



NORTHERN VIRGINIA STREAM RESTORATION BANK
THE GLADE – REACHES 1 AND 1A

MITIGATION MONITORING REPORT

FIRST GROWING SEASON (2009)

FAIRFAX COUNTY, VIRGINIA

Prepared For:

Northern Virginia Stream Restoration, L.C.
c/o Wetland Studies and Solutions, Inc.
5300 Wellington Branch, Suite 100
Gainesville, VA 20155

WSSI Project No. 20030
Task I2

October 20, 2009



Northern Virginia Stream Restoration Bank, The Glade – Reaches 1 and 1A
Mitigation Monitoring Report
First Growing Season
WSSI #20030
October 20, 2009

Introduction

The Glade – Reaches 1 and 1A of the Northern Virginia Stream Restoration Bank are located between Steeplechase Drive and Colts Neck Road, immediately upstream of Colts Neck Road, in Fairfax County, Virginia (Exhibit 1: 38°55'49"N, 77°21'57"W). Restoration of Reaches 1 and 1A of The Glade occurred in early 2009, in accordance with the Northern Virginia Stream Restoration Bank Mitigation Banking Instrument (MBI), dated February 17, 2006 (modified April 2007 and June 2009), the concept plan dated May 15, 2006¹, and the subsequent Nationwide Permit 27 verification². Periodic monitoring to evaluate the success of the stream restoration is required by the MBI. This monitoring report documents that all success criteria have been met at The Glade – Reaches 1 and 1A during the first growing season, as set forth in the MBI and associated mitigation plans.

Northern Virginia Stream Restoration Bank, The Glade – Reaches 1 and 1A includes a total of 1,995.5 linear feet of stream restoration, resulting in a total of 16,407.4 Stream Condition Units, per the As-Built Survey, dated May 2009, revised May 15, 2009.

Monitoring Success Criteria

According to the MBI (§V.E.2) the monitoring success criteria shall follow the guidelines below:

(a) *Reforested Riparian Buffer Areas*

- (i) *Plant density of at least 400 living woody stems (including volunteers) per acre of trees and shrubs must be achieved by the end of the first growing season following planting and maintained through the end of the monitoring period or until canopy coverage is greater than 30%.*
- (ii) *Herbaceous plant coverage of at least 60% must be achieved by the end of the first growing season and at least 80% each monitoring year thereafter.*
- (iii) *Woody plant coverage (from live-stakes, tublings, container grown material, and volunteers) along stream banks shall achieve a density of at least 5 l.f./stem (i.e., 1 stem per 5 l.f.) by the end of the first growing season and for each monitoring year thereafter.*

(b) *Stream and Riparian System*

- (i) Dimension – *The analysis of each permanent cross-section specified on the Stream Restoration Site Plan shall indicate that:*
 - 1) *The Width/Depth Ratio (defined as the width at bankfull divided by the mean riffle depth at bankfull) did not increase or decrease by an amount greater than 1.2 of the as-built cross section.*
 - 2) *The bankfull Cross-Sectional Area did not increase or decrease by an amount greater than 20% of the as-built cross-section.*

¹ The Concept Plan was approved by the COE and DEQ on June 22 and 30, 2009, respectively.

² COE # 2009-0064, dated January 26, 2009, and DEQ Notification of No Permit Required #08-1919, dated January 26, 2009.

- 3) *The Bank Height Ratio (defined as the low bank height divided by the maximum riffle depth) did not increase or decrease by an amount greater than 0.2 of the as-built cross section.*
- (ii) Pattern – *The analysis of the plan-view survey of field measurements shall indicate that:*
 - 1) *The Sinuosity of the stream (defined as the stream length along the thalweg divided by the valley length) did not increase or decrease by an amount greater than 0.2 of the as-built pattern.*
 - 2) *The Radius of Curvature/Width ratio did not increase or decrease by an amount greater than 0.2 of the as-built condition.*
- (iii) Profile – *The analysis of the longitudinal profile shall indicate that the slope of the longitudinal profile did not increase or decrease by an amount greater than 0.3% of the as-built slope.*
- (iv) Structures – *The analysis of each instream structure shall indicate that:*
 - 1) *The angle of any rock vane, j-hook, or cross vane did not increase or decrease by an amount greater than 3 degrees from the as-built angle, and remains between 20 and 30 degrees from the streambank.*
 - 2) *The slope of any rock vane, j-hook, or cross vane did not increase or decrease by an amount greater than 2% from the as-built slope (i.e. if the design slope was 5%, than any slope from 3% to 7% would be acceptable) and remains between 2% to 7%.*

Methods

Vegetation monitoring field work was conducted on September 4, 2009 by Benjamin N. Rosner, Sean D. Sipple, Jennifer Van Houten, Lynn Straughan, Beth Clements, and Mark Headly, and on October 13, 2009, by Benjamin N. Rosner and Caitlin Kelliher to collect vegetation data and take photographs at the three vegetation monitoring stations. Field surveys to document the required dimension, pattern, profile and structure criteria were completed on September 23, 2009. The following general supporting documentation is included at the end of this report: monitoring locations map (Exhibit 2); and representative monitoring photographs (Exhibit 3). Additional supporting data is available in separate Appendices³ including: monitoring photographs; percent cover data; woody plant data; stream survey data for dimension, pattern, profile and structure criteria; and bank pin, scour chain, pebble count and bar sample data.

In addition to the success criteria listed above, the DEQ §401 Certification also calls for the monitoring of temporary wetland impacts in years 1 and 2. For The Glade – Reaches 1 and 1A, this is to be accomplished by photographs of the temporary impact locations⁴ included in Exhibit 4.

Monitoring Program Protocol and Results

In accordance with the guidelines of §VI.B of the MBI, the 2009 the monitoring program and results are as follows:

³ This information is included in separate Appendices due to report size limitations as set forth in COE Regulatory Guidance Letter 06-03.

⁴ Per correspondence from Mike Rolband to Bettina Rayfield dated August 26, 2009 and approved by Ms. Rayfield on August 28, 2009 (see Appendix F for details).

1. *With respect to the riparian buffer areas:*

- a. *Visual description – ground level photographs shall be taken at each monitoring station, an aerial photograph shall be taken the 3rd or 5th year following final grading.*

Photographs were taken in four standard directions (upstream, downstream, left bank, right bank) at each of the three permanent monitoring stations during the September 2009 monitoring field work. The representative photographs (Exhibit 3) demonstrate that herbaceous and woody vegetation is becoming established throughout The Glade – Reaches 1 and 1A reforestation areas. An aerial photograph of the site will be provided in year 3 or year 5. All photographs from the riparian monitoring plots are provided within Appendix A.

- b. *Vegetation – based on the reforestation site size, there shall be 3 sample plots/per acre, with a 30 foot radius for woody stems and 3 foot diameter for herbaceous plants. Vegetation data shall include: dominant species identification, coverage assessment, number of woody plant stems (total and #/acre), and indicator status.*

The reforested area within Reaches 1 and 1A is <5 acres, therefore 3 vegetation monitoring plots were established.

The average density of living woody stems (as measured by the number of stems per acre) is 2,508. On individual plots, the number of stems per acre ranged from 2,108 to 3,108 (due in part to a high rate of volunteers). These results meet and exceed the success criteria [MBI §V.E.2(a)(i)] of an average of 400 living woody stems per acre in reforested areas. Species are provided within Appendix C.

The average percent cover by herbaceous vegetation was 87. This meets and exceeds the success criteria [MBI §V.E.2(a)(ii)] of 60 percent cover by the end of the first growing season. Dominant species and indicator status are provided within Appendix B.

2. *With respect to the stream and riparian system:*

- a. *Woody plant coverage shall be quantified by species and density (1 stem per 5 l.f. along the stream edge).*

The average density of woody stems along the streambanks was 1.3 stems per 5 linear foot of stream bank. On individual plots, the number of stems per 5 l.f. ranged from 1.1 to 1.6. These results meet and exceed the success criteria [MBI §V.E.2(a)(iii)] of an average of 1 stem per 5 linear feet. Species are provided within Appendix C.

- b. *Exposure of bank pins shall be quantified to provide an assessment of bank erosion.*

This data is provided within Appendix E, Sheets 7 and 8.

- c. *Scour chains shall be assessed to provide data on movement of sediment.*

This data is provided within Appendix E, Sheets 7 and 8.

- d. *Pebble counts and bar samples will be collected and analyzed to document changes in streambed material size.*

This data is provided within Appendix D.

- e. *Each stream stabilization structure shall be surveyed, photographed and a narrative statement provided as to whether or not specific Success Criteria have been violated.*

All success criteria were met for the Dimension, Pattern, Profile, and Structures parameters [MBI §V.E.2(b)]. See Appendix E, Sheets 3-15, for numerical survey data and photographs supporting the achievement of the success criteria, including a narrative statement.

- f. *One cross section per 1,000 l.f. shall be provided, with a representative mix of riffles and pools.*

Three cross sections have been provided within these Reaches. See Appendix E, Sheets 3 through 5, 7, and 8, for cross section location and details.

- g. *A surveyed profile of the stream shall be provided immediately following completion, and in years 1, 3, 5, and 10.*

Provided within Appendix E, Sheets 3 through 6, and 10.

- h. *Location of any riparian areas with excessive erosion that needs replanting or protection shall be identified.*

No riparian areas with excessive erosion or that needed replanting were identified during this monitoring year.

- i. *An assessment of biological conditions (habitat) shall be provided pre-restoration and in years 1, 5, and 10.*

Biological assessment reaches are not located within Reaches 1 and 1A of the Glade, due to the non-perennial nature of the streams, thus no post-construction monitoring was conducted. Biological Conditions Assessments for perennial stream reaches within The Glade watershed will be provided in separate monitoring reports, and three separate pre-construction reports (for years 2007, 2008, and 2009) were provided to the MBRT.

- j. *Within one week after any storm event that exceeds 3.2 inches in 24 hours or 2.0 inches in 2 hours, the subject stream reach shall be visually inspected for damages. Any damage noted shall be reported to the Corps in writing.*

During the 2009 growing season, following the completion of construction activities in Reaches 1 and 1A, two storm events (on May 26, 2009 and June 3, 2009) meeting the criteria of §VI.B.2(j) occurred. No damages to the Reaches were observed and these findings were reported to the Corps in a report dated June 12, 2009 (since they occurred only 9 days apart, the inspections were consolidated into one report).

Additional Reporting Criteria

In accordance with the accepted conditions of DEQ's §401 certification for the Nationwide Permit 27 issued for Reaches 1 and 1A (Appendix F), the temporary wetland impacts were photographically monitored. Photographs provided within Exhibit 4 depict the condition of the two temporary wetland impacts following the restoration activities.

Mitigation Credit Analysis

The MBI requires a summary of credits created by the bank and the permits that have been debited against these credits. A credit ledger for the entire NVSRB is provided annually to the chair of the Mitigation Bank Review Team.

Summary

This investigation indicates the successful restoration of The Glade – Reaches 1 and 1A in the first growing season. Monitoring of these reaches confirm the successful reforestation/revegetation of riparian buffers and the successful establishment of a stable stream system.

Limitations

This study is based on examination of the vegetation and geomorphology at the referenced site. Field indicators can change with variations in hydrology and other factors. Therefore, our conclusions may vary significantly from future observation by others. This report assesses the presence of vegetation and the stability of geomorphic features at the site at the time of our review and does not address conditions prior to our review or at a given time in the future.

Our review and report have been prepared in accordance with the MBI and with generally accepted guidelines for the conduct of monitoring reports for mitigation banks.

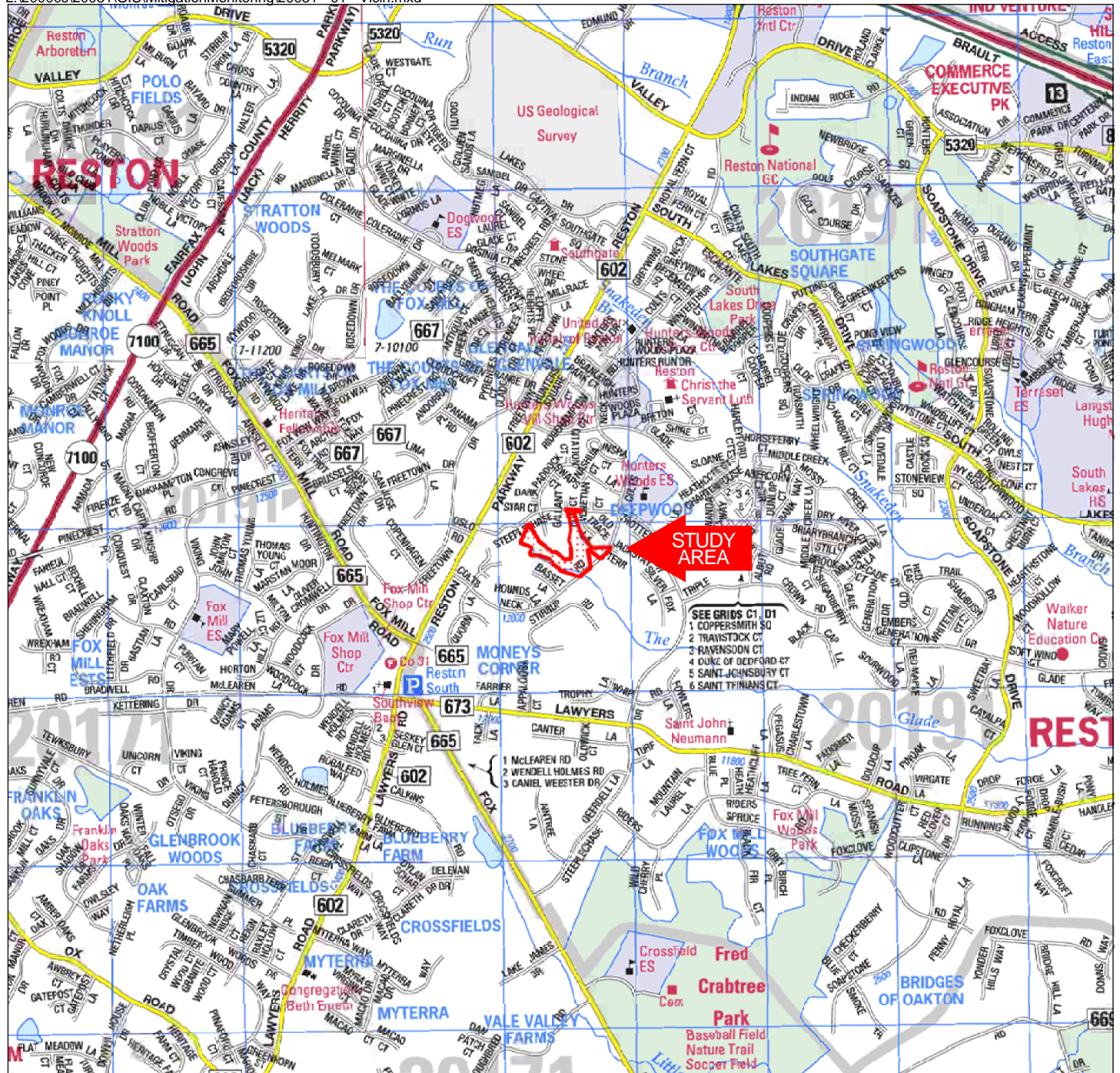
WETLAND STUDIES AND SOLUTIONS, INC.



Benjamin N. Rosner, PWS, PWD, CE, CT
Associate Environmental Scientist

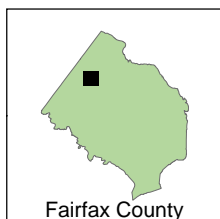


Mark Headly, PWS, PWD, LEED® AP
Executive Vice President

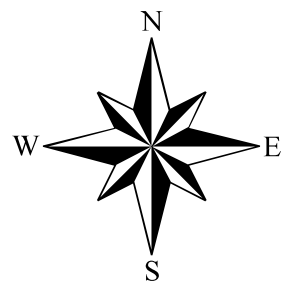


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Vicinity Map
Northern Virginia Stream Restoration Bank
The Glade - Reaches 1 & 1A
WSSI #20030
Scale: 1" = 2000'



Lat: 38° 55' 49" N
Lon 77° 21' 57" W

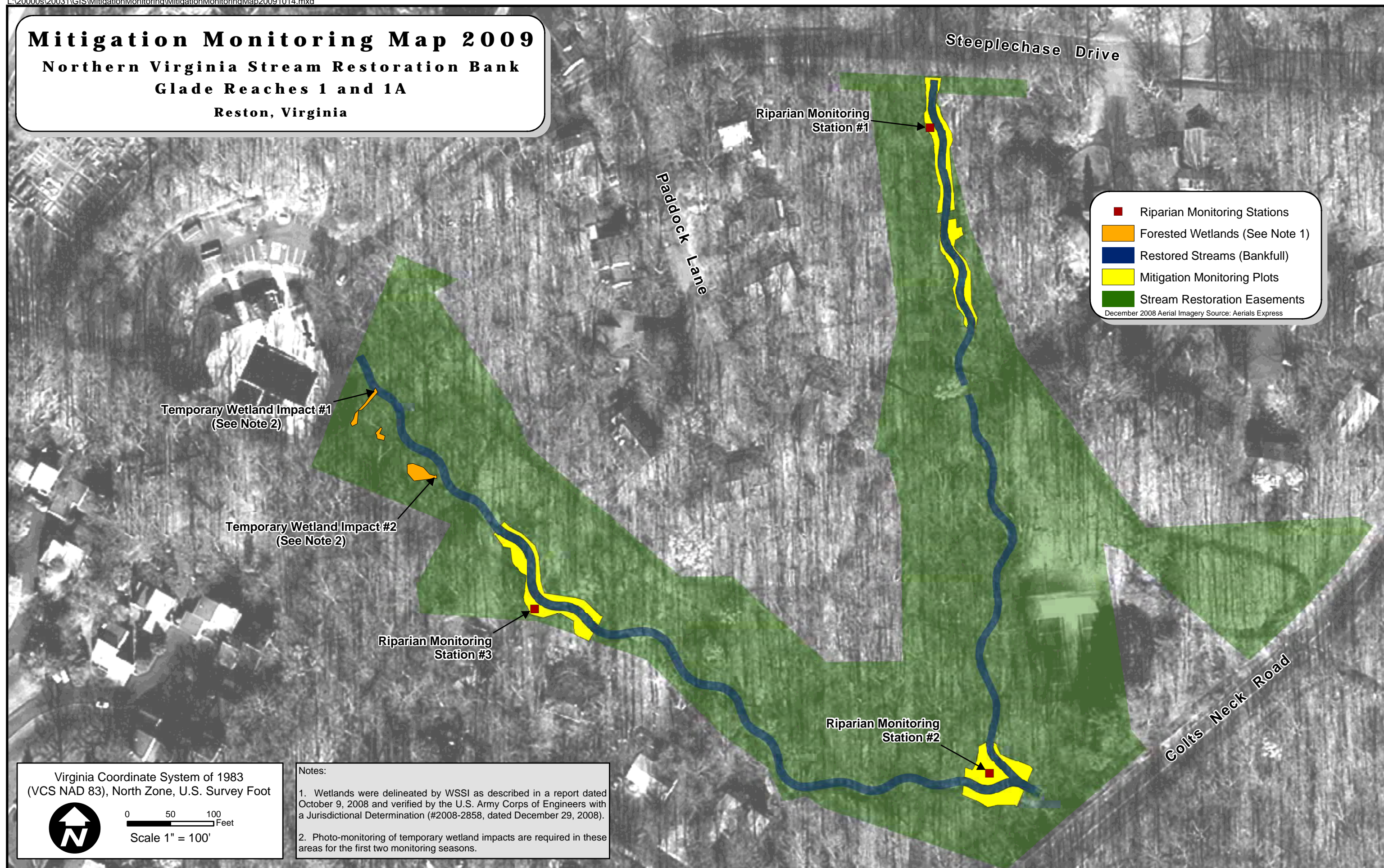


Mitigation Monitoring Map 2009

Northern Virginia Stream Restoration Bank

Glade Reaches 1 and 1A

Reston, Virginia



Virginia Coordinate System of 1983
(VCS NAD 83), North Zone, U.S. Survey Foot



0 50 100 Feet
Scale 1" = 100'

EXHIBIT 3
NORTHERN VIRGINIA STREAM RESTORATION BANK – THE GLADE REACHES 1 AND 1A
REPRESENTATIVE MONITORING PHOTOGRAPHS
SEPTEMBER 4, 2009



Station 1: Downstream



Station 2: Upstream



Station 3: Right bank

EXHIBIT 4
NORTHERN VIRGINIA STREAM RESTORATION BANK – THE GLADE
REACHES 1 AND 1A
MONITORING PHOTOS OF TEMPORARY IMPACTS
October 14, 2009



1. Looking west at Temporary Impact #1, in Reach 1 of the Glade. This impact area is becoming re-vegetated with a hydrophytic plant community.



2. Looking southwest Temporary Impact #2, in Reach 1 of the Glade. Although vegetation is sparse within the impact area, the area is becoming re-vegetated with a hydrophytic plant community.

**NORTHERN VIRGINIA STREAM RESTORATION BANK
THE GLADE – REACHES 1 AND 1A**

MITIGATION MONITORING REPORT

FIRST GROWING SEASON (2009)

FAIRFAX COUNTY, VIRGINIA

**WSSI # 20030
TASK I2**

APPENDIX

A. MONITORING PHOTOGRAPHS

B. PERCENT COVER DATA

C. WOODY PLANT DATA

D. PEBBLE COUNT AND BAR SAMPLE DATA

E. SURVEY MONITORING YEAR 1 (15 SHEETS)

**F. TEMPORARY WETLAND IMPACT MONITORING
CORRESPONDENCE**

1. 8/28/09 e-mail from Ms. Bettina Rayfield approving monitoring protocol for temporary impacts.
2. 8/26/09 letter from Mr. Mike Rolband requesting approval of monitoring protocol for temporary impacts.

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
FIRST GROWING SEASON PHOTOGRAPHS
WSSI #20030**



1. Monitoring station 1: Looking upstream.



2. Monitoring station 1: Looking downstream.

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
FIRST GROWING SEASON PHOTOGRAPHS
WSSI #20030**



3. Monitoring station 1: Looking at the left bank.



4. Monitoring station 1: Looking at the right bank.

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
FIRST GROWING SEASON PHOTOGRAPHS
WSSI #20030**



5. Monitoring station 2: Looking upstream.



6. Monitoring station 2: Looking downstream.

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
FIRST GROWING SEASON PHOTOGRAPHS
WSSI #20030**



7. Monitoring station 2: Looking at the left bank.



8. Monitoring station 2: Looking at the right bank.

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
FIRST GROWING SEASON PHOTOGRAPHS
WSSI #20030**



9. Monitoring station 3: Looking upstream.



10. Monitoring station 3: Looking downstream.

**MONITORING STATION PHOTOGRAPHS
THE GLADE – REACHES 1 AND 1A
FIRST GROWING SEASON PHOTOGRAPHS
WSSI #20030**



11. Monitoring station 3: Looking at the left bank.



12. Monitoring station 3: Looking at the right bank.

NORTHERN VIRGINIA STREAM RESTORATION BANK - THE GLADE REACHES 1 AND 1A
FIRST GROWING SEASON (2009)
PERCENT COVER DATA

PLANT COMMUNITY Data Site #		Riparian Monitoring Station	Riparian Monitoring Station	Riparian Monitoring Station	Overall Plot Average
		1	2	3	
PERCENT COVER					
Overall % Cover		80	100	80	87
% Bare Ground		20	0	20	13
% Open Water		0	0	0	0
SPECIES COMPOSITION					
TREES OR SHRUBS					
<i>Virburnum dentatum</i>	FAC	0	0	15	5
HERBS					
<i>Echinochloa crusgalli</i> *	FACW-**	0	100	0	33
<i>Lolium multiflorum</i>	NI	80	50	80	70
<i>Polygonum persicaria</i> *	FACW	0	0	1	<1
<i>Thelypteris noveboracensis</i>	FAC	2	0	0	1

* indicates volunteer species.

** per correspondence with Porter B. Reed, USFWS, 10/31/00.

Shaded cells indicate dominant species as determined by the 50/20 rule

Note that plots 1 and 3 were completely vegetated in the spring, but that most of the annual rye had died back by the late summer.

NORTHERN VIRGINIA STREAM RESTORATION BANK - THE GLADE REACH 1 AND 1A
FIRST GROWING SEASON (2009)
STREAM BANK WOODY STEM DENSITY DATA

Monitoring Station # ¹	1	2	3	SUMMARY
				TOTAL STEMS
# STEMS LIVING TREES				
<i>Alnus serotina</i>	2	2	0	4
<i>Salix nigra</i>	7	9	9	25
<i>Sambucus canadensis</i>	0	0	2	2
SHRUBS				
<i>Cornus amomum</i>	2	1	5	8
				AVERAGE
# STEMS LIVING	11	12	16	13
# STEMS LIVING / 5 LF	1.1	1.2	1.6	1.3

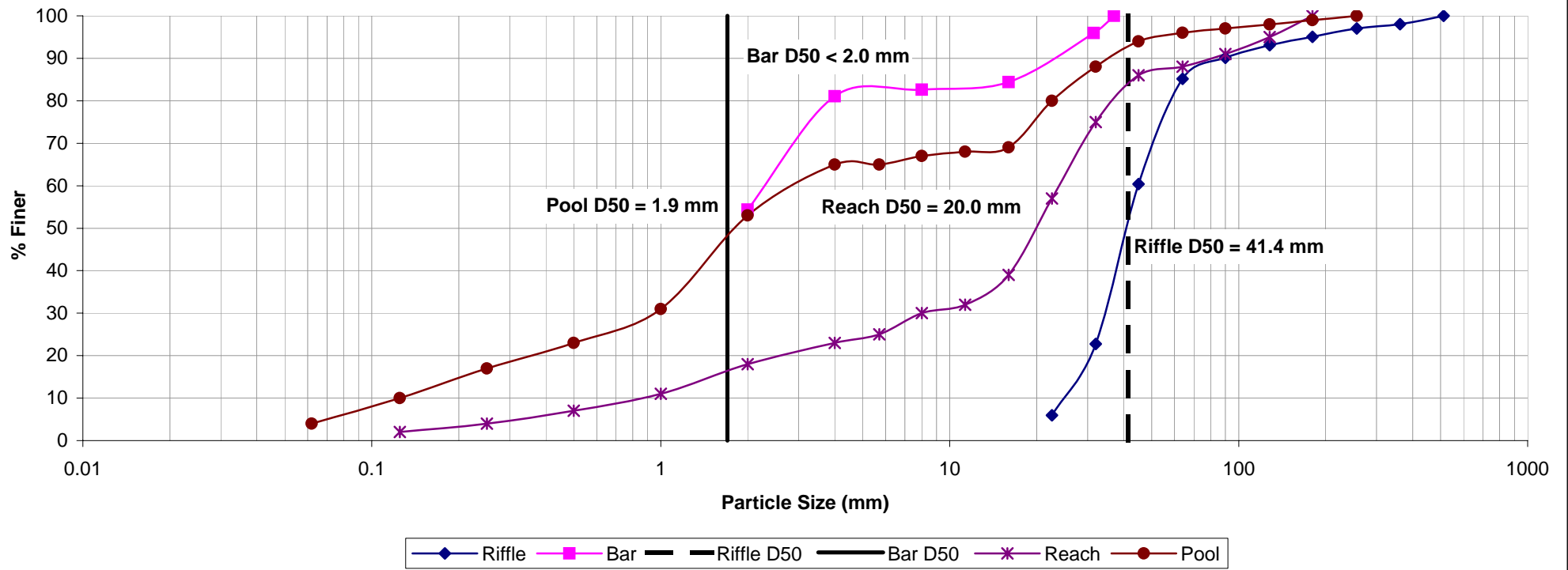
¹ Transect length was 50 feet adjacent to the station location.

**NORTHERN VIRGINIA STREAM RESTORATION BANK - THE GLADE REACH 1 AND 1A
FIRST GROWING SEASON (2009)
STREAM RESTORATION BUFFER
WOODY STEM DENSITY DATA**

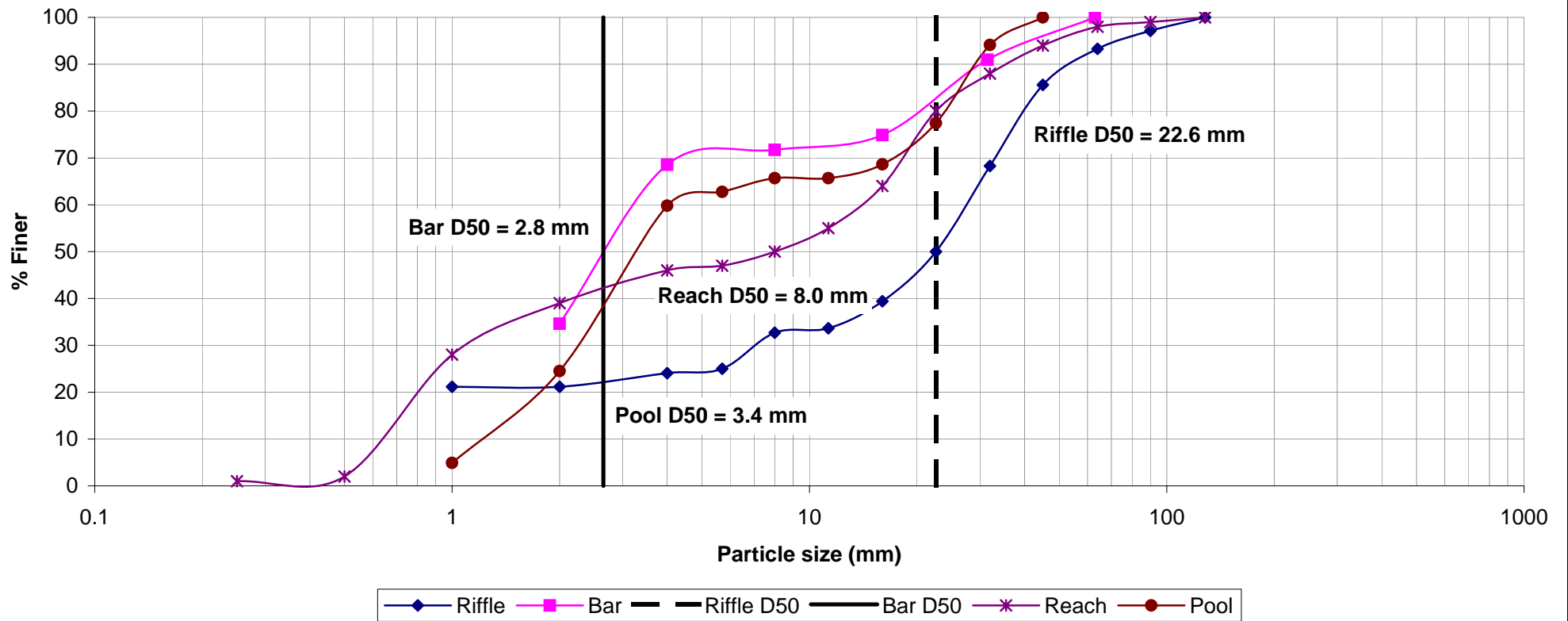
Monitoring Station #	1	2	3	SUMMARY TOTAL STEMS
# STEMS SURVIVING TREES				
<i>Acer negundo</i>	0	1	0	1
<i>Acer rubrum</i>	2	28	8	38
<i>Alnus serrulata</i>	5	5	2	12
<i>Betula nigra</i>	1	3	1	5
<i>Ilex opaca</i>	18	15	4	37
<i>Ilex verticillata</i>	4	2	5	11
<i>Liquidambar styraciflua</i>	1	1	0	2
<i>Liriodendron tulipifera</i>	0	3	3	6
<i>Nyssa sylvatica</i>	7	4	8	19
<i>Platanus occidentalis</i>	2	4	0	6
<i>Prunus serotina</i>	0	0	1	1
<i>Quercus alba</i>	2	0	0	2
<i>Quercus palustris</i>	2	0	0	2
<i>Quercus rubra</i>	2	13	5	20
<i>Salix nigra</i>	41	43	40	124
<i>Sambucus canadensis</i>	5	12	10	27
<i>Sassafras albidum</i>	0	0	2	2
SHRUBS				
<i>Cornus amomum</i>	17	27	26	70
<i>Corylus americana</i>	13	13	10	36
<i>Lindera benzoin</i>	2	1	0	3
<i>Viburnum dentatum</i>	25	27	12	64
<i>Viburnum prunifolium</i>	1	0	0	1
				AVERAGE
# STEMS SURVIVING	150	202	137	163
# STEMS SURV/ACRE	2308	3108	2108	2508

The plot area equals the area of a 30 ft radius circle (2,827 sq ft)

Northern Virginia Stream Restoration Bank - The Glade Reach 1 Pebble Count and Bar Sample Data



Northern Virginia Stream Restoration Bank - The Glade Reach 1A Pebble Count and Bar Sample Data



SURVEY MONITORING YEAR 1

NORTHERN VIRGINIA STREAM RESTORATION BANK

THE GLADE REACHES 1 & 1A

HUNTER MILL DISTRICT

FAIRFAX COUNTY, VIRGINIA

EASEMENT OWNER/APPLICANT:
MICHAEL S. ROLBAND, P.E., P.W.S., P.W.D.
MANAGING MEMBER
NORTHERN VIRGINIA STREAM RESTORATION L.C.
C/O WETLAND STUDIES AND SOLUTIONS, INC.
5300 WELLINGTON BRANCH DRIVE
SUITE 100
GAINESVILLE, VIRGINIA 20155

ENGINEER:
FRANK R. GRAZIANO, P.E.
WETLAND STUDIES AND SOLUTIONS, INC.
5300 WELLINGTON BRANCH DRIVE
SUITE 100
GAINESVILLE, VIRGINIA 20155

U.S. ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NUMBER 27:
REACHES 1 & 1A: 2009-0064

SITE NOTES:

TAX MAP PARCELS: REACH 1 & 1A

26-1-02-1C2, 26-3-03-003A, 26-3-04-0010,
26-1-04-0009, 26-1-02-1C1, 26-3-03-0065,
26-3-03-0063, 26-1-04-0164

ALL THE DATA DEPICTED IN RED DENOTES YEAR 1 (2009) MONITORING SURVEY

SURVEY MONITORING YEAR 1 SHEET INDEX

1. COVER SHEET
2. REACH 1 & 1A FAIRFAX COUNTY COVER SHEET
3. REACH 1 & 1A GRADING PLAN AND LONGITUDINAL PROFILE
4. REACH 1 & 1A GRADING PLAN AND LONGITUDINAL PROFILE
5. REACH 1 & 1A GRADING PLAN AND LONGITUDINAL PROFILE
6. REACH 1 & 1A GRADING PLAN AND LONGITUDINAL PROFILE
7. REACH 1 & 1A CROSS SECTIONS
8. REACH 1 & 1A CROSS SECTIONS
9. REACH 1 & 1A CONSTRUCTION DETAILS
10. REACH 1 & 1A SUMMARY OF DIMENSION, PATTERN, AND PROFILE & SCU ANALYSIS
11. REACH 1 & 1A STRUCTURE POINT DATA
12. REACH 1 & 1A STRUCTURE POINT DATA
13. REACH 1 & 1A STEP POOL & ROCK STEP POINT DATA
14. REACH 1 & 1A PHOTOS
15. REACH 1 & 1A PHOTOS



VICINITY MAP
SCALE: 1"=500'

Wetland
Studies and Solutions, Inc.
5300 Wellington Branch Drive • Suite 100
Gainesville, Virginia 20155
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www.wetlandstudies.com

NORTHERN VIRGINIA STREAM RESTORATION BANK
THE GLADE REACH 1 & 1A
Fairfax County, Virginia

SURVEY MONITORING YEAR 1 COVER SHEET

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REVISIONS				App. By	Rev. By	Date	Description	No.	DATE: September 2009	SCALE: As Noted
No.	Date	Description	No.							

Horizontal Datum: NAD 1983

Vertical Datum: NGVD 1929

Boundary and Topo Source:
Wetland Studies and Solutions, Inc.

Design	Draft	Approved
CJL	CJL	RPH

Sheet #
1 of 15

Computer File Name:
L:\2009\09\200912\13 Cover Sheet 181A.dwg

PLAN APPROVAL INFORMATION

RELATED INFORMATION	REQUIRED	NOT REQUIRED	COUNTY I.D. NUMBER	COMMENTS/SHEET NO.
1. CONCURRENT PROCESSING				
2. MODIFIED PROCESSING				
3. AFFORDABLE DWELLING UNITS				
4. R.P.A. DELINEATION				
5. FLOOD PLAIN STUDY				
6. DRAINAGE STUDY				
7. CHESAPEAKE BAY ACT EXCEPTION				
8. WATER QUALITY IMPACT ASSESSMENT				
9. SOILS REPORT APPROVAL				
10. ONSITE EASEMENTS				
11. OFFSITE EASEMENTS				
12. NOTARIZED LETTERS OF PERMISSION				
13. ARCHITECTURAL REVIEW BOARD APPROVAL				
14. RETURN PLAN TO B.O.S. PRIOR TO APPR.				
15. RETURN PLAN TO P.C. PRIOR TO APPR.				
16. ADJACENT PROPERTY OWNER NOTIFICATIONS				
17. OFFSITE UTILITY WORK NOTICES				
18. MAJOR UNDERGROUND UTILITY NOTICES				
19. REZONING/SPECIAL EXCEPTION/SPECIAL PERMIT APPROVAL				
20. B.O.S./B.Z.A. CLERK LETTER/RESOLUTION				
21. REZONING PROFFERS/CONDITIONS				
22. REZONING DEVELOPMENT PLAN				
23. B.Z.A. VARIANCE APPROVAL				
24. WETLANDS/WATERS OF THE U.S. PERMIT				
25. STATE REGULATED DAM PERMIT				
26. FEMA LETTER OF MAP REVISION				
27. VEGETATED ROOF NOTE				
28. OVERLAY DISTRICT INFORMATION				
WAIVER 1:				
WAIVER 2:				
WAIVER 3:				
MODIFICATION 1:				
MODIFICATION 2:				
MODIFICATION 3:				

PLAN REVIEW FEE COMPUTATION

PLAN TYPE	PUBLIC IMPROVEMENT PLANS (PI)	SUBDIVISION PLANS (SD)	SITE PLANS (SP)
BASE FEE	BASE FEE= \$2,385	IF LESS THAN 10 LOTS \$5,935	BASE FEE= \$6,625
		IF 10 LOTS OR MORE, ADD \$2,000	PLUS \$1,200 PER DISTURBED ACRE (OR \$3,040 PER DISTURBED HECTARE) (ROUND UP DISTURBED AREA TO WHOLE NUMBER) (OR AC. X \$1,220 (OR AC. X \$3,040)
	SUBTOTAL 1 \$2,385	SUBTOTAL 1 \$	SUBTOTAL (MAX. = \$33,120) 1 \$
FEES IN ADDITION TO BASE FEE - APPLIES TO ALL PLAN TYPES			
REZONING	\$1,350		
SPECIAL EXCEPTION OR PERMIT	\$970		
VARIANCE	\$720		
MAX. FEE RELATED TO ZONING	\$2,350		
PROBLEM SOIL AREA	\$720		
NATURAL DRAINAGE WAY	\$485		
FLOOD PLAIN AREA	\$485		
SRM FACILITY (EA)	\$595		
BMP FACILITY (EA)	\$1,590		
FEE RELATED TO DRAINAGE & SOILS			
	SUBTOTAL 3 \$	SUBTOTAL 3 \$	SUBTOTAL 3 \$
IMPROVEMENTS ON PI PLANS (OR QNTY.(#) X \$0.80/FT. (OR QNTY.(m) X \$2.70/m) FEE			
SANITARY SEWER			
STORM SEWER			
TRAILS			
SIDEWALKS			
ROAD IMPROVEMENTS			
CHANNEL IMPROVEMENTS	1,939		
WATERLINE			
	SUBTOTAL 4 \$1,551.20		
TOTAL REVIEW FEE	ADD 1, 2, 3 & 4 ABOVE \$3,936.20	ADD 1, 2 & 3 ABOVE \$	ADD 1, 2 & 3 ABOVE \$
PAYABLE UPON SUBMISSION			
INSERT FEE \$85 PER PAGE DUE PRIOR TO APPROVAL			
RESUBMISSION FEE			
DUE ON SUBMISSION			

APPROVAL NOTES AND/OR CONDITIONS:

DATE _____

DATE _____

DATE _____

DATE _____

DATE _____

NAME _____

CONSTRUCTION PERMIT RECEIVED

SANITARY SEWER AGREEMENT

CONSERVATION ESCROW AGMT. REC'D.

AGREEMENT AND BOND APPROVED

AGREEMENT EXPIRES

BALANCE OF FEE PAID

RESPONSIBLE LAND DISTURBER (R.L.D.)

R.L.D. CERTIFICATE NUMBER

NOTES AND CONDITIONS

1. THE APPROVAL OF THESE PLANS SHALL IN NO WAY RELIEVE THE DEVELOPER OR HIS AGENT OF ANY LEGAL RESPONSIBILITIES WHICH MAY BE REQUIRED BY THE CODE OF VIRGINIA OR ANY ORDINANCE ENACTED BY THE COUNTY OF FAIRFAX.

2. THE DESIGN, CONSTRUCTION, FIELD PRACTICES, AND METHODS SHALL CONFORM TO THE REQUIREMENTS SET FORTH IN THE FAIRFAX COUNTY CODE AND IN THE PUBLIC FACILITIES MANUAL AS AMENDED. FAILURE TO COMPLY WITH THE FAIRFAX COUNTY CODE, THE PUBLIC FACILITIES MANUAL, THE APPROVED PLANS, THE PROVISIONS OF THE CONSTRUCTION AND ESCROW AGREEMENT PERMIT SHALL BE DEEMED A VIOLATION.

3. WATER DISTRIBUTION NOTE: ALL FIRE PROTECTION SYSTEMS WHICH ARE INSTALLED IN COMPLIANCE WITH THESE PLANS AND COUNTY OF FAIRFAX ORDINANCES SHALL BE MAINTAINED IN AN OPERATIVE CONDITION AT ALL TIMES. WHEN NECESSARY TO TEMPORARILY REDUCE OR DISCONTINUE THE PROTECTION IN ORDER TO MAKE TESTS, REPAIRS, ALTERATIONS OR ADDITIONS, NOTIFY THE FAIRFAX COUNTY PUBLIC SAFETY COMMUNICATIONS CENTER AT 703-691-2131.

4. A PERMIT MUST BE OBTAINED FROM THE OFFICE OF THE RESIDENT ENGINEER, VIRGINIA DEPARTMENT OF TRANSPORTATION, NORTHERN VIRGINIA DISTRICT, BEFORE ANY CONSTRUCTION IS STARTED ON ANY EXISTING STATE ROUTE. CONTACT THE VIRGINIA DEPARTMENT OF TRANSPORTATION THREE WORKING DAYS BEFORE EXCAVATION IN ANY STATE RIGHT OF WAY AT 703-383-2888.

5. CONTRACTORS SHALL NOTIFY THE "MISS UTILITY" NOTIFICATION CENTER AT 1-800-552-7001 FOR ANY PROPOSED EXCAVATION, DEMOLITION, OR BLASTING AT LEAST TWO WORKING DAYS PRIOR TO COMMENCEMENT OF EXCAVATION, DEMOLITION, OR BLASTING IN ACCORDANCE WITH THE VIRGINIA UNDERGROUND UTILITY DAMAGE PREVENTION ACT. IN ADDITION, NAMES AND TELEPHONE NUMBERS SHALL ALSO BE USED TO SERVE IN AN EMERGENCY CONDITION AS REQUIRED BY SECTION 63-2-2 OF THE FAIRFAX COUNTY CODE.

6. FOR SITES PROPOSING LAND DISTURBING ACTIVITIES OF ONE (1) ACRE OR MORE, THE CONSTRUCTION ACTIVITY OPERATOR MUST REGISTER WITH THE DEPARTMENT OF CONSERVATION AND RECREATION OF THE COMMONWEALTH OF VIRGINIA. THIS IS A REQUIREMENT OF THE VIRGINIA POLLUTANT DISCHARGE ELIMINATION SYSTEM (VPDES) GENERAL PERMIT FOR CONSTRUCTION ACTIVITIES.

7. THE COUNTY INSPECTOR SHALL BE NOTIFIED WHEN ANY IMPROVEMENTS PERTINENT TO HIS INSPECTION DUTIES ARE BEING INSTALLED. SPECIFIC REQUIREMENTS ARE:

A. THE COUNTY SITE INSPECTOR IS TO BE NOTIFIED AT LEAST 3 DAYS PRIOR TO START OF CONSTRUCTION.

B. A MINIMUM OF 24 HOURS NOTICE IS REQUIRED WHEN REQUESTING RESIDENTIAL OR NON-RESIDENTIAL USE PERMITS.

C. A MINIMUM OF 48 HOURS NOTICE IS REQUIRED WHEN REQUESTING TESTS PERTAINING TO SANITARY SEWER ACCEPTANCE.

ZONING REQUIREMENTS

1) ZONING: PRC (General Combination Development and Open Space)

2) AVERAGE LOT AREA: N/A (sq.ft. or sq.m)

3) MIN. LOT AREA: N/A (sq.ft. or sq.m)

4) MIN. LOT WIDTH: N/A (ft. or m)

5) MAX. BUILDING HEIGHT: N/A (ft. or m)

6) NUMBER OF FLOORS: N/A (Commercial/Industrial ONLY)

7) MIN. YARD REQUIREMENTS:

FRONT: (ft. or m) SIDE: N/A (ft. or m) REAR: N/A (ft. or m)

8) MAXIMUM FAR: N/A

9) MAXIMUM DENSITY: N/A (D.U./Ac. or D.U./ha)

10) OPEN SPACE REQUIRED: N/A % N/A (sq.ft. or sq.m)

11) ANGLE OF BULK PLANE: FRONT: N/A SIDE: N/A REAR: N/A (DETAIL(S) ON SHEET _____)

12) OVERLAY DISTRICT(S): N/A

SUBDIVISION PLAN (SD) TABULATIONS

1) SITE AREA: (Ac. or ha) (sq.ft. or sq.m)

2) NUMBER OF LOTS: (sq.ft. or sq.m)

3) AREA OF LOTS: (sq.ft. or sq.m)

4) AVERAGE LOT AREA: (sq.ft. or sq.m)

5) AREA OF PARCEL/OUTLOT: (sq.ft. or sq.m)

6) AREA OF PARCEL/OUTLOT: (sq.ft. or sq.m)

7) AREA OF PARCEL/OUTLOT: (sq.ft. or sq.m)

8) AREA OF PARCEL/OUTLOT: (sq.ft. or sq.m)

9) TOTAL AREA OF OPEN SPACE: (sq.ft. or sq.m)

10) AREA OF STREET DEDICATION: (sq.ft. or sq.m)

11) DENSITY: (D.U./Ac. or D.U./ha)

SITE PLAN (SP) TABULATIONS

1) SITE AREA: (Ac. or ha) (sq.ft. or sq.m)

2) AREA OF STREET DEDICATION: N/A (sq.ft. or sq.m)

3) USE: N/A

4) NUMBER OF LOTS: N/A

5) AREA OF LOTS: N/A (sq.ft. or sq.m)

6) DENSITY: N/A (D.U./Ac. or D.U./ha)

7) EXISTING BUILDING GROSS FLOOR AREA: N/A (sq.ft. or sq.m)

8) PROPOSED BUILDING GROSS FLOOR AREA: N/A (sq.ft. or sq.m)

9) EXISTING BUILDING NET FLOOR AREA: N/A (sq.ft. or sq.m)

10) PROPOSED BUILDING NET FLOOR AREA: N/A (sq.ft. or sq.m)

11) TOTAL FLOOR AREA RATIO (FAR) FOR ENTIRE SITE: N/A

12) PROPOSED BUILDING HEIGHT: N/A (ft. or m)

13) PROPOSED NUMBER OF FLOORS: N/A (Commercial/Industrial ONLY)

14) TOTAL HANDICAPPED PARKING REQUIRED: N/A

15) TOTAL HANDICAPPED PARKING PROVIDED: N/A

16) TOTAL HANDICAPPED VAN SPACES REQUIRED: N/A

17) TOTAL HANDICAPPED VAN SPACES PROVIDED: N/A

18) TOTAL PARKING SPACES REQUIRED: N/A

19) TOTAL PARKING SPACES PROVIDED: N/A

20) LOADING SPACES REQUIRED: N/A

21) LOADING SPACES PROVIDED: N/A

22) OPEN SPACE PROVIDED: N/A % N/A (sq.ft. or sq.m)

FIRE MARSHAL NOTES

AVAILABLE FIRE FLOW: (gal./min. or liters/min)

SOURCE OF FIRE FLOW INFO: _____

TYPE OF CONSTRUCTION - BOCA: _____

USE GROUP CLASSIFICATION - BOCA: _____

BUILDING HEIGHT: (ft. or m)

BUILDING TO BE FULLY SPRINKLERED: YES ☐ NO ☐

IF YES, CHECK APPROPRIATE STANDARD: NFPA 13 ☐ ; NFPA 10 ☐ ; NFPA 13R ☐

SEE PFM CHAPTER 8, PART 2 FOR FULL INFORMATION REQUIRED. FIRE FLOW REQUIREMENTS TO BE DETERMINED BY THE FIRE PREVENTION DIVISION.

[SEE PUBLIC WATER AGENCY NOTES ON SHEET _____]

REFUSE AND RECYCLING COLLECTION REQUIREMENTS:

CHECK ALL APPLICABLE STATEMENTS

SINGLE-FAMILY AND TOWNHOUSE DEVELOPMENTS

I CERTIFY THAT THIS DEVELOPMENT IS (CHOOSE ONE):

___ IN A SANITARY DISTRICT WHERE REFUSE AND RECYCLING IS CONDUCTED BY FAIRFAX COUNTY

___ NOT IN A SANITARY DISTRICT AND REFUSE AND RECYCLING IS CONDUCTED BY A PRIVATE COMPANY

NON-RESIDENTIAL PROPERTIES, INCLUDING BUSINESSES, SCHOOLS AND INSTITUTIONS

I CERTIFY THAT (CHOOSE ONE):

___ I HAVE SUBMITTED A WASTE & RECYCLING SYSTEM PLAN AND RECYCLING OF MIXED PAPER AND CARDBOARD IS REQUIRED

___ I HAVE SUBMITTED A WASTE & RECYCLING SYSTEM PLAN AND RECYCLING OF MIXED PAPER, CARDBOARD AND ONE OTHER PRINCIPAL RECYCLABLE MATERIAL IS REQUIRED.

MULTI-FAMILY PROPERTIES, INCLUDING CONDOMINIUMS AND APARTMENTS

___ I CERTIFY THAT I HAVE SUBMITTED A WASTE & RECYCLING PLAN AND RECYCLING OF MIXED PAPER, CARDBOARD, CANS AND BOTTLES IS REQUIRED.

DESIGNS FOR ALL MULTI-FAMILY AND NON-RESIDENTIAL BUILDINGS MUST INCLUDE AREAS FOR COLLECTION OF REFUSE AND RECYCLABLES. IN THIS DESIGN, THE DEDICATED SPACE IS LOCATED IN _____ BUILDING OR ON _____ SHEET NUMBER _____

SANITARY SEWER STATEMENT

WASTEWATER TREATMENT PLANT

☐ THIS SITE IS SUBJECT TO _____

☐ SANITARY SEWER REIMBURSEMENT CHARGES.

☐ THIS SITE IS SERVED BY ONSITE SEWAGE TREATMENT SYSTEM(S).

STORMWATER STATEMENT

HIGH DENSITY POLYETHYLENE (HDPE) USED ON THIS PROJECT: YES ☐ NO ☒

SWM FACILITIES

FACILITY ID NO.	FACILITY TYPE	PURPOSE	TREATED AREA (AC OR HA)	WATERSHED	RECEIVING WATERS	MAINTENANCE AGREEMENT Y/N	VAHUS CODE
N/A							

DISTURBED AREA (DA) WITHIN WATERSHED(S):

WATERSHED 1: Difficult Run DA= 2.9 (Ac. or ha) TOTAL DISTURBED AREA=

WATERSHED 2: DA= (Ac. or ha) 2.9 (Ac. or ha)

WATERSHED 3: DA= (Ac. or ha)

PROFESSIONAL SEAL AND SIGNATURE

PROFESSIONAL SEAL AND SIGNATURE

PROFESSIONAL SEAL AND SIGNATURE

DATE _____ DATE _____ DATE _____

DESIGNATED PLANS EXAMINER (DPE) CERTIFICATE

1ST SUBMISSION REVIEWED & RECOMMENDED FOR SUBMISSION

2ND SUBMISSION REVIEWED & RECOMMENDED FOR APPROVAL

D.P.E. SIGNATURE & PRINTED NAME: _____ DATE: _____ REG. NO.: _____

D.P.E. SIGNATURE & PRINTED NAME: _____ DATE: _____ REG. NO.: _____

VICINITY MAP SCALE: 1" = 2000'

SIDEWALK MAINTENANCE: XXXX-VDOT, 0000-FFX CO

TRAIL MAINTENANCE: 0000-FFX CO

ALL OTHER WALKS/TRAILS TO BE OWNER MAINTAINED

TAX MAP REFERENCE NUMBER(S)

MAP PAGE #	DOUBLE CIRCLE #	BLOCK (SINGLE CIRCLE #)	LOT/ PARCEL(S) #
26-1	2		1C2
26-3	3		3A
26-3	4		10
26-1	4		9

SOILS MAP DATA SCALE: 1" = 300'

SOILS MAP SOURCE: ☒ COUNTY MAP; ☐ PRIVATE SOILS SCIENTIST (FOR UNMAPPED SITES)

SOIL ID NUMBERS	SOIL SERIES NAME	FOUNDATION SUPPORT	SUBSURFACE DRAINAGE	SLOPE STABILITY	ERODABILITY	PROBLEM CLASS
1A+	MIXED ALLUVIAL	POOR-F,B,W	POOR	----	LOW	A
20B+	MEADOWVILLE	FAIR-B,W	MARGINAL-W	----	MODERATE	B
55C2	GLENELG	GOOD	GOOD	----	HIGH	C

SOILS WITH IDENTIFICATION NUMBERS 59, 66, 69, 141, 142, AND 152 MAY OVERLIE PARENT BEDROCK FORMATIONS WHICH HAVE BEEN FOUND TO CONTAIN NATURALLY OCCURRING ASBESTOS MINERALS. SPECIAL MINIMUM CONSTRUCTION MEASURES AND PRECAUTIONS ARE REQUIRED IN COMPLIANCE WITH HEALTH DEPARTMENT DIRECTIVES WITHIN THESE SOILS OR WITHIN FILL ORIGINATING FROM THESE SOILS.

ENGINEER'S/SURVEYOR'S CERTIFICATE:

THIS PROPERTY IS IN THE NAME OF Reston Homeowners Association

DEED BOOK 2853 PAGE 301 OF THE LAND RECORDS OF FAIRFAX COUNTY, VA.

OWNER INFORMATION

Reston Homeowner's Association

NAME: (703) 435-6501

1930 Isaac Newton Square, Reston, VA 20190

DEVELOPER INFORMATION

Northern Virginia Stream Restoration L.C. (c/o Wetland Studies and Solutions, Inc.)

NAME: (703) 679-5600

5300 Wellington Branch Drive, Suite 100, Gainesville, VA 20155

I HEREBY CERTIFY THAT ALL WETLANDS PERMITS REQUIRED BY LAW WILL BE OBTAINED PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES.

SIGNATURE: _____

OWNER/DEVELOPER: Michael S. Roiland Manager

DATE: _____

RECOMMEND APPROVAL (SIGNATURE & PRINTED NAME): _____

STREETLIGHT SECTION, PLANNING & DESIGN DIVISION-DPWES

PUBLIC WATER AGENCY

SANITARY SEWER REVIEW, EFRD, OSDS - DPWES

GEOTECHNICAL REVIEW, EFRD, OSDS - DPWES

STORMWATER REVIEW, EFRD, OSDS - DPWES

URBAN FORESTRY DIVISION, OSDS - DPWES

FAIRFAX COUNTY FIRE MARSHAL

FAIRFAX COUNTY HEALTH DEPARTMENT

VIRGINIA DEPARTMENT OF TRANSPORTATION

PLAN REVIEWER, ENVIRONMENTAL & FACILITIES REVIEW DIVISION, OSDS - DPWES

DIRECTOR, ENVIRONMENTAL & FACILITIES REVIEW DIVISION, OSDS - DPWES

APPROVED

DATE _____ BY _____ DIRECTOR, DEPT. OF PUBLIC WORKS AND ENVIRONMENTAL SERVICES

THIS PLAN SHALL EXPIRE WITHOUT NOTICE IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE COUNTY CODE. REVISIONS DO NOT EXTEND THE APPROVAL PERIOD. THE APPROVAL PERIOD IS INDEPENDENT OF THE AGREEMENT EXPIRATION DATE.

THIS APPROVAL IS NOT A COMMITMENT TO PROVIDE PUBLIC SANITARY SEWER

CERTIFICATE OF NO CHANGE

(FOR SUBMISSION OTHER THAN THE FIRST)

I HEREBY CERTIFY THAT NO CHANGES HAVE BEEN MADE THAT WOULD AFFECT THE PRIOR APPROVAL BY THE

FIRE MARSHAL DATED _____

WATER AUTHORITY DATED _____

HEALTH DEPARTMENT DATED _____

VDOT DATED _____

DPWES-WPMD (SAN. SEW.) DATED _____

DPWES-STREETLIGHTS DATED _____

SHEET INDEX

FOR INFORMATION ONLY

NO AS-BUILT DATA ON THIS SHEET

NO SURVEY MONITORING DATA ON THIS SHEET

SHEET 1 OF 23

REVISED: 1/10/07

DESIGN ENGINEER / SURVEYOR

FIRM NAME: Wetland Studies and Solutions, Inc.

ADDRESS: 5300 Wellington Branch Drive, Suite 100 Gainesville, VA 20155

PHONE NO: (703) 679-5600 FAX NO: (703) 679-5601

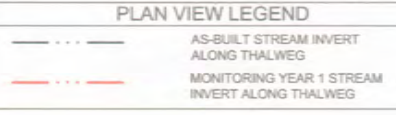
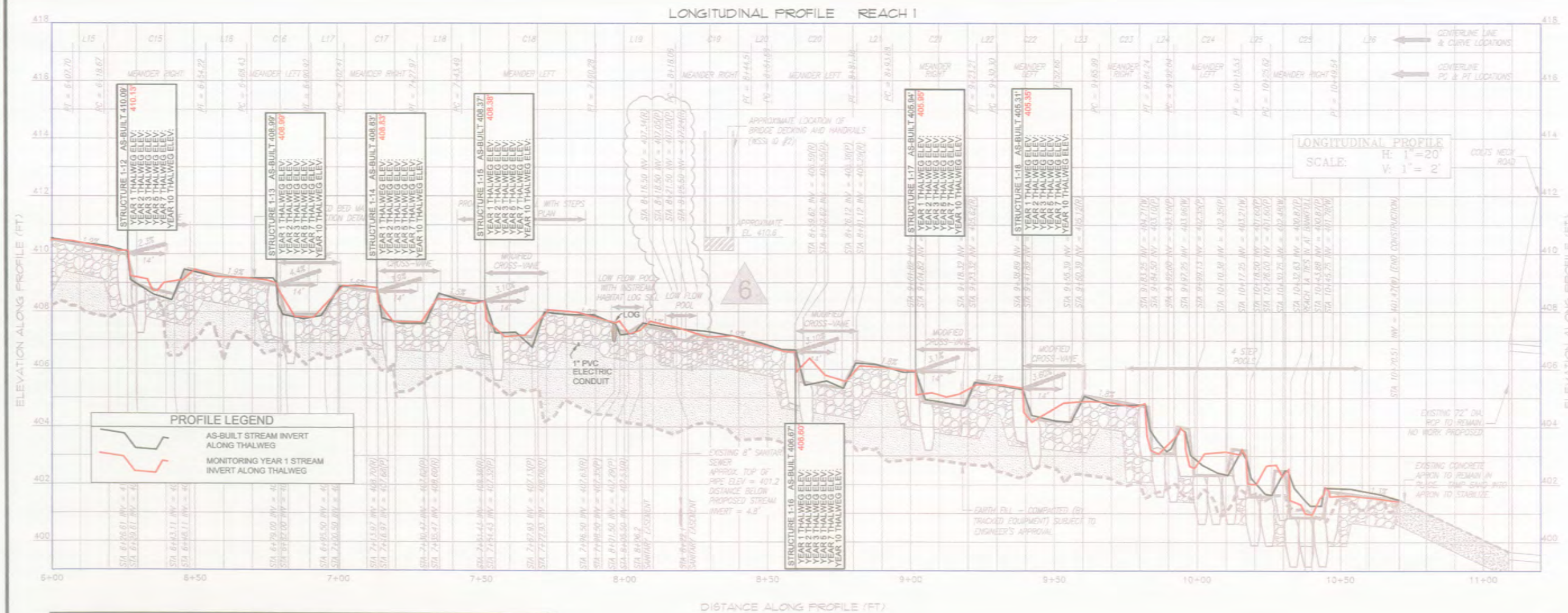
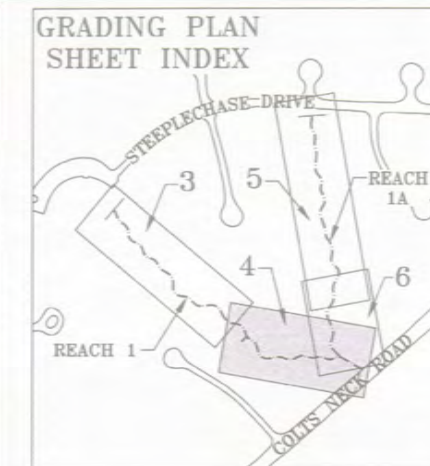
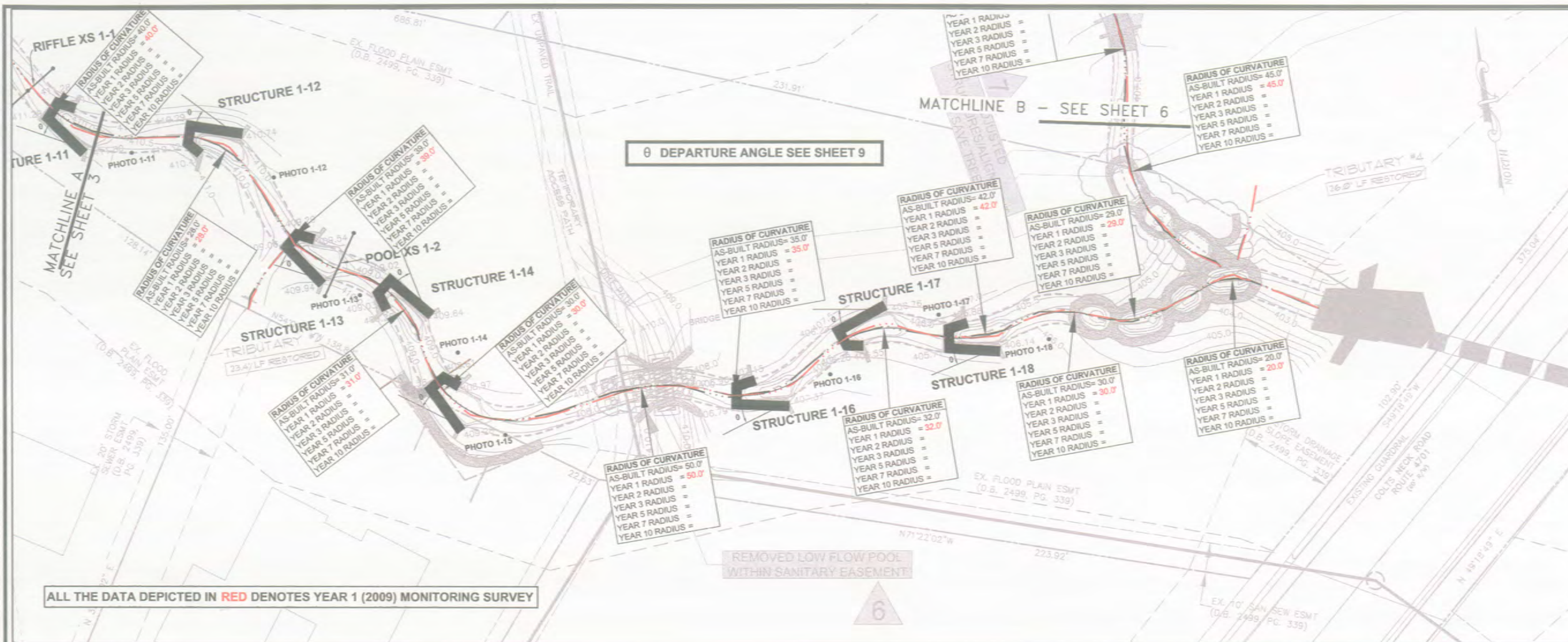
PROJ. MANAGER: Frank R. Graziano EMAIL: fgraziano@wetlandstudies.com

Northern Virginia Stream Restoration Bank

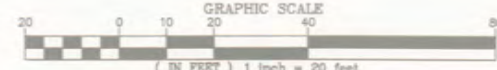
The Glade - Reaches 1 & 1A

COUNTY NUMBER 0000-XX-00-

SITE REVIEW ENGINEER



STATIONS AND ELEVATIONS OF THE AS-BUILT AND MONITORING ALIGNMENTS ARE RE-PROJECTED TO THE DESIGN ALIGNMENT FOR COMPARISON PURPOSES ONLY.



Wetland
Restoration and Solutions, Inc.

5300 Wellington Branch Drive, Suite 100 • Gainesville, VA 20155
Phone 703 679 5600 • Fax 703 679 5601
wetlandrestoration.com

Northern Virginia Stream Restoration Bank
The Glade - Reaches 1 & 1A
Fairfax County, Virginia

Survey Monitoring Year 1
Grading Plan and Longitudinal Profile

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REVISIONS

No.	Date	Description	App. By	Rev. By
1	9/10/09	RECEIVED LOW FLOW POOL OFFER MAIL SERVER	ALS	FRG
2	9/10/09	ADD STRUCTURES ALIGNMENT TO SAVE TREES	ALS	FRG

Horizontal Datum: VCS NAD 83
Vertical Datum: NGVD 29
Boundary and Topo Source: WSSI and Fairfax Digital Data

Design: CJL
Draft: CJL
Approved: RPH

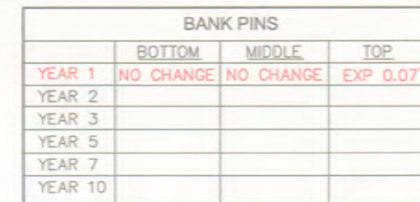
Sheet #
4 of 15

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1: Grading Plan and Longitudinal Profile, 10/14/09

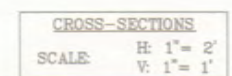
DATE: September 2009
SCALE: 1" = 20'

Wetland
Sustainable Landscapes®

5360 Wellington Branch Drive, Suite 100 • Gainesville, VA 20155
Phone 703 679 5600 • Fax 703 679 5601
wetlandlandscapes.com



YEAR 1 TOE PIN NO CHANGE
YEAR 2
YEAR 3
YEAR 5
YEAR 7
YEAR 10



Northern Virginia Stream Restoration Bank
The Glade - Reaches 1 & 1A
Fairfax County, Virginia

Survey Monitoring Year 1 Cross Sections

[illegible]

Horizontal Datum: VCS NAD 83

Vertical Datum: NGVD 29

Boundary and Topo Source:
WSSI and Fairfax Digital Data

Design	Draft	Approved
CJL	CJL	RPH

Sheet #
7 of 15

Computer File Name:
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075.E.Gest (Yr)Labg

Wetland
Specialties and Rehabilitation, Inc.

3300 Wellington Branch Drive, Suite 100 • Gainesville, VA 20135
Phone 703 679 5600 • Fax 703 679 5601
wetlandstudios.com

Fairfax County, Virginia

Survey Monitoring Year I Cross Sections

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[illegible]

Horizontal Datum:	VCS NAD 83
Vertical Datum:	NGVD 29
Boundary and Topo Source:	WSSI and Fairfax Digital Data

Design	Draft	Approval
CJL	CJL	RPH

Sheet #
8 of 15

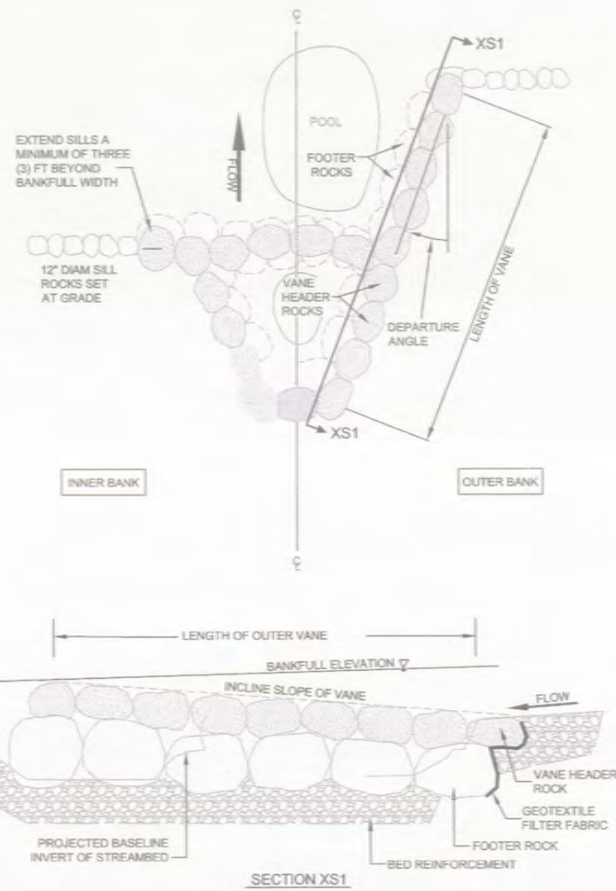
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BANK PINS			
	BOTTOM	MIDDLE	TOP
YEAR 1	NO CHANGE	NO CHANGE	NO CHANGE
YEAR 2			
YEAR 3			
YEAR 5			
YEAR 7			
YEAR 10			

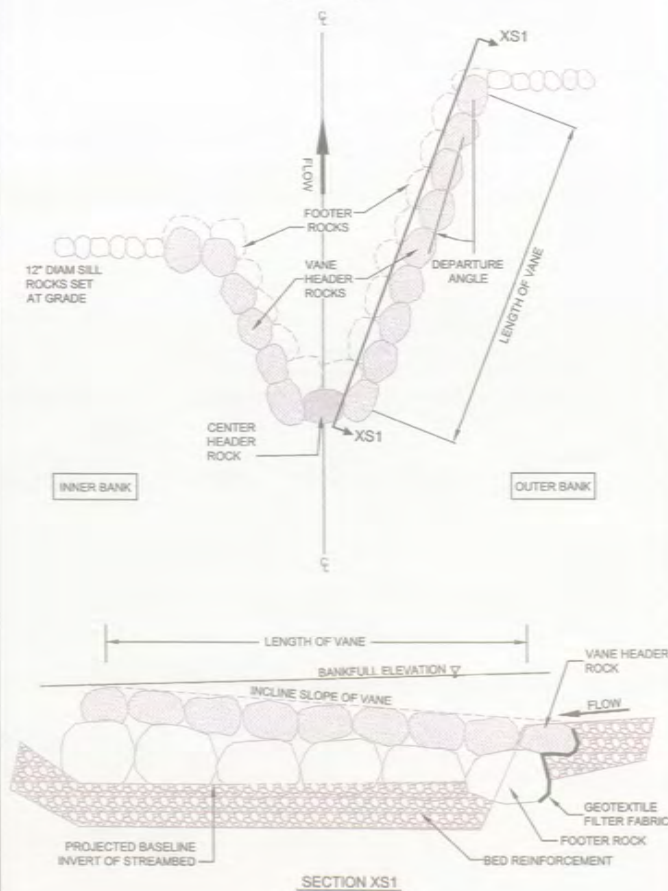
YEAR 1 TOE PIN NO CHANGE
YEAR 2
YEAR 3
YEAR 5
YEAR 7
YEAR 10

CROSS-SECTIONS
SCALE: H: 1" = 2'
V: 1" = 1'

2-STEP MODIFIED CROSS VANE (NTS)



MODIFIED CROSS VANE (NTS)



STRUCTURE DATA

ID Number	Station	Type	Monitoring Year	Vane Arm		
				Length (ft)	Departure Angle (ft) (Deg Deg/Min) *	Slope (%)
1-1	0+55.73	Modified Cross-Vane	As-Built	17.27	29 (25° 46')	4.5
			1	17.27	28° 41'	4.7
			2			
			3			
			5			
			7			
			10			
			As-Built	17.29	25 (24° 59')	4.4
			1	17.24	24° 48'	4.7
			2			
1-2	1+04.35	Modified Cross-Vane	As-Built	14.85	28 (25° 16')	5.5
			1	14.83	28° 09'	5.8
			2			
			3			
			5			
			7			
			10			
			As-Built	9.03	16 (15° 56')	4.0
			1	9.04	15° 52'	3.9
			2			
1-3	1+53.52	Modified Cross-Vane	As-Built	17.13	28 (28° 18')	3.7
			1	17.11	28° 18'	3.7
			2			
			3			
			5			
			7			
			10			
			As-Built	15.00	25 (24° 41')	4.0
			1	15.03	24° 37'	3.9
			2			
1-4	1+89.67	Modified Cross-Vane	As-Built	16.63	28 (27° 48')	4.0
			1	16.62	27° 48'	4.0
			2			
			3			
			5			
			7			
			10			
			As-Built	16.63	29 (28° 38')	3.1
			1	16.64	28° 39'	3.1
			2			
1-5	2+29.16	Modified Cross-Vane	As-Built	15.97	27 (26° 38')	3.3
			1	15.98	26° 44'	3.3
			2			
			3			
			5			
			7			
			10			
			As-Built	15.98	27 (27° 13')	2.5
			1	16.01	27° 10'	2.5
			2			
1-6	2+99.36	Modified Cross-Vane	As-Built	15.50	26 (25° 39')	3.3
			1	15.48	25° 42'	3.2
			2			
			3			
			5			
			7			
			10			
			As-Built	15.50	26 (25° 39')	3.3
			1	15.48	25° 42'	3.2
			2			
1-7	3+54.39	Modified Cross-Vane	As-Built	15.50	26 (25° 39')	3.3
			1	15.48	25° 42'	3.2
			2			
			3			
			5			
			7			
			10			
			As-Built	15.50	26 (25° 39')	3.3
			1	15.48	25° 42'	3.2
			2			
1-8	4+08.84	Modified Cross-Vane	As-Built	15.50	26 (25° 39')	3.3
			1	15.48	25° 42'	3.2
			2			
			3			
			5			
			7			
			10			
			As-Built	15.50	26 (25° 39')	3.3
			1	15.48	25° 42'	3.2
			2			
1-9	4+52.39	Modified Cross-Vane	As-Built	15.50	26 (25° 39')	3.3
			1	15.48	25° 42'	3.2
			2			
			3			
			5			
			7			
			10			
			As-Built	15.50	26 (25° 39')	3.3
			1	15.48	25° 42'	3.2
			2			
1-10	4+99.52	Modified Cross-Vane	As-Built	15.50	26 (25° 39')	3.3
			1	15.48	25° 42'	3.2
			2			
			3			
			5			
			7			
			10			
			As-Built	15.50	26 (25° 39')	3.3
			1	15.48	25° 42'	3.2
			2			
1-11	5+78.12	Modified Cross-Vane	As-Built	15.50	26 (25° 39')	3.3
			1	15.48	25° 42'	3.2
			2			
			3			
			5			
			7			
			10			
			As-Built	15.50	26 (25° 39')	3.3
			1	15.48	25° 42'	3.2
			2			

ID Number	Station	Type	Monitoring Year	Vane Arm		
				Length (ft)	Departure Angle (ft) (Deg Deg/Min) *	Slope (%)
1-12	6+25.61	Modified Cross-Vane	As-Built	15.10	28 (27° 32')	2.8
			1	16.12	27° 33'	2.9
			2			
			3			
			5			
			7			
			10			
1-13	6+79.00	Modified Cross-Vane	As-Built	15.80	29 (28° 54')	5.5
			1	15.80	28° 53'	5.6
			2			
			3			
			5			
			7			
			10			
1-14	7+13.97	Modified Cross-Vane	As-Built	16.75	28 (27° 53')	3.7
			1	16.75	27° 52'	3.7
			2			
			3			
			5			
			7			
			10			
1-15	7+51.43	Modified Cross-Vane	As-Built	16.06	28 (27° 34')	4.5
			1	16.06	27° 33'	4.4
			2			
			3			
			5			
			7			
			10			
1-16	8+59.62	Modified Cross-Vane	As-Built	16.37	28 (28° 29')	3.5
			1	16.34	28° 24'	3.6
			2			
			3			
			5			
			7			
			10			
1-17	9+01.82	Modified Cross-Vane	As-Built	16.37	29 (28° 38')	3.0
			1	16.36	28° 41'	3.0
			2			
			3			
			5			
			7			
			10			
1-18	9+38.89	Modified Cross-Vane	As-Built	15.60	26 (25° 49')	4.3 (2.8)
			1	15.61	25° 48'	2.8
			2			
			3			
			5			
			7			
			10			
1A-1	1+94.00	2-Step Cross-Vane	As-Built	13.01	22 (22° 06')	2.9
			1	13.00	22° 16'	3.0
			2			
			3			
			5			
			7			
			10			
1A-2	5+58.59	Modified Cross-Vane	As-Built	13.67	26 (26° 18')	3.5
			1	13.60	26° 29'	3.6
			2			
			3			
			5			
			7			
			10			
1A-3	7+01.52	Modified Cross-Vane	As-Built	11.15	23 (23° 26')	6.1
			1	11.16	23° 26'	6.1
			2			
			3			
			5			
			7			
			10			
1A-4	7+29.96	Modified Cross-Vane	As-Built	11.09	23 (23° 12')	4.6
			1	11.08	23° 13'	4.4
			2			
			3			
			5			
			7			
			10			

* SINUOSITY WAS ORIGINALLY GIVEN TO ONE DECIMAL PLACE IN AS-BUILT DRAWINGS. IN ORDER TO PROVIDE A MORE PRECISE COMPARISON, THE SINUOSITY AS-BUILT VALUE WAS REVISED TO SHOW ACCURACY TO FOUR DECIMALS.

ALL THE DATA DEPICTED IN RED DENOTES YEAR 1 (2009) MONITORING SURVEY

 <p style="text-align: center;"> Wetland <small>Studies and Solutions, Inc.</small> </p> <p style="text-align: center;"> 5300 Wellington Branch Drive, Suite 100 • Gainesville, VA 20155 Phone 703 679 5600 • Fax 703 679 5601 wetlandstudios.com </p>					
<p>Northern Virginia Stream Restoration Bank</p> <p>The Glade - Reaches 1 & 1A</p> <p>Fairfax County, Virginia</p>			<p>Survey Monitoring Year 1</p> <p>Summary of Dimension, Pattern, & Profile</p> <p>Copyright © 2009 Wetland Studies and Solutions, Inc.</p>		
					
REVISIONS		SCALE: N/A			
No.	Description	Rev. By	App. By		
Horizontal Datum: VCS NAD 83		DATE: September 2009			
Vertical Datum: NGVD 29					
Boundary and Topo Source: WSSI and Fairfax Digital Data					
Design	Draft	Approved			
CJL	CJL	RPH			
Sheet #					
10 of 15					
Computer File Name:					

ROCK STRUCTURE 1-1				
YEAR	POINT #	NORTHING	EASTING	ELEV
AS-BUILT	1	7024009.02	11805107.07	418.90
YEAR 1	1	7024009.06	11805107.13	418.95
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	2	7024020.68	11805094.32	418.10
YEAR 1	2	7024020.73	11805094.40	418.14
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3	7024019.11	11805092.83	417.93
YEAR 1	3	7024019.18	11805092.86	417.95
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	4	7024017.79	11805091.25	418.09
YEAR 1	4	7024017.86	11805091.30	418.12
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	5	7024012.87	11805093.90	418.43
YEAR 1	5	7024012.94	11805093.94	418.46
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				

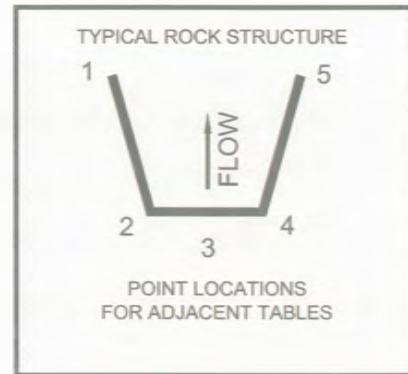
ROCK STRUCTURE 1-2				
YEAR	POINT #	NORTHING	EASTING	ELEV
AS-BUILT	1	7023981.81	11805107.56	418.11
YEAR 1	1	7023981.87	11805107.59	418.14
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	2	7023983.65	11805105.53	417.85
YEAR 1	2	7023983.71	11805105.56	417.88
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3	7023983.61	11805103.74	417.66
YEAR 1	3	7023983.62	11805103.75	417.66
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	4	7023983.06	11805101.62	417.80
YEAR 1	4	7023983.06	11805101.64	417.80
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	5	7023986.66	11805107.08	418.56
YEAR 1	5	7023986.72	11805107.15	418.61
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				

ROCK STRUCTURE 1-3				
YEAR	POINT #	NORTHING	EASTING	ELEV
AS-BUILT	1	7023946.93	11805153.94	418.12
YEAR 1	1	7023946.96	11805153.96	418.16
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	2	7023956.03	11805141.50	417.30
YEAR 1	2	7023956.09	11805141.54	417.33
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3	7023953.76	11805140.26	417.10
YEAR 1	3	7023953.82	11805140.28	417.13
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	4	7023951.73	11805139.15	417.36
YEAR 1	4	7023951.75	11805139.17	417.38
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	5	7023946.41	11805142.31	417.57
YEAR 1	5	7023946.46	11805142.34	417.60
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				

ROCK STRUCTURE 1-4				
YEAR	POINT #	NORTHING	EASTING	ELEV
AS-BUILT	1	7023920.68	11805162.85	417.32
YEAR 1	1	7023920.74	11805162.87	417.37
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	2	7023923.71	11805158.79	417.14
YEAR 1	2	7023923.76	11805158.80	417.20
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3	7023923.03	11805157.34	416.84
YEAR 1	3	7023923.10	11805157.38	416.90
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	4	7023922.29	11805155.83	417.12
YEAR 1	4	7023922.36	11805155.83	417.18
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	5	7023914.43	11805160.28	417.48
YEAR 1	5	7023914.49	11805160.29	417.53
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				

ROCK STRUCTURE 1-5				
YEAR	POINT #	NORTHING	EASTING	ELEV
AS-BUILT	1	7023894.83	11805205.38	417.22
YEAR 1	1	7023894.89	11805205.39	417.24
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	2	7023904.09	11805190.97	416.58
YEAR 1	2	7023904.11	11805190.98	416.60
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3	7023902.58	11805190.21	416.50
YEAR 1	3	7023902.64	11805190.19	416.52
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	4	7023900.98	11805189.43	416.57
YEAR 1	4	7023901.00	11805189.43	416.60
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	5	7023897.33	11805190.90	416.60
YEAR 1	5	7023897.36	11805190.94	416.62
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				

ROCK STRUCTURE 1-6				
YEAR	POINT #	NORTHING	EASTING	ELEV
AS-BUILT	1	7023848.59	11805253.80	416.10
YEAR 1	1	7023848.59	11805253.84	416.08
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	2	7023857.07	11805241.42	415.50
YEAR 1	2	7023857.10	11805241.45	415.49
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3	7023855.77	11805240.32	415.25
YEAR 1	3	7023855.82	11805240.32	415.28
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	4	7023854.08	11805239.23	415.42
YEAR 1	4	7023854.09	11805239.22	415.45
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	5	7023848.45	11805242.72	415.62
YEAR 1	5	7023848.47	11805242.74	415.63
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				



NOTES:

1. ALL ROCK STRUCTURE POINTS ARE ENGRAVED.

ALL THE DATA DEPICTED IN RED DENOTES YEAR 1 (2009) MONITORING SURVEY

ROCK STRUCTURE 1-7				
YEAR	POINT #	NORTHING	EASTING	ELEV
AS-BUILT	1	7023799.86	11805260.13	415.01
YEAR 1	1	7023799.86	11805260.14	415.03
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	2	7023805.54	11805256.46	414.68
YEAR 1	2	7023805.53	11805256.47	414.70
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3	7023804.87	11805254.45	414.47
YEAR 1	3	7023804.85	11805254.47	414.48
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	4	7023804.19	11805253.02	414.67
YEAR 1	4	7023804.18	11805253.01	414.66
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	5	7023787.97	11805256.67	415.33
YEAR 1	5	7023787.94	11805256.68	415.34
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				

ROCK STRUCTURE 1-8				
YEAR	POINT #	NORTHING	EASTING	ELEV
AS-BUILT	1	7023777.76	11805314.33	414.64
YEAR 1	1	7023777.76	11805314.35	414.65
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	2	7023781.59	11805298.14	414.12
YEAR 1	2	7023781.59	11805298.16	414.13
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3	7023779.75	11805297.41	413.83
YEAR 1	3	7023779.75	11805297.41	413.84
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	4	7023777.96	11805296.86	414.08
YEAR 1	4	7023777.97	11805296.87	414.09
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	5	7023774.93	11805301.03	414.25
YEAR 1	5	7023774.93	11805301.05	414.26
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				

ROCK STRUCTURE 1-13				
YEAR	POINT #	NORTHING	EASTING	ELEV
AS-BUILT	1	7023643.96	11805509.03	409.54
YEAR 1	1	7023644.01	11805509.04	409.54
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	2	7023646.11	11805504.79	409.29
YEAR 1	2	7023646.11	11805504.78	409.29
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3	7023645.06	11805503.13	409.00
YEAR 1	3	7023645.06	11805503.13	408.99
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	4	7023643.96	11805502.28	409.06
YEAR 1	4	7023643.96	11805502.27	409.06
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	5	7023630.85	11805511.11	409.94
YEAR 1	5	7023630.84	11805511.10	409.94
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				

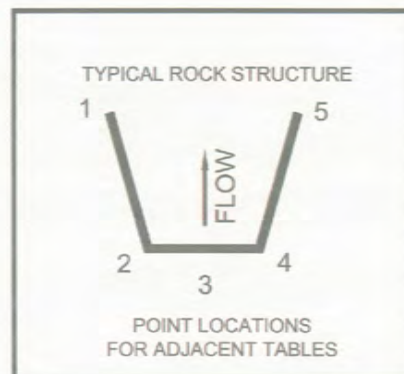
ROCK STRUCTURE 1-14				
YEAR	POINT #	NORTHING	EASTING	ELEV
AS-BUILT	1	7023612.20	11805543.44	408.64
YEAR 1	1	7023612.20	11805543.43	408.65
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	2	7023625.06	11805532.72	409.02
YEAR 1	2	7023625.07	11805532.71	409.03
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3	7023624.34	11805531.29	408.82
YEAR 1	3	7023624.35	11805531.28	408.83
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	4	7023622.96	11805529.90	409.03
YEAR 1	4	7023622.97	11805529.89	409.03
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	5	7023618.12	11805531.30	409.26
YEAR 1	5	7023618.12	11805531.29	409.26
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				

ROCK STRUCTURE 1-15				
YEAR	POINT #	NORTHING	EASTING	ELEV
AS-BUILT	1	7023585.59	11805548.60	408.97
YEAR 1	1	7023585.61	11805548.59	408.96
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	2	7023589.65	11805544.94	408.61
YEAR 1	2	7023589.68	11805544.92	408.59
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3	7023588.90	11805543.56	408.40
YEAR 1	3	7023588.94	11805543.54	408.38
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	4	7023587.96	11805541.99	408.56
YEAR 1	4	7023587.91	11805541.97	408.55
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	5	7023573.42	11805549.00	409.28
YEAR 1	5	7023573.44	11805548.99	409.25
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				

ROCK STRUCTURE 1-16				
YEAR	POINT #	NORTHING	EASTING	ELEV
AS-BUILT	1	7023570.82	11805546.13	407.15
YEAR 1	1	7023570.82	11805546.18	407.15
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	2	7023570.04	11805543.75	406.96
YEAR 1	2	7023570.06	11805543.75	406.96
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3	7023568.11	11805543.39	406.56
YEAR 1	3	7023568.11	11805543.39	406.56
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	4	7023566.53	11805543.12	406.79
YEAR 1	4	7023566.51	11805543.15	406.75
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	5	7023563.11	11805559.14	407.37
YEAR 1	5	7023563.13	11805559.13	407.36
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				

ROCK STRUCTURE 1-17				
YEAR	POINT #	NORTHING	EASTING	ELEV
AS-BUILT	1	7023588.23	11805587.28	406.76
YEAR 1	1	7023588.25	11805587.28	406.76
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	2	7023583.01	11805581.76	406.27
YEAR 1	2	7023583.01	11805581.76	406.27
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3	7023581.44	11805582.33	405.93
YEAR 1	3	7023581.45	11805582.34	405.93
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	4	7023579.82	11805582.91	406.28
YEAR 1	4	7023579.82	11805582.96	406.28
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	5	7023578.95	11805587.39	406.55
YEAR 1	5	7023578.94	11805587.41	406.56
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				

ROCK STRUCTURE 1-18				
YEAR	POINT #	NORTHING	EASTING	ELEV
AS-BUILT	1	7023577.48	11805723.57	405.88
YEAR 1	1	7023577.48	11805723.58	405.88
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	2	7023576.75	11805718.28	405.57
YEAR 1	2	7023576.74	11805718.29	405.55
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3	7023574.71	11805718.06	405.31
YEAR 1	3	7023574.71	11805718.10	405.31
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	4	7023572.67	11805717.70	405.71
YEAR 1	4	7023572.65	11805717.71	405.70
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	5	7023569.12	11805732.89	405.14
YEAR 1	5	7023569.11	11805732.90	405.13
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				



NOTES:

1. ALL ROCK STRUCTURE POINTS ARE ENGRAVED.

ROCK STRUCTURE 1A-1				
YEAR	POINT #	NORTHING	EASTING	ELEV
AS-BUILT	1	7024203.90	11805738.29	419.41
YEAR 1	1	7024203.57	11805738.32	419.43
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	2	7024209.84	11805734.46	419.17
YEAR 1	2	7024209.81	11805734.46	419.19
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3	7024209.84	11805733.31	419.10
YEAR 1	3	7024209.81	11805733.33	419.13
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	4	7024209.73	11805732.14	419.18
YEAR 1	4	7024209.71	11805732.17	419.18
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	5	7024196.76	11805733.17	419.54
YEAR 1	5	7024196.74	11805733.17	419.57
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				

ROCK STRUCTURE 1A-2				
YEAR	POINT #	NORTHING	EASTING	ELEV
AS-BUILT	1	7023962.93	11805815.40	412.80
YEAR 1	1	7023962.91	11805815.40	412.81
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	2	7023974.95	11805808.47	412.12
YEAR 1	2	7023974.84	11805808.47	412.11
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3	7023974.28	11805807.02	411.90
YEAR 1	3	7023974.25	11805807.03	411.90
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	4	7023973.61	11805805.89	412.10
YEAR 1	4	7023973.55	11805805.88	412.10
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	5	7023968.09	11805806.44	412.46
YEAR 1	5	7023968.08	11805806.45	412.46
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				

ROCK STEP & STEP POOLS 1				
YEAR	STATION	NORTHING	EASTING	ELEV
AS-BUILT	0+06.75	7024068.27	11805058.11	418.38
YEAR 1	0+06.75	7024068.28	11805058.10	418.35
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	0+19.75	7024052.84	11805063.57	418.65
YEAR 1	0+19.75	7024052.83	11805063.58	418.65
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	0+29.75	7024041.29	11805067.91	418.52
YEAR 1	0+29.75	7024041.32	11805067.93	418.50
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	9+83.25	7023576.23	11805759.96	404.80
YEAR 1	9+83.25	7023576.24	11805759.94	404.80
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	9+97.25	7023571.92	11805771.84	403.94
YEAR 1	9+97.25	7023571.93	11805771.85	403.95
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	10+17.25	7023572.28	11805791.67	403.16
YEAR 1	10+17.25	7023572.30	11805791.67	403.17
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	10+30.75	7023577.58	11805806.22	402.59
YEAR 1	10+30.75	7023577.57	11805806.23	402.58
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	10+45.75	7023577.49	11805819.81	401.93
YEAR 1	10+45.75	7023577.51	11805819.82	401.94
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				

ROCK STEP & STEP POOLS 1A				
YEAR	STATION	NORTHING	EASTING	ELEV
AS-BUILT	0+14.09	7024386.96	11805719.94	421.11
YEAR 1	0+14.09	7024386.94	11805719.94	421.10
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	0+22.59	7024377.41	11805717.82	421.29
YEAR 1	0+22.59	7024377.41	11805717.83	421.29
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	0+45.47	7024354.55	11805717.41	421.23
YEAR 1	0+45.47	7024354.56	11805717.42	421.22
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	0+51.47	7024349.84	11805719.03	421.14
YEAR 1	0+51.47	7024349.83	11805719.04	421.13
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	0+77.51	7024324.98	11805730.06	420.90
YEAR 1	0+77.51	7024325.00	11805730.05	420.88
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	0+87.51	7024315.68	11805733.52	420.91
YEAR 1	0+87.51	7024315.71	11805733.49	420.90
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	0+93.51	7024310.34	11805732.74	420.91
YEAR 1	0+93.51	7024310.39	11805732.72	420.89
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	1+18.00	7024284.21	11805730.10	420.46
YEAR 1	1+18.00	7024284.26	11805730.10	420.46
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	1+24.00	7024279.13	11805731.48	420.45
YEAR 1	1+24.00	7024279.11	11805731.51	420.48
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	1+50.00	7024253.11	11805734.89	420.10
YEAR 1	1+50.00	7024253.11	11805734.92	420.12
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	1+56.00	7024247.45	11805735.08	419.65
YEAR 1	1+56.00	7024247.46	11805735.08	419.68
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	2+01.00	7024202.57	11805735.07	418.85
YEAR 1	2+01.00	7024202.58	11805735.08	418.88
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				

ROCK STEP & STEP POOLS 1A				
YEAR	STATION	NORTHING	EASTING	ELEV
AS-BUILT	2+34.39	7024174.98	11805751.35	418.40
YEAR 1	2+34.39	7024174.97	11805751.33	418.43
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	2+40.39	7024170.80	11805751.87	418.21
YEAR 1	2+40.39	7024170.79	11805751.88	418.25
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	2+63.05	7024146.93	11805749.00	417.98
YEAR 1	2+63.05	7024146.97	11805748.99	418.01
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	2+71.05	7024140.11	11805749.05	417.63
YEAR 1	2+71.05	7024140.12	11805749.05	417.65
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3+00.00	7024113.42	11805761.76	417.17
YEAR 1	3+00.00	7024113.45	11805761.76	417.20
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3+10.00	7024105.77	11805758.99	417.03
YEAR 1	3+10.00	7024105.83	11805759.00	417.12
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3+44.77	7024070.61	11805751.43	416.50
YEAR 1	3+44.77	7024070.60	11805751.44	416.50
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3+52.77	7024065.15	11805751.80	416.14
YEAR 1	3+52.77	7024065.14	11805751.80	416.14
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3+58.77	7024058.93	11805751.77	415.67
YEAR 1	3+58.77	7024058.90	11805751.77	415.68
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3+68.77	7024049.96	11805751.97	415.45
YEAR 1	3+68.77	7024049.94	11805751.98	415.46
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	3+96.90	7024019.58	11805760.73	414.53
YEAR 1	3+96.90	7024019.57	11805760.75	414.54
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	4+05.10	7024013.46	11805762.64	414.57
YEAR 1	4+05.10	7024013.46	11805762.65	414.57
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				

ROCK STEP & STEP POOLS 1A				
YEAR	STATION	NORTHING	EASTING	ELEV
AS-BUILT	4+32.87	7023966.43	11805767.10	414.15
YEAR 1	4+32.87	7023966.45	11805767.12	414.16
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	4+38.87	7023962.39	11805769.02	413.89
YEAR 1	4+38.87	7023962.41	11805769.02	413.90
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	4+82.37	7023943.71	11805788.05	413.05
YEAR 1	4+82.37	7023943.64	11805788.10	413.07
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	4+90.37	7023936.85	11805788.45	412.90
YEAR 1	4+90.37	7023936.78	11805788.50	412.92
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	5+17.93	7023906.23	11805784.84	412.44
YEAR 1	5+17.93	7023906.18	11805784.87	412.47
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	5+23.93	7023899.99	11805786.23	412.51
YEAR 1	5+23.93	7023899.91	11805786.25	412.54
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	5+86.40	7023848.69	11805808.81	411.46
YEAR 1	5+86.40	7023848.69	11805808.80	411.48
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	5+92.40	7023843.83	11805805.96	411.32
YEAR 1	5+92.40	7023843.84	11805805.96	411.33
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	6+13.85	7023822.65	11805795.11	411.00
YEAR 1	6+13.85	7023822.62	11805795.11	411.00
YEAR 2				
YEAR 3				
YEAR 5				
YEAR 7				
YEAR 10				
AS-BUILT	6+21.85	7023816.84	11805794.63	4

ALL THE DATA DEPICTED IN RED DENOTES YEAR 1 (2009) MONITORING SURVEY



Structure 1-1



Structure 1-2



Structure 1-3



Structure 1-4



Structure 1-5



Structure 1-6



Structure 1-7



Structure 1-8



Structure 1-9



Structure 1-10



Structure 1-11

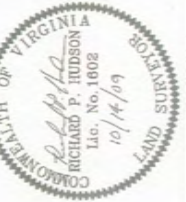


Structure 1-12

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Northern Virginia Stream Restoration Bank
The Glade - Reaches 1 & 1A
Fairfax County, Virginia

Survey Monitoring Year 1 Photos
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REVISIONS			
No.	Date	Description	App. By

Horizontal Datum: VCS NAD 83
Vertical Datum: NGVD 29
Boundary and Topo Source: WSSI and Fairfax Digital Data

Design: CJL
Draft: CJL
Approved: RPH

Sheet #
14 of 15

Computer File Name:
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(1/2) See Note on Water Photo 1/1/09

ALL THE DATA DEPICTED IN RED DENOTES YEAR 1 (2009) MONITORING SURVEY



Structure 1-13



Structure 1-14



Structure 1-15



Structure 1-16



Structure 1-17



Structure 1-18



Structure 1A-1



Structure 1A-2



Structure 1A-3



Structure 1A-4

Northern Virginia Stream Restoration Bank
The Glade - Reaches 1 & 1A

Fairfax County, Virginia

Survey Monitoring Year 1 Photos

[illegible]

Horizontal Datum:	VCS NAD 83
Vertical Datum:	NGVD 29
Boundary and Topo Source:	WSSI and Fairfax Digital Data

Design	Draft	Approval
CJL	CJL	RPH

Sheet #
15 of 15

Computer File Name:

From: Rayfield,Bettina [Bettina.Rayfield@deq.virginia.gov]
Sent: Friday, August 28, 2009 11:46 AM
To: Carol Novak
Cc: ron.h.stouffer@usace.army.mil; Larry Butler; Mark Headly; Amy Tobias; Mike Rolband
Subject: RE: Correspondence from Mike Rolband
Thank you for this monitoring plan. DEQ accepts this monitoring plan as satisfying the conditions of our 401 certification of the NW27 permit.

Cheers,

Bettina

From: Carol Novak [mailto:cnovak@wetlandstudies.com]
Sent: Wednesday, August 26, 2009 5:05 PM
To: Rayfield,Bettina
Cc: ron.h.stouffer@usace.army.mil; Larry Butler; Mark Headly; Amy Tobias; Rolband,Michael
Subject: RE: Correspondence from Mike Rolband

[Attached are Sheets 7-10.](#)

<<2009-08-26_DEQ_BettinaRayfield_ProposedPFOMonitoring_GladeImpactPlanSheets7_10.pdf>>

From: Carol Novak
Sent: Wednesday, August 26, 2009 5:03 PM
To: 'Rayfield,Bettina'
Cc: 'ron.h.stouffer@usace.army.mil'; 'Larry Butler'; Mark Headly; Amy Tobias; Mike Rolband
Subject: Correspondence from Mike Rolband

Ms. Rayfield - Good Afternoon! The attached correspondence, "Monitoring Plan for Temporary Wetlands Impacts," is from Mike Rolband. Please note that Plan Sheets 1-6 referenced on page 2 of the correspondence (bullet #4) are included with the attached correspondence! Sheets 7-10 will be sent in an additional e-mail!

<< File: 2009-08-26_DEQ_BettinaRayfield_ProposedPFOMonitoring.pdf >>

Carol Novak
Executive Assistant/Communications Coordinator
Wetland Studies and Solutions, Inc.
5300 Wellington Branch Drive, Suite 100
Gainesville, VA 20155
Telephone: 703.679.5607

Fax: 703.679.5601
Email: cnovak@wetlandstudies.com
Web Site: www.wetlandstudies.com



Via E-mail: bcrayfield@deq.virginia.gov

August 26, 2009

Ms. Bettina Rayfield
Environmental Specialist
Commonwealth of Virginia
Virginia Department of
Environmental Quality
P.O. Box 1105
Richmond, VA 23218

RE: Monitoring Plan for Temporary Wetlands Impacts
The Glade – Reaches 1 and 1A (DEQ No. 08-1919) – WSSI #20031
The Glade – Reach 2 (DEQ No. 08-2055) – WSSI #20032
The Glade – Reach 3 (DEQ No. 08-1920) – WSSI #20033
The Glade – Reaches 4A and 4B (DEQ No. 09-1457) – WSSI #20034A / #20034B
Fairfax County, Virginia

Dear Ms. Rayfield:

We are writing this letter in follow up to your request for a monitoring plan for temporary wetlands impacts on the referenced permits. In order to satisfy the Virginia Department of Environmental Quality's (DEQ's) 401 certification condition to the Nationwide Permit 27s issued for these four permits to monitor the temporary wetlands impact areas for two years following completion of the restoration activity, Wetland Studies and Solutions, Inc. (WSSI) is providing this monitoring plan for the referenced projects on behalf of the Permittee, Northern Virginia Stream Restoration, L.C., for your review and approval.

The temporary wetlands impact areas adjacent to the stream will be monitored to determine whether a hydrophytic plant community is re-established following the stream restoration activities. Monitoring activities shall occur during the growing season at least once during the 1st and 2nd growing seasons following completion of the stream restoration activities (including planting) during our normal stream condition monitoring program required under the Mitigation Banking Instrument (MBI).

We anticipate that this process of stream restoration of an incised urban stream will increase wetlands resources by providing for wetland areas on the stream edge and point bars – as well as within the adjacent floodplain in areas where the stream bed is raised (and thus raising the groundwater table), resulting in a net gain of wetlands resources. In fact, the three reaches of Snakeden that are now over one year old clearly exhibit these features (as verified by Ron



Stouffer, COE, on May 27, 2009). See photographs depicting Snakeden Reach 1 and the lower and upper ends of Snakeden Reach 3 enclosed within Exhibit 1.

As we discussed on the telephone, a standard wetlands delineation data plot is a 30-foot radius circle for trees (your targeted plant type for this monitoring) which encompasses 2,827.4 square feet. Many monitoring protocols for mitigation sites use plots with a 15 foot-radius (706.86 square feet) – the smallest recommended for measuring random densities of 400 woody stems / acre (as this density equates to an average spacing of 10.4 feet on center). Thus, we agreed that using photographic monitoring of impact areas less than 700 square feet is reasonable, and that vegetative data plots for larger impacts would be appropriate.

Therefore, we propose the following monitoring plan for temporary wetlands impacts:

1. For each separate impact area less than 700 square feet, one ground level photograph shall be provided with the photo location indicated in the monitoring report.
2. For each separate impact area exceeding 700 square feet (and three per acre for impacts exceeding 1/3 acre¹), one vegetative data plot shall be characterized using the procedures in the Routine Method of the 1987 Manual² modified to use a 15-foot radius (versus 30 foot) for sizing the data plot, or in situations where this exceeds the boundary of the impacted area due to its geometry – a data plot area of at least 700 square feet shall be utilized (configured to fit within the impact area) with its size and shape described in the monitoring report. The resulting data shall be presented in a format that expresses the woody stem density as number per acre, the herbaceous in percent cover, and the percentage of dominant species FAC or wetter (excluding FAC-).
3. This monitoring shall be included in the Year 1 and Year 2 stream restoration monitoring reports for the subject stream reaches.
4. The specific locations of the impacts being monitored are depicted on the enclosed plans, titled “Northern Virginia Stream Restoration Bank, The Glade – Reaches 1, 1A, 2, 3, 4A and 4B; Temporary Wetlands Impact Locations,” 10 sheets, dated August 2009.
5. The following tables summarize the wetland impacts and respective monitoring method:

Reach Name	Impact #	Impact (SF)	Monitoring Method
Reach 1 & 1A	1	55	Ground Photo
	2	28	Ground Photo
Total		83	

¹ Not applicable in the subject stream reaches.

² Corps of Engineers Wetland Delineation Manual (1987 Manual) Technical Report 4-87-1, Part IV, Section D, Subsection 2, Paragraph 65, Step 20(c)(1).

Reach Name	Impact #	Impact (SF)	Monitoring Method
Reach 2	1	315	Ground Photo
	2	22	Ground Photo
	3A	431	Ground Photo
	3B	192	Ground Photo
	4A	49	Ground Photo
	4B	69	Ground Photo
	5	915	Vegetation Data Plot
	6A	8	Ground Photo
	6B	3	Ground Photo
	6C	114	Ground Photo
	7	972	Vegetation Data Plot
	8	2	Ground Photo
	9	370	Ground Photo
	10A	44	Ground Photo
	10B	31	Ground Photo
	10C	12	Ground Photo
	10D	271	Ground Photo
Total		3,820	

Reach Name	Impact #	Impact (SF)	Monitoring Method
Reach 3	1	115	Ground Photo
	2	25	Ground Photo
	3	215	Ground Photo
	4A	8	Ground Photo
	4B	31	Ground Photo
	5A	34	Ground Photo
	5B	35	Ground Photo
	5C	42	Ground Photo
	6A	6	Ground Photo
	6B	36	Ground Photo
	7A	186	Ground Photo
	7B	275	Ground Photo
	7C	118	Ground Photo
	8A	120	Ground Photo
	8B	344	Ground Photo
	8C	10	Ground Photo
	8D	54	Ground Photo
	9A	143	Ground Photo*
	9B	198	Ground Photo
Total		1,995	

*Since this is in a sewer easement, it will not have trees.

Reach Name	Impact #	Impact (SF)	Monitoring Method
Reach 4A	1	171	Ground Photo
	2	7	Ground Photo
	3	526	Ground Photo
	4	74	Ground Photo
Total		778	

Reach Name	Impact #	Impact (SF)	Monitoring Method
Reach 4B	1	323	Ground Photo
	2	31	Ground Photo
	3	457	Ground Photo
	4	633	Ground Photo*
	5	11	Ground Photo
	6	179	Ground Photo
	7	13	Ground Photo
	8	121	Ground Photo
Total		1,768	

*Since this is in a sewer easement, it will not have trees.

Please confirm at your convenience that this plan satisfies the DEQ's 401 certification condition requirements.

Sincerely,

WETLAND STUDIES AND SOLUTIONS, INC.



Michael S. Rolband, P.E., P.W.S., P.W.D.
President

Enclosures

cc: Ron H. Stouffer, Jr. – U.S. Army Corps of Engineers – Northern Virginia Field Office
Via E-mail: ron.h.stouffer@usace.army.mil (with enclosures)
Larry T. Butler – Reston Association – Via E mail: lbutler@reston.org (with enclosures)
Mark W. Headly, P.W.S., P.W.D. – Wetland Studies and Solutions, Inc.
Via E-mail: mheadly@wetlandstudies.com (with enclosures)
Amy E. Tobias, P.W.S. - Wetland Studies and Solutions, Inc.
Via E-mail: atobias@wetlandstudies.com (with enclosures)

STREAM RESTORATION PHOTOGRAPHS
SNAKEDEN
MAY 27, 2009



Photo 1: Snakeden - Reach 1

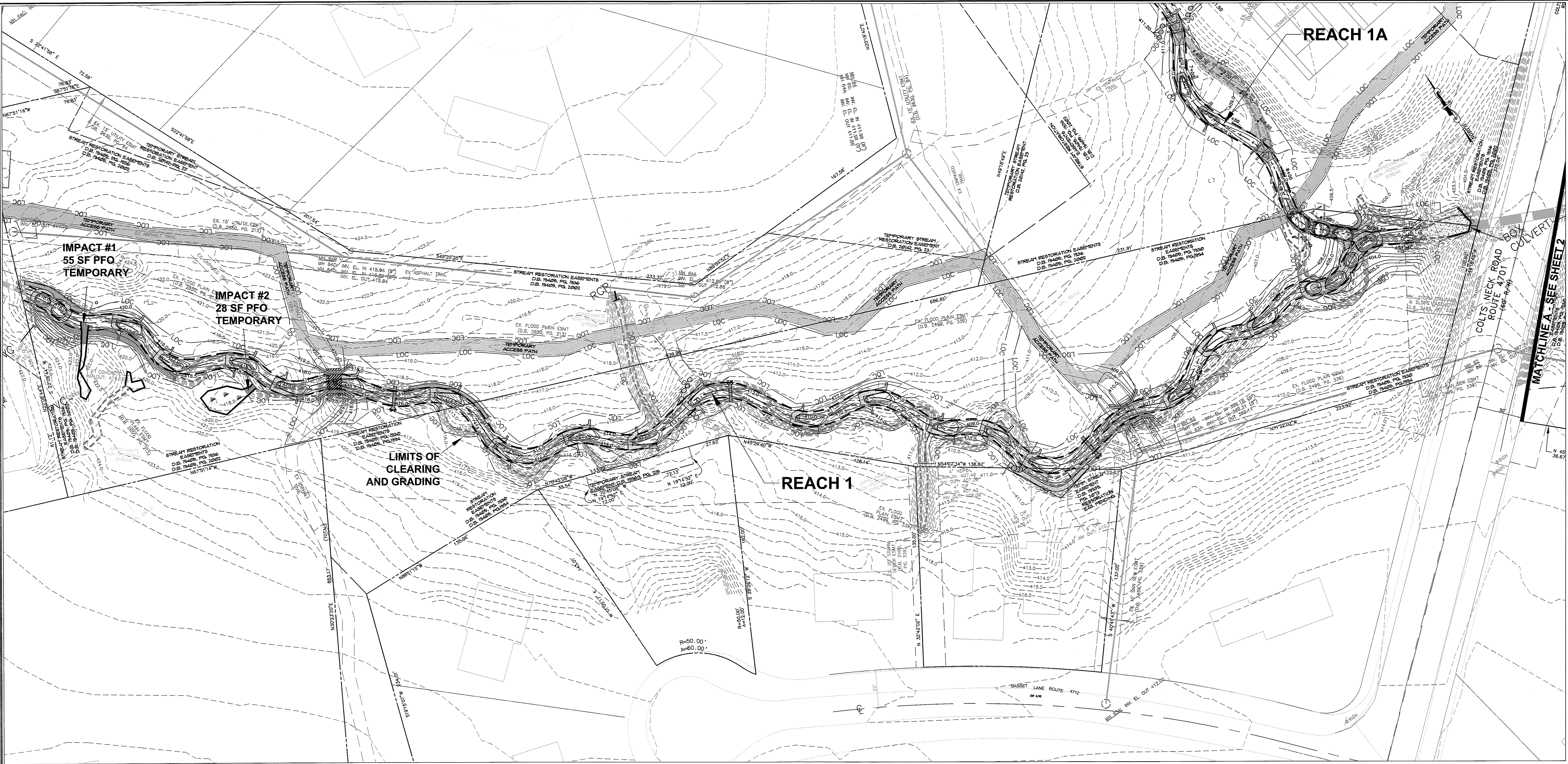


Photo 2: Snakeden – Lower End of Reach 3

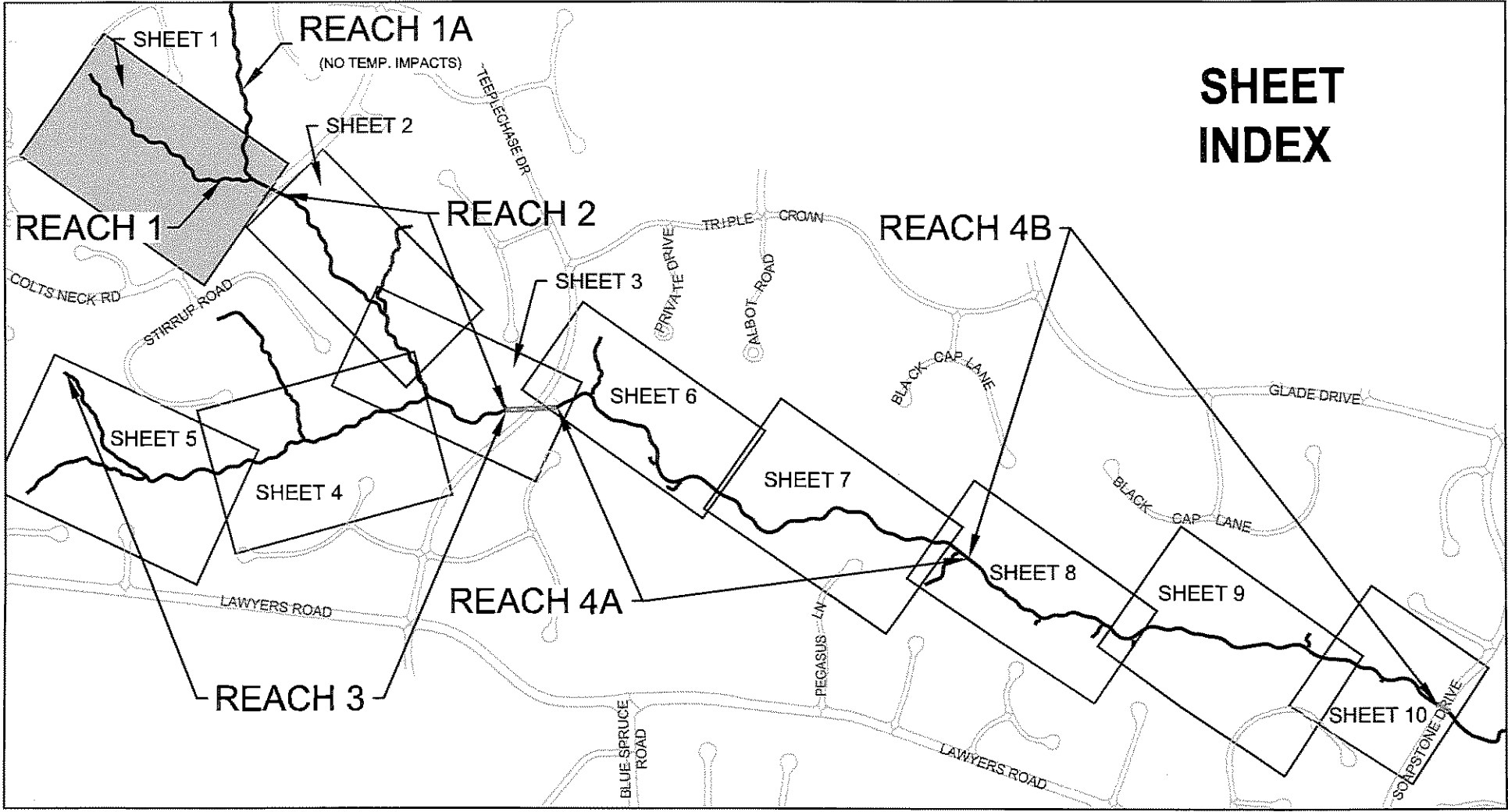
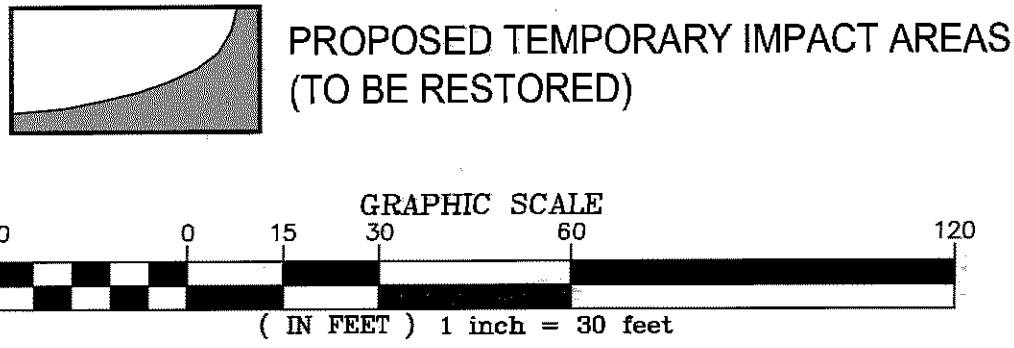
STREAM RESTORATION PHOTOGRAPHS
SNAKEDEN
MAY 27, 2009



Photo 3: Snakeden – Upper End of Reach 3



REACH NAME	IMPACT #	IMPACT (SF)
REACH 1 & 1A	1	55
	2	28
TOTAL		83

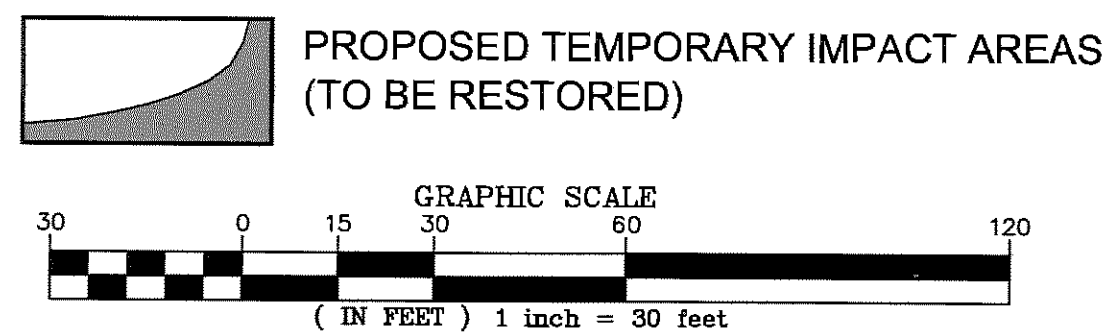
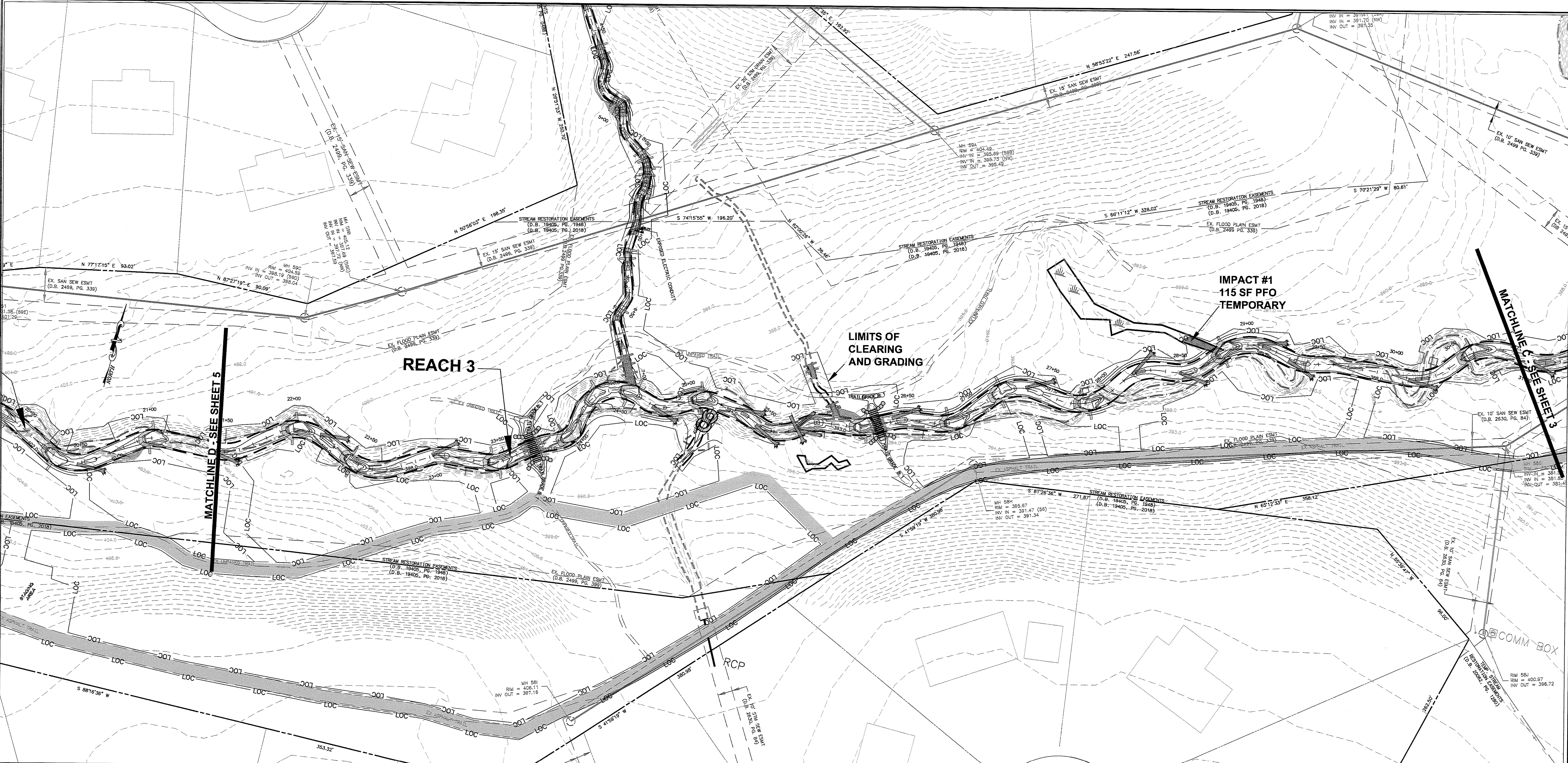


NORTHERN VIRGINIA STREAM RESTORATION BANK
THE GLADE - REACHES 1, 1A, 2, 3, 4A, & 4B
Fairfax County, Virginia

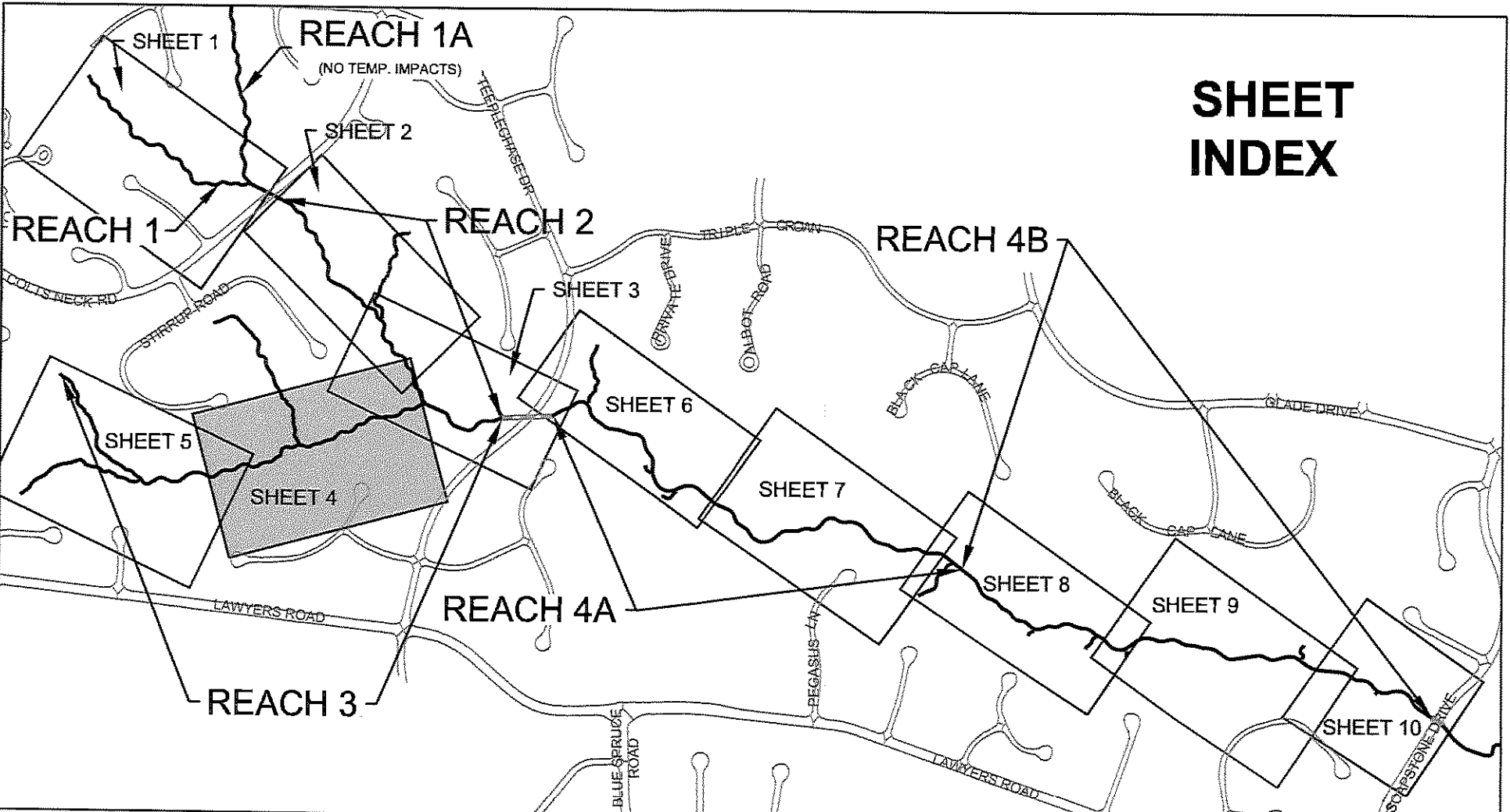
TEMPORARY WETLANDS IMPACT LOCATIONS

REVISIONS												H. D.: VCS NAD 83 V. D.: NGVD 29	
No.	Date	Description	Rev. By	App. By	No.	Date	Description	Rev. By	App. By	Boundary and Topo Source: WSSI and Fairfax Digital Data		Design Draft Approved	
										KLS KLS FRG		Sheet #	
										1 of 10		Computer File Name:	
DATE: AUGUST, 2009										SCALE: 1" = 30'		C.I. = 0.5'	

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REACH NAME	IMPACT #	IMPACT (SF)
REACH 3	1	115
	2	25
	3	215
	4A	8
	4B	31
	5A	34
	5B	35
	5C	42
	6A	6
	6B	36
	7A	186
	7B	275
	7C	118
	8A	120
	8B	344
	8C	10
	8D	54
	9A	143
	9B	198
TOTAL		1,995



NORTHERN VIRGINIA STREAM RESTORATION BANK
THE GLADE - REACHES 1, 1A, 2, 3, 4A, & 4B
Fairfax County, Virginia

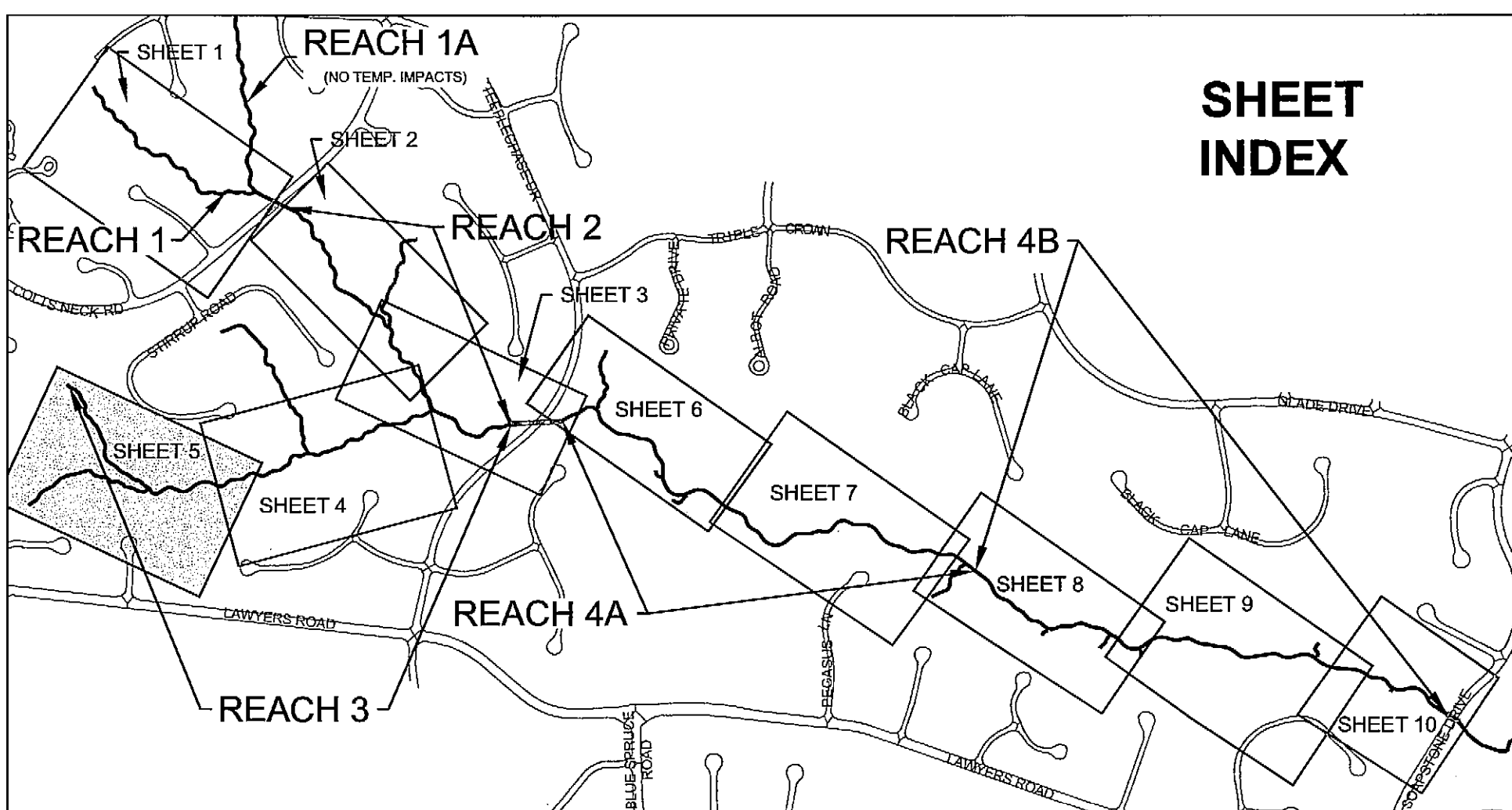
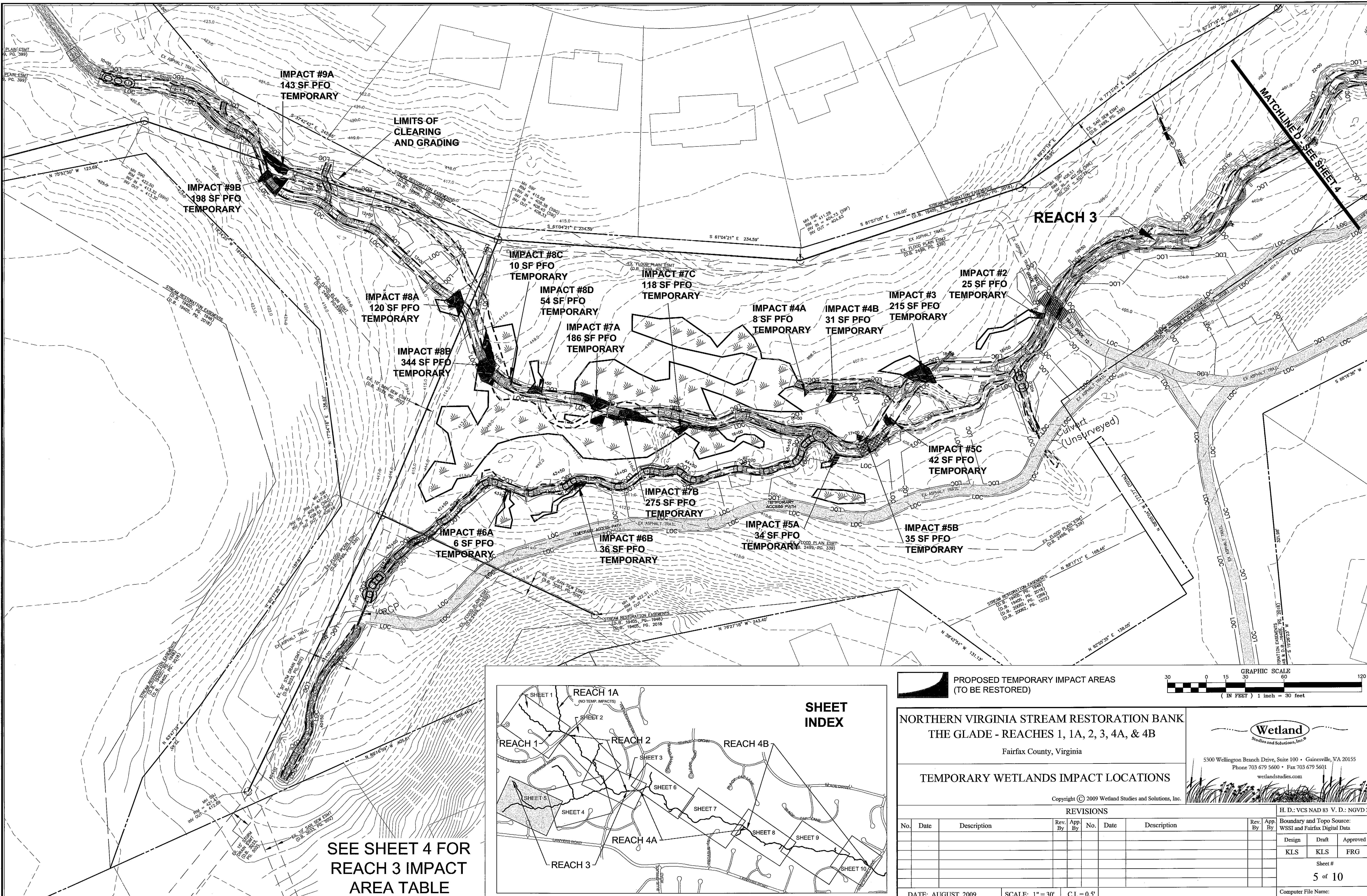
TEMPORARY WETLANDS IMPACT LOCATIONS


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										Design	Draft	Approved
										KLS	KLS	FRG
										Sheet #		
										4 of 10		
DATE: AUGUST, 2009		SCALE: 1" = 30'		C.I. = 0.5'		Computer File Name:						

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**PROPOSED TEMPORARY IMPACT AREAS
(TO BE RESTORED)**

**NORTHERN VIRGINIA STREAM RESTORATION BANK
THE GLADE - REACHES 1, 1A, 2, 3, 4A, & 4B**

Fairfax County, Virginia

TEMPORARY WETLANDS IMPACT LOCATIONS

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REVISIONS									
No.	Date	Description	Rev. By	App. By	No.	Date	Description	Rev. By	App. By

DATE: AUGUST, 2009 SCALE: 1" = 30' C.I. = 0.5'

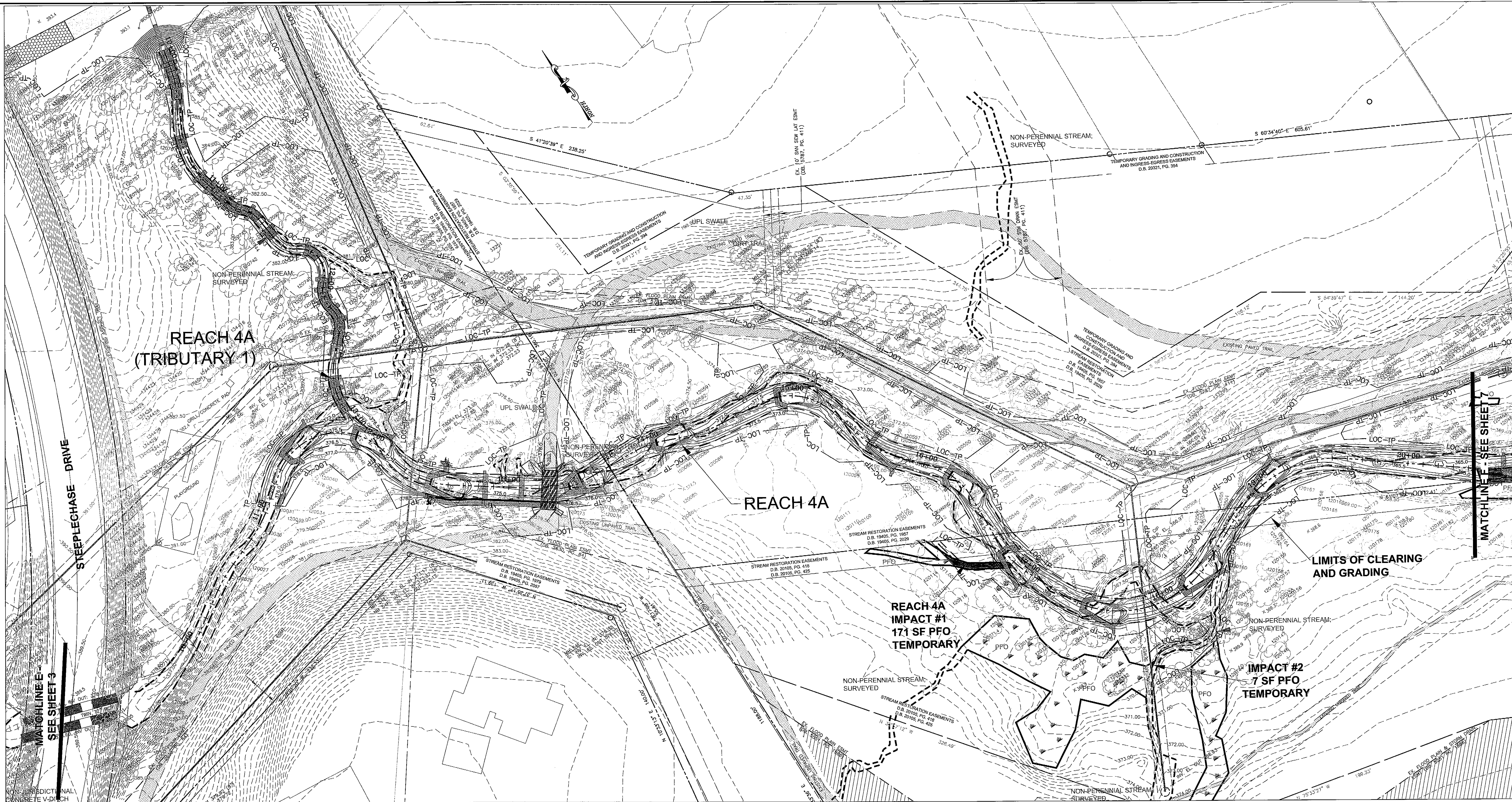
H. D.: VCS NAD 83 V. D.: NGVD 29

Boundary and Topo Source:
WSSI and Fairfax Digital Data

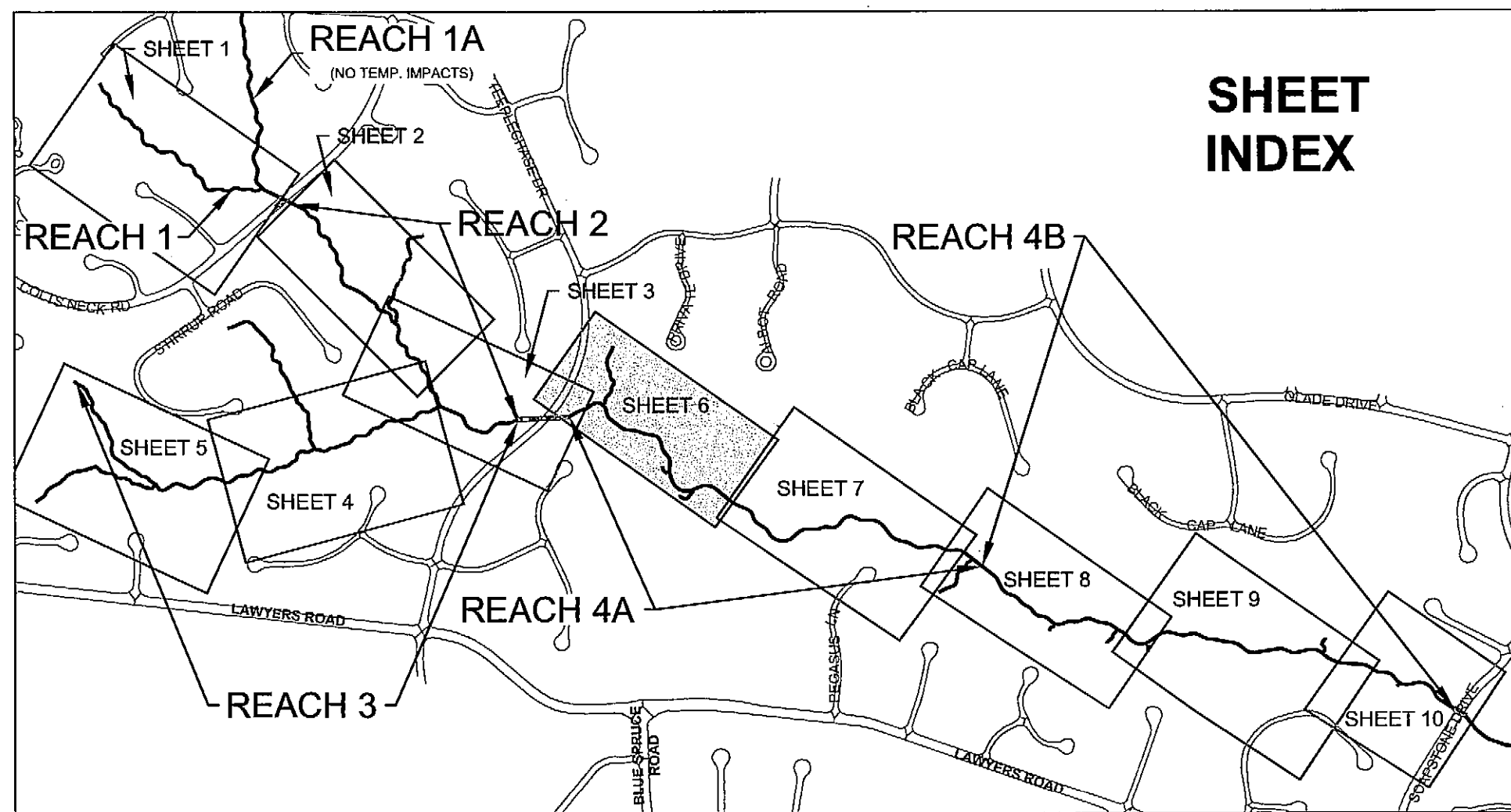
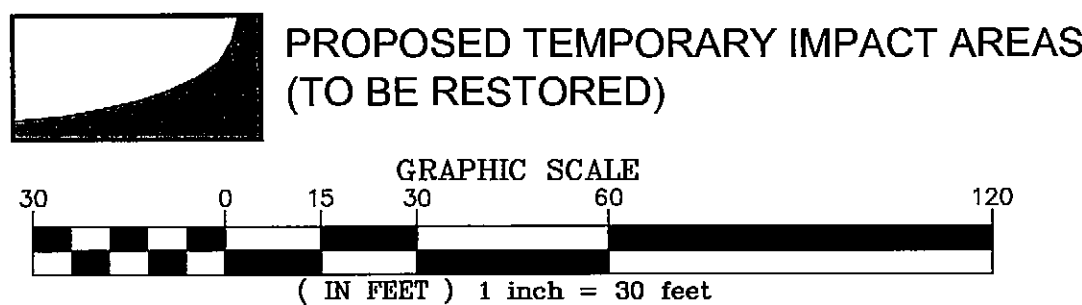
Design	Draft	Approved
KLS	KLS	FRG

Sheet #
5 of 10

Computer File Name:
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REACH NAME	IMPACT #	IMPACT (SF)
REACH 4A	1	171
	2	7
	3	526
TOTAL	4	74
		778



NORTHERN VIRGINIA STREAM RESTORATION BANK THE GLADE - REACHES 1, 1A, 2, 3, 4A, & 4B

Fairfax County, Virginia

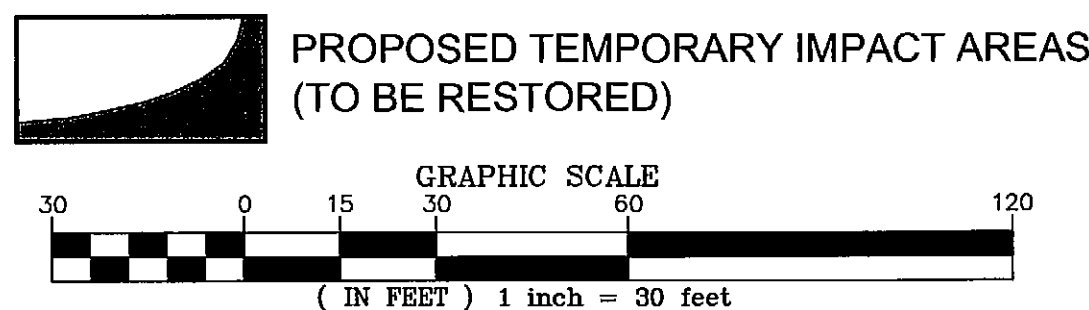
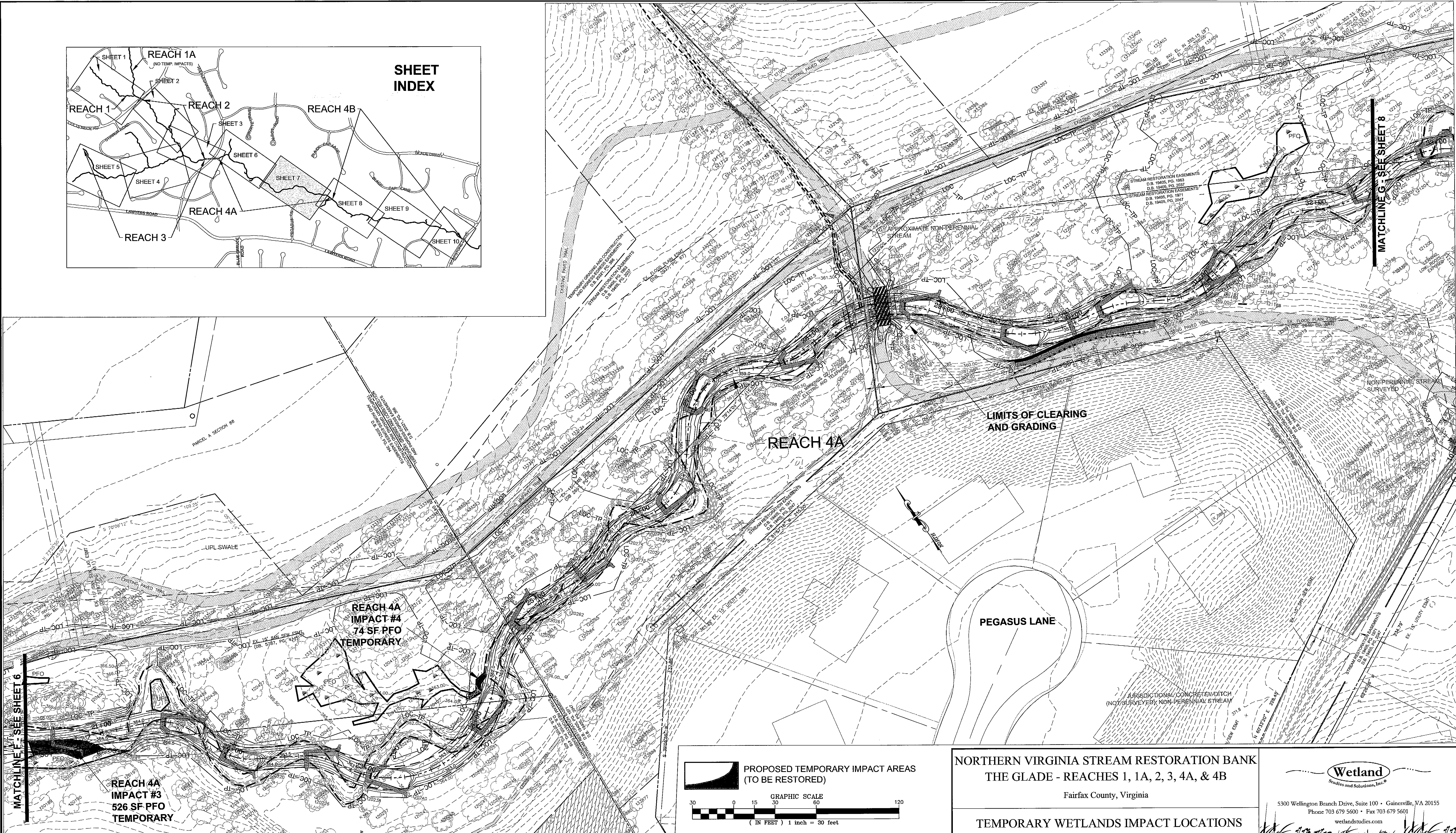
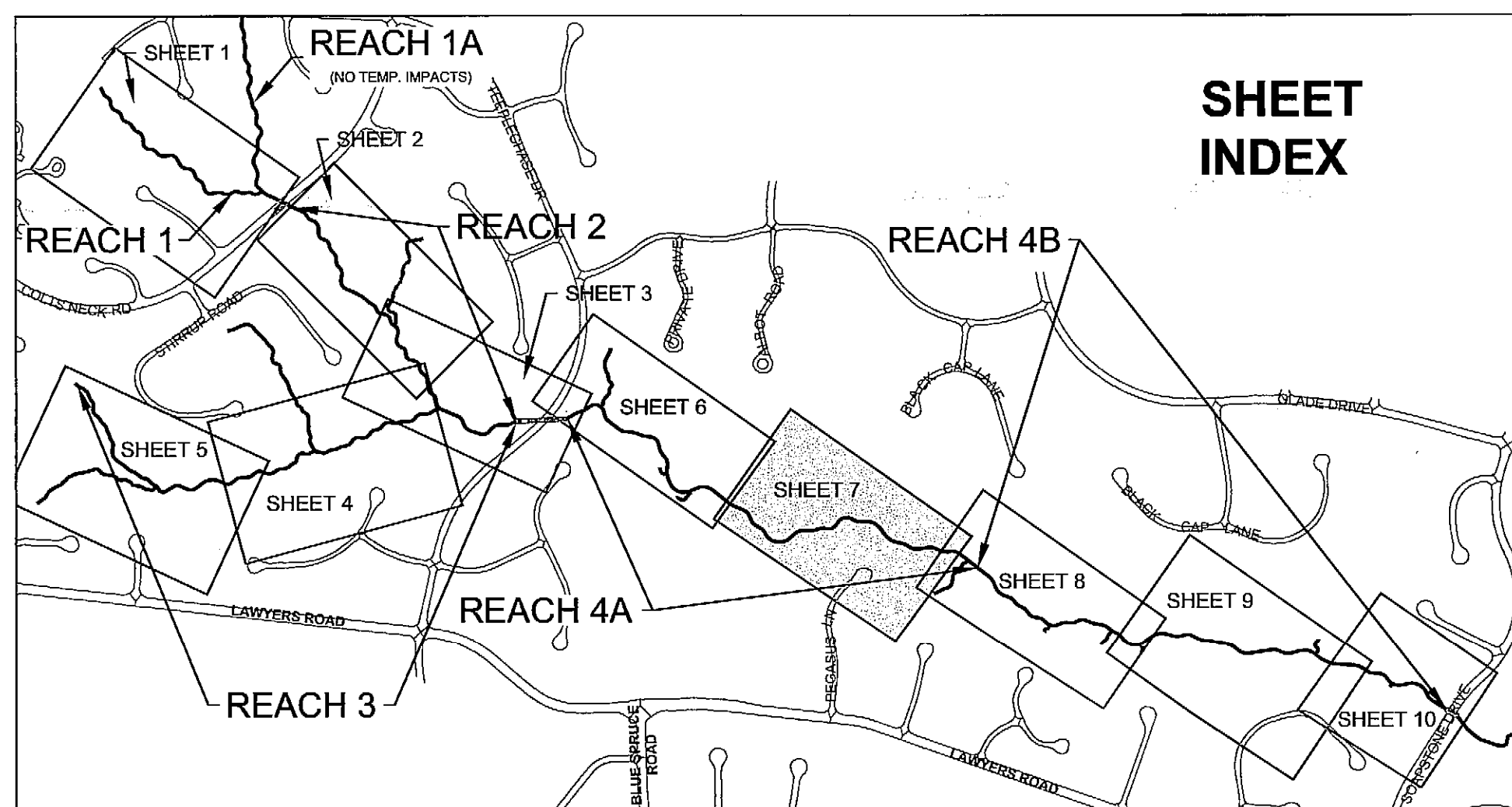
TEMPORARY WETLANDS IMPACT LOCATIONS

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REVISIONS										H. D.: VCS NAD 83 V. D.: NGVD 29	
No.	Date	Description	Rev. By	App. By	No.	Date	Description	Rev. By	App. By	Boundary and Topo Source: WSSI and Fairfax Digital Data	
										Design	Draft
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DATE: AUGUST 2009		SCALE: 1" = 30'		C.I. = 0.5'		Computer File Name: L:\0000000000\0000000000\0000000000					



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**SEE SHEET 6 FOR
REACH 4A IMPACT
AREA TABLE**

**NORTHERN VIRGINIA STREAM RESTORATION BANK
THE GLADE - REACHES 1, 1A, 2, 3, 4A, & 4B**
Fairfax County, Virginia

TEMPORARY WETLANDS IMPACT LOCATIONS

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No.	Date	Description	Rev. By	App. By	No.	Date	Description	Rev. By	App. By
DATE: AUGUST 2009								SCALE: 1" = 30'	
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