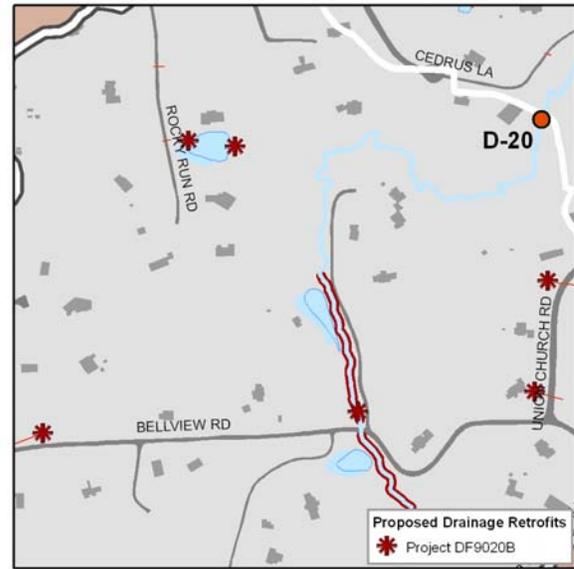


Project Number: DF9020B
Catchment Code: DFSP0002
Candidate Site: D-20

Project Type: Drainage Retrofit
Project Size: 6 Outfalls

Project Location:
 This project is distributed throughout the catchment.

Project Description:
 This project is intended to reduce scour and erosion at point outfalls where flows from the storm drain system enter the stream. Reduction of erosive velocities will reduce the amount of sediment transported downstream and may help prolong the life of the farm ponds throughout the catchment.



Potential Project Benefits:

Streamflow	The primary goal of this project is to reduce velocity from the storm drain outfalls and erosive potential downstream.
Water Quality	Water quality benefits would be achieved through the reduction of erosion and scour in the channel. Habitat would be improved by reducing sediment loads from erosion.

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 design or construction issues were identified.

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

This project is part of the alternative project group for Regional Pond D-20. See Table 5-2 for the recommended disposition.

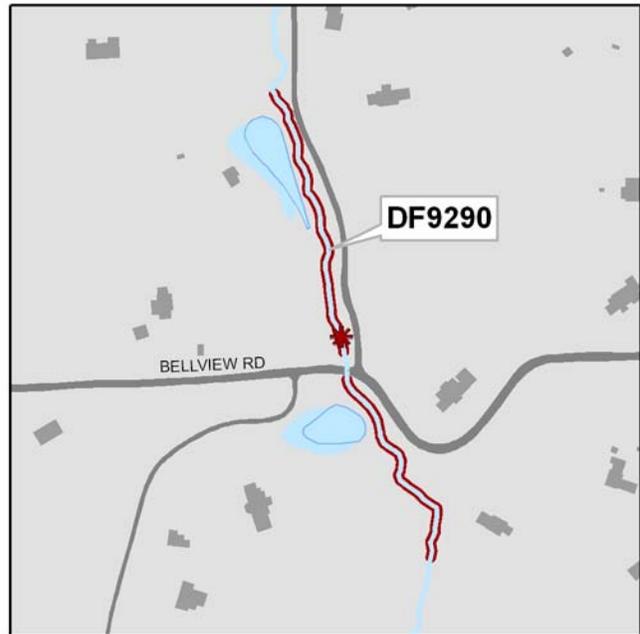
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Project Number: DF9290
Catchment Code: DFSP0001
Candidate Site: S90

Project Type: Stream Restoration
Project Size: 1,047 Linear Feet

Project Location:
 This project is located north and south of Bellview Road and west of Union Church Road.

Project Description:
 The right bank riparian zone lacks a healthy riparian buffer. The stream banks are raw and eroding; however, the streambed appears to be stable. The stream is located on private property between two residential driveways. The banks will be regraded and stabilized. The riparian area will be planted with native trees and shrubs. A floodplain bench will be created where space is available.



Potential Project Benefits:

Stream Stability	Moderate regrading will stabilize the streambanks. A nested channel with a floodplain bench will create a low-flow channel. A short reach will be reconstructed with a new pattern and profile.
Water Quality	Water quality will be improved by a significant reduction in stream erosion.
Instream Habitat	Erosion reduction, a low-flow channel, and a restored riparian buffer will improve physical habitat conditions.

Potential Project Constraints:

Environmental	Some forest impacts would occur during construction. The site will not impact jurisdictional wetlands. However, 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 site will be along the existing residential properties and will require an easement on private property but is open and unconstrained adjacent to the stream.
Design / Construction	Design efforts are minimal compared to other stream restoration projects. General constructability is good.

Difficult Run Watershed Management Plan
 Concept Plans
Sharpers Run

Costs:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Reconstruct new pattern and profile	133	LF	\$250.00	\$33,250
Stabilize in place -- grading	914	LF	\$175.00	\$159,950
Buffer restoration	included above	LF	\$25.00	\$0
Add'l cost, first 500 LF	500	LF	\$200.00	\$100,000
Base Construction Cost				\$293,200
Mobilization (5%)				\$14,660
Subtotal 1				\$307,860
Contingency (25%)				\$76,965
Subtotal 2				\$384,825
Engineering, Survey, Land Acquisition, Utility Relocations and Permits (45%)				\$173,171
Estimated Project Cost				\$558,000

Concept Sketch

