

Idylwood Substation

FLOODPLAIN STUDY FAIRVIEW LAKE TRIBUTARY

FAIRFAX COUNTY, VIRGINIA
XXXX-FP-XXX

FLOODPLAIN STUDY NARRATIVE

PROJECT DESCRIPTION

THIS FLOODPLAIN STUDY (FPS) IS IN SUPPORT OF AND TRACKS WITH SPECIAL EXCEPTION PLAT AND 2232 PLAN SE 2014-PR-032 PREPARED FOR DOMINION VIRGINIA POWER (DVP) IDYLWOOD SUBSTATION, SEE SHEET 24 FOR COVER SHEET OF THE SE. THE SITE IS LOCATED AT THE CORNER OF SHREVE ROAD AND HOLLY MANOR DRIVE. THE OVERALL PROJECT PROPOSES THE ADDITION AND ALTERATION OF SEVERAL TRANSMISSION STRUCTURES AS WELL AS RELOCATING AN EXISTING CONTROL BUILDING AND REALIGNING THE INTERNAL ACCESS ROAD. AS PART OF THE IMPROVEMENTS, THE EXISTING CROSSING OF SHREVE ROAD OVER FAIRVIEW LAKE TRIBUTARY WILL BE EXTENDED. APPROXIMATELY 125 FT OF THE MAIN CHANNEL OF FAIRVIEW LAKE TRIBUTARY WILL BE REALIGNED TO ACCOMMODATE THE IMPROVEMENTS. THE EXISTING FAIRFAX COUNTY FLOODPLAIN (UNMAPPED FEMA ZONE X) EXTENDS TO THE DOWNSTREAM LIMITS OF THE SITE.

FLOODPLAIN MAPPING / STUDY LIMITS

THE STUDY LIMITS OF FAIRVIEW LAKE TRIBUTARY EXTEND APPROXIMATELY 300 FT UPSTREAM AND DOWNSTREAM OF THE DVP PROPERTY LIMITS.

BASE MAPPING AND SURVEY

BASE MAPPING AND TOPO OF THE STUDY AREA WAS PERFORMED BY BURGESS & NIPLE, INC. IN JUNE AND JULY 2011. SUPPLEMENTAL CROSS SECTIONS WERE ALSO SURVEYED BY BURGESS & NIPLE, INC IN OCTOBER 2013. THE COORDINATE GRID IS VIRGINIA STATE PLANE NORTH ZONE NAD 1983. THE VERTICAL DATUM IS BASED ON THE FINISHED FLOOR ELEVATION OF THE CONTROL HOUSE (SURVEY DATUM). TO CONVERT FROM THE SURVEY DATUM TO NGVD 1929, SUBTRACT 0.65 FT.

HYDROLOGY

NRCS METHODOLOGY WAS USED TO COMPUTE THE PEAK DISCHARGE FOR THE 100-YEAR STORM. USACE HEC-1 WAS USED TO CALCULATE FLOWS TO THE SHREVE ROAD CROSSING OF FAIRVIEW LAKE TRIBUTARY AS WELL AS THE DOWNSTREAM DVP PROPERTY BOUNDARY. A CUSTOM 24-HOUR RAINFALL DISTRIBUTION WAS CREATED FROM THE NOAA ATLAS 14 PRECIPITATION FREQUENCY DATA USING THE VIENNA TYSONS CORNER GAUGE.

HYDRAULICS

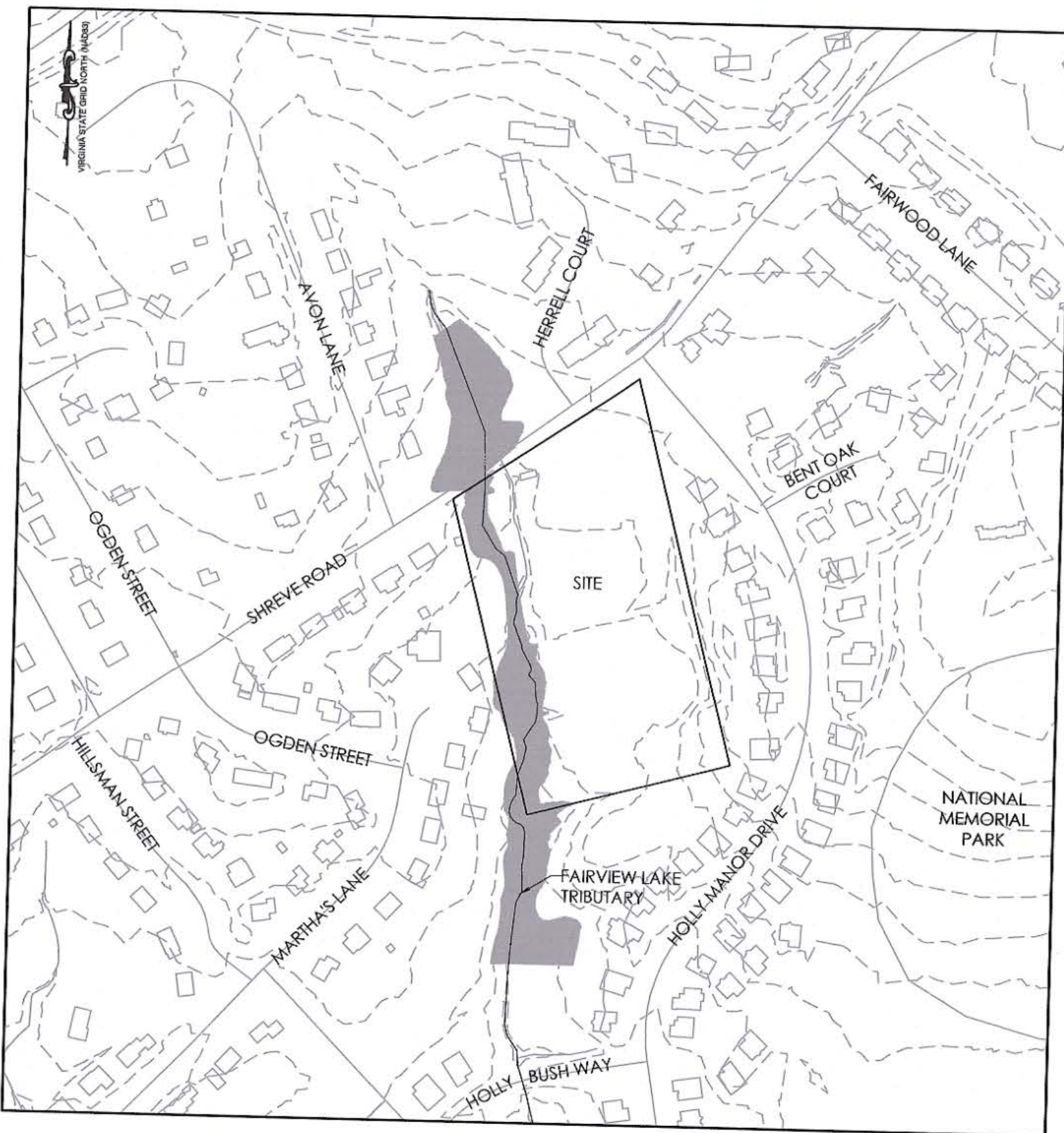
USACE HEC-RAS VERSION 4.1.0 WAS USED TO DETERMINE 100-YEAR WATER-SURFACE PROFILES FOR THIS FPS. THE MODEL CONSISTS OF THREE PLANS: EXISTING, PROPOSED AND PROPOSED OVERLAND.

HEC-RAS CROSS-SECTIONS WERE CUT FROM A COMBINATION OF ONSITE TOPO AND OFFSITE FIELD SURVEYED CROSS-SECTIONS. BOTH ONSITE SURVEY AND SURVEYED CROSS-SECTIONS ARE IN THE SURVEY DATUM ESTABLISHED BY BURGESS & NIPLE, INC.

THE 100-YEAR STARTING CONDITION FOR THE EXISTING AND PROPOSED MODELS IS BASED ON A KNOWN WATER-SURFACE ELEVATION OF 355.85 FEET (NGVD 29) AS INTERPOLATED FROM 7864-FP-01 (SEE SHEET 17). THIS ELEVATION CONVERTS TO 356.50 FEET (SURVEY DATUM), WHICH IS USED IN THE HEC-RAS MODEL.

ROUGHNESS COEFFICIENTS DOWNSTREAM OF THE PROPERTY BOUNDARY ARE BASED ON A COMBINATION OF APPROVED 7864-FP-01, FIELD RECONNAISSANCE AND AERIAL PHOTOGRAPHY. IN GENERAL, THE FLOODPLAIN IS URBANIZED AND INCLUDES A COMBINATION OF MANICURED LANDSCAPING, LIGHT BRUSH AND SCATTERED TREES. THE MAIN CHANNEL UPSTREAM OF THE SHREVE ROAD CROSSING IS PAVED, DOWNSTREAM THE CHANNEL IS PREDOMINANTLY STRAIGHT WITH LIGHT VEGETATION.

THE EXISTING CROSSING OF SHREVE ROAD IS A 33" RCP TO DUAL 30"x44" ELLIPTICAL CONCRETE PIPES, SEE SHEET 2 FOR DETAILS. THE SYSTEM WAS MODELED CONSERVATIVELY AS A 33" CULVERT. THE PROPOSED SYSTEM WILL BE EXTENDED AND REROUTED TO OUTFALL TO THE RELOCATED CHANNEL. THE MAJORITY OF THE 100-YEAR FLOW AT CROSSING IS OVERLAND; THEREFORE, A PROPOSED OVERLAND PLAN WAS CREATED TO MODEL THE OVERLAND FLOW. FLOW TO THE OVERLAND SECTIONS WAS TAKEN AS THE WEIR FLOW AT THE PROPOSED CULVERT CROSSING. THE DOWNSTREAM WATER-SURFACE ELEVATION FOR THE PROPOSED OVERLAND MODEL WAS SET TO THE KNOWN WATER-SURFACE ELEVATION AT SECTION 1283 IN THE PROPOSED MODEL.



VICINITY MAP
SCALE : 1" = 250'

NOTES

1. NO USE SHALL BE MADE OF, NOR SHALL ANY IMPROVEMENTS BE MADE IN THE FLOODPLAIN WITHOUT SPECIFIC AUTHORIZATION FROM FAIRFAX COUNTY.
2. THIS FLOODPLAIN STUDY SUPPORTS SPECIAL EXCEPTION PLAT AND 2232 PLAN FOR DOMINION VIRGINIA POWER (DVP) IDYLWOOD SUBSTATION SE 2014-PR-032.
3. THE FLOODPLAIN BOUNDARIES SHOWN HEREIN ARE BASED ON A SITE-SPECIFIC ENGINEERING FLOODPLAIN ANALYSIS THAT WAS PREPARED TO SUPPORT SE APPLICATION 2014-PR-032.
4. INFORMATION PROVIDED IN THIS STUDY IS FOR FLOODPLAIN PURPOSES ONLY AND NOT TO BE USED FOR CONSTRUCTION.
5. THE MAP NUMBER OF THE APPLICABLE FEMA FIRM PANEL IS 51059C0165E DATED SEPTEMBER 17, 2010.

SHEET INDEX

01	COVER SHEETS
02	100-YEAR FLOODPLAIN
03	FLOOD PROFILE
04-05	CROSS-SECTIONS
06	DRAINAGE AREA MAP
07	HEC-1 MODEL
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11-13	PROPOSED HEC-RAS MODEL
14-15	PROPOSED OVERLAND HEC-RAS MODEL
16	7864-FP-01 100-YEAR FLOODPLAIN & PROFILE
17-20	TOPOGRAPHIC SURVEY
21-23	CROSS-SECTION SURVEY
24	SE 2014-PR-032 COVER SHEET
25	CORRESPONDENCE

FEE SCHEDULE

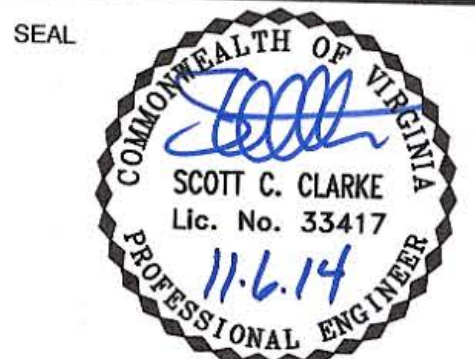
COUNTY NUMBER: 0000-FP-01		
TAX MAP REFERENCE NO: 0492 01 0151 & 0492 12 0001A		
WATERSHED: HOLMES RUN		
FLOODPLAIN STUDY REVIEW FEES		
COST PER UNIT	QUANTITY	FEE
\$2.30 PER FT	1,376 FT	\$3,164.80
\$509.00 PER ROAD CROSSING (EXISTING AND PROPOSED)	2	\$509.00
\$509.00 PER DAM	0	\$0
TOTAL FEE (NOT TO EXCEED \$9,355.00)		\$4,182.80



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XXXX-FP-XXX
FLOODPLAIN STUDY
FAIRVIEW LAKE TRIBUTARY
PROVIDENCE DISTRICT
FAIRFAX COUNTY, VIRGINIA



KEY PLAN

SCALE

No.	DATE	BY	Description
REVISIONS			

DRAWN BY TIB
APPROVED BY SCC
CHECKED BY SCC
DATE NOV 5, 2014
TITLE

COVER SHEET

PROJECT NO. 50058411

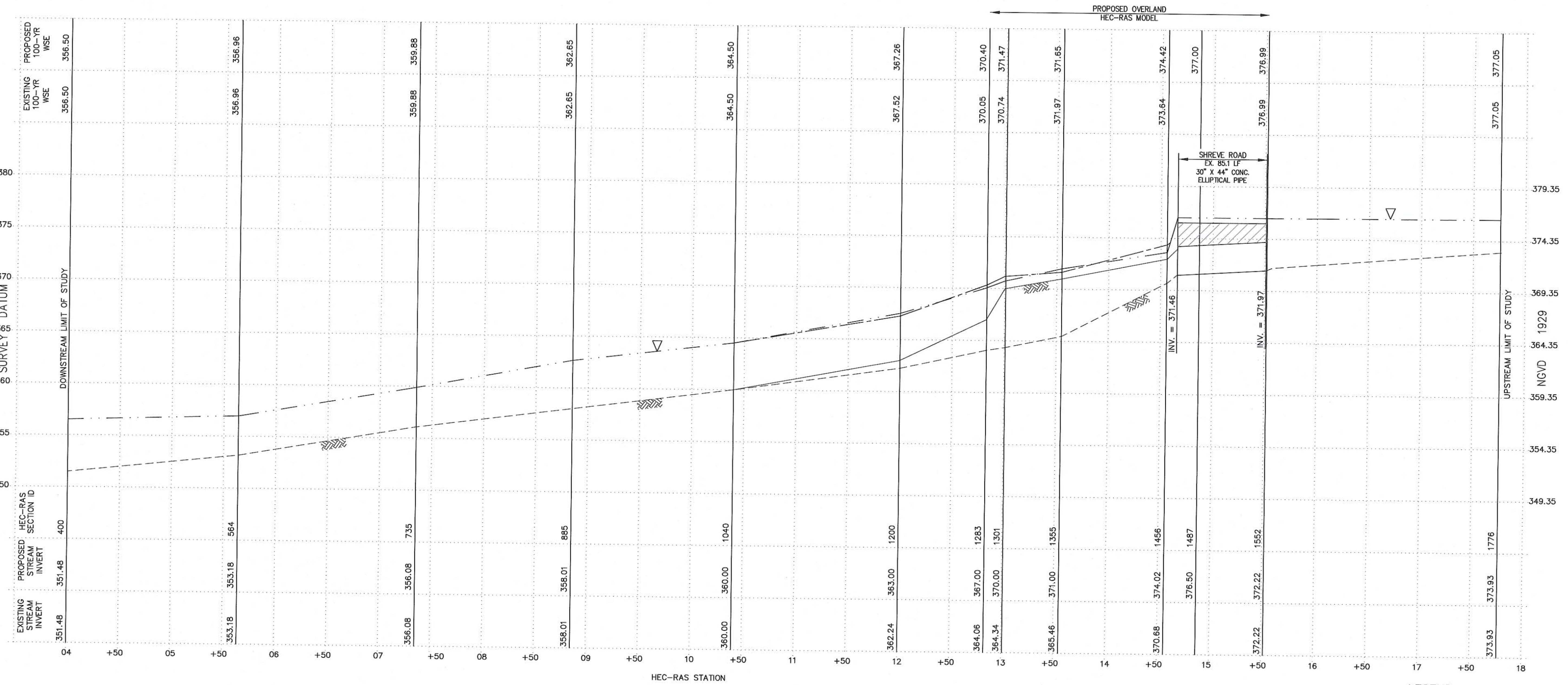
01

No.	DATE	BY	Description

No.	DATE	BY	Description

TITLE
FLOOD PROFILE

PROJECT NO. 50058411



LEGEND

--- EX. 100 YEAR PROFILE
--- PROP. 100 YEAR PROFILE
--- EXISTING STREAM INVERT
--- PROPOSED STREAM INVERT

NOTE:

1. WHERE THE EXISTING AND PROPOSED 100-YEAR WSEs ARE EQUAL, ONLY THE EXISTING 100-YEAR WSE IS SHOWN ON THE PROFILE.

2. ELEVATION SHOWN ON THIS SHEET ARE IN THE VERTICAL DATUM ESTABLISHED BY BURGESS & NIPLE. TO CONVERT TO NGVD 29, SUBTRACT 0.65' FROM ELEVATIONS SHOWN.

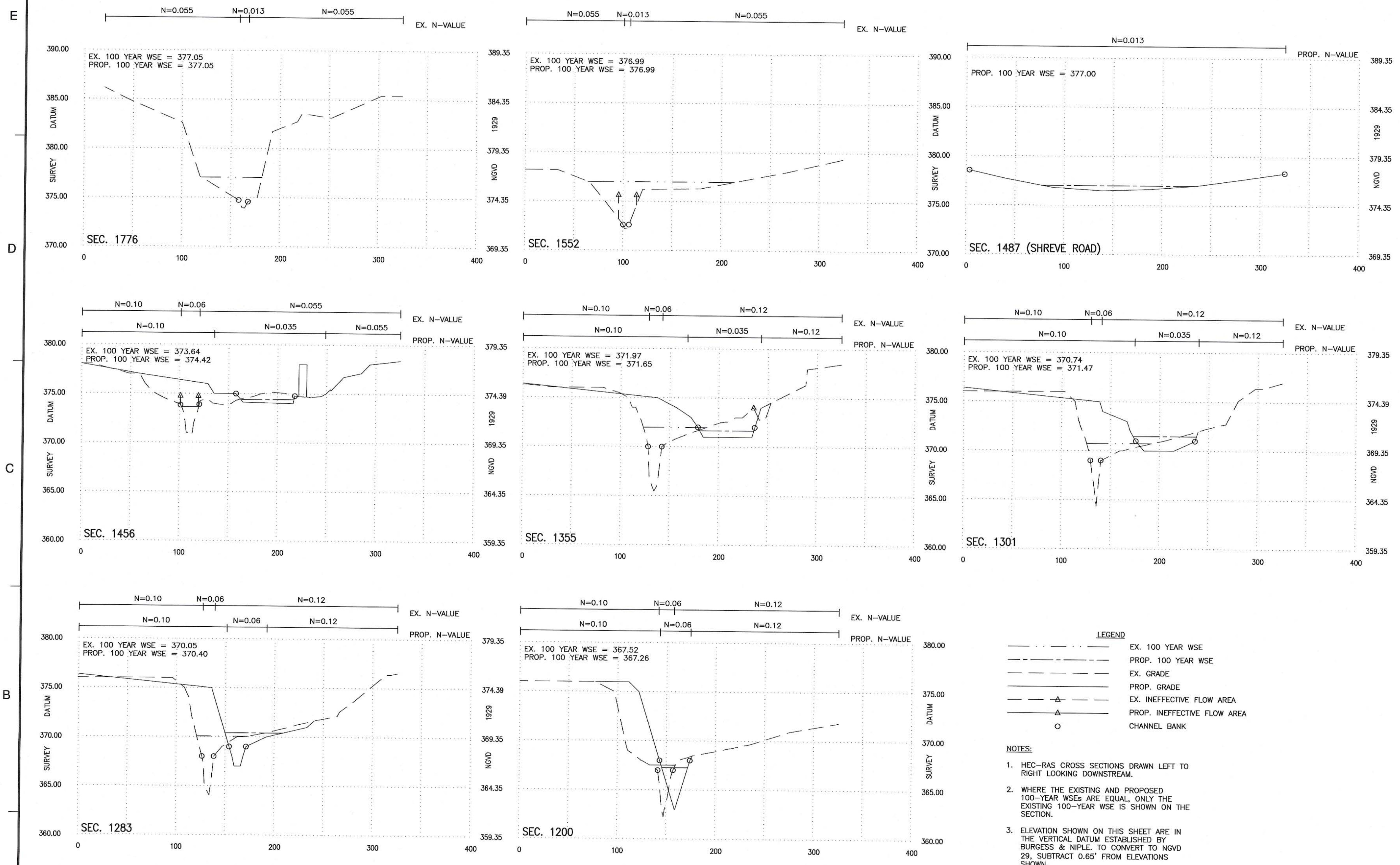
No.	DATE	BY	Description
REVISIONS			

DRAWN BY	TIB
APPROVED BY	SCC
CHECKED BY	SCC
DATE	NOV 5, 2014
TITLE	

CROSS-SECTIONS

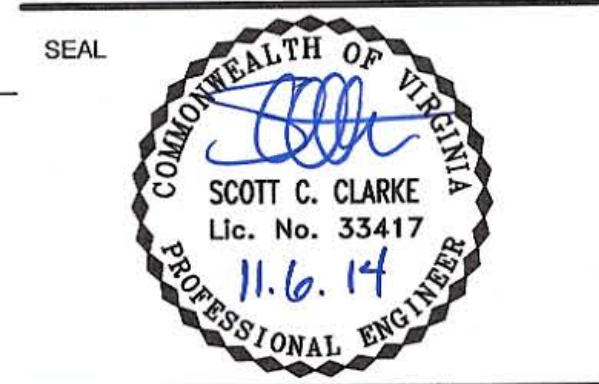
PROJECT NO. 50058411

04





DOMINION VIRGINIA POWER
Idylwood Substation
XXXX-FP-XXX
FLOODPLAIN STUDY
FAIRVIEW LAKE TRIBUTARY
PROVIDENCE DISTRICT
FAIRFAX COUNTY, VIRGINIA



KEY PLAN

SCALE
H: 1" = 50'
V: 1" = 5'

No.	DATE	BY	Description
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REVISIONS

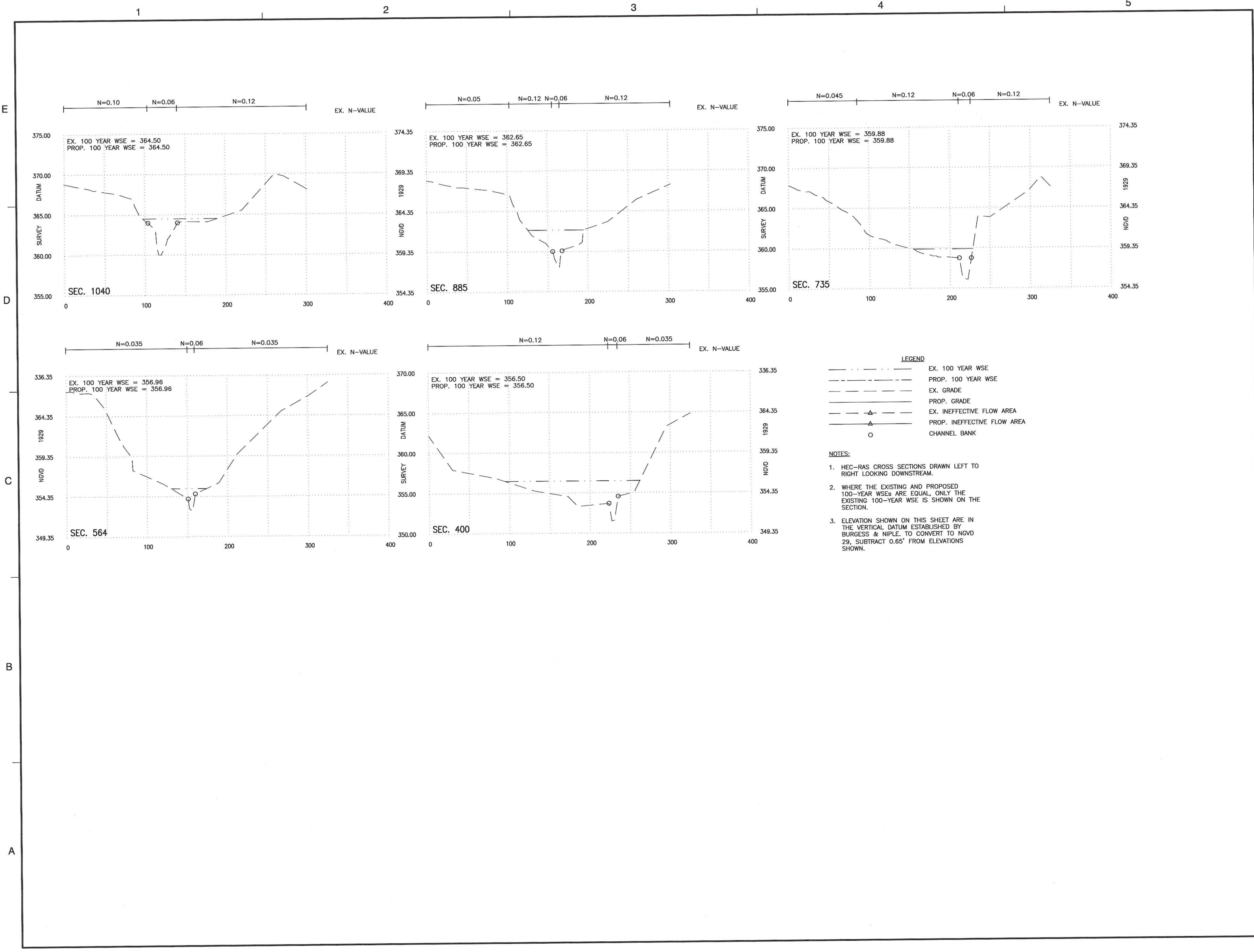
DRAWN BY TIB
APPROVED BY SCC
CHECKED BY SCC
DATE NOV 5, 2014

TITLE

CROSS-SECTIONS

PROJECT NO. 50058411

05



No.	DATE	BY	Description
REVISIONS			

DRAWN BY	TIB
APPROVED BY	SCC
CHECKED BY	SCC
DATE	NOV 5, 2014

TITLE
DRANAGE
AREA MAP

PROJECT NO. 50058411

06

RUNOFF CURVE NUMBER (CN) CALCULATIONS

LAND USE	HSG	CN	AREA (AC)
BASIN A1			
DVP PROPERTY	B	88	0.40
DVP PROPERTY	D	93	4.00
RESIDENTIAL (2-3 DU/AC)	B	72	3.76
RESIDENTIAL (2-3 DU/AC)	D	86	24.11
VDOT ROW	B	89	0.09
VDOT ROW	D	93	8.55
TOTAL	-	87	40.91
BASIN A⁽¹⁾			
CEMETERY	D	84	2.43
DVP PROPERTY	B	88	0.40
DVP PROPERTY	D	93	9.87
SCHOOL	B	80	0.14
SCHOOL	C	87	0.05
SCHOOL	D	90	9.81
RESIDENTIAL (1-2 DU/AC)	D	85	0.09
RESIDENTIAL (2-3 DU/AC)	B	72	3.76
RESIDENTIAL (2-3 DU/AC)	C	81	1.23
RESIDENTIAL (2-3 DU/AC)	D	86	48.17
RESIDENTIAL (3-4 DU/AC)	C	83	0.10
RESIDENTIAL (3-4 DU/AC)	D	87	0.19
VDOT ROW	B	89	0.09
VDOT ROW	D	93	10.11
TOTAL	-	87	86.44

NOTES:

1. DRAINAGE AREA A IS THE SUM OF DRAINAGE AREAS A1 AND A2.
2. HYDROLOGIC SOIL GROUPS BASED ON DESCRIPTION AND INTERPRETIVE GUIDE TO SOILS IN FAIRFAX COUNTY (REV. 2011).
3. LAND USES BASED ON COMPREHENSIVE LAND USE PLAN.

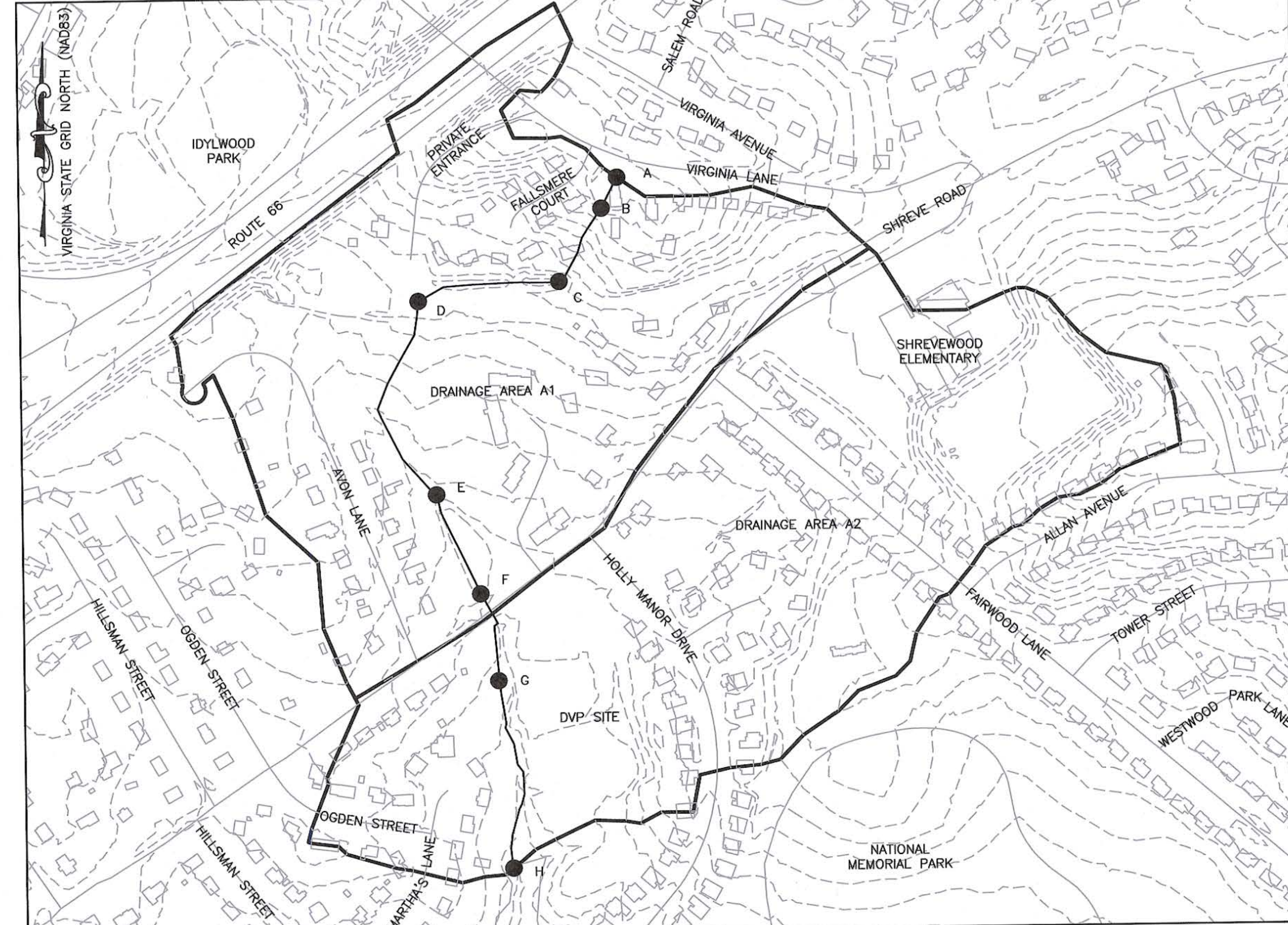
TIME OF CONCENTRATION (T_c) CALCULATIONS

BASIN	A1	A ⁽¹⁾
SHEET FLOW (SEE NOTE 1)		
MANINGGS ROUGHNESS COEFFICIENT, n	0.24	0.24
FLOW LENGTH, L (FT)	100	100
2-YR, 24-HR RAINFALL (IN)	3.2	3.2
LAND SLOPE, s (FT/FT)	0.05	0.05
T _c = [0.007(nL) ^{0.85}]/(P ² 0.5)(s ^{0.4})	0.165	0.165
SHALLOW CONCENTRATED FLOW (SEE NOTE 1)		
SURFACE DESCRIPTION UPV = UNPAVED	UPV	UPV
FLOW LENGTH, L (FT)	244	244
WATERCOURSE SLOPE, s (FT/FT)	0.18	0.18
AVERAGE VELOCITY, V (FPS)	6.85	6.85
T _c = L/(3600*V)	0.010	0.010
PIPE FLOW (SEE NOTE 3)		
FLOW LENGTH, L (FT)	418	418
AVERAGE VELOCITY, V (FPS)	8	8
T _c = L/(3600*V)	0.014	0.014
OPEN DITCH (SEE NOTE 2)		
HEIGHT OF MOST REMOTE POINT ABOVE OUTLET, H (FT)	32.5	32.5
MAXIMUM LENGTH OF TRAVEL, L (FT)	638	638
T _c = 0.00948H ^{0.385} L ^{1.13}	0.062	0.062
PAVED OPEN DITCH (SEE NOTE 2)		
HEIGHT OF MOST REMOTE POINT ABOVE OUTLET, H (FT)	8	8
MAXIMUM LENGTH OF TRAVEL, L (FT)	314	314
T _c = 0.2x0.00948H ^{0.385} L ^{1.13}	0.009	0.009
PIPE FLOW (SEE NOTE 3)		
FLOW LENGTH, L (FT)	267	267
AVERAGE VELOCITY, V (FPS)	8	8
T _c = L/(3600*V)	0.009	0.009
OPEN DITCH (SEE NOTE 2)		
HEIGHT OF MOST REMOTE POINT ABOVE OUTLET, H (FT)	12	12
MAXIMUM LENGTH OF TRAVEL, L (FT)	557	557
T _c = 0.00948H ^{0.385} L ^{1.13}	0.078	0.078
TOTAL TIME OF CONCENTRATION (HR)	0.260	0.347
TOTAL TIME OF CONCENTRATION USED FOR COMPUTATIONS (MIN)	15	20
LAG TIME, T _{lag} = (0.6*T _c) (HR)	0.15	0.2

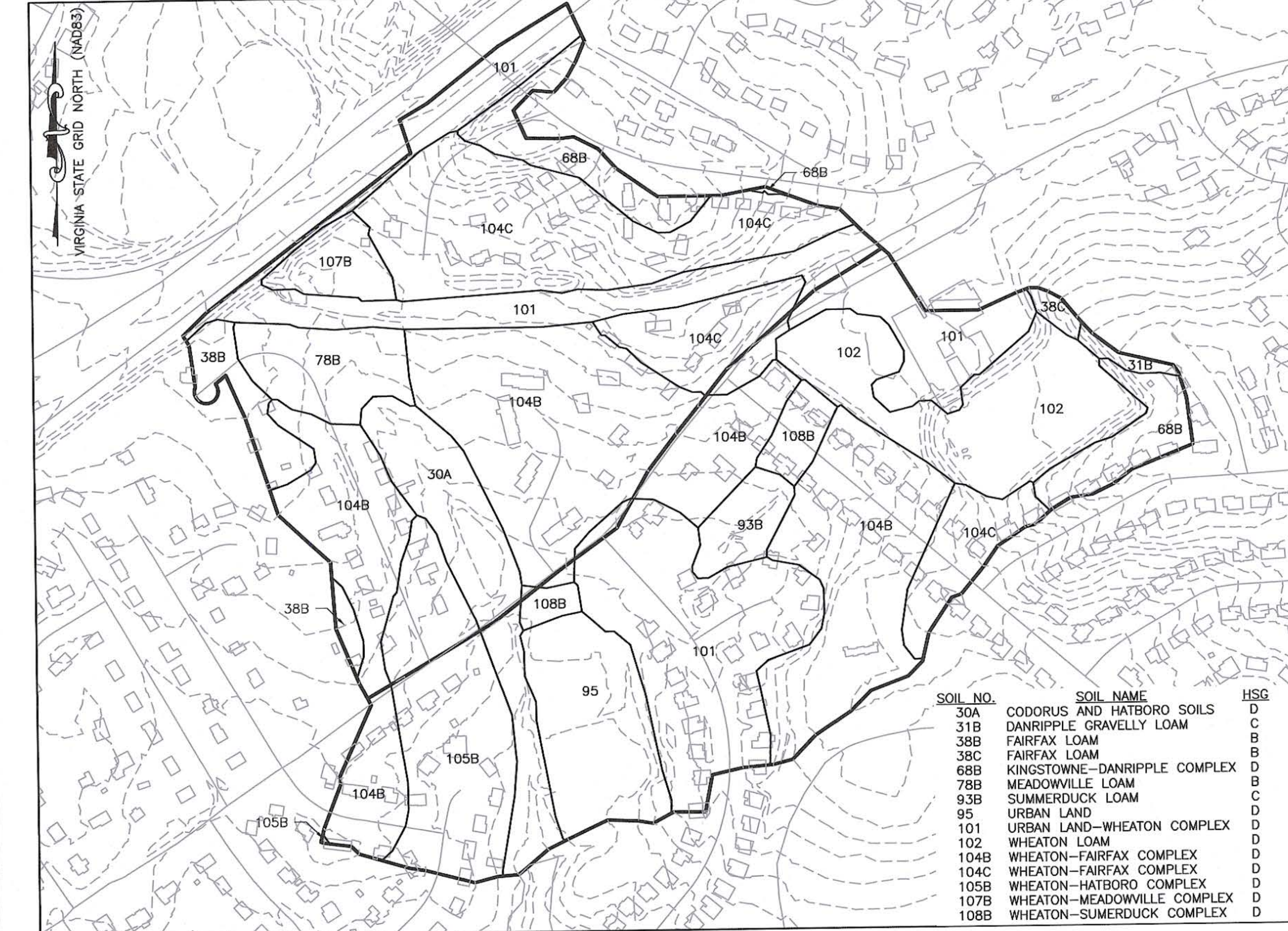
NOTES:

- 1.) BASED ON SCS SEGMENTAL APPROACH (TR-55)
- 2.) BASED ON KIRKPICH TIME OF CONCENTRATION FOR SMALL DRAINAGE BASINS.
- 3.) AVERAGE VELOCITY, V, FOR PIPE FLOW ASSUMED 8 FPS.

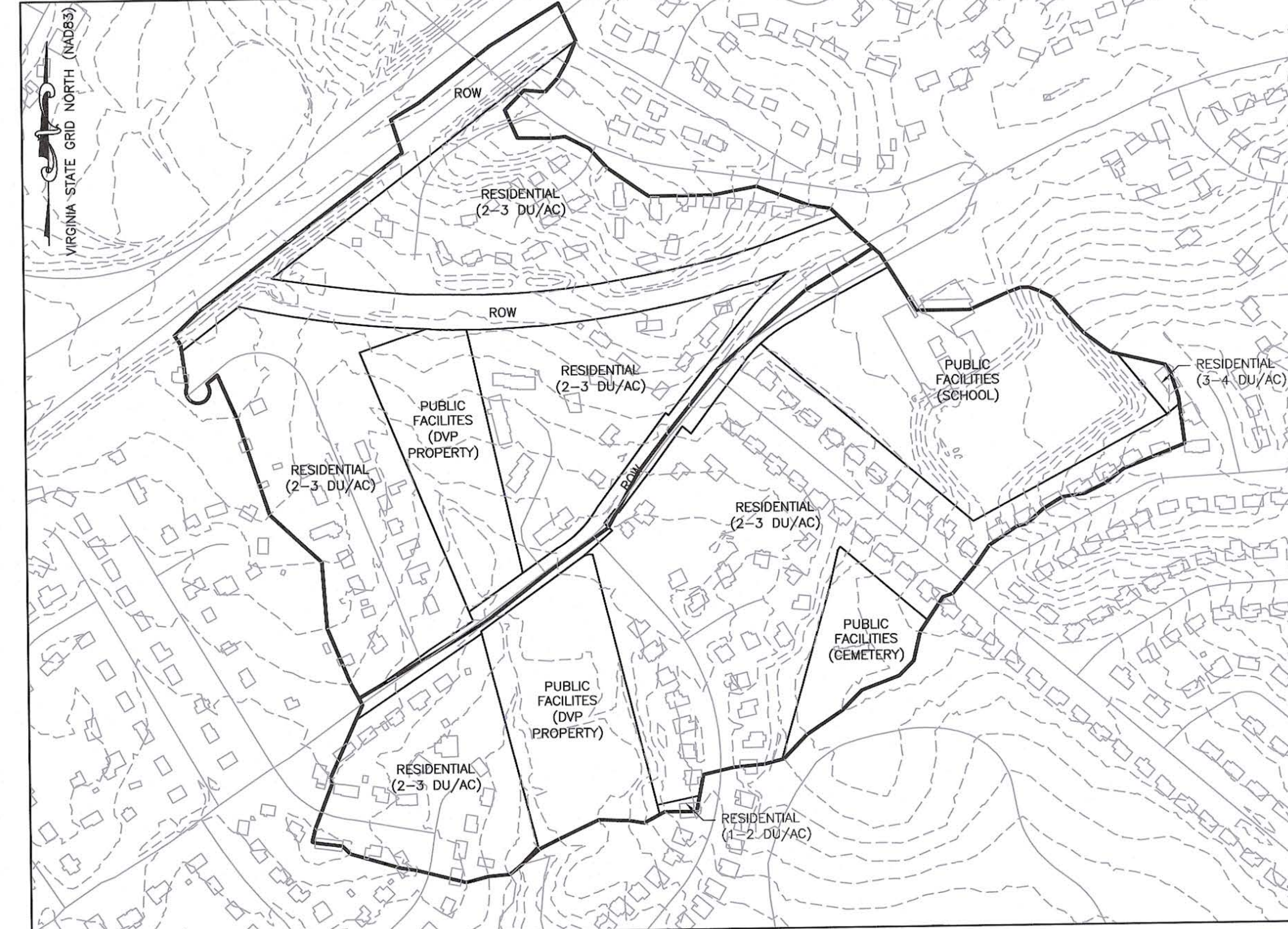
DRAINAGE AREA MAP



SOILS MAP



LAND USE MAP



1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 04NOV14 TIME 11:14:25
*

*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*

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X X XXXXXXX XXXX X
X X X X X XX
X X X X X X
XXXXXXX XXXX X XXXX X
X X X X X X
X X X X X
X X XXXXXXX XXXX XXX

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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.

THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION

NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,

DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION

KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1

HEC-1 INPUT

PAGE 1

LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1	ID DVP IDYWOOD SHREVE ROAD SUBSTATION
2	ID FAIRFAX COUNTY, VIRGINIA
3	ID CUSTOM 24-HOUR RAINFALL DISTRIBUTION (100-YEAR STORM)
4	ID BASED ON NOAA ATLAS 14 VIENNA TYSONS CONRNER GAUGE
5	ID FAIRFAX COUNTY COMPREHENSIVE PLAN LAND USES
	*DIAGRAM
6	IT 5 300
7	IO 5
	*
8	KK A1
9	KM BASIN A1 RUNOFF HYDROGRAPH
10	KO 22
11	PH 0 0.754 1.51 3.2 3.95 4.29 5.37 6.85 8.41
12	BA 0.064
13	LS 87
14	UD 0.15
	*
15	KK A
16	KM BASIN A RUNOFF HYDROGRAPH
17	KO 22
18	BA 0.135
19	LS 87
20	UD 0.2
	*
21	ZZ

1

SCHEMATIC DIAGRAM OF STREAM NETWORK		
INPUT LINE	(V) ROUTING	(--->) DIVERSION OR PUMP FLOW
NO.	(.) CONNECTOR	(<---) RETURN OF DIVERTED OR PUMPED FLOW
8	A1	.
15	.	A

RUNOFF SUMMARY								
FLOW IN CUBIC FEET PER SECOND								
TIME IN HOURS, AREA IN SQUARE MILES								
OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE
				6-HOUR	24-HOUR	72-HOUR	TIME OF MAX STAGE	
+	HYDROGRAPH AT	A1	215.	12.17	33.	12.	11.	.06
+	HYDROGRAPH AT	A	413.	12.25	71.	25.	24.	.14

*** NORMAL END OF HEC-1 ***



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Dominion

DOMINION VIRGINIA POWER
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XXXX-FP-XXX
FLOODPLAIN STUDY
FAIRVIEW LAKE TRIBUTARY
PROVIDENCE DISTRICT
FAIRFAX COUNTY, VIRGINIA

SEAL



KEY PLAN

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY	TIB
APPROVED BY	SCC
CHECKED BY	SCC
DATE	NOV 5, 2014

TITLE

HEC-1
MODEL

PROJECT NO. 50058411

07

SHEET NO.

07 OF 25

[illegible]

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DOMINION VIRGINIA POWER
Idylwood Substation
XXXX-FP-XXX

FLOODPLAIN STUDY
FAIRVIEW LAKE TRIBUTARY

PROVIDENCE DISTRICT
FAIRFAX COUNTY, VIRGINIA



KEY PLAN

SCALE

No.	DATE	BY	Description

DRAWN BY	TIB
APPROVED BY	SCC
CHECKED BY	SCC
DATE	NOV 5, 2014

TITLE

EXISTING

HEC-RAS

MODEL

PROJECT NO: 50050411

00

00

E

D

C

B

A

1

2

3

4

5

HEC-RAS VERSION 4.1.0 JAN 2010
U.S. ARMY CORPS OF ENGINEERS
HYDROLOGIC ENGINEERING CENTER
609 SECOND STREET
DAVIS, CALIFORNIA

X X XXXXXX XXXX XXXX XX XXXX
X X X X X X X X X
X X X X X X X X X
XXXXXXX XXXX X XXX XXXX XXXXXX XXXX
X X X X X X X X X
X X X X X X X X X
X X XXXXXX XXXX X X X XXXXX

PROJECT DATA
PROJECT TITLE: TRIB HOLMES RUN
PROJECT FILE : TRIB_HOLMES_RUN.PRJ
RUN DATE AND TIME: 10/29/2014 5:38:15 PM

PROJECT IN ENGLISH UNITS

PROJECT DESCRIPTION:
HORIZONTAL DATUM BASED ON NAD 83, VERTICAL DATUM BASED ON FINISHED FIRST FLOOR
ELEVATION OF CONTROL HOUSE = 376.50. TO CONVERT ELEVATIONS TO NGVD 29, SUBTRACT
0.65' FROM MODEL. TO CONVERT TO NAVD 88, SUBTRACT 1.39'.

PLAN DATA

PLAN TITLE: PROPOSED
PLAN FILE : W:\PROJECT\DVP-IDYLEWOOD\HEC-RAS\TRIB_HOLMES_RUN.P02

GEOMETRY TITLE: PROPOSED
GEOMETRY FILE : W:\PROJECT\DVP-IDYLEWOOD\HEC-RAS\TRIB_HOLMES_RUN.G02

FLOW TITLE : PROPOSED
FLOW FILE : W:\PROJECT\DVP-IDYLEWOOD\HEC-RAS\TRIB_HOLMES_RUN.F02

PLAN SUMMARY INFORMATION:

NUMBER OF: CROSS SECTIONS = 9 MULTIPLE OPENINGS = 0
CULVERTS = 1 INLINE STRUCTURES = 0
BRIDGES = 0 LATERAL STRUCTURES = 0

COMPUTATIONAL INFORMATION

WATER SURFACE CALCULATION TOLERANCE = 0.01
CRITICAL DEPTH CALCULATION TOLERANCE = 0.01
MAXIMUM NUMBER OF ITERATIONS = 20
MAXIMUM DIFFERENCE TOLERANCE = 0.3
FLOW TOLERANCE FACTOR = 0.001

COMPUTATION OPTIONS

CRITICAL DEPTH COMPUTED ONLY WHERE NECESSARY
CONVEYANCE CALCULATION METHOD: AT BREAKS IN N VALUES ONLY
FRICTION SLOPE METHOD: AVERAGE CONVEYANCE
COMPUTATIONAL FLOW REGIME: MIXED FLOW

FLOW DATA

FLOW TITLE: PROPOSED
FLOW FILE : W:\PROJECT\DVP-IDYLEWOOD\HEC-RAS\TRIB_HOLMES_RUN.F02

FLOW DATA (CFS)

RIVER	REACH	RS	100YR
TRIB_HOLMES_RUN MAIN		1776	215
TRIB_HOLMES_RUN MAIN		1283	413

BOUNDARY CONDITIONS

RIVER	REACH	PROFILE	UPSTREAM	DOWNSTREAM
TRIB_HOLMES_RUN MAIN		100YR	NORMAL S = 0.013	KNOWN WS = 356.5

CHANGES IN WS AND EG

RIVER	REACH	RS	PROFILE	TYPE	VALUE
TRIB_HOLMES_RUN MAIN		1552	100YR KNOWN WS	376.99	

GEOMETRY DATA

GEOMETRY TITLE: PROPOSED
GEOMETRY FILE : W:\PROJECT\DVP-IDYLEWOOD\HEC-RAS\TRIB_HOLMES_RUN.G02

CROSS SECTION

RIVER: TRIB_HOLMES_RUN
REACH: MAIN RS: 1776

INPUT

DESCRIPTION:
STATION ELEVATION DATA NUM= 15
STA ELEV STA ELEV STA ELEV STA ELEV STA ELEV
20.58 386.16 46.11 384.91 100.23 382.62 124.08 375.49 158.24 374.74
161.53 373.96 164.29 373.93 167.69 374.58 177.14 374.98 192.12 381.74
217.67 382.77 222.58 383.61 252.17 383.16 302.7 385.43 324.36 385.43

MANNING'S N VALUES NUM= 3
STA N VAL STA N VAL STA N VAL
20.58 .055 158.24 .013 167.69 .055

BANK STA: LEFT RIGHT LENGTHS: LEFT CHANNEL RIGHT COEFF CONTR. EXPAN.
158.24 167.69 219.66 219.65 219.86 .1 .3

CROSS SECTION

RIVER: TRIB_HOLMES_RUN
REACH: MAIN RS: 1552

INPUT

DESCRIPTION:

STATION ELEVATION DATA NUM= 12
STA ELEV STA ELEV STA ELEV STA ELEV STA ELEV
0 378.16 33.18 378.16 65.54 376.94 82.42 374.93 100.29 372.61
101.62 372.22 105.37 372.25 106.28 372.6 120.14 376.22 179.48 376.33
267.24 378.04 324.01 379.36

MANNING'S N VALUES NUM= 3
STA N VAL STA N VAL STA N VAL
0 .055 100.29 .013 106.28 .055

BANK STA: LEFT RIGHT LENGTHS: LEFT CHANNEL RIGHT COEFF CONTR. EXPAN.
100.29 106.28 282.59 275 266.31 .3 .5
INEFFECTIVE FLOW NUM= 2
STA L STA R ELEV PERMANENT
0 95.735 375.63 F
113.985 324.01 375.62 F

CULVERT

RIVER: TRIB_HOLMES_RUN
REACH: MAIN RS: 1487

INPUT

DESCRIPTION:

DISTANCE FROM UPSTREAM XS = 6
DECK/ROADWAY WIDTH = 268.9
WEIR COEFFICIENT = 2.6
UPSTREAM DECK/ROADWAY COORDINATES
NUM= 8
STA HI CORD LO CORD STA HI CORD LO CORD STA HI CORD LO CORD
3.55 378.54 0 39.95 377.71 0 88.65 376.8 0
138.56 376.5 0 186.01 376.65 0 234.34 377.01 0
281.35 377.68 0 325 378.34 0

UPSTREAM BRIDGE CROSS SECTION DATA

STATION ELEVATION DATA NUM= 12
STA ELEV STA ELEV STA ELEV STA ELEV STA ELEV
0 378.16 33.18 378.16 65.54 376.94 82.42 374.93 100.29 372.61
101.62 372.22 105.37 372.25 106.28 372.6 120.14 376.22 179.48 376.33
267.24 378.04 324.01 379.36

MANNING'S N VALUES NUM= 3
STA N VAL STA N VAL STA N VAL
0 .055 100.29 .013 106.28 .055

BANK STA: LEFT RIGHT COEFF CONTR. EXPAN.
100.29 106.28 .3 .5
INEFFECTIVE FLOW NUM= 2
STA L STA R ELEV PERMANENT
0 95.735 375.63 F
113.985 324.01 375.62 F

DOWNSTREAM DECK/ROADWAY COORDINATES

NUM= 8
STA HI CORD LO CORD STA HI CORD LO CORD STA HI CORD LO CORD
3.55 378.54 0 39.95 377.71 0 88.65 376.8 0
138.56 376.5 0 186.01 376.65 0 234.34 377.01 0
281.35 377.68 0 325 378.34 0

DOWNSTREAM BRIDGE CROSS SECTION DATA

STATION ELEVATION DATA NUM= 43
STA ELEV STA ELEV STA ELEV STA ELEV STA ELEV
0 376.34 34.36 376 135.81 375 138.86 374 141.9 373
144.94 372 147.99 371 151.03 370 154.07 369 157.12 368
159.32 367 165.69 367 168.28 368 171.31 369 191.79 370
233.25 371 240.52 371.65 240.84 371.66 240.99 371.67 241.26 371.68
241.39 371.68 241.54 371.69 241.73 371.7 241.97 371.7 242.52 371.71
243.42 371.73 244.7 371.76 246.45 371.79 248.8 371.84 251.94 371.9
256.2 371.99 256.72 372 259.1 372.05 261.43 372.09 263.43 372.13
264.05 372.14 266.47 372.61 276.09 373.31 278.63 373.49 313.28 376.39
313.41 376.39 317.76 376.39 325 376.55

MANNING'S N VALUES NUM= 3
STA N VAL STA N VAL STA N VAL
0 .1 154.07 .06 171.31 .12

BANK STA: LEFT RIGHT COEFF CONTR. EXPAN.
154.07 171.31 .3 .5

UPSTREAM EMBANKMENT SIDE SLOPE = 0 HORIZ. TO 1.0 VERTICAL
DOWNSTREAM EMBANKMENT SIDE SLOPE = 0 HORIZ. TO 1.0 VERTICAL
MAXIMUM ALLOWABLE SUBMERGENCE FOR WEIR FLOW = .98
ELEVATION AT WHICH WEIR FLOW BEGINS =
ENERGY HEAD USED IN SPILLWAY DESIGN =
SPILLWAY HEIGHT USED IN DESIGN =
WEIR CREST SHAPE = BROAD CRESTED

NUMBER OF CULVERTS = 1

CULVERT NAME SHAPE RISE SPAN
CULVERT #1 CIRCULAR 2.75

FWHA CHART # 1 - CONCRETE PIPE CULVERT
FWHA SCALE # 1 - SQUARE EDGE ENTRANCE WITH HEADWALL

SOLUTION CRITERIA = HIGHEST U.S. EG
CULVERT UPSTRM DIST LENGTH TOP N BOTTOM N DEPTH BLOCKED ENTRANCE LOSS COEF EXIT LOSS COEF
6 268.9 .013 .013 0 .5 1

UPSTREAM ELEVATION = 371.97
CENTERLINE STATION = 101.86

DOWNSTREAM ELEVATION = 367
CENTERLINE STATION = 162.505

CULVERT OUTPUT PROFILE #100YR CULV GROUP: CULVERT #1

Q CULV GROUP (CFS)	62.36	CULV FULL LEN (FT)	142.26
# BARRELS	1	CULV VEL US (FT/S)	10.50
Q BARREL (CFS)	62.36	CULV VEL DS (FT/S)	10.50
E.G. US. (FT)	377.28	CULV INV EL UP (FT)	371.97
W.S. US. (FT)	376.99	CULV INV EL DN (FT)	367.00
E.G. DS (FT)	371.30	CULV FRCTN LS (FT)	4.32
W.S. DS (FT)	370.40	CULV EXIT LOSS (FT)	0.81
DELTA EG (FT)	5.98	CULV ENTR LOSS (FT)	0.86
DELTA WS (FT)	6.59	Q WEIR (CFS)	152.64
E.G. IC (FT)	377.25	WEIR STA LFT (FT)	65.44
E.G. OC (FT)	377.28	WEIR STA RGT (FT)	225.86
CULVERT CONTROL	OUTLET	WEIR SUBMERG	0.00
CULV WS INLET (FT)	374.72	WEIR MAX DEPTH (FT)	0.73

CULV WS OUTLET (FT)	369.75	WEIR AVG DEPTH (FT)	0.49
CULV NML DEPTH (FT)	1.98	WEIR FLOW AREA (SQ FT)	79.34
CULV CRT DEPTH (FT)	2.52	MIN EL WEIR FLOW (FT)	376.51

NOTE: THE USER HAS ENTERED KNOWN ENERGY, A KNOWN WATER SURFACE, OR A CHANGE IN WATER SURFACE. THEREFORE, NO HYDRAULIC PROPERTIES WERE COMPUTED THROUGH THE CULVERT.

NOTE: DURING SUPERCRITICAL ANALYSIS, THE CULVERT DIRECT STEP METHOD WENT TO NORMAL DEPTH. THE PROGRAM THEN ASSUMED NORMAL DEPTH AT THE OUTLET.

NOTE: DURING THE SUPERCRITICAL CALCULATIONS A HYDRAULIC JUMP OCCURRED INSIDE OF THE CULVERT.

NOTE: THE CULVERT INLET IS SUBMERGED AND THE CULVERT FLOWS FULL OVER PART OR ALL OF ITS LENGTH. THEREFORE, THE CULVERT INLET EQUATIONS ARE NOT VALID AND THE SUPERCRITICAL RESULT HAS BEEN DISCARDED. THE OUTLET ANSWER WILL BE USED.

CROSS SECTION

RIVER: TRIB_HOLMES_RUN
REACH: MAIN RS: 1283

INPUT

DESCRIPTION:

STATION ELEVATION DATA NUM= 43
STA ELEV STA ELEV STA ELEV STA ELEV STA ELEV
0 376.34 34.36 376 135.81 375 138.86 374 141.9 373
144.94 372 147.99 371 151.03 370 154.07 369 157.12 368
159.32 367 165.69 367 168.28 368 171.31 369 191.79 370
233.25 371 240.52 371.65 240.84 371.66 240.99 371.67 241.26 371.68
241.39 371.68 241.54 371.69 241.73 371.7 241.97 371.7 242.52 371.71
243.42 371.73 244.7 371.76 246.45 371.79 248.8 371.84 251.94 371.9
256.2 371.99 256.72 372 259.1 372.05 261.43 372.09 263.43 372.13
264.05 372.14 266.47 372.61 276.09 373.31 278.63 373.49 313.28 376.39
313.41 376.39 317.76 376.39 325 376.55

MANNING'S N VALUES NUM= 3
STA N VAL STA N VAL STA N VAL
0 .1 154.07 .06 171.31 .12

BANK STA: LEFT RIGHT LENGTHS: LEFT CHANNEL RIGHT COEFF CONTR. EXPAN.
154.07 171.31 83.9 83.13 82.52 .3 .5

CROSS SECTION

RIVER: TRIB_HOLMES_RUN
REACH: MAIN RS: 1200

INPUT

DESCRIPTION:

STATION ELEVATION DATA NUM= 133
STA ELEV STA ELEV STA ELEV STA ELEV STA ELEV
0 376 9.5 376 10.45 376 13.88 376 14.99 376
15.57 376 16.01 376 16.26 376 16.43 376 16.55 376
17.2 376 17.49 376 17.98 376 18.7 376 19.64 376
20.57 376 21.42 376 23.67 376 25.41 376 26.88 376
26.94 376 27.99 376 28.12 376 28.3 376 29.36 376
29.63 376 29.94 376 30.29 376 30.64 376 31.8 376
32.16 376 32.41 376 35.36 376 47.26 376 49.04 376
50.19 376 50.63 376 54.45 376 58.95 376 59.68 376
60.34 376 60.96 376 61.54 376 62.39 376 71.08 376
71.31 376 71.78 376 72.34 376 72.98 376 73.69 376
73.8 376 74.54 376 75.29 376 76.13 376 77.12 376
77.18 376 96.78 376 111.22 376 121.5 376 124.59 374
127.69 373 130.78 372 133.88 371 136.97 370 140.06 369
143.16 368 146.25 367 149.35 366 152.44 365 155.53 364
158.63 363 159.06 363 162.07 364 165.07 365 168.08 366
171.08 367 174.09 368 176.43 368.48 176.62 368.48 176.85 368.48
177.1 368.49 177.4 368.49 177.73 368.5 178.1 368.51 178.48 368.51
178.87 368.52 179.22 368.53 179.73 368.54 180.48 368.55 181.57 368.58
183.24 368.61 185.93 368.66 190.77 368.76 200.71 368.95 206.94 369.08
202.81 369 203 369 204.94 369.04 205.1 369.04 206.94 369.08
208.28 369.11 209.13 369.12 209.6 369.13 209.96 369.14 210.17 369.15
210.35 369.15 210.56 369.15 210.97 369.16 212.05 369.18 212.67 369.2
214.31 369.23 214.97 369.24 217 369.29 217.62 369.3 219.83 369.34
220.3 369.35 220.49 369.36 220.66 369.36 220.81 369.36 220.97 369.37
221.15 369.37 223.41 369.42 223.64 369.42 224.19 369.43 225.08 369.45
227.24 369.5 228.49 369.52 230.15 369.56 232.05 369.59 234.09 369.64
235.08 369.66 275 370.94 324.96 371.83

MANNING'S N VALUES NUM= 3
STA N VAL STA N VAL STA N VAL
0 .1 143.16 .06 174.09 .12

BANK STA: LEFT RIGHT LENGTHS: LEFT CHANNEL RIGHT COEFF CONTR. EXPAN.
143.16 174.09 158.33 159.94 162.39 .1 .3

CROSS SECTION

RIVER: TRIB_HOLMES_RUN
REACH: MAIN RS: 1040

INPUT

DESCRIPTION:

STATION ELEVATION DATA NUM= 151
STA ELEV STA ELEV STA ELEV STA ELEV STA ELEV
0 368.8 .68 368.79 .91 368.78 .96 368.78 1.2 368.78
1.55 368.77 1.9 368.77 2.33 368.76 2.81 368.75 3.33 368.74
3.83 368.74 4.34 368.73 5.49 368.71 11.49 368.58 12.12 368.56
13.53 368.54 14.23 368.52 14.96 368.5 15.69 368.48 18.38 368.44
18.98 368.42 19.45 368.41 20.66 368.39 20.91 368.38 22.63 368.36
24.21 368.33 24.45 368.32 25.85 368.3 26.06 368.29 26.3 368.29
26.66 368.28 27.83 368.26 28.63 368.24 29.86 368.22 31.49 368.18
35.89 368 36.79 368 37.85 368 39 368 39.65 368
41.32 367.97 44.21 367.91 46.02 367.88 47.71 367.85 49.16 367.82
64.17 367.6 64.31 367.59 64.76 367.59 65.03 367.58 65.4 367.57
65.87 367.55 66.43 367.53 67.05 367.51 67.7 367.49 68.26 367.47
68.93 367.45 69.17 367.45 69.96 367.42 70.9 367.39 72 367.35
73.26 367.3 74.71 367.26 74.8 367.25 76.43 367.2 78.22 367.15
80.36 367.08 80.38 367.08 82.94 367 83.3 367 83.31 367
83.33 367 83.49 367 84.47 366.81 84.82 366.72 85.87 366.49
86.7 366.24 87.02 366.17 87.54 366 88.3 365.86 89.43 365.66
91.35 365.25 91.76 365.18 91.98 365.14 92.12 365.12 92.56 365
94.02 364.83 94.71 364.74 96.77 364.52 98.2 364.41 98.4 364.39
99.61 364.28 101.38 364.15 101.46 364.14 103.48 364 103.66 363.99



Dewberry Consultants LLC

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Fairfax VA 22031-4666
703.849.0100
703.849.0101 Fax



Dominion

DOMINION VIRGINIA POWER

Idylwood Substation
XXXX-FP-XXX

FLOODPLAIN STUDY
FAIRVIEW LAKE TRIBUTARY

PROVIDENCE DISTRICT
FAIRFAX COUNTY, VIRGINIA

SEAL



KEY PLAN

SCALE

No.	DATE	BY	Description
-----	------	----	-------------

REVISIONS

DRAWN BY TIB

APPROVED BY SCC

CHECKED BY SCC

DATE NOV 5, 2014

TITLE

PROPOSED
HEC-RAS
MODEL

PROJECT NO. 50058411

11

SHEET NO.

11 OF 25

[illegible]

1

2

3

4

5

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
RIVER: TRIB_HOLMES_RUN

REACH	RIVER STA.	CONTR.	EXPAN.
MAIN	1776	.1	.3
MAIN	1552	.3	.5
MAIN	1487	CULVERT	
MAIN	1283		.5
MAIN	1200		.3
MAIN	1040		.3
MAIN	885		.3
MAIN	735	.1	.3
MAIN	564	.1	.3
MAIN	400	.1	.3

PROFILE OUTPUT TABLE - STANDARD TABLE 1

REACH	RIVER STA	PROFILE	Q TOTAL (CFS)	MIN CH EL (FT)	W.S. ELEV (FT)	CRIT W.S. (FT)	E.G. ELEV (FT)	E.G. SLOPE (FT/FT)	VEL CHNL (FT/S)	FLOW AREA (SQ FT)	TOP WIDTH (FT)	FROUDE # CHL
MAIN	1776	100YR	215.00	373.93	377.05	376.21	377.28	0.000468	4.92	123.16	62.85	0.51
MAIN	1552	100YR	215.00	372.22	376.99		377.21	0.000226	4.74	192.82	149.14	0.39
MAIN	1487	CULVERT										
MAIN	1283		100YR	413.00	367.00	370.40	371.30	0.028597	7.97	71.89	58.60	0.85
MAIN	1200		100YR	413.00	363.00	367.26	368.07	0.032299	7.21	57.30	26.44	0.86
MAIN	1040		100YR	413.00	360.00	364.50	364.84	0.012853	4.74	102.53	92.50	0.55
MAIN	885		100YR	413.00	358.01	362.65	362.99	0.011079	5.92	135.82	68.73	0.54
MAIN	735	100YR	413.00	356.08	359.88	359.88	360.59	0.023856	7.48	91.54	73.43	0.76
MAIN	564	100YR	413.00	353.18	356.96	356.61	357.24	0.008564	4.57	99.80	79.93	0.45
MAIN	400	100YR	413.00	351.48	356.50	355.02	356.56	0.002078	2.62	319.38	167.55	0.23



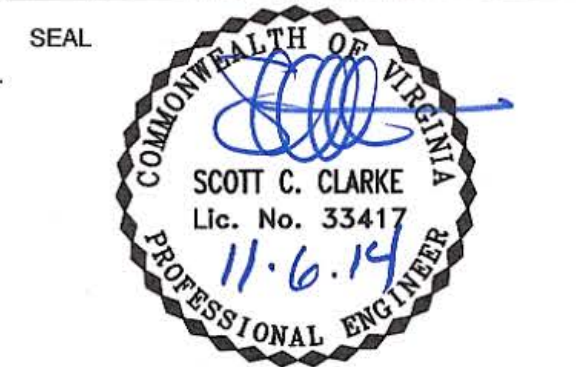
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703.849.0110 Fax



DOMINION VIRGINIA POWER
Idylwood Substation
XXXX-FP-XXX

FLOODPLAIN STUDY
FAIRVIEW LAKE TRIBUTARY
PROVIDENCE DISTRICT
FAIRFAX COUNTY, VIRGINIA



KEY PLAN

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY

TIB

APPROVED BY

SCC

CHECKED BY

SCC

DATE

NOV 5, 2014

TITLE

PROPOSED
HEC-RAS
MODEL

PROJECT NO.

50058411



Dominion VIRGINIA POWER
Idylwood Substation
XXXX-FP-XXX
FLOODPLAIN STUDY
FAIRVIEW LAKE TRIBUTARY
PROVIDENCE DISTRICT
FAIRFAX COUNTY, VIRGINIA



KEY PLAN

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY	TIB
APPROVED BY	SCC
CHECKED BY	SCC
DATE	NOV 5, 2014

TITLE
**PROPOSED
OVERLAND
HEC-RAS
MODEL**
PROJECT NO. 50058411

1
HEC-RAS VERSION 4.1.0 JAN 2010
U.S. ARMY CORPS OF ENGINEERS
HYDROLOGIC ENGINEERING CENTER
609 SECOND STREET
DAVIS, CALIFORNIA

E
X X XXXXXX XXXX XXXX XX XXXX
X X X X X X X X X
X X X X X X X X X
XXXXXXXX XXXX XXX XXXX XXXXXX XXXX
X X X X X X X X X
X X X X X X X X X
X X XXXXXX XXXX X X X XXXXX

PROJECT DATA
PROJECT TITLE: TRIB_HOLMES_RUN
PROJECT FILE : TRIB_HOLMES_RUN.PRJ
RUN DATE AND TIME: 10/29/2014 5:45:27 PM

PROJECT IN ENGLISH UNITS

PROJECT DESCRIPTION:
HORIZONTAL DATUM BASED ON NAD 83, VERTICAL DATUM BASED ON FINISHED FIRST FLOOR
ELEVATION OF CONTROL HOUSE = 376.50. TO CONVERT ELEVATIONS TO NGVD 29, SUBTRACT
0.65' FROM MODEL. TO CONVERT TO NAVD 88, SUBTRACT 1.39'.

PLAN DATA

PLAN TITLE: PROPOSED OVERLAND
PLAN FILE : W:\PROJECT\DVP-IDYLEWOOD\HEC-RAS\TRIB_HOLMES_RUN.P03

GEOMETRY TITLE: PROPOSED OVERLAND
GEOMETRY FILE : W:\PROJECT\DVP-IDYLEWOOD\HEC-RAS\TRIB_HOLMES_RUN.G06

FLOW TITLE : PROPOSED OVERLAND
FLOW FILE : W:\PROJECT\DVP-IDYLEWOOD\HEC-RAS\TRIB_HOLMES_RUN.F03

PLAN SUMMARY INFORMATION:
NUMBER OF: CROSS SECTIONS = 6 MULTIPLE OPENINGS = 0
CULVERTS = 0 INLINE STRUCTURES = 0
BRIDGES = 0 LATERAL STRUCTURES = 0

COMPUTATIONAL INFORMATION
WATER SURFACE CALCULATION TOLERANCE = 0.01
CRITICAL DEPTH CALCULATION TOLERANCE = 0.01
MAXIMUM NUMBER OF ITERATIONS = 20
MAXIMUM DIFFERENCE TOLERANCE = 0.3
FLOW TOLERANCE FACTOR = 0.001

COMPUTATION OPTIONS
CRITICAL DEPTH COMPUTED ONLY WHERE NECESSARY
CONVEYANCE CALCULATION METHOD: AT BREAKS IN N VALUES ONLY
FRICTION SLOPE METHOD: AVERAGE CONVEYANCE
COMPUTATIONAL FLOW REGIME: MIXED FLOW

C
FLOW DATA

FLOW TITLE: PROPOSED OVERLAND
FLOW FILE : W:\PROJECT\DVP-IDYLEWOOD\HEC-RAS\TRIB_HOLMES_RUN.F03

FLOW DATA (CFS)

RIVER	REACH	RS	100YR
TRIB_HOLMES_RUN MAIN		1552	215
TRIB_HOLMES_RUN MAIN		1487	152.64
TRIB_HOLMES_RUN MAIN		1283	413

BOUNDARY CONDITIONS

RIVER	REACH	PROFILE	UPSTREAM	DOWNSTREAM
TRIB_HOLMES_RUN MAIN		100YR	NORMAL S = 0.000213	KNOWN WS = 370.4

B
GEOMETRY DATA

GEOMETRY TITLE: PROPOSED OVERLAND
GEOMETRY FILE : W:\PROJECT\DVP-IDYLEWOOD\HEC-RAS\TRIB_HOLMES_RUN.G06

CROSS SECTION

RIVER: TRIB_HOLMES_RUN
REACH: MAIN RS: 1552

INPUT
DESCRIPTION:
STATION ELEVATION DATA NUM= 12
STA ELEV STA ELEV STA ELEV STA ELEV STA ELEV
0 378.16 33.18 378.16 65.54 376.94 82.42 374.93 100.29 372.61
101.62 372.22 105.37 372.25 106.28 372.6 120.14 376.22 179.48 376.33
267.24 378.04 324.01 379.36

MANNING'S N VALUES NUM= 3
STA N VAL STA N VAL STA N VAL
0 .055 100.29 .013 106.28 .055

BANK STA: LEFT RIGHT LENGTHS: LEFT CHANNEL RIGHT COEFF CONTR. EXPAN.
100.29 106.28 141.295 137.5 133.155 .3 .5

INEFFECTIVE FLOW NUM= 2
STA L STA R ELEV PERMANENT
0 95.735 375.63 F
113.985 324.01 375.62 F

CROSS SECTION

RIVER: TRIB_HOLMES_RUN
REACH: MAIN RS: 1487

3
INPUT
DESCRIPTION:
STATION ELEVATION DATA NUM= 8
STA ELEV STA ELEV STA ELEV STA ELEV STA ELEV
3.55 378.54 39.95 377.71 88.65 376.8 138.56 376.5 186.01 376.65
234.34 377.01 281.35 377.68 325 378.34

MANNING'S N VALUES NUM= 3
STA N VAL STA N VAL STA N VAL
3.55 .013 3.55 .013 325 .013

BANK STA: LEFT RIGHT LENGTHS: LEFT CHANNEL RIGHT COEFF CONTR. EXPAN.
3.55 325 141.295 137.5 133.155 .1 .3

CROSS SECTION

RIVER: TRIB_HOLMES_RUN
REACH: MAIN RS: 1456

INPUT
DESCRIPTION:
STATION ELEVATION DATA NUM= 54
STA ELEV STA ELEV STA ELEV STA ELEV STA ELEV
0 378.01 59.39 377 128.89 376 135.35 375 157.58 375
164.82 374.13 215.81 374.02 217.64 374.79 221.99 374.73 223.16 374.73
224.44 374.74 225.19 374.71 226.49 374.72 227.28 374.69 228.57 374.7
229.93 374.72 230.64 374.68 231.93 374.7 232.62 374.67 233.84 374.69
235.05 374.71 235.59 374.68 236.68 374.7 237.14 374.68 238.09 374.7
238.38 374.69 239.19 374.71 239.82 374.72 239.97 374.72 240.77 374.73
240.85 374.73 241.64 374.74 241.68 374.74 241.71 374.74 242.48 374.75
243.22 374.75 243.29 374.76 244.02 374.76 244.76 374.77 244.9 374.79
248.48 375 248.67 375 249.11 375 250.33 375.14 250.6 375.16
251.76 375.29 252.24 375.32 252.87 375.37 253.96 375.47 254.32 375.35
267.28 376.73 285.28 377.14 293.86 378.04 324.89 378.42

MANNING'S N VALUES NUM= 3
STA N VAL STA N VAL STA N VAL
0 .1 157.58 .035 217.64 .055

BANK STA: LEFT RIGHT LENGTHS: LEFT CHANNEL RIGHT COEFF CONTR. EXPAN.
157.58 217.64 108.34 101.14 94.04 .1 .3

INEFFECTIVE FLOW NUM= 1
STA L STA R ELEV PERMANENT
217.64 324.89 374.79 F

BLOCKED OBSTRUCTIONS NUM= 1
STA L STA R ELEV
221.67 229.68 378

CROSS SECTION

RIVER: TRIB_HOLMES_RUN
REACH: MAIN RS: 1355

INPUT
DESCRIPTION:
STATION ELEVATION DATA NUM= 15
STA ELEV STA ELEV STA ELEV STA ELEV STA ELEV
0 376.37 36.96 376 137.48 375 156.83 374 171.87 373
178.97 372 184.48 371 233.93 371 236.95 372 239.96 373
242.98 374 253.27 374.54 288.51 376.34 289.99 377.96 324.98 378.5

MANNING'S N VALUES NUM= 3
STA N VAL STA N VAL STA N VAL
0 .1 178.97 .035 236.95 .12

BANK STA: LEFT RIGHT LENGTHS: LEFT CHANNEL RIGHT COEFF CONTR. EXPAN.
178.97 236.95 55.63 54.58 53.52 .1 .3

CROSS SECTION

RIVER: TRIB_HOLMES_RUN
REACH: MAIN RS: 1301

INPUT
DESCRIPTION:
STATION ELEVATION DATA NUM= 35
STA ELEV STA ELEV STA ELEV STA ELEV STA ELEV
0 376.37 37.35 376 138.8 375 141.85 374 166.84 373
170.22 372 175.92 371 184.47 370 214.44 370 236.21 371
239.4 372 242.54 372.1 242.94 372.11 245.63 372.2 246.28 372.21
248.33 372.27 252.81 372.39 253.22 372.4 254.93 372.45 260.86 372.59
261.97 372.61 263.07 372.64 264.12 372.66 265.09 372.67 265.95 372.69
266.71 372.7 267.36 372.72 267.56 372.72 280.01 375.13 297.36 376.39
303.53 376.39 304.66 376.39 304.91 376.39 321.49 376.87 325 376.97

MANNING'S N VALUES NUM= 3
STA N VAL STA N VAL STA N VAL
0 .1 175.92 .035 236.21 .12

BANK STA: LEFT RIGHT LENGTHS: LEFT CHANNEL RIGHT COEFF CONTR. EXPAN.
175.92 236.21 17.55 17.64 17.68 .1 .3

CROSS SECTION

RIVER: TRIB_HOLMES_RUN
REACH: MAIN RS: 1283

INPUT
DESCRIPTION:
STATION ELEVATION DATA NUM= 43
STA ELEV STA ELEV STA ELEV STA ELEV STA ELEV
0 376.34 34.36 376 135.81 375 138.86 374 141.9 373
144.94 372 147.99 371 151.03 370 154.07 369 157.12 368
159.32 367 165.69 367 168.28 368 171.31 369 191.79 370
233.25 371 240.52 371.65 240.84 371.66 240.99 371.67 241.26 371.68
241.39 371.68 241.54 371.69 241.73 371.7 241.97 371.7 242.52 371.71
243.42 371.73 244.7 371.76 246.45 371.79 248.8 371.84 251.94 371.9
256.2 371.99 256.72 372 259.1 372.05 261.43 372.09 263.43 372.13
264.05 372.14 266.47 372.61 276.09 373.31 278.63 373.49 313.28 376.39
313.41 376.39 317.76 376.39 325 376.55

MANNING'S N VALUES NUM= 3
STA N VAL STA N VAL STA N VAL
0 .1 154.07 .06 171.31 .12

BANK STA: LEFT RIGHT LENGTHS: LEFT CHANNEL RIGHT COEFF CONTR. EXPAN.
154.07 171.31 83.9 83.13 82.52 .3 .5

CROSS SECTION

RIVER: TRIB_HOLMES_RUN
REACH: MAIN RS: 1487

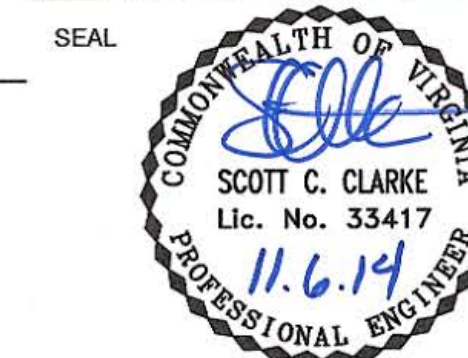
INPUT
DESCRIPTION:
STATION ELEVATION DATA NUM= 3
STA ELEV STA ELEV STA ELEV STA ELEV STA ELEV
0 376.34 34.36 376 135.81 375 138.86 374 141.9 373
144.94 372 147.99 371 151.03 370 154.07 369 157.12 368
159.32 367 165.69 367 168.28 368 171.31 369 191.79 370
233.25 371 240.52 371.65 240.84 371.66 240.99 371.67 241.26 371.68
241.39 371.68 241.54 371.69 241.73 371.7 241.97 371.7 242.52 371.71
243.42 371.73 244.7 371.76 246.45 371.79 248.8 371.84 251.94 371.9
256.2 371.99 256.72 372 259.1 372.05 261.43 372.09 263.43 372.13
264.05 372.14 266.47 372.61 276.09 373.31 278.63 373.49 313.28 376.39
313.41 376.39 317.76 376.39 325 376.55

MANNING'S N VALUES NUM= 3
STA N VAL STA N VAL STA N VAL
0 .1 154.07 .06 171.31 .12

BANK STA: LEFT RIGHT LENGTHS: LEFT CHANNEL RIGHT COEFF CONTR. EXPAN.
154.07 171.31 83.9 83.13 82.52 .3 .5

CROSS SECTION

RIVER: TRIB_HOLMES_RUN
REACH: MAIN RS: 1487



KEY PLAN

SCALE

[illegible]

No.	DATE	BY	Description
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REVISIONS

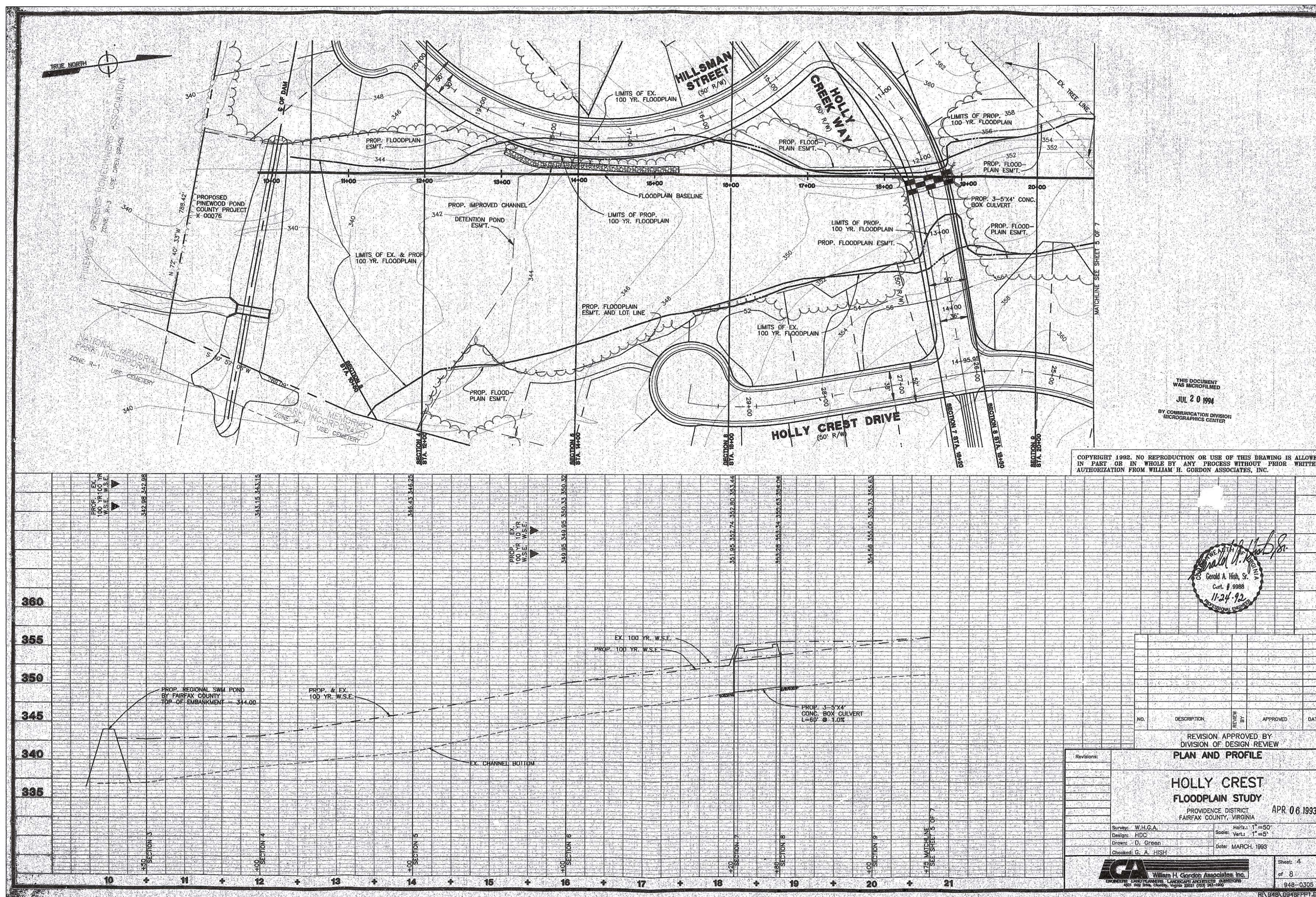
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APPROVED BY	SCC
CHECKED BY	SCC
DATE	NOV 5, 2014

TITLE
7864-FP-01
100-YEAR
FLOODPLAIN &
PROFILE

PROJECT NO. 50058411

16

SHEET NO. 16 OF



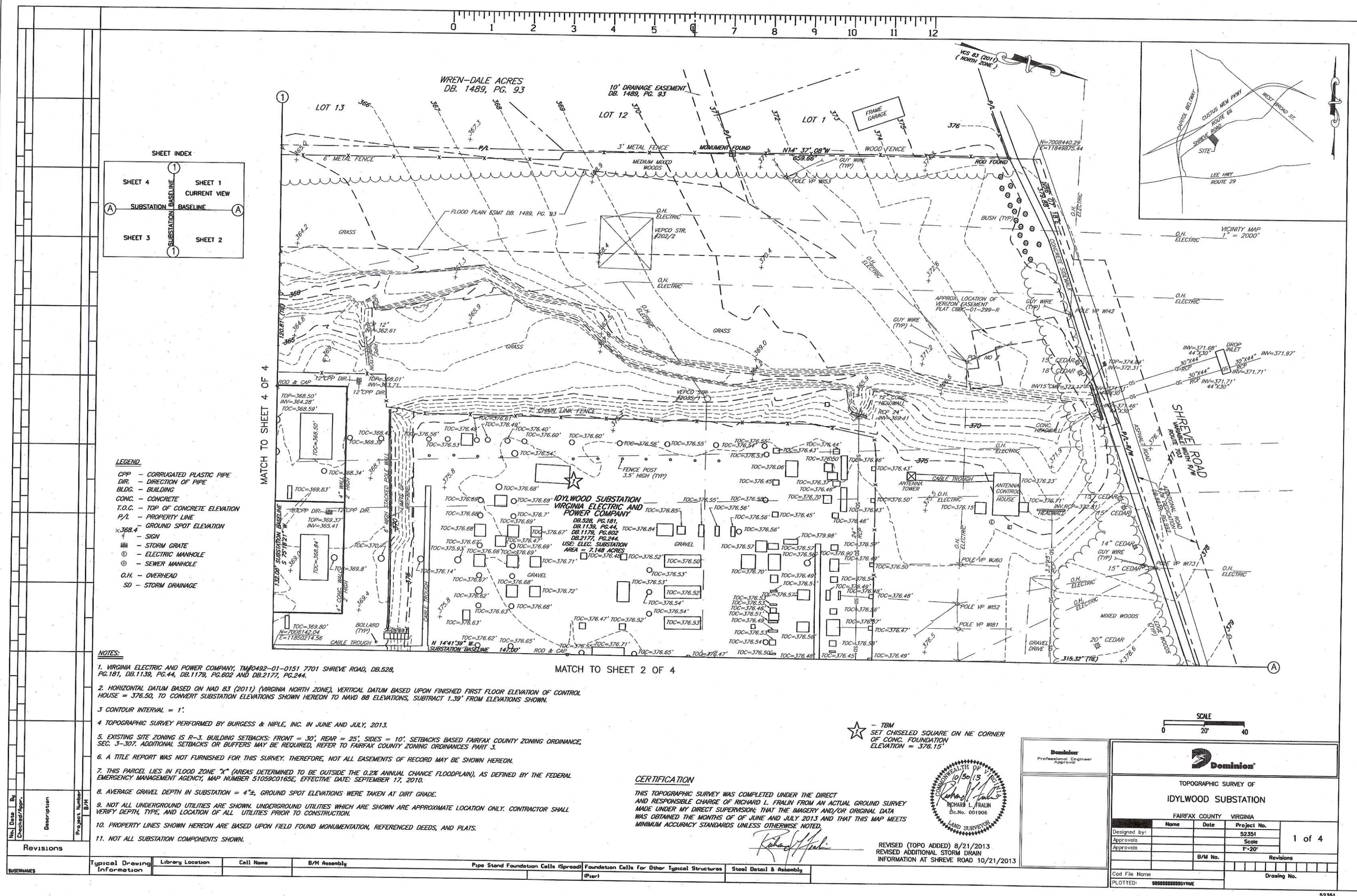
FOR REFERENCE ONLY

No.	DATE	BY	Description

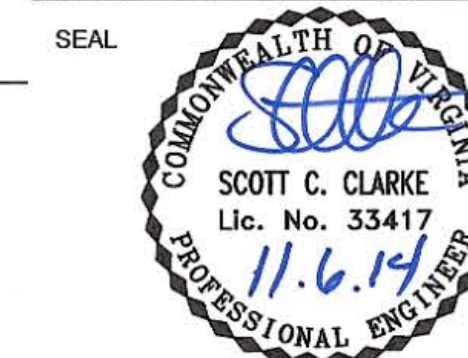
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APPROVED BY	SCC
CHECKED BY	SCC
DATE	NOV 5, 2014
TITLE	

TOPOGRAPHIC SURVEY

PROJECT NO. 50058411



FOR REFERENCE ONLY



KEY PLAN

SCALE

No.	DATE	BY	Description

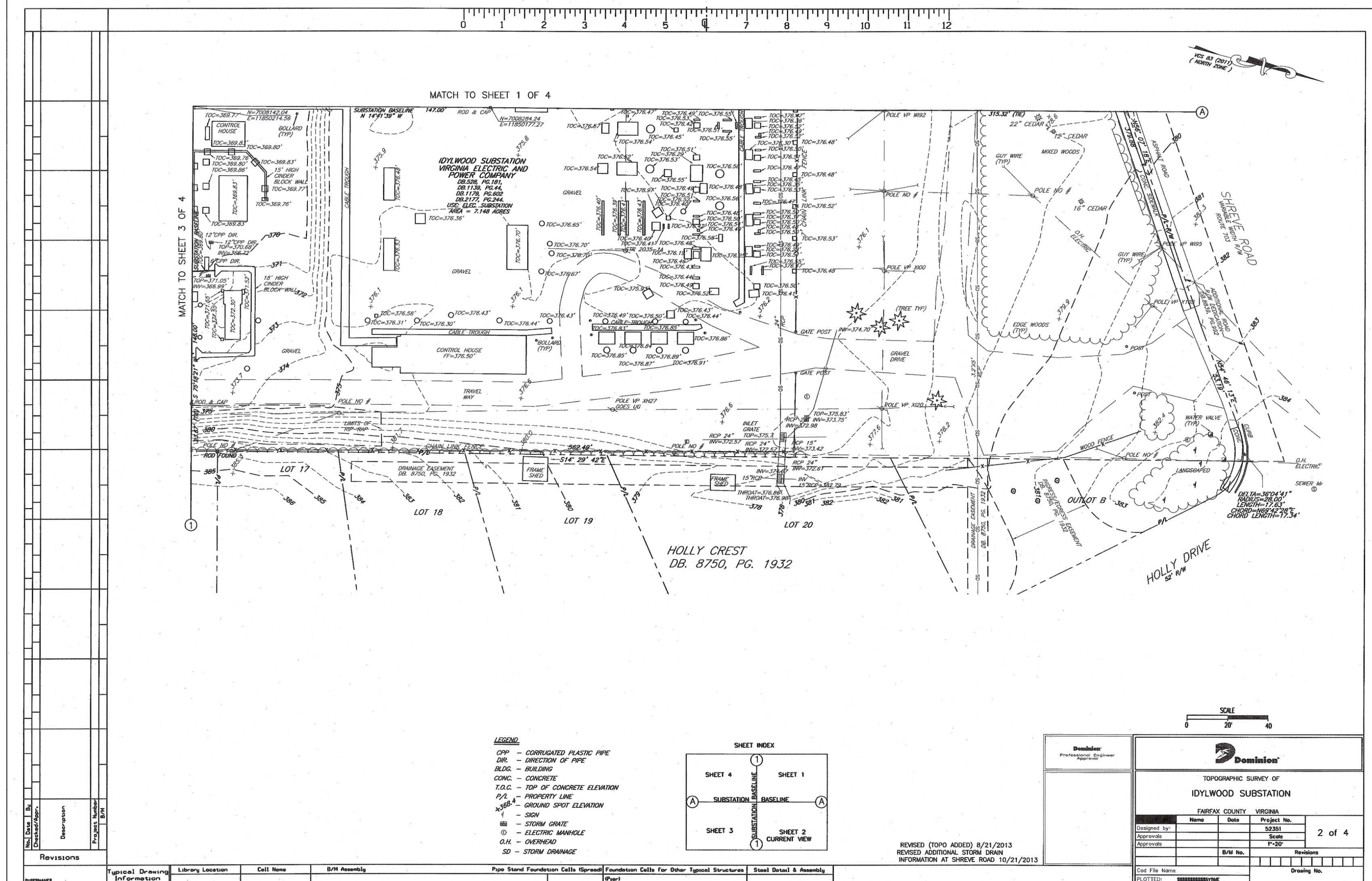
DRAWN BY	TIB
APPROVED BY	SCC
CHECKED BY	SCC
DATE	NOV 5, 2014
TITLE	

TOPOGRAPHIC SURVEY

PROJECT NO. 50058411

18

SHEET NO. 18 OF 25





DOMINION VIRGINIA POWER
Idylwood Substation
XXXX-FP-XXX
FLOODPLAIN STUDY
FAIRVIEW LAKE TRIBUTARY
PROVIDENCE DISTRICT
FAIRFAX COUNTY, VIRGINIA



KEY PLAN

SCALE

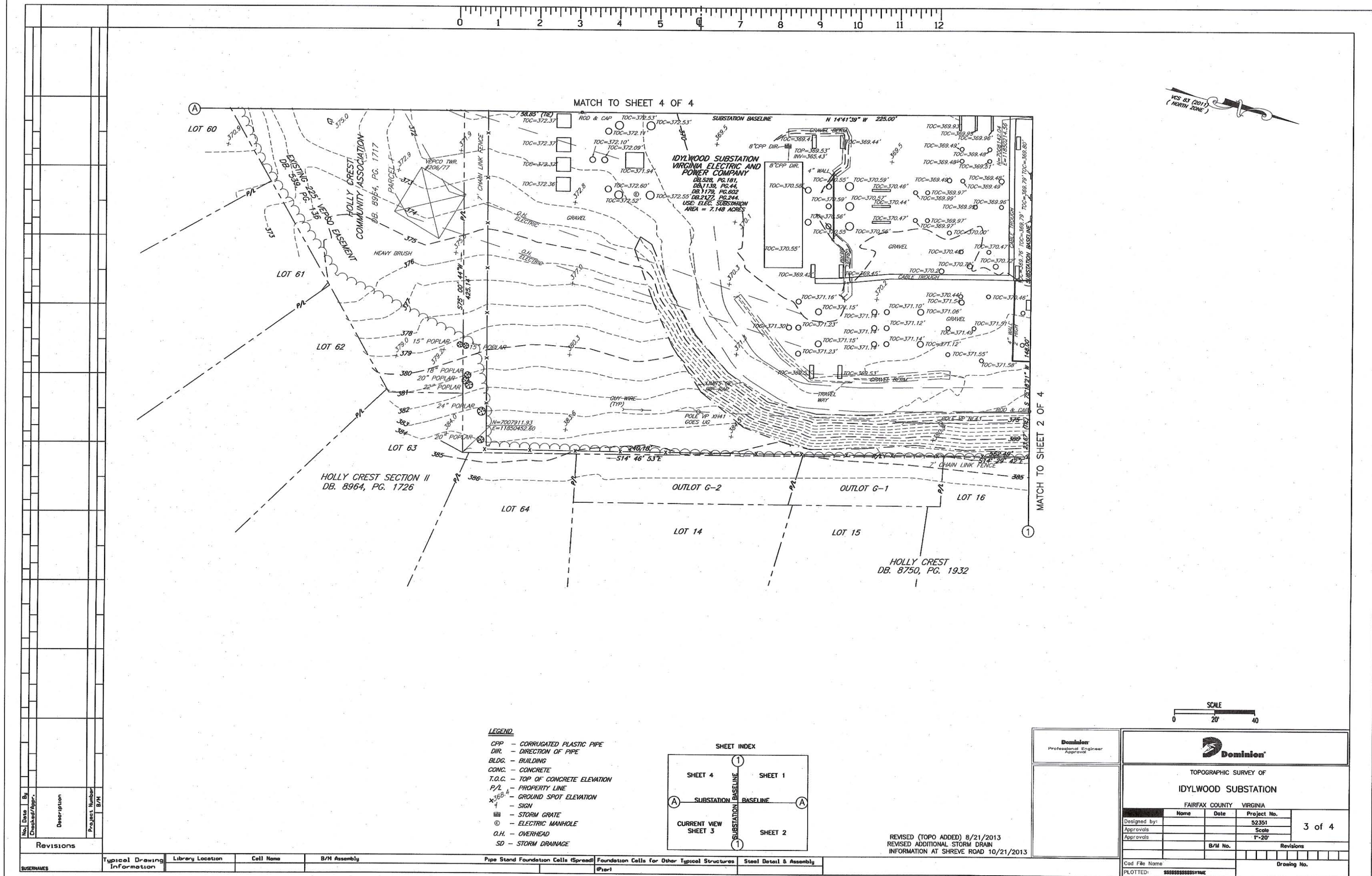
No.	DATE	BY	Description

REVISIONS			
DRAWN BY	TIB		
APPROVED BY	SCC		
CHECKED BY	SCC		
DATE	NOV 5, 2014		
TITLE			

TOPOGRAPHIC SURVEY

PROJECT NO. 50058411

19



Revisions	Typical Drawing Information	Library Location	Cell Name	B/M Assembly	Pipe Stand Foundation Cells (Spread)	Foundation Cells for Other Typical Structures	Steel Detail & Assembly

FOR REFERENCE ONLY

No.	DATE	BY	Description

REVISIONS

DRAWN BY TIB

APPROVED BY SCC

CHECKED BY SCC

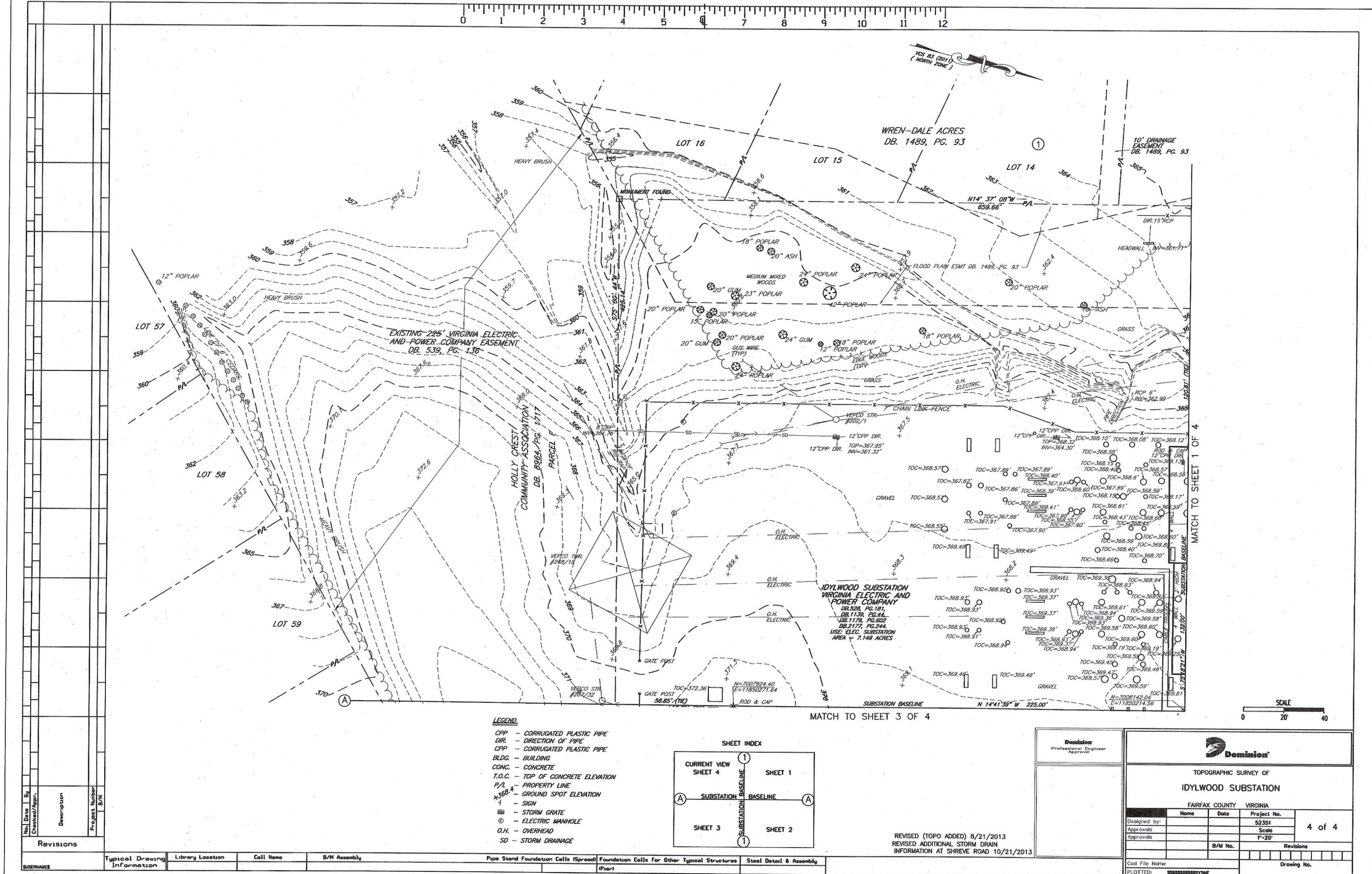
DATE NOV 5, 2014

TITLE

TOPOGRAPHIC SURVEY

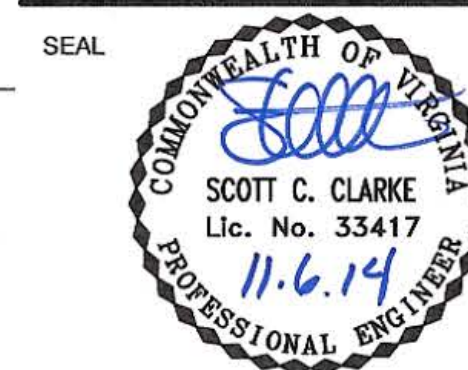
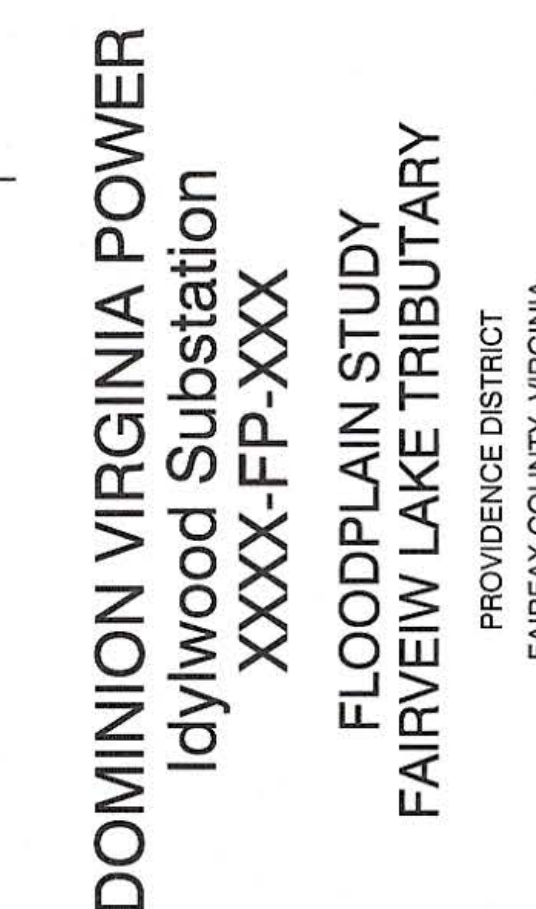
PROJECT NO. 50058411

20



FOR REFERENCE ONLY





SCALE

No.	DATE	BY	Description

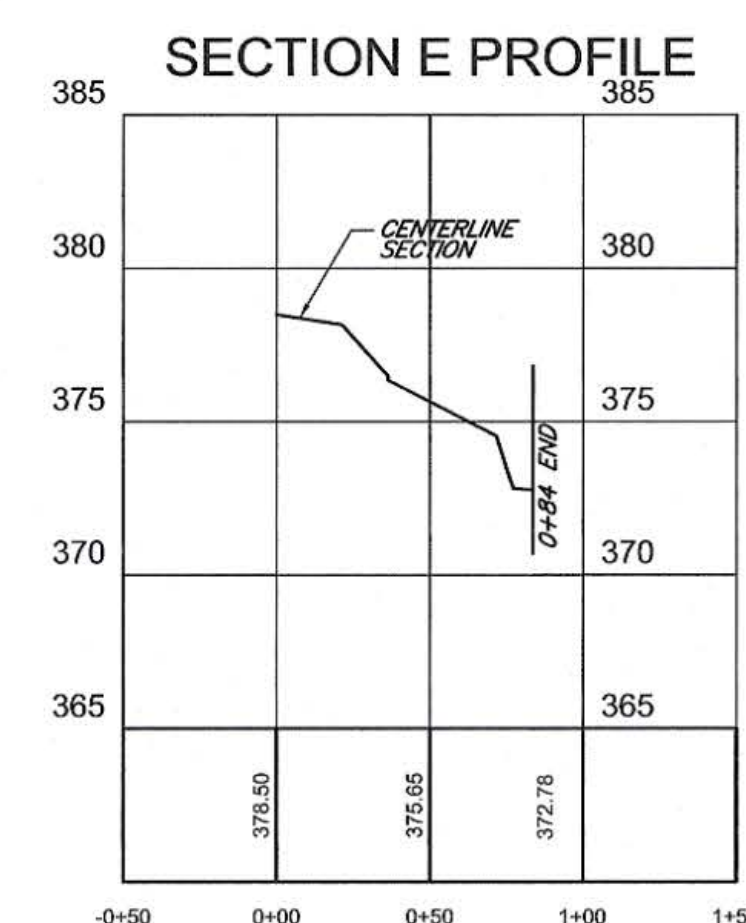
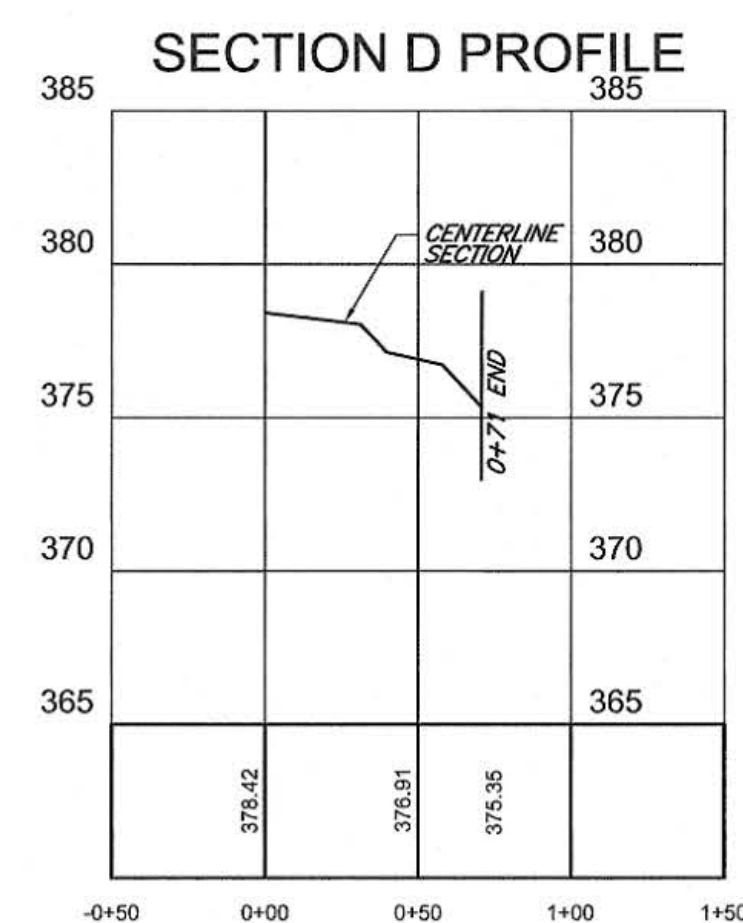
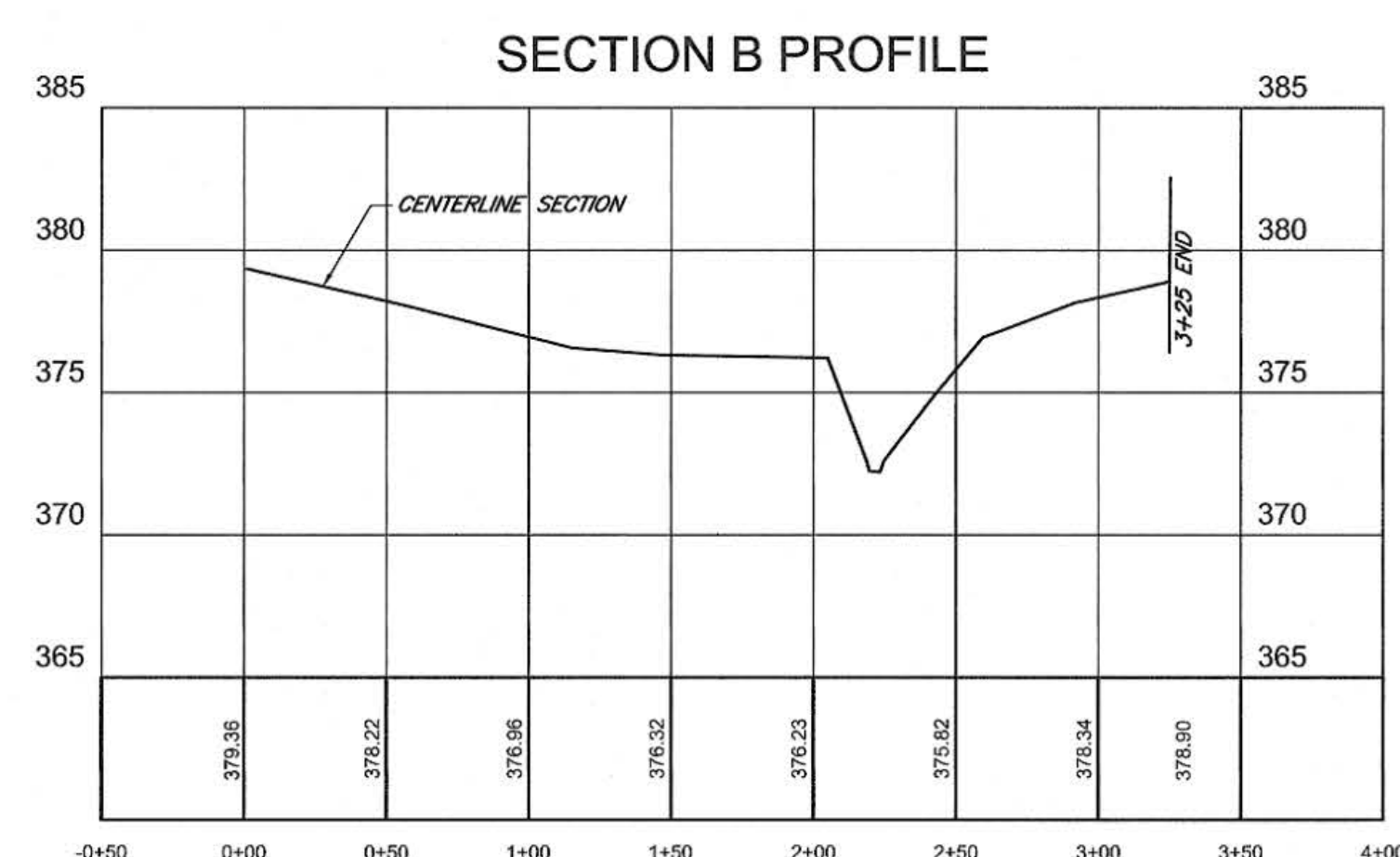
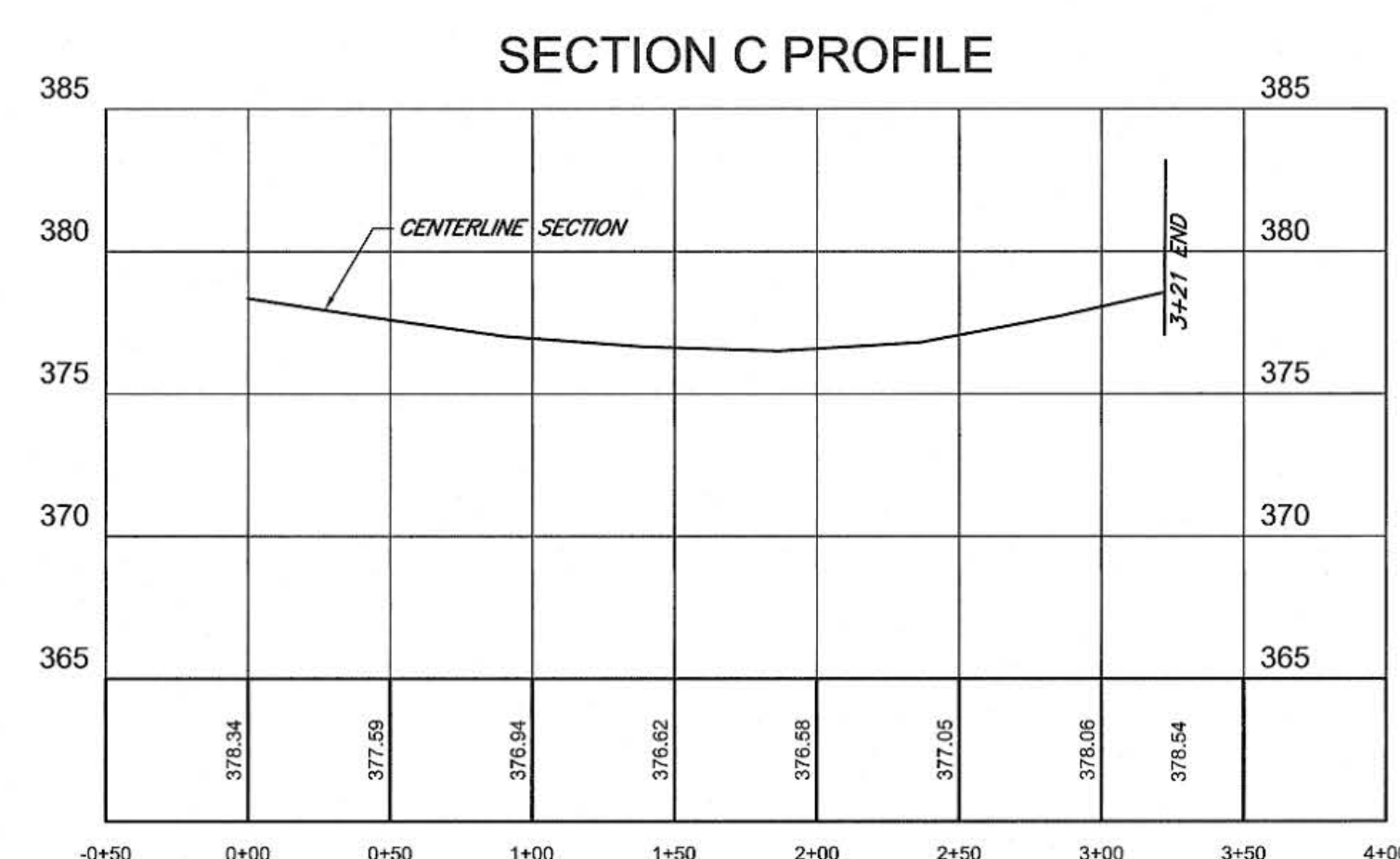
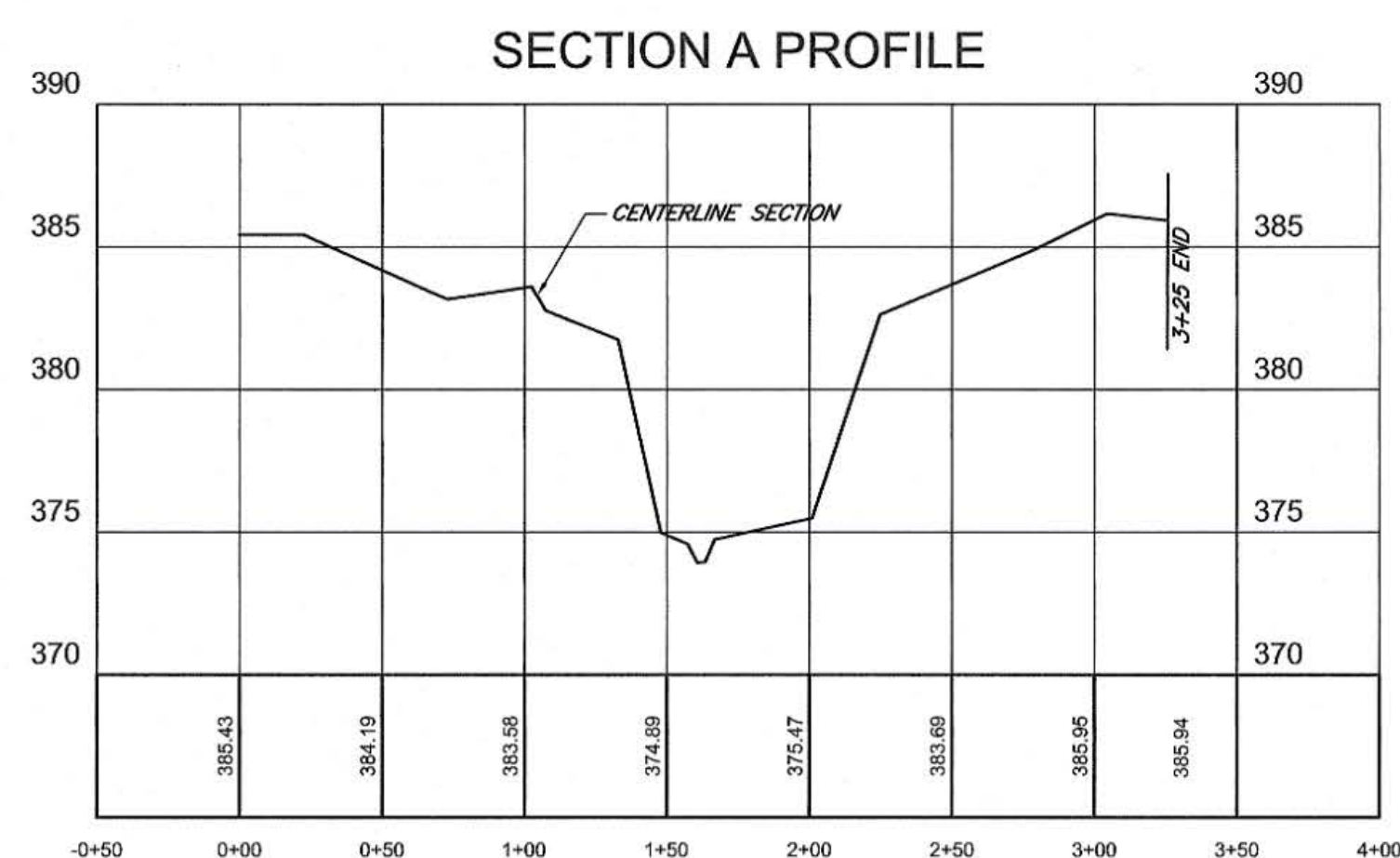
DRAWN BY	TIB
APPROVED BY	SCC
CHECKED BY	SCC
DATE	NOV 5, 2014
TITLE	

CROSS-SECTION SURVEY

PROJECT NO. 50058411

22

SHEET NO. 22 OF 25



PROFILES:
HORIZONTAL: 1" = 50'
VERTICAL : 1" = 5'

Designer
 Professional Engineer
 Approval


Dominion[®]

GROUND PROFILES

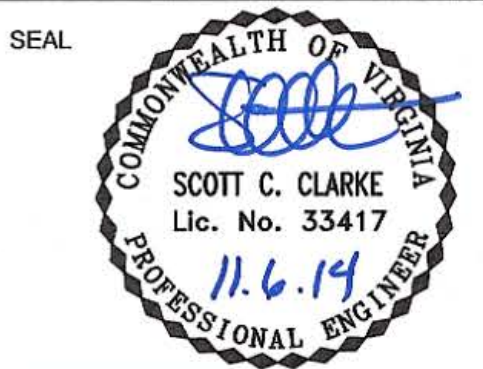
IDYLWOOD SUBSTATION
FAIRFAX COUNTY, VIRGINIA

	Name	Date	Project No.	
Designed by:	JDB	10/16/13	52351	2 of 3
Approvals			Scale	
Approvals			1"=50'	
		B/M No.	Revisions	

Cad File Name
PLOTTED: \$\$\$\$\$\$SYTIME

Drawing No.

FOR REFERENCE ONLY



KEY PLAN

SCALE

No.	DATE	BY	Description
REVISIONS			

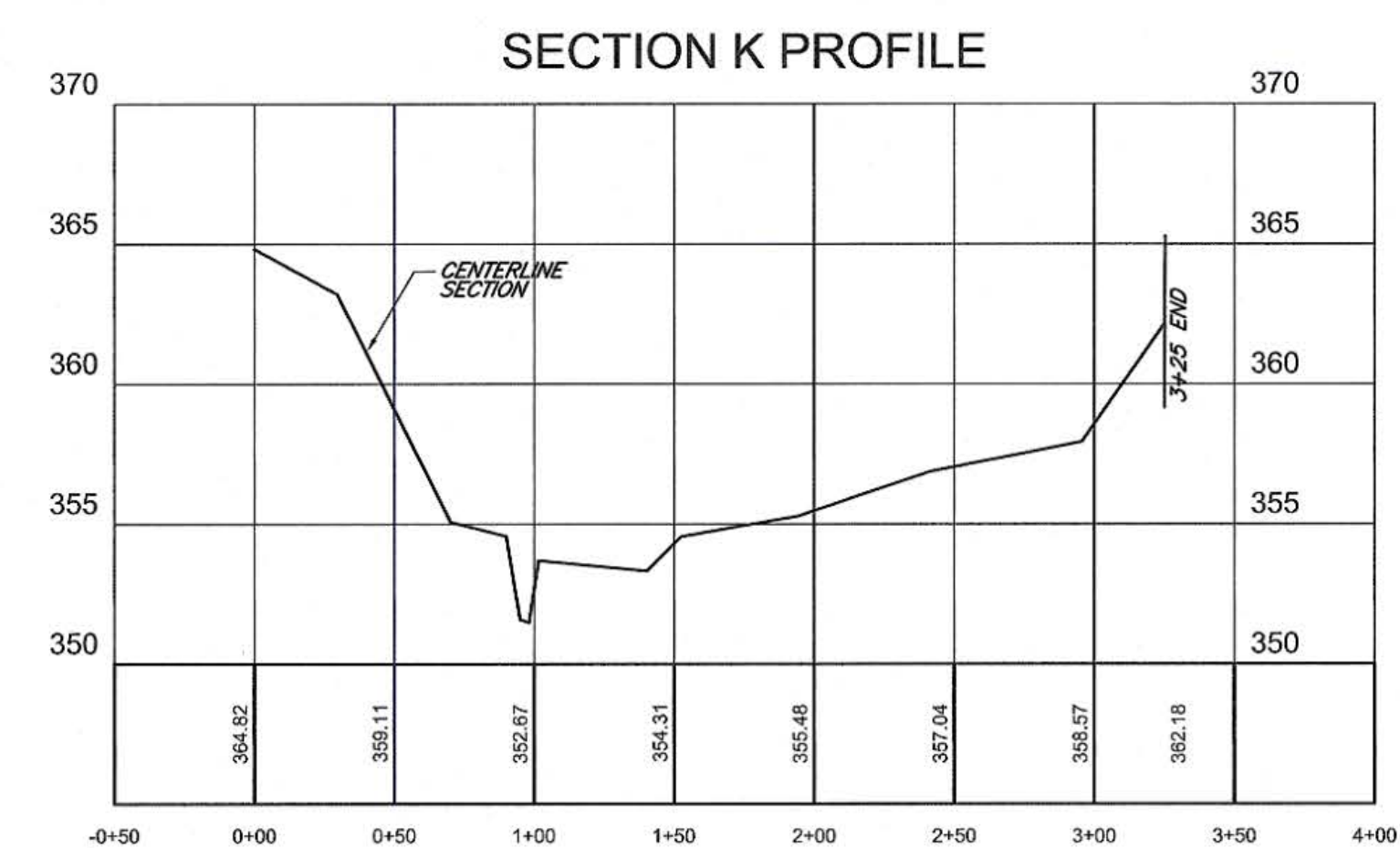
DRAWN BY	TIB
APPROVED BY	SCC
CHECKED BY	SCC
DATE	NOV 5, 2014
TITLE	

CROSS-SECTION SURVEY

PROJECT NO. 50058411

23

SHEET NO. 23 OF 25



PROFILES:
HORIZONTAL: 1" = 50'
VERTICAL : 1" = 5'



Dominion

GROUP PROFILES

IDYLWOOD SUBSTATION

FAIRFAX COUNTY, VIRGINIA

	Name	Date	Project No.	3 of 3										
Designed by:	JOB	10/16/13	52351											
Approvals			Scale											
Approvals			1"=50'											
		B/M No.	Revisions											
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Cad File Name			Drawing No.											
PLOTTED: 0000000000SYTIME														

FOR REFERENCE ONLY

Drawing Index

Civil

- 1 COVER SHEET
- 2 GENERAL NOTES & SOILS MAP
- 3 EXISTING CONDITIONS & DEMOLITION PLAN
- 4 PROPOSED FACILITY PLAN
- 5 ROADWAY IMPROVEMENTS & SIGHT DISTANCE PLAN
- 6 AT&T ENTRANCE SIGHT DISTANCE PLAN
- 7 PROPOSED GRADING & UTILITY PLAN
- 8 STORMWATER MANAGEMENT INFORMATION
- 9 DETENTION SYSTEM PROFILE - 1
- 10 DETENTION SYSTEM PROFILE - 2
- 11 PRE-DEVELOPED DRAINAGE AREA MAP
- 12 POST-DEVELOPED DRAINAGE AREA MAP
- 13 PROPOSED LANDSCAPING PLAN
- 14 NOTES, TABULATION, & EXISTING VEGETATION MAP
- 15 EXISTING DIMENSION PLAN FROM ADJACENT PROPERTY LINES & RESIDENCES
- 16 PROPOSED DIMENSION PLAN FROM ADJACENT PROPERTY LINES & RESIDENCES
- 17 SUBSTATION SECTION VIEW A-A'
- 18 SUBSTATION SECTION VIEW B-B'
- 19 DEVELOPMENT CONDITIONS

OVERALL SITE PHOTO



EXISTING VIEW

PROJECT INFORMATION

CIVIL ENGINEER:

DEWBERRY ENGINEERS INC.
4805 LAKE BROOK DRIVE, SUITE 200
GLEN ALLEN, VA 23060

CONTACT: KEN WAGNER, SENIOR PROJECT MANAGER
PHONE: 804-205-3350
FAX: 804-290-7928
EMAIL: kwagner@dewberry.com

APPLICANT:

DOMINION VIRGINIA POWER
701 EAST CARY STREET, 12TH FLOOR
RICHMOND, VA 23219

CONTACT: COURTNEY FISHER, PERMIT SPECIALIST
PHONE: 804-771-6408
FAX: 804-771-6303
EMAIL: courtney.r.fisher@dom.com

Idylwood Substation

Fairfax County, VA

Special Exception Plat and 2232 Plan

Client:
Dominion Virginia Power



CODE INFORMATION

TAX MAP #: 0492-01-0151, 0492-12-0001A

ZONING: R-3

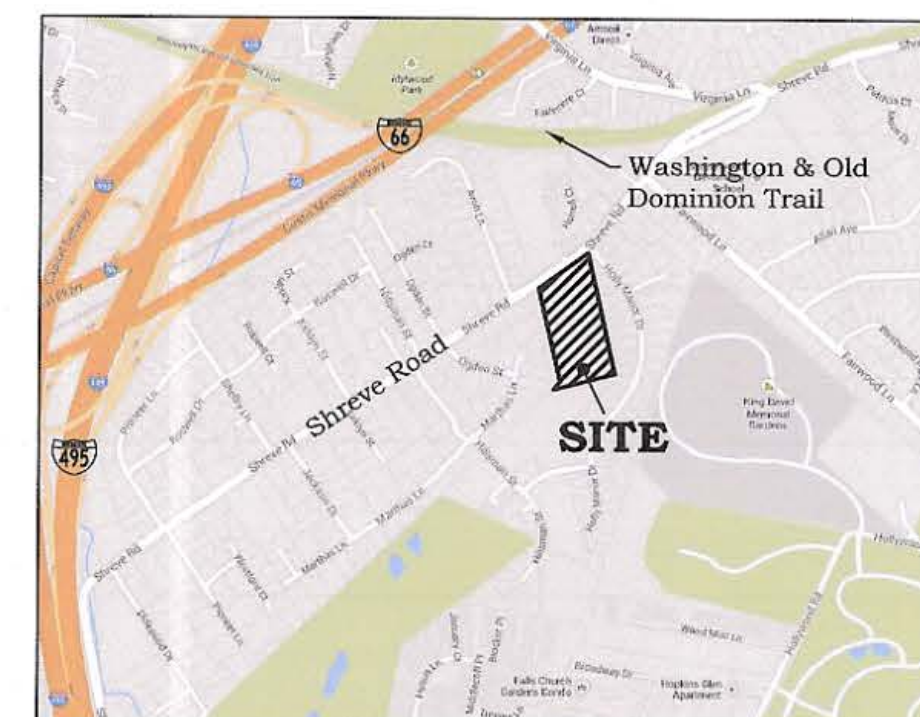
DISTRICT: PROVIDENCE

USE: LIGHT PUBLIC UTILITY USE (CATEGORY 1), ELECTRIC SUBSTATION, TELECOMMUNICATIONS FACILITY

PARCEL AREA: 7.148 ACRES (TOTAL)

MINIMUM LOT SIZE	REQUIRED 10,500 S.F.	PROVIDED 311,367 S.F.
MINIMUM LOT WIDTH	80 FT.	425 FT.
MAXIMUM BUILDING HEIGHT	EXEMPT	32± FT.
MAXIMUM FLOOR AREA RATIO	EXEMPT	.043
OPEN SPACE	25%	33%

VICINITY MAP



SCALE:
1" = 1000'

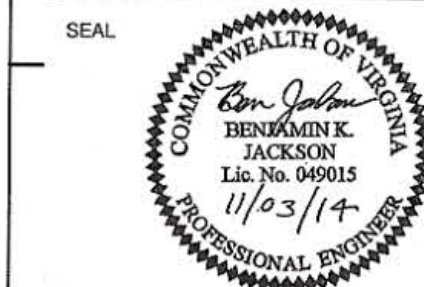
SE 2014-PR-032



Dewberry Engineers Inc.
4805 Lake Brook Drive, Suite 200
Glen Allen, Virginia 23060
PHONE: 804.290.7927
FAX: 804.290.7928
www.dewberry.com



DOMINION VIRGINIA POWER
Idylwood Substation
SE 2014-PR-032
SPECIAL EXCEPTION PLAT
2232 PLAN
PROVIDENCE DISTRICT
FAIRFAX COUNTY, VIRGINIA



KEY PLAN

SCALE

No.	DATE	BY	Description

REVISIONS
DRAWN BY: BKJ
APPROVED BY: KWW
CHECKED BY: KWW
DATE: NOVEMBER 2014

TITLE

COVER SHEET

PROJECT NO. 50058411

1

SHEET NO. 1 OF 19

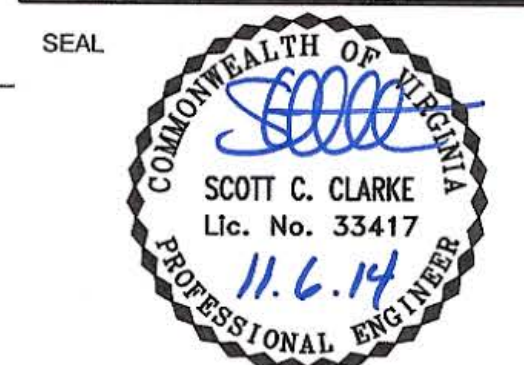
FOR REFERENCE ONLY



Dewberry Consultants LLC
8403 Arlington Blvd.
Fairfax VA 22031-4666
703.849.0100
703.849.0110 Fax



DOMINION VIRGINIA POWER
Idylwood Substation
XXXX-FP-XXX
FLOODPLAIN STUDY
FAIRVIEW LAKE TRIBUTARY
PROVIDENCE DISTRICT
FAIRFAX COUNTY, VIRGINIA



KEY PLAN

SCALE

No.	DATE	BY	Description

REVISIONS
DRAWN BY: TIB
APPROVED BY: SCC
CHECKED BY: SCC
DATE: NOV 5, 2014

TITLE

SE 2014-PR-032
COVER SHEET

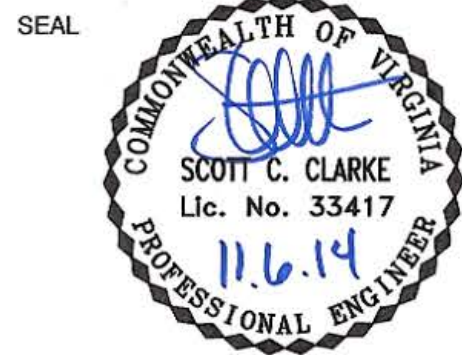
PROJECT NO. 50058411

24

SHEET NO. 24 OF 25



DOMINION VIRGINIA POWER
Idylwood Substation
XXXX-FP-XXX
FLOODPLAIN STUDY
FAIRVIEW LAKE TRIBUTARY
PROVIDENCE DISTRICT
FAIRFAX COUNTY, VIRGINIA



KEY PLAN

SCALE

No.	DATE	BY	Description
REVISIONS			
DRAWN BY		TIB	
APPROVED BY		SCC	
CHECKED BY		SCC	
DATE		NOV 5, 2014	
TITLE			

CORRESPONDENCE

PROJECT NO. 50058411

Somoza, Taryn

From: Clarke, Scott
Sent: Tuesday, November 04, 2014 9:24 AM
To: Somoza, Taryn
Subject: FW: Idylwood Substation

See below for datum confirmation.

From: Jackson, Benjamin
Sent: Wednesday, September 24, 2014 6:02 PM
To: Clarke, Scott
Cc: Hoover, Michael; Wagner, Kenneth; Buck, Taryn
Subject: RE: Idylwood Substation

Scott,

After talking with our surveyor (Mike Hoover, attached) and Larry Hedblom (chief of surveys, Dominion), the vertical control for the survey was done on the site datum. To convert from the site datum (what we've been using in our dwgs) to NAVD29, subtract 0.65'. Does this answer your question?

Benjamin K. Jackson, P.E.
Project Engineer
Dewberry
4805 Lake Brook Drive, Suite 200
Glen Allen, VA 23060
Office: 804.290.7957
Direct: 804.205.3352
Fax: 804.290.7998
Email: bjackson@dewberry.com
www.dewberry.com