

# STORMWATER MANAGEMENT

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Note: Projects with a \$0 total funding are active capital projects funded in prior CIP's that do not require additional resources.

	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2022 - FY 2031
Stormwater Management											
Stormwater Management											
Floodproofing Grant Program	750,000	769,000	789,000	809,000	830,000	851,000	873,000	895,000	918,000	941,000	8,425,000
Four Mile Run Channel Maintenance	0	936,600	0	300,000	300,000	0	1,251,300	2,900,000	0	300,000	5,987,900
Green Infrastructure	210,000	0	1,549,000	0	0	0	0	0	0	0	1,759,000
Hooffs Run Culvert	0	0	0	0	1,344,000	0	0	0	0	1,505,300	2,849,300
Inspection and Cleaning (State of Good Repair) CFMP	1,000,000	1,025,000	1,051,000	1,078,000	1,105,000	1,133,000	1,162,000	1,192,000	1,222,000	1,253,000	11,221,000
MS4-TDML Compliance Water Quality Improvements	1,350,000	1,300,000	2,100,000	1,800,000	2,050,000	1,750,000	2,000,000	2,575,000	1,500,000	1,000,000	17,425,000
NPDES / MS4 Permit	170,000	168,400	170,000	171,700	173,500	175,200	177,000	178,700	180,500	182,200	1,747,200
Phosphorus Exchange Bank	0	0	0	0	0	0	0	0	0	0	0
Small-Midsize Stormwater Maintenance Projects	500,000	513,000	526,000	540,000	554,000	568,000	583,000	598,000	613,000	629,000	5,624,000
Storm Sewer Capacity Assessment	19,900,000	26,425,000	28,825,000	32,375,000	15,950,000	15,200,000	13,675,000	6,700,000	6,350,000	4,000,000	169,400,000
Storm Sewer System Spot Improvements	2,540,500	2,605,000	2,671,000	2,738,000	2,807,000	2,878,000	2,950,000	3,024,000	3,100,000	3,178,000	28,491,500
Stormwater BMP Maintenance CFMP	245,000	252,000	260,000	1,202,000	1,221,000	158,000	161,000	165,000	168,000	172,000	4,004,000
Strawberry Run Stream Restoration	0	0	0	0	0	0	0	0	0	0	0
Stream & Channel Maintenance	859,000	881,000	904,000	927,000	951,000	975,000	1,000,000	1,025,000	1,051,000	1,078,000	9,651,000
Taylor Run Stream Restoration	0	0	0	0	0	0	0	0	0	0	0
<b>Stormwater Management Total</b>	<b>27,524,500</b>	<b>34,875,000</b>	<b>38,845,000</b>	<b>41,940,700</b>	<b>27,285,500</b>	<b>23,688,200</b>	<b>23,832,300</b>	<b>19,252,700</b>	<b>15,102,500</b>	<b>14,238,500</b>	<b>266,584,900</b>
Stormwater Management Total	27,524,500	34,875,000	38,845,000	41,940,700	27,285,500	23,688,200	23,832,300	19,252,700	15,102,500	14,238,500	266,584,900
<b>Grand Total</b>	<b>27,524,500</b>	<b>34,875,000</b>	<b>38,845,000</b>	<b>41,940,700</b>	<b>27,285,500</b>	<b>23,688,200</b>	<b>23,832,300</b>	<b>19,252,700</b>	<b>15,102,500</b>	<b>14,238,500</b>	<b>266,584,900</b>

## Stormwater Management Utility Ten-Year Plan Proposed FY 2022 – FY 2031 Capital, Operating and Debt Service

The Stormwater Management Utility plan presented on the following pages represents the proposed operating budget, debt service and capital program for FY 2022 and a preliminary estimate for FY 2023 – FY 2031. Staff will reevaluate the program and Stormwater Utility rate every year and present changes to City Council as part of each year’s budget development cycle.

	FY 2021 Approved	FY 2021 Adjusted Second Half	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2022 - FY 2031
<b>Stormwater Rate</b>													
Stormwater Utility Rate per ERU	\$ 140.00	\$ 140.00	\$ 140.00	\$ 280.00	\$ 294.00	\$ 308.70	\$ 358.10	\$ 415.40	\$ 440.30	\$ 471.10	\$ 504.10	\$ 524.30	
Proposed Rate Increase	0.0%	50.0%	50.0%	5.0%	5.0%	16.0%	16.0%	6.0%	7.0%	7.0%	4.0%	3.0%	
New Stormwater Utility Rate	\$ 140.00	\$ 210.00	\$ 280.00	\$ 294.00	\$ 308.70	\$ 358.10	\$ 415.40	\$ 440.30	\$ 471.10	\$ 504.10	\$ 524.30	\$ 540.00	
<b>Revenues</b>													
Billing Units	60,279	30,140	60,090	60,330	60,571	60,813	61,056	61,300	61,545	61,791	62,038	62,286	
Non Billable Units for EDTR			430	430	430	430	430	430	430	430	430	430	
Revenue Generation	8,439,060	2,109,765	16,825,000	17,737,000	18,698,000	21,777,000	25,363,000	26,990,000	28,994,000	31,149,000	32,527,000	33,634,000	253,694,000
Other Revenue Sources	21,017		21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	210,000
General Fund Contribution for EDTR *			125,000	130,000	135,000	140,000	146,000	152,000	158,000	164,000	171,000	178,000	185,000.00
Revenue Stream Reductions for Improvement Credits	(246,236)		(180,000)	(185,000)	(191,000)	(197,000)	(203,000)	(209,000)	(215,000)	(221,000)	(228,000)	(235,000)	(2,064,000)
New Debt Issuance	3,090,401		14,630,000	28,860,000	35,600,000	39,500,000	24,893,000	21,183,000	21,383,000	16,529,000	12,637,000	11,437,000	226,652,000
Use of Fund Balance 1/2 Cent	-		1,765,000	-	-	-	-	-	-	-	-	-	1,765,000
Use of Fund Balance SWU	-		3,600,000	-	-	-	-	-	-	-	-	-	3,600,000
COA General Fund Loan	2,000,000		-	-	-	-	-	-	-	-	-	-	-
<b>Total Revenues</b>	13,304,242	2,109,765	36,786,000	46,563,000	54,263,000	61,241,000	50,220,000	48,137,000	50,341,000	47,642,000	45,128,000	45,035,000	484,042,000
<b>Expenditures</b>													
All Operating	5,475,979	449,012	6,966,678	7,206,000	7,465,000	7,923,000	8,434,000	8,770,000	9,146,000	9,542,000	9,872,000	10,183,000	85,507,678
All Capital Projects	6,934,740	1,660,753	28,463,500	35,864,000	39,883,000	43,029,700	28,430,500	24,889,200	25,094,300	20,576,700	16,493,500	15,699,500	278,423,900
Repayment of G/F Loan	-	-	-	-	675,000	675,000	650,000	-	-	-	-	-	2,000,000
All Debt Service	893,523	-	1,355,822	3,547,191	6,332,121	9,602,755	12,745,941	14,693,595	16,280,872	17,784,825	18,794,722	19,455,447	120,593,291
<b>Total Expenditures</b>	13,304,242	2,109,765	36,786,000	46,617,191	54,355,121	61,230,455	50,260,441	48,352,795	50,521,172	47,903,525	45,160,222	45,337,947	486,524,869
<b>Operating Costs</b>													
TES Personnel	3,182,783	254,913	4,467,978	4,603,000	4,742,000	4,885,000	5,032,000	5,183,000	5,339,000	5,500,000	5,665,000	5,835,000	51,251,978
Main Operating	653,831	-	467,000	482,000	497,000	512,000	528,000	544,000	561,000	578,000	596,000	614,000	5,379,000
BMP's Operation	662,508	-	270,000	279,000	288,000	297,000	306,000	316,000	326,000	336,000	347,000	358,000	3,123,000
Oronoco Outfall Maintenance	103,000	-	107,000	111,000	115,000	119,000	123,000	127,000	131,000	135,000	140,000	145,000	1,253,000
Additional operating impact from capital	62,525	-	65,000	67,000	70,000	73,000	76,000	79,000	82,000	85,000	88,000	91,000	776,000
Indirect Costs	811,332	194,098	1,559,000	1,632,000	1,720,000	2,003,000	2,333,000	2,483,000	2,667,000	2,866,000	2,992,000	3,094,000	23,349,000
Contingent Cash Funding	-	-	30,700	32,000	33,000	34,000	36,000	38,000	40,000	42,000	44,000	46,000	375,700
<i>Subtotal, Operating Costs</i>	5,475,979	449,012	6,966,678	7,206,000	7,465,000	7,923,000	8,434,000	8,770,000	9,146,000	9,542,000	9,872,000	10,183,000	85,507,678

Stormwater Management Utility Ten-Year Plan  
 Proposed FY 2022 – FY 2031 Capital, Operating and Debt Service  
 (continued)

	FY 2021 Approved	FY 2021 Adjusted Second Half	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2022 - FY 2031
<b>Capital Projects</b>													
Four Mile Run Channel Maintenance				936,600		300,000	300,000		1,251,300	2,900,000	-	300,000	5,987,900
Green Infrastructure	206,500		210,000	-	1,549,000	-	-	-	-	-	-	-	1,759,000
MS4-TMDL Compliance Water Quality Improvements	3,000,000		1,350,000	1,300,000	2,100,000	1,800,000	2,050,000	1,750,000	2,000,000	2,575,000	1,500,000	1,000,000	17,425,000
NPDES / MS4 Permit	165,000		170,000	168,400	170,000	171,700	173,500	175,200	177,000	178,700	180,500	182,200	1,747,200
Storm Sewer Capacity Projects		1,573,738	19,900,000	26,425,000	28,825,000	32,375,000	15,950,000	15,200,000	13,675,000	6,700,000	6,350,000	4,000,000	169,400,000
Stormwater Infrastructure Resiliency Planning	698,750	-	-	-	-	-	-	-	-	-	-	-	-
Storm Sewer System Spot Improvements	420,000		2,540,500	2,605,000	2,671,000	2,738,000	2,807,000	2,878,000	2,950,000	3,024,000	3,100,000	3,178,000	28,491,500
Stream and Channel Maintenance	450,000		859,000	881,000	904,000	927,000	951,000	975,000	1,000,000	1,025,000	1,051,000	1,078,000	9,651,000
Stormwater BMP Maintenance CFMP	140,000		245,000	252,000	260,000	1,202,000	1,221,000	158,000	161,000	165,000	168,000	172,000	4,004,000
Small-Midsize Stormwater Maintenance Projects	-		500,000	513,000	526,000	540,000	554,000	568,000	583,000	598,000	613,000	629,000	5,624,000
Inspection and Cleaning (State of Good Repair) CFMP	-		1,000,000	1,025,000	1,051,000	1,078,000	1,105,000	1,133,000	1,162,000	1,192,000	1,222,000	1,253,000	11,221,000
Floodproofing Grant Program	-		750,000	769,000	789,000	809,000	830,000	851,000	873,000	895,000	918,000	941,000	8,425,000
Hooffs Run Culvert	1,200,000		-	-	-	-	1,344,000	-	-	-	-	1,505,300	2,849,300
DPI Personnel	602,200	87,016	886,000	934,000	980,000	1,028,000	1,081,000	1,134,000	1,191,000	1,250,000	1,313,000	1,379,000	11,176,000
Capitalized Sustainability Coordinator	52,290	-	53,000	55,000	58,000	61,000	64,000	67,000	71,000	74,000	78,000	82,000	663,000
<b>Subtotal, Capital Projects</b>	<b>6,934,740</b>	<b>1,660,753</b>	<b>28,463,500</b>	<b>35,864,000</b>	<b>39,883,000</b>	<b>43,029,700</b>	<b>28,430,500</b>	<b>24,889,200</b>	<b>25,094,300</b>	<b>20,576,700</b>	<b>16,493,500</b>	<b>15,699,500</b>	<b>278,423,900</b>
<b>Debt Service</b>	<b>FY 2021 Approved</b>	<b>FY 2021 Adjusted Second Half</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>FY 2029</b>	<b>FY 2030</b>	<b>FY 2031</b>	<b>FY 2022 - FY 2031</b>
Total Debt Service Payments	893,523	-	1,355,822	3,547,191	6,332,121	9,602,755	12,745,941	14,693,595	16,280,872	17,784,825	18,794,722	19,455,447	120,593,291
<b>Total Expenditures, All Categories</b>	<b>13,304,242</b>	<b>2,109,765</b>	<b>36,786,000</b>	<b>46,617,191</b>	<b>53,680,121</b>	<b>60,555,455</b>	<b>49,610,441</b>	<b>48,352,795</b>	<b>50,521,172</b>	<b>47,903,525</b>	<b>45,160,222</b>	<b>45,337,947</b>	<b>484,524,869</b>

## CAMERON STATION POND RETROFIT

DOCUMENT SUBSECTION: Stormwater Management

PROJECT LOCATION: Ben Brenman Park, 4800 Brenman Park Dr, Alexandria, VA 22304

MANAGING DEPARTMENT: Department of Transportation and Environmental Services

REPORTING AREA: Landmark/Van Dorn

PRIMARY STRATEGIC THEME: Theme 8: Environmental Sustainability

PROJECT CATEGORY: 3  
ESTIMATE USEFUL LIFE: 30+ Years

Cameron Station Pond Retrofit													
	A (B + M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total FY 2022 - FY 2031
<b>Expenditure Budget</b>	<b>4,681,885</b>	<b>4,681,885</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Financing Plan													
GO Bonds (Stormwater)	1,750,000	1,750,000	0	0	0	0	0	0	0	0	0	0	0
Private Capital Contributions	1,050,000	1,050,000	0	0	0	0	0	0	0	0	0	0	0
State/Federal Grants	1,881,885	1,881,885	0	0	0	0	0	0	0	0	0	0	0
<b>Financing Plan Total</b>	<b>4,681,885</b>	<b>4,681,885</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

### CHANGES FROM PRIOR YEAR CIP

No changes from previous CIP.

### PROJECT DESCRIPTION & JUSTIFICATION

Virginia Department of Environmental Quality (DEQ) issued the City's current Municipal Separate Storm Sewer System (MS4) Permit on July 1, 2013 that mandates City-specific stormwater nutrient and sediment reduction targets for the Chesapeake Bay (Bay) Total Maximum Daily Load (TMDL) enforced through three 5-year permit cycles. Accordingly, the current MS4 permit requires the City to implement practices sufficient to achieve 5% of the reduction targets during the first 5-year permit (2013-2018), while successive MS4 permits will require implementation of practices to achieve an additional 35% or 40% of total reduction targets during the second 5-year permit (2018-2023) by 2023, and the remaining 60% or 100% of the total reductions on or before the end of the third 5-year permit (2023-2028) by 2028. The City's 2018 - 2023 MS4 General Permit mandating a total of 40% Bay reductions by June 30, 2023 is scheduled to be in effect on or after July 1, 2018 and remain effective through June 30, 2023.

Retrofits to existing large regional stormwater facilities will provide additional pollutant removal either by enhancing the treatment efficiency and/or increasing the amount of area draining to the facility and are one of the most cost-effective strategies to meet the identified pollution reduction requirements.

The City has been discussing these strategies to comply with the reduction targets and other options available to the City through the Water Quality Steering Committee and Water Quality Workgroup. The City also completed the Chesapeake Bay TMDL Compliance Analysis and Options report that investigated options and alternatives for treating stormwater and provided corresponding costs. The City's Phase 1 Chesapeake Bay TMDL Action Plan for achieving 5% of the reductions was submitted to DEQ on October 1, 2015 and approved by DEQ on January 12, 2016. The City's draft Bay Phase 2 Action Plan for achieving a total 40% of the reductions was submitted in June 2018, with the final due one year after the effective date of the 2018 - 2023 MS4 General Permit (October 31, 2019). The City's approved Bay TMDL Action Plan and the draft Phase 2 Action Plan identify the retrofit of large regional stormwater facilities as a major strategy towards meeting pollution reduction goals. Most of the structure components have been installed for the pond retrofit, including the diversion of an extra 35 acres of stormwater being treated in the pond. The next phase will include the installation of plant materials on the shore and for the aquatic bench. Substantial completion occurred in 2020.

In FY 2015, City staff pursued and received \$1.75 million in a grant from the state through the Stormwater Local Assistance Fund (SLAF) by leveraging an equivalent amount of City funding for this project. This reduced the City funded contribution to this project by half of the original budgeted amount. While the Cameron Station Pond Retrofit is a cost effective strategy to meet the City's pollution reduction requirements, this project also offers an opportunity to enhance the recreational elements of this facility, making it more of an amenity to park-goers than it is currently.

#### EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

City of Alexandria Municipal Separate Storm Sewer System (MS4) General Permit, Program Plan, and Year 5 Annual Report; City's Chesapeake Bay TMDL Action Plan; T&ES Strategic Plan; Eco-City Charter; Eco-City Action Plan

#### ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

## CITY FACILITIES STORMWATER BEST MANAGEMENT PRACTICES (BMPs)

DOCUMENT SUBSECTION: Stormwater Management  
 MANAGING DEPARTMENT: Department of Transportation and Environmental Services

PROJECT LOCATION: Citywide  
 REPORTING AREA: Citywide

PRIMARY STRATEGIC THEME: Theme 8: Environmental Sustainability

PROJECT CATEGORY: 3  
 ESTIMATE USEFUL LIFE: 21 - 25 Years

City Facilities Stormwater Best Management Practices (BMPs)													
	A (B + M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total FY 2022 - FY 2031
<b>Expenditure Budget</b>	<b>1,633,000</b>	<b>1,633,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Financing Plan													
Cash Capital	125,000	125,000	0	0	0	0	0	0	0	0	0	0	0
GO Bonds (Stormwater)	1,133,000	1,133,000	0	0	0	0	0	0	0	0	0	0	0
Stormwater Utility Fund	375,000	375,000	0	0	0	0	0	0	0	0	0	0	0
<b>Financing Plan Total</b>	<b>1,633,000</b>	<b>1,633,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

### CHANGES FROM PRIOR YEAR CIP

No changes from previous CIP.

### PROJECT DESCRIPTION & JUSTIFICATION

The Virginia Department of Environmental Quality (DEQ) issued the City's current Municipal Separate Storm Sewer System (MS4) Permit on November 1, 2018 that mandates City-specific stormwater nutrient and sediment reduction targets for the Chesapeake Bay (Bay) Total Maximum Daily Load (TMDL) enforced through three 5-year MS4 permit cycles. Accordingly, the previous 2013-2018 permit required the City to implement practices sufficient to achieve 5% of the reduction targets during the first 5-year permit (2013-2018), while the current MS4 permit requires implementation of practices to achieve an additional 35% or 40% of the total reduction targets during the second 5-year permit (2018-2023) by 2023, and the remaining 60% or 100% of the reduction on or before the end of the third 5-year permit cycle (2023-2028) no later than 2028. The City's 2018 - 2023 MS4 General Permit mandating the total 40% Bay reductions by June 30, 2023 was effective November 1, 2018 and remains in effect through October 31, 2023. The City's Chesapeake Bay TMDL Action Plan identifies BMP retrofits on City properties as a strategy towards meeting mandated pollutant reduction goals.

One of the City's strategies to meet the identified pollution reduction requirements is retrofitting existing City properties that currently do not provide stormwater treatment with stormwater best management practices (BMPs) or to install additional stormwater BMPs for untreated areas to provide additional pollutant removal. The City has been discussing these and other options available to comply with these targets through the Water Quality Steering Committee and a Water Quality Workgroup. The City has also completed the Chesapeake Bay TMDL Compliance Analysis and Options (Analysis) report that looked into options and alternatives for treating stormwater and corresponding costs. The City's Phase 1 Chesapeake Bay TMDL Action Plan for achieving 5% reductions was approved January 2016. The City's draft Phase 2 Bay Action Plan for achieving a total 40% was submitted June 2019, with the draft final due October 31, 2020, pending DEQ releasing the action plan guidance there may be changes required to the Phase 2 Action Plan

(continued on next page)

### EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

City of Alexandria Municipal Separate Storm Sewer System (MS4) General Permit, Program Plan and Year 5 Annual Report; Chesapeake Bay TMDL Action Plan; T&ES Strategic Plan; Eco-City Charter and Action Plan

### ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

## City Facilities Stormwater Best Management Practices (continued)

Working closely with the General Services; Recreation, Parks and Cultural Activities; and Project Implementation departments, the following locations, among others, have been identified as potential locations for stormwater retrofits:

- T&ES/Recreation operations at 2900 Business Center Drive,
- City Fuel Island on Wheeler Avenue,
- King Street Gardens;
- ACPS Mount Vernon Elementary School and Recreation Center, and
- City Traffic Control Shop on Colvin Street.

The City is working on a Request for Qualification (RFQU) to further analyze City-owned properties to determine the best approach for retrofitting these properties with stormwater facility best management practices (BMPs). The RFQU scope includes the prioritization of at least 16 potential locations in addition to the above list and the development of conceptual design of those projects, with the option to complete the design. Once completed, these retrofits are expected to treat stormwater from a total of approximately 4-8 acres of impervious surface. These sites have been selected because of the facilities' operational stormwater impacts and their relatively high percentage of impervious acreage.

## FLOODPROOFING GRANT PROGRAM

DOCUMENT SUBSECTION: Stormwater Management  
 MANAGING DEPARTMENT: Transportation and Environmental Services

PROJECT LOCATION:  
 REPORTING AREA: Citywide

PRIMARY STRATEGIC THEME: Theme 8: Environmental Sustainability

PROJECT CATEGORY: 1  
 ESTIMATE USEFUL LIFE:

Floodproofing Grant Program													
	A (B + M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total FY 2022 - FY 2031
<b>Expenditure Budget</b>	<b>8,425,000</b>	<b>0</b>	<b>750,000</b>	<b>769,000</b>	<b>789,000</b>	<b>809,000</b>	<b>830,000</b>	<b>851,000</b>	<b>873,000</b>	<b>895,000</b>	<b>918,000</b>	<b>941,000</b>	<b>8,425,000</b>
Financing Plan													
Stormwater Utility Fund	8,425,000	0	750,000	769,000	789,000	809,000	830,000	851,000	873,000	895,000	918,000	941,000	8,425,000
<b>Financing Plan Total</b>	<b>8,425,000</b>	<b>0</b>	<b>750,000</b>	<b>769,000</b>	<b>789,000</b>	<b>809,000</b>	<b>830,000</b>	<b>851,000</b>	<b>873,000</b>	<b>895,000</b>	<b>918,000</b>	<b>941,000</b>	<b>8,425,000</b>

### CHANGES FROM PRIOR YEAR CIP

New project added to FY 2022 - FY 2031 CIP.

### PROJECT DESCRIPTION & JUSTIFICATION

The purpose of this project – which at this time is a pilot – is to provide grant funding to residents and businesses who have incurred damage to their primary residence or business as a result of recent climate change-induced flash flooding. This project was recommended by the 2020 Interdepartmental Flooding Management Task Force and was supported in the City’s 2020 legislative package. The City supported State legislation to provide clear authority and funding to support localities dealing with the impacts of inland and urban flooding and expands the City’s authority to implement a citywide grant program for projects on private property. Further analysis (and potential project updates) will be required before making any program permanent in FY 2023 or beyond. The initial priority is creation of the Pilot Grant Program (with some retroactivity) as this can be developed with relative expedience and provide an immediate benefit to residents and businesses.

This program as proposed is similar to the City’s Backflow Preventer Program, which provides reimbursement to those who have installed backflow preventers as a result of sanitary sewer backups.

A separate Flooding Mitigation Pilot Program document is under development that frames the program and policies, to include processes, funding level, and eligible reimbursable expenses. Some of the current considerations for the pilot grant program include:

- Reimbursement for 50% of the cost of improvements, not to exceed \$5,000 reimbursed
- Total funding for FY 2022: \$750,000
- Retroactive to July 2019
- Examples of possible reimbursable expenses include installation of flood-proof doors and windows, and berms or walls designed to prevent water from entering a structure

#### EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

Eco-City Charter; Strategic Plan, MS4 General Permit; Environmental Action Plan (EAP) 2040; City of Alexandria Storm Sewer Capacity Analysis (CASSCA); Be Flood Ready Alexandria;

#### ADDITIONAL OPERATING IMPACTS

Additional operating impacts include additional staff included in the Stormwater Management Utility 10-Year Plan associated with the be identified with design and construction of individual projects

## FOUR MILE RUN CHANNEL MAINTENANCE

DOCUMENT SUBSECTION: Stormwater Management  
 MANAGING DEPARTMENT: Department of Transportation and Environmental Services

PROJECT LOCATION: Four Mile Run Stream/Channel  
 REPORTING AREA: Potomac West

PRIMARY STRATEGIC THEME: Theme 8: Environmental Sustainability

PROJECT CATEGORY: 2  
 ESTIMATE USEFUL LIFE: 6 - 10 Years

Four Mile Run Channel Maintenance													
	A (B + M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total FY 2022 - FY 2031
<b>Expenditure Budget</b>	<b>8,680,900</b>	<b>2,693,000</b>	<b>0</b>	<b>936,600</b>	<b>0</b>	<b>300,000</b>	<b>300,000</b>	<b>0</b>	<b>1,251,300</b>	<b>2,900,000</b>	<b>0</b>	<b>300,000</b>	<b>5,987,900</b>
Financing Plan													
Cash Capital	283,000	283,000	0	0	0	0	0	0	0	0	0	0	0
GO Bonds	1,510,000	1,510,000	0	0	0	0	0	0	0	0	0	0	0
GO Bonds (Stormwater)	4,351,300	0	0	0	0	200,000	200,000	0	1,151,300	2,800,000	0	0	4,351,300
Stormwater Utility Fund	2,536,600	900,000	0	936,600	0	100,000	100,000	0	100,000	100,000	0	300,000	1,636,600
<b>Financing Plan Total</b>	<b>8,680,900</b>	<b>2,693,000</b>	<b>0</b>	<b>936,600</b>	<b>0</b>	<b>300,000</b>	<b>300,000</b>	<b>0</b>	<b>1,251,300</b>	<b>2,900,000</b>	<b>0</b>	<b>300,000</b>	<b>5,987,900</b>
Operating Impact	1,096,200	0	0	99,400	104,400	109,600	115,100	120,800	126,900	133,200	139,900	146,900	1,096,200

### CHANGES FROM PRIOR YEAR CIP

Project funding schedule updated to reflect the recommendations made to City Council in January 2020, regarding an expanded and accelerated program to address the City's flood and stormwater infrastructure needs.

### PROJECT DESCRIPTION & JUSTIFICATION

This project reflects the City's share of the costs to maintain the federally funded stormwater flood control channel and system of flood walls and levees. The project was constructed as a federal flood control project built by the U.S Army Corps of Engineers (USACE) in the late 1970's, which by mutual agreement requires the City to provide regular upgrades to its capital infrastructure. The USACE annually inspects Four Mile Run and dictates the extent of the channel maintenance activities that are to be completed. The City has hired a consultant to perform a detailed inspection of the flood control system and to develop recommendations for corrections. Staff is working with USACE to determine exactly what improvements the City needs to do to bring the rating up to the upgraded post-Hurricane Katrina standards that the USACE now considers acceptable. The City is currently developing revised plans for USACE to review that includes maintenance repairs to the flood walls, embankments, and gabions.

To date, nearly \$3 million in City funding has been applied to the project. Funding is programmed in the near term to address maintenance items with funding in out-years of the CIP to address future capital infrastructure requirements. As Four Mile Run maintenance is a shared responsibility with Arlington County, it will be necessary for the County and the City to engage in a joint decision-making process concerning some elements of Four Mile Run maintenance activities. Staff is collaborating with Arlington County to dredge the channel and remove sediment to maintain the conveyance capacity of the flood control project which will initiate in calendar year 2021. A grant application to the Federal Emergency Management Agency (FEMA) through the Virginia Department of Emergency Management (VDEM) for \$1.4 million for the FY 2020 Hazard Mitigation Assistance (HMA) for a Building Resilient Infrastructure and Communities (BRIC) pre-disaster mitigation grant will help offset the cost of the dredging project. However, this does not allow for a decrease in funding in the overall project given that levee/flood wall and appurtenant structure inspection, operations, and maintenance remains the responsibility of the jurisdiction where each levee/wall is located.

Routine inspection and maintenance of structures, updating the operations and maintenance (O&M) manual, design and removal of accumulated sediment, and continued vegetation removal from the levee, as requested by USACE, uncovered additional maintenance concerns that need to be addressed. This project involves routine inspection and maintenance, including design and removal of significant accumulated sediment and routine vegetation maintenance, is necessary to get this flood control channel back into conditions considered acceptable by the federal government. Achieving federal acceptance provides that our communities – along with Arlington – includes regular inspection and maintenance to the flood control system and ensures that the flood control project will perform as predicted and protects citizens and property from flooding, and provides eligibility for federal assistance in repairing any damage to the channels that storms may cause.

### EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

City of Alexandria Municipal Separate Storm Sewer System (MS4) General Permit, Program Plan and Year 5 Annual Report; Chesapeake Bay TMDL Action Plan; T&ES Strategic Plan; Eco-City Charter and Action Plan

### ADDITIONAL OPERATING IMPACTS

Additional staffing or contractor support will be need for regular inspection and maintenance of assets.

## GREEN INFRASTRUCTURE

DOCUMENT SUBSECTION: Stormwater Management  
 MANAGING DEPARTMENT: Department of Transportation and Environmental Services

PROJECT LOCATION: Citywide  
 REPORTING AREA: Citywide

PRIMARY STRATEGIC THEME: Theme 8: Environmental Sustainability

PROJECT CATEGORY: 3  
 ESTIMATE USEFUL LIFE: Varies

Green Infrastructure													
	A (B + M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total FY 2022 - FY 2031
<b>Expenditure Budget</b>	<b>3,815,500</b>	<b>2,056,500</b>	<b>210,000</b>	<b>0</b>	<b>1,549,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,759,000</b>
Financing Plan													
GO Bonds (Stormwater)	2,644,000	1,195,000	0	0	1,449,000	0	0	0	0	0	0	0	1,449,000
Sanitary Sewer Fund	350,000	350,000	0	0	0	0	0	0	0	0	0	0	0
Stormwater Utility Fund	821,500	511,500	210,000	0	100,000	0	0	0	0	0	0	0	310,000
<b>Financing Plan Total</b>	<b>3,815,500</b>	<b>2,056,500</b>	<b>210,000</b>	<b>0</b>	<b>1,549,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,759,000</b>
Operating Impact	30,000	0	0	2,000	2,000	2,000	4,000	4,000	4,000	4,000	4,000	4,000	30,000

### CHANGES FROM PRIOR YEAR CIP

Project funding schedule updated to reflect the recommendations made to City Council in January 2020, regarding an expanded and accelerated program to address the City's flood and stormwater infrastructure needs.

### PROJECT DESCRIPTION & JUSTIFICATION

This project receives funding from the stormwater utility special revenue funds for study, design, and construction of green infrastructure projects. This project is consistent with the objectives of the citywide approach to implement Green Infrastructure for the combined sewer system (CSS) and the separate storm sewer area, to address water pollution reduction goals. Projects completed will implement green infrastructure in the City to help address regulatory requirements in conjunction with the co-benefits provided by the implementation of these practices.

Completion of these projects will provide the following benefits: increase stormwater infiltration, reduce stormwater runoff, provide stormwater treatment (nutrients and sediment), and decrease the volume of discharges; along with providing co-benefits including creating habitat, reducing heat island effect, and enhancing air quality.

Prior year funding will be used for the design and construction of green infrastructure demonstration project(s) in the combined sewer area, with additional projects to be identified through work related to the City's Chesapeake Bay TMDL Action Plan as part of the City-wide approach to the implementation of Green Infrastructure. A Green Infrastructure Program Policy Study commenced in FY 2019 that laid out a citywide approach to implementation. Funding for projects identified through these efforts will be used for future years and supplemented, as needed, through the MS4-TMDL Compliance project. Construction of the current green infrastructure demonstration project is scheduled for completion in FY 2022/FY2023. Consistent with the City's planning documents that include green infrastructure as a strategy, funding has been added to the FY2022 - FY 2031 budget to continue with the implementation of green infrastructure on a city-wide basis.

#### EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

T&ES Strategic Plan 2012-2015; City of Alexandria Municipal Separate Storm Sewer System (MS4) General Permit, Program Plan, and PY5 Annual Report; Eco-City Charter City's Combined Sewer System Permit; City's Chesapeake Bay TMDL Action Plan; Old Town North Small Area Plan; Eisenhower West Small Area Plan; Landmark Van Dorn Small Area Plan

#### ADDITIONAL OPERATING IMPACTS

Annual inspection, minor routine maintenance, and major maintenance will be required to ensure continued proper functioning of the asset.

## HOOFFS RUN CULVERT MAINTENANCE

DOCUMENT SUBSECTION: Stormwater Management  
 MANAGING DEPARTMENT: Transportation and Environmental Services

PROJECT LOCATION:  
 REPORTING AREA: Eisenhower East

PRIMARY STRATEGIC THEME: Theme 8: Environmental Sustainability

PROJECT CATEGORY: 2  
 ESTIMATE USEFUL LIFE:

Hooffs Run Culvert													
	A (B + M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total FY 2022 - FY 2031
<b>Expenditure Budget</b>	<b>2,849,300</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,344,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,505,300</b>	<b>2,849,300</b>
Financing Plan													
GO Bonds (Stormwater)	2,849,300	0	0	0	0	0	1,344,000	0	0	0	0	1,505,300	2,849,300
<b>Financing Plan Total</b>	<b>2,849,300</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,344,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,505,300</b>	<b>2,849,300</b>

### CHANGES FROM PRIOR YEAR CIP

New project added to FY 2022 - FY 2031 CIP.

### PROJECT DESCRIPTION & JUSTIFICATION

This project proposes funding on a 5-year cycle for ongoing heavy cleaning of the Hooffs Run Culvert. This culvert conveys stormwater from a significant portion of Northridge, Del Ray, and Rosemont and has been subject to recurrent flooding for over 100 years. Recent climate-change induced flash flooding has placed greater emphasis on the importance of ongoing heavy cleaning of this culvert by maximizing the culvert capacity.

In June 2020 the city hired a contractor to conduct a detailed inspection and, for the first time, a robotic survey of approximately 7,000 feet of the culvert. The survey identified overall debris levels in the range of 5% with isolated sections having debris accumulation of approximately 15-20%. The City, using prior-year funding, undertook a major heavy cleaning effort beginning in November 2020 which is expected to be complete by mid-2021.

While the City has Operating funding to provide some routine debris removal and maintenance, this Capital Improvement Project will ensure funding is set aside for ongoing heavy cleaning and/or other capital maintenance requirements that may be identified in future structural inspections. This funding was recommended by the Interdepartmental Flooding Management Task Force.

### EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

N/A

### ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

## INSPECTION AND CLEANING (STATE OF GOOD REPAIR) CFMP

DOCUMENT SUBSECTION: Stormwater Management  
 MANAGING DEPARTMENT: Transportation and Environmental Services

PROJECT LOCATION:  
 REPORTING AREA: Citywide

PRIMARY STRATEGIC THEME: Theme 8: Environmental Sustainability

PROJECT CATEGORY: 1  
 ESTIMATE USEFUL LIFE:

Inspection and Cleaning (State of Good Repair) CFMP													
	A (B + M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total FY 2022 - FY 2031
<b>Expenditure Budget</b>	<b>11,221,000</b>	<b>0</b>	<b>1,000,000</b>	<b>1,025,000</b>	<b>1,051,000</b>	<b>1,078,000</b>	<b>1,105,000</b>	<b>1,133,000</b>	<b>1,162,000</b>	<b>1,192,000</b>	<b>1,222,000</b>	<b>1,253,000</b>	<b>11,221,000</b>
Financing Plan													
GO Bonds (Stormwater)	4,598,000	0	0	0	525,500	539,000	552,500	566,500	581,000	596,000	611,000	626,500	4,598,000
Stormwater Utility Fund	6,623,000	0	1,000,000	1,025,000	525,500	539,000	552,500	566,500	581,000	596,000	611,000	626,500	6,623,000
<b>Financing Plan Total</b>	<b>11,221,000</b>	<b>0</b>	<b>1,000,000</b>	<b>1,025,000</b>	<b>1,051,000</b>	<b>1,078,000</b>	<b>1,105,000</b>	<b>1,133,000</b>	<b>1,162,000</b>	<b>1,192,000</b>	<b>1,222,000</b>	<b>1,253,000</b>	<b>11,221,000</b>

### CHANGES FROM PRIOR YEAR CIP

New project added to FY 2022 – FY 2031 CIP.

### PROJECT DESCRIPTION & JUSTIFICATION

This project provides funding annually for expanded inspection and state of good repair maintenance in the City’s 189-mile storm sewer system. Staff is currently developing a Capital Facility Maintenance Program (CFMP) which will include a more detailed listing of projects. While the operating budget supports routine maintenance and inspections, this CIP reflects expanded video inspections and infrastructure repair activities (up to and including structure replacement) to ensure all conveyance and detention structures and outfalls are operating at maximum capacity.

The city’s Interdepartmental Flooding Management Team in January 2021 recommended expanded maintenance in the form of a CFMP.

### EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

N/A

### ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

## LUCKY RUN STREAM RESTORATION

DOCUMENT SUBSECTION: Stormwater Management  
 MANAGING DEPARTMENT: Department of Transportation and Environmental Services

PROJECT LOCATION: 2601 Gadsby Place  
 REPORTING AREA: Beauregard

PRIMARY STRATEGIC THEME: Theme 8: Environmental Sustainability

PROJECT CATEGORY: 3  
 ESTIMATE USEFUL LIFE: 21-25

Lucky Run Stream Restoration													
	A (B + M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total FY 2022 - FY 2031
<b>Expenditure Budget</b>	<b>2,800,000</b>	<b>2,800,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Financing Plan													
GO Bonds (Stormwater)	1,935,000	1,935,000	0	0	0	0	0	0	0	0	0	0	0
State/Federal Grants	668,720	668,720	0	0	0	0	0	0	0	0	0	0	0
Stormwater Utility Fund	196,280	196,280	0	0	0	0	0	0	0	0	0	0	0
<b>Financing Plan Total</b>	<b>2,800,000</b>	<b>2,800,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

### CHANGES FROM PRIOR YEAR CIP

No changes from previous CIP.

### PROJECT DESCRIPTION & JUSTIFICATION

Urban Stream Restoration is one of the major strategies in the City's Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan to reduce pollution and address the Bay TMDL mandates enforced through the City's Municipal Separate Storm Sewer System (MS4) permit. The project also allows restoration of ecological habitats, removal of invasive plants, replanting with native plants, and wetland enhancements as co-benefits. Additionally, the project will address an exposed portion of the sanitary sewer located along the existing stream bank by burying the sanitary sewer and relocating that portion of the stream away from the sewer. This project is highlighted in the Phase 2 Chesapeake Bay TMDL Action Plan as a specific strategy to meet the City's compliance goals.

To comply with the plan targets, the City has completed a preliminary stream assessment to obtain information on conditions to guide in protecting and restoring local streams. During these assessments, Lucky Run was identified as being in poor condition that make it a prime candidate for a stream restoration project. The Chesapeake Bay TMDL Compliance Analysis and Options report (2012) reviewed options and alternatives for treating stormwater and provided corresponding costs. While the Lucky Run Stream Restoration project is a cost-effective strategy to meet the City's pollution reduction requirements, this project also offers an opportunity to enhance the ecological integrity of the stream, the Resource Protection Area (RPA), and address the exposed sanitary sewer. Also, the City will perform rehabilitative maintenance of the Lucky Run Pond under the agreement stating that the City is required to perform maintenance for this regional facility to ensure proper functioning and the ability to continue claiming pollutant removal credits for the Pond as noted in the Phase 1 Bay TMDL Action Plan.

The City has also been awarded a \$668,720 grant from the state through the Stormwater Local Assistance Fund (SLAF) by leveraging an equivalent amount of funding from the Stream and Channel Maintenance project to fully fund this project. This reduced the City contribution by half of the original estimated amount for the stream restoration portion of the project. Design is completed and construction procurement will occur in FY2021, with an anticipated completion Fall 2020 / Winter 2021.

#### EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

City of Alexandria Municipal Separate Storm Sewer System (MS4) General Permit, Program Plan, and Year 5 Annual Report; City's Chesapeake Bay TMDL Action Plan; T&ES Strategic Plan; Eco-City Charter; Eco-City Action Plan; Green Infrastructure Program

#### ADDITIONAL OPERATING IMPACTS

Operating funding and existing City staff provide annual support for routine and ongoing inspection, monitoring and reporting, and maintenance as applicable. The BMP Maintenance CFMP program addresses capital maintenance for projects built to address Bay TMDL requirements.

## MS4-TMDL COMPLIANCE WATER QUALITY IMPRV.

DOCUMENT SUBSECTION: Stormwater Management  
 MANAGING DEPARTMENT: Department of Transportation and Environmental Services

PROJECT LOCATION: Citywide  
 REPORTING AREA: Citywide

PRIMARY STRATEGIC THEME: Theme 8: Environmental Sustainability

PROJECT CATEGORY: 3  
 ESTIMATE USEFUL LIFE: 30+ Years

MS4-TDML Compliance Water Quality Improvements													
	A (B + M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total FY 2022 - FY 2031
<b>Expenditure Budget</b>	<b>21,680,000</b>	<b>4,255,000</b>	<b>1,350,000</b>	<b>1,300,000</b>	<b>2,100,000</b>	<b>1,800,000</b>	<b>2,050,000</b>	<b>1,750,000</b>	<b>2,000,000</b>	<b>2,575,000</b>	<b>1,500,000</b>	<b>1,000,000</b>	<b>17,425,000</b>
Financing Plan													
GO Bonds (Stormwater)	19,450,401	3,375,401	0	1,300,000	2,100,000	1,800,000	2,050,000	1,750,000	2,000,000	2,575,000	1,500,000	1,000,000	16,075,000
Stormwater Utility Fund	2,229,599	879,599	1,350,000	0	0	0	0	0	0	0	0	0	1,350,000
<b>Financing Plan Total</b>	<b>21,680,000</b>	<b>4,255,000</b>	<b>1,350,000</b>	<b>1,300,000</b>	<b>2,100,000</b>	<b>1,800,000</b>	<b>2,050,000</b>	<b>1,750,000</b>	<b>2,000,000</b>	<b>2,575,000</b>	<b>1,500,000</b>	<b>1,000,000</b>	<b>17,425,000</b>
Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

### CHANGES FROM PRIOR YEAR CIP

Project funding schedule updated to reflect the recommendations made to City Council in January 2020, regarding an expanded and accelerated program to address the City's flood and stormwater infrastructure needs.

### PROJECT DESCRIPTION & JUSTIFICATION

The Virginia Department of Environmental Quality (DEQ) issued the City's current Municipal Separate Storm Sewer System (MS4) Permit on July 1, 2013 that mandates City-specific stormwater nutrient and sediment reduction targets for the Chesapeake Bay Total Maximum Daily Load (TMDL) enforced through three 5-year MS4 permit cycles. Accordingly, the permit requires the City to implement stormwater treatment best management practices (BMPs) sufficient to achieve 5% of the reduction targets during the first 5-year permit (2013-2018), while successive MS4 permits will require implementation of practices to achieve an additional 35% or 40% of total reduction targets during the second 5-year permit (2018-2023) by 2023, and the remaining 60% or 100% of the reductions on or before the end of the third permit cycle (2023-2028), no later than by 2028.

The City continues planning efforts and identifying options to comply with these targets and discusses these through the City's Water Quality Workgroup, and through meetings with other internal and external stakeholders. Additionally, the City completed the Chesapeake Bay TMDL Compliance Analysis and Options report (August 2014) that considered options and alternatives for treating stormwater to meet the Bay TMDL regulatory mandates, along with the corresponding costs to implement these alternatives. These formed the basis of the strategies included in the City's Phase 1 Chesapeake Bay TMDL Action Plan and form the basis of the strategies in the draft Phase 2 Chesapeake Bay Action Plan that was submitted June 1, 2018, with the final Action Plan due no later than October 31, 2019, one year from the effective date of the 2018 - 2023 MS4 General Permit. This budget is based on funding that can be used to implement a diverse mix of strategies to achieve the required reductions in the next ten years. In addition to retrofit of regional facilities, implementation of Green Infrastructure as stormwater quality retrofits of City facilities and right-of-way retrofits, along with urban stream restoration, are the top strategies that will be implemented to meet the required reductions. Funding is used as specific projects are identified and developed to achieve these reductions.

The budgetary estimates were developed with engineers from the firms conducting the Chesapeake Bay TMDL Compliance Analysis and Options study. Please note that these MS4-TMDL Compliance Water Quality Improvement projects such as retrofit of regional ponds, along with the inclusion of City Facilities BMP projects, Green Infrastructure projects, and stream restorations projects will likely satisfy the second permit cycle (2018 - 2023 permit) and exceed the Strategic Plan goal of 45% reductions by 2022; towards more aggressive reductions to meet 100% reductions as mandated. For FY 2021 and beyond, estimates are based on staff planning and will be revised as the 2023 - 2028 MS4 permit requirements and other regulatory expectations become clearer through the implementation of the state's Phase III Watershed Implementation Plan (WIP III), and uncertainty decreases.

#### EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

City of Alexandria Municipal Separate Storm Sewer System (MS4) Permit, Program Plan, and Year 5 Annual Report; City's Chesapeake Bay TMDL Action Plan; T&ES Strategic Plan; Eco-City Charter; Eco-City Action Plan

#### ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

## NPDES / MS4 PERMIT

DOCUMENT SUBSECTION: Stormwater Management  
 MANAGING DEPARTMENT: Department of Transportation and Environmental Services

PROJECT LOCATION: Citywide  
 REPORTING AREA: Citywide

PRIMARY STRATEGIC THEME: Theme 8: Environmental Sustainability

PROJECT CATEGORY: 3  
 ESTIMATE USEFUL LIFE: Varies

NPDES / MS4 Permit													
	A (B + M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total FY 2022 - FY 2031
<b>Expenditure Budget</b>	<b>2,727,200</b>	<b>980,000</b>	<b>170,000</b>	<b>168,400</b>	<b>170,000</b>	<b>171,700</b>	<b>173,500</b>	<b>175,200</b>	<b>177,000</b>	<b>178,700</b>	<b>180,500</b>	<b>182,200</b>	<b>1,747,200</b>
Financing Plan													
Cash Capital	250,000	250,000	0	0	0	0	0	0	0	0	0	0	0
Stormwater Utility Fund	2,477,200	730,000	170,000	168,400	170,000	171,700	173,500	175,200	177,000	178,700	180,500	182,200	1,747,200
<b>Financing Plan Total</b>	<b>2,727,200</b>	<b>980,000</b>	<b>170,000</b>	<b>168,400</b>	<b>170,000</b>	<b>171,700</b>	<b>173,500</b>	<b>175,200</b>	<b>177,000</b>	<b>178,700</b>	<b>180,500</b>	<b>182,200</b>	<b>1,747,200</b>
Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

### CHANGES FROM PRIOR YEAR CIP

Funding added to project for FY 2031.

### PROJECT DESCRIPTION & JUSTIFICATION

This project provides funding for the data collection, inspection and enforcement, public education and outreach, public involvement and citizen participation, GIS mapping, development of water quality action plans, BMP database management, and reporting activities associated with implementation of the programs required by the National Pollution Discharge Elimination System (NPDES) permit regulations administered by the Virginia Department of Environmental Quality (DEQ) through the Virginia Stormwater Management Program (VSMP) General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Storm Water from Small Municipal Separate Storm Sewer Systems (MS4) per 9VAC25-890 et. seq.

The MS4 general permit has a duration of 5-year cycles that requires the City to develop, implement and enforce an MS4 Program Plan to reduce discharges of pollutants from the MS4, protect water quality, and satisfy the appropriate requirements of the Clean Water Act.

The City was originally issued General Permit VAR040057 on July 8, 2003, and the most recent permit was issued on November 1, 2018 and is effective through October 31, 2023. Each successive permit contains increased regulatory requirements which necessitate more resources. The current 2018 – 2023 MS4 general permit is no exception, with increased requirements for public education and outreach, staff training, revisions to Total Maximum Daily Load (TMDL) plans, implementation of Stormwater Pollution Prevention Plans (SWPPPs), enhanced inspections, and additional reporting. The permits continue to contain increasingly stringent mandates to address the Chesapeake Bay TMDL.

The City developed and submitted on April 1, 2018 the required MS4 permit registration statement as an application for coverage under the 2018 – 2023 MS4 general permit, which included a Phase 2 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan that contains strategies to achieve an additional 35% of reductions in nutrients and sediment by 2023. The general permit also requires the City to update the MS4 Program Plan and perform new programmatic compliance, with MS4 annual reports covering compliance activities and other permit reporting requirements carried out for each fiscal year that are due by October 1st. Planned capital projects to meet the Bay TMDL reductions are budgeted as separate, specific projects under the “Stormwater Management” section of the CIP.

Finally, new broad requirements under the Virginia Watershed Implementation Plan Phase III (WIP III) and changes to guidance documents continue to translate into additional compliance activities.

#### EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

City of Alexandria Municipal Separate Storm Sewer System (MS4) Permit; MS4 Program Plan; MS4 Annual Report; City's Chesapeake Bay TMDL Action Plan; T&ES Strategic Plan; Eco-City Charter; Eco-City Action Plan

#### ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

## PHOSPHORUS EXCHANGE BANK

DOCUMENT SUBSECTION: Stormwater Management  
 MANAGING DEPARTMENT: Department of Transportation and Environmental Services

PROJECT LOCATION: Citywide  
 REPORTING AREA: Citywide

PRIMARY STRATEGIC THEME: Theme 8: Environmental Sustainability

PROJECT CATEGORY: 3  
 ESTIMATE USEFUL LIFE: 30+ Years

Phosphorus Exchange Bank													
	A (B + M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total FY 2022 - FY 2031
<b>Expenditure Budget</b>	0	0	0	0	0	0	0	0	0	0	0	0	0
Financing Plan													
Stormwater Utility Fund	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Financing Plan Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0
Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

### CHANGES FROM PRIOR YEAR CIP

No changes from previous CIP.

### PROJECT DESCRIPTION & JUSTIFICATION

Virginia Stormwater Management Program (VSMP) regulations, as incorporated into Article XIII of the City’s Environmental Management Ordinance (EMO), require properties that undergo development or redevelopment to reduce the amount of phosphorous in stormwater runoff that leaves the site in the post-construction condition. The amount of phosphorus that must be reduced is based upon several factors such as disturbed area, increases in impervious area, land cover types, etc. Owners of development sites may use applicable “offsite compliance options” to meet these requirements pursuant to 62.1-44.15:35 of the Code of Virginia and the attendant VSMP regulations per 9VAC25-870-69 A. The City can ‘exchange’ phosphorus reductions between projects occurring on city-owned properties under the current VSMP regulations.

Small-scale City-funded construction projects and City projects with unfavorable site conditions face difficulties in meeting stormwater management requirements on-site through the installation of stormwater quality structural best management practices (BMPs) due to lack of space and/or cost of construction that make installation infeasible. As such, these projects regularly use offsite compliance options to meet their regulatory phosphorous reduction requirements. Most often, this requirement is met by purchasing nutrient credits from the state’s Nutrient Credit Exchange for practices implemented outside the City within the Potomac River basin. In effect, these purchases send funds outside of the City and provide no benefit to local water quality.

The Transportation and Environmental Services, Stormwater Management Division (T&ES-SWM) created this policy alternative for City projects that allows offsite compliance options that provide benefits to local water quality and keep funds within the City. The policy was developed with input across city agencies, revised given that input, shared and approved by the Virginia Department of Environmental Quality, and executed via signature by the director of Transportation and Environmental Services. This project was initially seeded with \$100,000 to supplement the installation of BMPs that go beyond stormwater quality requirements that may be used on other projects. The project seeding also includes five (5) pounds of phosphorus that may be purchased by other City departments for small capital projects where installation of BMPs are not feasible.

#### EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

City of Alexandria Municipal Separate Storm Sewer System (MS4) Permit, Program Plan and Year 5 Annual Report; City's Chesapeake Bay TMDL Action Plan; T&ES Strategic Plan; Eco-City Charter; Eco-City Action Plan

#### ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

## SMALL-MIDSIZE STORMWATER MAINTENANCE PROJECTS

DOCUMENT SUBSECTION: Stormwater Management  
 MANAGING DEPARTMENT: Transportation and Environmental Services

PROJECT LOCATION: Citywide  
 REPORTING AREA: Citywide

PRIMARY STRATEGIC THEME: Theme 8: Environmental Sustainability

PROJECT CATEGORY: 1  
 ESTIMATE USEFUL LIFE: Varies

Small-Midsize Stormwater Maintenance Projects													
	A (B + M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total FY 2022 - FY 2031
<b>Expenditure Budget</b>	<b>5,624,000</b>	<b>0</b>	<b>500,000</b>	<b>513,000</b>	<b>526,000</b>	<b>540,000</b>	<b>554,000</b>	<b>568,000</b>	<b>583,000</b>	<b>598,000</b>	<b>613,000</b>	<b>629,000</b>	<b>5,624,000</b>
Financing Plan													
GO Bonds (Stormwater)	2,744,400	0	0	0	300,000	300,000	376,500	300,000	372,700	300,000	383,000	412,200	2,744,400
Stormwater Utility Fund	2,879,600	0	500,000	513,000	226,000	240,000	177,500	268,000	210,300	298,000	230,000	216,800	2,879,600
<b>Financing Plan Total</b>	<b>5,624,000</b>	<b>0</b>	<b>500,000</b>	<b>513,000</b>	<b>526,000</b>	<b>540,000</b>	<b>554,000</b>	<b>568,000</b>	<b>583,000</b>	<b>598,000</b>	<b>613,000</b>	<b>629,000</b>	<b>5,624,000</b>

### CHANGES FROM PRIOR YEAR CIP

New project added to FY 2022 – FY 2031 CIP.

### PROJECT DESCRIPTION & JUSTIFICATION

This project provides annual funding for small and midsize stormwater maintenance projects to accelerate infrastructure repairs beyond maintenance. These small to mid-size stormwater maintenance projects would not be associated with other Spot Improvement projects and would not require in-depth design to mitigate flooding issues.

Typical small to midsize projects includes repair/replacement of structure tops, inverts, gutter pans and pipe in the City’s 189-mile storm sewer network. Work may also include rehabilitation of pipe with trenchless technology or dig and replace based on the inspection and condition of the pipe. Work may also include cleaning or replacement of components of outfall structures and any other maintenance activity that keeps structures in satisfactory operating condition.

This project was recommended by the City’s Interdepartmental Flooding Management Task Force. A list of headline progress indicators is under development.

### EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

N/A

### ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

## STORM SEWER CAPACITY PROJECTS

DOCUMENT SUBSECTION: Stormwater Management  
 MANAGING DEPARTMENT: Department of Transportation and Environmental Services

PROJECT LOCATION: Citywide  
 REPORTING AREA: Citywide

PRIMARY STRATEGIC THEME: Theme 8: Environmental Sustainability

PROJECT CATEGORY: 1  
 ESTIMATE USEFUL LIFE: 11 - 15 Years

Storm Sewer Capacity Assessment													
	A (B + M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total FY 2022 - FY 2031
<b>Expenditure Budget</b>	<b>174,612,250</b>	<b>5,212,250</b>	<b>19,900,000</b>	<b>26,425,000</b>	<b>28,825,000</b>	<b>32,375,000</b>	<b>15,950,000</b>	<b>15,200,000</b>	<b>13,675,000</b>	<b>6,700,000</b>	<b>6,350,000</b>	<b>4,000,000</b>	<b>169,400,000</b>
Financing Plan													
Cash Capital	949,492	949,492	0	0	0	0	0	0	0	0	0	0	0
GO Bonds (Stormwater)	160,785,000	0	14,535,000	25,425,000	28,325,000	32,125,000	15,700,000	14,950,000	13,425,000	6,450,000	6,100,000	3,750,000	160,785,000
Stormwater Utility Fund	7,512,759	4,262,759	0	1,000,000	500,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	3,250,000
Use of Stormwater Fund Utility Balance	3,600,000	0	3,600,000	0	0	0	0	0	0	0	0	0	3,600,000
Use of Stormwater Tax Dedication Fund	1,765,000	0	1,765,000	0	0	0	0	0	0	0	0	0	1,765,000
<b>Financing Plan Total</b>	<b>174,612,250</b>	<b>5,212,250</b>	<b>19,900,000</b>	<b>26,425,000</b>	<b>28,825,000</b>	<b>32,375,000</b>	<b>15,950,000</b>	<b>15,200,000</b>	<b>13,675,000</b>	<b>6,700,000</b>	<b>6,350,000</b>	<b>4,000,000</b>	<b>169,400,000</b>
Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

### CHANGES FROM PRIOR YEAR CIP

Project funding schedule updated to reflect the recommendations made to and adopted by City Council in January 2021, regarding an aggressive, expanded, and accelerated program to address the City's flood and stormwater infrastructure needs.

### PROJECT DESCRIPTION & JUSTIFICATION

This project includes the aggressive design and implementation of large capital projects to address capacity and flooding issues. The City has experienced repeated and increasingly frequent flooding from storm events which lead to the procurement of the *City of Alexandria Storm Sewer Capacity Analysis (CASSCA, 2016)*, a multi-year citywide storm sewer analysis planning-level exercise to identify potential capacity issues and develop prioritized recommendations for improvements to the storm sewer system.

The City experienced three flash flooding events (July 8, 2019, July 23, 2020, and September 2, 2020) primarily as a result of climate change-induced severe rain events. Indications are that the City will continue to experience these severe rainfall events more frequently and that these large capital projects can provide long-term solutions to flooding issues.

The top 11 projects were prioritized based on planning-level cost-benefit analysis. These projects will mitigate flooding for the greatest number of residents, direct investment to areas where the most significant property damage is occurring and provide the greatest overall system benefit.

The prioritization sequence incorporates multiple data points such as the previous (2016 planning-level) storm sewer and capacity analysis, property impacts documented through Alex311 service requests, refinement of those priorities through recent and ongoing neighborhood engagement meetings, and infrastructure connectivity from a systems perspective. These inputs were used to further prioritize capacity issues compared against reported issues and feedback from neighborhood groups. This prioritization includes a systematic (holistic, watershed) perspective to provide the needed capacity (conveyance and storage as practicable) that must first ensure downstream capacity is adequate before upstream issues can be addressed. For large capacity capital projects that are costly, multi-year projects at the multi-block level, there is a greater level of certainty of project sequencing for the first three to four years. The estimated funding for the top three capacity projects is as follows:

1. Commonwealth Ave and Glebe Road: Design Fully Funded in FY 2022 and Construction Fully Funded in FY 2023. Planning level estimate of \$34 million.
2. Ashby Street and Glebe Road: Design Fully Funded in FY 2022 and Construction Fully Funded in FY 2024. Planning level estimate of \$16 million.
3. Hooffs Run Culvert Bypass: Design Fully Funded in FY 2022 and Construction Fully Funded in FY 2025. Planning level estimate of \$60 million.

(continued on Next Page)

#### EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

Eco-City Charter; Strategic Plan; Water Quality Management Supplement to the City's Master Plan; MS4 General Permit; Environmental Action Plan (EAP) 2040; City of Alexandria Storm Sewer Capacity Analysis (CASSCA); Be Flood Ready Alexandria;

#### ADDITIONAL OPERATING IMPACTS

Additional operating impacts include additional staff included in the Stormwater Management Utility 10-Year Plan associated with the be identified with design, construction, and maintenance of individual projects.

## Northern Virginia Flood Hazard Mitigation Plan

## Storm Sewer Capacity Projects (continued)

All planning and modeling to date is based on conceptual cost estimates and preliminary assessments, so there is considerable risk that costs could be higher than anticipated. During the design of the first three projects, staff will conduct further cost-benefit analysis of including additional flood mitigation and resiliency in the design of future capacity projects to determine the potential positive impact of designing these projects beyond the City's 10-year storm design standard. It should be noted that even if the City designs capacity projects for larger, more intense storm events, there is always the risk that an even more significant rain event will occur. In those situations, greater capacity will help, but it cannot eliminate the risk of flooding entirely. If a higher design standard than the 10-year storm is used, and therefore individual projects likely cost far more than projected and afforded in this model, fewer projects will be delivered overall unless additional funding can be provided.

FY 2026 to FY 2031 Projects

Project sequencing from FY 2026 to FY 2031 was based on the same considerations as the earlier projects; however, these may require reprioritization as further cost-benefit analysis, feasibility, and other design considerations become more available. These projects also include funding for potential property acquisition and/or public-private partnerships. The projects for the remaining six years of the capacity project element of the 10-Year Plan will address the following areas:

4. Edison and Dale Streets
5. Dewitt Avenue
6. East Mason Avenue
7. Notabene Drive and Old Dominion Boulevard
8. Mt. Vernon Avenue, East Glendale Avenue, East Luray Avenue, and East Alexandria Avenue
9. East Monroe Avenue and Wayne Street
10. Russell Rd & W. Rosemont Ave
11. Russell Rd & W. Rosemont Ave (south)

The schedule is aggressive, based on generic stormwater construction projects, and intended for financial planning and budgetary purposes only. Until substantial design work is completed for each specific project, the schedule and budget will only be estimates that will include significant contingencies. As additional information is collected and the design of each project is further defined, more precise construction schedules and cost estimates can be developed.

## STORM SEWER SYSTEM SPOT IMPROVEMENTS

DOCUMENT SUBSECTION: Stormwater Management  
 MANAGING DEPARTMENT: Department of Transportation and Environmental Services

PROJECT LOCATION: Citywide  
 REPORTING AREA: Citywide

PRIMARY STRATEGIC THEME: Theme 8: Environmental Sustainability

PROJECT CATEGORY: 1  
 ESTIMATE USEFUL LIFE: Varies

Storm Sewer System Spot Improvements													
	A (B + M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total FY 2022 - FY 2031
<b>Expenditure Budget</b>	<b>36,096,721</b>	<b>7,605,221</b>	<b>2,540,500</b>	<b>2,605,000</b>	<b>2,671,000</b>	<b>2,738,000</b>	<b>2,807,000</b>	<b>2,878,000</b>	<b>2,950,000</b>	<b>3,024,000</b>	<b>3,100,000</b>	<b>3,178,000</b>	<b>28,491,500</b>
Financing Plan													
Cash Capital	2,876,648	2,876,648	0	0	0	0	0	0	0	0	0	0	0
GO Bonds (Stormwater)	27,926,646	4,413,646	95,000	1,605,000	2,171,000	2,601,000	2,667,000	2,734,000	2,803,000	2,873,000	2,945,000	3,019,000	23,513,000
Private Capital Contributions	9,927	9,927	0	0	0	0	0	0	0	0	0	0	0
Stormwater Utility Fund	5,283,500	305,000	2,445,500	1,000,000	500,000	137,000	140,000	144,000	147,000	151,000	155,000	159,000	4,978,500
<b>Financing Plan Total</b>	<b>36,096,721</b>	<b>7,605,221</b>	<b>2,540,500</b>	<b>2,605,000</b>	<b>2,671,000</b>	<b>2,738,000</b>	<b>2,807,000</b>	<b>2,878,000</b>	<b>2,950,000</b>	<b>3,024,000</b>	<b>3,100,000</b>	<b>3,178,000</b>	<b>28,491,500</b>
Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

### CHANGES FROM PRIOR YEAR CIP

Project funding schedule updated to reflect the recommendations made to City Council in January 2020, regarding an expanded and accelerated program to address the City's flood and stormwater infrastructure needs.

### PROJECT DESCRIPTION & JUSTIFICATION

This project provides funding for essential capital infrastructure that provide localized flood mitigation to specific neighborhoods. These "Spot Improvements" of the City's storm sewer system are typically mid-sized capital projects that alleviate localized drainage and flooding concerns and can be implemented in 8 to 20 months from the beginning of design. These projects are typically identified through Alex311 complaints, field observations, neighborhood meetings, and onsite investigations. An increase of \$2 million in funding annual for a total of \$27.3 million in the 10-year period that allows for 8 to 11 projects to be completed annually, compared to the 3 to 5 projects that are currently implemented each year.

A list of projects planned for FY 2022 – FY 2024 is included below. Due to the possibility of unexpected or emergency repairs, or if efficiencies can be achieved by staging projects together, the list is subject to change:

#### FY 2022

- Mt. Vernon Alley
- Mt. Vernon Cul-de-sac Inlets
- Clifford/Manning Street Alley
- 1414 & 1416 Ruffner Dr Storm Sewer
- S Jordan St Storm Sewer Improvements
- N. Overlook Drainage/Storm Sewer Improvements
- Hume and Commonwealth
- 300 E. Mason
- E. Monroe and Wayne

#### FY 2023

- Lloyd's Lane
- Key Drive Unnamed Tributary Channel
- N. Columbus Street Alley
- Key Drive Unnamed Tributary Channel
- 636 Timber Branch Pkwy
- 3929 Colonel Eliis Avenue
- E. Alexandria and Dewitt
- E. Linden near Commonwealth
- W. Gendale and Junior Street
- Pitt and Gibbon Streets
- Ancell Street and Commonwealth

#### FY 2024

- Ancell Street and Commonwealth
- Clifford / Manning Street Alley
- 1414 & 1416 Ruffner Drive
- Park Fairfax - Valley and Gunson Rd
- West Taylor Run Pkwy and Janneys Lane
- Commonwealth - East Rosemont & East Maple
- E. Del Ray & Commonwealth
- E. Abingdon
- Taney Rd & Paxton Street
- Commonwealth & Glebe
- North Morgan Street

City staff continues to identify spot projects to provide improvements in the short to mid-term timeframe while concurrently advancing system capacity upgrades to reduce flooding. Completion of these Spot projects will improve the City's storm sewer capital infrastructure while mitigating the impacts of localized flooding and drainage issues. Planning efforts related to the more recent flooding events include a wider identification and prioritization of Spot projects for consideration of scheduling and funding based on neighborhood engagement in response to flooding and further investigation of those issues. This includes maintaining and updating the ranking and prioritization for those identified projects.

#### EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

Eco-City Charter; Strategic Plan; Water Quality Management Supplement to the City's Master Plan; MS4 General Permit; Environmental Action Plan (EAP) 2040; City of Alexandria Storm Sewer Capacity Analysis (CASSCA); Be Flood Ready Alexandria; Northern Virginia Hazard Mitigation Plan

#### ADDITIONAL OPERATING IMPACTS

Additional operating impacts include additional staff included in the Stormwater Management Utility 10-Year Plan associated with the be identified with design, construction, and maintenance of individual projects

## STORMWATER BMP MAINTENANCE CFMP

DOCUMENT SUBSECTION: Stormwater Management  
 MANAGING DEPARTMENT: Transportation and Environmental Services

PROJECT LOCATION: Citywide  
 REPORTING AREA: Citywide

PRIMARY STRATEGIC THEME: Theme 8: Environmental Sustainability

PROJECT CATEGORY: 1  
 ESTIMATE USEFUL LIFE: 30+ Years

Stormwater BMP Maintenance CFMP													
	A (B + M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total FY 2022 - FY 2031
<b>Expenditure Budget</b>	<b>4,279,000</b>	<b>275,000</b>	<b>245,000</b>	<b>252,000</b>	<b>260,000</b>	<b>1,202,000</b>	<b>1,221,000</b>	<b>158,000</b>	<b>161,000</b>	<b>165,000</b>	<b>168,000</b>	<b>172,000</b>	<b>4,004,000</b>
Financing Plan													
GO Bonds (Stormwater)	2,829,500	0	0	0	129,500	1,100,000	1,100,000	100,000	100,000	100,000	100,000	100,000	2,829,500
Stormwater Utility Fund	1,449,500	275,000	245,000	252,000	130,500	102,000	121,000	58,000	61,000	65,000	68,000	72,000	1,174,500
<b>Financing Plan Total</b>	<b>4,279,000</b>	<b>275,000</b>	<b>245,000</b>	<b>252,000</b>	<b>260,000</b>	<b>1,202,000</b>	<b>1,221,000</b>	<b>158,000</b>	<b>161,000</b>	<b>165,000</b>	<b>168,000</b>	<b>172,000</b>	<b>4,004,000</b>
Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

### CHANGES FROM PRIOR YEAR CIP

Project funding schedule updated to reflect the recommendations made to City Council in January 2020, regarding an expanded and accelerated program to address the City's flood and stormwater infrastructure needs.

### PROJECT DESCRIPTION & JUSTIFICATION

The Virginia Department of Environmental Quality (DEQ) issued the City's current Municipal Separate Storm Sewer System (MS4) Permit on November 1, 2018 that mandates City-specific stormwater nutrient and sediment reduction targets for the Chesapeake Bay Total Maximum Daily Load (TMDL) enforced through three 5-year MS4 permit cycles. Accordingly, the previous 2013-2018 permit required the City to implement stormwater treatment best management practices (BMPs) sufficient to achieve 5% of the reduction targets during first 5-year permit (2013-2018), while the current MS4 permit requires implementation of practices to achieve an additional 35% or 40% of total reduction targets during the second 5-year permit (2018-2023) by 2023, and the remaining 60% or 100% of the reductions on or before the end of the third permit cycle (2023-2028), no later than 2028. Identification of strategies to meet these reductions, which includes the retrofit of large regional ponds, urban stream restoration, and installation of green infrastructure, are included in the City's Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan.

Long-term maintenance of this new infrastructure must be performed to ensure proper functioning and reduce pollution in stormwater runoff to meet the state and federal mandates. This project funds maintenance of Stormwater Best Management Practices (BMPs) implemented throughout the City, with a focus on the maintenance of larger stormwater management capital projects implemented under the Bay TMDL Action Plan:

- Cameron Station Pond Retrofit
- City Facilities Stormwater BMPs
- Green Infrastructure
- Lake Cook Stormwater Management
- Lucky Run Stream Restoration
- MS4-TMDL Water Quality Compliance projects
- Strawberry Run Stream Restoration
- Taylor Run Stream Restoration

#### EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

Bay TMDL Action Plan, MS4 General Permit, Strategic Plan, Environmental Action Plan, Water Quality Management Supplement

#### ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

## STORMWATER UTILITY IMPLEMENTATION

DOCUMENT SUBSECTION: Stormwater Management  
 MANAGING DEPARTMENT: Department of Transportation and Environmental Services

PROJECT LOCATION: Citywide  
 REPORTING AREA: Citywide

PRIMARY STRATEGIC THEME: Theme 8: Environmental Sustainability

PROJECT CATEGORY: 3  
 ESTIMATE USEFUL LIFE: N/A

Stormwater Utility Implementation													
	A (B + M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total FY 2022 - FY 2031
<b>Expenditure Budget</b>	<b>1,673,200</b>	<b>1,673,200</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Financing Plan													
Cash Capital	1,518,200	1,518,200	0	0	0	0	0	0	0	0	0	0	0
Stormwater Utility Fund	155,000	155,000	0	0	0	0	0	0	0	0	0	0	0
<b>Financing Plan Total</b>	<b>1,673,200</b>	<b>1,673,200</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

### CHANGES FROM PRIOR YEAR CIP

No changes from previous CIP.

### PROJECT DESCRIPTION & JUSTIFICATION

The City Council directed staff in February 2016 to develop the framework of a Stormwater Utility (SWU) to provide a dedicated funding source to more equitably distribute the increasing costs of recent state and federal Chesapeake Bay water pollution reduction mandates that require the implementation of costly infrastructure associated with stormwater management, as enforced through the City’s Municipal Separate Storm Sewer System (MS4) general permit. Increasing operating and capital costs associated with the mandates exceeded the ½ cent dedication, demanding increasing contributions from the General Fund. Creation of the SWU more equitably apportions the cost obligation and provides a dedicated funding source for the City’s Stormwater Management Program by shifting the burden to those properties that contribute more to stormwater runoff, thus alleviating pressure on the General Fund to support these funding responsibilities.

Following extensive public outreach, the City Council adopted the Stormwater Utility framework at its May 4, 2017 special meeting as part of the FY 2018 Budget. The City began implementing the Stormwater Utility Fee, effective January 1, 2018, with first billing sent May 2018 and second billing in October 2018, with the Real Estate bill, and every May and October thereafter with each Real Estate bill, to fund these mandated stormwater improvements and the stormwater management program in an adequate, sustainable and equitable manner.

In FY 2022 database management, additional systems development (database modeling, integration and user interfaces), ongoing GIS data management, and other identified needs will continue to successfully implement the utility. Extensive and ongoing robust public engagement is also key to implementation of the utility.

#### EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

City of Alexandria Municipal Separate Storm Sewer System (MS4) Permit; MS4 Program Plan; MS4 Year 5 Annual Report; City's Chesapeake Bay TMDL Action Plan; T&ES Strategic Plan; Eco-City Charter; Eco-City Action Plan

#### ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

## STRAWBERRY RUN STREAM RESTORATION

DOCUMENT SUBSECTION: Stormwater Management  
 MANAGING DEPARTMENT: Transportation and Environmental Services

PROJECT LOCATION: Ft. Williams Parkway  
 REPORTING AREA: Seminary Hill

PRIMARY STRATEGIC THEME: Theme 8: Environmental Sustainability

PROJECT CATEGORY: 3  
 ESTIMATE USEFUL LIFE: 21-25 years

Strawberry Run Stream Restoration													
	A (B + M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total FY 2022 - FY 2031
<b>Expenditure Budget</b>	<b>1,600,000</b>	<b>1,600,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Financing Plan													
Cash Capital	50,000	50,000	0	0	0	0	0	0	0	0	0	0	0
GO Bonds (Stormwater)	625,000	625,000	0	0	0	0	0	0	0	0	0	0	0
State/Federal Grants	800,000	800,000	0	0	0	0	0	0	0	0	0	0	0
Stormwater Utility Fund	125,000	125,000	0	0	0	0	0	0	0	0	0	0	0
<b>Financing Plan Total</b>	<b>1,600,000</b>	<b>1,600,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

### CHANGES FROM PRIOR YEAR CIP

No changes from previous CIP.

### PROJECT DESCRIPTION & JUSTIFICATION

The project involves stream restoration for approximately 900 linear feet of stream north of Duke Street and continuing north to the culvert under Fort Williams Parkway. It is bounded by residential development along Taft Avenue, residential development along Featherstone Place, and Fort Williams Parkway. When the Taft Avenue development was constructed, stream restoration was completed for a 500-foot section of Strawberry Run just to the north of Duke Street before the current requirements.

This project will restore the reach above this previously restored section and extend to the culvert under Fort Williams Parkway. Addition of stormwater outfall repair and restoration of tributary which requires stabilization and repair due to undermining of utilities to protect proposed downstream restoration. A schedule delay is due to public engagement impact due to COVID-19 public health emergency and the need for more engagement. The schedule has been adjusted to add approximately one year.

The City Council has acted on the project as part of the Chesapeake Bay TMDL Action Plan, the Stormwater Local Assistance Fund (SLAF) grant application, and through the budget process. VDEQ reviewed the concept plan and performed a site walk as part of the SLAF award and has more recently reviewed the current plans. The project team consists of staff from T&ES, RPCA, DPI and a consultant. Staff began public outreach prior to the application for the SLAF grant and continues to reach out to the public via general public meetings, the Parks and Recreation Commission, Environmental Policy Commission (EPC), and targeted civic associations.

A stream restoration project to stabilize the stream banks and provide overall improvement to the stream's function is a stormwater treatment strategy that protects local water quality and mitigates the transport of pollutants to the Chesapeake Bay. The project will stabilize and repair undermined utility infrastructure and mitigate channel and bank erosion, preventing sediment and phosphorous associated with that erosion from being delivered downstream from an actively incising urban stream.

### EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

MS4 General Permit, Chesapeake Bay TMDL Action Plan, Strategic Plan, Environmental Action Plan, Water Quality Management Supplement

### ADDITIONAL OPERATING IMPACTS

Operating funding and existing City staff provide annual support for routine and ongoing inspection, monitoring and reporting, and maintenance as applicable. The BMP Maintenance CFMPA future capital facilities maintenance program may be required to address non-routine capital maintenance for projects built to address Bay TMDL requirements.

## STREAM & CHANNEL MAINTENANCE

DOCUMENT SUBSECTION: Stormwater Management  
 MANAGING DEPARTMENT: Department of Transportation and Environmental Services

PROJECT LOCATION: Citywide  
 REPORTING AREA: Citywide

PRIMARY STRATEGIC THEME: Theme 8: Environmental Sustainability

PROJECT CATEGORY: 1  
 ESTIMATE USEFUL LIFE: Varies

Stream & Channel Maintenance													
	A (B + M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total FY 2022 - FY 2031
<b>Expenditure Budget</b>	<b>16,671,454</b>	<b>7,020,454</b>	<b>859,000</b>	<b>881,000</b>	<b>904,000</b>	<b>927,000</b>	<b>951,000</b>	<b>975,000</b>	<b>1,000,000</b>	<b>1,025,000</b>	<b>1,051,000</b>	<b>1,078,000</b>	<b>9,651,000</b>
Financing Plan													
Cash Capital	3,802,125	3,802,125	0	0	0	0	0	0	0	0	0	0	0
GO Bonds	1,487,602	1,487,602	0	0	0	0	0	0	0	0	0	0	0
GO Bonds (Stormwater)	7,907,500	450,000	0	530,000	600,000	835,000	903,000	782,500	950,000	835,000	998,000	1,024,000	7,457,500
Private Capital Contributions	230,000	230,000	0	0	0	0	0	0	0	0	0	0	0
Stormwater Utility Fund	3,244,227	1,050,727	859,000	351,000	304,000	92,000	48,000	192,500	50,000	190,000	53,000	54,000	2,193,500
<b>Financing Plan Total</b>	<b>16,671,454</b>	<b>7,020,454</b>	<b>859,000</b>	<b>881,000</b>	<b>904,000</b>	<b>927,000</b>	<b>951,000</b>	<b>975,000</b>	<b>1,000,000</b>	<b>1,025,000</b>	<b>1,051,000</b>	<b>1,078,000</b>	<b>9,651,000</b>
Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

### CHANGES FROM PRIOR YEAR CIP

Project funding schedule updated to reflect the recommendations made to City Council in January 2020, regarding an expanded and accelerated program to address the City’s flood and stormwater infrastructure needs.

### PROJECT DESCRIPTION & JUSTIFICATION

This capital maintenance project preserves the capacity for City streams and channels to carry a 100-year floodwater and for repairs to erosion damage, stream corridor degradation, grade control structures, storm sewer discharge points, stream stabilization/restoration. Projects may minimize blockages at bridges by removing and thinning excess vegetation and restoring conveyance capacity by removing sediment that accumulates more quickly due to more frequent, intense storm events. Efforts typically include sediment removal, vegetation maintenance, and in Holmes Run and Cameron Run watersheds, often include efforts in smaller tributaries to these streams.

The increasing frequency of climate-change induced intense storm events is requiring increased funding to ensure the conveyance capacity of these waterways as climate resiliency and adaption measures consistent with the City’s Climate Emergency Declaration. In response to recommendations from the Flooding Interdepartmental Task Force accepted by City Council, this project includes a funding increase of \$0.4 million annually for a total of \$9.7M over the 10-year period to perform more aggressive and inspection and maintenance of the City’s larger flood channels due to the impact from more frequent, intense storm events.

Project funds will be utilized to mitigate damages caused by heavy storm events, provide water quality benefits, and mitigate flooding. Project costs may be funded directly or may form the basis of funding for new needs broken out into separate projects. Sediment removal and vegetation maintenance was conducted on Cameron Run in FY 2018. Vegetation maintenance for Holmes Run is scheduled to occur in FY 2022. Staff will also be prioritizing projects on our smaller streams, including Hooffs Run, Taylor Run, Timber Branch, Backlick, and tributaries to larger streams to ensure there are no blockages at road and railroad crossings and that conveyance capacity is maintained.

The urban nature of the City and the areas of Fairfax County whose stormwater drains into the City puts stress on the vitality of natural streams throughout the City. This has caused erosion, loss of natural habitat, impacted riparian areas, infrastructure damage, and flooding issues in these streams. Designing and implementing restoration for these streams will provide the additional capacity needed to handle the added stormwater runoff from urbanization, allowing for the return of natural habitat and enhancing the health of these important resources in our City. Restoration of these resources can also provide the added benefit of creating nutrient and sediment pollution reductions and help the City address Chesapeake Bay Total Maximum Daily Load (TMDL) mandates.

#### EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

Eco-City Charter; Water Quality Management Supplement to City Master Plan; MS4 General Permit and Program Plan; Chesapeake Bay TMDL Action Plan; Strategic Plan

#### ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

## TAYLOR RUN STREAM RESTORATION

DOCUMENT SUBSECTION: Stormwater Management  
 MANAGING DEPARTMENT: Transportation and Environmental Services

PROJECT LOCATION: Chinguapin and Forest Parks  
 REPORTING AREA: Taylor Run

PRIMARY STRATEGIC THEME: Theme 8: Environmental Sustainability

PROJECT CATEGORY: 3  
 ESTIMATE USEFUL LIFE: 21-25 Years

Taylor Run Stream Restoration													
	A (B + M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total FY 2022 - FY 2031
<b>Expenditure Budget</b>	<b>4,347,850</b>	<b>4,347,850</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Financing Plan													
Cash Capital	100,000	100,000	0	0	0	0	0	0	0	0	0	0	0
GO Bonds (Stormwater)	1,867,850	1,867,850	0	0	0	0	0	0	0	0	0	0	0
State/Federal Grants	2,255,000	2,255,000	0	0	0	0	0	0	0	0	0	0	0
Stormwater Utility Fund	125,000	125,000	0	0	0	0	0	0	0	0	0	0	0
<b>Financing Plan Total</b>	<b>4,347,850</b>	<b>4,347,850</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

### CHANGES FROM PRIOR YEAR CIP

No changes from previous CIP.

### PROJECT DESCRIPTION & JUSTIFICATION

The project along Taylor Run is mainly located in Chinguapin Park, west of King Street in the City. This project will restore a severely degraded section of the stream from below the culvert near the Chinguapin Recreation Center to approximately 1,900 feet downstream. The project goals include stabilizing the stream corridor, stabilizing the sanitary sewer infrastructure, and enhancing the flora and fauna of the stream, while addressing Chesapeake Bay pollution mandates.

The City Council has acted on the project as part of the Chesapeake Bay TMDL Action Plan, the Stormwater Local Assistance Fund (SLAF) grant application, and through the budget process. VDEQ reviewed the concept plan and performed a site walk as part of the SLAF award and has more recently reviewed the current plans. The project team consists of staff from T&ES, RPCA, DPI and a consultant. Staff began public outreach prior to the application for the SLAF grant and continued to reach out to the public via general public meetings, the Parks and Recreation Commission, Environmental Policy Commission (EPC), and targeted civic associations. Project schedule delay is due to public engagement impact due to COVID-19 public health emergency and the need for more engagement with the community. Staff anticipates completion of design by spring/summer 2021. Construction is anticipated to begin by fall/winter 2021-2022 and last approximately 12 months.

A stream restoration project to stabilize the stream banks and provide overall improvement to the stream's function is a stormwater treatment strategy that protects local water quality and mitigates the transport of pollutants to the Chesapeake Bay. The project will mitigate channel and bank erosion, preventing sediment and phosphorous associated with that erosion from being delivered downstream from an actively incising urban stream.

This project was initially identified in the FY 2019 Phase III Stream Restoration and Outfall Rehabilitation Feasibility Study. The Study considered five stream segments for potential restoration projects and five outfalls for potential rehabilitation. The purpose of the Study was to help the City to develop overall strategies to deal with degraded streams and assist in prioritizing the projects. The Study prioritized two potential stream restoration projects, with the top two potential projects identified along Strawberry Run and Taylor Run. Partial funding for those projects included funding from this project and from the MS4 TMDL Water Quality Improvement CIP project.

### EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

MS4 General Permit, Chesapeake Bay TMDL Action Plan, Strategic Plan, Environmental Action Plan

### ADDITIONAL OPERATING IMPACTS

Operating funding and existing City staff provide annual support for routine and ongoing inspection, monitoring and reporting, and maintenance as applicable. The BMP Maintenance CFMP program addresses capital maintenance for projects built to address Bay TMDL requirements.