

6 Project Prioritization and Implementation

6.1 Introduction

Chapters 3, 4, and 5 described and summarized the structural projects, policy actions, and non-structural measures considered for implementation in Difficult Run. The recommended actions will potentially be implemented over the 25-year life of the *Difficult Run Watershed Management Plan*. This section prioritizes the projects, develops an initial implementation program and provides an estimate of the costs improvements proposed by the Plan.

This Plan will be a guide for all County agencies and officials in protecting and maintaining the health of the watershed. It will be an active or “living” document that will be revisited and updated regularly throughout the implementation phase.

The final scope and design of each project will be determined during implementation, in collaboration with all parties affected, including the Fairfax County Park Authority, homeowners associations, adjacent landowners and others.

The following “tracks” have been identified for the implementation of watershed management plan recommendations throughout the County:

1. Structural and Non-structural Projects:
 - County-initiated Projects via the Capital Improvement Program
 - Developer-initiated via the Zoning Approval Process (proffers and/or development conditions) or waiver approval process
 - Volunteer Group Implementation
2. “Policy” Recommendations

The policy actions and many of the nonstructural actions will be considered with similar recommendations from other watershed plans and will potentially be implemented across all watersheds. Also, many of the actions involve coordination with other agencies such as the Northern Virginia Soil and Water Conservation Service, Fairfax County Health Department and Virginia Department of Conservation and Recreation.

The Plan identifies the projects to be evaluated and implemented within each of the following five-year implementation phases:

- A - Year 1 – 5
- B - Year 6 – 10
- C - Year 11 – 15
- D - Year 16 – 20
- E - Year 21 - 25

The identification of the projects to be included in each phase is based primarily on the project priority developed as described in Section 6.2, although other factors are considered when phasing the projects for implementation. Phase A includes higher priority projects and Phase E includes lower-priority projects. While not completed at this time, a comprehensive County-wide project prioritization method is forthcoming. This ranking process will affect the actual implementation sequence and annual funding analysis.

6.2 Prioritization Methodology

The prioritization methodology presented in this section is based on interim procedures developed by the Fairfax County Stormwater Planning Division which have been applied in other watershed management plans. Although this report provides a recommended schedule for implementation of the actions included in the Plan, additional factors, which may affect the individual projects and the implementation schedule, include:

- Projects, programs and policy items will first undergo review by County staff and the Board of Supervisors before implementation. Board adoption of the watershed plan will not set into motion the automatic implementation of the plan recommendations.
- The watershed plan is a master list of recommended non-structural actions and structural projects. Each fiscal year, staff will prepare and submit to the Board a detailed spending plan that will describe the projects and explain their ranking, benefit, and need to meet a defined watershed or water quality goal.
- The watershed plan considers visions, goals, issues and needs only within the Difficult Run watershed. Fairfax County will consider stormwater needs and priorities across the entire County when implementing the recommendations included in this and other watershed plans.
- Availability of funding and other resources will affect the implementation of projects identified in this watershed plan.
- The initial project implementation phases will include outreach to the community near the proposed projects. The recommended plan elements may become infeasible or need to be modified based on comments received from the local residents during this outreach.
- Projects will be value-engineered at the time of implementation to ensure cost-effectiveness. Alternatives such as enlisting volunteers or alternative funding sources will be considered for each project to reduce the costs to the County.
- Stream crossing improvements not related to protection of streambeds or banks or prevention of structure flooding will not be funded out of the County budget for stormwater improvements.
- Stream restoration and other projects on private land will be evaluated to determine means for cost sharing with the landowners.

For the interim prioritization process, a weighted set of five categories was applied to each plan action. The weighting factor assigned is indicated in parentheses:

1. Board Adopted Stormwater Control Project Prioritization Categories (40%).

- Projects that are mandated by state or federal regulations for immediate implementation and projects that address critical/emergency dam safety issues.
- Projects that alleviate structures from damage by flood waters or by being undermined by severe erosion.
- Projects that achieve stormwater quality improvement in specific conformance with the County's obligation under the Chesapeake Bay initiatives and/or the VPDES permit for storm sewer system discharges.
- Projects that alleviate severe streambank and channel erosion.
- Projects that alleviate moderate and minor streambank and channel erosion.
- Projects that alleviate yard flooding.
- Projects that alleviate road flooding.

2. Direct Regulatory Contribution (10%)

- Hybrid projects that accomplish multiple objectives.
- Projects that contribute directly to MS4 and Virginia Tributary Strategies compliance.

- Projects that contribute to TMDL compliance only.
- Projects that have indirect water quality benefits
- Projects that mitigate flooding.

3. Public Support (10%)

- Steering Committee support.
- Support for projects by affected residents.

4. Effectiveness / Location (25%)

- Quantity control projects are more desirable in headwater areas that lack stormwater management controls
- Quality control projects are more desirable in areas that lack existing controls
- Projects that address peak flows and velocities should be implemented before downstream stream erosion control projects
- Project effectiveness in removing pollutants, eliminating stream erosion, meeting project goals, etc.

5. Ease of Implementation (15%)

- Project complexity
- Land acquisition requirements

The plan actions are given a score from 1 to 5 for each prioritization category with 5 being the highest score and 1 the lowest. The assigned scores are based on both qualitative and quantitative measures. The weighting factors are then applied to a total score used to rank the projects.

6.3 Nonstructural Project Prioritization and Implementation Program

Table 6-1 shows the priority rankings, based on the procedures described in Section 6.2, for the nonstructural actions listed in Chapter 4. This table provides the implementation phase, assuming that all nonstructural actions are considered for implementation within the first 15 years of the 25-year program. Projects with a score of 4.0 or higher were assigned Implementation Phase A. Scores between 3.5 and 4.0 were assigned to Phase B, with lower scores in Phase C.

Table 6.1: Nonstructural Project Prioritization and Implementation Program

Action	Description	Score	Phase
4.2.3	Continue and enhance the volunteer monitoring program	4.3	A
4.5.1	Conduct a drainage study to reduce flooding in Vienna	4.2	A
4.3.5	Update the County's database of SWM facilities	4.2	A
4.3.6	Enhance SWM inspection and maintenance, programs	4.2	A
4.3.7	Conduct a drainage study for the right fork of Dog Run	4.2	A
4.4.4	Enhance illicit discharge and I/I program	4.2	A
4.4.2	Education and outreach for lawn care	4.1	A
4.4.3	Golf course nutrient management	4.1	A
4.2.2	Enhance outfall inspections and make repairs as necessary	3.3	C

6.4 Policy Recommendation Prioritization and Implementation Program

Policy recommendations described in Chapter 4 are ranked and sorted by their assigned priority in Table 6.2. This table also provides the implementation phase for these projects with all

recommendations being considered within the first 15 years of the 25-year program. Implementation phases were determined in the same manner for policies as they were for non-structural projects.

Table 6.2 Policy Recommendation Prioritization and Implementation Program

Action	Description	Score	Phase
4.3.5	Continue efforts to add LID design criteria and keep PFM up to date.	4.2	A
4.3.1	Evaluate land development regulations to consider setting a maximum impervious percentage for each type of development.	4.0	A
4.3.3	Evaluate and implement incentives where appropriate for the use of porous pavers for seasonal or overflow parking	4.0	A
4.3.2	Request road widening projects to manage stormwater runoff from the entire roadway, not just the added lane widths	3.9	B
4.3.4	Evaluate and implement incentives into County ordinances to consider establishing more stringent stormwater quality control standards for redevelopment.	3.8	B
4.4.1	Evaluate and implement incentives that could be applied locally to encourage lawn care companies in Fairfax to enroll in the Virginia Water Quality Improvement Program	3.7	B
4.6.2	Continue efforts to obtain legal authority and develop a forest conservation ordinance that will preserve existing woodlands	3.4	C

6.5 Structural Project Implementation Program

Structural projects were sorted by implementation phase, priority score, and project number in Table 6.3 below. This table also provides the cost estimate for each project and the assigned implementation phase.

Structural projects were grouped into phases to maximize the benefit to the watershed by implementing projects as a group wherever possible. This approach can reduce neighborhood impacts and also reduce costs associated with the public outreach when the projects are implemented. Finally, by implementing projects in a geographic area at one time, the net benefit to the stream may be greater than the sum of the benefits provided by the individual projects.

The reasoning used to prepare the project implementation program were as follows:

- Projects were grouped based on a percentage of the total cost of watershed improvements. Projects in Groups A and B each represented about 25% of the total cost of the proposed improvements. Group C represented about 20%, and groups D and E, 15% each.
- Construction of alternatives to the unbuilt regional ponds was a high priority in the Difficult Run watershed. These alternatives were assigned to implementation groups A and B based on priority score, each group with an equal total cost. Fifty-eight of these projects were assigned to group A and 47 to group B.
- Projects recommended for inclusion in the County's FY 2007 Stormwater Implementation program were assigned to implementation group A. These were for the most part either regional pond replacement projects, or high priority projects with significant public support or interest. There were 16 additional group A projects from this category:

- LID retrofit DF9843, and the group of pond retrofits at the Government Center, DF9143A through DF9143H in Upper Difficult Run.
- Stream restoration DF92136 and upstream culvert retrofit DF9507B, which addresses a severely eroding stream next to Wiehle Avenue in Colvin Run.
- Three stream restoration projects, DF9249, DF92104, and DF9284.
- Watershed-wide stream projects, including dumpsite cleanup, removal of obstructions, repair of utility crossings, and buffer restoration.
 - The remainder of Group A projects were selected from among the highest scoring projects based on the project team's evaluation of priorities. Factors included stream restoration projects where severe erosion is active, and projects that should be grouped for reasons of construction or function. These included:
 - DF9285, a stream restoration of the mainstem of Colvin Run which is undermining Leesburg Pike.
 - DF92117, a stream restoration project in Angelico Branch, one of the most severe cases of erosion in the watershed. Erosion has worked upstream and excessive stormwater does not appear to be the cause.
 - DF92119, stream restoration in South Fork Run which is undermining residential property. An existing regional pond is upstream of the project.
 - DF92135, a stream restoration in Colvin Run where erosion is threatening a major sewer line. This project should be built simultaneously with upstream culvert retrofits DF9550A and DF9550B.
 - DF92101 and DF9524, a stream restoration and culvert retrofit in Snakeden Branch where active erosion is beginning to undermine an adjacent commercial parking lot.
 - DF9278, a stream restoration in Dog Run which would help improve water quality and habitat in the drainage area of regional pond D-01.
 - DF9106A, DF9106B, DF9806, DF9706, and DF9274, all high priority projects which would complete the restoration projects for Captain Hickory Run.
 - The remainder of projects in Group B were selected using the same criteria.
 - All projects in Courthouse Spring Branch, which had the highest levels of modeled runoff water quality of all the subwatersheds.
 - Stream restoration DF9225 and associated culvert retrofit DF9523 in Snakeden Branch, where the mainstem is eroding.
 - Culvert retrofit and LID projects upstream of DF9225 including DF9535A and B, DF9835, and DF9123B. This would complete the retrofit of the upstream tributaries of Snakeden Branch.
 - A series of projects in the three most upstream and developed catchments of Wolftrap Creek: Pond retrofit DF9133, LID projects DF9831, DF9831B, DF9833 and DF9832, and culvert retrofits DF9532A and B.
 - Two culvert retrofits where the mainstem of Wolftrap Creek crosses under the Dulles Toll Road: DF9520A and DF9520B.
 - Seven of the next highest scoring pond retrofit projects, which are in headwater areas and designed for both peak flow reduction and water quality improvements, along with stream restoration project DF9213 in Lake Fairfax Park.
 - Projects in Groups C, D, and E were selected based on order of priority from the remaining projects.

The total cost of projects in each implementation group are shown in Table 6.4, along with an estimate of the County staff effort in Staff Year Equivalents (SYE) required to manage the program implementation.

Projects are listed and sorted by project number in the Executive Summary and in each subwatershed section in Chapter 3.

Table 6.3 Structural Project Prioritization

Project_No	Type	Subwatershed	Location	Score	Phase	Estimate
DF9001B	Pond Retrofit	Dog Run	End of Branton Lane	3.95	A	\$224,000
DF9003AA	Pond Retrofit	Piney Run	Near Tottenham Court	3.95	A	\$110,000
DF9003AB	Pond Retrofit	Piney Run	Near Tottenham Court	3.95	A	\$90,000
DF9007D	LID Retrofit	Captain Hickory Run	Commercial area W of Walker Road	3.95	A	\$170,000
DF9011A	Pond Retrofit	Middle Difficult Run	Upstream of Windstone Road	3.95	A	\$205,000
DF9030A	Pond Retrofit	Rocky Branch	End of Martinhoe Court	3.95	A	\$55,000
DF9031A	Pond Retrofit	Rocky Branch	Oakton Ridge Circle and Oakton Ridge Court	3.95	A	\$32,000
DF9031C	LID Retrofit	Rocky Branch	Oakton Ridge Circle and Oakton Ridge Court	3.95	A	\$14,000
DF9035B	LID Retrofit	Upper Difficult Run	E side of Young Road	3.95	A	\$100,000
DF9041B	Pond Retrofit	South Fork Run	Tilton Valley Drive and Hickory Hills Drive	3.95	A	\$43,000
DF9041C	Pond Retrofit	South Fork Run	S Vale Road, E of Valewood Drive	3.95	A	\$35,000
DF9041D	LID Retrofit	South Fork Run	Along Brecknock Street	3.95	A	\$2,000
DF9041E	Pond Retrofit	South Fork Run	Along a private drive off Vale Road	3.95	A	\$107,000
DF9043C	LID Retrofit	Little Difficult Run	Parking lot of Fox Mill Swim and Tennis Club	3.95	A	\$107,000
DF9045A	LID Retrofit	Upper Difficult Run	Left of drive at Oakton Swim and Racquet Club	3.95	A	\$46,000
DF9073A	LID Retrofit	Piney Branch	Madison HS and Flint Hill ES	3.95	A	\$221,000
DF9073C	Pond Retrofit	Piney Branch	Along Riviera Drive	3.95	A	\$63,000
DF9106A	Pond Retrofit	Captain Hickory Run	At Georgetown Pike	3.95	A	\$112,000
DF9106B	Pond Retrofit	Captain Hickory Run	Downstream of Columbine Street	3.95	A	\$44,000
DF9143E	Pond Retrofit	Upper Difficult Run	Glen Alden Road and Government Center Pkwy	3.95	A	\$24,000
DF9143H	Pond Retrofit	Upper Difficult Run	Government Center Parkway and Legato Road	3.95	A	\$147,000
DF9806	LID Retrofit	Captain Hickory Run	N of Georgetown Pike	3.95	A	\$145,000
DF9843	LID Retrofit	Upper Difficult Run	Entire parking area for the Government Center	3.95	A	\$333,000
DF9010E	Stream Restoration	Lower Difficult Run	Upstream side of Tackroom Road	3.90	A	\$964,000
DF9045D	Stream Restoration	Upper Difficult Run	E side of Valeview Drive	3.90	A	\$375,000
DF92101	Stream Restoration	Snakeden Branch	N of Sunrise Valley Road	3.90	A	\$573,000
DF92104	Stream Restoration	The Glade	SW of Stirrup Road	3.90	A	\$628,000
DF92117	Stream Restoration	Angelico Branch	S of Whippoorwill Road and N of Lawyers Road	3.90	A	\$1,358,000
DF92135	Stream Restoration	Colvin Run	S of N Shore Drive	3.90	A	\$861,000
DF9249	Stream Restoration	Colvin Run	S of Fairway Drive and W of Westbriar Drive	3.90	A	\$424,000
DF9274	Stream Restoration	Captain Hickory Run	At end of Walker Glen Court	3.90	A	\$683,000
DF9284	Stream Restoration	Lower Difficult Run	E of Old Dominion Drive	3.90	A	\$583,000
DF9285	Stream Restoration	Lower Difficult Run	Where Colvin Run Road intersects Leesburg Pike	3.90	A	\$609,000

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Project_No	Type	Subwatershed	Location	Score	Phase	Estimate
DF9012	Pond Retrofit	Colvin Run	Private property off of Crowell Road	3.85	A	\$54,000
DF9017A	Pond Retrofit	Wolftrap Creek	Existing pond along Spring Ridge Road	3.85	A	\$217,000
DF9024B	Culvert Retrofit	Snakeden Branch	Upstream of the W&OD Trail	3.85	A	\$135,000
DF9028B	Culvert Retrofit	Wolftrap Creek	End of Ashgrove Lane	3.85	A	\$105,000
DF9028C	Pond Retrofit	Wolftrap Creek	Along Lupine Den Road	3.85	A	\$46,000
DF9040A	Pond Retrofit	South Fork Run	End of Nathaniel Oaks Drive	3.85	A	\$178,000
DF9040B	Pond Retrofit	South Fork Run	Near Falkirk Road	3.85	A	\$48,000
DF9040C	Pond Retrofit	South Fork Run	Birdsboro Drive and Country Ridge Lane	3.85	A	\$96,000
DF9040D	Pond Retrofit	South Fork Run	End of Navy Road	3.85	A	\$84,000
DF9058A	Culvert Retrofit	Little Difficult Run	Upstream side of Thoroughbred Road	3.85	A	\$27,000
DF9059A	Pond Retrofit	Upper Difficult Run	Along Center Ridge Road	3.85	A	\$49,000
DF9059C	Pond Retrofit	Upper Difficult Run	Upstream of Berryland Drive	3.85	A	\$183,000
DF9066A	Pond Retrofit	Rocky Run	Woodlea Mill and Orlo Road	3.85	A	\$96,000
DF9072A	Pond Retrofit	Upper Difficult Run	Across Vale Road from Chris Wood Drive	3.85	A	\$111,000
DF9079B	Culvert Retrofit	South Fork Run	Honda Road and Lariat Lane	3.85	A	\$63,000
DF9143B1	Pond Retrofit	Upper Difficult Run	S of DF9143A and N of Rockaway Lane	3.85	A	\$20,000
DF9143B2	Pond Retrofit	Upper Difficult Run	S of DF9143A and N of Rockaway Lane	3.85	A	\$36,000
DF9143C	Pond Retrofit	Upper Difficult Run	N of Government Center Parkway	3.85	A	\$162,000
DF9045B	Pond Retrofit	Upper Difficult Run	Waples Mill Road and Bronzedale Drive	3.70	A	\$23,000
DF9064C	Pond Retrofit	Piney Run	The end of Artemel Lane	3.70	A	\$22,000
DF9065A	New Pond	Wolftrap Creek	Near Pinstripe Court	3.70	A	\$1,456,000
DF9029B	New Pond	Piney Branch	Site of D-29	3.60	A	\$499,000
DF9036A3	Pond Retrofit	Rocky Branch	Near Miller Road	3.60	A	\$77,000
DF9054B	New Pond	Wolftrap Creek	At Site of D-54	3.60	A	\$333,000
DF9007C	Culvert Retrofit	Captain Hickory Run	Upstream of Sunnybrook Drive	3.45	A	\$79,000
DF9009A	Pond Retrofit	Lower Difficult Run	End of Lyons Road	3.45	A	\$105,000
DF9009B	Pond Retrofit	Lower Difficult Run	Near Wood Glade Drive	3.45	A	\$132,000
DF9013	Pond Retrofit	Colvin Run	Business Center Drive	3.45	A	\$111,000
DF9013A	Pond Retrofit	Colvin Run	Business Center Drive	3.45	A	\$268,000
DF9023A	Pond Retrofit	Little Difficult Run	Birdfoot Ct and Raccoon Ridge Ct	3.45	A	\$20,000
DF9024A	Pond Retrofit	Snakeden Branch	Existing facility near Clovermeadow Road	3.45	A	\$150,000
DF9027A	Culvert Retrofit	Piney Branch	Upstream of Batten Hollow and Brookhill Roads	3.45	A	\$91,000
DF9043B	Pond Retrofit	Little Difficult Run	Wild Cherry Place and Black Fir Court	3.45	A	\$42,000
DF9061A	Culvert Retrofit	Little Difficult Run	At Stuart Mill Road	3.45	A	\$30,000
DF9061D	Pond Retrofit	Little Difficult Run	Along Foxclove Road	3.45	A	\$401,000
DF9064A	Pond Retrofit	Piney Run	Behind private residences by Challedon Road	3.45	A	\$96,000
DF9076A	Culvert Retrofit	Lower Difficult Run	Culvert under Falls Run Road	3.45	A	\$294,000
DF9076B	Pond Retrofit	Lower Difficult Run	Pond below Falls Run Road	3.45	A	\$369,000
DF9143D	Pond Retrofit	Upper Difficult Run	N side of the stream from project DF9143C	3.45	A	\$47,000
DF9143F2	Pond Retrofit	Upper Difficult Run	N of the Government Center building	3.45	A	\$24,000
DF9003B	Drainage Retrofit	Piney Run	Distributed	3.25	A	\$91,000
DF9040E	Drainage Retrofit	South Fork Run	Distributed	3.25	A	\$76,000
DF9706	Drainage Retrofit	Captain Hickory Run	Distributed	3.25	A	\$213,000

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Project_No	Type	Subwatershed	Location	Score	Phase	Estimate
DF9143A	Pond Retrofit	Upper Difficult Run	E of the Fairfax Government Center	3.20	A	\$50,000
DF9507B	Culvert Retrofit	Colvin Run	Culvert under Wiehle Avenue	3.05	A	\$146,000
DF9524	Culvert Retrofit	Snakeden Branch	N of Sunrise Valley Dr, E of Preston White Dr	3.05	A	\$218,000
DF9550A	Culvert Retrofit	Colvin Run	Culvert under Baron Cameron Avenue	3.05	A	\$22,000
DF92136	Stream Restoration	Colvin Run	E of Wiehle Avenue and S of Yellowwood Court	2.70	A	\$1,038,000
DF9278	Stream Restoration	Dog Run	By Georgetown Pike and Kimberly Place	2.70	A	\$419,000
DF9133A	Pond Retrofit	Wolftrap Creek	At the outlet to Catchment 33	3.95	B	\$43,000
DF9133B	Pond Retrofit	Wolftrap Creek	At the outlet to Catchment 33	3.95	B	\$534,000
DF9157	New Pond	Old Courthouse	At Leesburg Pike and Laurel Hill Road	3.95	B	\$499,000
DF9535A	Culvert Retrofit	Snakeden Branch	Upstream side of Colts Neck Road	3.95	B	\$98,000
DF9819	LID Retrofit	Old Courthouse	S of intersection of Village Drive and N Shore Drive	3.95	B	\$1,721,000
DF9831	LID Retrofit	Wolftrap Creek	Rear parking lot on Follin Lane	3.95	B	\$309,000
DF9831B	LID Retrofit	Wolftrap Creek	Rear parking lot on Follin Lane	3.95	B	\$723,000
DF9832	LID Retrofit	Wolftrap Creek	Notre Dame and Our Lady of Good Counsel Catholic Church	3.95	B	\$120,000
DF9833	LID Retrofit	Wolftrap Creek	Upper third of Catchment 33	3.95	B	\$1,256,000
DF9835	LID Retrofit	Snakeden Branch	In and around Hunters Woods Village Shopping Center	3.95	B	\$292,000
DF9535B1	Culvert Retrofit	Snakeden Branch	Culvert under Glade Drive	3.85	B	\$28,000
DF9535B2	Culvert Retrofit	Snakeden Branch	Culvert under Glade Drive	3.85	B	\$16,000
DF9123B	Pond Retrofit	Snakeden Branch	Existing pond on upstream side of Sugarberry Court	3.70	B	\$23,000
DF9157A	Pond Retrofit	Old Courthouse	At the crossing of Jarrett Valley Drive	3.70	B	\$332,000
DF9051D	Culvert Retrofit	Angelico Branch	Upstream of Cedar Pond Road	3.45	B	\$65,000
DF9119	New Pond	Old Courthouse	Village Road and Baron Cameron Avenue	3.45	B	\$212,000
DF9002A	Culvert Retrofit	Piney Run	Upstream of Great Passage Boulevard	3.35	B	\$47,000
DF9014A	Culvert Retrofit	Colvin Run	Upstream side of Little Run Court	3.35	B	\$26,000
DF9520A	Culvert Retrofit	Wolftrap Creek	Culvert under Dulles Toll Road	3.35	B	\$88,000
DF9520B	Culvert Retrofit	Wolftrap Creek	Culvert under Dulles Toll Road	3.35	B	\$188,000
DF9523	Culvert Retrofit	Snakeden Branch	Upstream side of Soapstone Road	3.35	B	\$212,000
DF9532A	Culvert Retrofit	Wolftrap Creek	Upstream side of Follin Lane	3.35	B	\$98,000
DF9532B	Culvert Retrofit	Wolftrap Creek	Upstream side of Woodford Road	3.35	B	\$27,000
DF9001A	Drainage Retrofit	Dog Run	Distributed at outfalls throughout the drainage area	3.25	B	\$228,000
DF9002B	Drainage Retrofit	Piney Run	Distributed at outfalls throughout the drainage area	3.25	B	\$137,000
DF9006B	Drainage Retrofit	Captain Hickory Run	Distributed at outfalls throughout the drainage area	3.25	B	\$61,000
DF9007A	Drainage Retrofit	Captain Hickory Run	Distributed at outfalls throughout the drainage area	3.25	B	\$122,000
DF9009C	Drainage Retrofit	Lower Difficult Run	Distributed at outfalls throughout the drainage area	3.25	B	\$496,000
DF9010D	Drainage Retrofit	Lower Difficult Run	Distributed at outfalls throughout the drainage area	3.25	B	\$91,000
DF9011C	Drainage Retrofit	Middle Difficult Run	Distributed at outfalls throughout the	3.25	B	\$137,000

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Project_No	Type	Subwaterhed	Location	Score	Phase	Estimate
			drainage area			
DF9014B	Drainage Retrofit	Colvin Run	Distributed at outfalls throughout the drainage area	3.25	B	\$107,000
DF9017B	Drainage Retrofit	Wolftrap Creek	Distributed at outfalls throughout the drainage area	3.25	B	\$61,000
DF9019A	Drainage Retrofit	Rocky Run	Distributed at outfalls throughout the drainage area	3.25	B	\$137,000
DF9020B	Drainage Retrofit	Sharpers Run	Distributed at outfalls throughout the drainage area	3.25	B	\$91,000
DF9024C	Drainage Retrofit	Snakeden Branch	Distributed at outfalls throughout the drainage area	3.25	B	\$91,000
DF9027B	Drainage Retrofit	Piney Branch	Distributed at outfalls throughout the drainage area	3.25	B	\$106,000
DF9028A	Drainage Retrofit	Wolftrap Creek	Distributed at outfalls throughout the drainage area	3.25	B	\$370,000
DF9029A	Drainage Retrofit	Piney Branch	Distributed at outfalls throughout the drainage area	3.25	B	\$213,000
DF9030B	Drainage Retrofit	Rocky Branch	Distributed at outfalls throughout the drainage area	3.25	B	\$167,000
DF9032B	Drainage Retrofit	Upper Difficult Run	Distributed at outfalls throughout the drainage area	3.25	B	\$107,000
DF9033	Drainage Retrofit	Upper Difficult Run	Distributed at outfalls throughout the drainage area	3.25	B	\$30,000
DF9034B	Drainage Retrofit	Upper Difficult Run	Distributed at outfalls throughout the drainage area	3.25	B	\$76,000
DF9035A	Drainage Retrofit	Upper Difficult Run	Distributed at outfalls throughout the drainage area	3.25	B	\$203,000
DF9039B	Drainage Retrofit	Little Difficult Run	Distributed at outfalls throughout the drainage area	3.25	B	\$183,000
DF9039B	Drainage Retrofit	Little Difficult Run	Distributed at outfalls throughout the drainage area	3.25	B	\$183,000
DF9041A	Drainage Retrofit	South Fork Run	Distributed at outfalls throughout the drainage area	3.25	B	\$583,000
DF9043A	Drainage Retrofit	Little Difficult Run	Distributed at outfalls throughout the drainage area	3.25	B	\$76,000
DF9051E	Drainage Retrofit	Angelico Branch	Distributed at outfalls throughout the drainage area	3.25	B	\$244,000
DF9054A	Drainage Retrofit	Wolftrap Creek	Distributed at outfalls throughout the drainage area	3.25	B	\$46,000
DF9059B	Drainage Retrofit	Upper Difficult Run	Distributed at outfalls throughout the drainage area	3.25	B	\$344,000
DF9061B	Drainage Retrofit	Little Difficult Run	Distributed at outfalls throughout the drainage area	3.25	B	\$122,000
DF9064D	Drainage Retrofit	Piney Run	Distributed at outfalls throughout the drainage area	3.25	B	\$91,000
DF9065B	Drainage Retrofit	Wolftrap Creek	Distributed at outfalls throughout the drainage area	3.25	B	\$46,000
DF9073B	Drainage Retrofit	Piney Branch	Distributed at outfalls throughout the drainage area	3.25	B	\$673,000
DF9074A	Drainage Retrofit	Piney Branch	Distributed at outfalls throughout the drainage area	3.25	B	\$61,000
DF9079A	Drainage Retrofit	South Fork Run	At Fox Mill Road	3.25	B	\$152,000

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Project_No	Type	Subwatershed	Location	Score	Phase	Estimate
DF9723	Drainage Retrofit	Snakeden Branch	Distributed at outfalls throughout the drainage area	3.25	B	\$183,000
DF9735	Drainage Retrofit	Snakeden Branch	Distributed at outfalls throughout the drainage area	3.25	B	\$259,000
DF9757	Drainage Retrofit	Old Courthouse	Distributed at outfalls throughout the drainage area	3.25	B	\$61,000
DF9005B	Culvert Retrofit	Captain Hickory Run	At Polo Place	3.05	B	\$47,000
DF9010A	Culvert Retrofit	Lower Difficult Run	Upstream side of Forestville Road	3.05	B	\$19,000
DF9032A	Culvert Retrofit	Upper Difficult Run	Upstream side of Miller Heights Road	3.05	B	\$136,000
DF9034A	Culvert Retrofit	Upper Difficult Run	Upstream side of Miller Heights Road	3.05	B	\$40,000
DF9039A	Culvert Retrofit	Little Difficult Run	Upstream side of Timberline Road	3.05	B	\$118,000
DF9061C	Culvert Retrofit	Little Difficult Run	Upstream of Foxclove Road	3.05	B	\$29,000
DF9225	Stream Restoration	Snakeden Branch	E and W of Soapstone Road	2.70	B	\$1,125,000
DF9010B	Culvert Retrofit	Lower Difficult Run	Upstream side of Trotting Horse Road	2.55	B	\$22,000
DF9010C	Culvert Retrofit	Lower Difficult Run	Upstream side of Tackroom Road	2.55	B	\$255,000
DF9058B	Culvert Retrofit	Little Difficult Run	Upstream side of Folkstone Road	2.55	B	\$41,000
DF9064B	Culvert Retrofit	Piney Run	N of Brevity Drive	2.55	B	\$143,000
DF9557	Culvert Retrofit	Old Courthouse	Upstream of Laurel Hill Road	2.55	B	\$97,000
DF9103	Pond Retrofit	Piney Run	Bright Pond Lane and Fieldview Drive	3.95	C	\$20,000
DF91135	Pond Retrofit	Dog Run	Water Pointe Lane and the Reston Parkway	3.95	C	\$532,000
DF9121	Pond Retrofit	Rocky Run	Retrofit regional pond D-67	3.95	C	\$151,000
DF9139	Pond Retrofit	Rocky Branch	Intersection of Rosehaven and Jermantown Roads	3.95	C	\$20,000
DF9141A	Pond Retrofit	Upper Difficult Run	Fair Oaks Mall property, near Lee Jackson Hwy	3.95	C	\$90,000
DF9142	Pond Retrofit	Upper Difficult Run	E end of the Fair Oaks Mall property	3.95	C	\$250,000
DF9171	Pond Retrofit	Upper Difficult Run	Bennington Woods Road and Baron Cameron Avenue	3.95	C	\$100,000
DF9172	Pond Retrofit	Upper Difficult Run	At Leesburg Pike and Laurel Hill Road	3.95	C	\$63,000
DF9540B	Culvert Retrofit	The Glade	Upstream side of Colts Neck Road	3.95	C	\$119,000
DF9807	LID Retrofit	Colvin Run	Rain garden at Wiehle Rd and N Shore Dr	3.95	C	\$43,000
DF9808	LID Retrofit	Colvin Run	Intersection of Village Drive and N Shore Drive	3.95	C	\$60,000
DF9809	LID Retrofit	Colvin Run	S of the intersection of Village Drive and N Shore Drive	3.95	C	\$1,546,000
DF9812	LID Retrofit	Colvin Run	Isaac Newton Square and Wiehle Avenue	3.95	C	\$628,000
DF9818	LID Retrofit	Colvin Run	Throughout catchment N of the Dulles Toll Road	3.95	C	\$2,520,000
DF9830	LID Retrofit	Piney Branch	Along Maple Avenue and the W&OD Trail	3.95	C	\$1,961,000
DF9839	LID Retrofit	Rocky Branch	Around intersection of Jermantown and Route 123	3.95	C	\$1,069,000
DF9841	LID Retrofit	Upper Difficult Run	On and around Fair Oaks Mall	3.95	C	\$2,216,000
DF9842	LID Retrofit	Upper Difficult Run	Throughout the Fair Oaks Mall property	3.95	C	\$904,000
DF9871	LID Retrofit	Upper Difficult Run	E of Pender Court	3.95	C	\$1,207,000
DF9213	Stream Restoration	Colvin Run	In Lake Fairfax Park, W of Hunter Mill Road	3.90	C	\$1,118,000

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Project_No	Type	Subwatershed	Location	Score	Phase	Estimate
DF9205	Stream Restoration	Piney Run	S of Walker Mill Road	3.90	D	\$875,000
DF92106	Stream Restoration	Middle Difficult Run	Mainstem N of Toll Road	3.90	D	\$1,089,000
DF92110	Stream Restoration	Piney Branch	S off Fosbak Drive	3.90	D	\$203,000
DF92114	Stream Restoration	Little Difficult Run	E of Colt Run before Stuart Mill Road	3.90	D	\$721,000
DF92120	Stream Restoration	South Fork Run	E of Fox Mill Road, N of Deerfield Drive	3.90	D	\$563,000
DF92124	Stream Restoration	Wolftrap Creek	S of Chain Bridge Road, W of Westwood Forest Road	3.90	D	\$409,000
DF92126	Stream Restoration	Wolftrap Creek	W of Foxstone Drive	3.90	D	\$874,000
DF92130	Stream Restoration	Rocky Branch	W of Mystic Meadow Road, S of Hunter Mill Road	3.90	D	\$627,000
DF92131	Stream Restoration	Rocky Branch	W of Hunter Mill Road before intersection with Vale Road	3.90	D	\$792,000
DF9236	Stream Restoration	Little Difficult Run	W of intersection of Stuart Mill Road and Birdfoot Lane	3.90	D	\$1,926,000
DF9263	Stream Restoration	Upper Difficult Run	SW of Lawyers Road before Hunters Crest Way	3.90	D	\$194,000
DF9265	Stream Restoration	Little Difficult Run	S of Thoroughbred Rd, E of Fox Mill Rd	3.90	D	\$742,000
DF9289	Stream Restoration	Lower Difficult Run	Confluence with Captain Hickory Run	3.90	D	\$964,000
DF9290	Stream Restoration	Sharpers Run	Downstream of Bellview Road	3.90	D	\$558,000
DF9291	Stream Restoration	Rocky Run	N of Bellview Road, S of Galium Road	3.90	D	\$1,006,000
DF9295	Stream Restoration	Colvin Run	S of Colvin Forest Dr, W of Leesburg Pike	3.90	D	\$1,384,000
DF9116A	Pond Retrofit	Wolftrap Creek	Kilby Glen Drive and South Courthouse Drive	3.85	D	\$45,000
DF9116B	Pond Retrofit	Wolftrap Creek	Along Deramus Farm Drive	3.85	D	\$59,000
DF9118B	Pond Retrofit	Colvin Run	Facility on S side of Dulles Toll Road	3.85	D	\$317,000
DF9151	Pond Retrofit	Colvin Run	S of Baron Cameron Avenue	3.85	D	\$75,000
DF9503	Culvert Retrofit	Piney Run	Intersection of Hawthorne Court and Reston Parkway	3.85	D	\$41,000
DF9508A	Culvert Retrofit	Colvin Run	Along Village Road and Baron Cameron Avenue	3.85	D	\$38,000
DF9512A	Culvert Retrofit	Colvin Run	Culvert under N Shore Drive	3.85	D	\$25,000
DF9512B	Culvert Retrofit	Colvin Run	Culvert under N Shore Drive	3.85	D	\$218,000
DF9515A	Culvert Retrofit	Lower Difficult Run	Under Leesburg Pike	3.85	D	\$20,000
DF9551	Culvert Retrofit	Colvin Run	Upstream of Gates Meadow Way	3.85	D	\$19,000
DF9552A	Culvert Retrofit	Colvin Run	Upstream of Bennington Woods Road	3.85	D	\$24,000
DF9118A	Pond Retrofit	Colvin Run	Culvert under Sunset Hills Road	3.70	D	\$166,000
DF9141B	Pond Retrofit	Upper Difficult Run	N side of US 50	3.70	D	\$381,000
DF9124A	Pond Retrofit	Snakeden Branch	End of Red Leaf Court	3.60	D	\$35,000
DF9152	Pond Retrofit	Colvin Run	Bennington Woods Road and Baron Cameron Avenue	3.60	D	\$46,000
DF9117	Pond Retrofit	Wolftrap Creek	S Courthouse Drive and Towlston Road	3.45	E	\$149,000
DF9122	Pond Retrofit	Middle Difficult Run	Brittenford Drive and Hunt Country Lane	3.45	E	\$404,000
DF9124C	Pond Retrofit	Snakeden Branch	Intersection of the Dulles Toll Road with W&OD Trail	3.45	E	\$128,000
DF9129	Pond Retrofit	Piney Branch	At the bend in Liberty Tree Lane	3.45	E	\$96,000
DF9531B	Culvert Retrofit	Wolftrap Creek	Above Creek Crossing Road	3.45	E	\$115,000
DF9540A	Culvert Retrofit	The Glade	Upstream side of Steeplechase Road	3.45	E	\$103,000
DF9501B	Culvert Retrofit	Dog Run	Upstream of Stones Throw Drive	3.35	E	\$53,000

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Project_No	Type	Subwatershed	Location	Score	Phase	Estimate
DF9501C	Culvert Retrofit	Dog Run	End of Bright Pond Lane	3.35	E	\$126,000
DF9508B	Culvert Retrofit	Colvin Run	Culvert under Baron Cameron Avenue	3.35	E	\$17,000
DF9515B	Culvert Retrofit	Lower Difficult Run	Upstream of Locust Hill Drive	3.35	E	\$27,000
DF9552B	Culvert Retrofit	Colvin Run	Upstream of N Shore Drive	3.35	E	\$44,000
DF9558	Culvert Retrofit	Wolftrap Creek	Upstream side of Old Courthouse Road	3.35	E	\$212,000
DF9701	Drainage Retrofit	Dog Run	Distributed at outfalls throughout the drainage area	3.25	E	\$91,000
DF9707	Drainage Retrofit	Colvin Run	Distributed at outfalls throughout the drainage area	3.25	E	\$91,000
DF9712	Drainage Retrofit	Colvin Run	Distributed at outfalls throughout the drainage area	3.25	E	\$61,000
DF9716	Drainage Retrofit	Wolftrap Creek	Along Tuba and Laurin Court	3.25	E	\$183,000
DF9722	Drainage Retrofit	Middle Difficult Run	Distributed at outfalls throughout the drainage area	3.25	E	\$61,000
DF9724	Drainage Retrofit	Snakeden Branch	Distributed at outfalls throughout the drainage area	3.25	E	\$167,000
DF9728	Drainage Retrofit	Snakeden Branch	Along Purple Beech Drive and Ridge Heights Road	3.25	E	\$230,000
DF9729	Drainage Retrofit	Piney Branch	Distributed at outfalls throughout the drainage area	3.25	E	\$46,000
DF9730	Drainage Retrofit	Piney Branch	Distributed at outfalls throughout the drainage area	3.25	E	\$30,000
DF9731	Drainage Retrofit	Wolftrap Creek	Distributed at outfalls throughout the drainage area	3.25	E	\$122,000
DF9740	Drainage Retrofit	The Glade	Distributed at outfalls throughout the drainage area	3.25	E	\$1,410,000
DF9741	Drainage Retrofit	Upper Difficult Run	Distributed at outfalls throughout the drainage area	3.25	E	\$91,000
DF9750	Drainage Retrofit	Colvin Run	Distributed at outfalls throughout the drainage area	3.25	E	\$46,000
DF9751	Drainage Retrofit	Colvin Run	Distributed at outfalls throughout the drainage area	3.25	E	\$46,000
DF9755	Drainage Retrofit	Middle Difficult Run	Distributed at outfalls throughout the drainage area	3.25	E	\$61,000
DF9758	Drainage Retrofit	Wolftrap Creek	Distributed at outfalls throughout the drainage area	3.25	E	\$167,000
DF9504A	Culvert Retrofit	Piney Run	Upstream side of Tiverton Circle	3.05	E	\$41,000
DF9522A	Culvert Retrofit	Middle Difficult Run	Driveway off of Willow Crest Court	3.05	E	\$117,000
DF9522B	Culvert Retrofit	Middle Difficult Run	Upstream of Brittenford Drive	3.05	E	\$37,000
DF9522C	Culvert Retrofit	Middle Difficult Run	At Brittenford Drive, E of Raleigh Hill Road	3.05	E	\$43,000
DF9522D	Culvert Retrofit	Middle Difficult Run	At Brittenford Drive, E of Landon Hill Road	3.05	E	\$31,000
DF9555A	Culvert Retrofit	Middle Difficult Run	Upstream of Hunter Mill Road	3.05	E	\$66,000
DF9555B	Culvert Retrofit	Middle Difficult Run	Upstream of Dulles Toll Road	3.05	E	\$72,000
DF92108	Buffer Restoration	Middle Difficult Run	S of Dulles Toll Road, E of Hunter Mill Road	3.00	E	\$32,000
DF92125	Buffer Restoration	Wolftrap Creek	Within the Westbriar Country Club golf course	3.00	E	\$36,000
DF9238	Buffer Restoration	Upper Difficult Run	N of intersection of Waples Mill Road and Fox Mill Road	3.00	E	\$28,000

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Project_No	Type	Subwaterhed	Location	Score	Phase	Estimate
DF9279	Buffer Restoration	Dog Run	E of Stones Throw Road	3.00	E	\$39,000
DF9280	Buffer Restoration	Piney Run	On either side of Bishops Gate Way	3.00	E	\$33,000
DF9202	Stream Restoration	Dog Run	SW of Leesburg Pike and E of Reston Parkway	2.70	E	\$368,000
DF92102	Stream Restoration	Snakeden Branch	S of N Shore Dr and E of Barton Hill Rd	2.70	E	\$786,000
DF9244	Stream Restoration	Upper Difficult Run	N of Government Center Parkway	2.70	E	\$577,000
DF9245	Stream Restoration	Upper Difficult Run	N of intersection of Fairfax Farms Road and Valley Road	2.70	E	\$442,000
DF9504B	Culvert Retrofit	Piney Run	Culvert under Wiehle Avenue	2.55	E	\$128,000
DF9512C	Culvert Retrofit	Colvin Run	Culvert under Wiehle Avenue	2.55	E	\$94,000
DF9555C	Culvert Retrofit	Middle Difficult Run	At Brittenford Drive, E of Rosaleigh Court	2.55	E	\$70,000
DF9001B	Pond Retrofit	Dog Run	End of Branton Lane	3.95	A	\$224,000
DF9003AB	Pond Retrofit	Piney Run	Near Tottenham Court	3.95	A	\$90,000

Table 6.4: Project Cost by Implementation Group

Implementation Group	Cost	Percent	SYE
A	\$19,562,000	27%	
B	\$17,528,000	25%	
C	\$14,199,000	20%	
D	\$9,995,000	14%	
E	\$9,932,000	14%	
Total	\$71,216,000	100%	4.9

6.6 Watershed Plan Benefits

Plan benefits were estimated with the watershed model developed during the project. Proposed conditions were compared to future conditions to determine the benefits of the proposed projects.

Proposed stormwater BMPs, including pond retrofits, culvert retrofits, LID retrofits, and new ponds were modeled based on the amount of runoff each was capable of treating, and literature values for pollutant removal efficiency. Peak flow reductions were also modeled, again based on the amount of area draining to each retrofit project and its size. The majority of the proposed projects were designed to improve both water quality and water quantity control, and should help to reduce pollutant loads, but also to reduce the erosive peak flows that damage streambeds and scour stream crossings.

The watershed plan includes many nonstructural actions and policy recommendations. Many of the nonstructural actions are education and outreach that would reduce the impact on Difficult Run and its tributary streams. Policy actions also modify the impacts that new impervious area would have on the watershed. While these actions would improve the watershed health and reduce nutrient loads, these benefits are difficult to quantify.

6.6.1 Water Quality Improvements

Results of the modeling showed improvements in pollutant loads, throughout the entire Difficult Run watershed. Table 6.5 below compares the existing and future conditions model results for

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each subwatershed to the results of the projects proposed in this watershed plan. The modeling shows an 8 percent decrease in Total Suspended Solids (TSS), an 11percent decrease in Total Nitrogen (TN), and a 17 percent decrease in Total Phosphorus (TP) throughout the watershed.

Table 6.5: Pollutant Loads and Reductions

Subwatershed	Area	Scenario	Runoff Volume (in/yr)	Peak Flow (cfs/ac)	TSS (lb/ac/yr)	TN (lb/ac/yr)	TP (lb/ac/yr)
Angelico Branch	483	Existing	2.1	1.6	19.1	1.00	0.20
		Future	2.5	1.8	25.5	1.35	0.27
		Proposed	2.5	1.7	25.4	1.28	0.24
		Reduction	-2.6%	-5.8%	-0.5%	-5.0%	-12.5%
Captain Hickory Run	1,695	Existing	2.1	1.2	24.5	1.2	0.21
		Future	2.3	1.2	26.5	1.3	0.24
		Proposed	2.3	1.1	24.9	1.1	0.18
		Reduction	-2.6%	-8.1%	-6.1%	-13.4%	-23.6%
Colvin Run	3,876	Existing	5.1	2.1	108.6	4.3	0.52
		Future	5.7	2.2	119.4	4.6	0.55
		Proposed	5.3	1.8	103.1	3.9	0.44
		Reduction	-6.7%	-14.4%	-13.7%	-16.2%	-20.2%
Dog Run	516	Existing	3.0	1.5	35.7	1.8	0.32
		Future	3.4	1.6	43.0	2.1	0.40
		Proposed	3.3	1.4	42.8	1.8	0.25
		Reduction	-1.8%	-17.0%	-0.7%	-13.9%	-36.4%
The Glade	853	Existing	3.3	1.6	45.5	2.3	0.44
		Future	3.3	1.6	46.0	2.3	0.45
		Proposed	3.3	1.4	46.0	2.2	0.39
		Reduction	-1.4%	-13.0%	-0.1%	-4.9%	-12.2%
Little Difficult Run	2,590	Existing	2.0	1.4	20.2	1.1	0.21
		Future	2.2	1.5	23.5	1.3	0.25
		Proposed	2.2	1.3	23.5	1.2	0.23
		Reduction	-2.8%	-10.9%	0.0%	-3.2%	-8.6%
Old Courthouse Spring	981	Existing	9.3	2.7	192.9	7.7	0.88
		Future	9.5	2.8	197.9	8.0	0.93
		Proposed	9.4	2.7	191.8	7.6	0.86
		Reduction	-1.1%	-3.1%	-3.1%	-5.1%	-7.7%
Piney Branch	2,475	Existing	4.6	2.1	73.7	3.6	0.63
		Future	4.9	2.2	85.6	4.2	0.72
		Proposed	4.8	2.1	84.7	4.0	0.64
		Reduction	-3.0%	-7.5%	-1.0%	-4.8%	-11.5%
Piney Run	2,100	Existing	3.2	1.6	48.8	2.1	0.32
		Future	3.5	1.6	56.8	2.5	0.37
		Proposed	3.5	1.3	57.0	2.4	0.33
		Reduction	-2.0%	-19.0%	0.5%	-4.8%	-12.7%
Rocky Branch	2,167	Existing	3.4	1.6	47.9	2.3	0.39
		Future	3.7	1.7	53.2	2.5	0.44
		Proposed	3.6	1.6	53.2	2.3	0.36

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Subwatershed	Area	Scenario	Runoff Volume (in/yr)	Peak Flow (cfs/ac)	TSS (lb/ac/yr)	TN (lb/ac/yr)	TP (lb/ac/yr)
		Reduction	-2.3%	-10.1%	0.1%	-7.0%	-17.7%
Rocky Run	1,673	Existing	4.0	1.9	64.5	2.9	0.36
		Future	4.2	2.0	66.2	3.1	0.40
		Proposed	4.1	1.8	65.5	3.0	0.40
		Reduction	-2.1%	-9.2%	-1.2%	-1.5%	-2.3%
Snakeden Branch	2,239	Existing	6.1	2.1	126.5	5.0	0.66
		Future	6.4	2.1	132.9	5.1	0.66
		Proposed	6.3	1.8	130.3	4.9	0.60
		Reduction	-2.4%	-12.9%	-1.9%	-4.7%	-9.4%
South Fork Run	1,745	Existing	2.1	1.3	23.4	1.3	0.25
		Future	2.3	1.3	25.4	1.4	0.27
		Proposed	2.2	1.2	25.3	1.3	0.23
		Reduction	-2.1%	-10.4%	-0.2%	-6.2%	-15.7%
Sharpers Run	415	Existing	1.7	1.2	21.3	1.2	0.18
		Future	2.2	1.2	30.0	1.6	0.23
		Proposed	2.1	1.1	29.8	1.6	0.23
		Reduction	-3.1%	-10.9%	-0.7%	-0.4%	-0.5%
Wolftrap Creek	3,631	Existing	5.1	2.3	80.8	3.7	0.60
		Future	5.6	2.5	95.4	4.5	0.74
		Proposed	5.3	2.0	84.4	3.8	0.58
		Reduction	-5.0%	-20.2%	-11.5%	-15.8%	-22.7%
Upper Difficult Run	5,684	Existing	3.7	1.8	60.6	2.5	0.34
		Future	4.1	1.9	73.1	3.0	0.39
		Proposed	4.0	1.5	60.5	2.3	0.30
		Reduction	-2.2%	-20.4%	-17.3%	-20.9%	-24.8%
Middle Difficult Run	1,721	Existing	3.3	1.7	41.2	1.9	0.31
		Future	3.5	1.8	45.1	2.1	0.33
		Proposed	3.3	1.5	42.8	1.9	0.26
		Reduction	-5.6%	-14.0%	-5.1%	-11.8%	-20.8%
Lower Difficult Run	2,450	Existing	1.9	1.4	17.5	0.9	0.17
		Future	2.0	1.5	19.0	1.0	0.19
		Proposed	1.9	1.4	18.9	0.9	0.16
		Reduction	-1.5%	-5.1%	-0.5%	-4.7%	-12.6%
Difficult Run Total	37,924	Existing	3.8	1.8	63.1	2.7	0.41
		Future	4.2	1.9	70.6	3.1	0.46
		Proposed	4.0	1.6	65.4	2.7	0.38
		Reduction	-3.3%	-13.6%	-7.5%	-10.9%	-16.6%

