

NOTE 1: THE LOCATIONS OF THE NEW SUBSTATION YARD, SUBSTATION YARD EXPANSIONS AND LINE STRUCTURES ARE BASED UPON PRELIMINARY ENGINEERING AND PRESENTLY AVAILABLE DATA. FINAL DESIGN WILL BE COMPLETED UPON FINAL GROUND SURVEY, GEOTECHNICAL STUDIES AND ASSOCIATED DETAILED ENGINEERING.



H:\Internal\GRAPHICS\PLAN\PROJ\Cloverdale 500kV Station Study\ArcView\Specialty Map_Top.mxd

USGS Quadrangles: Daleville & Roanoke; 2011 Aerial Basemap - Commonwealth of Virginia

LEGEND:

	Proposed Substation Equipment within the existing APCo Yard		765kV Existing		500kV Existing		345kV Existing		138kV Existing
	Proposed New or Existing Yard Expansion and New Substation Equipment		765kV To Be Relocated		500kV To Be Relocated		345kV To Be Removed		138kV To Be Relocated
			765kV Relocated		500kV Relocated		345kV New		138kV Relocated
					500kV New		345kV Future Use		34.5kV To Be Removed

A Structure Type (See "Response to Guidelines," Section II.B.3)
● Preliminary Proposed Structure Location



MAP 8

Land Use and Zoning



PROJECT LOCATION

BOTETOURT COUNTY, VIRGINIA

REFERENCE:
 PROPOSED NEW AND RELOCATED TRANSMISSION LINES WERE PROVIDED BY APPALACHIAN POWER COMPANY, AERIAL BASEMAP, COMMONWEALTH OF VIRGINIA, 2011. ZONING CLASSIFICATION AREAS PROVIDED BY BOTETOURT COUNTY. ZONING CLASSES FROM CHAPTER 25, ZONING, COUNTY CODE OF BOTETOURT, VIRGINIA, JULY 24, 2012.

LEGEND

- NEW OR RELOCATED TRANSMISSION LINE STRUCTURE
- PROPOSED NEW OR RELOCATED TRANSMISSION LINE
- ▭ PROPOSED YARD/PROPOSED YARD EXTENSION
- ▭ ZONING BOUNDARY
- ▭ DISTRICT BOUNDARY

ZONING CLASSES (BOTETOURT COUNTY)

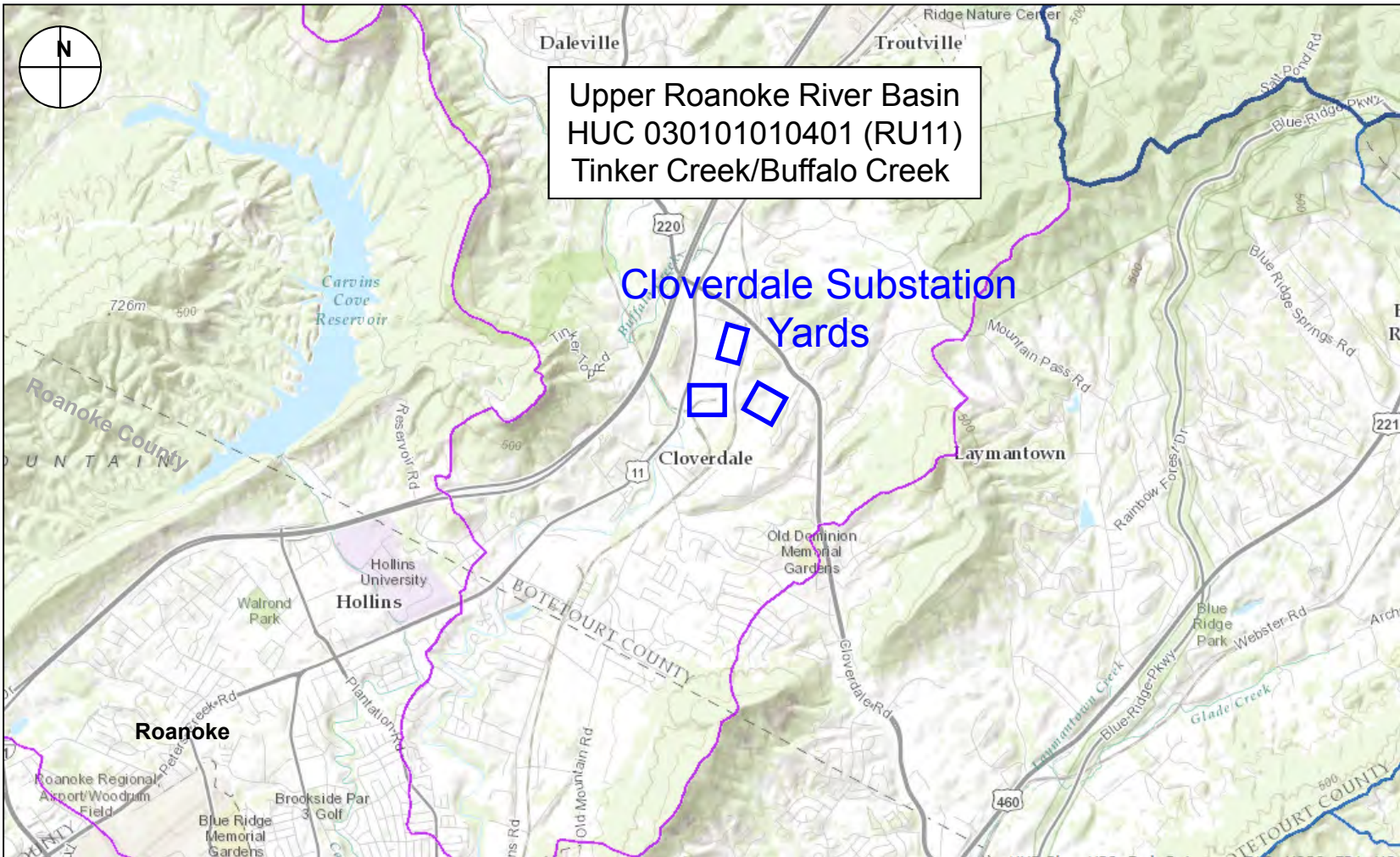
A1 = Agricultural	M3 = Industrial District
AR = Agricultural Residential	POP = Planned Office Park District
B1 = Business	R1 = Residential
B2 = Business	R2 = Residential
B3 = Business	R3 = Residential
FC = Forest Conservation	RR = Rural Residential
M1 = Industrial District	SC = Shopping Center
M2 = Industrial District	TND = Traditional Neighborhood District


EXHIBIT
LAND USE/ZONING MAP

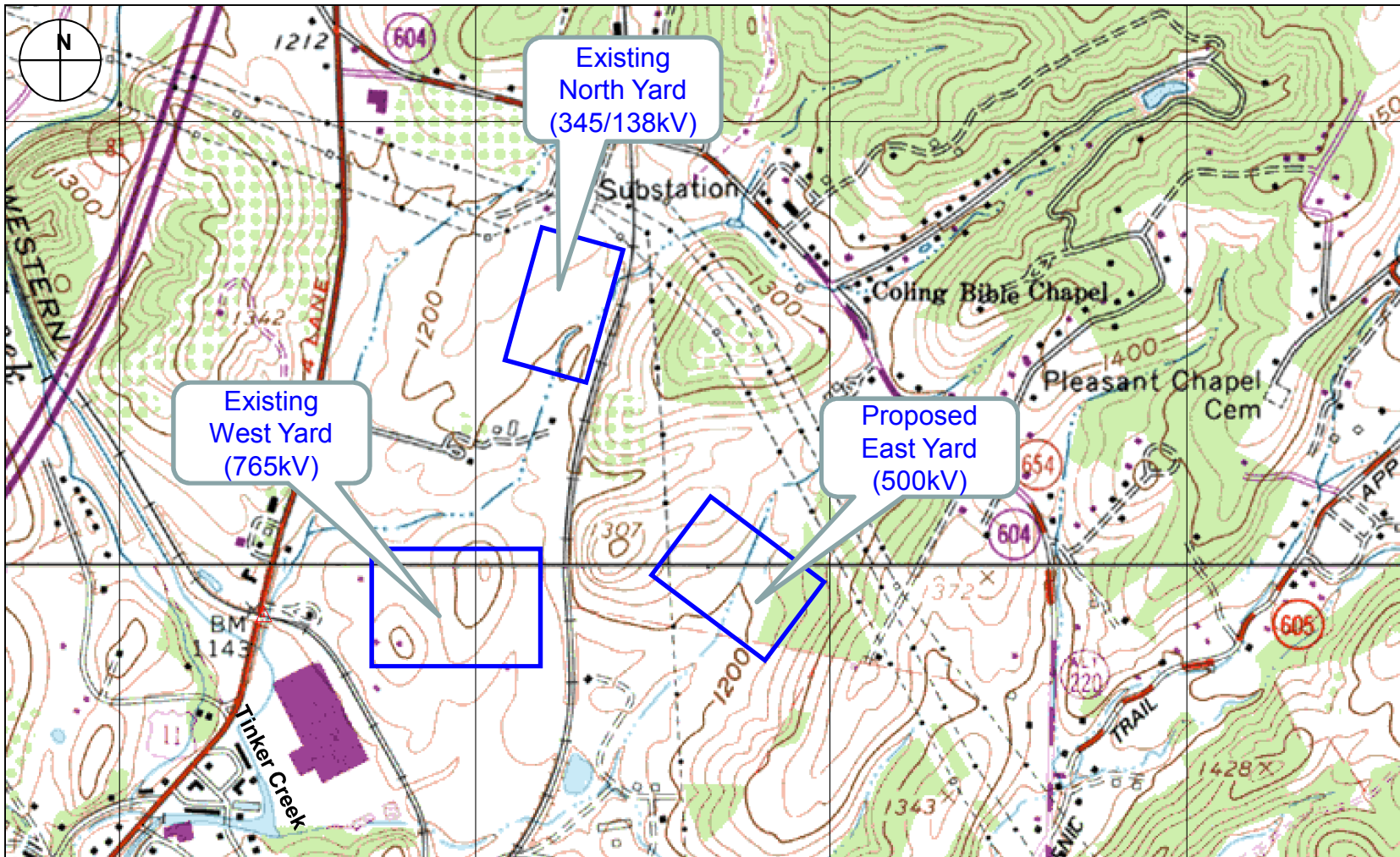
APPALACHIAN POWER COMPANY
 CLOVERDALE EHV TRANSMISSION IMPROVEMENTS PROJECT


DRAWN BY: HCD
 CHECKED: JWB

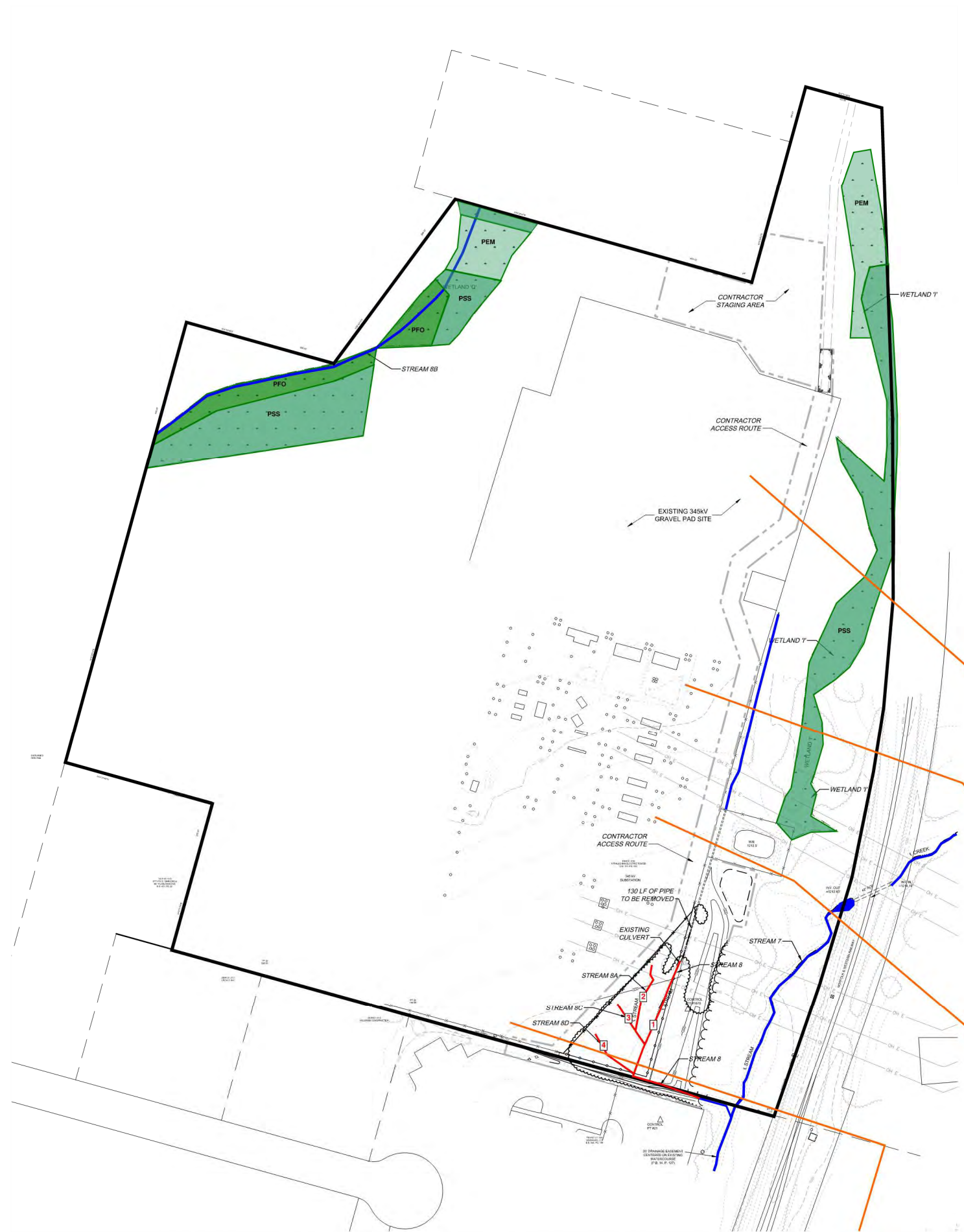
DATE: 4/12/2013
 APPROVED: GTR



 <p>HURT & PROFFITT INCORPORATE</p> <p>2524 LANGHORNE ROAD LYNCHBURG, VA 24501 800.242.4906 TOLL FREE 434.847.7796 MAIN 434.847.0047 FAX WWW.HANDP.COM</p>	<p>AEP Substation Project Cloverdale, Virginia</p> <p>Source: VDEQ Hydrologic Unit Explorer (2013), NTS</p>	<p>Location/ Watershed Map</p>	<p>Map 9</p>
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Impact Number	North Yard			
	1	2	3	4
Feature	Stream 8	Stream 8A	Stream 8C	Stream 8D
Impact Description	F, NT, PE, PR, NV	F, NT, PE, NV	F, NT, PE, NV	F, NT, PE, NV
Wetland/Waters Impact Area (sf)				
Wetland/Waters Impact Area (ac)				
Stream Dimensions at Impact Site (area)	780 sf (260 lf * 3 ft)	226 sf (113 lf * 2 ft)	90 sf (45 lf * 2 ft)	146 sf (73 lf * 2 ft)
Stream Length Impact (lf)	260	113	45	73
Volume of Fill Below OHWM (cy)	28.9	4.2	1.7	2.7
Cowardin Classification / Stream Classification	G4c	F4	F4	F4
Ave. Stream Flow (cfs)	< 5	< 0.01	< 0.01	< 0.01
Approximate Contributing Drainage Area (ac)	20	< 10	< 10	< 10
DEQ Classification	Mountainous Class IV	Mountainous Class IV	Mountainous Class IV	Mountainous Class IV

WETLAND AREA TABLE:

NAME	TOTAL	IMPACT
WETLAND T	0.75 ACRES	0.00 ACRES
WETLAND Q	0.94 ACRES	0.00 ACRES
TOTAL	1.69 ACRES	0.00 ACRES

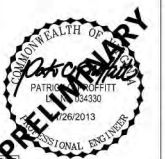
STREAM LENGTH TABLE:

NAME	TOTAL	IMPACT
STREAM 7	334 LF	0 LF
STREAM 8	431 LF	260 LF
STREAM 8A	113 LF	113 LF
STREAM 8B	550 LF	0 LF
STREAM 8C	45 LF	45 LF
STREAM 8D	73 LF	73 LF
TOTAL	1,546 LF	491 LF



FOR INFORMATION PURPOSES ONLY

AEP CLOVERDALE EXPANSION NORTH YARD DELINEATION MAP



HURT AND PROFFITT, INC. PROJECT NO. 20130134
 1 08/21/13 PER COUNTY COMMENTS REC'D 07/23/14
 2 1/14/14 PER COUNTY COMMENTS REC'D 07/23/14

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APPALACHIAN POWER CO.
 CLOVERDALE
 BOTETOURT COUNTY VIRGINIA

345KV
 GRADING PLAN
 PRELIMINARY IMPACTS MAP

SCALE:	DR: RKW	ENG: PCP	CH: PCP
WOP# 42010134	APPD: PCP	DATE: 05/24/2013	
T RIVERSIDE PLAZA COLUMBUS, OH 43215	DWG NO. W2.0	REV 0	



PLOTTED BY: RKW ON 17-Jan-2014 AT 16:01 STATION ENGINEERING

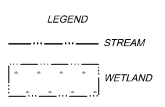


West Yard						
5	6	7	8	9	10	11
Wetland N	Wetland N	Wetland N	Wetland N (PFO conversion)	Wetland N (PFO conversion)	Stream 9	Stream 11
F, NT, PE, V	F, NT, PE, V	F, NT, PE, V	MC, NT, PE, V	MC, NT, TE, V	F, S, NT, PE, PR, VV	F, S, NT, PE, NV
27,007	2,614	80,113	6,098	3,049	1,868 sf (934 ft * 2 ft)	45 sf (45 ft * 1 ft)
0.62	0.06	1.38	0.14	0.07	934	45
PEM	PSS	PFO	PFO to PSS conversion	PFO	68.2	1.7
					E4	F4
					W	<0.01
Mountainous Class IV	Mountainous Class IV	Mountainous Class IV	Mountainous Class IV	Mountainous Class IV	Mountainous Class IV	Mountainous Class IV

WETLAND AREA TABLE:		
NAME	TOTAL	IMPACT
WETLAND IV (80% WETLAND/20% UPLAND)		
WETLAND UPLAND	17.79 ACRES	2.06 ACRES
WETLAND D'	0.002 ACRES	0.00 ACRES
TOTAL	22.242 ACRES	2.06 ACRES

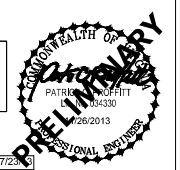
TEMPORARY IMPACTS	
CONSTRUCTION CROSSING	0.07 ACRES

STREAM LENGTH TABLE:		
NAME	TOTAL	IMPACT
STREAM 9	1,860 LF	934 LF
STREAM 9B	119 LF	0 LF
STREAM 10	824 LF	0 LF
STREAM 10A	310 LF	0 LF
STREAM 11	86 LF	45 LF
STREAM 12	350 LF	0 LF
STREAM 13	120 LF	0 LF
TOTAL	3,669 LF	979 LF



FOR INFORMATION PURPOSES ONLY

AEP CLOVERDALE EXPANSION WEST YARD DELINEATION MAP



HURT AND PROFFITT, INC. PROJECT NO. 20130136
 1 08/21/13 PER COUNTY COMMENTS/REV'D 07/25/13
 2 11/14/14 PER USACE/ VDEQ COMMENTS

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 765KV
 VIRGINIA

GRADING PLAN
 PELIMINARY IMPACTS MAP

SCALE:	DR: RKW	ENG: PCP	CH: PCP
WOP: 42010383	APPD: PCP	DATE: 05/24/2013	
T RIVERSIDE PLAZA COLUMBUS, OH 43215	DWG NO:	W2.0	REV 1

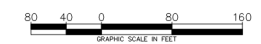
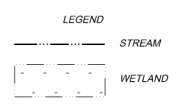
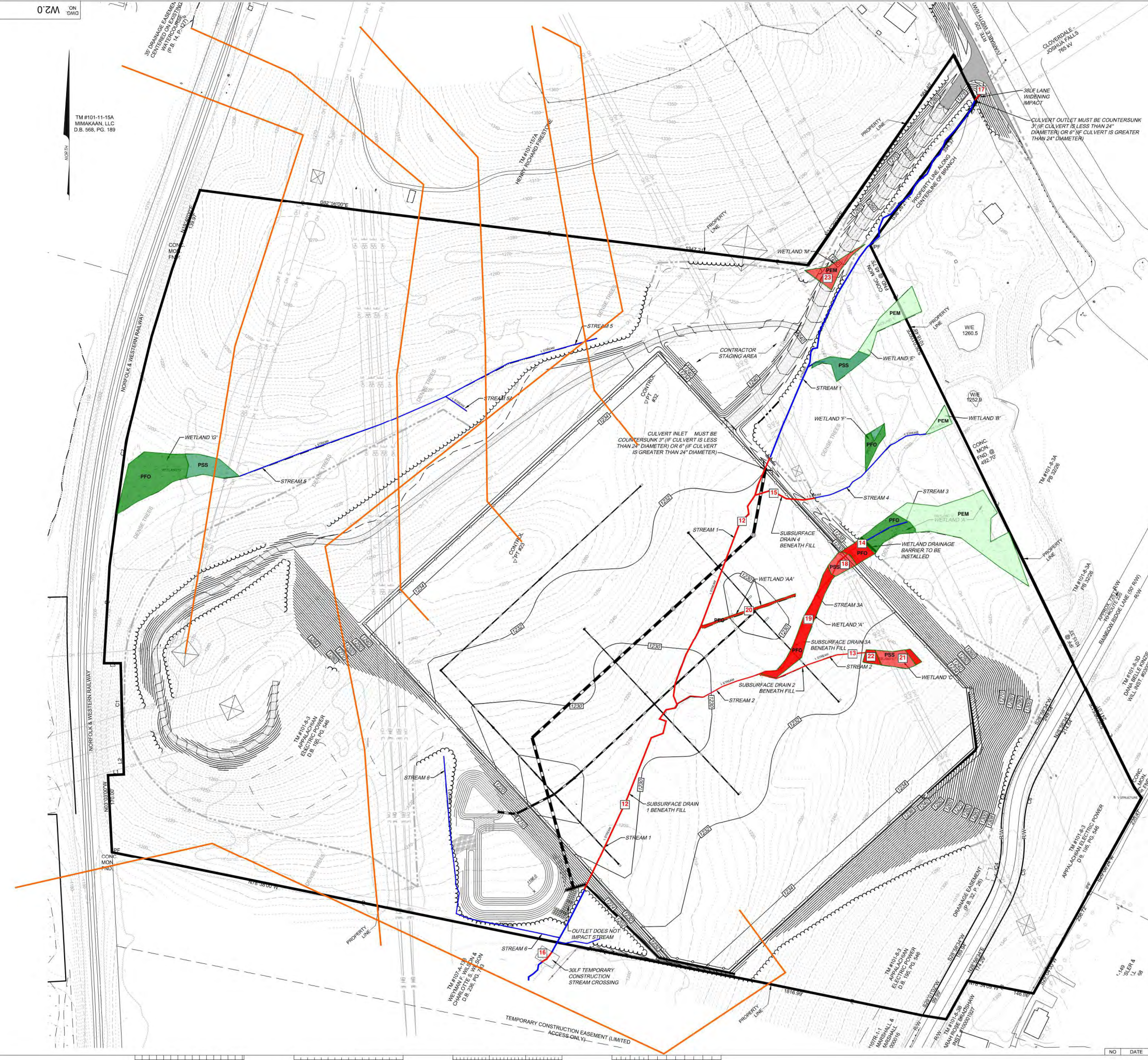


STATION ENGINEERING AT 14:06 PLOTTED BY RKW ON 25-Jun-13

TM #101-11-15A
MMAKAM, LLC
D.B. 568, PG. 189

Impact Number	East Yard					
	12	13	14	15	16	17
Feature	Stream 1	Stream 2	Stream 3/3A	Stream 4	Stream 1	Stream 1
Impact Description	F, S, NT, PE, PR, NV	F, NT, PE, PR, NV	F, NT, PE, PR, NV	F, NT, PE, PR, NV	F, NT, PE, PR, NV	F, S, NT, PE, PR, NV
Wetland/Waters Impact Area (sf)						
Wetland/Waters Impact Area (ac)	4.476 sf (1,119 ft * 4 ft)	882 sf (441 ft * 2 ft)	706 (353 ft * 2 ft)	250 (125 ft * 2 ft)	120 sf (30 ft * 4 ft)	39 sf (13 ft * 3 ft)
Stream Dimensions at Impact Site (area)						
Stream Length Impact (ft)	1,119	441	353	125	30	13
Volume of Fill below OHWM (cy)	331.6	26.1	26.1	4.6	8.9	2.9
Cowardin Classification / Stream Classification	F4	F4	C4	F4	F4	F4
Ave. Stream Flow (cfs)	< 2	< 2	< 2	< 2	< 2	< 2
Approximate Contributing Drainage Area (ac)	150	< 10	20	< 10	150	150
DEQ Classification	Mountainous Class IV	Mountainous Class IV	Mountainous Class IV	Mountainous Class IV	Mountainous Class IV	Mountainous Class IV

Impact Number	East Yard					
	18	19	20	21	22	23
Feature	Wetland A	Wetland A	Wetland AA	Wetland C	Wetland C	Wetland M
Impact Description	F, NT, PE, V	F, NT, PE, V	F, NT, PE, V	F, NT, PE, V	F, NT, PE, V	F, NT, PE, V
Wetland/Waters Impact Area (sf)						
Wetland/Waters Impact Area (ac)	0.02	0.21	0.03	0.02	0.07	0.07
Stream Length Impact (ft)						
Volume of Fill below OHWM (cy)						
Cowardin Classification / Stream Classification	PSS	PFO	PFO	PSS	PFO	PEM
Ave. Stream Flow (cfs)						
Approximate Contributing Drainage Area (ac)						
DEQ Classification	Mountainous Class IV	Mountainous Class IV	Mountainous Class IV	Mountainous Class IV	Mountainous Class IV	Mountainous Class IV



FOR INFORMATION PURPOSES ONLY

AEP CLOVERDALE EXPANSION EAST YARD DELINEATION MAP



HURT AND PROFFITT, INC. PROJECT NO. 20130132
 1 02/21/13 PER EXHIBIT COMMENT'S RECD 07/23/13
 2 1/14/14 PER USACE/VOEG COMMENTS

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OLD DWG # _____ STD DWG # _____

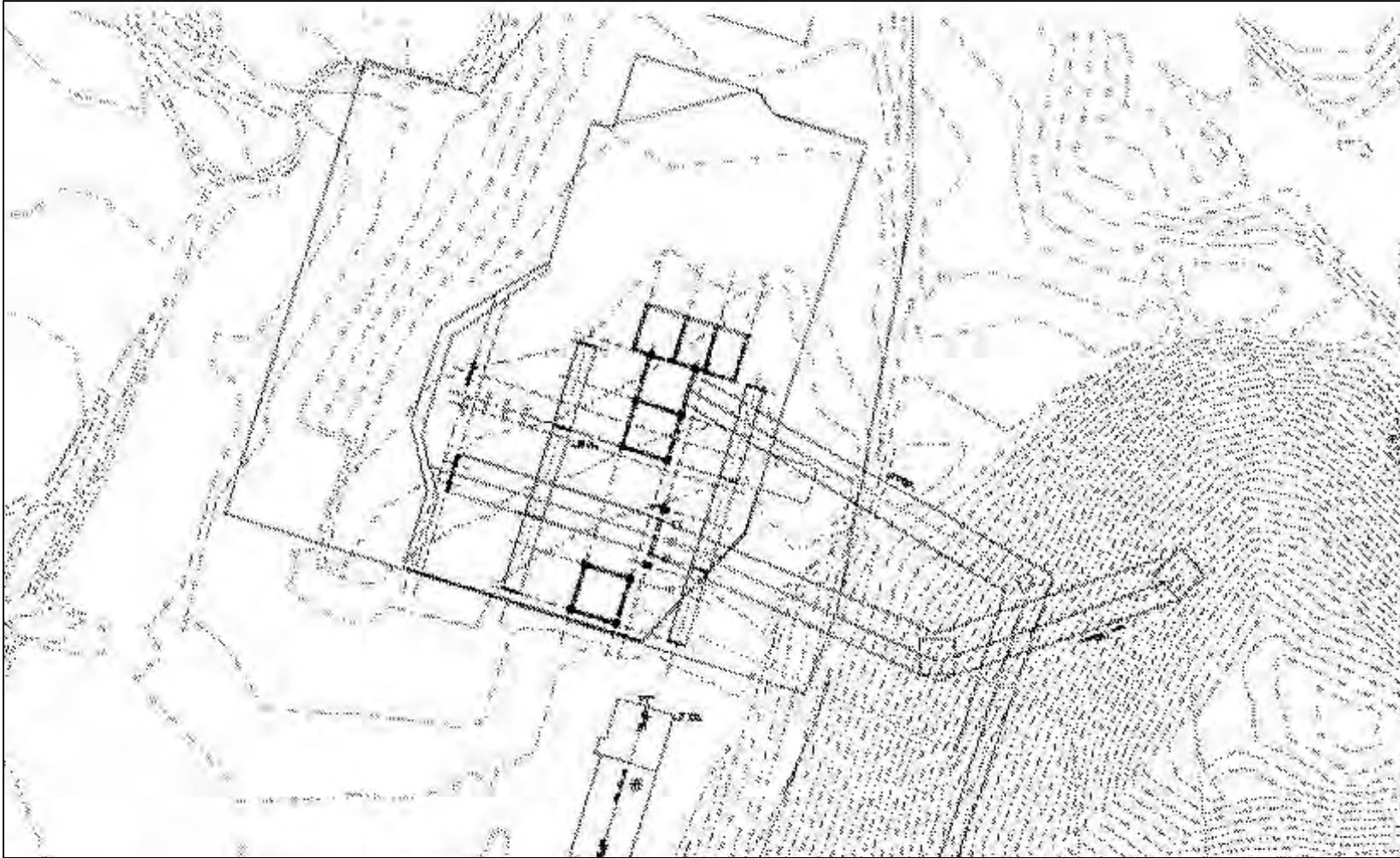
APPALACHIAN POWER CO.
CLOVERDALE
 CLOVERDALE VIRGINIA

500KV
GRADING PLAN
 PRELIMINARY IMPACTS MAP

SCALE: 1" = 40'	DR: RWK	ENG: PCP	CH: PCP
WOP: 42010374	APPD: PCP	DATE: 05/24/2013	
TRIVERSIDE PLAZA COLUMBUS, OH 43215	DWG NO: W2.0	REV: 1	



PLOTTED BY: RWK ON 1/17/2014 AT 16:44 STATION ENGINEERING



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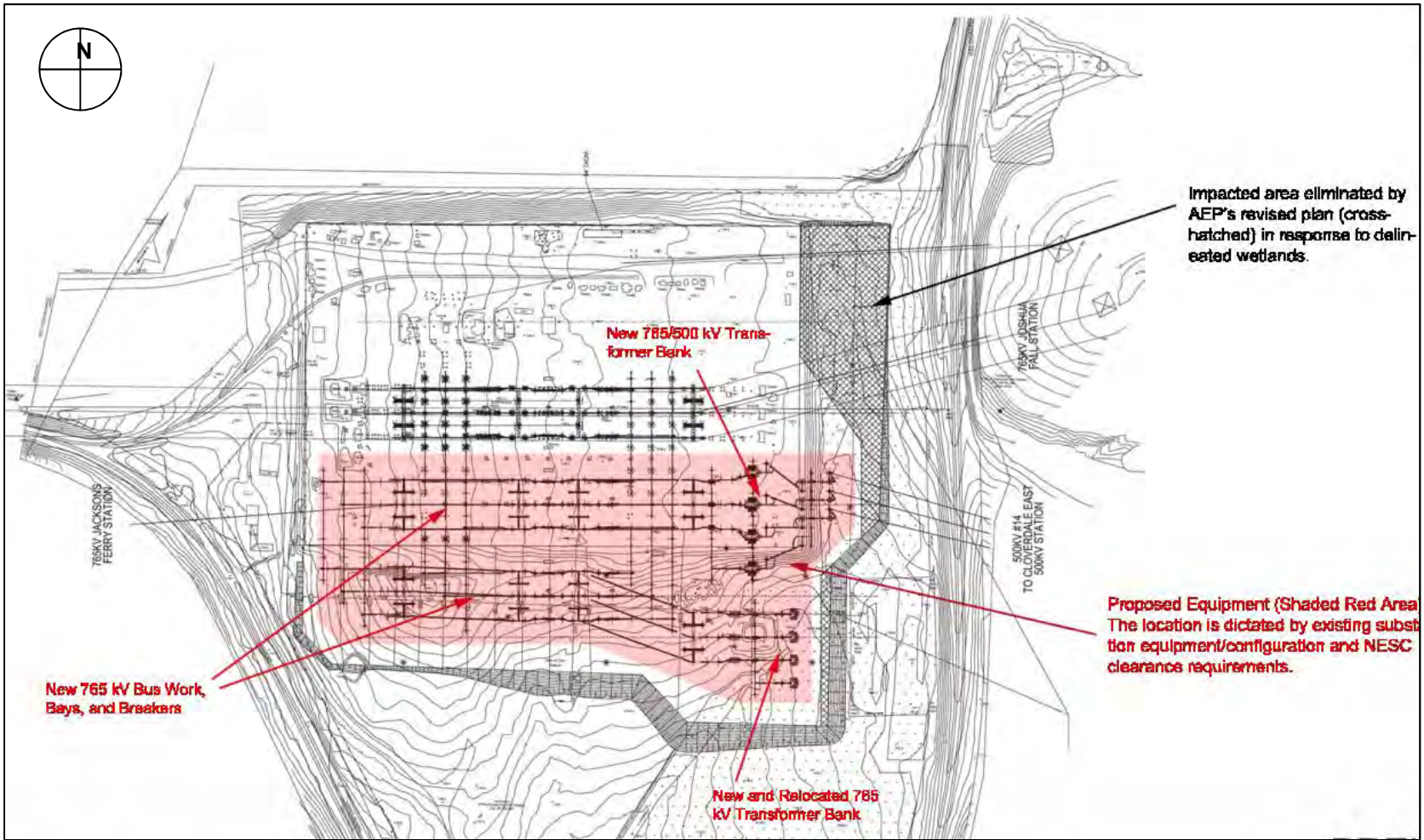
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**AEP Substation Project
Cloverdale, Virginia**

Source: GAI Consultants, (2011), NTS

North Yard
Facility Detail

**Map
23**



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**AEP Substation Project
Cloverdale, Virginia**

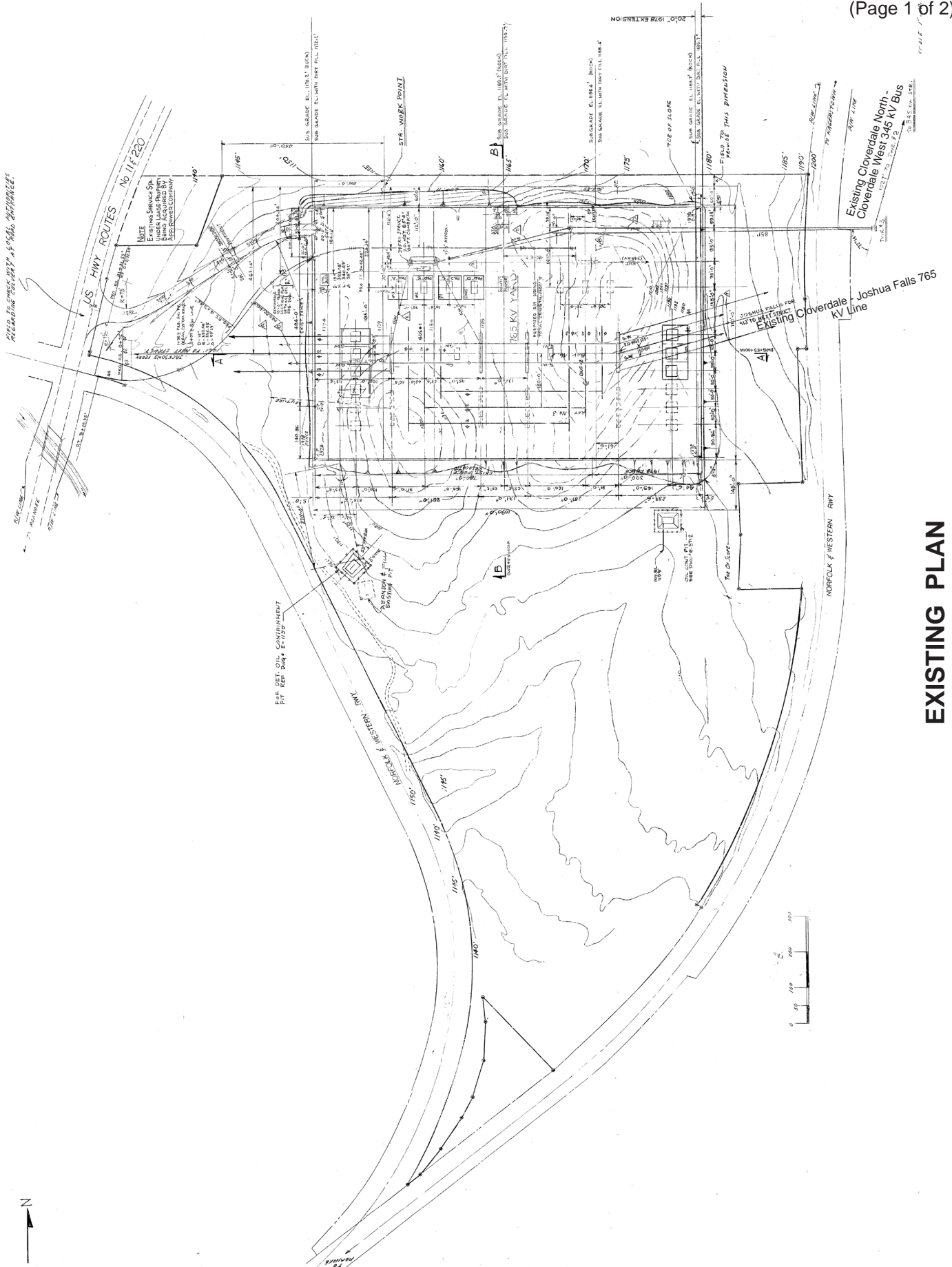
Source: AEP and Hurt & Proffitt (2013), NTS

**East Yard
Facility Detail**

**Map
25**

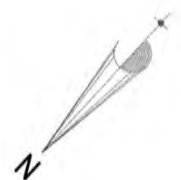
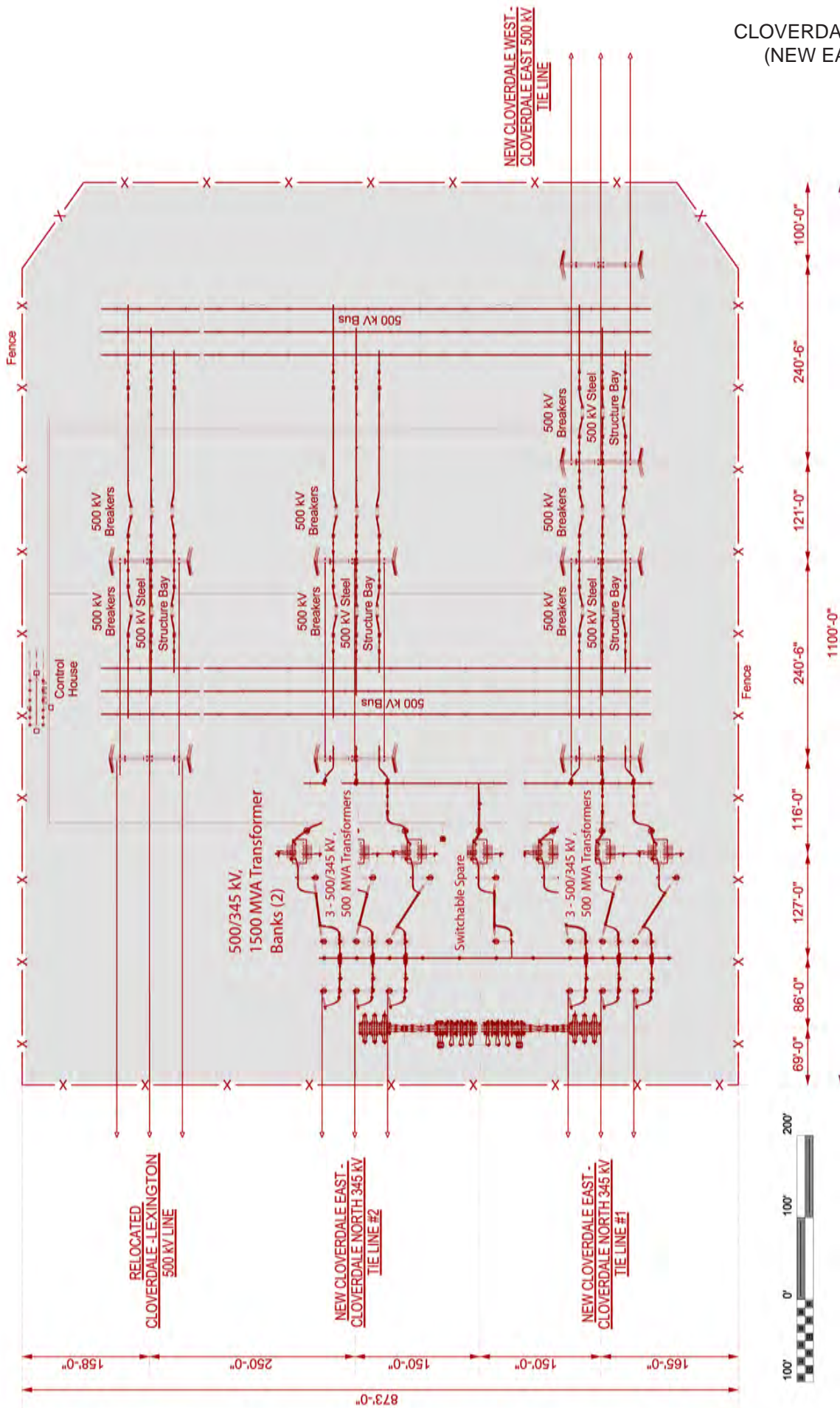
EXHIBIT 18
CLOVERDALE SUBSTATION (EXISTING WEST YARD) PLAN

(Page 1 of 2)

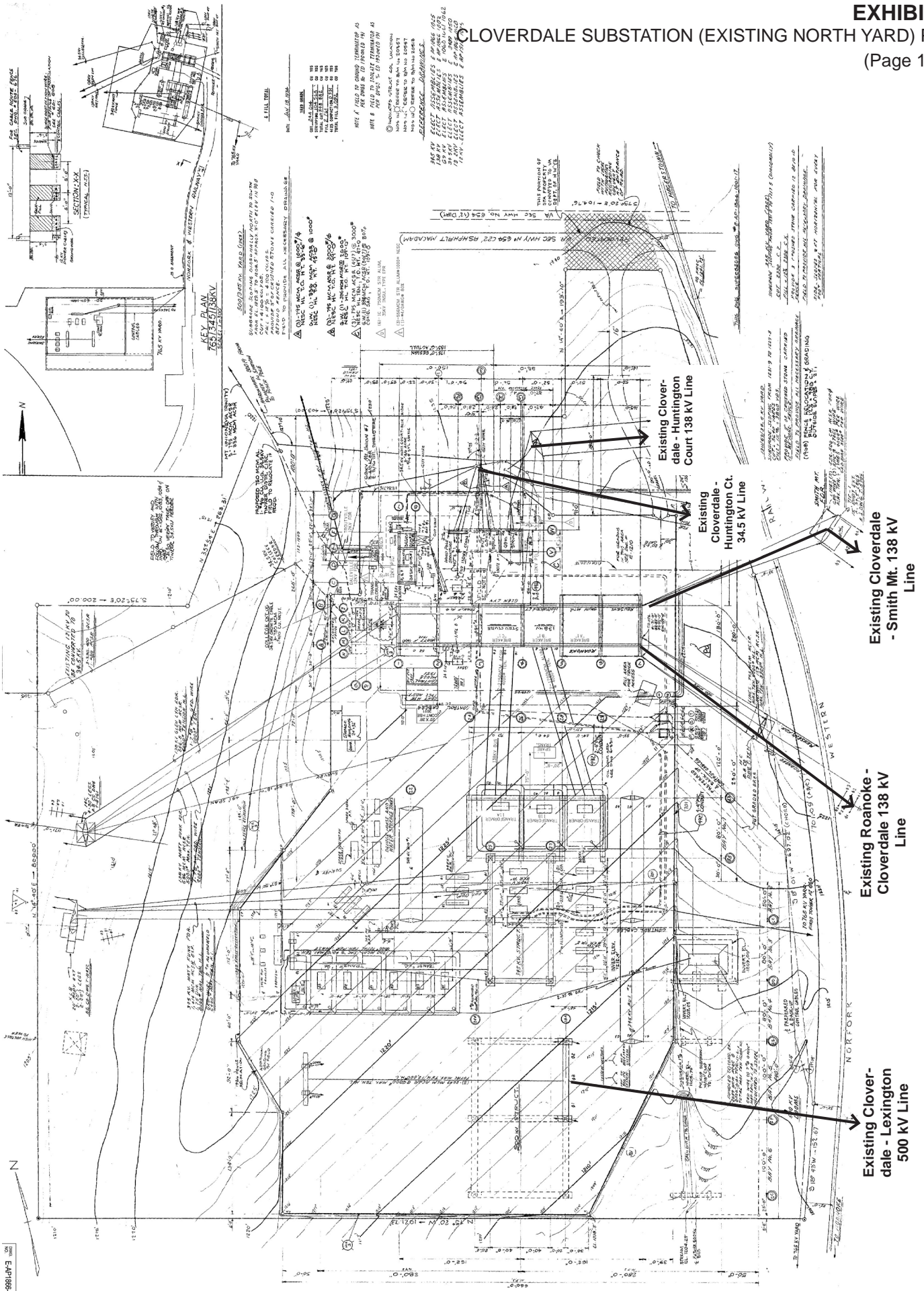


EXISTING PLAN

EXHIBIT 19
CLOVERDALE SUBSTATION
(NEW EAST YARD) PLAN
 (Page 1 of 2)



PROPOSED PLAN

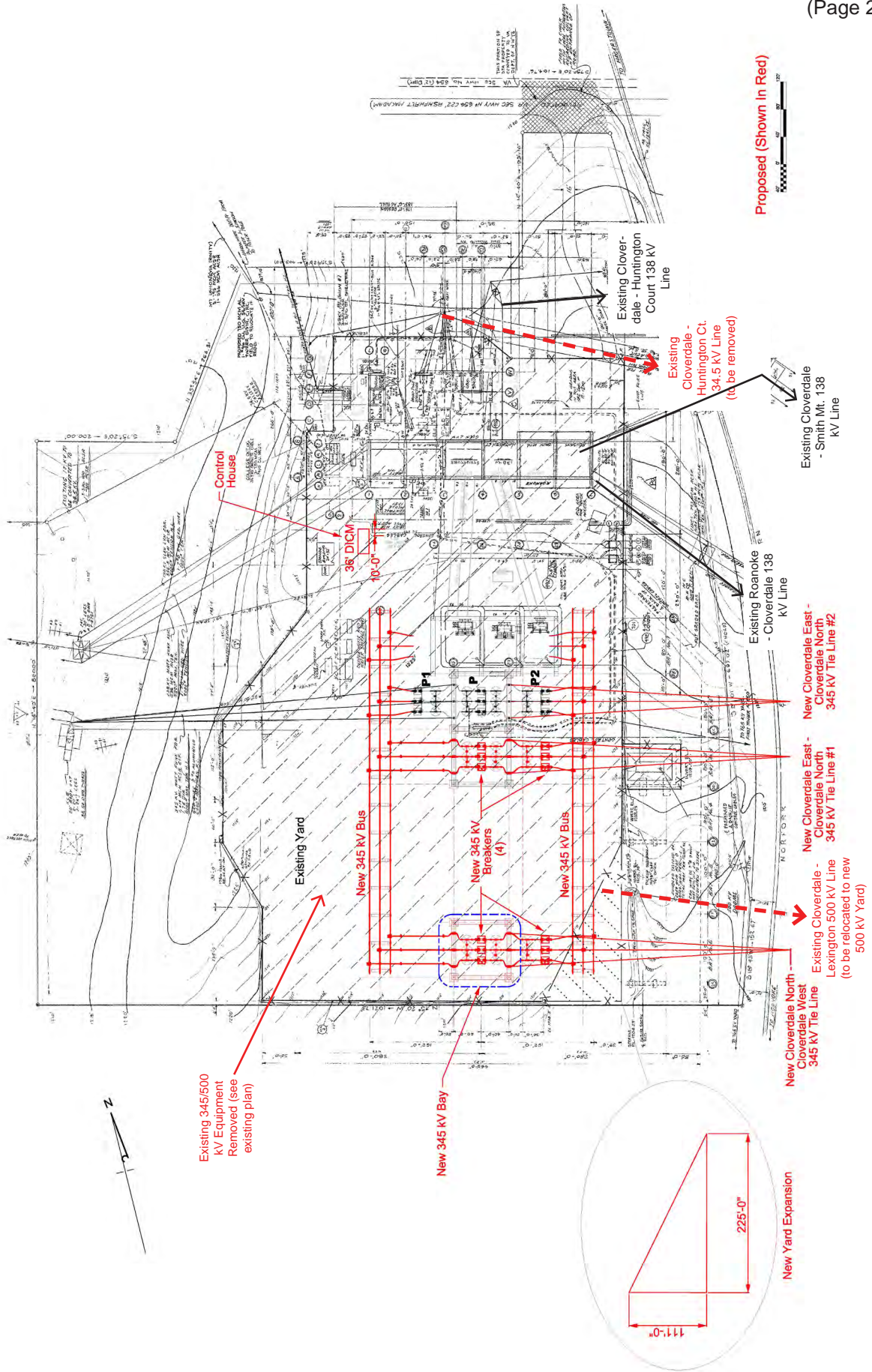


EXISTING PLAN

- Existing Cloverdale - Huntington Court 138 kV Line
- Existing Cloverdale - Huntington Ct. Huntington Ct. 34.5 kV Line
- Existing Cloverdale - Smith Mt. 138 kV Line
- Existing Roanoke - Cloverdale 138 kV Line
- Existing Cloverdale - Lexington 500 kV Line

EXHIBIT 20 CLOVERDALE SUBSTATION (EXISTING NORTH YARD) PLAN

(Page 2 of 2)



PROPOSED PLAN

Proposed (Shown in Red)

Existing 345/500 kV Equipment Removed (see existing plan)

New 345 kV Bay

Existing Yard

New 345 kV Bus

New 345 kV Breakers (4)

New 345 kV Bus

Control House

36' DICM

10'-0"

Existing Cloverdale - Huntington Court 138 kV Line

Existing Cloverdale - Huntington Ct. 34.5 kV Line (to be removed)

Existing Cloverdale - Smith Mt. 138 kV Line

Existing Roanoke - Cloverdale 138 kV Line

New Cloverdale East - Cloverdale North 345 kV Tie Line #2

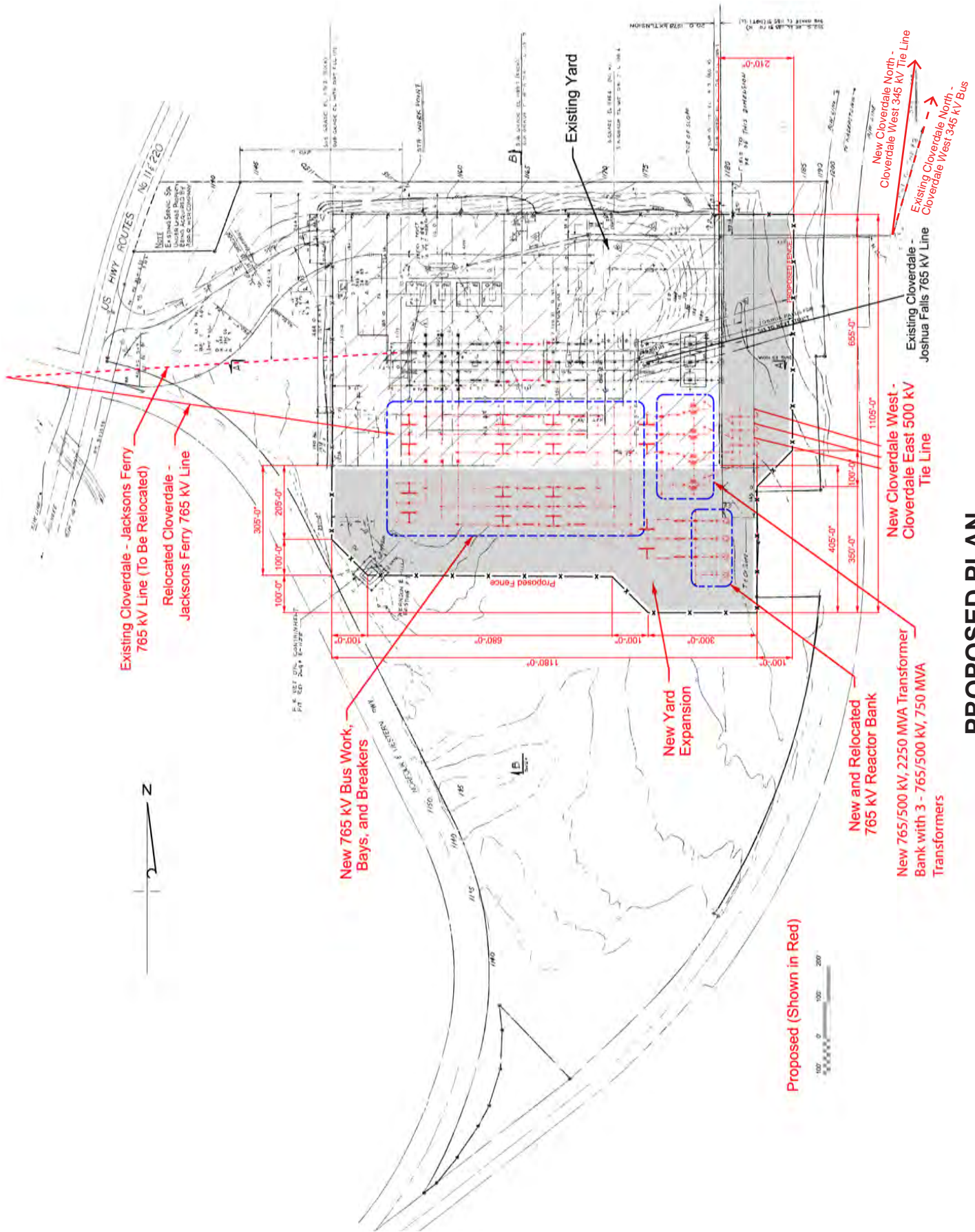
New Cloverdale East - Cloverdale North 345 kV Tie Line #1

Existing Cloverdale - Lexington 500 kV Line (to be relocated to new 500 kV Yard)

New Yard Expansion

111'-0"

225'-0"



PROPOSED PLAN