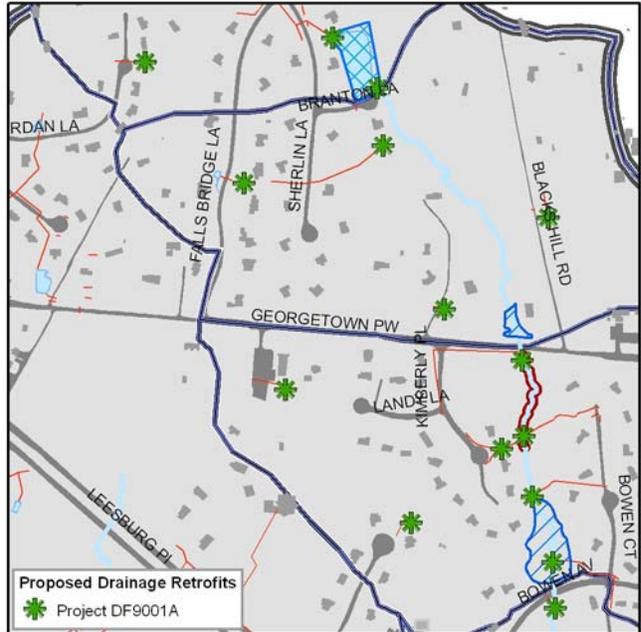


Project Number: DF9001A
Catchment Code: DFDG0002
Candidate Site: D-01

Project Type: Drainage Retrofit
Project Size: 15 Outfalls

Project Location:
 This project will be distributed throughout the catchment.

Project Description:
 There are signs of erosion and scour distributed throughout this catchment. This project will provide improvements to the drainage infrastructure by improving outlet protection at the storm sewer outfalls.



Potential Project Benefits:

Streamflow	The project will reduce velocity from the outfalls and erosive potential immediately downstream.
Water Quality	The primary benefit to water quality would come from the reduction of sediment loads associated with high velocity at the outfall locations.

Potential Project Constraints:

Environmental	Environmental impacts and permit requirements are not anticipated for this project; however, projects in RPAs may require exceptions or waivers
Facility Access	Generally, access can be obtained from adjacent roads.
Design / Construction	No significant design or construction issues were identified for this project.

Costs:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Outfall Protection	15	EA	\$8,000.00	\$120,000
Base Construction Cost				\$120,000
Mobilization (5%)				\$6,000
Subtotal 1				\$126,000
Contingency (25%)				\$31,500
Subtotal 2				\$157,500
Engineering, Survey, Land Acquisition, Utility Relocations and Permits (45%)				\$70,875
Estimated Project Cost				\$228,000

*This project is part of the alternative project group for Regional Pond D-01.
 See Table 5-2 for the recommended disposition.*

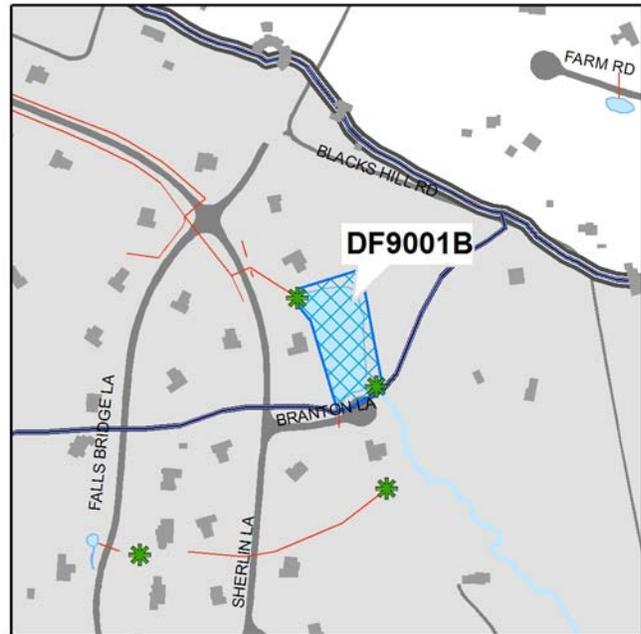
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Project Number: DF9001B
Catchment Code: DFDG0002
Candidate Site: D-01

Project Type: Pond Retrofit
Project Size: 1.5 acres
Treated Area: 62.5 acres

Project Location: This project is located at the end of Branton Lane.

Project Description: This facility is bordered on all sides by private property and therefore all retrofit improvements should be contained within the existing pond boundaries. The upstream portion of the pond will be excavated out to create a flat bottom. The center of the facility will be reconstructed to direct runoff into a wet marsh.



Potential Project Benefits:

Streamflow	100% of the channel protection volume can be created by excavation and by modifying the control structure.
Water Quality	100% of the water quality volume can be stored in this project.

Potential Project Constraints:

Environmental	No environmental constraints are anticipated. Projects in RPAs may require exceptions or waivers.
Facility Access	Access to this facility is very good from Branton Lane.
Design / Construction	No significant design or construction issues were identified for this project. County staff will coordinate with the facility owner to implement the project.

Costs:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.7	AC	\$5,000.00	\$3,500
Grading and Excavation	1852	CY	\$30.00	\$55,560
New Embankment	725	CY	\$60.00	\$43,500
Riser	1	LS	\$3,000.00	\$3,000
Rip Rap Stabilization	100	LF	\$50.00	\$5,000
Wetland Planting	1947	SY	\$2.00	\$3,894
Dry Landscaping	1370	SY	\$2.50	\$3,425
Base Construction Cost				\$117,879
Mobilization (5%)				\$5,894
Subtotal 1				\$123,773
Contingency (25%)				\$30,943
Subtotal 2				\$154,716
Engineering, Survey, Land Acquisition, Utility Relocations and Permits (45%)				\$69,622
Estimated Project Cost				\$224,000

This project is part of the alternative project group for Regional Pond D-01. See Table 5-2 for the recommended disposition.

Concept Sketch



Project Site

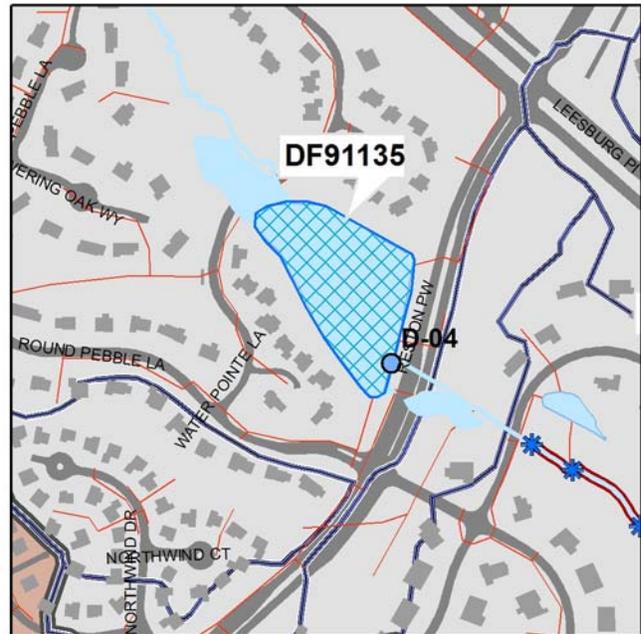


Project Number: DF91135
Catchment Code: DFDG9901
Candidate Site: C135

Project Type: Pond Retrofit
Project Size: 3.5 acres
Treated Area: 187.8 acres

Project Location: This project is located upstream of Reston Parkway.

Project Description: The control structure of this pond can be modified for extended detention of the 1-year storm event by raising the principal weir crest and notching an orifice at the water surface, which will meet the channel protection volume. The water quality volume is completely met within the wet storage of this pond. Also, an existing vegetated aquatic bench and areas of wetland planting are evident around sections of the wet perimeter. This project will enhance these components by extending the existing aquatic bench around the entire perimeter of the pond.



Potential Project Benefits:

Streamflow	100% of the channel protection can be met by modifying the control structure.
Water Quality	100% of the water quality volume is met within the wet storage of this pond.

Potential Project Constraints:

Environmental	No environmental constraints are anticipated. Projects in RPAs may require exceptions or waivers.
Facility Access	Access to this area is very good by way of public roads.
Design / Construction	No design or construction problems are anticipated for this project. County staff will coordinate with the facility owner to implement the project.

Costs:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Excavation/Grading (aquatic bench)	9111	CY	\$30.00	\$273,330.00
Riser	1	LS	\$3,000.00	\$3,000.00
Wetland Planting (aquatic bench)	1656	SY	\$2.00	\$3,312.00
Base Construction Cost				\$279,642
Mobilization (5%)				\$13,982
Subtotal 1				\$293,624
Contingency (25%)				\$73,406
Subtotal 2				\$367,030
Engineering, Survey, Land Acquisition, Utility Relocations and Permits (45%)				\$165,164
Estimated Project Cost				\$532,000

Concept Sketch



Project site:

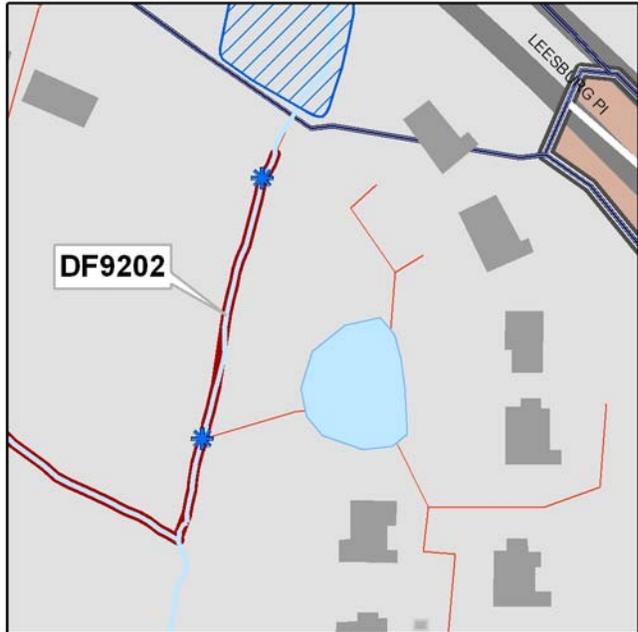


Project Number: DF9202
Catchment Code: DFDG0003
Candidate Site: S02

Project Type: Stream Restoration
Project Size: 484 Linear Feet

Project Location: This project is located southwest of Leesburg Pike and east of Reston Parkway.

Project Description:
 The stream has raw eroding streambanks and is moderately incised. The stream appears to be historically straightened and lacks strong riffle pool morphology. The stream will be re-meandered with a pattern, dimension and profile more consistent with a natural stream. Banks will be stabilized and a floodplain connection will be recreated. Stream buffers will be restored on all project reaches.



Potential Project Benefits:

Stream Stability	The pattern, dimension, and profile of the stream will be reestablished and a floodplain connection will be recreated.
Water Quality	Water quality will be improved by a significant reduction in current and future bank and bed erosion.
Instream Habitat	Erosion reduction, created bed features, and establishing a riparian buffer will improve physical habitat conditions.

Potential Project Constraints:

Environmental	The site will not require forest clearing but will impact jurisdictional wetlands. It will require a permit from the U.S. Army Corps of Engineers and VDEQ. Projects in RPAs may require exceptions or waivers.
Facility Access	Access to this facility will require an easement on private property and some clearing of scrub vegetation.
Design / Construction	Design efforts are moderate compared to other stream restoration projects. General constructability is good.

Difficult Run Watershed Management Plan
 Concept Plans
Dog Run

Costs:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct new channel	484	LF	\$200.00	\$96,800
Add'l cost, first 500 LF	484	LF	\$200.00	\$96,800
Base Construction Cost				\$193,600
Mobilization (5%)				\$9,680
Subtotal 1				\$203,280
Contingency (25%)				\$50,820
Subtotal 2				\$254,100
Engineering, Survey, Land Acquisition, Utility Relocations and Permits (45%)				\$114,345
Estimated Project Cost				\$368,000

Concept Sketch



Project Number: DF9278
Catchment Code: DFDG0002
Candidate Site: S78

Project Type: Stream Restoration
Project Size: 558 Linear Feet

Project Location: This project is located to the south of Georgetown Pike

Project Description:

The stream is eroding its banks and is incised. The stream is straight in the upper portion but has re-established a meander pattern in the downstream portion. The streambed has moderate riffle pool morphology. A pattern, dimension and profile more consistent with a natural stream will be recreated. Banks will be stabilized and a floodplain connection will be established. Two eroding side channels will also be restored as part of the project. A vegetated stream buffer will be re-established on all project reaches.



Potential Project Benefits:

Stream Stability	The pattern, dimension, and profile of the stream will be corrected and a floodplain connection will be recreated.
Water Quality	Water quality will be improved by a significant reduction in current and future bank and bed erosion.
Instream Habitat	Erosion reduction, created bed features, and establishing a riparian buffer will improve physical habitat conditions.

Potential Project Constraints:

Environmental	The site will require some tree removal and impacts to jurisdictional wetlands. It will require a permit from both the U.S. Army Corps of Engineers and VDEQ. Projects in RPAs may require exceptions or waivers.
Facility Access	Access to this facility will require an easement on private property and improvements to the project area.
Design / Construction	Design efforts are significant compared to other stream restoration projects. General constructability is constrained by access.

Difficult Run Watershed Management Plan
 Concept Plans
Dog Run

Costs:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct new channel	384	LF	\$200.00	\$76,800
Reconstruct new pattern and profile	174	LF	\$250.00	\$43,500
Add'l cost, first 500 LF	500	LF	\$200.00	\$100,000
Base Construction Cost				\$220,300
Mobilization (5%)				\$11,015
Subtotal 1				\$231,315
Contingency (25%)				\$57,829
Subtotal 2				\$289,144
Engineering, Survey, Land Acquisition, Utility Relocations and Permits (45%)				\$130,115
Estimated Project Cost				\$419,000

Concept Sketch

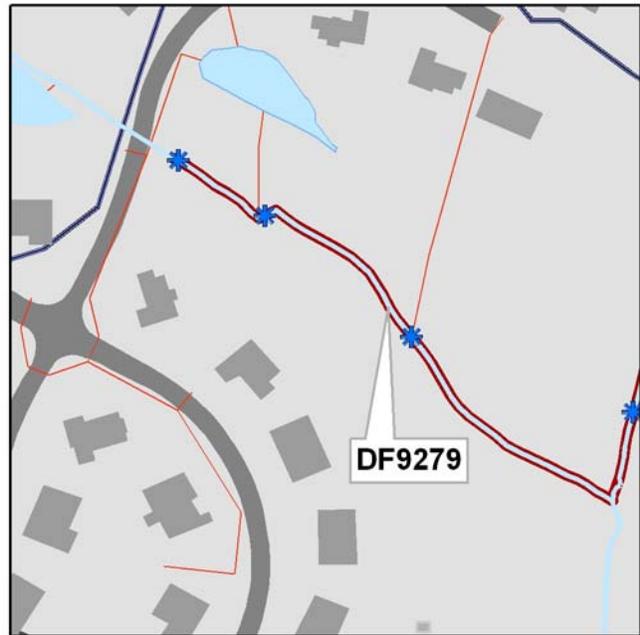


Project Number: DF9279
Catchment Code: DFDG0003
Candidate Site: S79

Project Type: Buffer Restoration
Project Size: 810 Linear Feet

Project Location: This project is located southwest of Leesburg Pike and east of Reston Parkway.

Project Description:
 The stream has poor habitat and is missing the buffer on both banks. It also shows evidence of being channelized in the past. The project will restore a forested buffer, but stream stabilization and restoration is not required.



Potential Project Benefits:

Stream Stability	The buffer will provide some stabilization by vegetating the streambanks.
Water Quality	Minor improvements to water quality will occur due to shading and cooler temperatures.
Instream Habitat	Increase in shade, detritus, woody plant material and cooler water temperatures will improve habitat.

Potential Project Constraints:

Environmental	The site will not require forest clearing but will impact to jurisdictional wetlands. It will require a permit from the U.S. Army Corps of Engineers and VDEQ. Projects in RPAs may require exceptions or waivers.
Facility Access	Access to this facility will require an easement on private property and some clearing of scrub vegetation.
Design / Construction	Design efforts are minor. General constructability is good.

Difficult Run Watershed Management Plan
 Concept Plans
Dog Run

Costs:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Buffer restoration	810	LF	\$25.00	\$20,250
Base Construction Cost				\$20,250
Mobilization (5%)				\$1,012
Subtotal 1				\$21,262
Contingency (25%)				\$5,315
Subtotal 2				\$26,578
Engineering, Survey, Land Acquisition, Utility Relocations and Permits (45%)				\$11,960
Estimated Project Cost				\$39,000.00

Concept Sketch

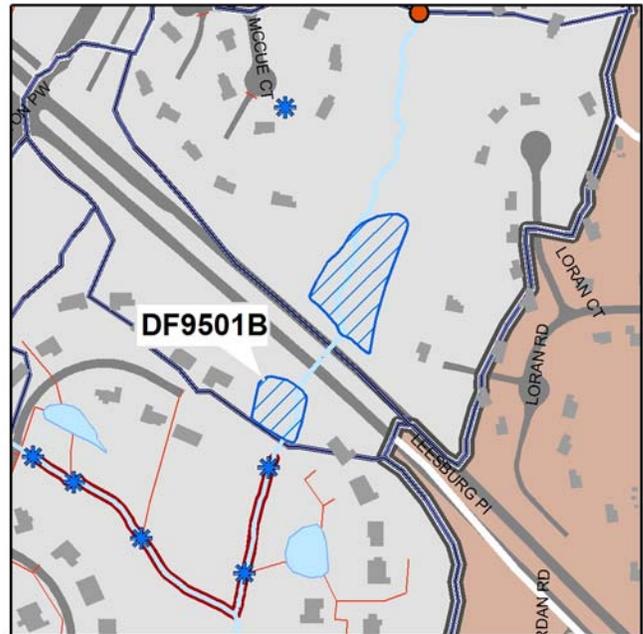


Project Number: DF9501B
Catchment Code: DFDG0003
Candidate Site: C01

Project Type: Culvert Retrofit
Project Size: 0.5 acres
Treated Area: 35.3 acres

Project Location: On the upstream side of Stones Throw Drive

Project Description: The retrofit to this existing culvert would make use of the floodplain area for detention and water quality treatment, and could be accomplished with a small enough footprint as to have minimum impact on the existing stream ecology. This facility should focus on providing dry detention that maintains base flow rates and channel forming flows.



Potential Project Benefits:

Streamflow	The site can provide storage for 90% of the channel protection volume.
Water Quality	Water quality would benefit from the reduction of scour inducing peak flow rates, and the use of floodplain areas for detention and vegetative uptake.

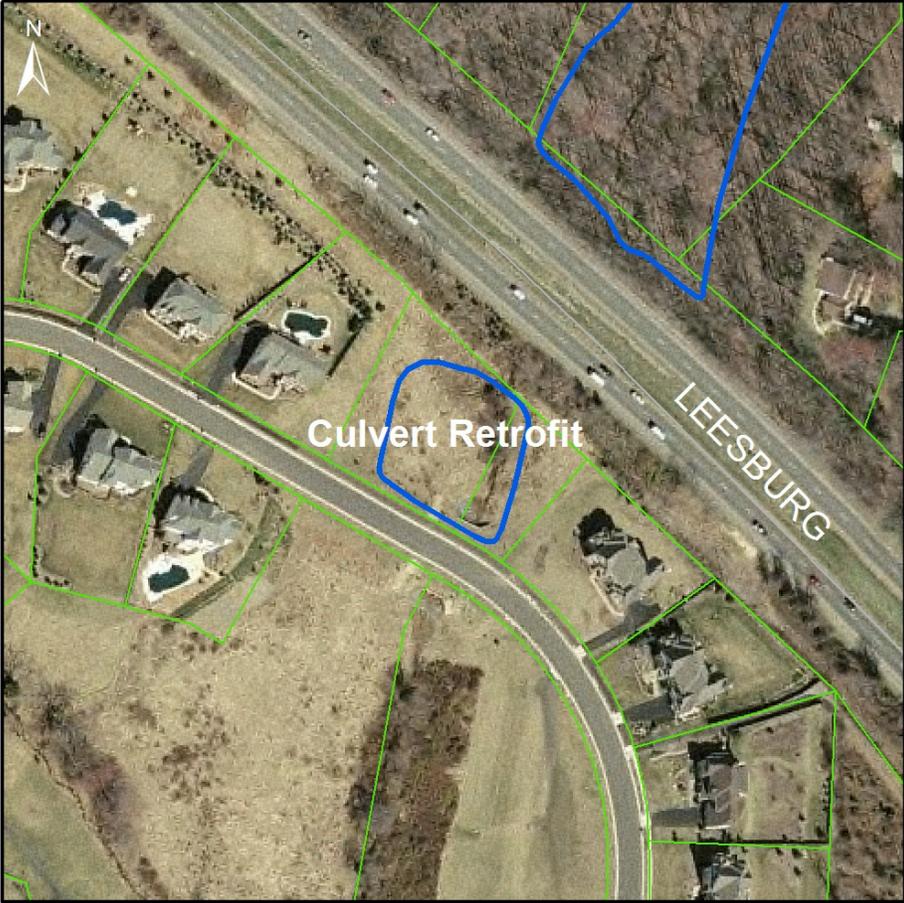
Potential Project Constraints:

Environmental	It will require a permit from both the U.S. Army Corps of Engineers and VDEQ. The area is open and no forest impacts are expected. Projects in RPAs may require exceptions or waivers.
Facility Access	Access to this facility is very good from the roadway.
Design / Construction	No design or construction issues were noted for this project.

Costs:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.10	AC	\$5,000.00	\$522
Excavation	590	CY	\$35.00	\$20,650
Impoundment Structure	1	LS	\$5,000.00	\$5,000
Landscaping	480	SY	\$2.50	\$1,200
Wetland Planting	160	SY	\$2.00	\$320
Base Construction Cost				\$27,692
Mobilization (5%)				\$1,385
Subtotal 1				\$29,077
Contingency (25%)				\$7,269
Subtotal 2				\$36,346
Engineering, Survey, Land Acquisition, Utility Relocations and Permits (45%)				\$16,356
Estimated Project Cost				\$53,000

Concept Sketch

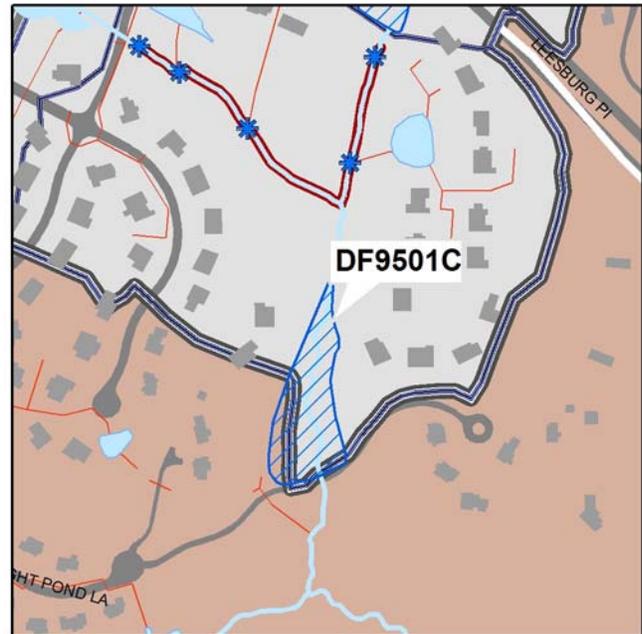


Project Number: DF9501C
Catchment Code: DFDG0003
Candidate Site: C01

Project Type: Culvert Retrofit
Project Size: 1.8 acres
Treated Area: 39.3 acres

Project Location: This project is located on the upstream side of the driveway at the end of Bright Pond Lane.

Project Description: There is a low head culvert along this drive and the area to either side of this culvert has been left natural and unmanaged. The potential depth of a pond for this location is low due to the driveway's vertical alignment, but there is an opportunity to provide beneficial storage and treatment.



Potential Project Benefits:

Streamflow	This project can meet 100% of the channel protection storage volume.
Water Quality	There is sufficient volume at this site to meet five times the water quality storage.

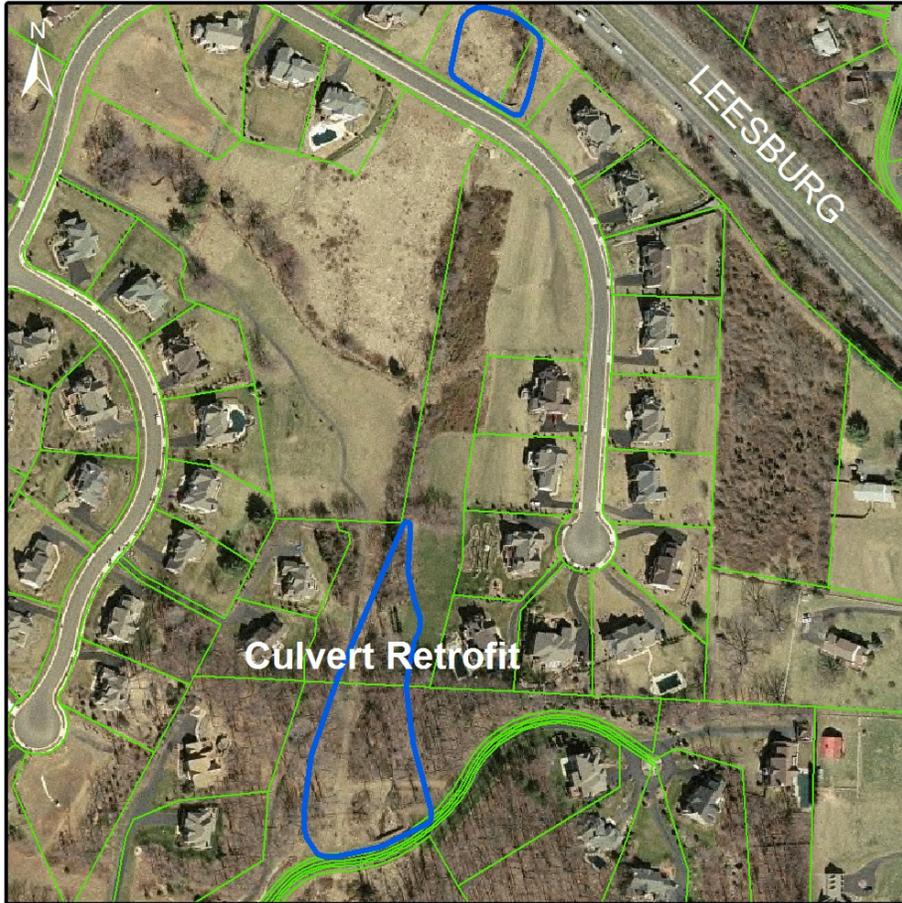
Potential Project Constraints:

Environmental	The project will require a permit from both the U.S. Army Corps of Engineers and VDEQ. Some forest impacts will be incurred. Projects in RPAs may require exceptions or waivers.
Facility Access	Access for this project is very good from the pipestem drive.
Design / Construction	No design or construction issues were noted for this project.

Costs:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.37	AC	\$5,000.00	\$1,832
Excavation	1,540	CY	\$35.00	\$53,900
Impoundment Structure	1	LS	\$5,000.00	\$5,000
Landscaping	1,670	SY	\$2.50	\$4,175
Wetland Planting	560	SY	\$2.00	\$1,120
Base Construction Cost				\$66,027
Mobilization (5%)				\$3,301
Subtotal 1				\$69,329
Contingency (25%)				\$17,332
Subtotal 2				\$86,661
Engineering, Survey, Land Acquisition, Utility Relocations and Permits (45%)				\$38,997
Estimated Project Cost				\$126,000

Concept Sketch

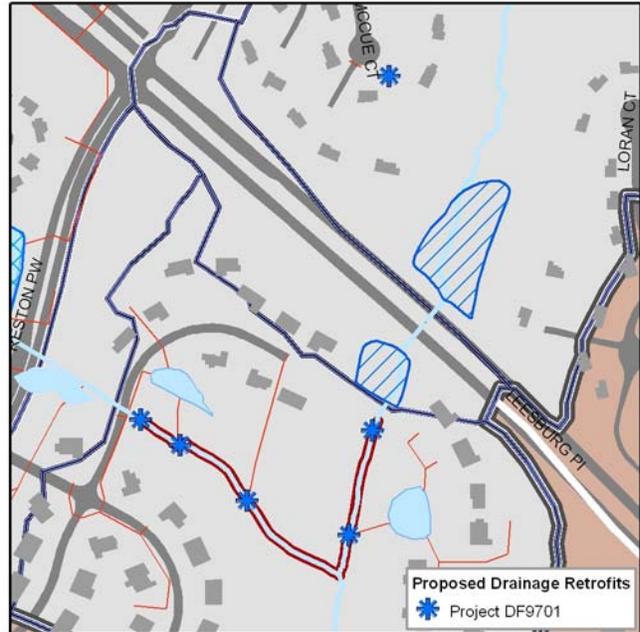


Project Number: DF9701
Catchment Code: DFDG0003
Candidate Site: C01

Project Type: Drainage Retrofit
Project Size: 6 acres

Project Location: This project is distributed throughout the catchment.

Project Description: The majority of this catchment consists of large lot residential areas with considerable open space. The developed area (i.e. houses and roads) is served by storm drains with outfalls that are experiencing erosion and scour. This project consists of implementing appropriate energy dissipation and outlet protection in each of these cases.



Potential Project Benefits:

Streamflow	The project will reduce velocity from each outfall and erosive potential immediately downstream.
Water Quality	The primary benefit to the water quality would come from the reduction of sediment loads associated with excessive flow momentum at the outfall locations. Reduction of sediment and velocity will also improve stream habitat.

Potential Project Constraints:

Environmental	No environmental constraints or permits are anticipated. Projects in RPAs may require exceptions or waivers.
Facility Access	Generally, access can be obtained from the roadway.
Design / Construction	No design or construction constraints are anticipated.

Costs:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Outfall Protection	6	EA	\$8,000.00	\$48,000
Base Construction Cost				\$48,000
Mobilization (5%)				\$2,400
Subtotal 1				\$50,400
Contingency (25%)				\$12,600
Subtotal 2				\$63,000
Engineering, Survey, Land Acquisition, Utility Relocations and Permits (45%)				\$28,350
Estimated Project Cost				\$91,000

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