



# Storm Drains

## PROGRAM DESCRIPTION AND OBJECTIVES

The Department of Transportation (DOT) involvement in the County Conservation of Natural Resources program is mandated by Section 2 58A (c) of the County Code which requires DOT to be responsible for control, supervision, design, construction, and maintenance of all culverts and storm drainage systems under the jurisdiction of the County.

The DOT Storm Drains Capital Program consists of the construction of storm drainage structures such as curbs, gutters, drainage inlets, pipes, and channels. Such networks are constructed to provide for the conveyance of stormwater from impervious surfaces into natural drainage swales and stream channels. This program is focused on storm drainage projects outside the scope of the larger DOT Roads program, which also installs storm drainage systems at the time of new road construction or existing road reconstruction or enhancement.

A second component of the storm drainage program involves County-developer and homeowner participation in the construction of storm drainage facilities. Construction of storm drainage facilities provides a public benefit by reducing drainage problems, flooding, property damage, and contributing to the orderly development of the County. In participation projects, the County and the developer or the homeowner agree to share the costs of storm drainage facilities in which the benefit of storm drainage extends beyond the developer's or homeowner's own property. The County pays only for that portion of the project which benefits properties other than the developer's or homeowner's, not to exceed 50 percent of the total cost. Homeowners can satisfy their portion of the cost-share through in-kind contributions.

## STORMWATER MANAGEMENT COORDINATION

In February 2010, the Maryland Department of the Environment issued the County a National Pollutant Discharge Elimination System (NPDES) Permit. This permit requires that the County develop and implement a Stormwater Management program to prevent harmful pollutants from being washed or dumped into the Municipal Separate Storm Sewer Systems (MS4). The DOT is partnering with the County's Department of Environmental Protection (DEP) in implementing the MS4 Permit by 1) constructing Stormwater Management (SWM) retrofit programs which have been developed through DEP's MS4 planning studies, 2) providing opportunities for curb bump-outs and road narrowing where feasible to permit implementation of Low-Impact Development (LID) SWM provisions within the right-of-way, 3) seeking DEP guidance on prioritization of storm drain outfall repairs, and 4) coordinating with DEP on storm drain projects developed in the Storm Drain General and Facility Planning Storm Drain programs to identify opportunities for enhancements which would assist in meeting the requirements of the MS4 permit.

In recognition of the Stormwater Management added value to the Storm Drains projects, Storm Drains have historically been funded through Water Quality Protection Bonds or the Water Quality Protection Charge. In FY19, going forward, Water Quality Protection Bonds have been replaced with Long-Term Financing based on the Maryland Water Quality Revolving Loan Fund (WQRLF) to finance water quality improvement projects with low interest loans which are less costly than bond sales.

## PROGRAM CONTACTS

Contact Sogand Seirafi of the Department of Transportation at 240.777.7260 or Bryan Hunt of the Office of Management and Budget at 240.777.2786 for more information regarding this department's capital budget.

## CAPITAL PROGRAM REVIEW

The Storm Drainage program for FY19-24 includes four ongoing projects. The overall cost of the recommended six year program is \$16.8 million, representing level funding from the FY17-22 Amended Program of \$16.8 million.



# Facility Planning: Storm Drains

(P508180)

Category	Conservation of Natural Resources	Date Last Modified	01/05/18
SubCategory	Storm Drains	Administering Agency	Transportation
Planning Area	Countywide	Status	Ongoing

## EXPENDITURE SCHEDULE (\$000s)

Cost Elements	Total	Thru FY17	Est FY18	Total 6 Years	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24	Beyond 6 Years
Planning, Design and Supervision	7,340	5,288	312	1,740	290	290	290	290	290	290	-
Land	142	142	-	-	-	-	-	-	-	-	-
Construction	37	37	-	-	-	-	-	-	-	-	-
Other	5	5	-	-	-	-	-	-	-	-	-
<b>TOTAL EXPENDITURES</b>	<b>7,524</b>	<b>5,472</b>	<b>312</b>	<b>1,740</b>	<b>290</b>	<b>290</b>	<b>290</b>	<b>290</b>	<b>290</b>	<b>290</b>	<b>-</b>

## FUNDING SCHEDULE (\$000s)

Funding Source	Total	Thru FY17	Est FY18	Total 6 Years	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24	Beyond 6 Years
G.O. Bonds	101	101	-	-	-	-	-	-	-	-	-
Current Revenue: General	4,103	4,103	-	-	-	-	-	-	-	-	-
Current Revenue: Water Quality Protection	3,320	1,268	312	1,740	290	290	290	290	290	290	-
<b>TOTAL FUNDING SOURCES</b>	<b>7,524</b>	<b>5,472</b>	<b>312</b>	<b>1,740</b>	<b>290</b>	<b>290</b>	<b>290</b>	<b>290</b>	<b>290</b>	<b>290</b>	<b>-</b>

## APPROPRIATION AND EXPENDITURE DATA (\$000s)

Appropriation FY 19 Request	290	Year First Appropriation	FY81
Appropriation FY 20 Request	290	Last FY's Cost Estimate	6,944
Cumulative Appropriation	5,784		
Expenditure / Encumbrances	5,471		
Unencumbered Balance	313		

## Project Description

This project provides for the investigation and analysis of various storm drainage assistance requests initiated by private citizens and public agencies. These requests are related to the design, construction, and operation of public drainage facilities where flooding and erosion occur. This project includes expenditures for the preliminary and final design and land acquisition for storm drain projects prior to inclusion in the Storm Drain General project, or as a stand-alone project in the Capital Improvements Program (CIP). Prior to its inclusion in the CIP, the Department of Transportation (DOT) will conduct a feasibility study to determine the general and specific features required for the project. Candidate projects currently are evaluated from the Drainage Assistance Request list. As part of the facility planning process, DOT considers citizen and public agency requests and undertakes a comprehensive analysis of storm drainage issues and problems being experienced in the County. This analysis is

---

used to select areas where a comprehensive long-term plan for the remediation of a problem may be required. No construction activities are performed in this project. When a design is 35 percent complete, an evaluation is performed to determine if right-of-way is needed. Based on the need for right-of-way, the project may proceed to final design and the preparation of right-of-way plats under this project. The cost of right-of-way acquisition will be charged to the Advanced Land Acquisition Revolving Fund (ALARF). When designs are complete, projects with a construction cost under \$500,000 will be constructed in the Storm Drain General project. Projects with a construction cost over \$500,000 will be constructed in stand-alone projects.

## Capacity

---

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

## Cost Change

---

Increase due to the addition of FY23 and FY24 to this on-going level of effort project.

## Project Justification

---

Evaluation, justification, and cost-benefit analysis are completed by DOT as necessary. In the case of participation projects, drainage studies and preliminary plans will be prepared by the requestor's engineer and reviewed by DOT. Traffic signals, streetlights, crosswalks, bus stops, ADA ramps, bikeways and other pertinent issues are being considered in the design of the project to ensure pedestrian safety.

## Other

---

Before being added as a sub-project, concept studies are evaluated based on the following factors: public safety; damage to private property; 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. In the case of public safety or severe damage to private property, the 5:1 cost benefit damage prevented ratio can be waived. Drainage assistance requests are evaluated on a continuing basis in response to public requests. DOT maintains a database of complaints. Recent construction projects completed include: Shepherd Street, Norvale Road, Sherwood Forest Drive, Drummond Avenue, Westland Road, Madawaska Road, 80th Street, Greentree Road, Grant Street, 83rd Street, Parker Avenue, East Franklin Avenue and Oakmont Avenue. Candidate Projects for FY19 and FY20: Stable Lane, Ashburton Lane, 2nd Avenue, and Ogden Court.

## 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, Sidewalk Program - Minor Projects (CIP No. 506747).



# Outfall Repairs

(P509948)

Category	Conservation of Natural Resources	Date Last Modified	01/02/18
SubCategory	Storm Drains	Administering Agency	Transportation
Planning Area	Countywide	Status	Ongoing

## EXPENDITURE SCHEDULE (\$000s)

Cost Elements	Total	Thru FY17	Est FY18	Total 6 Years	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24	Beyond 6 Years
Planning, Design and Supervision	4,219	2,096	503	1,620	270	270	270	270	270	270	-
Land	12	12	-	-	-	-	-	-	-	-	-
Construction	5,671	4,255	264	1,152	192	192	192	192	192	192	-
Other	3	3	-	-	-	-	-	-	-	-	-
<b>TOTAL EXPENDITURES</b>	<b>9,905</b>	<b>6,366</b>	<b>767</b>	<b>2,772</b>	<b>462</b>	<b>462</b>	<b>462</b>	<b>462</b>	<b>462</b>	<b>462</b>	<b>-</b>

## FUNDING SCHEDULE (\$000s)

Funding Source	Total	Thru FY17	Est FY18	Total 6 Years	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24	Beyond 6 Years
G.O. Bonds	5,357	5,357	-	-	-	-	-	-	-	-	-
Current Revenue: Water Quality Protection	667	547	120	-	-	-	-	-	-	-	-
Long-Term Financing	2,772	-	-	2,772	462	462	462	462	462	462	-
Water Quality Protection Bonds	1,109	462	647	-	-	-	-	-	-	-	-
<b>TOTAL FUNDING SOURCES</b>	<b>9,905</b>	<b>6,366</b>	<b>767</b>	<b>2,772</b>	<b>462</b>	<b>462</b>	<b>462</b>	<b>462</b>	<b>462</b>	<b>462</b>	<b>-</b>

## APPROPRIATION AND EXPENDITURE DATA (\$000s)

Appropriation FY 19 Request	462	Year First Appropriation	FY99
Appropriation FY 20 Request	462	Last FY's Cost Estimate	8,981
Cumulative Appropriation	7,133		
Expenditure / Encumbrances	6,661		
Unencumbered Balance	472		

## 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.

## Cost Change

---

Increase due to the addition of FY23-24 to this on-going level of effort project.

## 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 FY16-17: Dartmouth Avenue, Havard Street, 7600 Rossdhu Court, Sligo Creek at Dennis Avenue, 11820 Hunting Ridge Court, 1301 Dilston Place and 3732 Cardiff Road. Scheduled for repairs (FY18 - beyond): 5009 Elsmere Road, 9124 Hollyoak Drive, 9100 Hollyoak Drive, 11208 Whisperwood Road, 10808 Margate Road, and Shiloh Church Road.

## Fiscal Note

---

In FY19, going forward, Water Quality Protection Bonds have been replaced with Long-Term Financing based on the Maryland Water Quality Revolving Loan Fund (WQRLF) to finance water quality improvement projects with low interest loans which are less costly than bond sales.

## 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, Miscellaneous Stream Valley Improvements.



# Storm Drain Culvert Replacement (P501470)

Category	Conservation of Natural Resources	Date Last Modified	01/05/18
SubCategory	Storm Drains	Administering Agency	Transportation
Planning Area	Countywide	Status	Ongoing

## EXPENDITURE SCHEDULE (\$000s)

Cost Elements	Total	Thru FY17	Est FY18	Total 6 Years	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24	Beyond 6 Years
Planning, Design and Supervision	2,265	793	392	1,080	180	180	180	180	180	180	-
Construction	12,833	4,902	1,811	6,120	1,020	1,020	1,020	1,020	1,020	1,020	-
Other	2	2	-	-	-	-	-	-	-	-	-
<b>TOTAL EXPENDITURES</b>	<b>15,100</b>	<b>5,697</b>	<b>2,203</b>	<b>7,200</b>	<b>1,200</b>	<b>1,200</b>	<b>1,200</b>	<b>1,200</b>	<b>1,200</b>	<b>1,200</b>	<b>-</b>

## FUNDING SCHEDULE (\$000s)

Funding Source	Total	Thru FY17	Est FY18	Total 6 Years	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24	Beyond 6 Years
G.O. Bonds	1,500	1,500	-	-	-	-	-	-	-	-	-
Current Revenue: Water Quality Protection	4,000	2,681	1,319	-	-	-	-	-	-	-	-
Long-Term Financing	7,200	-	-	7,200	1,200	1,200	1,200	1,200	1,200	1,200	-
Water Quality Protection Bonds	2,400	1,516	884	-	-	-	-	-	-	-	-
<b>TOTAL FUNDING SOURCES</b>	<b>15,100</b>	<b>5,697</b>	<b>2,203</b>	<b>7,200</b>	<b>1,200</b>	<b>1,200</b>	<b>1,200</b>	<b>1,200</b>	<b>1,200</b>	<b>1,200</b>	<b>-</b>

## APPROPRIATION AND EXPENDITURE DATA (\$000s)

Appropriation FY 19 Request	1,200	Year First Appropriation	FY14
Appropriation FY 20 Request	1,200	Last FY's Cost Estimate	12,700
Cumulative Appropriation	7,900		
Expenditure / Encumbrances	6,976		
Unencumbered Balance	924		

## 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).

## Cost Change

---

Increase due to the addition of FY23-24 to this on-going level of effort project.

## 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 will provide funding towards developing an asset inventory of the storm drain system including pipe and culvert conditions to help forecast future funding requirements.

## Fiscal Note

---

In FY19, going forward, Water Quality Protection Bonds have been replaced with Long-Term Financing based on the Maryland Water Quality Revolving Loan Fund (WQRLF) to finance water quality improvement projects with low interest loans which are less costly than bond sales.

## 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, United States Army Corps of Engineers.



# Storm Drain General

(P500320)

Category	Conservation of Natural Resources	Date Last Modified	01/05/18
SubCategory	Storm Drains	Administering Agency	Transportation
Planning Area	Countywide	Status	Ongoing

## EXPENDITURE SCHEDULE (\$000s)

Cost Elements	Total	Thru FY17	Est FY18	Total 6 Years	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24	Beyond 6 Years
Planning, Design and Supervision	4,659	1,863	372	2,424	404	404	404	404	404	404	-
Land	103	103	-	-	-	-	-	-	-	-	-
Construction	13,228	9,926	602	2,700	450	450	450	450	450	450	-
Other	1	1	-	-	-	-	-	-	-	-	-
<b>TOTAL EXPENDITURES</b>	<b>17,991</b>	<b>11,893</b>	<b>974</b>	<b>5,124</b>	<b>854</b>	<b>854</b>	<b>854</b>	<b>854</b>	<b>854</b>	<b>854</b>	<b>-</b>

## FUNDING SCHEDULE (\$000s)

Funding Source	Total	Thru FY17	Est FY18	Total 6 Years	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24	Beyond 6 Years
G.O. Bonds	9,169	9,169	-	-	-	-	-	-	-	-	-
Intergovernmental	228	223	5	-	-	-	-	-	-	-	-
Current Revenue: Water Quality Protection	1,600	1,588	12	-	-	-	-	-	-	-	-
Long-Term Financing	5,124	-	-	5,124	854	854	854	854	854	854	-
State Aid	162	162	-	-	-	-	-	-	-	-	-
Water Quality Protection Bonds	1,708	751	957	-	-	-	-	-	-	-	-
<b>TOTAL FUNDING SOURCES</b>	<b>17,991</b>	<b>11,893</b>	<b>974</b>	<b>5,124</b>	<b>854</b>	<b>854</b>	<b>854</b>	<b>854</b>	<b>854</b>	<b>854</b>	<b>-</b>

## APPROPRIATION AND EXPENDITURE DATA (\$000s)

Appropriation FY 19 Request	854	Year First Appropriation	FY03
Appropriation FY 20 Request	854	Last FY's Cost Estimate	16,283
Cumulative Appropriation	12,867		
Expenditure / Encumbrances	12,635		
Unencumbered Balance	232		

## 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. Right-of-way is acquired under the Advanced Land Acquisition Revolving Fund (ALARF).

## Capacity

---

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

## Cost Change

---

Increase due to the addition of FY23-24 to this on-going level of effort project.

## 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 FY16 and FY17: Rosemere Avenue, Decatur Avenue, Diamondback Drive at Decoverly Drive, Berryville Road, Elsworth Drive, Shepherd Street, Norvale Road, Sherwood Forest Drive, Drummond Avenue, Westland Road, Madawaska Road, 80th Street, Greentree Road, Grant Street, 83rd Street, Parker Avenue, East Franklin Avenue and Oakmont Avenue. Potential Future projects: Stable Lane, Ashburton Lane, Mintwood Street, and Ogden Court.

## Fiscal Note

---

In FY19, going forward, Water Quality Protection Bonds have been replaced with Long-Term Financing based on the Maryland Water Quality Revolving Loan Fund (WQRLF) to finance water quality improvement projects with low interest loans which are less costly than bond sales.

## 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, Sidewalk Program - Minor Projects (CIP No. 506747).