

APPALACHIAN POWER COMPANY
BEFORE THE
VIRGINIA STATE CORPORATION COMMISSION
CASE NO. PUR-2023-00024

APPLICATION FOR APPROVAL AND CERTIFICATION OF
ELECTRICAL TRANSMISSION LINE

Stuart Area 138-kV Transmission Improvements Project

VOLUME 1 OF 4
PART 2 of 2

Exhibits 8 through 38

July 2023

VOLUME 1, PART 1 OF 2 - Application, Testimony, Response to Guidelines, and Exhibits 1 through 7

LIST OF EXHIBITS, MAPS AND ATTACHMENTS

GLOSSARY OF TERMS AND ABBREVIATIONS

EXECUTIVE SUMMARY

APPLICATION

TESTIMONY

Direct Testimony of Nicolas C. Koehler, P.E. (Project Need)

Direct Testimony of Mary Jane L. McMillen, P.E. (Transmission Line Engineering)

Direct Testimony of James K. Bledsoe, P.E. (Substation Engineering)

Direct Testimony of Xin Liu, P.E. (Electromagnetic Fields)

Direct Testimony of Anastacia Santos (Environmental Analysis and Route
Review)

RESPONSE TO GUIDELINES

Section I: Necessity for the Proposed Project

Section II: Description of the Proposed Project

Section III: Impact of Line on Scenic, Environmental, and Historic Features

Section IV: Health Aspects of Electromagnetic Fields (“EMF”)

Section V: Notice

EXHIBITS 1 THROUGH 7

VOLUME 1, PART 2 OF 2 – Exhibits 8 through 38

EXHIBITS 8 THROUGH 38

VOLUME 1, PART 1 OF 2

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- 2 PUBLIC NOTICE MAP
- 3 PROJECT OVERVIEW MAP
- 4 AEP TRANSMISSION PLANNING CRITERIA AND GUIDELINES FOR END-OF-LIFE AND OTHER ASSET MANAGEMENT NEEDS
- 5 CONSTRUCTION SEQUENCE DRAWINGS
- 6 TRANSMISSION LINE CIRCUIT CONFIGURATION DRAWINGS
- 7 COMPONENT 1 GIS CONSTRAINTS MAP

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- 9 COMPONENT 3 GIS CONSTRAINTS MAP
- 10 PROPOSED 138-KV STEEL H-FRAME (SINGLE CIRCUIT)
- 11 PROPOSED 138-KV STEEL THREE-POLE RUNNING ANGLE (SINGLE CIRCUIT)
- 12 PROPOSED 138-KV STEEL THREE-POLE DEAD-END (SINGLE CIRCUIT)
- 13 PROPOSED 138-KV STEEL MONOPOLE WITH BRACED POSTS (SINGLE CIRCUIT)
- 14 PROPOSED 138-KV STEEL MONOPOLE RUNNING ANGLE (SINGLE CIRCUIT)
- 15 PROPOSED 138-KV GUYED STEEL MONOPOLE DEAD-END (SINGLE CIRCUIT)
- 16 PROPOSED 138-KV STEEL MONOPOLE DEAD-END (SINGLE CIRCUIT)
- 17 PROPOSED 138-KV STEEL MONOPOLE TANGENT WITH DAVIT ARMS (DOUBLE CIRCUIT)
- 18 PROPOSED 138-KV STEEL MONOPOLE DEAD-END WITH DAVIT ARMS (DOUBLE CIRCUIT)

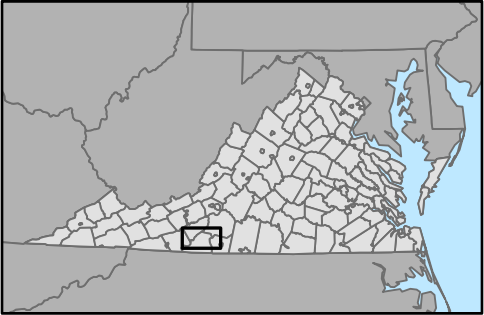
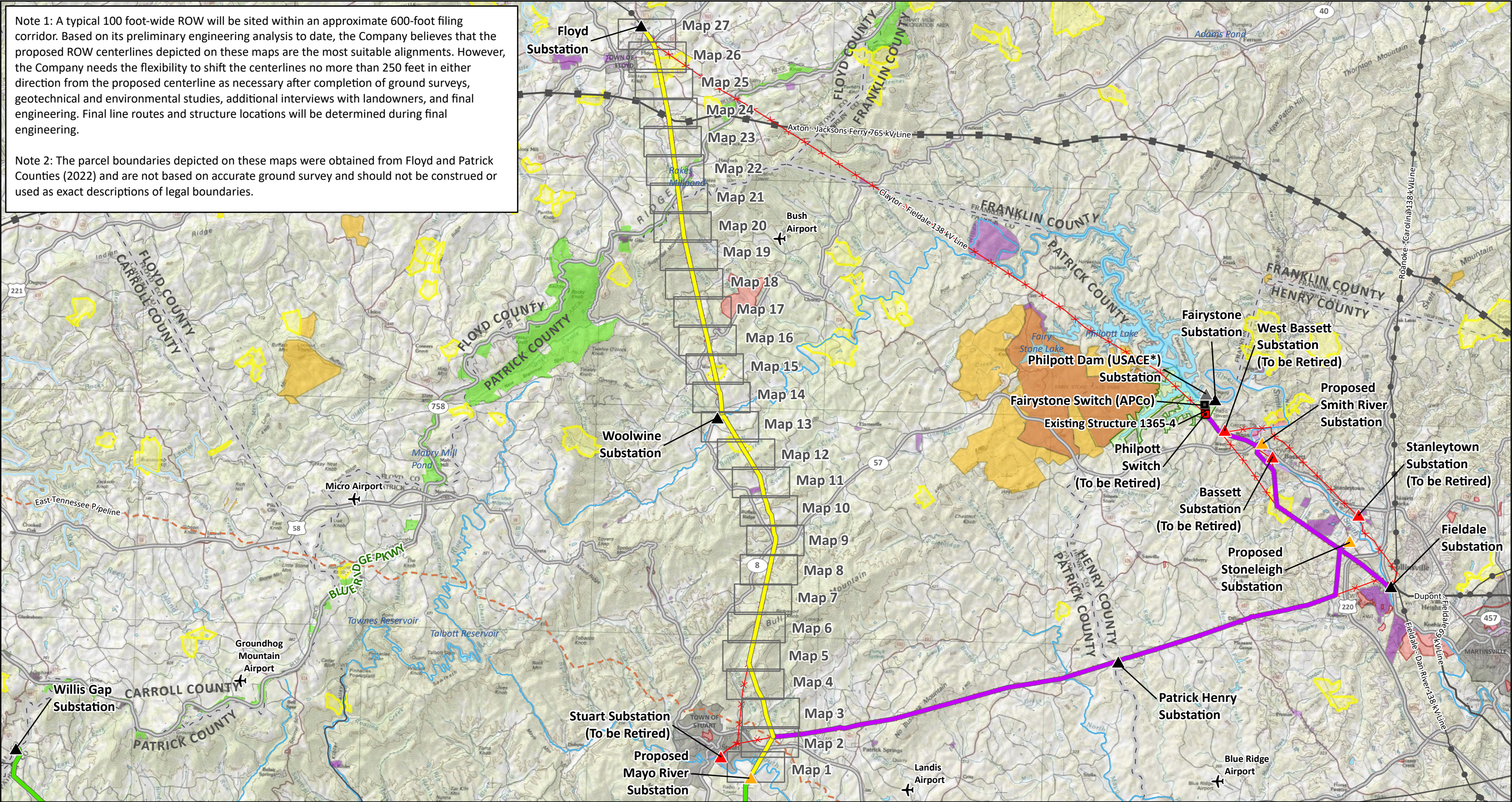
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- 20 EXISTING STRUCTURE PHOTOGRAPHS
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- 22 IMPROVEMENTS AT 138-KV WILLIS GAP SUBSTATION
- 23 PROPOSED 138-KV CLAUDVILLE SUBSTATION
- 24 PROPOSED 138-KV MAYO RIVER SUBSTATION
- 25 EXISTING 69-KV STUART SUBSTATION (TO BE RETIRED)
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Exhibit 8: Component 2 GIS Constraints Map

Note 1: A typical 100 foot-wide ROW will be sited within an approximate 600-foot filing corridor. Based on its preliminary engineering analysis to date, the Company believes that the proposed ROW centerlines depicted on these maps are the most suitable alignments. However, the Company needs the flexibility to shift the centerlines no more than 250 feet in either direction from the proposed centerline as necessary after completion of ground surveys, geotechnical and environmental studies, additional interviews with landowners, and final engineering. Final line routes and structure locations will be determined during final engineering.

Note 2: The parcel boundaries depicted on these maps were obtained from Floyd and Patrick Counties (2022) and are not based on accurate ground survey and should not be construed or used as exact descriptions of legal boundaries.



<ul style="list-style-type: none">Proposed APCo SubstationExisting APCo Substation to be RetiredExisting APCo SubstationNon-APCo Generation FacilityExisting Switch Station to be RetiredExisting Switch Station	<ul style="list-style-type: none">Component 2 Proposed RouteComponent 1 Proposed RouteComponent 3 Proposed RouteExisting Transmission Line to be RetiredExisting APCo Transmission Line (69 kv or lower)Existing APCo Transmission Line (115 kv - 230 kv)	<ul style="list-style-type: none">Existing APCo Transmission Line (345 kv +)Existing Non-APCo Transmission LineAirportHighwayNatural Gas PipelineStream (NHD)	<ul style="list-style-type: none">River (NHD)Waterbody (NHD)Local Conservation LandState Conservation LandVOF EasementPhilpott Lake Recreation Area (USACE)	<ul style="list-style-type: none">Blue Ridge Parkway National ParkwayHistoric District (VDHR)Architectural Resource (VDHR)Town BoundaryCounty BoundaryMap Tile
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* USACE = U.S. Army Corps of Engineers

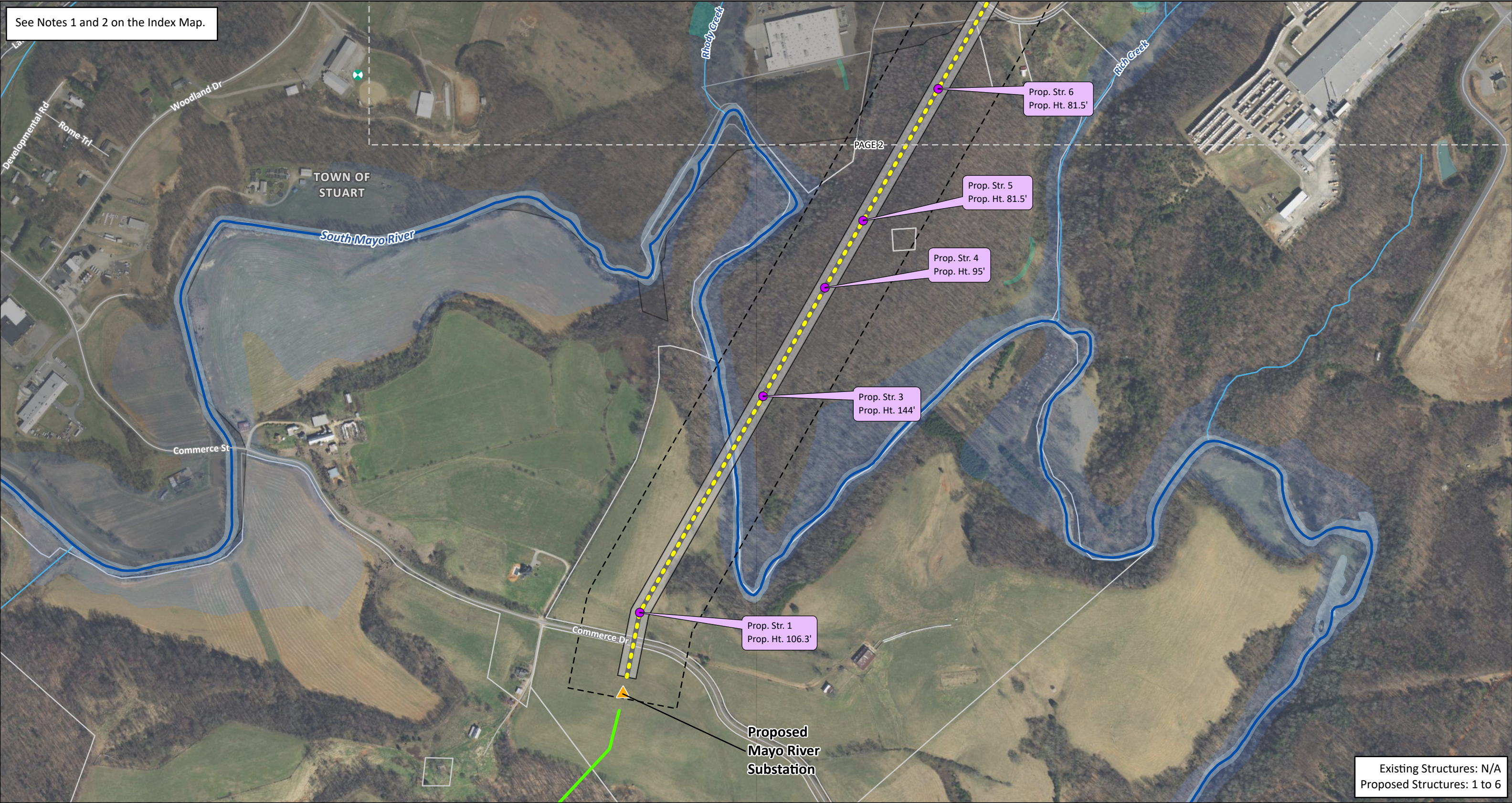
Patrick & Floyd Counties,
Virginia

Date: 7/10/2023; Author: kkunde; Project: 158529

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Exhibit 8:
Component 2
GIS Constraints Map

Stuart Area Transmission
Improvements Project
Component 2:
Mayo River (Stuart) to Floyd
Transmission Improvements

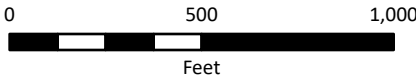


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|---------------------------------------------|---------------------------------|------------------------------|
| Proposed APCo Substation | Filing Corridor (See Note 1) | Waterbody (NHD) |
| Proposed Structure | Cell Tower (FCC) | Wetland (NWI) |
| Component 2 Proposed Route (Double Circuit) | Road | Floodplain |
| Component 1 Proposed Route | South Mayo River (Scenic River) | Town Boundary |
| Proposed Right-of-Way (100') | Stream (NHD) | Map Tile |
| | River (NHD) | Parcel Boundary (See Note 2) |



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Date: 5/4/2023; Author: elundy; Project: 158529

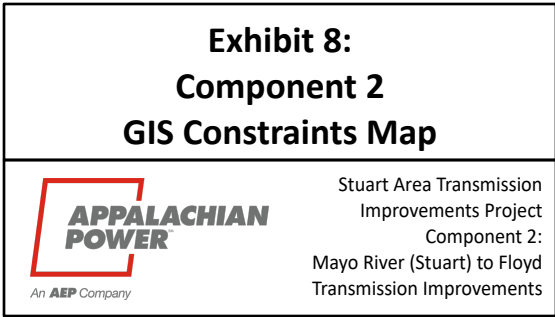
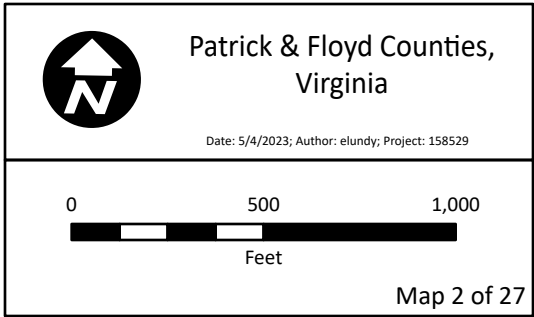
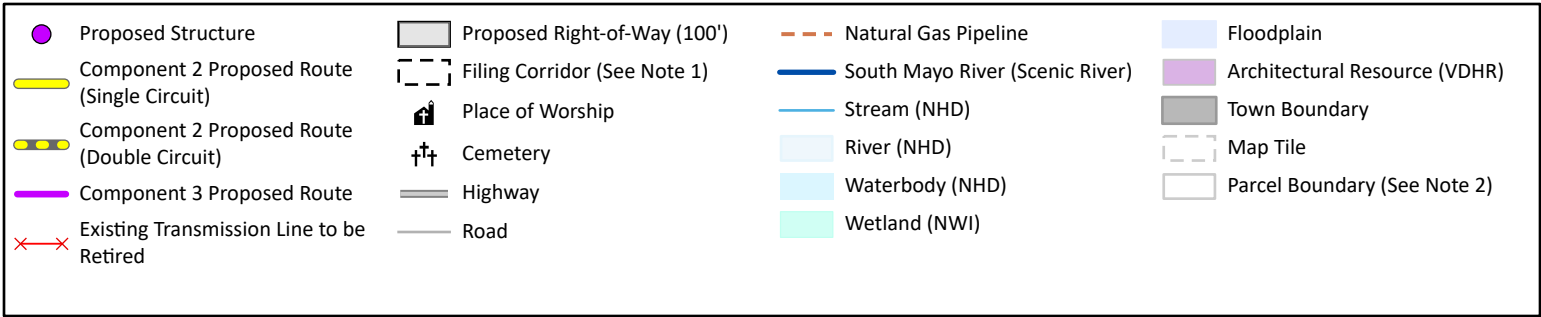
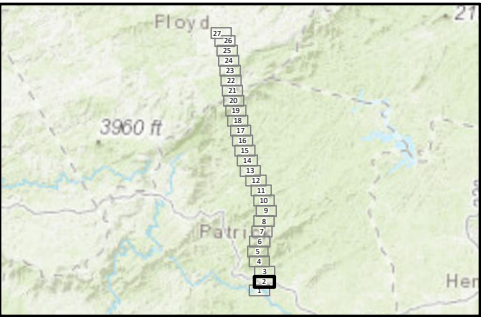
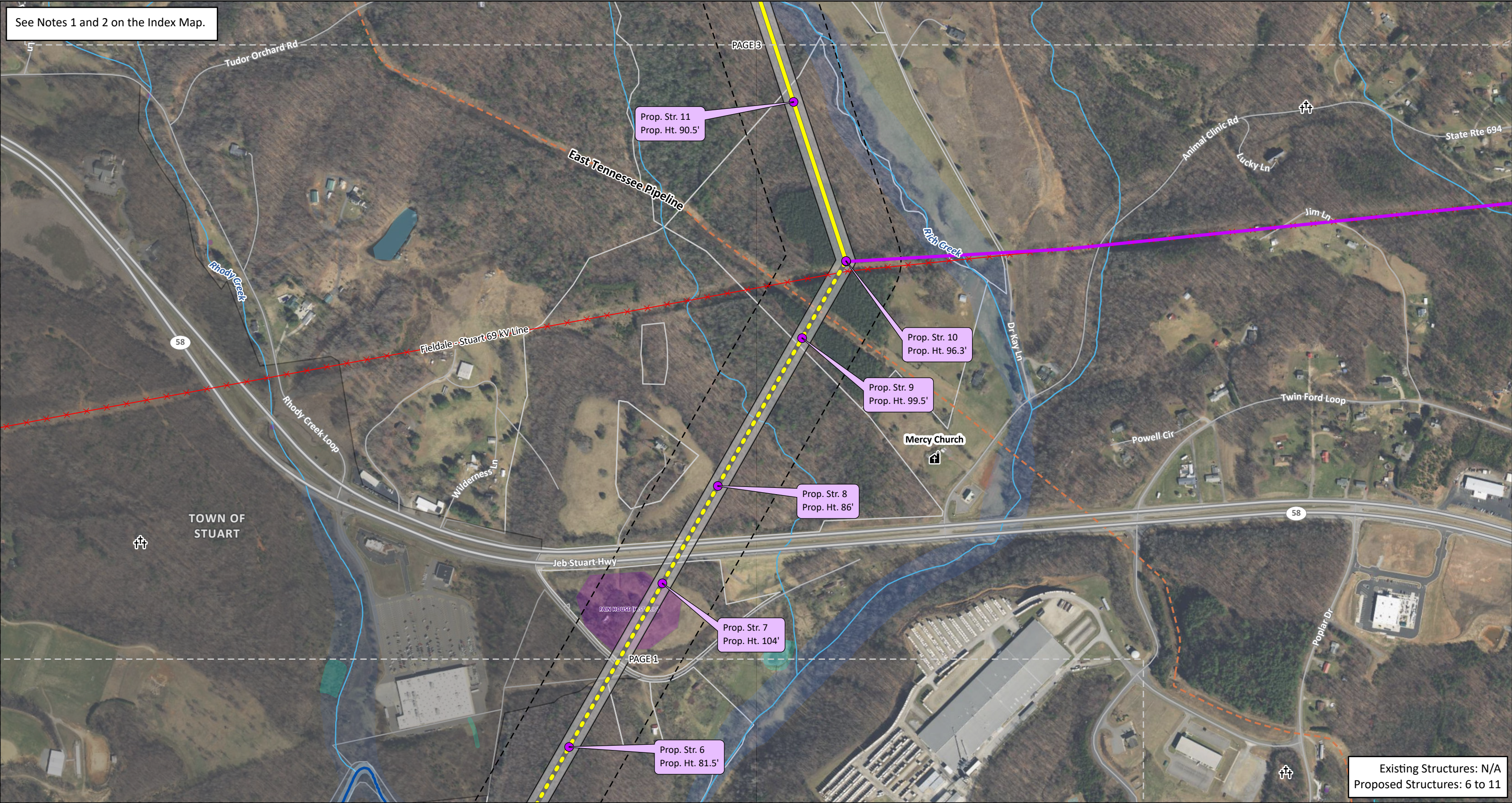


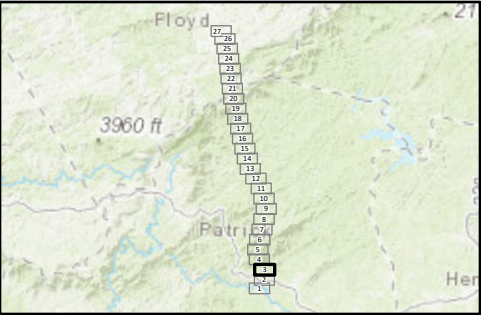
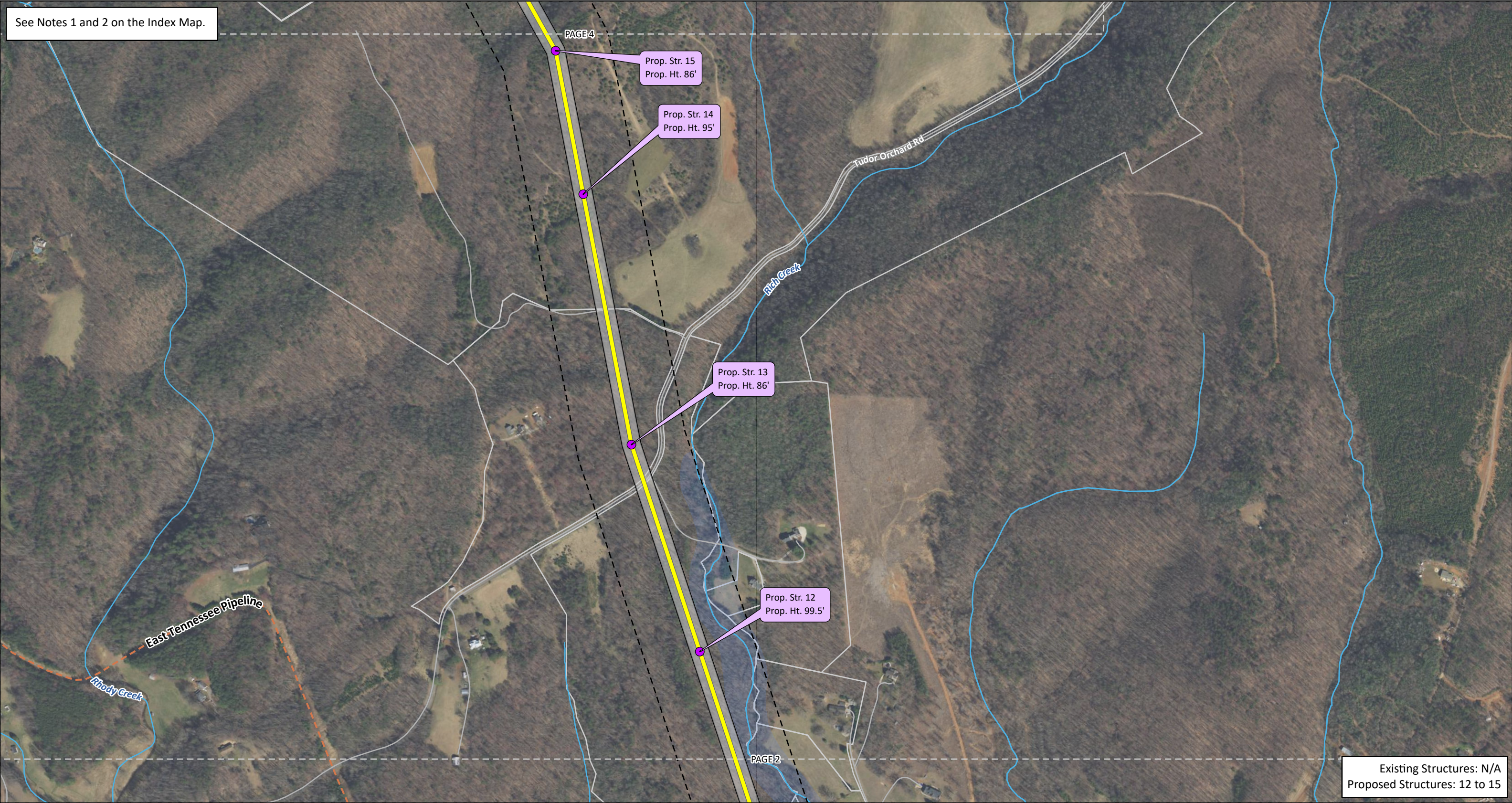
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Exhibit 8: Component 2 GIS Constraints Map



Stuart Area Transmission
Improvements Project
Component 2:
Mayo River (Stuart) to Floyd
Transmission Improvements



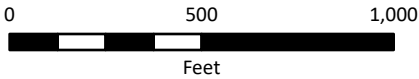


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|---------------------------------------------|------------------------------|------------------------------|
| Proposed Structure | Filing Corridor (See Note 1) | Floodplain |
| Component 2 Proposed Route (Single Circuit) | Road | Map Tile |
| Proposed Right-of-Way (100') | Natural Gas Pipeline | Parcel Boundary (See Note 2) |
| | Stream (NHD) | |



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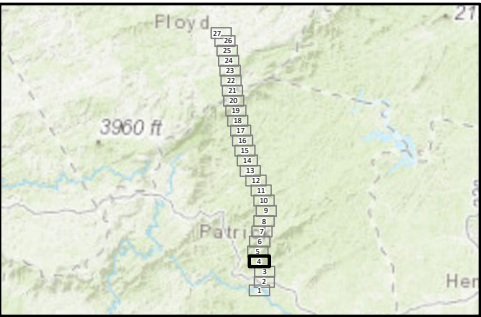
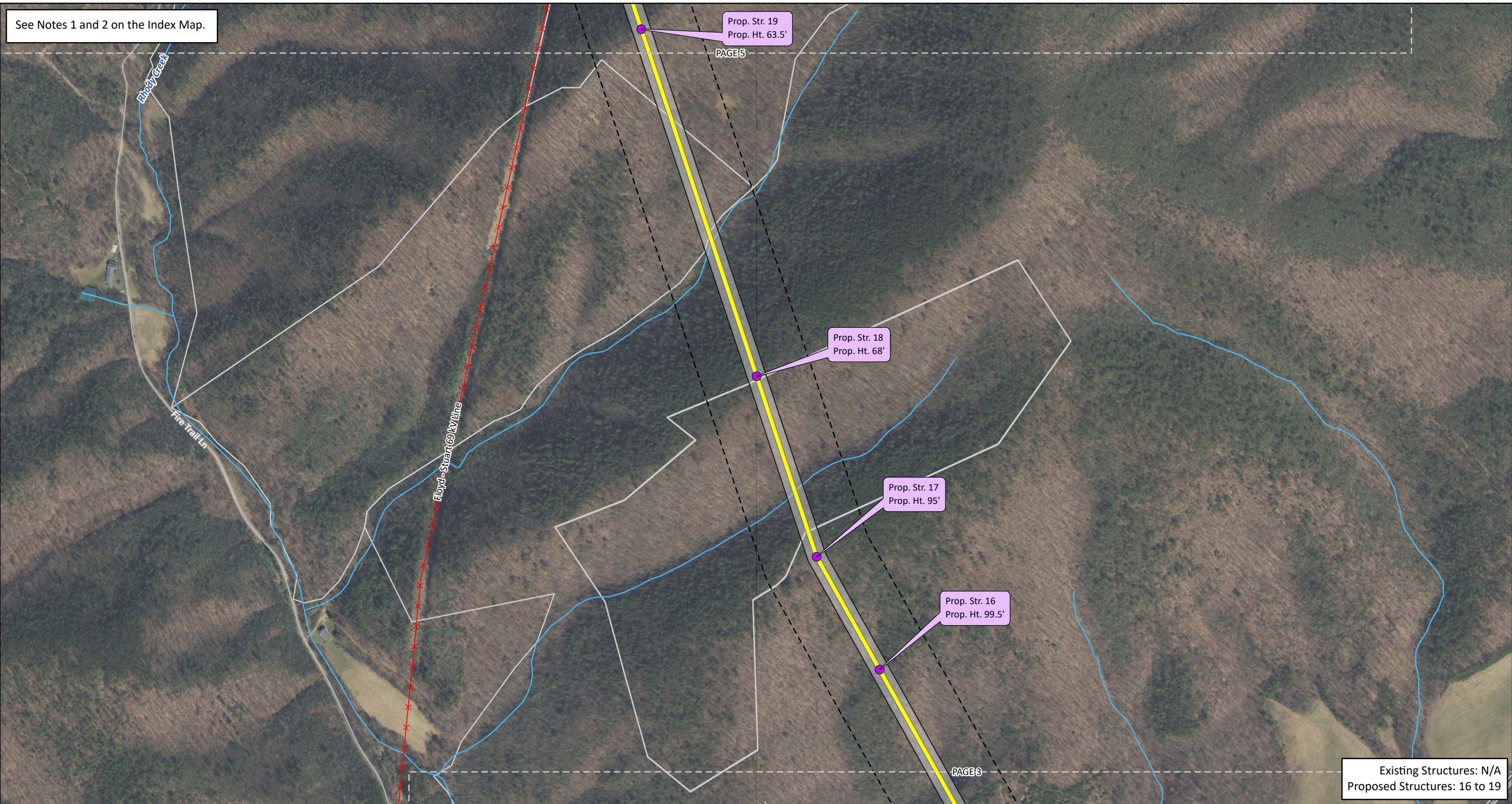


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Exhibit 8: Component 2 GIS Constraints Map



Stuart Area Transmission
Improvements Project
Component 2:
Mayo River (Stuart) to Floyd
Transmission Improvements

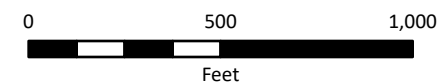


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|-----------------------------------------------|----------------------------------|--------------------------------|
| ● Proposed Structure | ■ Proposed Right-of-Way (100') | ■ Waterbody (NHD) |
| — Component 2 Proposed Route (Single Circuit) | --- Filing Corridor (See Note 1) | --- Map Tile |
| × Existing Transmission Line to be Retired | — Road | □ Parcel Boundary (See Note 2) |
| | — Stream (NHD) | |



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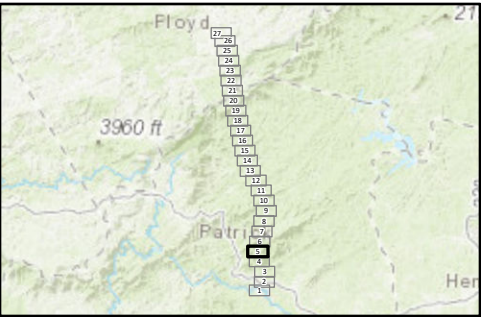
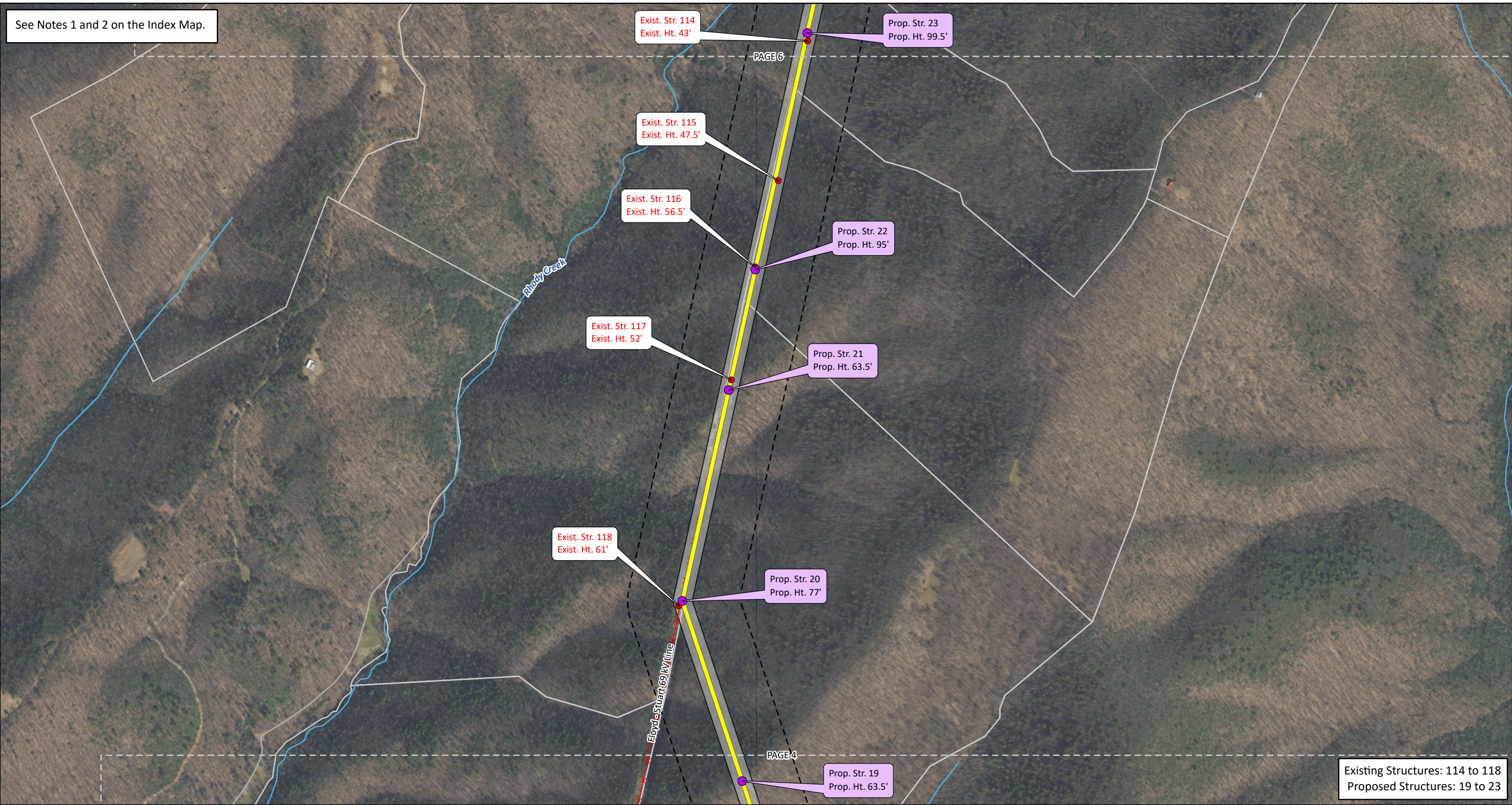


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Exhibit 8: Component 2 GIS Constraints Map



Stuart Area Transmission
Improvements Project
Component 2:
Mayo River (Stuart) to Floyd
Transmission Improvements



Proposed Structure	Existing Transmission Line to be Retired	Road
Existing APCo Structure to be Removed	Proposed Right-of-Way (100')	Stream (NHD)
Component 2 Proposed Route (Single Circuit)	Filing Corridor (See Note 1)	Map Tile
		Parcel Boundary (See Note 2)

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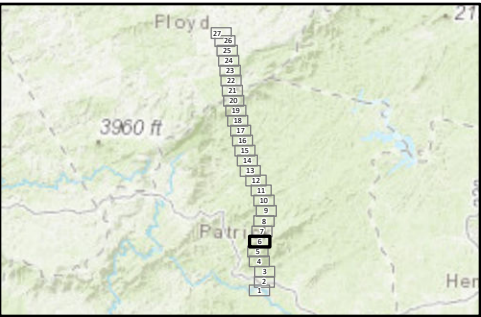
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**Exhibit 8:
Component 2
GIS Constraints Map**

An AEP Company

Stuart Area Transmission
Improvements Project
Component 2:
Mayo River (Stuart) to Floyd
Transmission Improvements

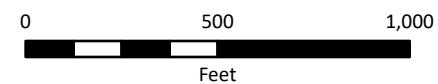


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|---------------------------------------------|------------------------------------------|------------------------------|
| Proposed Structure | Existing Transmission Line to be Retired | Stream (NHD) |
| Existing APCo Structure to be Removed | Proposed Right-of-Way (100') | Map Tile |
| Component 2 Proposed Route (Single Circuit) | Filing Corridor (See Note 1) | Parcel Boundary (See Note 2) |



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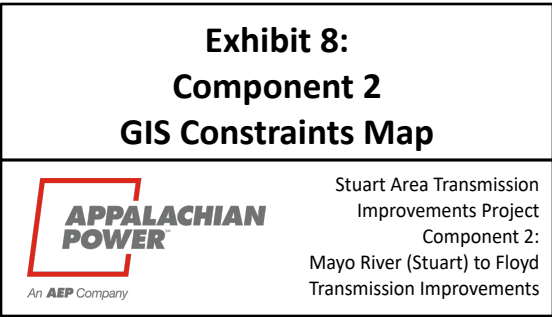
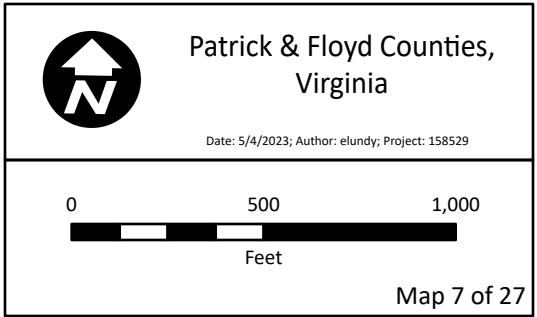
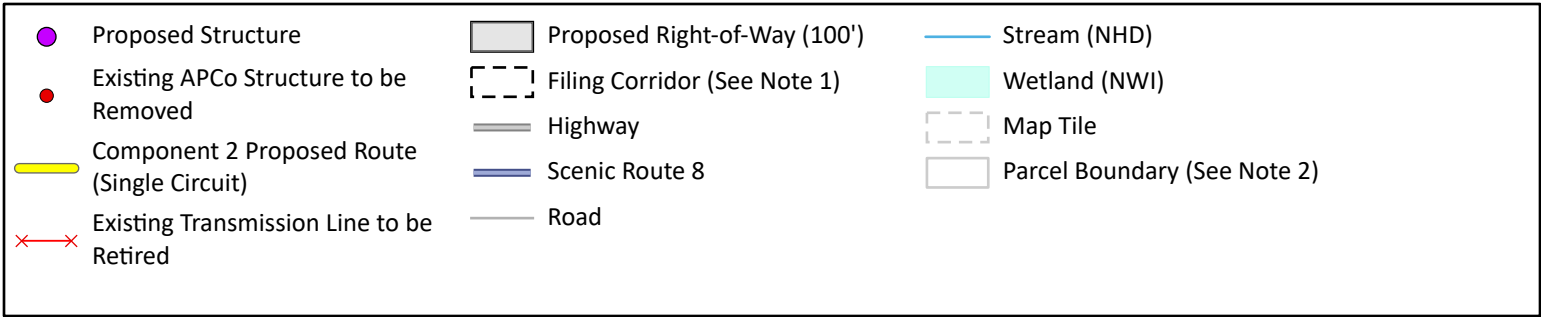
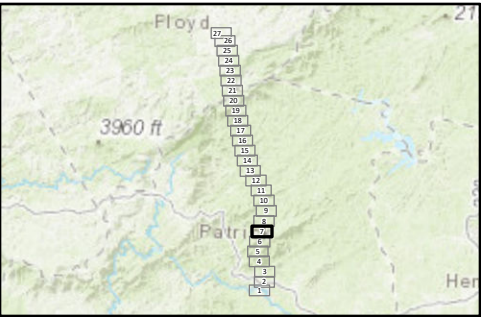
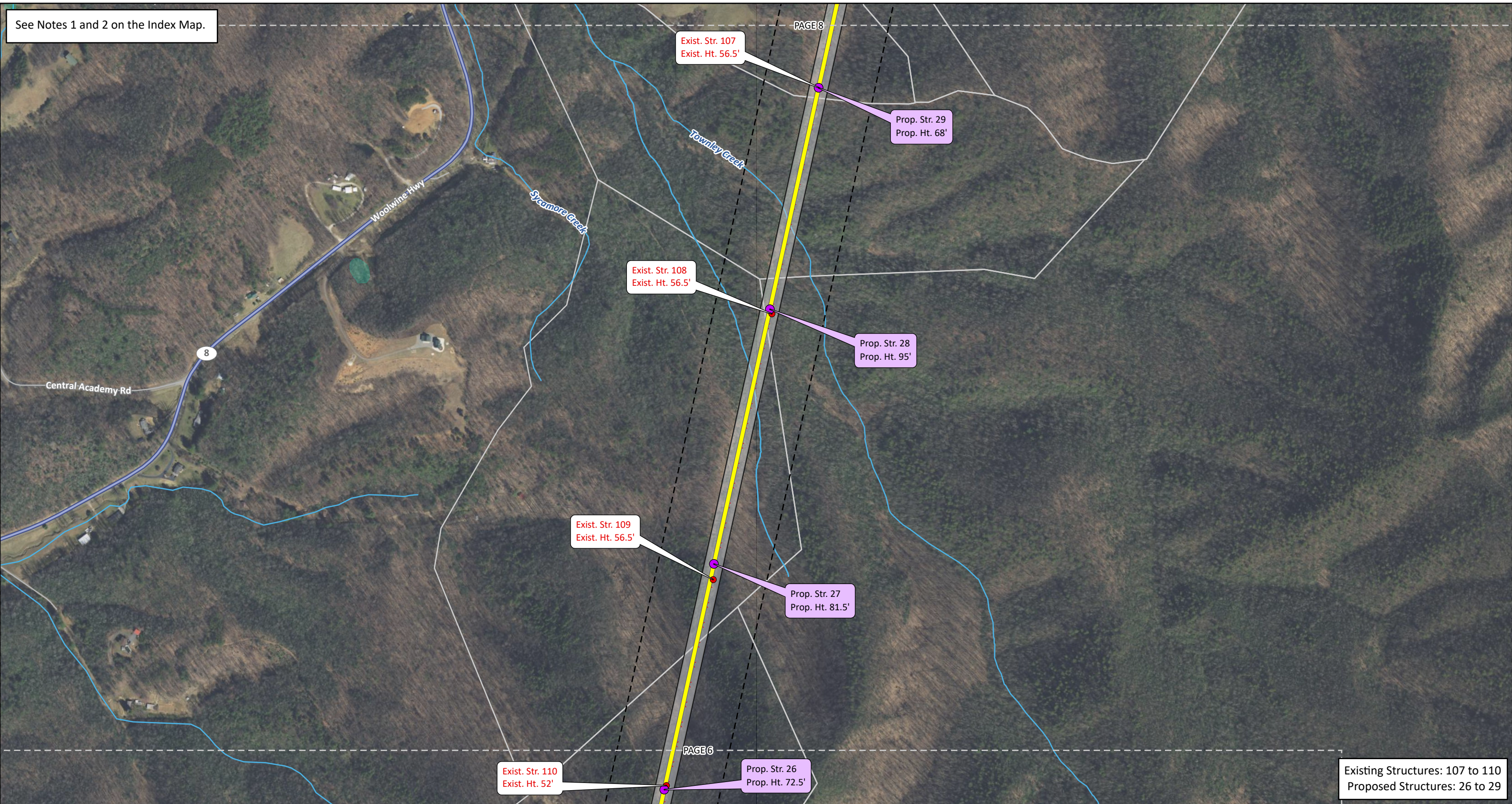


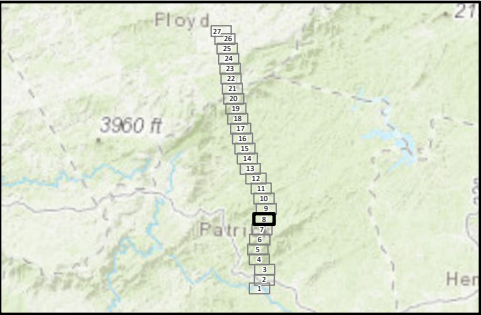
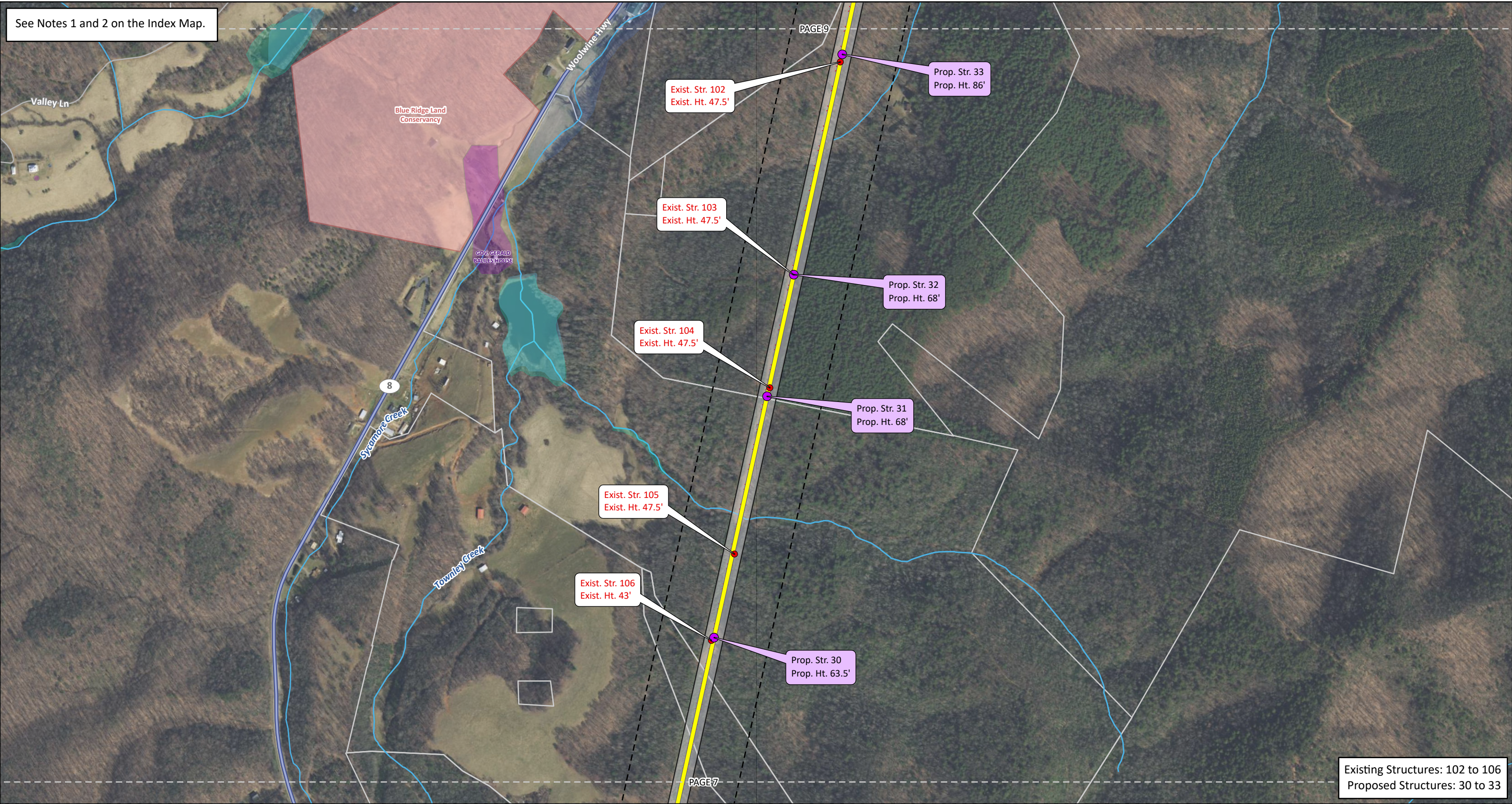
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Exhibit 8: Component 2 GIS Constraints Map



Stuart Area Transmission
Improvements Project
Component 2:
Mayo River (Stuart) to Floyd
Transmission Improvements





- Proposed Structure
- Existing APCo Structure to be Removed
- Component 2 Proposed Route (Single Circuit)
- Existing Transmission Line to be Retired
- Proposed Right-of-Way (100')

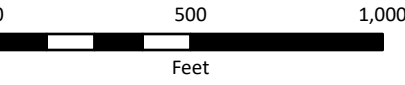
- Filing Corridor (See Note 1)
- Highway
- Scenic Route 8
- Road
- Stream (NHD)
- Waterbody (NHD)

- Wetland (NW1)
- Floodplain
- Local Conservation Land
- Architectural Resource (VDHR)
- Map Tile
- Parcel Boundary (See Note 2)



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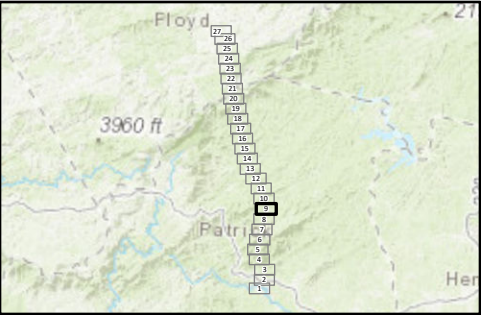
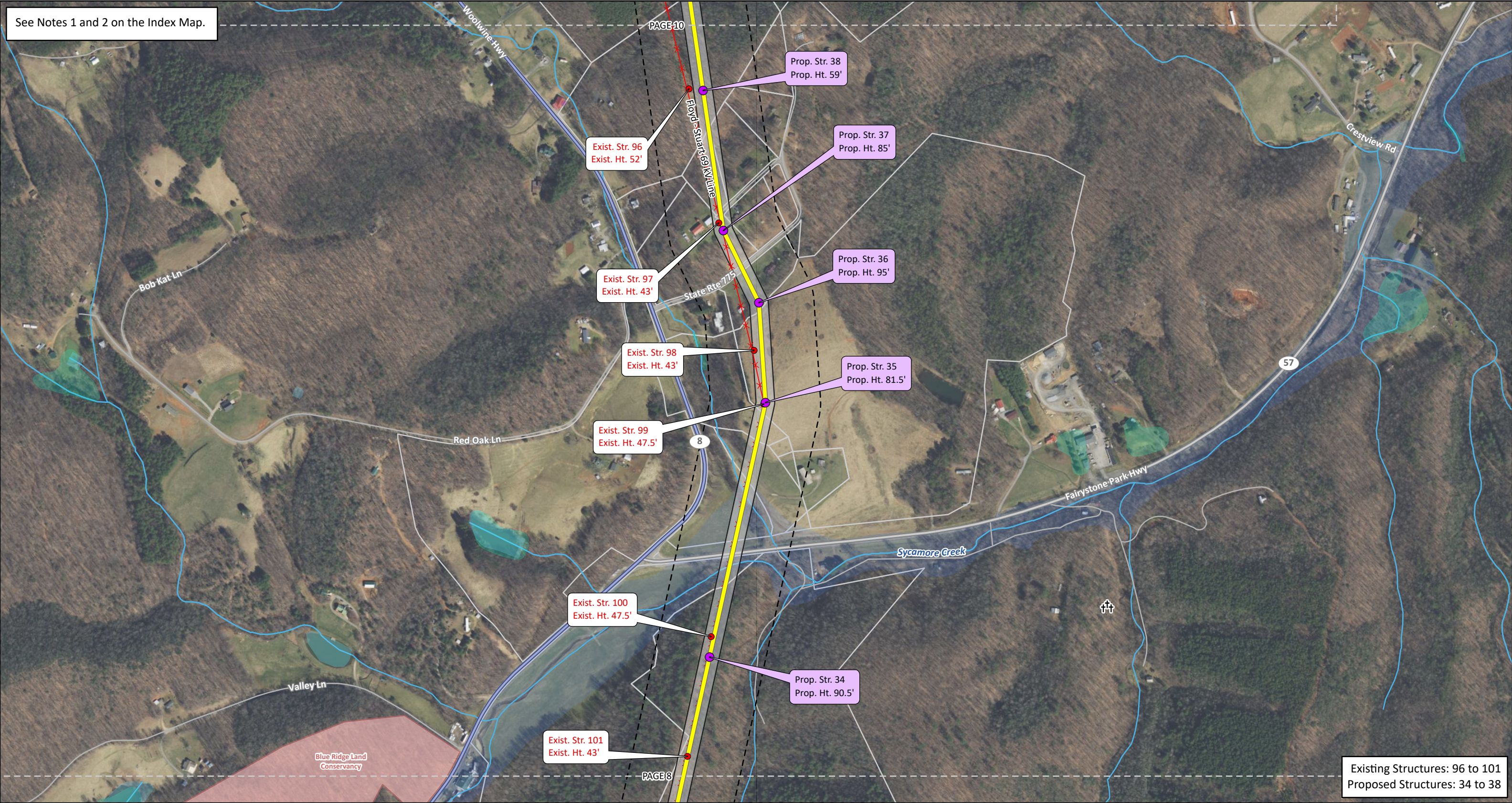


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Exhibit 8: Component 2 GIS Constraints Map



Stuart Area Transmission
Improvements Project
Component 2:
Mayo River (Stuart) to Floyd
Transmission Improvements

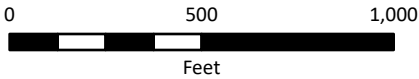


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| Proposed Structure | Filing Corridor (See Note 1) | Wetland (NWI) |
| Existing APCo Structure to be Removed | Cemetery | Floodplain |
| Component 2 Proposed Route (Single Circuit) | Highway | Local Conservation Land |
| Existing Transmission Line to be Retired | Scenic Route 8 | Architectural Resource (VDHR) |
| Proposed Right-of-Way (100') | Road | Map Tile |
| | Stream (NHD) | Parcel Boundary (See Note 2) |
| | Waterbody (NHD) | |



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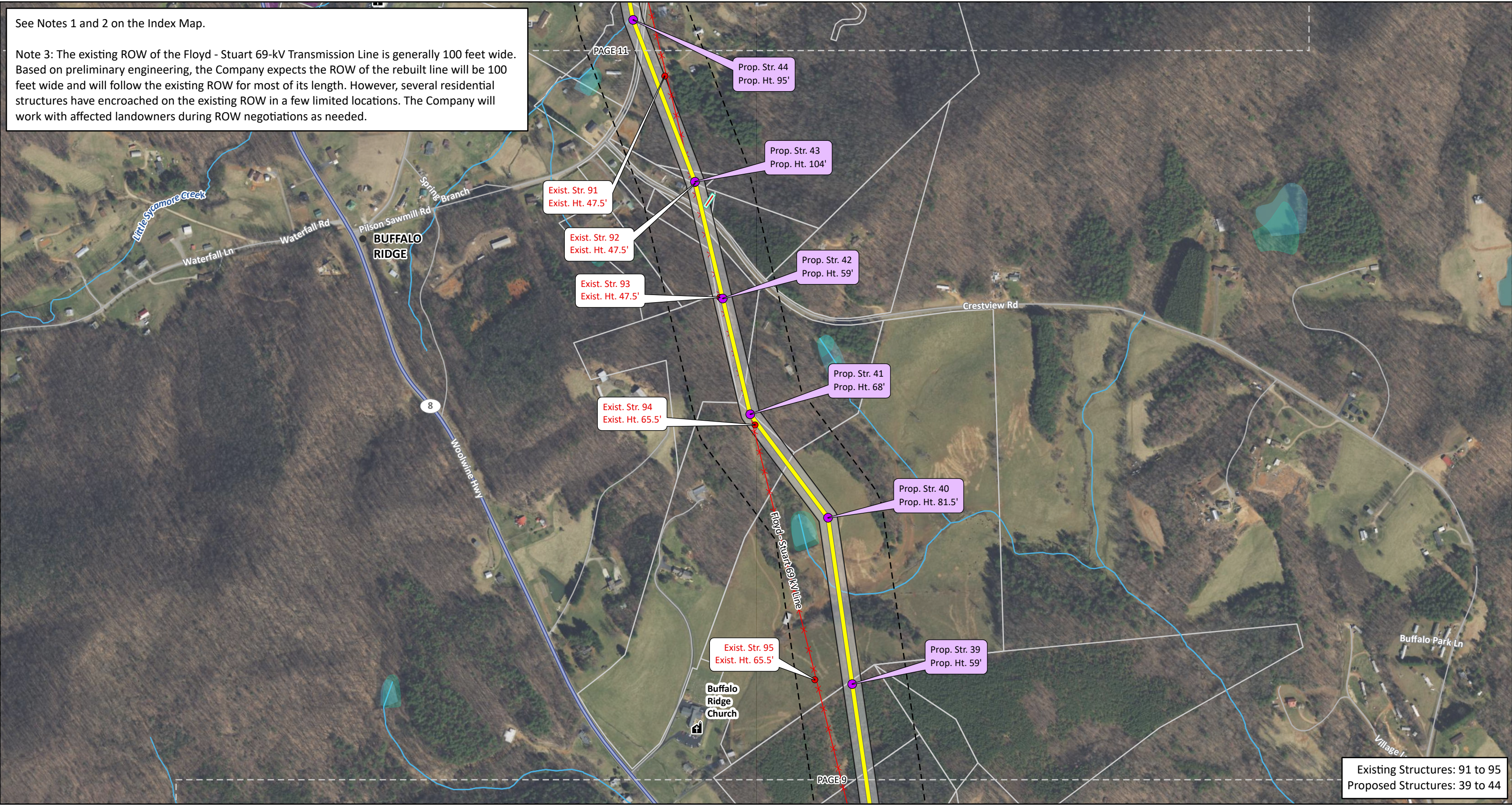
**Exhibit 8:
Component 2
GIS Constraints Map**



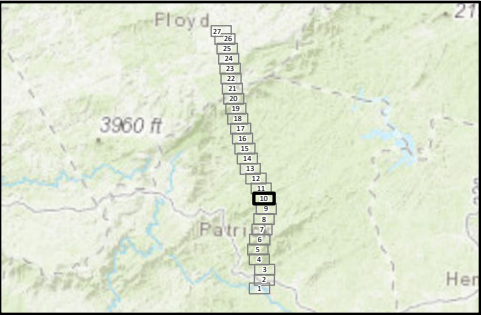
Stuart Area Transmission
Improvements Project
Component 2:
Mayo River (Stuart) to Floyd
Transmission Improvements

See Notes 1 and 2 on the Index Map.

Note 3: The existing ROW of the Floyd - Stuart 69-kV Transmission Line is generally 100 feet wide. Based on preliminary engineering, the Company expects the ROW of the rebuilt line will be 100 feet wide and will follow the existing ROW for most of its length. However, several residential structures have encroached on the existing ROW in a few limited locations. The Company will work with affected landowners during ROW negotiations as needed.



Existing Structures: 91 to 95
Proposed Structures: 39 to 44



- | | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">Proposed StructureExisting APCo Structure to be RemovedComponent 2 Proposed Route (Single Circuit)Existing Transmission Line to be Retired | <ul style="list-style-type: none">Proposed Right-of-Way (100')Filing Corridor (See Note 1)Residential Structure (within proposed 100' ROW) (See Note 3)Place of WorshipPopulated Place | <ul style="list-style-type: none">HighwayScenic Route 8RoadStream (NHD)Waterbody (NHD) | <ul style="list-style-type: none">Wetland (NWI)Architectural Resource (VDHR)Map TileParcel Boundary (See Note 2) |
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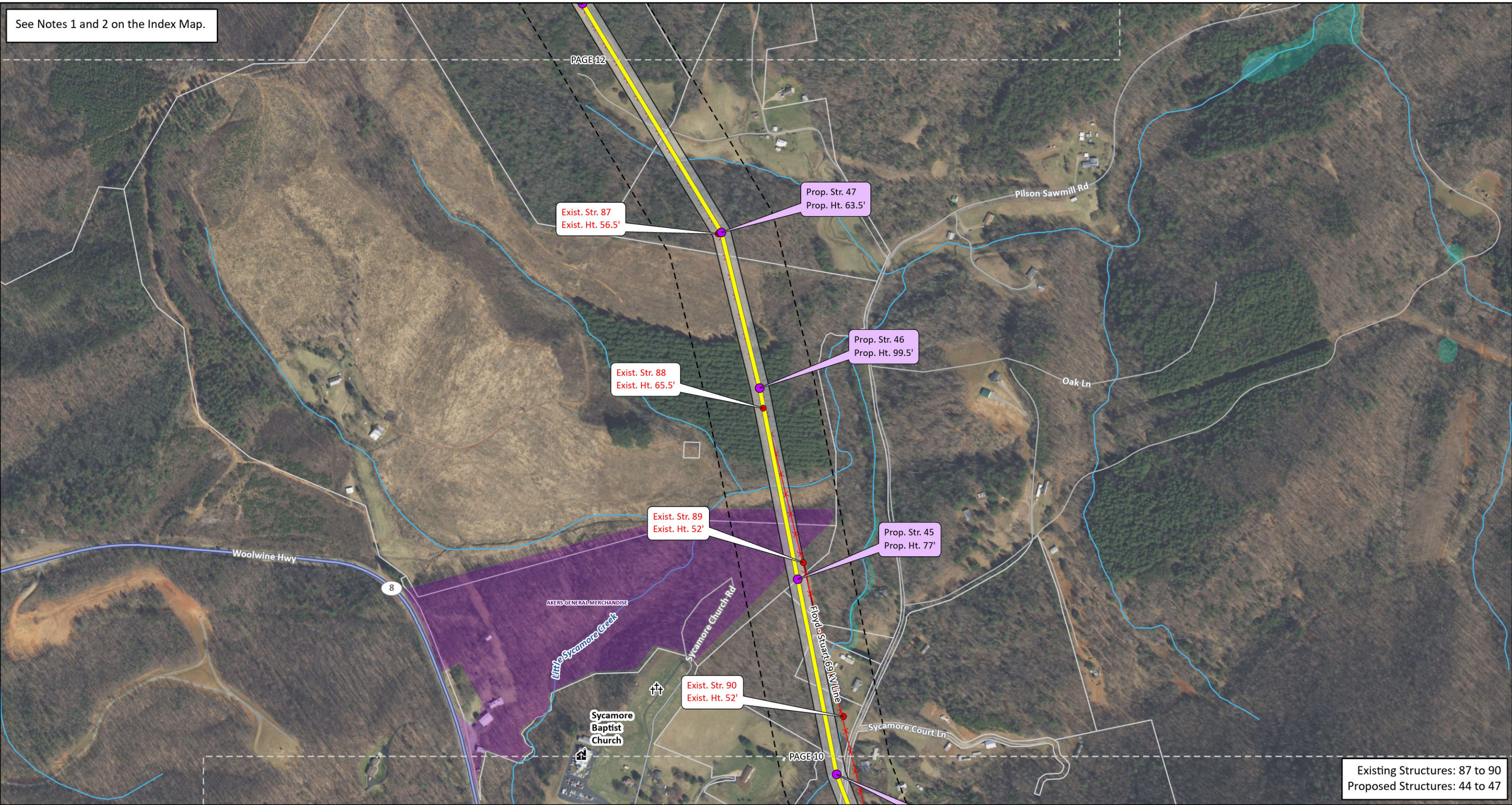
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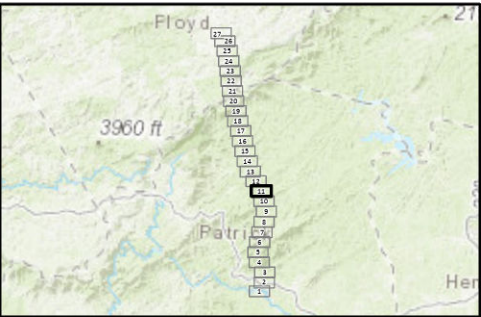
**Exhibit 8:
Component 2
GIS Constraints Map**

Stuart Area Transmission
Improvements Project
Component 2:
Mayo River (Stuart) to Floyd
Transmission Improvements

See Notes 1 and 2 on the Index Map.



Existing Structures: 87 to 90
Proposed Structures: 44 to 47

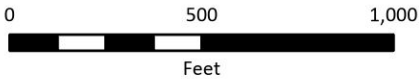


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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">Proposed StructureExisting APCo Structure to be RemovedComponent 2 Proposed Route (Single Circuit)Existing Transmission Line to be RetiredProposed Right-of-Way (100') | <ul style="list-style-type: none">Filing Corridor (See Note 1)Place of WorshipCemeteryHighwayScenic Route 8Road | <ul style="list-style-type: none">Stream (NHD)Waterbody (NHD)Wetland (NWI)Architectural Resource (VDHR)Map TileParcel Boundary (See Note 2) |
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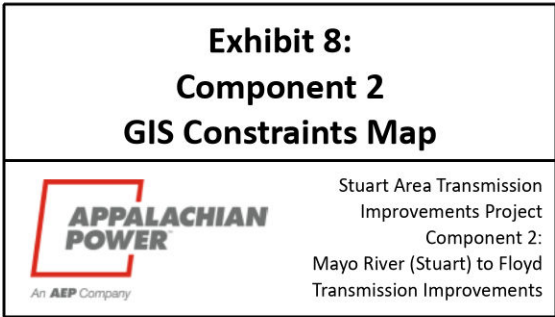
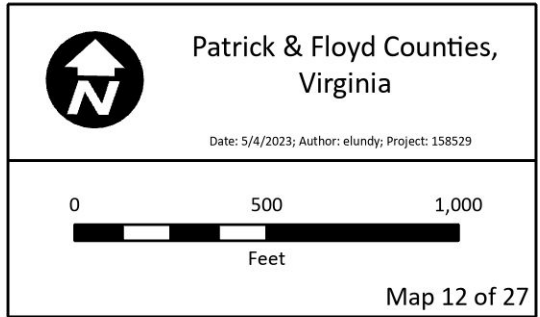
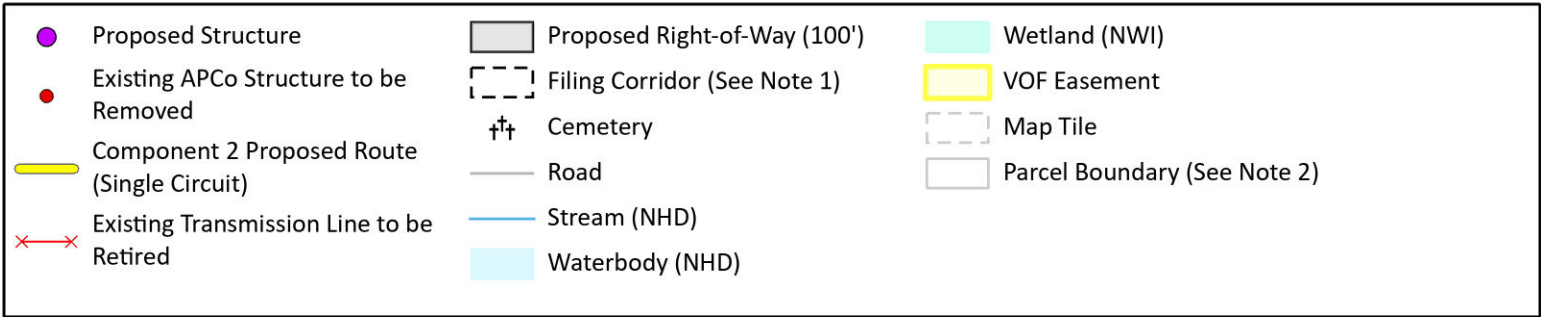
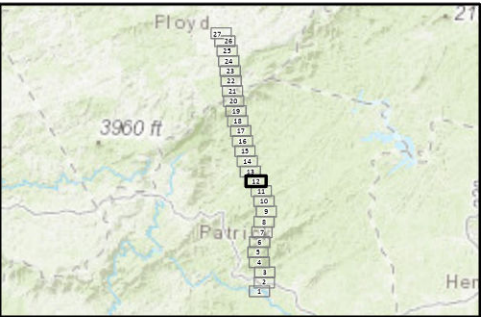
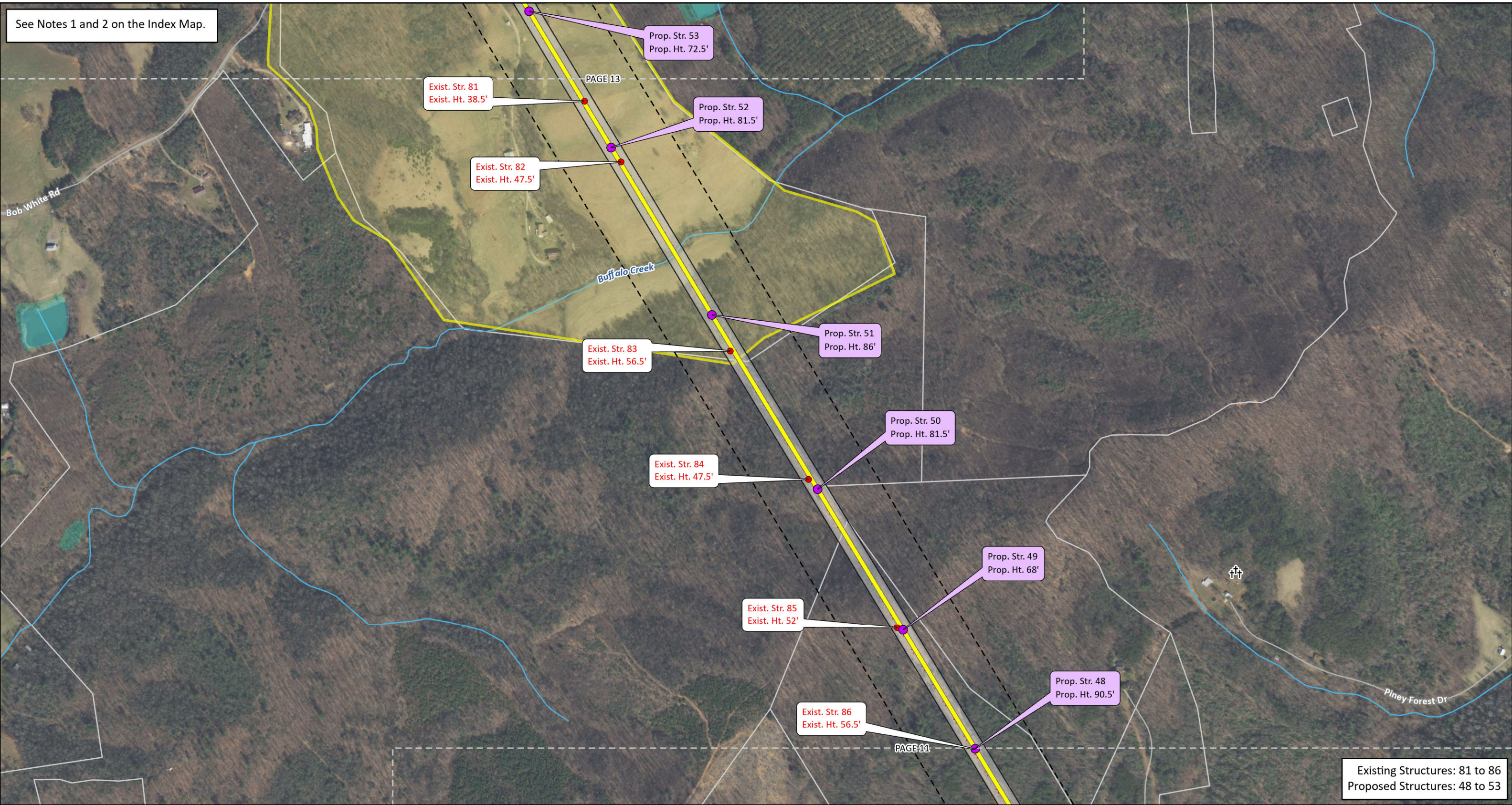


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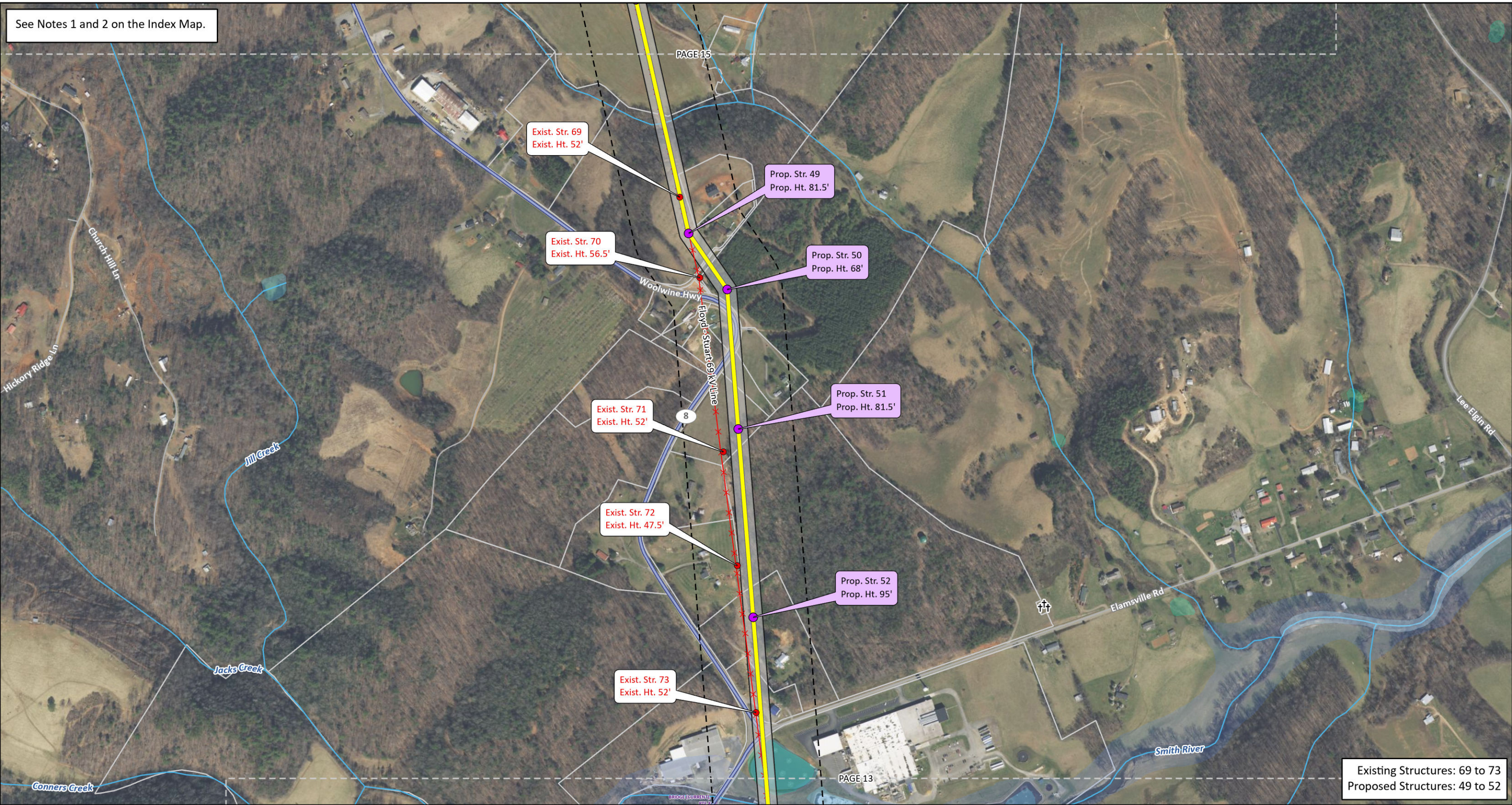
**Exhibit 8:
Component 2
GIS Constraints Map**



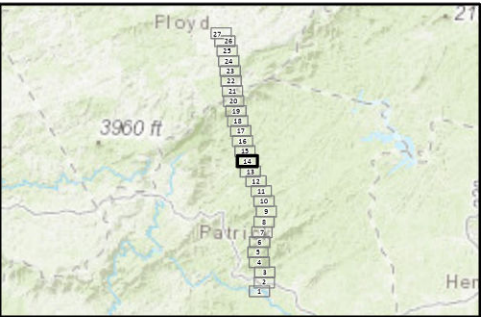
Stuart Area Transmission
Improvements Project
Component 2:
Mayo River (Stuart) to Floyd
Transmission Improvements



See Notes 1 and 2 on the Index Map.



Existing Structures: 69 to 73
Proposed Structures: 49 to 52

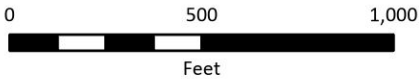


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|---------------------------------------------|------------------------------|-------------------------------|
| Proposed Structure | Filing Corridor (See Note 1) | Waterbody (NHD) |
| Existing APCo Structure to be Removed | Cemetery | Wetland (NWI) |
| Component 2 Proposed Route (Single Circuit) | Highway | Floodplain |
| Existing Transmission Line to be Retired | Scenic Route 8 | Architectural Resource (VDHR) |
| Proposed Right-of-Way (100') | Road | Map Tile |
| | Stream (NHD) | Parcel Boundary (See Note 2) |
| | River (NHD) | |



Patrick & Floyd Counties,
Virginia

Date: 5/4/2023; Author: elundy; Project: 158529

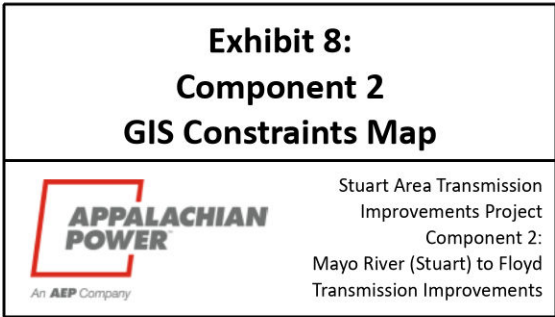
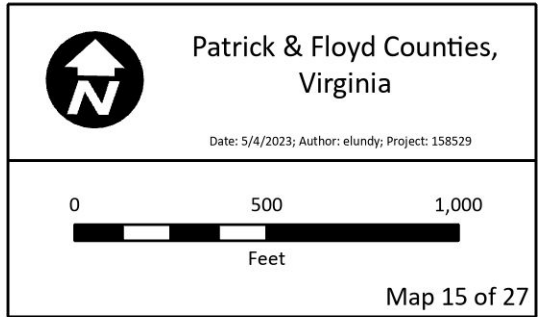
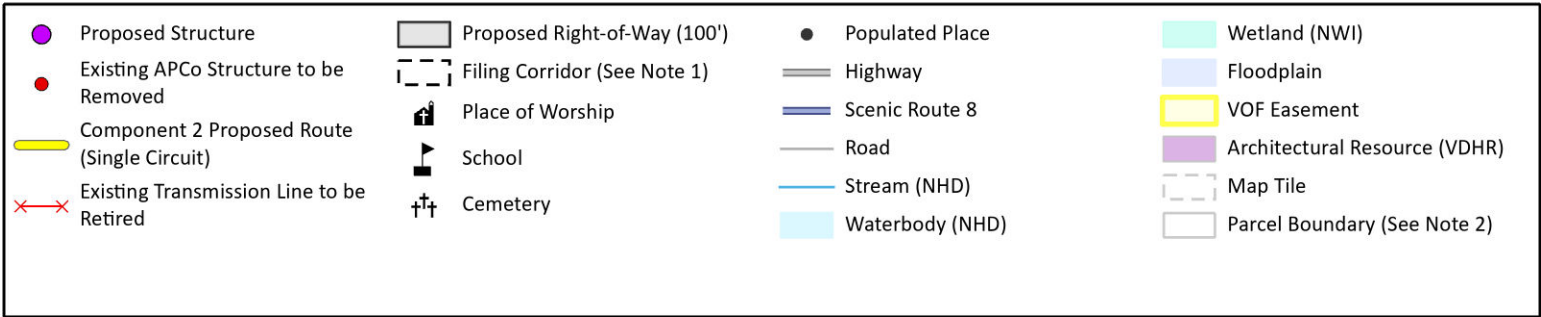
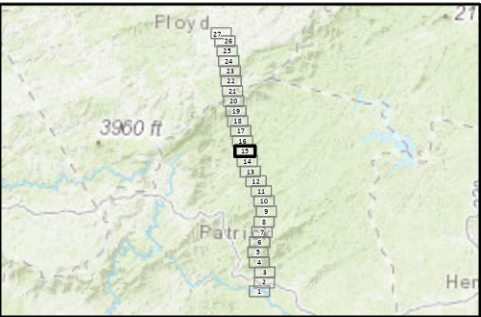
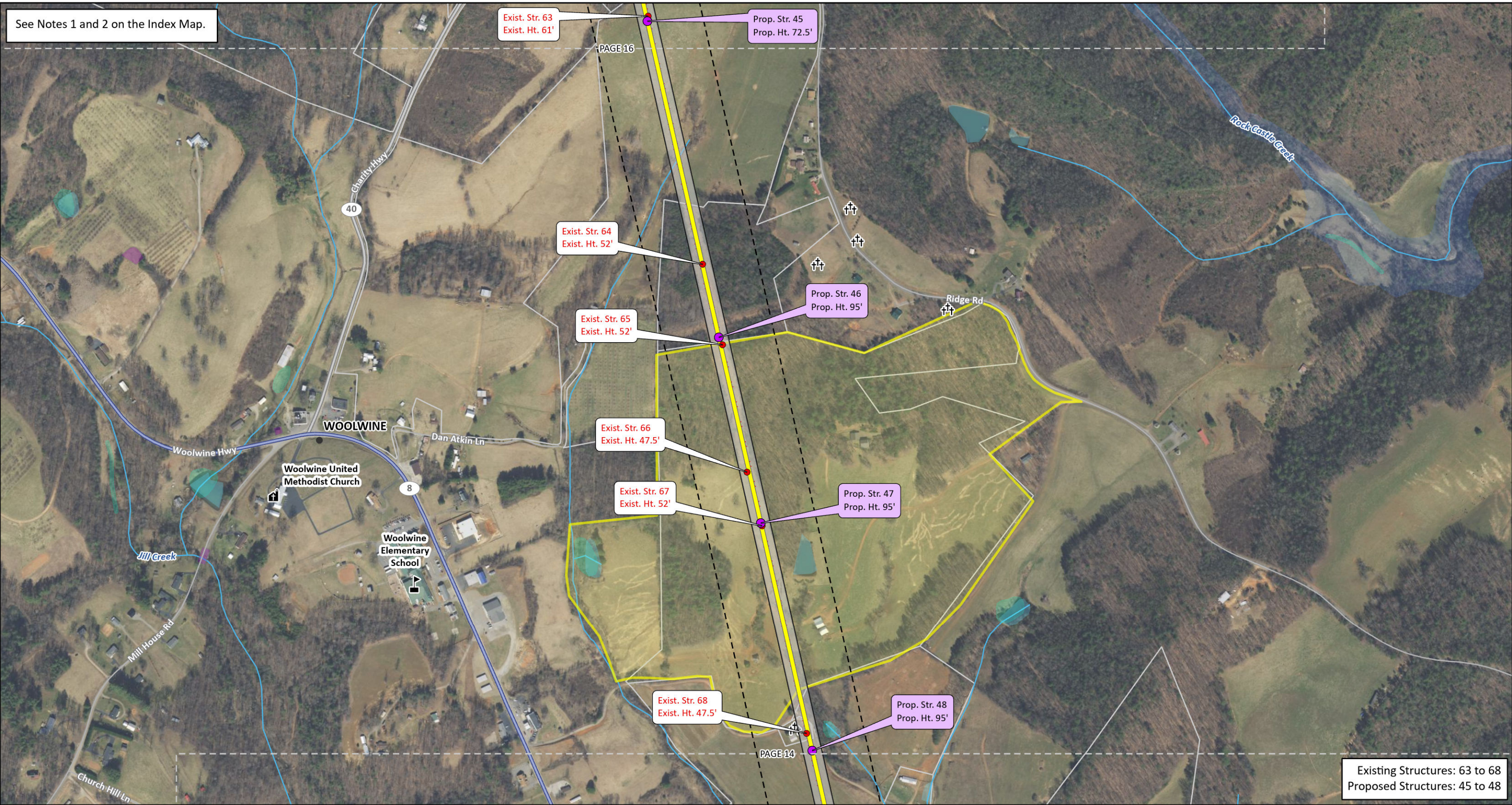


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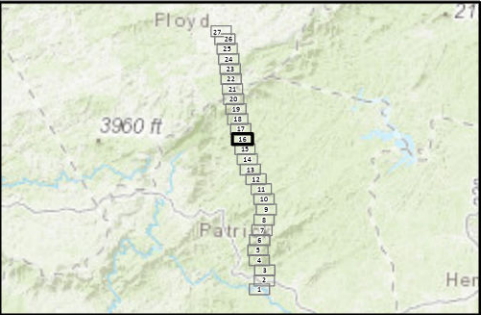
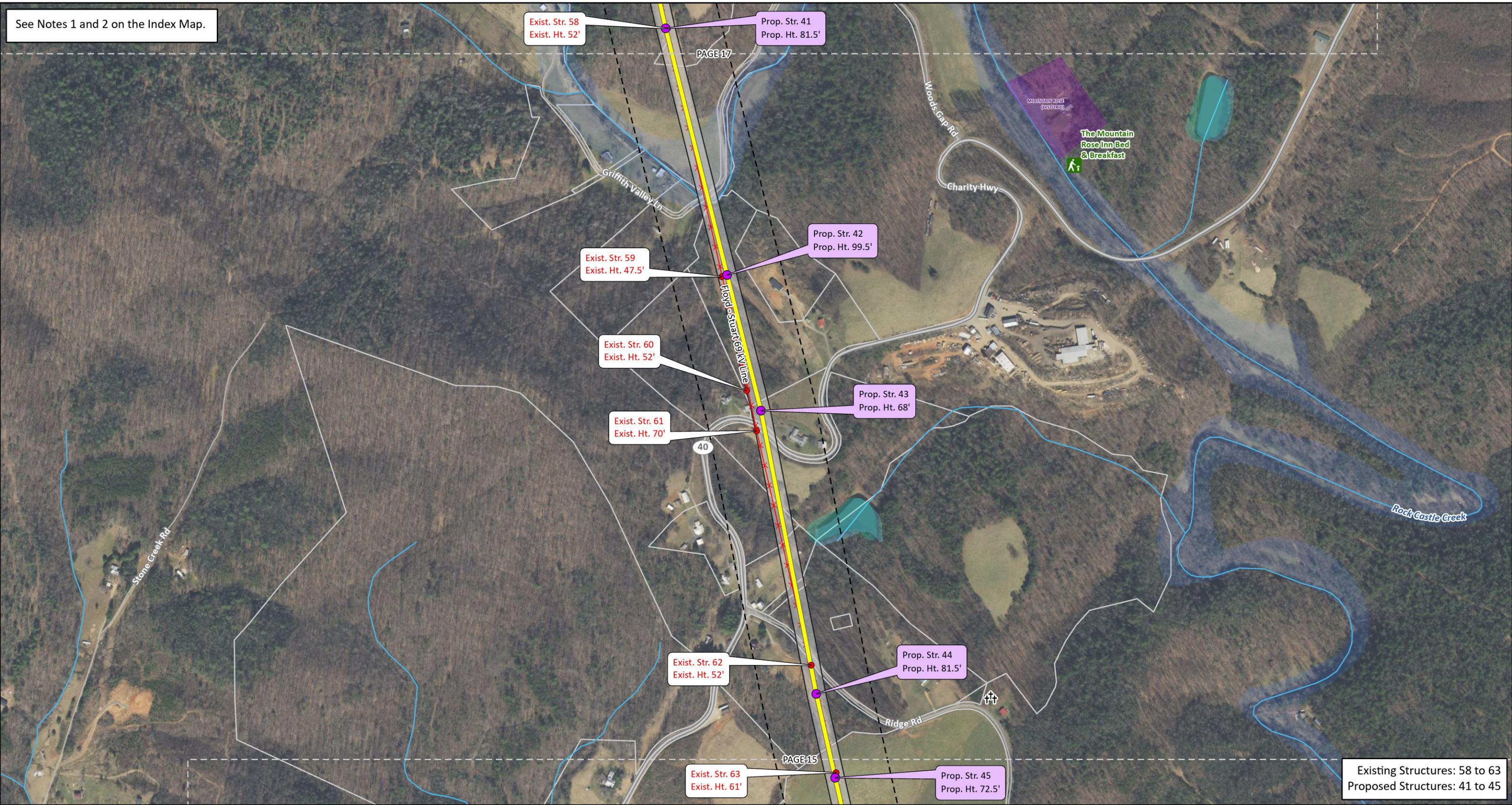
Exhibit 8: Component 2 GIS Constraints Map



Stuart Area Transmission
Improvements Project
Component 2:
Mayo River (Stuart) to Floyd
Transmission Improvements



See Notes 1 and 2 on the Index Map.



- Proposed Structure
- Existing APCo Structure to be Removed
- Component 2 Proposed Route (Single Circuit)
- Existing Transmission Line to be Retired
- Proposed Right-of-Way (100')

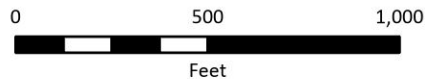
- Filing Corridor (See Note 1)
- Cemetery
- Birding and Wildlife Trail Sites
- Highway
- Road
- Stream (NHD)

- Waterbody (NHD)
- Wetland (NWI)
- Floodplain
- Architectural Resource (VDHR)
- Map Tile
- Parcel Boundary (See Note 2)



Patrick & Floyd Counties,
Virginia

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Exhibit 8: Component 2 GIS Constraints Map

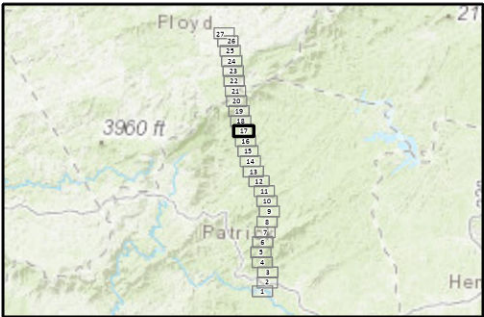


Stuart Area Transmission
Improvements Project
Component 2:
Mayo River (Stuart) to Floyd
Transmission Improvements

See Notes 1 and 2 on the Index Map.



Existing Structures: 52 to 58
Proposed Structures: 37 to 41



- Proposed Structure
- Existing APCo Structure to be Removed
- Component 2 Proposed Route (Single Circuit)
- Existing Transmission Line to be Retired

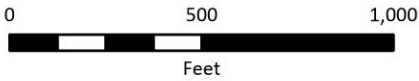
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Cemetery
- Highway
- Road
- Stream (NHD)

- Waterbody (NHD)
- Wetland (NWI)
- Floodplain
- Local Conservation Land
- Map Tile
- Parcel Boundary (See Note 2)



Patrick & Floyd Counties,
Virginia

Date: 5/4/2023; Author: elundy; Project: 158529



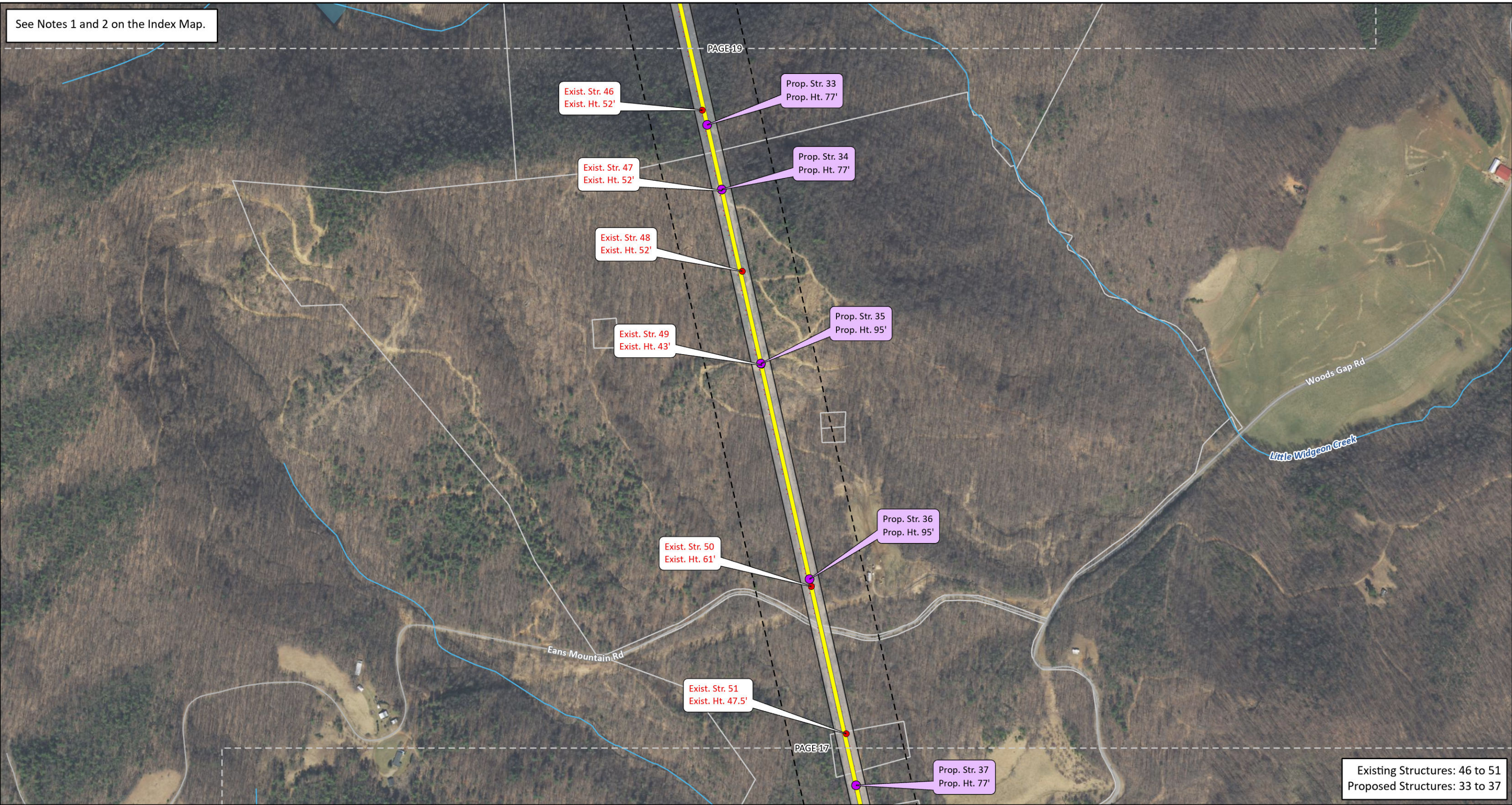
Map 17 of 27

Exhibit 8: Component 2 GIS Constraints Map

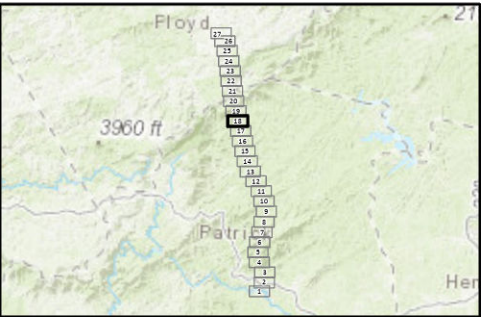


Stuart Area Transmission
Improvements Project
Component 2:
Mayo River (Stuart) to Floyd
Transmission Improvements

See Notes 1 and 2 on the Index Map.



Existing Structures: 46 to 51
Proposed Structures: 33 to 37

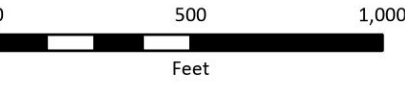


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|-----------------------------------------------|---------------------------------------------|--------------------------------|
| ● Proposed Structure | ✕✕ Existing Transmission Line to be Retired | — Stream (NHD) |
| ● Existing APCo Structure to be Removed | ▭ Proposed Right-of-Way (100') | ▭ Waterbody (NHD) |
| — Component 2 Proposed Route (Single Circuit) | ▭ Filing Corridor (See Note 1) | ▭ Map Tile |
| | — Road | ▭ Parcel Boundary (See Note 2) |



Patrick & Floyd Counties,
Virginia

Date: 5/4/2023; Author: elundy; Project: 158529

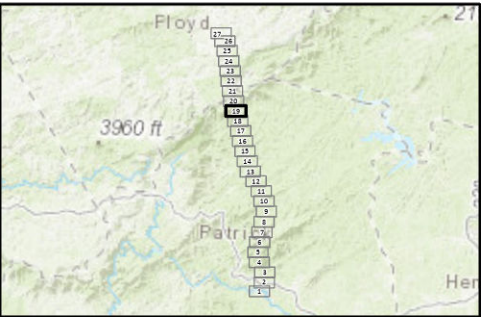


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Exhibit 8: Component 2 GIS Constraints Map



Stuart Area Transmission
Improvements Project
Component 2:
Mayo River (Stuart) to Floyd
Transmission Improvements



Proposed Structure	Proposed Right-of-Way (100')	Wetland (NWI)
Existing APCo Structure to be Removed	Filing Corridor (See Note 1)	Architectural Resource (VDHR)
Component 2 Proposed Route (Single Circuit)	Cemetery	Map Tile
Existing Transmission Line to be Retired	Road	Parcel Boundary (See Note 2)
	Stream (NHD)	
	Waterbody (NHD)	

Patrick & Floyd Counties, Virginia

Date: 5/4/2023; Author: elundy; Project: 158529

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Map 19 of 27

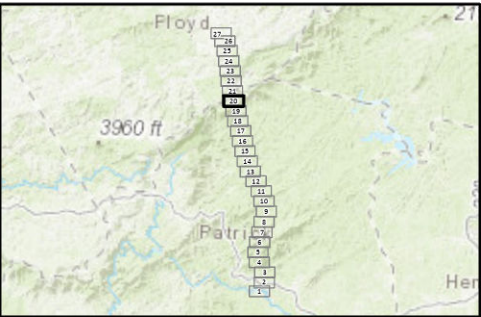
Exhibit 8:
Component 2
GIS Constraints Map

APPALACHIAN POWER
An AEP Company

Stuart Area Transmission Improvements Project
Component 2:
Mayo River (Stuart) to Floyd Transmission Improvements



Existing Structures: 38 to 41
Proposed Structures: 29 to 30



- | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">Proposed StructureExisting APCo Structure to be RemovedComponent 2 Proposed Route (Single Circuit)Existing Transmission Line to be RetiredProposed Right-of-Way (100') | <ul style="list-style-type: none">Filing Corridor (See Note 1)HighwayRoadStream (NHD)County BoundaryWaterbody (NHD) | <ul style="list-style-type: none">Wetland (NWI)Federal EasementBlue Ridge Parkway National ParkwayFederal Conservation LandMap TileParcel Boundary (See Note 2) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Patrick & Floyd Counties,
Virginia

Date: 5/4/2023; Author: elundy; Project: 158529

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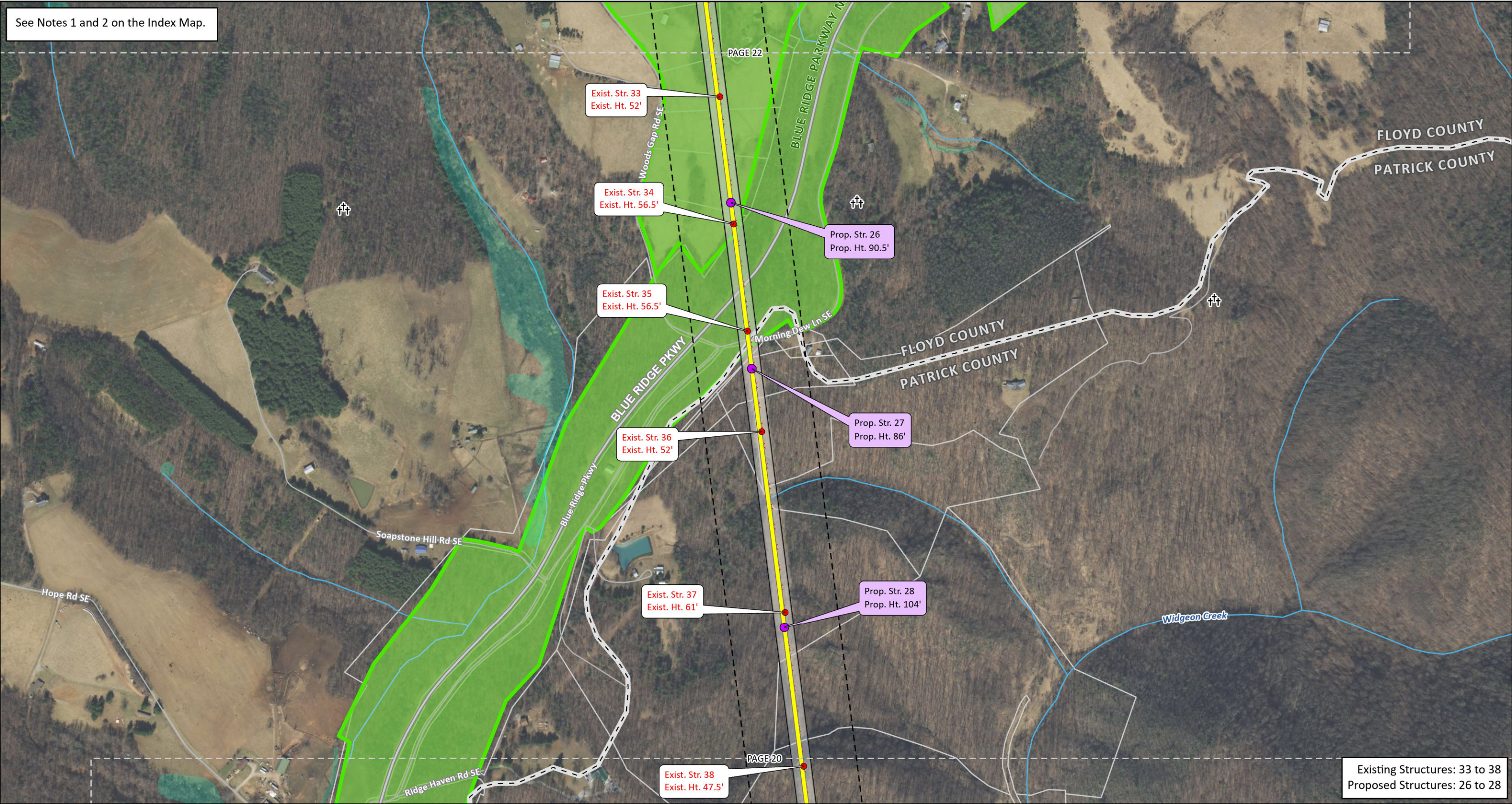
Feet

Map 20 of 27

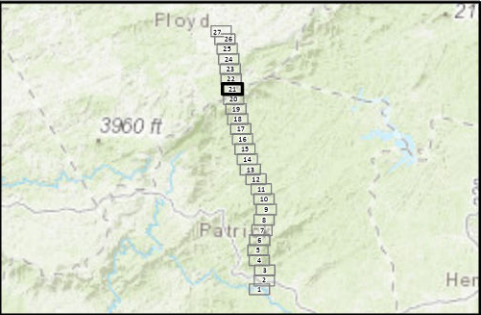
Exhibit 8:
Component 2
GIS Constraints Map

Stuart Area Transmission
Improvements Project
Component 2:
Mayo River (Stuart) to Floyd
Transmission Improvements

See Notes 1 and 2 on the Index Map.



Existing Structures: 33 to 38
Proposed Structures: 26 to 28

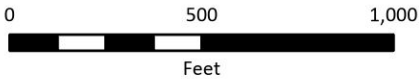


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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">Proposed StructureExisting APCo Structure to be RemovedComponent 2 Proposed Route (Single Circuit)Existing Transmission Line to be RetiredProposed Right-of-Way (100') | <ul style="list-style-type: none">Filing Corridor (See Note 1)CemeteryHighwayRoadStream (NHD)County Boundary | <ul style="list-style-type: none">Waterbody (NHD)Wetland (NWI)Blue Ridge Parkway National ParkwayFederal Conservation LandMap TileParcel Boundary (See Note 2) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



Patrick & Floyd Counties,
Virginia

Date: 5/4/2023; Author: elundy; Project: 158529

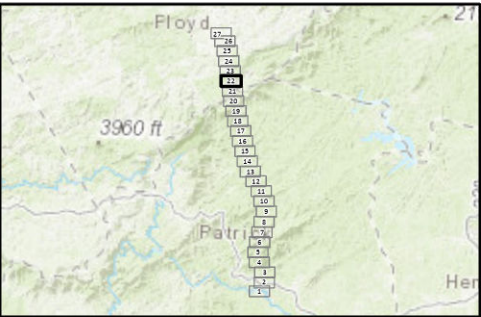
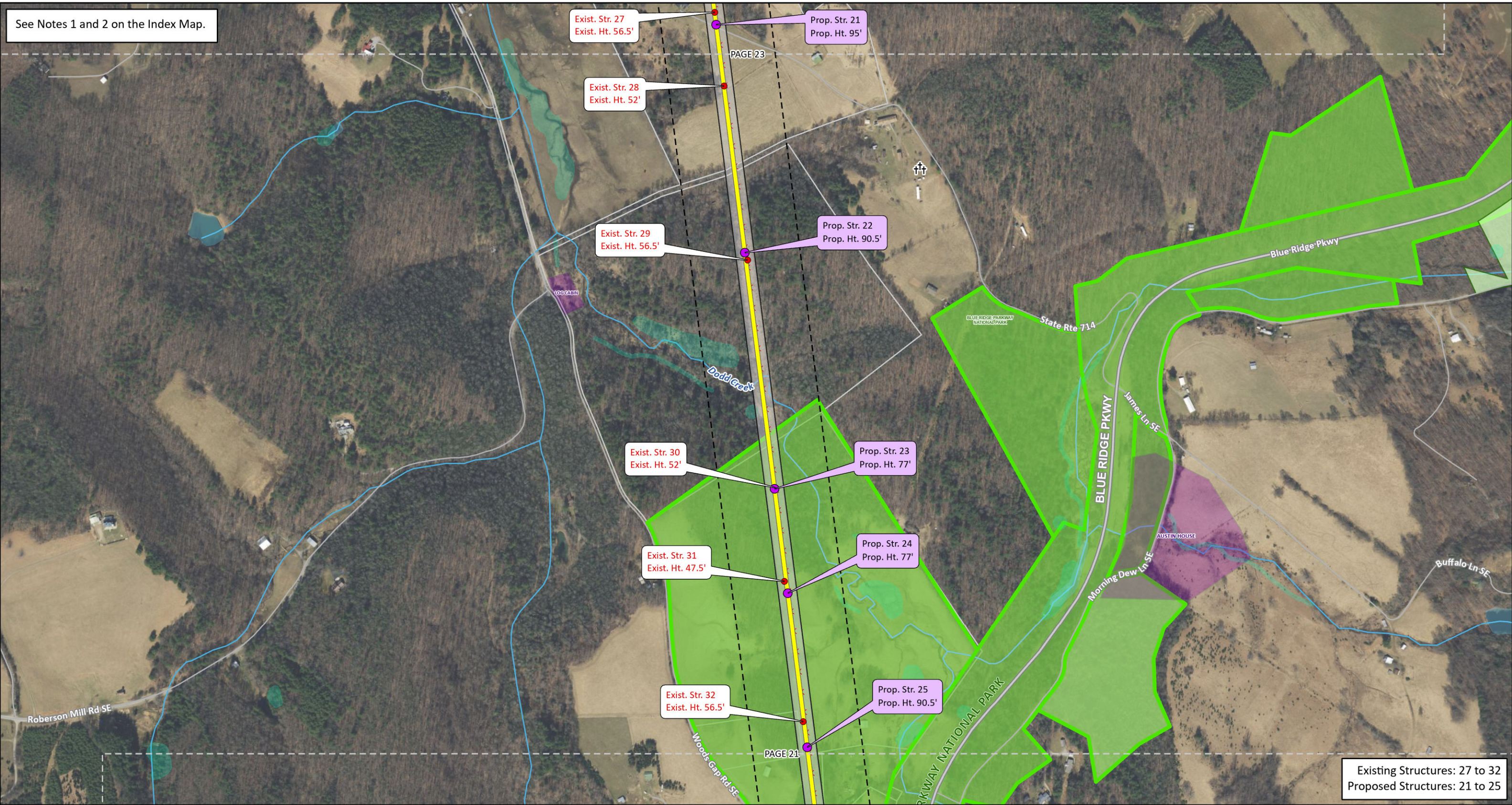


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Exhibit 8: Component 2 GIS Constraints Map



Stuart Area Transmission
Improvements Project
Component 2:
Mayo River (Stuart) to Floyd
Transmission Improvements

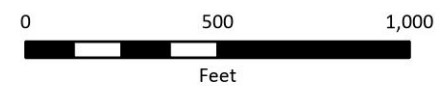


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|---------------------------------------------|------------------------------------------|------------------|-------------------------------------|
| Proposed Structure | Existing Transmission Line to be Retired | Road | Blue Ridge Parkway National Parkway |
| Existing APCo Structure to be Removed | Proposed Right-of-Way (100') | Stream (NHD) | Federal Conservation Land |
| Component 2 Proposed Route (Single Circuit) | Filing Corridor (See Note 1) | Waterbody (NHD) | Architectural Resource (VDHR) |
| | Cemetery | Wetland (NWI) | Map Tile |
| | Highway | Federal Easement | Parcel Boundary (See Note 2) |



Patrick & Floyd Counties,
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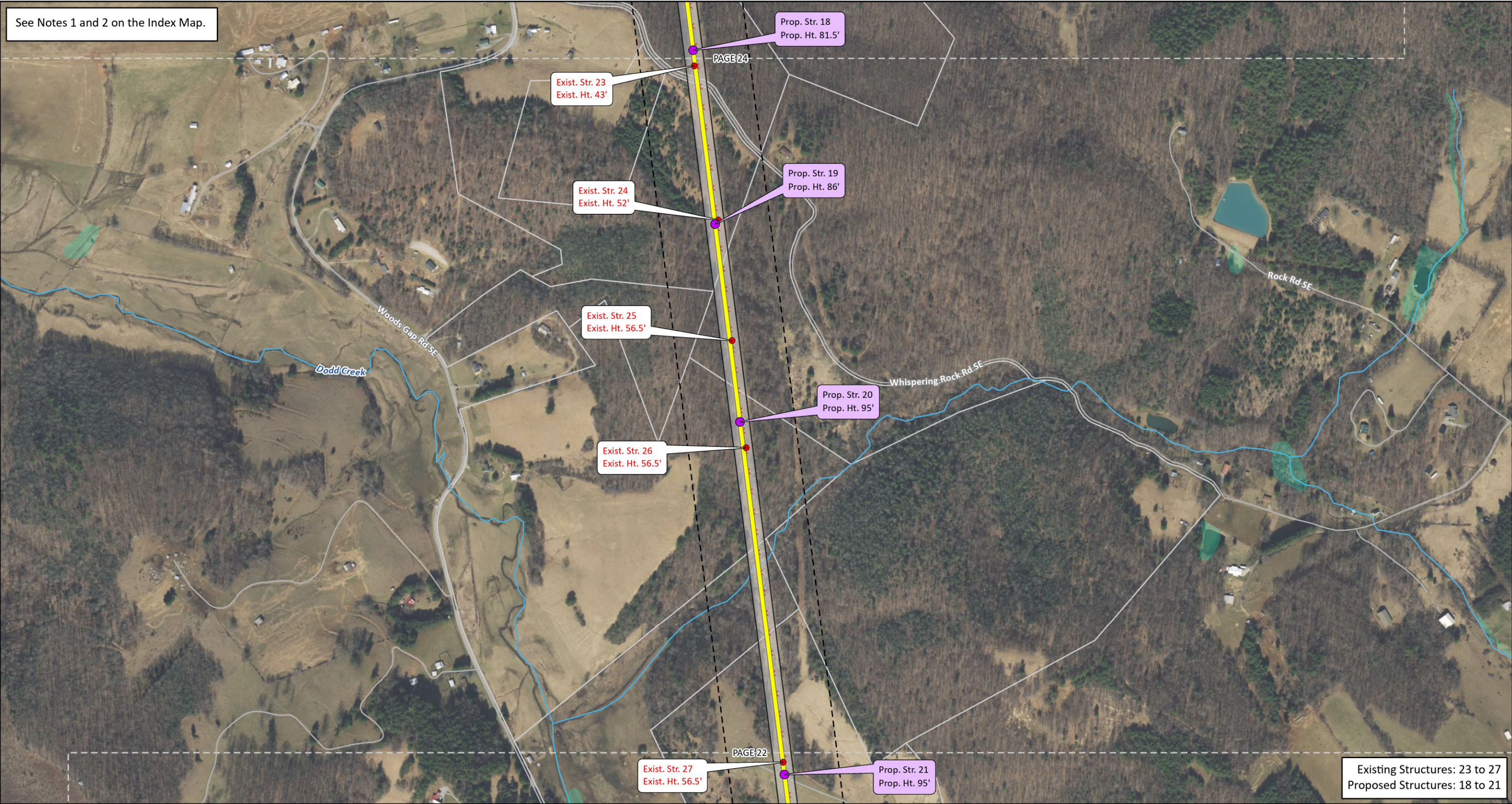
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Exhibit 8: Component 2 GIS Constraints Map

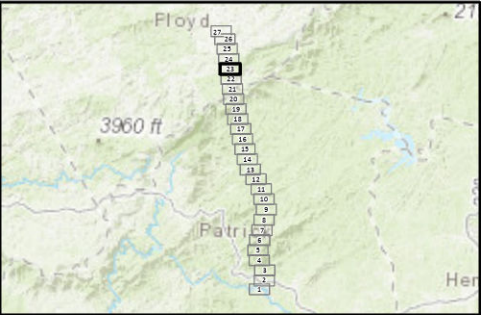


Stuart Area Transmission
Improvements Project
Component 2:
Mayo River (Stuart) to Floyd
Transmission Improvements

See Notes 1 and 2 on the Index Map.



Existing Structures: 23 to 27
Proposed Structures: 18 to 21

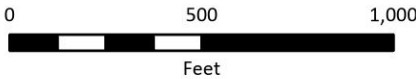


- | | | |
|---------------------------------------------|------------------------------------------|------------------------------|
| Proposed Structure | Existing Transmission Line to be Retired | Stream (NHD) |
| Existing APCo Structure to be Removed | Proposed Right-of-Way (100') | Waterbody (NHD) |
| Component 2 Proposed Route (Single Circuit) | Filing Corridor (See Note 1) | Wetland (NWI) |
| | Road | Map Tile |
| | | Parcel Boundary (See Note 2) |



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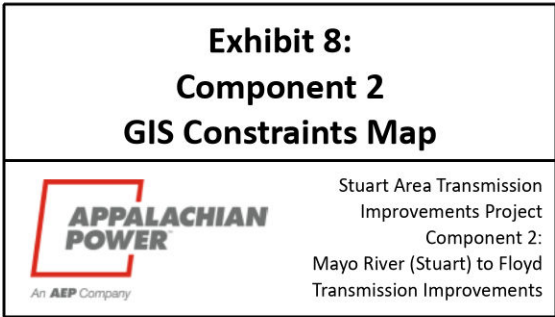
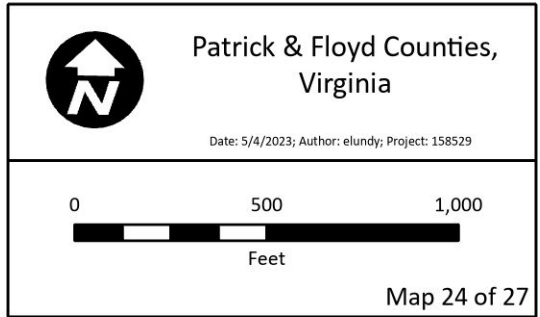
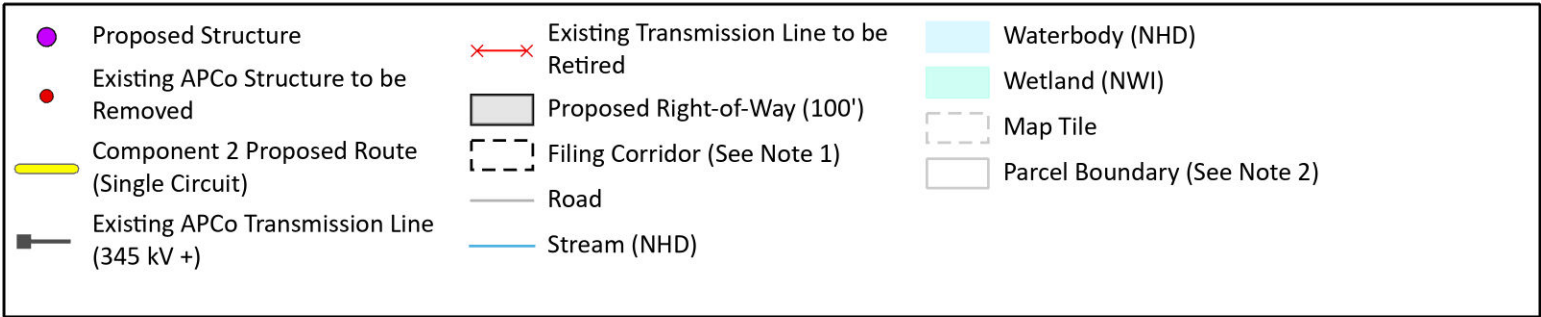
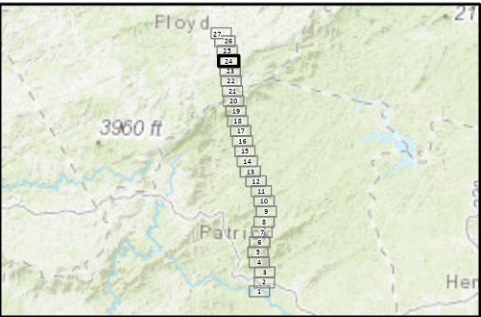


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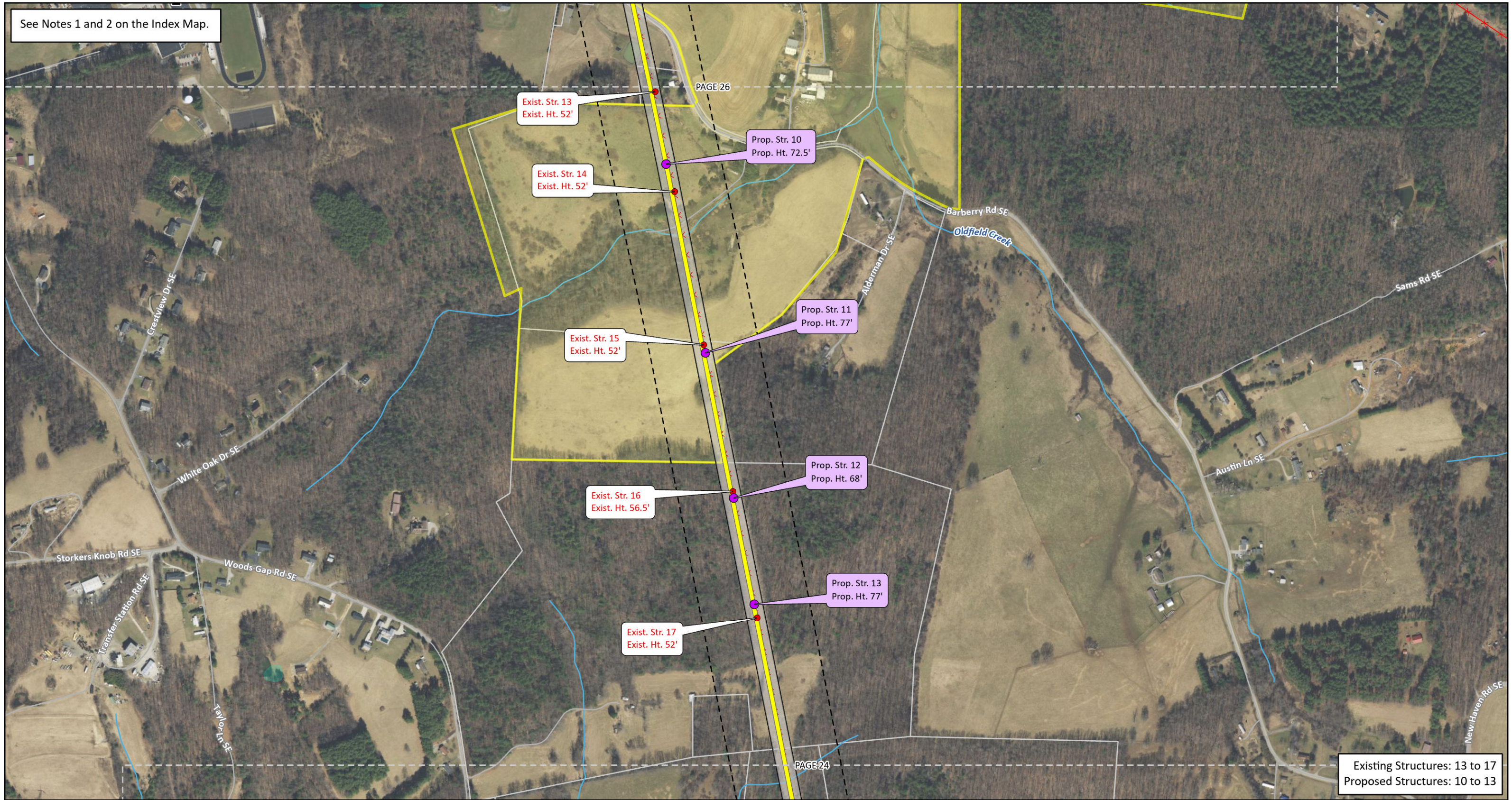
**Exhibit 8:
Component 2
GIS Constraints Map**



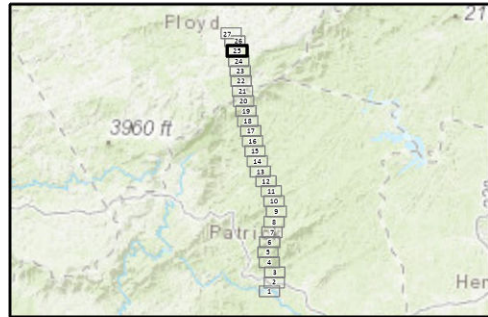
Stuart Area Transmission
Improvements Project
Component 2:
Mayo River (Stuart) to Floyd
Transmission Improvements



See Notes 1 and 2 on the Index Map.



Existing Structures: 13 to 17
Proposed Structures: 10 to 13

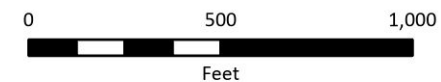


- | | | |
|-----------------------------------------------|--------------------------------|--------------------------------|
| ● Proposed Structure | ▬ Proposed Right-of-Way (100') | ▬ Wetland (NWI) |
| ● Existing APCo Structure to be Removed | ▬ Filing Corridor (See Note 1) | ▬ VOF Easement |
| ▬ Component 2 Proposed Route (Single Circuit) | ▬ School | ▬ Map Tile |
| ▬ Existing Transmission Line to be Retired | ▬ Road | ▬ Parcel Boundary (See Note 2) |
| | ▬ Stream (NHD) | |



Patrick & Floyd Counties,
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Date: 5/4/2023; Author: elundy; Project: 158529

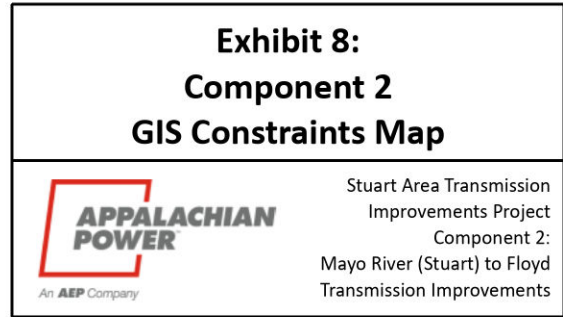
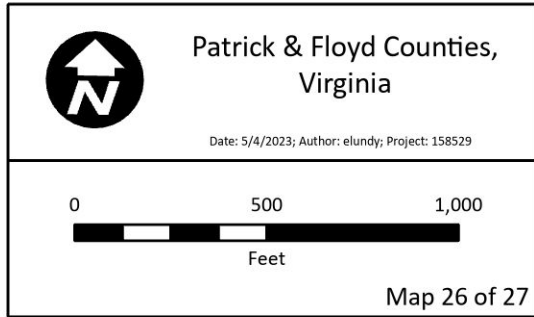
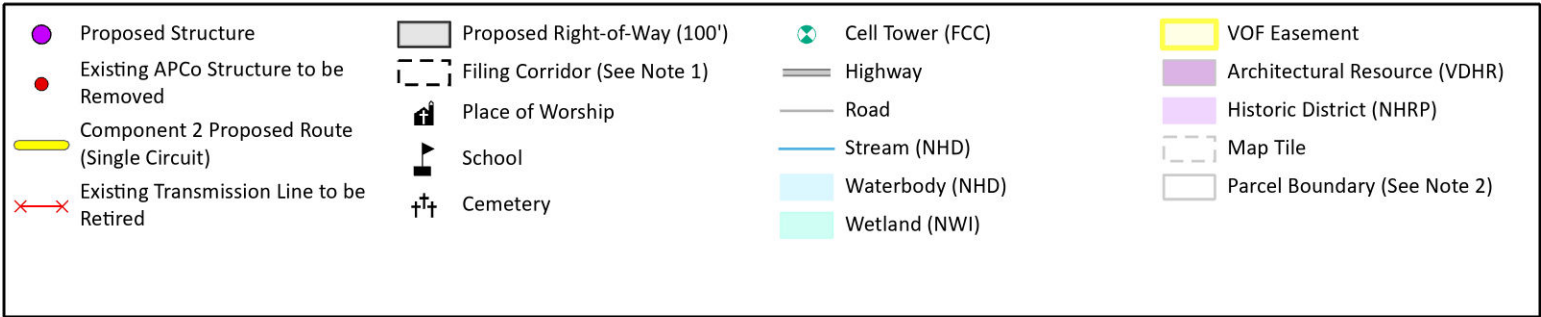
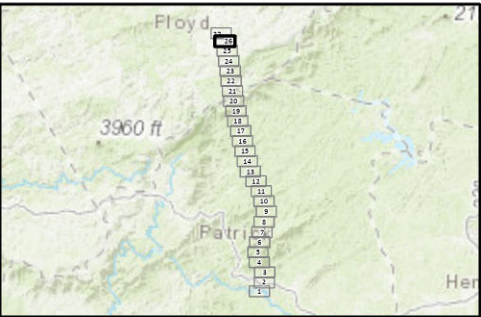
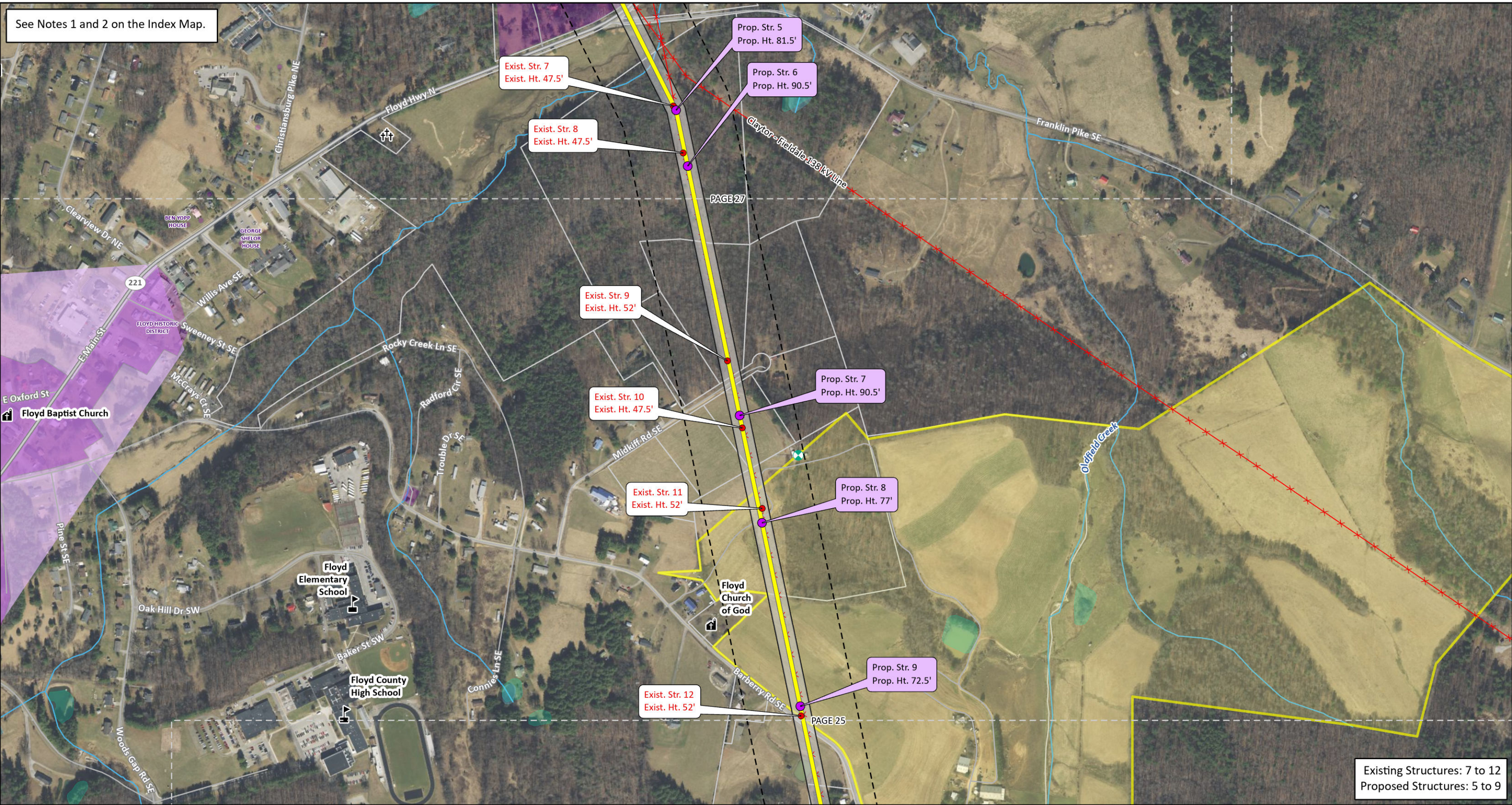


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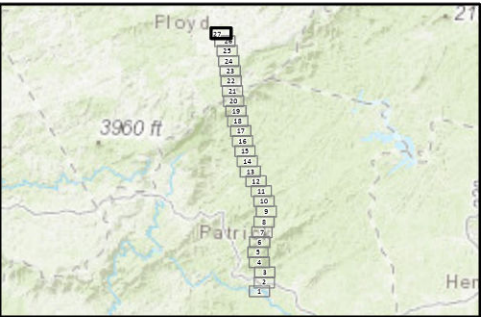
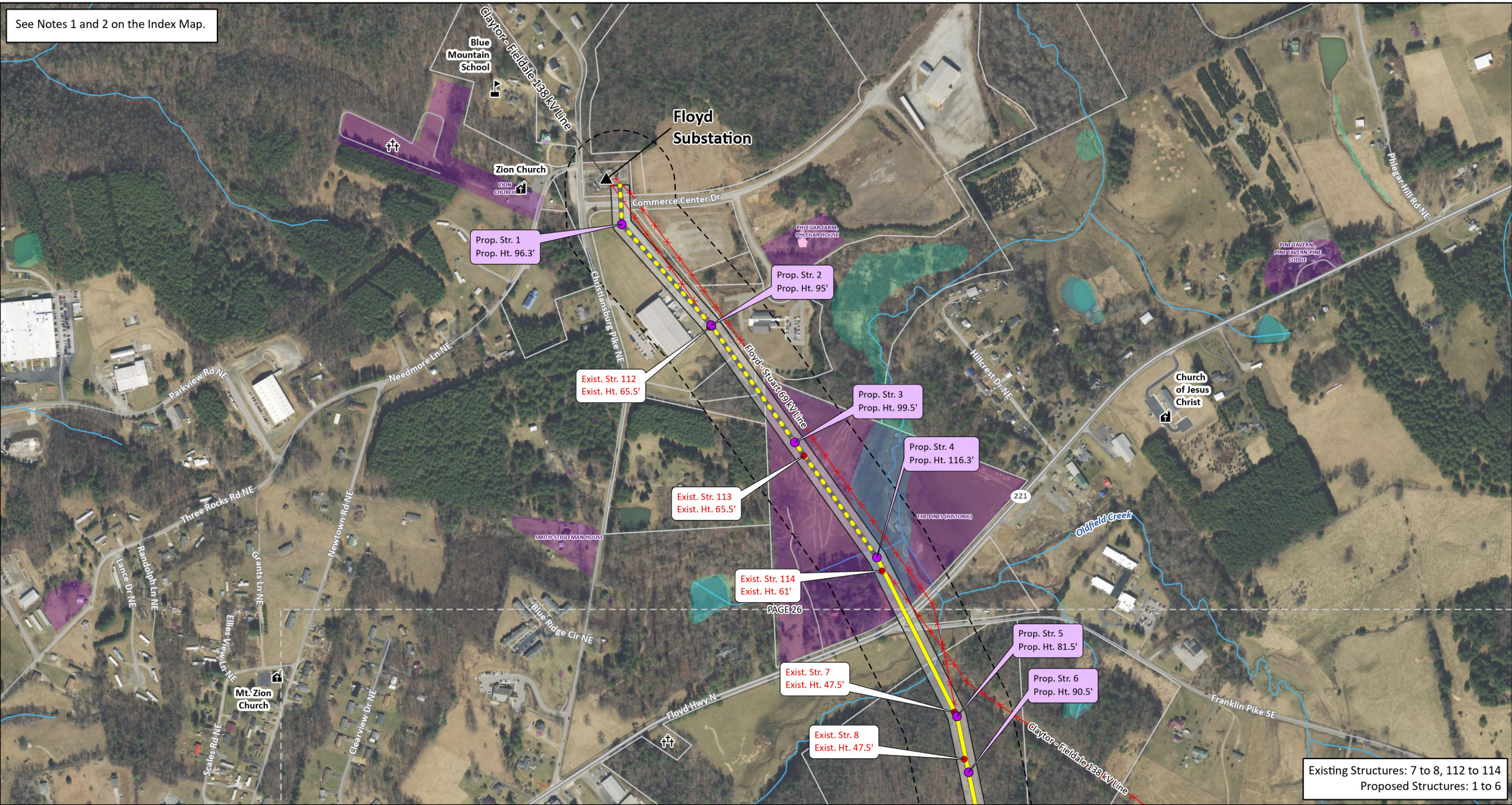
Exhibit 8: Component 2 GIS Constraints Map




Stuart Area Transmission
Improvements Project
Component 2:
Mayo River (Stuart) to Floyd
Transmission Improvements



See Notes 1 and 2 on the Index Map.



▲ Existing APCo Substation	● Existing APCo Transmission Line (115 kV - 230 kV)	🏫 School	💧 Waterbody (NHD)
● Proposed Structure	✂ Existing Transmission Line to be Retired	⛔ Cemetery	💧 Wetland (NWI)
● Existing APCo Structure to be Removed	▭ Proposed Right-of-Way (100')	🏠 NRHP Building	💜 Architectural Resource (VDHR)
🟡 Component 2 Proposed Route (Single Circuit)	▭ Filing Corridor (See Note 1)	🛣 Highway	🗺 Map Tile
🟡🟡 Component 2 Proposed Route (Double Circuit)	⛪ Place of Worship	🛣 Road	▭ Parcel Boundary (See Note 2)
		💧 Stream (NHD)	



Patrick & Floyd Counties,
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Date: 5/4/2023; Author: elundy; Project: 158529

0 500 1,000
Feet

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Exhibit 8:
Component 2
GIS Constraints Map

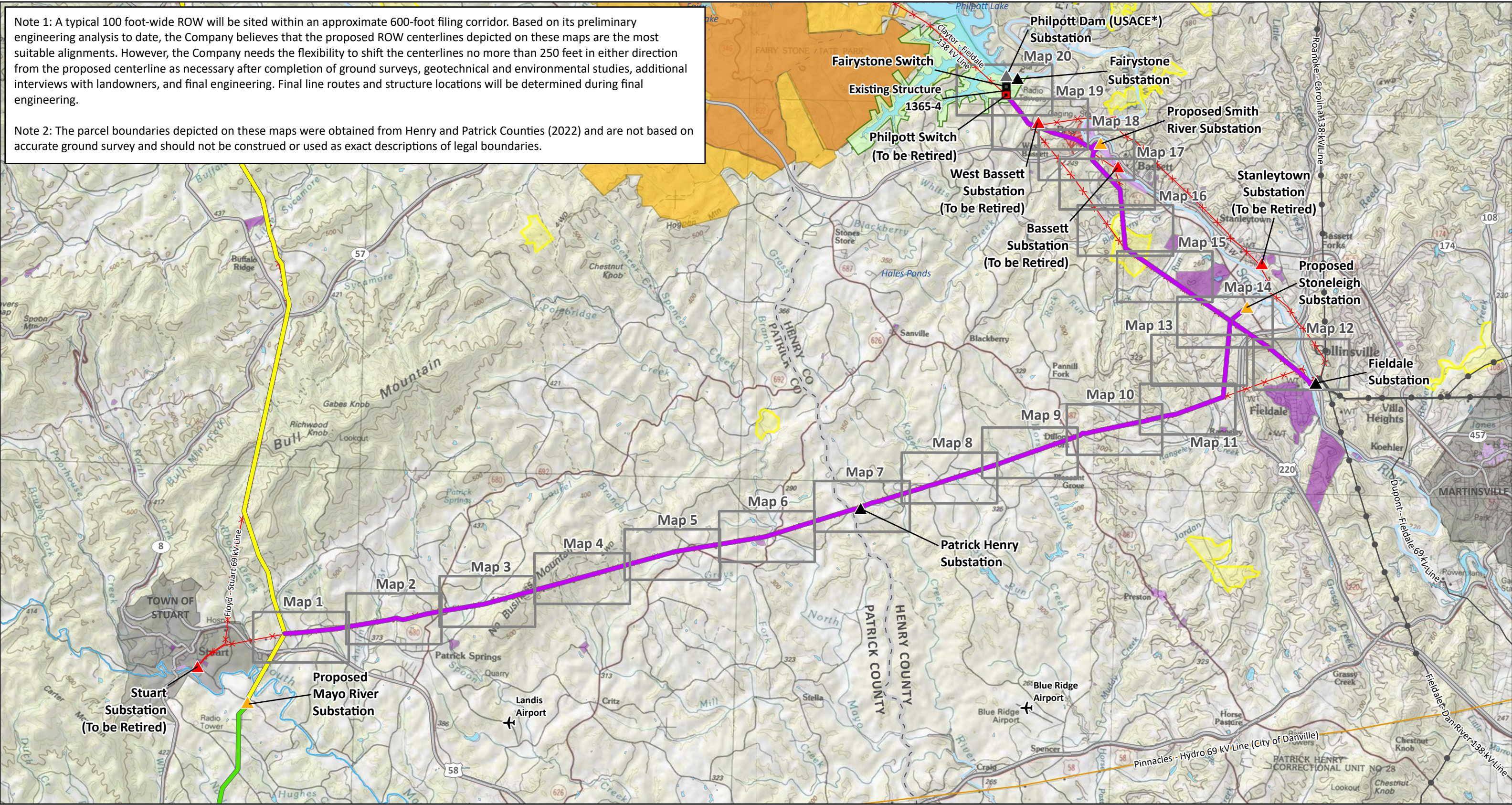
APPALACHIAN POWER
An AEP Company

Stuart Area Transmission
Improvements Project
Component 2:
Mayo River (Stuart) to Floyd
Transmission Improvements

Exhibit 9: Component 3 GIS Constraints Map

Note 1: A typical 100 foot-wide ROW will be sited within an approximate 600-foot filing corridor. Based on its preliminary engineering analysis to date, the Company believes that the proposed ROW centerlines depicted on these maps are the most suitable alignments. However, the Company needs the flexibility to shift the centerlines no more than 250 feet in either direction from the proposed centerline as necessary after completion of ground surveys, geotechnical and environmental studies, additional interviews with landowners, and final engineering. Final line routes and structure locations will be determined during final engineering.

Note 2: The parcel boundaries depicted on these maps were obtained from Henry and Patrick Counties (2022) and are not based on accurate ground survey and should not be construed or used as exact descriptions of legal boundaries.



Proposed APCo Substation	Component 3 Proposed Route	Airport	Local Conservancy
Existing APCo Substation	Component 1 Proposed Route	Highway	Philpott Lake Recreation Area (USACE)
Existing APCo Substation to be Retired	Component 2 Proposed Route	Stream (NHD)	Historic District (VDHR)
Non-APCo Generation Facility	Existing APCo Transmission Line (69 kv or lower)	River (NHD)	Architectural Resource (VDHR)
Existing Switch Station	Existing APCo Transmission Line (115 kv - 230 kv)	Waterbody (NHD)	Town Boundary
Existing Switch Station to be Retired	Existing Non-APCo Transmission Line	State Conservation Land	County Boundary
	Existing Transmission Line to be Retired	VOF Easement	Map Tile

* USACE = U.S. Army Corps of Engineers

Patrick & Henry Counties,
Virginia

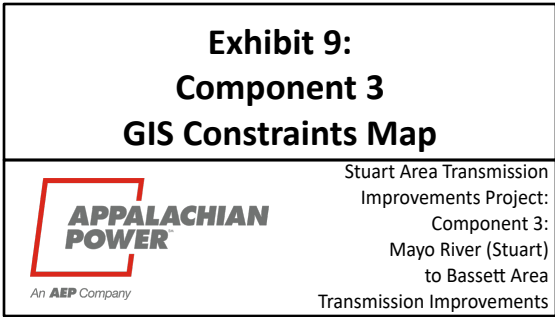
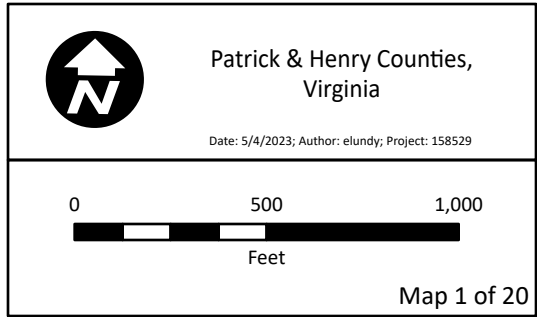
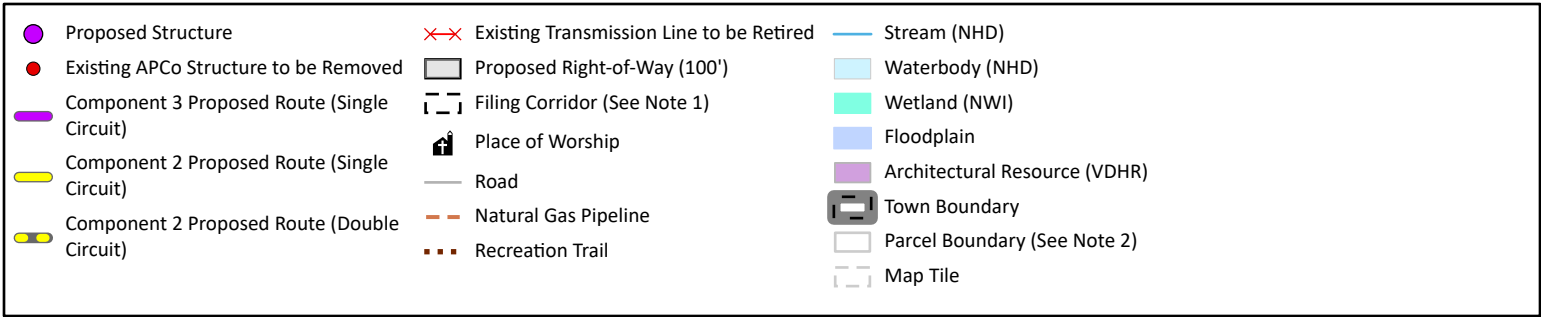
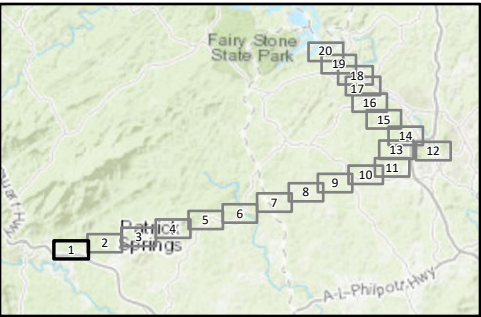
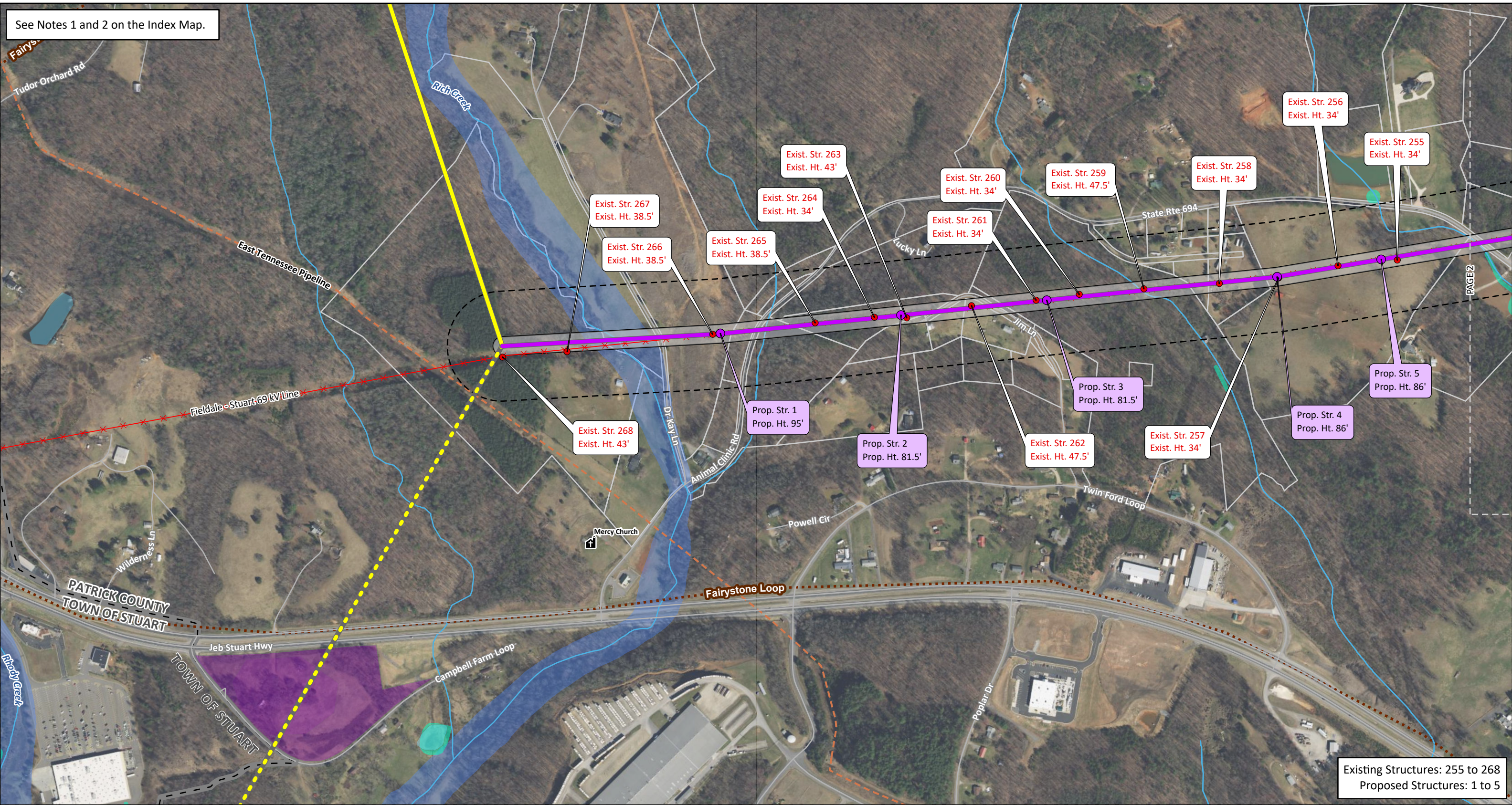
Date: 7/10/2023; Author: ckunde; Project: 158529

Miles

INDEX

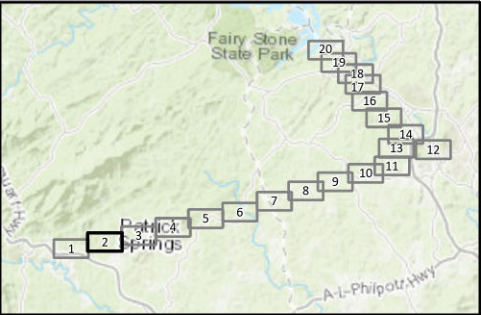
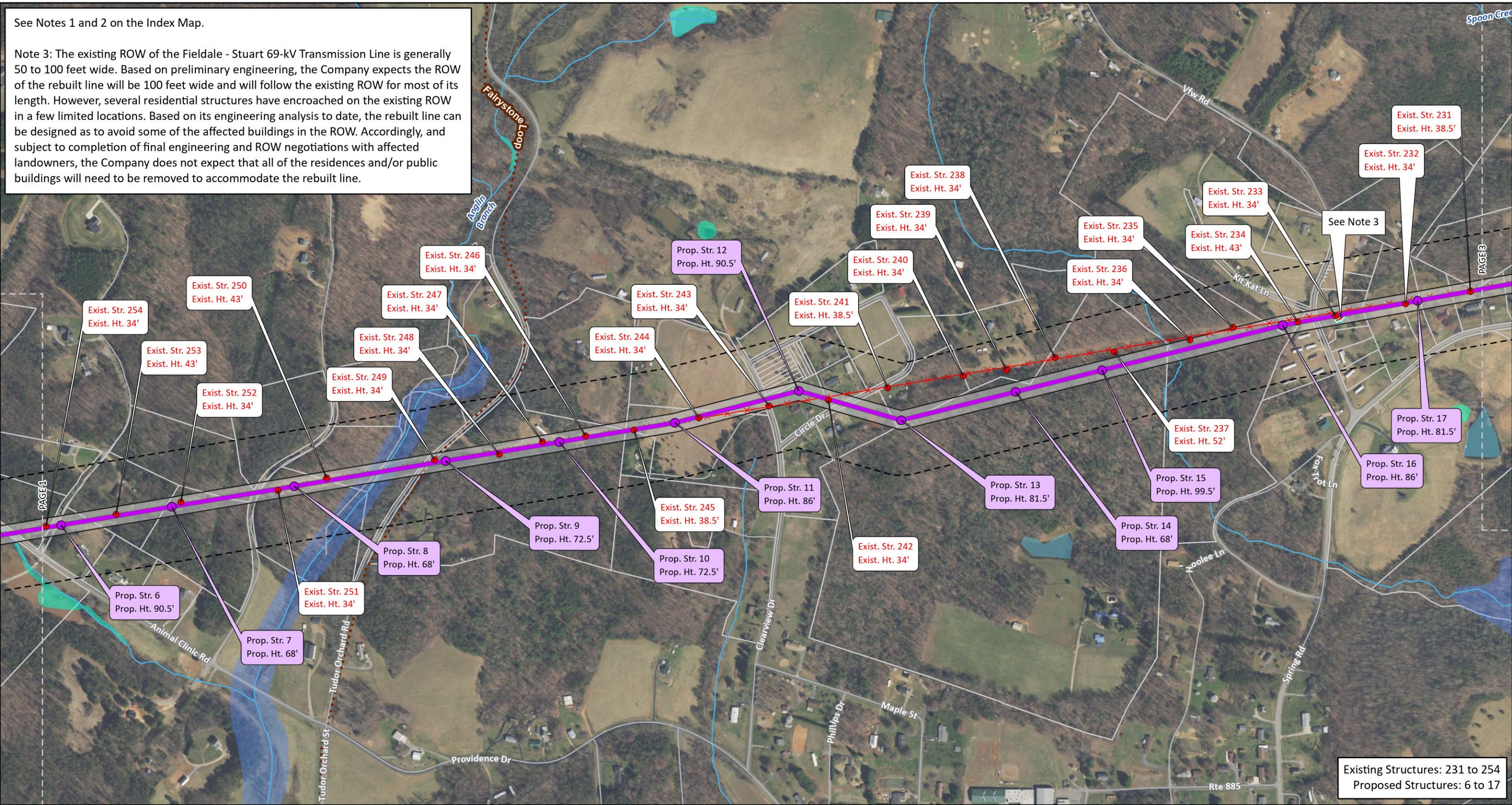
Exhibit 9:
Component 3
GIS Constraints Map

Stuart Area Transmission
Improvements Project:
Component 3:
Mayo River (Stuart)
to Bassett Area
Transmission Improvements



See Notes 1 and 2 on the Index Map.

Note 3: The existing ROW of the Fieldale - Stuart 69-kV Transmission Line is generally 50 to 100 feet wide. Based on preliminary engineering, the Company expects the ROW of the rebuilt line will be 100 feet wide and will follow the existing ROW for most of its length. However, several residential structures have encroached on the existing ROW in a few limited locations. Based on its engineering analysis to date, the rebuilt line can be designed as to avoid some of the affected buildings in the ROW. Accordingly, and subject to completion of final engineering and ROW negotiations with affected landowners, the Company does not expect that all of the residences and/or public buildings will need to be removed to accommodate the rebuilt line.

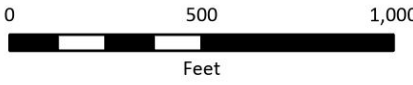


- Proposed Structure
- Existing APCo Structure to be Removed
- Component 3 Proposed Route (Single Circuit)
- Existing Transmission Line to be Retired
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Residential Structure (within proposed 100' ROW) (See Note 3)
- Road
- Recreation Trail
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- Floodplain
- Parcel Boundary (See Note 2)
- Map Tile



Patrick & Henry Counties,
Virginia

Date: 5/4/2023; Author: elundy; Project: 158529



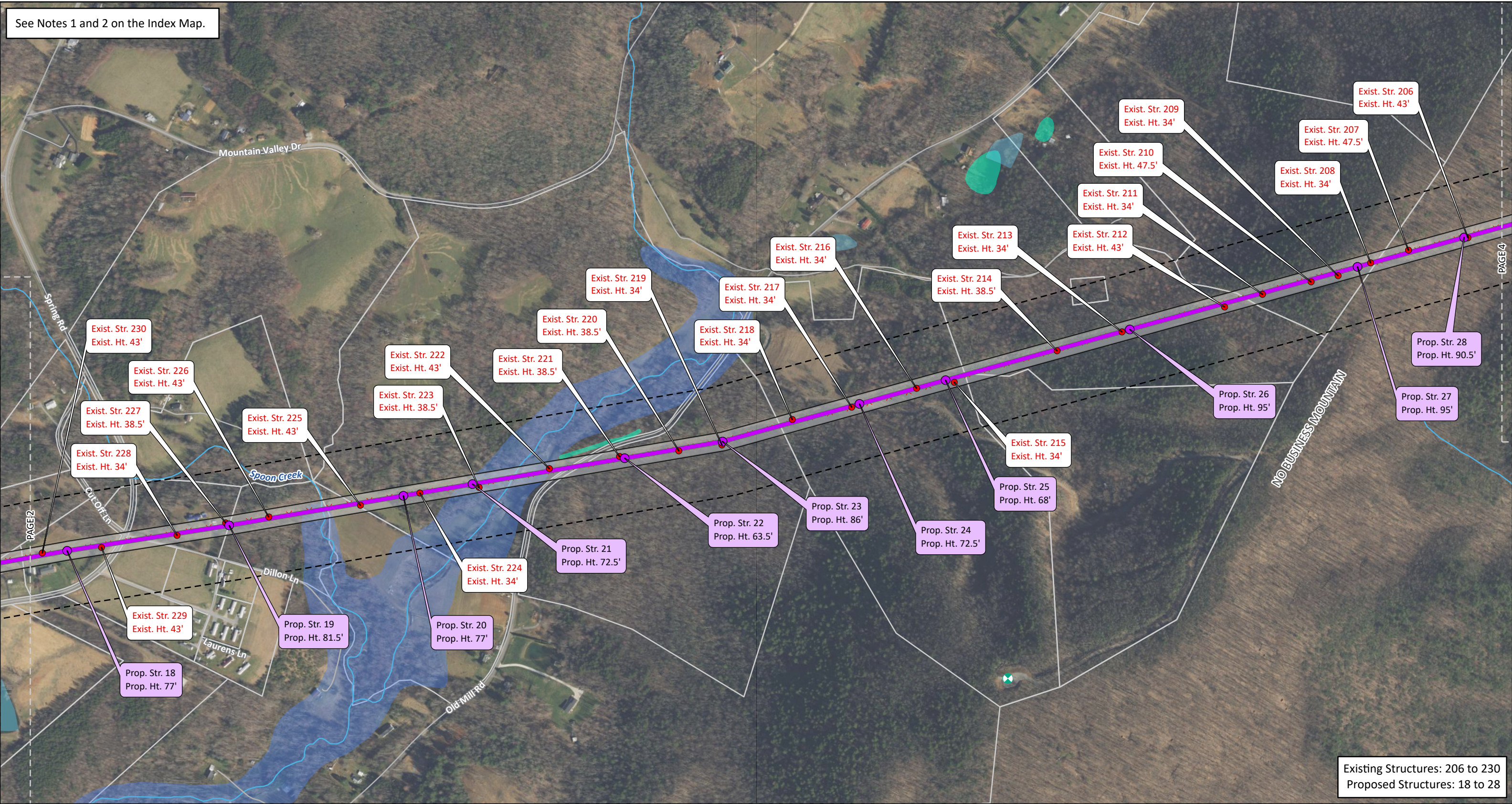
Map 2 of 20

Exhibit 9: Component 3 GIS Constraints Map

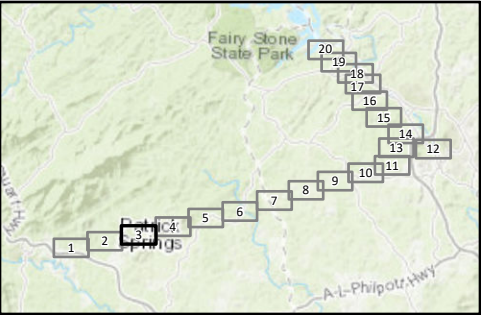


Stuart Area Transmission
Improvements Project:
Component 3:
Mayo River (Stuart)
to Bassett Area
Transmission Improvements

See Notes 1 and 2 on the Index Map.



Existing Structures: 206 to 230
Proposed Structures: 18 to 28

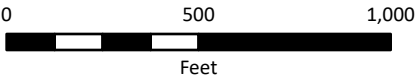


- Proposed Structure
- Existing APCo Structure to be Removed
- Component 3 Proposed Route (Single Circuit)
- Existing Transmission Line to be Retired
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Cell Tower (FCC)
- Road
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- Floodplain
- Parcel Boundary (See Note 2)
- Map Tile



Patrick & Henry Counties,
Virginia

Date: 5/4/2023; Author: elundy; Project: 158529

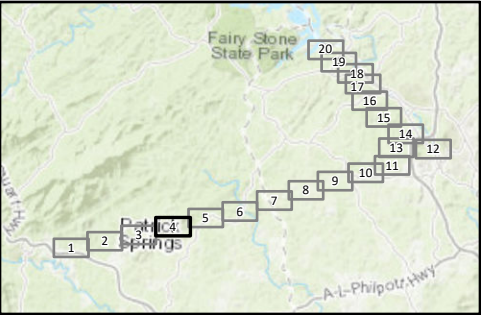
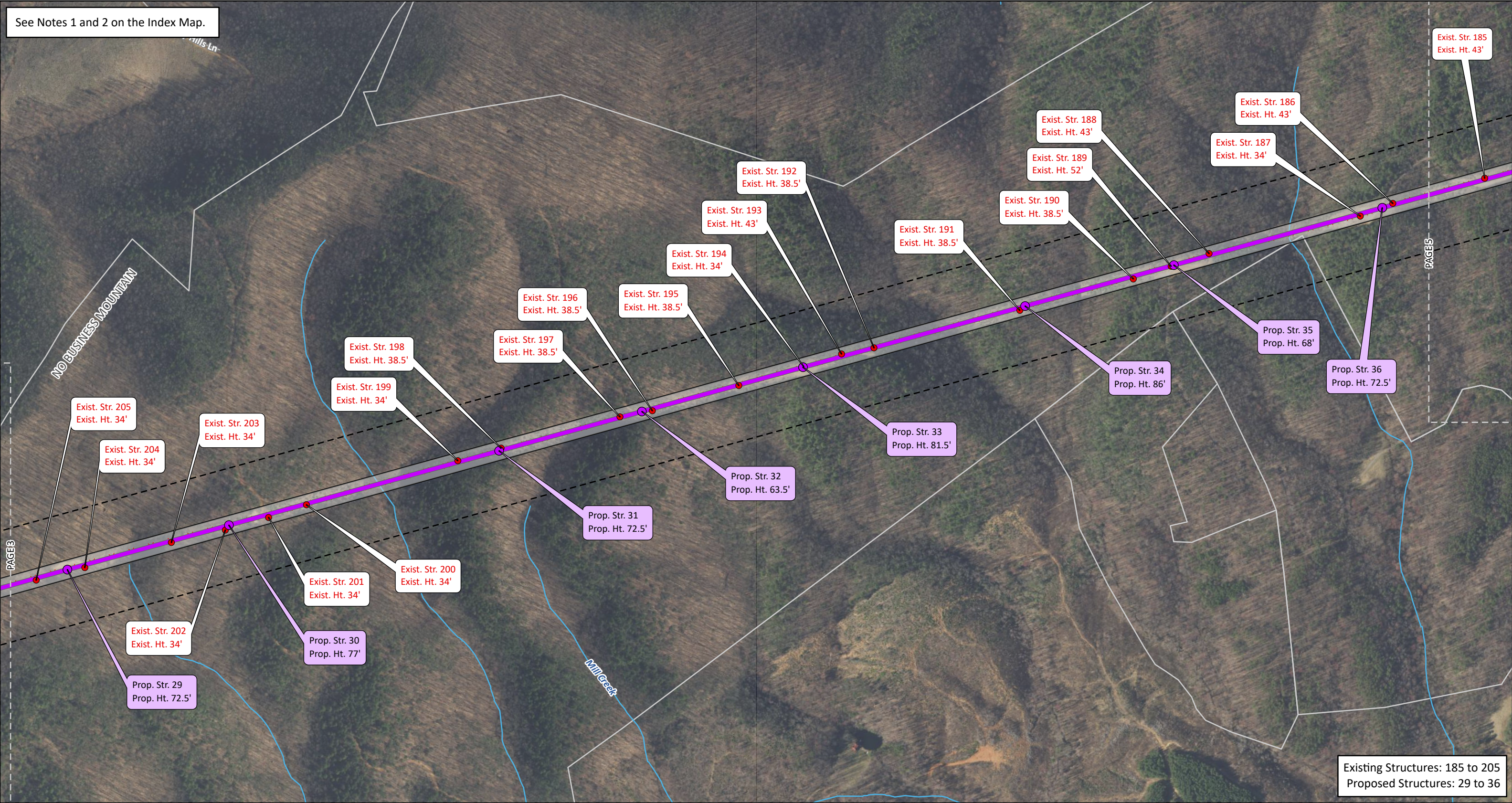


Map 3 of 20

Exhibit 9: Component 3 GIS Constraints Map



Stuart Area Transmission
Improvements Project:
Component 3:
Mayo River (Stuart)
to Bassett Area
Transmission Improvements

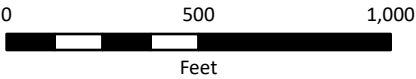


- Proposed Structure
- Existing APCo Structure to be Removed
- Component 3 Proposed Route (Single Circuit)
- Existing Transmission Line to be Retired
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Road
- Stream (NHD)
- Parcel Boundary (See Note 2)
- Map Tile



Patrick & Henry Counties,
Virginia

Date: 5/4/2023; Author: elundy; Project: 158529



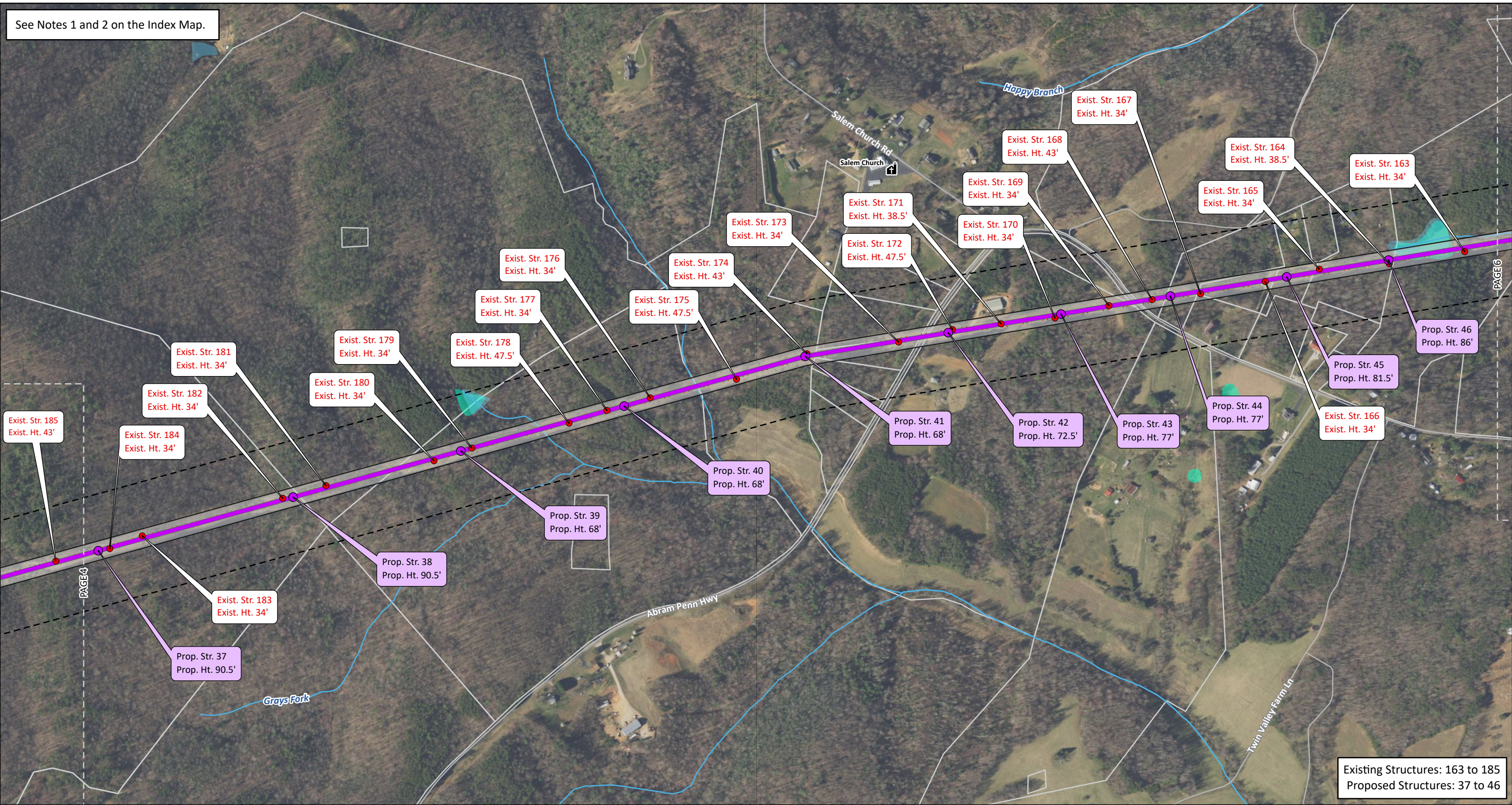
Map 4 of 20

Exhibit 9: Component 3 GIS Constraints Map

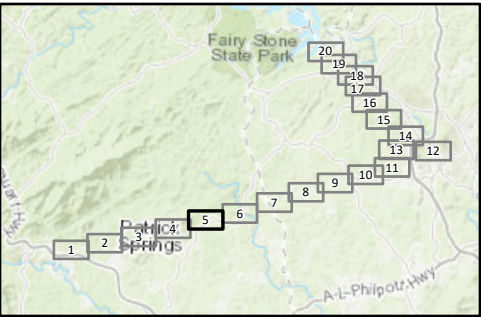


Stuart Area Transmission
Improvements Project:
Component 3:
Mayo River (Stuart)
to Bassett Area
Transmission Improvements

See Notes 1 and 2 on the Index Map.



Existing Structures: 163 to 185
Proposed Structures: 37 to 46



- Proposed Structure
- Existing APCo Structure to be Removed
- Component 3 Proposed Route (Single Circuit)
- Existing Transmission Line to be Retired
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Place of Worship
- Road
- Stream (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- Parcel Boundary (See Note 2)
- Map Tile



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Virginia

Date: 5/4/2023; Author: elundy; Project: 158529

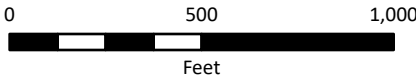
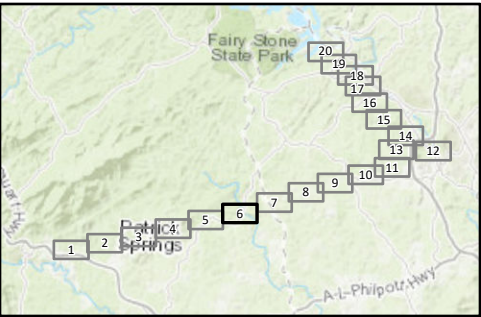
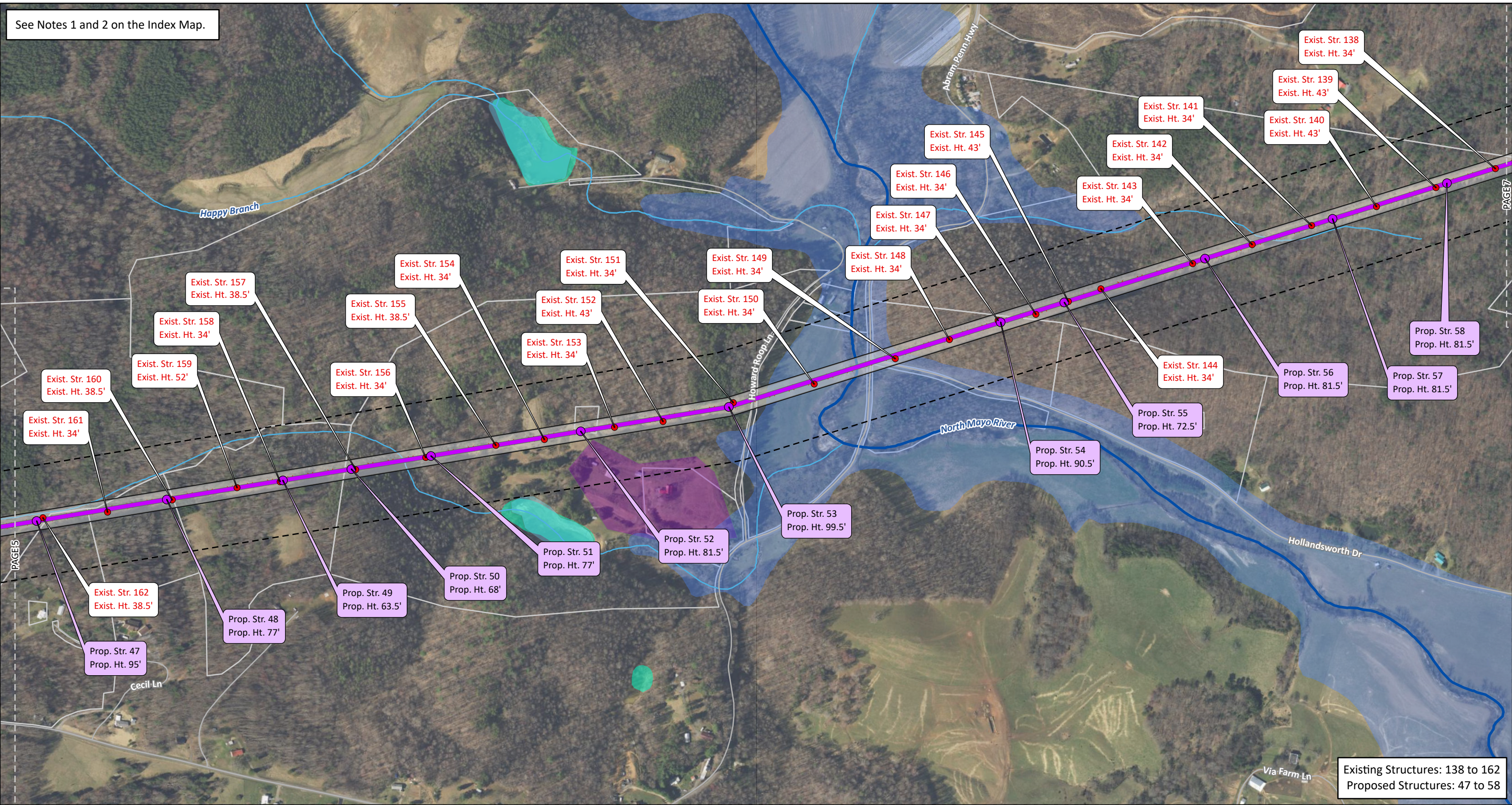


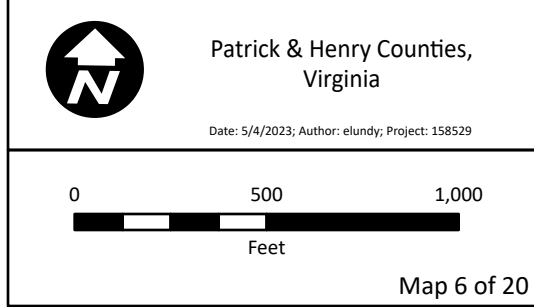
Exhibit 9: Component 3 GIS Constraints Map



Stuart Area Transmission
Improvements Project:
Component 3:
Mayo River (Stuart)
to Bassett Area
Transmission Improvements



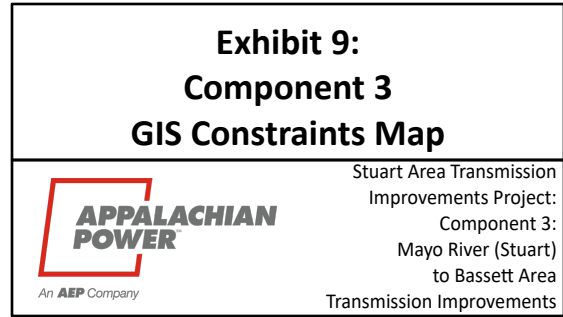
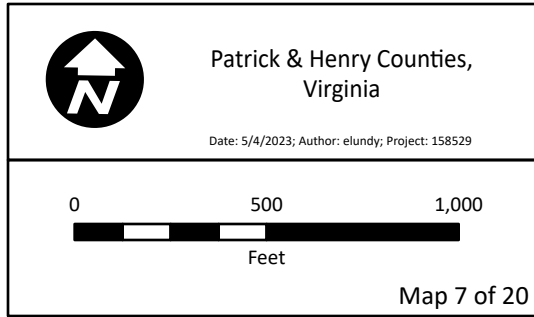
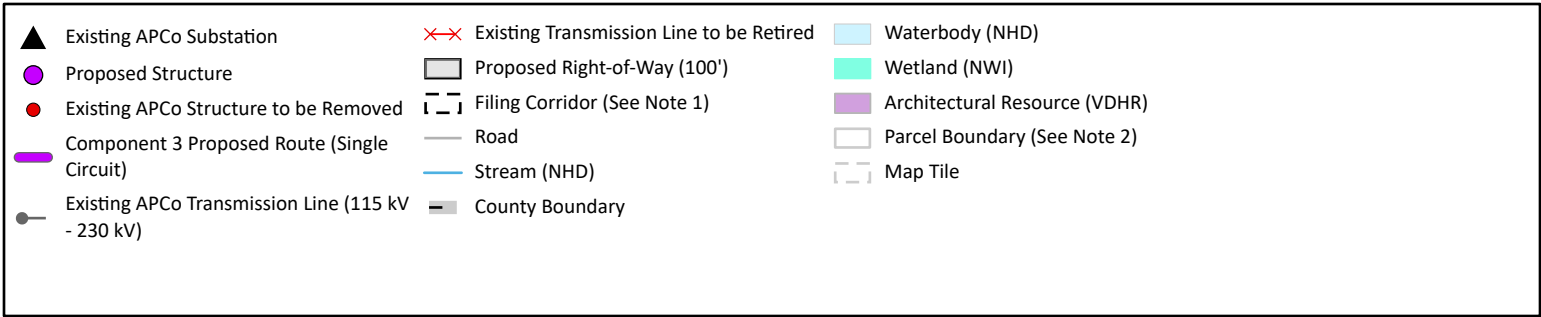
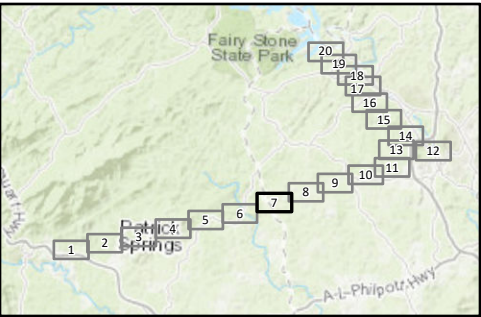
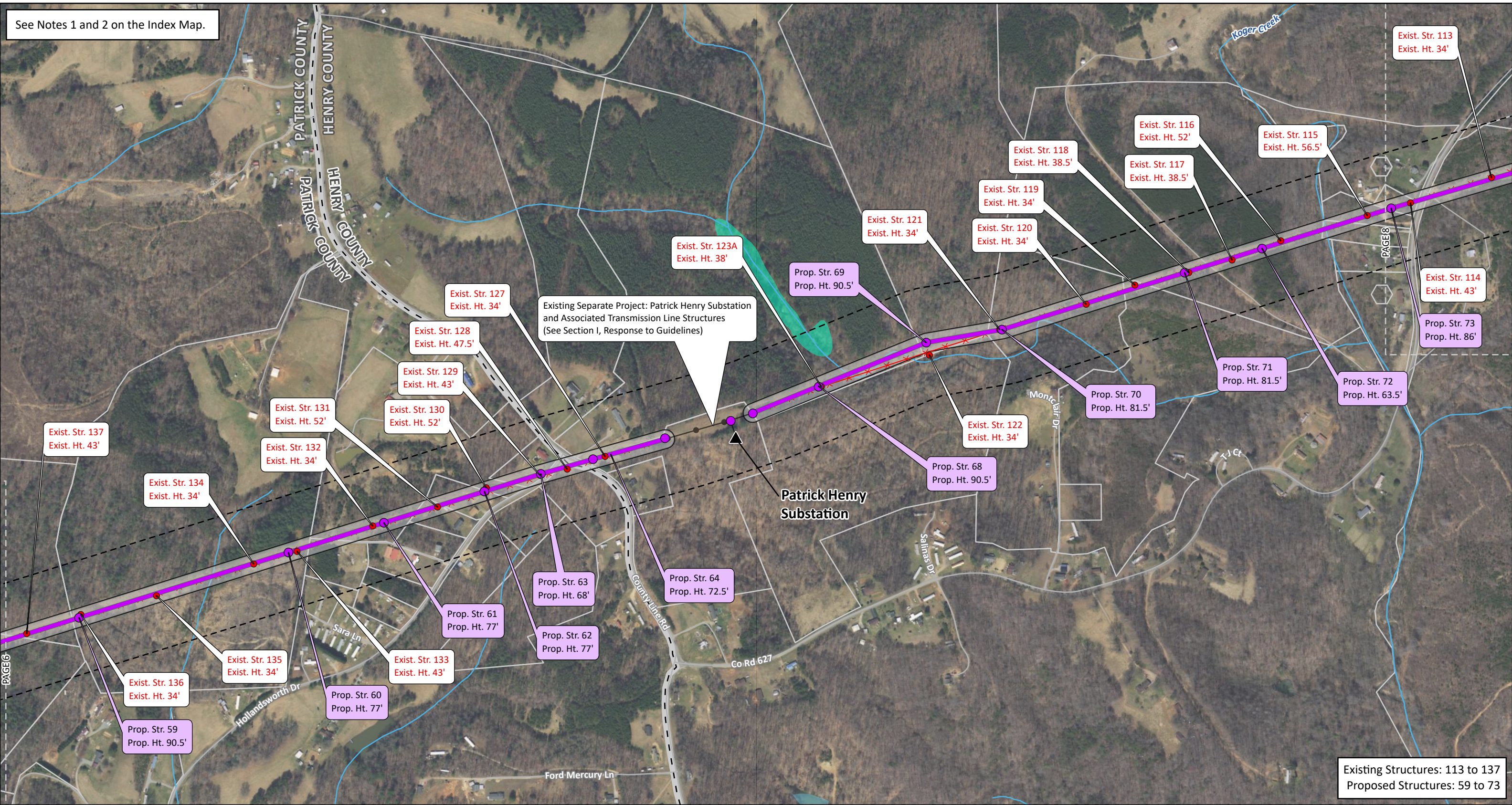
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|---------------------------------------------|------------------------------|-------------------------------|
| Proposed Structure | Filing Corridor (See Note 1) | Wetland (NWI) |
| Existing APCo Structure to be Removed | Road | Floodplain |
| Component 3 Proposed Route (Single Circuit) | North Mayo Scenic River | Architectural Resource (VDHR) |
| Existing Transmission Line to be Retired | Stream (NHD) | Parcel Boundary (See Note 2) |
| Proposed Right-of-Way (100') | Waterbody (NHD) | Map Tile |



**Exhibit 9:
Component 3
GIS Constraints Map**

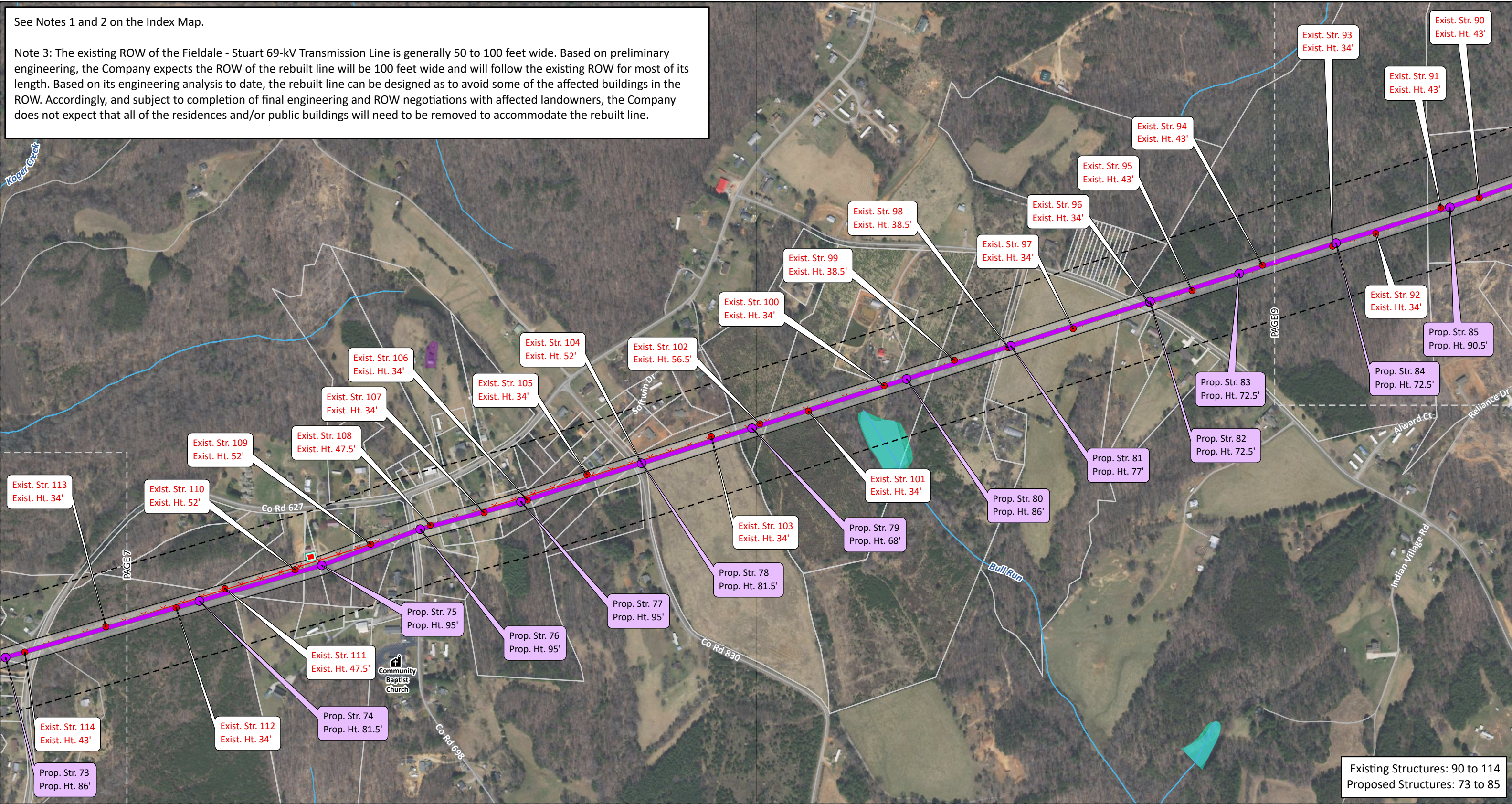
Stuart Area Transmission Improvements Project:
Component 3:
Mayo River (Stuart) to Bassett Area Transmission Improvements

APPALACHIAN POWER
An AEP Company

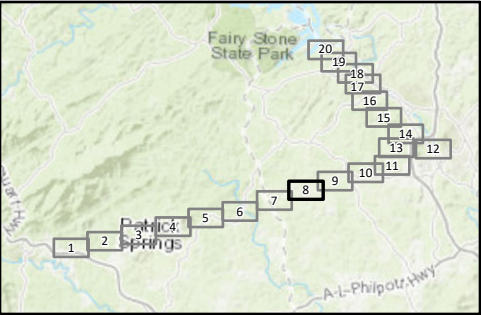


See Notes 1 and 2 on the Index Map.

Note 3: The existing ROW of the Fieldale - Stuart 69-kV Transmission Line is generally 50 to 100 feet wide. Based on preliminary engineering, the Company expects the ROW of the rebuilt line will be 100 feet wide and will follow the existing ROW for most of its length. Based on its engineering analysis to date, the rebuilt line can be designed as to avoid some of the affected buildings in the ROW. Accordingly, and subject to completion of final engineering and ROW negotiations with affected landowners, the Company does not expect that all of the residences and/or public buildings will need to be removed to accommodate the rebuilt line.



Existing Structures: 90 to 114
Proposed Structures: 73 to 85

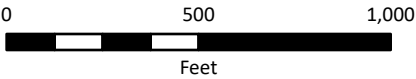


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| <ul style="list-style-type: none">Proposed StructureExisting APCo Structure to be RemovedComponent 3 Proposed Route (Single Circuit)Existing Transmission Line to be RetiredProposed Right-of-Way (100') | <ul style="list-style-type: none">Filing Corridor (See Note 1)Residential Structure (within proposed 100' ROW) (See Note 3)Place of WorshipRoadStream (NHD) | <ul style="list-style-type: none">Waterbody (NHD)Wetland (NWI)Architectural Resource (VDHR)Parcel Boundary (See Note 2)Map Tile |
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Virginia

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Map 8 of 20

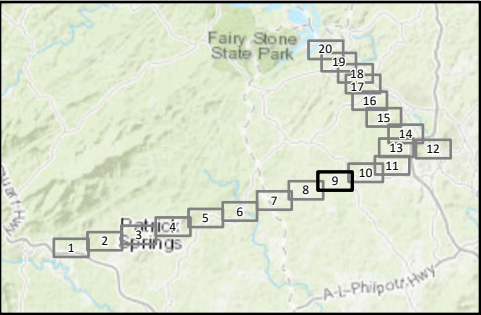
Exhibit 9: Component 3 GIS Constraints Map

















Stuart Area Transmission
Improvements Project:
Component 3:
Mayo River (Stuart)
to Bassett Area
Transmission Improvements

See Notes 1 and 2 on the Index Map.

Existing Structures: 68 to 93
Proposed Structures: 84 to 94



- | | | | | | |
|-------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------|------------------------------|---------------------------------------------------------------------------------------|-------------------------------|
|  | Proposed Structure |  | Proposed Right-of-Way (100') |  | Waterbody (NHD) |
|  | Existing APCo Structure to be Removed |  | Filing Corridor (See Note 1) |  | Wetland (NWI) |
|  | Component 3 Proposed Route (Single Circuit) |  | Populated Place |  | Architectural Resource (VDHR) |
|  | Existing Transmission Line to be Retired |  | Road |  | Parcel Boundary (See Note 2) |
| | |  | Stream (NHD) |  | Map Tile |

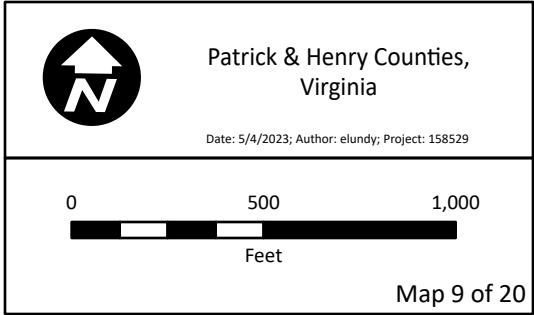




Exhibit 9: Component 3 GIS Constraints Map



Stuart Area Transmission
Improvements Project:
Component 3:
Mayo River (Stuart)
to Bassett Area
Transmission Improvements



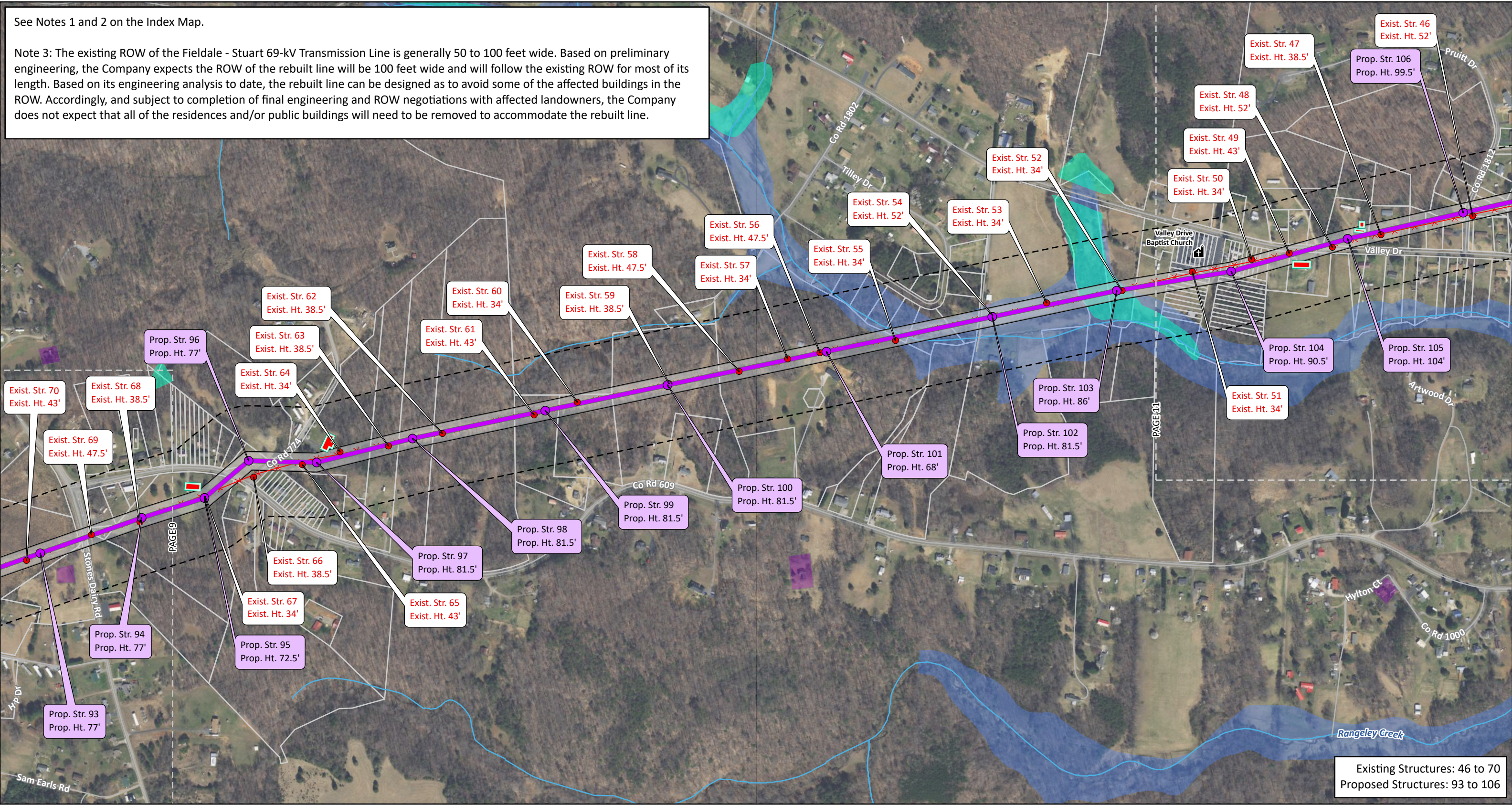
**APPALACHIAN
POWER**

An AEP Company

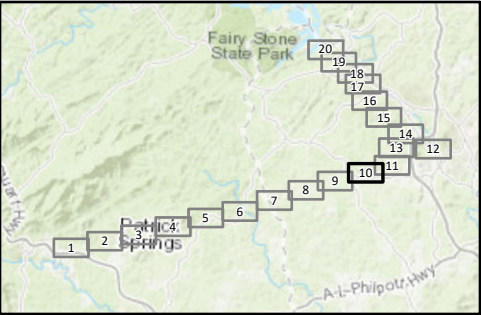
Stuart Area Transmission
Improvements Project:
Component 3:
Mayo River (Stuart)
to Bassett Area
Transmission Improvements

See Notes 1 and 2 on the Index Map.

Note 3: The existing ROW of the Fieldale - Stuart 69-kV Transmission Line is generally 50 to 100 feet wide. Based on preliminary engineering, the Company expects the ROW of the rebuilt line will be 100 feet wide and will follow the existing ROW for most of its length. Based on its engineering analysis to date, the rebuilt line can be designed as to avoid some of the affected buildings in the ROW. Accordingly, and subject to completion of final engineering and ROW negotiations with affected landowners, the Company does not expect that all of the residences and/or public buildings will need to be removed to accommodate the rebuilt line.



Existing Structures: 46 to 70
Proposed Structures: 93 to 106

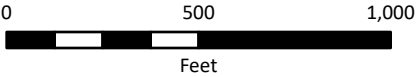


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| <ul style="list-style-type: none">Proposed StructureExisting APCo Structure to be RemovedComponent 3 Proposed Route (Single Circuit)Existing Transmission Line to be RetiredProposed Right-of-Way (100') | <ul style="list-style-type: none">Filing Corridor (See Note 1)Residential Structure (within proposed 100' ROW) (See Note 3)Place of WorshipPopulated PlaceRoad | <ul style="list-style-type: none">Stream (NHD)Wetland (NWI)FloodplainArchitectural Resource (VDHR)Parcel Boundary (See Note 2)Map Tile |
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Virginia

Date: 5/4/2023; Author: elundy; Project: 158529



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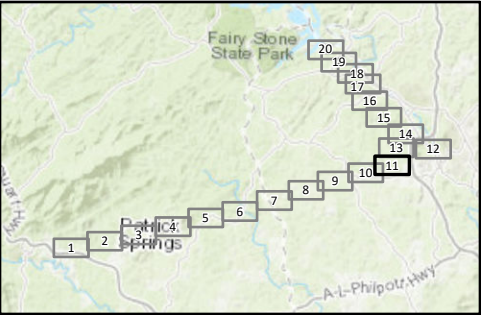
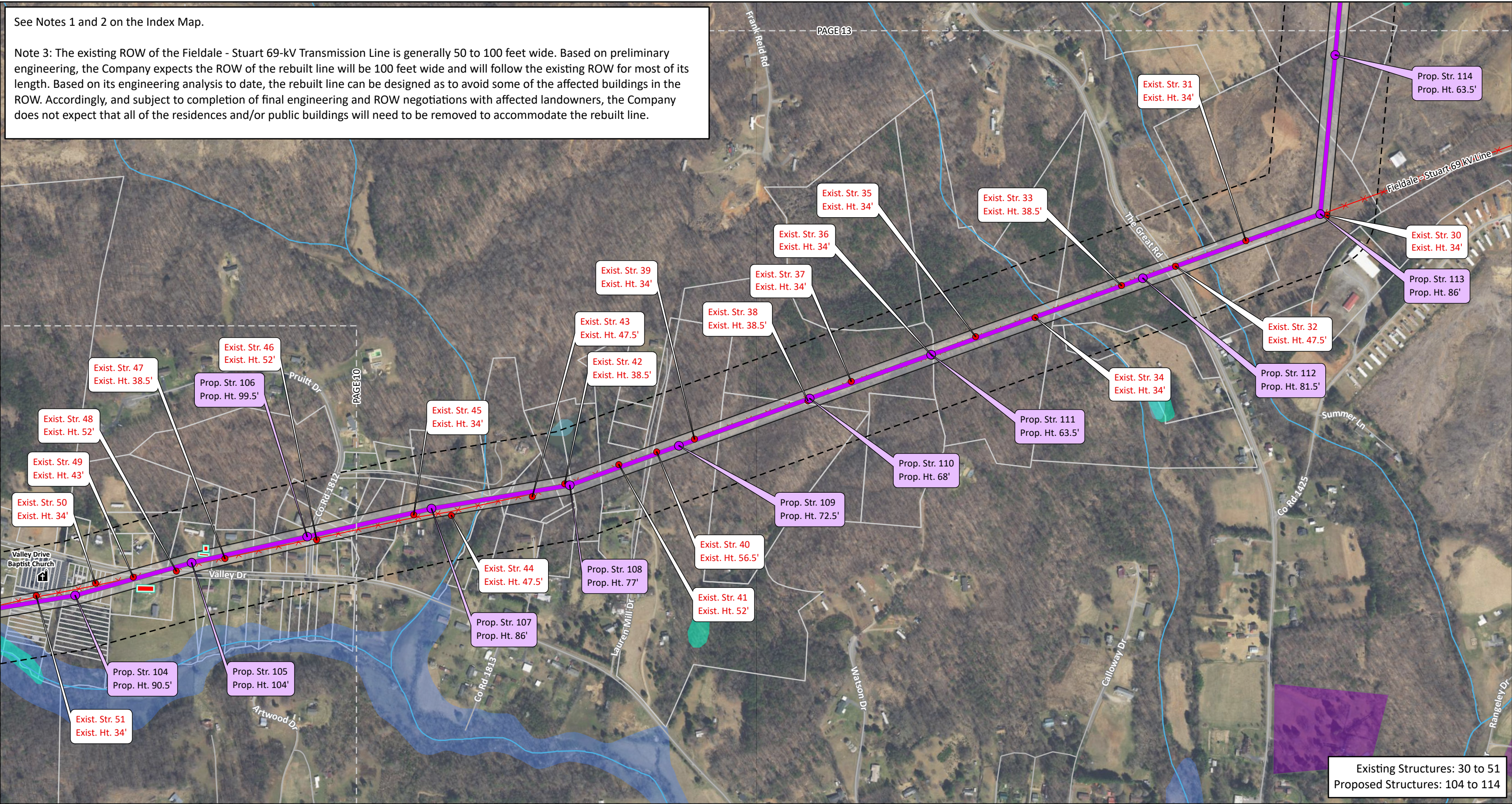
Exhibit 9: Component 3 GIS Constraints Map




Stuart Area Transmission
Improvements Project:
Component 3:
Mayo River (Stuart)
to Bassett Area
Transmission Improvements

See Notes 1 and 2 on the Index Map.

Note 3: The existing ROW of the Fieldale - Stuart 69-kV Transmission Line is generally 50 to 100 feet wide. Based on preliminary engineering, the Company expects the ROW of the rebuilt line will be 100 feet wide and will follow the existing ROW for most of its length. Based on its engineering analysis to date, the rebuilt line can be designed as to avoid some of the affected buildings in the ROW. Accordingly, and subject to completion of final engineering and ROW negotiations with affected landowners, the Company does not expect that all of the residences and/or public buildings will need to be removed to accommodate the rebuilt line.



- | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">Proposed StructureExisting APCo Structure to be RemovedComponent 3 Proposed Route (Single Circuit)Existing Transmission Line to be RetiredProposed Right-of-Way (100') | <ul style="list-style-type: none">Filing Corridor (See Note 1)Residential Structure (within proposed 100' ROW) (See Note 3)Place of WorshipRoadStream (NHD) | <ul style="list-style-type: none">Waterbody (NHD)Wetland (NWI)FloodplainArchitectural Resource (VDHR)Parcel Boundary (See Note 2)Map Tile |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



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0


500

1,000

Feet

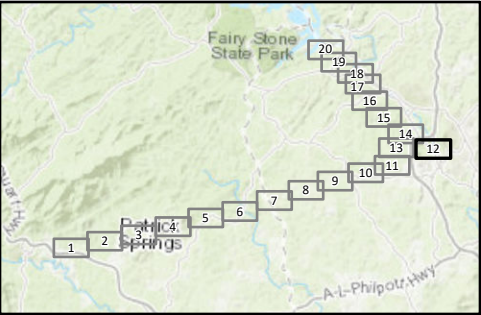
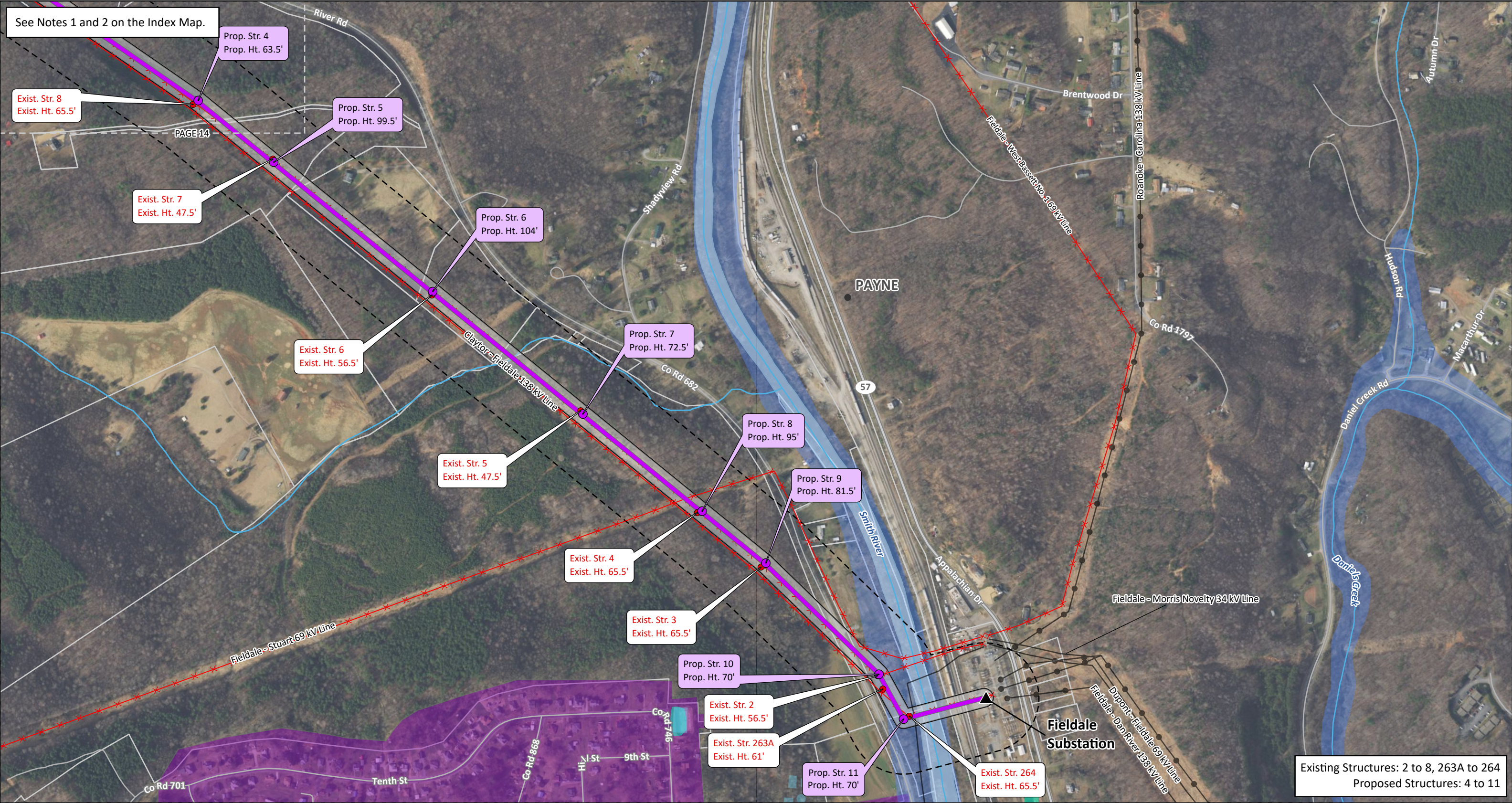
Map 11 of 20

Exhibit 9: Component 3 GIS Constraints Map



An AEP Company

Stuart Area Transmission
Improvements Project:
Component 3:
Mayo River (Stuart)
to Bassett Area
Transmission Improvements

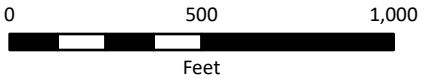


- ▲ Existing APCo Substation
- Proposed Structure
- Existing APCo Structure to be Removed
- Component 3 Proposed Route (Single Circuit)
- Existing APCo Transmission Line (69 kv or lower)
- Existing APCo Transmission Line (115 kv - 230 kv)
- ✂ Existing Transmission Line to be Retired
- ▭ Proposed Right-of-Way (100')
- ▭ Filing Corridor (See Note 1)
- Populated Place
- Highway
- Road
- Stream (NHD)
- River (NHD)
- Waterbody (NHD)
- Wetland (NWI)
- Floodplain
- Architectural Resource (VDHR)
- ▭ Parcel Boundary (See Note 2)
- Map Tile



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Virginia

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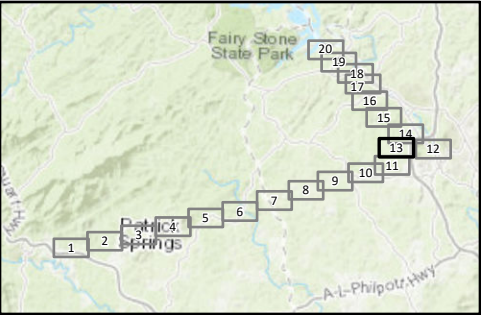
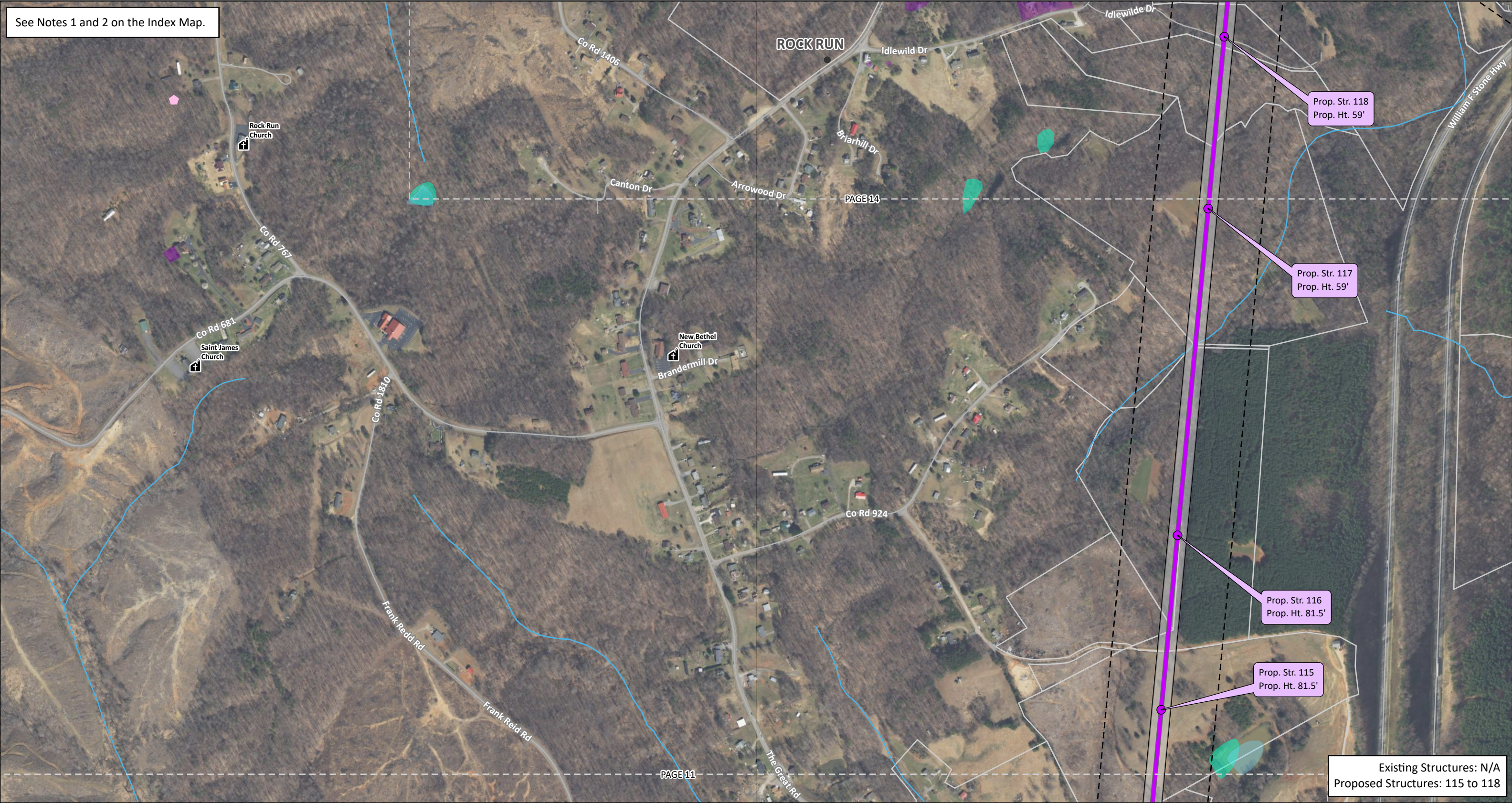
Map 12 of 20

Exhibit 9: Component 3 GIS Constraints Map



An AEP Company

Stuart Area Transmission
Improvements Project:
Component 3:
Mayo River (Stuart)
to Bassett Area
Transmission Improvements

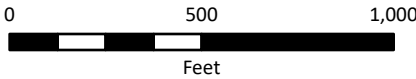


- | | | |
|---------------------------------------------|------------------|-------------------------------|
| Proposed Structure | Place of Worship | Waterbody (NHD) |
| Component 3 Proposed Route (Single Circuit) | Populated Place | Wetland (NWI) |
| Proposed Right-of-Way (100') | NRHP Building | Architectural Resource (VDHR) |
| Filing Corridor (See Note 1) | Road | Parcel Boundary (See Note 2) |
| | Stream (NHD) | Map Tile |



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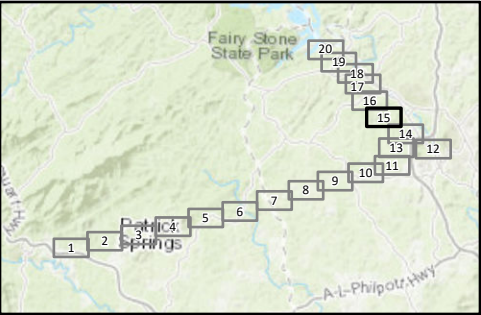
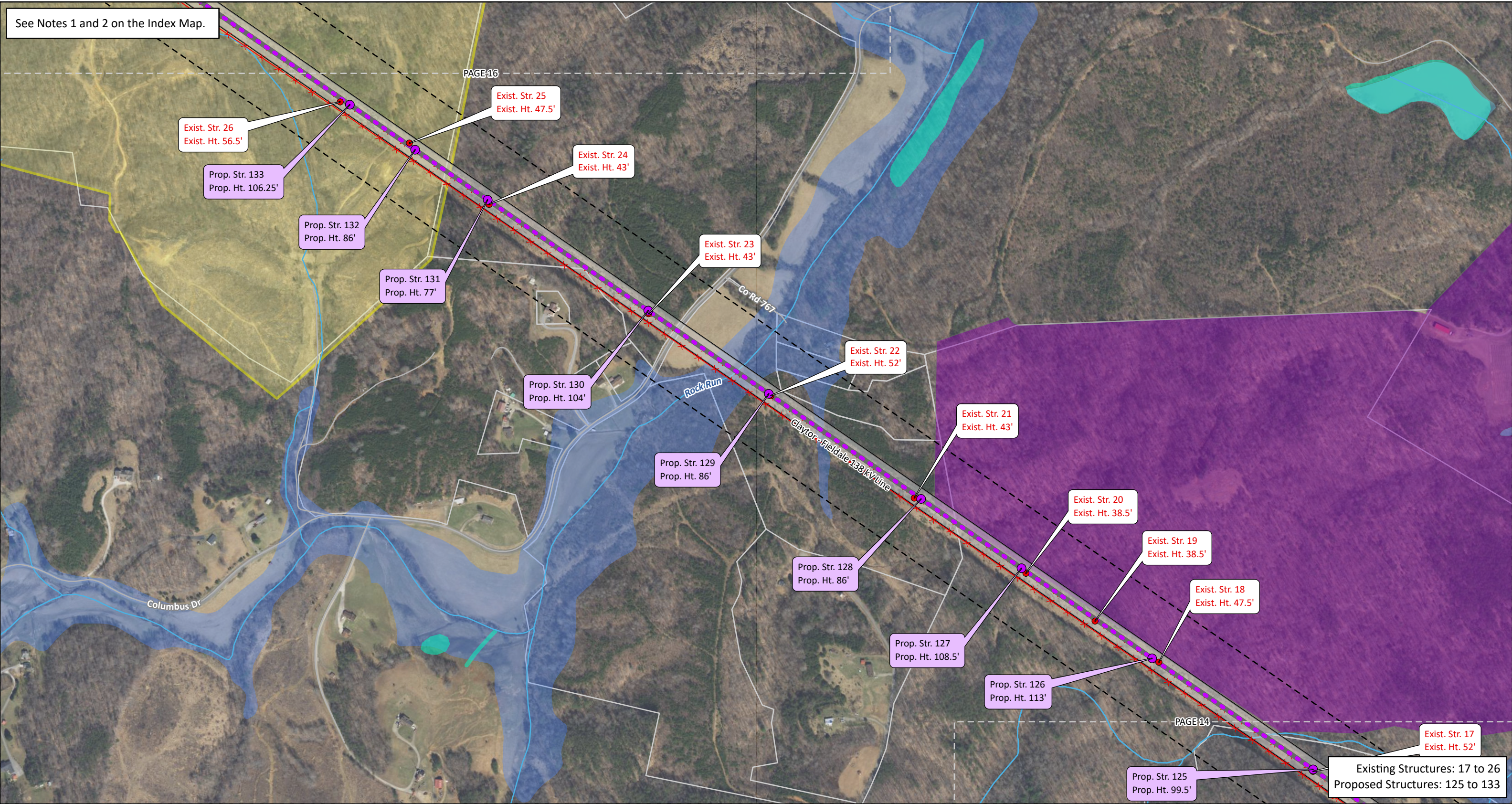
Map 13 of 20

Exhibit 9: Component 3 GIS Constraints Map



An AEP Company

Stuart Area Transmission
Improvements Project:
Component 3:
Mayo River (Stuart)
to Bassett Area
Transmission Improvements

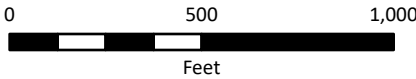


- | | | |
|-----------------------------------------------|--------------------------------|---------------------------------|
| ● Proposed Structure | ▭ Filing Corridor (See Note 1) | ▭ Floodplain |
| ● Existing APCo Structure to be Removed | — Road | ▭ VOF Easement |
| — Component 3 Proposed Route (Double Circuit) | — Stream (NHD) | ▭ Architectural Resource (VDHR) |
| — Existing Transmission Line to be Retired | ▭ Waterbody (NHD) | ▭ Parcel Boundary (See Note 2) |
| ▭ Proposed Right-of-Way (100') | ▭ Wetland (NWI) | ▭ Map Tile |



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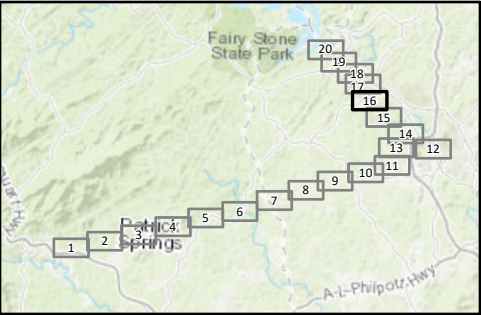
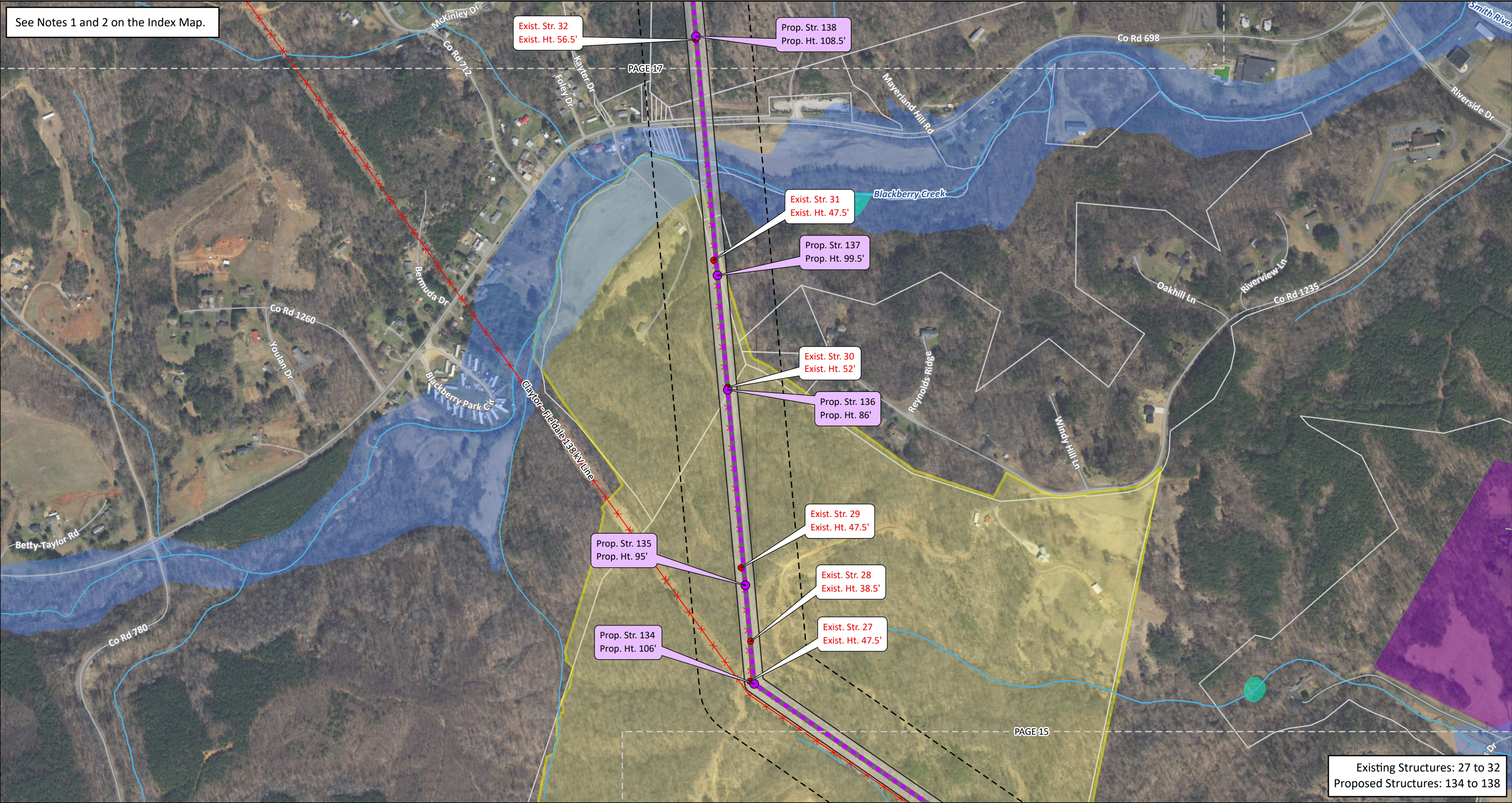
Map 15 of 20

Exhibit 9: Component 3 GIS Constraints Map



An AEP Company

Stuart Area Transmission
Improvements Project:
Component 3:
Mayo River (Stuart)
to Bassett Area
Transmission Improvements

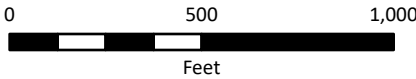


- | | | |
|---------------------------------------------|------------------------------|-------------------------------|
| Proposed Structure | Filing Corridor (See Note 1) | Floodplain |
| Existing APCo Structure to be Removed | Road | VOF Easement |
| Component 3 Proposed Route (Double Circuit) | Stream (NHD) | Architectural Resource (VDHR) |
| Existing Transmission Line to be Retired | River (NHD) | Parcel Boundary (See Note 2) |
| Proposed Right-of-Way (100') | Wetland (NWI) | Map Tile |



Patrick & Henry Counties,
Virginia

Date: 5/4/2023; Author: elundy; Project: 158529



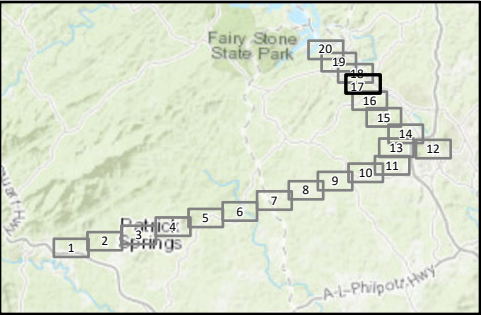
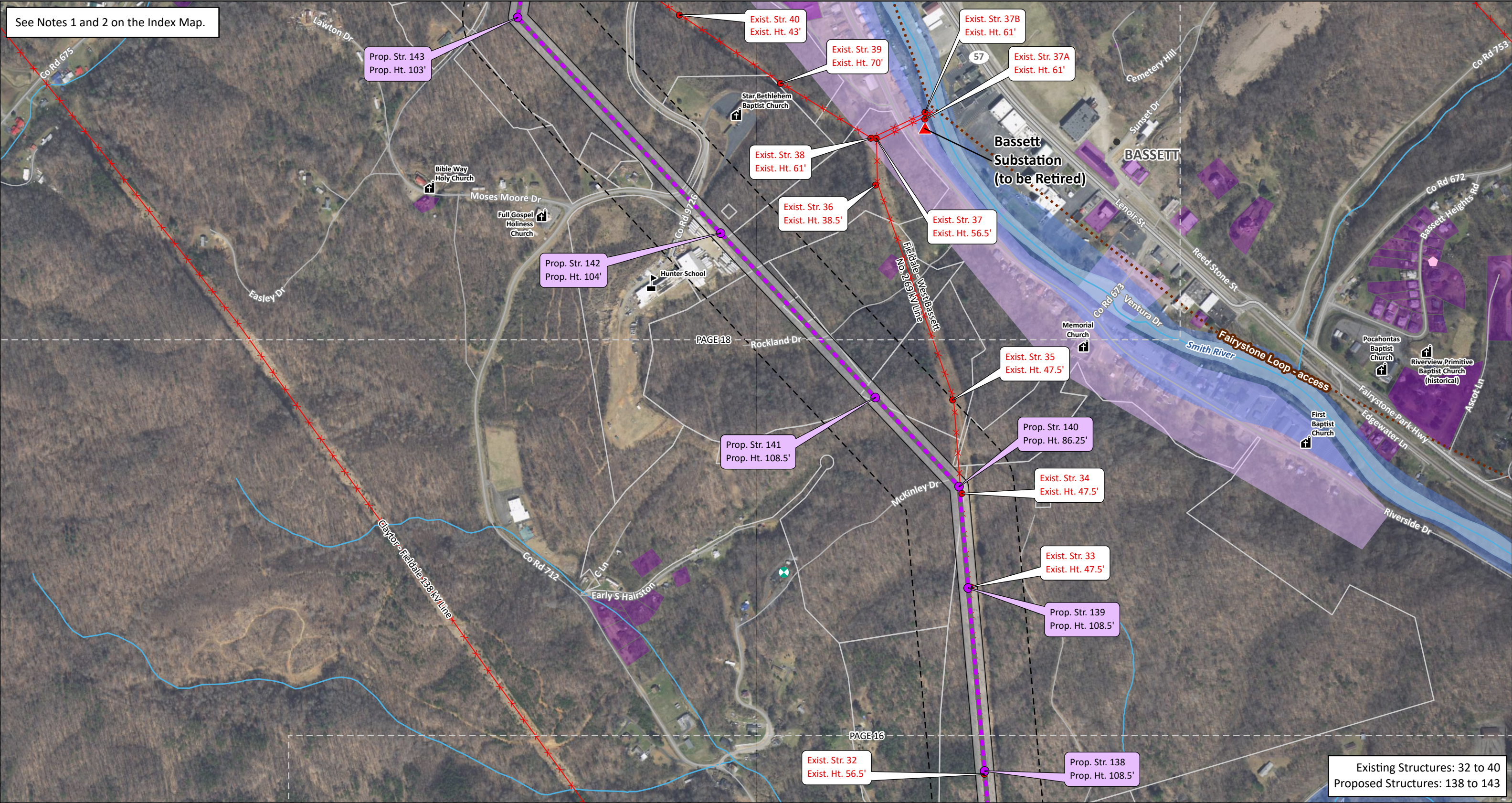
Map 16 of 20

Exhibit 9: Component 3 GIS Constraints Map



An AEP Company

Stuart Area Transmission
Improvements Project:
Component 3:
Mayo River (Stuart)
to Bassett Area
Transmission Improvements



- ▲ Existing APCo Substation to be Retired
- Proposed Structure
- Existing APCo Structure to be Removed
- Component 3 Proposed Route (Double Circuit)
- Existing Transmission Line to be Retired
- Proposed Right-of-Way (100')
- Filing Corridor (See Note 1)
- Place of Worship
- School
- Populated Place
- Cell Tower (FCC)
- NRHP Building

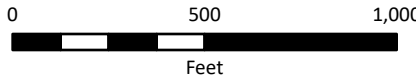
- Highway
- Road
- Recreation Trail
- Stream (NHD)
- River (NHD)
- Waterbody (NHD)
- Floodplain

- Historic District (VDHR)
- Architectural Resource (VDHR)
- Parcel Boundary (See Note 2)
- Map Tile



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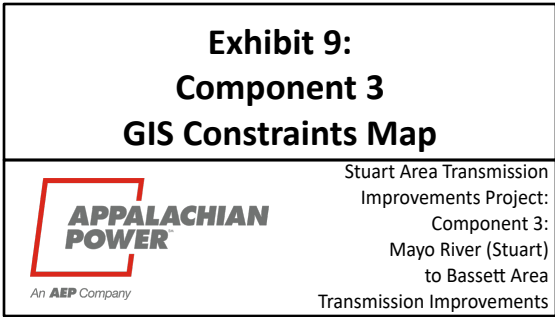
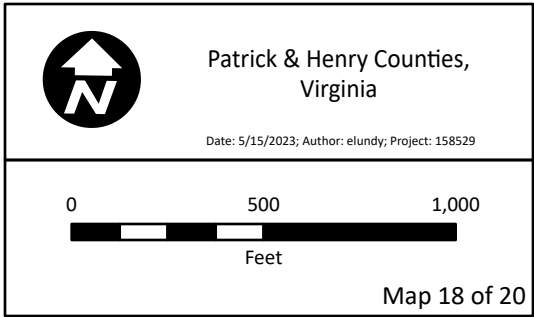
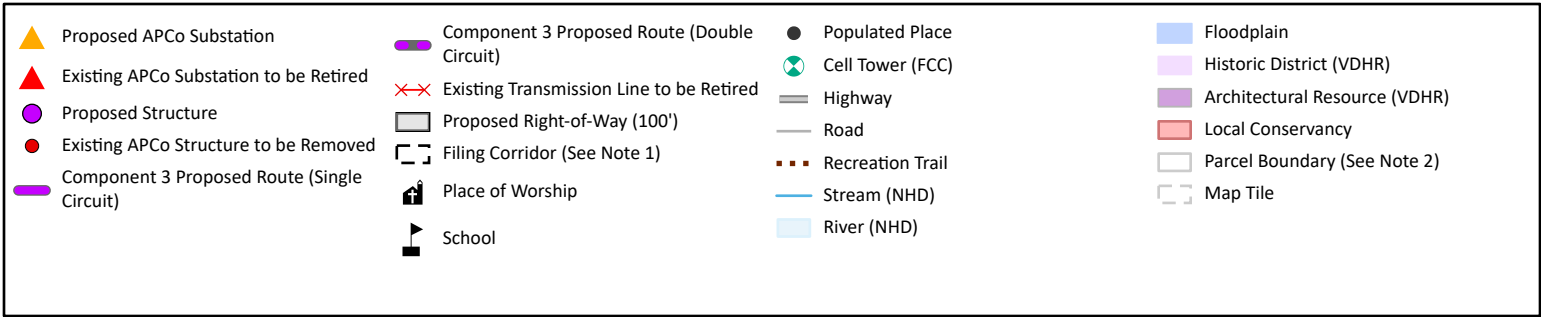
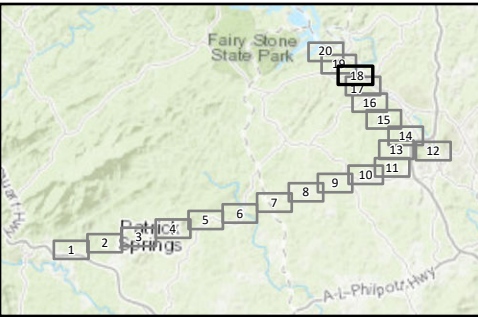
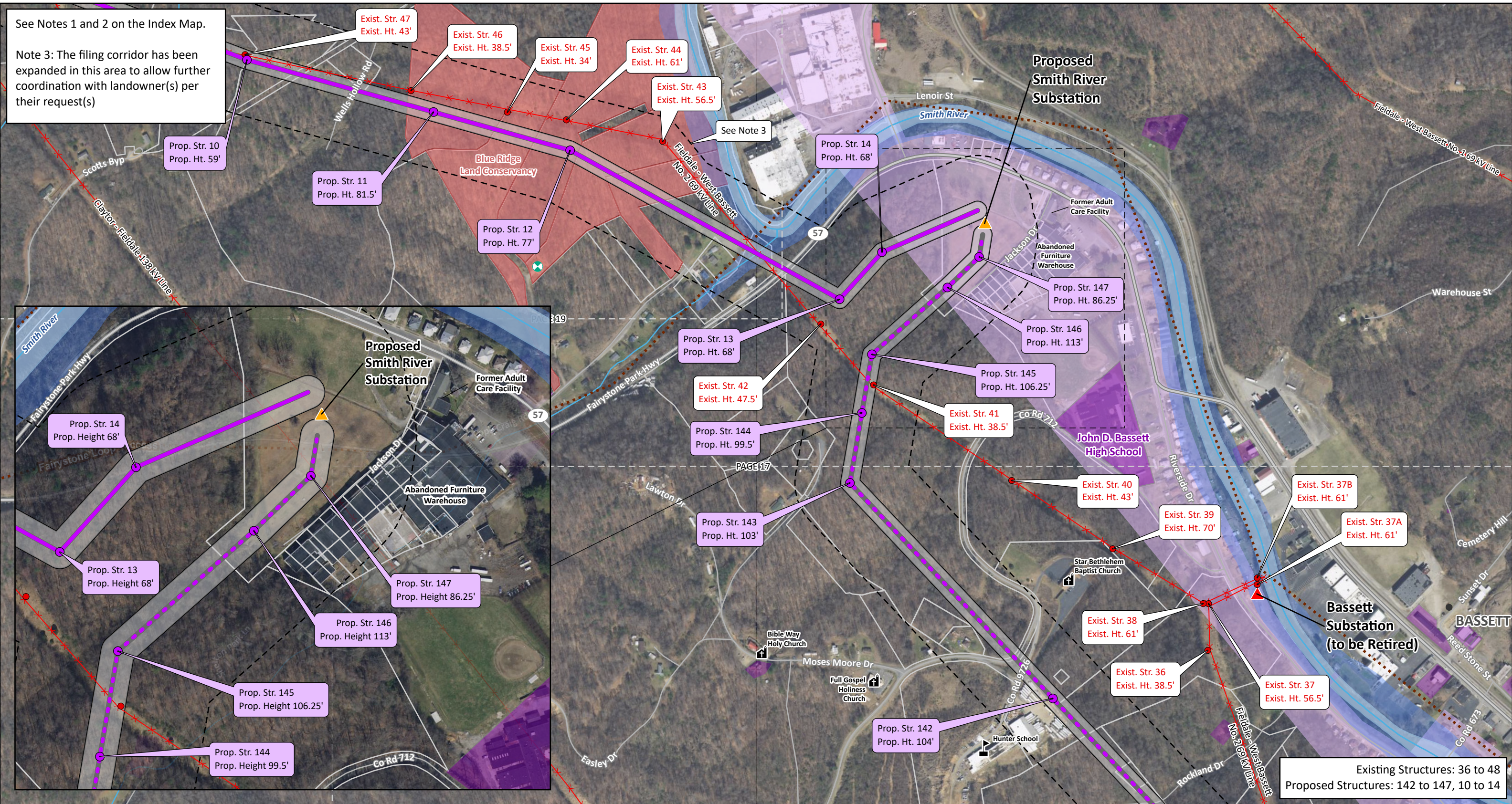
Map 17 of 20

Exhibit 9: Component 3 GIS Constraints Map



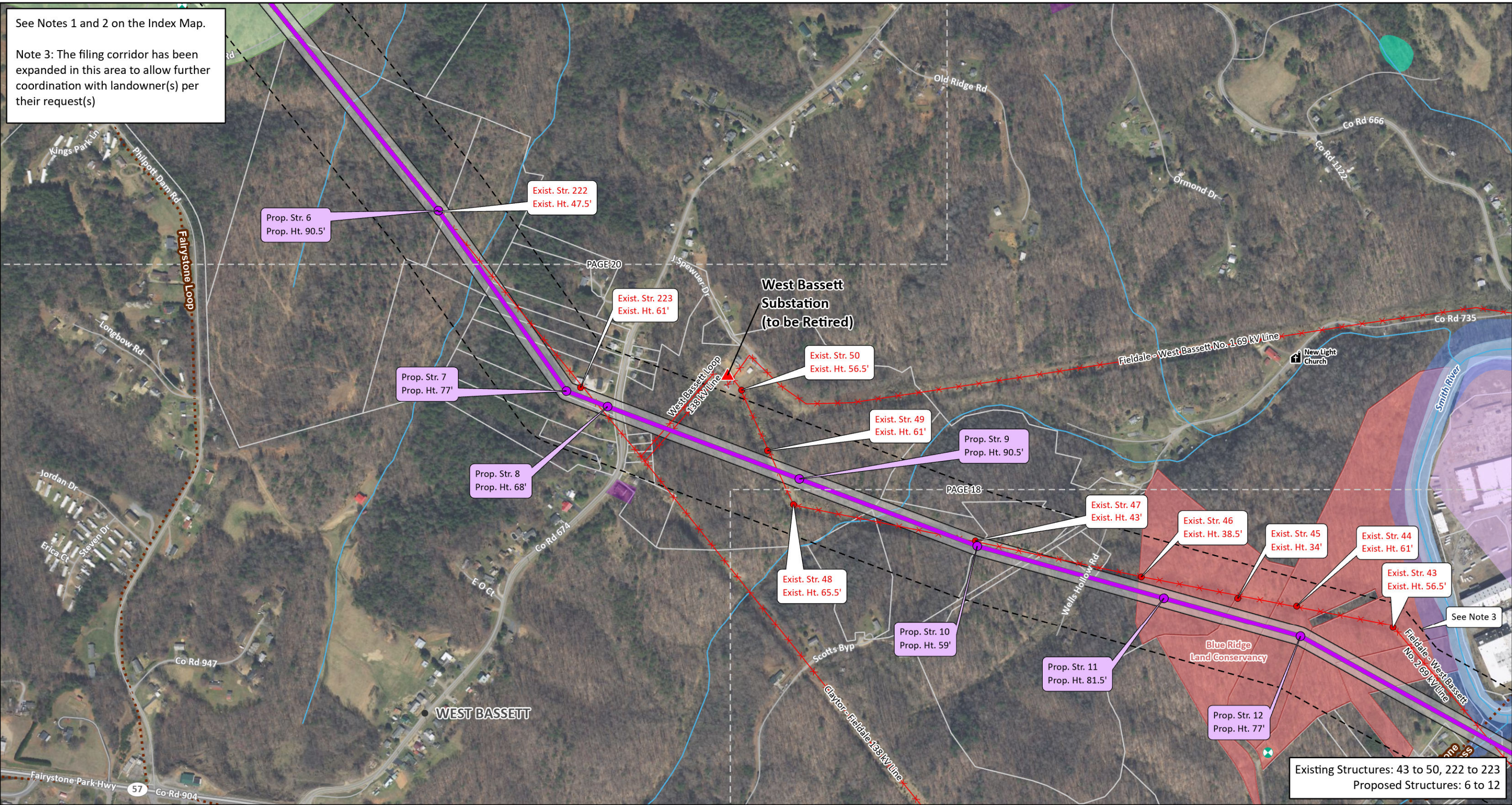
An AEP Company

Stuart Area Transmission
Improvements Project:
Component 3:
Mayo River (Stuart)
to Bassett Area
Transmission Improvements

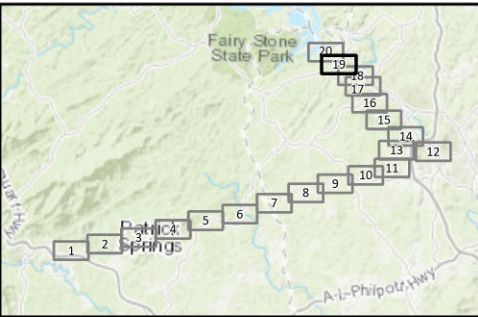


See Notes 1 and 2 on the Index Map.

Note 3: The filing corridor has been expanded in this area to allow further coordination with landowner(s) per their request(s)



Existing Structures: 43 to 50, 222 to 223
Proposed Structures: 6 to 12



- | | | | |
|-----------------------------------------------|--------------------------------|--------------------|-----------------------------------------|
| ▲ Existing APCo Substation to be Retired | ▭ Proposed Right-of-Way (100') | — Road | ▭ Historic District (VDHR) |
| ● Proposed Structure | ▭ Filing Corridor (See Note 1) | — Recreation Trail | ▭ Architectural Resource (VDHR) |
| ● Existing APCo Structure to be Removed | ▭ Place of Worship | — Stream (NHD) | ▭ Local Conservancy |
| — Component 3 Proposed Route (Single Circuit) | ● Populated Place | — River (NHD) | ▭ Philpott Lake Recreation Area (USACE) |
| — Existing Transmission Line to be Retired | ● Cell Tower (FCC) | — Wetland (NWI) | ▭ Parcel Boundary (See Note 2) |
| | — Highway | — Floodplain | ▭ Map Tile |



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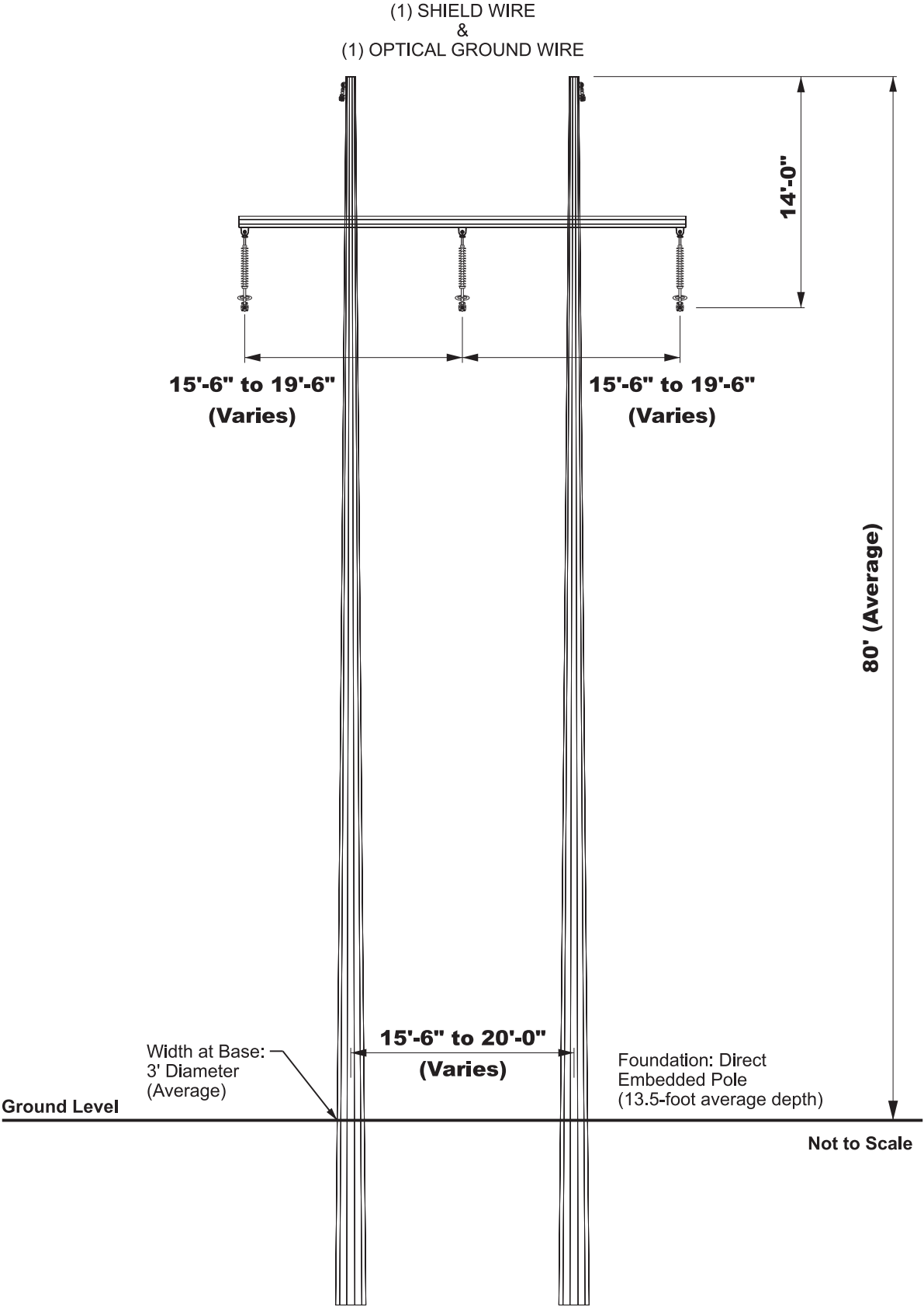
Exhibit 9: Component 3 GIS Constraints Map



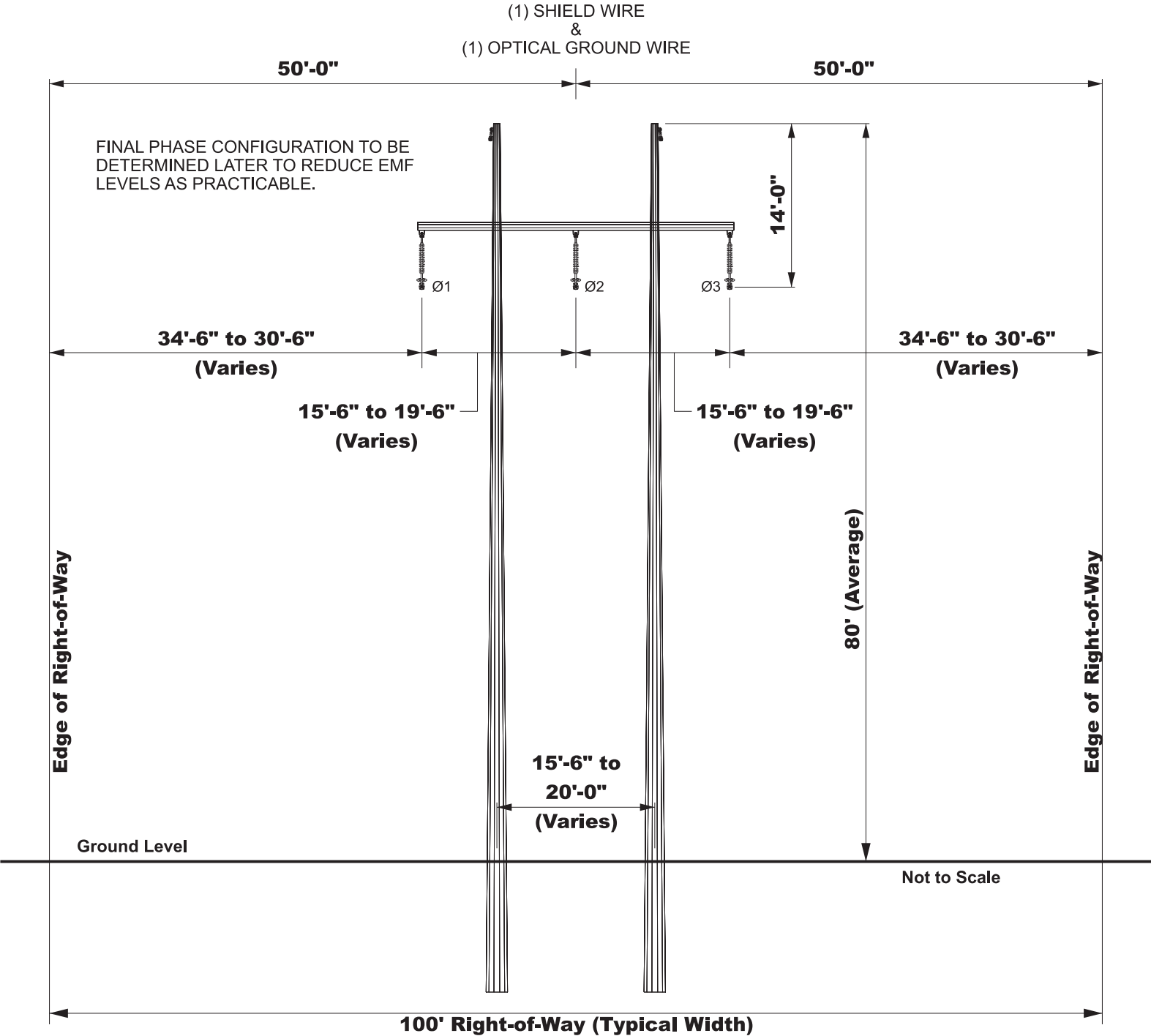
Stuart Area Transmission
Improvements Project:
Component 3:
Mayo River (Stuart)
to Bassett Area
Transmission Improvements

**Exhibit 10: Proposed 138-kV Steel H-Frame
(Single Circuit)**

STEEL H-FRAME (Single Circuit)



TYPICAL SCHEMATIC



TYPICAL RIGHT-OF-WAY CROSS SECTION

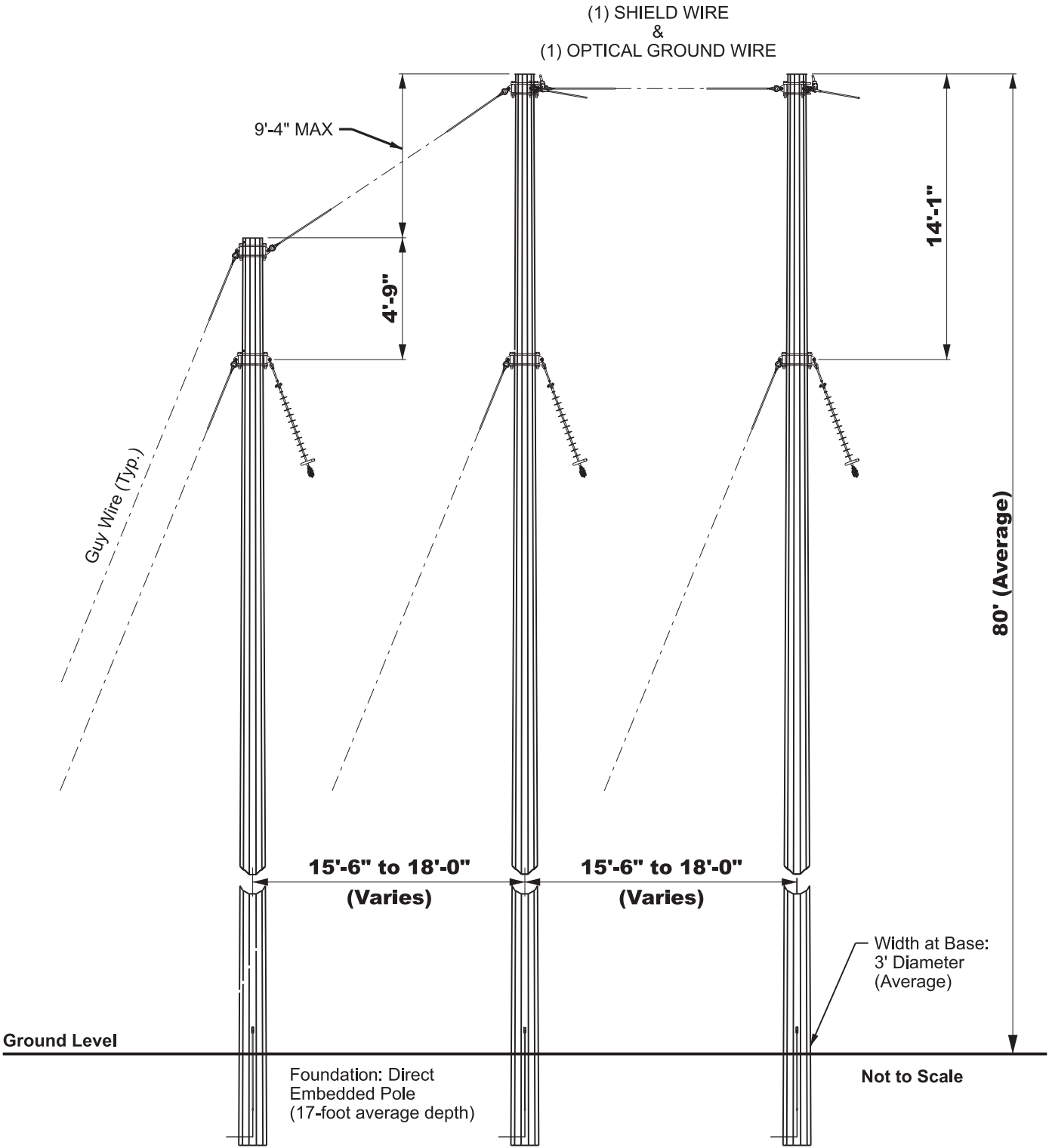


COMPARABLE EXISTING STRUCTURE PHOTOGRAPH

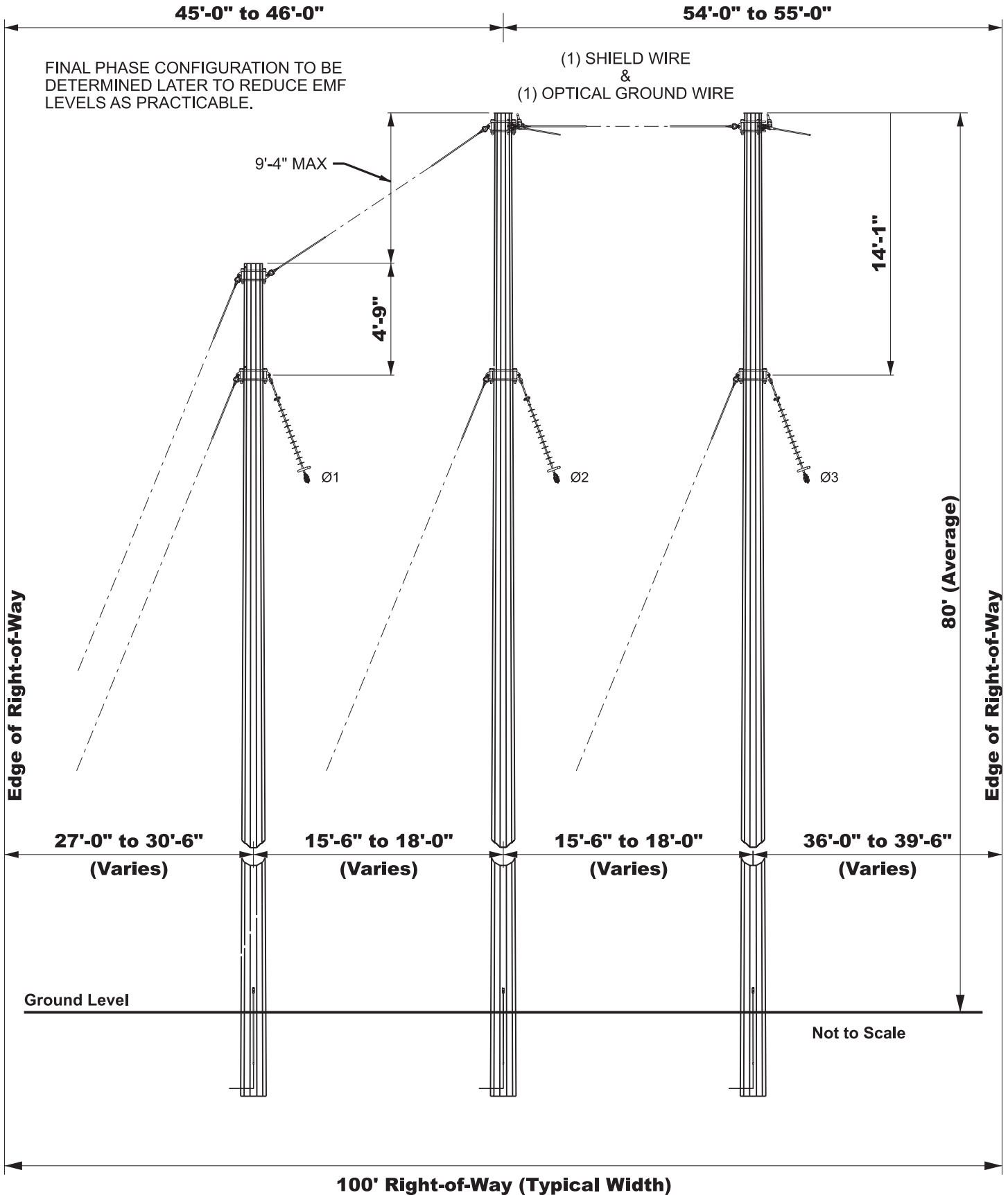
Note: The proposed material for the typical structure will be galvanized steel with a dulled finish (as shown above)

**Exhibit 11: Proposed 138-kV Steel Three-Pole
Running Angle (Single Circuit)**

STEEL THREE-POLE RUNNING ANGLE (Single Circuit)



TYPICAL SCHEMATIC



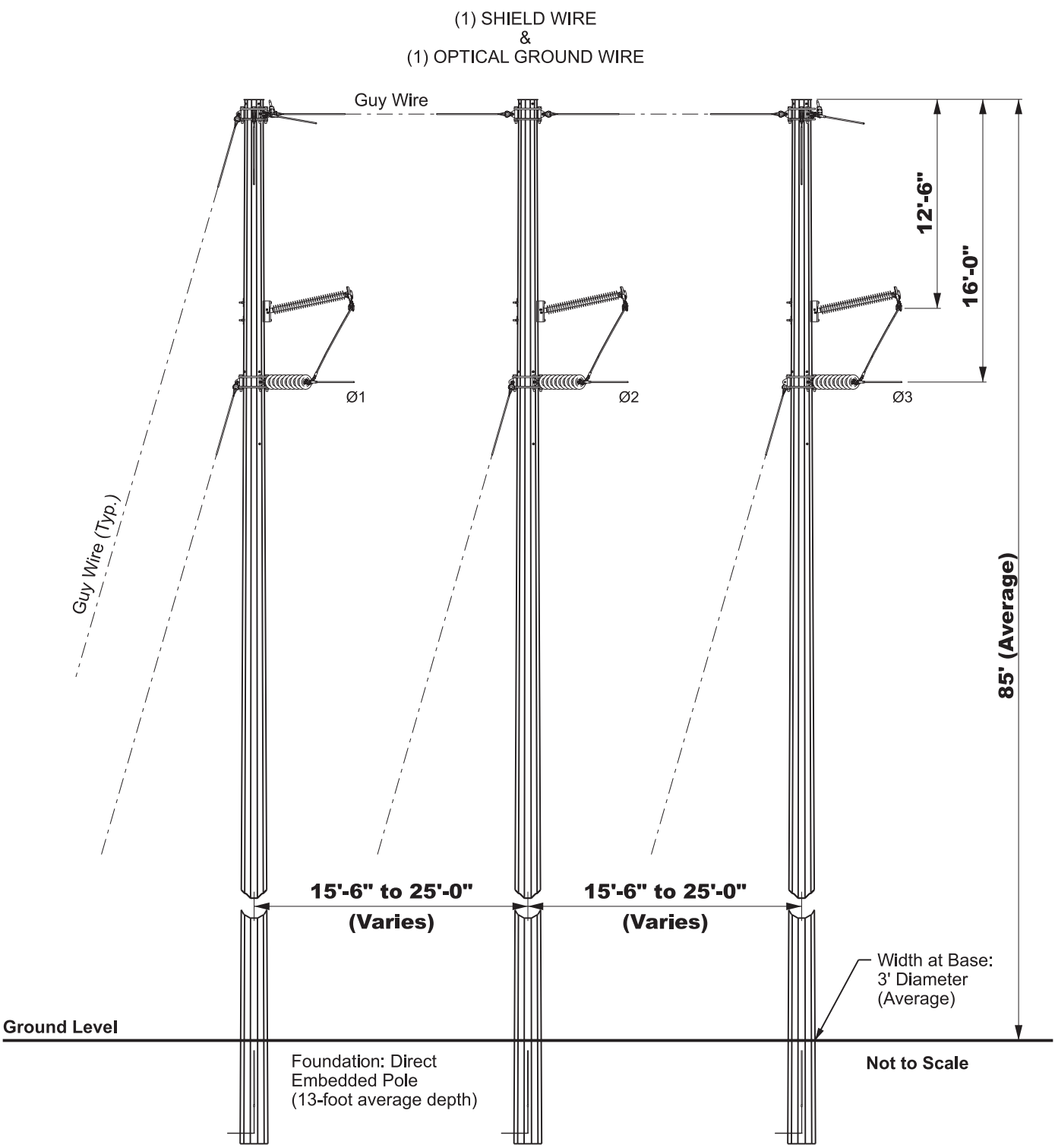
TYPICAL RIGHT-OF-WAY CROSS SECTION



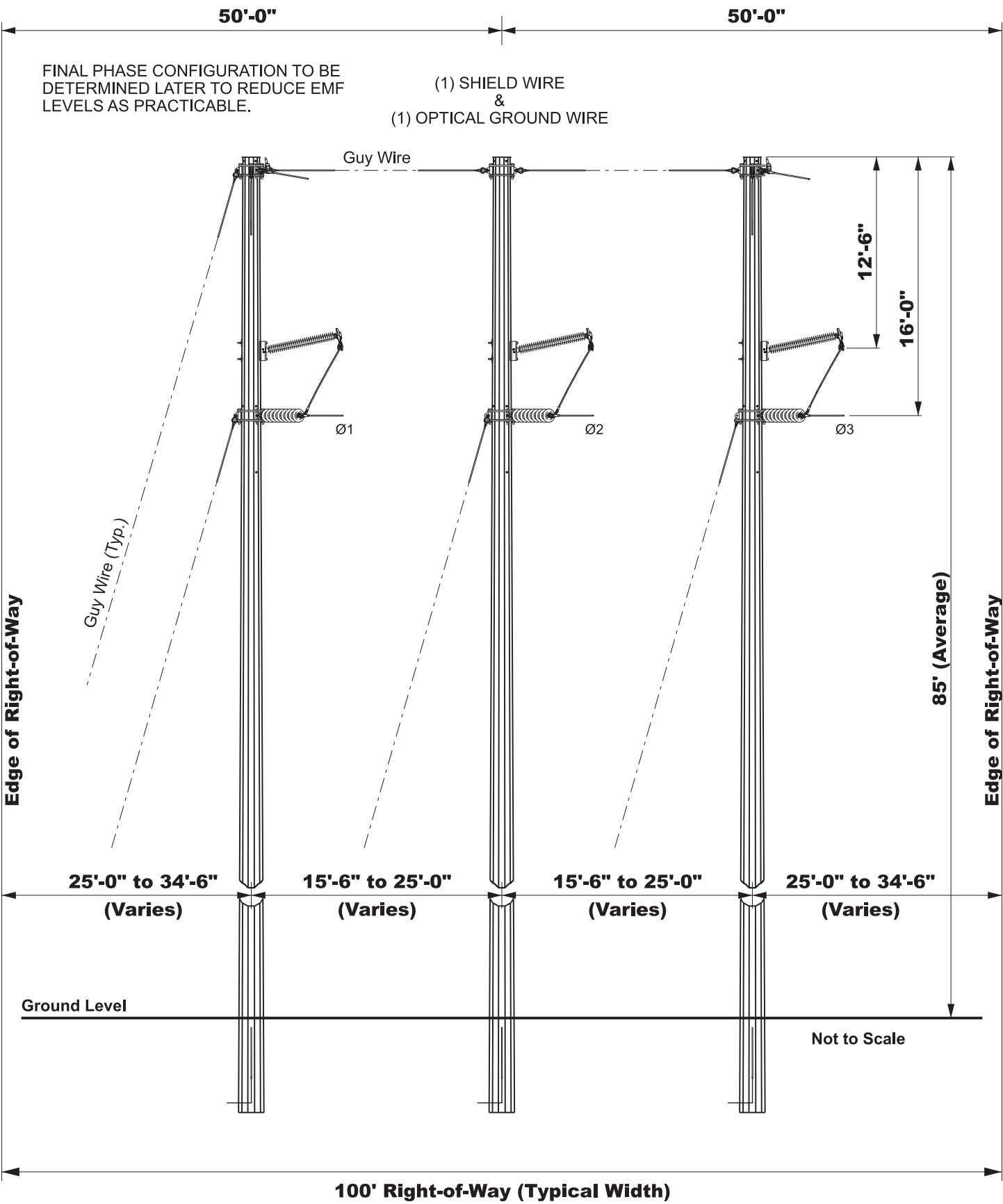
COMPARABLE EXISTING STRUCTURE PHOTOGRAPH

Note: The proposed material for the typical structure will be galvanized steel with a dulled finish (as shown above)

**Exhibit 12: Proposed 138-kV Steel Three-Pole
Dead-End (Single Circuit)**



TYPICAL SCHEMATIC



TYPICAL RIGHT-OF-WAY CROSS SECTION

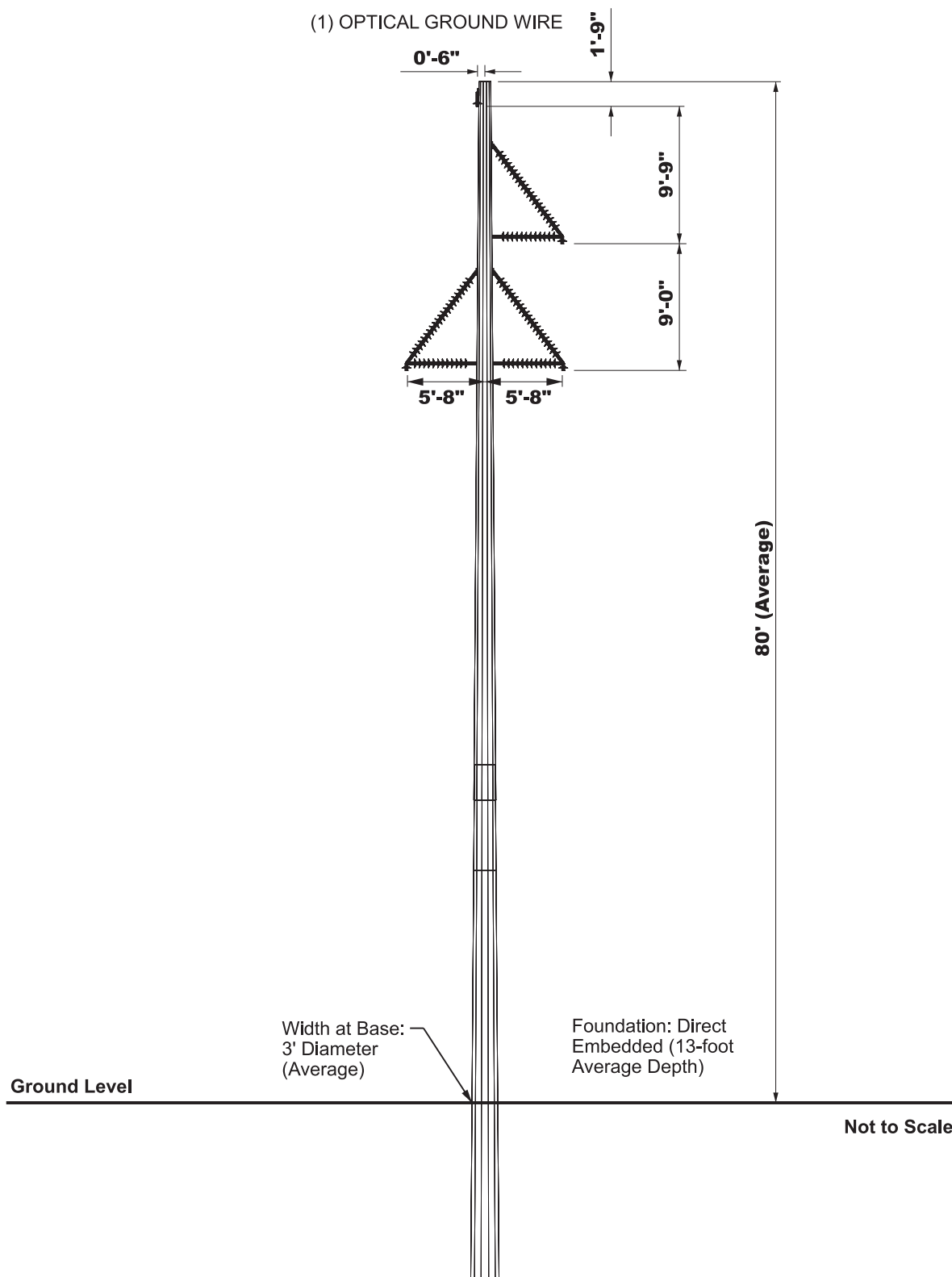


COMPARABLE EXISTING STRUCTURE PHOTOGRAPH

Note: The proposed material for the typical structure will be galvanized steel with a dulled finish (as shown above)

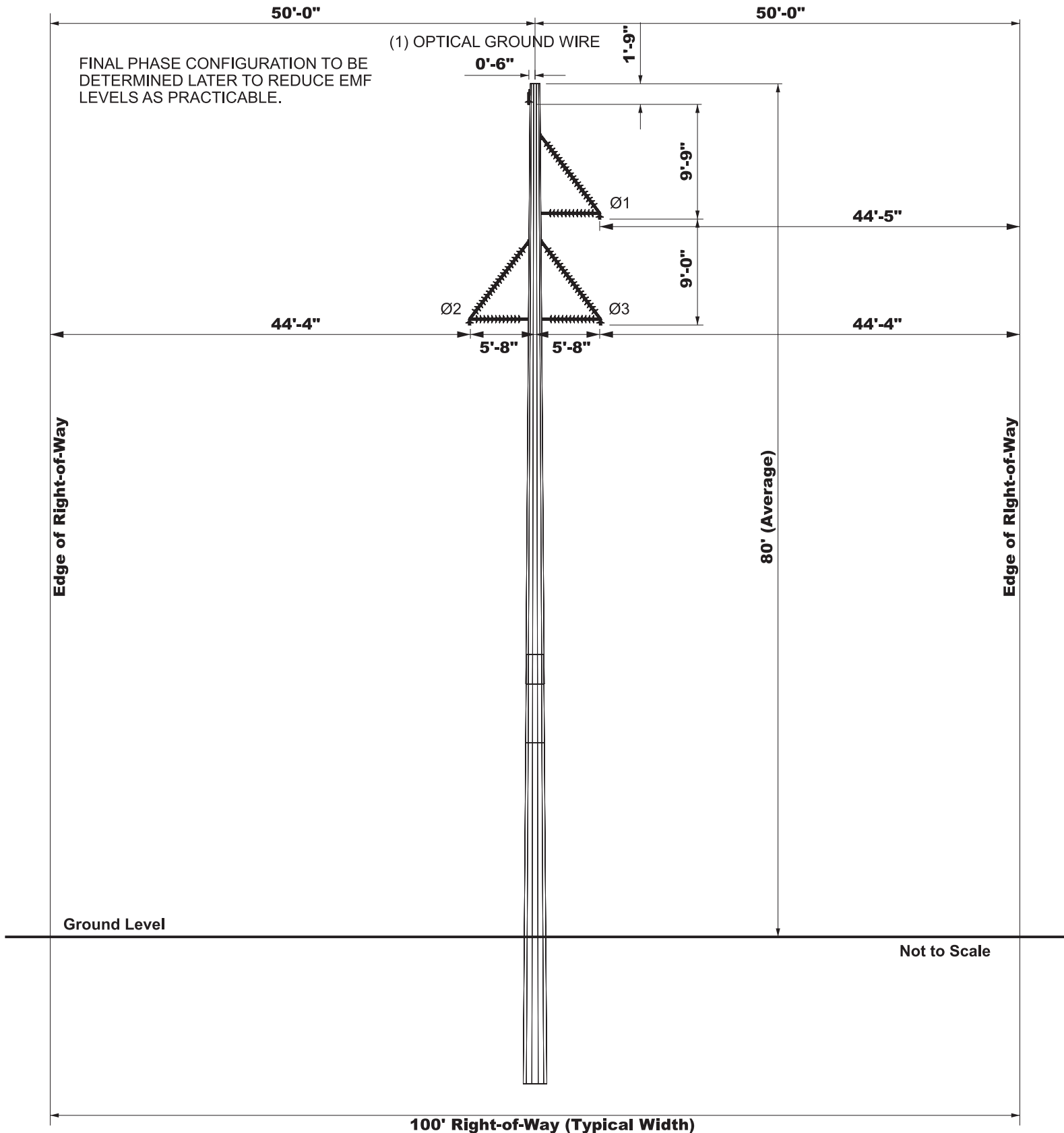
**Exhibit 13: Proposed 138-kV Steel Monopole
with Braced Posts (Single Circuit)**

EXHIBIT 13
PROPOSED 138-kV TRANSMISSION LINE STRUCTURES (Page 1 of 3)
STEEL MONOPOLE WITH BRACED POSTS (Single Circuit)



TYPICAL SCHEMATIC

EXHIBIT 13
PROPOSED 138-kV TRANSMISSION LINE STRUCTURES (Page 2 of 3)
STEEL MONOPOLE WITH BRACED POSTS (Single Circuit)



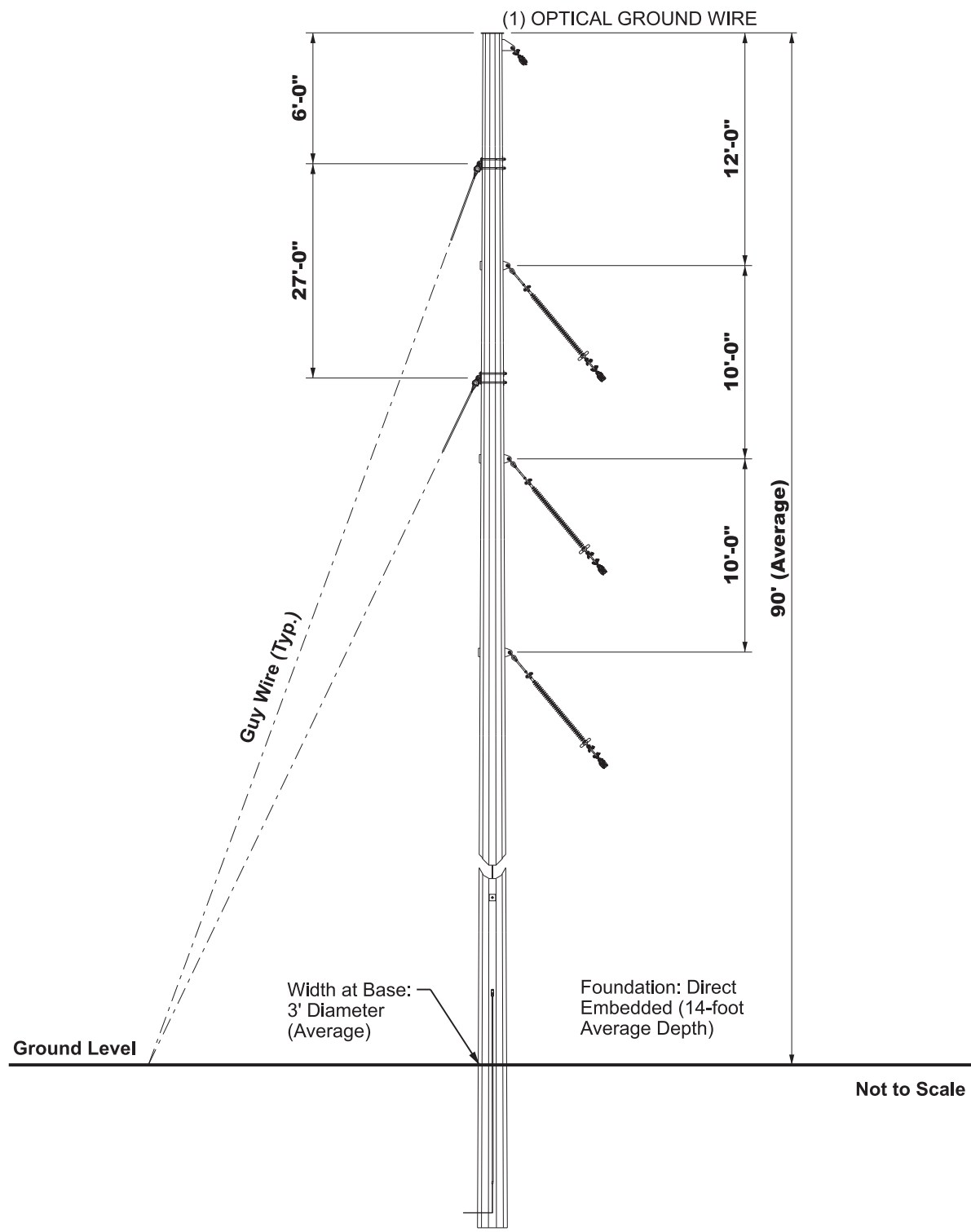
TYPICAL RIGHT-OF-WAY CROSS SECTION



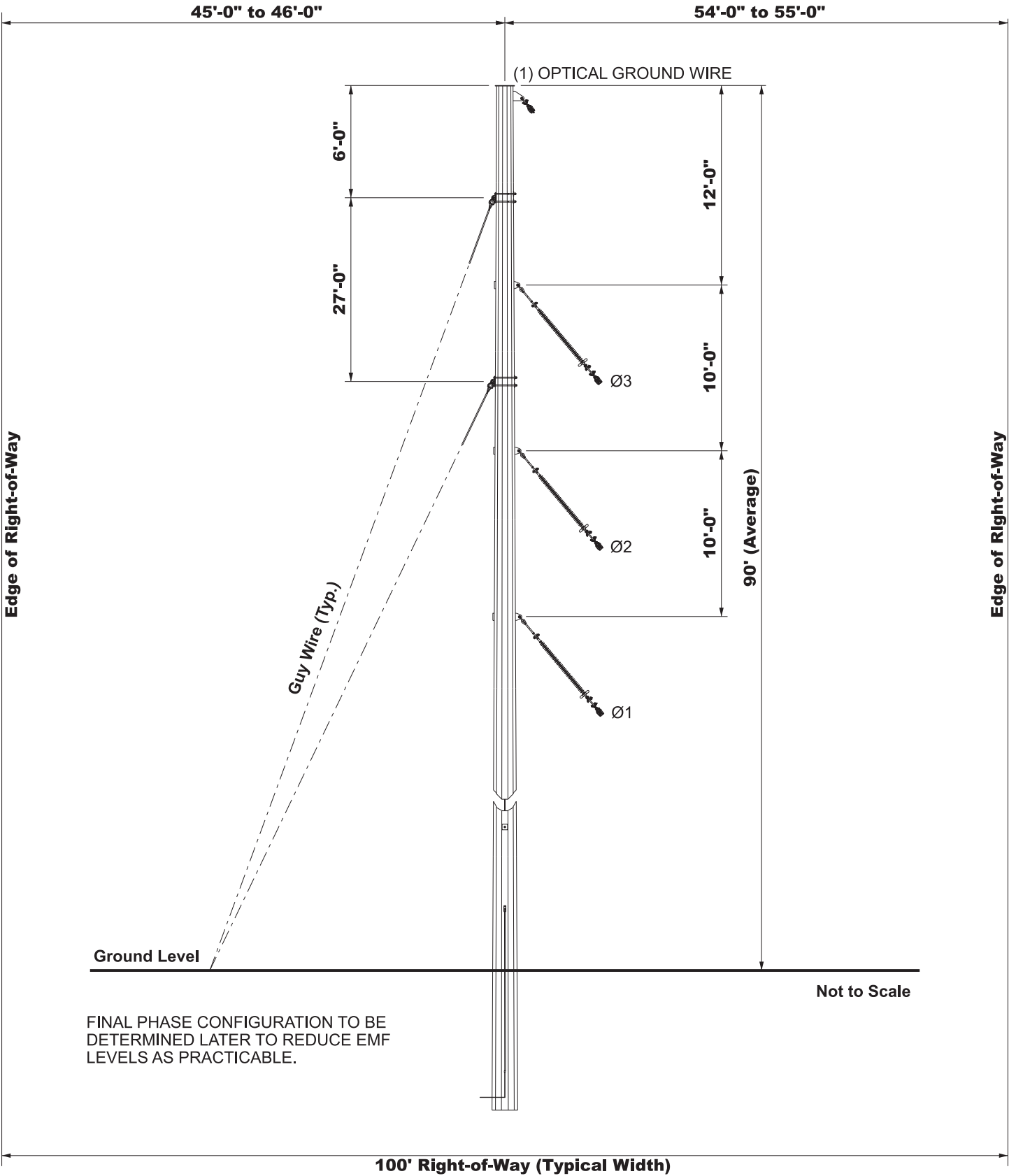
COMPARABLE EXISTING STRUCTURE PHOTOGRAPH

Note: The proposed material for the typical structure will be galvanized steel with a dulled finish (as shown above)

**Exhibit 14: Proposed 138-kV Steel Monopole
Running Angle (Single Circuit)**



TYPICAL SCHEMATIC



TYPICAL RIGHT-OF-WAY CROSS SECTION

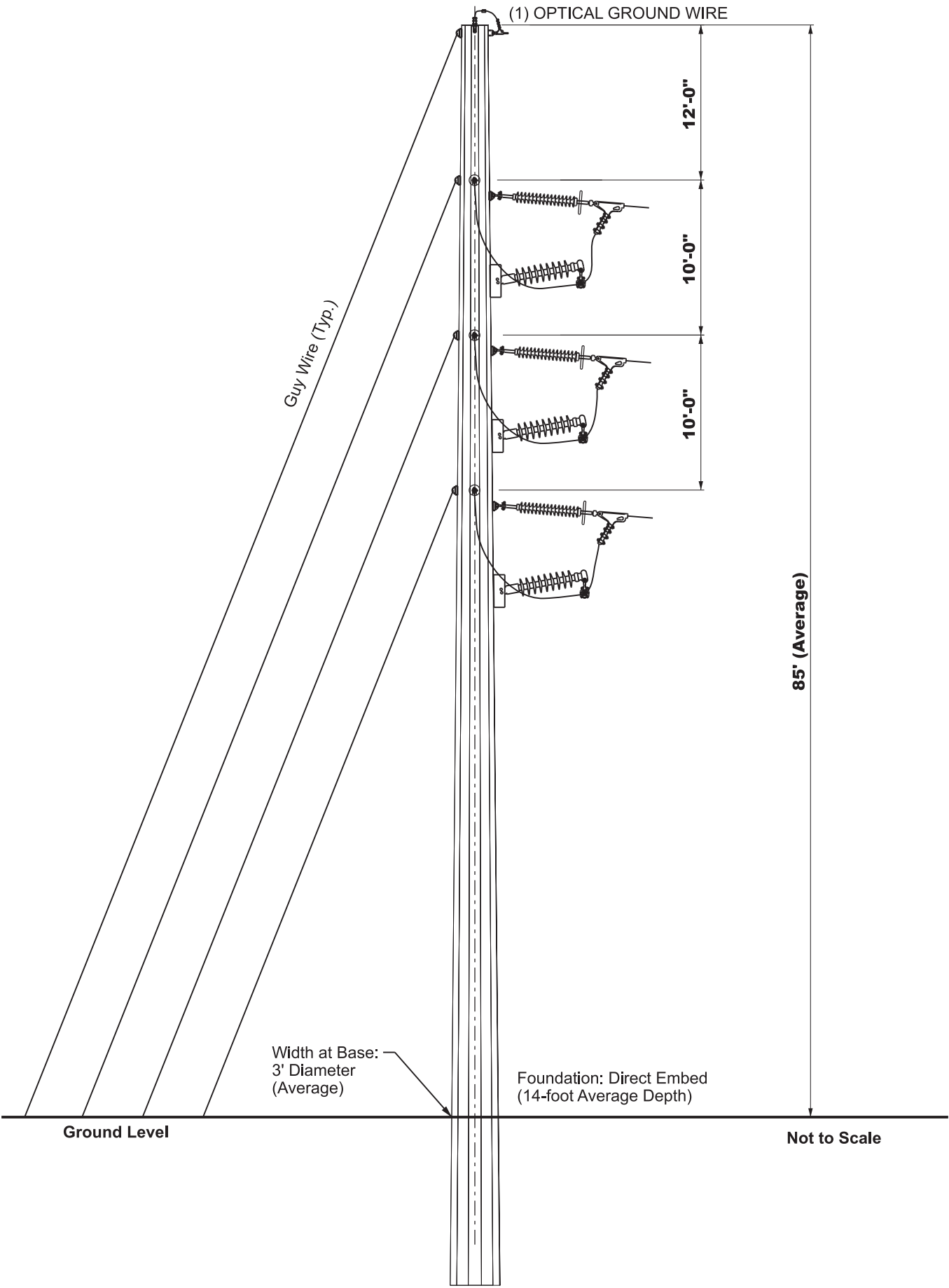


COMPARABLE EXISTING STRUCTURE PHOTOGRAPH

Note: The proposed material for the typical structure will be galvanized steel with a dulled finish (as shown above)

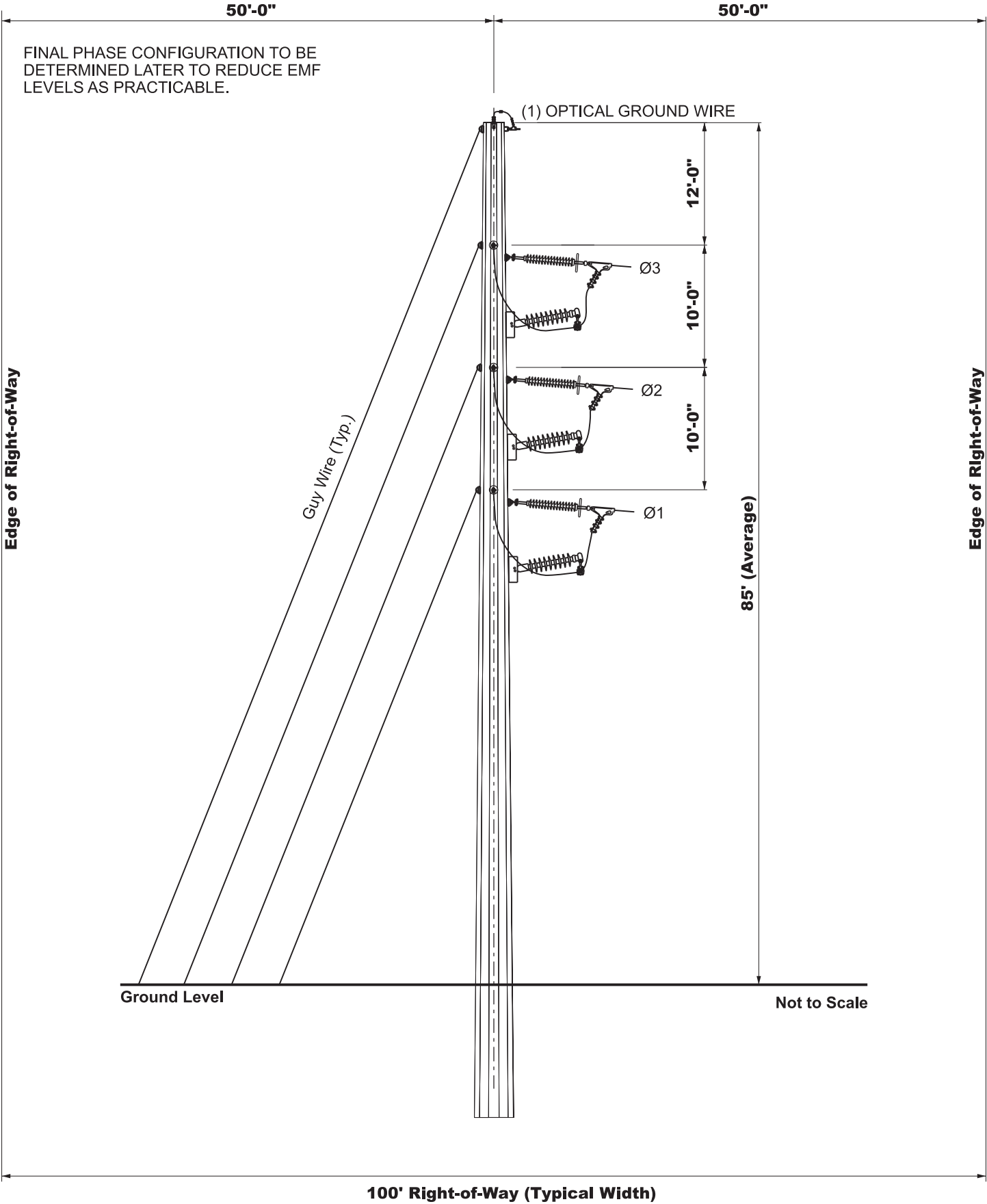
**Exhibit 15: Proposed 138-kV Guyed Steel
Monopole Dead-End (Single Circuit)**

GUYED STEEL MONOPOLE DEAD-END (SINGLE CIRCUIT)

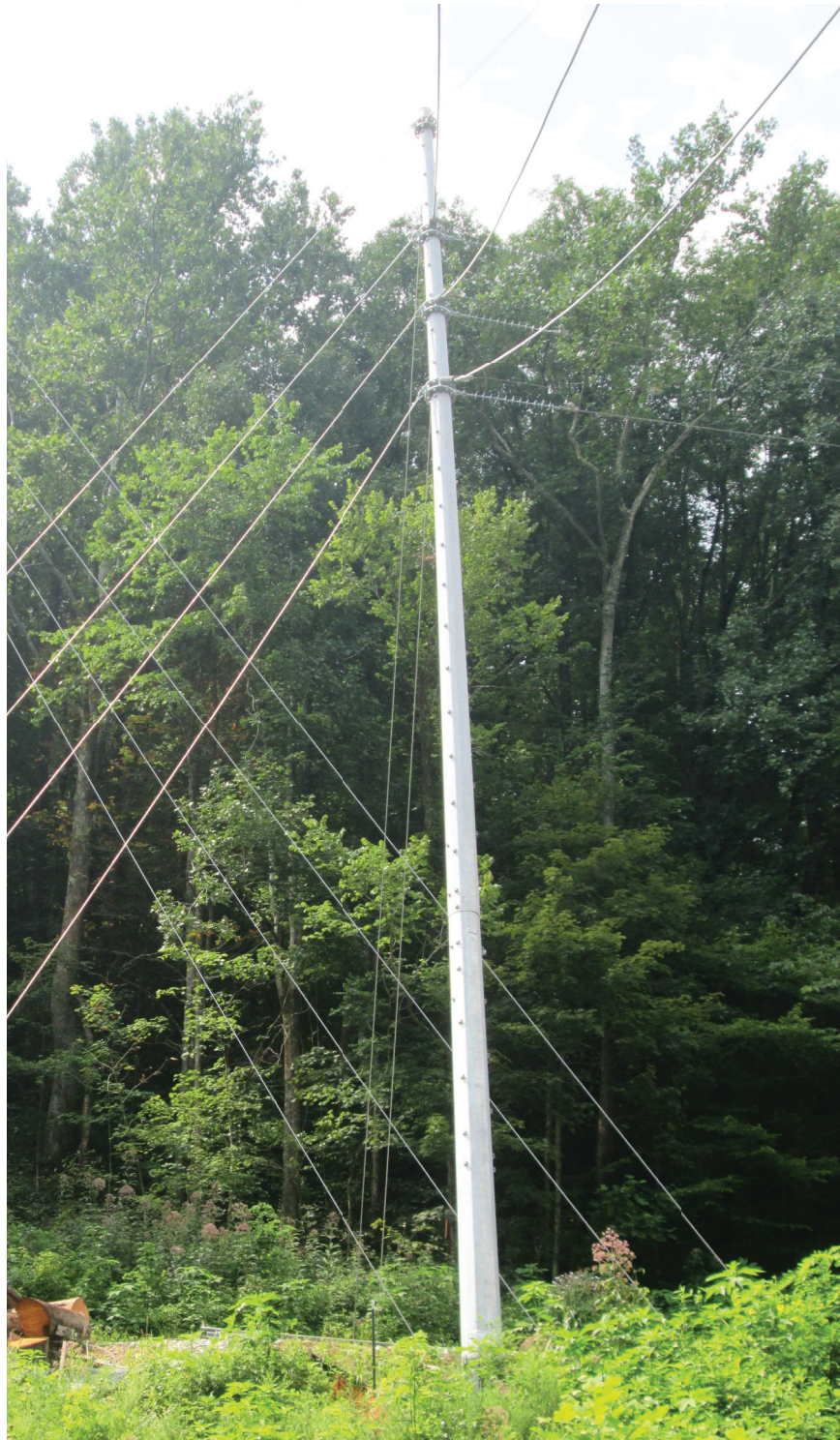


TYPICAL SCHEMATIC

GUYED STEEL MONOPOLE DEAD-END (SINGLE CIRCUIT)



TYPICAL RIGHT-OF-WAY CROSS SECTION

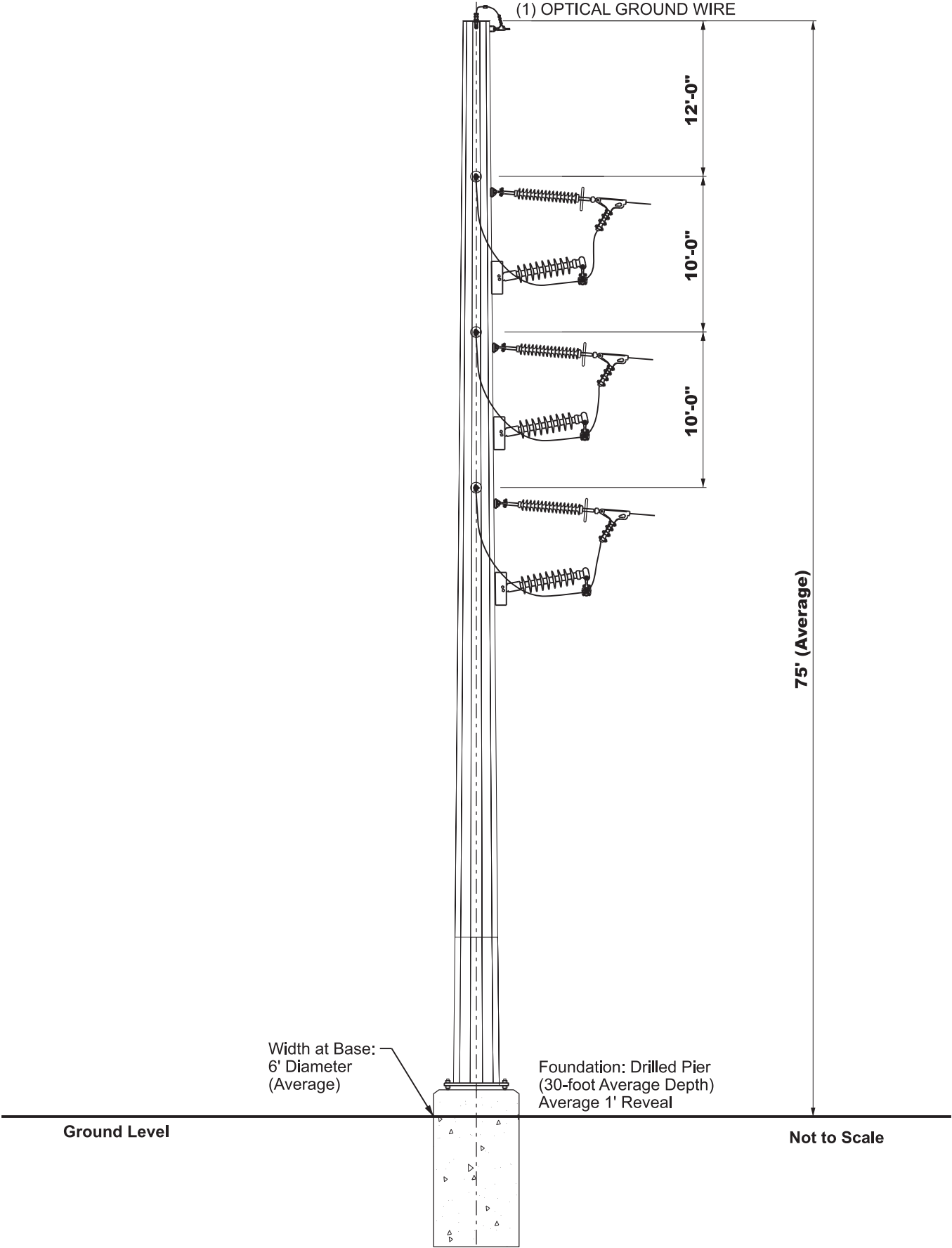


COMPARABLE EXISTING STRUCTURE PHOTOGRAPH

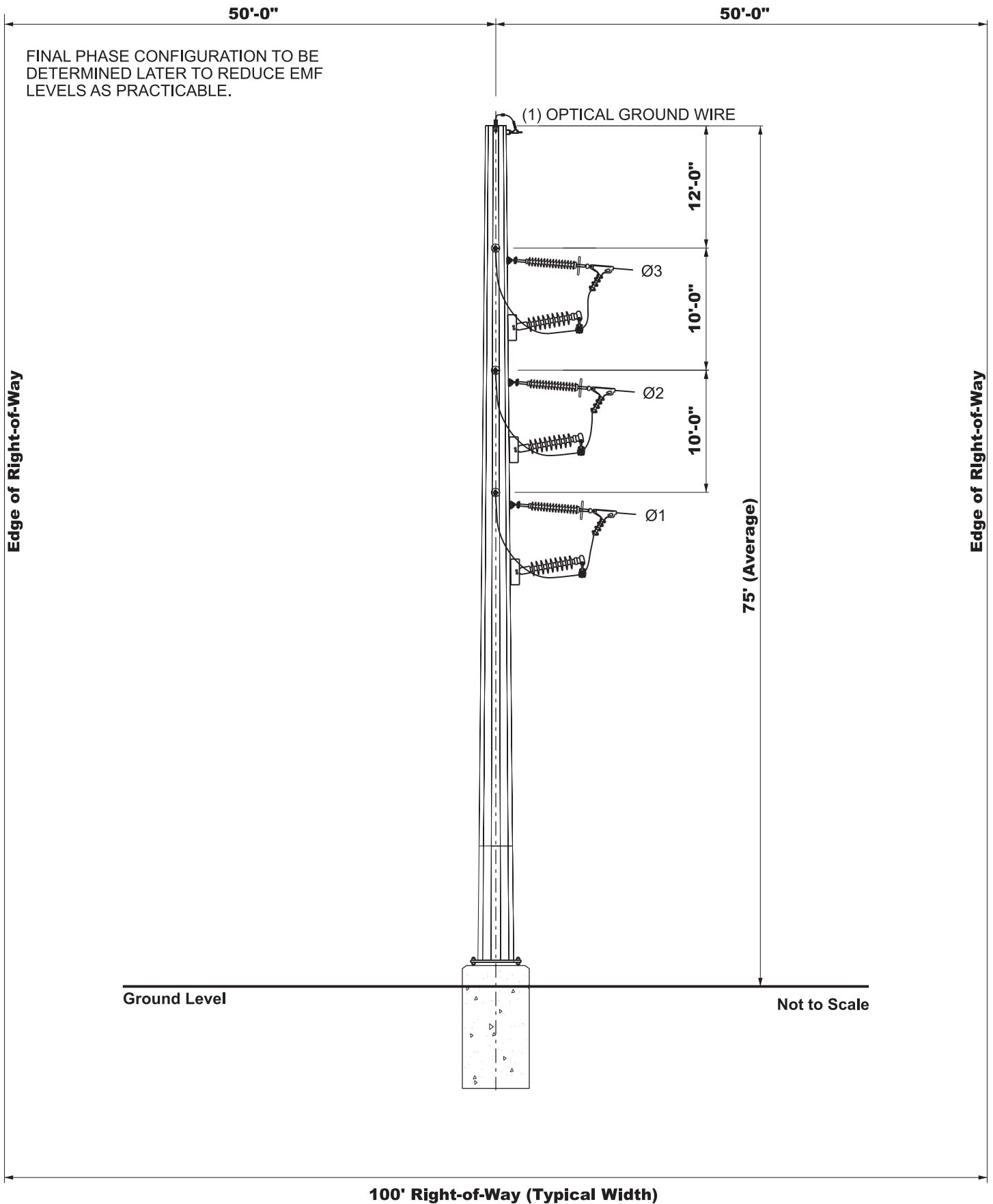
Note: The proposed material for the typical structure will be galvanized steel with a dulled finish (as shown above)

**Exhibit 16: Proposed 138-kV Steel Monopole
Dead-End (Single Circuit)**

STEEL MONOPOLE DEAD-END (SINGLE CIRCUIT)



TYPICAL SCHEMATIC



TYPICAL RIGHT-OF-WAY CROSS SECTION

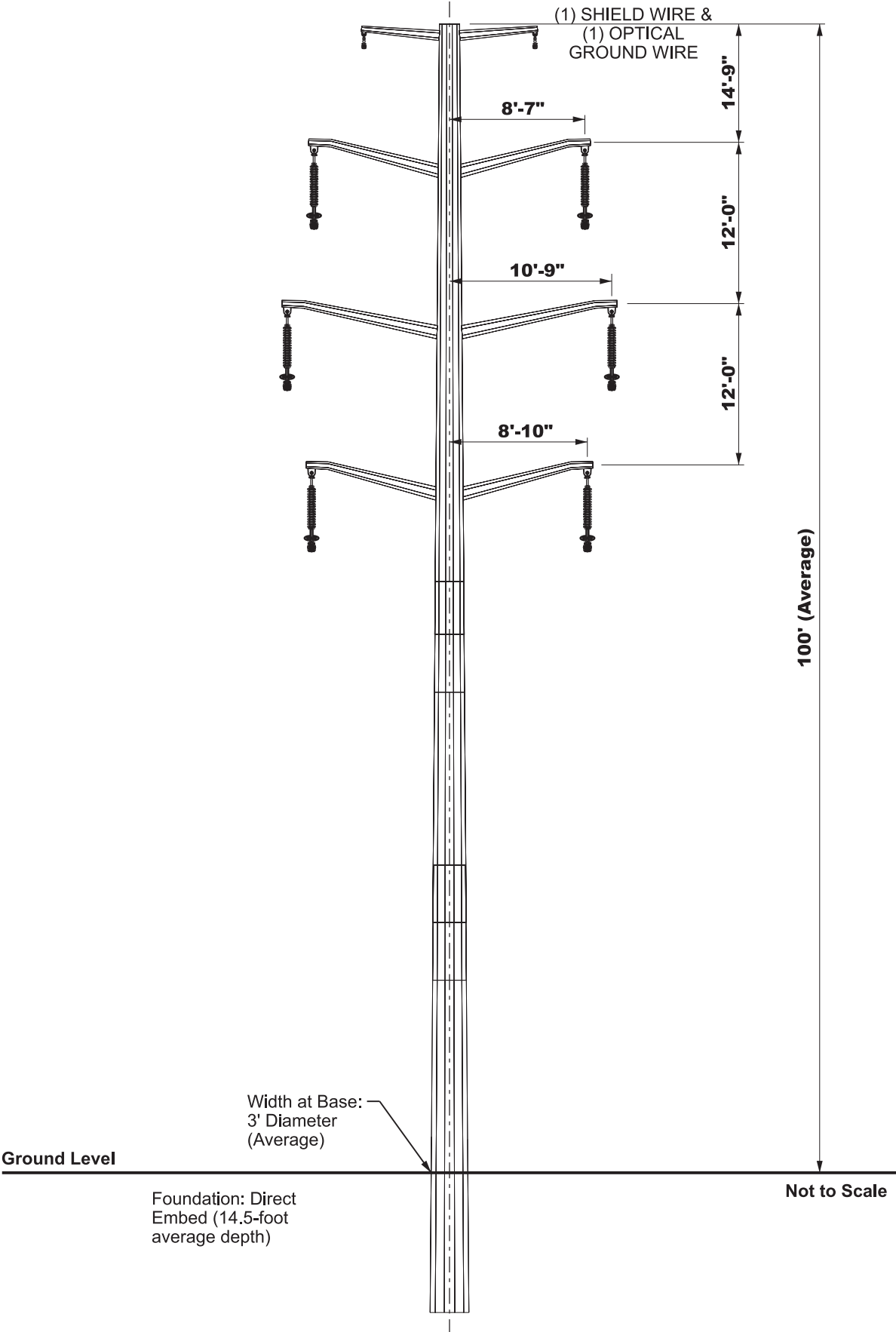


COMPARABLE EXISTING STRUCTURE PHOTOGRAPH

Note: The proposed material for the typical structure will be galvanized steel with a dulled finish (as shown above)

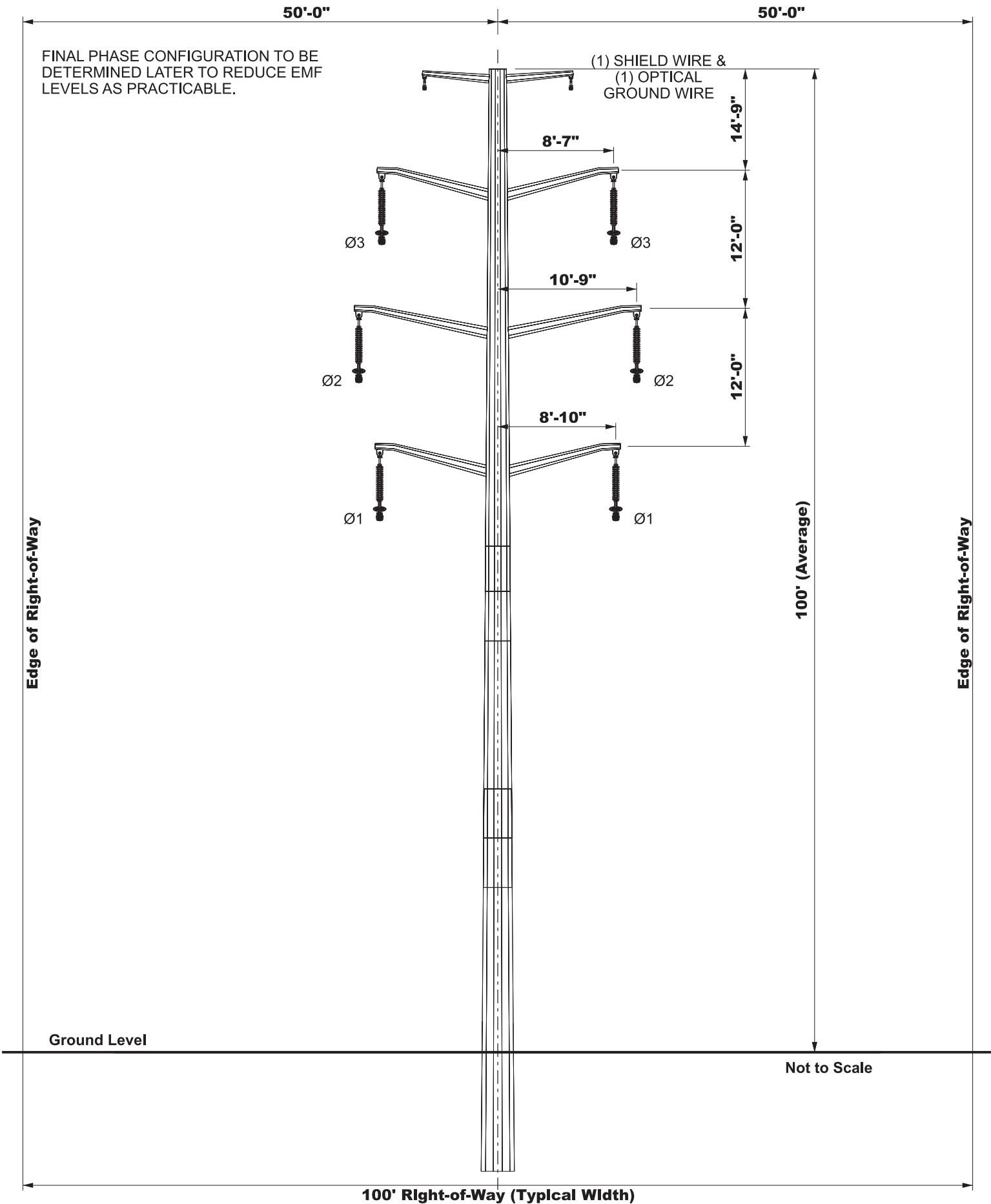
**Exhibit 17: Proposed 138-kV Steel Monopole
Tangent with Davit Arms (Double
Circuit)**

STEEL MONOPOLE TANGENT WITH DAVIT ARMS (Double Circuit)

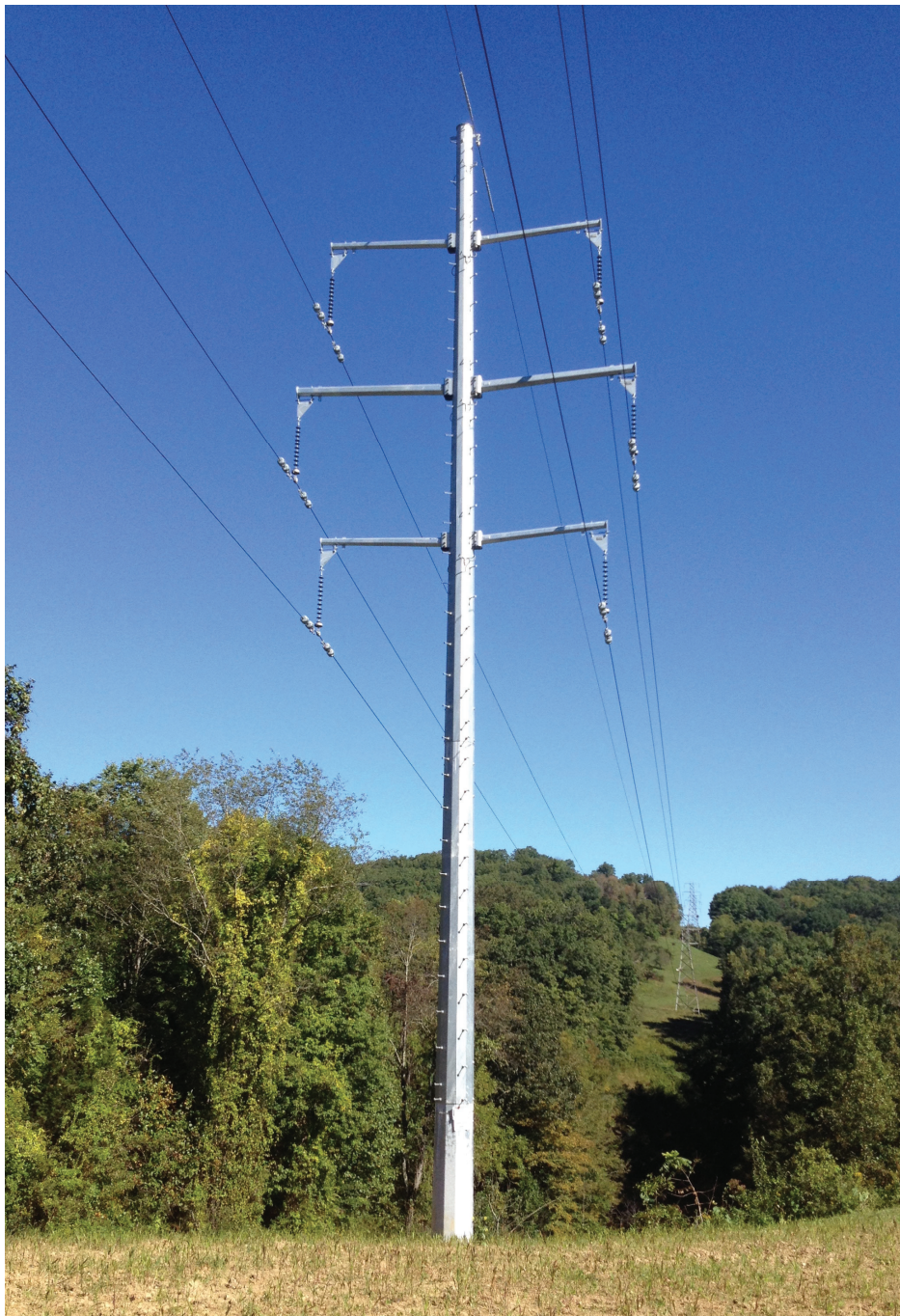


TYPICAL SCHEMATIC

STEEL MONOPOLE TANGENT WITH DAVIT ARMS (Double Circuit)



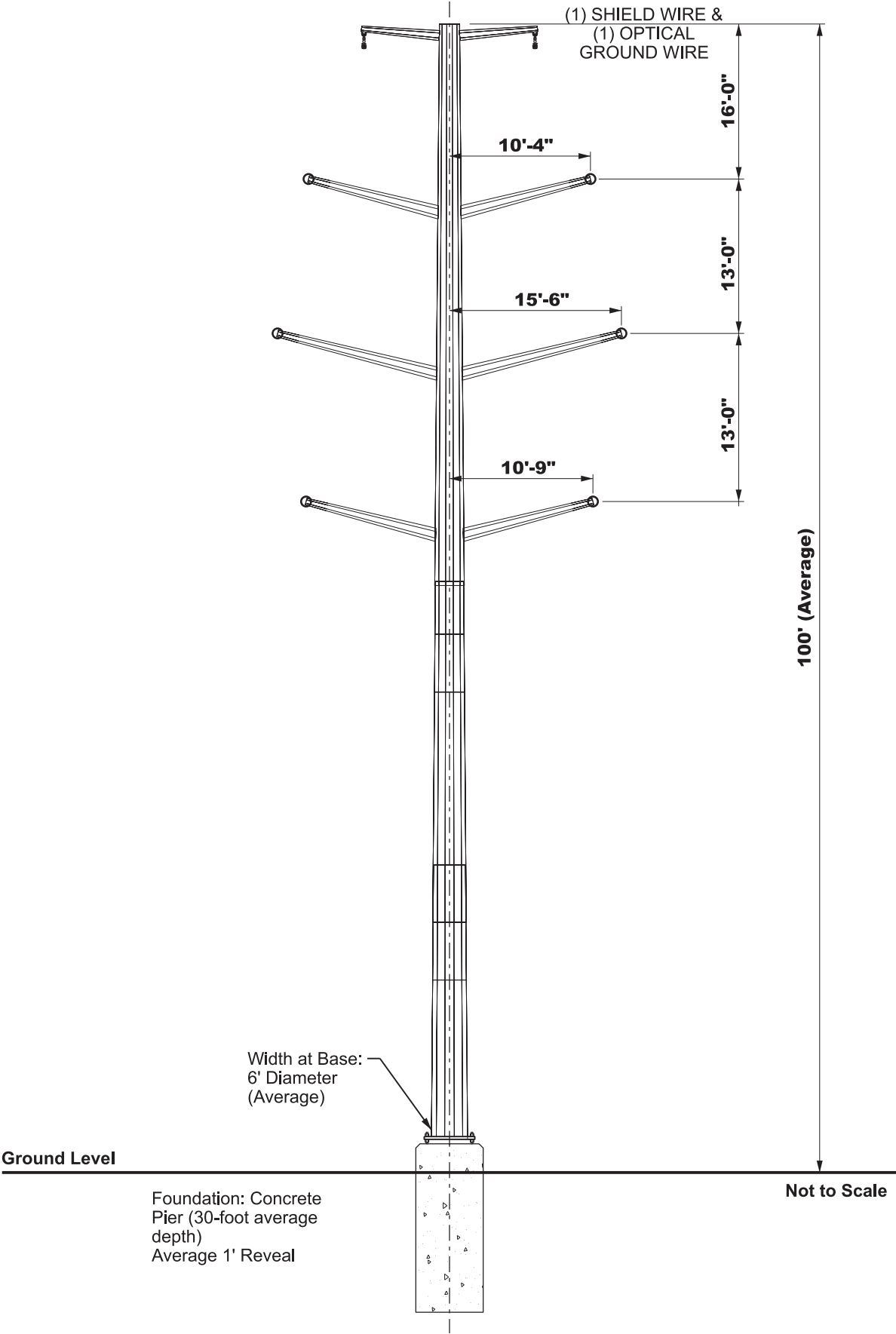
TYPICAL RIGHT-OF-WAY CROSS SECTION

STEEL MONOPOLE TANGENT WITH DAVIT ARMS (Double Circuit)**COMPARABLE EXISTING STRUCTURE PHOTOGRAPH**

Note: The proposed material for the typical structure will be galvanized steel with a dulled finish (as shown above)

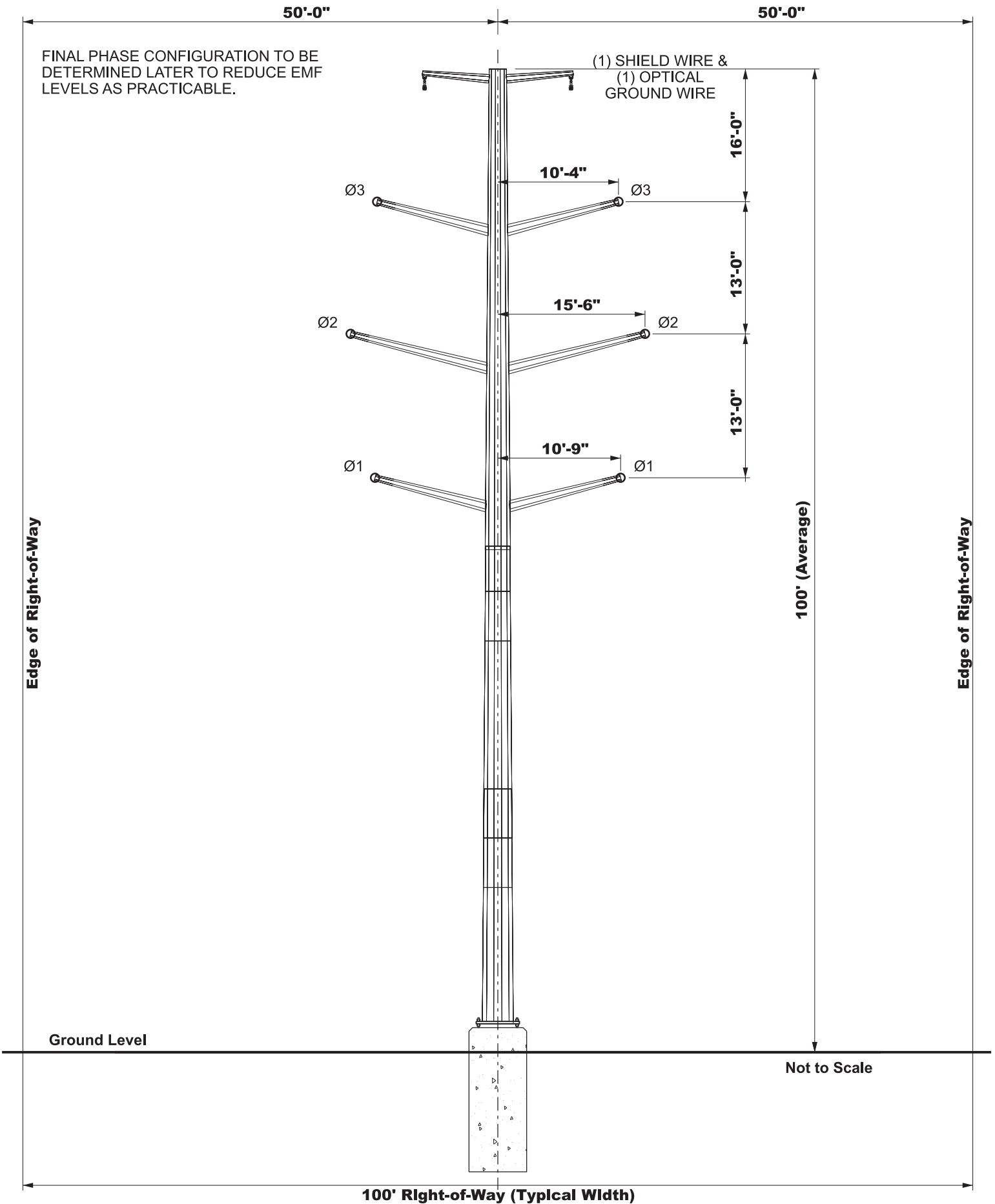
**Exhibit 18: Proposed 138-kV Steel Monopole
Dead-End with Davit Arms (Double
Circuit)**

STEEL MONOPOLE DEAD-END WITH DAVIT ARMS (Double Circuit)



TYPICAL SCHEMATIC

STEEL MONOPOLE DEAD-END WITH DAVIT ARMS (Double Circuit)



TYPICAL RIGHT-OF-WAY CROSS SECTION

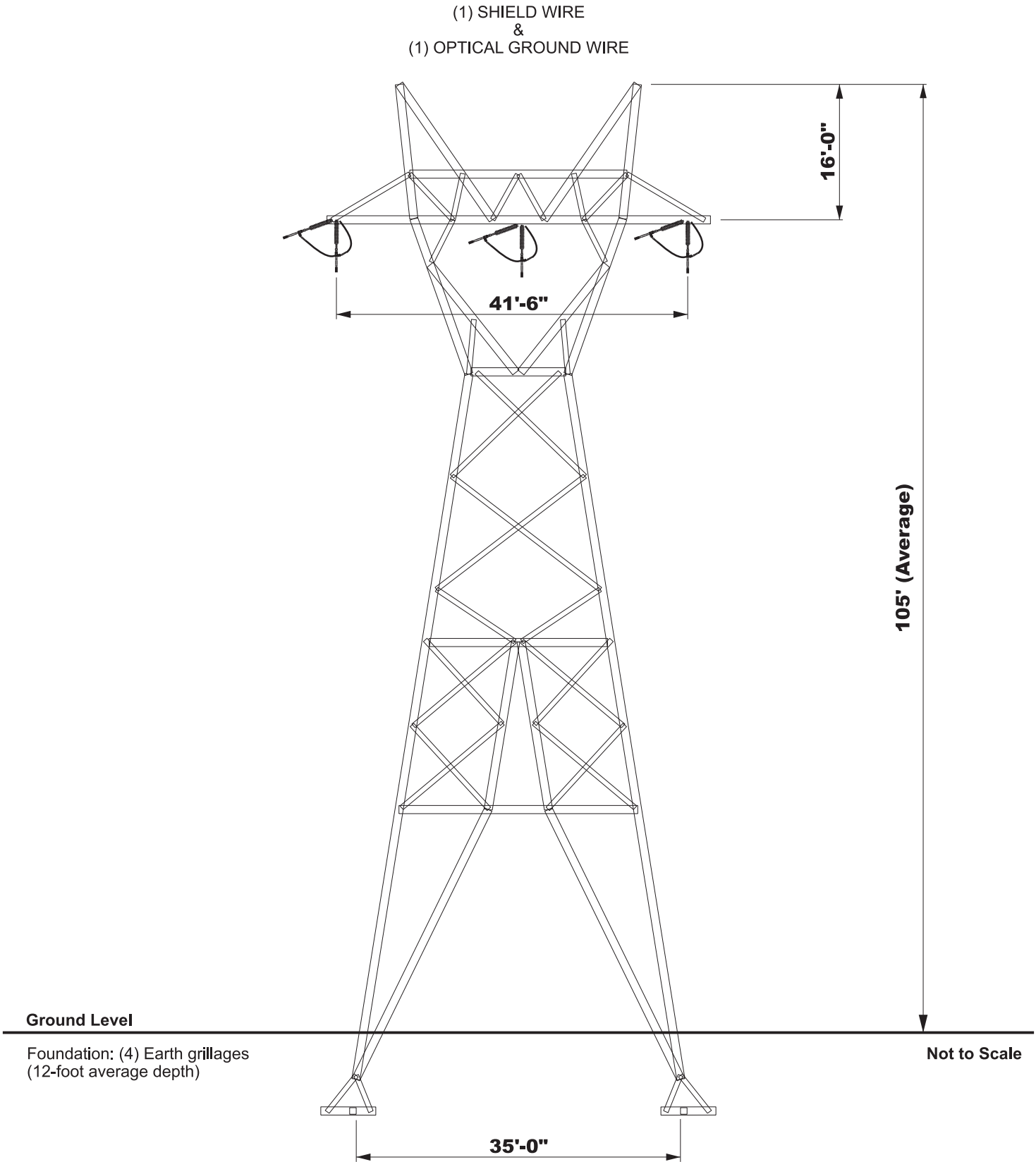


COMPARABLE EXISTING STRUCTURE PHOTOGRAPH

Note: The proposed material for the typical structure will be galvanized steel with a dulled finish (as shown above)

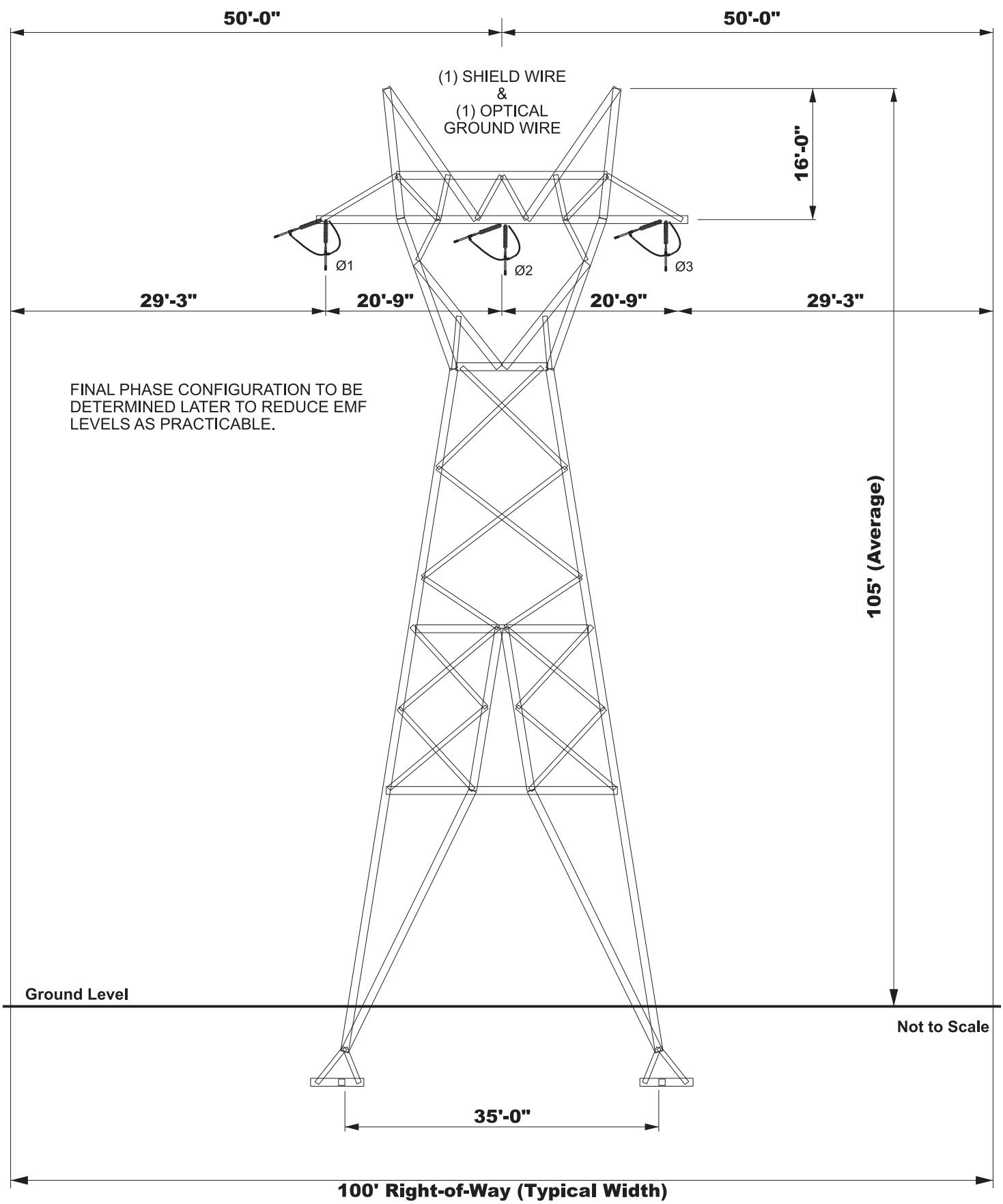
**Exhibit 19: Proposed 138-kV Self-Supporting
Steel Lattice Tower (Single Circuit)**

SELF-SUPPORTING STEEL LATTICE TOWER (Single Circuit)



TYPICAL SCHEMATIC

SELF-SUPPORTING STEEL LATTICE TOWER (Single Circuit)



TYPICAL RIGHT-OF-WAY CROSS SECTION



COMPARABLE EXISTING STRUCTURE PHOTOGRAPH

Note: The proposed material for the typical structure will be galvanized steel with a dulled finish (as shown above)

Exhibit 20: Existing Structure Photographs

Component 1: Mayo River (Stuart) to Willis Gap Transmission Improvements



Existing City of Danville's Pinnacles - Hydro 69-kV Line
H-Frame

Component 2: Mayo River (Stuart) to Floyd Transmission Improvements



Existing Floyd - Stuart 69-kV Line
H-Frame

Component 3: Mayo River (Stuart) to Bassett Area Transmission Improvements



Existing Fieldale - Stuart 69-kV Line
Monopole with Cross Arms

Component 3: Mayo River (Stuart) to Bassett Area Transmission Improvements



Existing Fieldale - West Bassett No. 1 69-kV Line
Monopole with Post Insulators and Cross Arms

Component 3: Mayo River (Stuart) to Bassett Area Transmission Improvements



Existing Fieldale - West Bassett No. 1 69-kV Line
H-Frame

Component 3: Mayo River (Stuart) to Bassett Area Transmission Improvements



Existing Fieldale - West Bassett No. 2 69-kV Line
H-Frame

Component 3: Mayo River (Stuart) to Bassett Area Transmission Improvements



Existing Claytor - Fieldale 138-kV Line
H-Frame

Component 3: Mayo River (Stuart) to Bassett Area Transmission Improvements



Existing Claytor - Fieldale 138-kV Line (Left)
and Fieldale - West Bassett No. 2 69-kV Line (Right)
H-Frames

Exhibit 21: Improvements at 138-kV Huffman Substation

CONFIDENTIAL INFORMATION

SEE VOLUME 4 – EXHIBIT 21-C FOR PROPOSED SUBSTATION LAYOUT
DRAWING



SUBSTATION LOCATION MAP



EXISTING HUFFMAN SUBSTATION

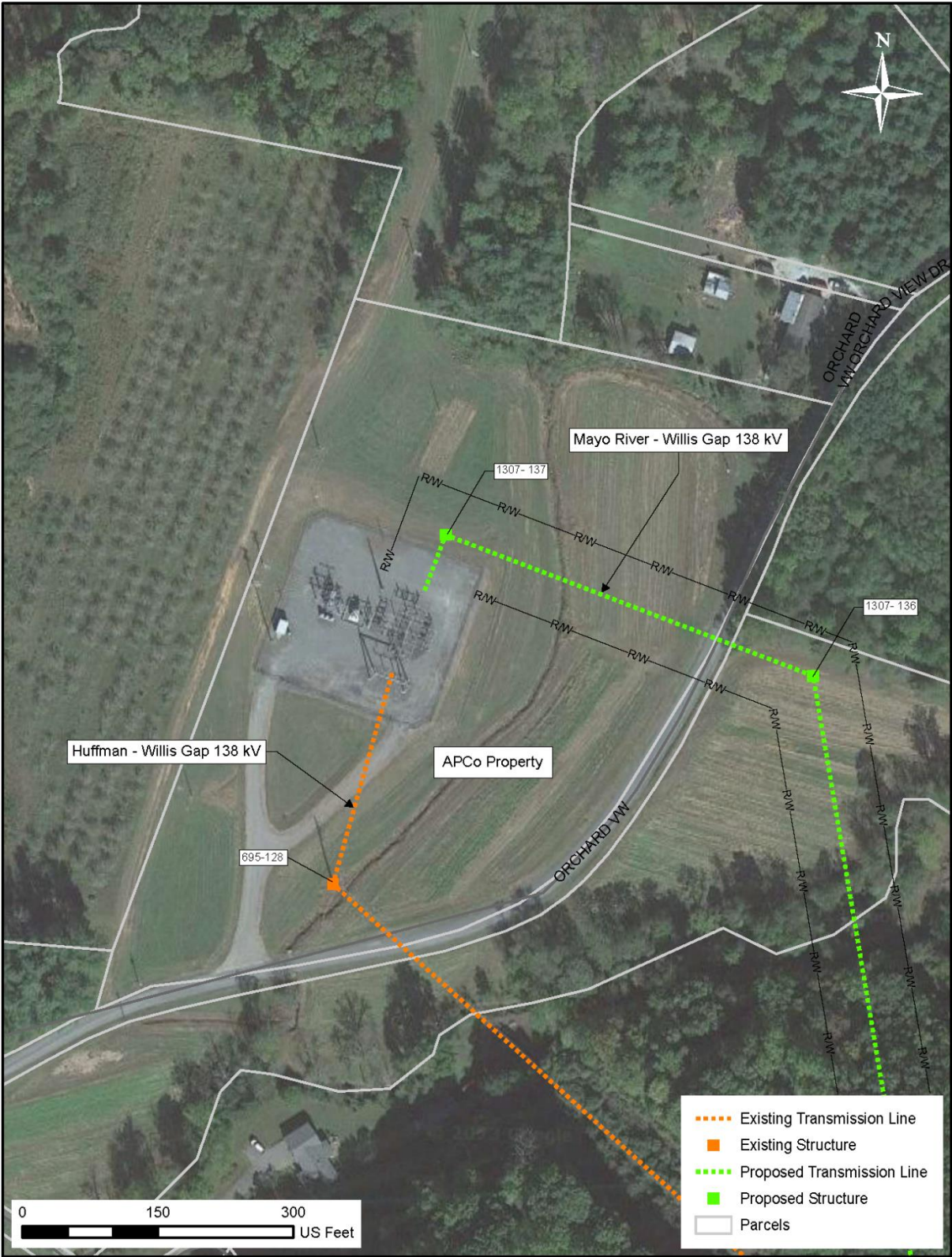
CONFIDENTIAL INFORMATION

SEE VOLUME 4 – EXHIBIT 21-C FOR PROPOSED SUBSTATION ONE-LINE
DRAWING

Exhibit 22: Improvements at 138-kV Willis Gap Substation

CONFIDENTIAL INFORMATION

SEE VOLUME 4 – EXHIBIT 22-C FOR PROPOSED SUBSTATION LAYOUT
DRAWING



SUBSTATION LOCATION MAP



EXISTING WILLIS GAP SUBSTATION

CONFIDENTIAL INFORMATION

SEE VOLUME 4 – EXHIBIT 22-C FOR PROPOSED SUBSTATION ONE-LINE
DRAWING

**Exhibit 23: Proposed 138-kV Claudville
Substation**

CONFIDENTIAL INFORMATION

**SEE VOLUME 4 – EXHIBIT 23-C FOR PROPOSED SUBSTATION LAYOUT
DRAWING**



Note: The house and garage were removed in 2022.

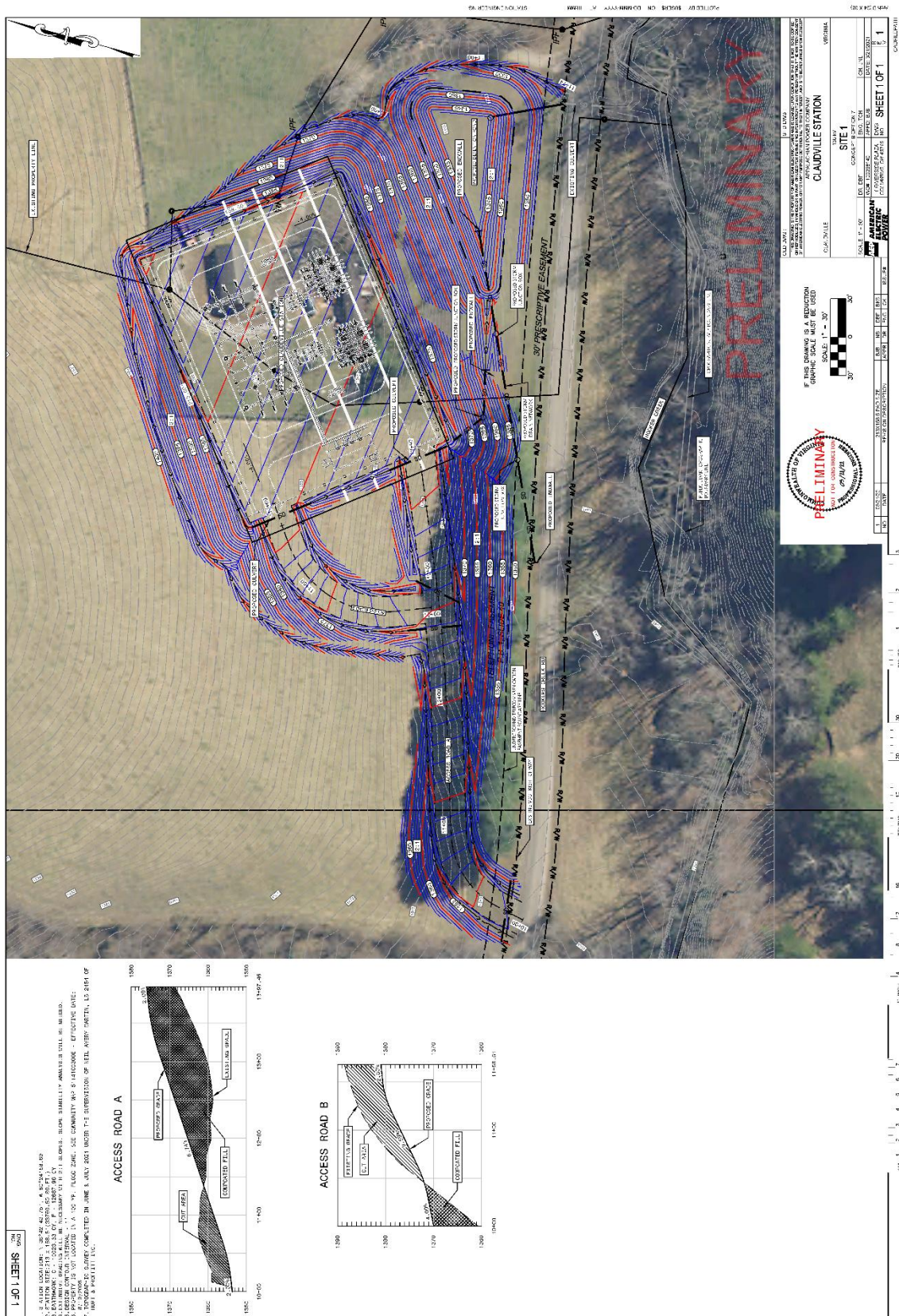
SUBSTATION LOCATION MAP



COMPARABLE SUBSTATION PHOTO

CONFIDENTIAL INFORMATION

SEE VOLUME 4 – EXHIBIT 23-C FOR PROPOSED SUBSTATION ONE-LINE
DRAWING



**Exhibit 24: Proposed 138-kV Mayo River
Substation**

CONFIDENTIAL INFORMATION

**SEE VOLUME 4 – EXHIBIT 24-C FOR PROPOSED SUBSTATION LAYOUT
DRAWING**



SUBSTATION LOCATION MAP



COMPARABLE SUBSTATION PHOTO

(Also, see Visual Simulation, Exhibit 37 (Page 7 of 7))

CONFIDENTIAL INFORMATION

**SEE VOLUME 4 – EXHIBIT 24-C FOR PROPOSED SUBSTATION ONE-LINE
DRAWING**

CONFIDENTIAL INFORMATION

**SEE VOLUME 4 – EXHIBIT 24-C FOR PROPOSED SUBSTATION ONE-LINE
DRAWING**

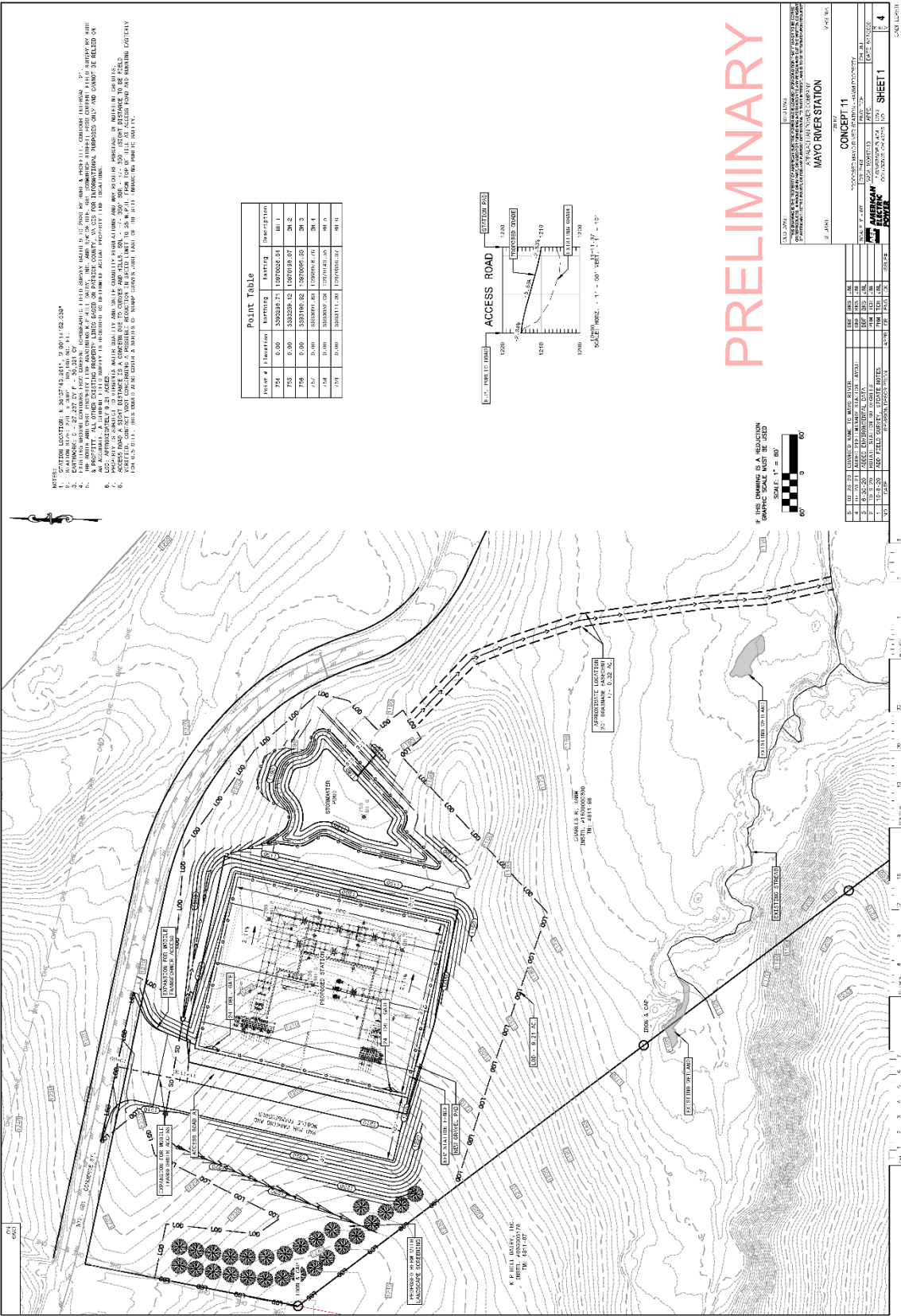
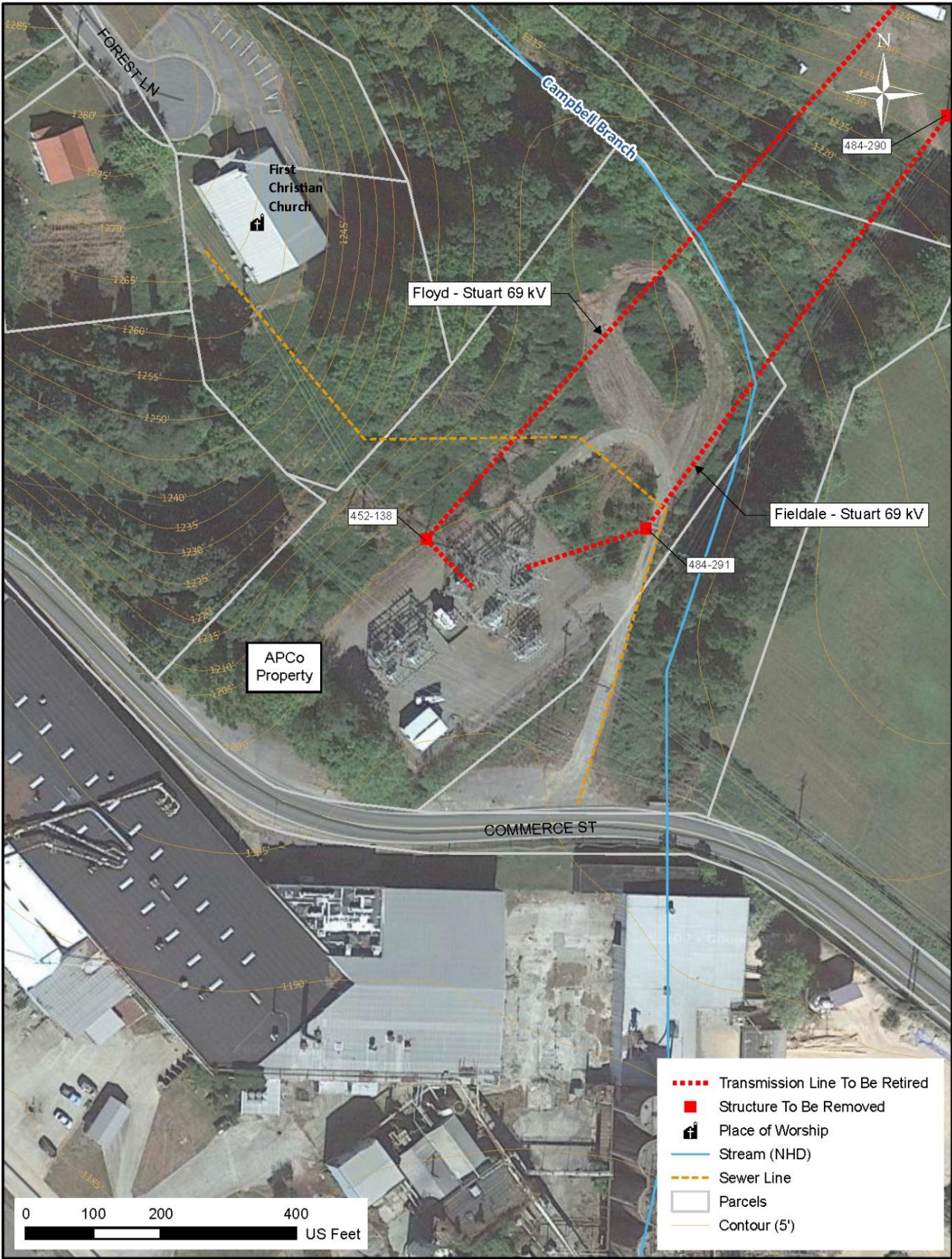


Exhibit 25: Existing 69-kV Stuart Substation (to be retired)



SUBSTATION LOCATION MAP

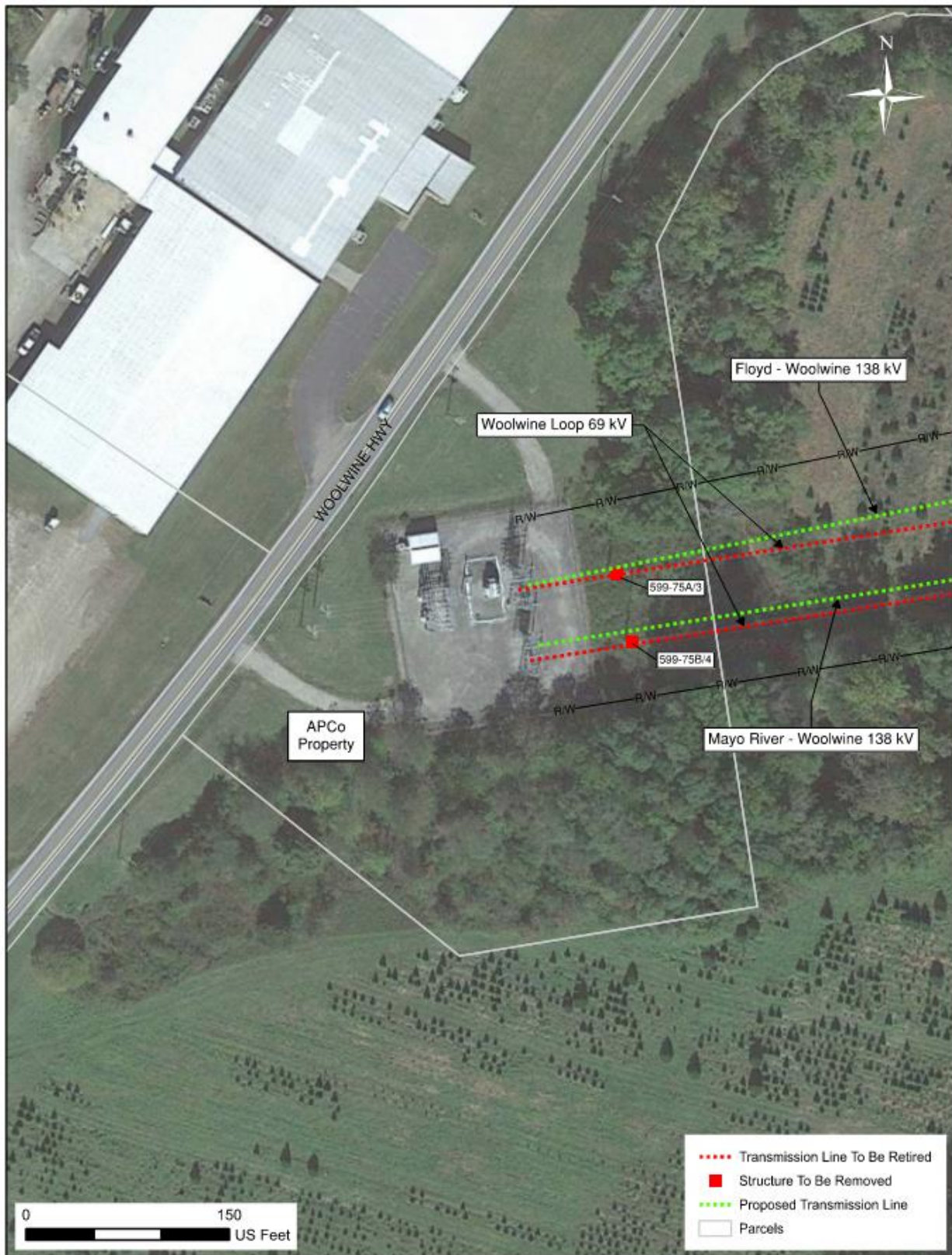


EXISTING STUART RETIREMENT SUBSTATION

Exhibit 26: Improvements at 138-kV Woolwine Substation

CONFIDENTIAL INFORMATION

**SEE VOLUME 4 – EXHIBIT 26-C FOR PROPOSED SUBSTATION LAYOUT
DRAWING**



SUBSTATION LOCATION MAP



EXISTING WOOLWINE SUBSTATION

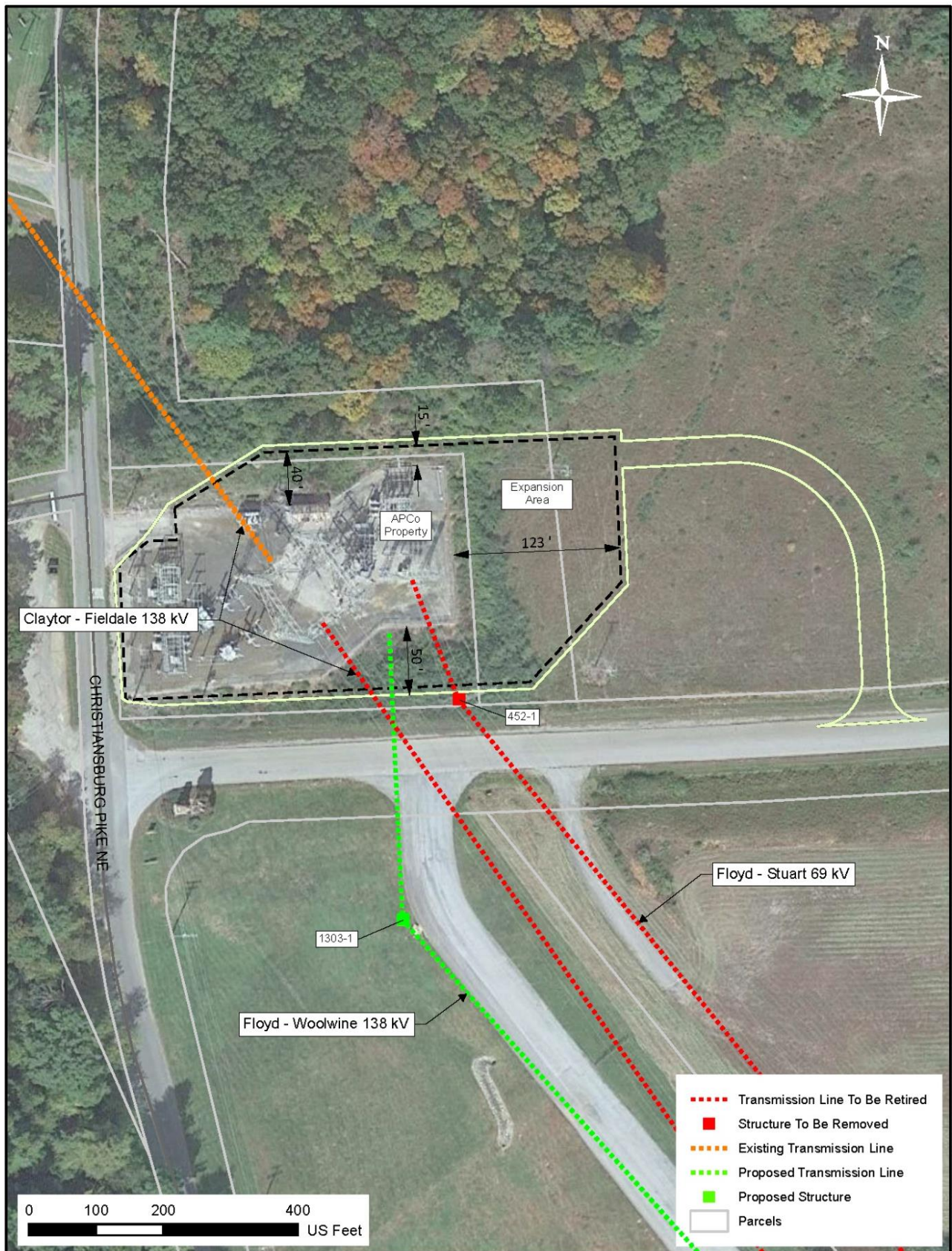
CONFIDENTIAL INFORMATION

**SEE VOLUME 4 – EXHIBIT 26-C FOR PROPOSED SUBSTATION ONE-LINE
DRAWING**

Exhibit 27: Improvements at 138-kV Floyd Substation

CONFIDENTIAL INFORMATION

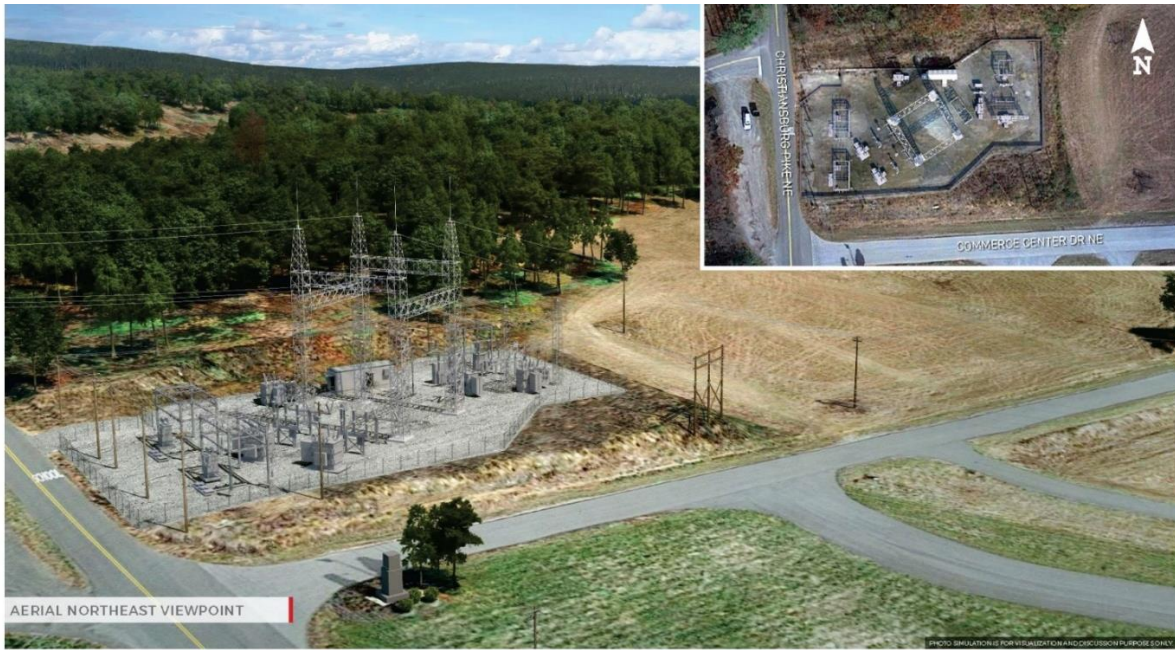
**SEE VOLUME 4 – EXHIBIT 27-C FOR PROPOSED SUBSTATION LAYOUT
DRAWING**



SUBSTATION LOCATION MAP



EXISTING FLOYD SUBSTATION



FLOYD SUBSTATION
EXPANSION PROJECT
SIMULATION EXISTING



FLOYD SUBSTATION
EXPANSION PROJECT
SIMULATION PROPOSED



CONCEPTUAL RENDERINGS

CONFIDENTIAL INFORMATION

**SEE VOLUME 4 – EXHIBIT 27-C FOR PROPOSED SUBSTATION ONE-LINE
DRAWING**

CONFIDENTIAL INFORMATION

**SEE VOLUME 4 – EXHIBIT 27-C FOR PROPOSED SUBSTATION ONE-LINE
DRAWING**

CONFIDENTIAL INFORMATION

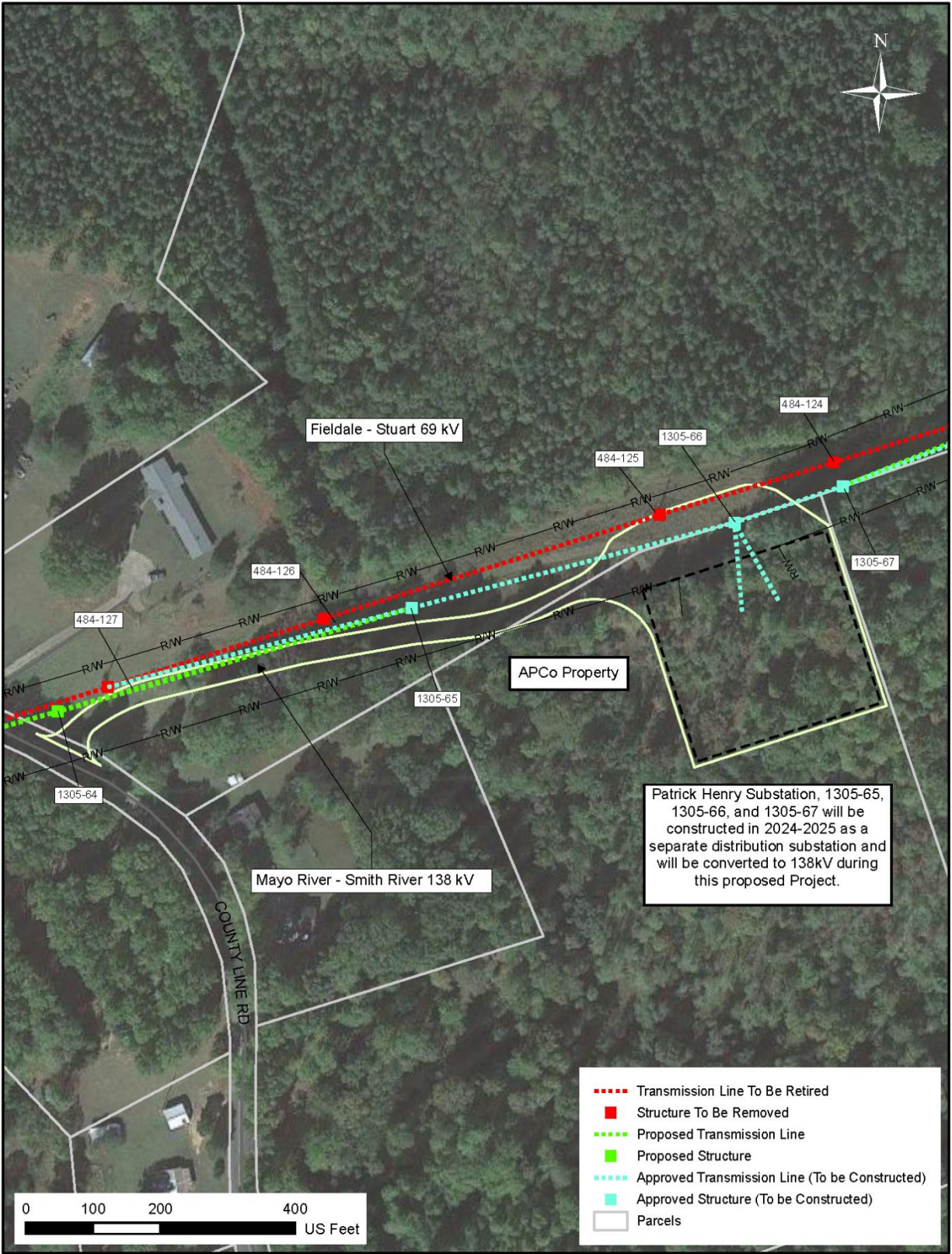
**SEE VOLUME 4 – EXHIBIT 27-C FOR PROPOSED SUBSTATION ONE-LINE
DRAWING**



**Exhibit 28: Improvements at 138-kV Patrick
Henry Substation**

CONFIDENTIAL INFORMATION

**SEE VOLUME 4 – EXHIBIT 28-C FOR PROPOSED SUBSTATION LAYOUT
DRAWING**



SUBSTATION LOCATION MAP



COMPARABLE SUBSTATION PHOTO

CONFIDENTIAL INFORMATION

SEE VOLUME 4 – EXHIBIT 28-C FOR PROPOSED SUBSTATION ONE-LINE
DRAWING

**Exhibit 29: Proposed 138-kV Smith River
Substation**

CONFIDENTIAL INFORMATION

**SEE VOLUME 4 – EXHIBIT 29-C FOR PROPOSED SUBSTATION LAYOUT
DRAWING**



SUBSTATION LOCATION MAP



COMPARABLE SUBSTATION PHOTO

CONFIDENTIAL INFORMATION

**SEE VOLUME 4 – EXHIBIT 29-C FOR PROPOSED SUBSTATION ONE-LINE
DRAWING**

CONFIDENTIAL INFORMATION

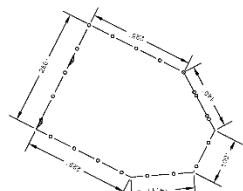
**SEE VOLUME 4 – EXHIBIT 29-C FOR PROPOSED SUBSTATION ONE-LINE
DRAWING**



CONCEPTUAL RENDERING



CONCEPTUAL RENDERING



**Exhibit 30: Proposed 138-kV Stoneleigh
Substation**

CONFIDENTIAL INFORMATION

**SEE VOLUME 4 – EXHIBIT 30-C FOR PROPOSED SUBSTATION LAYOUT
DRAWING**



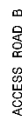
SUBSTATION LOCATION MAP



COMPARABLE SUBSTATION PHOTO

CONFIDENTIAL INFORMATION

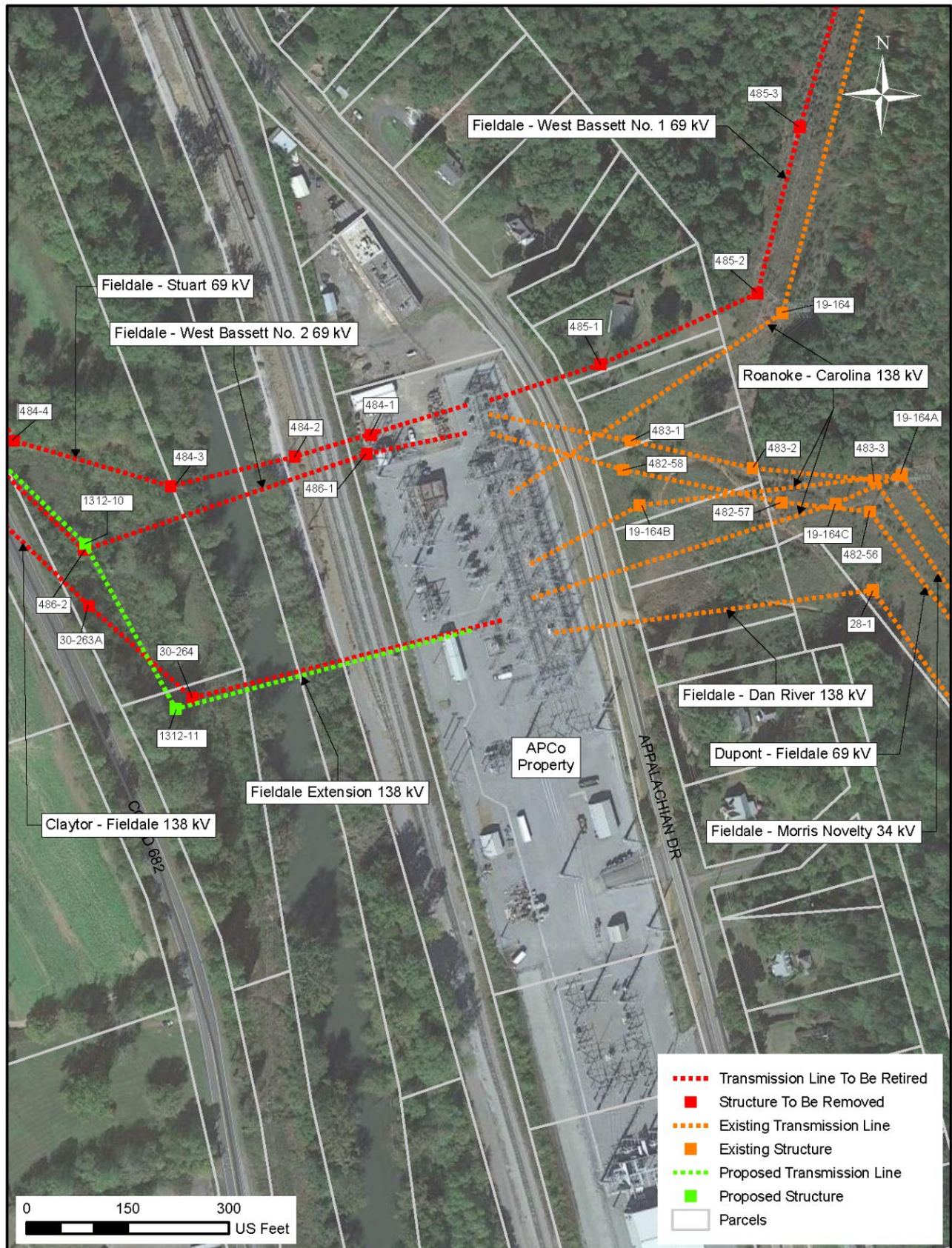
**SEE VOLUME 4 – EXHIBIT 30-C FOR PROPOSED SUBSTATION ONE-LINE
DRAWING**



**Exhibit 31: Improvements at 69/138-kV
Fieldale Substation**

CONFIDENTIAL INFORMATION

**SEE VOLUME 4 – EXHIBIT 31-C FOR PROPOSED SUBSTATION LAYOUT
DRAWING**



SUBSTATION LOCATION MAP

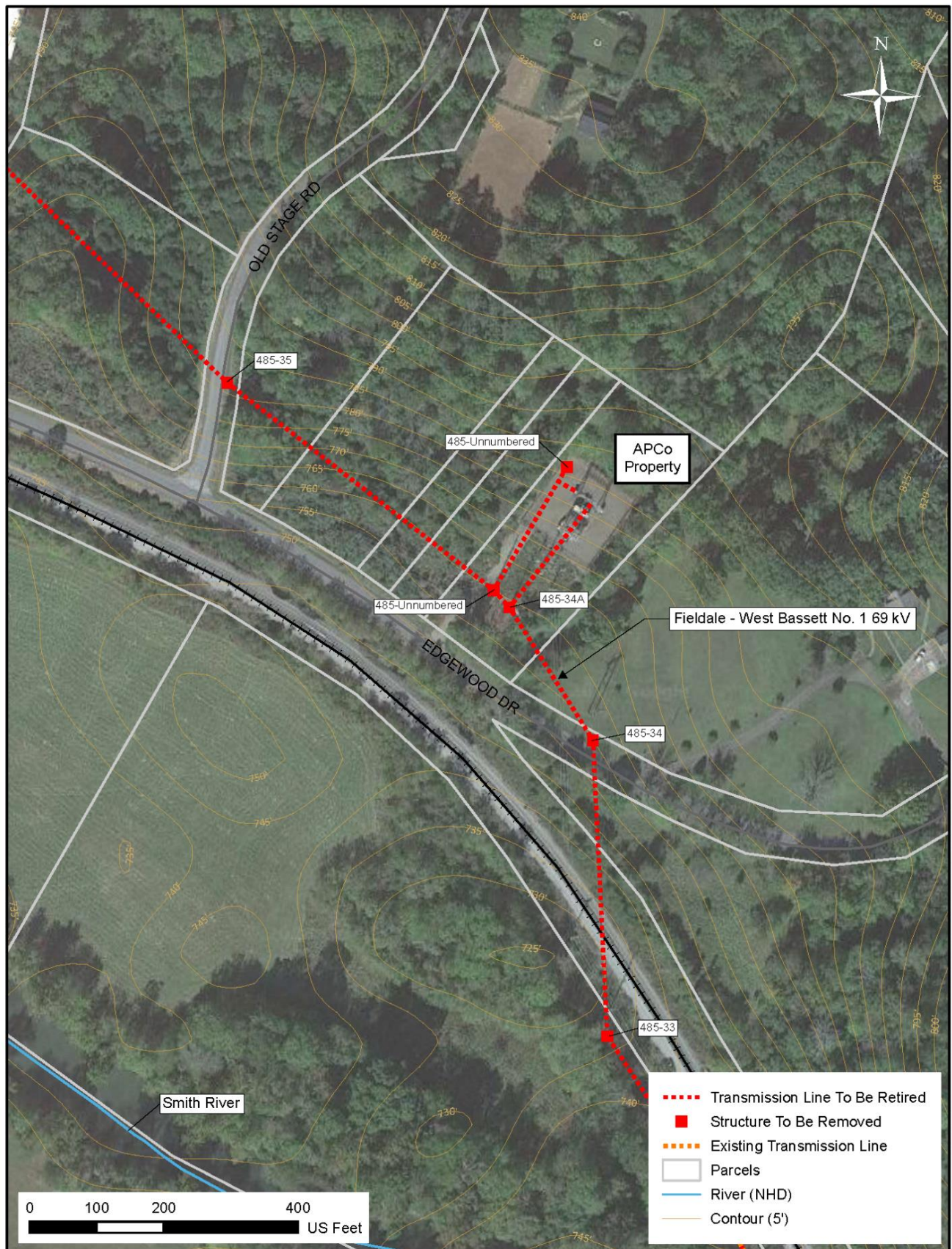


EXISTING FIELDALE SUBSTATION

CONFIDENTIAL INFORMATION

**SEE VOLUME 4 – EXHIBIT 31-C FOR PROPOSED SUBSTATION ONE-LINE
DRAWING**

**Exhibit 32: Existing 69-kV Stanleytown
Substation (to be retired)**

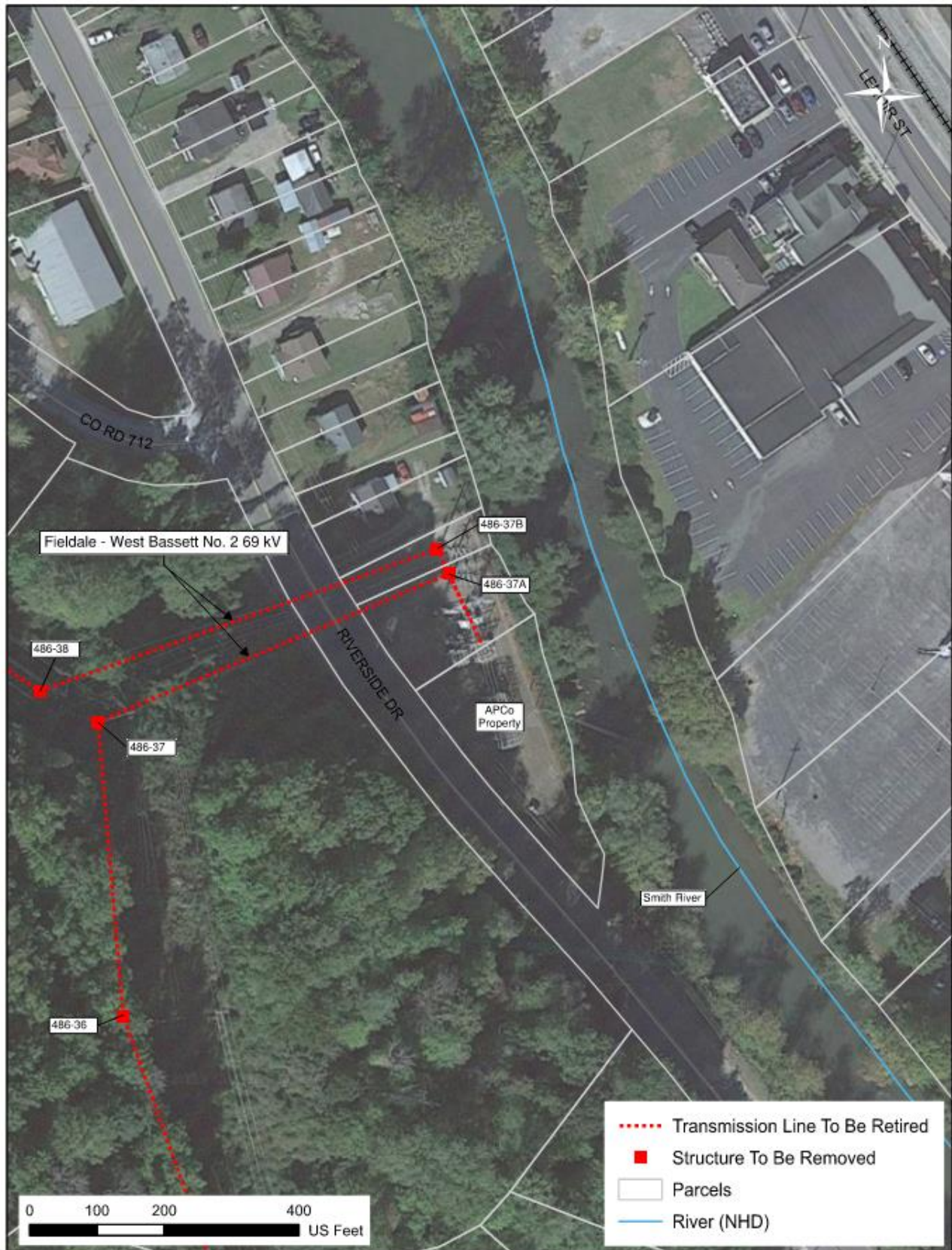


SUBSTATION LOCATION MAP



EXISTING STANLEYTOWN RETIREMENT SUBSTATION

**Exhibit 33: Existing 69-kV Bassett Substation
(to be retired)**



SUBSTATION LOCATION MAP

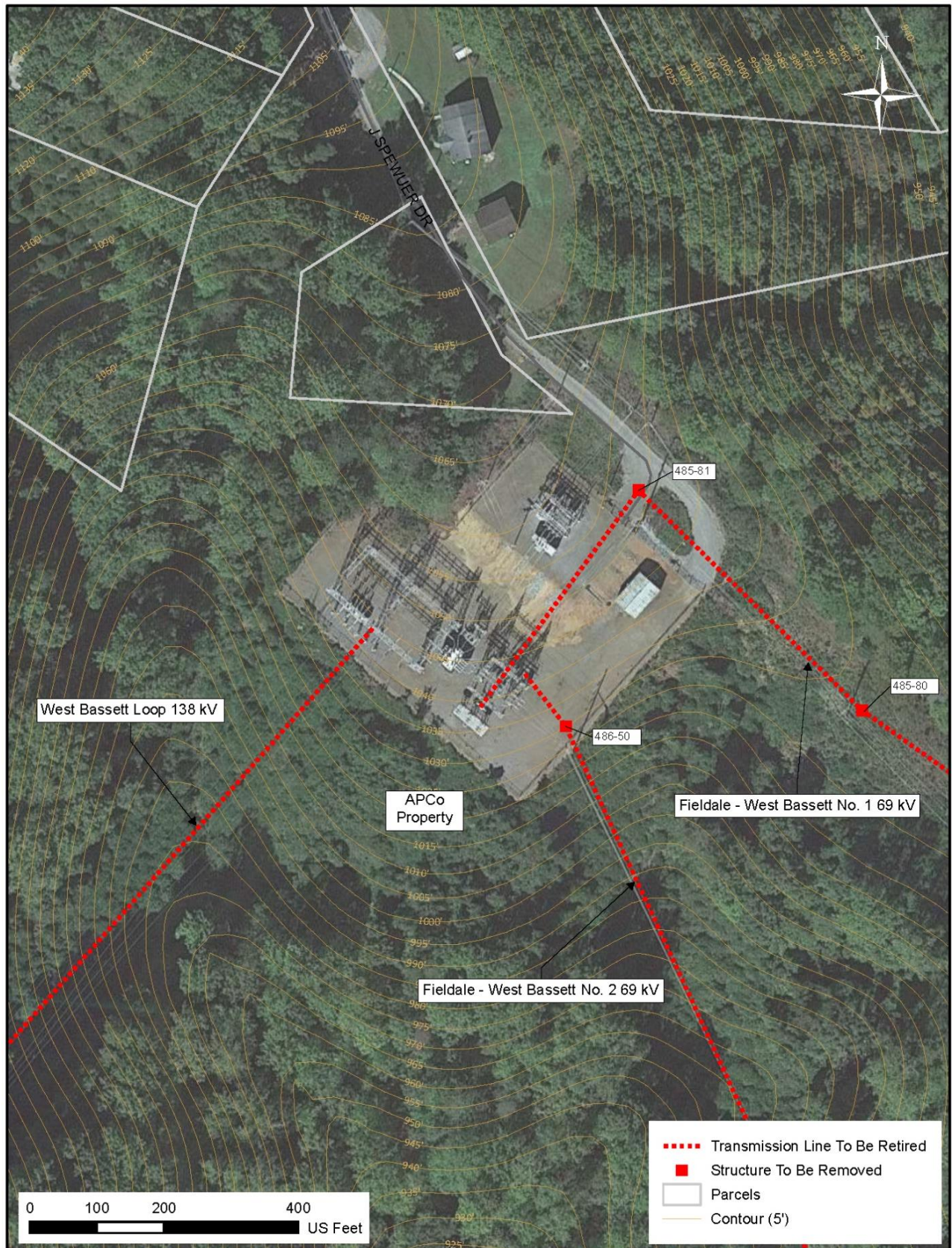


EXISTING BASSETT RETIREMENT SUBSTATION



EXISTING BASSETT RETIREMENT SUBSTATION

**Exhibit 34: Existing 69/138-kV West Bassett
Substation (to be retired)**

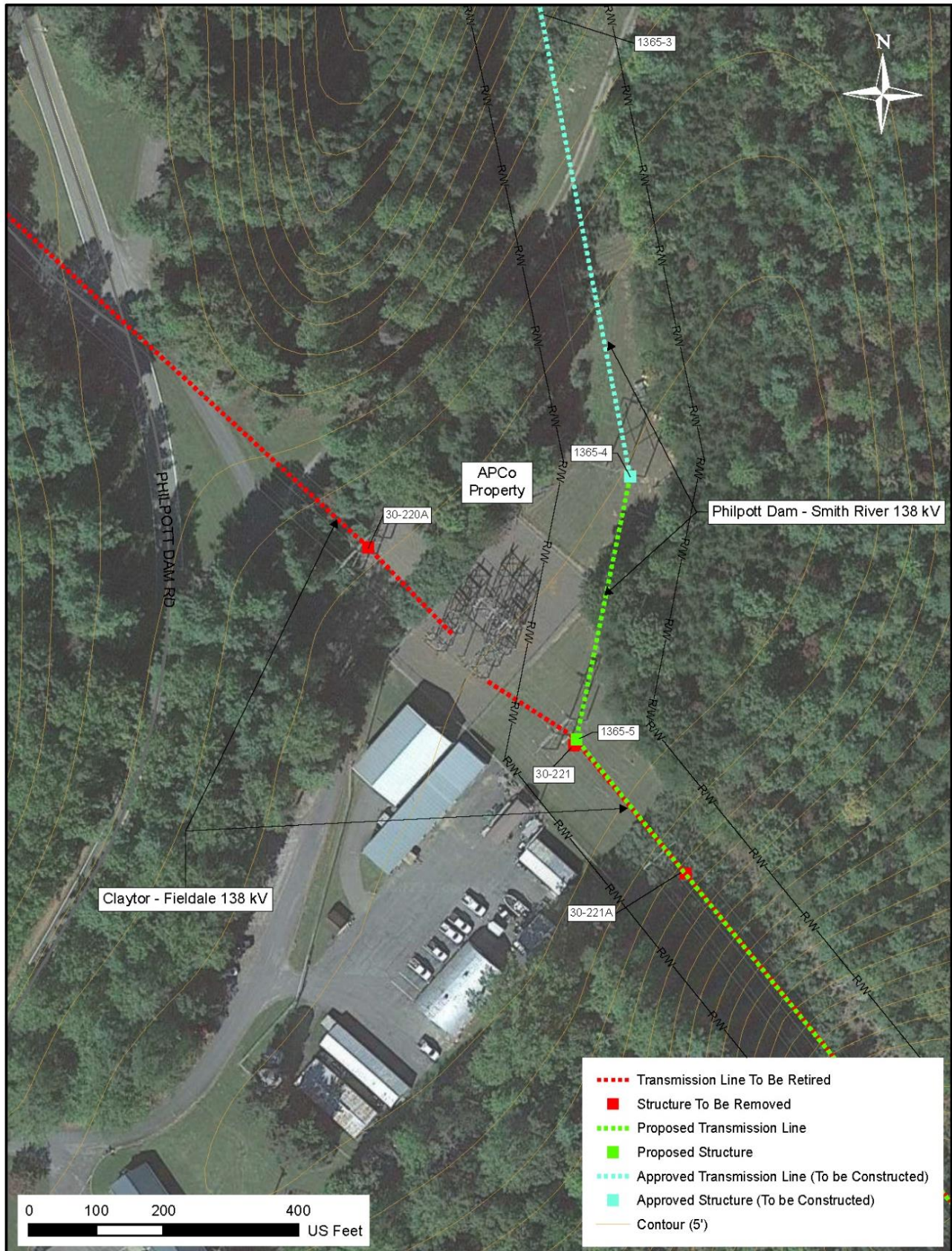


SUBSTATION LOCATION MAP



EXISTING WEST BASSETT RETIREMENT SUBSTATION

**Exhibit 35: Existing 138-kV Philpott Switch
(to be retired)**



SUBSTATION LOCATION MAP



EXISTING PHILPOTT SWITCH SUBSTATION (to be Retired)

**Exhibit 36: Existing 138-kV Fairystone
Substation (Transclosure)**

CONFIDENTIAL INFORMATION

SEE VOLUME 4 – EXHIBIT 36-C FOR PROPOSED SUBSTATION
TRANSCLOSURE LAYOUT



PROPOSED SUBSTATION TRANSCLOSURE LAYOUT MAP

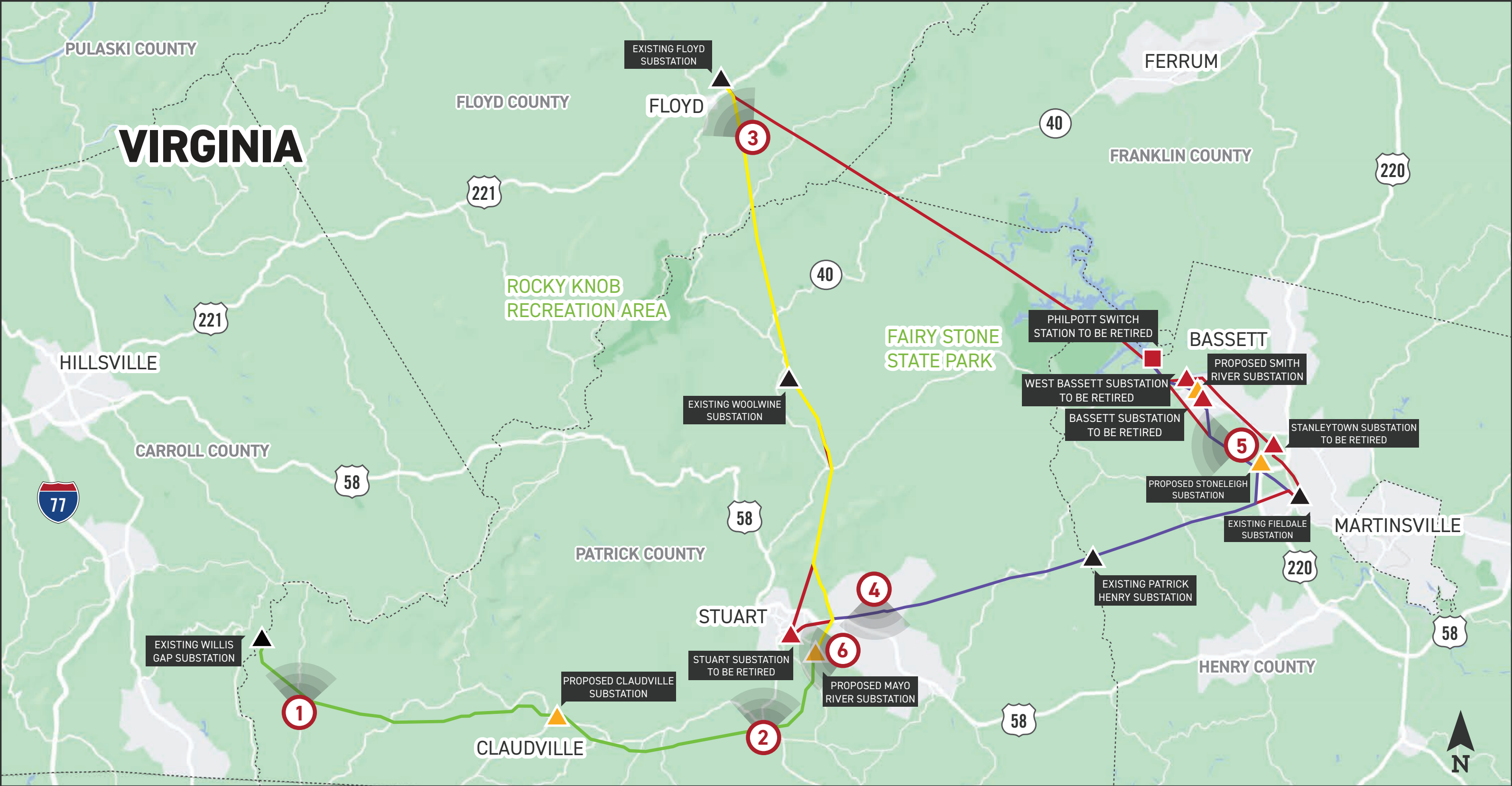
Exhibit 37: Visual Simulations

STUART AREA

138-kV TRANSMISSION IMPROVEMENTS PROJECT

- COMPONENT 1 PROPOSED ROUTE
- COMPONENT 2 PROPOSED ROUTE
- COMPONENT 3 PROPOSED ROUTE
- EXISTING TRANSMISSION LINE TO BE RETIRED
- EXISTING SWITCH STATION TO BE RETIRED

- EXISTING SUBSTATION
- PROPOSED SUBSTATION
- EXISTING SUBSTATION TO BE RETIRED
- PHOTO VIEWPOINT LOCATION



STUART AREA

138-kV TRANSMISSION IMPROVEMENTS PROJECT

PHOTO VIEWPOINT 1

WILLIS GAP MOUNTAIN ROAD, VIEWING NORTH

DATE:
05/12/2022

TIME:
1:55 PM

DIRECTION:
NORTH

- COMPONENT 1 PROPOSED ROUTE
- EXISTING SUBSTATION
- PROPOSED SUBSTATION
- PHOTO VIEWPOINT LOCATION



EXISTING CONDITIONS



PROPOSED CONDITIONS

THE VISUAL SIMULATION IS AN APPROXIMATION. FINAL ENGINEERING AND CONSTRUCTION DETAILS ARE NOT COMPLETE.

STUART AREA

138-kV TRANSMISSION IMPROVEMENTS PROJECT

PHOTO VIEWPOINT 2

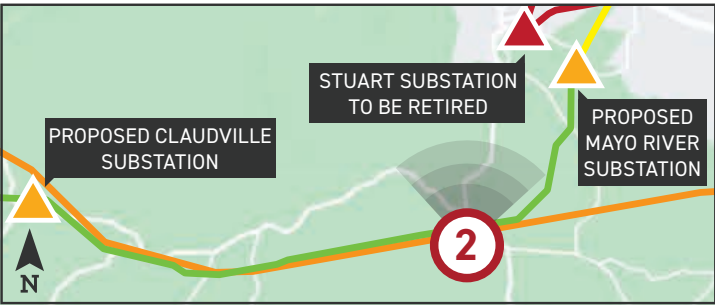
ROUTE 8, VIEWING NORTH

DATE:
05/12/2022

TIME:
12:46 PM

DIRECTION:
NORTH

- COMPONENT 1 PROPOSED ROUTE
- COMPONENT 2 PROPOSED ROUTE
- EXISTING TRANSMISSION LINE TO BE RETIRED
- CITY OF DANVILLE'S EXISTING PINNACLES - HYDRO 69-KV TRANSMISSION LINE
- PROPOSED SUBSTATION
- EXISTING SUBSTATION TO BE RETIRED
- PHOTO VIEWPOINT LOCATION



EXISTING CONDITIONS



PROPOSED CONDITIONS

THE VISUAL SIMULATION IS AN APPROXIMATION. FINAL ENGINEERING AND CONSTRUCTION DETAILS ARE NOT COMPLETE.

STUART AREA

138-kV TRANSMISSION IMPROVEMENTS PROJECT

PHOTO VIEWPOINT 3

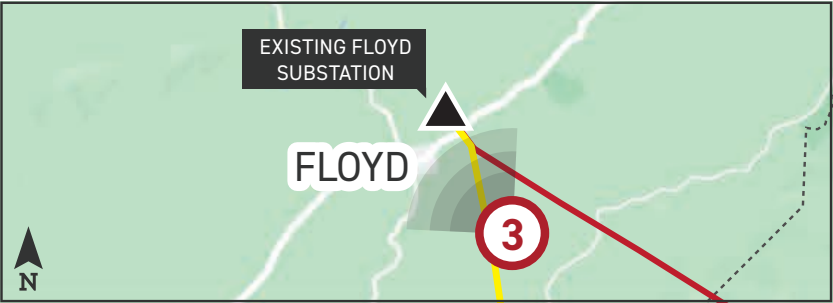
ROUTE 615, VIEWING NORTHWEST

DATE:
05/12/2022

TIME:
8:09 AM

DIRECTION:
NORTHWEST

- COMPONENT 2 PROPOSED ROUTE
- EXISTING TRANSMISSION LINE TO BE RETIRED
- EXISTING SUBSTATION
- PHOTO VIEWPOINT LOCATION



EXISTING CONDITIONS



PROPOSED CONDITIONS

THE VISUAL SIMULATION IS AN APPROXIMATION. FINAL ENGINEERING AND CONSTRUCTION DETAILS ARE NOT COMPLETE.

STUART AREA

138-kV TRANSMISSION IMPROVEMENTS PROJECT

PHOTO VIEWPOINT 4

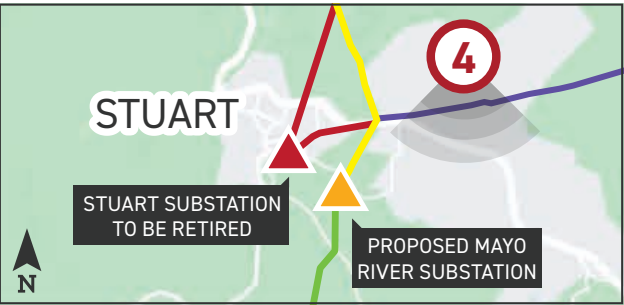
CIRCLE DRIVE, VIEWING SOUTH

DATE:
05/12/2022

TIME:
11:57 AM

DIRECTION:
SOUTH

- COMPONENT 1 PROPOSED ROUTE
- COMPONENT 2 PROPOSED ROUTE
- EXISTING TRANSMISSION LINE TO BE RETIRED
- PROPOSED SUBSTATION
- EXISTING SUBSTATION TO BE RETIRED
- PHOTO VIEWPOINT LOCATION
- COMPONENT 3 PROPOSED ROUTE



EXISTING CONDITIONS



PROPOSED CONDITIONS

THE VISUAL SIMULATION IS AN APPROXIMATION. FINAL ENGINEERING AND CONSTRUCTION DETAILS ARE NOT COMPLETE.

STUART AREA

138-kV TRANSMISSION IMPROVEMENTS PROJECT

PHOTO VIEWPOINT 5

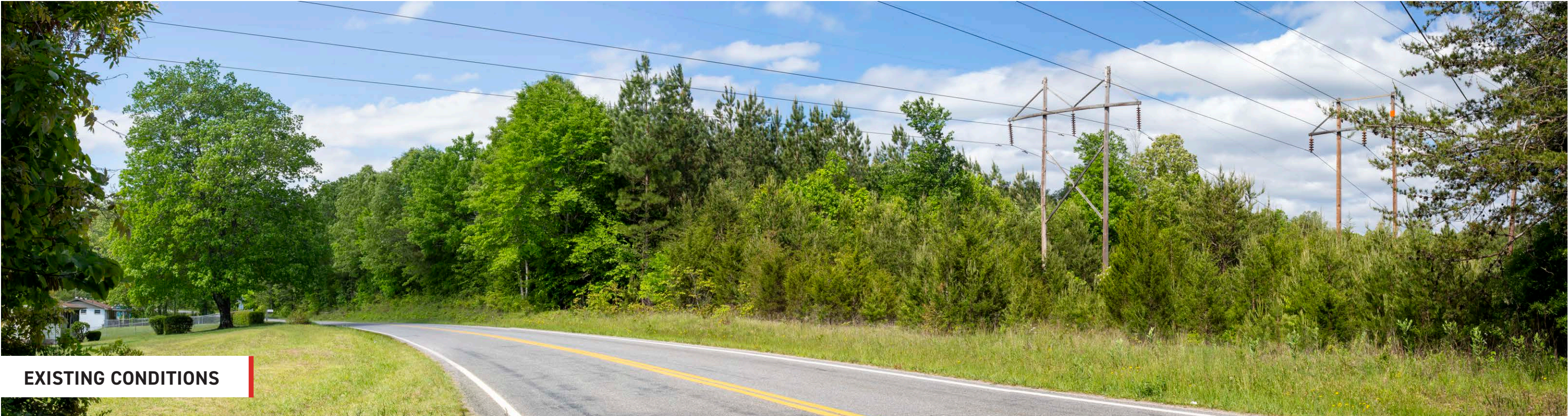
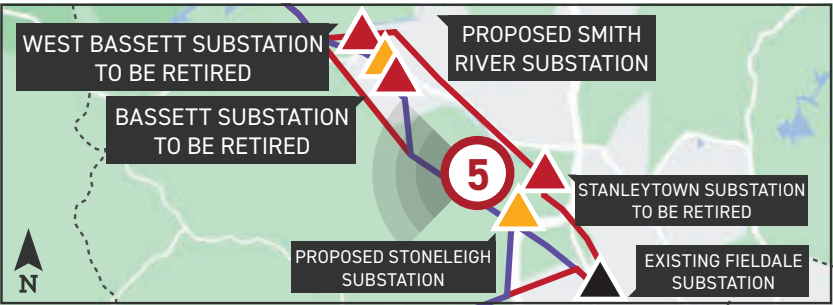
ROUTE 683, VIEWING WEST

DATE:
05/12/2022

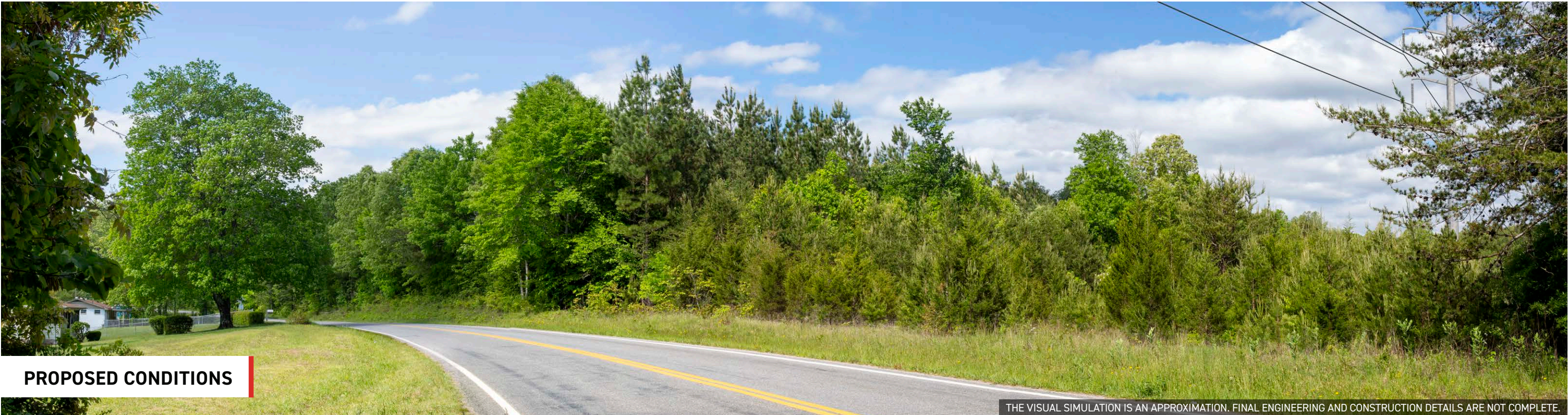
TIME:
9:33 AM

DIRECTION:
WEST

- COMPONENT 3 PROPOSED ROUTE
- EXISTING TRANSMISSION LINE TO BE RETIRED
- EXISTING SUBSTATION
- PROPOSED SUBSTATION
- EXISTING SUBSTATION TO BE RETIRED
- PHOTO VIEWPOINT LOCATION



EXISTING CONDITIONS



PROPOSED CONDITIONS

THE VISUAL SIMULATION IS AN APPROXIMATION. FINAL ENGINEERING AND CONSTRUCTION DETAILS ARE NOT COMPLETE.

STUART AREA

138-kV TRANSMISSION IMPROVEMENTS PROJECT

PHOTO VIEWPOINT 6

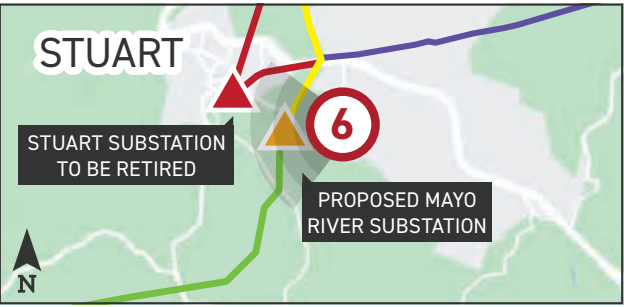
PROPOSED MAYO RIVER SUBSTATION, COMMERCE STREET, VIEWING WEST

DATE:
10/15/2022

TIME:
9:58 AM

DIRECTION:
WEST

- COMPONENT 1 PROPOSED ROUTE
 - COMPONENT 2 PROPOSED ROUTE
 - EXISTING TRANSMISSION LINE TO BE RETIRED
 - PROPOSED SUBSTATION
 - EXISTING SUBSTATION TO BE RETIRED
 - PHOTO VIEWPOINT LOCATION
 - COMPONENT 3 PROPOSED ROUTE
- DISTRIBUTION LINES ARE NOT SHOWN. THREE PROPOSED DISTRIBUTION LINES CARRYING SIX CIRCUITS WILL EXIT THE PROPOSED SUBSTATION.



EXISTING CONDITIONS



PROPOSED CONDITIONS



THE VISUAL SIMULATION IS AN APPROXIMATION. FINAL ENGINEERING AND CONSTRUCTION DETAILS ARE NOT COMPLETE.

Exhibit 38: VDOT General Highway Maps and Existing Transmission Facilities

CONFIDENTIAL INFORMATION

SEE VOLUME 4 – EXHIBIT 38-C FOR VDOT GENERAL HIGHWAY MAPS
AND EXISTING TRANSMISSION FACILITIES