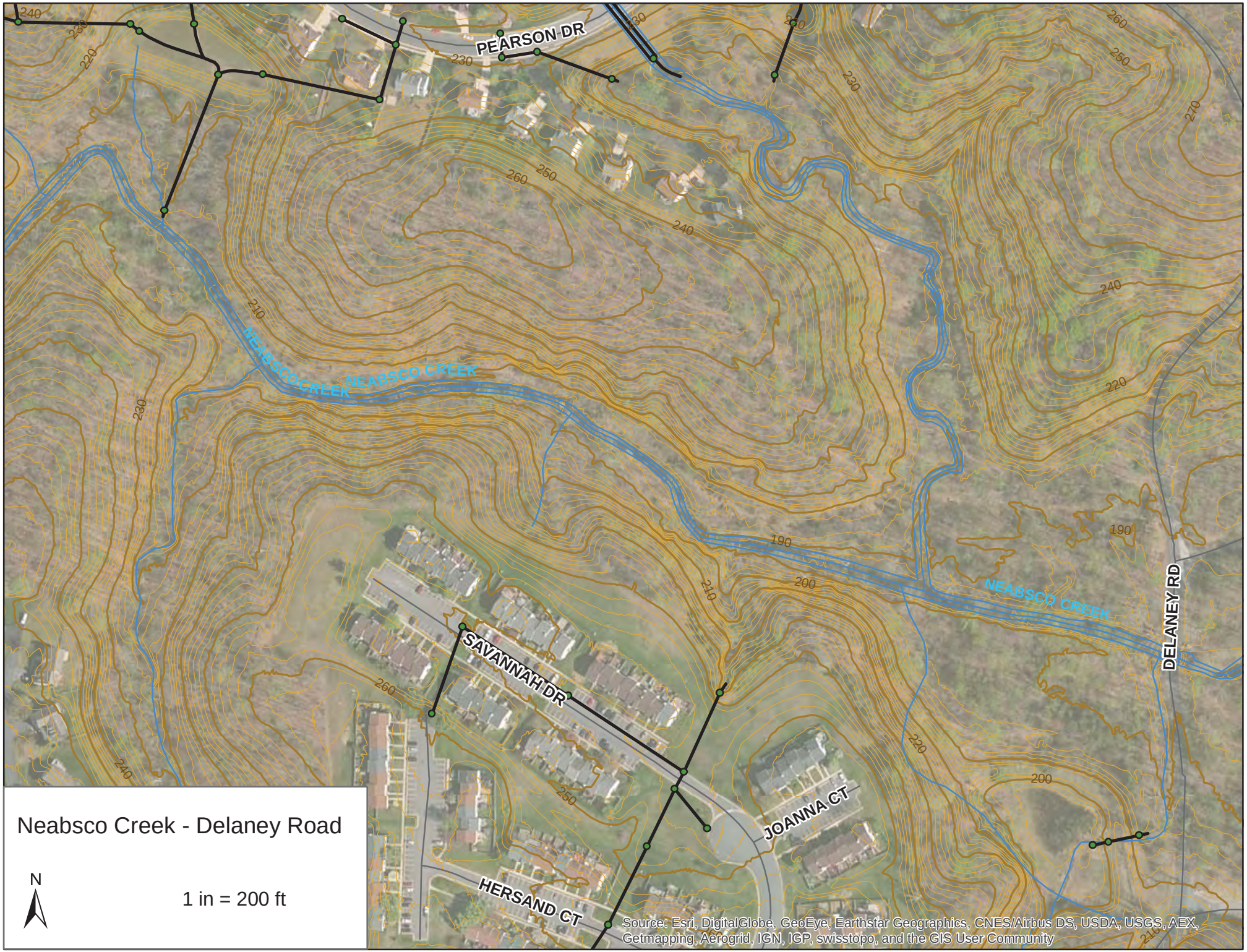
Dawkins Branch - Wellington Road

N

1 in = 400 ft


FERN OAK CT
PURGELL RD
PURGELL BRANCH
PURGELL BRANCH
GRAY FOX TL
OOKE DR
270
260
250
240
230
220
210
200
280
Purcell Branch - Purcell Road
N
1 in = 200 ft
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


FALLING CREEK DR
FERN OAK CT
PURCELL BRANCH
ROCKY BROOKE CT
PURCELL RD
VISTA BROOKE DR
GLADE CT
GRAY FOX TL
WHITE EAGLE DR
SILO MILL CT
UNBRIDLED CT
VISIONARY CT
BRIDLE POST PL
Purcell Branch - Purcell Road
N
1 in = 400 ft
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


PEARSON DR
NEABSCO CREEK
NEABSCO CREEK
NEABSCO CREEK
SAVANNAH DR
JOANNA CT
HERSAND CT
DELANEY RD
Neabsco Creek - Delaney Road
N
1 in = 200 ft
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


LAMBSGATE LN
LYNWOOD DR
LOGAN CT
LYNWAY CT
NEABSCO CREEK
NEABSCO CREEK
NEABSCO CREEK
NEABSCO CREEK
JOANNA CT
HERSAND CT
WHITELY CT
HEDRICK LN
HERCULES LN
DELANEY RD
STILL PL
PRATHER PL
MANOR HOUSE CT
BEL AIR PLANTATION RD
MINNIEVILLE RD
MINNIEVILLE RD
SAVANNAH DR
WHITAKER PL
ACCO WY
ESTATE DR
REGIMENT CT
Neabsco Creek - Delaney Road
N
1 in = 400 ft
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


OPITZ BL
OPITZ BL
MALLOY CT
MASON CREEK CL
DANIEL STUART SQ
GREYWING ST
POTOMAC BRANCH DR
CROSSFIELD WY
OBERLIN DR
MELLOTT RD
JEFFERSON DAVIS HY
Cow Branch - Mellott Road
N
1 in = 200 ft
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


OPITZ BL
OPITZ BL
REDDY DR
MALLOY CT
MASON CREEK CL
DANIEL STUART SQ
JEFFERSON DAVIS HY
BUILDAMERICA DR
POTOMAC CENTER BL
BROOKMOOR LN
CARTHAGE DR
OBERLIN DR
GREYWING ST
POTOMAC BRANCH DR
CROSSFIELD WY
IVYSTONE PL
EASTBOURNE DR
MELLOTT RD
WINDING LP
MARYLAND AV
PARTREE CT
DELAWARE DR
POTOMAC HEIGHTS PL
ENTERPRISE LN
HORIZON CT
SEQUOIA CT
Cow Branch - Mellott Road
N
1 in = 400 ft
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

APPENDIX B

FIELD FORMS

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME	LOCATION	
STATION #_____ RIVERMILE_____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN	
STORET #	AGENCY	
INVESTIGATORS		
FORM COMPLETED BY	DATE _____ TIME _____ AM PM	REASON FOR SURVEY

WEATHER CONDITIONS

Now		Past 24 hours
❑	storm (heavy rain)	❑
❑	rain (steady rain)	❑
❑	showers (intermittent)	❑
____%❑	%cloud cover	❑____%
❑	clear/sunny	❑

Has there been a heavy rain in the last 7 days? ❑ Yes ❑ No

Air Temperature_____° C

Other_____

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)

STREAM CHARACTERIZATION

Stream Subsystem
❑ Perennial ❑ Intermittent ❑ Tidal

Stream Type
❑ Coldwater ❑ Warmwater

Stream Origin
❑ Glacial
❑ Non-glacial montane
❑ Swamp and bog
❑ Spring-fed
❑ Mixture of origins
❑ Other_____

Catchment Area_____km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES

Predominant Surrounding Landuse
☐ Forest ☐ Commercial
☐ Field/Pasture ☐ Industrial
☐ Agricultural ☐ Other _____
☐ Residential

Local Watershed NPS Pollution
☐ No evidence ☐ Some potential sources
☐ Obvious sources

Local Watershed Erosion
☐ None ☐ Moderate ☐ Heavy

RIPARIAN VEGETATION (18 meter buffer)

Indicate the dominant type and record the dominant species present
☐ Trees ☐ Shrubs ☐ Grasses ☐ Herbaceous

dominant species present _____

INSTREAM FEATURES

Estimated Reach Length _____m

Estimated Stream Width _____m

Sampling Reach Area _____m^2

Area in km^2 (m^2x1000) _____km^2

Estimated Stream Depth _____m

Surface Velocity (at thalweg) _____m/sec

Canopy Cover
☐ Partly open ☐ Partly shaded ☐ Shaded

High Water Mark _____m

Proportion of Reach Represented by Stream Morphology Types
☐ Riffle_____% ☐ Run_____%
☐ Pool_____%

Channelized ☐ Yes ☐ No

Dam Present ☐ Yes ☐ No

LARGE WOODY DEBRIS

LWD _____m^2

Density of LWD _____m^2/km^2 (LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating
☐ Floating Algae ☐ Attached Algae

dominant species present _____

Portion of the reach with aquatic vegetation _____%

WATER QUALITY

Temperature_____° C

Specific Conductance_____

Dissolved Oxygen _____

pH _____

Turbidity _____

WQ Instrument Used _____

Water Odors
☐ Normal/None ☐ Sewage
☐ Petroleum ☐ Chemical
☐ Fishy ☐ Other_____

Water Surface Oils
☐ Slick ☐ Sheen ☐ Globs ☐ Flecks
☐ None ☐ Other_____

Turbidity (if not measured)
☐ Clear ☐ Slightly turbid ☐ Turbid
☐ Opaque ☐ Stained ☐ Other_____

SEDIMENT/ SUBSTRATE

Odors
☐ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☐ Anaerobic ☐ None
☐ Other_____

Oils
☐ Absent ☐ Slight ☐ Moderate ☐ Profuse

Deposits
☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand
☐ Relict shells ☐ Other_____

Looking at stones which are not deeply embedded, are the undersides black in color?
☐ Yes ☐ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock			Detritus	sticks, wood, coarse plant materials (CPOM)	
Boulder	> 256 mm (10")				
Cobble	64-256 mm (2.5"-10")		Muck-Mud	black, very fine organic (FPOM)	
Gravel	2-64 mm (0.1"-2.5")				
Sand	0.06-2mm (gritty)		Marl	grey, shell fragments	
Silt	0.004-0.06 mm				
Clay	< 0.004 mm (slick)				

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

STREAM NAME	LOCATION	
STATION #_____ RIVERMILE_____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN	
STORET #	AGENCY	
INVESTIGATORS		
FORM COMPLETED BY	DATE _____ TIME _____ AM PM	REASON FOR SURVEY

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/ Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/Depth Regime	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow-deep).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ___ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ___ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ___ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score _____

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

STREAM NAME	LOCATION	
STATION #_____ RIVERMILE_____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN	
STORET #	AGENCY	
INVESTIGATORS		
FORM COMPLETED BY	DATE _____ TIME _____ AM PM	REASON FOR SURVEY

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ___ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ___ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ___ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score _____

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME	LOCATION	
STATION #_____ RIVERMILE_____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN	
STORET #	AGENCY	
INVESTIGATORS		LOT NUMBER
FORM COMPLETED BY	DATE _____ TIME _____ AM PM	REASON FOR SURVEY

HABITAT TYPES	**Indicate the percentage of each habitat type present** ❑ Cobble_____% ❑ Snags_____% ❑ Vegetated Banks_____% ❑ Sand_____% ❑ Submerged Macrophytes_____% ❑ Other ( )_____%
SAMPLE COLLECTION	**Gear used** ❑ D-frame ❑ kick-net ❑ Other _____ **How were the samples collected?** ❑ wading ❑ from bank ❑ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ❑ Cobble_____ ❑ Snags_____ ❑ Vegetated Banks_____ ❑ Sand_____ ❑ Submerged Macrophytes_____ ❑ Other ( )_____
GENERAL COMMENTS	

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	0	1	2	3	4	Slimes	0	1	2	3	4
Filamentous Algae	0	1	2	3	4	Macroinvertebrates	0	1	2	3	4
Macrophytes	0	1	2	3	4	Fish	0	1	2	3	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culcidae	0	1	2	3	4						

YSI Calibration Form

Project:_____
Date:_____
Pre-Calibration Time (24-hr Clock):_____
Post-Calibration Time (24-hr Clock):_____

Pine Sonde ID No.: _____
Pine Handset ID No.: _____
Battery Voltage (%): _____

Prior to Operation - Check the Following Items:

- ☐ Ensure Equipment is Operable Prior to Mobilization - Checked By _____
- ☐ Attach Carabiner to Sonde
- ☐ Attach Safety Line (Non-Wadeable Conditions) ☐ NA (Wadeable Conditions)
- ☐ Check Batteries/Back-Up Batteries

User Tips:

Keep the handset and sonde in the shade when not in use (i.e., cooler, bucket, bin).
Keep the sensors damp between readings, check the sponge to ensure adequate moisture.
Do not keep the slotted cover on the sonde between readings or sites, or during mobilization.
If the calibration is "outside of range", call Pine Environmental at (770) 925-2855 or (800) 842-1088 for assistance, or for instructions to reset the default calibration settings.

		Pre-Calibration	Post-Calibration
DISSOLVED OXYGEN (DO)			
Was DO membrane changed? Yes, Time/Date:_____ ☐ No ☐ NA (optical sensor)			
Current Air Temperature ºC (meter reading):			
Current Barometric Pressure (from Weather Channel or NOAA.gov, which is corrected to sea level):	☐ NA (YSI includes barometer)		
Elevation Corrected Barometric Pressure to enter into YSI DO calibration (or YSI barometer reading if available):	Ex.: 30.02 in. Hg x 25.4 = mm Hg; **subtract** 2.54 mm Hg for every 100 ft. above sea level: 565/100 x 2.54 = 14.4 mm Hg Elevation: Calvert, AL is 50 ft, and Athens, GA site is 700 ft.		
DO concentration before Calibration (mg/L):			
DO concentration after Calibration (mg/L):			
CONDUCTIVITY [Note: Calibrate before pH]			
Temperature (ºC)			
Reading before Calibration (mS/cm^{C})			
Reading AFTER Calibration (mS/cm^{C})			
pH			
pH **7.0** value before calibration:			
pH **7.0** value after calibration:			
pH **7.0** mV **(range is -50 to +50 mV)**:			
pH **10.0** value before calibration:			
pH **10.0** value after calibration:			
pH **10.0** mV **(range is -130 to -230 mV)**:			
pH **4.0** value before calibration:			
pH **4.0** value after calibration:			
pH **4.0** mV **(range is 130 to 230 mV)**:			
OXIDATION/REDUCTION POTENTIAL (ORP)			
Calibration Temperature (ºC):			
Reading before calibration (mV):			
Reading after calibration (mV):			
TURBIDITY			
0 NTU Turbidity Standard	☐ NA (No Standard) Before Cal: After Cal:		
1 NTU Turbidity Standard	☐ NA (No Standard) Before Cal: After Cal:		
10 NTU Turbidity Standard	☐ NA (No Standard) Before Cal: After Cal:		
126 NTU Turbidity Standard	☐ NA (No Standard) Before Cal: After Cal:		

Pre-Calibrated By:_____

Post-Calibrated By:_____

Checked by:_____

APPENDIX C

LABORATORY FORMS

page __ of __

BENTHIC MACROINVERTEBRATE SAMPLE LOG-IN SHEET

Date Collected	Collected By	Number of Containers	Preservation	Station #	Stream Name and Location	Date Received by Lab	Lot Number	Date of Completion		
								sorting	mounting	identification

Serial Code Example: B0754001(1)
B = Benthos (F = Fish; P = Periphyton) ■ 0754 = project number ■ 001 = sample number ■ (1) = lot number (e.g., winter 1996 =1; summer 1996 = 2)

This Page Intentionally Left Blank

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (FRONT)

page ____ of ____

STREAM NAME	LOCATION
STATION # _____ RIVERMILE _____	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN
STORET #	AGENCY
COLLECTED BY DATE _____	LOT #
TAXONOMIST DATE _____	SUBSAMPLE TARGET ☐ 100 ☐ 200 ☐ 300 ☐ Other ____

Enter Family and/or Genus and Species name on blank line.

Organisms		No.	LS	TI	TCR	Organisms		No.	LS	TI	TCR
Oligochaeta						Megaloptera					
Hirudinea						Coleoptera					
Isopoda											
Amphipoda						Diptera					
Decapoda											
Ephemeroptera											
						Gastropoda					
						Pelecypoda					
Plecoptera											
						Other					
Trichoptera											
Hemiptera											

Taxonomic certainty rating (TCR) 1-5:1=most certain, 5=least certain. If rating is 3-5, give reason (e.g., missing gills). LS= life stage: I = immature; P = pupa; A = adult TI = Taxonomists initials

Total No. Organisms _____ **Total No. Taxa** _____

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (BACK)

SUBSAMPLING/SORTING INFORMATION

Sorter _____

Date _____

Number of grids picked: _____

Time expenditure _____ No. of organisms _____

Indicate the presence of large or obviously abundant organisms:

QC: ☐ YES ☐ NO QC Checker _____

$$\text{\# organisms originally sorted} \div \left(\text{\# organisms recovered by checker} + \text{\# organisms originally sorted} \right) = \text{\% sorting efficiency}$$

≥90%, sample passes _____

<90%, sample fails, action taken _____

TAXONOMY

ID _____

Date _____

Explain TCR ratings of 3-5:

Other Comments (e.g. condition of specimens):

QC: ☐ YES ☐ NO QC Checker _____

Organism recognition ☐ pass ☐ fail

Verification complete ☐ YES ☐ NO

General Comments (use this space to add additional comments):

Appendix 2 – In-Stream Monitoring

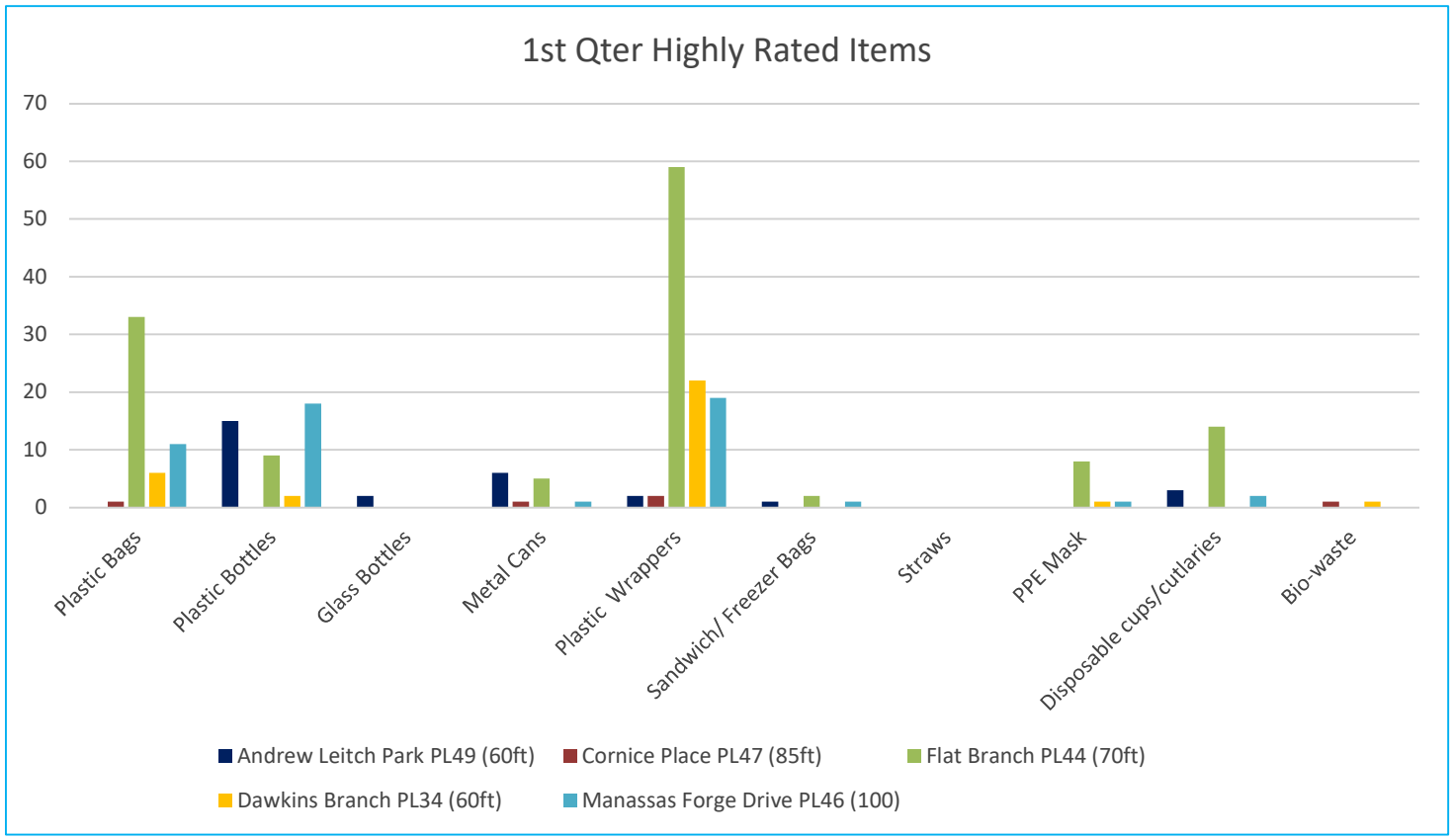
Appendix 3 – Floatables and Solids Monitoring

8850 Rixlew Lane, Manassas, VA 20109 Tel. 571.379.7514 Fax. 571.379.8305 www.pwswcd.org

Prince William County Floatable Survey

2021 Fiscal Year Report

Figure 1. Top on the list Floatable Items collected during the 1st Quarter



Monitoring during the 1st Quarter showed a significant number of plastic wrappers at all five sites followed by plastic bags and plastic bottles. Flat Branch was dominant in plastic bags, plastic bottles, metal cans, plastic wrappers, PPE mask and Disposable cups/ cutleries, followed by Manassas Forge Drive and Andrew Leitch (Figure 1).

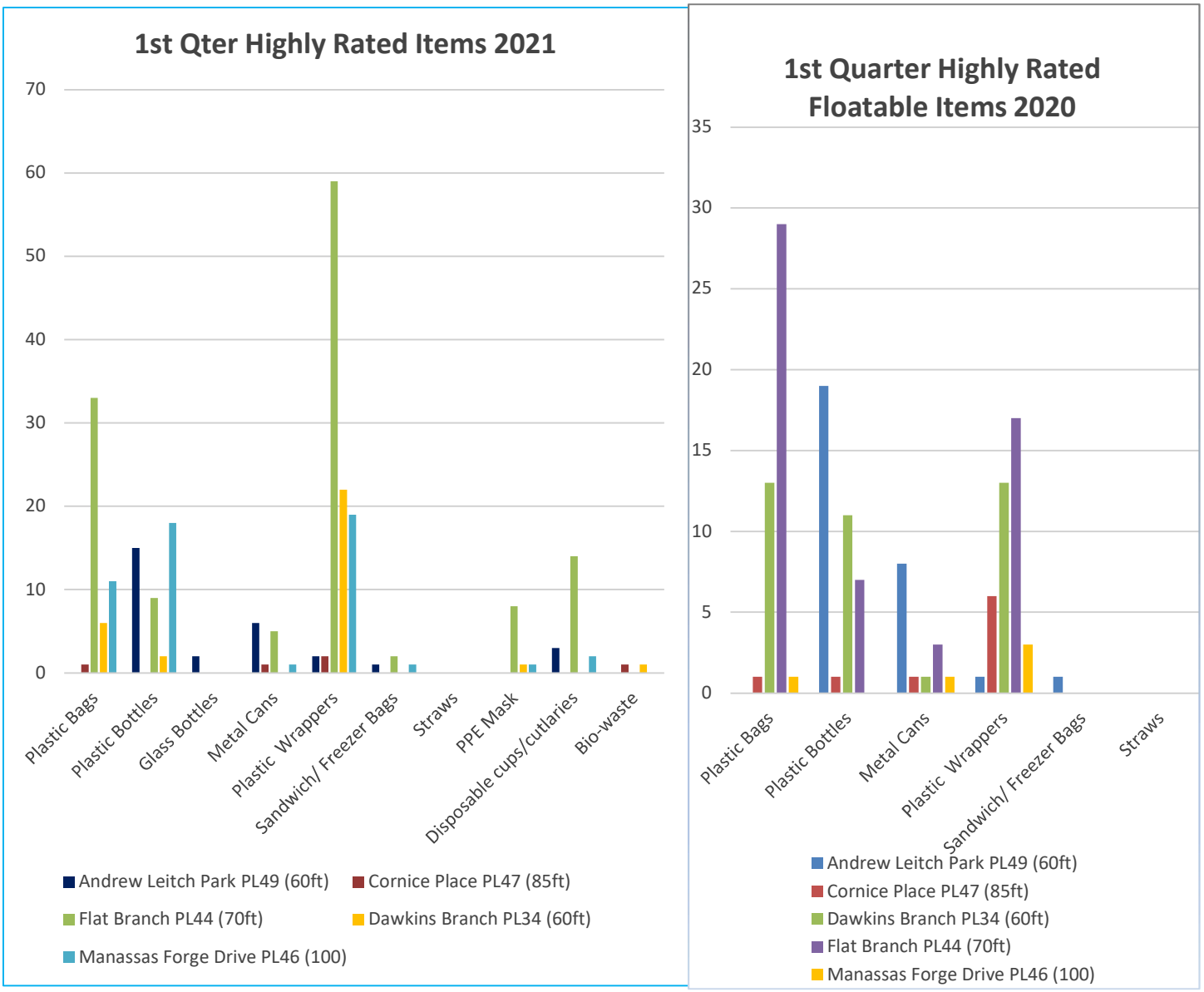
Comparing 1st Quarter 2020 and 2021 Fiscal year

Comparing the items collected during the 1st Quarter of 2020 to that of 2021 Fiscal year, Dawkin's Branch was competitive only in plastic wrappers in 2021 compared to 2020. This reduction in items could be directly attributed to the COVID-19 pandemic which led to close of schools like the Victory Lake Elementary school. But the increase in plastic wrappers at Dawkin's Branch could also be associated with folks who use the playground and Broad Run trails (Figures 1a).

PRINCE WILLIAM SOIL AND WATER CONSERVATION DISTRICT

8850 Rixlew Lane, Manassas, VA 20109 Tel. 571.379.7514 Fax. 571.379.8305 www.pwswcd.org

Figure 1a. Comparing 2020 and 2021



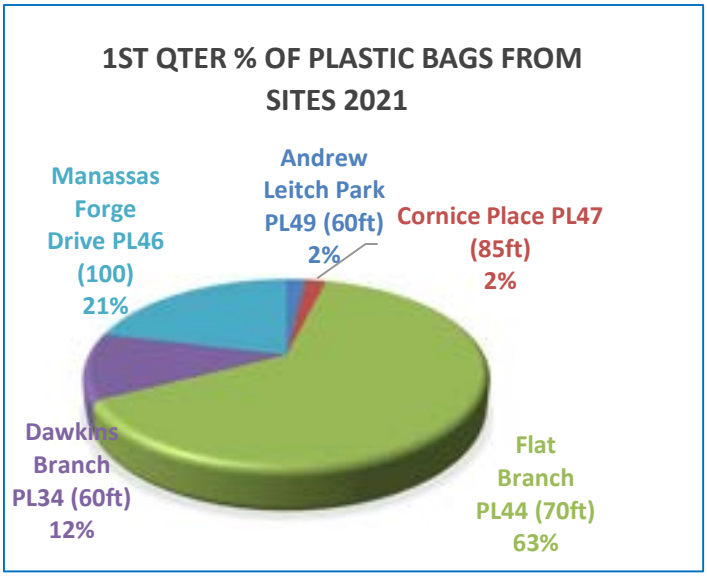
Comparing 1st Quarter plastic bags, bottles, and Wrappers at all five sites in 2020 and 2021 Fiscal year

Plastic bags were highest at Flat Branch (63%), seconded by Manassas Forge (21%) compared to 2020 when Dawkins Branch was second place (Figure 1c). Manassas Forge site was dominant in plastic bottles (41%) followed by Andrew Leitch (Fig 1d). Plastic wrappers remained overall high at Flat Branch in both years (Fig 1e).

PRINCE WILLIAM SOIL AND WATER CONSERVATION DISTRICT

8850 Rixlew Lane, Manassas, VA 20109 Tel. 571.379.7514 Fax. 571.379.8305 www.pwswcd.org

Figure 1c. Proportion of plastic bags in 1st Quarter



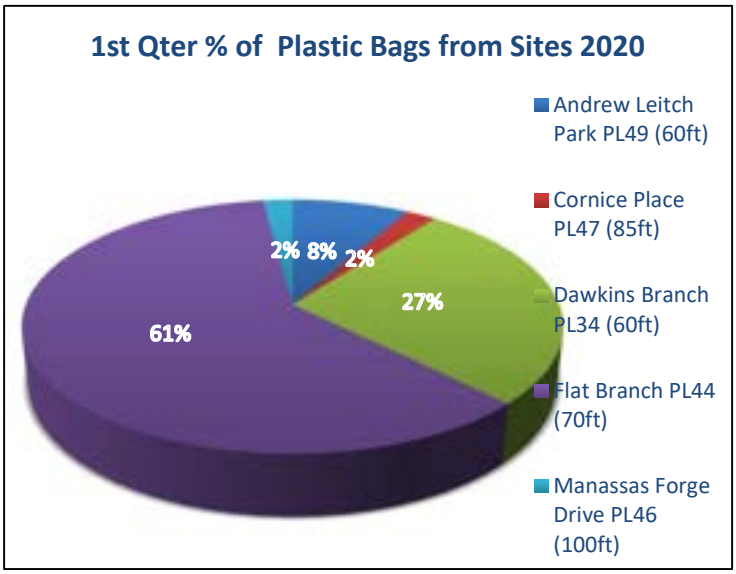


Figure 1 d. Proportion of plastic bottles 2021

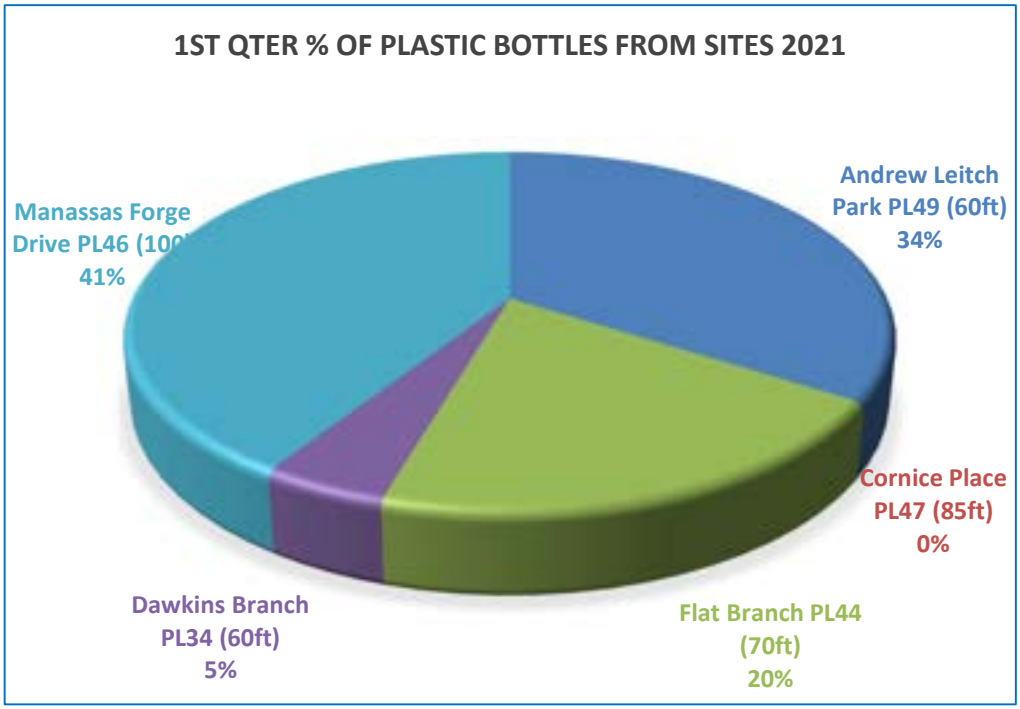
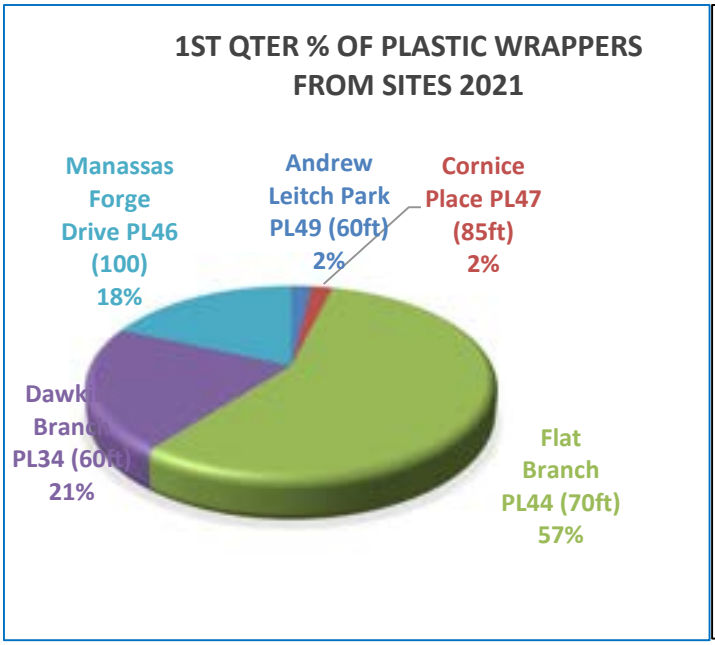
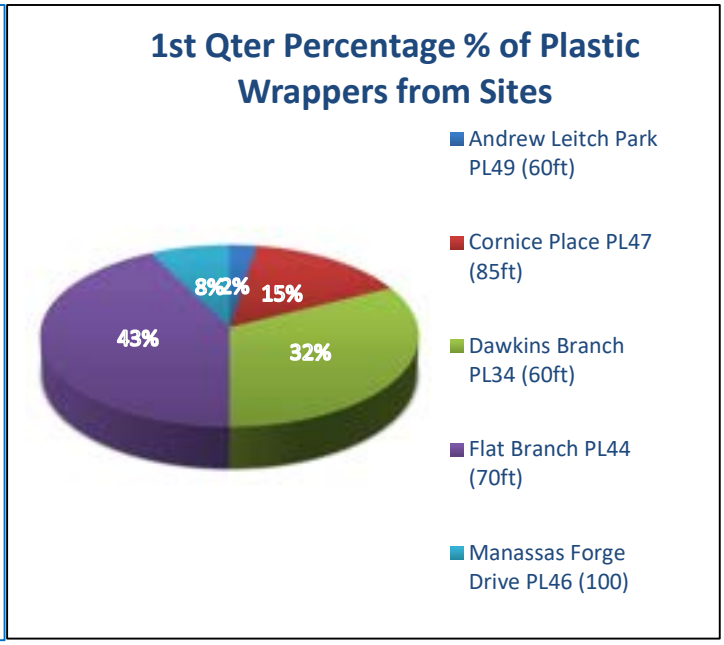


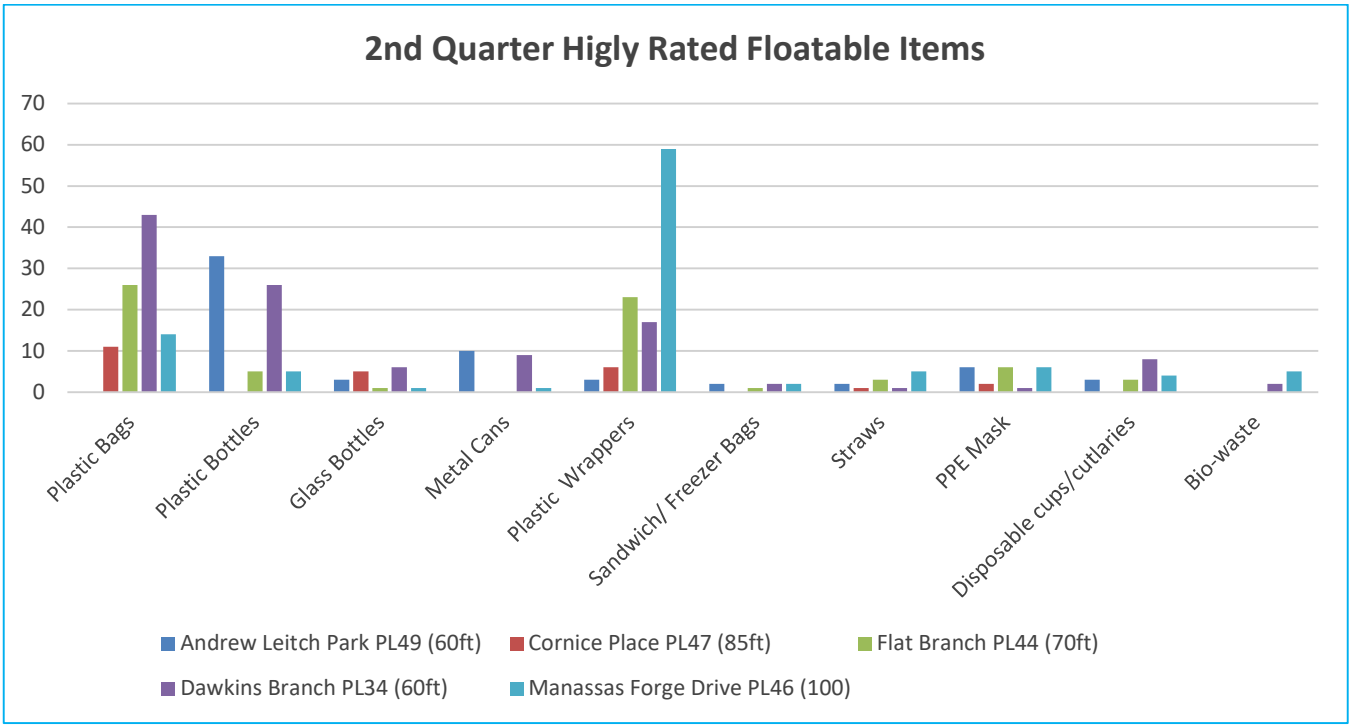
Figure 1e. Proportion of plastic wrappers





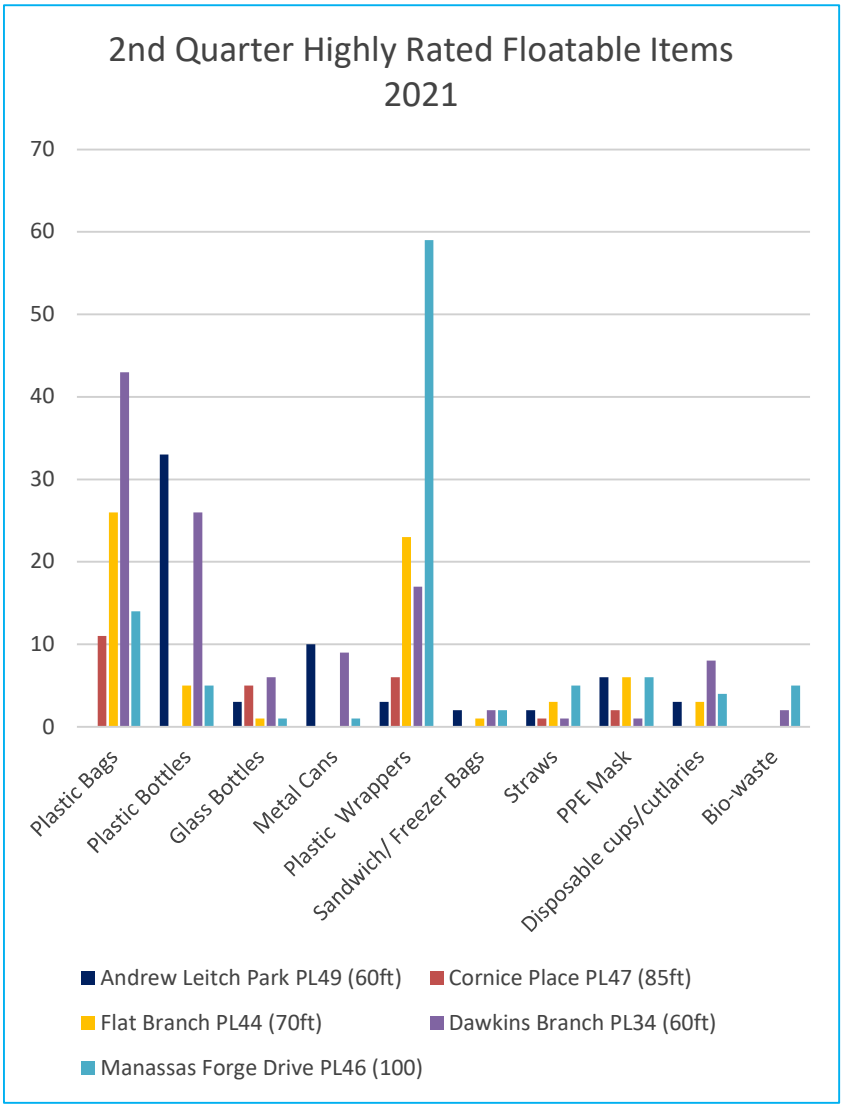
Phase 2

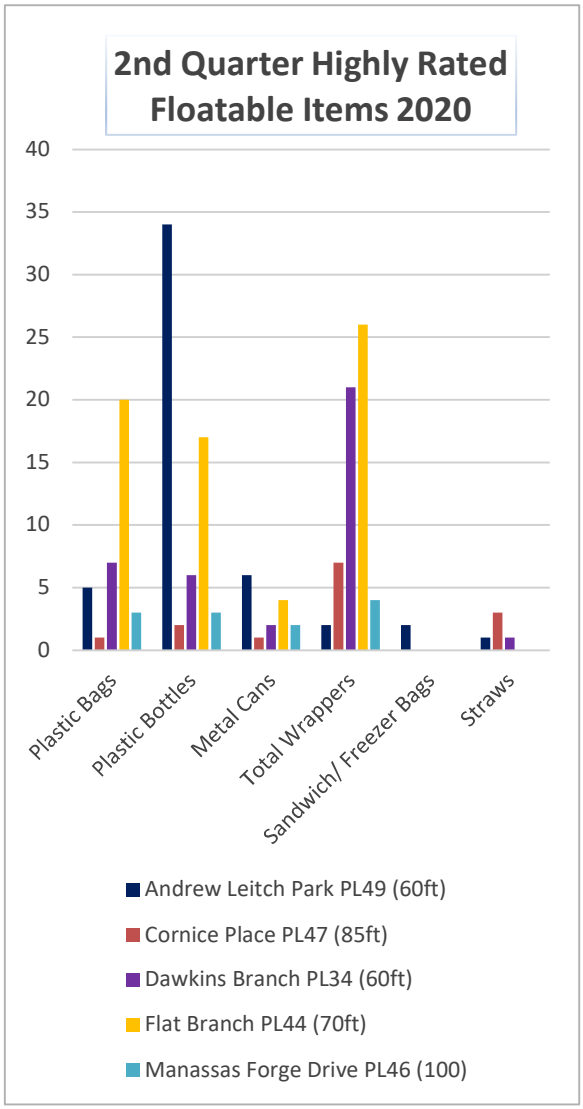
Figure 2. Top on the list Floatable Items collected during the 2nd Quarter



Comparing 2nd Quarter 2020 and 2021 Fiscal year

Figure 2a. Comparing 2020 and 2021





More floatable items were present in the 2nd Quarter of 2021. This was similar to 2020 which recorded a significant amount of plastic wrappers, bags and bottles. More Personal Protective Equipment(PPE) as masks and gloves emerged strongly in 2021 because of the COVID-19 pandemic.

Comparing 2nd Quarter plastic bags, bottles, and Wrappers at all five sites in 2020 and 2021 Fiscal year

Dawkin's Branch, Flat Branch and Manassas Forge showed a significantly high number in plastic bags for both 2020 and 2021 (Fig 2a). Cornice Place recorded the lowest number of floatable items. Manassas Forge and Flat

Branch kept Dawkin's Branch in the third position in 2021 compared to 2020. PPE in the form of masks and gloves were dominant at the Flat Branch (Fig. 2d)

Figure 2a. Proportion of plastic bags- 2nd Quarter

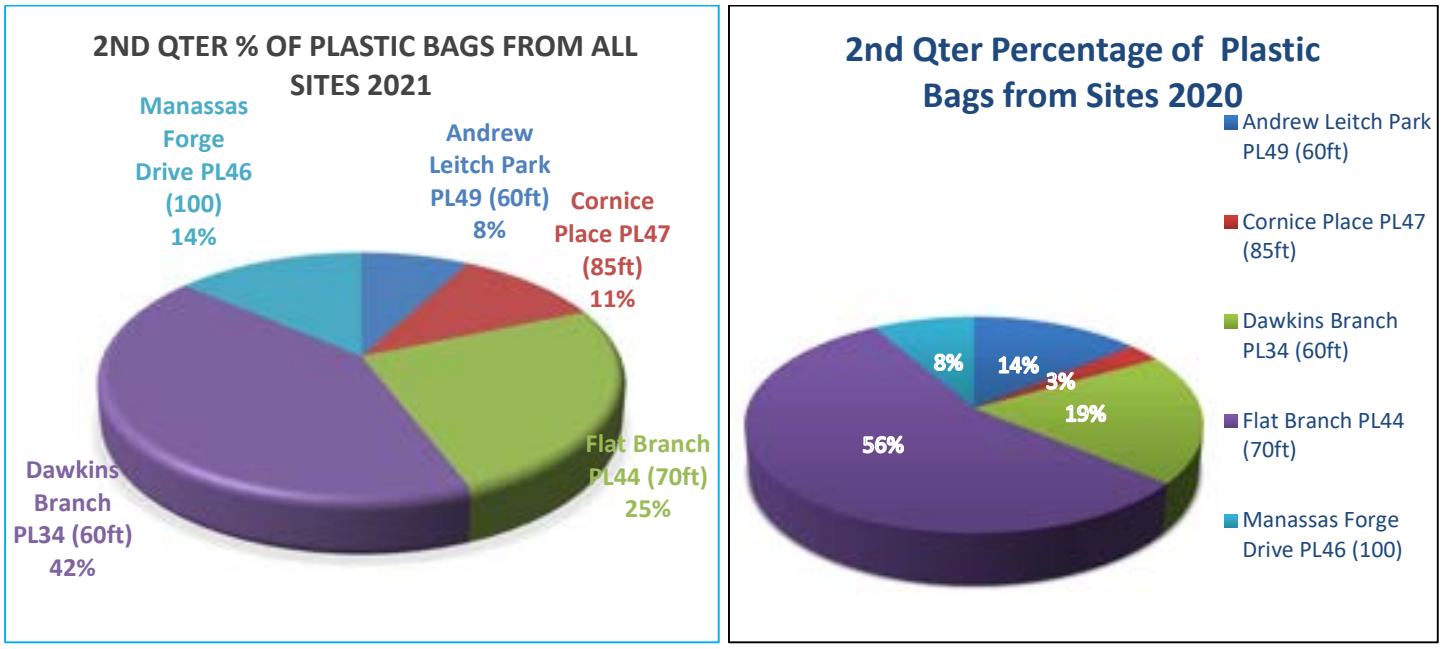
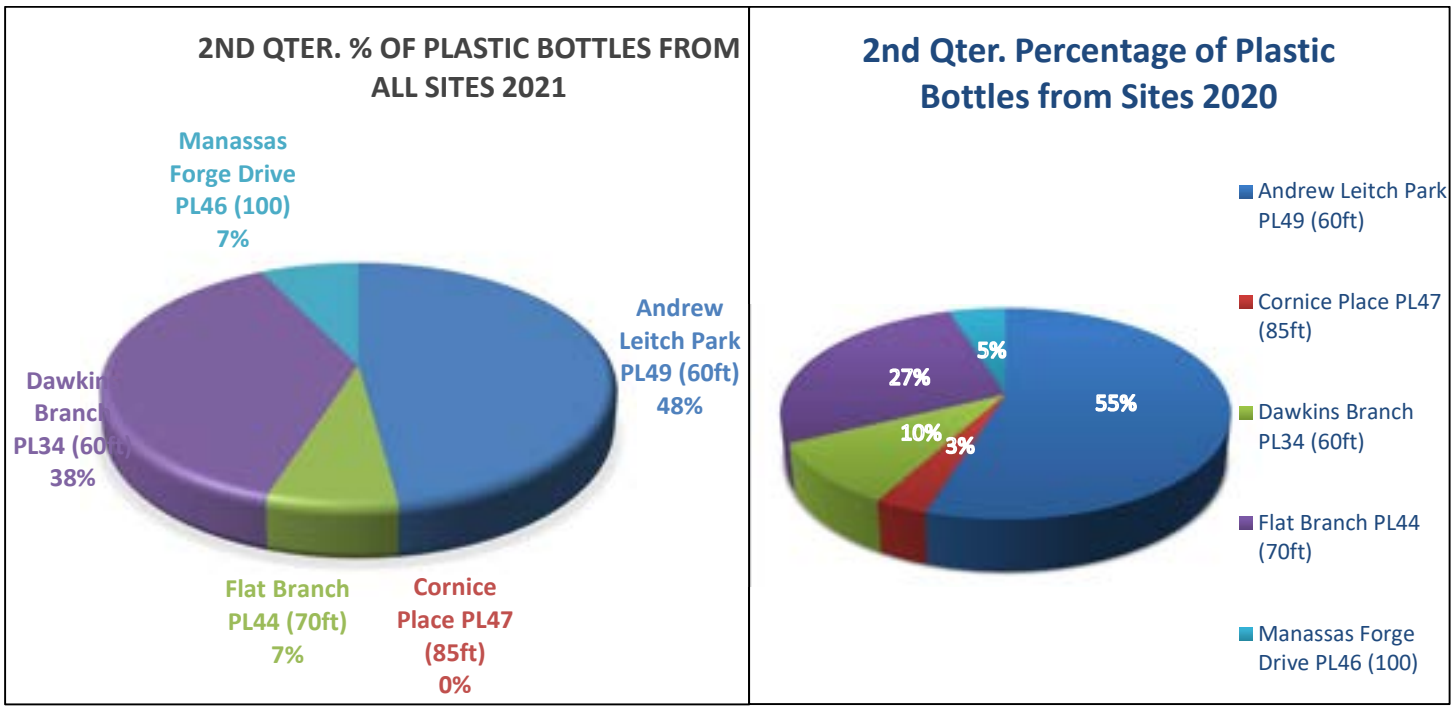


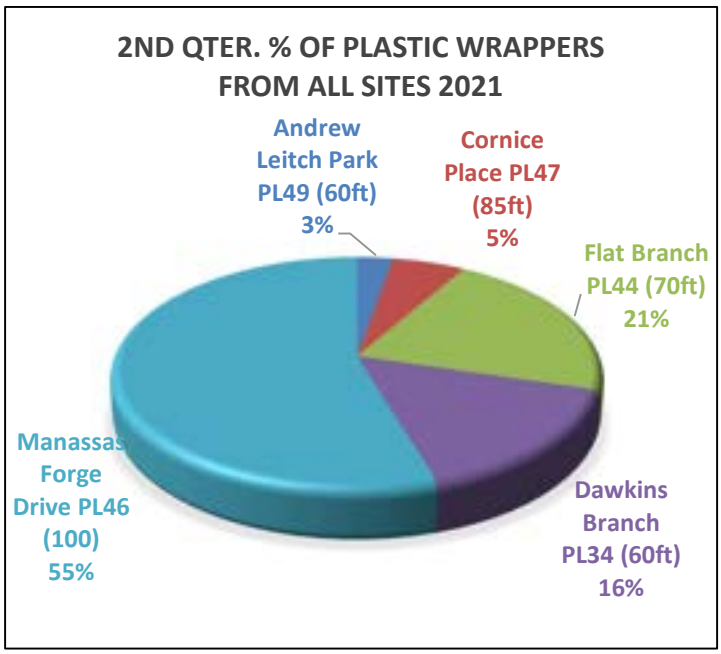
Figure 2b. Proportion of plastic bottles



PRINCE WILLIAM SOIL AND WATER CONSERVATION DISTRICT

8850 Rixlew Lane, Manassas, VA 20109 Tel. 571.379.7514 Fax. 571.379.8305 www.pwswcd.org

Figure 2c. Proportion of plastic wrappers Quarter



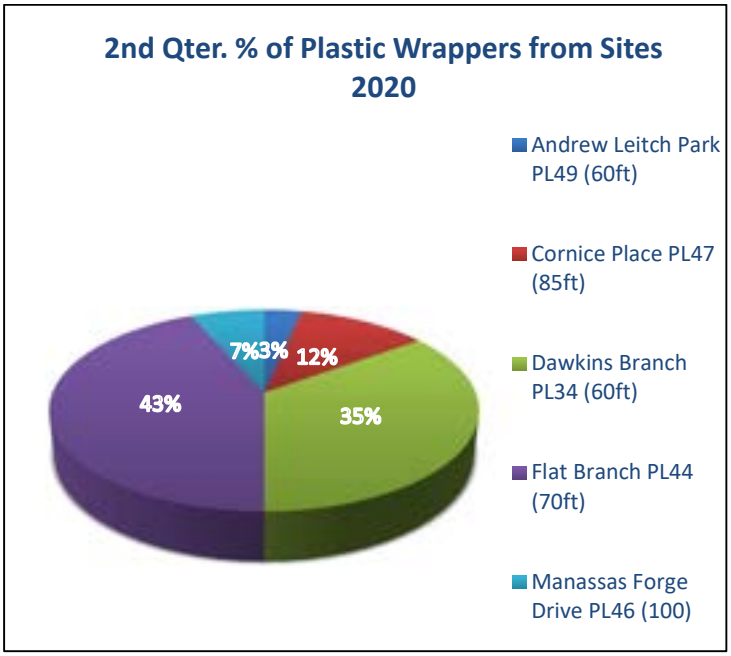
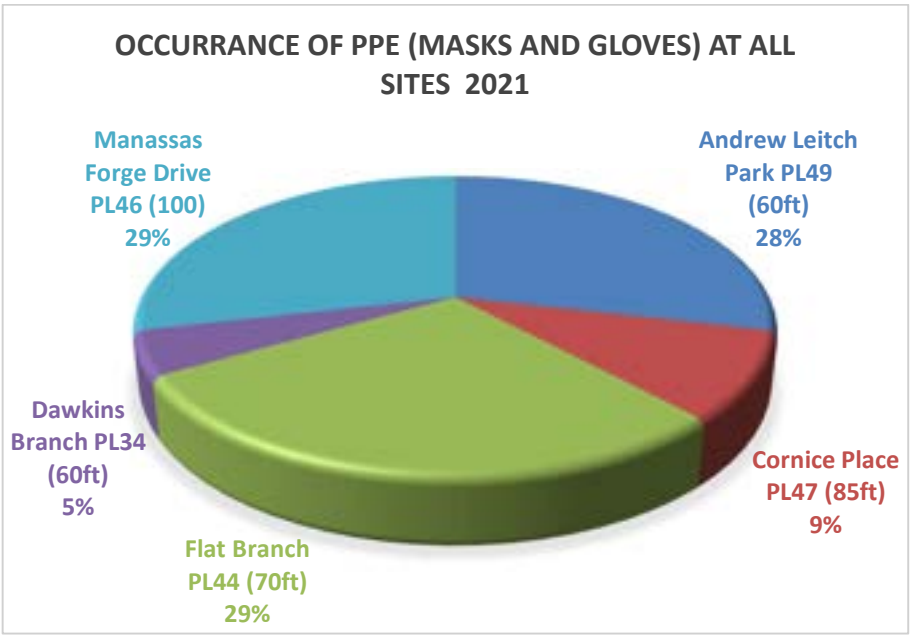


Figure 2d. Proportion of Personal Protective Equipment at all sites in 2021 FY.

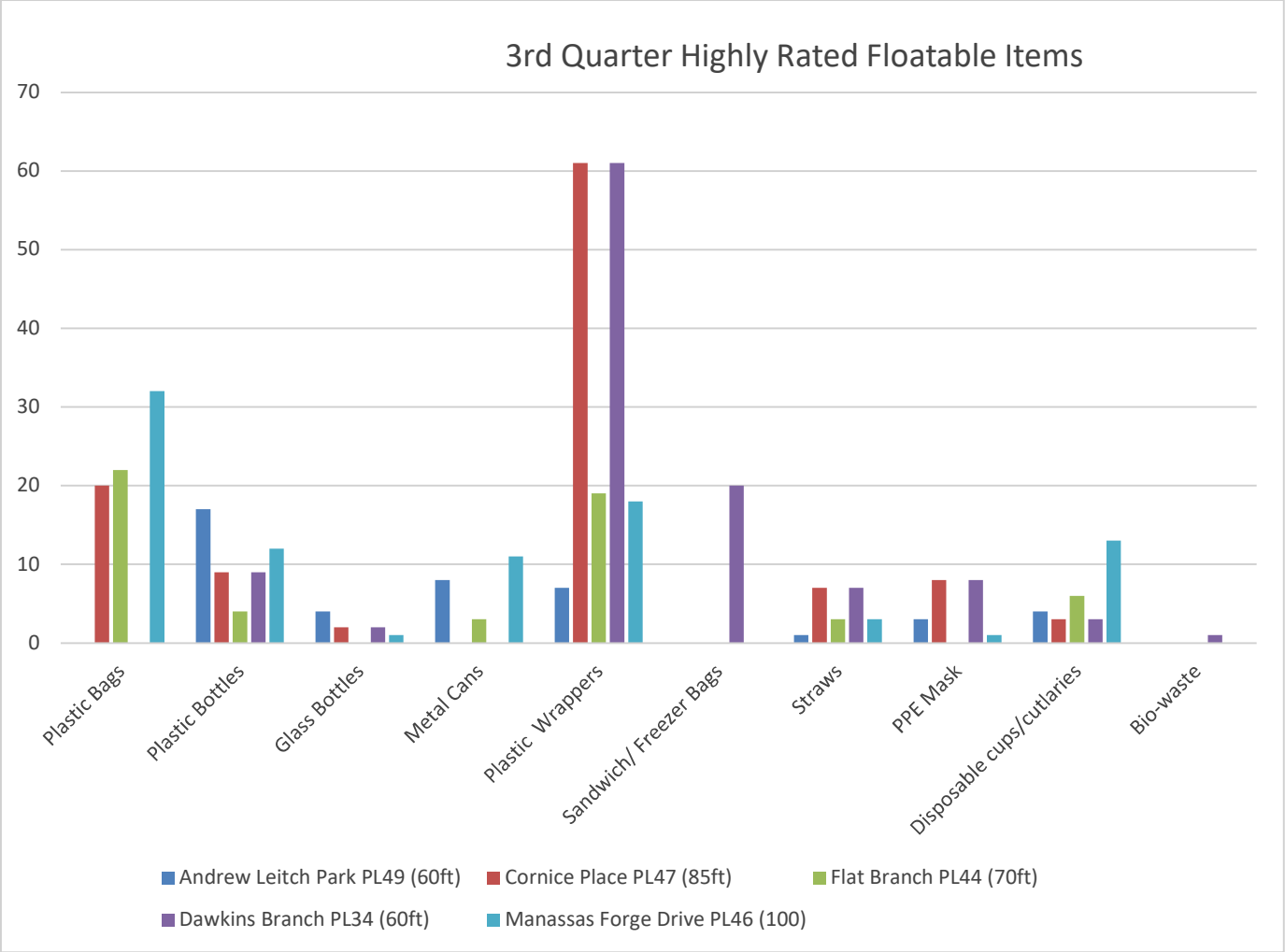


PRINCE WILLIAM SOIL AND WATER CONSERVATION DISTRICT

8850 Rixlew Lane, Manassas, VA 20109 Tel. 571.379.7514 Fax. 571.379.8305 www.pwswcd.org

Phase III

Figure 3. Top on the list Floatable Items collected during the 3rd Quarter



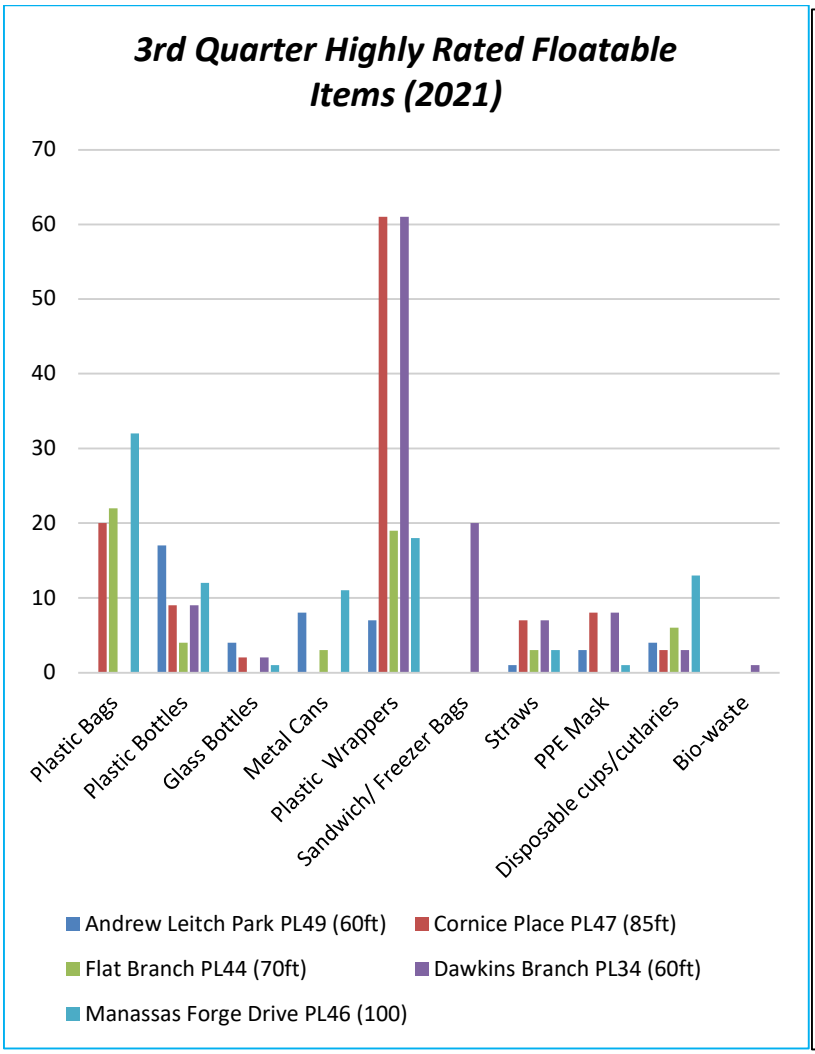
In the 3rd Quarter, plastic wrappers were significantly dominant at all five monitoring sites compared to plastic bags and bottles (figure 3).

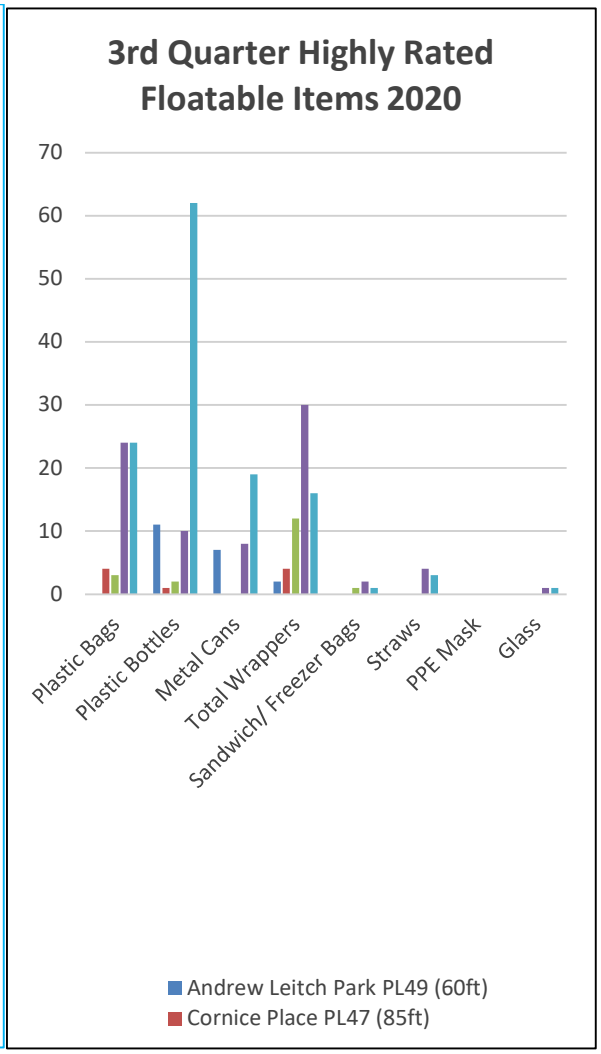
PRINCE WILLIAM SOIL AND WATER CONSERVATION DISTRICT

8850 Rixlew Lane, Manassas, VA 20109 Tel. 571.379.7514 Fax. 571.379.8305 www.pwswcd.org

Comparing 3rd Quarter 2020 and 2021 Fiscal year

Figure 3a. Comparing 2020 and 2021





Comparing 3rd Quarter plastic bags, bottles, and Wrappers at all five sites in 2020 and 2021 Fiscal year

Plastic wrappers were high at all five monitoring sites compared to plastic bags and bottles. This high trend in plastic wrappers with was not the case in 2020.

Andrew Leitch, Manassas Forge and Flat Branch remained dominant on floatable items counts with a significant increase in plastic bags at Cornice Place.

Figure 3b. Proportion of plastic bags

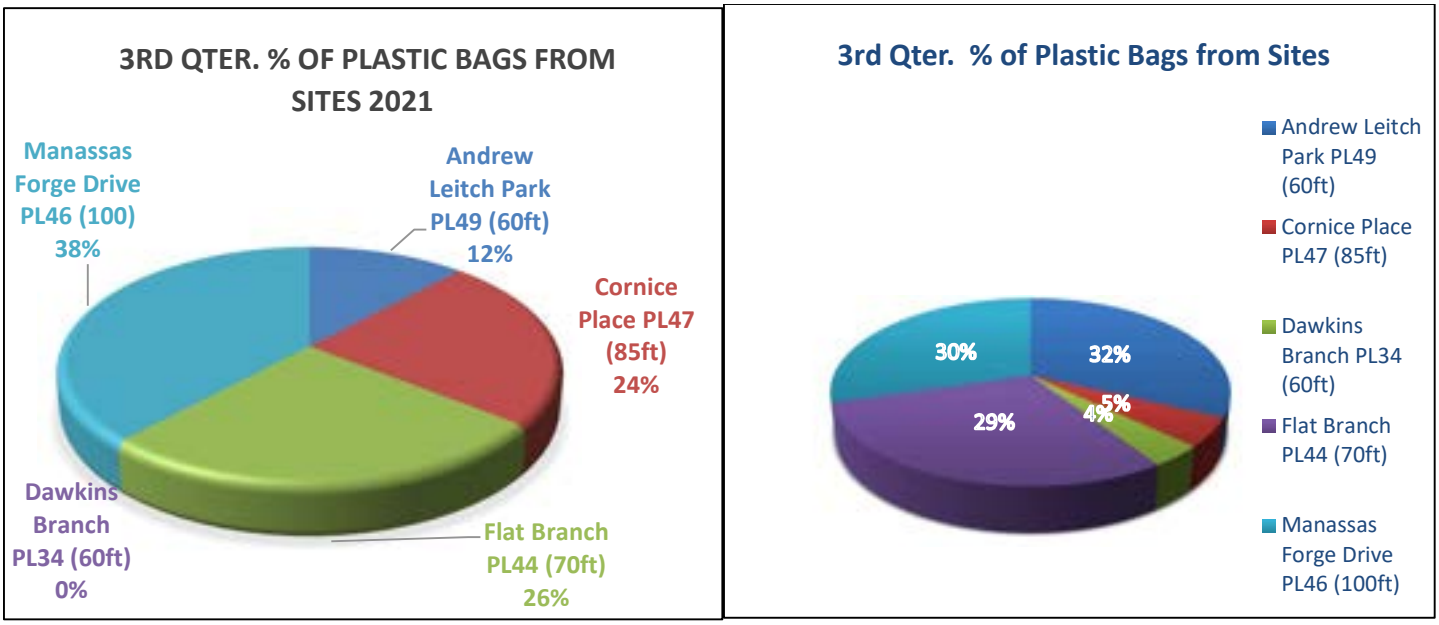


Figure 3c. Proportion of plastic bottles

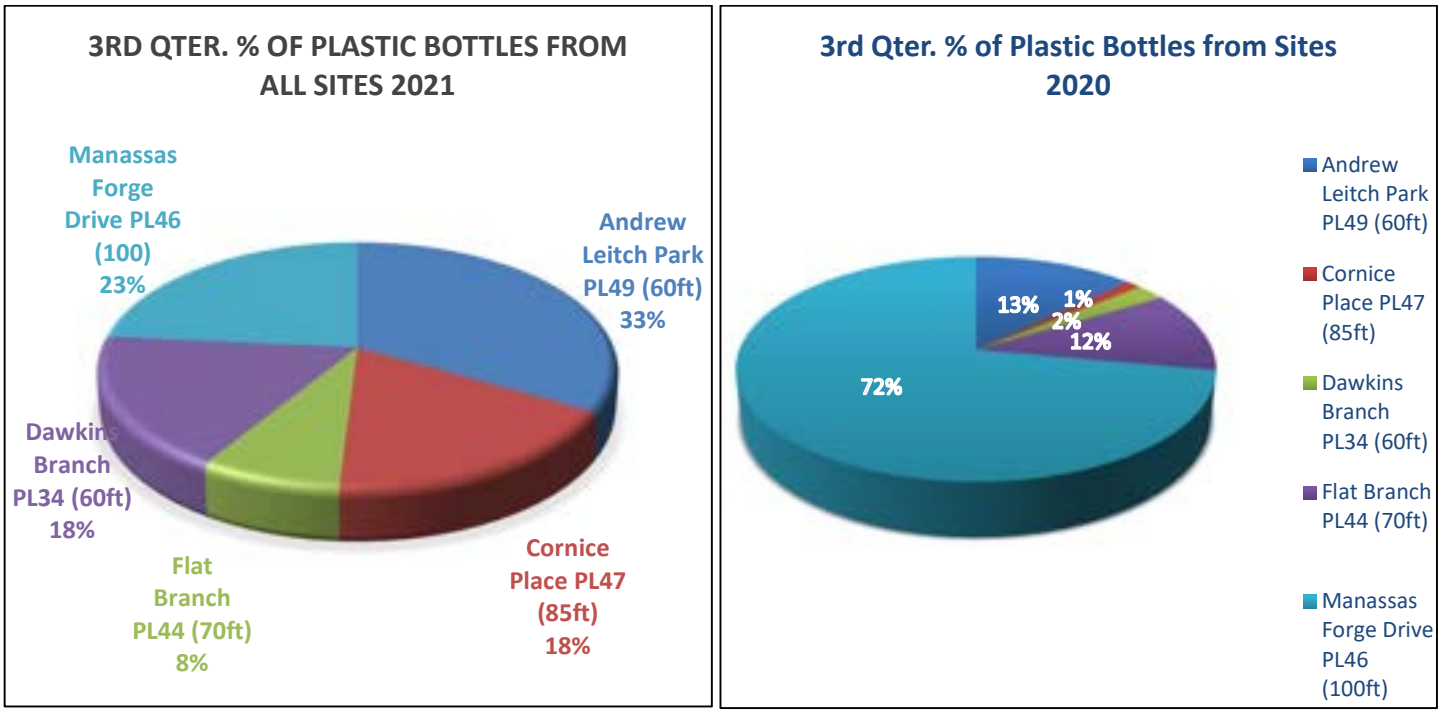
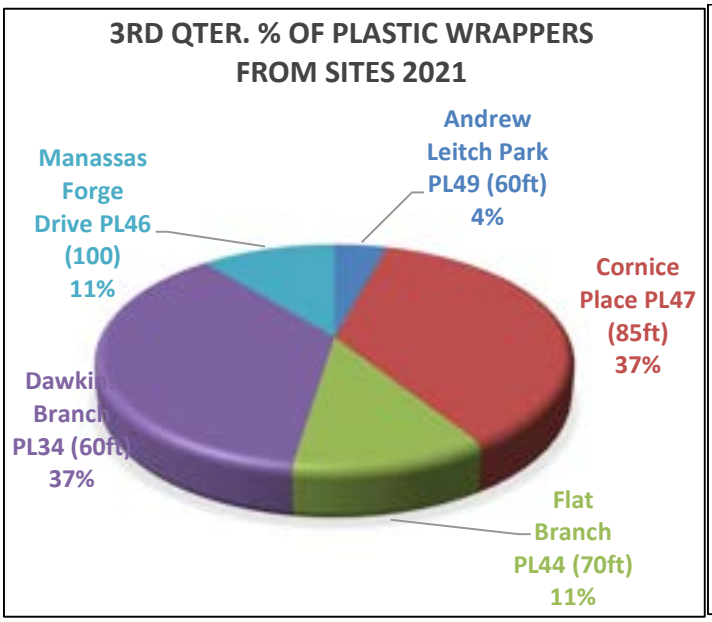


Figure 3d. Proportion of plastic wrappers



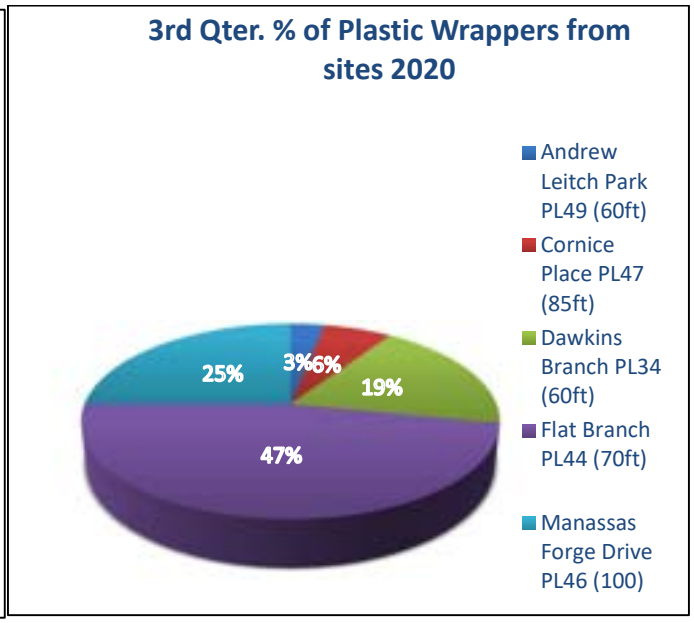
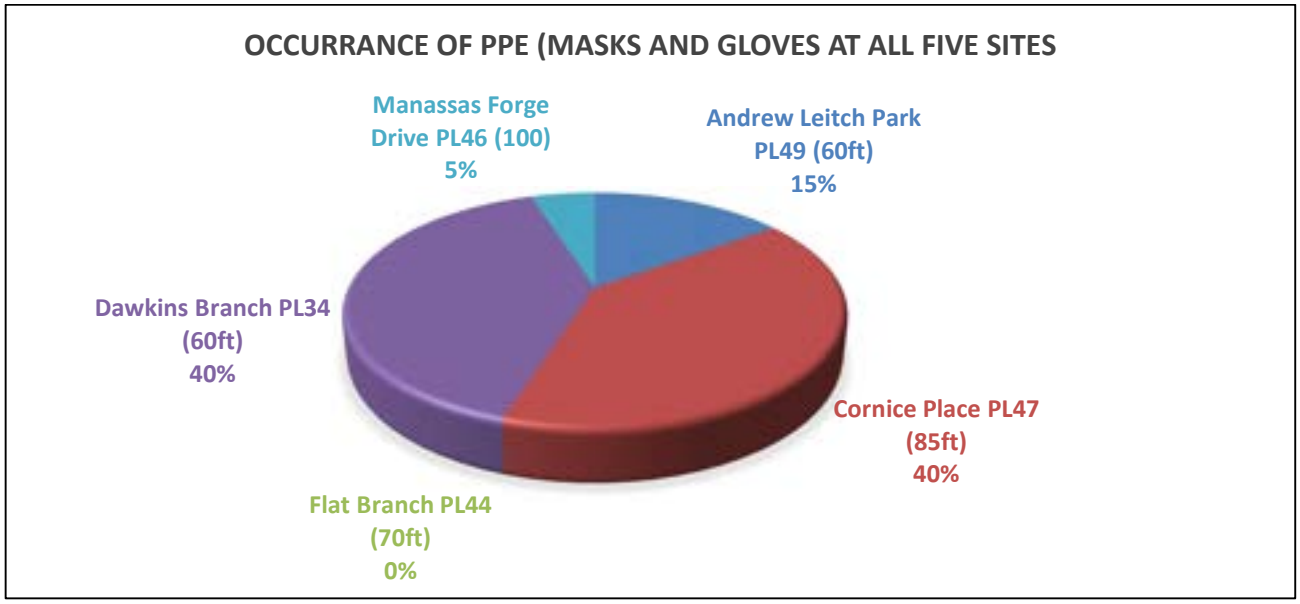
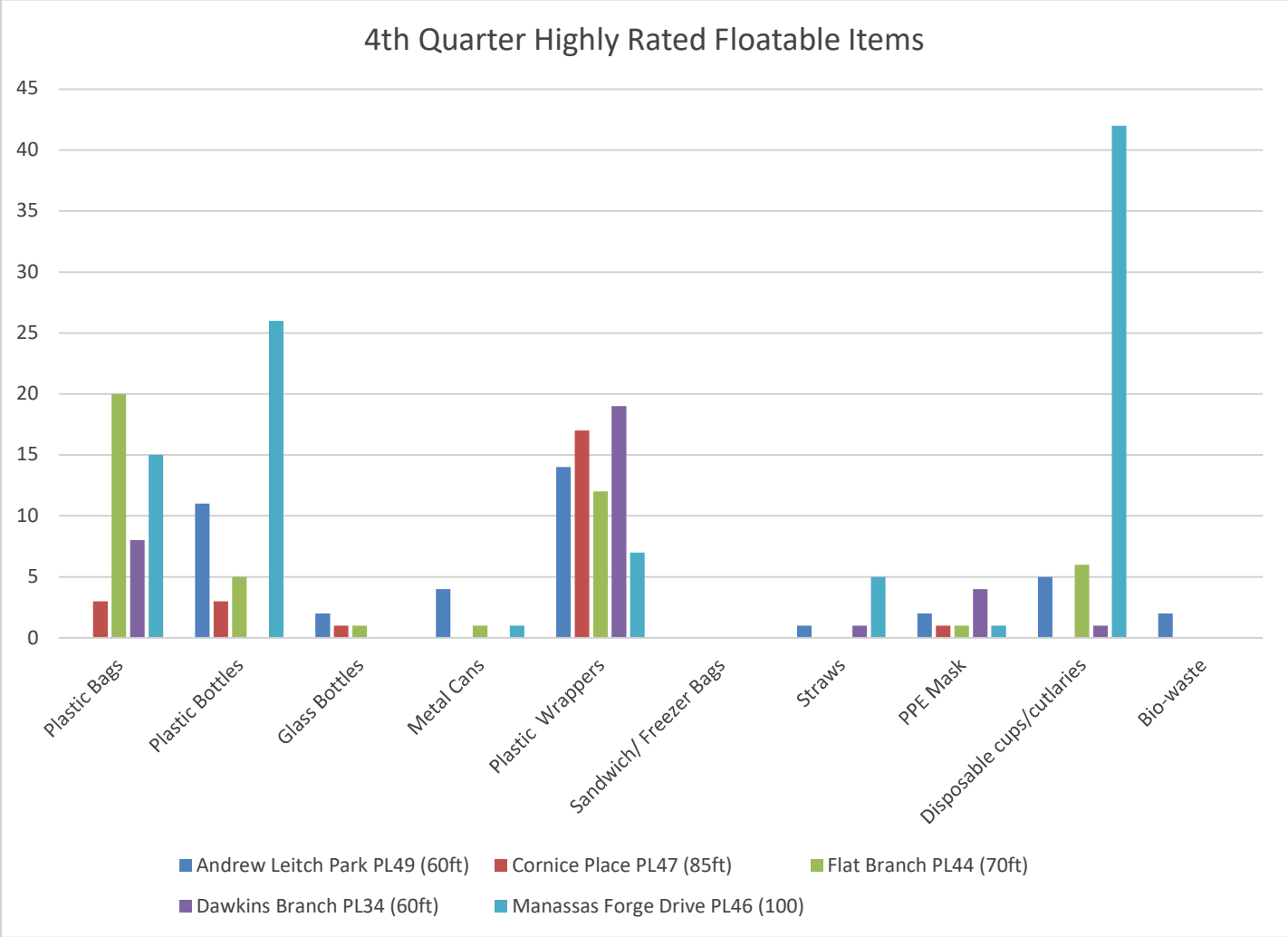


Figure 3e. Proportion of Personal Protective Equipment at all sites in 2021 FY.



PHASE IV

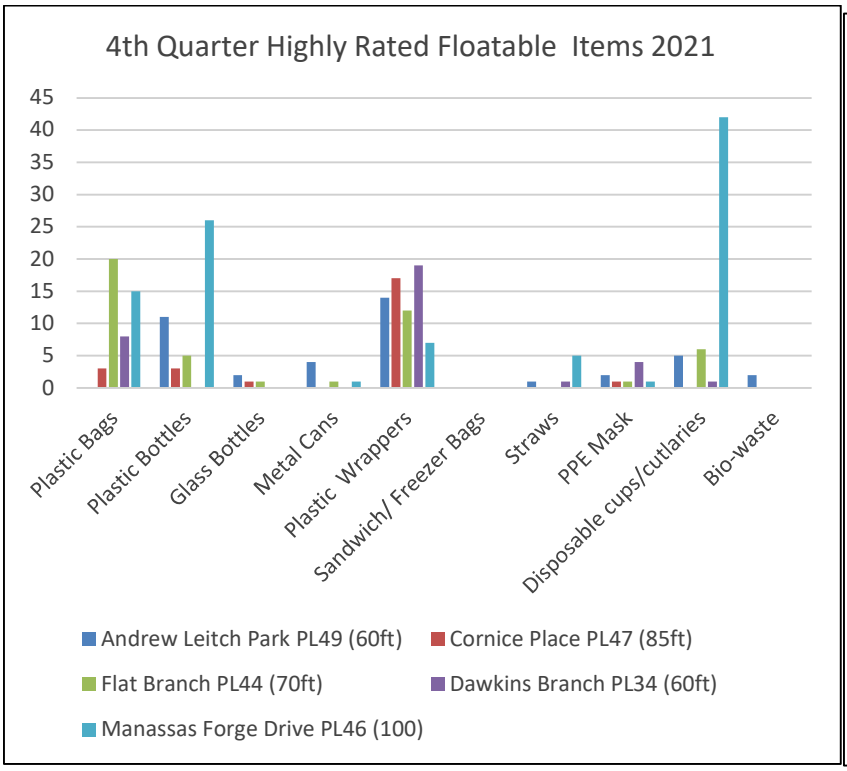
Figure 4. Top on the list Floatable Items collected during the 4th Quarter



Comparing 4th Quarter 2020 and 2021 Fiscal year

The 4th Quarter of 2021 showed a significant increase in plastic wrappers at all five sites. Personal Protective Equipment (PPE) seen as masks and gloves and disposable items (cups and cutleries) were significant especially at Manassas Forge (Figure 4a). This trend could clearly be related to the pandemic as more folks depended on take-a-away food from restaurants and snacks compared to the case in 2020.

Figure 4a. Comparing 2020 and 2021



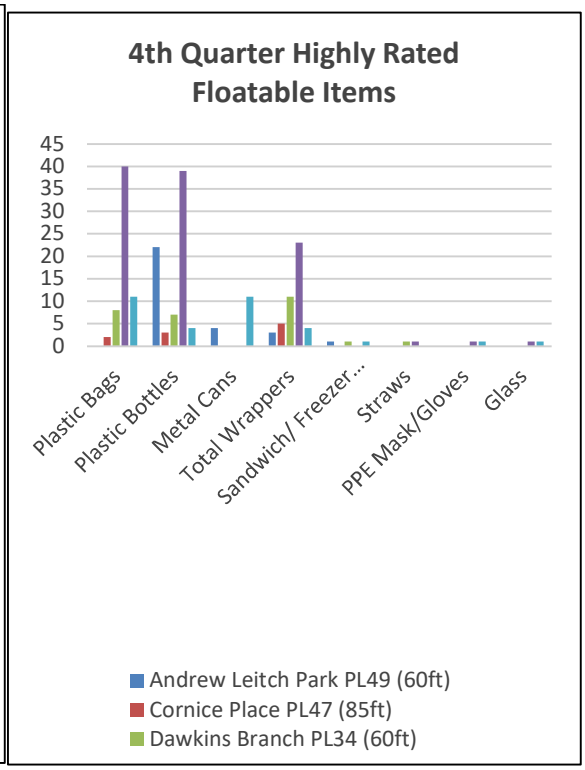
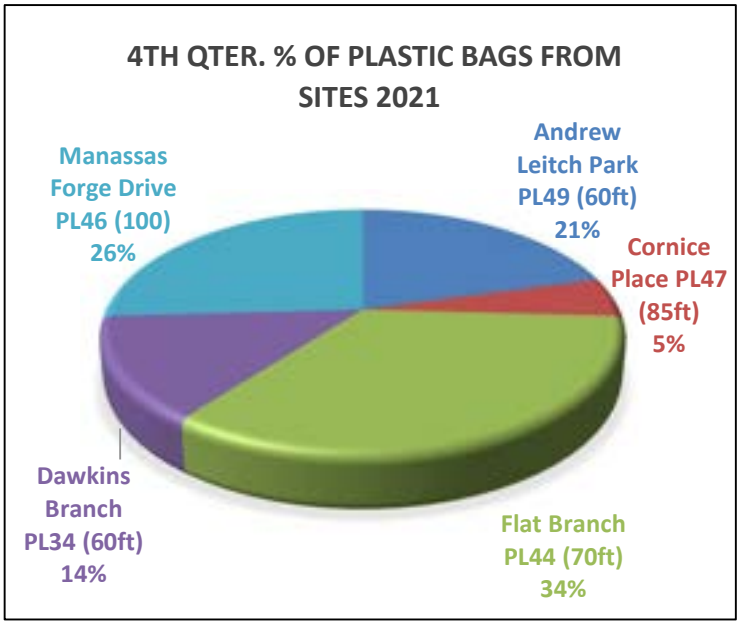


Figure 4b. Proportion of plastic bags - 4th Quarter



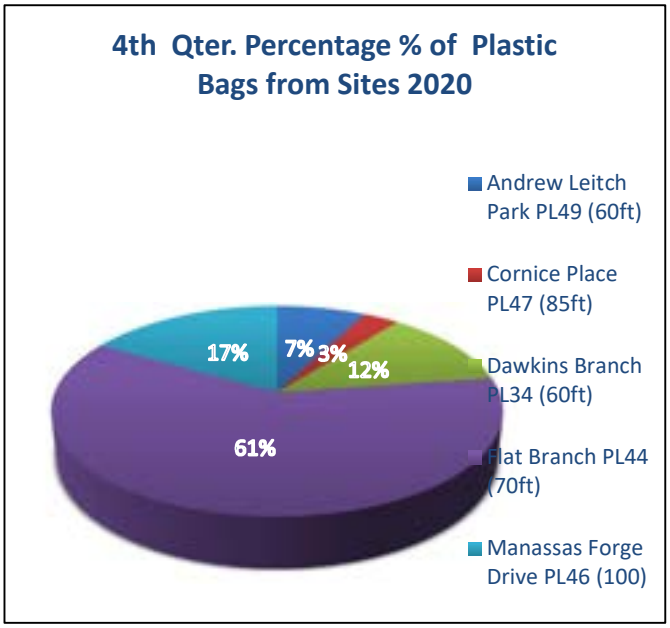


Figure 4c. Proportion of plastic bottles

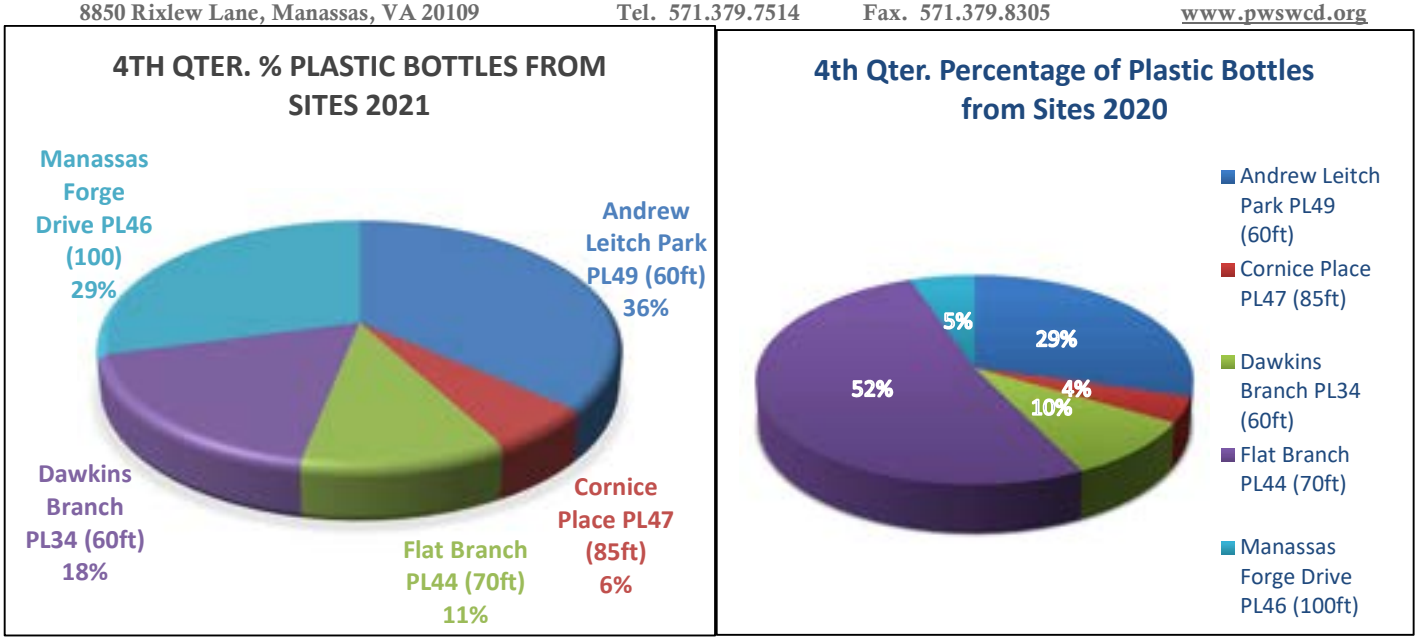


Figure 4d. Proportion of plastic wrappers

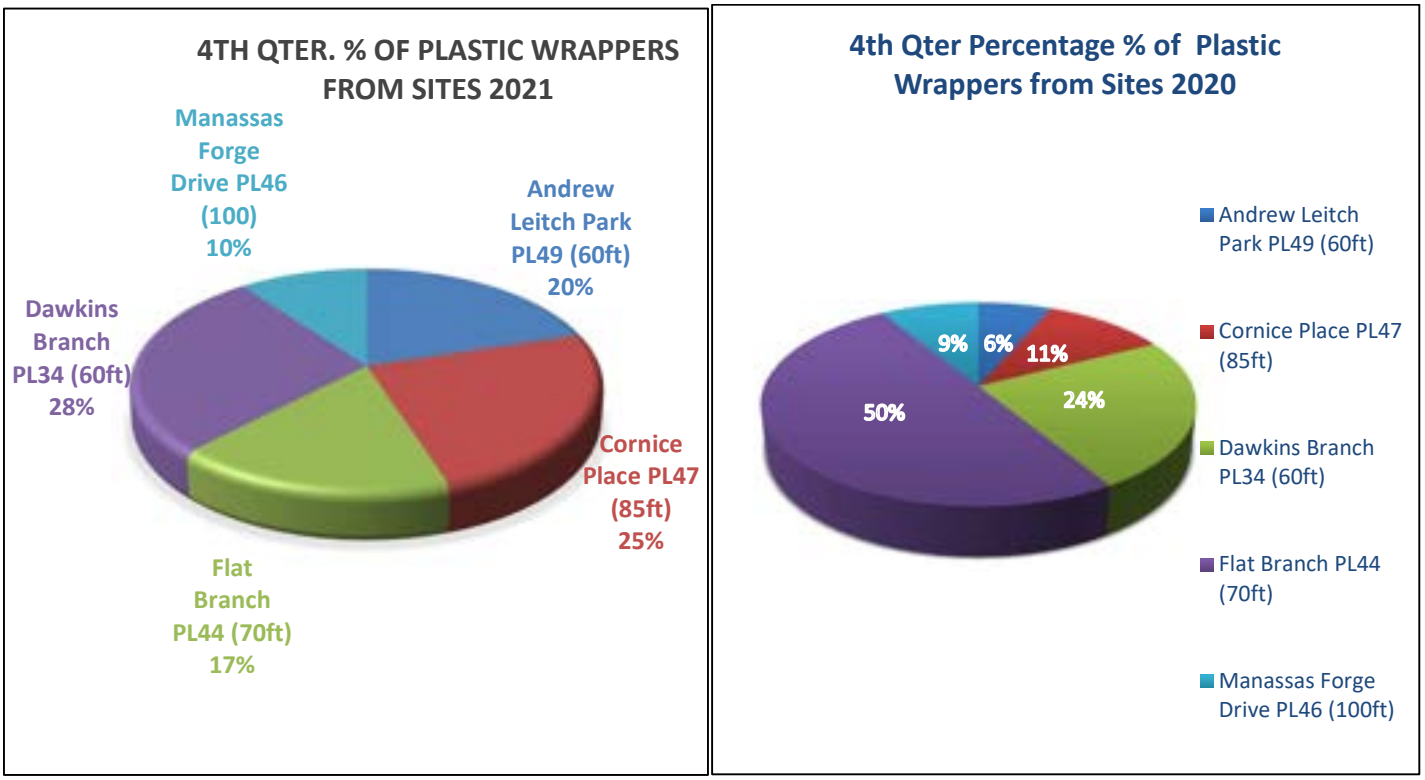
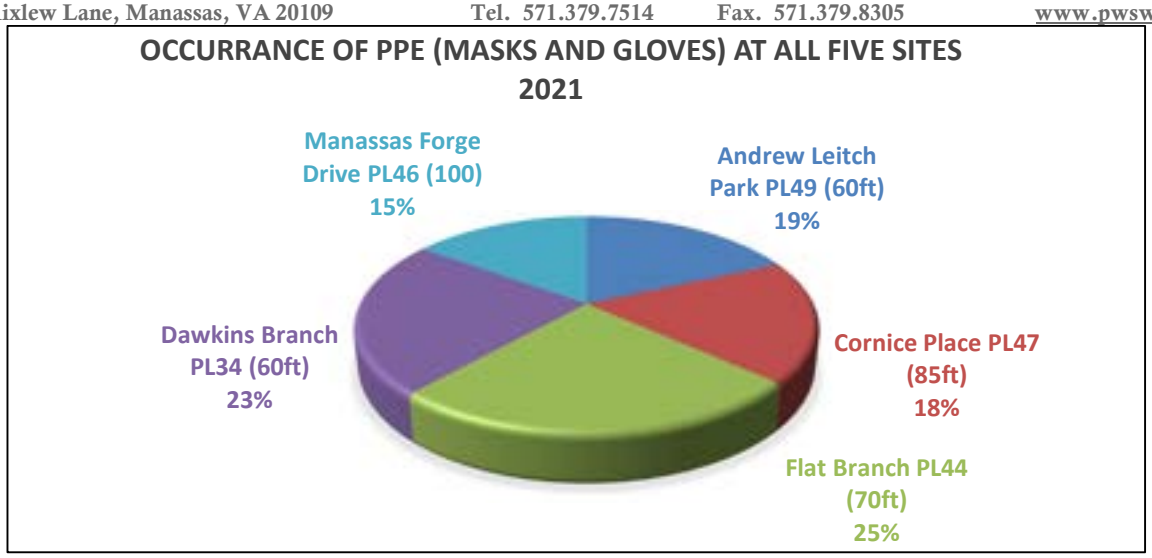


Figure 4e. Proportion of Personal Protective Equipment at all sites in 2021 FY.



General Analysis of Floatable Items Collected in 2021

Figure 5. Total amount of items collected at all five sites in 2021

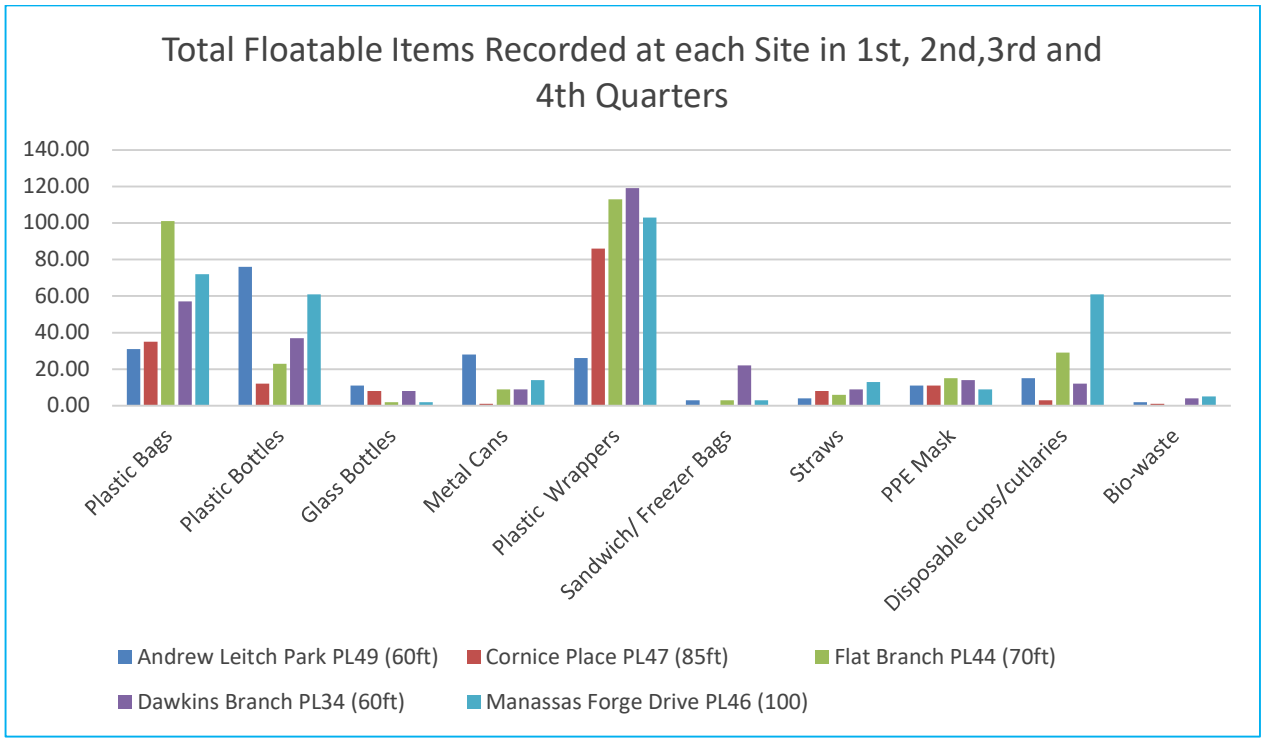
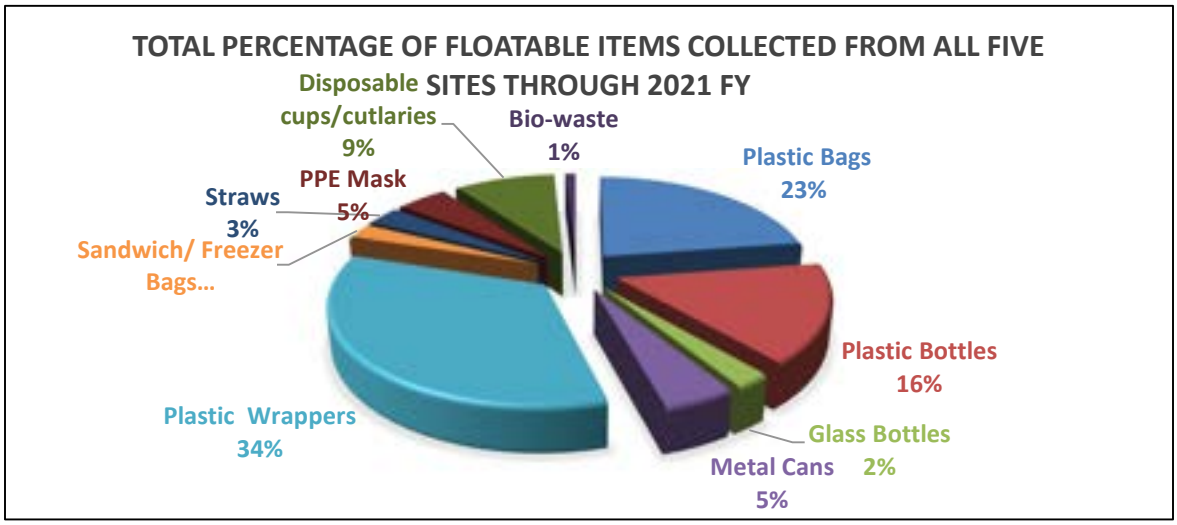


Figure 6. Total amount of items collected at all five sites in 2021

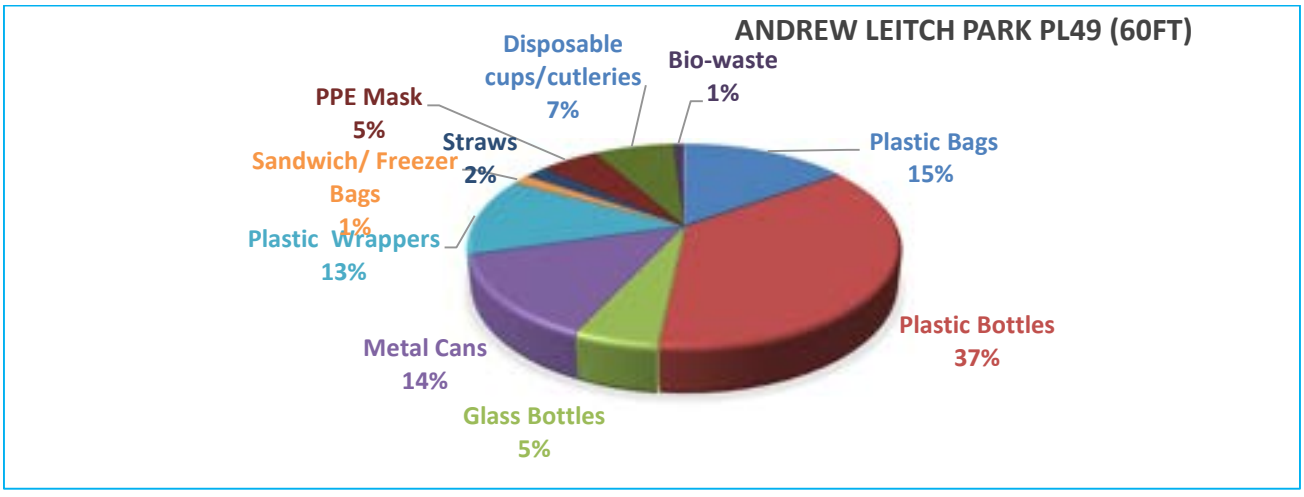


The number one floatable item collected in 2021 from all the monitoring sites was plastic wrappers making 34 % of the total bulk. Seconded by plastic bags (23%), plastic bottles (16%), and disposable cups and cutleries (9%) (Figure 5 & 6). The identification of bio-waste signifies the need for more education to residence on the proper disposal of dog poop bags especially when using the trails.

Analysis of total floatable items collected at each site in 2021

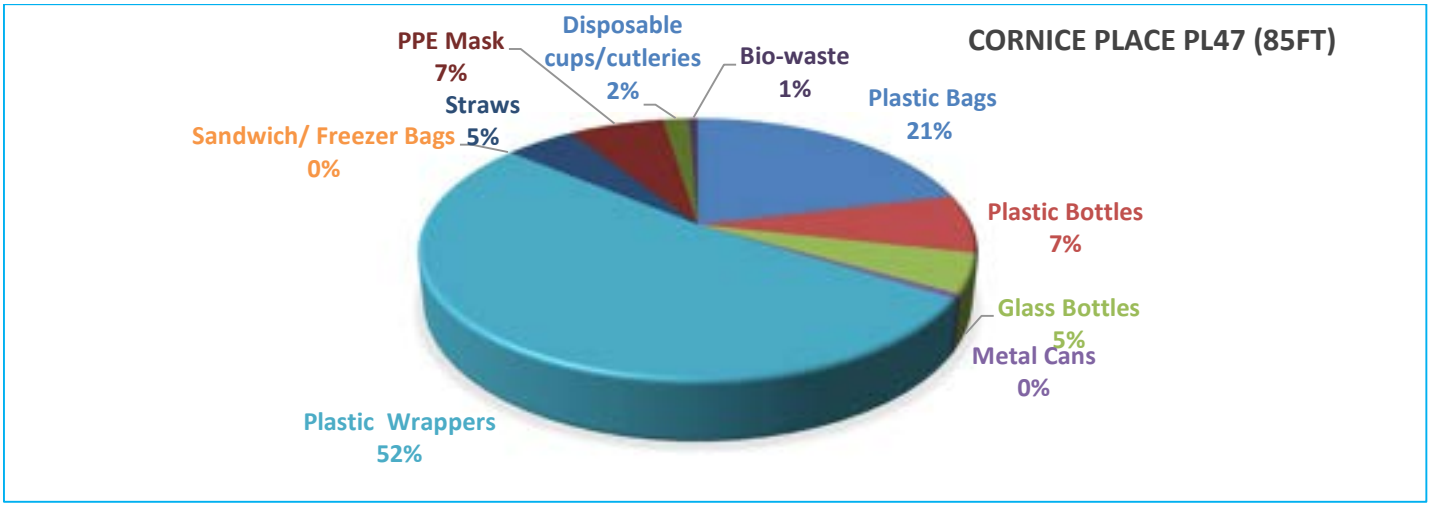
1. **Andrew Leitch Park PL49 – Neabsco Creek (60ft)**

This 60ft. monitored distance was dominant in plastic bottles (37%), plastic bags (15%), metal cans (14%), plastic wrappers (13%) and a significant presence of disposable cups and cutleries (7%).



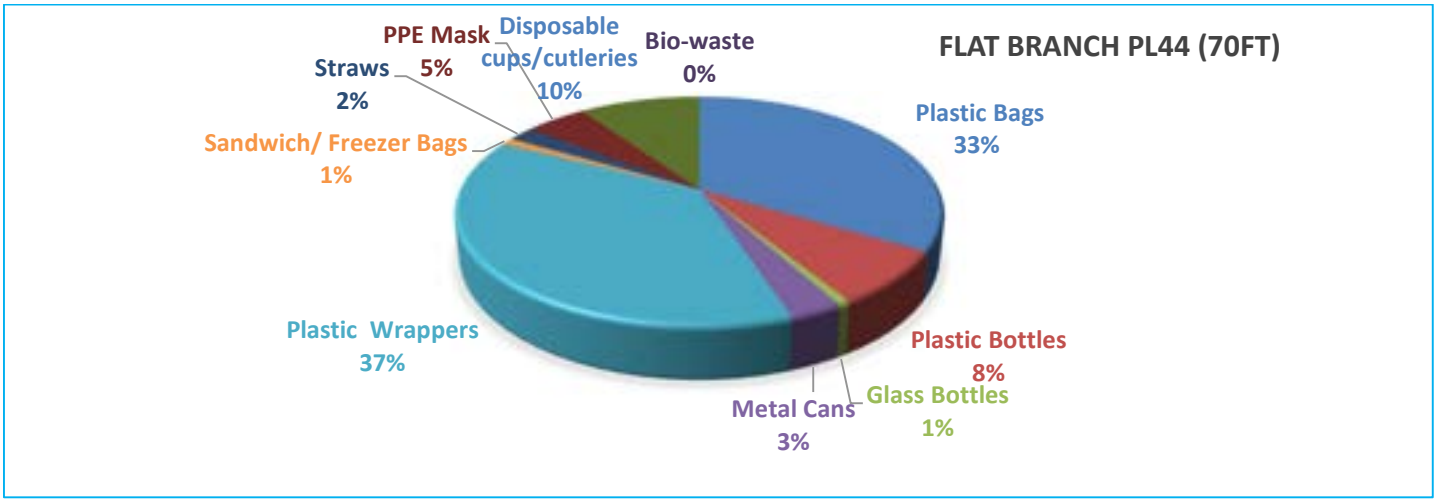
2. **Cornice Place PL 47- Hooes Run (85ft)**

This 85ft. monitored distance was dominant in plastic wrappers (52%), plastic bags (21%), plastic bottles (7%) and a significant number of PPE (dominantly masks) 7%. It is worth noting that there is constant presence of oil sheen in the stormwater drain present at this location.



3. Flat Branch PL44 - Bull Run (70ft)

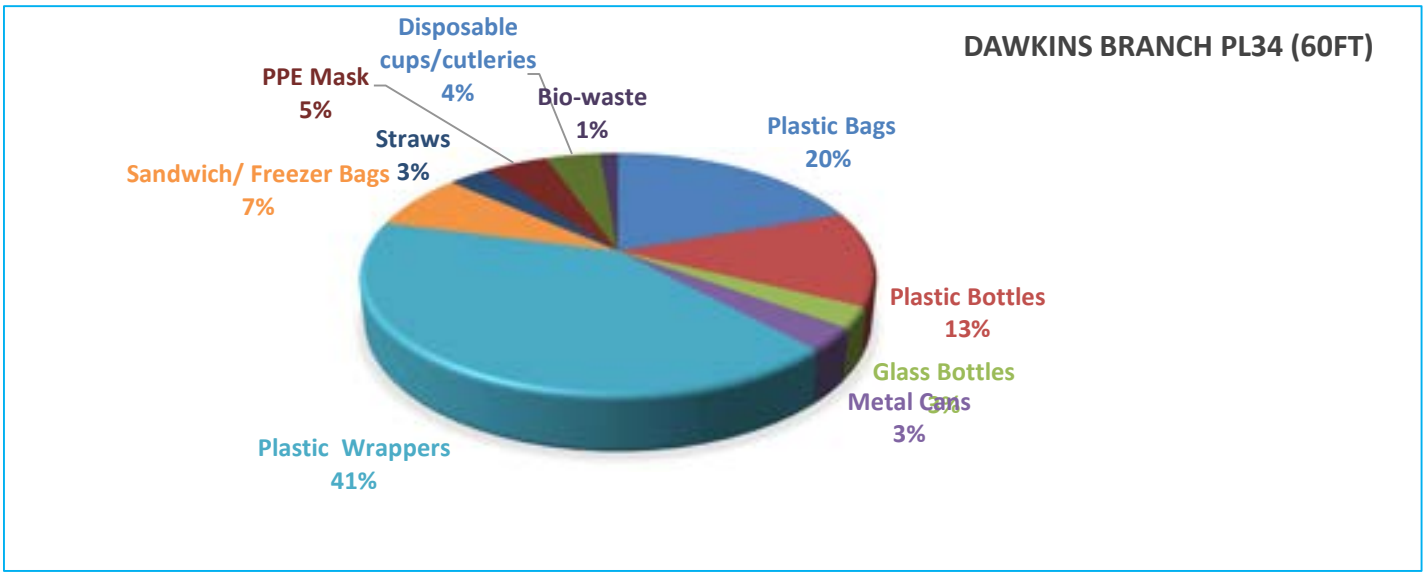
This 70ft. monitored distance was dominant in plastic wrappers (37%), plastic bags (33%), plastic bottles (8%) and a significant number of disposable cups/cutleries 10% and PPE (dominantly masks) 5%.



4. Dawkin's Branch PL34 - Broad RUN (60ft)

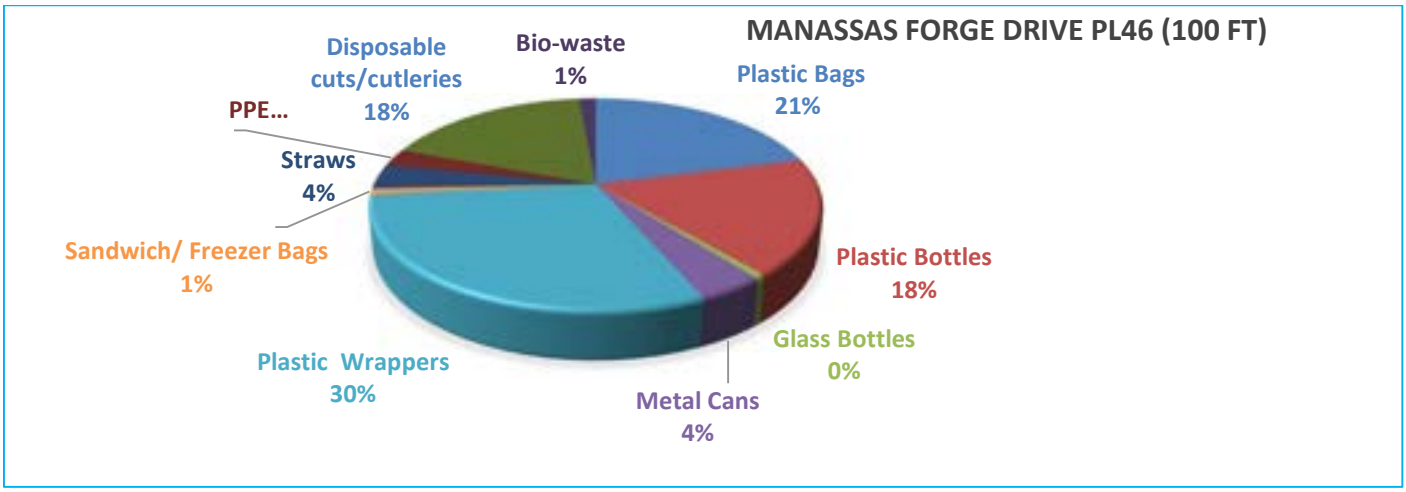
This 60ft. monitored distance was dominant in plastic wrappers (41%), plastic bags (20%), plastic bottles (13%) and a significant number of sandwich /freezer bags (7 %) and PPE (dominantly masks) 5%. The significant

presence of bio-waste in the form dog poop bags could be attributed the dog walked on the trail by residents. This calls for the need for more awareness in handling dog poop waste in the community.



5. Manassas Forge PL46 (100ft)

This 100ft. monitored distance was dominant in plastic wrappers (30%), plastic bags (21%), plastic bottles (18%) and the highest number of disposable cups/cutleries (18%). This significant amount of disposal cups and food related items could be directly attributed to take-a-away foods from restaurants during the Covid-19 pandemic.



The Prince William County Floatable Monitoring program which started in July 2016, has seen a significant progress as it applies techniques to help capture meaningful data that reflects the types of floatable items that are dominating local waterways in Prince William County.

As efforts to support the County's Green Community Goals, every year, lessons and knowledge gained from the previous years are put in place to restructure the results of the previous years. For example, the 2019 report laid more emphases on plastic bags and plastic bottles as the dominant items recorded. In 2020, the issue of rising plastic wrappers and Personal Protective Equipment.(PPE) in waterways was identified. All these changes emphasize on the need to explore more on the impact of plastics in relation to water pollution especially at time when COVID-19 pandemic appears to be a contributing factor on how humans are currently relating to the environment and its waterbodies.

This 2021 Fiscal report has noticed an outstanding increase in the number of plastic wrappers in Prince William County waterways. The significant presence of PPE (masks and gloves) and disposable food items in waterways call for concern. This trend could be directly linked to the impact of the COVID-19 pandemic and how folks have been adjusting and adopting to changes in the environment and maintaining social distancing. As folks adjust to isolation, they are forced to go out for long nature walks, taking with them more snacks. Probably the reason why there is an increasing number of plastic wrappers in waterways. It is important to examine this new PPE trend in waterways in relation to the COVID-19 pandemic and how it impacts the environment for a general fix.

PHASES

This report covers five floatable monitoring sites which are monitored quarterly: Phase I (July 2020 – September 2020), Phase II (October 2020 – December 2020), Phase III (January 2021 – March 2021) and Phase IV (April 2021 – June 2021).

The data of 2021 has drawn more attention on plastic wrapper, plastic bags, plastic bottles, disposable food items and PPE (masks and gloves)

Phase I. Flat Branch recorded the highest number of plastic wrappers, plastic bags, disposable food items, followed by Manassas forge, Andrew Leitch, and Dawkins Branch (See Figure 1a)

Phase II. More floatable items were present in the 2nd quarter of 2021. More Personal Protective Equipment (PPE) as masks and gloves were significant because of the COVID-19 pandemic.

Phase III. In the 3rd Quarter, plastic wrappers were significantly dominant at all five monitoring sites followed by plastic bags and bottles (figure 3).

Phase IV. The 4th Quarter of 2021 showed a significant increase in plastic wrappers at all five sites, Personal Protective Equipment (PPE) and an outstanding presence of disposable food related items are observed especially at Manassas Forge (Figure 4).

Some recommendations:

- As humans adapt to changes in the environment because of the COVID-19, there is the need for more education on how to dispose trash and litter to protect local waterways
- There is the need for partnership and networking in water quality awareness between the Prince William County School system and all environmental agencies in Prince William County.
- There is need for more education and environmental programs (such as water quality monitoring) to promote water quality and plastic pollution awareness in Prince William County (residents and schools)
- There is need to promote more citizen science for groom more community scientists to monitor waterways from more water quality awareness in Prince William County
- The need to add one or two new floatable monitoring sites to the existing list with direct connection to large human interactive areas like shopping malls. This will capture data that will support and enforcement more policy change around the management of floatable items.
- It is time to demonstrate the impact of floatable items and data to Prince William County residents using significant sites that will greatly reflect the problem. This could be done by adding some stormwater drainages/ponds areas to the floatable monitoring sites for citizen scientists. This data will reflect and show the community what is happening in all nearby stormwater drainages/ponds should litter and trash is not well controlled in Prince William County
- All these done, the education on water quality awareness and how litter and trash impact water quality especially in suburban communities achieved. This will also help to address the issue of environmental justice and equity in water resources in Prince William County as more folks will get engaged to promote change and the County's sustainable goals

Conclusion

As Prince William County advances in floatable monitoring, the data collected is getting more meaning in addressing the growing challenges around water quality and plastic pollution in a diversified suburban community in the United States

Water pollution is an important topic that relates to human vitality. Therefore, there is great need to promote this awareness for a sustainable Prince William County and to get more folks engage in building the County's Green Community Goals in the Chesapeake Bay watershed.

Prince William County

Floatables Monitoring Program

Permit No.
VA0088595

Prince William County Department of Public Works
Watershed Management Branch
5 County Complex Court, Suite 170
Prince William, Virginia 22192

5/1/2016

Table of Contents

I. Introduction

Prince William County is dedicated to Program providing its citizens with the healthiest environment possible. It is with this goal the County establishes programs aimed at reducing pollutant impacts from heavily urbanized and industrialized areas. Non-point source pollution from urban and industrial areas within the County is a great concern due to its potential to impact water quality. Pollutants are transported from these areas during rain events and often deposited untreated into nearby streams and rivers. To mitigate this issue, the Environmental Protection Agency (EPA) and Virginia Department of Environmental Quality (VA-DEQ) have instituted programs aimed at reducing the potential impact of pollutants from urban areas. Goes into

Under the Virginia Pollutant Discharge Elimination System Permit Program (VPDS) and Virginia Stormwater Management Program (VSMP) permits are issued aimed at reducing pollution runoff from industrial and urban areas containing Municipal Separate Storm Sewers Systems or MS-4s. These systems transport water from urbanized areas to streams and rivers and are a major concern of point and non-point source pollution. Discharges from MS4s are regulated under the Virginia Stormwater Management Act and Clean Water Act (CWA) through permits issued by DEQ and the EPA. Through this program, Prince William County maintains a Phase 1 VSMP MS-4 permit (Permit No. VA0088595).

Through its VSMP permit, the County is required to monitor floatables from areas suspected to be contributing excess levels of trash and refuse to its MS-4 by implementing a Floatables Monitoring Program. Unlike the Dry Weather Monitoring Program and Wet Weather Screening Program, the Floatables Monitoring Program is aimed at assessing trash loadings to streams. Using information obtained through this program, the County is to then develop strategies to reduce refuse load from these areas. The County's MS-4 permit, issued on December 17th, 2014, outlines requirements for the Floatables Monitoring Program as follows:

> **3. Floatables Solids Monitoring**
> No later than 24 months after the effective date of the permit, the permittee shall develop and implement a floatables monitoring program. The intent of the monitoring program is to determine the loading of floatables from the MS4 to streams within the county. The permittee will implement the floatables monitoring program as follows:
>
> a) Monitoring shall be conducted at five (5) monitoring sites located at MS4 outfalls and/or streams receiving discharges from the MS4.
>
> b) Monitoring shall be conducted once per quarter after program implementation.
>
> c) The monitoring program shall include the count of floatables visually observed and length or area of sites assessed.

This program manual describes the methods and procedures for Prince William County's Floatables Monitoring Program. All procedures are subject to modification as program feasibility and applicability are assessed during program implementation. All program modifications will be noted as part of the County's Program Plan.

II. Site Selection

a. Initial Locations and Site Screening

i. Methods and Results

Initial site locations were provided by the Prince William County Soil and Water Conservation District (PWCSWCD) from a list of sites currently monitored under its stream stewards program. These nine sites were selected as the starting point during site screening since the PWCSWCD currently visits these sites on a quarterly basis, and Floatables monitoring could straightforwardly be incorporated with the stream stewards program.

Three additional sites were identified using GIS in the need to incorporate a more diverse set of land uses in the floatables analysis, as the sites monitored by PWCSWCD were located in mostly residential areas. These sites were located by making an overall observation of the County's service area and the location of its regulated outfalls in relation to areas with diverse land uses. The first supplementary site was located off of Liberia Avenue, near the intersection of Liberia and route 294. This site includes discharge from an upstream commercial area. The second additional site is located on flat branch near the intersection of Sudley Road and Goodwin Drive. This site incorporates an area with a high degree of impervious surfaces and includes drainage from commercial and industrial land uses. Finally the third additional site is located on Cornice Place off of Old Bridge Road. This area drains from a smaller shopping center, and would be a good opportunity to see how BMPs applied in that shopping center can effect floatables numbers downstream.

b. Selection of final sampling sites

i. Methods

Sites identified during initial site screening were visited and scored according to a set of metrics. These metrics were adopted in order to identify optimal locations for floatables monitoring. Metrics incorporated elements analyzing the quality of upstream conditions, land uses, safety and access of the site, size of contributing drainage systems, and opportunity to reduce floatable sources. Each metric was scored on a scale of 1-5 with a score of 5 being the most desirable, and 1 being the least. The total score for each site was calculated by averaging the scores from each metric for the site. Sites with the highest average score were the most desirable for use in the floatables monitoring program.

Within each site, a sampling area will be selected. This sampling area will outline where volunteers or staff are to assess floatables. This sampling site will be selected during the first sampling period, and will encompass the area where the most floatables are identified.

ii. Results

All 12 sites were analyzed for use in the program. The score results from each site are located in Table 1 below.

Table 1: Site Assessment Scores

Site	Score
Site 7: Neabsco Creek, Andrew Leitch Park	3.6
Site 10: Liberia and 294	3.6
Site 3: Dawkins Branch, Victory Elementary	3.4

Site 11: Flat Branch	3.4
Site 12: Cornice Place and Old Bridge Road	3.2
Site 4: Dewey's Creek, Wayside Drive	3.2
Site 9: Powell's Creek, Monclair	3.0
Site 6: Hooe's Run, Springwood Drive	2.6
Site 5: Hooe's Run, Castile Court	2.6
Site 2: Catharpin Creek, James Long Park	2.6
Site 8: Neabsco Creek, Cloverdale Park	2.4
Site 1: Bull Run, Ben Lomond Park	0

Site scores varied from 3.6 to 0. Site 1 was disqualified due to a lack of MS-4 outfalls discharging into the stream segment. Sites that ranked the highest typically had a mix of contributing land uses and highly accessible, countable, and identifiable sources of floatables within the stream segment. Sties typically had one to three regulated outfalls discharging to the stream, and had medium to small contributing drainage areas. The top 5 sites are selected for the program, with the top 2 sites used for the pilot study. Completed site assessment sheets are available in Appendix A.

c. Site Rotation

Sites will be rotated from monitoring cycle if it is determined that the site does not perform as expected. This can occur for several reasons such as, if the site does not receive sufficient trash counts, if access to the site becomes too dangerous for staff to safely perform monitoring, or if activities occur on site that render monitoring impractical such as a stream restoration or redevelopment projects. Sites must remain in the program for at least one year before being replaced by another site, unless circumstances arise that prevent monitoring from occurring.

Replacement sites will be selected in the same method as described above in section b. New candidate sites will be selected from the list of sites that were not selected in the initial site selection procedure and from suggestions from County Staff.

III. Field Procedures

a. Pilot Program

i. Methods

To test and refine monitoring program procedures as well as assess staff effectiveness in monitoring efforts, the Floatables Monitoring Program will first operate under a pilot program. The pilot program will conduct monitoring at two sites for four sampling periods. In order to proceed with main sampling program in a reasonable timeframe, the pilot monitoring will take place at an accelerated schedule. Instead of sampling once per quarter, monitoring will be conducted once per month. Factors such as sampling procedures, sampling site characteristics, safety measures, and monitoring forms will be evaluated during this time. The pilot program will last a total of 4 months before the main monitoring program begins.

ii. Results

Pilot Program results will be included at the end of the pilot study for the program.

b. Training

Sampling will be performed with a mix of paid staff and volunteers. In order to maintain consistency in the program in the event that different groups of people sample different sites, or different groups of people sample from each sampling period to the next, training must take place. Staff will be responsible for reading and understanding the methods presented in this manual, and relaying that information to volunteers. Staff will be directed to either be present during all sampling events, or at the very least be present for the first sampling event a volunteer participates in. Important concepts to place emphasis on when training volunteers are bankfull depth, the location of site markers, and the layout of the sampling form. A sampling manual shall be provided to each volunteer performing monitoring and each inspection sheet will include instructions and a detailed list of site locations. Volunteers can be directed to contact PWC staff if needed.

c. Sampling Methods

Sampling will be consistent across all sites. As referenced in section II.b, a sampling area will be selected within each monitoring site. The sampling area will be identified on site with simple wooden stakes. The stakes will be labeled to indicate the direction to follow when sampling and also indicate the bankfull height of the stream. If a distinct sampling direction is not indicated, it will be assumed sampling will take place in the direction of stream flow. The distance between stakes will be approximately 100 ft. Floatables monitoring staff will walk the length of the sampling area counting the type and amount of each floatable type. Refuse will be considered a floatable eligible to be counted if it is above the water line, within the confines of the stream, and below the bankfull mark of the channel, as described in figure 1 below. Observations will be recorded on the form presented in section IV.a. Data sheets will be provided to the County at the end of each monitoring year and kept within the County's Floatables monitoring manual in Appendix B.

Figure 1. Bankfull Diagram, Credit Indiana FDH

d. Safety

Safety an important goal of the floatables monitoring program. When performing monitoring, staff should be equipped with proper footwear and clothing. This includes at a minimum closed toed shoes. Staff are recommended to also wear long sleeved shirts and pants, as well as waterproof gaiters or shoes in the event entering the stream is necessary. Staff should avoid accessing areas with high slopes and steep drop-offs.

The accessibility and safety of monitoring sites are incorporated in the site analysis used to determine sampling sites. Within sampling sites, sampling areas are identified that incorporate safe access and easy visibility for monitoring. Health and safety responsibility and accountability involves every employee. Some additional measures that should be followed or noticed includes:

1) Bring cell phone on all field site visits.

2) Exercise caution when encountering any wildlife and hazardous plants. In addition, many outfalls are located in remote areas that may be near gathering places for homeless or transient individuals. Do not enter a potentially hostile area.

3) Use common sense during electrical storms and/or when severe conditions (e.g., high wind, hail) develop. The safety of field staff overrides all other considerations.

4) Storm sewers contain a variety of water-borne bacteria and other harmful chemicals.
Wash hands or use anti-bacterial wipes or hand gels liberally, especially prior to lunch breaks, etc.

i. DANGEROUS FLORA AND FAUNA

During the course of field activities, employees may come in contact with a wide range of dangerous or toxic animals and plants. Dangerous animals may include: black widow and brown recluse spiders; fire ants; mosquitoes and biting flies; bees, wasps and hornets; ticks and chiggers; microbial organisms (e.g., found in water, soil, and air and on carrier/host organisms); rabid mammals; and poisonous snakes. Dangerous plants may include: thorny plants; poison ivy, oak, and sumac; and molds, mildews, and fungi (which may cause allergic reactions). Contact with these organisms can cause effects from simple discomfort (such as from thorny bush scratches) to severe allergic reactions and possibly death. If interactions do occur, take appropriate actions related to specific interaction and individual response to interaction.

ii. WEATHER-RELATED HAZARDS

Weather-related hazards include the potential for heat or cold stress, electrical storms, treacherous weather-related working conditions, high winds, and limited visibility. These hazards correlate with the season in which site activities occur. In the event of adverse weather conditions, the Field Team Leader will determine if work can continue without endangering the health and safety of site personnel.

iii. HEAT STRESS

Heat stress is a significant potential hazard during the warmer months. Heat stress manifests itself as one of three conditions: heat cramps, heat exhaustion, or heat stroke. Heat cramps are brought about by a prolonged exposure to heat. As an individual sweats, water and salts are lost by the body, triggering painful muscle cramps.

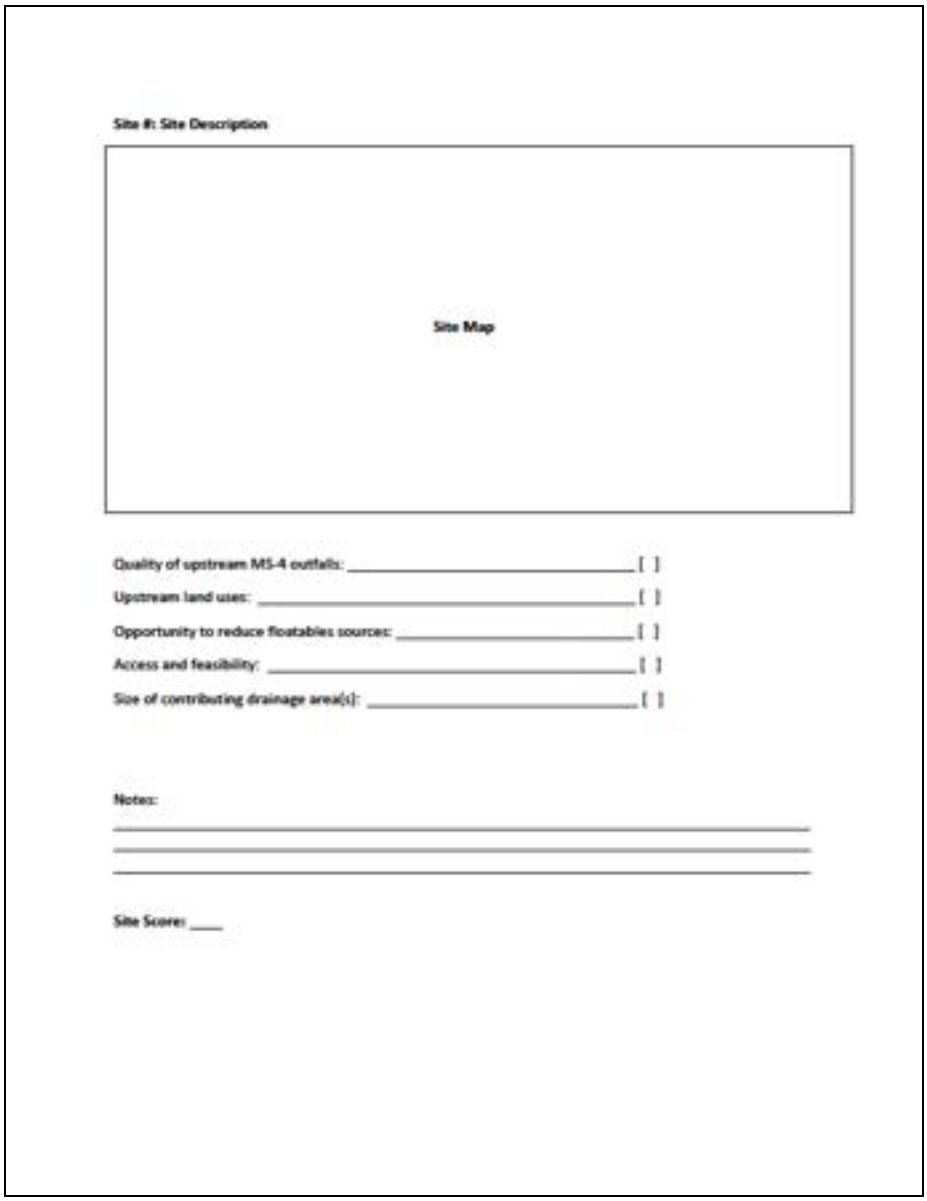
iv. COLD STRESS

Cold stress is a danger at low temperatures and when the wind chill factor is low. Cold stress is generally described as a local cooling (frost nip, frost bite, and freezing) or a general cooling (hypothermia). Personnel working outdoors in temperatures at or below freezing may be subject to local cooling. Areas of the body that have a high surface area-to-volume ratio, such as fingers, toes, and ears, are the most susceptible. General cooling (hypothermia) occurs when exposure to cold reduces body temperature. With prolonged exposure, the body becomes unable to maintain its proper internal temperature. Without treatment, hypothermia will lead to stupor, collapse, and death. Prevention of cold stress is a function of whole body protection. Adequate insulated clothing will be worn when the air temperature drops below 50 °F. Reduced work periods maybe necessary in extreme conditions to allow adequate periods in a warm area.

IV. Documentation

a. Forms

There are two types of data acquisition forms used in the program, the site identification/evaluation form, and the field inspection form. The site identification/evaluation form is used during the site selection process to evaluate potential sampling sites. It will also be used whenever new potential sites are evaluated for inclusion into the program. This form uses a set of metrics to score and average to generate a quantitative comparison between candidate sites. An example of the Site identification form can be seen in figure 2 below:


Site #: Site Description

Site Map

Quality of upstream MS-4 outfalls: _____ [ ]

Upstream land uses: _____ [ ]

Opportunity to reduce floatables sources: _____ [ ]

Access and feasibility: _____ [ ]

Size of contributing drainage area(s): _____ [ ]

Notes:

_____

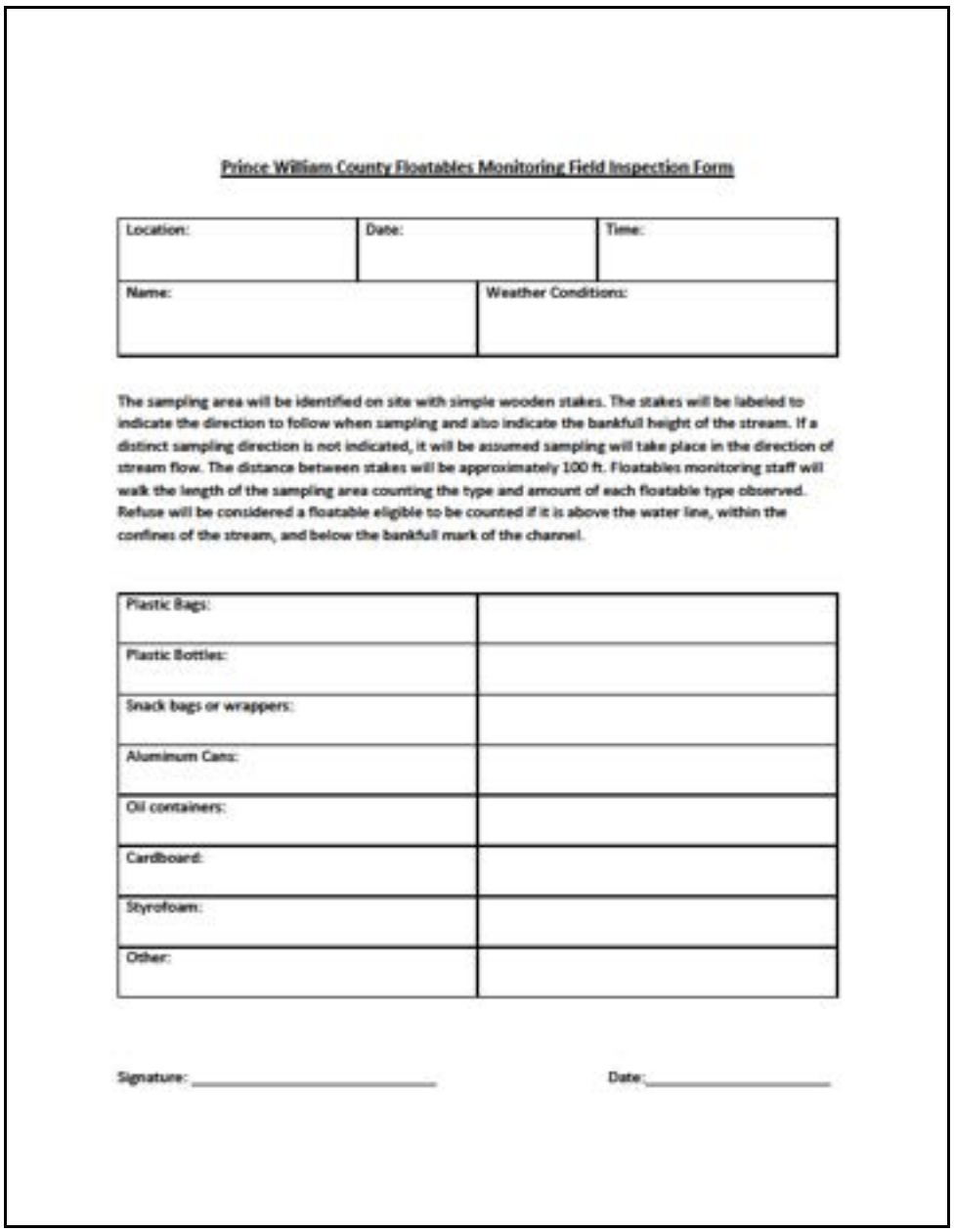
_____

_____

Site Score: ____

Figure 2: Site Identification Form

Field inspection forms are completed during each inspection. They incorporate information on the date, time, weather conditions, and site number of the inspection, Information on the person/group performing the inspection, and information on the floatables found on site. Each inspection from includes the basic sampling methods, and breaks down each floatable type typically observed in the field. An example of the field inspection form can be seen in figure 3 below:



Prince William County Floatables Monitoring Field Inspection Form

Location:	Date:	Time:
Name:	Weather Conditions:	

The sampling area will be identified on site with simple wooden stakes. The stakes will be labeled to indicate the direction to follow when sampling and also indicate the bankfull height of the stream. If a distinct sampling direction is not indicated, it will be assumed sampling will take place in the direction of stream flow. The distance between stakes will be approximately 100 ft. Floatables monitoring staff will walk the length of the sampling area counting the type and amount of each floatable type observed. Refuse will be considered a floatable eligible to be counted if it is above the water line, within the confines of the stream, and below the bankfull mark of the channel.

Plastic Bags:	
Plastic Bottles:	
Snack bags or wrappers:	
Aluminum Cans:	
Oil containers:	
Cardboard:	
Styrofoam:	
Other:	

Signature: _____ Date: _____

Figure 3: Field Inspection Form

b. Documentation and trends analysis

Data gathered in the field will be organized using an excel database provided by Prince William County. This database incorporates all site characteristics and inspections and allows for the easy identification of continued trends within each sampling site.

Each site has its own sheet within the database. Each sheet contains easily identifiable areas to enter data gathered from the field. Each site is identified at the top of the sheet along with a description of the site location. This database will be the main form of data transfer between monitoring staff and PWC.

V. Future Program Goals

a. Trash Mitigation plans

As data is gathered at sampling sites, an effort to help reduce the amount of floatables entering the streams will be developed. Using data gathered on floatables entering the stream segments, a determination of their source will be made. Efforts will then be undertaken in the surrounding drainage areas to reduce the amount of the floatables identified in the stream reaches.

These mitigation plans will focus on efforts such as ensuring recycling and trash bins have lids, enhancing trash storage, enforcing and promoting current recycling standards, promoting trash pickup events, encouraging street sweeping efforts in commercial areas, and other methods. An assessment on the effectiveness of these efforts can then be made, with the possibility of expanding mitigation plans to other parts of the County.

b. Adapting to changing MS-4 Regulations

As the program continues throughout the length of the County's current MS-4 permit, the County will monitor trends related to future requirements within the MS-4 program. This could lead to changes in the floatables monitoring program. Since the permit requirements can only be changed during permit issuance, current program goals and methods will remain constant throughout each permit period (5 years). As the timeline advances towards the County receiving a new MS-4 permit, potential changes to the program will be observed and incorporated into the next monitoring period.

APPENDIX A – Site Identification Forms

Site 1: Bull Run, Ben Lomond Park

Quality of upstream MS-4 outfalls: No quality upstream outfalls [0]

Upstream land uses: Residential, some Commercial [2]

Opportunity to reduce floatables sources: _____ [ ]

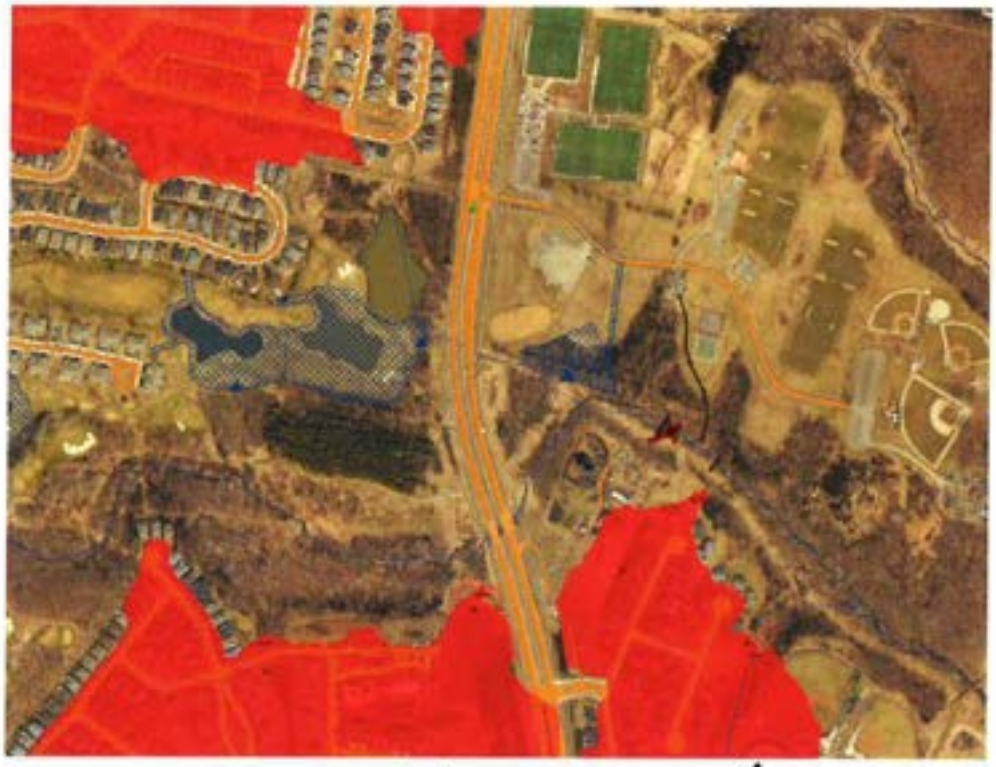
Access and feasibility: _____ [ ]

Size of contributing drainage area(s): Large >100s [3]

Notes:
No MS-4 outfalls eliminates this site from the floatables monitoring program.

Site Score: 0

Site 2: Catharpin Creek, James Long Park



Quality of upstream MS-4 outfalls: Mostly Nonpoint, One MS-4 outfall [1]

Upstream land uses: Residential, Large lot, Sports Complex [2]

Opportunity to reduce floatables sources: Not Much trash present [1]

Access and feasibility: Very easy access, ~~Limited~~ Easy Mobility latter [5]

Size of contributing drainage area(s): Small-Med [4]

Notes:

Access easily available from library parking lot. Site is downgraded by lack of floatables input, Not many MS-4 outfalls nearby, Little Nonpoint Sources. Site good for monitoring, Bad for trend analysis

Site Score: 2.6

Site 3: Dawkins Branch, Victory Elementary School

Quality of upstream MS-4 outfalls: 2 Quality outfalls [3] 2

Upstream land uses: Residential, Schools, Roadway [3]

Opportunity to reduce floatables sources: Some floatables, limited but existing sources [4]

Access and feasibility: Path allows easy access, Lateral access good [5]

Size of contributing drainage area(s): Med. - large [3]

Notes:
Good open area for monitoring. Outfalls can be Isolated to single residential area. Not Many floatables present when site inspection occurred

Site Score: 3.4

Site 4: Dewey's Creek, Wayside Drive

Quality of upstream MS-4 outfalls: One gravity outfall, [3]

Upstream land uses: Residential, Commercial, Roadway [4]

Opportunity to reduce floatables sources: Large amount of trash → Trash Source from Streambank [3]

Access and feasibility: Available parking, easy access [3]

Size of contributing drainage area(s): Large [3]

Notes:

Stream will undergo Restoration project in Coming years. May Complicate Monitoring efforts [fall 2018]. Could be good pilot site

Site Score: ~~3.0~~ 3.2

Site 5: Hooes Run, Castile Court

Quality of upstream MS-4 outfalls: 2-3 quality outfalls [3]

Upstream land uses: Residential [2]

Opportunity to reduce floatables sources: good amount of trash identifiable sources [4]

Access and feasibility: Neighborhood w/ little parking, hill difficult [2]

Size of contributing drainage area(s): Medium [2]

Notes:

good opportunity to reduce floatables, Access may be difficult, Steep slopes down to stream and stream has high steep banks.

Site Score: 2.6

Site 6: Hooes Run, Springwood Drive

Quality of upstream MS-4 outfalls: 3 quality outfalls [3]

Upstream land uses: Residential [2]

Opportunity to reduce floatables sources: little to no trash [2]

Access and feasibility: hilly area to descend, roads helps access [3]

Size of contributing drainage area(s): med - large [2]

Notes:

larger Stream, access good, but ~~needs~~ may vary according to where along reach Sampling occurs. Very little trash in Stream.

Site Score: 2.6

Site 7: Neabsco Creek, Andrew Leitch Park

Quality of upstream MS-4 outfalls: 2 quality outfalls [2]

Upstream land uses: Residential small lot [3]

Opportunity to reduce floatables sources: Low numbers of floatables [~~3~~] 4

Access and feasibility: good access, ~~Too few inputs~~ got isolated inputs [~~4~~] 5

Size of contributing drainage area(s): Small - Med [4]

Notes:

Many potential sampling sites, ~~not much trash found in stream~~, access is good. Stream size is good. ~~Exactly~~ Simple area to reduce floatables.

Site Score: 3.6

Site 8: Neabsco Creek, Cloverdale Park

Quality of upstream MS-4 outfalls: 2-3 quality [3]

Upstream land uses: Residential [2]

Opportunity to reduce floatables sources: Would be difficult to ID sources [4] little amount of trash

Access and feasibility: long way from Parking, wide deep channel [2]

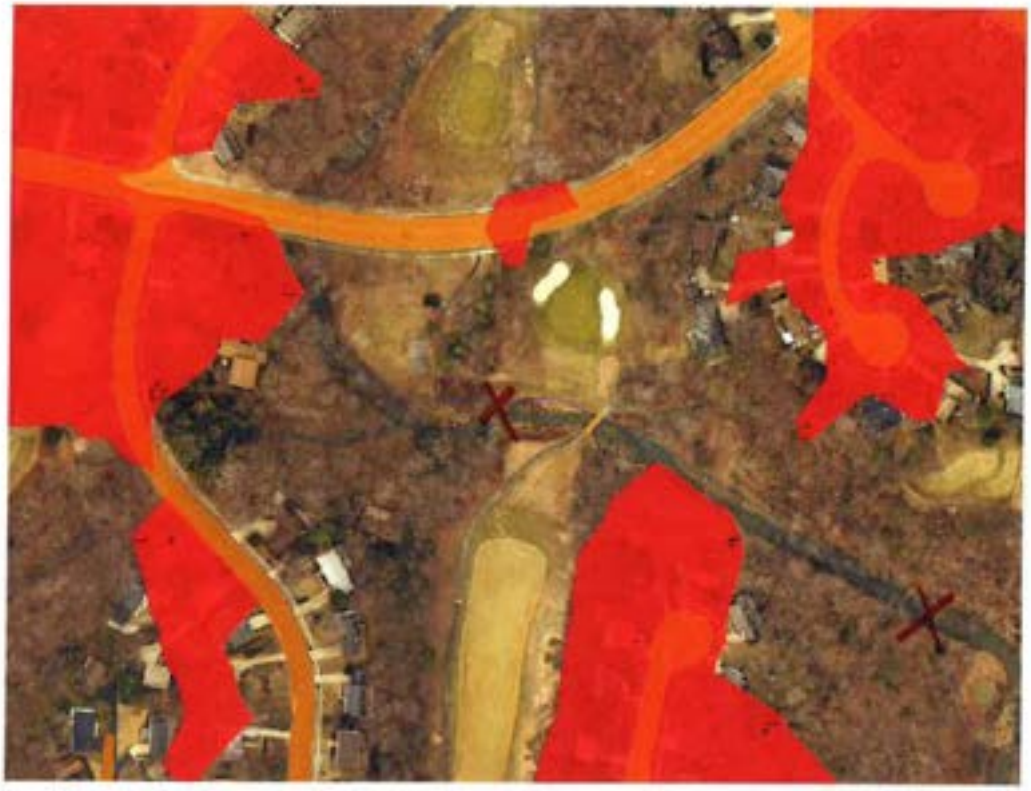
Size of contributing drainage area(s): Med. Large [3]

Notes:

wide stream make it difficult for monitoring efforts.

Site Score: 2.4

Site 9: Powells Creek, Monclair



Quality of upstream MS-4 outfalls: 1-2 quality outfalls [2]

Upstream land uses: Residential. [2]

Opportunity to reduce floatables sources: ~~Some trash, difficult to~~ Identifiable sources Some trash (3)

Access and feasibility: ~~large distance from parking, across through the creek, little channel~~ easy access (4)

Size of contributing drainage area(s): Small-med [4]

Notes:
Trash great as part of Prior Stream Restoration project which must be removed from analysis. Wide but shallow stream that receives high flows.

Site Score: 3.0

Site 10:

Quality of upstream MS-4 outfalls: Many upstream outfalls [4]

Upstream land uses: Commercial/Resdntial [4]

Opportunity to reduce floatables sources: Some [3]

Access and feasibility: Fence Impedes Access, Location below stream grade [3]

Size of contributing drainage area(s): Small-med [4]

Notes:

No Current Sampling Site. ~~[illegible]~~

Mostly Residential, Mod access to BMP, But Site can be locatio Before found off area leaves Identifiable Input Drainage Areas. Floatables are few, but have potential for more.

Site Score: 3.6

Site 11: Flat Branch

(2)

Quality of upstream MS-4 outfalls: Many [4]

Upstream land uses: Commercial/ Residential [4]

Opportunity to reduce floatables sources: Sufficient floatables [4]

Access and feasibility: Ingress/Egress through private property [3] Local access good

Size of contributing drainage area(s): Large [2]

Notes:

No Current Sampling Site. Ingress/Egress through private property. Sufficient floatables exist, but may not be attributed to MS-4 outfalls. Transported from upstream

Site Score: 3.4

Site 12:

Quality of upstream MS-4 outfalls: Many [4]

Upstream land uses: Commercial / Residential [4]

Opportunity to reduce floatables sources: Good amount of floatables [4]

Access and feasibility: Small Stream, easy access from Roadway [3]

Size of contributing drainage area(s): Very Large [1]

Notes:
No Current Sampling site. Small Stream with good floatables #'s. Easy access
May be able to discern Source of floatables to Possible Commercial Sources

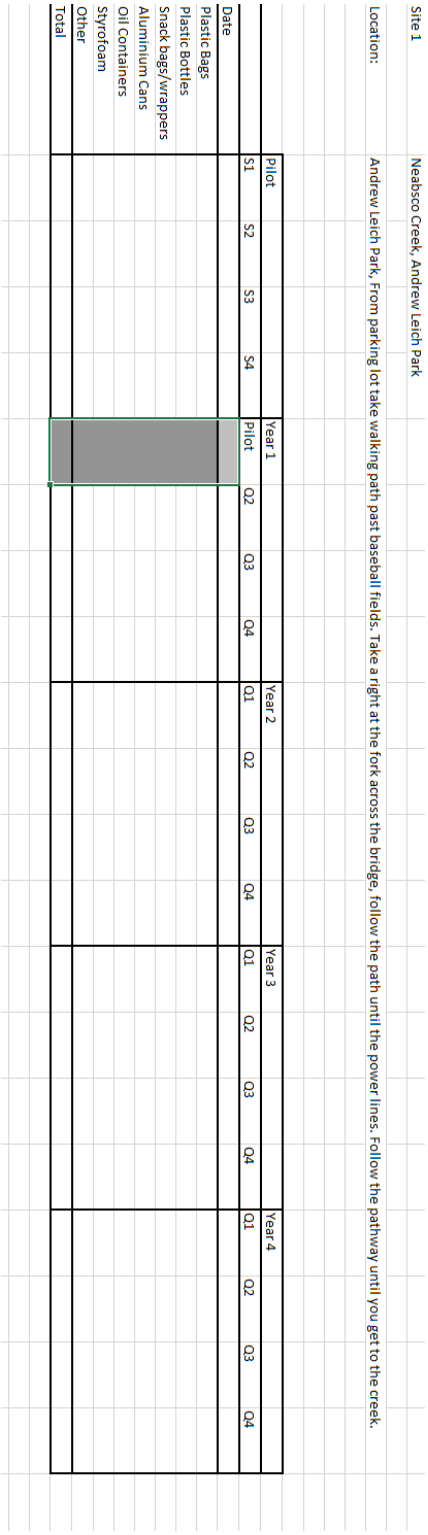
Site Score: 3.2

APPENDIX B – Field Inspection Forms

Forms will be added to this section upon completion

APPENDIX C – Floatables Monitoring Database

An example page from the document is presented below:



Site 1 Neabsco Creek, Andrew Leich Park

Location: Andrew Leich Park. From parking lot take walking path past baseball fields. Take a right at the fork across the bridge, follow the path until the power lines. Follow the pathway until you get to the creek.

	Pilot				Year 1				Year 2				Year 3				Year 4			
	S1	S2	S3	S4	Pilot	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Date																				
Plastic Bags																				
Plastic Bottles																				
Snack bags/wrappers																				
Aluminium Cans																				
Oil Containers																				
Styrofoam																				
Other																				
Total																				

Appendix 4 – Structural and Source Controls

Appendix III – Administrative and Programmatic

Public Works

Mission Statement

The goal of the Prince William County Department of Public Works is to improve the wellbeing of our community by creating and sustaining the best environment in which to live, work, and play. We protect and improve our natural resources, adopt and enforce codes and regulations, and build and maintain environmental infrastructure in our community.

Community Development Expenditure Budget: $161,878,286

Expenditure Budget: $50,858,419

33.8% of Community Development

Programs:

- Director's Office: $409,016
- Stormwater Infrastructure Management: $3,956,841
- Site Development: $3,851,207
- Watershed Improvement: $5,042,693
- Sign Shop: $261,005
- Small Project Construction: $2,099,720
- Mosquito & Forest Pest Management: $1,756,057
- Solid Waste: $29,097,761
- Neighborhood Services: $4,018,832
- Service Districts: $365,287

Mandates

Public Works provides mandated services for solid waste management and recycling and maintains existing street name signs. Public Works is liaison to the state-mandated Chesapeake Bay Preservation Area Review and Wetlands Boards. The Board of County Supervisors has enacted additional local mandates for which Public Works has responsibility.

Federal Code: 33 U. S. C. Section 1251 (Clean Water Act)

State Code: 9VAC20-130 (Solid Waste Management Regulations), 33.2-328 (Street Name Signs), 28.2-1303 (Local Wetlands Board), 62.1-44.15:74 (Chesapeake Bay Preservation Areas), Chapter 870 (Virginia Stormwater Management Regulation), Chapter 3.1 (State Water Control Law)

County Code: Chapter 2 Article VII (Wetlands Areas), Chapter 3 (Amusements), Chapter 5 Article VI (Building Maintenance Code), Chapter 12 (Massage Establishments), Chapter 13-320.1 (Designation of watercraft, boat trailer, motor home, and camping trailer "restricted parking" zones), Chapter 14 (Noise), Chapter 16-56 (Graffiti Prevention and Removal), Chapter 22 (Refuse), Chapter 23 Article II (Public Sanitary Sewers), Chapter 23.2 (Stormwater Management), Chapter 25 Article II (Subdivisions - Minimum Requirements), Chapter 29 Article II (Weeds & Grass), Chapter 32 (Zoning), Chapter 33 (Expedited Land Development Plan Review)

Expenditure and Revenue Summary

Expenditure by Program	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY21 Adopted	FY22 Proposed	% Change Budget FY21/ Budget FY22
Director's Office	$1,396,542	$1,582,998	$1,699,705	$485,698	$409,016	(15.79%)
Historic Preservation	$1,315,257	$1,374,848	$0	$0	$0	-
Stormwater Infrastructure Management	$3,546,384	$3,486,111	$4,196,209	$3,899,715	$3,956,841	1.46%
Site Development	$3,374,458	$3,637,468	$3,726,041	$4,048,222	$3,851,207	(4.87%)
Watershed Improvement	$7,365,168	$4,905,025	$4,934,270	$5,006,242	$5,042,693	0.73%
Fleet Management - PW	$9,263,362	$11,973,810	$11,378,417	$0	$0	-
Facilities Construction Management - PW	($30,906)	$105,473	$906,645	$0	$0	-
Sign Shop	$244,324	$265,403	$304,102	$217,651	$261,005	19.92%
Small Project Construction	$2,016,298	$3,183,649	$3,386,728	$2,109,675	$2,099,720	(0.47%)
Mosquito & Forest Pest Mgmt	$1,472,725	$1,546,708	$1,592,212	$1,697,311	$1,756,057	3.46%
Solid Waste	$15,397,112	$26,295,132	$17,556,951	$29,322,612	$29,097,761	(0.77%)
Buildings & Grounds - PW	$11,588,120	$12,140,167	$11,789,771	$0	$0	-
Property Management	$13,318,745	$13,398,677	$12,723,852	$0	$0	-
Neighborhood Services	$3,771,062	$3,813,251	$3,919,053	$4,108,667	$4,018,832	(2.19%)
Service Districts	$321,687	$291,740	$321,101	$365,287	$365,287	0.00%
Total Expenditures	**$74,360,337**	**$88,000,461**	**$78,435,057**	**$51,261,079**	**$50,858,419**	**(0.79%)**

Expenditure by Classification						
Salaries & Benefits	$27,745,780	$29,259,394	$30,410,528	$18,283,358	$18,586,026	1.66%
Contractual Services	$12,925,241	$14,162,645	$13,150,436	$6,104,348	$6,487,405	6.28%
Internal Services	$3,907,809	$3,745,202	$4,450,125	$2,633,458	$2,608,458	(0.95%)
Purchase of Goods & Services	$11,945,348	$13,097,756	$12,430,452	$4,512,550	$4,672,281	3.54%
Capital Outlay	$1,902,712	$4,394,195	$2,251,850	$2,394,013	$1,959,861	(18.13%)
Leases & Rentals	$7,357,523	$7,405,620	$7,802,962	$183,597	$183,597	0.00%
Reserves & Contingencies	($2,736,857)	($3,099,401)	($2,189,773)	($168,490)	($168,490)	0.00%
Amortization	$656,594	$2,614,265	$2,786,571	$2,085,793	$2,085,793	0.00%
Depreciation Expense	$1,492,152	$1,485,477	$1,294,760	$2,158,713	$2,158,713	0.00%
Transfers Out	$9,164,036	$14,935,308	$6,047,146	$13,073,739	$12,284,776	(6.03%)
Total Expenditures	**$74,360,337**	**$88,000,461**	**$78,435,057**	**$51,261,079**	**$50,858,419**	**(0.79%)**

Funding Sources						
Permits & Fees	$2,479,062	$2,974,499	$2,802,106	$3,002,522	$3,002,522	0.00%
Fines & Forfeitures	$2,004	$12,308	$155	$0	$0	-
Use of Money & Property	$1,306,429	$1,571,051	$1,402,337	$1,526,000	$1,526,000	0.00%
Miscellaneous Revenue	$744,526	$501,021	$403,642	$240,000	$290,000	20.83%
Non-Revenue Receipts	$277,087	$308,498	$327,775	$0	$0	-
General Property Taxes	$1,772,646	$1,840,171	$1,903,249	$1,870,287	$1,870,287	0.00%
Charges for Services	$38,073,282	$41,105,372	$41,860,466	$29,845,061	$30,870,061	3.43%
Revenue from Commonwealth	$666,006	$371,278	$125,857	$86,000	$86,000	0.00%
Transfers In	$1,827,770	$1,010,234	$857,626	$3,060,020	$2,194,667	(28.28%)
Total Designated Funding Sources	**$47,148,813**	**$49,694,432**	**$49,683,211**	**$39,629,889**	**$39,839,537**	**0.53%**
Use/(Contribution) of Fund Balance	**($2,175,022)**	**$4,505,491**	**($2,288,464)**	**$7,932,241**	**$7,297,812**	
Net General Tax Support	**$29,386,546**	**$33,800,538**	**$31,040,309**	**$3,698,949**	**$3,721,070**	**0.60%**
Net General Tax Support	**39.52%**	**38.41%**	**39.57%**	**7.22%**	**7.32%**	

An FY19 expense misclassification of $104,025 exists between Facilities Construction Management (FCM) and Solid Waste. The correct FY19 expense for FCM is $1,448, and the expense for Solid Waste is $26,399,221.

Staff History by Program

	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY21 Adopted	FY22 Proposed
Director's Office	5.27	6.27	6.27	6.37	3.27
Historic Preservation	14.55	14.55	0.00	0.00	0.00
Stormwater Infrastructure Management	25.16	26.44	27.01	23.58	24.18
Site Development	27.78	27.50	29.23	28.74	27.95
Watershed Improvement	11.22	11.22	10.92	10.98	11.27
Fleet Management	35.15	35.15	44.41	0.00	0.00
Facilities Construction Management	10.00	10.00	10.00	0.00	0.00
Sign Shop	4.16	4.16	4.16	4.06	4.06
Small Project Construction	14.43	14.43	12.43	16.42	16.42
Mosquito & Forest Pest Management	14.00	14.00	14.00	14.02	14.02
Solid Waste	60.72	62.72	65.72	65.72	65.72
Buildings & Grounds	80.47	80.47	81.47	0.00	0.00
Property Management	18.00	19.00	19.00	0.00	0.00
Neighborhood Services	37.11	37.11	36.11	36.11	35.11
Service Districts*	0.00	0.00	0.00	0.00	0.00
Full-Time Equivalent (FTE) Total	**358.02**	**363.02**	**360.73**	**206.00**	**202.00**

Future Outlook

Construction Costs and Labor Shortages – A shortage of skilled labor is having direct effects on construction costs and hiring of qualified construction and maintenance personnel. High demand and increases in pay of truck drivers and equipment operations in the private sector have made it difficult to retain and hire qualified operators. Factors leading to the construction cost escalation include the following: loss of skilled labor, an increase in the number of public and private sector projects, reduced competition, and increases in salaries. The recent pandemic has made the procurement of some construction materials more difficult and has increased prices as well.

Solid Waste Issues – Recycling markets have continued to be depressed due to lack of markets and manufacturing facilities that use recyclable products. The prices to process recyclable material at local recycling facilities continue to be higher than refuse disposal costs and make it difficult for refuse haulers to economically provide recycling services and find markets for collected recyclables. A new program for glass recycling should be expanded.

Planning for the permitting and construction for the Phase IV landfill area, scheduled to open in FY30, is in progress. Additional land was purchased in FY21 and one additional parcel is under negotiation with the property owner. Costs to build access roads, new scale facilities, crew offices and a new heavy equipment shop will need to be funded to build and operate the Phase IV area. To avoid a large fee increase when future Phase IV costs are necessary, a review of the Solid Waste Fee and proposed increases in revenue should be considered as recommended in the recent audit of the solid waste system performed by RSM Internal Audit June 11, 2020. Debt financing for future Phase IV infrastructure should also be considered and analyzed.

The opening of a new advanced compost system occurred in July 2020. Changes in Chapter 22 of the Prince William County (PWC) Code, to include new requirements for mandatory separation of yard waste, was approved by the Board of County Supervisors (BOCS) on December 15, 2020, via Ordinance 20-55, to be implemented in FY21. This will increase recycling and extend the life of the landfill by 10 to 15 years.

Development and implementation of new alternative waste conversion technologies continues to be an opportunity to reduce waste disposed at the landfill. The long-term cost/benefit of these alternatives have been analyzed and future discussions are ongoing. The impacts of these proposed changes have been analyzed through development of various scenarios of the Solid Waste 15-year forecast projections.

Stormwater Management and Dam Safety – Environmental Services anticipates a marked increase in dredging (removal of silt and mud) from stormwater management ponds and facilities as the next phase of our County stormwater management program. With over 1,000 ponds and facilities in our inventory – and the number continues to grow – along with the high cost of dredge material disposal, this activity will have an impact on the stormwater management fee. Additionally, as County stormwater infrastructure (pipes and culverts and easements) continues to grow and age, more inspections, maintenance, and repairs will be needed, especially to prevent localized flooding. Localized flooding continues to be of concern as the intensity and number of significant rain events in the County is increasing. Lake Jackson Dam is an aging County-owned dam that is seeing an increase in expenses related to dam safety, maintenance, and operation costs to meet Dam Safety Regulations and Permit Certifications.

COVID-19 Pandemic Impacts – Work methods and protocols, schedules, and the way work is completed by both those whose work is performed in an office setting and those whose work is in the field have changed and will most likely not go back to the way work was done before COVID-19. Remote work, online shopping, and safer-at-home-stay practices have resulted in diminished in-person commerce. Less use of commercial properties and increasing vacancy rates have resulted in reduced and deferred maintenance, as well as tall grass/weeds. In addition, there are large sections of the workforce that are unemployed or underemployed. Deferred utility payments and prohibitions on evictions for lack of payment loom large, as well as a possible increase in foreclosures resulting in neighborhood deterioration.

General Overview

A. Base Revenue Adjustments – The Proposed FY2022 Budget includes the following base budget revenue adjustments:

- Solid Waste – Increase the Solid Waste revenue budget $800,000 to accurately reflect historical revenue trends with no change to the solid waste fees. There is no impact to the general fund.
- Watershed Improvement – Increase the Watershed Improvement revenue budget $300,000 to accurately reflect historical revenue trends with no change to the stormwater management fee. There is no impact to the general fund.

B. Budget Shift for Occoquan Monitoring Lab Membership Dues – Watershed Improvement – This shift covers an increase of $9,711, from $271,289 to $281,000, in the Community Partner Occoquan Monitoring Lab membership dues. The Occoquan Reservoir is a drinking water supply for the County, and Department of Environmental Quality (DEQ) mandates the continued annual support to the Occoquan Watershed Monitoring program to ensure the integrity of the reservoir as a drinking water supply. All member jurisdictions using or discharging effluent to the reservoir are required to pay a set percentage of the annual budgeted amount to run and operate the Occoquan Watershed Monitoring Program. The County's membership increases approximately 3% annually; however, the budget has not been increased in several years. This increase is covered within the existing Watershed Improvement program budget. There is no net impact to the General Fund.

C. Increase/Decrease Indirect Cost Transfer to the General Fund – Indirect costs are expenditures charged by one part of the County government for services rendered by another part of the County government, for example, the cost of office space, utilities, and other basic agency support.

- The indirect cost transfer amount reimbursing the general fund for Solid Waste decreases by $18,862 from $1,436,580 in FY21 to $1,417,718 in FY22.
- The indirect cost transfer amount reimbursing the general fund for Mosquito & Forest Pest Management increases by $7,472 from $255,135 in FY21 to $262,607 in FY22.
- The indirect cost transfer amount reimbursing the general fund for Stormwater Infrastructure Management decreases by $174,988 from $1,174,710 in FY21 to $999,722 in FY22.

D. Removal of One-Time Costs in Solid Waste –

- A total of $1,607,400 in expenditures has been removed from the Public Works Solid Waste Program for FY21 one-time costs associated with the addition of equipment and vehicles. In FY21, Solid Waste replaced a Mack roll-off truck ($210,000), a Cat D6T Dozer ($510,000), an Al-Jon Compactor ($580,000), and a 15-Passenger Chevy Van ($45,000). A new Roll-Off Truck ($210,000) and a replacement for a Litter Crew truck ($52,400) were also purchased.
- A total of $4,680,000 in expenditures has been removed from the Public Works Solid Waste Program for FY21 one-time costs associated with the Landfill Liner Phase III Cell A capital project.

E. Solid Waste Transfer to Litter Control Crew in Neighborhood Services – Solid Waste has historically transferred funds from the Solid Waste operating fund to Litter Control in the general fund, funding the Litter Control expenses. To achieve more efficiency and accuracy, FY22 Litter Control revenue and expenses are budgeted directly in the Solid Waste Fund. When compared to the FY2021 Budget, the transfer out of Solid Waste and the transfer into Litter Crew decreases by $865,353. There is no net impact to the general fund.

F. Position Transfers from Public Works to Facilities & Fleet Management – When Facilities & Fleet Management was created in FY21, four programs, including Buildings & Grounds, Facilities Construction Management, Fleet Management, and Property Management, were removed from Public Works to create the new department. During FY21, the Facilities & Fleet Management Director's Office was formed to provide overall leadership and management oversight. Four FTEs were shifted from Public Works: the

Deputy Director, Senior Business Services Administrator, Senior Business Services Analyst, and Risk & Wellness Specialist, forming the Facilities & Fleet Management Director's Office. These transfers shifted funds totaling $584,568 from Public Works to Facilities & Fleet Management.

Budget Initiatives

A. Budget Initiatives

1. Phase II Sequence 5 Landfill Cap - A Capital Project – Solid Waste

Expenditure	$4,950,000
Use of Fund Balance	$4,950,000
General Fund Impact	$0
FTE Positions	0.00

a. Description – This initiative funds the Phase II Sequence 5 Landfill Cap design, bidding, construction, and construction quality & assurance of the capital project in the Proposed FY2022-FY2027 Capital Improvement Program (CIP). The capping is a DEQ mandate for environmental health and is required by federal and state regulations to operate a sanitary landfill. The Solid Waste Enterprise fund balance supports this one-time expenditure, which is included in the Solid Waste 15-year forecast. There is no general fund impact.

b. Service Level Impacts – Existing service levels are maintained.

2. Replace Solid Waste Equipment and Vehicles – Solid Waste

Expenditure	$1,105,000
Use of Fund Balance	$1,105,000
General Fund Impact	$0
FTE Positions	0.00

a. Description – This initiative provides one-time funding for the replacement and purchase of solid waste equipment and vehicles. The equipment includes:

- $550,000 to replace an Articulated Dump Truck (SW2683) acquired in 2006 with a useful life of 15 years. This truck is used to support the landfill cover program set by DEQ.
- $200,000 to replace the Fuel Truck (SW2974) acquired in 2008 with a useful life of 10 years. This truck is used to support of landfill fueling program of County equipment.
- $165,000 to replace Kenworth Roll-Off (SW2689) acquired in 2005 with a useful life of 10 years. This equipment is for the continued support of the resident disposal and recycling program set by DEQ compliance.
- $150,000 to replace a tractor (SW2374) acquired in 1997 with a useful life of 15 years. This equipment is used to support the mowing of the landfill for DEQ compliance.
- $40,000 to replace the John Deere Gator (SW2647) acquired in 2005 with a useful life of 15 years. This equipment is used to support the freon extraction program.

The Solid Waste Enterprise fund balance supports these one-time expenditures. There is no general fund impact.

b. **Service Level Impacts** –

- **Percent of regulations met per DEQ inspections**

  FY22 w/o Addition | 70%
  FY22 w/ Addition | 100%

- **Compaction rate of trash**

  FY22 w/o Addition | 1,000 pounds per cubic yard
  FY22 w/ Addition | 1,200 pounds per cubic yard

3. Part A Permit Update – Solid Waste

Expenditure	$530,000
Use of Fund Balance	$530,000
General Fund Impact	$0
FTE Positions	0.00

a. **Description** – This initiative funds the Part A DEQ environmental mandated permit. Part A permit demonstrates that the landfill facility meets siting requirements mandated by federal and state regulations to operate a sanitary landfill. Solid Waste continually updates a 15-year forecast to determine when capping is required and permits are needed. The Solid Waste Enterprise fund balance funds this one-time expenditure. There is no general fund impact.

b. **Service Level Impacts** – Maintain compliance with mandated requirements.

4. Landfill Traffic Control Building – Solid Waste

Expenditure	$80,000
Use of Fund Balance	$80,000
General Fund Impact	$0
FTE Positions	0.00

a. **Description** – This initiative provides one-time funding for the construction of a new traffic control building at the landfill. The design of the existing building is old, creating health issues resulting from exposure to the elements and car exhaust. On weekends, six thousand cars pass through the building, needing immediate service to avoid a hazardous backup on Route 234 which could potentially cause a hazard. Additionally, the design of the current building hampers visibility, resulting in traffic control errors. Temporary solutions such as shades and tinted windows are not effective, and an awning is not feasible due to the height of trucks. The Solid Waste Enterprise fund balance funds this one-time expenditure. There is no general fund impact.

b. **Service Level Impacts** –

- **Customer services wait time**

  FY22 w/o Addition | 3 minutes
  FY22 w/ Addition | 1 minute

- **Number of transaction errors made in traffic control building per year**

  FY22 w/o Addition | 5%
  FY22 w/ Addition | 2%

Program Summary

Director's Office

Provide overall leadership and management oversight for all Public Works personnel activities. Review all major policy issues, financial transactions, BOCS reports, and County Executive-generated directives, and interface with executive management and the public on complex issues within the department.

Key Measures	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY21 Adopted	FY22 Proposed
Key department program measures met	67%	64%	66%	62%	86%
Public Works Days Away Restricted or Transferred	7.58	5.01	3.33	5.79	4.67

Program Activities & Workload Measures (Dollar amounts expressed in thousands)	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY21 Adopted	FY22 Proposed
Leadership & Management	**$1,397**	**$1,583**	**$1,700**	**$486**	**$409**
BOCS agenda items	53	33	23	50	17

Stormwater Infrastructure Management

Ensure that the County's stormwater infrastructure complies with state and federal environmental regulations, standards, and policies, including County standards, the Chesapeake Bay Total Maximum Daily Load (TMDL), and the County's Municipal Separate Storm Sewer System (MS4) permit regulations, along with Virginia Stormwater Management Program (VSMP) regulations. The program consists of the inspection of existing infrastructure, such as storm drain inlets, storm sewers, and stormwater management facilities within County easements, as well as major maintenance of County-maintained facilities to prevent flooding and protect local water quality and the Chesapeake Bay.

Key Measures	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY21 Adopted	FY22 Proposed
Drainage assistance requests responded to within five business days	100%	99%	100%	97%	97%

Program Activities & Workload Measures (Dollar amounts expressed in thousands)	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY21 Adopted	FY22 Proposed
Stormwater Management Infrastructure Inspection	**$810**	**$759**	**$813**	**$905**	**$959**
County-maintained facilities inspected and/or re-inspected	969	1,036	1,243	900	900
Privately-maintained facilities inspected and/or re-inspected	256	241	342	200	200
Stormwater Management Infrastructure Maintenance	**$2,737**	**$2,727**	**$3,383**	**$2,995**	**$2,998**
Major maintenance cases completed/closed	460	543	467	350	350

Site Development

Review all site and subdivision land development plans and document inspection of active construction sites to ensure compliance with environmental regulations, standards, and policies related to stormwater management, best management practices, erosion and sediment control, resource protection areas, floodplains, and geotechnical engineering.

Key Measures	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY21 Adopted	FY22 Proposed
Site development plan submissions reviewed within County standards	100%	99%	100%	100%	100%
Lot grading plan submissions reviewed within 10 business days	100%	100%	100%	100%	100%

Program Activities & Workload Measures (Dollar amounts expressed in thousands)	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY21 Adopted	FY22 Proposed
Plan Review	**$1,780**	**$1,876**	**$2,004**	**$2,062**	**$1,920**
Site development plan submissions reviewed	448	356	565	350	350
Lot grading lots reviewed	1,338	1,012	1,246	1,000	1,000
Site Inspections	**$1,595**	**$1,761**	**$1,722**	**$1,987**	**$1,931**
VSMP & erosion & sediment control inspections	17,049	21,561	27,777	19,000	22,000

Watershed Improvement

Ensure that the water quality of local streams within each of the County's watersheds follows environmental regulations, standards, and policies, including the Chesapeake Bay TMDL and the County's MS4 permit. The program focus is to prevent downstream and localized flooding impacts, protect water quality from illicit pollution discharges into the storm drainage system, prevent discharge of pollutants from industrial activities, and prevent sediment release associated with stream erosion, as well as the reduction of nitrogen, phosphorous, and sediment loads from stormwater runoff. The program includes the assessment of streams and other natural resources within each watershed, identification of problem areas, and implementation of water quality improvements. In addition, environmental education, outreach, and technical assistance to citizens, both in urban areas as well as within the agricultural community, are components of this program.

Key Measures	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY21 Adopted	FY22 Proposed
Industrial or high risk inspections conducted	130	81	26	50	50
Linear feet of stream restorations completed	1,380	3,100	3,143	3,000	3,000

Program Activities & Workload Measures (Dollar amounts expressed in thousands)	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY21 Adopted	FY22 Proposed
Watershed Monitoring	**$6,792**	**$4,495**	**$4,458**	**$4,496**	**$4,532**
Linear feet of stream assessments completed	63,260	61,454	67,522	60,000	60,000
Dry weather outfalls monitored and inspected	853	1,092	761	800	700
Watershed Improvements	**$573**	**$410**	**$476**	**$510**	**$511**
Pounds of phosphorus reduction achieved	112	211	248	200	200

Sign Shop

Inspect, fabricate, install, and maintain all street name signs as mandated by Code of Virginia. In addition, the program produces high quality graphics for County vehicles and creates custom-designed original graphic designs for interior and exterior signs, banners, posters, and displays for County agencies, outside jurisdictions, and developers.

Key Measures	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY21 Adopted	FY22 Proposed
Street signs completed within 10 days of request	92%	96%	92%	85%	85%

Program Activities & Workload Measures (Dollar amounts expressed in thousands)	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY21 Adopted	FY22 Proposed
Street Name Signs	**$176**	**$211**	**$260**	**$187**	**$230**
Streets requiring street name signs	9,826	9,797	7,298	9,900	7,300
Street name signs fabricated for maintenance	1,592	1,060	1,318	1,000	1,000
Signs and Graphics	**$68**	**$54**	**$44**	**$31**	**$31**
Signs and graphics fabricated for revenue	8,806	20,372	25,497	12,500	17,500

Small Project Construction

Provide support for a variety of County projects, including stormwater management infrastructure maintenance and inspections, stream restorations, drainage improvements, and parks and transportation improvements.

Key Measures	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY21 Adopted	FY22 Proposed
Community improvement projects completed within 10% of estimated cost	100%	100%	100%	97%	97%

Program Activities & Workload Measures (Dollar amounts expressed in thousands)	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY21 Adopted	FY22 Proposed
Small Community Improvement Construction	**$2,016**	**$3,184**	**$3,387**	**$2,110**	**$2,100**
Drainage infrastructure inspected (% of easement miles)	37%	56%	76%	45%	45%
Drainage infrastructure projects completed/closed	460	543	467	350	350
Responsive to project estimate requests within 30 days	-	100%	100%	90%	90%

Mosquito & Forest Pest Management

Survey, reduce, and manage mosquitoes and certain forest pest populations. Program objectives include minimizing mosquito-transmitted disease such as West Nile Virus and Zika Virus by reducing mosquito populations and breeding sites, minimizing tree defoliation and mortality caused by the Gypsy Moth and Fall Cankerworm, conducting surveillance and outreach for Emerald Ash Borer, Asian Longhorned Beetle, Thousand Cankers Disease, and Sudden Oak Death, and minimizing adverse environmental and human health impacts resulting from the treatment of these pests.

Key Measures	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY21 Adopted	FY22 Proposed
Mosquito traps processed within 48 hrs to detect West Nile & Zika virus	100%	100%	100%	98%	98%
High priority mosquito habitat applications	-	91%	92%	90%	90%
Citizen site visit requests responded to within 24 hours	92%	100%	100%	95%	95%
Gypsy moth surveys conducted to determine if spraying is needed	1,047	1,050	1,054	1,050	1,050

Program Activities & Workload Measures (Dollar amounts expressed in thousands)	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY21 Adopted	FY22 Proposed
Mosquito/Forest Pest Monitoring	**$855**	**$849**	**$905**	**$949**	**$995**
Larval mosquito habitat inspections	5,752	5,587	7,059	5,500	5,500
Reduction and Response	**$618**	**$697**	**$687**	**$749**	**$761**
Mosquito larvicide applications	1,374	1,528	1,489	1,500	1,500
Community engagement and outreach	48	40	25	40	40

Solid Waste

Provide solid waste management services to all residents, institutions, and businesses now and into the long-range future. Facilities and programs promote waste reduction and recycling, and efficiently receive and process all acceptable household and commercial wastes generated within the geographical boundaries, including the towns of Dumfries, Haymarket, Occoquan, and Quantico. Processing of the waste will meet or exceed all applicable federal, state, and local regulations.

Key Measures	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY21 Adopted	FY22 Proposed
Refuse recycled	35%	35%	35%	32%	35%
Tons of refuse processed	444,654	392,630	365,615	425,000	400,000

Program Activities & Workload Measures (Dollar amounts expressed in thousands)	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY21 Adopted	FY22 Proposed
Solid Waste Management & Administration	**$2,879**	**$2,992**	**$3,268**	**$10,030**	**$5,917**
Non-residential accounts processed	4,356	4,576	4,414	4,600	4,600
Yard Waste Composting	**$2,437**	**$2,931**	**$2,555**	**$3,648**	**$3,617**
Tons of County yard waste diverted from waste stream	24,688	26,053	24,885	28,000	28,000
Solid Waste Facilities Operation	**$9,341**	**$19,854**	**$11,072**	**$12,532**	**$11,464**
Refuse trucks inspected	3,958	5,448	5,158	4,500	5,000
Pounds of Household Hazardous Waste and eWaste collected	1.3M	1.3M	0.9M	1.3M	1.3M
Citizens trips to Solid Waste facilities	585,903	609,720	662,435	620,000	630,000
Recyclable Materials Collected, Processed & Marketed	**$740**	**$622**	**$662**	**$1,027**	**$1,064**
Tons of recyclables processed and marketed	1,637	1,747	1,928	2,000	2,000
Revenue generated from sale of recyclables	$628,591	$651,778	$538,375	$600,000	$600,000
Landfill Closure	**$0**	**$0**	**$0**	**$2,086**	**$7,036**

Neighborhood Services

Provide a safe, clean, and healthy community through education, community support, and Property Code Enforcement (PCE). Provide programs that teach residents and business owners how to properly maintain their properties, and work with neighborhood leaders to enforce property codes that go to the heart of the County's quality of life.

Key Measures	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY21 Adopted	FY22 Proposed
Founded PCE cases resolved or moved to court action within 100 calendar days	92%	95%	95%	92%	92%
First inspection of complaint within five business days	97%	99%	98%	97%	97%
Average time to resolve cases (calendar days)	46	36	38	40	38

Program Activities & Workload Measures (Dollar amounts expressed in thousands)	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY21 Adopted	FY22 Proposed
Litter Control	**$727**	**$694**	**$732**	**$817**	**$754**
Illegal signs removed from State right-of-way	12,253	11,805	5,682	9,500	6,000
Lane miles cleaned	-	-	1,185	1,450	1,200
Tons of trash removed by County Litter Crew	125	164	75	-	-
Landscaping	**$503**	**$509**	**$605**	**$717**	**$717**
Landscaping areas maintained	44	48	48	48	48
Acres of medians and rights-of-way maintained	230	234	234	234	234
Property Code Enforcement	**$2,541**	**$2,610**	**$2,583**	**$2,575**	**$2,548**
Total cases resolved	4,179	4,079	3,219	4,200	4,200
Total inspections conducted	11,455	10,761	8,652	11,100	10,000

COUNTY OF PRINCE WILLIAM
5 County Complex Ct., Suite 260
Prince William, Virginia 22192-5308
(703) 792-6820 Fax: (703) 792-6828

Thomas Bruun
Director

Department of Public Works

A Nationally Accredited
Public Works Agency

June 29, 2018

Department of Environmental Quality
Northern Regional Office
ATTN: Anna Tuthill
13901 Crown Court
Woodbridge, VA 22193

RE: Prince William County MS4 Permit No. VA0088595 Review of Local TMDL Action Plans (Bacteria, Sediment, PCBs) – Response to Comments

Dear Ms. Tuthill,

Prince William County (PWC) is submitting the following information in response to your comments on PWC's Local TMDL Action Plans, received May 4th, 2018. Please refer to our comment responses below as well as the revised Action Plans attached to this letter.

1) *There are currently three streams in Prince William County (PWC) associated with Bacteria TMDLs (Powells Creek, Quantico Creek, and the North Branch of Chopawamsic Creek). PWC, Prince William County Public Schools, and the VDOT MS4s share aggregated E.coli loads for Powells Creek and Quantico Creek. PWC has been assigned the entire E.coli load for the North Branch of Chopawamsic Creek. However, it appears that the entire North Branch of Chopawamsic Creek watershed may be within the Quantico Marine Corps Base and the boundaries of their permitted MS4 area (VAR040069). Based upon this information, staff will continue to review the TMDL to identify responsibility for the WLA developed for the North Branch of Chopawamsic Creek and will provide updated comments to the County should this review draw a different conclusion than that identified above.*

   To clarify, there are eight streams associated with the four bacteria TMDLs assigned to Prince William County as listed in Table 2.A in our Action Plan. There are the three streams identified in the bacteria TMDL for tributaries to the Potomac river (Powells Creek, Quantico Creek, and the North Branch of Chopawamsic Creek). We concur with County's limited role within the Chopawamsic Creek watershed and will address any updated comments received from DEQ.

2) *Street sweeping is addressed in the PWC MS4 Program Plan under Housekeeping, and pet waste stations are present throughout the County, particularly in the dog parks. Staff recommends these practices be discussed and incorporated into the Bacteria TMDL Action Plan.*

The county is currently developing SOPs related to street sweeping. However, the sweeping will not be used for BMP credit and therefore will not be included in the Action Plan.

There are privately maintained pet waste stations and dog parks located throughout the County. The County does not currently maintain any dog parks or pet waste stations. As stated in the revised attached Action Plan, we will perform an initial assessment of waste deposits to determine the need to install signage or pet waste station(s).

The County continues to distribute brochures on proper collection and disposal of pet wastes to the sites listed in Table 2.F as part of a public outreach event.

3) *Clarify the procedure for the review of waste deposits on county-owned or operated properties. Please state the method in which the measure of effectiveness of a property being a significant source of bacteria is determined.*

Clarification on this procedure has been updated in the Bacteria TMDL Action Plan under Section 2.5, and is summarized below. In addition, the County will distribute pet waste brochures to the private facilities found in Table 2.F.

- The County will assess portions of the trail system operated by the Department of Parks and Recreation. This assessment will include evaluating their proximity to residential neighborhoods, performing a field survey for prevalent waste deposit problems, and use staff knowledge of trail systems. If the County believes a waste deposit problem area has been discovered, installing signage will be considered to remind pet owners of the County's pet waste clean-up laws and penalties associated with non-compliance. If the County finds the installed signage to be ineffective, pet waste stations will be considered for installation. Continued monitoring will reoccur on an as needed basis to determine effectiveness of installed preventative measures.

4) *Establish a monitoring plan and/or use existing DEQ bacteria monitoring data to determine if measurable bacteria load reduction goals are being met.*

The County will review DEQ's bacteria monitoring data and trend analysis to determine if load reduction goals are being met.

5) *To assist with the implementation of this TMDL* (Sediment), *public education efforts that specifically target controlling discharge of sediments to local waterways should be enhanced.*

Section 2.5 of the Benthic TMDL Action Plan identifies the existing public education and outreach programs. These programs include components that specifically target controlling the discharge of sediments into the local waterways. Section 2.7 has been updated with a list of topics that specifically target controlling discharge of sediments to local waterways. They include:

- Urban nutrient management
- Homeowner stormwater and soil BMPs (use of native plants, mulching, rooftop disconnection, biorention etc.)
- Management of effective riparian buffers
- Citizen reporting of illicit discharges
- Citizen reporting of erosion and sediment runoff
- Preservation of Resource Protection Areas
- Storm drain labelling to promote awareness of stormwater discharges
- Erosion and sediment control as well as stormwater management information associated with Site Development

6) *To assist with the implementation of this TMDL* (PCB), *a standard operating procedure for disposal of materials from renovation of structures constructed prior to 1979 should be developed.*

The County will prepare an SOP that addresses the required controls to be implemented during the demolition of county-facilities that minimize the exposure of potential PCB materials to stormwater runoff. The SOP shall apply to any structure with at least 10,000 square feet of floor space and built or renovated prior to January 1, 1980. Section 2.5.2 and 2.8 of the PCB TMDL Action Plan has been revised to include the development of this SOP.

If you have any questions, please contact the MS-4 Coordinator of the Watershed Management Branch, Mr. David Ungar at (703) 792-7104 or email DUngar@pwcgov.org.

Sincerely,

Marc T. Aveni
Environmental Services Division Chief

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 1105, Richmond, Virginia 23218
www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

June 28, 2017

Christopher E. Martino
County Executive
County of Prince William
1 Complex Court
Prince William, VA 22192

Transmitted electronically to (CEmartino@pwcgov.org)

RE: Virginia Pollutant Discharge Elimination System (VPDES) MS4 Permit VA0088595, County of Prince William, Chesapeake Bay TMDL Action Plan Approval

Dear Mr. Martino:

The Department of Environmental Quality (DEQ) has reviewed the Chesapeake Bay TMDL Action Plan for received on February 21, 2017 in accordance Part I.D.1 of the MS4 Permit. Additional information was received March 13, 2017, March 14, 2017 and May 16, 2017.

As submitted, the action plan will result in the following annual reduction of pollutants of concern:

Pollutant of Concern	Annual Load Reduction (lb/yr)	Percentage of L2 Reduction Achieved After Implementation
Total Nitrogen	6706.58	33.5%
Total Phosphorus	1370.40	62.0%
Total Suspended Solids	893286.63	49.4%

The Chesapeake Bay TMDL Action Plan is hereby approved and is an enforceable part of the MS4 Program Plan.

Please note any modifications to the Chesapeake Bay TMDL Action Plan shall be made in accordance with Part I.A.7 of the MS4 Permit.

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have thirty (30) days from the date you received this decision within which to appeal this decision by filing a notice of appeal in accordance with the Rules of the Supreme Court of Virginia with the Director, Virginia Department of Environmental Quality.

Please contact Jeff Selengut at (804) 698-4265 or at Jeffrey.selengut@deq.virginia.gov if you have any questions.

Sincerely,

Allan Brockenbrough II, P.E.
Manager, Office of VPDES Permits

Copies: File
Mark Aveni, Prince William County (maveni@pwcgov.org)