

Worksession

MEMORANDUM

February 22, 2023

TO: Transportation & Environment Committee

FROM: Keith Levchenko, Senior Legislative Analyst

SUBJECT: **Worksession: Amendments to the FY23-28 Capital Improvements Program (CIP) Conservation of Natural Resources: Agenda Item #2A: Storm Drains and Agenda Item #2B: Stormwater Management**

NOTE: Both the Storm Drains CIP and the Stormwater Management CIP are funded via the Water Quality Protection Fund and therefore do not affect the County's CIP affordability calculations regarding General Obligation Bonds or General Current Revenue.

- **Storm Drains**
 - Approved FY23-28 CIP is \$36.2 million. The Council approved large increases in several projects last year to begin to address backlogs of work.
 - As part of his January 17, 2023 CIP amendment transmittal, the CE is recommending several technical amendments to address funding switches from MDE long-term financing to Water Quality Protection Bonds – **Council Staff concurs with these funding switches.**

- **Stormwater Management**
 - Approved FY23-28 CIP is \$119.4 million.
 - Intended to meet the impervious area retrofit requirement (1,814 acres) in the County's current NPDES-MS4 permit
 - As part of his January 17 transmittal of CIP amendments, the Executive is recommending an amendment to the Stormwater Facility Major Structural Repair project to add \$2.8 million in FY24 to address cost increases for the Lake Hallowell Dredging project (\$1.7 million in Water Quality Protection Charge current revenue) and the Railroad Branch Dam emergency work (\$1.1 million in Long-Term Financing). - **Council Staff supports approval of the County Executive's recommendations**
 - Council Staff suggests the Committee also discuss the status of the Flood Control project and DEP's three contracting mechanisms for its retrofit work.

The following officials and staff will be attending this meeting:

Storm Drains CIP

- Emil Wolanin, Chief, Division of Traffic Engineering and Operations, Department of Transportation (DOT)
- Dan Sheridan, Design Section Chief, Division of Transportation Engineering, (DOT)
- Veronica Jaua, Fiscal and Policy Analyst, Office of Management and Budget

Stormwater Management CIP

- Vicky Wan, Acting Deputy Director, Department of Environmental Protection (DEP)
- Stan Edwards, Chief, Energy, Climate & Compliance Division
- Frank Dawson, Chief, Watershed Restoration Division, DEP
- Amy Stevens, Watershed Restoration Division, DEP
- Pam Parker, Watershed Restoration Division, DEP
- Saeyin Oh, Watershed Restoration Division, DEP
- Rich Harris, Fiscal and Policy Analyst, Office of Management and Budget

Attachments

- Excerpts from the County Executive’s Recommended FY23-28 CIP amendments (©1-11)
- Flood Control Study Presentation Slide Deck (©12-38)

AGENDA ITEM #2A: Amendments to the FY23-28 Storm Drains CIP

Summary

The Department of Transportation (DOT) Division of Transportation Engineering manages the County storm drains program. Properly functioning storm drains remove excess water from the roads, ensuring safer road conditions while also protecting roads from water damage. Properly functioning storm drains also protect adjacent properties from water runoff damage. Work is identified through requests for assistance that come from property owners as well as from government agencies. DOT works in partnership with the state and other municipalities when state roads and/or municipal properties are involved.

The Approved FY23-28 Storm Drains CIP is \$36.2 million as presented below:

Table #1: Expenditures by Project (in \$000s)

Projects	Six-Year	FY23	FY24	FY25	FY26	FY27	FY28
Facility Planning: Storm Drains	2,880	480	480	480	480	480	480
Outfall Repairs	5,544	924	924	924	924	924	924
Storm Drain: General	14,275	4,275	2,000	2,000	2,000	2,000	2,000
Storm Drain Culvert Replacement	13,500	5,000	1,700	1,700	1,700	1,700	1,700
Total	36,199	10,679	5,104	5,104	5,104	5,104	5,104

The Six-Year program is funded mostly with Water Quality Protection Bonds (65 percent) along with Water Quality Protection Current Revenue (29 percent) and some Federal Aid (6 percent).

Over the past few years, the Council has approved increases (both one-time and increases in the level of effort) of several of the Storm Drain projects to address backlogs in work and the large inventory of aging Storm Drain infrastructure. For more background information, please see the [Council Staff Report](#) from last year’s FY23-28 CIP review. DOT staff will be available at the T&E Committee meeting to answer questions regarding the Approved Storm Drain CIP.

FY24 Capital Budget

In terms of the FY24 appropriations required for each project, the table below presents the cumulative appropriation and projected expenditures through FY24 as well as the appropriation required in FY24 per the County Executive’s January 17 transmittal.

Table #2: Appropriations by Project (in \$000s)

Projects	Cumulative expenditures		Projected	Additional
	Appropriation	through FY24*	Balance	Needed in FY24
Facility Planning: Storm Drains	7,566	8,046	(480)	480
Outfall Repairs	10,829	10,829	-	-
Storm Drain Culvert Replacement	18,200	19,900	(1,700)	1,700
Storm Drain General	22,790	22,790	-	-

*Based on approved expenditures and/or amendments recommended by the County Executive

The Facility Planning: Storm Drains and the Storm Drain Culvert Replacement projects SM will need FY24 appropriations (as shown above) to cover projected spending through FY24.

The Outfall Repairs and Storm Drain General projects both received appropriations in FY23 covering two years (FY23 and FY24) to provide project timing flexibility during that two-year period. Therefore, neither project requires an appropriation in FY24.

Council Staff concurs with the FY24 appropriation recommendations transmitted by the County Executive.

CIP Amendments

As part of his FY24 Capital Budget and amendments to the FY23-28 CIP, the Executive is not recommending any change in expenditures but has included some technical adjustments in funding sources for several projects in the Storm Drains CIP (see excerpt from his January 17, 2023 transmittal on ©1). These adjustments reflect the latest assumptions that the County’s Storm Drain projects are generally not eligible for long-term financing from the Maryland Department of the Environment (MDE). These technical adjustments include:

- **Outfall Repairs:** Minor funding switches in FY22 and FY23 (totaling \$72,000) to reduce long-term financing and increase Water Quality Protection Bonds.
- **Storm Drain Culvert Replacement:** A large funding switch in FY22 (\$3.6 million) to reduce long-term financing and increase Water Quality Protection Bonds.
- **Storm Drain General:** A minor funding switch in FY22 (totaling \$66,000) to reduce long-term financing and increase Water Quality Protection Bonds.

Council Staff concurs with the Executive’s technical adjustments in each project.

AGENDA ITEM #2B: Amendments to the FY23-28 Stormwater Management CIP

Summary

Stormwater management is a shared responsibility among several County departments and agencies. DEP plans and implements the stormwater management CIP program. The Department of Permitting Services reviews, approves, inspects, and enforces requirements for construction of privately-owned stormwater management facilities. DEP works with the County’s Department of Transportation (DOT) to address storm drain outfall repair issues, as well as with the Washington Suburban Sanitary Commission (WSSC Water) when WSSC Water infrastructure work is needed. DEP also inspects and provides structural maintenance for most Montgomery County Public Schools (MCPS) and the Montgomery County facilities on Maryland-National Capital Park and Planning Commission (M-NCPPC) land. M-NCPPC, in coordination with DEP, performs stream restoration work (utilizing Water Quality Protection funding) on park land which is credited under the County’s MS-4 permit (discussed later).

Fiscal Summary

The Approved Stormwater Management CIP totals \$119.4 million as shown on the following chart:

Table #3: Expenditures by Project (in 000s)

Projects	Six-Year	FY23	FY24	FY25	FY26	FY27	FY28
Facility Planning: SWM	6,407	1,018	1,037	1,057	1,077	1,098	1,120
Flood Control Study	1,200	1,200					
SM Facility Major Structural Repair	24,927	8,577	4,360	3,075	3,135	2,795	2,985
SM Retrofit - Countywide	83,078	10,929	10,485	23,895	14,242	12,208	11,319
Wheaton Regional Dam Flooding Mitigation	3,779	1,909	1,870				
Total	119,391	23,633	17,752	28,027	18,454	16,101	15,424

The Council discussed each of the Stormwater Management projects last year as part of its review of the FY23-28 CIP. For more information on each project, please see the [Council Staff Report](#) from last spring.

The funding sources for this program are presented in the following chart:

Table #4: Funding Sources (in 000s)

Funding Sources	FY23-28 Total	FY23-28 CE	\$\$\$ Change	% Change
Total	119,391	122,191	2,800	2.3%
Current Revenue	1,200	1,200		
State Aid	12,130	12,130		
Long-Term Financing	58,123	59,223	1,100	n/a
SWM Waiver Fees	2,360	2,360		
Water Quality Protection Bonds	30,617	30,617	-	0.0%
Water Quality Protection Current Revenue	14,961	16,661	1,700	11.4%

The increases in Long-Term Financing and in WQP Current Revenue reflect the Executive’s recommended amendment to the SM Facility Major Structural Repair project discussed later.

FY24 Capital Budget

In terms of the FY24 appropriations required for each project, the table below presents the cumulative appropriation and projected expenditures through FY24 as well as the appropriation required in FY24 per the County Executive’s January 17 transmittal.

Table #5: Appropriations by Project (in 000s)

Projects	Cumulative ppropriation	Expenditures Through FY24*	Projected Balance	Appropriation Needed in FY24
Facility Planning: SWM	16,954	17,991	(1,037)	1,037
Flood Control Study	1,300	1,300	-	-
SM Facility Major Structural Repair	40,244	43,044	(2,800)	2,800
SM Retrofit - Countywide	100,934	85,467	15,467	1,596 (multi-year)
Wheaton Regional Dam Flooding Mitigation	4,776	4,776	-	-

*Based on approved expenditures and/or amendments recommended by the County Executive

The Flood Control Study and the Wheaton Regional Dam Flooding Mitigation projects are both fully appropriated, so no FY24 appropriations for these projects are needed.

The Facility Planning: SWM project will need an FY24 appropriation (as shown above) to cover projected spending through FY24.

The SM Retrofit – Countywide project requires an appropriation covering multiple fiscal years based on the subprojects moving forward, and has a large balance carrying over beyond FY24. Therefore, the FY24 appropriation requirement differs from projected spending through FY24.

The SM Facility Major Structural Repair project will need an FY24 appropriation based on the Executive’s recommended amendment to the structural repair project discussed below).

Council Staff concurs with each of these FY24 appropriations as transmitted by the County Executive.

CIP Amendments

As part of his January 17 transmittal of CIP amendments, the Executive is recommending an amendment to the Stormwater Facility Major Structural Repair project to add \$2.8 million in FY24 to address cost increases for the Lake Hallowell Dredging project (\$1.7 million in Water Quality Protection Charge current revenue) and the Railroad Branch Dam emergency work (\$1.1 million in Long-Term Financing). An excerpt from the Executive’s Recommended FY23-28 Amended CIP transmittal is attached and includes a summary of the amendment (see ©7) and the amended project description form (see ©8).

DEP staff provided the following additional information regarding the two projects noted above:

The Lake Hallowell Dredging Project is the valve replacement and dredging of the existing Lake Hallowell located in Olney. This project was bid twice. The first bid to our C-18 Contractors resulted in a low bid that was withdrawn and the next lowest bidder at \$4.532M. The decision was made to rephase the sequence of construction in an effort to bring down the cost of the project and rebid this project through the Office of Procurement under IFB 1136706. The low bid in this solicitation also resulted in a contractor's bid withdrawal. The next low bid by HGS, LLC was \$3.999M, which was greater than the engineer's estimate, but resulted in the award to the contractor.

The Railroad Branch Dam Emergency Project required major changes to the scope of the project, as a result of unforeseen sub-surface site conditions and the poor condition of the existing WSSC manholes. Changes included modifications to the originally priced concrete endwall, including rock grinding measures to deal with high rock; additional manhole coating for the WSSC manholes, due to deteriorated interior conditions; additional sand trench to accommodate high ground water; protective access measures for the existing sewer line; and increased earthworks about the outfall.

Council Staff recommends approval of the amendment as transmitted by the County Executive.

The Wheaton Regional Dam Flooding Mitigation project was not recommended for an amendment by the Executive in his January 17, 2023 transmittal. However, this project is linked to the Dennis Ave. Bridge M-0194 Replacement project, which the Executive has recommended for amendment this year. The Executive's January 17, 2023 transmittal includes a summary of the bridge project amendment (see ©9) which notes,

"Schedule change (including slippage) and cost increase due to updated construction costs reflecting final design and additional utility relocations that were not previously expected."

The amended project description form (see ©10-11) has construction scheduled to start in the Spring of 2024 instead of the Spring of 2023 (as approved last year). Completion has been pushed back one year from the Fall of 2023 to the Fall of 2024.

Council Staff has asked DOT and OMB staff for more information on the schedules for both projects. DOT staff have noted that the bridge project is facing an implementation delay because of the utility relocations. **Given this, it appears the Council will likely need to amend the Wheaton Regional Dam Flooding Mitigation recognizing a project delay. Council Staff will work with OMB and DEP staff on this issue and bring this issue back to the T&E Committee at a later date.**

Other Issues

In addition to the CIP amendment above, the Council may wish to discuss two ongoing items related to the Stormwater Management CIP:

- As noted in last year’s discussion, DEP is moving forward with three different contracting approaches to achieve its retrofit requirements under its NPDES-MS4 permit. Council Staff asked DEP for more information on the status of work under each approach:
 - An MOU with M-NCPPC for four stream and outfall restoration projects:
 - *The Desmet Place Outfall Design is under contract,*
 - *The Lake Frank Outfalls and Lemontree/Collingwood Outfalls are currently in the Planning phase*
 - *The North Creek Stream Restoration project design is out for bid.*
 - A Pay for Performance RFP for several restoration projects:
 - *DEP currently has 8 individual Pay for Performance RFP project awarded to two contractors. Project kickoffs were completed in early February. Contractor outreach for all 8 projects is proceeding.*
 - Design-Build Invitations for Bid for several stormwater pond retrofit and low impact development projects.
 - *During the scoping and Design-Build IFB reviews by Procurement and OCA, DEP was notified that the original engineering firms would not be able to participate in the bid, due to an unfair advantage they would have. DEP is currently engaging with the original engineering firms to finishing the design of the respective suspended projects.*

The Committee will also have an opportunity to talk more about the stormwater management retrofit projects in the context of the MDE-required Financial Assurance Plan for FY22 which is scheduled for T&E Committee review on March 6.

- The Flood Control Study project was approved last May. This project is intended to proactively address current flooding problems in the County as well as more frequent and intense rain events in the future resulting from climate change. Phase I of the study, to identify watersheds that need attention and develop an overall strategy, was recently completed. The development of subwatershed plans is the next step noted in the approved project description form. DEP staff will provide a presentation (see slide deck on ©12-38) on the status of the study to the T&E Committee.

Attachments

**FY 23-28 Biennial Recommended CIP
January Budget Amendments Summary (\$000s)
17-Jan-23**

Project #	Project Name	Explanation of Adjustment	FY23-28 Change (\$000s)	Funding Sources
P501912	Bus Rapid Transit: US 29	Funding switch when expenditures were not eligible for WSSC Water reimbursement.	0	Impact Tax, Intergovernmental, Short-Term Financing
P501404	MCG Reconciliation PDF	Reflects updated impact tax and recordation tax premium revenue estimates with offsetting funding switches. Reflects programming of available prior year impact tax receipts.	0	G.O. Bonds, Impact Tax, Recordation Tax Premium
P501109	Snouffer School Road	Funding switch from G.O. Bonds to Impact Taxes and Intergovernmental to reflect additional expenditures eligible for WSSC Water reimbursement.	0	G.O. Bonds, Impact Tax, Intergovernmental
P501119	Snouffer School Road North (Webb Tract)	Funding switch from G.O. Bonds to Intergovernmental to reflect additional expenditures reimbursable by WSSC water.	0	G.O. Bonds, Intergovernmental
P711503	21st Century Library Enhancements Level Of Effort	Beginning in FY24, \$164,000 is shifted from this project to the Library operating budget to provide for the operating budget impacts from annual software licenses and maintenance costs that result from this project.	(820)	Current Revenue: General
P509948	Outfall Repairs	Funding switch prior to the 6-year period to replace long term financing from MDE that will not materialize with CR:WQPC, and funding switch in FY23 to replace CR: WQPC with WQPC Bonds.	0	Current Revenue: Water Quality Protection, Long-Term Financing, Water Quality Protection Bonds
P501470	Storm Drain Culvert Replacement	Funding switch prior to the 6-year period to replace long term financing from MDE that will not materialize with CR:WQPC, and funding switch in FY23 to replace CR: WQPC with WQPC Bonds.	0	Current Revenue: Water Quality Protection, Long-Term Financing, Water Quality Protection Bonds
P500320	Storm Drain General	Funding switches to match costs with the most appropriate funding sources. Also reflects \$3,000 credit from the Maryland Dept. of Environment.	0	Current Revenue: Water Quality Protection, Long-Term Financing, Water Quality Protection Bonds
P760100	Affordable Housing Acquisition and Preservation	Funding switch replaces HIF funding with Loan Repayment Proceeds.	0	HIF Revolving Program, Loan Repayment Proceeds

Prior Approved CIP Amendments

P362105	Exelon-Pepco Merger Fund	FY23 supplemental in Utility Merger Funds for the amount of \$636,971.	637	Utility Merger Funds
P342303	Business Continuity Phase II	FY23 supplemental in Current Revenue: General for the amount of \$5,299,000, Short-Term Financing for the amount of \$2,170,000.	7,469	Current Revenue: General, Short-Term Financing
P422303	Montgomery County Correctional Facility Sewer	New Project. FY23 supplemental in G.O. Bonds for the amount of \$500,000. Project supports installation of equipment to remove excess trash from entering the sanitary sewer system.	500	G.O. Bonds
P362202	Appellate Court Judges Chambers	FY22 supplemental appropriation for \$909,000 added to this project to accommodate a fourth Appellate Court Judges chamber.	879	Current Revenue: General, G.O. Bonds, State Aid
P502201	Bus Rapid Transit: US 29-Phase 2	Adjusted funding to match December 2022 Council amendment which reduced impact tax funding in FY23 by \$1.5 million.	(1,500)	Impact Tax
P502316	Farm Women's Market Parking Garage	Companion project to M-NCPPC's Bethesda Lots 10-24 Parks project which together are designed to provide two new urban parks in downtown Bethesda.	10,293	G.O. Bonds, Intergovernmental
P502108	Bowie Mill Road Bikeway	State aid was secured which accelerated the project one year consistent with the Council approved supplemental.	0	G.O. Bonds, State Aid
P720601	Cost Sharing: MCG	FY23 Supplemental Appropriation #23-13 for \$5,000,000 in Current Revenue: General for the CASA, Inc., workforce development and training center project. Also, reflects technical correction to eliminate prior	5,000	Current Revenue: General, State Aid



Outfall Repairs (P509948)

Category	Conservation of Natural Resources	Date Last Modified	01/03/23
SubCategory	Storm Drains	Administering Agency	Transportation
Planning Area	Countywide	Status	Ongoing

	Total	Thru FY22	Rem FY22	Total 6 Years	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Beyond 6 Years
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EXPENDITURE SCHEDULE (\$000s)

Planning, Design and Supervision	5,620	3,296	80	2,244	374	374	374	374	374	374	-
Land	12	12	-	-	-	-	-	-	-	-	-
Construction	8,890	5,590	-	3,300	550	550	550	550	550	550	-
Other	3	3	-	-	-	-	-	-	-	-	-
TOTAL EXPENDITURES	14,525	8,901	80	5,544	924	924	924	924	924	924	-

FUNDING SCHEDULE (\$000s)

Current Revenue: Water Quality Protection	2,879	1,215	152	1,512	192	264	264	264	264	264	-
G.O. Bonds	5,357	5,357	-	-	-	-	-	-	-	-	-
Long-Term Financing	1,148	1,220	(72)	-	-	-	-	-	-	-	-
Water Quality Protection Bonds	5,141	1,109	-	4,032	732	660	660	660	660	660	-
TOTAL FUNDING SOURCES	14,525	8,901	80	5,544	924	924	924	924	924	924	-

APPROPRIATION AND EXPENDITURE DATA (\$000s)

Appropriation FY 24 Request	-	Year First Appropriation	FY99
Cumulative Appropriation	10,829	Last FY's Cost Estimate	14,525
Expenditure / Encumbrances	8,988		
Unencumbered Balance	1,841		

PROJECT DESCRIPTION

This project provides for the repair of existing storm drain outfalls into stream valleys. Design of corrective measures is included when in-kind replacement of original outfall structures is not feasible. Candidate outfall repairs are selected from citizen and public agency requests. The Department of Environmental Protection's (DEP) Miscellaneous Stream Valley Improvements project generates and assists in rating the outfalls, which are identified as that project expands into additional watersheds.

PROJECT JUSTIFICATION

Collapsed storm drain pipe sections, undermined endwalls, and eroded outfall channels create hazardous conditions throughout the County. The course of drainage could be altered endangering private property or public roads and speeding the erosion of stream channels. Erosion from damaged outfalls results in heavy sediment load being carried downstream that can severely impact aquatic ecosystems and exacerbate existing downstream channel erosion. As part of its watershed restoration inventories, DEP identifies storm drain outfalls that are in need of repair in County stream valleys and respective watersheds. As this program expands to include additional watersheds, each outfall is categorized and, where damaged, rated. A functional rating and evaluation process is used to prioritize each outfall.

OTHER

The number of outfall locations being repaired per year varies based on the severity of the erosion and damage, the complexity of the design, and the complexity of the needed restorative construction work. Completed outfalls in FY20-21: Bennington Drive, Margate Road, Hatherleigh Drive, Glen Road, Loxford Road, Pebble Beach Lane, Whisperwood Road, Buttonwood Lane, Brandyhall Lane, Hollyoak Court, Lambertson Road. Potential Outfalls projects in FY22-23: Georgian Forest Park, Crosby Road, Vandever Street, Garrett Park Road, Lily Stone Drive, and Littleton Street.

FISCAL NOTE

In FY23-FY28, long-term financing based on the Maryland Water Quality Revolving Loan Fund (WQRLF) from the Maryland Department of Environment (MDE) was replaced with Water Quality Protection Bonds due to limited eligibility of projects within this CIP under the revolving fund. FY22 amendment to reduce Long-Term Financing and replace it with Water Quality Protection Bonds. FY23 funding switch between Long-Term Financing and Current Revenue: WQPC to fund expenditures incurred in FY19 under the MDE loan that will not materialize and reprogramming of expenditures originally under CR:WQPC with WQPC Bonds.

DISCLOSURES

A pedestrian impact analysis has been completed for this project. Expenditures will continue indefinitely.

COORDINATION

Montgomery County Department of Environmental Protection, Maryland-National Capital Park and Planning Commission, Maryland Department of the Environment, United States Army Corps of Engineers, Montgomery County Department of Permitting Services, Utility Companies, and Miscellaneous Stream Valley Improvements (CIP No. 807359).



Storm Drain Culvert Replacement (P501470)

Category	Conservation of Natural Resources	Date Last Modified	01/03/23
SubCategory	Storm Drains	Administering Agency	Transportation
Planning Area	Countywide	Status	Ongoing

	Total	Thru FY22	Rem FY22	Total 6 Years	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Beyond 6 Years
EXPENDITURE SCHEDULE (\$000s)											
Planning, Design and Supervision	3,264	1,303	131	1,830	555	255	255	255	255	255	-
Construction	23,434	11,764	-	11,670	4,445	1,445	1,445	1,445	1,445	1,445	-
Other	2	2	-	-	-	-	-	-	-	-	-
TOTAL EXPENDITURES	26,700	13,069	131	13,500	5,000	1,700	1,700	1,700	1,700	1,700	-

FUNDING SCHEDULE (\$000s)											
Current Revenue: Water Quality Protection	9,000	4,000	3,560	1,440	1,440	-	-	-	-	-	-
G.O. Bonds	1,500	1,500	-	-	-	-	-	-	-	-	-
Long-Term Financing	-	3,560	(3,560)	-	-	-	-	-	-	-	-
Water Quality Protection Bonds	16,200	4,009	131	12,060	3,560	1,700	1,700	1,700	1,700	1,700	-
TOTAL FUNDING SOURCES	26,700	13,069	131	13,500	5,000	1,700	1,700	1,700	1,700	1,700	-

APPROPRIATION AND EXPENDITURE DATA (\$000s)			
Appropriation FY 24 Request	1,700	Year First Appropriation	FY14
Cumulative Appropriation	18,200	Last FY's Cost Estimate	26,700
Expenditure / Encumbrances	13,133		
Unencumbered Balance	5,067		

PROJECT DESCRIPTION

This program will provide for the replacement of failed storm drain pipes and culverts. The County's storm drain infrastructure is aging and many of the metal pipe culverts installed from 1960 through the 1990's have reached the end of their service life. An asset inventory with condition assessments has been developed to better forecast future replacement needs. Going forward, funding will be programmed for both systematic and emergency replacement of these pipes and culverts. Program scope includes: storm water pipe and culvert replacement of both metal and concrete less than six (6) feet in roadway longitudinal length; headwalls, end sections, replacement, or extension of culverts to assure positive flow of stormwater and channeling of stormwater into existing ditch lines or structures. Repairs also include roadside pipe and culvert end treatment safety improvements to eliminate safety hazards. This project will not make major changes to the location or size of existing storm drainage facilities. Structures greater than six-feet-roadway-longitudinal length are repaired under the Bridge Renovation Program, (CIP No. 509753).

PROJECT JUSTIFICATION

This program will address emergency pipe replacements of aging metal and concrete pipes that have reached the end-of-their-service life. The result of these pipe failures has been deep depressions, sinkholes, sediment build-up, open pipe joints, and metal pipe inverts to an unacceptable levels. Existing storm drain conditions are extremely poor. Repairs are needed to improve safety and reduce the potential for hazards and associated public inconvenience. Failure of a storm drain pipe will precipitate emergency repairs at much higher prices. Furthermore, this program provided funding towards developing an asset inventory of the storm drain system including pipe and culvert conditions that helps forecast future funding requirements.

FISCAL NOTE

In FY23-FY28, long-term financing based on the Maryland Water Quality Revolving Loan Fund (WQRLF) from the Maryland Department of Environment (MDE) was replaced with Water Quality Protection Bonds due to limited eligibility of projects within this CIP under the revolving fund. FY22 amendment and funding switch to reduce Long-Term Financing and replace it with Water Quality Protection Bonds. FY23 funding switch between Long-Term Financing and Current Revenue: WQPC to fund expenditures incurred in FY19-21 under the MDE loan that will not materialize and reprogramming of expenditures originally under CR:WQPC with WQPC Bonds.

DISCLOSURES

Expenditures will continue indefinitely.

COORDINATION

Washington Suburban Sanitary Commission, Washington Gas Company, Montgomery County Department of Permitting Services, Pepco, Cable TV, Verizon, Montgomery County Public Schools, Regional Service Centers, Community Association's, Commission on People With Disabilities, Maryland Department of Environment, Montgomery County Department of Environmental Protection, and United States Army Corps of Engineers.



Storm Drain General (P500320)

Category	Conservation of Natural Resources	Date Last Modified	01/03/23
SubCategory	Storm Drains	Administering Agency	Transportation
Planning Area	Countywide	Status	Ongoing

	Total	Thru FY22	Rem FY22	Total 6 Years	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Beyond 6 Years
EXPENDITURE SCHEDULE (\$000s)											
Planning, Design and Supervision	7,559	3,065	240	4,254	1,274	596	596	596	596	596	-
Land	103	103	-	-	-	-	-	-	-	-	-
Construction	23,127	13,009	97	10,021	3,001	1,404	1,404	1,404	1,404	1,404	-
Other	1	1	-	-	-	-	-	-	-	-	-
TOTAL EXPENDITURES	30,790	16,178	337	14,275	4,275	2,000	2,000	2,000	2,000	2,000	-

FUNDING SCHEDULE (\$000s)											
Current Revenue: Water Quality Protection	3,364	2,178	183	1,003	1,003	-	-	-	-	-	-
Federal Aid	2,275	-	-	2,275	2,275	-	-	-	-	-	-
G.O. Bonds	9,169	9,169	-	-	-	-	-	-	-	-	-
Intergovernmental	122	122	-	-	-	-	-	-	-	-	-
Long-Term Financing	2,015	2,012	3	-	-	-	-	-	-	-	-
State Aid	162	162	-	-	-	-	-	-	-	-	-
Stormwater Management Waiver Fees	101	101	-	-	-	-	-	-	-	-	-
Water Quality Protection Bonds	13,582	2,434	151	10,997	997	2,000	2,000	2,000	2,000	2,000	-
TOTAL FUNDING SOURCES	30,790	16,178	337	14,275	4,275	2,000	2,000	2,000	2,000	2,000	-

APPROPRIATION AND EXPENDITURE DATA (\$000s)			
Appropriation FY 24 Request	-	Year First Appropriation	FY03
Cumulative Appropriation	22,790	Last FY's Cost Estimate	30,790
Expenditure / Encumbrances	16,498		
Unencumbered Balance	6,292		

PROJECT DESCRIPTION

This project provides the flexibility to construct various sub-projects that might otherwise be delayed for lack of funds or difficulty in acquiring right-of-way. This project provides for right-of-way acquisition and construction for storm drain projects resulting from the Drainage Assistance Request Program. Individual projects range from retrofitting existing storm drainage systems to developing new drainage systems required to upgrade the existing systems in older subdivisions. Projects formerly handled through the Neighborhood Storm Drain Improvements Project are usually small, unanticipated projects initiated by requests from citizens whose homes and properties are subject to severe flooding or erosion and where there is a demonstrated need for early relief. Potential new storm drain projects are studied under the Facility Planning: Storm Drain project. Concept studies are evaluated based on the following factors: public safety, damage to private property and frequency of event, damage to public right-of-way, environmental factors such as erosion, general public benefit, availability of right-of-way and 5:1 cost benefit damage prevented ratio. After the completion of facility planning, projects with construction estimated to cost less than \$500,000 are included in this project. Prompt relief is frequently achieved by the use of Department of Transportation (DOT) personnel to construct and provide construction management. The project also facilitates financial participation with developers up to 50 percent share of construction cost for storm drainage projects where such construction would yield a public benefit to properties other than that of homeowner or developers.

CAPACITY

Projects will be designed to accommodate the ten-year storm frequency interval.

OTHER

On Participation projects, cost sharing between the County and either homeowners or developers varies and is based upon a signed Letter of Understanding. Some funds from this project will go to support the Renew Montgomery program. Completed Projects in FY20 and FY21: Menlo Avenue, Windmill Lane, Eastwood Avenue, Tomlinson Avenue, Tranford Road, Thornley Court, McComas Avenue, Roosevelt Avenue, Greenfield Street, Decatur Avenue, Stonington Place, Brookside Drive, Warren Street, Windsor Lane, Charen Lane, Goshen Road, Burdette Avenue, Pearson Street, Stable Lane, Springridge Road, Wildwood Shopping Center. Candidate Projects for FY22 and FY23: Reading Road, Kenilworth Driveway, Railroad Street, Conway Drive, Easley Street, Saul Road, Lucas Lane, Parkwood Drive, Fairfax Road, Highview Drive, Gardiner Avenue, Macarthur Blvd at Persimmon Tree Road.

FISCAL NOTE

In FY23-FY28, long-term financing based on the Maryland Water Quality Revolving Loan Fund (WQRLF) from the Maryland Department of Environment (MDE) and Current Revenue: Water Quality Protection Charge were replaced with Water Quality Protection Bonds due to limited eligibility of projects within this CIP under the revolving fund. FY23 multi-year appropriation request; consistent with past practice for this project. Funding switch in the upload of actuals between

Intergovernmental and Stormwater Management Waiver Fees for \$101,000. FY22 amendment and funding switch to reduce Long-Term Financing and replace it with Water Quality Protection Bonds. FY23 Federal Aid for \$2,275,000 includes American Rescue Plan Act State and Local Fiscal Recovery Funds to fund 10 storm drain projects. FY23 funding switch between Current Revenue: WQPC and Long-Term Financing to record a small credit received from MDE related to FY19 expenditures and funding switch between Current Revenue and Bonds from the WQPC fund.

DISCLOSURES

A pedestrian impact analysis will be performed during design or is in progress. Expenditures will continue indefinitely. The County Executive asserts that this project conforms to the requirement of relevant local plans, as required by the Maryland Economic Growth, Resource Protection and Planning Act.

COORDINATION

Montgomery County Department of Environmental Protection, Maryland-National Capital Park & Planning Commission, Maryland Department of the Environment, United States Army Corps of Engineers, Montgomery County Department of Permitting Services, Utility Companies, and Sidewalk Program - Minor Projects (CIP No. 506747).

FY 23-28 Biennial Recommended CIP
January Budget Amendments Summary (\$000s)
17-Jan-23

Project #	Project Name	Explanation of Adjustment	FY23-28 Change (\$000s)	Funding Sources
P502203	Burtonsville Park and Ride Improvements	Added State Aid funding in FY24.	4,500	State Aid
P501603	Purple Line	Increased scope to acquire easements for culverts and for supervision costs due to Purple Line project delays. Funding switch to allocate prior year GO Bond Premium.	570	G.O. Bonds, G.O. Bond Premium
P501111	Silver Spring Lot 3 Parking Garage	Cost decrease recognizes prior year project savings for this pending closeout project.	0	Current Revenue: Parking - Silver Spring
P502006	Davis Mill Road Emergency Stabilization	Decreased funding reflects savings taken prior to project closeout. Unused appropriation transferred to Dennis Ave Bridge.	0	G.O. Bonds
P500717	Montrose Parkway East	Funding reduced to reflect savings captured prior to closeout. Unused appropriation transferred to Dennis Ave Bridge.	0	G.O. Bonds
P501200	Platt Ridge Drive Extended	Funding switch from GO Bonds to Intergovernmental to reflect additional expenditures reimbursable by WSSC. Decreased funding reflects savings taken prior to project closeout. Unused appropriation transferred to Dennis Ave Bridge.	0	G.O. Bonds, Intergovernmental
P507310	Public Facilities Roads	Reduced prior year funding to reflect savings.	0	G.O. Bonds
P802201	Full Upgrade of Existing Recycling Center Complex	Reflects machinery and other equipment cost increases.	7,280	Revenue Bonds, Current Revenue: Solid Waste Disposal
P802101	Transfer Station Fire Detection and Suppression System	Excess funding and appropriation was removed from the project and expenditures shifted into the six-year period to reflect actual project schedule.	504	Current Revenue: Solid Waste Disposal
P640902	High School Wellness Center and Expanded Wellness Services	Cost increase reflects additional project scope to support design and construction of Centers at eight high schools and design only for a ninth. Project schedule adjusted to reflect MCPS' planned construction for schools with projects programmed in the MCPS CIP and invoicing practices.	3,419	Current Revenue: General, G.O. Bonds
P602202	Martha B. Gudelsky Child Development Center Sewer Improvements	Adjustment recognizes prior year cost savings and WSSC Water refund.	0	Recordation Tax Premium (MCG)
P711502	Library Refurbishment Level of Effort	Damascus Library refurbishment cost increases.	950	G.O. Bonds
P800700	Stormwater Management Facility Major Structural Repair	Cost increase reflects \$1.7 million in CR: WQP needed for total contract cost of Lake Hallowell Dredging project and \$1.1 million in Long-Term Financing needed for Railroad Branch Dam emergency work.	2,800	Contributions, Current Revenue: Water Quality Protection, Long-Term Financing
P760900	Burtonsville Community Revitalization	Prior year project costs reduced by \$48,000 to reflect final expenditures.	0	G.O. Bonds, PAYGO
Montgomery County Public Schools				
P076506	Building Modifications and Program Improvements	Board of Education requested scope increase and acceleration of expenditures in GO Bonds for \$4,349,000 from FY23 into FY22.	5,651	G.O. Bonds
P652114	Damascus HS - Major Capital Project	Updated State Aid assumptions.	0	G.O. Bonds, State Aid



Stormwater Management Facility Major Structural Repair (P800700)

Category	Conservation of Natural Resources	Date Last Modified	11/08/22
SubCategory	Stormwater Management	Administering Agency	Environmental Protection
Planning Area	Countywide	Status	Ongoing

	Total	Thru FY22	Rem FY22	Total 6 Years	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Beyond 6 Years
EXPENDITURE SCHEDULE (\$000s)											
Planning, Design and Supervision	16,729	7,736	686	8,307	1,417	1,250	1,325	1,435	1,445	1,435	-
Construction	38,049	15,280	3,349	19,420	7,160	5,910	1,750	1,700	1,350	1,550	-
Other	256	256	-	-	-	-	-	-	-	-	-
TOTAL EXPENDITURES	55,034	23,272	4,035	27,727	8,577	7,160	3,075	3,135	2,795	2,985	-

FUNDING SCHEDULE (\$000s)											
Contributions	600	148	452	-	-	-	-	-	-	-	-
Current Revenue: Water Quality Protection	13,028	11,328	-	1,700	-	1,700	-	-	-	-	-
Long-Term Financing	14,256	4,324	3,583	6,349	4,989	1,360	-	-	-	-	-
State Aid	529	399	-	130	130	-	-	-	-	-	-
Water Quality Protection Bonds	26,621	7,073	-	19,548	3,458	4,100	3,075	3,135	2,795	2,985	-
TOTAL FUNDING SOURCES	55,034	23,272	4,035	27,727	8,577	7,160	3,075	3,135	2,795	2,985	-

APPROPRIATION AND EXPENDITURE DATA (\$000s)			
Appropriation FY 24 Request	2,800	Year First Appropriation	FY07
Cumulative Appropriation	40,244	Last FY's Cost Estimate	52,234
Expenditure / Encumbrances	25,604		
Unencumbered Balance	14,640		

PROJECT DESCRIPTION

This project provides for the design and construction of major structural repairs to County maintained stormwater management facilities. The County is responsible for structural maintenance of over 6,800 stormwater management facilities. Major structural repairs can include dredging and removing sediment, removal and replacement or relining of failing pipes and principal spillways, replacing failing riser structures, and repairing failing dam embankments. The repair work under this project is more significant than routine maintenance and requires engineering analysis and design and application for Federal, State, and/or local permitting.

COST CHANGE

Current Revenue: WQP added to cover total contract costs in the Lake Hallowell Dredging project (\$1.7 million), and Long Term Financing added for emergency work on the Railroad Branch Dam project (\$1.1 million).

PROJECT JUSTIFICATION

This project provides for major structural repairs in order to comply with the County's municipal separate storm sewer system (MS4) permit. It is limited to funding repairs at facilities that require extensive engineering design and permitting that cannot be accomplished within a single fiscal year due to the time required to obtain State and Federal permits.

Current projects include: Wheaton Branch overtopping protection, Railroad Branch Dam, Lake Hallowell dredging project, Lake Whetstone Toe Drain repair, Clearspring Manor Road, Norbeck Manor Pond, Quail Valley Pond, Rossmoor Leisure World Pond, and Gunners Lake Erosion Repair.

FISCAL NOTE

Funding sources updated in FY23 to include Water Quality Protection Fund bonds in FY23-FY28. The County intends for a portion of Long-Term Financing in FY22 to also be paid for with Water Quality Protection Fund bonds. FY21 supplemental in Contributions for the amount of \$600,000. This project assumes the award of Maryland Water Quality Revolving Loan Funds (long-term financing) over the six-year period.

DISCLOSURES

Expenditures will continue indefinitely. The County Executive asserts that this project conforms to the requirement of relevant local plans, as required by the Maryland Economic Growth, Resource Protection and Planning Act.

COORDINATION

Department of Transportation, Maryland-National Capital Park and Planning Commission, Department of Permitting Services, Homeowners Associations, Montgomery County Public Schools, Department of General Services, Maryland State Highway Administration, Stormwater Management Retrofit: Countywide (No. 808726), and Maryland Department of Natural Resources.

**FY 23-28 Biennial Recommended CIP
January Budget Amendments Summary (\$000s)
17-Jan-23**

Project #	Project Name	Explanation of Adjustment	FY23-28 Change (\$000s)	Funding Sources
P762201	Preservation of Naturally Occurring Affordable Housing Fund	FY23 Loan Repayment Proceeds supplemental appropriation (\$30.2 million) to support additional affordable housing projects.	30,200	Loan Repayment Proceeds
P092301	WSSC Sewer and Storm Line Improvements at Elizabeth Square	Increased costs to install an upgraded sewer line and temporary storm line at HOC's Elizabeth Square development.	520	Current Revenue: General

FY23-28 Scope Change and/or other Increase/Decrease Existing Projects - Amendments

P361107	Americans with Disabilities Act (ADA): Compliance	Cost decrease recognizes prior year project savings.	0	Current Revenue: General, G.O. Bonds
P507834	Energy Conservation: MCG	FY23 supplemental in Utility Incentives for the amount of \$975,000. Funding switch between G.O. Bonds and State Aid receipts. Reflects prior year cost savings.	975	Current Revenue: General, G.O. Bonds, State Aid, Utility Incentives
P508768	Facility Planning: MCG	Updates the list of candidate projects for facility planning adding Countywide Space Strategy and removing Future County Transit Depot(s) since studies for other depots have been funded in other projects.	0	Current Revenue: General
P360903	MCPS Bus Depot and Maintenance Relocation	Prior year funds for constructing this project are not needed at this time but planning funds have been added to the project.	250	Current Revenue: General, G.O. Bonds
P340901	Public Safety System Modernization	Prior year project savings. Funding switch between Short Term Financing and Current Revenue to support subscription as a service activities. G.O. Bonds accelerated. Funding switches in the prior to the six-year period due to FY22 actuals upload.	2,508	Current Revenue: General, Federal Aid, G.O. Bonds, PAYGO, Short-Term Financing, Recordation Tax Premium (MCG)
P151200	White Flint Redevelopment Program	Prior year project savings due to lower than anticipated consulting costs.	0	White Flint Special Tax District
P342102	County Radio Replacement and Related Equipment	Cost decrease recognizes prior year project cost savings.	0	Recordation Tax Premium (MCG)
P341700	Digital Equity - Montgomery Connects	Reflects slippage of State Grant from FY23-FY25 to FY24-FY26 along with associated matching funds and other schedule adjustments. Additional \$961,000 enhancement in FY23 State Aid. Project name was changed from ultraMontgomery to more accurately reflect the nature of the work.	2,659	State Aid, Current Revenue: Cable TV
P422102	Montgomery County Detention Center Partial Demolition and Renovation	Cost reduced to reflect prior year project savings.	0	G.O. Bonds
P479909	PSTA Academic Building Complex	Cost reduced to reflect savings following project completion.	0	G.O. Bonds, PAYGO
P501701	Dennis Ave Bridge M-0194 Replacement	Schedule change (including slippage) and cost increase due to updated construction costs reflecting final design and additional utility relocations that were not previously expected.	1,903	Federal Aid, G.O. Bonds, Intergovernmental
P508182	Sidewalk and Curb Replacement	Reduction in Contributions reflects anticipated reduction in private residences utilizing apron replacement program. Funding switches between Land Sale Proceeds and Contributions to reflect actual level of private participation in the apron replacement program.	(3,000)	Contributions, Land Sale Proceeds
P500929	Bethesda Metro Station South Entrance	Added funding to continue project supervision following Purple Line delays. Prior year actuals funding switch.	400	G.O. Bonds, Impact Tax



Dennis Ave Bridge M-0194 Replacement (P501701)

Category	Transportation	Date Last Modified	01/04/23
SubCategory	Bridges	Administering Agency	Transportation
Planning Area	Kensington-Wheaton	Status	Final Design Stage

Total	Thru FY22	Rem FY22	Total 6 Years	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Beyond 6 Years
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EXPENDITURE SCHEDULE (\$000s)

Planning, Design and Supervision	1,342	251	-	1,091	214	496	381	-	-	-	-
Land	100	-	-	100	100	-	-	-	-	-	-
Site Improvements and Utilities	1,650	-	-	1,650	-	765	885	-	-	-	-
Construction	6,278	-	-	6,278	-	4,179	2,099	-	-	-	-
TOTAL EXPENDITURES	9,370	251	-	9,119	314	5,440	3,365	-	-	-	-

FUNDING SCHEDULE (\$000s)

Federal Aid	4,858	-	-	4,858	-	2,999	1,859	-	-	-	-
G.O. Bonds	4,184	251	-	3,933	314	2,113	1,506	-	-	-	-
Intergovernmental	328	-	-	328	-	328	-	-	-	-	-
TOTAL FUNDING SOURCES	9,370	251	-	9,119	314	5,440	3,365	-	-	-	-

APPROPRIATION AND EXPENDITURE DATA (\$000s)

Appropriation FY 24 Request	1,082	Year First Appropriation	FY22
Cumulative Appropriation	8,288	Last FY's Cost Estimate	7,850
Expenditure / Encumbrances	294		
Unencumbered Balance	7,994		

PROJECT DESCRIPTION

This project provides for the replacement of the existing Dennis Avenue Bridge M-0194 over a tributary to Sligo Creek. The existing bridge, built in 1961, is a single 30-foot span structure composed of pre-stressed concrete voided slab beams carrying a 24-foot roadway, two six-foot shoulders, and two 4'-8" sidewalks. The proposed replacement bridge will be a 80-foot overall span three-cell precast concrete arch culvert carrying a 22-foot roadway, two five-foot bicycle compatible shoulders, two two-foot striped buffers, a 13-foot shared-use path on the north side and a seven-foot sidewalk on the south side, for a total clear bridge width of 56 feet. The project includes utility relocations and approach roadway work at each end of the bridge as necessary to tie into the existing roadway and sidewalks. The bridge will be closed to traffic during construction. Accelerated bridge construction techniques will be utilized to minimize the disruption to the traveling public and local community.

LOCATION

The project is located on Dennis Avenue approximately 1,800 feet east of the intersection of Georgia Avenue and Dennis Avenue.

CAPACITY

The roadway Average Daily Traffic (ADT) is approximately 14,000 and the roadway capacity will not change as a result of this project.

ESTIMATED SCHEDULE

The design of the project is expected to be completed in the summer of 2023. The land acquisition is projected in FY23. The construction is scheduled to begin in the spring of 2024 and be completed in the fall of 2024. The bridge will be closed to traffic during the school summer break of 2024.

COST CHANGE

Cost increase due to updated construction costs reflecting final design and additional utility relocation costs that were not previously expected.

PROJECT JUSTIFICATION

The proposed replacement work will mitigate the frequent flooding of five residential properties and local streets upstream of the bridge; mitigate occasional roadway flooding on Dennis Avenue that causes significant traffic delays; and eliminate annual maintenance repairs required for this deteriorating structure. The existing bridge is rapidly deteriorating and is nearing the end of its estimated service life.

OTHER

The December 2018 Technical Update to the Master Plan of Highways and Transitways designates Dennis Avenue as Minor Arterial Road (MA-17) with a minimum right-of-way of 80 feet. The December 2018 Montgomery County Bicycle Master Plan recommends a sidepath (shared use path) on the north side. Streetlights, crosswalks, sidewalk ramps, bikeways, and other pertinent issues are being considered in the design of the project to ensure pedestrian safety. The funding shown as "Intergovernmental" is from WSSC for its share of the project cost.

FISCAL NOTE

In FY23, this project received transfers totaling \$438,000 from P502006 Davis Mill Road Emergency Stabilization (\$7,000), P500717 Montrose Parkway East (\$337,000), and P501200 Platt Ridge Drive Extended (\$94,000).

DISCLOSURES

A pedestrian impact analysis has been completed for this project.

COORDINATION

Federal Highway Administration - Federal Aid Bridge Replacement/Rehabilitation Program, Maryland State Highway Administration, Maryland Department of the Environment, Montgomery County Department of Environmental Protection, Montgomery County Department of Permitting Services, Montgomery County Public School, Montgomery County Police Department, Montgomery County Fire and Rescue Services, Montgomery County Ride On Bus, Maryland-National Capital Park and Planning Commission, Utilities, and Wheaton Regional Dam Flooding Mitigation (CIP Project #801710).



Development of a Comprehensive Flood Management Plan for Montgomery County, Maryland



Agenda



- Why do we need a Comprehensive Flood Management Plan (CFMP)?
- Background on flooding and what causes it
- Why flooding risk has increased
- What is the CFMP?
- Q&A

Why do we need a Comprehensive Flood Management Plan (CFMP)?



Why do we need a CFMP?



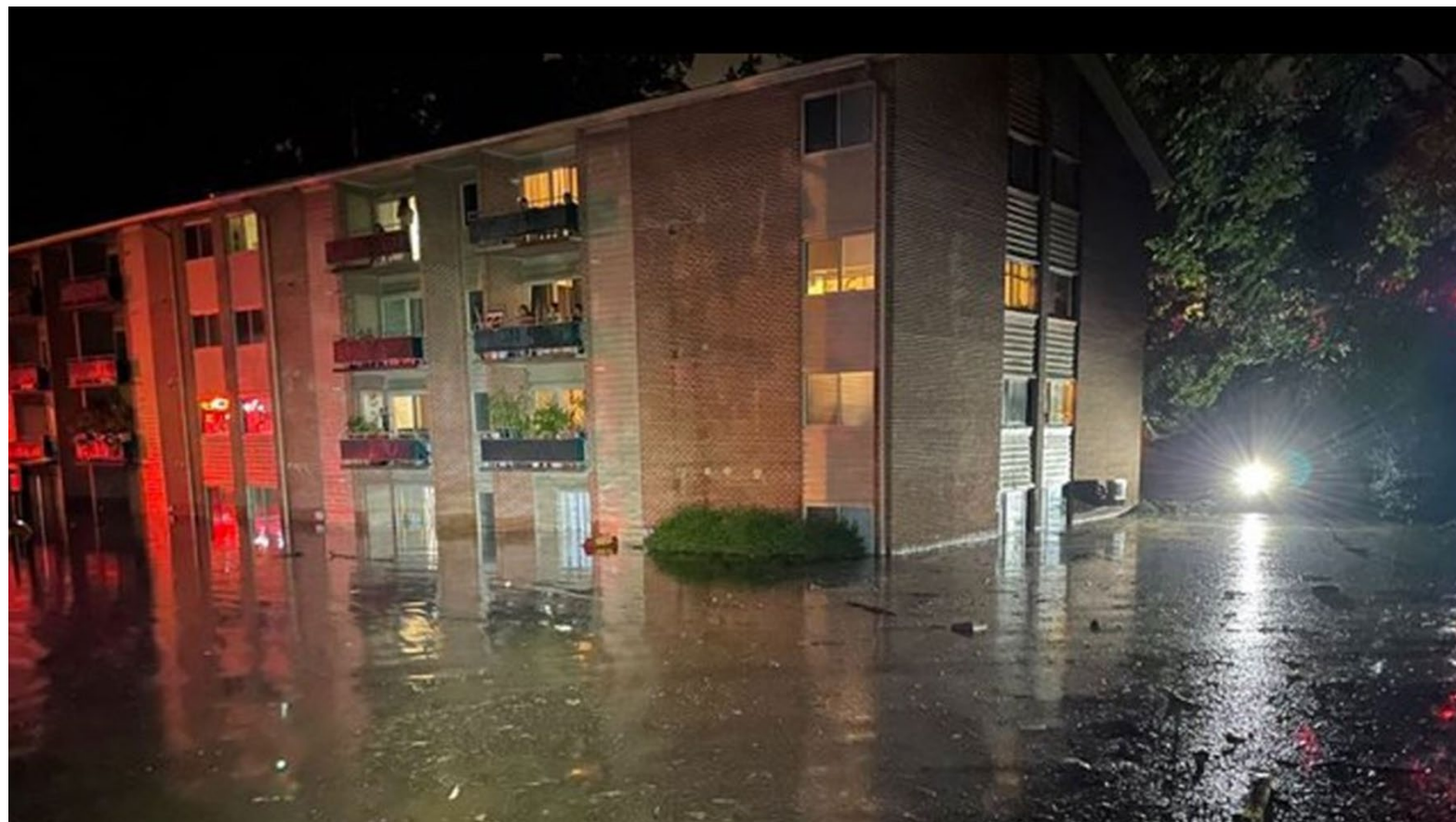
Why do we need a CFMP?



Why do we need a CFMP?



Why do we need a CFMP?



Flooding Basics



Need for Terminology Clarification



- Definition of flooding
- Quality control / quantity control
- Green infrastructure / grey infrastructure
- Stormwater management, stormwater drainage, flood mitigation

Background on Flooding

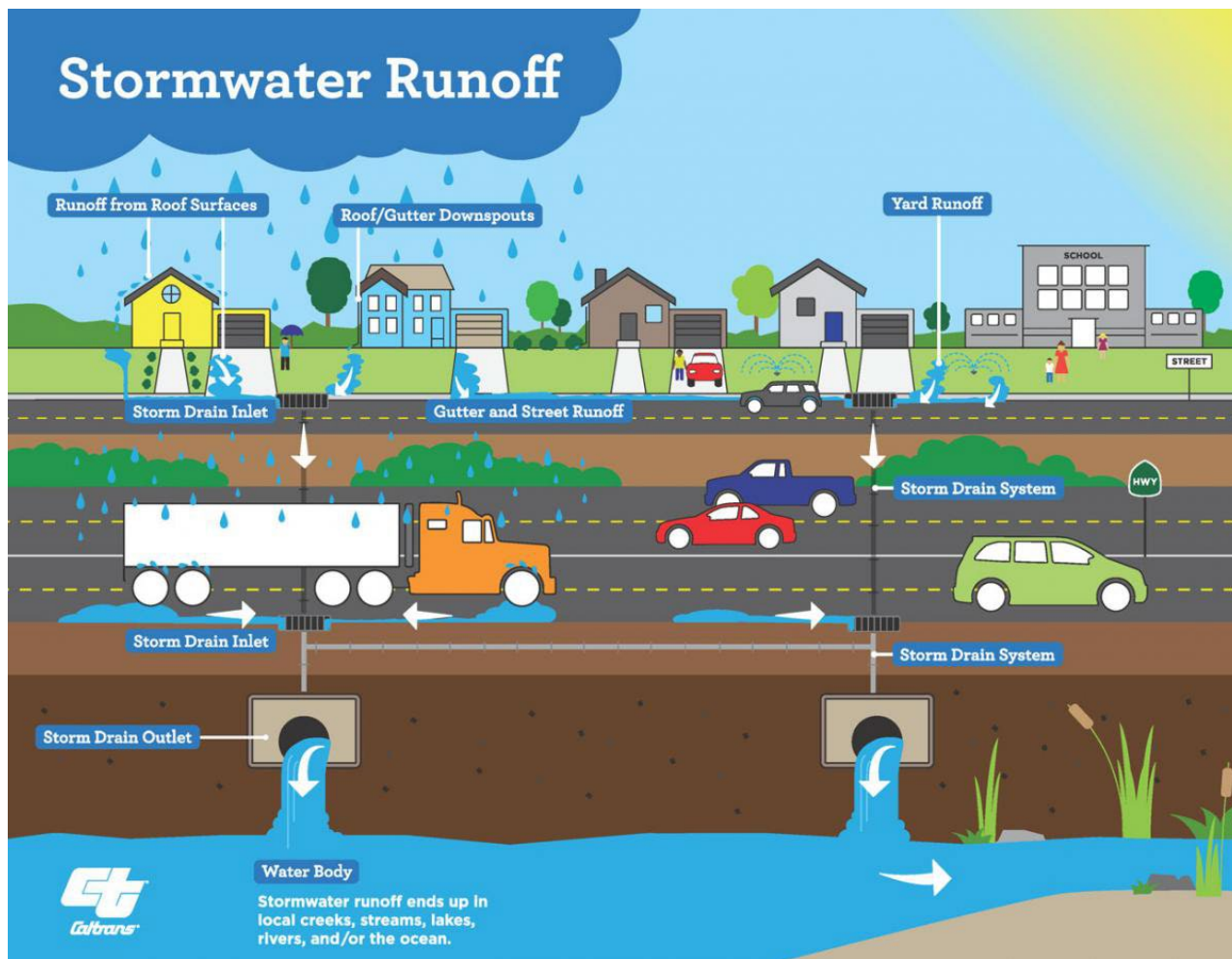


Image Source: California Department of Transportation (CalTrans)

Background on Flooding

Fluvial / Riverine

Precipitation creates flows that overtop stream/river channels



Pluvial / Urban

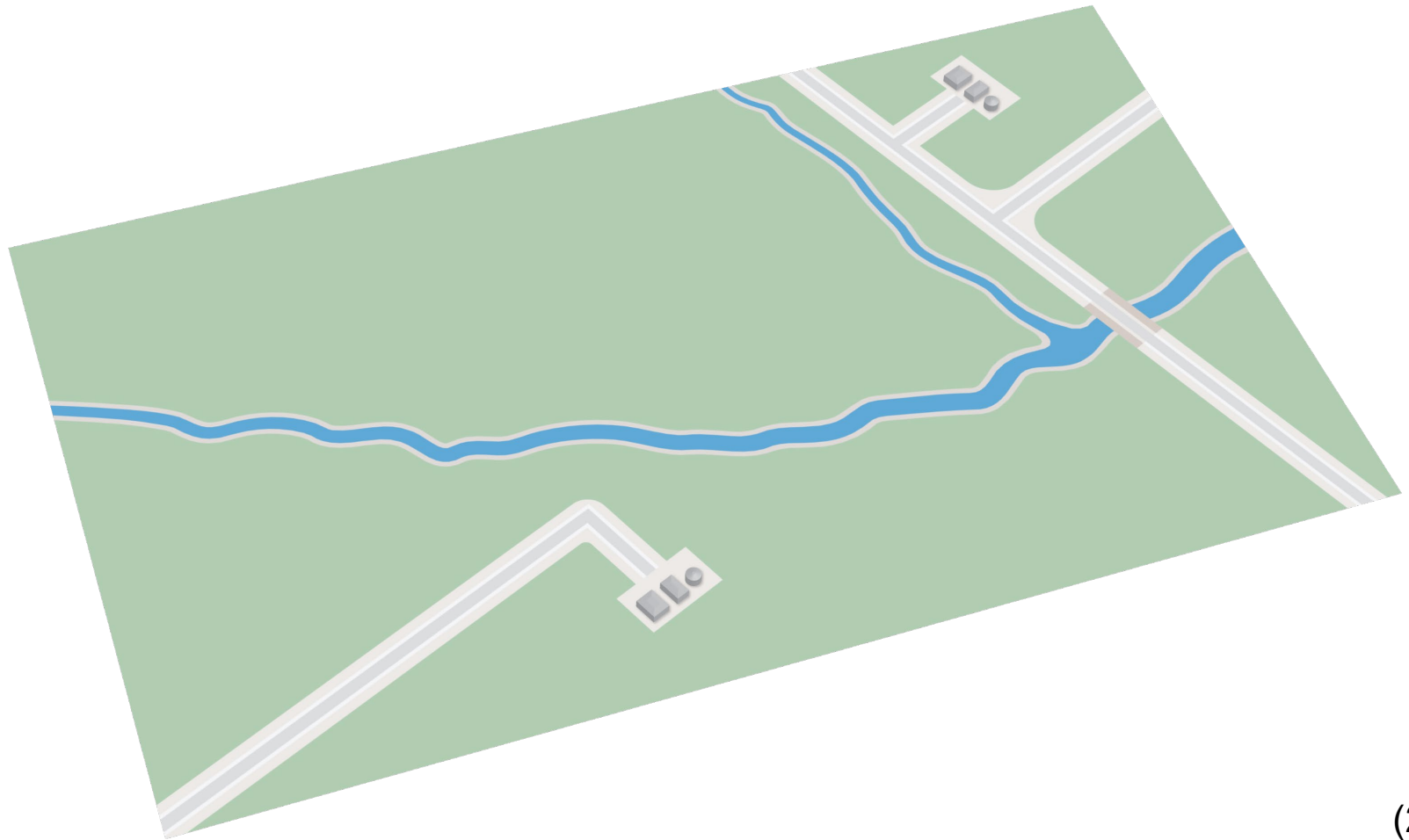
Precipitation exceeds capacity of local drainage infrastructure





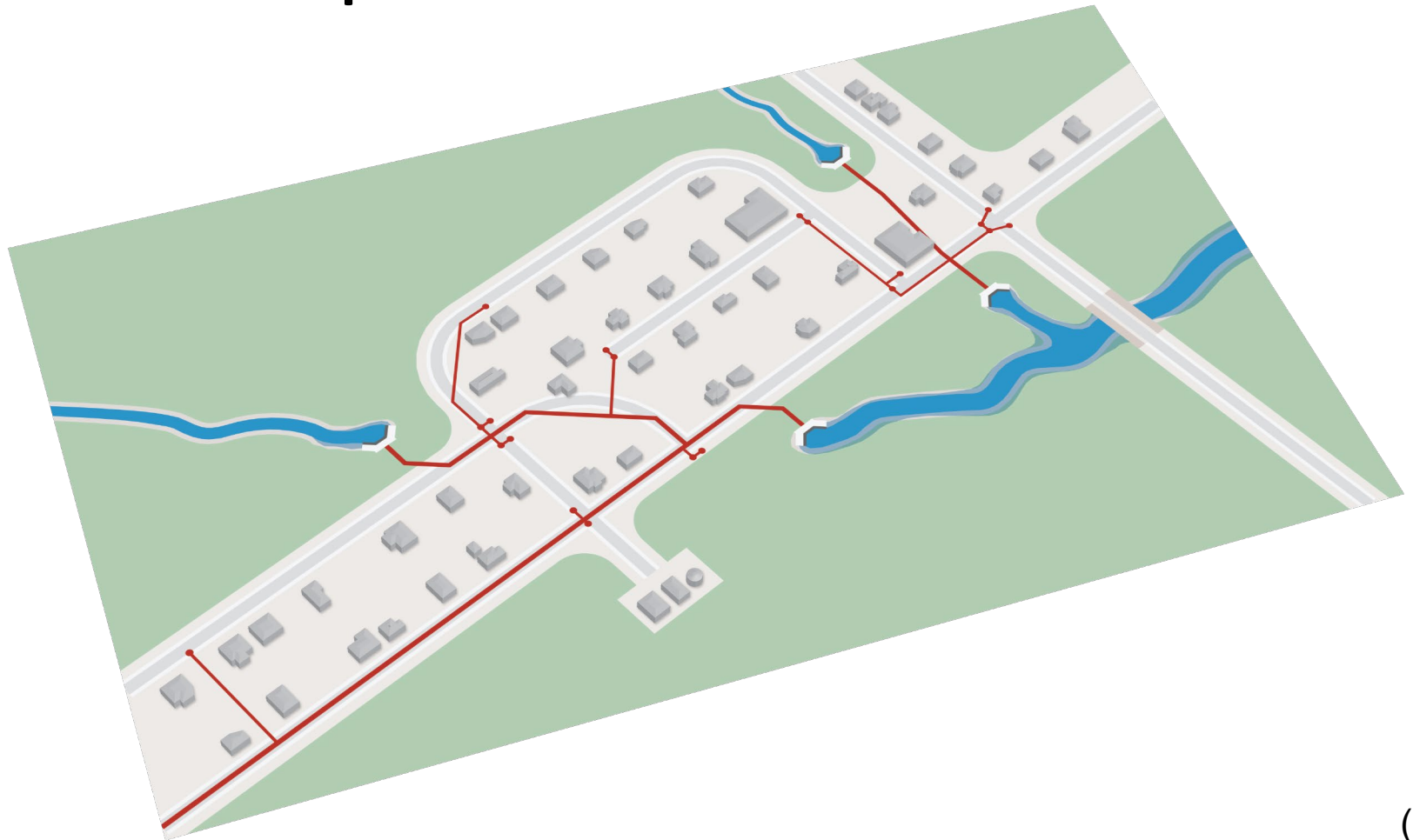
Background on Flooding

Pre-Development



Background on Flooding

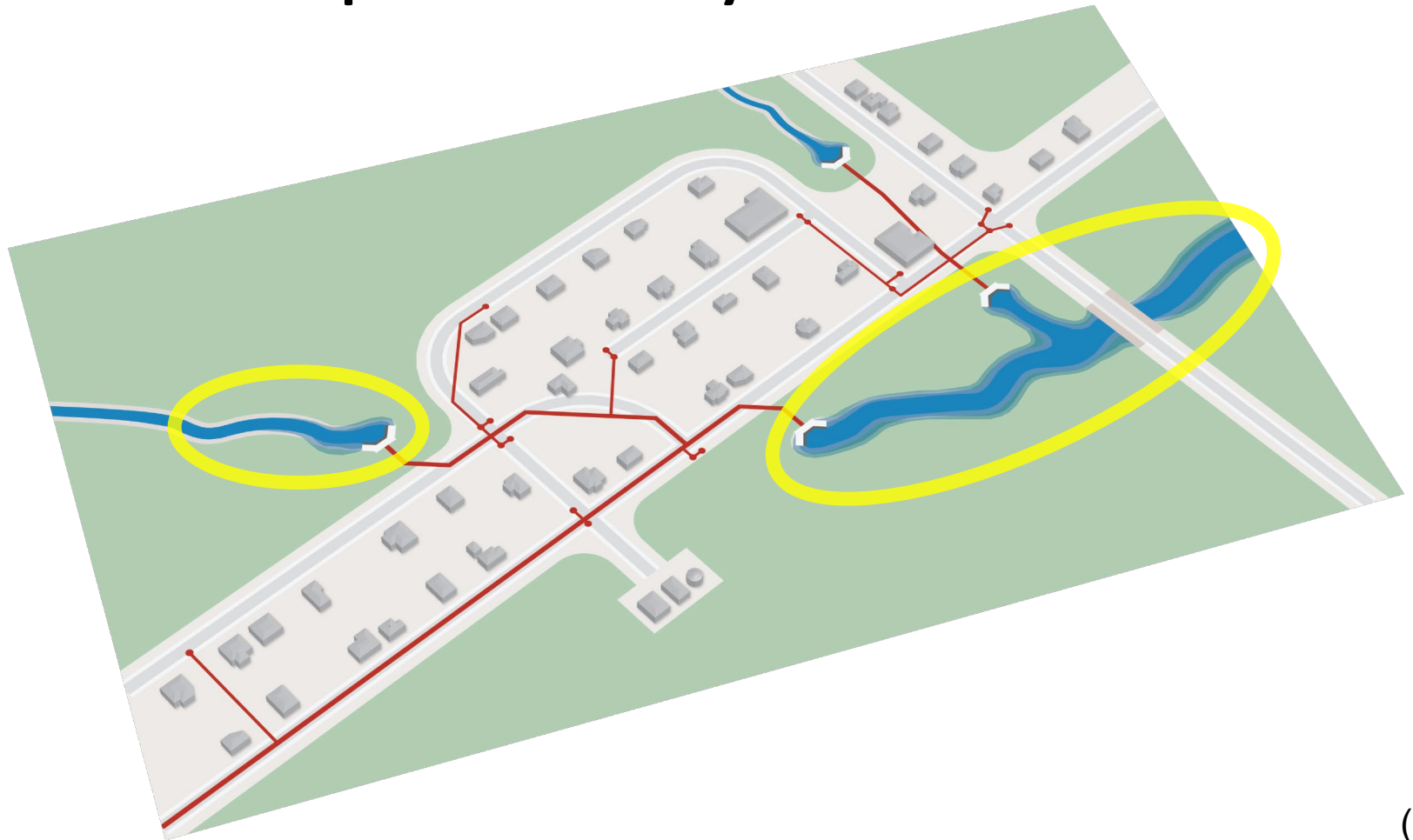
Initial Development



Background on Flooding



Initial Development – Heavy Rainfall



Background on Flooding

Intense Development



Background on Flooding

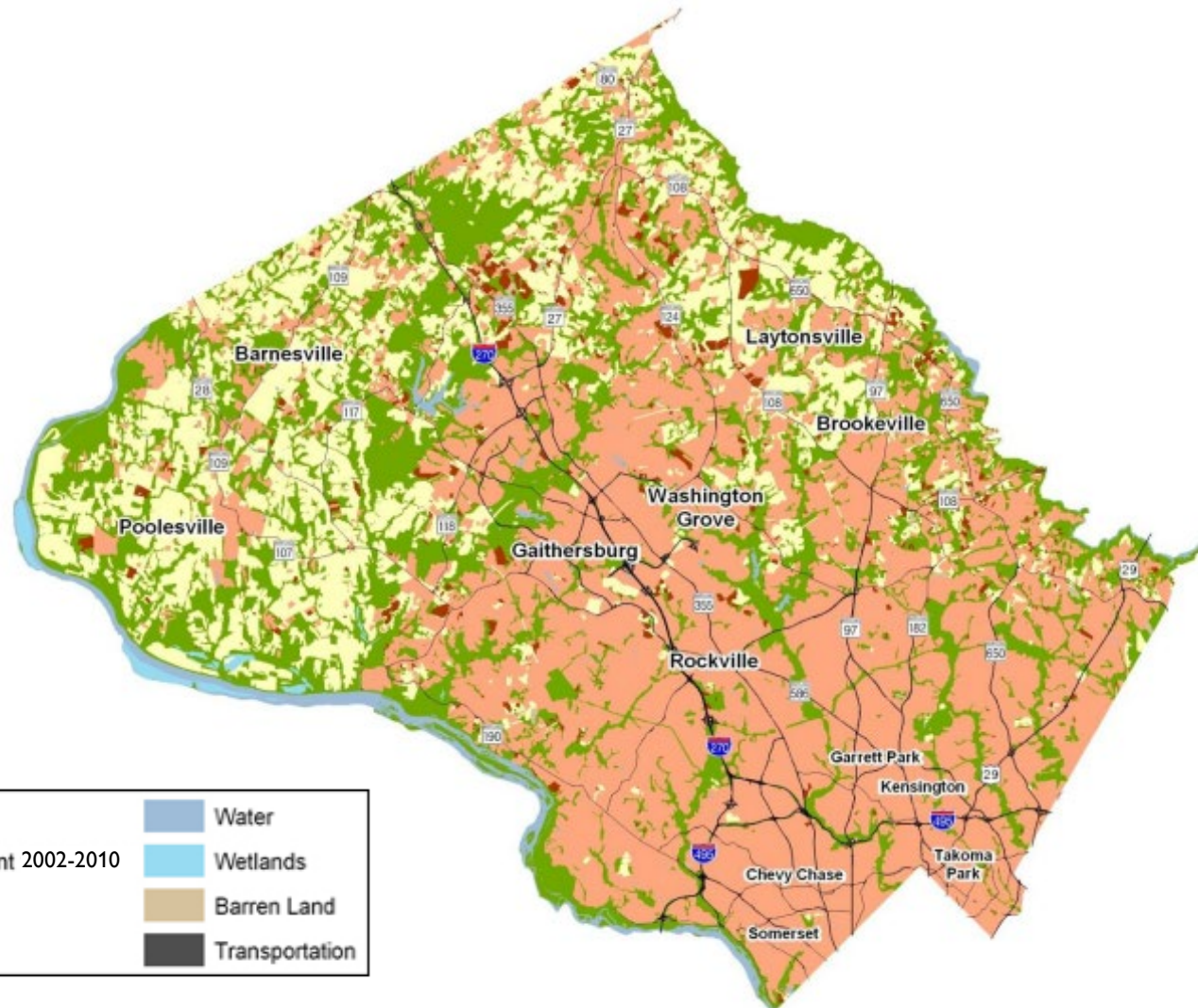
Intense Development – Heavy Rainfall



Why is flood risk increasing?



Changes in Flood Risk – Urbanization



Developed Land	Water
New Development 2002-2010	Wetlands
Agriculture	Barren Land
Forest	Transportation

Source: Maryland Department of Planning

Changes in Flood Risk – Aging Infrastructure



The Washington Post
Democracy Dies in Darkness

TRANSPORTATION

I-270 sinkhole work could last weeks during drainage pipe repairs

By Justin George
June 21, 2022 at 5:45 p.m. EDT

Listen 3 min Comment 12 Save Gift Article Share

Maryam Shahzad
@maryam_mcm · Follow

The sinkhole on I-270 from the Muddy Branch Road overpass. @mymcmedia

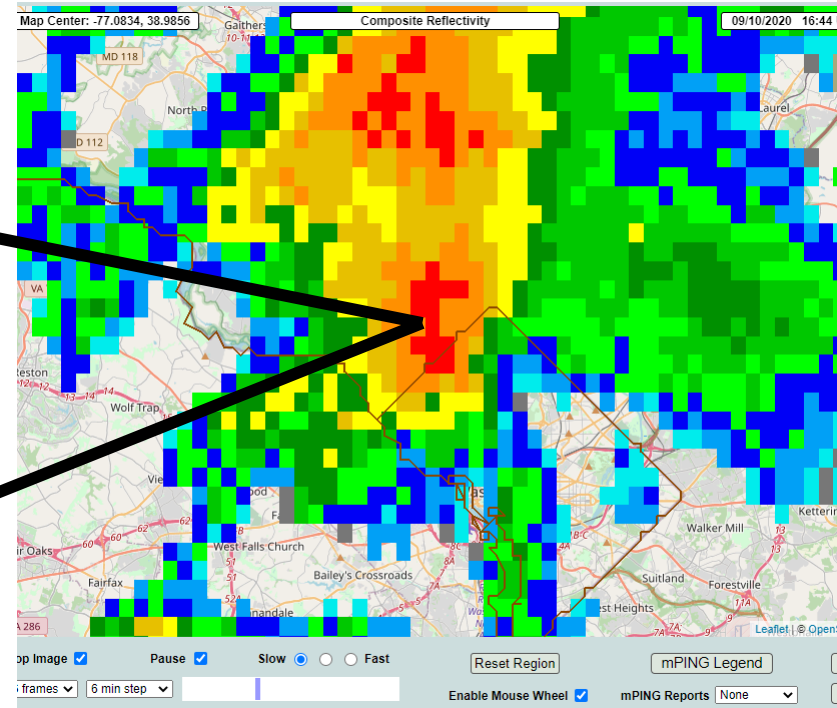
Watch on Twitter

Image sources: MoCo Show, Washington Post

Changes in Flood Risk – More Intense Storms



High-intensity events exceeding storm drain inlet capacity result in localized flooding impacts



Weather radar showing cumulative 3-hour rainfall for the September 10, 2020 storm cell—a high-intensity short-duration event, with rain intensities as high as 10 inches per hour for 1 to 3 hours in some areas.

Source: NOAA Multi-Radar Multi-Sensor (MRMS) Operational Product Viewer

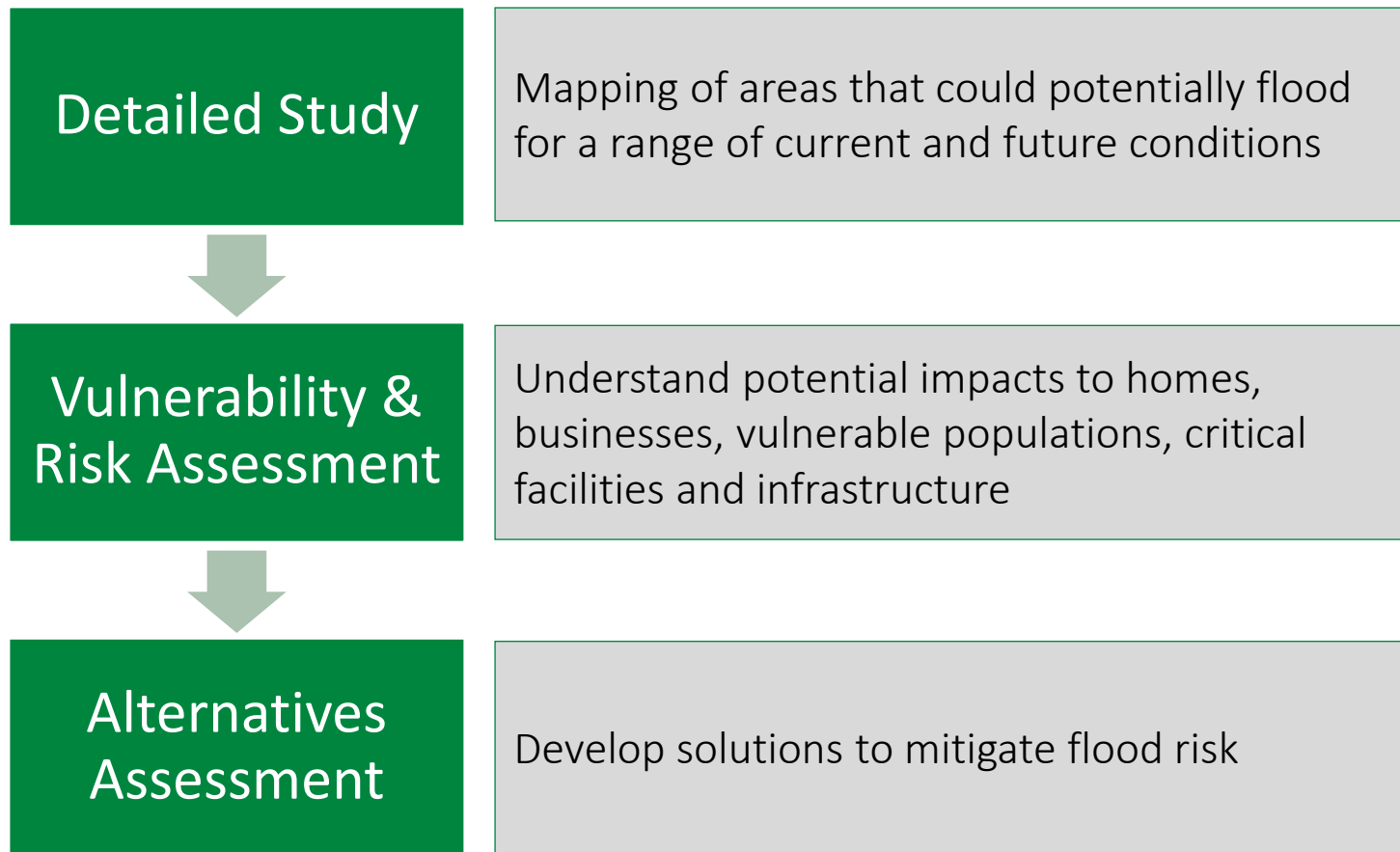
The Comprehensive Flood Management Plan



Comprehensive Flood Management Plan



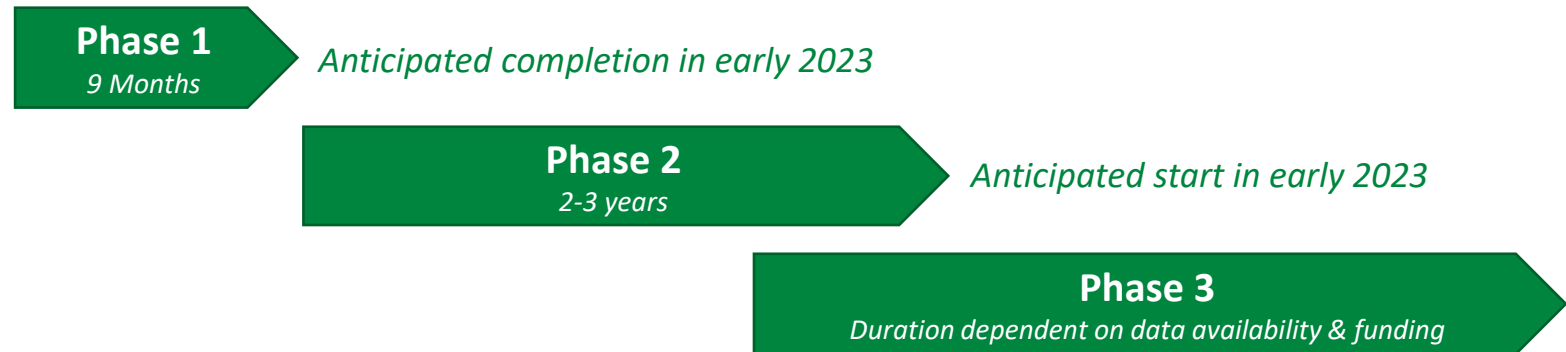
The Comprehensive Flood Management Plan (CFMP) will develop solutions to flooding based on an understanding of current and future flood risk.





Comprehensive Flood Management Plan

- Phase 1: Understand current organizational approach to flooding and identify recommended changes
- Phase 2: Detailed studies including flooding risk assessment, vulnerability analysis, and preliminary alternatives analysis
- Phase 3: Implementation of flood mitigation alternatives



Comprehensive Flood Management Plan

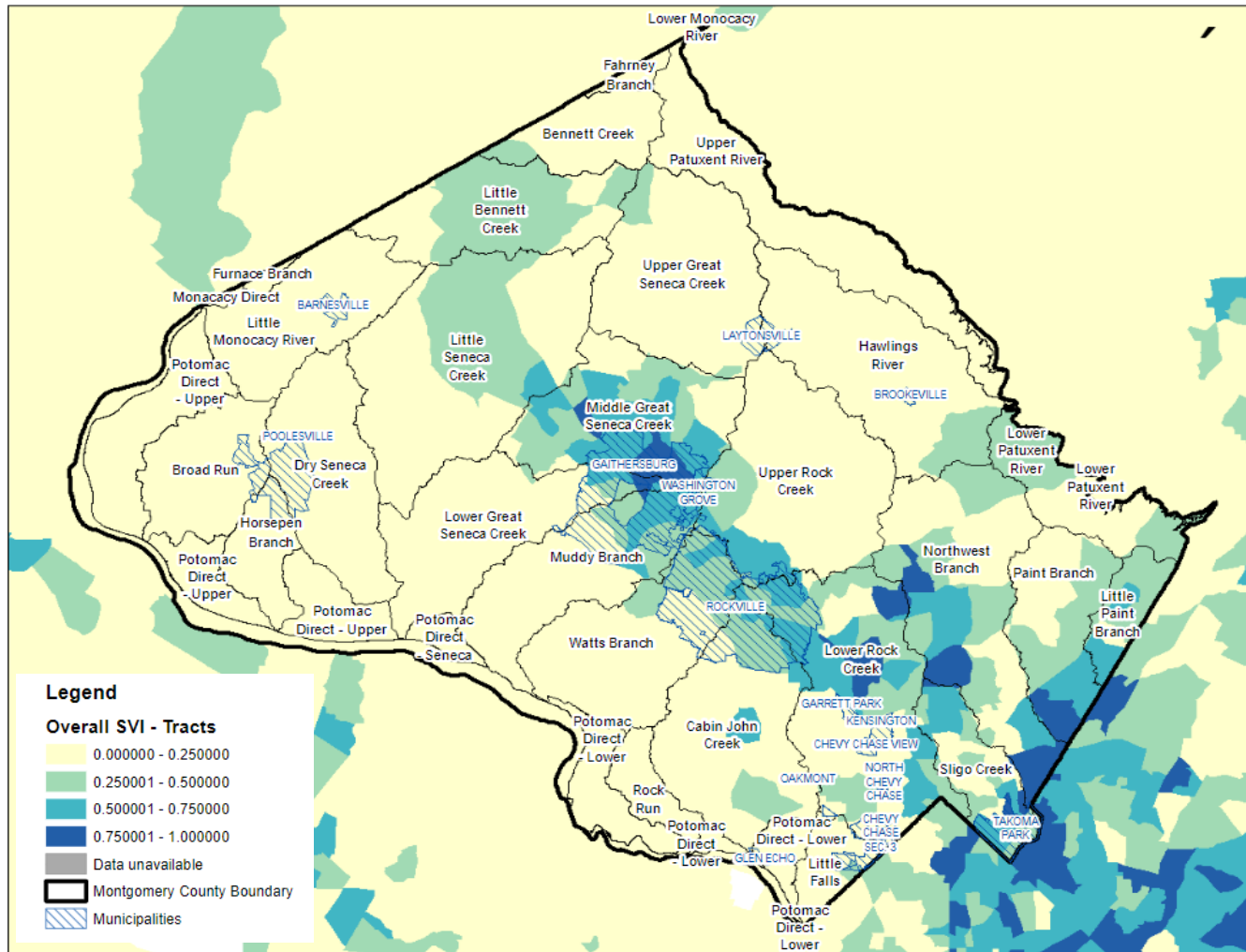


The Comprehensive Flood Management Plan (CFMP) will also focus on a variety of other issues related to flooding:

- Governance – Roles and responsibilities related to flooding are well understood
- Design standards and building codes – Standards and codes are evaluated and revised as appropriate to reflect flood risk, and processes are in place to implement and enforce them
- Flood information – Flooding data is developed and maintained for internal processes (e.g., development review) and external communication (e.g., alerting residents to flood risks)
- Budget – Adequate funding is provided to understand and address flooding risks



Comprehensive Flood Management Plan



Comprehensive Flood Management Plan



Jurisdiction	Area ¹ (sq. mi.)	Population ¹ (July 2021 est)	Capital Program
City of Alexandria	15	155,000	FY22 - FY31 ² \$170 million, 11 projects
Arlington County	26	233,000	FY23 - FY32 ³ \$229 million, 16 projects
Montgomery County	493	1,055,000	???

[1] <https://www.census.gov/quickfacts/fact/table/US/PST045222>

[2] <https://www.alexandriava.gov/stormwater-management/storm-sewer-capacity-projects>

[3] <https://www.arlingtonva.us/files/sharedassets/public/budget/documents/cip-webpage/1.-cip-final/stormwater/3.-stormwater-management-stormwater-infrastructure-capacity-improvements.pdf>

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