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An employee-owned company

TECHNICAL MEMO

July 28, 2009

Attn: Shannon Curtis, Fairfax County

From: Trish Hennessy-Webb, PBS&J

Ref: **Task 3.2 Lower Occoquan Restoration Strategies Candidate Project Selection**

Restoration Strategies:
Based on the watershed impact indicators, source indicators, and field reconnaissance, areas of impairment or degraded conditions throughout Lower Occoquan watershed was mapped using the subwatershed ranking procedure. Once these areas were mapped, restoration strategies were identified to address and mitigate these areas. Within Lower Occoquan, all 10 of the WMAs experienced some level of impairment, however more than half of Lower Occoquan is downzoned and maintains some of the best water quality and streams in the County. While some WMAs such as Wolf Run, Old Mill Branch and Giles Run North had sever stream bank erosion, other WMAs had minor issues such as raised nutrient loading in Occoquan. While it is not feasible to implement restoration efforts on every location in an older watershed such as Lower Occoquan, the restoration strategies focused on meeting and addressing the County goals and objectives identified in Chapter 2 of the Lower Occoquan Watershed Workbook. For Lower Occoquan watershed the following restoration strategies were identified and presented to the Watershed Advisory Group.

(1) Stream Restoration and improving Habitat Quality
(2) Addressing Flooding Issues
(3) Improve Water Quality

The table below links the Lower Occoquan restoration strategies to the County goals and objectives.

County Goals & Objectives	Restoration Strategies		
	Stream Restoration & Improve Habitat Quality	Flooding	Water Quality
Minimize impacts of stormwater runoff on stream hydrology to promote stable stream morphology, protect habitat, and support biota.	•		
Minimize flooding to protect property, human health, and safety		•	
Provide for healthy habitat through protecting, restoring, and maintaining riparian buffers, wetlands, and instream habitat	•		
Improve and maintain diversity of native plants and animals in the county	•		
Minimize impacts to stream water quality from pollutants in stormwater runoff			•
Minimize impacts to drinking water sources from pathogens, nutrients, and toxics in stormwater runoff			•
Minimize impacts to drinking water storage capacity from sediment in stormwater runoff			•
Encourage the public to participate in watershed stewardship	•	•	•
Coordinate with regional jurisdictions on watershed management and restoration efforts such as Chesapeake Bay initiatives	•	•	
Improve watershed aesthetics in Fairfax County	•	•	

Candidate Site Selection Strategy:
The process for candidate site selection was based on the broad restoration strategies. The candidate site selection strategy began by preparing color coded watershed maps and scoring spreadsheets based on the output from subwatershed ranking. These maps and spreadsheets were color coded using the scoring thresholds developed for the watershed metrics. The colors show lower scored areas in red, and higher scored areas in green. This gave a visual representation of potential problem trends or issues throughout the overall watershed. The scoring worksheets from the Subwatershed Ranking Spreadsheets were reviewed and some basic statistical calculations were performed to identify some of the more prevalent issues affecting the watershed as a whole. A statistical analysis of the indicators for “good” to “very poor” was performed. The below table illustrates the results of the indicators which reflected “very poor”. This process allows the top 10 issues throughout the watershed to be highlighted.

This is the first step in capturing and identifying the major issues/trends throughout the watershed and allows for the initial identification of the universe of potential projects which will address these issues.

Impact Indicators			
Ranking of Issues	**Metric**	**Impact Indicator**	**% Watershed Categorized as "Very Poor"**
1	3.3.4	Channel Morphology	76%
2	3.3.19	Phosphorous	21%
3	3.3.18	Nitrogen	14%
4	3.3.17	Upland Sediment	13%
5	3.3.14	Wetland Habitat	11%
6	3.3.16	E. Coli	7%
7	3.3.13	Headwater Riparian Habitat	4%
8	3.3.12	RPA Riparian Habitat	3%
9	3.3.15	Terrestrial Forested Habitat	1%

Source Indicator			
Ranking of Issues	**Metric**	**Source Indicator**	**% Watershed Categorized as "Very Poor"**
1	4.3.5	Parcels Served by Septic Tanks	47%
2	4.3.12	TP Load	21%
3	4.3.10	TN Load	14%
4	4.3.13	TSS Load	13%
5	4.3.11	Total Urban Land Cover	9%
6	4.3.1	Channelized/Piped Streams	7%
7	4.3.4	Stormwater Outfalls	7%
8	4.3.9	Streambank Buffer Deficiency	6%
9	4.3.14	VPDES Permitted Point Sources	4%
10	4.3.2	Directly Connected Impervious Area	3%
11	4.3.3	Total Impervious Area	3%

After identifying some basic trends, individual WMAs were selected to be analyzed. Each subwatershed has a composite score for its Source Indicators and Impact Indicators. The individual metrics comprising the watershed's composite score were reviewed for each subwatershed and potential project areas were identified. The different indicators are as specified in the Tetra Tech ranking document (Fairfax County WMP Subwatershed Ranking Approach). The scoring spreadsheets and GIS maps were used to identify subwatersheds with severe area conditions, moderate area conditions, and good area conditions. The subwatersheds with severe area conditions in both source and impact indicators were addressed first. Below is an example of Lower Occoquan – High Point WMA and the individual subwatersheds and the scoring.

			Impact Indicators Metrics and Scores													
SITE_CODE	Scenario	WMA Name	331	332	333	334	335	3311	3312	3313	3314	3315	3316	3317	3318	3319
HP-PO-0001	Existing	High Point	10	6	10	2	7.5	10	6	10	4	10	5	10	10	7.5
HP-PO-0002	Existing	High Point	6	6	6	2	7.5	10	6	10	4	10	5	7.5	10	7.5
HP-PO-0003	Existing	High Point	10	6	10	2	7.5	10	6	10	4	10	5	7.5	10	7.5
HP-PO-0004	Existing	High Point	10	6	10	2	7.5	10	4	10	4	10	5	7.5	10	7.5
HP-PO-0005	Existing	High Point	10	6	10	2	7.5	10	4	10	4	10	5	2.5	10	7.5
HP-PO-0006	Existing	High Point	6	6	6	6	10	10	4	10	2	10	5	10	10	7.5
HP-PO-0007	Existing	High Point	6	6	6	6	10	10	4	10	2	10	5	10	10	7.5
HP-PO-0008	Existing	High Point	10	6	10	2	7.5	10	6	10	4	10	5	7.5	7.5	7.5
HP-PO-0009	Existing	High Point	10	6	10	6	10	10	6	10	4	10	5	7.5	10	7.5
HP-PO-0010	Existing	High Point	6	6	6	2	7.5	10	6	10	4	10	5	7.5	10	7.5
HP-PO-0011	Existing	High Point	6	6	6	2	7.5	10	6	10	4	8	5	7.5	5	5
HP-PO-0012	Existing	High Point	6	6	6	2	7.5	10	4	10	4	10	5	7.5	7.5	5
HP-PO-0013	Existing	High Point	6	6	6	6	7.5	10	4	10	4	10	5	7.5	10	7.5
HP-PO-0014	Existing	High Point	4	6	4	2	7.5	10	4	4	4	4	5	7.5	5	2.5
HP-PO-0015	Existing	High Point	6	6	6	2	7.5	10	4	8	4	8	2.5	5	5	2.5
HP-PO-0016	Existing	High Point	6	6	6	2	7.5	8	4	8	4	6	5	10	5	5
HP-PO-0017	Existing	High Point	10	6	10	6	7.5	10	4	10	4	10	5	10	7.5	5
HP-PO-0018	Existing	High Point	10	6	10	6	7.5	10	4	8	4	8	5	7.5	7.5	5
HP-PO-0019	Existing	High Point	10	6	10	6	7.5	10	4	10	4	10	5	7.5	7.5	5
HP-PO-0020	Existing	High Point	10	6	10	2	7.5	10	4	10	4	10	5	7.5	5	2.5
HP-PO-0021	Existing	High Point	10	6	10	2	7.5	10	4	10	4	10	5	7.5	7.5	5

Objective Composite Score

SITE_CODE	WMA Name	Stormwater Runoff	Flooding Hazards	Habitat Health	Habitat Diversity	Stream Water Quality	Drinking Water Quality	Storage Capacity	Overall Composite Score
HP-PO-0001	High Point	7.10	10.00	8.00	8.00	8.00	8.13	8.75	8.40
HP-PO-0002	High Point	5.50	10.00	7.20	6.00	7.07	7.50	7.50	7.44
HP-PO-0003	High Point	7.10	10.00	8.00	8.00	7.64	7.50	7.50	8.10
HP-PO-0004	High Point	7.10	10.00	7.60	8.00	7.64	7.50	7.50	8.05
HP-PO-0005	High Point	7.10	10.00	7.60	8.00	6.93	6.25	5.00	7.45
HP-PO-0006	High Point	6.80	10.00	6.40	6.00	7.79	8.13	10.00	8.01
HP-PO-0007	High Point	6.80	10.00	6.40	6.00	7.79	8.13	10.00	8.01
HP-PO-0008	High Point	7.10	10.00	8.00	8.00	7.29	6.88	7.50	7.97
HP-PO-0009	High Point	8.40	10.00	8.00	8.00	8.00	7.50	8.75	8.49
HP-PO-0010	High Point	5.50	10.00	7.20	6.00	7.07	7.50	7.50	7.44
HP-PO-0011	High Point	5.50	10.00	6.80	6.00	6.00	5.63	7.50	6.99
HP-PO-0012	High Point	5.50	10.00	6.80	6.00	6.36	6.25	7.50	7.12
HP-PO-0013	High Point	6.30	10.00	6.80	6.00	7.07	7.50	7.50	7.49
HP-PO-0014	High Point	4.70	10.00	4.00	5.00	5.36	5.00	7.50	6.21
HP-PO-0015	High Point	5.50	10.00	6.00	6.00	4.93	3.75	6.25	6.32
HP-PO-0016	High Point	5.50	8.00	5.60	6.00	6.36	6.25	8.75	6.73
HP-PO-0017	High Point	7.90	10.00	7.60	8.00	7.29	6.88	8.75	8.19
HP-PO-0018	High Point	7.90	10.00	6.80	8.00	6.93	6.25	7.50	7.78
HP-PO-0019	High Point	7.90	10.00	7.60	8.00	6.93	6.25	7.50	7.89
HP-PO-0020	High Point	7.10	10.00	7.60	8.00	6.21	5.00	7.50	7.52
HP-PO-0021	High Point	7.10	10.00	7.60	8.00	6.93	6.25	7.50	7.78

When the potential project areas were identified, the subwatershed was crosschecked against any ProRata projects that may be on the County's project list already.

Universe of Project Selection Strategy:

The final step of the strategy involved looking at GIS orthographic maps, field site visit forms, site photos and other pertinent information related to the given subwatershed. The objective was to select projects and sites that fit the overall condition of the subwatershed. There are multiple approaches to address any specific issue however, the universe of projects identified were developed based on meeting the County's goals and objectives as described in the "Fairfax County Watershed Management Plan Development Standards, Version 3.2". The table below identifies the type of structural projects and the associated BMPs used for project section.

Type	BMP	Water Quantity	Water Quality	Habitat Quality	Stream Morphology
Streams /Buffers	New stream alignment		X	X	X
	Re-alignment of existing channel		X	X	X
	Stream stabilization		X	X	X
	Bank stabilization		X	X	X
	Buffer restoration		X	X	X
Outfalls / Culverts	Culvert Retrofit	X	X		
	Outfall Retrofit	X	X		X
LID	Sand Filters		X		
	Bioretention / Rain Gardens	X	X		
	Infiltration Basins / Trenches	X	X		
	Rain Barrels / Cisterns	X	X		
	Green Roofs	X	X		
	Porous Pavements	X	X		
New Pond / Retrofit	Wet Pond	X	X		
	Extended Dry Pond	X	X		
	Wetland System	X	X	X	
	Micropool ED Pond	X	X		
	Shallow Marsh	X	X		
Area-wide Drainage Improvements	Dumpsites		X	X	
	Obstructions			X	X
	Utility Crossings			X	X

For example project LO92-SO1; a subwatershed with stream channel degradation issues, and moderate water quality issues, is a potential candidate for a stream restoration project. Stream restoration can help to return a stream to its natural channel, reduce drainage complaints, and reduce erosive velocities and downstream sedimentation. These reductions can result in potential increases in water quality.

Capturing the universe of projects will consist of developing the following table and a watershed map identifying the location of the project:

Project #	Project Type	WMA	Description	Indicator	Benefit	Cost	Map ID #
PC92-SO1	Stream restoration	Upper South Run	Provide localized stability to stream channel	Channel morphology	Water Quality	$100,000	1

Approach to Project Prioritization and Selection

Stormwater system improvement, system repair, prevention, and site specific conditions were all considered during project selection and prioritization. The improvement projects were focused on areas of degradation or potential severe conditions. In some cases the conditions were moderate and spot repair projects were proposed. In areas that were in good condition but had the potential for future degradation, prevention projects were selected.

The areas needing improvement were in areas with poorly scored conditions. These areas were determined during the first phase of project selection. The scoring worksheets and GIS maps were used to identify areas that scored poorly in multiple indicator and source categories. These areas were analyzed to determine feasible candidate projects. Within Lower Occoquan, stream restoration was the most common recommendation. These projects are generally located in areas without treatment, or with very little stormwater management BMP facilities.

In areas with moderate scores, projects were targeted to the specific negative indicators. Identified projects included buffer repair, and spot stream improvements. These projects were generally selected in areas with some existing treatment. However, the treatment was inadequate to meet the current or future needs of the site.

In areas with only a single negative indicator, prevention type projects were selected. These projects were selected based on their future benefit to the watershed and their benefit to public outreach. An example of this would be the neighborhood street sweeping programs and obstruction removal projects designed to prevent sedimentation and pollutants from reaching streams and help prevent potential flooding.

Sandy Run
Occoquan
Mill Branch
High Point
Kane Creek
Location of Fairfax County Watersheds
CANDIDATE PROJECT SITES
0 0.5 1 1.5 Miles
Lower Occoquan (Lower) - All Candidate Projects
OCCOQUAN RESERVOIR
OCCOQUAN BAY
BELMONT BAY
POHICK BAY
POTOMAC RIVER
GUNSTON COVE
HAMPTON RD
HAMPTON HUNT DR
MOUNTAIN VALLEY RD
PALMER DR
DAVIS DR
PENIWILL DR
CROSSPOINTE DR
LEE ALAN DR
NAGER ST
ISOE ST
HOOES RD
FURNACE RD
LAUREL CREST DR
SILVERBROOK RD
LORTON RD
OX RD
6TH PL
MORDOR DR
MINES ST
OLD COLCHESTER RD
GREENE DR
HARLEY RD
GUNSTON RD
HIGH POINT RD
ANCHORAGE RD
MOUNT VERNON BV
RIVER DR
BELMONT BV

Old Mill Branch

Wolf Run

Ryans Dam

Sandy Run

Occoquan

Mill Branch

CANDIDATE PROJECT SITES

0 0.5 1 1.5 Miles

Lower Occoquan (Upper) - All Candidate Projects

Fairfax County

Lower Occoquan Watershed

Technical Memorandum 3.4/3.5

Project Ranking

December 2010

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Introduction

The Fairfax County Watershed Management Plan Standards Version 3.2 (WMP 3.2) provides guidance for ranking the candidate projects created for the watershed management plan. This document describes how the Lower Occoquan Watershed candidate structural projects were ranked and placed in the 10 year and 25-year implementation plans. The ranking employed the following methods:

1. Structural projects were scored and ranked using the quantitative analysis detailed in Subtask 5.1-E. This analysis uses five factors to compare and rank the projects. The factors include: (1) impact indicators, (2) source indicators, (3) priority subwatersheds, (4) sequencing, and (5) implementability. Each proposed project was assigned a score for each of the five prioritization factors, where projects that propose the greatest benefit to the watershed were given a preliminary project score of 5, and projects that propose the least benefit were assigned a project score of 1. The proposed structural projects were then ranked according to a weighted average of these five preliminary project scores. The project scores were then adjusted based on best professional judgement (BPJ) based on site visit information, community input, and a cost benefit analysis.
2. Non-structural projects were scored using similar factors, but more emphasis was placed on best professional judgment (BPJ). Buffer restoration projects were scored similar to the prioritization schemes because of their similar qualities to those of stream restoration projects which can be quantified.

This memo provides a brief description of the methods used for the candidate project selections, the field investigations, community involvement, the project cost estimates, and water quality modeling. This information was used for the evaluation of the structural and non-structural projects as outlined by subtask 3.4, 3.5, and 3.6 (WMP 3.2). A list of the guidance documents used for this evaluation can be found in the bibliography in Appendix A. Additionally a description of all files used for the prioritization is provided in Appendix B.

Project Ranking Subtasks

Candidate Project Selection

In subtask 3.2, projects were strategically proposed throughout subwatersheds with the lowest composite impact and source indicator scores. Proposed projects were selected by comparing the lowest scoring impact indicators to the types of proposed projects to ensure proposed projects would provide the most benefit within each subwatershed. The candidate projects were then located and saved in the GIS file *LO_Projects*. (See Appendix M for a map of the candidate projects.) The candidate projects were then presented at watershed advisory group meetings for community input. This input was used to modify the project selection and was added to the ranking comments for score adjustments (See Appendix C: Lower Occoquan Master Project List).

Field Investigations

In subtask 3.3 field reconnaissance was performed for the candidate project sites. The reconnaissance included site visits to document site conditions, check for project feasibility and to take photos. This information was compiled into the access database file *PC-LO_Candidate_Project_Investigation.* This database was used to populate some of the metrics for the prioritization scheme. Additionally, the field visit form comments were condensed and added to the BPJ Project Ranking Comments column in the Lower Occoquan Master Project List. These ranking comments were utilized to support project score adjustments.

Cost Estimates

Cost estimates were performed for the projects during the ranking process based on County cost guidance. Projects costing less than $80,000 were grouped together with other projects based on whether the projects would be constructed simultaneously. These projects were scored under the project type “Suite of Projects”, where the benefits were added together.

Projects excluded from the grouping were rain barrel/cisterns and street sweepings. These projects do not currently have cost information provided by the County, and since these projects are non-structural they are still being further evaluated. Types of projects that were grouped together in project suites included buffer restorations, stream restorations, pipe daylighting and obstruction/dumpsite removals; bioretention areas, bioswale and swale retrofits; and stream restorations and stormwater pond retrofits. The large majority of grouped projects are in the same subwatershed. Most of the BMP/LID groups are located on a single site. Stream restorations were only grouped with stormwater pond retrofits if restoration is directly upstream of the pond and has existing negative impacts on the condition of the pond. In some cases, low-cost projects are not grouped as a result of an isolated site which could not to be matched with another higher cost project. According to County guidance these projects were dropped to the bottom of the rankings. Costs for grouped projects are the sum of all projects in the group (before rounding up). The subcomponents of the grouped projects are called subprojects and are denoted by a project ID number and letter (i.e. MB9806A). The subproject ID numbers were used in all of the tables except the final ranking.

Structural Project Prioritization

The following section describes PBS&J's implementation of the Fairfax County WMP 3.2 guidance for the Structural Project Prioritization. The structural project prioritization was completed using a spreadsheet based on the prioritization scheme outlined in subtask 5.1-E. The spreadsheet uses the five factors explained below to provide a basis to compare each project's ability to improve the watershed and rank the most beneficial projects.

Impact Indicators

Table 1, which was taken from Attachment #1 in the WMP 3.2, lists the relationship between the different project types and the impact indicators that were evaluated. For each project type, the indicators marked with an X were included in the prioritization, indicators marked with an O had their potential effects considered but not scored, and the remaining indicators were not considered for the prioritization.

Table 1: Matrix showing links between Project Types and Impact Indicator Scores

Individual Impact Indicators	Stream Restoration	Outfall Improvement	BMP/LID	Stormwater Pond Retrofit	Buffer Restoration
Benthic Communities	O	O			O
Fish Communities	O	O			O
Aquatic Habitat	O	O			O
Channel Morphology (CEM)	X	O		O	X
Instream Sediment	X	X		O	X
Hydrology	X X X			X	X
Number of Road Hazards					
Magnitude of Road Hazards					
Residential Building Hazards					
Non-residential Building Hazards					
Flood Complaints		O	O		
RPA Riparian Habitat	X		O		X
Headwater Riparian Habitat	X		O		X
Wetland Habitat	X		O		X
Terrestrial Forested Habitat			O		X
E. Coli	O	O	O	O	
TSS (Upland Sediment)	X	X	X	X	X
TN (Nitrogen Load)		X	X	X	X
TP (Phosphorus)	X	X	X	X	X
Total X's	8	5	4	4	10
Total O's	4	6	6	3	3

***Note**: Flood protection / mitigation and culvert retrofit projects were omitted, since flood protection / mitigation or culvert retrofit projects are not proposed in the Lower Occoquan Watershed.*

As shown by Table 1, a different number of indicators were scored depending on the project type. For example, stream restorations have 8 indicators that were scored, where stormwater pond retrofits

only have 4 indicators that were scored. For this reason, a composite indicator project score was determined for each project by averaging only the indicators that were affected by the corresponding project type (indicators marked with an X in Table 1). These composite impact indicator scores were reviewed to verify that, comparing different project types by impact indicator ranking was reasonable.

The existing and future without (FWO) impact indicator metric values and scores were determined using the Subwatershed Ranking (SWR) Approach, section 3.4, which was completed under a previous task. The future with projects was determined as possible for predictive indicators. For example, the future pollutant loads were calculated by subtracting a project's pollutant removal from a subwatershed's pollutant load. The scoring of the candidate projects and description of each impact indicator is provided below. (See Appendix D: Summary of Impact Indicator Scoring.)

Channel Morphology ICEM Metric Score

Only stream restoration and buffer restoration projects were scored based on the ICEM impact indicator. The channel morphology ICEM score was based on geomorphic stability. Table 2 was taken from Table 3-4 of the SWR guidance and shows the ICEM subwatershed scoring thresholds for channel morphology ICEM stage values. The preliminary project scores were based on existing conditions. Streambank erosion was assumed to occur at streams with ICEM stage values of 2 or 3. For this reason all candidate projects have SWR scores of either 2 or 6, where higher scores indicate higher geomorphology stability.

Table 2: SPS/SPA ICEM Class Scoring Thresholds

Average SPA/SPS ICEM Stage Value	Description1	Score
1 to 1.5	Well developed baseflow and bankfull stages; consistent floodplain features easily identified and covered by diverse vegetation; one terrace apparent above active floodplain; streambank slopes less than or equal to 45 degrees.	10
4.5 to 5	Well developed baseflow and bankfull stages; consistent floodplain features easily identified and covered by diverse vegetation; two terraces apparent above active floodplain; streambank slopes less than or equal to 45 degrees.	8
1.5 to 2.5	Headcuts and exposed cultural features (i.e., property, infrastructure) apparent; absent or sparse sediment deposits; exposed bedrock; streambank slopes greater than 45 degrees.	6
3.5 to 4.5	Streambank aggrading while sloughed material not eroding; vegetative colonization of sloughed material; development of baseflow, bankfull, and floodplain channel features; predictable sinuous flow patterns developing streambank slopes less than 45 degrees.	4
2.5 to 3.5	Streambank sloughing with sloughed material actively eroding; streambanks are ~60 degrees and vertical or concave.	2

[1] *Descriptions modified from Fairfax County SPS Baseline Study (Fairfax County, 2001)*

Notice that the table gives a higher stability score to the ICEM stage value range 1.5 to 2.5 than the 2.5 to 3.5 range, which correspond to scores of 6 and 2, respectively. The ICEM Stage value range of 1.5 to 2.5 (channel incision) is more stable than the 2.5 to 3.5 ICEM stage value range (channel widening).

Projects proposed in subwatersheds with channel morphology ICEM scores of 2 were given preliminary project scores of 4 since they have the most room for improvement, where projects proposed in subwatersheds with channel morphology ICEM scores of 6 were given preliminary project scores of 2 since they have less room for improvement.

Instream Sediment Metric Score

Stream restoration, outfall improvement, and buffer restoration projects were scored for this impact indicator. The instream sediment metric is not a predictive indicator, therefore the future conditions scores were not available and the preliminary project scores were based solely on existing conditions.

Projects addressing this indicator were only proposed in subwatersheds with existing conditions instream sediment scores of 2.5, 5, and 7.5.

Subwatersheds with an existing conditions instream sediment metric score of 2.5 had streambanks that were unstable with signs of mass erosion and slumping. Projects proposed in these subwatersheds were given a preliminary project score of 5 because they provide the most benefit. Projects proposed in subwatersheds with an existing conditions instream sediment metric scores of 5.0 and 7.5 were given preliminary project scores of 4 and 3, respectively, since they provide the next two levels of improvement compared to the other projects.

Hydrology Metric Score

Stream restoration, outfall improvement, BMP/LID, stormwater pond retrofit and buffer restoration projects were evaluated and scored for this impact indicator**.** The hydrology metric is area-weighted based on the flow rate in cubic feet per second per square mile (cfs/mi^2). The metric values from the subwatershed ranking spreadsheet were used to assign the project scores for this indicator (direct-metric value method).

Rather than scoring projects based on how much the hydrology metric changes in cfs, which would require extensive modeling at this preliminary stage, the existing conditions metric was compared to the FWO conditions metric and the percent change was calculated. As per the County's quintile scoring method, the range of percent change was divided into five preliminary project scores ranging from 1 to 5. See Table 3. Projects that provided the largest percent change, corresponding to the largest improvement, were assigned a preliminary project score of 5, where projects that proposed the least improvement were assigned a preliminary project score of 1.

Table 3: Hydrology Metric Quintile Scoring Method.

Percentile	% Change: Future w/o to Future w/ Project	Preliminary Score
80%	18.57%	5
60%	9.07%	4
40%	2.92%	3
20%	0.00%	2
0%	-0.68%	1

RPA Riparian Habitat Metric Score

Stream restoration and buffer restoration projects were scored for this impact indicator. The RPA riparian habitat score is the percentage of riparian habitat in the regulated Chesapeake Bay Resource Protection Areas. The preliminary project scores were based on FWO conditions. The SWR scores for this indicator range from 2 to 10, which indicate the lowest and highest percentages of riparian habitat, respectively.

Projects proposed in subwatersheds with RPA riparian habitat scores of 2 were given preliminary project scores of 5 since they provide the greatest benefit. Projects proposed in subwatersheds with RPA riparian habitat scores of 4, 6, 8, and 10 were given preliminary project scores of 4, 3, 2, and 1, respectively, since they provide the next four levels of improvement compared to the other projects.

Headwater RPA Riparian Habitat Metric Score

Stream restoration and buffer restoration projects were scored for this impact indicator. The headwater RPA riparian habitat score is the percent of riparian habitat in the RPA riparian areas that are located at the stream headwaters. The preliminary project scores were based on FWO conditions. The SWR scores for this indicator range from 2 to 10, which indicate the lowest and highest percentages of riparian habitat located at stream headwaters, respectively.

Projects proposed in subwatersheds with headwater RPA Riparian habitat scores of 2 were given preliminary project scores of 5 since they provide the greatest benefit. Projects proposed in

subwatersheds with headwater RPA riparian habitat scores of 4, 6, 8, and 10 were given preliminary project scores of 4, 3, 2, and 1, respectively, since they provide the next four levels of improvement compared to the other projects.

Wetland Habitat Metric Score

Stream restoration and buffer restoration projects should were scored for this impact indicator. The Wetland Habitat score is the percentage of wetland habitat in the subwatershed. The preliminary project scores were based on FWO conditions. The SWR scores for this indicator range from 2 to 10, which indicate the lowest and highest percentages of wetland habitat, respectively.

Projects proposed in subwatersheds with wetland habitat scores of 2 were given preliminary project scores of 5 since they provide the greatest benefit. Projects proposed in subwatersheds with wetland habitat scores of 4 and 6 were given preliminary project scores of 4 and 3, respectively, since they provide the next two levels of improvement compared to the other projects.

The percent change between the existing conditions metric to the FWO conditions metric was calculated for informational purposes only and was not directly used in the calculations. Per County Guidance, this metric did not employ the quintile method since this metric was not directly modeled.

Terrestrial Forested Habitat Metric Score

Buffer restoration projects were scored for this impact indicator. The Terrestrial Forested Habitat score is based on the percentage that the VDOF forested cover classification area covers in the subwatershed. The preliminary project scores were based on FWO conditions. The SWR scores for this indicator range from 2 to 10, which indicate the lowest and highest percentages of terrestrial forested habitat, respectively.

All of the proposed buffer restoration projects were located in subwatersheds with a terrestrial forested habitat score of 4, and these projects were given preliminary project scores of 4 since they provide roughly equal benefit.

The percent change between the existing conditions metric and the FWO conditions metric was calculated for informational purposes only and was not directly used in the calculations. Per County Guidance, this metric did not employ the quintile method since this metric was not directly modeled.

Pollutant Load Indicator Scores (TSS, TN, & TP)

The County provided Spreadsheet Tool for Estimating Pollutant Loads (STEPL) was used to calculate upland sediment (TSS), total nitrogen (TN), and total phosphorous (TP). GIS processing was used to determine the directly connected impervious area, land use types, BMP types, and drainage areas to determine the amount of pollutants for all subwatersheds. The FWO project conditions used future land use information to determine pollutant loads. The future with project conditions (FW) were determined by estimating the amount of pollutant that a project would remove if it was the only project implemented. This pollutant removal was then subtracted from a subwatershed's entire pollutant load.

To allow the comparison of results across different watersheds, the subwatershed's pollutant loads were divided by their areas to get units of mass/acre/year. STEPL was not capable of estimating the FW project conditions for the non-structural projects, outfall improvement projects, and stream restoration projects. The non-structural projects and outfall improvements were judged on their existing conditions.

The percentage of change from the FW project to the FWO conditions was determined for all of the projects except for the buffer restorations, outfall improvements and non-structural projects, since the FW project loads was not calculated. The amount of improvement that the projects provided (AKA percentage of change from the FW project to the FWO conditions) was broken into quintiles per the County's Guidance, and the highest project scores were given to the projects that caused the most improvement. The metric values from the subwatershed ranking spreadsheet were used to assign the project scores for this indicator (direct-metric value method). See the percentages of change and quintile thresholds in Appendix E.

Stream restorations were not modeled in STEPL, but metric values were calculated for TSS, TP, and TN, by considering all streambank erosion pollutants that had previously been created along the length of the stream restoration were eliminated once the stream restoration was complete. This method was also extrapolated to stream restorations that involved daylighting a storm pipe. For these projects that involved daylighting some distance (D) of existing stormwater pipe, it was assumed that the pollutant removal of the project was equal to the pollutants caused by that same distance (D) in the downstream eroding reach. A stream restoration project's pollutant removal was then subtracted from the FWO conditions total subwatershed pollutant load and divided by the subwatershed area. This allowed stream restorations to be quantitatively compared to the projects modeled by STEPL.

For outfall improvement projects, streambank erosion was assumed to be eliminated for a distance of 135 ft downstream of the projects. This distance is based on VDOT design standards which call for a minimum of 135 ft of protection downstream of an outfall. This method provides a planning-level estimate of TSS, TN and TP reduction for outfall improvement projects.

Final Project Score based on Impact Indicators

Each project type's average score was based on a different number of indicators per Table 1. The initial impact indicator score was determined by adding the project scores assigned for each impact indicator and dividing this sum by the number of indicators evaluated to obtain a score between 1 and 5. These project scores were then ranked with the highest project scores receiving the highest priority rank.

Per County Guidance BPJ was used to account for the fact that different project types provide a different number of benefits. An additional score was added to account for this difference. Project types that addressed the most impact indicators were given higher scores, whereas project types that addressed the least impact indicators were given the lowest scores. Table 4 summarizes this scoring. The final project score was determined by including this additional value in the average score.

Table 4: BPJ Score Adjustment for Number Impact Indicator Evaluated

	Suite of Projects	Stream Restor.	Suite of Projects	Outfall Improve.	BMP /LID	SW Pond Retrofit	Buffer Restor.
# of Impact Indicators Addressed	9	8	6	5	4	4	9
Score Assigned	5	4	3	2	1	1	5

Source Indicators

Table 5 lists the relationship between the different project types and the source indicators that were included when evaluating a project. For each project type, the indicators marked with an X were included in the prioritization, indicators marked with an O only had their potential effects considered but not scored, and the remaining indicators were not considered for the prioritization.

Table 5: Matrix showing links between Project Types and Source Indicator Scores

Individual Source Indicators Scores	Stream Restoration	Outfall Improvement	BMP/LID	Stormwater Pond Retrofit	Buffer Restoration
Channelized/ Piped Streams	X	X			
DCIA			X	X	
Impervious Surface			O		
Stormwater Outfalls	X	X	X	X	
Sanitary Sewer Crossings	X				
Streambank Buffer Deficiency	X				X
TSS (Upland Sediment)	O	X	X	X	O

TN (Nitrogen Load)	O	X	X	X	O
TP (Phosphorus)	O	X	X	X	O
Total X's	4	5	5	5	1
Total O's	3	0	1	0	3

***Note**: Flood protection / mitigation and culvert retrofit projects were omitted, since no flood protection / mitigation or culvert retrofit projects are proposed in Lower Occoquan*

As was the case with impact indicators, different project types were scored based on a different number of source indicators. For example, stream restorations have 4 indicators that were evaluated and scored, where buffer restorations only have 1 indicator that was evaluated and scored. For this reason, a composite indicator project score was determined for each project by averaging only the indicators that were affected by the corresponding project type (indicators marked with an X in attachment #2). These composite impact indicator scores were reviewed to verify that, although each project type is scored based on a different number of impact indicators, comparing different project types by impact indicator ranking was reasonable.

Existing and FWO impact indicator metric values and scores were determined using the Subwatershed Ranking (SWR) Approach section 3.4 (See Appendix B) under a previously completed task. Note that FWO conditions were determined only for predicative indicators.

Channelized/ Piped Streams Metric Score

Stream restoration and outfall improvement projects were scored for this impact indicator. The channelized/ piped streams score is the percentage of channelized or piped streams in a subwatershed. The channelized/ piped streams metric is not a predictive indicator, therefore the future conditions scores were not available and the preliminary project scores were based solely on existing conditions. The SWR scores for this indicator range from 2.5 to 10, which indicate the highest and lowest percentages of channelized/ piped streams, respectively.

Projects proposed in subwatersheds with channelized/ piped streams scores of 2.5 were given preliminary project scores of 5 since these areas had the most room for improvement. Projects proposed in subwatersheds with channelized/ piped streams scores of 5, 7.5 and 10 were given preliminary project scores of 4, 3, and 2, respectively, since they provide the next three levels of improvement compared to the other projects.

DCIA Metric Score

Stormwater pond retrofits and BMP/LID projects were scored for this impact indicator. The directly connected impervious area metric score is based on the percentage of impervious area that flows directly to a stormwater system. The directly connected impervious area indicator scores were taken from the FWO SWR spreadsheets. The SWR scores for this indicator range from 2.5 to 10, where 2.5 indicate the largest percentage of DCIA and 10 indicates the smallest percentage of DCIA.

Projects proposed in subwatersheds with DCIA scores of 2.5 were given preliminary project scores of 5 since they provide the greatest benefit. Projects proposed in subwatersheds with stormwater outfalls scores of 5, 7.5, and 10 were given preliminary project scores of 4, 3, and 2, respectively, since they provide the next three levels of improvement compared to the other projects.

Stormwater Outfalls Metric Score

Stream restoration, outfall improvement, BMP/LID, and stormwater pond retrofit projects were scored for this impact indicator. The stormwater outfalls score is based on the number of outfalls per mile of stream. The stormwater outfalls metric is not a predictive indicator, therefore the future conditions scores were not available and the preliminary project scores were based solely on existing conditions. The SWR scores for this indicator range from 2.5 to 10, where 2.5 indicates the largest number of outfalls per mile of stream and 10 indicates the fewest number of outfalls per mile of stream.

Projects proposed in subwatersheds with stormwater outfalls scores of 2.5 were given preliminary project scores of 5 since they provide the greatest benefit. Projects proposed in subwatersheds with

stormwater outfalls scores of 5, 7.5, and 10 were given preliminary project scores of 4, 3, and 2, respectively, since they provide the next three levels of improvement compared to the other projects.

Sanitary Sewer Crossings Metric Score

Stream restoration projects were scored for this impact indicator. The sanitary sewer crossings score is based on the number of sanitary sewer crossings per mile of stream. The sanitary sewer crossings metric is not a predictive indicator, therefore the future conditions scores were not available and the preliminary project scores were based solely on existing conditions. The SWR scores for this indicator range from 2.5 to 10, where 2.5 indicates the largest number of sanitary sewer crossings per mile of stream and 10 indicates the fewest number of sanitary sewer crossings per mile of stream.

Projects proposed in subwatersheds with sanitary sewer crossings scores of 2.5 were given preliminary project scores of 5 since they provide the greatest benefit. Projects proposed in subwatersheds with sanitary sewer crossings scores of 5, 7.5, and 10 were given preliminary project scores of 4, 3, and 2, respectively, since they provide the next three levels of improvement compared to the other projects.

Stream Bank Deficiency Metric Score

Stream restoration and buffer restoration projects were scored for this impact indicator. The stream bank deficiency score is based on the percentage of forest area in the buffer areas of the streams. The stream bank deficiency metric is not a predictive indicator, therefore the future conditions scores were not available and the preliminary project scores were based solely on existing conditions. The SWR scores for this indicator range from 2.5 to 10, which indicate the highest and lowest percentages of stream bank deficiency, respectively.

Projects proposed in subwatersheds with stream bank deficiency scores of 2.5 were given preliminary project scores of 5 since they provide the greatest benefit. Projects proposed in subwatersheds with stream bank deficiency scores of 5, 7.5, and 10 were given preliminary project scores of 4, 3, and 2, respectively, since they provide the next three levels of improvement compared to the other projects.

TSS (Upland Sediment) Metric Score

Outfall improvement, BMP/LID, and stormwater pond retrofit projects were evaluated and scored for this source indicator. The TSS source indicator preliminary scoring process is the same as that of the TSS impact indicator scoring process. Therefore, the preliminary project scores for this indicator were pulled from the TSS impact indicator table. See the TSS impact indicator scoring description from section 1 of the prioritization spreadsheet methods for a detailed description of the scoring process for this indicator.

Total Nitrogen (TN) Metric Score

Outfall improvement, BMP/LID, and stormwater pond retrofit projects were scored for this source indicator. The TN source indicator preliminary scoring process is the same as that of the TN impact indicator scoring process. Therefore, the preliminary project scores for this indicator were pulled from the TN impact indicator table. See the TN impact indicator scoring description from section 1 of the prioritization spreadsheet methods for a detailed description of the scoring process for this indicator.

Total Phosphorous (TP) Metric Score

Outfall improvement, BMP/LID, and stormwater pond retrofit projects were scored for this source indicator. The TP source indicator preliminary scoring process is the same as that of the TP impact indicator scoring process. Therefore, the preliminary project scores for this indicator were pulled from the TP impact indicator table. See the TP impact indicator scoring description from section 1 of the prioritization spreadsheet methods for a detailed description of the scoring process for this indicator.

Final Project Score based on Source Indicators

Each project type's average score was based on a different number of indicators per Table 5. The initial source indicator score was determined by adding the project scores assigned for each source

indicator and dividing this sum by the number of indicators evaluated to obtain a score between 1 and 5. Per County Guidance BPJ was used to account for the fact that different project types address a different number of indicators. An additional score was added to account for this difference. Project types that addressed the most source indicators were given higher scores, whereas project types that addressed the least source indicators were given the lowest scores. Table 6 below summarizes this scoring. The final source indicator project scores were determined by averaging in this new score. See Appendix F: Summary of Source Indicator Scoring for more information.

Table 6: BPJ Score Adjustment for Number Impact Indicator Evaluated

	Suite of Projects	Stream Restoration	Outfall Improvement	BMP/LID	Stormwater Pond Retrofit	Buffer Restoration
# of Source Indicators Addressed	6	4	5	5	5	1
Score Assigned	5	3	4	4	4	1

Priority Subwatersheds

The third factor in the prioritization process was the priority subwatershed selection, which was based on a subwatershed's overall impact composite score. The subwatershed overall impact composite scores were pulled from the "Overall_and_Objective_Composite_Scores_Occoquan" spreadsheet for existing conditions.

The County's quintile scoring method was used to break the range of subwatershed overall composite scores into five preliminary project scores ranging from 1 to 5. Subwatersheds with the lowest overall impact composite scores, which represent the worst overall watershed conditions, were assigned a preliminary project score of 5. Subwatersheds with the highest overall impact composite scores, which represent the best overall watershed conditions, were assigned a preliminary project score of 1.

Each proposed project was then assigned the preliminary project score based on score of subwatershed where it is proposed. See Appendix G: Priority Subwatershed Scoring for more information.

Sequencing

Project Score based on Subwatershed Order

Projects in headwater subwatersheds were considered the highest priority and given the highest project scores, per WMP Standards 3.2. The order of the subwatersheds was determined per Figure 1, Hypothetical Subwatershed Ordering Example, from the WMP Standards 3.2 and the following criteria:

A. All subwatersheds where a stream originates were classified as a headwater subwatershed and given an order of 1.

B. Subwatershed order increased going downstream, specifically at the confluence of tributaries.

C. BPJ was used to determine whether a subwatershed should be given an order of 1 (headwater subwatershed) based on whether the majority of the drainage came from the subwatershed itself.

Using the above criteria and a GIS Lower Occoquan Watershed map review (See Appendix L) the subwatersheds were assigned an order between 1 and 8. Projects in subwatersheds with lower orders were farther upstream and would benefit Lower Occoquan the most, and therefore were given the highest scores. The subwatershed orders did not have an even distribution, and therefore the typical quintile ranges could not be used to obtain scores between 1 and 5. The project scores were assigned per table 7. See Appendix H: Sequencing Scoring for more information.

Table 7: Subwatershed Order Percentile scoring

Percentile	Subwatershed Order	Preliminary Score
95%	6.00	1
90% 3.80		2
85%	3.00	3
80% 2.00		4
0%	1.00	5

Implementability

Project Scores Based on Implementability

The very specific WMP Standards 3.2 project implementability scoring methods were utilized to assign scores. Information from the field investigation database was compiled to help assign the implementability scores. The decision steps for assigning implementability scores for each project are described below. See Appendix I: Implementability Scoring for tabularized results.

A high implementability score of 5 was given to projects with any of the following criteria;

1. Buffer restoration projects.
2. Stormwater Pond retrofits that are County maintained facilities and require no additional land rights. This was determined by researching the parcel owner on the property appraiser's website. The determination of whether additional land rights were required was determined by seeing if easements were provided and if the retrofits would fit into the existing easements. This information was taken from the candidate investigation database.
3. Stream Restorations that do not require upstream runoff quantity reductions, and are proposed on sites with significant land owner support.
    - At this time hydraulic modeling has not been done to determine whether upstream runoff quantity reductions are required. Since channel erosion is related to runoff quantity a surrogate determination was made by reviewing the subwatershed ICEM value. The Subwatershed Ranking Approach states that "Stage Values between 1.5 to 2.5 may still have the potential to be improved or restored." Therefore projects with ICEM STAGE Values between 1.5 to 2.5 will be scored as the most implementable and the other stream restorations will be given a lower score.
    - Land Owner Support is based on WAG comments.
4. BMP and LIDs retrofits located at a school or another county owned facility.

A moderate implementability score of 3 was given to projects with any of the following criteria:

1. Other pond and LID retrofits and other stream restorations that do not require upstream runoff quantity reductions.
    - A direct determination of whether upstream runoff quantity reduction was not determined at this time, because of the lack of hydraulic modeling. Instead the ponds and LID projects that were not maintained by the county were sorted out and reviewed on a case by case basis. Most pond retrofits that were not located on a school site were deemed as requiring upstream runoff reduction. This was due to the fact that the ponds would lose some attenuation ability from the addition of the stormwater quality improvements. The only pond retrofits that were deemed as not needing upstream runoff reduction were the projects that had available head or room for expansion.
    - The LID projects were reviewed to see whether the type and location of the project would require runoff reduction.

A low implementability score of 1 was given to all other projects that did not fit into the above categories and are likely to be less feasible than the majority of recommended projects.

Initial Structural Project Ranking

The final composite scores were based on the 5 factors and their corresponding weights. The factors were weighted as follows: impact indicators (30%), source indicators (30%), priority subwatersheds (10%), sequencing (20%), and implementability (10%). This score was used to obtain an initial ranking. The higher the overall composite scores the lower the preliminary rank (higher priority). Once the initial rankings were completed using the prioritization scheme's quantitative method, the projects were qualitatively reviewed.

The qualitative adjustments for Lower Occoquan Watershed were more significant than for other watersheds in Fairfax County. This was partially due to the lesser development of the Lower Occoquan Watershed and the fact that it consists of 7 Watershed Management Areas. To improve the confidence in the assigned project ranks, additional site visits of all stream restoration projects were completed. This additional information was combined with GIS information, field observations, WAG comments, and the ability for a project to achieve the County's objectives. From this review BPJ was used to adjust the scores to verify the projects were ranked properly. The BPJ Score Adjustments in the structural ranking (See Appendix J), were explained or justified in the Project Ranking Comments Column of the *LO_Master_Project_List* spreadsheet (See Appendix C). The source of the comments was noted by color. WAG comments are in Green. PBS&J information obtained from field investigations and GIS reviews are in black. Finally ICEM stage review comments are in blue.

Based on the additional information, 22 projects were identified as projects that should be placed in the 0-10 year plan. The projects ranked 23 – 84 were assigned to the 11-25-year plan. The remaining candidate structural projects were elimination. Elimination of these projects is recommended, because in many cases their slight benefits do not justify their expense and disturbing the site for implementing these projects.

Based on revised County Guidance as of March 3rd 2010, only structural projects will be used in the 0-25 year plan. For these reasons the buffer restorations and rain barrel projects were removed from the original structural project quantitative prioritization scheme, and moved to the qualitative prioritization. Additionally any project with a project cost less than $80K was eliminated from the WMP.

Cost-Benefit Analysis

The cost-benefit analysis (CBA) of the projects was completed on the 10-year projects after the initial ranking. The cost of each project was determined using cost estimates per County Guidance. The benefit of a project, which was quantified by their project score, was compared to its costs. The CBA created a ranking of the projects in which the projects with the best benefit per cost were ranked highest. Some project had a significant difference in rank from the CBA ranking to the initial ranking. To complete the final ranking in which the CBA ranking was considered, a final BPJ adjustment was added to some of the project scores. Projects that provided a high benefit with lower costs had their scores increased by 0.25. These high benefit low cost projects consisted of small stormwater pond retrofits, stream daylights, outfall improvements and BMP/LID projects. Projects that had great costs with too small of benefit had their scores adjusted downward by 0.25. These adjustments mostly improved the rank of lower cost BMP projects and worsened the rank of some of the more expensive stream restorations.

Additional Hydrologic and Hydraulic Modeling

Hydrology

For the 10-year plan, projects which might have a measurable impact on the watershed hydrology were selected for additional modeling. For the Lower Occoquan projects, only stormwater pond retrofits were assumed to have a measurable effect on the hydrology.

A total of seven (7) projects in the Lower Occoquan Watershed were simulated using the SWMM5 (build 11) modeling software. These projects are listed in Table 8. Each of these proposed pond retrofit projects will capture and treat a limited portion of the runoff from a specific sub-basin.

Table 8: Candidate Stormwater Pond Retrofits (10-year Plan)

Project ID	WMA	Sub-Basin	Description
MB9104	Giles Run South	MB-GR-0001	Pond Retrofit (Dry Pond)
MB9105	Giles Run South	MB-GR-0005	Pond Retrofit (Wetland)
MB9107	Giles Run South	MB-GR-0001	Pond Retrofit (Dry Pond)
MB9109	Giles Run South	MB-GR-0003	Pond Retrofit (Dry Pond)
MB9111	Giles Run South	MB-GR-0003	Pond Retrofit (Wetland)
MB9114	Giles Run South	MB-GR-0007	Pond Retrofit (Dry Pond)
MB9122	Giles Run North	MB-GR-0016	Pond Retrofit (Wetland)
MB9114	Giles Run South	MB-GR-0007	Pond Retrofit (Dry Pond)
MB9104	Giles Run South	MB-GR-0001	Pond Retrofit (Dry Pond)
MB9105	Giles Run South	MB-GR-0005	Pond Retrofit (Wetland)
MB9107	Giles Run South	MB-GR-0001	Pond Retrofit (Dry Pond)
MB9109	Giles Run South	MB-GR-0003	Pond Retrofit (Dry Pond)
MB9111	Giles Run South	MB-GR-0003	Pond Retrofit (Wetland)

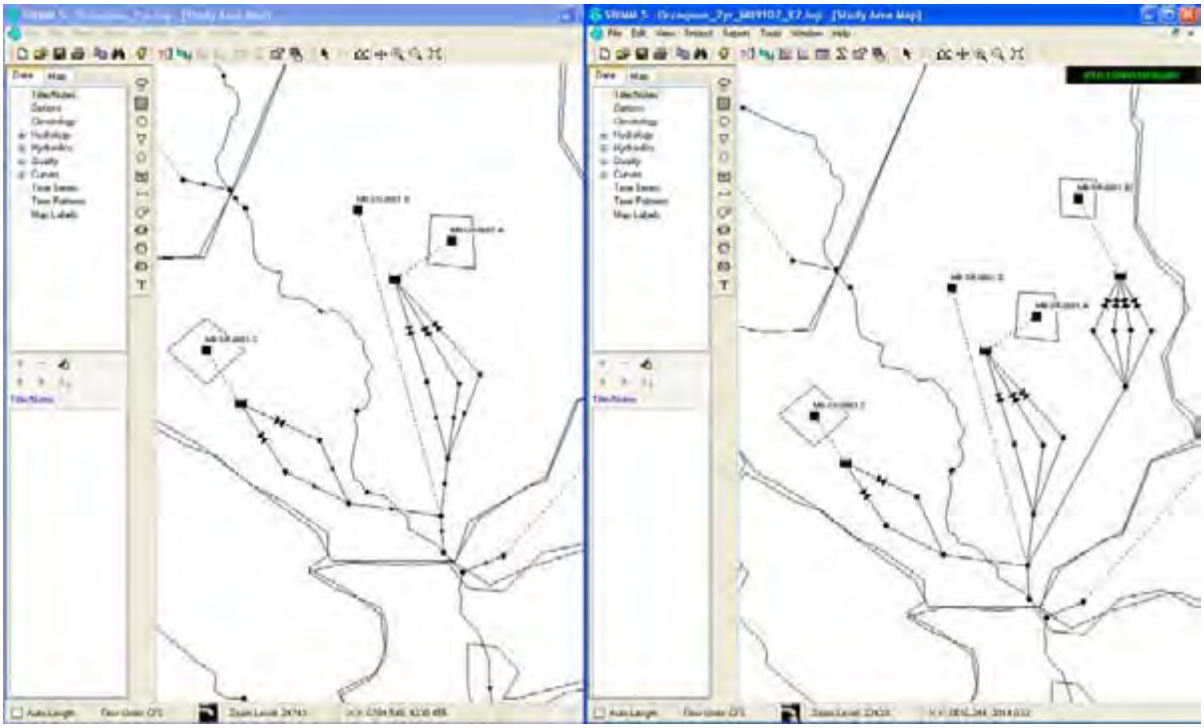
Methodology

For the seven (7) projects that capture and treat a limited portion of the runoff from a specific sub-basin, the tools were fully applied. This is shown in Figure 1 where Classification Area D was converted to Classification Area B2 due to the proposed pond retrofit. The sketch on the left shows the model configuration in the Future without project scenario. The sketch on the right shows the model configuration for Sub-basin MB-GR-0001 in the Future with project scenario.

In sub-basins where two (2) or more projects are recommended, the tools were used to combine the projects into common classification areas. As an example, in sub-basin MB-GR-0001, two pond retrofits

are recommended. Each of these retrofits calls for implementation of a dry pond. In the combined SWMM model, these projects were merged and simulated as a single dry pond that treats the combined drainage area of the proposed projects.

Figure 1. Comparison of Model Configuration – Sub-basin MB-GR-0001.



Results

The results of the combined 2- and 10-year SWMM model simulations are presented in Appendices N and O. The rows highlighted in yellow are those basins where recommended pond retrofits were added to the model.

Discussion

The results shown that, for the all of the proposed projects, the predicted flows from the sub-basin are less the predicted peak flow in the Future - Without projects scenario. This is expected. Most of the proposed ponds are capturing and treating runoff from areas that previously were not treated. Other ponds convert the treatment from a dry pond to a wet pond, or vice-versa.

Hydraulics

Once the SWMM modeling was completed, the flows from the 100-, 10-, and 2-year combined models were applied to the HEC-RAS model to model these events. As the projects only affected the Giles Run and Lower Occoquan Tributary A watersheds, changes in water surface elevations were only seen at these streams. The same cross section flow change locations from the existing and future models were used for the future with projects model. The flows were taken from the same SWMM nodes as had been used for existing and future.

Overall, the differences in the 100-yr floodplain for Lower Occoquan Trib A from FWO to FWP conditions are very minimal; a maximum of 0.01 ft increase for the 100-year WSEL. For the 10-yr event, the WSELs decrease 0 to 0.3 ft.

More differences in the floodplains are seen along Giles Run. A slight increase in the 100-yr (0.2 ft) occurs just upstream of Richmond Highway. Overall, however, the computed WSELs decrease between FWO and FWP. The water surface elevations decrease up to 3 ft in the 100-yr and 1 ft in the 10-yr event. Additionally, the model shows Richmond Highway as overtopping during the 100-year event for the FWO condition, but not overtopping for the FWP condition.

The following graphs (Figures 2-5) are an analysis of the number of buildings (residential and other types) located within the 100- and 10-yr floodplains, as well as located in or within a 15 foot buffer of the 100- and 10-yr floodplains.

Figure 2. Buildings located in the 100-year floodplain

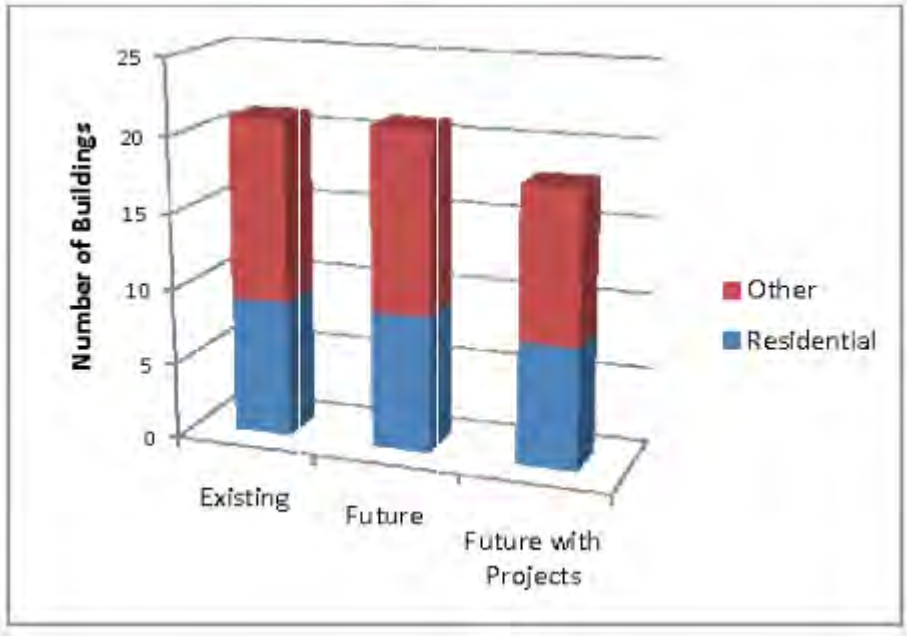


Figure 3. Buildings located within 15 feet of the 100-year floodplain

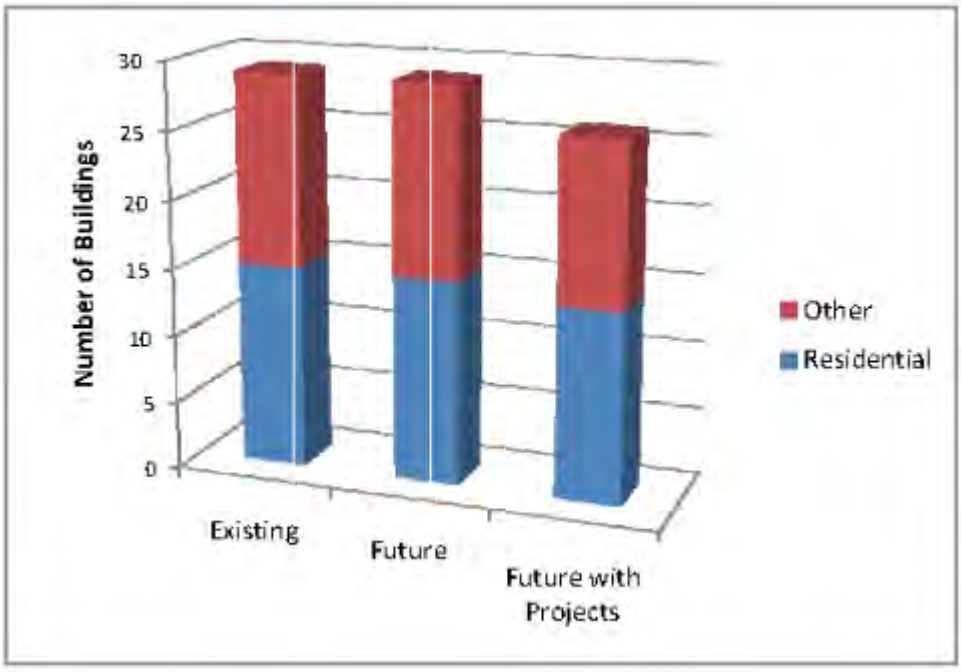


Figure 4. Buildings located within the 10-year floodplain

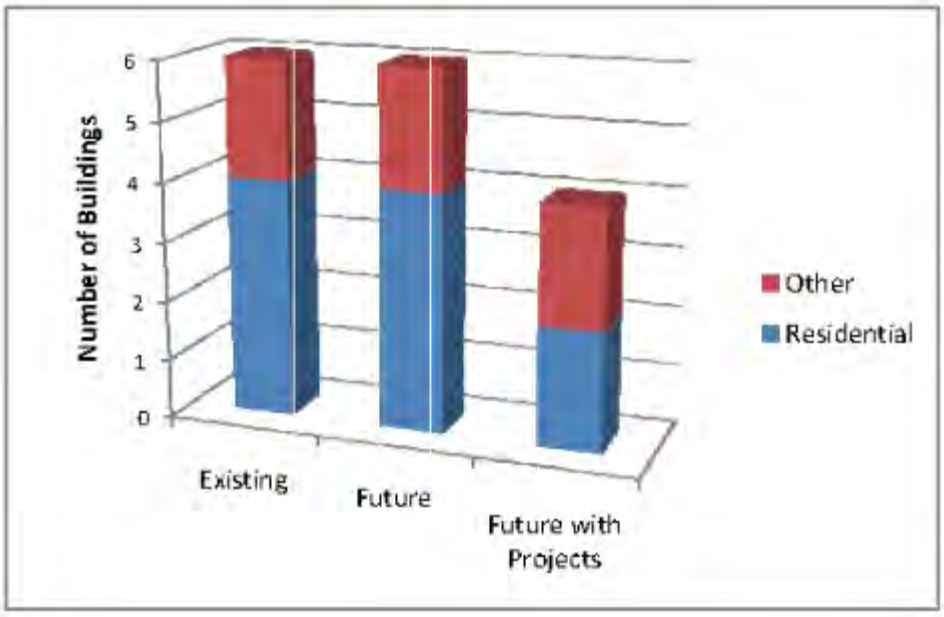
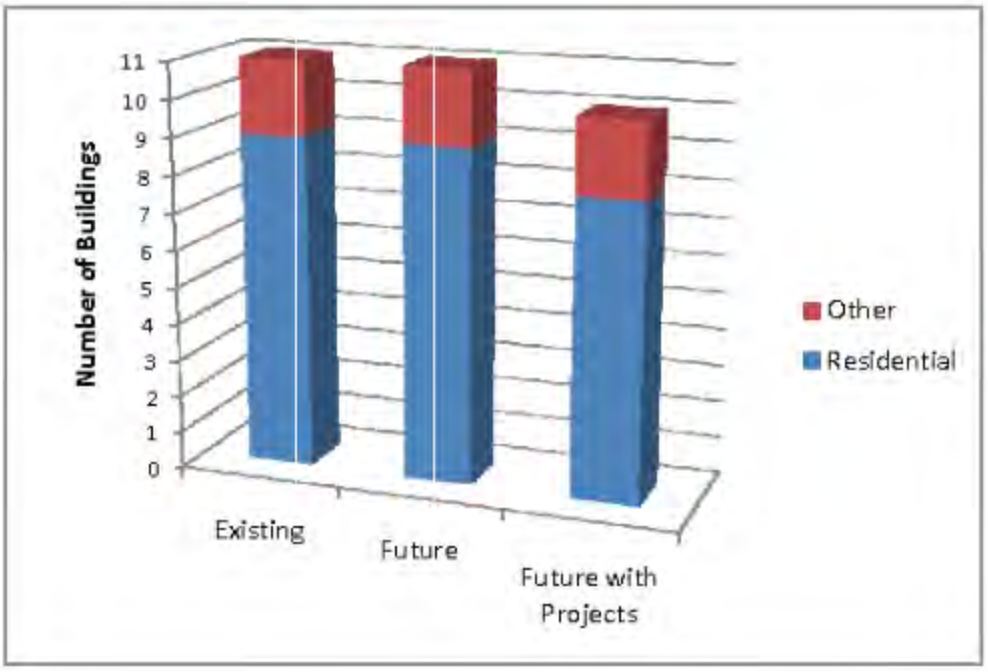


Figure 5. Buildings located within 15 feet of the 10-year floodplain



Evaluation of Non-structural Practices

Non-structural Project Selection

Candidate non-structural practices identified under Subtask 3.2 were evaluated by their overall benefit and feasibility in meeting the watershed goals and objectives. The candidate non-structural practices include:

1. Buffer Restoration Programs
2. Dumpsite / Obstruction Removal Projects
3. Street Sweeping Programs
4. Reforestatio n
5. Rain Barrel/ Cistern Programs

These non-structural projects were proposed in addition to the structural projects because they have lower initial costs than structural projects and there are little or no design/ construction costs. For these reasons some non-structural projects are easier to implement, and should be ranked separately. Non-structural projects that were grouped with structural projects are not included in this qualitative analysis since these projects will be implemented at the same time and therefore already have rankings.

Non-Structural Project types

Buffer Restorations

Many different factors and indicators were used to decide where buffer restoration projects would be most beneficial throughout the Lower Occoquan watershed, with the primary indicator being the Streambank Buffer Deficiency source indicator score from the subwatershed ranking. Sub basins with scores that corresponded to “poor” or “very poor” conditions for this indicator met the initial criteria for buffer restoration placement. Buffer restoration projects consist of practices such as re-planting upland buffer areas to help re-establish Resource Protection Areas (RPAs). RPAs provide additional stream buffer for filtration of pollutants while reducing runoff by intercepting the water and increasing surface storage and infiltration.

The buffer restoration programs were scored and ranked with the same prioritization scheme as stream restorations, which are structural projects. The only difference was that these projects received either an implementability score of 5 or 3 based on whether the project is located on County owned land.

Dumpsite/ Obstruction Removals

The flood complaints indicator and the results from Task 3.3, Investigation of Candidate Projects were the primary factors used to determine where dumpsite/obstruction projects should be proposed. The removal of the obstructions will help restore the stream channel to its natural conditions and improve the function of the streams. An example of a proposed project includes the cleanup of trash in or near the stream channel to help reduce the amount of pollutants from entering adjacent streams and storm systems.

Dumpsite / obstruction removal projects accomplish many of the County’s watershed management planning goals and objectives. Table 9 explains how the County Watershed Management Planning Objectives are met.

Table 9: County Objectives Met Dumpsite / Obstruction Removals

County Obj.	County Objectives Met by Dumpsite / Obstruction Removal Projects
1A	Minimizes stormwater runoff by creating stable stream morphology and protecting habitat.
1B	Minimizes flooding by restoring conveyance capacity of impacted streams.
2A	Helps restores instream habitat.
3A	Helps reduce pollutants caused by objects placed at the dumpsite.
4A	Removes possible toxins at dumpsites.
5A	Provides opportunity for public to get involved in organized stream cleanups.
5C	Improves watershed aesthetics by removing trash and other foreign objects.

Street Sweeping Programs

In areas where there were no existing stormwater quality treatment, and structural projects were not recommended or practical, street sweeping programs were recommended. Street sweeping helps reduce the amount of potential pollutants entering nearby streams and storm systems. In addition they add the aesthetic benefits of having clean streets, the safety benefits of removing debris that can block storm systems and stormwater facilities. Areas where these projects were proposed are primarily comprised of dense residential development, many of which have their streets piped directly into the nearby streams.

Street sweeping programs accomplish many of the County's watershed management planning goals and objectives. Table 10 explains how the County Watershed Management Planning Objectives are met.

Table 10: County Objectives Met by Street Sweeping Programs.

County Obj.	County Objectives Met by Street Sweeping Programs
1A	Reduces stormwater runoff impacts by reducing road sediment, which can change stream morphology and hurt biota by increasing turbidity and reducing dissolved oxygen.
1B	Reduces inlet and BMP clogging by reducing fines that wash off paved surfaces.
2A	Reduces fines from pavements which are sources of TSS, TN, and TP.
3A	Reduces fines from pavements which are sources of TSS, TN, TP, and heavy metals.
4A	Reduces fines from pavements.
4B	Provides opportunity for public to get involved in organized stream cleanups.
5A	Encourages public to participate in watershed stewardship by being an example of action that the County is taking for water quality.
5B	Mimics other jurisdictions that have implemented street sweeping programs to improve water quality for the Chesapeake Bay.
5C	Reduces trash, leaves, and sediment, which improves the aesthetics of the watershed.

Reforestation

Reforestation was chosen because it can provide natural runoff volume reduction and pollutant removal. Reforestation can help address poor channel morphology. The increased vegetation from reforestation will provide additional stream buffer for filtration of pollutants and increase surface storage and infiltration. This project type meets many of the county goals and objectives. (See Table 11)

Table 11: County Objectives Met by Reforestation.

County Obj.	County Objectives Met by Reforestation
1A	Reduces stormwater runoff impacts by reducing runoff volume, which can change stream morphology and hurt biota by increasing turbidity and reducing dissolved oxygen.
3A	Reforestation can catches fines from roofs which are sources of TSS, TN, TP, and heavy metals.
4B	Reforestation helps retain sediment and heavy metals that wash off roofs from the first flush caused by storm events.
5A	Encourages public to participate in watershed stewardship by being an example of action that the County is taking for water quality, and educating future generations about water stewardship

Rain Barrel/ Cistern Programs

Rain Barrels are proposed at Fairfax County Schools that have visible roof drains. These low cost LID's meet many of the county goals and objectives. (See Table 11) The rain barrel programs were chosen to be installed at school sites for two reasons. First they will provide an excellent teaching opportunity about stormwater management. Second, they are highly implementable, since schools are owned by the County. Third, some older schools do not have existing stormwater quality systems and these rain barrels are easy to install on existing buildings that have roof drains on the exterior of the buildings. Rain barrels were only at these sites. Sites with no visible roof drains will require underground cisterns that are sized to handle the full runoff volume from a school building's large roof.

Table 12: County Objectives Met by Reforestation.

County Obj.	County Objectives Met by Reforestation
1A	Reduces stormwater runoff impacts by reducing runoff volume, which can change stream morphology and hurt biota by increasing turbidity and reducing dissolved oxygen.
3A	Catches fines from roofs which are sources of TSS, TN, TP, and heavy metals.
4B	Rain barrels help retain sediment and heavy metals that wash off roofs from the first flush caused by storm events.
5A	Encourages public to participate in watershed stewardship by being an example of action that the County is taking for water quality, and educating future generations about water stewardship
5B	Similar to other Chesapeake Bay initiatives, such as the free 55-gallon rain barrel program sponsored by the Alliance for the Chesapeake Bay and the Baltimore Coca-Cola Bottling Company.

Non-Structural Project Ranking

The Non-structural projects were ranked using either a quantitative analysis or a qualitative analysis depending on the project type. Buffer restorations were scored per the subtask 5.1E quantitative scheme that was explained in detail above. See Appendix K: Non-Structural Projects Quantitative Analysis. Street Sweeping and a reforestation projects had their project ranks determined by comparing the existing conditions TSS, TP, and TN ranking indicator scores and assigning a score of 1 through 5 based on their potential for improvement (See Appendix K: Non-Structural Projects Qualitative Analysis). The average of these scores were be used to obtain an initial ranking. Finally a BPJ score modification was used to account for any project specific issues. The score modification also considers the number of flood complaints. Due to the high implementability and immediate results of the non-structural projects, these projects should be evaluated separately from the 0-25 year plan.

Appendix A: Bibliography

1. "Watershed Management Plan Development Standards - V.3.2, March 2009" (WMP Standards 3.2)
2. "Subwatershed Ranking Approach) June 2008 (SWR approach)
3. "Clarification to 3.4 & 3.6 language from March 2009 WMP Standards Version 3.2.doc "
4. "Project_Prioritization_TP_Scores_Example sep2009 v5 - calcs fixed.xls "
5. "Clarification Subwatershed Ranking Approach, June 2008"
6. "Supplemental Guidance on Subwatershed Ranking" - January 19, 20009
7. Previous Homework assignment (HW assignment)
8. The web site http://ffxwmp.tetratech-ffx.com/forum
9. "Guidance for Representing Streambank Erosion and Regional Pond Efficiencies" –October 22, 2009
10. "Task 3.4 Technical Memo Checklist includes Example Tables 012210"
11. "GIS Processing for updating SWMM and STEPL Models", Tetra Tech
12. "Tutorial for using the SWMM Updating Tool", Tetra Tech
13. "Subarea Orifice Sizing in SWMM", Tetra Tech

Appendix B: Description of files used for the prioritization

1. *Subwatershed ranking spreadsheets* – The existing conditions and future without projects were previously submitted. The spreadsheets include impact indicator metric scores and overall and objective composite scores. These files are in GKY's format. The impact indicator spreadsheets include an extra summary tab showing how the STEPL and Streambank Erosion Tabs affected the Subwatershed Scores.
2. *Loads_LowerOCC_FWO_Jan19_2010.xlsx* – This spreadsheet provides the revised future without project STEPL results.
3. *STEPL Runs* – This folder includes the future with project STEPL runs that were used to determine the individual projects results
4. *LO_Streambank_Erosion* – This spreadsheet calculate the amount of erosion and pollutants produced by eroding streams and is added to the STEPL pollutant calculations.
5. *LO_Master_Project_List* – This spreadsheet was used to bring together the work of the WAG meeting, site visit, and other comments for the projects.
6. *LO_Project_Cost_Estimates* – This spreadsheet calculates the Cost Estimates per County Guidance.
7. *Lower Occoquan Ordering Map* - , This 11x17 map shows the Lower Occoquan watershed management areas and the main branches of the Lower Occoquan. From this figure the subwatershed order was determined.
8. *DCIA with projects* – Spreadsheet used to compile the DCIA metric value.

Appendix C: Lower Occoquan Master Project List

Appendix C: Lower Occoquan Master Project List

BPJ Comments Source Key (by color): WAG, PBS&J, Stream ICEM review

PRJ_ ID_LEG	PRJ_ TYPE	Detailed Description	BPJ Project Ranking Comments
HP9201	Stream Restoration	Stream located north of Chapman Road in the Gunston area shows indicators of poor channel morphology. This project proposes repairing the bank and bed erosion. Stream stabilization will reduce sediment loads to the steam while maintaining capacity and controlling unwanted meander. Stream ultimately outfalls into the Potomac River so repairing stream would help control sediment deposition into the river.	Feeds directly into Potomac River. Drainage area is heavily wooded. Field investigation revealed Water reddish in color. Good connection to flood plain. Channel not well defined in some areas. Overall, stream in pretty good condition and would considering removing project. Little if no signs of erosion.
HP9801	Buffer Restoration	This project proposes the repair of a stream buffer along Gunston Road near Gunston Hall Plantation. Repairing the buffer will re-establish the RPA. Primary indicators are streambank buffer deficiencies. Increased vegetation from buffer repair will provide additional buffer for filtration of pollutants and will reduce runoff by intercepting the water, increasing surface storage and infiltration. It will also reduce runoff rates to stream and minimize erosion.	
KC9201	Stream Restoration	Stream located west of Haislip Lane has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stream stabilization will reduce sediment loads to the stream and help control unwanted meander. This stream feeds directly into the Potomac river so by restoring this stream, it will help improve the quality of the river.	Field investigation revealed minor stream in good condition. Terminates into a small pool of water. Recommend remove project.
KC9202	Stream Restoration	Stream located north of High Point Road in Lorton that feeds into Belmont Bay shows indications of poor channel morphology. This project proposes repairing the bank and bed erosion to restore channel morphology. This restoration will reduce sediment loads to the stream and help control unwanted meander. This project particularly important due to proximity to larger body of water (Belmont Bay).	Feeds directly into Belmont Bay. Site investigation revealed that stream mostly in good condition. Upstream end of culvert could use some spot improvements but overall stream has minimal erosion and clearly defined channel, especially on downstream end.
KC9203	Stream Restoration	Three streams located west of High Point Road in Lorton feed into Belmont Bay and show indications of poor channel morphology. This project proposes repairing the bank and bed erosion for the southeastern stream branch to restore channel morphology. This restoration will reduce sediment loads to the stream and help control unwanted meander.	Feeds directly into Belmont Bay. Field investigation revealed site was inaccessible. Spoke with a ranger who indicated that she thought only accessible by canoe. Headwater channel- early '2' late '1' stage. Head cutting in lower portion of reach.
KC9204	Stream Restoration	Three streams located west of High Point Road in Lorton feed into Belmont Bay and show indications of poor channel morphology. This project proposes repairing the bank and bed erosion for the eastern stream branch to restore channel morphology. This restoration will reduce sediment loads to the stream and help control unwanted meander.	Feeds directly into Belmont Bay. Field investigation revealed that site was inaccessible. Spoke with a ranger who indicated that she thought only accessible by canoe.
KC9205	Stream Restoration	Three streams located west of High Point Road in Lorton feed into Belmont Bay and show indications of poor channel morphology. This project proposes repairing the bank and bed erosion for the northern stream branch to restore channel morphology. This restoration will reduce sediment loads to the stream and help control unwanted meander.	Feeds directly into Belmont Bay. Field investigations revealed that site was inaccessible. Spoke with a ranger who indicated that she thought only accessible by canoe. Headwater stream early '2' stage of down cutting.
KC9206	Stream Restoration	Stream west of Haislip Lane outfalls to pond that is adjacent to the Belmont Bay. Stream has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. This restoration will reduce sediment loads to stream while maintaining capacity and controlling unwanted meander.	Discharges to pond that then discharges into Belmont Bay. Minimal drainage area. Field investigation revealed sign indicating "No trespassing: Firearms in use" so it was not accessed.
KC9207	Stream Restoration	Stream located east of Old Spring Drive in Lorton that feeds into Belmont Bay show indications of poor channel morphology. This project proposes repairing the bank and bed erosion to restore channel morphology. This restoration will reduce sediment loads to the stream and help control unwanted meander. This project particularly important due to proximity to larger body of water (Belmont Bay).	Feeds directly into Belmont Bay. Field investigations indentified stream has good connection to the flood plain and minimal to no erosion. Recommend removing project.
KC9208	Stream Restoration	Stream north of Harley Road in Lorton show indicators of poor channel morphology. A project is proposed to repair bank and bed erosion to restore channel morphology. Restoration will minimize sediment loads to stream while maintaining capacity and controlling unwanted meander. Stream ultimately outfalls into Belmont Bay.	Feeds indirectly into Potomac River, but in very close proximity Field investigation revealed site was inaccessible. Stream access was fenced in at all signs and clearly marked with no trespassing signs. Stream is down cutting headwater channel (Step-pool system)
KC9209	Stream Restoration	Stream south of Springfield Drive in Lorton shows indicators of poor channel morphology. A project is proposed to repair bank and bed erosion to restore channel morphology. Restoration will minimize sediment loads to stream while maintaining capacity and controlling unwanted meander. Stream ultimately outfalls into Belmont Bay.	Field investigation indentified stream heavily eroded, especially directly downstream from the pond. Stream is narrowing and deepening.
KC9210	Stream Restoration	Stream southwest of Gunston Road flowing south east has indicators of poor channel morphology. This project proposes repairing bank and bed erosion, thereby restoring channel morphology. This will reduce sediment loads while maintaining capacity and controlling unwanted meander.	Field investigation revealed site difficult to access because on private property but overall stream in good condition. A few spots of moderate erosion. Spot treatment recommended.
KC9211	Stream Restoration	Stream southwest of Gunston Road flowing west has indicators of poor channel morphology. This project proposes repairing bank and bed erosion, thereby restoring channel morphology. This will reduce sediment loads while maintaining capacity and controlling unwanted meander.	Field investigation showed site was fenced in and just upstream of KC9210 which was in good condition. Good buffer.
KC9701	Outfall Improvement	This project proposes the reconstruction of a swale southeast of Haislip Lane to convey runoff away from road and houses and towards Belmont Bay. The primary indicator is poor channel morphology. Retrofitting swale will reduce flow velocities and increase filtration capacities. This will provide some water treatment and protection of downstream channel against erosion.	< $80,000

PRJ_ ID_LEG	PRJ_ TYPE	Detailed Description	BPJ Project Ranking Comments
MB9101	Stormwater Pond Retrofit	Wet pond on the northwest side of Old Colchester Road. This project proposes the retrofit of an existing pond to create a wetland system, sediment forebay and addition of bench planting. The primary indicators are pollutants, including nitrogen, phosphorous and total suspended solids. The retrofit will create a better-functioning environment for gravitational settling, biological uptake and microbial activity. The permanent pool prevent re-suspension of sediments and other pollutants.	Pond receives very little runoff from impervious areas. Minimal benefit from retrofit.
MB9102	Stormwater Pond Retrofit Suite	Subproject A proposes retrofitting existing pond to create an extended detention with a sediment forebay. The dry pond is behind a building on Furnace Road. The primary indicators are pollutants, including nitrogen, phosphorous and total suspended solids. Retrofit will modify the existing ponds to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which promotes particulate pollutant settlement. Subproject B proposes the improvement of an outfall to provide energy dissipation device and erosion control at intersection of Furnace Road and Richmond Highway. The primary indicators are upland sediment and channel morphology. Outfall reconstruction will reduce erosive velocities and sediment loads at the outfalls, protecting downstream channels.	Pond is relatively new and in good condition.
MB9102A	Stormwater Pond Retrofit	Dry pond behind building on Furnace Road. Project proposes retrofitting existing pond to create an extended detention with a sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorous and total suspended solids. Retrofit will modify the existing ponds to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which promotes particulate pollutant settlement.	See MB9102 for ranking comments
MB9102B	Outfall Improvement	This project proposes the improvement of an outfall to provide energy dissipation device and erosion control at intersection of Furnace Road and Richmond Highway. The primary indicators are upland sediment and channel morphology. Outfall reconstruction will reduce erosive velocities and sediment loads at the outfalls, protecting downstream channels.	< $80,000
MB9103	Stormwater Pond Retrofit	Dry pond behind building on Furnace Road. Project proposes retrofitting existing pond to create an extended detention with a sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorous and total suspended solids. Retrofit will modify the existing ponds to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which promotes particulate pollutant settlement.	Low priority - private property, newer stormwater facility in good condition.
MB9104	Stormwater Pond Retrofit	Dry pond retrofit proposed at Mason Neck West Park off of Old Colchester Road in Lorton. The project proposes to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which promotes particulate pollutant settlement.	Project at a regional park, untreated impervious area runoff. Park soils tend to be heavily compacted, preventing natural infiltration. Good public visibility.
MB9105	Stormwater Pond Retrofit	This project proposes the retrofit of an existing pond west of Old Colchester Road to create a wetland system, sediment forebay and bench planting. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to increase pollutant removal by creating a better functioning environment for gravitational settling, biological uptake and microbial activity.	Pond water quality treatment functions could be greatly improved with retrofit.
MB9106	Stormwater Pond Retrofit	This project proposes retrofitting an existing dry pond south of Hassett Street to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which promotes particulate pollutant settlement.	Appears to be in poor condition in industrial area. Could benefit from enhancement.
MB9107	Stormwater Pond Retrofit	Dry pond located in industrial area off of Richmond Highway. Project proposes retrofitting existing dry pond to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream protection and allow for better function of temporary ponding using a control structure to promote particulate pollutant settlement.	In industrial area. Pond would benefit from enhancement
MB9108	Stormwater Pond Retrofit	This project proposes retrofitting an existing pond located off of Giles Run Road near a parking lot of an industrial area to create an extended detention pond with a sediment forebay. The primary indicators are pollutants such as nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure. This will promote the settlement of particulate pollutants.	Water quality would benefit from a forebay.
MB9109	Stormwater Pond Retrofit	Dry pond west of Mims Street. Project proposes the retrofit of the existing pond to create an extended detention pond with a sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. Dry pond retrofits will be modified to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which promotes particulate settlement.	Industrial area would benefit from additional stormwater treatment
MB9110	Stormwater Pond Retrofit	This project proposes the retrofit of an existing dry pond east of Mims Street to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorous and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which promotes particulate pollutant settlement.	Existing pond is relatively new. Appears to be well-functioning. Recommend removing old silt fence.

PRJ_ ID_LEG	PRJ_ TYPE	Detailed Description	BPJ Project Ranking Comments
MB9111	Stormwater Pond Retrofit	This project proposes the retrofit of an existing pond east of Mims Street to create a wetland system, sediment forebay and bench planting. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to increase pollutant removal and to provide adequate channel protection above the permanent pool of standing water. The pool prevents re-suspension of sediments and other pollutants.	Appears to have adequate space for expansion. Heavily impervious area.
MB9112	Stormwater Pond Retrofit	This project proposes the retrofit of an existing dry pond to create an extended detention dry pond with a sediment forebay. The pond is located off of Gunston Road. The primary indicators are pollutants, including nitrogen, phosphorous and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure which promote particulate pollutant settlement.	Relatively new pond in good condition
MB9113	Stormwater Pond Retrofit	Dry pond located in a residential community off of White Haven Court in Lorton. Project proposes retrofitting pond to create an extended detention pond with sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorous and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which promotes particulate pollutant settlement.	Relatively new pond in good condition
MB9114	Stormwater Pond Retrofit	This project proposes to retrofit an existing dry pond at the Fairfax County Landfill off of Furnace Road in Lorton. The existing pond will become an extended detention dry pond with a sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide better function of temporary ponding using a control structure, which promote particulate pollutant settlement.	Landfill - restricted access - Located at a landfill, significant pollutants from trucks and debris.
MB9115	Stormwater Pond Retrofit	Dry pond located in a residential community off of Sloway Coast Drive in Lorton. Project proposes retrofitting pond to create an extended detention pond with sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorous and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which promotes particulate pollutant settlement.	Relatively new pond in good condition
MB9116	Stormwater Pond Retrofit	Dry pond in a residential community off of Hucks Bridge Circle in Lorton. This project proposes to retrofit existing pond to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorous and total suspended solids. The retrofit will modify the existing pond to provide downstream channel protection and allow for better function of temporary control structure, which promotes particulate pollutant settlement.	WAG identified as critical. In a new development - pond most likely built to recent standards for quality and quantity. Therefore, this project would have little net benefit.
MB9117	Stormwater Pond Retrofit	This project proposes retrofitting an existing public dry pond, situated behind houses on the south end of High Grove Court in Lorton, to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide downstream channel protection and allow for better function of temporary ponding using a control structure, which promotes particulate pollutant settlement.	Residential area. Room for expansion.
MB9118	Stormwater Pond Retrofit	Dry pond situated behind houses on the north end of High Grove Court in Lorton. This project proposes the retrofit of an existing public dry pond to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants including nitrogen, phosphorous and total suspended solids. The retrofit will modify the existing pond to provide downstream channel protection and allow for better function of temporary ponding using a control structure, which promotes particulate pollutant settlement.	Pond in good condition in relatively new neighborhood
MB9119	Stormwater Pond Retrofit	This project proposes the retrofiting of the existing pond near Cardinal Forest Lane at Mid Atlantic Petroleum and creating an extended detention pond with a sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better temporary ponding using a control structure, which promotes particulate pollutant settlement.	Pond adjacent to car wash, so could have high pollutant levels
MB9120	Stormwater Pond Retrofit	This project proposes the retrofit of an existing wet pond behind Southpointe Lane to create a wetland system, sediment forebay and bench planting. The primary indicators are pollutants, including nitrogen, and phosphorus. The retrofit will modify the existing pond to increase pollutant removal and to provide adequate channel protection above the permanent pool. The retrofit will create a better-functioning environment for gravitational settling, biological uptake and microbial activity with a permanent pool. The pool prevents re-suspension of sediments and other pollutants.	Adequate open space available for expansion. Receives runoff from residential neighborhood.
MB9121	Stormwater Pond Retrofit	This project proposes the retrofit of an existing dry pond at William Halley Elementary School to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and provide better function of temporary ponding using a control structure, which promotes particulate pollutant settlement.	Some room for expansion. Good educational opportunity.

PRJ_ ID_LEG	PRJ_ TYPE	Detailed Description	BPJ Project Ranking Comments
MB9122	Stormwater Pond Retrofit	This project proposes the retrofit of an existing public pond east of Cross Chase Circle to create a wetland system, sediment forebay and bench planting. The primary indicators are pollutants, including nitrogen and phosphorus. The wetland retrofit will provide increase in shade, detritus, woody plant material and cooler water temperatures which will improve habitat. Pollutant removal will be achieved through settling and biological uptake within the wetland, while reducing volume and peak runoff rates.	Good implementability and would have good water quality benefits.
MB9123	Stormwater Pond Retrofit	This project proposes the retrofit of an existing public pond northwest of Meadow Edge Terrace to create a wetland system, sediment forebay and bench planting. The primary indicators are pollutants, including nitrogen and phosphorus. The wetland retrofit will provide increase in shade, detritus, woody plant material and cooler water temperatures which will improve habitat. Pollutant removal will be achieved through settling and biological uptake within the wetland, while reducing volume and peak runoff rates.	
MB9124	Stormwater Pond Retrofit	This project proposes the retrofit of an existing public pond northeast of Cross Oaks Court in Fairfax Station to create a wetland system, sediment forebay and bench planting. The primary indicators are pollutants, including nitrogen and phosphorus. The retrofit will modify the existing pond to increase pollutant removal and to provide adequate channel protection. The retrofit will create a better-functioning environment for gravitational settling, biological uptake and microbial activity with a permanent pool of standing water. The permanent pool prevents re-suspension of sediments and other pollutants. Large berm currently separates pond into two. A large berm currently divides the pond.	Pond in good condition. Retrofit would improve treatment functions.
MB9125	Stormwater Pond Retrofit	This project proposes the retrofit of an existing pond in front of Silverbrook Elementary School to an extended detention dry pond with a sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which enables particulate pollutants to settle out. The small dry pond is just upstream of large wet pond. Improving the quality of the upstream pond will have positive effects on the large downstream pond.	Pond in good condition. Retrofit would improve treatment functions.
MB9201	Stream Restoration	This project proposes the restoration of a large portion of the stream west of Anita Drive. The project proposes to restore channel morphology by reducing bed and bank erosion. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander.	Drainage area is heavily wooded Field investigations indentified areas of siltation and debris, but overall stream in good condition and well connected to the flood plain. Recommend removing project.
MB9202	Stream Restoration	This project proposes the restoration of stream north of Gunston Drive that flows from east to west. The project proposes to restore channel morphology by improving bed and bank erosion. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander.	Field investigation indentified highly eroded and would recommend a high priority for this project.
MB9203	Stream Restoration	This project proposes the restoration of the stream north of Gunston Drive that flows from northeast to south. The project proposes to restore channel morphology by improving bed and bank erosion. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander.	Field investigation indentified stream is in good condition, with minimal erosion and widening. Stream has good connection to floodplain with buffer.
MB9204	Stream Restoration	This project proposes the restoration of a stream east of parking lot at Occoquan Park. The project proposes to restore channel morphology by improving bed and bank erosion. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander.	WAG identified as critical. Per field investigation, would recommend removing project. Stream has good connection to the flood plain and minimal to no erosion.
MB9205	Stream Restoration	This project proposes restoring the stream, west of a parking lot at Occoquan Park, improving channel morphology and reducing bed and bank erosion. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander. Since the stream directly outfalls into Occoquan River, improving this stream will directly benefit the overall condition of the larger body of water.	WAG identified as critical. Heavily wooded buffer. Field investigations indentified some areas of moderate erosion but stream lies in low area. Actively widening and deepening. Large metal "pipes" that should be removed.
MB9206	Stream Restoration	This project proposes the restoration of a stream east of Ox Road at Lower Occoquan Park. The project proposes to restore channel morphology by improving bed and bank erosion. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander. Stream directly outfalls into Occoquan River. Improving the outfall into the river will benefit the overall condition of the larger body of water.	Field investigations indentified that stream runs along park access road. Some areas of erosion and sedimentation, but against a very steep slope so stream.
MB9207	Stream Restoration	This project proposes the restoration of a stream east of Ox Road at Lower Occoquan Park and will restore channel morphology by improving bed and bank erosion. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander. The stream directly outfalls into Occoquan River. Improving the outfall into the river will benefit the overall condition of the larger body of water. (Coordination with the Fairfax County Park Authority should be done to prevent any potential conflicts.)	WAG identified as critical. Visible siltation. Runs through park, public education opportunity. Field investigation revealed site not accessible. Site is on the grounds of the old prison and is enclosed with fences. Tried multiple access points but was unsuccessful.
MB9208	Stream Restoration	This project proposes the restoration of the stream east of Windermere Hill Drive that flows from north to south. The project proposes to restore poor channel morphology by improving bed and bank erosion. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander. Project should be coordinated with the downstream property owners to consider extending the area of restoration and/or spot improvements further downstream. Representatives of the landfill located near I-95 have expressed support for extending the restoration downstream.	WAG identified as critical. Large impervious area outfalling into stream. Field investigation indentified a few areas of minimal erosion but overall stream in good condition and would not recommend a restoration beyond spot improvements.

PRJ_ ID_LEG	PRJ_ TYPE	Detailed Description	BPJ Project Ranking Comments
MB9209	Stream Restoration	This project proposes the restoration of the stream north of Cumbia Valley Drive that runs parallel to Lorton Road. The project proposes to restore channel morphology by improving bed and bank erosion. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander. This project is located on the Giles Run Main Stem just downstream from Lorton Road. Laurel Hill Park is located along this segment of Lorton Road opposite of the proposed project. The current road improvement project for the Lorton Road widening will result in major alignment shifts in this area and may result in a portion, or all, of this stream project being located on Laurel Hill Park. In consideration of this road alignment change, DPWES should coordinate closely with the Park Authority in the design of this project.	WAG identified as critical. Field investigation revealed stream runs along main road so could not safely access.
MB9210	Stream Restoration	This project proposes the restoration of the stream at Laurel Hill Golf Club in Lorton. The stream flows west to east. The project proposes to restore poor channel morphology by improving bed and bank erosion. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander.	WAG identified as critical. Field investigation revealed site inaccessible due to its location on the golf course. Stream is actively down cutting - Headwater, channel (Step pools)
MB9211	Stream Restoration	This project proposes daylighting an outfall pipe further upstream, providing outfall protection, an energy dissipation device and constructing an open channel. The pipe is located west of Cross Chase Circle. The primary indicator is poor channel morphology. The daylighting will redirect a closed system to an aboveground channel, returning the water to its natural state and helping reduce runoff rates. This will help minimize stream erosion.	Very small drainage area minimal benefit.
MB9212	Stream Restoration	This project proposes the restoration of the stream east of Cross Chase Circle in Lorton by restoring channel morphology and reducing bed and bank erosion. The stream stabilization will reduce downstream sediment loads, maintain capacity of the stream channel, and control unwanted meander. The stream flows southwest to northeast and outfalls into a pond.	WAG identified as critical. Field investigation indentified areas of moderate erosion. Could benefit from stream stabilization. 1 to 2 foot bank height. Good buffer.
MB9213	Stream Restoration	This project proposes daylighting an outfall pipe further upstream, providing outfall protection, installing an energy dissipation device and constructing an open channel. The pipe is located north of Cross View in Fairfax Station. The primary indicators are poor channel morphology downstream. Daylighting redirects a closed system back to an aboveground channel, returning water to its natural state, reducing runoff rates, encouraging infiltration and minimizing downstream erosion.	
MB9214	Stream Restoration	This project proposes daylighting an outfall pipe further upstream, providing outfall protection, an energy dissipation device and constructing an open channel. The pipe is located north of Chase Pointe Way in Fairfax Station. The primary indicators are poor channel morphology downstream. Daylighting redirects a closed system back to an aboveground channel, returning water to its natural state and reducing runoff rates. This minimizes downstream erosion.	WAG identified as critical. Neighborhood runoff is discharged directly to stream.
MB9215	Stream Restoration	This project proposes restoring a stream north of Cross Oaks Court by repairing bank and bed erosion and restoring channel morphology. The primary indicators are benthic communities, fish communities, aquatic habitats, channel morphology, upland sediment and total suspended solids load. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the channel and controlling unwanted meander. Improving the quality of the stream will improve the aquatic habitats and fish communities.	WAG identified as critical. Field investigation indentified a few spots of erosion & minimal widening. Good connection to flood plain. Overall, stream in good condition with good buffer.
MB9216	Stream Restoration	This project proposes the restoration of stream west of Chase Glen Circle along Crosspointe Drive. The stream flows west to east and outfalls into a large wet pond. The project proposes to restore channel morphology by improving bed and bank erosion. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander.	WAG identified as critical. Field investigation indentified minor bank erosion and siltation. Very low priority
MB9501	BMP/LID	This project proposes the construction of a bioretention area northeast of Furnace Road at a large industrial building. The bioretention landscaping feature will receive runoff from impervious areas. The primary indicators are upland sediment, total suspended solids and pollutants including nitrogen and phosphorous. The bioretention area will create an ideal environment for filtration, biological uptake and microbial activity. It will also reduce the outflow to the storm system.	New building and parking lot should already have adequate stormwater management.
MB9502	BMP/LID	This project proposes pervious pavement at parking lot at Occoquan Park. The project will replace the existing pavement with pervious pavement or pavers. Additional underground detention may be provided as site conditions permit. The primary indicators are total impervious area and total urban land cover. Pervious pavement will reduce runoff rates using porous materials that allow runoff to infiltrate so pollutants may be trapped in the soil.	WAG in favor of project. Park project for a parking lot in poor condition.
MB9503	BMP/LID	This project proposes the construction of a bioretention area northeast of Giles Run Road in industrial area. The bioretention landscaping feature will receive runoff from impervious areas. The primary indicators are upland sediment, total suspended solids and pollutants including nitrogen and phosphorous. The bioretention area will create an ideal environment for filtration, biological uptake and microbial activity. It will also reduce the outflow to the storm system.	In industrial area. Low implementability. < $80,000
MB9504	BMP/LID	This project proposes the construction of a bioretention area at Gunston Elementary School. The bioretention landscaping feature will receive runoff from impervious areas, including the parking lot and the school building. The primary indicators are upland sediment, total suspended solids and pollutants including nitrogen and phosphorus. The bioretention area will create an ideal environment for filtration, biological uptake and microbial activity. It will also reduce runoff to the storm system.	No other treatment onsite. Good educational opportunity.

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MB9505	BMP/LID	This project proposes the collection of downspouts in rain barrels or roof drains in underground cisterns for reuse in irrigation at Gunston Elementary School. A rain barrel/cistern program will capture, store and reuse rooftop runoff. The rain barrels can be used by students as a hands-on educational program.	Building has visible roof overflows, but no downspouts. Inexpensive implementation with educational value.
MB9506	BMP/LID	This project proposes the construction of a bioretention area at Fairfax County Landfill. The bioretention landscaping feature will receive runoff from parking lots. The primary indicators are upland sediment, total suspended solids and pollutants including nitrogen and phosphorus. The bioretention area will create an ideal environment for filtration, biological uptake and microbial activity. It will also reduce the outflow to the storm system.	WAG identified as critical. Increase priority due to high pollutants on landfill site.
MB9507	BMP/LID	This project proposes the collection of downspouts in rain barrels or roof drains in underground cisterns for reuse in irrigation at William Halley Elementary School. A rain barrel/cistern program will capture, store and reuse rooftop runoff. The rain barrels can be used by students as a hands-on educational program.	No visible downspouts. Will have to use cistern and these are very expensive. Good educational project
MB9508	BMP/LID	This project proposes the construction of a bioretention area at Laurel Hill Golf Club. The bioretention landscaping feature will receive runoff from parking lots. The primary indicators are upland sediment, total suspended solids and pollutants including nitrogen and phosphorous. The bioretention area will create an ideal environment for filtration, biological uptake and microbial activity. It will also reduce the outflow to the storm system.	Area appears to be raised. Not an ideal location
MB9509	BMP/LID	This project proposes the construction of a bioretention area at Christ United Methodist Church on Glen Eagles Court in Fairfax Station. The bioretention landscaping feature will receive runoff from the parking lot and building. The primary indicators are upland sediment, total suspended solids and pollutants including nitrogen and phosphorus. The bioretention area will create an ideal environment for filtration, biological uptake and microbial activity. It will also reduce the outflow to the storm system.	Could provide treatment for adjacent impervious area
MB9510	BMP/LID	This project proposes the construction of a bioretention area at Silverbrook Elementary School on Crosspointe Drive. The bioretention landscaping feature will receive runoff from parking lot and building. The primary indicators are upland sediment, total suspended solids and pollutants including nitrogen and phosphorus. The bioretention area will create an ideal environment for filtration, biological uptake and microbial activity. It will also reduce the outflow to the storm system.	Appears to be a good location. Good demonstrational/ educational opportunity.
MB9511	BMP/LID	This project proposes pervious pavement for the parking lot at Crosspointe Swim and Racquet Club on Glen Eagles Lane. The project will replace the existing pavement with pervious pavement or pavers. Additional underground detention may be provided as site conditions permit. The primary indicators are total impervious area and total urban land cover. Pervious pavement will reduce runoff rates using porous material that allows runoff to infiltrate so pollutants may be trapped in the soil.	
MB9512	BMP/LID	This project proposes the collection of downspouts in rain barrels or roof drains in underground cisterns for reuse in irrigation at Silverbrook Elementary School. A rain barrel/cistern program will capture, store and reuse rooftop runoff. The rain barrels can be used by students as a hands-on educational program.	Cisterns are expensive, but a good educational project.
MB9702	Outfall Improvement	This project proposes the reconstruction of a concrete channel with vegetative plantings, an energy dissipation device and check dams south east of Richmond Highway near a boat storage lot. The primary indicator is channel morphology. Retrofitted swales will reduce flow velocities and increase filtration capacity, providing some water quality treatment and protection of downstream channels.	< $80,000
MB9703	Outfall Improvement	This project proposes the reconstruction of an outfall across Crosspointe Drive from Silverbrook Elementary School. The project will include an energy dissipation device and erosion controls. Reconstruction will reduce erosion velocities and sediment loads at the outfalls, protecting downstream channels. Outfall reconstruction is proposed on the downstream side of large pond. This project will protect stream below.	< $80,000
MB9801	Buffer Restoration	This project proposes to repair a deficient stream buffer northeast of Greene Drive in order to re-establish the RPA and provide reforestation to a partially bare area. Increased vegetation from the buffer repair will provide additional stream buffer for filtration of pollutants and will reduce runoff by intercepting the water, thereby increasing surface storage and infiltration.	Increase ranking - Low vegetation adjacent to stream.
MB9802	Buffer Restoration	This project proposes to repair a deficient stream buffer at Occoquan Regional Park in order to re-establish the RPA. Increased vegetation from the buffer repair will provide additional stream buffer for filtration of pollutants and will reduce runoff by intercepting the water, thereby increasing surface storage and infiltration.	WAG in favor of project.
MB9803	Street Sweeping Program	This project proposes a street sweeping program to help reduce the amount of potential pollutants from entering the nearby streams and storm systems. The area is near Windmere Hill Drive and consists of 40 acres. The area is a townhouse development. The primary indicators are upland sediment and total suspended solid load. A street sweeping program will improve water quality in residential areas by capturing and preventing potential pollutants from entering the nearby streams and storm systems.	
MB9804	Buffer Restoration	This project proposes to repair a deficient stream buffer northwest of Lorton Road. Increased vegetation from the buffer repair will provide additional stream buffer for filtration of pollutants and will reduce runoff by intercepting the water, thereby increasing surface storage and infiltration. Stream buffer area is located in the yards of private houses.	Stream not clearly defined.
MB9805	Street Sweeping Program	This project proposes a street sweeping program to help reduce the amount of potential pollutants from entering the nearby streams and storm systems. The area is near Cardinal Forest Lane and consists of 35 acres. The area is a multifamily housing development. The primary indicators are upland sediment and total suspended solid load. A street sweeping program will improve water quality in residential areas by capturing and preventing potential pollutants from entering the nearby streams and storm systems.	High density due to multifamily homes.

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MB9806	Buffer Restoration Suite	This suite of projects proposes to repair deficient stream buffers at Laurel Hill Golf Club in Lorton in order to re-establish the RPA. Increased vegetation from the buffer repair will provide additional stream buffer for filtration of pollutants and will reduce runoff by intercepting the water, thereby increasing surface storage and infiltration.	WAG identified as critical.
MB9806A	Buffer Restoration	This project proposes to repair a deficient stream buffer at Laurel Hill Golf Club in Lorton in order to re-establish the RPA. Increased vegetation from the buffer repair will provide additional stream buffer for filtration of pollutants and will reduce runoff by intercepting the water, thereby increasing surface storage and infiltration.	WAG identified as critical.
MB9806B	Buffer Restoration	This project proposes to repair a deficient stream buffer at Laurel Hill Golf Club in Lorton in order to re-establish the RPA. Increased vegetation from the buffer repair will provide additional stream buffer for filtration of pollutants and will reduce runoff by intercepting the water, thereby increasing surface storage and infiltration.	
MB9807	Buffer Restoration Suite	This Buffer Restoration suite of projects proposes repairing a deficient stream buffers at Laurel Hill Golf Club in Lorton. Increased vegetation from the buffer repairs will provide additional stream buffer for filtration of pollutants and will reduce runoff by intercepting the water, thereby increasing surface storage and infiltration.	
MB9807A	Buffer Restoration	This project proposes to repair a deficient stream buffer at Laurel Hill Golf Club in Lorton. Increased vegetation from the buffer repair will provide additional stream buffer for filtration of pollutants and will reduce runoff by intercepting the water, thereby increasing surface storage and infiltration.	Large impervious area draining with very minimal vegetation before stream.
MB9807B	Buffer Restoration	This project proposes to repair a deficient stream buffer at Laurel Hill Golf Club in Lorton. Increased vegetation from the buffer repair will provide additional stream buffer for filtration of pollutants and will reduce runoff by intercepting the water, thereby increasing surface storage and infiltration.	WAG identified as critical.
MB9808	Street Sweeping Program	This project proposes a street sweeping program to help reduce the amount of potential pollutants from entering the nearby streams and storm systems. The area is off of Lorfax Drive and consists of 125 acres. The area is mostly single family residential development. The primary indicators are upland sediment and total suspended solid load. A street sweeping program will improve water quality in residential areas by capturing and preventing potential pollutants from entering the nearby streams and storm systems.	In neighborhood with no existing treatment.
MB9809	Street Sweeping Program	This project proposes a street sweeping program to help reduce the amount of potential pollutants from entering the nearby streams and storm systems. The area is along Chase Glenn Circle and consists of 230 acres. The area is mostly single family residential and very small area of commercial development. The primary indicators are upland sediment and total suspended solid load. A street sweeping program will improve water quality in residential areas by capturing and preventing potential pollutants from entering the nearby streams and storm systems.	Large area to be treated.
MB9810	Street Sweeping Program	This project proposes a street sweeping program to help reduce the amount of potential pollutants from entering the nearby streams and storm systems. The area is along Cross Chase Circle and consists of 135 acres. The area is single family residential and commercial development. The primary indicators are upland sediment and total suspended solid load. A street sweeping program will improve water quality in residential areas by capturing and preventing potential pollutants from entering the nearby streams and storm systems.	
MB9811	Buffer Restoration	This project proposes to repair a deficient stream buffer south of Crosspointe Drive in order to re-establish the RPA. Increased vegetation from the buffer repair will provide additional stream buffer for filtration of pollutants and will reduce runoff by intercepting the water, thereby increasing surface storage and infiltration.	Small drainage area. Majority of the area is piped in and would not be going through the buffer.
MB9812	Street Sweeping Program	This project proposes a street sweeping program to help reduce the amount of potential pollutants from entering the nearby streams and storm systems. The area is along Crosspointe Drive near Silverbrooke Elementary School and consists of 45 acres, however there is not very much roadway within drainage area. The area is single family residential, a school and a very large wet pond. The primary indicators are upland sediment and total suspended solid load. A street sweeping program will improve water quality in residential areas by capturing and preventing potential pollutants from entering the nearby streams and storm systems.	
OC9101	Stormwater Pond Retrofit	This project proposes retrofitting an existing pond, on the north of Davis Drive in Lorton, to create a wetland system, sediment forebay and addition of bench planting. The pond collects runoff from adjacent residential neighborhoods. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will create a better-functioning environment for gravitational settling, biological uptake and microbial activity. The permanent pool prevent re-suspension of sediments and other pollutants.	Pond could benefit from retrofit
OC9102	Stormwater Pond Retrofit	A small dry pond located northwest of Davis Drive in Lorton collects runoff from adjacent residential neighborhoods and outfalls into a stream. This project proposes retrofitting this pond to create an extended detention pond with a sediment forebay. The primary indicators are pollutants such as nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure. This will promote the settlement of particulate pollutants.	Large portion of road runoff flowing to pond.

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OC9103	Stormwater Pond Retrofit	Small dry pond located east of Davis Drive in Lorton. The pond collects runoff from adjacent residential neighborhoods and outfalls into wooded area. This project proposes the retrofitting of the existing pond to create an extended detention pond with a sediment forebay. The primary indicators are pollutants such as nitrogen, phosphorous and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure. This will promote the settlement of particulate pollutants.	Pond in good condition.
OC9201	Stream Restoration	Stream south Elkhorne Run Court in Lorton has indications of poor channel morphology. Stream receives runoff from few residential lots and adjacent roadways. This project proposes repairing bank and bed erosion to restore channel morphology. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander.	Field investigation indentified wide stream, with some erosion and sedimentation in stream.
OC9202	Stream Restoration	Stream running south behind Occoquan Overlook Drive in Lorton has indications of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilizing the stream will reduce sediment loads to stream while maintaining capacity and controlling unwanted meander.	WAG identified as critical. Field investigation indentified stream has good connection to the flood plain and minimal to no erosion. Recommend removing project.
OC9203	Stream Restoration Suite	Subproject A proposes repairing bank and bed erosion to restore channel morphology for the stream north of Elkhorne Run Court has indications of poor channel morphology. Stream stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander. Subproject B proposes removing an obstruction in stream west of Dogue Hollow Road. Stream conveys runoff from wooded area, houses and open space. This will remove trees and debris blocking the stream channel and restore natural conditions. The primary indicator is flood complaints and has been field verified.	WAG identified as critical. Stream would benefit from spot improvements. Erosion and cutting on bends, sedimentation in stream, dumpsite debris.
OC9203A	Stream Restoration	Stream north of Elkhorne Run Court has indications of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stream stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	WAG identified as critical.
OC9203B	Dumpsite/Obstruction Removal	This project proposes removing an obstruction in stream west of Dogue Hollow Road. Stream conveys runoff from wooded area, houses and open space. This will remove trees and debris blocking the stream channel and restore natural conditions. The primary indicator is flood complaints and has been field verified.	WAG identified as critical.
OC9204	Stream Restoration	This project proposes restoring the stream west and south of Hampton Woods Drive in Lorton. This stream flows to the south west and discharges directly into the Occoquan Reservoir. The primary indicator is poor channel morphology. Stream stabilization will reduce sediment loads to the stream while maintaining capacity on controlling unwanted meander.	WAG is in favor of this project. Minimal impervious area draining to this stream. Field investigation revealed spots of moderate erosion, but not throughout stream (more on the upstream end). Areas of sediment deposition creating islands. Recommend spot treatment.
OC9205	Stream Restoration	Stream east of Swift Creek court running southwest before converging with another stream and ultimately outfalling into the Occoquan Reservoir. The primary indicator is poor channel morphology. Stream stabilization will reduce sediment loads to the stream, maintaining capacity of the channel and controlling unwanted meander.	WAG identified as critical. Field investigations indentified spots of erosion but stream is well "stepped" and overall in good condition.
OC9206	Stream Restoration	Stream west of Swift Creek court running southeast before converging with another stream and ultimately outfalling into the Occoquan Reservoir. The primary indicator is poor channel morphology. Stream stabilization will reduce sediment loads to the stream, maintaining capacity of the channel and controlling unwanted meander.	WAG identified as critical. Field investigations indentified stream in good condition. Has only spots of bank erosion.
OC9207	Stream Restoration Suite	Subproject A proposes repairing bank and bed erosion of a stream south of Palmer Drive. The stream conveys runoff from wooded area and several houses downstream of a pond. Stream stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander. Subproject B proposes the removal of tires and 55-gallon drums blocking the stream channel to restore natural conditions in the stream north of Elk Horn Road. The primary indicator is flood complaints and has been field verified. Removal of obstructions will help restore the natural conditions of the stream and alleviate flooding problems.	WAG identified as critical. Field investigation indentified erosion on some banks would benefit from spot improvements and dumpsite debris removal.
OC9207A	Stream Restoration	Stream south of Palmer Drive running southwest. Conveys runoff from wooded area and several houses. Downstream of TBD pond. Due to poor channel morphology, this project proposes repairing bank and bed erosion. Stream stabilization will reduce sediment loads to stream while maintaining capacity and controlling unwanted meander.	WAG identified as critical.
OC9207B	Dumpsite/Obstruction Removal	This project proposes the removal of tires and 55-gallon drums blocking the stream channel to restore natural conditions in stream north of Elk Horn Road. The primary indicator are flood complaints and has been field verified. Removal of obstructions will help restore the natural conditions of the stream and alleviate flooding problems.	WAG identified as critical.
OC9208	Stream Restoration	This project proposes restoring the stream south of Lakehill Drive, which flows southeast in a heavily wooded area, downstream of multiple ponds, and collects runoff from woods and several houses. The primary indicator is poor channel morphology. Stream stabilization will reduce bed and bank erosion and sediment loads to stream, and will maintain conveyance capacity and control unwanted meander.	WAG identified as critical. Field investigation indentified areas of moderate erosion. Many large trees with roots exposed. Recommend spot improvements.
OM9201	Stream Restoration	This project proposes repairing the stream south of Old Yates Ford Road at Fountainhead Regional Park. This stream conveys runoff from wooded area and several houses. Stream stabilization will reduce bank and bed erosion, restore channel morphology, reduce sediment loads to the stream, maintain conveyance capacity and control unwanted meander.	WAG supports project. Little impervious area runoff. Good buffer. Field investigation indentified this is a great project, because stream has high eroded banks, and fallen trees. Spot improvements recommended.

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OM9202	Stream Restoration	The stream south of Clifton Hunt Court has indicators of poor channel morphology. The stream conveys runoff from houses and wooded area. This project proposes reducing bank and bed erosion to restore channel morphology. Stream stabilization will reduce sediment load to the stream while maintaining capacity and controlling unwanted meander.	Field investigation indentified stream has excessive meander with undercut and bare banks. Recommend spot treatments
OM9203	Stream Restoration	This project proposes restoring the stream east of Kincheloe Road, which outfalls directly into the Occoquan Reservoir, conveying runoff from houses and wooded area. Stabilizing this stream will reduce bank and bed erosion, restore channel morphology, reduce sediment loads to the stream, maintain conveyance capacity and control unwanted meander.	WAG supports project. Field investigation indentified stream has eroded to expose bedrock and tree roots. Steep slopes and debris. Stream outfall is secluded and near road.
OM9204	Stream Restoration	Stream east of Kincheloe Road upstream of where two streams converge. Stream conveys runoff from several houses. This project proposes repairing bank and bed erosion to restore the poor channel morphology. Stream stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	WAG stated: Gravel road and trash dump site problems. Request more info on location of dump site. WAG identified as critical. No significant erosion.
OM9205	Stream Restoration	This project proposes restoring the stream west of Kincheloe Road that conveys runoff from wooded area and several houses and is immediately upstream of a pond . Stabilizing this stream will reduce bank and bed erosion, restore channel morphology, reduce sediment loads to the stream, maintain conveyance capacity, and control unwanted meander.	WAG identified as critical. Field investigations indentified steep slopes. Could not access. Very far below houses.
OM9206	Stream Restoration	This project proposes restoring the stream south of Wyckland Drive where two streams converge. These streams convey runoff from houses and wooded area. Stabilizing this stream will reduce bank and bed erosion, restore channel morphology, reduce sediment loads to the stream, maintain conveyance capacity, and controlling unwanted meander.	Property owner believes that the upstream development of the Centreville area is the main reason for channel degradation and pollution and that stream stabilization will not remedy the problem. He feels that the biggest problem is due to deer population eating the vegetation, adversely affecting ground cover. WAG identified as critical. Field investigations indentified stream very sinuous with moderate erosion. Stream close to road and about 2' below. Would benefit from restoration. Recommend spot treatments
OM9207	Stream Restoration	This project proposes restoring the stream south of Wyckland Drive and downstream of pond WP0267, which conveys runoff from houses and wooded area. Stabilizing this stream will reduce bank and bed erosion, restore channel morphology, reduce sediment loads to the stream, maintain conveyance capacity, and control unwanted meander.	WAG identified as critical. Field investigations indentified stream very sinuous with moderate erosion. Stream close to road and about 2' below.
RD9201	Stream Restoration	The stream west of Stillwell Acres Lane upstream of Occoquan Reservoir in Fountainhead Park has indicators of poor channel morphology and conveys runoff primarily from wooded and open space areas. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and control unwanted meander.	WAG identified as critical. Field investigation indentified stream moderately eroded but not close to anything. Spot treatment recommended.
RD9202	Stream Restoration	The stream west of Crestridge Road conveys runoff from houses and wooded area and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and control unwanted meander.	WAG identified as critical. Field investigation revealed stream behind barbed wire. Stream shows signs of erosion. Some banks are high. Spot treatment recommended.
RD9501	BMP/LID	This project proposes creation of a bioretention landscaping feature to receive runoff from impervious areas at Fountainhead Regional Park. Currently used as a picnic area. Site drains to the southwest towards stream. Primary indicators are pollutants including nitrogen, phosphorous and total suspended solids. Bioretention will capture sheet flow from impervious areas and create and ideal environment for filtration, biological uptake, and microbial activity providing moderate to high pollutant removal. It will also reduce runoff rates.	WAG stated: area currently used a picnic area. Heavy equipment not favored because of access; recommend hand labor involving PATC or Boy Scout Eagle project. WAG identified as critical.
RD9502	BMP/LID	This project proposes the construction of a stormwater wetland to reduce flow velocity and provide pollutant removal near stream east of Crestridge Road. The primary indicators are wetland habitat and pollutants, including nitrogen, phosphorous and total suspended solids. Wetlands will receive stormwater and create and ideal environment for gravitational settling, biological uptake and microbial activity providing for efficient and reliable pollutant removal.	WAG stated: Heavy equipment not favored because of access; recommend hand labor involving PATC or Boy Scout Eagle project. WAG identified as critical. Heavily wooded area project to be removed.
SA9101	Stormwater Pond Retrofit	This project proposes the retrofit of an existing VDOT dry pond (VDOT29025) south of Thorn Bush Drive to create an extended detention dry pond with a sediment forebay. This pond receives runoff from the road and has pollutant indicators, including nitrogen and phosphorus. This retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which enables particulate pollutants to settle out.	WAG is in favor of this project. Room for pond improvements.
SA9102	Stormwater Pond Retrofit	This project proposes the retrofit of an existing VDOT dry pond (VDOT29031) to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants included nitrogen and phosphorus. The pond treats a portion of Ox Road next to the stream in which it discharges. Dry pond retrofits will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure which enables particulate pollutants to settle out providing better removal for particulate pollutants.	Appears to have room for enhancement.

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SA9103	Stormwater Pond Retrofit	This project proposes the retrofit of an existing public dry pond (0209DP) east of Wayfarer Drive to create an extended detention dry pond with a sediment forebay. The pond receives runoff from an adjacent subdivision, wooded area and road. Pond outfalls into stream that crosses Henderson Road. The primary indicators are pollutants including nitrogen and phosphorus. Dry pond retrofits will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which promote particulate pollutant settlement.	WAG commented that many trees would need to be removed for project. Lower priority due to access constraints and WAG concerns.
SA9104	Stormwater Pond Retrofit	This project proposes the retrofit of an existing public pond (0685DP) south of Jennifer Marie Place to create a wetland system, sediment forebay and the addition of bench planting. Pond treats runoff from adjacent subdivisions and wooded area, intercepting stream. The primary indicators are pollutants, including nitrogen and phosphorous. Wet pond retrofits will modify the existing pond to increase pollutant removal and provide adequate channel protection above the permanent pool. The retrofit will create a better-functioning environment for gravitational settling, biological uptake and microbial activity. The pool prevents resuspension of sediments and other pollutants and can have long residence time.	Heavily vegetated. Little room for expansion
SA9105	Stormwater Pond Retrofit	This project proposes the retrofit of an existing dry pond (DP0535) near Virginia Korean Baptist Church to create a wetland system, sediment forebay and bench planting. The pond is located to the west of the church. The primary indicators are pollutants, including nitrogen and phosphorus. Wet pond retrofits will modify the existing pond to increase pollutant removal and to provide adequate channel protection above the permanent pool. The retrofit will create a better functioning environment for gravitational settling, biological uptake and microbial activity.	
SA9106	Stormwater Pond Retrofit	This project proposes the retrofit of an existing public dry pond (0703DP) south of Jennifer Marie Place to create a wetland system, sediment forebay and bench planting. The pond is located behind a house, conveying runoff from adjacent house lots, wooded area and portion of Ox Road. The primary indicators are pollutants, including nitrogen, phosphorous and total suspended solids. Wet pond retrofits will modify the existing pond to increase pollutant removal and provide adequate channel protection above the permanent pool. The retrofit will create a better functioning environment for gravitational settling, biological uptake and microbial activity.	WAG identified as critical. Heavily wooded. Very little room for expansion.
SA9107	Stormwater Pond Retrofit	This project proposes the retrofit of an existing public dry pond (0701DP) near Brimstone Lane to create a wetland system, sediment forebay and bench planting. The pond treats runoff from adjacent houses, wooded area and portions of Ox Road. Wet pond retrofits will modify the existing pond to increase pollutant removal and provide adequate channel protection above the permanent pool. The retrofit will create a better-functioning environment for gravitational settling, biological uptake and microbial activity.	Very little room to expand pond
SA9201	Stream Restoration	The stream near Birch Cliff Drive conveying runoff from houses, wooded area, and substation area upstream of outfall to Occoquan Reservoir has indicators of poor channel morphology. This project proposes spot improvements along the stream to restore channel morphology and repair eroded areas. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics and rapid vegetation establishment.	WAG commented that manmade impediments to the flow of the natural stream are a hindrance to any effort at this site. Field investigation revealed areas of slight to moderate erosion. Several peninsulas and islands formed from sediment deposition. Dam created before culvert.
SA9202	Stream Restoration	Stream near Thorn Bush Drive conveying runoff from houses and wooded area upstream of outfall to Occoquan Reservoir has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	Field investigation revealed some areas of moderate erosion. Trees look unstable in spots. Overall, good condition.
SA9203	Stream Restoration	Stream near Thorn Bush Drive conveying runoff from houses and wooded area upstream of outfall to Occoquan Reservoir has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	Area more developed than others Field investigation indentified stream in good condition. Areas of minor erosion and siltation.
SA9204	Stream Restoration	Stream near Community Lane conveying runoff from houses, open space and wooded area has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	Field investigation revealed some areas of minor erosion and sedimentation but not throughout.
SA9205	Stream Restoration Suite	Subproject A proposes repairing bank and bed erosion to restore channel morphology for a stream between Henderson Roads and a pond. This project occurs where two streams converge and convey runoff from houses, open space and wooded area. The streams have indicators of poor channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander. Subproject B proposes the removal of concrete slabs blocking the channel behind stables northeast of Henderson Road to restore natural conditions. The stream is in a wooded area and collects runoff from a stable, houses, and wooded area. The primary indicators are flood complaints and have been field verified. Removal of obstructions will help restore the natural conditions of the stream and alleviate flooding problems.	WAG identified as critical. WAG commented area has filled in over the years as a result of building north of Henderson Rd. If flow could be increased from this point south it may resolve some marsh areas just south of the site. Stream in good condition. Severe buffer deficiency adjacent to private yard.
SA9205A	Stream Restoration	Stream between Henderson Roads and TBD pond where two streams converge conveying runoff from houses, open space and wooded area has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	WAG identified as critical. WAG commented area has filled in over the years as a result of building north of Henderson Rd. If flow could be increased from this point south it may resolve some marsh areas just south of the site.

PRJ_ ID_LEG	PRJ_ TYPE	Detailed Description	BPJ Project Ranking Comments
SA9205B	Dumpsite/Obstruction Removal	This project proposes the removal of concrete slabs blocking the channel behind stables northeast of Henderson Road to restore natural conditions. Stream is in wooded area collecting runoff from the stable, housing lots, and wooded area. The primary indicator are flood complaints and has been field verified. Removal of obstructions will help restore the natural conditions of the stream and alleviate flooding problems.	WAG identified as critical.
SA9206	Stream Restoration	The stream section upstream of Henderson Road conveys runoff from houses, open space, a power line easement and wooded area. The stream has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	Asphalt over pipe damaged. WAG commented that if area can be restored to increase the flow it may help several areas just south of Henderson Rd. where a marsh area forms. WAG commented that sediment silt is a minor issue from observations and project should be low priority. Field investigations indentified stream has severe erosion near roadway and needs stabilization. Remainder of stream has non-severe to moderate erosion.
SA9207	Stream Restoration Suite	Subproject A proposes repairing bank and bed erosion to restore channel morphology of a stream section south of Silverleaf Drive, which conveys runoff from wooded areas and housing lots. The stream has indicators of poor channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander. Subproject B proposes the repair of a stream buffer upstream of Hunting Horse Drive. Repairing the buffer will re-establish the RPA and provide reforestation to a partially bare area. Primary indicators are streambank buffer deficiencies. Increased vegetation from buffer repair will provide additional buffer for filtration of pollutants and will reduce runoff by intercepting the water, increasing surface storage and infiltration. It will also reduce runoff rates to stream and minimize erosion.	Surrounded by low density residential. Stream on private property. Moderate erosion of banks on a minor stream.
SA9207A	Stream Restoration	Stream section south of Silverleaf Drive conveying runoff from wooded area and housing lots has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	
SA9207B	Buffer Restoration	This project proposes the repair of a stream buffer upstream of Hunting Horse Drive. Repairing the buffer will re-establish the RPA and provide reforestation to a partially bare area. Primary indicators are streambank buffer deficiencies. Increased vegetation from buffer repair will provide additional buffer for filtration of pollutants and will reduce runoff by intercepting the water, increasing surface storage and infiltration. It will also reduce runoff rates to stream and minimize erosion.	
SA9208	Stream Restoration	The stream section upstream of Daysailer Drive conveys runoff from wooded area, housing and buildings with parking and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	Field investigations indentified minor stream has moderate erosion of banks. Significant buffer deficiencies.
SA9209	Stream Restoration	The stream section upstream of Beechnut Court in Fairfax Station conveys runoff from wooded area, housing, and Ox Road has indicators of poor channel morphology. This project proposes spot improvements along the stream to restore channel morphology and repair eroded areas. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment. The banks will be armored to reduce further erosion using geofabrics, fabric encapsulated rocks or equivalent. The culvert is made of three pipes, one which is entirely blocked. Culvert needs to be restored to maximize benefits.	Three pipes, one entirely blocked. WAG identified as critical. Field investigation indentified stream bank cut approximately 2' or more along majority of the length of the stream. Close to houses. restoration.
SA9210	Stream Restoration	Stream section upstream of Sandy Manor Drive in Fairfax Station conveys runoff from wooded area and houses has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	WAG identified as critical. Field investigations indentified minor stream in residential yard behind fence. Good connection to flood plain. Recommend removing this project.
SA9211	Stream Restoration	The stream section east of Streamwood Place in Fairfax Station where two streams converge, conveys runoff from adjacent houses, streets and wooded area has indicators of poor channel morphology. This project proposes spot improvements along the stream to restore channel morphology and repair eroded areas. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics and rapid vegetation establishment. The banks will be armored to reduce further erosion using geofabrics, fabric encapsulated rocks or equivalent.	WAG identified as critical. Field investigation revealed minor to moderate erosion. Significant sediment deposition. Recommend spot improvements.
SA9212	Stream Restoration	This project proposes restoring the stream section east of Streamwood Place in Fairfax Station where two streams converge. The streams conveys runoff from adjacent houses, streets and wooded area and has indicators of poor channel morphology. Stabilization will reduce bank and bed erosion, restore channel morphology, reduce sediment loads to the stream, maintain capacity and control unwanted meander.	WAG identified as critical. Field investigations indentified signs of moderate erosion throughout length of stream.
SA9213	Stream Restoration	The stream section east of Wolf Shoals Road in Fairfax Station conveying runoff primarily from wooded area, several houses, and a building with parking lot, has indicators of poor channel morphology. This project proposes spot improvements along the stream to restore channel morphology and repair eroded areas. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment.	WAG identified as critical. Field investigation indentified moderate to severe erosion in spots. Areas of sediment deposition.
SA9214	Stream Restoration	The stream section east of Wolf Shoals Road in Fairfax Station conveys runoff from a church site, major road, wooded area and houses and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	WAG identified as critical. Gravel road and trash dump site problems upstream. Low vegetation. Field investigation indentified some erosion and widening of banks. Would benefits from spot improvements

PRJ_ ID_LEG	PRJ_ TYPE	Detailed Description	BPJ Project Ranking Comments
SA9701	Outfall Improvement	This project proposes the reconstruction of a concrete swale along Silverleaf Drive to convey runoff away from road into stream. The primary indicator is poor channel morphology. Retrofitting swale will reduce flow velocities and increase filtration capacities. This will provide some water treatment and protection of downstream channel against erosion. Replace concrete with check dams and step pools reduce velocity encourage infiltration.	Treatment of roadway runoff will help improve quality of flow into adjacent stream.
SA9702	Outfall Improvement	This project proposes the reconstruction of a swale southwest of Sandy Manor Drive that conveys runoff from street, adjacent houses and wooded area directly into stream. The primary indicator is poor channel morphology. Retrofitting the swale will reduce flow velocities and increase filtration capacities. This will provide some water treatment and protect the downstream channel against erosion.	North end of Sandy Run has been "going shallow" for the past 20 years. Stream restoration favored. WAG identified as critical.
SA9801	Buffer Restoration	This project proposes the repair of a stream buffer south of Sandy Run Trail. Repairing the buffer will re-establish the RPA and provide reforestation to a partially bare area. Primary indicators are streambank buffer deficiencies. Increased vegetation from buffer repair will provide additional buffer for filtration of pollutants and will reduce runoff by intercepting the water, increasing surface storage and infiltration. It will also reduce runoff rates to stream and minimize erosion.	
SA9802	Buffer Restoration	This project proposes the repair of a stream buffer east of Hunting Shire Lane. Repairing the buffer will re-establish the RPA and provide reforestation to a partially bare area. Primary indicators are streambank buffer deficiencies. Increased vegetation from buffer repair will provide additional buffer for filtration of pollutants and will reduce runoff by intercepting the water, increasing surface storage and infiltration. It will also reduce runoff rates to stream and minimize erosion.	
SA9803	Other	This project proposes reforestation to a sparsely wooded area southwest of Old Stone Fence Road to provide natural runoff volume reduction and pollutant removal. The primary indicator is poor channel morphology. Increase vegetation from reforestation will provide additional stream buffer for filtration of pollutants and will reduce runoff by interception water, thereby increasing surface storage and infiltration.	WAG identified as critical.
WR9201	Stream Restoration	Stream section east of Wolf Valley Drive in Fairfax Station conveying runoff from wooded area and houses, has indicators of poor channel morphology. Stream located upstream of outfall to Occoquan Reservoir and downstream of Henderson Road. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	Field investigations indentified stream has areas of high eroded banks, widening, meander, and fallen trees. Upstream bank of bridge support has erosion, exposed support. Upstream end of project the meandering stream had cut an overflow ditch through the woods. Downstream end has sediment deposit obstruction.
WR9202	Stream Restoration	Stream section west of Thomas Ashleigh Lane in Clifton conveying runoff from wooded area and houses, has indicators of poor channel morphology. Stream located upstream of where two stream converge. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	Field investigation indentified the beginning of stream had little erosion.
WR9203	Stream Restoration	This project proposes daylighting an outfall pipe further upstream, providing outfall protection, an energy dissipation device and constructing an open channel. The pipe is located east of Cub Den Court. The primary indicators are poor channel morphology downstream. Daylighting redirects a closed system back to an aboveground channel, returning water to its natural state and reducing runoff rates. This minimizes downstream erosion.	Property owner feels removal of existing pipe would be a waste of taxpayer dollars. Field investigation revealed there is no paved ditch as shown on GIS. Road runoff flows down steep slope in well functioning set of stepping pools. Recommend remove project.
WR9204	Stream Restoration	This project proposes daylighting an outfall pipe further upstream, providing outfall protection, an energy dissipation device and constructing an open channel. The pipe is located east of north of Wolf Run Hills Road. The primary indicators are poor channel morphology downstream. Daylighting redirects a closed system back to an aboveground channel, returning water to its natural state and reducing runoff rates. This minimizes downstream erosion.	Property owner feels removal of existing pipe would be a waste of taxpayer dollars. Field investigation revealed no paved ditch. Road runoff drains across property via overland flow through woods with the flow path broken up.
WR9205	Stream Restoration	Stream section upstream of Wolf Run Hills Road conveying runoff from wooded area and houses, has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	WAG commented that the topography makes project challenging and since there is a wet pond directly upstream this project should be medium priority. Field investigation revealed minor erosion and sedimentation. Buffer restoration would help with yards with horses.
WR9206	Stream Restoration	The stream section near Winterway Road in Fairfax Station convey runoff from wooded area and houses and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	On first visit a home owner did not allow access. On a different visit field investigations indentified stream had most erosion near Winterway Lane. Stream meandered a lot but steep slopes heights were 2' to 3'. Recommend spot improvements
WR9207	Stream Restoration	Stream section east of Willowbrook Road conveying runoff from wooded area and houses, has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander. Analyze capacity of downstream culvert and upgrade.	WAG stated culvert under Willowbrook Rd has capacity issues. Culvert replaced 5-6 years ago because of flooding. Community is interested in stream improvements that will help with stream bed overflow and road submergence. WAG identified as critical . Field investigation indentified stream showed little signs of erosion. Recommend analysis of culvert capacity if flooding still occurs on road.
WR9208	Stream Restoration	Stream section east of Turtle Valley Drive conveying runoff from open space and houses, has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	Field investigations showed that beginning of project @ private driveway has less erosion than upstream sections and projects. Banks are eroded in some places. (Max 4'). Some trees fallen in stream. Two bath tubs near stream bank.

PRJ_ ID_LEG	PRJ_ TYPE	Detailed Description	BPJ Project Ranking Comments
WR9209	Stream Restoration	Stream section near Rose Hall Drive conveying runoff from upstream houses and wooded area, has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	Field investigations indentified stream actively meandering with exposed banks (around 2'). One spot with 5' undercut bank, significant erosion. Stream has room for banks to be stabilized.
WR9210	Stream Restoration	The stream section north of Amkin Court conveys runoff from upstream houses and wooded area and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	WAG commented project could be important long term and numerous property owners with property near stream would welcome any project that stabilizes stream as long as there isn't any extreme invasion of property. Field investigations indentified banks are eroded with heights of 2' to 3' in some places. There is some excessive meander. Recommend minor spot treatments.
WR9211	Stream Restoration	Stream section west of Amkin Drive conveying runoff from upstream houses and wooded area, has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	WAG commented project could be important long term and numerous property owners with property near stream would welcome any project that stabilizes stream as long as there isn't any extreme invasion of property. Field investigation revealed stream bank eroded 7' near structure. Stream is down cutting, meandering, and undercutting trees. Eroded bank threatening homeowner property.
WR9212	Stream Restoration	Stream section near Maple Branch Road conveying runoff from upstream houses and wooded area, has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	WAG commented that the crossing road is a major thoroughfare and project should be high on priority list due to potential road-closure and blockage consequences. Per field investigation, stream is in an open area running across two roads. Exposed roots and 2' vertical slopes. One 4' exposed slope near culvert crossing could be improved. Stream exhibits signs of widening, eroding banks, and sediment deposition.
WR9213	Stream Restoration	The stream section west of Swift Run Trails Drive conveys runoff from upstream houses and wooded area and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	WAG commented that this is an important project with high value. Field investigation indentified eroded bank with debris and fallen trees. Possible spot treatments.
WR9214	Stream Restoration	The stream section upstream of Swift Run Trails Drive conveys runoff from upstream houses and wooded area and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	WAG commented this is a major road culvert within Swift Run Trails subdivision and stream can have a large velocity at this point. Project is important and anything that could be done to stabilize banks would be advantageous. Field investigation indentified that the downstream end minor erosion. Stream needs buffer enhancement from mowed yard with horses.
WR9215	Stream Restoration	Stream section north of Swift Run Trails Drive conveying runoff from upstream houses and wooded area, has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	Property owner indicates that the streams flow only when upstream ponds overflow or flood during heavy or extended rainfalls; extensive pond population in the area degrades the stream quality. Owner is indisposed to having County enter his property to remedy an issue that is neither obvious or severe. WAG identified as critical. Field investigations indentified stream ran through private driveway that had a gate. The adjacent stream was a better candidate, because it received road runoff and had less stable banks. Lower priority- Not of great need.
WR9216	Stream Restoration	Stream section north of Clifton Road conveying runoff from upstream houses and wooded area, has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	WAG was concerned about potential access issues; not able to contact property owner. WAG identified as critical. Field investigation revealed site was secured with signs stating owners desire for privacy. Implementability score is low.
WR9217	Stream Restoration	The stream section south of Corral Drive conveys runoff from upstream houses, open space and wooded area and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	Field investigation indentified stream has eroded banks in spots. There are some exposed roots. Recommend spot treatments
WR9218	Stream Restoration	The stream section near Lilting Lane in Fairfax Station conveys runoff from upstream houses, roadways and wooded area and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	Field investigation indentified needs buffer and spot treatments. Stream runs in front yard and had some banks that were steep, but erosion heights were less than 3'. Homeowner wanted to know how project would affect her property. Some sedimentation. Erosion at culvert outfall.
WR9219	Stream Restoration	The stream section near Lilting Lane in Fairfax Station conveys runoff from upstream houses, roadways and wooded area where two streams converge and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion on the eastern branch to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	Per field investigation, stream showed marginal erosion. Stream crosses yards where horses are picketed. Stream needs buffer (yard was mowed to stream bank).
WR9220	Stream Restoration	The stream section east of Wolf Den Road in Fairfax Station conveys runoff from upstream houses, open spaces and wooded area and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	Field investigation indentified stream showed active signs of meander and erosion. Some banks were steep with exposed roots. Upstream branches both had ponds.

PRJ_ ID_LEG	PRJ_ TYPE	Detailed Description	BPJ Project Ranking Comments
WR9221	Stream Restoration	The stream section west of Lilting Lane in Fairfax Station conveys runoff from upstream houses, roadways and wooded area where two streams converge and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion on the western stream to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	Stream would benefit from spot improvements on eroded banks. Outfall protection from culvert is in need of repair.
WR9222	Stream Restoration	South of Ryanlynn Drive there are two streams which convey runoff from upstream houses and a wooded area. The streams have indicators of poor channel morphology. This project proposes restoring the channel morphology of the eastern branch by reducing the bank and bed erosion. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	Field investigation could not access site, but eroded banks and sediment deposition occurred downstream. There was a high steep slope near the project.
WR9223	Stream Restoration	South of Ryanlynn Drive there are two streams which convey runoff from upstream houses and a wooded area. The streams have indicators of poor channel morphology. This project proposes restoring the channel morphology of the western branch by reducing the bank and bed erosion. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.	Field investigation revealed site not accessible, but eroded banks sediment deposition occurred downstream. There was a high steep slope near the project.

Appendix D: Summary of Impact Indicators

Appendix D: Summary of Impact Indicator Scoring

PRJ ID LEG	PRJ_TYPE	Sub-watershed	Channel Morph.	Instream Sediment	Hydrology	Prot. RPA Riparian	Prot. Headwater Riparian	Prot. Wetland	Prot. Forrest Habitat.	TSS	TN	TP	# of Scored Indicators Score	Sum	Score
HP9201	Stream Restoration	HP-PO-0013	2	3	2	4	1	4	-	5	5	5	5	36	3.60
HP9801	Buffer Restoration	HP-PO-0018	2	3	2	4	2	4	2	4	2	3	5	33	3.00
KC9201	Stream Restoration	KC-KC-0003	2	2	2	3	1	4	-	4	5	3	5	31	3.10
KC9202	Stream Restoration	KC-KC-0010	2	2	2	4	1	4	-	5	5	3	5	33	3.30
KC9203	Stream Restoration	KC-KC-0013	2	3	2	4	1	4	-	5	5	3	5	34	3.40
KC9204	Stream Restoration	KC-KC-0012	2	2	3	4	1	4	-	5	5	4	5	35	3.50
KC9205	Stream Restoration	KC-KC-0009	2	2	2	4	1	4	-	5	5	4	5	34	3.40
KC9206	Stream Restoration	KC-OC-0002	2	3	2	4	2	4	-	5	5	3	5	35	3.50
KC9207	Stream Restoration	KC-TC-0002	4	3	5	4	1	4	-	5	4	3	5	38	3.80
KC9208	Stream Restoration	KC-TC-0004	2	3	2	4	2	4	-	5	5	4	5	36	3.60
KC9209	Stream Restoration	KC-KC-0006	2	2	4	4	1	4	-	3	3	2	5	30	3.00
KC9210	Stream Restoration	KC-TC-0006	4	3	5	4	1	5	-	5	4	3	5	39	3.90
KC9211	Stream Restoration	KC-TC-0005	4	3	3	4	3	4	-	4	4	3	5	37	3.70
KC9701	Outfall Improvement	KC-OC-0001	-	3	5	-	-	-	-	2	4	4	2	20	3.33
MB9101	Stormwater Pond Retrofit	MB-OC-0003	-	-	5	-	-	-	-	1	3	2	1	12	2.40
MB9102	Stormwater Pond Retrofit Suit	MB-OC-0004	0	4	5	0	0	0	0	1	1	1	2	14	2.33
MB9102A	Stormwater Pond Retrofit	MB-OC-0004	-	-	5	-	-	-	-	1	1	1	1	9	1.80
MB9102B	Outfall Improvement	MB-OC-0005	-	4	2	-	-	-	-	4	4	4	2	20	3.33
MB9103	Stormwater Pond Retrofit	MB-OC-0004	-	-	5	-	-	-	-	2	3	2	1	13	2.60
MB9104	Stormwater Pond Retrofit	MB-GR-0001	-	-	4	-	-	-	-	1	1	1	1	8	1.60
MB9105	Stormwater Pond Retrofit	MB-OC-0005	-	-	2	-	-	-	-	3	4	4	1	14	2.80
MB9106	Stormwater Pond Retrofit	MB-GR-0001	-	-	4	-	-	-	-	1	1	1	1	8	1.60
MB9107	Stormwater Pond Retrofit	MB-GR-0001	-	-	4	-	-	-	-	2	2	1	1	10	2.00
MB9108	Stormwater Pond Retrofit	MB-GR-0001	-	-	4	-	-	-	-	2	2	1	1	10	2.00
MB9109	Stormwater Pond Retrofit	MB-GR-0003	-	-	4	-	-	-	-	4	5	4	1	18	3.60
MB9110	Stormwater Pond Retrofit	MB-GR-0004	-	-	4	-	-	-	-	2	2	2	1	11	2.20
MB9111	Stormwater Pond Retrofit	MB-GR-0003	-	-	4	-	-	-	-	5	2	2	1	14	2.80
MB9112	Stormwater Pond Retrofit	MB-GR-0005	-	-	4	-	-	-	-	2	3	2	1	12	2.40
MB9113	Stormwater Pond Retrofit	MB-GR-0007	-	-	3	-	-	-	-	1	2	2	1	9	1.80
MB9114	Stormwater Pond Retrofit	MB-GR-0007	-	-	3	-	-	-	-	1	1	1	1	7	1.40
MB9115	Stormwater Pond Retrofit	MB-GR-0007	-	-	3	-	-	-	-	1	2	2	1	9	1.80
MB9116	Stormwater Pond Retrofit	MB-GR-0008	-	-	1	-	-	-	-	2	3	2	1	9	1.80
MB9117	Stormwater Pond Retrofit	MB-MB-0005	-	-	4	-	-	-	-	2	2	2	1	11	2.20
MB9118	Stormwater Pond Retrofit	MB-MB-0005	-	-	4	-	-	-	-	1	1	1	1	8	1.60
MB9119	Stormwater Pond Retrofit	MB-GR-0010	-	-	4	-	-	-	-	1	1	1	1	8	1.60
MB9120	Stormwater Pond Retrofit	MB-GR-0015	-	-	3	-	-	-	-	3	4	4	1	15	3.00
MB9121	Stormwater Pond Retrofit	MB-GR-0016	-	-	1	-	-	-	-	1	2	1	1	6	1.20
MB9122	Stormwater Pond Retrofit	MB-GR-0016	-	-	1	-	-	-	-	1	1	1	1	5	1.00
MB9123	Stormwater Pond Retrofit	MB-GR-0017	-	-	1	-	-	-	-	1	2	1	1	6	1.20
MB9124	Stormwater Pond Retrofit	MB-GR-0018	-	-	5	-	-	-	-	2	4	3	1	15	3.00
MB9125	Stormwater Pond Retrofit	MB-GR-0019	-	-	2	-	-	-	-	2	2	2	1	9	1.80

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MB9201	Stream Restoration	MB-OC-0003	4	4	5	4	3	4	-	5	4	3	5	41	4.10
MB9202	Stream Restoration	MB-SB-0001	4	3	3	4	2	4	-	2	3	2	5	32	3.20
MB9203	Stream Restoration	MB-SB-0001	4	3	3	4	2	4	-	3	4	3	5	35	3.50
MB9204	Stream Restoration	MB-OC-0008	2	2	4	3	4	4	-	5	5	3	5	37	3.70
MB9205	Stream Restoration	MB-MB-0001	4	3	4	4	4	4	-	5	5	3	5	41	4.10
MB9206	Stream Restoration	MB-OC-0009	2	3	4	3	4	4	-	4	3	2	5	34	3.40
MB9207	Stream Restoration	MB-MB-0004	4	3	2	4	4	4	-	3	2	2	5	33	3.30
MB9208	Stream Restoration	MB-GR-0010	2	3	4	3	5	4	-	4	3	2	5	35	3.50
MB9209	Stream Restoration	MB-GR-0009	4	4	5	3	4	5	-	3	4	2	5	39	3.90
MB9210	Stream Restoration	MB-GR-0011	4	2	3	2	3	4	-	2	3	2	5	30	3.00
MB9211	Stream Restoration	MB-GR-0015	4	4	3	4	3	5	-	2	1	1	5	32	3.20
MB9212	Stream Restoration	MB-GR-0015	4	4	3	4	3	5	-	4	4	2	5	38	3.80
MB9213	Stream Restoration	MB-GR-0016	4	4	2	3	4	4	-	1	1	1	5	29	2.90
MB9214	Stream Restoration	MB-GR-0016	4	4	2	3	4	4	-	2	1	1	5	30	3.00
MB9215	Stream Restoration	MB-GR-0017	4	4	2	2	4	4	-	4	4	2	5	35	3.50
MB9216	Stream Restoration	MB-GR-0019	4	4	2	3	4	4	-	3	3	2	5	34	3.40
MB9501	BMP/LID	MB-OC-0005	-	-	2	-	-	-	-	1	1	1	1	6	1.20
MB9502	BMP/LID	MB-OC-0006	-	-	5	-	-	-	-	2	3	2	1	13	2.60
MB9503	BMP/LID	MB-GR-0001	-	-	4	-	-	-	-	2	2	2	1	11	2.20
MB9504	BMP/LID	MB-SB-0001	-	-	3	-	-	-	-	1	1	1	1	7	1.40
MB9505	BMP/LID	MB-SB-0001	-	-	3	-	-	-	-	1	2	1	1	8	1.60
MB9506	BMP/LID	MB-GR-0007	-	-	3	-	-	-	-	1	2	1	1	8	1.60
MB9507	BMP/LID	MB-GR-0016	-	-	2	-	-	-	-	1	1	1	1	6	1.20
MB9508	BMP/LID	MB-GR-0012	-	-	2	-	-	-	-	1	1	1	1	6	1.20
MB9509	BMP/LID	MB-GR-0018	-	-	5	-	-	-	-	1	2	2	1	11	2.20
MB9510	BMP/LID	MB-GR-0019	-	-	2	-	-	-	-	2	2	2	1	9	1.80
MB9511	BMP/LID	MB-GR-0018	-	-	5	-	-	-	-	1	1	1	1	9	1.80
MB9512	BMP/LID	MB-GR-0019	-	-	2	-	-	-	-	1	1	1	1	6	1.20
MB9702	Outfall Improvement	MB-GR-0001	-	4	4	-	-	-	-	4	4	4	2	22	3.67
MB9703	Outfall Improvement	MB-GR-0018	-	4	5	-	-	-	-	4	3	3	2	21	3.50
MB9801	Buffer Restoration	MB-GR-0001	4	4	4	3	3	4	3	4	4	4	5	42	3.82
MB9802	Buffer Restoration	MB-OC-0006	2	2	5	3	1	4	3	4	4	4	5	37	3.36
MB9804	Buffer Restoration	MB-MB-0005	4	4	4	5	3	4	4	1	3	4	5	41	3.73
MB9806	Buffer Restoration Suite	MB-GR-0013	4	3	3	2	4	4	4	4	3	3	5	39	3.55
MB9806A	Buffer Restoration	MB-GR-0013	4	3	3	2	4	4	4	4	3	3	5	39	3.55
MB9806B	Buffer Restoration	MB-GR-0013	4	3	3	2	4	4	4	4	3	3	5	39	3.55
MB9807	Buffer Restoration Suite	MB-GR-0012	4	4	2	3	4	4	4	4	3	4	5	41	3.73
MB9807A	Buffer Restoration	MB-GR-0012	4	4	2	3	4	4	4	4	3	4	5	41	3.73
MB9807B	Buffer Restoration	MB-GR-0012	4	4	2	3	4	4	4	4	3	4	5	41	3.73
MB9811	Buffer Restoration	MB-GR-0019	4	4	2	3	4	4	4	4	4	4	5	42	3.82
OC9101	Stormwater Pond Retrofit	OC-EH-0003	-	-	5	-	-	-	-	1	2	1	1	10	2.00

Appendix D: Summary of Impact Indicator Scoring

PRJ ID LEG	PRJ_TYPE	Sub-watershed	Channel Morph.	Instream Sediment	Hydrology	Prot. RPA Riparian	Prot. Headwater Riparian	Prot. Wetland	Prot. Forrest Habitat.	TSS	TN	TP	# of Scored Indicators Score	Sum	Score
OC9102	Stormwater Pond Retrofit	OC-EH-0005	-	-	5	-	-	-	-	2	3	2	1	13	2.60
OC9103	Stormwater Pond Retrofit	OC-EH-0006	-	-	4	-	-	-	-	1	2	2	1	10	2.00
OC9201	Stream Restoration	OC-EH-0002	4	3	5	4	3	5	-	4	4	2	5	39	3.90
OC9202	Stream Restoration	OC-EH-0002	4	3	5	4	3	5	-	4	4	3	5	40	4.00
OC9203	Stream Restoration Suite	OC-EH-0003	4	3	5	4	4	4	-	3	4	4	5	40	4.00
OC9203A	Stream Restoration	OC-EH-0003	4	3	5	4	4	4	-	3	4	3	5	39	3.90
OC9204	Stream Restoration	OC-OR-0007	2	3	4	3	1	4	-	5	4	3	5	34	3.40
OC9205	Stream Restoration	OC-OR-0005	4	3	2	4	1	4	-	4	4	3	5	34	3.40
OC9206	Stream Restoration	OC-OR-0005	4	3	2	4	1	4	-	3	3	2	5	31	3.10
OC9207	Stream Restoration Suite	OC-EH-0005	4	4	5	4	3	4	-	3	3	3	5	38	3.80
OC9207A	Stream Restoration	OC-EH-0005	4	4	5	4	3	4	-	3	3	2	5	37	3.70
OC9208	Stream Restoration	OC-EH-0006	4	3	4	4	3	4	-	4	4	3	5	38	3.80
OM9201	Stream Restoration	OM-BU-0004	4	4	3	4	1	4	-	5	5	4	5	39	3.90
OM9202	Stream Restoration	OM-BU-0005	4	4	3	3	1	4	-	3	4	3	5	34	3.40
OM9203	Stream Restoration	OM-BU-0006	4	4	2	4	1	4	-	4	4	2	5	34	3.40
OM9204	Stream Restoration	OM-OM-0001	3	4	2	4	1	4	-	5	4	3	5	35	3.50
OM9205	Stream Restoration	OM-BU-0008	4	4	5	4	1	4	-	3	3	2	5	35	3.50
OM9206	Stream Restoration	OM-BU-0008	4	4	5	4	1	4	-	3	3	2	5	35	3.50
OM9207	Stream Restoration	OM-BU-0008	4	4	5	4	1	4	-	2	2	2	5	33	3.30
RD9201	Stream Restoration	RD-OR-0016	4	2	4	4	1	4	-	4	5	4	5	37	3.70
RD9202	Stream Restoration	RD-SW-0002	4	2	5	4	1	4	-	4	5	4	5	38	3.80
RD9501	BMP/LID	RD-OR-0008	-	-	2	-	-	-	-	2	2	2	1	9	1.80
RD9502	BMP/LID	RD-OR-0011	-	-	2	-	-	-	-	3	5	5	1	16	3.20
SA9101	Stormwater Pond Retrofit	SA-SA-0004	-	-	3	-	-	-	-	2	3	2	1	11	2.20
SA9102	Stormwater Pond Retrofit	SA-SA-0004	-	-	3	-	-	-	-	1	1	1	1	7	1.40
SA9103	Stormwater Pond Retrofit	SA-SA-0012	-	-	2	-	-	-	-	2	4	3	1	12	2.40
SA9104	Stormwater Pond Retrofit	SA-SA-0022	-	-	2	-	-	-	-	2	4	3	1	12	2.40
SA9105	Stormwater Pond Retrofit	SA-SA-0013	-	-	3	-	-	-	-	2	4	3	1	13	2.60
SA9106	Stormwater Pond Retrofit	SA-SA-0022	-	-	2	-	-	-	-	1	1	1	1	6	1.20
SA9107	Stormwater Pond Retrofit	SA-SA-0025	-	-	3	-	-	-	-	2	4	3	1	13	2.60
SA9201	Stream Restoration	SA-OR-0004	4	4	5	4	2	4	-	3	2	2	5	35	3.50
SA9202	Stream Restoration	SA-SA-0003	4	3	4	4	1	4	-	5	4	3	5	37	3.70
SA9203	Stream Restoration	SA-SA-0004	4	3	3	4	1	4	-	5	4	3	5	36	3.60
SA9204	Stream Restoration	SA-SA-0008	4	3	4	4	1	5	-	3	4	2	5	35	3.50
SA9205	Stream Restoration Suite	SA-SA-0016	3	4	2	4	1	4	-	4	4	4	5	35	3.50
SA9205A	Stream Restoration	SA-SA-0016	3	4	2	4	1	4	-	4	4	3	5	34	3.40
SA9206	Stream Restoration	SA-SA-0016	3	4	2	4	1	4	-	5	5	4	5	37	3.70
SA9207	Stream Restoration Suite	SA-SA-0018	4	3	5	4	1	4	1	3	2	3	5	35	3.18
SA9207A	Stream Restoration	SA-SA-0018	4	3	5	4	1	4	-	3	2	2	5	33	3.30
SA9207B	Buffer Restoration	SA-SA-0018	4	3	5	4	1	4	1	4	3	3	5	37	3.36
SA9208	Stream Restoration	SA-SA-0013	4	4	3	4	1	4	-	4	4	3	5	36	3.60

Appendix D: Summary of Impact Indicator Scoring

PRJ ID LEG	PRJ_TYPE	Sub-watershed	Channel Morph.	Instream Sediment	Hydrology	Prot. RPA Riparian	Prot. Headwater Riparian	Prot. Wetland	Prot. Forrest Habitat.	TSS	TN	TP	# of Scored Indicators Score	Sum	Score
SA9209	Stream Restoration	SA-SA-0022	4	3	2	4	1	4	-	3	2	2	5	30	3.00
SA9210	Stream Restoration	SA-SA-0020	4	4	3	5	1	5	-	5	4	3	5	39	3.90
SA9211	Stream Restoration	SA-SA-0025	4	3	3	4	1	4	-	2	1	1	5	28	2.80
SA9212	Stream Restoration	SA-SA-0025	4	3	3	4	1	4	-	3	2	2	5	31	3.10
SA9213	Stream Restoration	SA-SA-0026	4	3	2	4	1	5	-	3	2	2	5	31	3.10
SA9214	Stream Restoration	SA-SA-0026	4	3	2	4	1	5	-	4	4	3	5	35	3.50
SA9701	Outfall Improvement	SA-SA-0018	-	3	5	-	-	-	-	4	3	3	2	20	3.33
SA9702	Outfall Improvement	SA-SA-0019	-	4	2	-	-	-	-	4	3	2	2	17	2.83
SA9801	Buffer Restoration	SA-SA-0010	4	4	2	3	1	4	1	1	2	2	5	29	2.64
SA9802	Buffer Restoration	SA-SA-0012	4	4	2	4	1	4	2	4	3	3	5	36	3.27
WR9201	Stream Restoration	WR-WR-0002	4	3	2	4	1	4	-	4	5	4	5	36	3.60
WR9202	Stream Restoration	WR-WR-0003	4	3	2	4	2	4	-	3	3	2	5	32	3.20
WR9203	Stream Restoration	WR-WR-0003	4	3	2	4	2	4	-	2	2	2	5	30	3.00
WR9204	Stream Restoration	WR-WR-0003	4	3	2	4	2	4	-	2	2	2	5	30	3.00
WR9205	Stream Restoration	WR-WR-0005	4	4	4	4	1	4	-	3	4	3	5	36	3.60
WR9206	Stream Restoration	WR-WR-0006	4	3	3	4	1	4	-	5	5	5	5	39	3.90
WR9207	Stream Restoration	WR-WR-0007	4	3	2	4	2	4	-	4	4	3	5	35	3.50
WR9208	Stream Restoration	WR-WR-0008	4	3	2	3	2	4	-	4	5	4	5	36	3.60
WR9209	Stream Restoration	WR-WR-0008	4	3	2	3	2	4	-	5	5	5	5	38	3.80
WR9210	Stream Restoration	WR-WR-0011	4	3	2	4	2	4	-	4	4	3	5	35	3.50
WR9211	Stream Restoration	WR-WR-0011	4	3	2	4	2	4	-	4	4	3	5	35	3.50
WR9212	Stream Restoration	WR-WR-0009	4	3	2	4	1	4	-	5	5	4	5	37	3.70
WR9213	Stream Restoration	WR-WR-0013	4	4	2	4	1	4	-	3	4	3	5	34	3.40
WR9214	Stream Restoration	WR-WR-0013	4	4	2	4	1	4	-	4	4	3	5	35	3.50
WR9215	Stream Restoration	WR-WR-0015	4	4	4	4	2	4	-	3	3	2	5	35	3.50
WR9216	Stream Restoration	WR-WR-0017	4	3	3	4	1	4	-	5	5	5	5	39	3.90
WR9217	Stream Restoration	WR-WR-0017	4	3	3	4	1	4	-	4	5	4	5	37	3.70
WR9218	Stream Restoration	WR-WR-0021	4	4	4	4	1	5	-	4	4	3	5	38	3.80
WR9219	Stream Restoration	WR-WR-0021	4	4	4	4	1	5	-	5	4	3	5	39	3.90
WR9220	Stream Restoration	WR-WR-0019	2	4	2	4	2	5	-	5	4	3	5	36	3.60
WR9221	Stream Restoration	WR-WR-0022	4	4	4	4	1	4	-	5	5	4	5	40	4.00
WR9222	Stream Restoration	WR-WR-0024	4	4	5	4	2	4	-	5	5	5	5	43	4.30
WR9223	Stream Restoration	WR-WR-0023	4	3	2	4	1	4	-	4	4	3	5	34	3.40

Appendix E: STEPL Pollutant Loads

Appendix E: STEPL Pollutant Loads

			TSS			TN			TP		
PRJ_ID _LEG	PRJ_TYPE	Sub-watershed	Future w/o Project Conditions (tons/ac/yr)	Future w/ Project Conditions Metric (tons/ac/yr)	% Change: Future w/o to Future w/ Project	Future w/o Project Conditions (lbs/ac/yr)	Future w/ Project Conditions Metric (lbns/ac/yr)	% Change: Future w/o to Future w/ Project2	Future w/o Project Conditions (lbs/ac/yr)3	Future w/ Project Conditions Metric (lbns/ac/yr)4	% Change: Future w/o to Future w/ Project5
HP9201	Stream Restoration	HP-PO-0013	0.476	0.113	76.30%	1.361	0.867	36.27%	0.209	0.018	91.56%
KC9201	Stream Restoration	KC-KC-0003	0.186	0.098	47.28%	1.012	0.892	11.83%	0.203	0.157	22.85%
KC9202	Stream Restoration	KC-KC-0010	0.136	0.065	51.97%	0.871	0.775	11.04%	0.161	0.124	23.15%
KC9203	Stream Restoration	KC-KC-0013	0.192	0.095	50.49%	1.097	0.965	12.00%	0.211	0.160	24.12%
KC9204	Stream Restoration	KC-KC-0012	0.224	0.071	68.32%	1.538	1.329	13.56%	0.243	0.162	33.27%
KC9205	Stream Restoration	KC-KC-0009	0.245	0.104	57.52%	1.266	1.074	15.12%	0.227	0.153	32.66%
KC9206	Stream Restoration	KC-OC-0002	0.244	0.090	63.30%	2.488	2.240	9.93%	0.374	0.278	25.62%
KC9207	Stream Restoration	KC-TC-0002	0.256	0.111	56.84%	3.455	3.222	6.74%	0.527	0.437	17.11%
KC9208	Stream Restoration	KC-TC-0004	0.371	0.154	58.45%	2.634	2.339	11.21%	0.363	0.249	31.48%
KC9209	Stream Restoration	KC-KC-0006	0.174	0.137	21.60%	2.418	2.367	2.12%	0.368	0.348	5.40%
KC9210	Stream Restoration	KC-TC-0006	0.235	0.090	61.83%	3.225	3.027	6.12%	0.488	0.412	15.65%
KC9211	Stream Restoration	KC-TC-0005	0.384	0.235	38.97%	2.498	2.294	8.15%	0.377	0.298	20.95%
MB9101	Stormwater Pond Retrofit	MB-OC-0003	0.470	0.466	0.79%	5.347	5.260	1.63%	0.731	0.710	2.87%
MB9102	Stormwater Pond Retrofit S	MB-OC-0004	0.223	0.223	0.00%	9.556	9.556	0.00%	1.460	1.460	0.00%
MB9102A	Stormwater Pond Retrofit	MB-OC-0004	0.223	0.223	0.00%	9.556	9.556	0.00%	1.460	1.460	0.00%
MB9103	Stormwater Pond Retrofit	MB-OC-0004	0.223	0.211	5.33%	9.556	9.385	1.79%	1.460	1.426	2.34%
MB9104	Stormwater Pond Retrofit	MB-GR-0001	0.160	0.159	0.83%	5.787	5.774	0.23%	0.829	0.827	0.34%
MB9105	Stormwater Pond Retrofit	MB-OC-0005	0. 15	0. 24	21. 9%	16. 22	15. 60	8. 5%	2. 51	2. 72	14. 7%
MB9106	Stormwater Pond Retrofit	MB-GR-0001	0.160	0.160	0.07%	5.787	5.785	0.04%	0.829	0.829	0.05%
MB9107	Stormwater Pond Retrofit	MB-GR-0001	0.160	0.158	1.12%	5.787	5.763	0.42%	0.829	0.826	0.43%
MB9108	Stormwater Pond Retrofit	MB-GR-0001	0.160	0.158	1.58%	5.787	5.749	0.66%	0.829	0.823	0.73%
MB9109	Stormwater Pond Retrofit	MB-GR-0003	0.285	0.166	41.89%	11.283	9.517	15.65%	1.458	1.188	18.53%
MB9110	Stormwater Pond Retrofit	MB-GR-0004	0.272	0.266	2.13%	10.300	10.189	1.07%	1.172	1.151	1.78%
MB9111	Stormwater Pond Retrofit	MB-GR-0003	0.285	-0.157	154.95%	11.283	11.192	0.81%	1.458	1.436	1.53%
MB9112	Stormwater Pond Retrofit	MB-GR-0005	0.512	0.502	1.96%	9.377	9.241	1.45%	1.263	1.243	1.60%
MB9113	Stormwater Pond Retrofit	MB-GR-0007	0.428	0.426	0.59%	7.504	7.467	0.49%	0.960	0.953	0.73%
MB9114	Stormwater Pond Retrofit	MB-GR-0007	0.428	0.427	0.28%	7.504	7.480	0.32%	0.960	0.955	0.55%
MB9115	Stormwater Pond Retrofit	MB-GR-0007	0.428	0.426	0.57%	7.504	7.460	0.58%	0.960	0.953	0.80%
MB9116	Stormwater Pond Retrofit	MB-GR-0008	0.520	0.511	1.81%	8.156	8.018	1.69%	1.165	1.138	2.39%
MB9117	Stormwater Pond Retrofit	MB-MB-0005	0.093	0.091	1.89%	4.653	4.618	0.77%	0.710	0.703	0.98%
MB9118	Stormwater Pond Retrofit	MB-MB-0005	0.093	0.092	0.76%	4.653	4.638	0.34%	0.710	0.707	0.41%
MB9119	Stormwater Pond Retrofit	MB-GR-0010	0.271	0.271	0.00%	8.297	8.297	0.00%	1.199	1.199	0.00%
MB9120	Stormwater Pond Retrofit	MB-GR-0015	0.319	0.284	10.90%	6.221	5.716	8.11%	0.869	0.775	10.81%
MB9121	Stormwater Pond Retrofit	MB-GR-0016	0.244	0.243	0.40%	4.779	4.763	0.34%	0.697	0.693	0.53%
MB9122	Stormwater Pond Retrofit	MB-GR-0016	0.244	0.243	0.13%	4.779	4.777	0.04%	0.697	0.696	0.12%
MB9123	Stormwater Pond Retrofit	MB-GR-0017	0.302	0.301	0.50%	7.011	6.982	0.42%	1.054	1.049	0.55%
MB9124	Stormwater Pond Retrofit	MB-GR-0018	0.274	0.266	3.19%	3.344	3.150	5.83%	0.471	0.434	7.90%
MB9125	Stormwater Pond Retrofit	MB-GR-0019	0.195	0.192	1.61%	5.869	5.821	0.82%	0.893	0.882	1.25%
MB9201	Stream Restoration	MB-OC-0003	0.470	0.167	64.50%	5.347	4.934	7.71%	0.731	0.571	21.87%
MB9202	Stream Restoration	MB-SB-0001	0.435	0.402	7.69%	3.715	3.669	1.23%	0.498	0.480	3.55%
MB9203	Stream Restoration	MB-SB-0001	0.435	0.340	21.99%	3.715	3.584	3.50%	0.498	0.447	10.13%
MB9204	Stream Restoration	MB-OC-0008	0.627	0.274	56.23%	6.593	6.029	8.55%	0.925	0.707	23.62%
MB9205	Stream Restoration	MB-MB-0001	0.558	0.151	72.91%	7.817	7.167	8.32%	0.959	0.707	26.27%
MB9206	Stream Restoration	MB-OC-0009	0.311	0.193	37.93%	7.854	7.693	2.04%	0.993	0.931	6.26%
MB9207	Stream Restoration	MB-MB-0004	0.170	0.140	17.57%	3.465	3.424	1.17%	0.501	0.485	3.15%

Appendix E: STEPL Pollutant Loads

			TSS			TN			TP		
PRJ_ID _LEG	PRJ_TYPE	Sub-watershed	Future w/o Project Conditions (tons/ac/yr)	Future w/ Project Conditions Metric (tons/ac/yr)	% Change: Future w/o to Future w/ Project	Future w/o Project Conditions (lbs/ac/yr)	Future w/ Project Conditions Metric (lbns/ac/yr)	% Change: Future w/o to Future w/ Project2	Future w/o Project Conditions (lbs/ac/yr)3	Future w/ Project Conditions Metric (lbns/ac/yr)4	% Change: Future w/o to Future w/ Project5
MB9208	Stream Restoration	MB-GR-0010	0.271	0.181	33.29%	8.297	8.174	1.48%	1.199	1.151	3.97%
MB9209	Stream Restoration	MB-GR-0009	0.453	0.348	23.19%	5.105	4.962	2.80%	0.741	0.685	7.47%
MB9210	Stream Restoration	MB-GR-0011	0.394	0.366	7.24%	1.799	1.760	2.16%	0.262	0.247	5.73%
MB9211	Stream Restoration	MB-GR-0015	0.319	0.311	2.44%	6.221	6.208	0.20%	0.869	0.864	0.56%
MB9212	Stream Restoration	MB-GR-0015	0.319	0.200	37.25%	6.221	6.031	3.06%	0.869	0.795	8.48%
MB9213	Stream Restoration	MB-GR-0016	0.244	0.241	0.95%	4.779	4.776	0.07%	0.697	0.696	0.17%
MB9214	Stream Restoration	MB-GR-0016	0.244	0.239	1.70%	4.779	4.773	0.12%	0.697	0.695	0.31%
MB9215	Stream Restoration	MB-GR-0017	0.302	0.160	47.14%	7.011	6.784	3.25%	1.054	0.966	8.37%
MB9216	Stream Restoration	MB-GR-0019	0.195	0.152	22.16%	5.869	5.800	1.18%	0.893	0.866	3.00%
MB9501	BMP/LID	MB-OC-0005	0.415	0.413	0.53%	16.522	16.482	0.24%	2.651	2.641	0.35%
MB9502	BMP/LID	MB-OC-0006	0.317	0.314	1.01%	5.973	5.895	1.32%	0.922	0.903	1.99%
MB9503	BMP/LID	MB-GR-0001	0.160	0.157	1.96%	5.787	5.734	0.92%	0.829	0.821	1.01%
MB9504	BMP/LID	MB-SB-0001	0.435	0.435	0.03%	3.715	3.712	0.06%	0.498	0.497	0.11%
MB9505	BMP/LID	MB-SB-0001	0.435	0.435	0.13%	3.715	3.701	0.36%	0.498	0.494	0.63%
MB9506	BMP/LID	MB-GR-0007	0.428	0.427	0.30%	7.504	7.478	0.35%	0.960	0.955	0.54%
MB9507	BMP/LID	MB-GR-0016	0.244	0.243	0.15%	4.779	4.770	0.18%	0.697	0.695	0.29%
MB9508	BMP/LID	MB-GR-0012	0.232	0.231	0.23%	4.159	4.156	0.07%	0.647	0.647	0.13%
MB9509	BMP/LID	MB-GR-0018	0. 74	0. 73	0. 6%	3. 44	3. 20	0. 2%	0. 71	0. 66	1. 9%
MB9510	BMP/LID	MB-GR-0019	0.195	0.193	1.12%	5.869	5.834	0.59%	0.893	0.885	0.94%
MB9511	BMP/LID	MB-GR-0018	0.274	0.274	0.03%	3.344	3.342	0.08%	0.471	0.471	0.12%
MB9512	BMP/LID	MB-GR-0019	0.195	0.195	0.16%	5.869	5.861	0.13%	0.893	0.891	0.20%
OC9101	Stormwater Pond Retrofit	OC-EH-0003	0.473	0.472	0.16%	3.842	3.824	0.46%	0.480	0.476	0.71%
OC9102	Stormwater Pond Retrofit	OC-EH-0005	0.314	0.311	0.96%	4.774	4.707	1.40%	0.675	0.662	1.89%
OC9103	Stormwater Pond Retrofit	OC-EH-0006	0.299	0.299	0.30%	3.061	3.041	0.65%	0.405	0.401	0.94%
OC9201	Stream Restoration	OC-EH-0002	0.283	0.189	33.21%	3.635	3.507	3.52%	0.506	0.456	9.81%
OC9202	Stream Restoration	OC-EH-0002	0.283	0.165	41.93%	3.635	3.474	4.45%	0.506	0.443	12.38%
OC9203	Stream Restoration Suite	OC-EH-0003	0.473	0.349	26.08%	3.842	3.674	4.36%	0.480	0.415	13.55%
OC9203A	Stream Restoration	OC-EH-0003	0.473	0.349	26.08%	3.842	3.674	4.36%	0.480	0.415	13.55%
OC9204	Stream Restoration	OC-OR-0007	0.148	0.050	66.26%	2.048	1.915	6.51%	0.300	0.249	17.19%
OC9205	Stream Restoration	OC-OR-0005	0.289	0.196	32.46%	1.972	1.844	6.48%	0.253	0.203	19.58%
OC9206	Stream Restoration	OC-OR-0005	0.289	0.260	10.09%	1.972	1.932	2.01%	0.253	0.238	6.09%
OC9207	Stream Restoration Suite	OC-EH-0005	0.314	0.247	21.12%	4.774	4.668	2.22%	0.675	0.634	6.08%
OC9207A	Stream Restoration	OC-EH-0005	0.314	0.247	21.12%	4.774	4.668	2.22%	0.675	0.634	6.08%
OC9208	Stream Restoration	OC-EH-0006	0.299	0.217	27.54%	3.061	2.929	4.31%	0.405	0.354	12.62%
OM9201	Stream Restoration	OM-BU-0004	0.292	0.063	78.48%	2.266	1.954	13.75%	0.314	0.194	38.41%
OM9202	Stream Restoration	OM-BU-0005	0.318	0.264	16.99%	2.467	2.380	3.50%	0.323	0.290	10.36%
OM9203	Stream Restoration	OM-BU-0006	0.102	0.067	33.96%	1.884	1.829	2.94%	0.292	0.271	7.36%
OM9204	Stream Restoration	OM-OM-0001	0.101	0.043	56.93%	2.020	1.928	4.55%	0.297	0.261	11.98%
OM9205	Stream Restoration	OM-BU-0008	0.142	0.117	17.71%	1.923	1.883	2.09%	0.250	0.235	6.22%
OM9206	Stream Restoration	OM-BU-0008	0.142	0.124	12.90%	1.923	1.894	1.52%	0.250	0.239	4.53%
OM9207	Stream Restoration	OM-BU-0008	0.142	0.135	5.19%	1.923	1.911	0.61%	0.250	0.246	1.82%
RD9201	Stream Restoration	RD-OR-0016	0.468	0.284	39.32%	2.464	2.213	10.17%	0.316	0.219	30.69%
RD9202	Stream Restoration	RD-SW-0002	0.460	0.268	41.65%	2.770	2.509	9.41%	0.329	0.228	30.73%
RD9501	BMP/LID	RD-OR-0008	0.141	0.136	3.31%	2.090	2.069	1.04%	0.414	0.407	1.72%
RD9502	BMP/LID	RD-OR-0011	0.211	0.172	18.15%	1.704	1.157	32.09%	0.245	0.120	51.06%

Appendix E: STEPL Pollutant Loads

			TSS			TN			TP		
PRJ_ID _LEG	PRJ_TYPE	Sub-watershed	Future w/o Project Conditions (tons/ac/yr)	Future w/ Project Conditions Metric (tons/ac/yr)	% Change: Future w/o to Future w/ Project	Future w/o Project Conditions (lbs/ac/yr)	Future w/ Project Conditions Metric (lbns/ac/yr)	% Change: Future w/o to Future w/ Project2	Future w/o Project Conditions (lbs/ac/yr)3	Future w/ Project Conditions Metric (lbns/ac/yr)4	% Change: Future w/o to Future w/ Project5
SA9101	Stormwater Pond Retrofit	SA-SA-0004	0.174	0.170	2.80%	3.771	3.698	1.94%	0.566	0.549	2.88%
SA9102	Stormwater Pond Retrofit	SA-SA-0004	0.174	0.174	0.16%	3.771	3.764	0.18%	0.566	0.564	0.24%
SA9103	Stormwater Pond Retrofit	SA-SA-0012	0.263	0.258	1.92%	3.249	3.133	3.59%	0.436	0.414	5.16%
SA9104	Stormwater Pond Retrofit	SA-SA-0022	0.290	0.278	3.98%	4.415	4.151	6.00%	0.613	0.549	10.39%
SA9105	Stormwater Pond Retrofit	SA-SA-0013	0.301	0.294	2.29%	3.606	3.485	3.34%	0.483	0.451	6.52%
SA9106	Stormwater Pond Retrofit	SA-SA-0022	0.290	0.289	0.06%	4.415	4.412	0.09%	0.613	0.612	0.15%
SA9107	Stormwater Pond Retrofit	SA-SA-0025	0.292	0.279	4.27%	5.573	5.317	4.60%	0.848	0.784	7.51%
SA9201	Stream Restoration	SA-OR-0004	0.195	0.162	16.55%	2.630	2.608	0.83%	0.337	0.329	2.52%
SA9202	Stream Restoration	SA-SA-0003	0.196	0.052	73.41%	2.856	2.625	8.08%	0.393	0.303	22.76%
SA9203	Stream Restoration	SA-SA-0004	0.174	0.077	55.78%	3.771	3.615	4.13%	0.566	0.505	10.66%
SA9204	Stream Restoration	SA-SA-0008	0.293	0.216	26.08%	3.817	3.695	3.20%	0.537	0.490	8.81%
SA9205	Stream Restoration Suite	SA-SA-0016	0.318	0.223	29.75%	2.613	2.461	5.79%	0.322	0.263	18.22%
SA9205A	Stream Restoration	SA-SA-0016	0.318	0.223	29.75%	2.613	2.461	5.79%	0.322	0.263	18.22%
SA9206	Stream Restoration	SA-SA-0016	0.318	0.143	55.05%	2.613	2.333	10.71%	0.322	0.213	33.71%
SA9207	Stream Restoration Suite	SA-SA-0018	0.168	0.146	13.23%	3.223	3.187	1.10%	0.450	0.437	3.06%
SA9207A	Stream Restoration	SA-SA-0018	0.168	0.146	13.23%	3.223	3.187	1.10%	0.450	0.437	3.06%
SA9208	Stream Restoration	SA-SA-0013	0.301	0.170	43.63%	3.606	3.395	5.83%	0.483	0.401	16.88%
SA9209	Stream Restoration	SA-SA-0022	0. 90	0. 47	14. 8%	4. 15	4. 81	0. 7%	0. 13	0. 99	2. 5%
SA9210	Stream Restoration	SA-SA-0020	0.241	0.114	52.77%	2.847	2.644	7.14%	0.385	0.307	20.43%
SA9211	Stream Restoration	SA-SA-0025	0.292	0.279	4.19%	5.573	5.565	0.15%	0.848	0.844	0.38%
SA9212	Stream Restoration	SA-SA-0025	0.292	0.256	12.36%	5.573	5.524	0.88%	0.848	0.829	2.24%
SA9213	Stream Restoration	SA-SA-0026	0.241	0.203	15.77%	3.179	3.148	0.96%	0.440	0.428	2.68%
SA9214	Stream Restoration	SA-SA-0026	0.241	0.135	43.87%	3.179	3.009	5.32%	0.440	0.374	14.92%
WR9201	Stream Restoration	WR-WR-0002	0.394	0.221	44.01%	2.476	2.199	11.21%	0.299	0.191	36.01%
WR9202	Stream Restoration	WR-WR-0003	0.457	0.407	10.83%	3.449	3.370	2.30%	0.423	0.393	7.25%
WR9203	Stream Restoration	WR-WR-0003	0.457	0.449	1.64%	3.449	3.437	0.35%	0.423	0.419	1.10%
WR9204	Stream Restoration	WR-WR-0003	0.457	0.444	2.76%	3.449	3.429	0.58%	0.423	0.416	1.84%
WR9205	Stream Restoration	WR-WR-0005	0.459	0.368	19.75%	3.375	3.229	4.30%	0.416	0.360	13.51%
WR9206	Stream Restoration	WR-WR-0006	0.399	0.131	67.24%	2.471	2.041	17.37%	0.276	0.109	60.34%
WR9207	Stream Restoration	WR-WR-0007	0.279	0.159	43.15%	2.466	2.274	7.82%	0.307	0.233	24.30%
WR9208	Stream Restoration	WR-WR-0008	0.643	0.412	35.82%	3.092	2.724	11.91%	0.315	0.172	45.34%
WR9209	Stream Restoration	WR-WR-0008	0.643	0.305	52.58%	3.092	2.551	17.48%	0.315	0.105	66.55%
WR9210	Stream Restoration	WR-WR-0011	0.242	0.152	37.22%	2.963	2.819	4.86%	0.405	0.349	13.80%
WR9211	Stream Restoration	WR-WR-0011	0.242	0.147	39.18%	2.963	2.812	5.12%	0.405	0.346	14.53%
WR9212	Stream Restoration	WR-WR-0009	0.389	0.118	69.59%	2.974	2.540	14.58%	0.365	0.197	46.04%
WR9213	Stream Restoration	WR-WR-0013	0.375	0.285	24.10%	2.699	2.577	4.55%	0.334	0.286	14.27%
WR9214	Stream Restoration	WR-WR-0013	0.375	0.247	34.18%	2.699	2.525	6.46%	0.334	0.266	20.24%
WR9215	Stream Restoration	WR-WR-0015	0.210	0.163	22.56%	2.902	2.826	2.61%	0.401	0.372	7.32%
WR9216	Stream Restoration	WR-WR-0017	0.556	0.286	48.53%	2.939	2.508	14.69%	0.314	0.146	53.33%
WR9217	Stream Restoration	WR-WR-0017	0.556	0.383	31.05%	2.939	2.663	9.40%	0.314	0.207	34.13%
WR9218	Stream Restoration	WR-WR-0021	0.231	0.145	37.54%	2.387	2.269	4.95%	0.315	0.269	14.54%
WR9219	Stream Restoration	WR-WR-0021	0.231	0.121	47.72%	2.387	2.237	6.29%	0.315	0.257	18.48%
WR9220	Stream Restoration	WR-WR-0019	0.191	0.093	51.41%	2.487	2.330	6.31%	0.334	0.274	18.18%
WR9221	Stream Restoration	WR-WR-0022	0.380	0.171	54.92%	2.972	2.638	11.23%	0.372	0.243	34.76%
WR9222	Stream Restoration	WR-WR-0024	0.402	0.034	91.64%	2.628	2.038	22.43%	0.300	0.071	76.20%

Appendix E: STEPL Pollutant Loads

			TSS			TN			TP		
PRJ_ID _LEG	PRJ_TYPE	Sub-watershed	Future w/o Project Conditions (tons/ac/yr)	Future w/ Project Conditions Metric (tons/ac/yr)	% Change: Future w/o to Future w/ Project	Future w/o Project Conditions (lbs/ac/yr)	Future w/ Project Conditions Metric (lbns/ac/yr)	% Change: Future w/o to Future w/ Project2	Future w/o Project Conditions (lbs/ac/yr)3	Future w/ Project Conditions Metric (lbns/ac/yr)4	% Change: Future w/o to Future w/ Project5
WR9223	Stream Restoration	WR-WR-0023	0.215	0.129	39.85%	2.599	2.463	5.27%	0.324	0.271	16.38%

Percentile	Score	TSS	TN	TP
80%	5	47.72%	8.28%	20.95%
60%	4	27.54%	2.67%	10.66%
40%	3	10.09%	1.18%	3.06%
20%	2	0.96%	0.34%	0.73%
0%	1	0.00%	0.00%	0.00%

Appendix F: Summary of Source Indicator Scoring

Appendix F: Summary of Source Indicator Scoring

PRJ_ID _LEG	PRJ_TYPE	Sub-watershed	Channelized Pipes/ Streams	DCIA	SW Outfalls	Saniatary Sewer Crossing	Streambank Deficient	TSS	TN	TP	# of Scored Indicators Score	Sum	Score
HP9201	Stream Restoration	HP-PO-0013	2	-	2	2	2	-	-	-	3	11	2.20
HP9801	Buffer Restoration	HP-PO-0018	-	-	2	-	2	-	-	-	2	6	2.00
KC9201	Stream Restoration	KC-KC-0003	2	-	2	2	2	-	-	-	3	11	2.20
KC9202	Stream Restoration	KC-KC-0010	2	-	2	2	2	-	-	-	3	11	2.20
KC9203	Stream Restoration	KC-KC-0013	2	-	2	2	2	-	-	-	3	11	2.20
KC9204	Stream Restoration	KC-KC-0012	2	-	2	2	2	-	-	-	3	11	2.20
KC9205	Stream Restoration	KC-KC-0009	2	-	2	2	2	-	-	-	3	11	2.20
KC9206	Stream Restoration	KC-OC-0002	2	-	3	4	2	-	-	-	3	14	2.80
KC9207	Stream Restoration	KC-TC-0002	2	-	2	5	2	-	-	-	3	14	2.80
KC9208	Stream Restoration	KC-TC-0004	2	-	2	4	2	-	-	-	3	13	2.60
KC9209	Stream Restoration	KC-KC-0006	2	-	2	5	2	-	-	-	3	14	2.80
KC9210	Stream Restoration	KC-TC-0006	2	-	2	5	2	-	-	-	3	14	2.80
KC9211	Stream Restoration	KC-TC-0005	2	-	3	4	2	-	-	-	3	14	2.80
KC9701	Outfall Improvement	KC-OC-0001	2	-	2	-	-	2	4	4	4	18	3.00
MB9101	Stormwater Pond Retrofit	MB-OC-0003	-	4	4	-	-	1	3	2	4	18	3.00
MB9102	Stormwater Pond Retrofit S	MB-OC-0004	5	5	5	0	0	1	1	1	5	23	3.29
MB9102A	Stormwater Pond Retrofit	MB-OC-0004	-	5	3	-	-	1	1	1	4	15	2.50
MB9102B	Outfall Improvement	MB-OC-0005	5	-	5	-	-	4	4	4	4	26	4.33
MB9103	Stormwater Pond Retrofit	MB-OC-0004	-	5	3	-	-	2	3	2	4	19	3.17
MB9104	Stormwater Pond Retrofit	MB-GR-0001	-	5	3	-	-	1	1	1	4	15	2.50
MB9105	Stormwater Pond Retrofit	MB-OC-0005	-	4	5	-	-	3	4	4	4	24	4.00
MB9106	Stormwater Pond Retrofit	MB-GR-0001	-	5	3	-	-	1	1	1	4	15	2.50
MB9107	Stormwater Pond Retrofit	MB-GR-0001	-	5	3	-	-	2	2	1	4	17	2.83
MB9108	Stormwater Pond Retrofit	MB-GR-0001	-	5	3	-	-	2	2	1	4	17	2.83
MB9109	Stormwater Pond Retrofit	MB-GR-0003	-	3	2	-	-	4	5	4	4	22	3.67
MB9110	Stormwater Pond Retrofit	MB-GR-0004	-	3	2	-	-	2	2	2	4	15	2.50
MB9111	Stormwater Pond Retrofit	MB-GR-0003	-	3	2	-	-	5	2	2	4	18	3.00
MB9112	Stormwater Pond Retrofit	MB-GR-0005	-	5	3	-	-	2	3	2	4	19	3.17
MB9113	Stormwater Pond Retrofit	MB-GR-0007	-	3	2	-	-	1	2	2	4	14	2.33
MB9114	Stormwater Pond Retrofit	MB-GR-0007	-	3	2	-	-	1	1	1	4	12	2.00
MB9115	Stormwater Pond Retrofit	MB-GR-0007	-	3	2	-	-	1	2	2	4	14	2.33
MB9116	Stormwater Pond Retrofit	MB-GR-0008	-	5	2	-	-	2	3	2	4	18	3.00
MB9117	Stormwater Pond Retrofit	MB-MB-0005	-	2	2	-	-	2	2	2	4	14	2.33
MB9118	Stormwater Pond Retrofit	MB-MB-0005	-	2	2	-	-	1	1	1	4	11	1.83
MB9119	Stormwater Pond Retrofit	MB-GR-0010	-	5	5	-	-	1	1	1	4	17	2.83
MB9120	Stormwater Pond Retrofit	MB-GR-0015	-	3	3	-	-	3	4	4	4	21	3.50
MB9121	Stormwater Pond Retrofit	MB-GR-0016	-	5	5	-	-	1	2	1	4	18	3.00
MB9122	Stormwater Pond Retrofit	MB-GR-0016	-	5	5	-	-	1	1	1	4	17	2.83
MB9123	Stormwater Pond Retrofit	MB-GR-0017	-	3	3	-	-	1	2	1	4	14	2.33
MB9124	Stormwater Pond Retrofit	MB-GR-0018	-	3	5	-	-	2	4	3	4	21	3.50
MB9125	Stormwater Pond Retrofit	MB-GR-0019	-	5	5	-	-	2	2	2	4	20	3.33
MB9201	Stream Restoration	MB-OC-0003	5	-	4	5	4	-	-	-	3	21	4.20
MB9202	Stream Restoration	MB-SB-0001	2	-	2	5	2	-	-	-	3	14	2.80

Appendix F: Summary of Source Indicator Scoring

PRJ_ID _LEG	PRJ_TYPE	Sub-watershed	Channelized Pipes/ Streams	DCIA	SW Outfalls	Saniatary Sewer Crossing	Streambank Deficient	TSS	TN	TP	# of Scored Indicators Score	Sum	Score
MB9203	Stream Restoration	MB-SB-0001	2	-	2	5	2	-	-	-	3	14	2.80
MB9204	Stream Restoration	MB-OC-0008	4	-	3	2	2	-	-	-	3	14	2.80
MB9205	Stream Restoration	MB-MB-0001	2	-	2	2	4	-	-	-	3	13	2.60
MB9206	Stream Restoration	MB-OC-0009	3	-	2	2	2	-	-	-	3	12	2.40
MB9207	Stream Restoration	MB-MB-0004	3	-	2	3	3	-	-	-	3	14	2.80
MB9208	Stream Restoration	MB-GR-0010	5	-	5	2	5	-	-	-	3	20	4.00
MB9209	Stream Restoration	MB-GR-0009	3	-	3	2	3	-	-	-	3	14	2.80
MB9210	Stream Restoration	MB-GR-0011	2	-	2	2	2	-	-	-	3	11	2.20
MB9211	Stream Restoration	MB-GR-0015	2	-	3	4	4	-	-	-	3	16	3.20
MB9212	Stream Restoration	MB-GR-0015	2	-	3	4	4	-	-	-	3	16	3.20
MB9213	Stream Restoration	MB-GR-0016	3	-	5	5	3	-	-	-	3	19	3.80
MB9214	Stream Restoration	MB-GR-0016	3	-	5	5	3	-	-	-	3	19	3.80
MB9215	Stream Restoration	MB-GR-0017	4	-	3	4	3	-	-	-	3	17	3.40
MB9216	Stream Restoration	MB-GR-0019	4	-	5	2	5	-	-	-	3	19	3.80
MB9501	BMP/LID	MB-OC-0005	-	4	5	-	-	1	1	1	4	16	2.67
MB9502	BMP/LID	MB-OC-0006	-	3	2	-	-	2	3	2	4	16	2.67
MB9503	BMP/LID	MB-GR-0001	-	5	3	-	-	2	2	2	4	18	3.00
MB9504	BMP/LID	MB-SB-0001	-	3	2	-	-	1	1	1	4	12	2.00
MB9505	BMP/LID	MB-SB-0001	-	3	2	-	-	1	2	1	4	13	2.17
MB9506	BMP/LID	MB-GR-0007	-	3	2	-	-	1	2	1	4	13	2.17
MB9507	BMP/LID	MB-GR-0016	-	5	5	-	-	1	1	1	4	17	2.83
MB9508	BMP/LID	MB-GR-0012	-	5	3	-	-	1	1	1	4	15	2.50
MB9509	BMP/LID	MB-GR-0018	-	3	5	-	-	1	2	2	4	17	2.83
MB9510	BMP/LID	MB-GR-0019	-	5	5	-	-	2	2	2	4	20	3.33
MB9511	BMP/LID	MB-GR-0018	-	3	5	-	-	1	1	1	4	15	2.50
MB9512	BMP/LID	MB-GR-0019	-	5	5	-	-	1	1	1	4	17	2.83
MB9702	Outfall Improvement	MB-GR-0001	2	-	3	-	-	4	4	4	4	21	3.50
MB9703	Outfall Improvement	MB-GR-0018	3	-	5	-	-	4	3	3	4	22	3.67
MB9801	Buffer Restoration	MB-GR-0001	-	-	3	-	4	-	-	-	2	9	3.00
MB9802	Buffer Restoration	MB-OC-0006	-	-	2	-	4	-	-	-	2	8	2.67
MB9804	Buffer Restoration	MB-MB-0005	-	-	2	-	3	-	-	-	2	7	2.33
MB9806	Buffer Restoration Suite	MB-GR-0013	0	0	2	0	4	4	3	3	4	20	3.33
MB9806A	Buffer Restoration	MB-GR-0013	-	-	2	-	4	-	-	-	2	8	2.67
MB9806B	Buffer Restoration	MB-GR-0013	-	-	2	-	4	-	-	-	2	8	2.67
MB9807	Buffer Restoration Suite	MB-GR-0012	0	0	3	0	5	4	3	4	4	23	3.83
MB9807A	Buffer Restoration	MB-GR-0012	-	-	3	-	5	-	-	-	2	10	3.33
MB9807B	Buffer Restoration	MB-GR-0012	-	-	3	-	5	-	-	-	2	10	3.33
MB9811	Buffer Restoration	MB-GR-0019	-	-	5	-	5	-	-	-	2	12	4.00
OC9101	Stormwater Pond Retrofit	OC-EH-0003	-	3	2	-	-	1	2	1	4	13	2.17
OC9102	Stormwater Pond Retrofit	OC-EH-0005	-	3	4	-	-	2	3	2	4	18	3.00
OC9103	Stormwater Pond Retrofit	OC-EH-0006	-	3	5	-	-	1	2	2	4	17	2.83
OC9201	Stream Restoration	OC-EH-0002	2	-	2	3	2	-	-	-	3	12	2.40
OC9202	Stream Restoration	OC-EH-0002	2	-	2	3	2	-	-	-	3	12	2.40

Appendix F: Summary of Source Indicator Scoring

PRJ_ID _LEG	PRJ_TYPE	Sub-watershed	Channelized Pipes/ Streams	DCIA	SW Outfalls	Saniatary Sewer Crossing	Streambank Deficient	TSS	TN	TP	# of Scored Indicators Score	Sum	Score
OC9203	Stream Restoration Suite	OC-EH-0003	5	-	2	5	3	3	4	4	5	31	3.88
OC9203A	Stream Restoration	OC-EH-0003	5	-	2	5	3	-	-	-	3	18	3.60
OC9204	Stream Restoration	OC-OR-0007	2	-	2	5	2	-	-	-	3	14	2.80
OC9205	Stream Restoration	OC-OR-0005	2	-	2	5	2	-	-	-	3	14	2.80
OC9206	Stream Restoration	OC-OR-0005	2	-	2	5	2	-	-	-	3	14	2.80
OC9207	Stream Restoration Suite	OC-EH-0005	2	-	4	5	2	3	3	3	5	27	3.38
OC9207A	Stream Restoration	OC-EH-0005	2	-	4	5	2	-	-	-	3	16	3.20
OC9208	Stream Restoration	OC-EH-0006	2	-	5	5	2	-	-	-	3	17	3.40
OM9201	Stream Restoration	OM-BU-0004	2	-	2	5	2	-	-	-	3	14	2.80
OM9202	Stream Restoration	OM-BU-0005	2	-	2	5	2	-	-	-	3	14	2.80
OM9203	Stream Restoration	OM-BU-0006	2	-	2	5	2	-	-	-	3	14	2.80
OM9204	Stream Restoration	OM-OM-0001	2	-	2	5	2	-	-	-	3	14	2.80
OM9205	Stream Restoration	OM-BU-0008	2	-	2	4	2	-	-	-	3	13	2.60
OM9206	Stream Restoration	OM-BU-0008	2	-	2	4	2	-	-	-	3	13	2.60
OM9207	Stream Restoration	OM-BU-0008	2	-	2	4	2	-	-	-	3	13	2.60
RD9201	Stream Restoration	RD-OR-0016	2	-	2	5	2	-	-	-	3	14	2.80
RD9202	Stream Restoration	RD-SW-0002	2	-	2	5	2	-	-	-	3	14	2.80
RD9501	BMP/LID	RD-OR-0008	-	2	2	-	-	2	2	2	4	14	2.33
RD9502	BMP/LID	RD-OR-0011	-	2	2	-	-	3	5	5	4	21	3.50
SA9101	Stormwater Pond Retrofit	SA-SA-0004	-	3	2	-	-	2	3	2	4	16	2.67
SA9102	Stormwater Pond Retrofit	SA-SA-0004	-	3	2	-	-	1	1	1	4	12	2.00
SA9103	Stormwater Pond Retrofit	SA-SA-0012	-	2	5	-	-	2	4	3	4	20	3.33
SA9104	Stormwater Pond Retrofit	SA-SA-0022	-	2	4	-	-	2	4	3	4	19	3.17
SA9105	Stormwater Pond Retrofit	SA-SA-0013	-	3	3	-	-	2	4	3	4	19	3.17
SA9106	Stormwater Pond Retrofit	SA-SA-0022	-	2	4	-	-	1	1	1	4	13	2.17
SA9107	Stormwater Pond Retrofit	SA-SA-0025	-	3	4	-	-	2	4	3	4	20	3.33
SA9201	Stream Restoration	SA-OR-0004	2	-	2	5	2	-	-	-	3	14	2.80
SA9202	Stream Restoration	SA-SA-0003	2	-	2	5	2	-	-	-	3	14	2.80
SA9203	Stream Restoration	SA-SA-0004	2	-	2	5	2	-	-	-	3	14	2.80
SA9204	Stream Restoration	SA-SA-0008	2	-	2	5	2	-	-	-	3	14	2.80
SA9205	Stream Restoration Suite	SA-SA-0016	2	-	3	5	2	4	4	4	5	29	3.63
SA9205A	Stream Restoration	SA-SA-0016	2	-	3	5	2	-	-	-	3	15	3.00
SA9206	Stream Restoration	SA-SA-0016	2	-	3	5	2	-	-	-	3	15	3.00
SA9207	Stream Restoration Suite	SA-SA-0018	5	0	4	5	2	3	2	3	5	29	3.63
SA9207A	Stream Restoration	SA-SA-0018	5	-	4	5	2	-	-	-	3	19	3.80
SA9207B	Buffer Restoration	SA-SA-0018	-	-	4	-	2	-	-	-	2	8	2.67
SA9208	Stream Restoration	SA-SA-0013	2	-	3	5	2	-	-	-	3	15	3.00
SA9209	Stream Restoration	SA-SA-0022	4	-	4	5	2	-	-	-	3	18	3.60
SA9210	Stream Restoration	SA-SA-0020	2	-	3	5	2	-	-	-	3	15	3.00
SA9211	Stream Restoration	SA-SA-0025	4	-	4	5	2	-	-	-	3	18	3.60
SA9212	Stream Restoration	SA-SA-0025	4	-	4	5	2	-	-	-	3	18	3.60
SA9213	Stream Restoration	SA-SA-0026	3	-	5	5	2	-	-	-	3	18	3.60
SA9214	Stream Restoration	SA-SA-0026	3	-	5	5	2	-	-	-	3	18	3.60

Appendix F: Summary of Source Indicator Scoring

PRJ_ID _LEG	PRJ_TYPE	Sub-watershed	Channelized Pipes/ Streams	DCIA	SW Outfalls	Saniatary Sewer Crossing	Streambank Deficient	TSS	TN	TP	# of Scored Indicators Score	Sum	Score
SA9701	Outfall Improvement	SA-SA-0018	5	-	4	-	-	4	3	3	4	23	3.83
SA9702	Outfall Improvement	SA-SA-0019	2	-	2	-	-	4	3	2	4	17	2.83
SA9801	Buffer Restoration	SA-SA-0010	-	-	2	-	2	-	-	-	2	6	2.00
SA9802	Buffer Restoration	SA-SA-0012	-	-	5	-	2	-	-	-	2	9	3.00
WR9201	Stream Restoration	WR-WR-0002	2	-	2	5	2	-	-	-	3	14	2.80
WR9202	Stream Restoration	WR-WR-0003	2	-	2	5	2	-	-	-	3	14	2.80
WR9203	Stream Restoration	WR-WR-0003	2	-	2	5	2	-	-	-	3	14	2.80
WR9204	Stream Restoration	WR-WR-0003	2	-	2	5	2	-	-	-	3	14	2.80
WR9205	Stream Restoration	WR-WR-0005	3	-	5	5	2	-	-	-	3	18	3.60
WR9206	Stream Restoration	WR-WR-0006	2	-	2	5	2	-	-	-	3	14	2.80
WR9207	Stream Restoration	WR-WR-0007	2	-	4	5	2	-	-	-	3	16	3.20
WR9208	Stream Restoration	WR-WR-0008	2	-	2	5	2	-	-	-	3	14	2.80
WR9209	Stream Restoration	WR-WR-0008	2	-	2	5	2	-	-	-	3	14	2.80
WR9210	Stream Restoration	WR-WR-0011	3	-	4	5	2	-	-	-	3	17	3.40
WR9211	Stream Restoration	WR-WR-0011	3	-	4	5	2	-	-	-	3	17	3.40
WR9212	Stream Restoration	WR-WR-0009	2	-	2	5	2	-	-	-	3	14	2.80
WR9213	Stream Restoration	WR-WR-0013	2	-	2	5	2	-	-	-	3	14	2.80
WR9214	Stream Restoration	WR-WR-0013	2	-	2	5	2	-	-	-	3	14	2.80
WR9215	Stream Restoration	WR-WR-0015	2	-	4	5	2	-	-	-	3	16	3.20
WR9216	Stream Restoration	WR-WR-0017	2	-	3	5	2	-	-	-	3	15	3.00
WR9217	Stream Restoration	WR-WR-0017	2	-	3	5	2	-	-	-	3	15	3.00
WR9218	Stream Restoration	WR-WR-0021	3	-	5	5	2	-	-	-	3	18	3.60
WR9219	Stream Restoration	WR-WR-0021	3	-	5	5	2	-	-	-	3	18	3.60
WR9220	Stream Restoration	WR-WR-0019	2	-	2	5	2	-	-	-	3	14	2.80
WR9221	Stream Restoration	WR-WR-0022	3	-	5	5	2	-	-	-	3	18	3.60
WR9222	Stream Restoration	WR-WR-0024	2	-	2	5	2	-	-	-	3	14	2.80
WR9223	Stream Restoration	WR-WR-0023	2	-	4	5	2	-	-	-	3	16	3.20

Appendix G: Priority Subwatershed Scoring

Appendix G:Priority Subwatershed Scoring

Map ID	PRJ_ID_LEG	PRJ_TYPE	Subwatershed	Existing SWR	Applied Score
201	HP9201	Stream Restoration	HP-PO-0013	7.52	2
196	HP9801	Buffer Restoration	HP-PO-0018	7.72	1
194	KC9201	Stream Restoration	KC-KC-0003	8.19	1
193	KC9202	Stream Restoration	KC-KC-0010	8.14	1
192	KC9203	Stream Restoration	KC-KC-0013	7.87	1
191	KC9204	Stream Restoration	KC-KC-0012	8.58	1
190	KC9205	Stream Restoration	KC-KC-0009	8.08	1
184	KC9206	Stream Restoration	KC-OC-0002	8.02	1
185	KC9207	Stream Restoration	KC-TC-0002	7.16	3
187	KC9208	Stream Restoration	KC-TC-0004	7.70	1
189	KC9209	Stream Restoration	KC-KC-0006	8.39	1
181	KC9210	Stream Restoration	KC-TC-0006	7.09	3
183	KC9211	Stream Restoration	KC-TC-0005	6.84	3
186	KC9701	Outfall Improvement	KC-OC-0001	6.63	3
174	MB9101	Stormwater Pond Retro	MB-OC-0003	6.24	4
906	MB9102	Stormwater Pond Retro	MB-OC-0004	5.27	5
173	MB9102A	Stormwater Pond Retro	MB-OC-0004	5.27	5
170	MB9102B	Outfall Improvement	MB-OC-0005	5.06	5
172	MB9103	Stormwater Pond Retro	MB-OC-0004	5.27	5
158	MB9104	Stormwater Pond Retro	MB-GR-0001	5.49	4
167	MB9105	Stormwater Pond Retro	MB-OC-0005	5.06	5
157	MB9106	Stormwater Pond Retro	MB-GR-0001	5.49	4
156	MB9107	Stormwater Pond Retro	MB-GR-0001	5.49	4
153	MB9108	Stormwater Pond Retro	MB-GR-0001	5.49	4
144	MB9109	Stormwater Pond Retro	MB-GR-0003	5.08	5
150	MB9110	Stormwater Pond Retro	MB-GR-0004	5.32	5
145	MB9111	Stormwater Pond Retro	MB-GR-0003	5.08	5
140	MB9112	Stormwater Pond Retro	MB-GR-0005	5.06	5
139	MB9113	Stormwater Pond Retro	MB-GR-0007	5.01	5
81	MB9114	Stormwater Pond Retro	MB-GR-0007	5.01	5
138	MB9115	Stormwater Pond Retro	MB-GR-0007	5.01	5
79	MB9116	Stormwater Pond Retro	MB-GR-0008	4.65	5
75	MB9117	Stormwater Pond Retro	MB-MB-0005	5.89	4
58	MB9118	Stormwater Pond Retro	MB-MB-0005	5.89	4
51	MB9119	Stormwater Pond Retro	MB-GR-0010	5.15	5
65	MB9120	Stormwater Pond Retro	MB-GR-0015	5.11	5
56	MB9121	Stormwater Pond Retro	MB-GR-0016	5.62	4
53	MB9122	Stormwater Pond Retro	MB-GR-0016	5.62	4
50	MB9123	Stormwater Pond Retro	MB-GR-0017	4.92	5
48	MB9124	Stormwater Pond Retro	MB-GR-0018	6.14	4
136	MB9125	Stormwater Pond Retro	MB-GR-0019	5.04	5
176	MB9201	Stream Restoration	MB-OC-0003	6.24	4
164	MB9202	Stream Restoration	MB-SB-0001	7.44	2
163	MB9203	Stream Restoration	MB-SB-0001	7.44	2
83	MB9204	Stream Restoration	MB-OC-0008	7.49	2

Appendix G:Priority Subwatershed Scoring

Map ID	PRJ_ID_LEG	PRJ_TYPE	Subwatershed	Existing SWR	Applied Score
82	MB9205	Stream Restoration	MB-MB-0001	5.50	4
78	MB9206	Stream Restoration	MB-OC-0009	5.94	4
76	MB9207	Stream Restoration	MB-MB-0004	6.60	4
80	MB9208	Stream Restoration	MB-GR-0010	5.15	5
72	MB9209	Stream Restoration	MB-GR-0009	6.10	4
74	MB9210	Stream Restoration	MB-GR-0011	6.82	3
47	MB9211	Stream Restoration	MB-GR-0015	5.11	5
66	MB9212	Stream Restoration	MB-GR-0015	5.11	5
37	MB9213	Stream Restoration	MB-GR-0016	5.62	4
54	MB9214	Stream Restoration	MB-GR-0016	5.62	4
52	MB9215	Stream Restoration	MB-GR-0017	4.92	5
40	MB9216	Stream Restoration	MB-GR-0019	5.04	5
168	MB9501	BMP/LID	MB-OC-0005	5.06	5
85	MB9502	BMP/LID	MB-OC-0006	7.30	2
152	MB9503	BMP/LID	MB-GR-0001	5.49	4
160	MB9504	BMP/LID	MB-SB-0001	7.44	2
161	MB9505	BMP/LID	MB-SB-0001	7.44	2
68	MB9506	BMP/LID	MB-GR-0007	5.01	5
55	MB9507	BMP/LID	MB-GR-0016	5.62	4
61	MB9508	BMP/LID	MB-GR-0012	5.91	4
43	MB9509	BMP/LID	MB-GR-0018	6.14	4
41	MB9510	BMP/LID	MB-GR-0019	5.04	5
14	MB9511	BMP/LID	MB-GR-0018	6.14	4
13	MB9512	BMP/LID	MB-GR-0019	5.04	5
154	MB9702	Outfall Improvement	MB-GR-0001	5.49	4
42	MB9703	Outfall Improvement	MB-GR-0018	6.14	4
159	MB9801	Buffer Restoration	MB-GR-0001	5.49	4
86	MB9802	Buffer Restoration	MB-OC-0006	7.30	2
67	MB9804	Buffer Restoration	MB-MB-0005	5.89	4
900	MB9806	Buffer Restoration Suite	MB-GR-0013	6.85	3
64	MB9806A	Buffer Restoration	MB-GR-0013	6.85	3
59	MB9806B	Buffer Restoration	MB-GR-0013	6.85	3
901	MB9807	Buffer Restoration Suite	MB-GR-0012	5.91	4
63	MB9807A	Buffer Restoration	MB-GR-0012	5.91	4
62	MB9807B	Buffer Restoration	MB-GR-0012	5.91	4
39	MB9811	Buffer Restoration	MB-GR-0019	5.04	5
32	OC9101	Stormwater Pond Retro	OC-EH-0003	7.58	1
134	OC9102	Stormwater Pond Retro	OC-EH-0005	6.20	4
133	OC9103	Stormwater Pond Retro	OC-EH-0006	7.53	2
135	OC9201	Stream Restoration	OC-EH-0002	7.41	2
27	OC9202	Stream Restoration	OC-EH-0002	7.41	2
902	OC9203	Stream Restoration Suit	OC-EH-0003	7.58	1
33	OC9203A	Stream Restoration	OC-EH-0003	7.58	1
132	OC9204	Stream Restoration	OC-OR-0007	7.91	1
25	OC9205	Stream Restoration	OC-OR-0005	7.82	1

Appendix G:Priority Subwatershed Scoring

Map ID	PRJ_ID_LEG	PRJ_TYPE	Subwatershed	Existing SWR	Applied Score
23	OC9206	Stream Restoration	OC-OR-0005	7.82	1
903	OC9207	Stream Restoration Suit	OC-EH-0005	6.20	4
35	OC9207A	Stream Restoration	OC-EH-0005	6.20	4
34	OC9208	Stream Restoration	OC-EH-0006	7.53	2
92	OM9201	Stream Restoration	OM-BU-0004	7.49	2
91	OM9202	Stream Restoration	OM-BU-0005	7.60	1
90	OM9203	Stream Restoration	OM-BU-0006	7.55	2
10	OM9204	Stream Restoration	OM-OM-0001	7.54	2
8	OM9205	Stream Restoration	OM-BU-0008	7.60	1
9	OM9206	Stream Restoration	OM-BU-0008	7.60	1
7	OM9207	Stream Restoration	OM-BU-0008	7.60	1
24	RD9201	Stream Restoration	RD-OR-0016	7.90	1
26	RD9202	Stream Restoration	RD-SW-0002	7.89	1
30	RD9501	BMP/LID	RD-OR-0008	7.29	3
28	RD9502	BMP/LID	RD-OR-0011	8.63	1
127	SA9101	Stormwater Pond Retro	SA-SA-0004	7.19	3
126	SA9102	Stormwater Pond Retro	SA-SA-0004	7.19	3
119	SA9103	Stormwater Pond Retro	SA-SA-0012	6.68	3
114	SA9104	Stormwater Pond Retro	SA-SA-0022	6.80	3
117	SA9105	Stormwater Pond Retro	SA-SA-0013	6.68	3
22	SA9106	Stormwater Pond Retro	SA-SA-0022	6.80	3
3	SA9107	Stormwater Pond Retro	SA-SA-0025	6.39	4
128	SA9201	Stream Restoration	SA-OR-0004	7.18	3
125	SA9202	Stream Restoration	SA-SA-0003	7.32	2
124	SA9203	Stream Restoration	SA-SA-0004	7.19	3
122	SA9204	Stream Restoration	SA-SA-0008	7.21	3
904	SA9205	Stream Restoration Suit	SA-SA-0016	7.46	2
19	SA9205A	Stream Restoration	SA-SA-0016	7.46	2
116	SA9206	Stream Restoration	SA-SA-0016	7.46	2
905	SA9207	Stream Restoration Suit	SA-SA-0018	7.44	2
87	SA9207A	Stream Restoration	SA-SA-0018	7.44	2
89	SA9207B	Buffer Restoration	SA-SA-0018	7.44	2
118	SA9208	Stream Restoration	SA-SA-0013	6.68	3
1	SA9209	Stream Restoration	SA-SA-0022	6.80	3
16	SA9210	Stream Restoration	SA-SA-0020	7.06	3
2	SA9211	Stream Restoration	SA-SA-0025	6.39	4
4	SA9212	Stream Restoration	SA-SA-0025	6.39	4
12	SA9213	Stream Restoration	SA-SA-0026	6.90	3
11	SA9214	Stream Restoration	SA-SA-0026	6.90	3
88	SA9701	Outfall Improvement	SA-SA-0018	7.44	2
18	SA9702	Outfall Improvement	SA-SA-0019	7.08	3
121	SA9801	Buffer Restoration	SA-SA-0010	7.41	2
120	SA9802	Buffer Restoration	SA-SA-0012	6.68	3
113	WR9201	Stream Restoration	WR-WR-0002	7.37	2
111	WR9202	Stream Restoration	WR-WR-0003	7.81	1

Appendix G:Priority Subwatershed Scoring

Map ID	PRJ_ID_LEG	PRJ_TYPE	Subwatershed	Existing SWR	Applied Score
110	WR9203	Stream Restoration	WR-WR-0003	7.81	1
109	WR9204	Stream Restoration	WR-WR-0003	7.81	1
108	WR9205	Stream Restoration	WR-WR-0005	7.48	2
105	WR9206	Stream Restoration	WR-WR-0006	7.51	2
15	WR9207	Stream Restoration	WR-WR-0007	7.40	2
107	WR9208	Stream Restoration	WR-WR-0008	7.19	3
112	WR9209	Stream Restoration	WR-WR-0008	7.19	3
103	WR9210	Stream Restoration	WR-WR-0011	7.21	3
104	WR9211	Stream Restoration	WR-WR-0011	7.21	3
106	WR9212	Stream Restoration	WR-WR-0009	7.32	2
102	WR9213	Stream Restoration	WR-WR-0013	7.67	1
101	WR9214	Stream Restoration	WR-WR-0013	7.67	1
6	WR9215	Stream Restoration	WR-WR-0015	6.63	3
5	WR9216	Stream Restoration	WR-WR-0017	7.88	1
99	WR9217	Stream Restoration	WR-WR-0017	7.88	1
97	WR9218	Stream Restoration	WR-WR-0021	7.56	2
98	WR9219	Stream Restoration	WR-WR-0021	7.56	2
96	WR9220	Stream Restoration	WR-WR-0019	7.59	1
95	WR9221	Stream Restoration	WR-WR-0022	7.67	1
94	WR9222	Stream Restoration	WR-WR-0024	7.62	1
93	WR9223	Stream Restoration	WR-WR-0023	7.75	1

Impact score associated with project score

Percentile	Subwatershed Impact Overall	Preliminary Score
80%	7.58	1
60%	7.30	2
40%	6.63	3
20%	5.49	4
0%	4.65	5

Appendix H: Sequencing Scoring

Appendix H: Sequencing Scoring

(Subwatershed Order of 1 = headwater and is given highest score)

PRJ_ID _LEG	PRJ_TYPE	Subwatershed	Sub-watershed Order	Applied Score
HP9201	Stream Restoration	HP-PO-0013	1.00	5
HP9801	Buffer Restoration	HP-PO-0018	1.00	5
KC9201	Stream Restoration	KC-KC-0003	1.00	5
KC9202	Stream Restoration	KC-KC-0010	1.00	5
KC9203	Stream Restoration	KC-KC-0013	1.00	5
KC9204	Stream Restoration	KC-KC-0012	1.00	5
KC9205	Stream Restoration	KC-KC-0009	1.00	5
KC9206	Stream Restoration	KC-OC-0002	1.00	5
KC9207	Stream Restoration	KC-TC-0002	1.00	5
KC9208	Stream Restoration	KC-TC-0004	2.00	4
KC9209	Stream Restoration	KC-KC-0006	1.00	5
KC9210	Stream Restoration	KC-TC-0006	1.00	5
KC9211	Stream Restoration	KC-TC-0005	1.00	5
KC9701	Outfall Improvement	KC-OC-0001	1.00	5
MB9101	Stormwater Pond Retrofit	MB-OC-0003	1.00	5
MB9102	Stormwater Pond Retrofit Sui	MB-OC-0004	1.00	5
MB9102A	Stormwater Pond Retrofit	MB-OC-0004	1.00	5
MB9103	Stormwater Pond Retrofit	MB-OC-0004	1.00	5
MB9104	Stormwater Pond Retrofit	MB-GR-0001	7.00	1
MB9105	Stormwater Pond Retrofit	MB-OC-0005	1.00	5
MB9106	Stormwater Pond Retrofit	MB-GR-0001	7.00	1
MB9107	Stormwater Pond Retrofit	MB-GR-0001	7.00	1
MB9108	Stormwater Pond Retrofit	MB-GR-0001	7.00	1
MB9109	Stormwater Pond Retrofit	MB-GR-0003	1.00	5
MB9110	Stormwater Pond Retrofit	MB-GR-0004	1.00	5
MB9111	Stormwater Pond Retrofit	MB-GR-0003	1.00	5
MB9112	Stormwater Pond Retrofit	MB-GR-0005	6.00	1
MB9113	Stormwater Pond Retrofit	MB-GR-0007	2.00	4
MB9114	Stormwater Pond Retrofit	MB-GR-0007	2.00	4
MB9115	Stormwater Pond Retrofit	MB-GR-0007	2.00	4
MB9116	Stormwater Pond Retrofit	MB-GR-0008	6.00	1
MB9117	Stormwater Pond Retrofit	MB-MB-0005	1.00	5
MB9118	Stormwater Pond Retrofit	MB-MB-0005	1.00	5
MB9119	Stormwater Pond Retrofit	MB-GR-0010	1.00	5
MB9120	Stormwater Pond Retrofit	MB-GR-0015	1.00	5
MB9121	Stormwater Pond Retrofit	MB-GR-0016	3.00	3
MB9122	Stormwater Pond Retrofit	MB-GR-0016	3.00	3
MB9123	Stormwater Pond Retrofit	MB-GR-0017	1.00	5
MB9124	Stormwater Pond Retrofit	MB-GR-0018	2.00	4
MB9125	Stormwater Pond Retrofit	MB-GR-0019	1.00	5
MB9201	Stream Restoration	MB-OC-0003	1.00	5
MB9202	Stream Restoration	MB-SB-0001	1.00	5
MB9203	Stream Restoration	MB-SB-0001	1.00	5

Appendix H: Sequencing Scoring

(Subwatershed Order of 1 = headwater and is given highest score)

PRJ_ID _LEG	PRJ_TYPE	Subwatershed	Sub-watershed Order	Applied Score
MB9204	Stream Restoration	MB-OC-0008	1.00	5
MB9205	Stream Restoration	MB-MB-0001	3.00	3
MB9206	Stream Restoration	MB-OC-0009	1.00	5
MB9207	Stream Restoration	MB-MB-0004	2.00	4
MB9208	Stream Restoration	MB-GR-0010	1.00	5
MB9209	Stream Restoration	MB-GR-0009	2.00	4
MB9210	Stream Restoration	MB-GR-0011	5.00	2
MB9211	Stream Restoration	MB-GR-0015	1.00	5
MB9212	Stream Restoration	MB-GR-0015	1.00	5
MB9213	Stream Restoration	MB-GR-0016	3.00	3
MB9214	Stream Restoration	MB-GR-0016	3.00	3
MB9215	Stream Restoration	MB-GR-0017	1.00	5
MB9216	Stream Restoration	MB-GR-0019	1.00	5
MB9501	BMP/LID	MB-OC-0005	1.00	5
MB9502	BMP/LID	MB-OC-0006	2.00	4
MB9503	BMP/LID	MB-GR-0001	7.00	1
MB9504	BMP/LID	MB-SB-0001	1.00	5
MB9505	BMP/LID	MB-SB-0001	1.00	5
MB9506	BMP/LID	MB-GR-0007	2.00	4
MB9507	BMP/LID	MB-GR-0016	3.00	3
MB9508	BMP/LID	MB-GR-0012	1.00	5
MB9509	BMP/LID	MB-GR-0018	2.00	4
MB9510	BMP/LID	MB-GR-0019	1.00	5
MB9511	BMP/LID	MB-GR-0018	2.00	4
MB9512	BMP/LID	MB-GR-0019	1.00	5
MB9102B	Outfall Improvement	MB-OC-0005	1.00	5
MB9702	Outfall Improvement	MB-GR-0001	7.00	1
MB9703	Outfall Improvement	MB-GR-0018	2.00	4
MB9801	Buffer Restoration	MB-GR-0001	7.00	1
MB9802	Buffer Restoration	MB-OC-0006	2.00	4
MB9804	Buffer Restoration	MB-MB-0005	1.00	5
MB9806	Buffer Restoration Suite	MB-GR-0013	4.00	2
MB9807	Buffer Restoration Suite	MB-GR-0012	1.00	5
MB9811	Buffer Restoration	MB-GR-0019	1.00	5
OC9101	Stormwater Pond Retrofit	OC-EH-0003	2.00	4
OC9102	Stormwater Pond Retrofit	OC-EH-0005	1.00	5
OC9103	Stormwater Pond Retrofit	OC-EH-0006	1.00	5
OC9201	Stream Restoration	OC-EH-0002	1.00	5
OC9202	Stream Restoration	OC-EH-0002	1.00	5
OC9203	Stream Restoration Suite	OC-EH-0003	2.00	4
OC9204	Stream Restoration	OC-OR-0007	1.00	5
OC9205	Stream Restoration	OC-OR-0005	1.00	5
OC9206	Stream Restoration	OC-OR-0005	1.00	5

Appendix H: Sequencing Scoring

(Subwatershed Order of 1 = headwater and is given highest score)

PRJ_ID _LEG	PRJ_TYPE	Subwatershed	Sub-watershed Order	Applied Score
OC9207	Stream Restoration Suite	OC-EH-0005	1.00	5
OC9208	Stream Restoration	OC-EH-0006	1.00	5
OM9201	Stream Restoration	OM-BU-0004	1.00	5
OM9202	Stream Restoration	OM-BU-0005	1.00	5
OM9203	Stream Restoration	OM-BU-0006	1.00	5
OM9204	Stream Restoration	OM-OM-0001	2.00	4
OM9205	Stream Restoration	OM-BU-0008	1.00	5
OM9206	Stream Restoration	OM-BU-0008	1.00	5
OM9207	Stream Restoration	OM-BU-0008	1.00	5
RD9201	Stream Restoration	RD-OR-0016	1.00	5
RD9202	Stream Restoration	RD-SW-0002	1.00	5
RD9501	BMP/LID	RD-OR-0008	3.00	3
RD9502	BMP/LID	RD-OR-0011	2.00	4
SA9101	Stormwater Pond Retrofit	SA-SA-0004	1.00	5
SA9102	Stormwater Pond Retrofit	SA-SA-0004	1.00	5
SA9103	Stormwater Pond Retrofit	SA-SA-0012	1.00	5
SA9104	Stormwater Pond Retrofit	SA-SA-0022	1.00	5
SA9105	Stormwater Pond Retrofit	SA-SA-0013	1.00	5
SA9106	Stormwater Pond Retrofit	SA-SA-0022	1.00	5
SA9107	Stormwater Pond Retrofit	SA-SA-0025	1.00	5
SA9201	Stream Restoration	SA-OR-0004	1.00	5
SA9202	Stream Restoration	SA-SA-0003	1.00	5
SA9203	Stream Restoration	SA-SA-0004	1.00	5
SA9204	Stream Restoration	SA-SA-0008	1.00	5
SA9205	Stream Restoration Suite	SA-SA-0016	1.00	5
SA9206	Stream Restoration	SA-SA-0016	1.00	5
SA9207	Stream Restoration Suite	SA-SA-0018	1.00	5
SA9208	Stream Restoration	SA-SA-0013	1.00	5
SA9209	Stream Restoration	SA-SA-0022	1.00	5
SA9210	Stream Restoration	SA-SA-0020	1.00	5
SA9211	Stream Restoration	SA-SA-0025	1.00	5
SA9212	Stream Restoration	SA-SA-0025	1.00	5
SA9213	Stream Restoration	SA-SA-0026	1.00	5
SA9214	Stream Restoration	SA-SA-0026	1.00	5
SA9701	Outfall Improvement	SA-SA-0018	1.00	5
SA9702	Outfall Improvement	SA-SA-0019	2.00	4
SA9801	Buffer Restoration	SA-SA-0010	6.00	1
SA9802	Buffer Restoration	SA-SA-0012	1.00	5
WR9201	Stream Restoration	WR-WR-0002	8.00	1
WR9202	Stream Restoration	WR-WR-0003	8.00	1
WR9203	Stream Restoration	WR-WR-0003	8.00	1
WR9204	Stream Restoration	WR-WR-0003	8.00	1
WR9205	Stream Restoration	WR-WR-0005	1.00	5

Appendix H: Sequencing Scoring

(Subwatershed Order of 1 = headwater and is given highest score)

PRJ_ID _LEG	PRJ_TYPE	Subwatershed	Sub-watershed Order	Applied Score
WR9206	Stream Restoration	WR-WR-0006	2.00	4
WR9207	Stream Restoration	WR-WR-0007	1.00	5
WR9208	Stream Restoration	WR-WR-0008	2.00	4
WR9209	Stream Restoration	WR-WR-0008	2.00	4
WR9210	Stream Restoration	WR-WR-0011	1.00	5
WR9211	Stream Restoration	WR-WR-0011	1.00	5
WR9212	Stream Restoration	WR-WR-0009	1.00	5
WR9213	Stream Restoration	WR-WR-0013	2.00	4
WR9214	Stream Restoration	WR-WR-0013	2.00	4
WR9215	Stream Restoration	WR-WR-0015	1.00	5
WR9216	Stream Restoration	WR-WR-0017	1.00	5
WR9217	Stream Restoration	WR-WR-0017	1.00	5
WR9218	Stream Restoration	WR-WR-0021	1.00	5
WR9219	Stream Restoration	WR-WR-0021	1.00	5
WR9220	Stream Restoration	WR-WR-0019	1.00	5
WR9221	Stream Restoration	WR-WR-0022	1.00	5
WR9222	Stream Restoration	WR-WR-0024	1.00	5
WR9223	Stream Restoration	WR-WR-0023	1.00	5

Percentile	Subwatershed Order	Preliminary Score
95%	6.00	1
90%	3.80	2
85%	3.00	3
80%	2.00	4
0%	1.00	5

Appendix I: Implementability Scoring

Appendix I: Implementability Scoring

PRJ_ID _LEG	PRJ_TYPE	Sub-watershed	County Maintained	Additional Ease. Req.	ICEM Stage Value	Upstream Runoff Red. Req.?	Project Location^1	Score
HP9201	Stream Restoration	HP-PO-0013	No	Yes	2.0	No	J	3
HP9801	Buffer Restoration	HP-PO-0018	No	Yes	2.0	N/A	E	5
KC9201	Stream Restoration	KC-KC-0003	No	Yes	2.0	No	J	3
KC9202	Stream Restoration	KC-KC-0010	Yes	Yes	2.0	No	C	5
KC9203	Stream Restoration	KC-KC-0013	No	Yes	2.0	No	J	3
KC9204	Stream Restoration	KC-KC-0012	No	Yes	2.0	No	J	3
KC9205	Stream Restoration	KC-KC-0009	Yes	Yes	2.0	No	C	5
KC9206	Stream Restoration	KC-OC-0002	No	Yes	2.0	No	J	3
KC9207	Stream Restoration	KC-TC-0002	Yes	Yes	3.0	Yes	C	1
KC9208	Stream Restoration	KC-TC-0004	No	Yes	2.0	No	J	3
KC9209	Stream Restoration	KC-KC-0006	No	Yes	2.0	No	F	3
KC9210	Stream Restoration	KC-TC-0006	No	Yes	3.0	Yes	E	1
KC9211	Stream Restoration	KC-TC-0005	No	Yes	3.0	Yes	J	1
KC9701	Outfall Improvement	KC-OC-0001	No	Yes	3.0	N/A	E	1
MB9101	Stormwater Pond Retrofit	MB-OC-0003	Yes	Yes	3.0	No	C	3
MB9102	Stormwater Pond Retrofit Suite	MB-OC-0004	No	Yes	3.0	Yes	E	1
MB9102A	Stormwater Pond Retrofit	MB-OC-0004	No	Yes	3.0	Yes	E	1
MB9103	Stormwater Pond Retrofit	MB-OC-0004	No	Yes	3.0	Yes	F	1
MB9104	Stormwater Pond Retrofit	MB-GR-0001	Yes	Yes	3.0	No	C	3
MB9105	Stormwater Pond Retrofit	MB-OC-0005	No	Yes	3.0	Yes	E	1
MB9106	Stormwater Pond Retrofit	MB-GR-0001	No	Yes	3.0	Yes	E	1
MB9107	Stormwater Pond Retrofit	MB-GR-0001	No	Yes	3.0	Yes	E	1
MB9108	Stormwater Pond Retrofit	MB-GR-0001	Yes	Yes	3.0	No	C	3
MB9109	Stormwater Pond Retrofit	MB-GR-0003	No	Yes	3.0	Yes	E	1
MB9110	Stormwater Pond Retrofit	MB-GR-0004	Yes	Yes	3.0	No	C	3
MB9111	Stormwater Pond Retrofit	MB-GR-0003	No	Yes	3.0	Yes	E	1
MB9112	Stormwater Pond Retrofit	MB-GR-0005	No	Yes	3.0	Yes	E	1
MB9113	Stormwater Pond Retrofit	MB-GR-0007	No	Yes	3.0	Yes	E	1
MB9114	Stormwater Pond Retrofit	MB-GR-0007	Yes	Yes	3.0	No	C	3
MB9115	Stormwater Pond Retrofit	MB-GR-0007	No	Yes	3.0	Yes	E	1
MB9116	Stormwater Pond Retrofit	MB-GR-0008	No	Yes	3.0	Yes	E	1
MB9117	Stormwater Pond Retrofit	MB-MB-0005	No	No	3.0	Yes	E	1
MB9118	Stormwater Pond Retrofit	MB-MB-0005	No	Yes	3.0	Yes	E	1
MB9119	Stormwater Pond Retrofit	MB-GR-0010	No	Yes	2.0	Yes	E	1
MB9120	Stormwater Pond Retrofit	MB-GR-0015	No	Yes	3.0	Yes	E	1
MB9121	Stormwater Pond Retrofit	MB-GR-0016	No	Yes	3.0	Yes	K	1
MB9122	Stormwater Pond Retrofit	MB-GR-0016	No	Yes	3.0	Yes	E	1
MB9123	Stormwater Pond Retrofit	MB-GR-0017	No	Yes	3.0	Yes	G	1
MB9124	Stormwater Pond Retrofit	MB-GR-0018	No	Yes	3.0	Yes	E	1
MB9125	Stormwater Pond Retrofit	MB-GR-0019	No	Yes	3.0	Yes	E	1
MB9201	Stream Restoration	MB-OC-0003	No	Yes	3.0	Yes	E	1
MB9202	Stream Restoration	MB-SB-0001	Yes	Yes	2.5	No	C	5

Appendix I: Implementability Scoring

PRJ_ID _LEG	PRJ_TYPE	Sub-watershed	County Maintained	Additional Ease. Req.	ICEM Stage Value	Upstream Runoff Red. Req.?	Project Location^1	Score
MB9203	Stream Restoration	MB-SB-0001	Yes	Yes	2.5	No	C	5
MB9204	Stream Restoration	MB-OC-0008	Yes	Yes	2.0	No	C	5
MB9205	Stream Restoration	MB-MB-0001	Yes	Yes	3.0	Yes	C	1
MB9206	Stream Restoration	MB-OC-0009	No	Yes	2.0	No	E	3
MB9207	Stream Restoration	MB-MB-0004	Yes	Yes	3.0	Yes	C	1
MB9208	Stream Restoration	MB-GR-0010	No	Yes	2.0	No	E	3
MB9209	Stream Restoration	MB-GR-0009	No	Yes	2.8	Yes	E	1
MB9210	Stream Restoration	MB-GR-0011	No	Yes	2.5	No	E	3
MB9211	Stream Restoration	MB-GR-0015	Yes	Yes	3.0	Yes	D	1
MB9212	Stream Restoration	MB-GR-0015	No	Yes	3.0	Yes	E	1
MB9213	Stream Restoration	MB-GR-0016	No	Yes	3.0	Yes	E	1
MB9214	Stream Restoration	MB-GR-0016	No	Yes	3.0	Yes	E	1
MB9215	Stream Restoration	MB-GR-0017	No	Yes	3.0	Yes	F	1
MB9216	Stream Restoration	MB-GR-0019	Yes	Yes	3.0	Yes	D	1
MB9501	BMP/LID	MB-OC-0005	Yes	Yes	3.0	No	C	5
MB9502	BMP/LID	MB-OC-0006	No	Yes	2.0	No	E	3
MB9503	BMP/LID	MB-GR-0001	No	Yes	3.0	No	E	3
MB9504	BMP/LID	MB-SB-0001	No	Yes	2.5	No	E	3
MB9505	BMP/LID	MB-SB-0001	No	Yes	2.5	No	E	3
MB9506	BMP/LID	MB-GR-0007	Yes	Yes	3.0	No	C	5
MB9507	BMP/LID	MB-GR-0016	No	Yes	3.0	No	K	3
MB9508	BMP/LID	MB-GR-0012	No	Yes	3.0	No	E	3
MB9509	BMP/LID	MB-GR-0018	No	Yes	3.0	No	E	3
MB9510	BMP/LID	MB-GR-0019	No	Yes	3.0	No	E	3
MB9511	BMP/LID	MB-GR-0018	Yes	Yes	3.0	No	C	5
MB9512	BMP/LID	MB-GR-0019	No	Yes	3.0	No	E	3
MB9102B	Outfall Improvement	MB-OC-0005	No	Yes	3.0		F	1
MB9702	Outfall Improvement	MB-GR-0001	No	Yes	3.0	N/A	E	1
MB9703	Outfall Improvement	MB-GR-0018	Yes	Yes	3.0	N/A	C	1
MB9801	Buffer Restoration	MB-GR-0001	No	Yes	3.0	N/A	J	5
MB9802	Buffer Restoration	MB-OC-0006	Yes	Yes	2.0	N/A	C	5
MB9804	Buffer Restoration	MB-MB-0005	No	Yes	3.0	N/A	E	5
MB9806	Buffer Restoration Suite	MB-GR-0013	Yes	Yes	2.8	N/A	C	5
MB9806A	Buffer Restoration	MB-GR-0013	Yes	Yes	2.8	N/A	C	5
MB9806B	Buffer Restoration	MB-GR-0013	Yes	Yes	2.8	N/A	C	5
MB9807	Buffer Restoration Suite	MB-GR-0012	Yes	Yes	3.0	N/A	C	5
MB9807A	Buffer Restoration	MB-GR-0012	Yes	Yes	3.0	N/A	C	5
MB9807B	Buffer Restoration	MB-GR-0012	Yes	Yes	3.0	N/A	C	5
MB9811	Buffer Restoration	MB-GR-0019	No	Yes	3.0	N/A	E	5
OC9101	Stormwater Pond Retrofit	OC-EH-0003	Yes	Yes	3.0	No	D	3
OC9102	Stormwater Pond Retrofit	OC-EH-0005	No	Yes	3.0	Yes	E	1
OC9103	Stormwater Pond Retrofit	OC-EH-0006	No	Yes	3.0	Yes	E	1

Appendix I: Implementability Scoring

PRJ_ID _LEG	PRJ_TYPE	Sub-watershed	County Maintained	Additional Ease. Req.	ICEM Stage Value	Upstream Runoff Red. Req.?	Project Location^1	Score
OC9201	Stream Restoration	OC-EH-0002	No	Yes	3.0	Yes	F	1
OC9202	Stream Restoration	OC-EH-0002	No	Yes	3.0	Yes	E	1
OC9203	Stream Restoration Suite	OC-EH-0003	No	Yes	3.0	Yes	E	1
OC9203A	Stream Restoration	OC-EH-0003	No	Yes	3.0	Yes	E	1
OC9204	Stream Restoration	OC-OR-0007	Yes	Yes	2.0	No	C	5
OC9205	Stream Restoration	OC-OR-0005	Yes	Yes	3.0	Yes	C	1
OC9206	Stream Restoration	OC-OR-0005	Yes	Yes	3.0	Yes	C	1
OC9207	Stream Restoration Suite	OC-EH-0005	No	Yes	3.0	Yes	E	1
OC9207A	Stream Restoration	OC-EH-0005	No	Yes	3.0	Yes	E	1
OC9208	Stream Restoration	OC-EH-0006	No	Yes	3.0	Yes	E	1
OM9201	Stream Restoration	OM-BU-0004	No	Yes	3.0	Yes	E	1
OM9202	Stream Restoration	OM-BU-0005	Yes	Yes	3.0	Yes	D	1
OM9203	Stream Restoration	OM-BU-0006	No	Yes	3.0	Yes	E	1
OM9204	Stream Restoration	OM-OM-0001	Yes	Yes	3.8	Yes	C	1
OM9205	Stream Restoration	OM-BU-0008	No	Yes	3.0	Yes	E	1
OM9206	Stream Restoration	OM-BU-0008	No	Yes	3.0	Yes	E	1
OM9207	Stream Restoration	OM-BU-0008	No	Yes	3.0	Yes	E	1
RD9201	Stream Restoration	RD-OR-0016	No	Yes	3.0	Yes	E	1
RD9202	Stream Restoration	RD-SW-0002	No	Yes	3.0	Yes	E	1
RD9501	BMP/LID	RD-OR-0008	No	Yes	2.0	No	E	3
RD9502	BMP/LID	RD-OR-0011	No	Yes	2.0	No	E	3
SA9101	Stormwater Pond Retrofit	SA-SA-0004	No	Yes	3.0	Yes	E	1
SA9102	Stormwater Pond Retrofit	SA-SA-0004	No	Yes	3.0	Yes	F	1
SA9103	Stormwater Pond Retrofit	SA-SA-0012	No	Yes	3.0	Yes	E	1
SA9104	Stormwater Pond Retrofit	SA-SA-0022	No	Yes	3.0	Yes	E	1
SA9105	Stormwater Pond Retrofit	SA-SA-0013	No	Yes	3.0	Yes	E	1
SA9106	Stormwater Pond Retrofit	SA-SA-0022	Yes	Yes	3.0	No	D	3
SA9107	Stormwater Pond Retrofit	SA-SA-0025	No	Yes	3.0	Yes	E	1
SA9201	Stream Restoration	SA-OR-0004	No	Yes	3.0	Yes	E	1
SA9202	Stream Restoration	SA-SA-0003	No	Yes	3.0	Yes	E	1
SA9203	Stream Restoration	SA-SA-0004	No	Yes	3.0	Yes	E	1
SA9204	Stream Restoration	SA-SA-0008	No	Yes	3.3	Yes	E	1
SA9205	Stream Restoration Suite	SA-SA-0016	No	Yes	3.5	Yes	E	1
SA9205A	Stream Restoration	SA-SA-0016	No	Yes	3.5	Yes	E	1
SA9206	Stream Restoration	SA-SA-0016	No	Yes	3.5	Yes	E	1
SA9207	Stream Restoration Suite	SA-SA-0018	No	Yes	3.0	Yes	E	1
SA9207A	Stream Restoration	SA-SA-0018	No	Yes	3.0	Yes	E	1
SA9207B	Buffer Restoration	SA-SA-0018	No	Yes	3.0	N/A	E	5
SA9208	Stream Restoration	SA-SA-0013	No	Yes	3.0	Yes	G	1
SA9209	Stream Restoration	SA-SA-0022	No	Yes	3.0	Yes	E	1
SA9210	Stream Restoration	SA-SA-0020	No	Yes	3.0	Yes	E	1
SA9211	Stream Restoration	SA-SA-0025	No	Yes	3.0	Yes	E	1

Appendix I: Implementability Scoring

PRJ_ID _LEG	PRJ_TYPE	Sub-watershed	County Maintained	Additional Ease. Req.	ICEM Stage Value	Upstream Runoff Red. Req.?	Project Location^1	Score
SA9212	Stream Restoration	SA-SA-0025	No	Yes	3.0	Yes	E	1
SA9213	Stream Restoration	SA-SA-0026	No	Yes	3.0	Yes	E	1
SA9214	Stream Restoration	SA-SA-0026	No	Yes	3.0	Yes	E	1
SA9701	Outfall Improvement	SA-SA-0018	Yes	Yes	3.0	N/A	C	1
SA9702	Outfall Improvement	SA-SA-0019	No	Yes	3.0	N/A	E	1
SA9801	Buffer Restoration	SA-SA-0010	No	Yes	3.3	N/A	E	5
SA9802	Buffer Restoration	SA-SA-0012	No	Yes	3.0	N/A	E	5
WR9201	Stream Restoration	WR-WR-0002	Yes	Yes	3.0	Yes	C	1
WR9202	Stream Restoration	WR-WR-0003	No	Yes	3.0	Yes	E	1
WR9203	Stream Restoration	WR-WR-0003	No	Yes	3.0	Yes	E	1
WR9204	Stream Restoration	WR-WR-0003	No	Yes	3.0	Yes	E	1
WR9205	Stream Restoration	WR-WR-0005	No	Yes	3.0	Yes	E	1
WR9206	Stream Restoration	WR-WR-0006	No	Yes	3.0	Yes	E	1
WR9207	Stream Restoration	WR-WR-0007	No	Yes	3.0	Yes	E	1
WR9208	Stream Restoration	WR-WR-0008	No	Yes	3.0	Yes	F	1
WR9209	Stream Restoration	WR-WR-0008	No	Yes	3.0	Yes	E	1
WR9210	Stream Restoration	WR-WR-0011	No	Yes	3.0	Yes	E	1
WR9211	Stream Restoration	WR-WR-0011	No	Yes	3.0	Yes	E	1
WR9212	Stream Restoration	WR-WR-0009	No	Yes	3.0	Yes	E	1
WR9213	Stream Restoration	WR-WR-0013	No	Yes	3.0	Yes	E	1
WR9214	Stream Restoration	WR-WR-0013	No	Yes	3.0	Yes	E	1
WR9215	Stream Restoration	WR-WR-0015	No	Yes	3.0	Yes	E	1
WR9216	Stream Restoration	WR-WR-0017	No	Yes	3.0	Yes	E	1
WR9217	Stream Restoration	WR-WR-0017	No	Yes	3.0	Yes	E	1
WR9218	Stream Restoration	WR-WR-0021	No	Yes	3.0	Yes	E	1
WR9219	Stream Restoration	WR-WR-0021	No	Yes	3.0	Yes	E	1
WR9220	Stream Restoration	WR-WR-0019	No	Yes	2.0	No	E	3
WR9221	Stream Restoration	WR-WR-0022	No	Yes	3.0	Yes	E	1
WR9222	Stream Restoration	WR-WR-0024	No	Yes	3.0	Yes	E	1
WR9223	Stream Restoration	WR-WR-0023	No	Yes	3.0	Yes	E	1

Note: A= Other owned, B= Behind School, County, C= County owned, D= County owned, Behind house, E= Private, F= State owned, G= State owned, Behind house, H= Other owned, Behind School, I= Other owned, Behind house, J= Federal owned, K= State owned, Behind School.

Appendix J: Summary of the Individual Project Scores and Initial Ranking

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Structural Projects		Weighting	30%	30%	10%	20%	10%									
PRJ_ID _LEG	PRJ_TYPE	Sub-watershed	Watershed Impact indicators	Watershed Source Indicators	Location within Priority SW	Sequencing	Implementability	Initial Composite Score	Initial Project Rank	BPJ Score Adjustment	Final Composite Score	Intermediate Project Rank	Project Cost	CBA BPJ score adjustment	CBA Adjusted Score	Final Ranking[1]
MB9202	Stream Restoration	MB-SB-0001	3.20	2.80	2	5	5	3.50	17	0.46	3.96	1	$ 720,000		3.96	1
KC9209	Stream Restoration	KC-KC-0006	3.00	2.80	1	5	3	3.14	77	0.77	3.91	2	$ 840,000		3.91	2
MB9109	Stormwater Pond Retrofit	MB-GR-0003	3.60	3.67	5	5	1	3.78	3	0.04	3.82	4	$ 290,000		3.82	3
MB9105	Stormwater Pond Retrofit	MB-OC-0005	2.80	4.00	5	5	1	3.64	9	0.13	3.77	5	$ 280,000		3.77	4
SA9209	Stream Restoration	SA-SA-0022	3.00	3.60	3	5	1	3.38	33	0.30	3.68	7	$ 600,000		3.68	5
WR9209	Stream Restoration	WR-WR-0008	3.80	2.80	3	4	1	3.18	68	0.69	3.87	3	$ 1,420,000	-0.25	3.62	6
SA9213	Stream Restoration	SA-SA-0026	3.10	3.60	3	5	1	3.41	30	0.12	3.53	10	$ 560,000		3.53	7
MB9111	Stormwater Pond Retrofit	MB-GR-0003	2.80	3.00	5	5	1	3.34	39	0.15	3.49	11	$ 180,000		3.49	8
WR9211	Stream Restoration	WR-WR-0011	3.50	3.40	3	5	1	3.47	19	0.25	3.72	6	$ 1,160,000	-0.25	3.47	9
SA9701	Outfall Improvement	SA-SA-0018	3.33	3.83	2	5	1	3.45	25	-0.01	3.44	12	$ 150,000		3.44	10
MB9506	BMP/LID	MB-GR-0007	1.60	2.17	5	4	5	2.93	100	0.22	3.15	17	$ 110,000	0.25	3.40	11
WR9212	Stream Restoration	WR-WR-0009	3.70	2.80	2	5	1	3.25	58	0.38	3.63	8	$ 1,420,000	-0.25	3.38	12
MB9114	Stormwater Pond Retrofit	MB-GR-0007	1.40	2.00	5	4	3	2.62	113	0.49	3.11	18	$ 160,000	0.25	3.36	13
MB9510	BMP/LID	MB-GR-0019	1.80	3.33	5	5	3	3.34	39	0.00	3.34	14	$ 220,000		3.34	14
SA9201	Stream Restoration	SA-OR-0004	3.50	2.80	3	5	1	3.29	51	0.29	3.58	9	$ 780,000	-0.25	3.33	15
SA9211	Stream Restoration	SA-SA-0025	2.80	3.60	4	5	1	3.42	29	-0.17	3.25	15	$ 360,000		3.25	16
WR9208	Stream Restoration	WR-WR-0008	3.60	2.80	3	4	1	3.12	81	0.08	3.20	16	$ 1,050,000		3.20	17
WR9201	Stream Restoration	WR-WR-0002	3.60	2.80	2	1	1	2.42	122	0.97	3.39	13	$ 1,120,000	-0.25	3.14	18
MB9122	Stormwater Pond Retrofit	MB-GR-0016	1.00	2.83	4	3	1	2.25	126	0.81	3.06	19	$ 190,000		3.06	19
MB9107	Stormwater Pond Retrofit	MB-GR-0001	2.00	2.83	4	1	1	2.15	129	0.86	3.01	20	$ 130,000		3.01	20
MB9104	Stormwater Pond Retrofit	MB-GR-0001	1.60	2.50	4	1	3	2.13	132	0.83	2.96	21	$ 240,000		2.96	21
OC9203	Stream Restoration Suite	OC-EH-0003	4.00	3.88	1	4	1	3.36	36	-0.41	2.95	22	$ 670,000		2.95	22
WR9221	Stream Restoration	WR-WR-0022	4.00	3.60	1	5	1	3.48	18	-0.55	2.93	23	$ 1,310,000		2.93	23
OC9208	Stream Restoration	OC-EH-0006	3.80	3.40	2	5	1	3.46	22	-0.56	2.90	24	$ 1,250,000		2.90	24
SA9212	Stream Restoration	SA-SA-0025	3.10	3.60	4	5	1	3.51	16	-0.63	2.88	25	$ 580,000		2.88	25
OC9204	Stream Restoration	OC-OR-0007	3.40	2.80	1	5	5	3.46	24	-0.60	2.86	26	$ 1,050,000		2.86	26
WR9220	Stream Restoration	WR-WR-0019	3.60	2.80	1	5	3	3.32	43	-0.49	2.83	27	$ 760,000		2.83	27
OM9201	Stream Restoration	OM-BU-0004	3.90	2.80	2	5	1	3.31	46	-0.50	2.81	28	$ 1,200,000		2.81	28
OM9206	Stream Restoration	OM-BU-0008	3.50	2.60	1	5	1	3.03	91	-0.24	2.79	29	$ 610,000		2.79	29
WR9206	Stream Restoration	WR-WR-0006	3.90	2.80	2	4	1	3.11	83	-0.35	2.76	30	$ 1,300,000		2.76	30
OM9207	Stream Restoration	OM-BU-0008	3.30	2.60	1	5	1	2.97	97	-0.23	2.74	31	$ 440,000		2.74	31
MB9208	Stream Restoration	MB-GR-0010	3.50	4.00	5	5	3	4.05	1	-1.54	2.51	32	$ 930,000		2.51	32
MB9212	Stream Restoration	MB-GR-0015	3.80	3.20	5	5	1	3.70	5	-1.27	2.43	33	$ 800,000		2.43	33
OC9207	Stream Restoration Suite	OC-EH-0005	3.80	3.38	4	5	1	3.65	7	-1.23	2.42	34	$ 610,000		2.42	34
MB9120	Stormwater Pond Retrofit	MB-GR-0015	3.00	3.50	5	5	1	3.55	11	-1.15	2.40	35	$ 300,000		2.40	35
WR9219	Stream Restoration	WR-WR-0021	3.90	3.60	2	5	1	3.55	11	-1.15	2.40	36	$ 760,000		2.40	36
SA9214	Stream Restoration	SA-SA-0026	3.50	3.60	3	5	1	3.53	13	-1.14	2.39	37	$ 1,010,000		2.39	37
WR9218	Stream Restoration	WR-WR-0021	3.80	3.60	2	5	1	3.52	14	-1.13	2.39	38	$ 650,000		2.39	38
WR9210	Stream Restoration	WR-WR-0011	3.50	3.40	3	5	1	3.47	19	-1.09	2.38	39	$ 1,120,000		2.38	39
MB9206	Stream Restoration	MB-OC-0009	3.40	2.40	4	5	3	3.44	27	-1.07	2.37	40	$ 1,500,000		2.37	40
SA9205	Stream Restoration Suite	SA-SA-0016	3.50	3.63	2	5	1	3.44	28	-1.07	2.37	41	$ 1,040,000		2.37	41
KC9210	Stream Restoration	KC-TC-0006	3.90	2.80	3	5	1	3.41	30	-1.05	2.36	42	$ 1,960,000		2.36	42
SA9208	Stream Restoration	SA-SA-0013	3.60	3.00	3	5	1	3.38	33	-1.03	2.35	43	$ 940,000		2.35	43
SA9207	Stream Restoration Suite	SA-SA-0018	3.18	3.63	2	5	1	3.34	38	-1.00	2.35	44	$ 630,000		2.35	44
WR9222	Stream Restoration	WR-WR-0024	4.30	2.80	1	5	1	3.33	41	-0.99	2.34	45	$ 2,290,000		2.34	45
MB9209	Stream Restoration	MB-GR-0009	3.90	2.80	4	4	1	3.31	46	-0.97	2.34	46	$ 610,000		2.34	46
SA9206	Stream Restoration	SA-SA-0016	3.70	3.00	2	5	1	3.31	46	-0.97	2.34	47	$ 1,680,000		2.34	47
KC9205	Stream Restoration	KC-KC-0009	3.40	2.20	1	5	5	3.28	55	-0.95	2.33	48	$ 1,450,000		2.33	48
MB9124	Stormwater Pond Retrofit	MB-GR-0018	3.00	3.50	4	4	1	3.25	58	-0.93	2.32	49	$ 370,000		2.32	49
WR9217	Stream Restoration	WR-WR-0017	3.70	3.00	1	5	1	3.21	64	-0.90	2.31	50	$ 930,000		2.31	50
OC9102	Stormwater Pond Retrofit	OC-EH-0005	2.60	3.00	4	5	1	3.18	68	-0.87	2.31	51	$ 140,000		2.31	51
RD9202	Stream Restoration	RD-SW-0002	3.80	2.80	1	5	1	3.18	68	-0.87	2.31	52	$ 1,230,000		2.31	52
WR9223	Stream Restoration	WR-WR-0023	3.40	3.20	1	5	1	3.18	68	-0.87	2.31	53	$ 670,000		2.31	53
OM9203	Stream Restoration	OM-BU-0006	3.40	2.80	2	5	1	3.16	72	-0.86	2.30	54	$ 840,000		2.30	54
RD9201	Stream Restoration	RD-OR-0016	3.70	2.80	1	5	1	3.15	74	-0.85	2.30	55	$ 1,460,000		2.30	55
MB9125	Stormwater Pond Retrofit	MB-GR-0019	1.80	3.33	5	5	1	3.14	75	-0.84	2.30	56	$ 290,000		2.30	56
MB9207	Stream Restoration	MB-MB-0004	3.30	2.80	4	4	1	3.13	78	-0.83	2.30	57	$ 820,000		2.30	57
SA9105	Stormwater Pond Retrofit	SA-SA-0013	2.60	3.17	3	5	1	3.13	78	-0.83	2.30	58	$ 440,000		2.30	58
SA9103	Stormwater Pond Retrofit	SA-SA-0012	2.40	3.33	3	5	1	3.12	80	-0.83	2.29	59	$ 180,000		2.29	59

Appendix J: Summary of Individual Project Scores and Initial Ranking

Structural Projects		Weighting	30%	30%	10%	20%	10%									
PRJ_ID _LEG	PRJ_TYPE	Sub-watershed	Watershed Impact indicators	Watershed Source Indicators	Location within Priority SW	Sequencing	Implementability	Initial Composite Score	Initial Project Rank	BPJ Score Adjustment	Final Composite Score	Intermediate Project Rank	Project Cost	CBA BPJ score adjustment	CBA Adjusted Score	Final Ranking[1]
KC9204	Stream Restoration	KC-KC-0012	3.50	2.20	1	5	3	3.11	82	-0.82	2.29	60	$ 2,040,000		2.29	60
MB9205	Stream Restoration	MB-MB-0001	4.10	2.60	4	3	1	3.11	83	-0.82	2.29	61	$ 1,240,000		2.29	61
MB9213	Stream Restoration	MB-GR-0016	2.90	3.80	4	3	1	3.11	83	-0.82	2.29	62	$ 130,000		2.29	62
KC9203	Stream Restoration	KC-KC-0013	3.40	2.20	1	5	3	3.08	86	-0.80	2.28	63	$ 1,630,000		2.28	63
KC9208	Stream Restoration	KC-TC-0004	3.60	2.60	1	4	3	3.06	88	-0.78	2.28	64	$ 1,280,000		2.28	64
OM9202	Stream Restoration	OM-BU-0005	3.40	2.80	1	5	1	3.06	89	-0.78	2.28	65	$ 930,000		2.28	65
OM9205	Stream Restoration	OM-BU-0008	3.50	2.60	1	5	1	3.03	91	-0.76	2.27	66	$ 580,000		2.27	66
MB9509	BMP/LID	MB-GR-0018	2.20	2.83	4	4	3	3.01	93	-0.74	2.27	67	$ 110,000		2.27	67
MB9511	BMP/LID	MB-GR-0018	1.80	2.50	4	4	5	2.99	95	-0.73	2.26	68	$ 310,000		2.26	68
MB9119	Stormwater Pond Retrofit	MB-GR-0010	1.60	2.83	5	5	1	2.93	99	-0.68	2.25	69	$ 110,000		2.25	69
SA9702	Outfall Improvement	SA-SA-0019	2.83	2.83	3	4	1	2.90	101	-0.66	2.24	70	$ 270,000		2.24	70
WR9214	Stream Restoration	WR-WR-0013	3.50	2.80	1	4	1	2.89	102	-0.65	2.24	71	$ 1,400,000		2.24	71
MB9502	BMP/LID	MB-OC-0006	2.60	2.67	2	4	3	2.88	103	-0.64	2.24	72	$ 1,070,000		2.24	72
MB9117	Stormwater Pond Retrofit	MB-MB-0005	2.20	2.33	4	5	1	2.86	104	-0.63	2.23	73	$ 450,000		2.23	73
SA9101	Stormwater Pond Retrofit	SA-SA-0004	2.20	2.67	3	5	1	2.86	105	-0.63	2.23	74	$ 280,000		2.23	74
WR9213	Stream Restoration	WR-WR-0013	3.40	2.80	1	4	1	2.86	105	-0.63	2.23	75	$ 1,070,000		2.23	75
MB9123	Stormwater Pond Retrofit	MB-GR-0017	1.20	2.33	5	5	1	2.66	110	-0.48	2.18	76	$ 300,000		2.18	76
MB9210	Stream Restoration	MB-GR-0011	3.00	2.20	3	2	3	2.56	115	-0.40	2.16	77	$ 580,000		2.16	77
MB9504	BMP/LID	MB-SB-0001	1.40	2.00	2	5	3	2.52	117	-0.37	2.15	78	$ 80,000		2.15	78
OC9101	Stormwater Pond Retrofit	OC-EH-0003	2.00	2.17	1	4	3	2.45	120	-0.32	2.13	79	$ 570,000		2.13	79
SA9102	Stormwater Pond Retrofit	SA-SA-0004	1.40	2.00	3	5	1	2.42	122	-0.29	2.13	80	$ 210,000		2.13	80
MB9121	Stormwater Pond Retrofit	MB-GR-0016	1.20	3.00	4	3	1	2.36	124	-0.25	2.11	81	$ 250,000		2.11	81
MB9108	Stormwater Pond Retrofit	MB-GR-0001	2.00	2.83	4	1	3	2.35	125	-0.24	2.11	82	$ 110,000		2.11	82
MB9106	Stormwater Pond Retrofit	MB-GR-0001	1.60	2.50	4	1	1	1.93	133	0.08	2.01	83	$ 150,000		2.01	83

Appendix J: Summary of Individual Project Scores and Initial Ranking

Structural Projects		Weighting	30%	30%	10%	20%	10%									
PRJ_ID _LEG	PRJ_TYPE	Sub-watershed	Watershed Impact indicators	Watershed Source Indicators	Location within Priority SW	Sequencing	Implementability	Initial Composite Score	Initial Project Rank	BPJ Score Adjustment	Final Composite Score	Intermediate Project Rank	Project Cost	CBA BPJ score adjustment	CBA Adjusted Score	Final Ranking[1]
MB9201	Stream Restoration	MB-OC-0003	4.10	4.20	4	5	1	3.99	2	-1.99	2.00	84	$ 2,120,000		2.00	TBE
MB9216	Stream Restoration	MB-GR-0019	3.40	3.80	5	5	1	3.76	4	-1.87	1.89	85	$ 840,000		1.89	TBE
MB9215	Stream Restoration	MB-GR-0017	3.50	3.40	5	5	1	3.67	6	-1.83	1.84	86	$ 1,700,000		1.84	TBE
MB9204	Stream Restoration	MB-OC-0008	3.70	2.80	2	5	5	3.65	8	-1.82	1.83	87	$ 1,450,000		1.83	TBE
MB9203	Stream Restoration	MB-SB-0001	3.50	2.80	2	5	5	3.59	10	-1.78	1.81	88	$ 1,090,000		1.81	TBE
MB9211	Stream Restoration	MB-GR-0015	3.20	3.20	5	5	1	3.52	14	-1.75	1.77	89	$ 130,000		1.77	TBE
SA9210	Stream Restoration	SA-SA-0020	3.90	3.00	3	5	1	3.47	19	-1.72	1.75	90	$ 600,000		1.75	TBE
WR9205	Stream Restoration	WR-WR-0005	3.60	3.60	2	5	1	3.46	22	-1.72	1.74	91	$ 990,000		1.74	TBE
MB9703	Outfall Improvement	MB-GR-0018	3.50	3.67	4	4	1	3.45	26	-1.71	1.74	92	$ 40,000		1.74	TBE
WR9215	Stream Restoration	WR-WR-0015	3.50	3.20	3	5	1	3.41	30	-1.69	1.72	93	$ 740,000		1.72	TBE
KC9207	Stream Restoration	KC-TC-0002	3.80	2.80	3	5	1	3.38	33	-1.68	1.70	94	$ 1,520,000		1.70	TBE
KC9211	Stream Restoration	KC-TC-0005	3.70	2.80	3	5	1	3.35	37	-1.66	1.69	95	$ 820,000		1.69	TBE
MB9103	Stormwater Pond Retrofit	MB-OC-0004	2.60	3.17	5	5	1	3.33	41	-1.65	1.68	96	$ 250,000		1.68	TBE
MB9101	Stormwater Pond Retrofit	MB-OC-0003	2.40	3.00	4	5	3	3.32	43	-1.65	1.67	97	$ 420,000		1.67	TBE
SA9203	Stream Restoration	SA-SA-0004	3.60	2.80	3	5	1	3.32	45	-1.65	1.67	98	$ 2,000,000		1.67	TBE
WR9207	Stream Restoration	WR-WR-0007	3.50	3.20	2	5	1	3.31	46	-1.64	1.67	99	$ 1,020,000		1.67	TBE
SA9204	Stream Restoration	SA-SA-0008	3.50	2.80	3	5	1	3.29	51	-1.63	1.66	100	$ 860,000		1.66	TBE
KC9206	Stream Restoration	KC-OC-0002	3.50	2.80	1	5	3	3.29	53	-1.63	1.66	101	$ 860,000		1.66	TBE
MB9102	Stormwater Pond Retrofit S	MB-OC-0004	2.33	3.29	5	5	1	3.29	54	-1.63	1.66	102	$ 270,000		1.66	TBE
SA9107	Stormwater Pond Retrofit	SA-SA-0025	2.60	3.33	4	5	1	3.28	55	-1.63	1.65	103	$ 450,000		1.65	TBE
WR9216	Stream Restoration	WR-WR-0017	3.90	3.00	1	5	1	3.27	57	-1.62	1.65	104	$ 1,300,000		1.65	TBE
SA9202	Stream Restoration	SA-SA-0003	3.70	2.80	2	5	1	3.25	58	-1.61	1.64	105	$ 1,270,000		1.64	TBE
KC9202	Stream Restoration	KC-KC-0010	3.30	2.20	1	5	5	3.25	61	-1.61	1.64	106	$ 980,000		1.64	TBE
HP9201	Stream Restoration	HP-PO-0013	3.60	2.20	2	5	3	3.24	62	-1.60	1.64	107	$ 960,000		1.64	TBE
OC9202	Stream Restoration	OC-EH-0002	4.00	2.40	2	5	1	3.22	63	-1.59	1.63	108	$ 1,040,000		1.63	TBE
MB9110	Stormwater Pond Retrofit	MB-GR-0004	2.20	2.50	5	5	3	3.21	64	-1.59	1.62	109	$ 500,000		1.62	TBE
RD9502	BMP/LID	RD-OR-0011	3.20	3.50	1	4	3	3.21	64	-1.59	1.62	110	$ 520,000		1.62	TBE
OC9201	Stream Restoration	OC-EH-0002	3.90	2.40	2	5	1	3.19	67	-1.58	1.61	111	$ 880,000		1.61	TBE
MB9501	BMP/LID	MB-OC-0005	1.20	2.67	5	5	5	3.16	72	-1.56	1.60	112	$ 190,000		1.60	TBE
MB9214	Stream Restoration	MB-GR-0016	3.00	3.80	4	3	1	3.14	75	-1.55	1.59	113	$ 190,000		1.59	TBE
SA9104	Stormwater Pond Retrofit	SA-SA-0022	2.40	3.17	3	5	1	3.07	87	-1.52	1.55	114	$ 450,000		1.55	TBE
OC9205	Stream Restoration	OC-OR-0005	3.40	2.80	1	5	1	3.06	89	-1.51	1.55	115	$ 1,120,000		1.55	TBE
OM9204	Stream Restoration	OM-OM-0001	3.50	2.80	2	4	1	2.99	94	-1.48	1.51	116	$ 1,030,000		1.51	TBE
KC9201	Stream Restoration	KC-KC-0003	3.10	2.20	1	5	3	2.99	95	-1.48	1.51	117	$ 870,000		1.51	TBE
OC9206	Stream Restoration	OC-OR-0005	3.10	2.80	1	5	1	2.97	97	-1.47	1.50	118	$ 670,000		1.50	TBE
MB9508	BMP/LID	MB-GR-0012	1.20	2.50	4	5	3	2.81	108	-1.38	1.43	119	$ 90,000		1.43	TBE
OC9103	Stormwater Pond Retrofit	OC-EH-0006	2.00	2.83	2	5	1	2.75	109	-1.35	1.40	120	$ 200,000		1.40	TBE
MB9115	Stormwater Pond Retrofit	MB-GR-0007	1.80	2.33	5	4	1	2.64	111	-1.30	1.34	121	$ 360,000		1.34	TBE
MB9113	Stormwater Pond Retrofit	MB-GR-0007	1.80	2.33	5	4	1	2.64	111	-1.30	1.34	122	$ 290,000		1.34	TBE
SA9106	Stormwater Pond Retrofit	SA-SA-0022	1.20	2.17	3	5	3	2.61	114	-1.28	1.33	123	$ 180,000		1.33	TBE
MB9118	Stormwater Pond Retrofit	MB-MB-0005	1.60	1.83	4	5	1	2.53	116	-1.24	1.29	124	$ 220,000		1.29	TBE
MB9112	Stormwater Pond Retrofit	MB-GR-0005	2.40	3.17	5	1	1	2.47	118	-1.21	1.26	125	$ 290,000		1.26	TBE
RD9501	BMP/LID	RD-OR-0008	1.80	2.33	3	3	3	2.44	121	-1.19	1.25	126	$ 100,000		1.25	TBE
MB9116	Stormwater Pond Retrofit	MB-GR-0008	1.80	3.00	5	1	1	2.24	127	-1.09	1.15	127	$ 470,000		1.15	TBE
WR9202	Stream Restoration	WR-WR-0003	3.20	2.80	1	1	1	2.20	128	-1.07	1.13	128	$ 990,000		1.13	TBE
WR9203	Stream Restoration	WR-WR-0003	3.00	2.80	1	1	1	2.14	130	-1.04	1.10	129	$ 120,000		1.10	TBE
WR9204	Stream Restoration	WR-WR-0003	3.00	2.80	1	1	1	2.14	130	-1.04	1.10	130	$ 170,000		1.10	TBE
KC9701	Outfall Improvement	KC-OC-0001	3.33	3.00	3	5	1	3.30	50	-2.30	1.00	131	$ 30,000		1.00	TBE
MB9702	Outfall Improvement	MB-GR-0001	3.67	3.50	4	1	1	2.85	107	-2.11	0.74	132	$ 50,000		0.74	TBE
MB9503	BMP/LID	MB-GR-0001	2.20	3.00	4	1	3	2.46	119	-1.95	0.51	133	$ 50,000		0.51	TBE

1. TBE denotes projects to be eliminated, due to project's limited impact.

Appendix K: Non-Structural Quantitative and Qualitative Analyses

Appendix K: Non-Structural Projects Quantitative Analysis

Non-Structural Projects		Weighting	30%	30%	10%	20%	10%					
PRJ_ID _LEG	PRJ_TYPE	Sub-watershed	Watershed Impact indicators	Watershed Source Indicators	Location within Priority SW	Sequencing	Implementability	Initial Composite Score	Initial Project Rank	Score Adjustment	Final Composite Score	Final Project Rank
MB9807	Buffer Restoration S	MB-GR-0012	3.73	3.83	4	5	5	4.17	2	0.20	4.37	1
MB9811	Buffer Restoration	MB-GR-0019	3.82	4.00	5	5	5	4.35	1		4.35	2
SA9802	Buffer Restoration	SA-SA-0012	3.27	3.00	3	5	5	3.68	4		3.68	3
MB9804	Buffer Restoration	MB-MB-0005	3.73	2.33	4	5	5	3.72	3	-0.04	3.68	4
MB9802	Buffer Restoration	MB-OC-0006	3.36	2.67	2	4	5	3.31	5		3.31	5
MB9806	Buffer Restoration S	MB-GR-0013	3.55	3.33	3	2	5	3.26	6		3.26	6
HP9801	Buffer Restoration	HP-PO-0018	3.00	2.00	1	5	5	3.10	8		3.10	7
MB9801	Buffer Restoration	MB-GR-0001	3.82	3.00	4	1	5	3.15	7	-0.05	3.10	8
MB9512	BMP/LID	MB-GR-0019	1.20	2.83	5	5	3	3.01	9		3.01	9
MB9505	BMP/LID	MB-SB-0001	1.60	2.17	2	5	3	2.63	10		2.63	10
MB9507	BMP/LID	MB-GR-0016	1.20	2.83	4	3	3	2.51	11		2.51	11
SA9801	Buffer Restoration	SA-SA-0010	2.64	2.00	2	1	5	2.29	12		2.29	12

Appendix K: Non-Structural Projects Qualitative Analysis

PRJ_ID _LEG	PRJ_ TYPE	Sub-water-shed	Detailed Description	Project Ranking Comments	# of Flood Complaints	**Flood Complaints Score**	SWR TSS Metric (Tons/ac/yr)	SWR FWO TSS Score	**FWO TSS Score**	SWR FWO TN Metric (lbs/ac/yr)	SWR FWO TN Score	**FWO TN Score**	SWR FWO TP Metric (lbs/ac/yr)	SWR FWO TP Score	**FWO TP Score**	Average Score	Initial Project Rank	BPJ Score Adjustment	Final Score	Final Project Rank
MB9805	Street Sweeping Program	MB-GR-0010	This project proposes a street sweeping program to help reduce the amount of potential pollutants from entering the nearby streams and storm systems. The area is near Cardinal Forest Lane and consists of 35 acres. The area is a multifamily housing development. The primary indicators are upland sediment and total suspended solid load. A street sweeping program will improve water quality in residential areas by capturing and preventing potential pollutants from entering the nearby streams and storm systems.	High density due to multifamily homes.	2	**2**	0.271	2.5	**5**	8.297	2.5	**5**	1.199	2.5	**4**	4.00	1	0.1	4.10	1
MB9809	Street Sweeping Program	MB-GR-0017	This project proposes a street sweeping program to help reduce the amount of potential pollutants from entering the nearby streams and storm systems. The area is along Chase Glenn Circle and consists of 230 acres. The area is mostly single family residential and very small area of commercial development. The primary indicators are upland sediment and total suspended solid load. A street sweeping program will improve water quality in residential areas by capturing and preventing potential pollutants from entering the nearby streams and storm systems.	Large area to be treated.	1	**1**	0.302	2.5	**5**	7.011	2.5	**5**	1.054	2.5	**4**	3.75	3	0.1	3.85	2
MB9812	Street Sweeping Program	MB-GR-0019	This project proposes a street sweeping program to help reduce the amount of potential pollutants from entering the nearby streams and storm systems. The area is along Crosspointe Drive near Silverbrooke Elementary School and consists of 45 acres, however there is not very much roadway within drainage area. The area is single family residential, a school and a very large wet pond. The primary indicators are upland sediment and total suspended solid load. A street sweeping program will improve water quality in residential areas by capturing and preventing potential pollutants from entering the nearby streams and storm systems.	0	2	**2**	0.195	2.5	**5**	5.869	2.5	**5**	0.893	2.5	**4**	4.00	1	-0.2	3.80	3
MB9803	Street Sweeping Program	MB-GR-0008	This project proposes a street sweeping program to help reduce the amount of potential pollutants from entering the nearby streams and storm systems. The area is near Windmere Hill Drive and consists of 40 acres. The area is a townhouse development. The primary indicators are upland sediment and total suspended solid load. A street sweeping program will improve water quality in residential areas by capturing and preventing potential pollutants from entering the nearby streams and storm systems.	0	1	**1**	0.520	2.5	**5**	8.156	2.5	**5**	1.165	2.5	**4**	3.75	3		3.75	4

Appendix K: Non-Structural Projects Qualitative Analysis

PRJ_ID _LEG	PRJ_ TYPE	Sub-water-shed	Detailed Description	Project Ranking Comments	# of Flood Complaints	**Flood Complaints Score**	SWR TSS Metric (Tons/ac/yr)	SWR FWO TSS Score	**FWO TSS Score**	SWR FWO TN Metric (lbs/ac/yr)	SWR FWO TN Score	**FWO TN Score**	SWR FWO TP Metric (lbs/ac/yr)	SWR FWO TP Score	**FWO TP Score**	Average Score	Initial Project Rank	BPJ Score Adjustment	Final Score	Final Project Rank
MB9808	Street Sweeping Program	MB-GR-0016	This project proposes a street sweeping program to help reduce the amount of potential pollutants from entering the nearby streams and storm systems. The area is off of Lorfax Drive and consists of 125 acres. The area is mostly single family residential development. The primary indicators are upland sediment and total suspended solid load. A street sweeping program will improve water quality in residential areas by capturing and preventing potential pollutants from entering the nearby streams and storm systems.	In neighborhood with no existing treatment.	8	**2**	0.244	2.5	**5**	4.779	5.0	**3**	0.697	2.5	**4**	3.50	5		3.50	5
SA9803	Re-forest-ation	SA-SA-0024	This project proposes reforestation to a sparsely wooded area southwest of Old Stone Fence Road to provide natural runoff volume reduction and pollutant removal. The primary indicator is poor channel morphology. Increase vegetation from reforestation will provide additional stream buffer for filtration of pollutants and will reduce runoff by interception water, thereby increasing surface storage and infiltration.	WAG identified as critical.	2	**2**	0.267	2.5	**5**	3.163	5.0	**3**	0.435	5	**3**	3.25	6		3.25	6
MB9810	Street Sweeping Program	MB-GR-0018	This project proposes a street sweeping program to help reduce the amount of potential pollutants from entering the nearby streams and storm systems. The area is along Cross Chase Circle and consists of 135 acres. The area is single family residential and commercial development. The primary indicators are upland sediment and total suspended solid load. A street sweeping program will improve water quality in residential areas by capturing and preventing potential pollutants from entering the nearby streams and storm systems.	0	0	**1**	0.274	2.5	**5**	3.344	5.0	**3**	0.471	5	**3**	3.00	7		3.00	7

Appendix L: Lower Occoquan Watershed Subwatersheds by Stream Orders Map

Location of Fairfax County Watersheds

Old Mill Branch

Wolf Run

Ryans Dam

Sandy Run

Occoquan

Mill Branch

High Point

Kane Creek

Sequencing Score

1
2
3
4
5

0 3,600 7,200 10,800 14,400 Feet

Lower Occoquan Subwatershed Orders

Appendix M: Lower Occoquan Watershed All Candidate Projects Map

Problem Areas

Subwatershed Objective Composite Scores

- 4.653492 - 5.499524
- 5.499525 - 6.319206
- 6.319207 - 7.079683
- 7.079684 - 7.867937
- 7.867938 - 8.893492

● **Candidate Project Sites**

0 3,000 6,000 8,000 Feet

Appendix M:
Lower Occoquan Watershed
All Candidate Projects

Appendix N: Storm Event Peak Flow Comparisons for Combined Projects Model, 2-yr Event

Appendix N. 2-yr Storm Event Peak Flow Comparison

			Future with projects Model - June 2010	Future without projects Model	Difference
Project ID	Basin Name	Outlet Node	Peak Flow to Outlet (cfs)	Peak Flow to Outlet (cfs)	Peak Flow to Outlet (cfs)
	HP-P0-0001	HP-P0-0001	38.26	38.26	0.0
	HP-P0-0002	HP-P0-0002	16.99	16.99	0.0
	HP-P0-0003	HP-P0-0003	42.47	42.47	0.0
	HP-P0-0004	HP-P0-0004	35.22	35.22	0.0
	HP-P0-0005	HP-P0-0005	32.65	32.65	0.0
	HP-P0-0006	HP-P0-0006	13.1	13.1	0.0
	HP-P0-0007	HP-P0-0007	16.69	16.69	0.0
	HP-P0-0008	HP-P0-0008	15.94	15.94	0.0
	HP-P0-0009	HP-P0-0009	28.3	28.3	0.0
	HP-P0-0010	HP-P0-0010	32.22	32.22	0.0
	HP-P0-0011	HP-P0-0011	42.85	42.85	0.0
	HP-P0-0012	HP-P0-0012	13.38	13.38	0.0
	HP-P0-0013	HP-P0-0013	9.13	9.13	0.0
	HP-P0-0014	HP-P0-0014	65.22	65.22	0.0
	HP-P0-0015	HP-P0-0015	100.16	100.16	0.0
	HP-P0-0016	HP-P0-0016	77.77	77.77	0.0
	HP-P0-0017	HP-P0-0017	33.25	33.25	0.0
	HP-P0-0018	HP-P0-0018	29.27	29.27	0.0
	HP-P0-0019	HP-P0-0019	70.66	70.66	0.0
	HP-P0-0020	HP-P0-0020	34.33	34.33	0.0
	HP-P0-0021	HP-P0-0021	59.03	59.03	0.0
	KC-KC-0001	KC-KC-0001	53.61	53.61	0.0
	KC-KC-0002	KC-KC-0002	62.38	62.38	0.0
	KC-KC-0003	KC-KC-0003	13.12	13.12	0.0
	KC-KC-0004	KC-KC-0004	31.55	31.55	0.0
	KC-KC-0005	KC-KC-0005	61.29	61.29	0.0
	KC-KC-0006	KC-KC-0006	61.32	61.32	0.0
	KC-KC-0007	KC-KC-0007	10.26	10.26	0.0
	KC-KC-0008	KC-KC-0008	4.79	4.79	0.0
	KC-KC-0009	KC-KC-0009	19.54	19.54	0.0
	KC-KC-0010	KC-KC-0010	21.93	21.93	0.0
	KC-KC-0011	KC-KC-0011	7.34	7.34	0.0
	KC-KC-0012	KC-KC-0012	29.94	29.94	0.0
	KC-KC-0013	KC-KC-0013	11.03	11.03	0.0
	KC-0C-0001	KC-0C-0001	57.94	57.94	0.0
	KC-0C-0002	KC-0C-0002	30.1	30.1	0.0
	KC-0C-0003	KC-0C-0003	148.22	148.22	0.0
	KC-TC-0001	KC-TC-0001	60.51	60.51	0.0
	KC-TC-0002	KC-TC-0002	33.8	33.8	0.0
	KC-TC-0003	KC-TC-0003	21.87	21.87	0.0

Appendix N. 2-yr Storm Event Peak Flow Comparison

			Future with projects Model - June 2010	Future without projects Model	Difference
Project ID	Basin Name	Outlet Node	Peak Flow to Outlet (cfs)	Peak Flow to Outlet (cfs)	Peak Flow to Outlet (cfs)
	KC-TC-0004	KC-TC-0004	32.19	32.19	0.0
	KC-TC-0005	KC-TC-0005	52.18	52.18	0.0
	KC-TC-0006	KC-TC-0006	75.7	75.7	0.0
MB9104 MB9107	MB-GR-0001	MB-GR-0001	182.93	215.3	-32.4
	MB-GR-0002	MB-GR-0002	141.63	141.63	0.0
MB9109 MB9111	MB-GR-0003	MB-GR-0003	37.33	102.38	-65.1
MB9111	MB-GR-0004	MB-GR-0004	47.38	67.6	-20.2
	MB-GR-0005	MB-GR-0005	121.96	121.96	0.0
	MB-GR-0006	MB-GR-0006	26.35	26.35	0.0
MB9114	MB-GR-0007	MB-GR-0007	75.11	85.95	-10.8
	MB-GR-0008	MB-GR-0008	169.94	169.94	0.0
	MB-GR-0009	MB-GR-0009	115.54	115.54	0.0
	MB-GR-0010	MB-GR-0010	185.17	185.17	0.0
	MB-GR-0011	MB-GR-0011	65.17	65.17	0.0
	MB-GR-0012	MB-GR-0012	176.82	176.82	0.0
	MB-GR-0013	MB-GR-0013	96.59	96.59	0.0
	MB-GR-0014	MB-GR-0014	34.28	34.28	0.0
	MB-GR-0015	MB-GR-0015	65.84	65.84	0.0
MB9122	MB-GR-0016	MB-GR-0016	205.99	218.93	-12.9
	MB-GR-0017	MB-GR-0017	96.55	96.55	0.0
	MB-GR-0018	MB-GR-0018	52.95	52.95	0.0
	MB-GR-0019	MB-GR-0019	0	0	0.0
	MB-MB-0001	MB-MB-0001	68.2	68.2	0.0
	MB-MB-0002	MB-MB-0002	124.69	124.69	0.0
	MB-MB-0003	MB-MB-0003	102.45	102.45	0.0
	MB-MB-0004	MB-MB-0004	93.94	93.94	0.0
	MB-MB-0005	MB-MB-0005	40.49	40.49	0.0
	MB-0C-0001	MB-0C-0001	32.99	32.99	0.0
	MB-0C-0002	MB-0C-0002	56.84	56.84	0.0
	MB-0C-0003	MB-0C-0003	107.16	107.16	0.0
	MB-0C-0004	MB-0C-0004	140.9	140.9	0.0
MB9105	MB-0C-0005	MB-0C-0005	94.1	111.64	-17.5
	MB-0C-0006	MB-0C-0006	56.57	56.57	0.0
	MB-0C-0007	MB-0C-0007	145.25	145.25	0.0
	MB-0C-0008	MB-0C-0008	74.8	74.8	0.0
	MB-0C-0009	MB-0C-0009	77.5	77.5	0.0
	MB-SB-0001	MB-SB-0001	113.69	113.69	0.0
	0C-EH-0001	0C-EH-0001	90.14	90.14	0.0

Appendix N. 2-yr Storm Event Peak Flow Comparison

			Future with projects Model - June 2010	Future without projects Model	Difference
Project ID	Basin Name	Outlet Node	Peak Flow to Outlet (cfs)	Peak Flow to Outlet (cfs)	Peak Flow to Outlet (cfs)
	0C-EH-0002	0C-EH-0002	100.49	100.49	0.0
	0C-EH-0003	0C-EH-0003	65.06	65.06	0.0
	0C-EH-0004	0C-EH-0004	49.93	49.93	0.0
	0C-EH-0005	0C-EH-0005	80.57	80.57	0.0
	0C-EH-0006	0C-EH-0006	70.99	70.99	0.0
	0C-LQ-0001	0C-LQ-0001	133.02	133.02	0.0
	0C-0R-0001	0C-0R-0001	79.35	79.35	0.0
	0C-0R-0002	0C-0R-0002	8.91	8.91	0.0
	0C-0R-0003	0C-0R-0003	31.74	31.74	0.0
	0C-0R-0004	0C-0R-0004	62.73	62.73	0.0
	0C-0R-0005	0C-0R-0005	73.55	73.55	0.0
	0C-0R-0006	0C-0R-0006	50.44	50.44	0.0
	0C-0R-0007	0C-0R-0007	48.08	48.08	0.0
	0M-BU-0001	0M-BU-0001	34.2	34.2	0.0
	0M-BU-0002	0M-BU-0002	31.26	31.26	0.0
	0M-BU-0003	0M-BU-0003	40.94	40.94	0.0
	0M-BU-0004	0M-BU-0004	55.97	55.97	0.0
	0M-BU-0005	0M-BU-0005	78.49	78.49	0.0
	0M-BU-0006	0M-BU-0006	29.37	29.37	0.0
	0M-BU-0007	0M-BU-0007	43.47	43.47	0.0
	0M-BU-0008	0M-BU-0008	79.18	79.18	0.0
	0M-BU-0009	0M-BU-0009	30.07	30.07	0.0
	0M-BU-0010	0M-BU-0010	10.12	10.12	0.0
	0M-BU-0011	0M-BU-0011	35.85	35.85	0.0
	0M-BU-0012	0M-BU-0012	24.06	24.06	0.0
	0M-BU-0013	0M-BU-0013	31.2	31.2	0.0
	0M-0M-0001	0M-0M-0001	77.13	77.13	0.0
	0M-0M-0002	0M-0M-0002	57.84	57.84	0.0
	0M-0R-0001	0M-0R-0001	18.1	18.1	0.0
	0M-0R-0002	0M-0R-0002	26.4	26.4	0.0
	0M-0R-0003	0M-0R-0003	52.72	52.72	0.0
	RD-0R-0001	RD-0R-0001	19.64	19.64	0.0
	RD-0R-0002	RD-0R-0002	37.75	37.75	0.0
	RD-0R-0003	RD-0R-0003	38.48	38.48	0.0
	RD-0R-0004	RD-0R-0004	22.03	22.03	0.0
	RD-0R-0005	RD-0R-0005	16.22	16.22	0.0
	RD-0R-0006	RD-0R-0006	26.75	26.75	0.0
	RD-0R-0007	RD-0R-0007	11	11	0.0
	RD-0R-0008	RD-0R-0008	38.94	38.94	0.0
	RD-0R-0009	RD-0R-0009	34.47	34.47	0.0

Appendix N. 2-yr Storm Event Peak Flow Comparison

			Future with projects Model - June 2010	Future without projects Model	Difference
Project ID	Basin Name	Outlet Node	Peak Flow to Outlet (cfs)	Peak Flow to Outlet (cfs)	Peak Flow to Outlet (cfs)
	RD-0R-0010	RD-0R-0010	25.63	25.63	0.0
	RD-0R-0011	RD-0R-0011	38.55	38.55	0.0
	RD-0R-0012	RD-0R-0012	70.86	70.86	0.0
	RD-0R-0013	RD-0R-0013	57.07	57.07	0.0
	RD-0R-0014	RD-0R-0014	38.67	38.67	0.0
	RD-0R-0015	RD-0R-0015	25.74	25.74	0.0
	RD-0R-0016	RD-0R-0016	37.73	37.73	0.0
	RD-SW-0001	RD-SW-0001	27.71	27.71	0.0
	RD-SW-0002	RD-SW-0002	81.54	81.54	0.0
	SA-0R-0001	SA-0R-0001	56.16	56.16	0.0
	SA-0R-0002	SA-0R-0002	45.24	45.24	0.0
	SA-0R-0003	SA-0R-0003	46.88	46.88	0.0
	SA-0R-0004	SA-0R-0004	68.34	68.34	0.0
	SA-0R-0005	SA-0R-0005	45.96	45.96	0.0
	SA-0R-0006	SA-0R-0006	78.27	78.27	0.0
	SA-SA-0001	SA-SA-0001	40.41	40.41	0.0
	SA-SA-0002	SA-SA-0002	26.52	26.52	0.0
	SA-SA-0003	SA-SA-0003	25.5	25.5	0.0
	SA-SA-0004	SA-SA-0004	49.27	49.27	0.0
	SA-SA-0005	SA-SA-0005	51.07	51.07	0.0
	SA-SA-0006	SA-SA-0006	54.43	54.43	0.0
	SA-SA-0007	SA-SA-0007	15.49	15.49	0.0
	SA-SA-0008	SA-SA-0008	82.44	82.44	0.0
	SA-SA-0009	SA-SA-0009	21.68	21.68	0.0
	SA-SA-0010	SA-SA-0010	49.12	49.12	0.0
	SA-SA-0011	SA-SA-0011	43.12	43.12	0.0
	SA-SA-0012	SA-SA-0012	32.71	32.71	0.0
	SA-SA-0013	SA-SA-0013	56.54	56.54	0.0
	SA-SA-0014	SA-SA-0014	44.95	44.95	0.0
	SA-SA-0015	SA-SA-0015	36.44	36.44	0.0
	SA-SA-0016	SA-SA-0016	56.32	56.32	0.0
	SA-SA-0017	SA-SA-0017	50.15	50.15	0.0
	SA-SA-0018	SA-SA-0018	102.26	102.26	0.0
	SA-SA-0019	SA-SA-0019	20.08	20.08	0.0
	SA-SA-0020	SA-SA-0020	46.43	46.43	0.0
	SA-SA-0021	SA-SA-0021	36.41	36.41	0.0
	SA-SA-0022	SA-SA-0022	34.69	34.69	0.0
	SA-SA-0023	SA-SA-0023	35.15	35.15	0.0
	SA-SA-0024	SA-SA-0024	104.11	104.11	0.0
	SA-SA-0025	SA-SA-0025	114.73	114.73	0.0

Appendix N. 2-yr Storm Event Peak Flow Comparison

			Future with projects Model - June 2010	Future without projects Model	Difference
Project ID	**Basin Name**	**Outlet Node**	**Peak Flow to Outlet (cfs)**	**Peak Flow to Outlet (cfs)**	**Peak Flow to Outlet (cfs)**
	SA-SA-0026	SA-SA-0026	73.96	73.96	0.0
	WR-WR-0001	WR-WR-0001	35.85	35.85	0.0
	WR-WR-0002	WR-WR-0002	43.38	43.38	0.0
	WR-WR-0003	WR-WR-0003	65.46	65.46	0.0
	WR-WR-0004	WR-WR-0004	63.53	63.53	0.0
	WR-WR-0005	WR-WR-0005	74.31	74.31	0.0
	WR-WR-0006	WR-WR-0006	42.43	42.43	0.0
	WR-WR-0007	WR-WR-0007	61.46	61.46	0.0
	WR-WR-0008	WR-WR-0008	44.54	44.54	0.0
	WR-WR-0009	WR-WR-0009	62.88	62.88	0.0
	WR-WR-0010	WR-WR-0010	22.08	22.08	0.0
	WR-WR-0011	WR-WR-0011	54.62	54.62	0.0
	WR-WR-0012	WR-WR-0012	27.94	27.94	0.0
	WR-WR-0013	WR-WR-0013	78.95	78.95	0.0
	WR-WR-0014	WR-WR-0014	27.29	27.29	0.0
	WR-WR-0015	WR-WR-0015	55.66	55.66	0.0
	WR-WR-0016	WR-WR-0016	12.93	12.93	0.0
	WR-WR-0017	WR-WR-0017	31.47	31.47	0.0
	WR-WR-0018	WR-WR-0018	39.37	39.37	0.0
	WR-WR-0019	WR-WR-0019	35.35	35.35	0.0
	WR-WR-0020	WR-WR-0020	33.09	33.09	0.0
	WR-WR-0021	WR-WR-0021	45.12	45.12	0.0
	WR-WR-0022	WR-WR-0022	51.17	51.17	0.0
	WR-WR-0023	WR-WR-0023	19.75	19.75	0.0
	WR-WR-0024	WR-WR-0024	30.4	30.4	0.0

Appendix O: Storm Event Peak Flow Comparisons for Combined Projects Model, 10-yr Event

Appendix O. 10-yr Storm Event Peak Flow Comparison

			Future with projects Model - June 2010	Future without projects Model	Difference
Project ID	Basin Name	Outlet Node	Peak Flow to Outlet (cfs)	Peak Flow to Outlet (cfs)	Peak Flow to Outlet (cfs)
	HP-P0-0001	HP-P0-0001	98.92	98.92	0.0
	HP-P0-0002	HP-P0-0002	43.23	43.23	0.0
	HP-P0-0003	HP-P0-0003	107.26	107.26	0.0
	HP-P0-0004	HP-P0-0004	89.9	89.9	0.0
	HP-P0-0005	HP-P0-0005	104.96	104.96	0.0
	HP-P0-0006	HP-P0-0006	43.37	43.37	0.0
	HP-P0-0007	HP-P0-0007	48.97	48.97	0.0
	HP-P0-0008	HP-P0-0008	49.64	49.64	0.0
	HP-P0-0009	HP-P0-0009	97.37	97.37	0.0
	HP-P0-0010	HP-P0-0010	111.89	111.89	0.0
	HP-P0-0011	HP-P0-0011	96.95	96.95	0.0
	HP-P0-0012	HP-P0-0012	44.77	44.77	0.0
	HP-P0-0013	HP-P0-0013	30.32	30.32	0.0
	HP-P0-0014	HP-P0-0014	135.81	135.81	0.0
	HP-P0-0015	HP-P0-0015	200.56	200.56	0.0
	HP-P0-0016	HP-P0-0016	167.17	167.17	0.0
	HP-P0-0017	HP-P0-0017	106.75	106.75	0.0
	HP-P0-0018	HP-P0-0018	69	69	0.0
	HP-P0-0019	HP-P0-0019	164.62	164.62	0.0
	HP-P0-0020	HP-P0-0020	86.99	86.99	0.0
	HP-P0-0021	HP-P0-0021	132.96	132.96	0.0
	KC-KC-0001	KC-KC-0001	159.04	159.04	0.0
	KC-KC-0002	KC-KC-0002	170.17	170.17	0.0
	KC-KC-0003	KC-KC-0003	42.24	42.24	0.0
	KC-KC-0004	KC-KC-0004	101.55	101.55	0.0
	KC-KC-0005	KC-KC-0005	161.08	161.08	0.0
	KC-KC-0006	KC-KC-0006	138.96	138.96	0.0
	KC-KC-0007	KC-KC-0007	32.5	32.5	0.0
	KC-KC-0008	KC-KC-0008	16.23	16.23	0.0
	KC-KC-0009	KC-KC-0009	60.03	60.03	0.0
	KC-KC-0010	KC-KC-0010	54.55	54.55	0.0
	KC-KC-0011	KC-KC-0011	21.4	21.4	0.0
	KC-KC-0012	KC-KC-0012	62.62	62.62	0.0
	KC-KC-0013	KC-KC-0013	38.15	38.15	0.0
	KC-0C-0001	KC-0C-0001	132.15	132.15	0.0
	KC-0C-0002	KC-0C-0002	89.81	89.81	0.0
	KC-0C-0003	KC-0C-0003	379.5	379.5	0.0
	KC-TC-0001	KC-TC-0001	161.47	161.47	0.0
	KC-TC-0002	KC-TC-0002	75.5	75.5	0.0
	KC-TC-0003	KC-TC-0003	57.63	57.63	0.0

Appendix O. 10-yr Storm Event Peak Flow Comparison

			Future with projects Model - June 2010	Future without projects Model	Difference
Project ID	Basin Name	Outlet Node	Peak Flow to Outlet (cfs)	Peak Flow to Outlet (cfs)	Peak Flow to Outlet (cfs)
	KC-TC-0004	KC-TC-0004	86.43	86.43	0.0
	KC-TC-0005	KC-TC-0005	116.08	116.08	0.0
	KC-TC-0006	KC-TC-0006	160.48	160.48	0.0
MB9104 MB9107	MB-GR-0001	MB-GR-0001	361.54	433.32	-71.8
	MB-GR-0002	MB-GR-0002	283.03	283.03	0.0
MB9109 MB9111	MB-GR-0003	MB-GR-0003	71.78	194.88	-123.1
MB9111	MB-GR-0004	MB-GR-0004	108.98	138.28	-29.3
	MB-GR-0005	MB-GR-0005	241.89	241.89	0.0
	MB-GR-0006	MB-GR-0006	72.01	72.01	0.0
MB9114	MB-GR-0007	MB-GR-0007	149.28	173.74	-24.5
	MB-GR-0008	MB-GR-0008	338.78	338.78	0.0
	MB-GR-0009	MB-GR-0009	232.19	232.19	0.0
	MB-GR-0010	MB-GR-0010	372.32	372.32	0.0
	MB-GR-0011	MB-GR-0011	137.83	137.83	0.0
	MB-GR-0012	MB-GR-0012	352.38	352.38	0.0
	MB-GR-0013	MB-GR-0013	194.68	194.68	0.0
	MB-GR-0014	MB-GR-0014	78.4	78.4	0.0
	MB-GR-0015	MB-GR-0015	135.63	135.63	0.0
MB9122	MB-GR-0016	MB-GR-0016	411.08	448.42	-37.3
	MB-GR-0017	MB-GR-0017	198.18	198.18	0.0
	MB-GR-0018	MB-GR-0018	114.49	114.49	0.0
	MB-GR-0019	MB-GR-0019	2.8	2.8	0.0
	MB-MB-0001	MB-MB-0001	164.94	164.94	0.0
	MB-MB-0002	MB-MB-0002	268.3	268.3	0.0
	MB-MB-0003	MB-MB-0003	205.92	205.92	0.0
	MB-MB-0004	MB-MB-0004	194.1	194.1	0.0
	MB-MB-0005	MB-MB-0005	93.83	93.83	0.0
	MB-0C-0001	MB-0C-0001	97.52	97.52	0.0
	MB-0C-0002	MB-0C-0002	127.23	127.23	0.0
	MB-0C-0003	MB-0C-0003	216.65	216.65	0.0
	MB-0C-0004	MB-0C-0004	281.96	281.96	0.0
MB9105	MB-0C-0005	MB-0C-0005	187.22	223.56	-36.3
	MB-0C-0006	MB-0C-0006	122.74	122.74	0.0
	MB-0C-0007	MB-0C-0007	291.47	291.47	0.0
	MB-0C-0008	MB-0C-0008	155.11	155.11	0.0
	MB-0C-0009	MB-0C-0009	164.37	164.37	0.0
	MB-SB-0001	MB-SB-0001	239.69	239.69	0.0
	0C-EH-0001	0C-EH-0001	185.66	185.66	0.0

Appendix O. 10-yr Storm Event Peak Flow Comparison

			Future with projects Model - June 2010	Future without projects Model	Difference
Project ID	Basin Name	Outlet Node	Peak Flow to Outlet (cfs)	Peak Flow to Outlet (cfs)	Peak Flow to Outlet (cfs)
	0C-EH-0002	0C-EH-0002	212.08	212.08	0.0
	0C-EH-0003	0C-EH-0003	141.33	141.33	0.0
	0C-EH-0004	0C-EH-0004	107.05	107.05	0.0
	0C-EH-0005	0C-EH-0005	170.13	170.13	0.0
	0C-EH-0006	0C-EH-0006	160.03	160.03	0.0
	0C-LQ-0001	0C-LQ-0001	266.19	266.19	0.0
	0C-0R-0001	0C-0R-0001	169.9	169.9	0.0
	0C-0R-0002	0C-0R-0002	36.21	36.21	0.0
	0C-0R-0003	0C-0R-0003	115.62	115.62	0.0
	0C-0R-0004	0C-0R-0004	192.54	192.54	0.0
	0C-0R-0005	0C-0R-0005	183.97	183.97	0.0
	0C-0R-0006	0C-0R-0006	155.36	155.36	0.0
	0C-0R-0007	0C-0R-0007	127.7	127.7	0.0
	0M-BU-0001	0M-BU-0001	103.54	103.54	0.0
	0M-BU-0002	0M-BU-0002	84.07	84.07	0.0
	0M-BU-0003	0M-BU-0003	108.1	108.1	0.0
	0M-BU-0004	0M-BU-0004	131.45	131.45	0.0
	0M-BU-0005	0M-BU-0005	170.14	170.14	0.0
	0M-BU-0006	0M-BU-0006	69.3	69.3	0.0
	0M-BU-0007	0M-BU-0007	126.98	126.98	0.0
	0M-BU-0008	0M-BU-0008	192.17	192.17	0.0
	0M-BU-0009	0M-BU-0009	90.63	90.63	0.0
	0M-BU-0010	0M-BU-0010	29.17	29.17	0.0
	0M-BU-0011	0M-BU-0011	107.67	107.67	0.0
	0M-BU-0012	0M-BU-0012	71.52	71.52	0.0
	0M-BU-0013	0M-BU-0013	93.81	93.81	0.0
	0M-0M-0001	0M-0M-0001	173.38	173.38	0.0
	0M-0M-0002	0M-0M-0002	134.37	134.37	0.0
	0M-0R-0001	0M-0R-0001	54.16	54.16	0.0
	0M-0R-0002	0M-0R-0002	78.93	78.93	0.0
	0M-0R-0003	0M-0R-0003	159.89	159.89	0.0
	RD-0R-0001	RD-0R-0001	77.27	77.27	0.0
	RD-0R-0002	RD-0R-0002	146.25	146.25	0.0
	RD-0R-0003	RD-0R-0003	152.2	152.2	0.0
	RD-0R-0004	RD-0R-0004	84.08	84.08	0.0
	RD-0R-0005	RD-0R-0005	58.95	58.95	0.0
	RD-0R-0006	RD-0R-0006	69.63	69.63	0.0
	RD-0R-0007	RD-0R-0007	34.42	34.42	0.0
	RD-0R-0008	RD-0R-0008	103.03	103.03	0.0
	RD-0R-0009	RD-0R-0009	92.45	92.45	0.0

Appendix O. 10-yr Storm Event Peak Flow Comparison

			Future with projects Model - June 2010	Future without projects Model	Difference
Project ID	Basin Name	Outlet Node	Peak Flow to Outlet (cfs)	Peak Flow to Outlet (cfs)	Peak Flow to Outlet (cfs)
	RD-0R-0010	RD-0R-0010	70.24	70.24	0.0
	RD-0R-0011	RD-0R-0011	114.93	114.93	0.0
	RD-0R-0012	RD-0R-0012	162.19	162.19	0.0
	RD-0R-0013	RD-0R-0013	140.14	140.14	0.0
	RD-0R-0014	RD-0R-0014	116.48	116.48	0.0
	RD-0R-0015	RD-0R-0015	70.01	70.01	0.0
	RD-0R-0016	RD-0R-0016	87.18	87.18	0.0
	RD-SW-0001	RD-SW-0001	83.01	83.01	0.0
	RD-SW-0002	RD-SW-0002	177.83	177.83	0.0
	SA-0R-0001	SA-0R-0001	174.38	174.38	0.0
	SA-0R-0002	SA-0R-0002	149.78	149.78	0.0
	SA-0R-0003	SA-0R-0003	114.56	114.56	0.0
	SA-0R-0004	SA-0R-0004	150.21	150.21	0.0
	SA-0R-0005	SA-0R-0005	103.63	103.63	0.0
	SA-0R-0006	SA-0R-0006	162.66	162.66	0.0
	SA-SA-0001	SA-SA-0001	94.35	94.35	0.0
	SA-SA-0002	SA-SA-0002	74.97	74.97	0.0
	SA-SA-0003	SA-SA-0003	61.88	61.88	0.0
	SA-SA-0004	SA-SA-0004	115.67	115.67	0.0
	SA-SA-0005	SA-SA-0005	111.09	111.09	0.0
	SA-SA-0006	SA-SA-0006	116.53	116.53	0.0
	SA-SA-0007	SA-SA-0007	50.27	50.27	0.0
	SA-SA-0008	SA-SA-0008	177.19	177.19	0.0
	SA-SA-0009	SA-SA-0009	65.14	65.14	0.0
	SA-SA-0010	SA-SA-0010	104.31	104.31	0.0
	SA-SA-0011	SA-SA-0011	99.38	99.38	0.0
	SA-SA-0012	SA-SA-0012	71.19	71.19	0.0
	SA-SA-0013	SA-SA-0013	117.1	117.1	0.0
	SA-SA-0014	SA-SA-0014	98.3	98.3	0.0
	SA-SA-0015	SA-SA-0015	87.52	87.52	0.0
	SA-SA-0016	SA-SA-0016	127.16	127.16	0.0
	SA-SA-0017	SA-SA-0017	116.05	116.05	0.0
	SA-SA-0018	SA-SA-0018	227.05	227.05	0.0
	SA-SA-0019	SA-SA-0019	54.4	54.4	0.0
	SA-SA-0020	SA-SA-0020	121.73	121.73	0.0
	SA-SA-0021	SA-SA-0021	85.82	85.82	0.0
	SA-SA-0022	SA-SA-0022	119.18	119.18	0.0
	SA-SA-0023	SA-SA-0023	90.68	90.68	0.0
	SA-SA-0024	SA-SA-0024	235.29	235.29	0.0
	SA-SA-0025	SA-SA-0025	236.92	236.92	0.0

Appendix O. 10-yr Storm Event Peak Flow Comparison

			Future with projects Model - June 2010	Future without projects Model	Difference
Project ID	**Basin Name**	**Outlet Node**	**Peak Flow to Outlet (cfs)**	**Peak Flow to Outlet (cfs)**	**Peak Flow to Outlet (cfs)**
	SA-SA-0026	SA-SA-0026	165.66	165.66	0.0
	WR-WR-0001	WR-WR-0001	121.3	121.3	0.0
	WR-WR-0002	WR-WR-0002	102.53	102.53	0.0
	WR-WR-0003	WR-WR-0003	156.55	156.55	0.0
	WR-WR-0004	WR-WR-0004	141.75	141.75	0.0
	WR-WR-0005	WR-WR-0005	155.58	155.58	0.0
	WR-WR-0006	WR-WR-0006	101.03	101.03	0.0
	WR-WR-0007	WR-WR-0007	143.61	143.61	0.0
	WR-WR-0008	WR-WR-0008	104.76	104.76	0.0
	WR-WR-0009	WR-WR-0009	152.41	152.41	0.0
	WR-WR-0010	WR-WR-0010	62.08	62.08	0.0
	WR-WR-0011	WR-WR-0011	120.06	120.06	0.0
	WR-WR-0012	WR-WR-0012	71.77	71.77	0.0
	WR-WR-0013	WR-WR-0013	170.3	170.3	0.0
	WR-WR-0014	WR-WR-0014	75.7	75.7	0.0
	WR-WR-0015	WR-WR-0015	125.9	125.9	0.0
	WR-WR-0016	WR-WR-0016	38.28	38.28	0.0
	WR-WR-0017	WR-WR-0017	71.13	71.13	0.0
	WR-WR-0018	WR-WR-0018	88.31	88.31	0.0
	WR-WR-0019	WR-WR-0019	88.32	88.32	0.0
	WR-WR-0020	WR-WR-0020	79.85	79.85	0.0
	WR-WR-0021	WR-WR-0021	104.8	104.8	0.0
	WR-WR-0022	WR-WR-0022	118.03	118.03	0.0
	WR-WR-0023	WR-WR-0023	51.51	51.51	0.0
	WR-WR-0024	WR-WR-0024	76.67	76.67	0.0

MEMORANDUM

To: Shannon Curtis, Fairfax County
From: Laura Chap, PBS&J
Cc:
Date: October 14, 2010
Re: Technical Memo 3.6 Lower Occoquan Streambank Erosion

PBS&J has followed the county guidance to estimate streambank erosion in the Lower Occoquan watershed. PBS&J used the following guidance:

1) Guidance for Representing Streambank Erosion and Regional Pond Efficiencies.doc, posted on the forum on 2/5/2009, and
2) The discussion on the forum under the topic STEPL template/Streambank Erosion, dated 1/7/2009 to 2/11/2009.

The following explanation describes PBS&J's methods in computing the streambank erosion loads for the subwatersheds:

Eroding reaches:
PBS&J identified the eroding reaches in the Lower Occoquan watershed by considering all the ICEM Type II and Type III reaches as eroding. (This data was available as shapefiles from the subwatershed ranking process.) Reaches identified as channelized, piped, or other alterations were removed, as these reaches are not expected to be significant sources of sediment. The length of each eroding reach was computed using GIS.

Height of eroding reaches:
The SPA data was used to determine the bank height. Left and right bank heights were averaged.

Lateral Recession Rate:
Each reach was assigned a relative severity, and the table provided in county guidance was used to equate the severity with a recession rate. ICEM Type II and III reaches were assigned "moderate" erosion. There were no erosion reaches identified by the instream sediment metric shapefile in the Lower Occoquan watershed, therefore no reaches were classified as "severe".

Soil Dry Weight and Nutrient Correction Factor
The USDA soils map was used to identify the predominant soil map unit underlying the eroding reach. Based on map unit descriptions, a soil type was assigned to each reach. The dry weight and nutrient correction factor were assigned based on the soil type.

Nutrient Concentration

The nutrient concentrations in the soils were taken from the STEPL model. These concentrations are 0.08% for nitrogen, 0.031% for phosphorus, and 0.16% for BOD.

Results

The following table compares the streambank erosion loads to the land-based loads.

Lower Occoquan Watershed	Land-based Sediment Load (tons/yr)	Streambank Erosion Sediment Load (tons/yr)	% of total attributed to Streambank Erosion
Lower Occoquan (total)	2524	4462	64%
Kane Creek	265	379	59%
Wolf Run	168	1371	89%
Giles Run	675	761	53%
Sandy Run	279	737	73%

Priority Structural Projects (Ten Year Implementation Plan)						
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**	**Cost**
KC9209	Stream Restoration	Kane Creek	Behind 10809 Harley Rd.	Water quality control	Public/State/Private - Department of Conservation and Economic Department, Residential	$ 840,000
MB9104	Stormwater Pond Retrofit	Mill Branch- Giles Run South	10418 Old Colchester Rd. (Mason Neck West Park)	Water quality and quantity	Public/Local - FCPA	$ 240,000
MB9105	Stormwater Pond Retrofit	Mill Branch- Giles Run South	Across from 10555 Furnace Rd.	Water quality and quantity	Public/State - VDOT	$ 280,000
MB9107	Stormwater Pond Retrofit	Mill Branch- Giles Run South	10119 Giles Run Rd.	Water quality and quantity	Private - Residential	$ 130,000
MB9109	Stormwater Pond Retrofit	Mill Branch- Giles Run South	8115 Mims St.	Water quality and quantity	Private - Industrial	$ 290,000
MB9111	Stormwater Pond Retrofit	Mill Branch- Giles Run South	9816 Richmond Hwy.	Water quality and quantity	Private - Commercial	$ 180,000
MB9114	Stormwater Pond Retrofit	Mill Branch- Giles Run South	9850 Furnace Rd. (I-95 Landfill)	Water quality and quantity	Public/Local - FCPS	$ 160,000
MB9122	Stormwater Pond Retrofit	Mill Branch- Giles Run North	Behind 8605 Cross Chase Court	Water quality and quantity	Private - Commercial	$ 190,000
MB9202	Stream Restoration	Mill Branch- Giles Run South	10207 Old Colchester Rd.	Water quality control	Public/Federal - USA	$ 720,000
MB9506	BMP/LID	Mill Branch- Giles Run South	9850 Furnace Rd, Lorton (I-95 Landfill)	Water quality and quantity	Public/Local - FCPS	$ 110,000
MB9510	BMP/LID	Mill Branch- Giles Run North	9350 Crosspointe Dr. (Silverbrook Elementary School)	Water quality and quantity	Public/Local - FCPS	$ 220,000
SA9201	Stream Restoration	Sandy Run	Next to 8721 Birch Cliff Dr.	Water quality control	Private - Residential	$ 780,000
SA9209	Stream Restoration	Sandy Run	Near 10746 Beechnut Ct.	Water quality control	Private - Residential, HOA	$ 600,000
SA9211	Stream Restoration	Sandy Run	Behind 6901 Streamwood Pl.	Water quality control	Public/Local - FCPA	$ 360,000
SA9213	Stream Restoration	Sandy Run	6650 Rutledge Dr.	Water quality control	Private - Residential	$ 560,000
SA9701	Outfall Improvement	Sandy Run	Near 11223 Silverleaf Dr.	Water quality and quantity	Private - Residential	$ 150,000
WR9201	Stream Restoration	Wolf Run	Behind 12101 Henderson Rd.	Water quality control	Private - Residential	$ 1,120,000
WR9208	Stream Restoration	Wolf Run	Near 12025 Seven Hills La.	Water quality control	Private - Residential	$ 1,050,000
WR9209	Stream Restoration	Wolf Run	12060 Rose Hall Dr.	Water quality control	Private - Residential	$ 1,420,000
WR9211	Stream Restoration	Wolf Run	Behind 11724 Amkin Dr.	Water quality control	Private - Residential	$ 1,160,000
WR9212	Stream Restoration	Wolf Run	7610 Maple Branch Rd.	Water quality control	Private - Residential	$ 1,420,000
					Total Cost	**$ 11,980,000**

Long-Term Structural Projects (25 Year Implementation Plan)					
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**
KC9203	Stream Restoration	Kane Creek	6407 High Point Rd. (Mason Neck State Park)	Water quality control	Public/Federal - USA
KC9204	Stream Restoration	Kane Creek	6408 High Point Rd. (Mason Neck State Park)	Water quality control	Public/State/Federal - Commonwealth of VA, USA
KC9205	Stream Restoration	Kane Creek	6409 High Point Rd. (Mason Neck State Park)	Water quality control	Public/State/Federal - Commonwealth of VA, Department of Conservation and
KC9208	Stream Restoration	Kane Creek	Behind 10800 Harley Rd.	Water quality control	Public/Federal/Private - USA, Residential
KC9210	Stream Restoration	Kane Creek	Across from 10417 Gunston Rd.	Water quality control	Public/State/Federal/Private - VDOT, USA, Residential
MB9106	Stormwater Pond Retrofit	Mill Branch- Giles Run South	10301 Richmond Hwy	Water quality and quantity	Public/Local/Private - FCPA, Industrial
MB9108	Stormwater Pond Retrofit	Mill Branch- Giles Run South	10109 Giles Run Rd.	Water quality and quantity	Private - Industrial
MB9117	Stormwater Pond Retrofit	Mill Branch- Mill Branch	Behind 8940 Highgrove Ct.	Water quality and quantity	Private - Residential, HOA
MB9119	Stormwater Pond Retrofit	Mill Branch- Giles Run North	Near 9300 Cardinal Forest La.	Water quality and quantity	Private - Commercial
MB9120	Stormwater Pond Retrofit	Mill Branch- Giles Run North	9001 Southpointe La. (Behind Cul-de-sac)	Water quality and quantity	Private - Commercial
MB9121	Stormwater Pond Retrofit	Mill Branch- Giles Run North	8850 Cross Chase Circle (William Halley Elementary School)	Water quality and quantity	Public/Local - FCPS
MB9123	Stormwater Pond Retrofit	Mill Branch- Giles Run North	Behind 8628 Meadow Edge Terr.	Water quality and quantity	Private - Commercial
MB9124	Stormwater Pond Retrofit	Mill Branch- Giles Run North	Behind 9210 Cross Oaks Ct.	Water quality and quantity	Private - Commercial
MB9125	Stormwater Pond Retrofit	Mill Branch- Giles Run North	9350 Crosspointe Dr. (Silverbrook Elementary School)	Water quality and quantity	Public/Local-FCPS
MB9205	Stream Restoration	Mill Branch- Mill Branch	9751 Ox Rd (Occoquan Regional Park, Site 1)	Water quality control	Public/Local - FCPS
MB9206	Stream Restoration	Mill Branch- Mill Branch	9751 Ox Rd. (Occoquan Regional Park, Site 3)	Water quality control	Public/Local - FCPS
MB9207	Stream Restoration	Mill Branch- Mill Branch	Across street from 8932 Lorton Rd.	Water quality control	Public/Local - FCPA
MB9208	Stream Restoration	Mill Branch- Giles Run North	8301 Lorton Rd.	Water quality control	Public/Local/State/Private - FCPA, VDOT, Residential
MB9209	Stream Restoration	Mill Branch- Giles Run North	8300 Newby Bridge Dr.	Water quality control	Public/Local - FCPA
MB9210	Stream Restoration	Mill Branch- Giles Run North	8700 Laurel Crest Dr. (Laurel Hill Golf Club, Site 1)	Water quality control	Public/Local - FCPA
MB9212	Stream Restoration	Mill Branch- Giles Run North	8921 Cross Chase Cir.	Water quality control	Private - Commercial
MB9213	Stream Restoration	Mill Branch- Giles Run North	8601 Cross View	Water quality and quantity	Private - Commercial
MB9502	BMP/LID	Mill Branch- Mill Branch	9751 Ox Rd. (Occoquan Regional Park, Site 5)	Water quality and quantity	Public/Local - FCPS
MB9504	BMP/LID	Mill Branch- Giles Run South	10100 Gunston Rd. (Gunston Elementary School)	Water quality and quantity	Public/Local - FCPS
MB9509	BMP/LID	Mill Branch- Giles Run North	8285 Glen Eagles La. (Christ Church United Methodist Inc.)	Water quality and quantity	Private - Church
MB9511	BMP/LID	Mill Branch- Giles Run North	8275 Glen Eagles La. (Crosspointe Swim and Racquet Club)	Water quality and quantity	Private - Residential
OC9101	Stormwater Pond Retrofit	Occoquan	Behind 9340 Davis Dr.	Water quality and quantity	Private - HOA
OC9102	Stormwater Pond Retrofit	Occoquan	Behind 9270 Davis Dr.	Water quality and quantity	Private - Residential
OC9203	Stream Restoration Suite	Occoquan	Behind 9307 Denali Way	Water quality control	Private - Residential, HOA
OC9204	Stream Restoration	Occoquan	10450 Van Thompson Rd.	Water quality control	Public/Local/Private - FCPA, Residential
OC9207	Stream Restoration Suite	Occoquan	Behind 9035 Palmer Dr.	Water quality control	Private - Residential
OC9208	Stream Restoration	Occoquan	Behind 9520 Elk Horn Rd.	Water quality control	Private - Residential
OM9201	Stream Restoration	Old Mill Branch	Near 12505 Old Yates Ford Rd. (Fountainhead Regional Park)	Water quality control	Public/Local/Private - FCPA, Residential
OM9202	Stream Restoration	Old Mill Branch	Behind 8100 Flossie La.	Water quality control	Private - Residential

OM9203	Stream Restoration	Old Mill Branch	Behind 12606 Clifton Hunt La.	Water quality control	Private - Residential
OM9205	Stream Restoration	Old Mill Branch	Behind 12990 Wyckland Dr.	Water quality control	Private - Residential
OM9206	Stream Restoration	Old Mill Branch	Behind 12995 Wyckland Dr.	Water quality control	Private - Residential
OM9207	Stream Restoration	Old Mill Branch	Behind 7859 My Way Dr.	Water quality control	Private - Residential
RD9201	Stream Restoration	Ryans Dam	Near 8517 Wolf Run Shoals Rd.	Water quality control	Pubic/Local/Private - NVRPA, Residential
RD9202	Stream Restoration	Ryans Dam	Behind 11470 Robert Stephens Dr.	Water quality control	Private - Residential, HOA
SA9101	Stormwater Pond Retrofit	Sandy Run	Next to 9699 Thorn Bush Dr.	Water quality and quantity	Public/State - VDOT
SA9102	Stormwater Pond Retrofit	Sandy Run	8120 Ox Rd.	Water quality and quantity	Public/State - Commonwealth of VA
SA9103	Stormwater Pond Retrofit	Sandy Run	Behind 7401 Wayfarer Rd.	Water quality and quantity	Private - HOA
SA9105	Stormwater Pond Retrofit	Sandy Run	Behind 7200 Ox Rd.	Water quality and quantity	Private - Church
SA9205	Stream Restoration Suite	Sandy Run	Behind 10901 Henderson Rd.	Water quality control	Private - Residential
SA9206	Stream Restoration	Sandy Run	Across street from 11100 Devereux Station La.	Water quality control	Private - Residential
SA9207	Stream Restoration Suite	Sandy Run	Near 11212 Hunting Horse Dr.	Water quality control	Private - Residential
SA9208	Stream Restoration	Sandy Run	10608 Daysailer Dr.	Water quality control	Private - Residential, HOA
SA9212	Stream Restoration	Sandy Run	6572 Ox Rd.	Water quality control	Private - Residential
SA9214	Stream Restoration	Sandy Run	6635 Rutledge Dr.	Water quality control	Private - Residential
SA9702	Outfall Improvement	Sandy Run	Behind 11204 Silver Leaf Dr.	Water quality and quantity	Private - Residential
WR9206	Stream Restoration	Wolf Run	Near 7900 Wolf Run Hills	Water quality control	Private - Residential
WR9210	Stream Restoration	Wolf Run	7501 Amkin Ct.	Water quality control	Private - Residential
WR9213	Stream Restoration	Wolf Run	Behind 7433 Clifton Rd.	Water quality control	Private - Residential
WR9214	Stream Restoration	Wolf Run	7121 Swift Run Trails Dr.	Water quality control	Private - Residential
WR9217	Stream Restoration	Wolf Run	12013 Corral Dr.	Water quality control	Private - Residential
WR9218	Stream Restoration	Wolf Run	11047 Lilting La.	Water quality control	Private - Residential
WR9219	Stream Restoration	Wolf Run	11418 Lilting La.	Water quality control	Private - Residential
WR9220	Stream Restoration	Wolf Run	11806 Yates Ford Rd.	Water quality control	Private - Residential
WR9221	Stream Restoration	Wolf Run	11721 Yates Ford Rd.	Water quality control	Public/State/Private - VDOT, Residential
WR9222	Stream Restoration	Wolf Run	11543 Lilting La.	Water quality control	Private - Residential
WR9223	Stream Restoration	Wolf Run	11543 Lilting La.	Water quality control	Private - Residential

Non-Structural Projects					
Project #	**Project Type**	**WMA**	**Location**	**Watershed Benefit**	**Land Owner**
HP9801	Buffer Restoration	High Point	Near 10709 Gunston Rd. (Gunston Hall Plantation)	Water quality control	Public/State - Commonwealth of VA
MB9505	BMP/LID	Mill Branch- Giles Run South	10100 Gunston Rd. (Gunston Elementary School)	Water quality and quantity	Public/Local - FCPS
MB9507	BMP/LID	Mill Branch- Giles Run North	8850 Cross Chase Circle (William Halley Elementary School)	Water quality and quantity	Public/Local - FCPS
MB9512	BMP/LID	Mill Branch- Giles Run North	9350 Crosspointe Dr. (Silverbrook Elementary School)	Water quality and quantity	Public/Local - FCPS
MB9801	Buffer Restoration	Mill Branch- Giles Run South	Behind 10463 Greene Dr.	Water quality control	Public/Local/Federal - FCPA, USA
MB9802	Buffer Restoration	Mill Branch- Mill Branch	9751 Ox Rd. (Occoquan Regional Park, Site 2)	Water quality control	Public/Local/Private - FCPS, Industrial
MB9803	Street Sweeping Program	Mill Branch- Giles Run South	8386 Old Vicarage St.	Water quality control	Public/State - VDOT
MB9804	Buffer Restoration	Mill Branch- Mill Branch	Next to 8936 Lorton Rd.	Water quality control	Private - Residential
MB9805	Street Sweeping Program	Mill Branch- Giles Run North	Near 8327 Bluebird Way	Water quality control	Public/State - VDOT
MB9806	Buffer Restoration Suite	Mill Branch- Giles Run North	8700 Laurel Crest Dr. (Laurel Hill Golf Club, Site 1)	Water quality control	Public/Local - FCPA
MB9807	Buffer Restoration Suite	Mill Branch- Giles Run North	8700 Laurel Crest Dr. (Laurel Hill Golf Club, Site 2)	Water quality control	Public/Local - FCPA
MB9808	Street Sweeping Program	Mill Branch- Giles Run North	Near 8709 Lorfax Dr.	Water quality control	Public/State - VDOT
MB9809	Street Sweeping Program	Mill Branch- Giles Run North	Near 9413 Eagle Glen Ter.	Water quality control	Public/State - VDOT
MB9810	Street Sweeping Program	Mill Branch- Giles Run North	Behind 9105 Oak Chase Ct.	Water quality control	Public/State - VDOT
MB9811	Buffer Restoration	Mill Branch- Giles Run North	Next to 9527 Crosspointe Dr.	Water quality control	Private - Residential
MB9812	Street Sweeping Program	Mill Branch- Giles Run North	Near 8409 Crosslake Dr.	Water quality control	Public/State - VDOT
SA9801	Buffer Restoration	Sandy Run	Next to 10711 Sandy Run Trail	Water quality control	Private - Residential
SA9802	Buffer Restoration	Sandy Run	10600 Hunting Shire La.	Water quality control	Private - Residential
SA9803	Other	Sandy Run	Behind 6909 Heathstone Ct.	Water quality and quantity	Public/Local - FCPA