



STAMP

NOT FOR  
CONSTRUCTION

PRELIMINARY

LAUREL BRANCH  
SOLAR PROJECT  
LUNENBURG COUNTY  
VIRGINIA

PROJECT NUMBERS:  
194-1058-0025

SHEET TITLE:  
DRAFT GRADING PLAN  
SHEET

SHEET SIZE: ARCH (D)  
24" X 36" (910 X 914)

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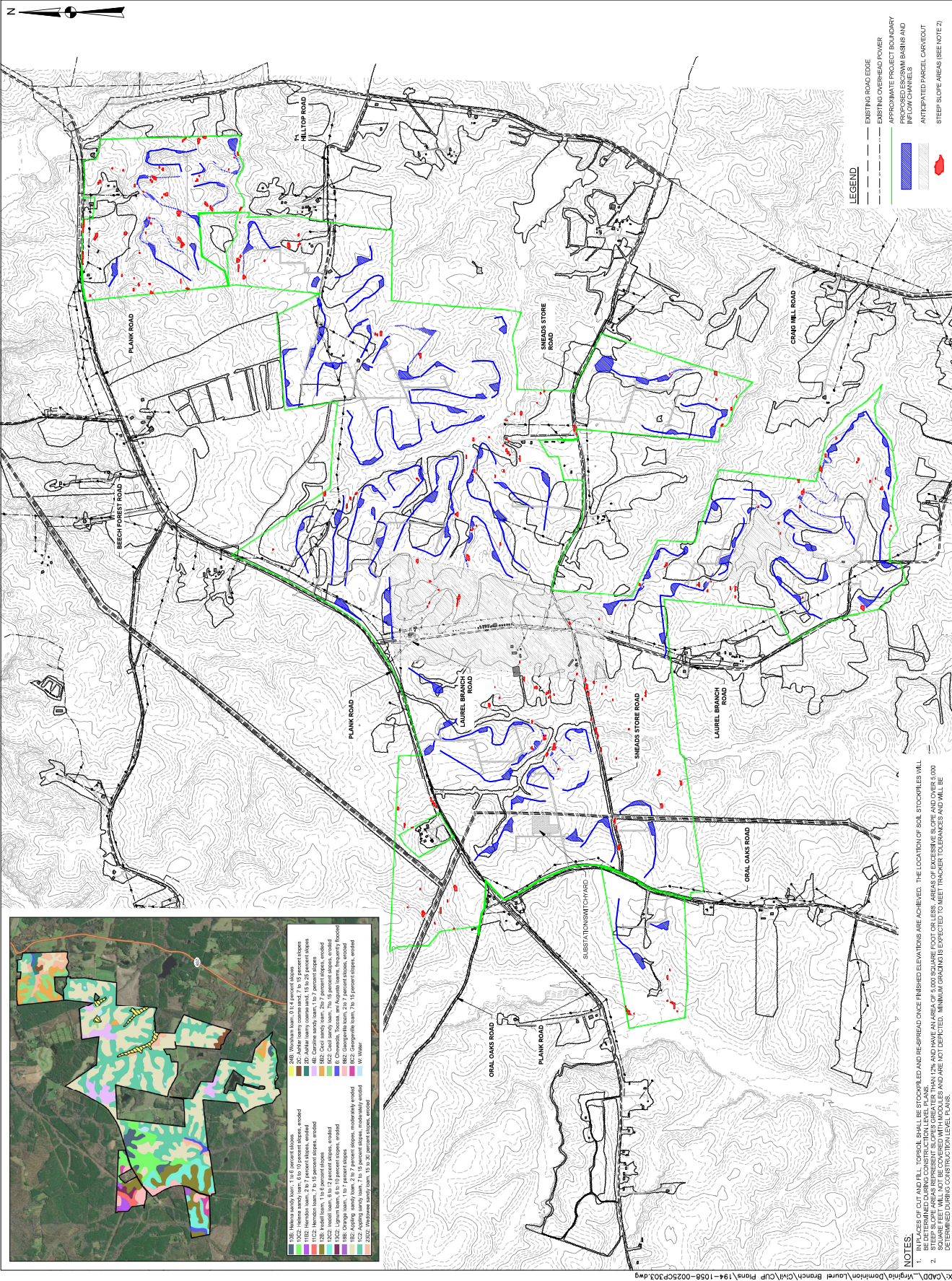
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00	CLIP APPLICATION	03/01/2022	GAR



DATE: 01/16/2022  
DRAWN BY: OR  
ENGINEER: MS  
APPROVED BY: ED

PROJECT PHASE:  
CONDITIONAL USE PERMIT SITE PLANS  
SCALE: 1" = 800'

SHEET NO.:  
CP303



NOTES:  
1. INFILTRATION AND SOIL STABILIZATION SHALL BE STOKERED AND RESPIRED ONCE FINISHED ELEVATIONS ARE ACHIEVED. THE LOCATION OF SOIL STOKERES WILL BE DETERMINED BY THE SOIL STOKERES.  
2. STEEP SLOPE AREAS REPRESENT SLOPES GREATER THAN 12% AND HAVE AN AREA OF 5,000 SQUARE FEET OR LESS. AREAS OF EXCESSIVE SLOPE AND OVER 3,000 SQUARE FEET ARE NOT DEPICTED. MINIMUM GRADING IS EXPECTED TO MEET TRACKER TOLERANCES AND WILL BE DETERMINED DURING CONSTRUCTION LEVEL PLANS.



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LAUREL BRANCH  
SOLAR PROJECT  
LUNENBURG COUNTY  
VIRGINIA

PROJECT NUMBERS:  
194-1058-0025

SHEET TITLE:  
GENERAL NOTES AND  
DETAIL SHEET

SHEET SIZE: ARCH (11' x 17')  
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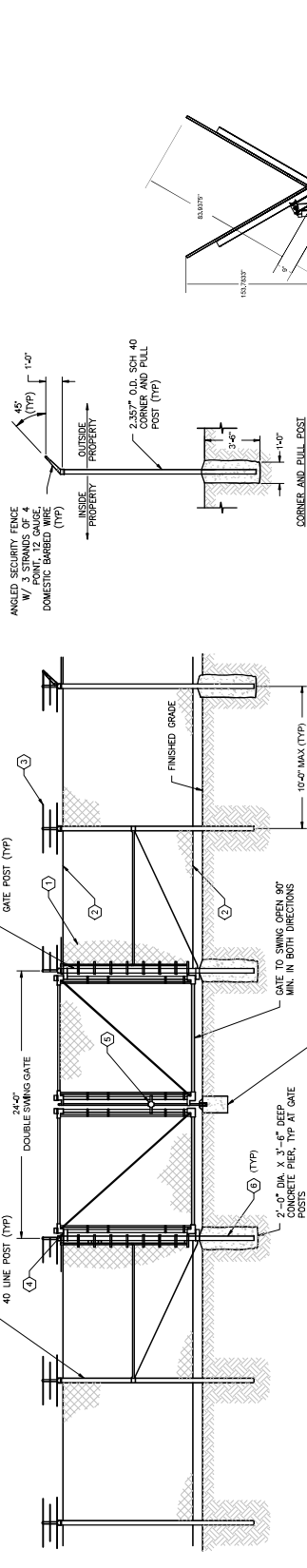
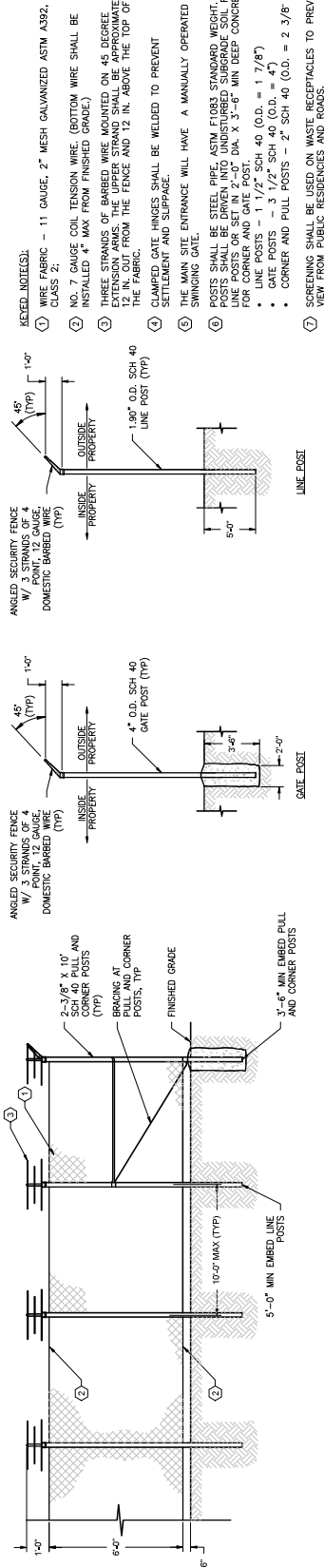
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EO:   
PROJECT PHASE:   
CONDITIONAL USE PERMIT SITE PLANS

SCALE: N.T.S.

SHEET NO.:  
CP304



A FENCE AND GATE DETAILS  
SCALE: NTS

B TRACKER ELEVATION VIEW  
SCALE: NTS

**SITE CONDITIONS:**  
WIND SPEED: TBD  
CORROSION CATEGORY: TBD  
MIN SITE TEMP: -8C  
AZIMUTH: 180C


**MODULE SPECIFICATIONS:**  
MODULE: BIFACIAL MONOCRYSTALLINE  
MODULE QTY: 190,996  
ELECTRICAL CHARACTERISTICS (STC)  
RATED POWER: 530W  
VOLTAGE AT MAX. POWER: 40.9V  
SHORT CIRCUIT CURRENT: 13.71A  
VOLTAGE AT MAX. POWER: 41.25V  
CURRENT AT MAX. POWER: 12.82A  
MODULE EFFICIENCY: 20.1%

**MOUNTING SYSTEM SPECIFICATION:**  
RACKING CONFIG: TRACKER  
TRACKER TYPE: 108 MODULES, 4 STRINGS  
TYPE 2: 54 MODULES, 2 STRINGS  
± 60° TRACKER RANGE OF MOTION  
PITCH: 37.50FT  
INTER ROW SPACING: 15.3FT  
GCR: 40.8%

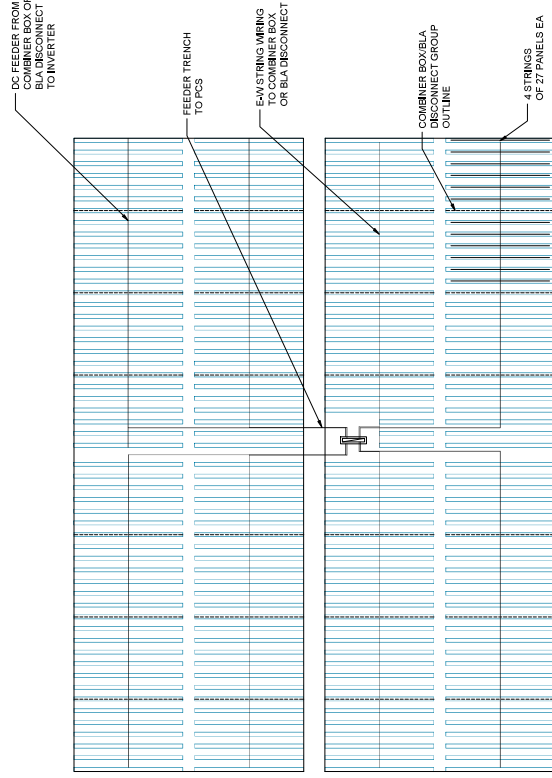
**INVERTER SPECIFICATION:**  
840W INVERTER @25C  
GCR: 40.8%  
INVERTER QTY: 100  
3.36 TO 5.0AMVA EACH AC STATION @25C  
TYPE: PVU-L0840GR  
TRANSFORMER SPECIFICATION:  
TRANSFORMER QTY: 21

**SYSTEM SUMMARY (APPROX):**  
SYSTEM SIZE (AC) 80MW (@INVERTERS)  
SYSTEM SIZE (DC) 101.2MW  
DC VOLTAGE: 1500V  
DC/AC RATIO: 1.21

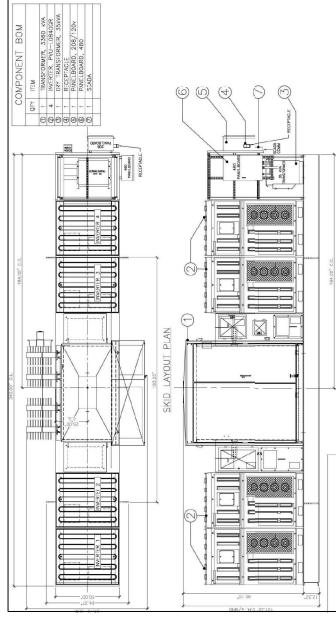




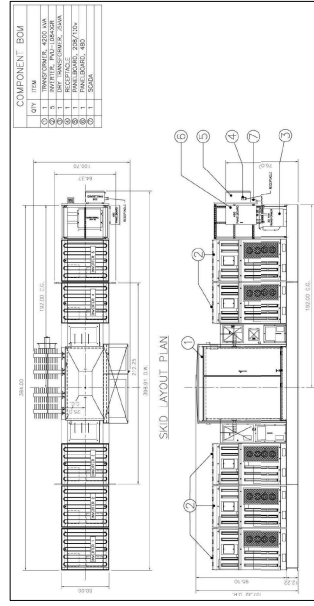
TYPICAL BLOCK 5.04MW AC MECHANICAL LAYOUT



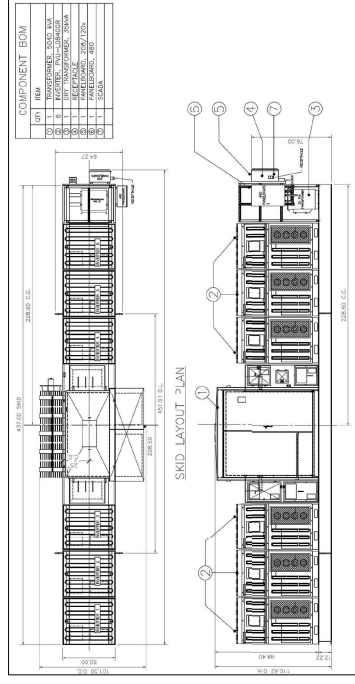
TYPICAL BLOCK 5.04MW AC ELECTRICAL LAYOUT



**INVERTER DETAIL OPTION 1**

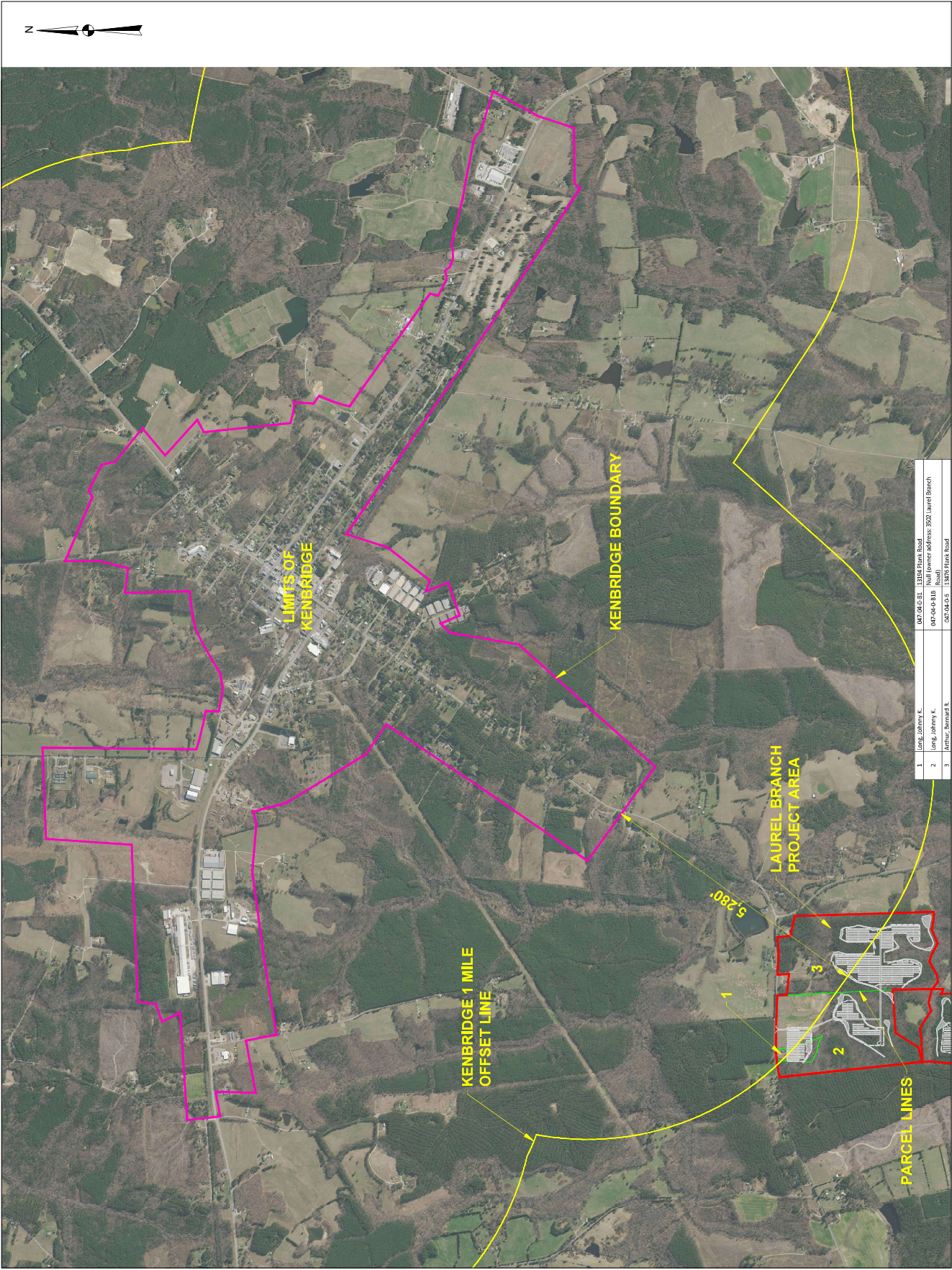


**INVERTER DETAIL OPTION 2**



**INVERTER DETAIL OPTION 3**





**TETRA TECH**  
TETRA TECH, INC.  
4101 OCEAN ROAD,  
GLENN ALLEN, VA 22060  
TEL: (804) 276-2779  
FAX: (804) 276-2779

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**PRELIMINARY**

**LAUREL BRANCH SOLAR PROJECT**  
DOMINION ENERGY VIRGINIA  
LUNENBURG COUNTY  
VIRGINIA

PROJECT NUMBER:  
194-1058-0025

SHEET TITLE:  
TOWNSHIP DISTANCE  
FIGURE

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PROJECT PHASE:  
CONDITIONAL USE PERMIT SITE PLANS  
SCALE: 1" = 800'

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**FIGURE 1**



**TAB H**  
Traffic Study





# Transportation Assessment

## Laurel Branch Solar Project

February 28, 2022

---

Prepared for



600 E Canal Street  
Richmond, VA 23219

Prepared by



4101 Cox Road, Suite 120  
Glen Allen, VA 23060

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## Acronyms and Abbreviations

3D	three-dimensional
ADT	average daily traffic
BABS	Blackstone Area Bus System
CUP	Conditional Use Permit
GIS	geographic information system
GPS	global positioning system
KOP	key observation point
MWac	megawatts (alternating current)
O&M	operations and maintenance
Project Area	The 1,969± acres of privately-owned land where the proposed Project is located
Project	Laurel Branch Solar Project
STAA	Surface Transportation Assistance Act
VDOT	Virginia Department of Transportation
vpd	vehicles per day

## 1.0 OVERVIEW

Tetra Tech has prepared the following transportation assessment for the proposed Laurel Branch Solar project (the “project”) to be located on Routes 635 (Oral Oaks Road), 646 (Laurel Branch Road), 647 (Sneads Store Road), 655 (Plank Road), and Hilltop Road in Lunenburg County, Virginia. The project site is comprised of approximately 1,969 acres (based on the current project boundary) and currently supports agricultural land with several single-family homes. Access to the site parcels is currently provided via several driveways and agricultural access ways. The proposed project calls for the redevelopment of existing agricultural land to support the construction of an 80 megawatt (MWac) solar photovoltaic power generation facility. Some of the existing single-family homes and several agricultural buildings on-site will be removed. As part of the project, 13 driveways will be constructed on the public roadway system to provide temporary construction access and permanent operations and maintenance (O&M) access to the site.

As part of this assessment, Tetra Tech developed vehicle trip generation estimates associated with the proposed project’s anticipated peak construction workforce levels (estimated at up to 150 construction workers). Tetra Tech also reviewed existing traffic volumes and public transportation in the vicinity of the project site. Potential truck haul routes were also identified between the site parcels and the regional highway system to reduce construction-related traffic impacts.

The project is anticipated to generate approximately 486 vehicle trips on a typical weekday day with 149 vehicle trips occurring during the weekday morning and weekday evening commuter peak hours. This equates to approximately two to three new vehicle trips per minute during peak commuting hours. These estimates conservatively assume that all construction workers would arrive within the same hour and depart within the same hour. Additionally, there are several routes connecting the site to the regional roadway system thereby reducing impacts to any single roadway segment or intersection. Peak construction activities are currently anticipated to occur for a period of approximately two to three months. The remainder of the construction period is anticipated to generate fewer vehicle trips. The adjacent roadways are anticipated to have ample capacity to accommodate the temporary increase in daily and peak hour traffic. These trip generation estimates assume 50 daily delivery trips and six delivery trips during each of the peak hours during the peak two to three months of construction activity.

## 2.0 PROJECT DESCRIPTION

The project calls for the construction of a proposed 80 MWac solar photovoltaic power generation facility to be located on Routes 635 (Oral Oaks Road), 646 (Laurel Branch Road), 647 (Sneads Store Road), 655 (Plank Road), and Hilltop Road in Lunenburg County, Virginia. The project site location in the context of the surrounding area roadways is shown in Figure 1. The project site currently supports agricultural fields and several single-family homes. Access to the site parcels is currently provided via several driveways and agricultural access ways.

The proposed project calls for the redevelopment of existing agricultural land to support the construction of an 80 MWac solar photovoltaic power generation facility. Some of the existing single-



family homes and agricultural buildings on-site will be removed. As part of the project, 13 driveways will be constructed on the public roadway system to provide temporary construction access and permanent O&M access to the site including two driveways on Oral Oaks Road, four driveways on Laurel Branch Road, three driveways on Plank Road, three driveways on Sneads Store Road, and one driveway on Hilltop Road.

## 2.1 Existing Traffic Volumes

The site parcels are accessed by Routes 635 (Oral Oaks Road), 646 (Laurel Branch Road), 647 (Sneads Store Road), and 655 (Plank Road) and Hilltop Road. These primary roadways serving the site are under Virginia Department of Transportation (VDOT) ownership and allow for two-way travel.

The estimated Average Daily Traffic (ADT) volume estimates for the study area roadways are summarized in Table 1 based on the most recent publicly available data from VDOT. VDOT traffic volume data is provided in Appendix A.

**Table 1 Estimated Average Daily Traffic (ADT) Volumes**

Roadway	ADT (vehicles per day)
Route 637 (east of Route 655)	1,100
Route 655	540
Route 637 (south of Route 655)	580
Route 635 (south of Route 655)	440
Route 635 (north of Route 655)	310
Sneads Store Road (east of Route 646)	100
Route 646	70
Route 647	20
Hilltop Road	40

Source: VDOT

## 2.2 Vehicle Trip Generation

The project will consist of three phases: construction, O&M, and decommissioning. The highest volume of site-related trips will occur during the peak construction phase of the project. Therefore, the trip generation for the peak construction phase workforce levels were estimated for this assessment.

Vehicle trip generation estimates for the project were developed based on anticipated construction operations for the project. Construction of the proposed solar facility is expected to include grading, panel installation, inspections, and equipment deliveries. It is anticipated that, at peak operations, the site could experience construction workforce levels of up to 150 construction workers at one time. Construction hours of operation are assumed to generally be 7 AM to 5 PM with construction workers arriving prior to 7 AM and departing after 5 PM. Since the peak hours of the adjacent street traffic are expected to occur sometime during the peak commuting periods of 7 AM to 9 AM and 4 PM to 6 PM, it is expected that the majority of construction workers would be arriving and departing the site outside of the typical weekday morning and weekday evening commuter peak hours of the adjacent street. However, to present a conservative assessment of potential traffic increases associated with the

project, it is assumed that all the construction workers would arrive during the weekday morning peak hour and depart during the weekday evening peak hour. The supporting trip generation calculations and assumptions for the proposed project's peak construction workforce levels are provided in Appendix B.

The Blackstone Area Bus System (BABS) operates public transit service in nearby Lunenburg County. BABS operates the Town and Country bus service on Route 637 which travels from Kenbridge to Victoria. The site is approximately 2 miles southwest of this public transportation service with the closest stop located at the W. 7<sup>th</sup> Avenue and Broad Street intersection in Kenbridge. For the purposes of this assessment, it was assumed that no construction workers would use public transit to access the site. Public transportation information is provided in Appendix C.

It is anticipated that some construction workers would arrive and depart the site together (carpooling). For purposes of this assessment, it was assumed that 10 percent of the construction workers will carpool to travel to/from the site with two workers per vehicle. Table 1 presents a summary of the trip generation estimates for the project's peak construction workforce activities.

**Table 2 Trip Generation Summary – Peak Construction Period**

Time Period/ Direction	Project Trips			
	Workforce Trips <sup>1</sup>	Non-Heavy Vehicle Deliveries <sup>2</sup>	Heavy Vehicles <sup>3</sup>	Total
<b>Weekday AM Peak Hour</b>				
Enter	143	1	2	146
Exit	0	1	2	3
<b>Total</b>	<b>143</b>	<b>2</b>	<b>4</b>	<b>149</b>
<b>Weekday PM Peak Hour</b>				
Enter	0	1	2	3
Exit	143	1	2	146
<b>Total</b>	<b>143</b>	<b>2</b>	<b>4</b>	<b>149</b>
<b>Weekday Daily</b>				
Enter	218	5	20	243
Exit	218	5	20	243
<b>Total</b>	<b>436</b>	<b>10</b>	<b>40</b>	<b>486</b>

1 Assumed 150 construction workers per day. Conservatively assumed trips overlap with adjacent street peaks. Peak construction activities are currently anticipated to occur for a period of approximately two to three months. The remainder of the construction period is anticipated to generate fewer vehicle trips.

2 Assumed 5 deliveries per day with 40 percent of trips occurring during peak hours.

3 Assumed 20 deliveries per day spread evenly throughout day.

As shown in Table 1, the peak construction activity for the proposed solar facility is expected to generate 486 new vehicle trips (243 entering and 243 exiting) on a typical weekday, with approximately 149 new vehicle trips (146 entering and 3 exiting) during the weekday morning peak hour and 149 new vehicle trips (3 entering and 146 exiting) during the weekday evening peak hour. These trip generation estimates assume 50 daily delivery trips and six delivery trips during each of the peak hours. The adjacent roadways are anticipated to have ample capacity to accommodate the temporary increase in daily and peak hour traffic with the project estimated to generate approximately two to three additional trips every minute during peak hours. Additionally, there are

several routes connecting the site to the regional roadway system thereby reducing impacts to any single roadway segment or intersection.

**Post-Construction Conditions.** Routine post-construction O&M activities at the site are not anticipated to result in a measurable increase in vehicle traffic. The number of maintenance workers traveling to the site is anticipated to be low and impacts to local traffic are not expected. The proposed solar facility will be unmanned during routine O&M and would only be inspected periodically. Therefore, the site is not expected to add a noticeable increase to existing traffic under typical O&M conditions. Personnel would be on site as necessary for any maintenance and repairs. Additionally, impacts resulting from decommissioning of the project are expected to be similar to or less than those experienced during construction.

### 2.3 Truck Haul Routes

The construction of the proposed solar facility will require large vehicle deliveries for a variety of materials that may include concrete, solar panels, earth materials, building materials, etc. Tetra Tech identified potential truck haul routes between the site parcels and the regional roadway system for these larger vehicles. For purposes of this assessment, it was assumed that the deliveries would originate from three primary geographical areas: Richmond, VA, Lynchburg, VA, and Raleigh, NC. Factors considered in developing potential truck haul routes are summarized below. Separate inbound and outbound travel routes are provided where appropriate.

- Prioritize designated Surface Transportation Assistance Act (STAA) truck routes from the VDOT database.
- Avoid roadway segments having bridge height and weight limitations based on a review of the VDOT database.
- Minimize impacts to schools, traffic signals, and areas with pedestrian activity.
- Minimize turns at locations with geometric limitations.

The potential regional truck haul routes are shown in Figure 2. The potential local truck haul routes to/from the proposed site driveways are shown in Figure 3.

## 3.0 CONCLUSIONS

The peak construction workforce levels for the proposed 80 MWac solar photovoltaic power generation facility is expected to generate approximately 149 trips during the weekday morning peak hour and 149 trips during the weekday evening peak hour during peak construction workforce activity. This equates to approximately two to three new vehicle trips per minute during peak hours. Peak construction activities are currently anticipated to occur for a period of approximately two to three months. The remainder of the construction period is anticipated to generate fewer vehicle trips. These trip generation estimates are conservative as the majority of peak hour trips are likely to occur outside of the typical weekday commuter peak hours of the adjacent street traffic and do not take credit for possible vehicle trip reductions associated with use of available public transportation. The project will generate even less traffic post construction with routine inspection and maintenance of the solar panels and supporting equipment. Additionally, there are several routes connecting the site



to the regional roadway system thereby reducing impacts to any single roadway segment or intersection. As part of the project, 13 driveways will be constructed to provide temporary construction access and permanent O&M access to the site from the public roadway network including two driveways on Oral Oaks Road, four driveways on Laurel Branch Road, three driveways on Plank Road, three driveways on Sneads Store Road, and one driveway on Hilltop Road. The adjacent roadways are anticipated to have ample capacity to accommodate the temporary increase in daily and peak hour traffic with existing daily traffic volumes of 20 vehicles per day (vpd) to 1,100 vpd. Potential truck haul routes were identified between the site parcels and the regional highway system to reduce construction-related traffic impacts.

## FIGURES



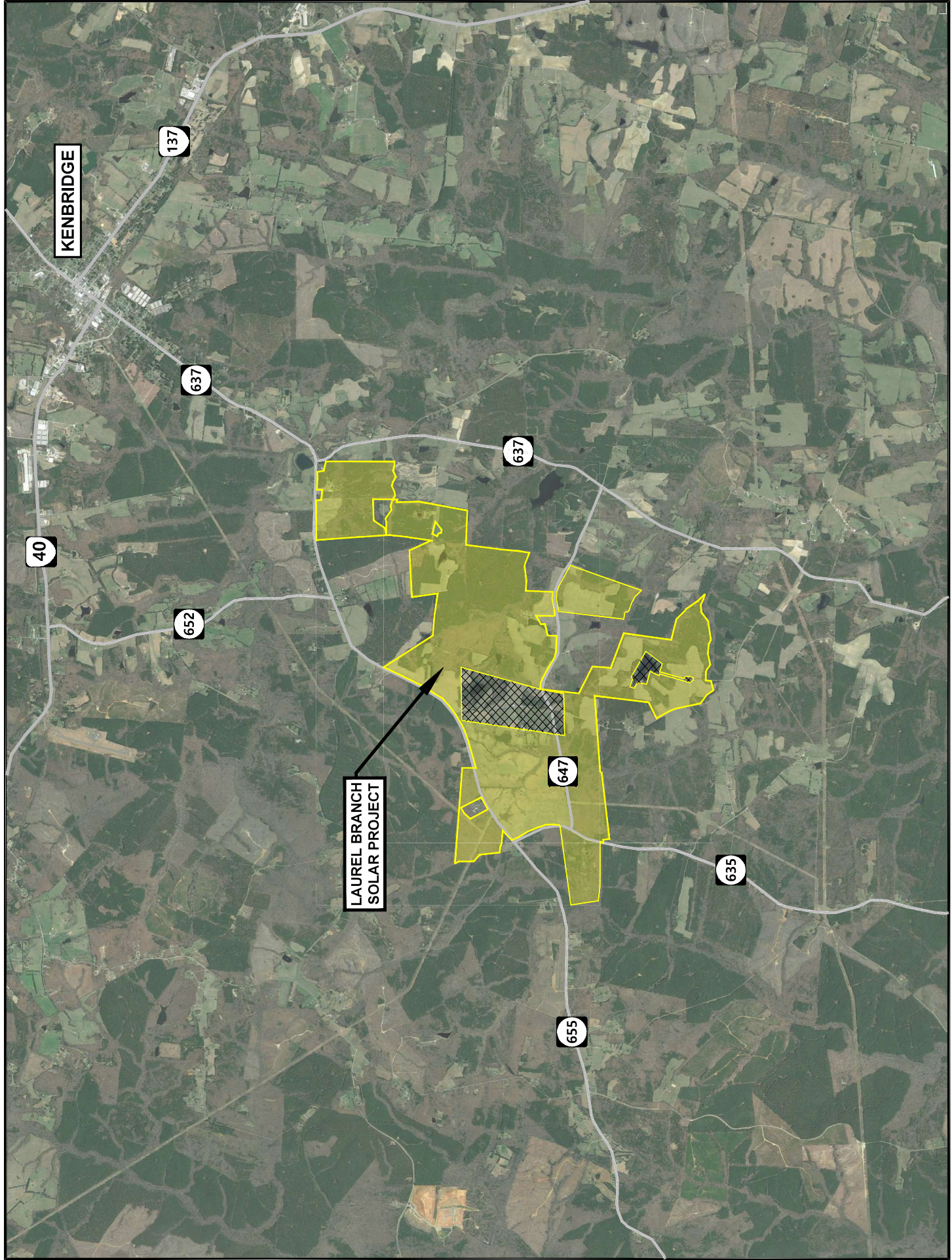
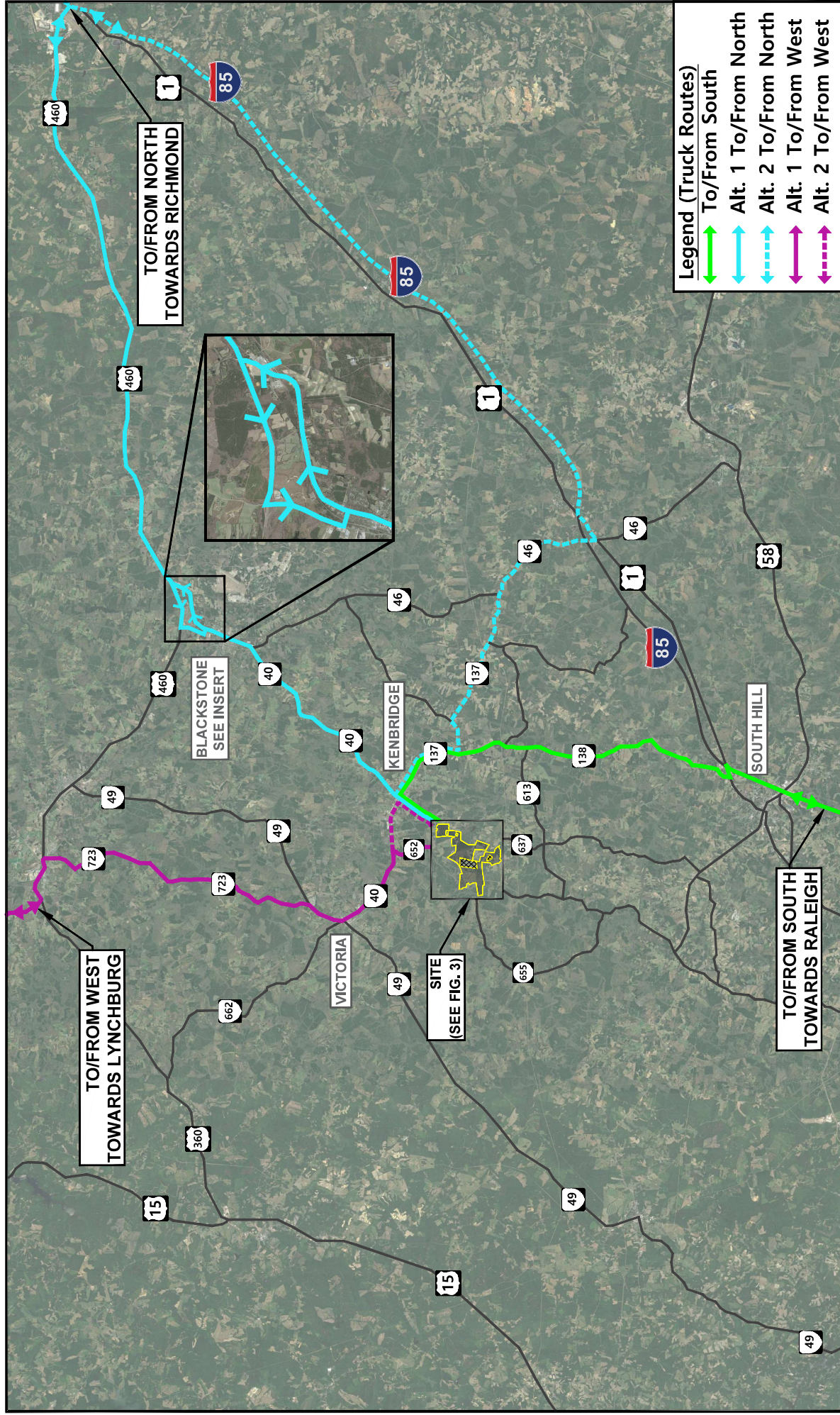


FIGURE  
**1**

Laurel Branch Solar Project  
Lunenburg County, Virginia  
**SITE LOCUS**





Lunenburg County, Virginia

**Laurel Branch Solar**  
Potential Regional Truck Haul Routes

FIGURE

**2**





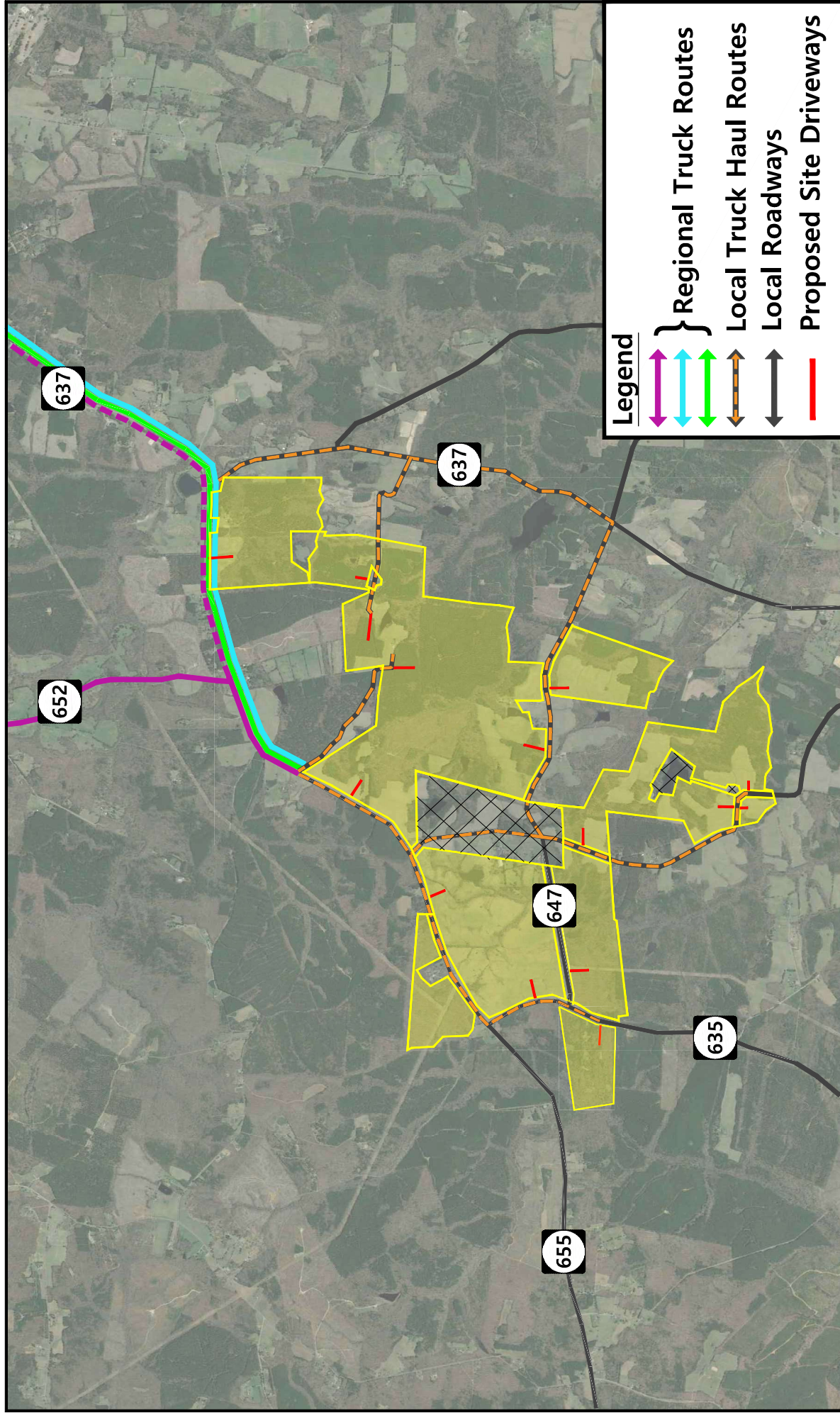


FIGURE 3

Lunenburg County, Virginia  
**Laurel Branch Solar**  
 Potential Local Truck Haul Routes





## APPENDIX A: VDOT TRAFFIC VOLUME DATA



## Virginia Traffic Volume Map



### Summary

Map displaying traffic volume across the Commonwealth of Virginia.

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#### Map

[Web Map](#)



#### December 28, 2020

Date Updated



#### May 18, 2017

Published Date



#### Public

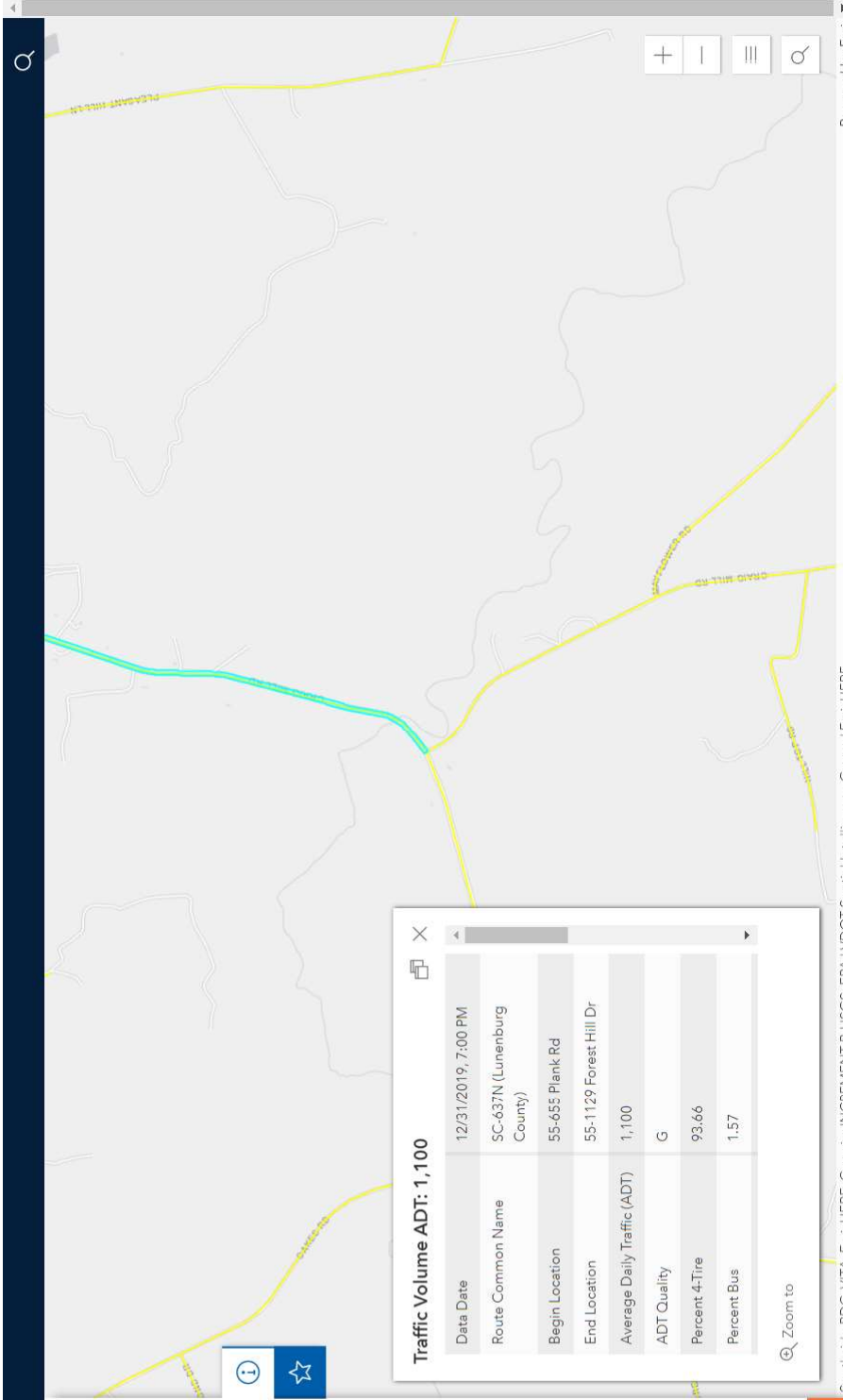
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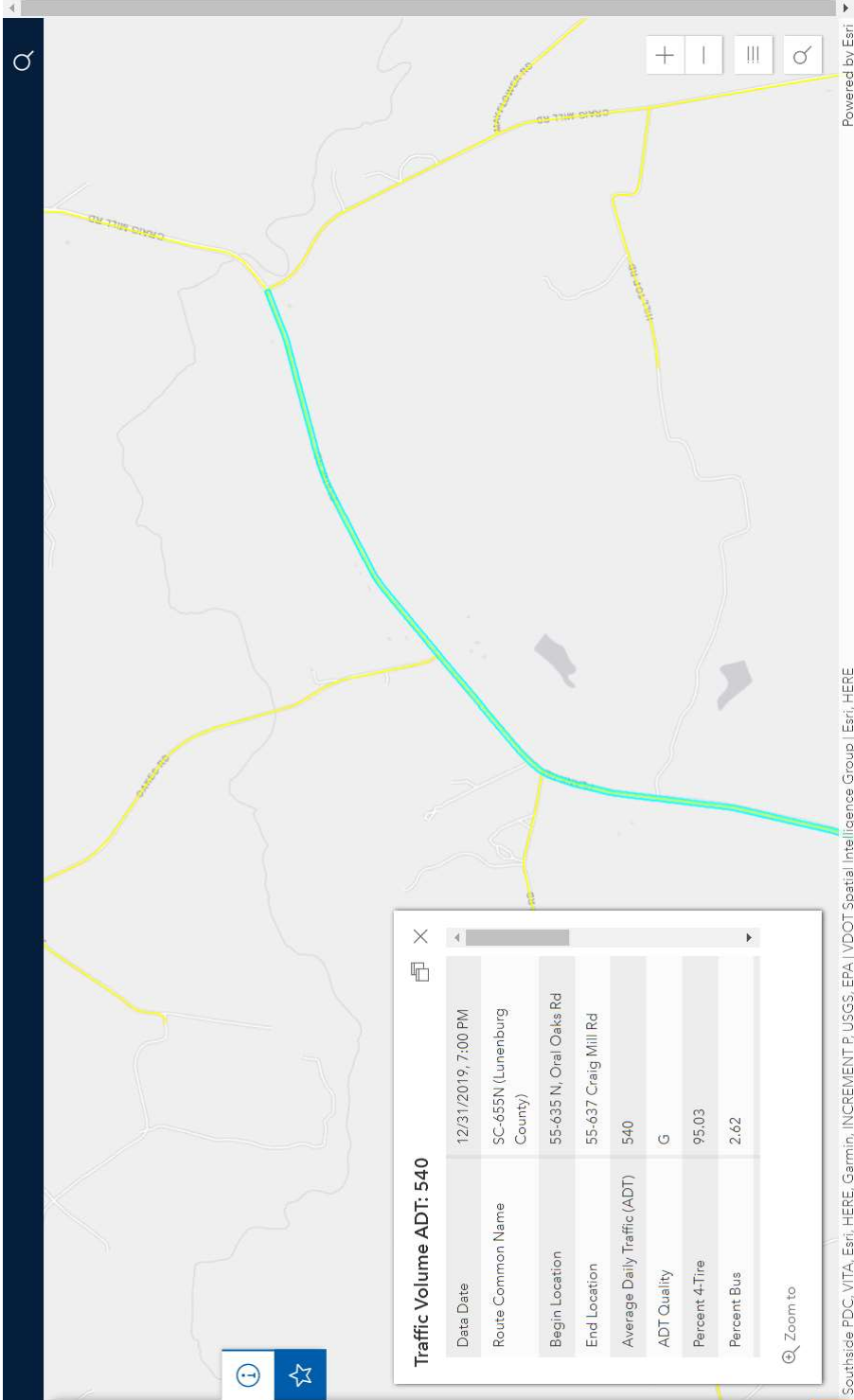
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## Virginia Traffic Volume Map



**VDOT Spatial Intelligence Group**  
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### Summary

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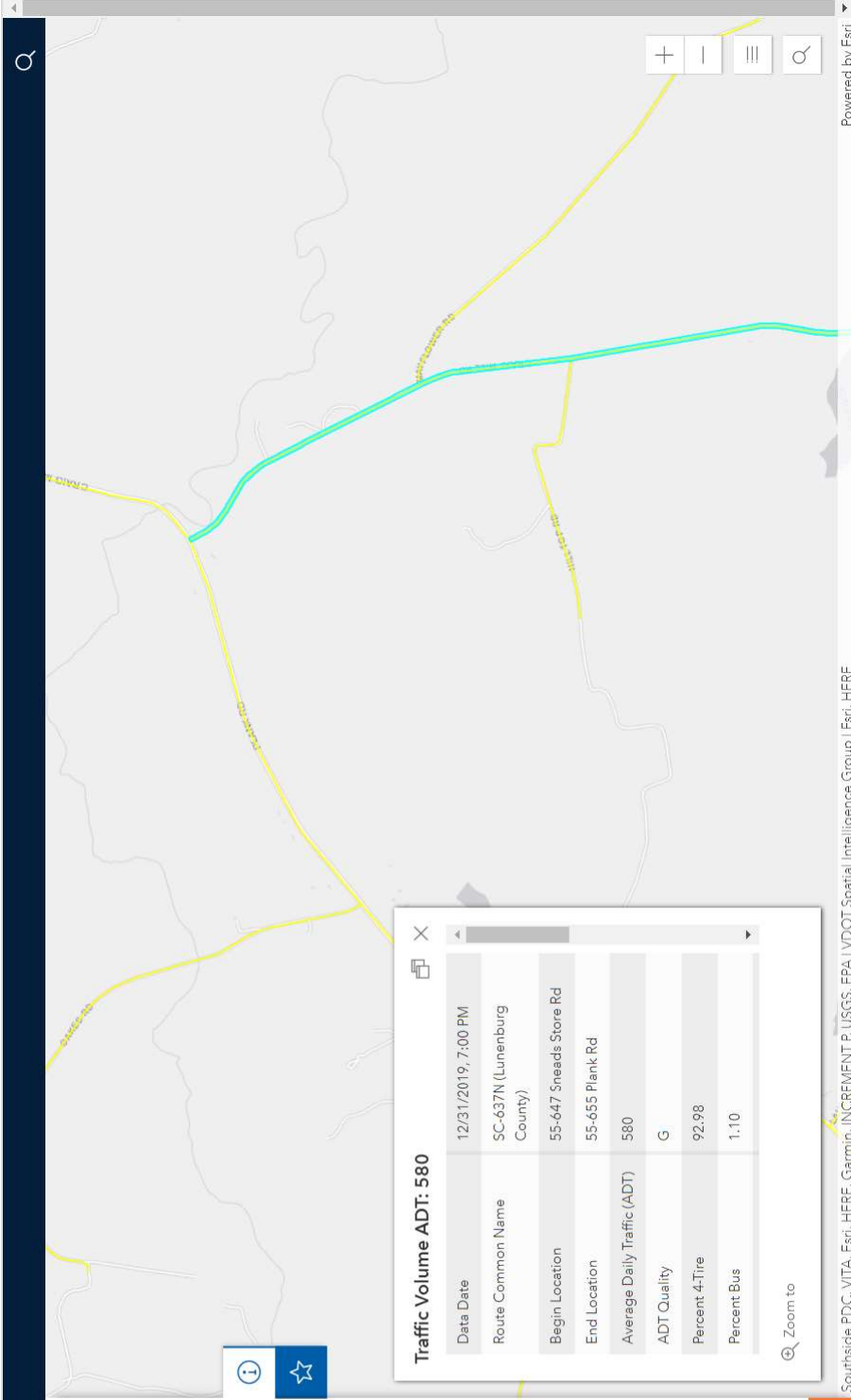


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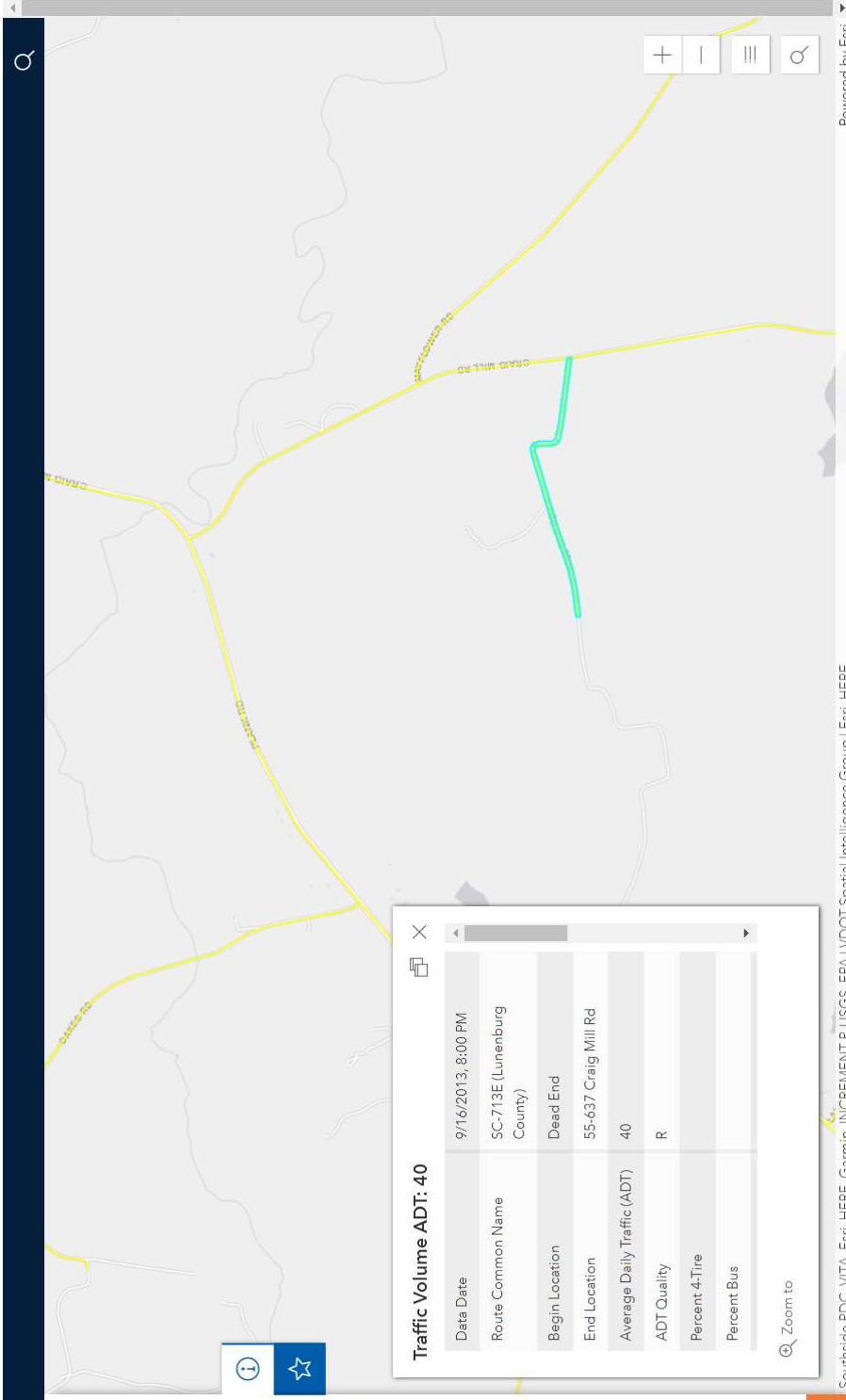


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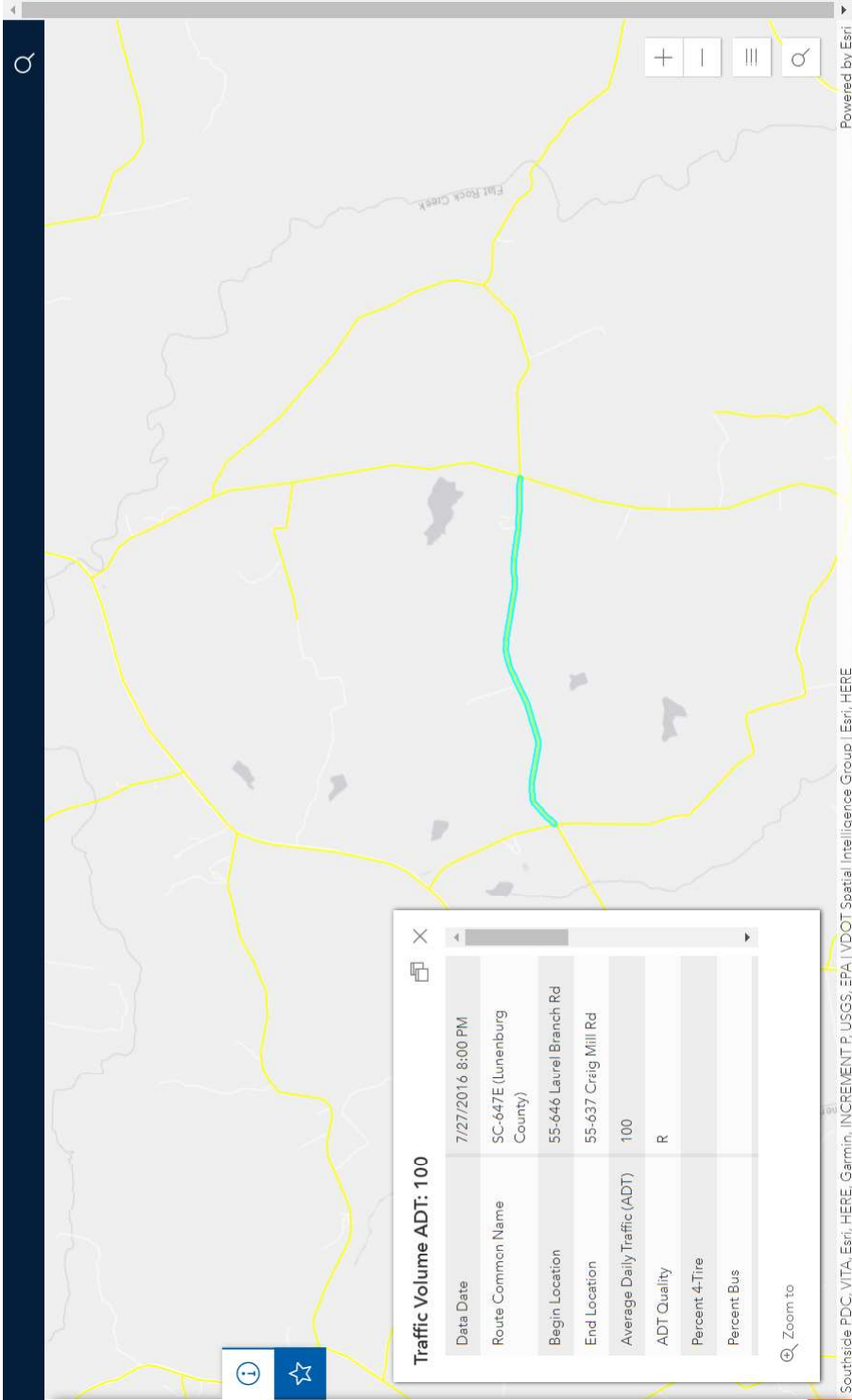


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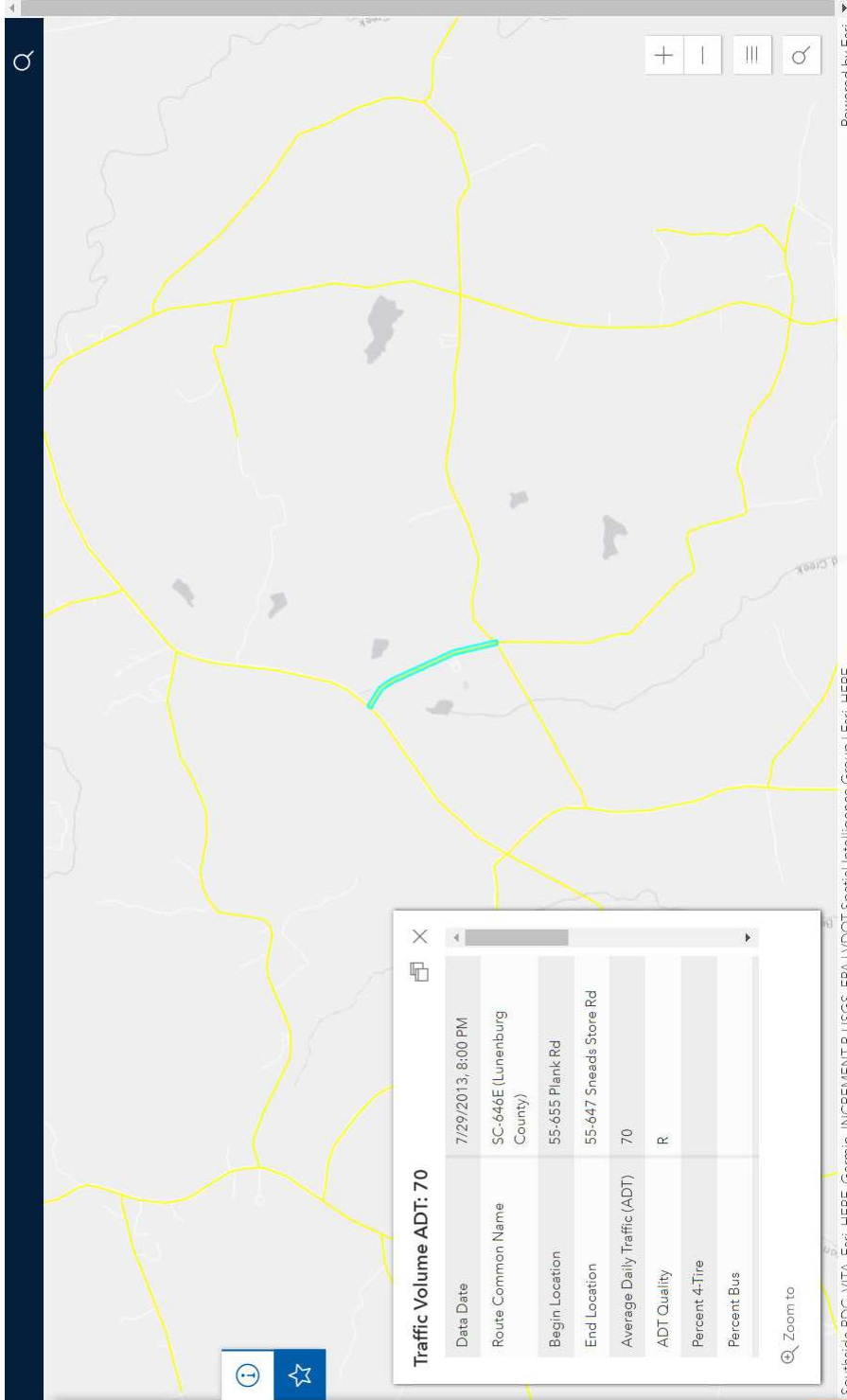
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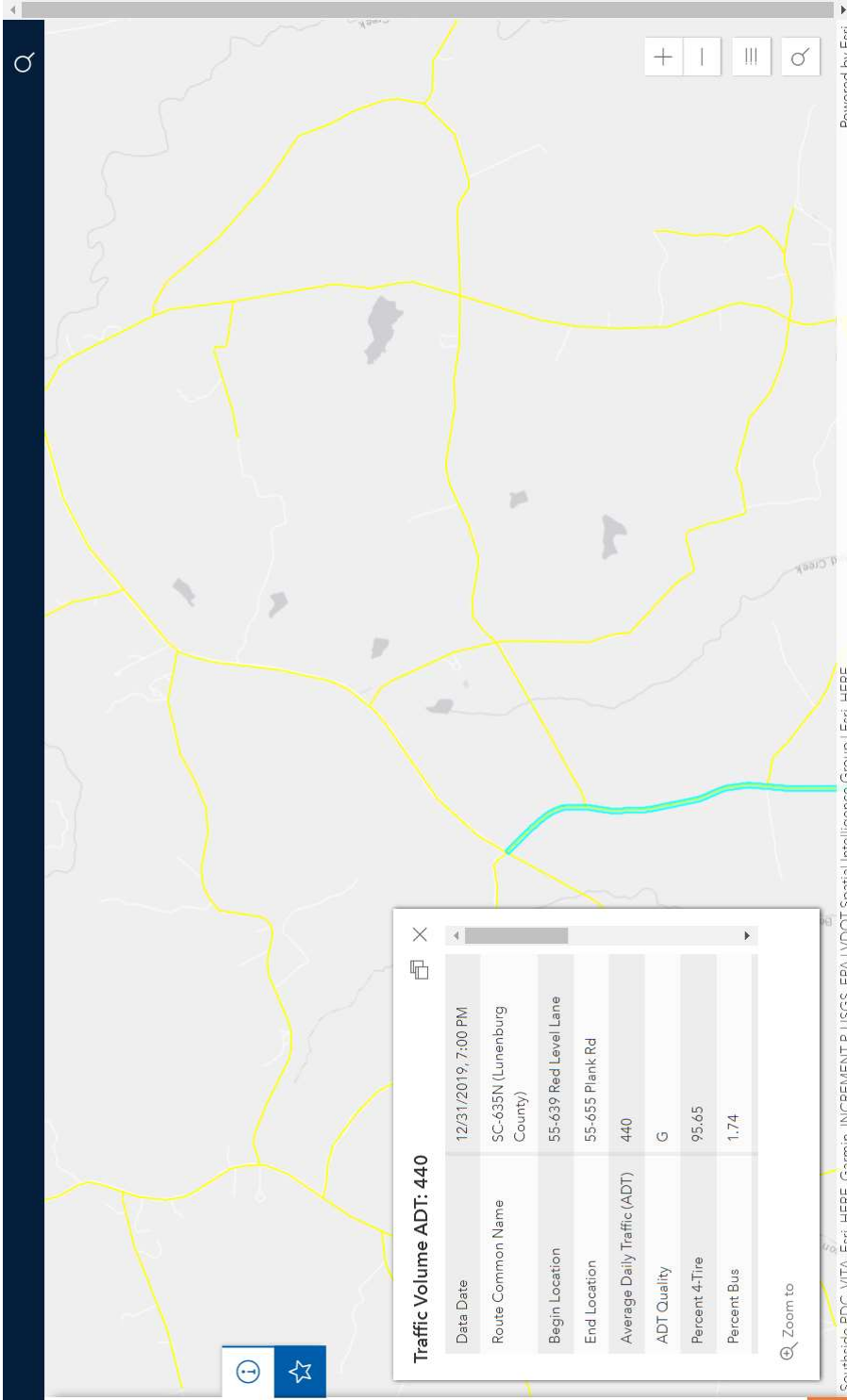


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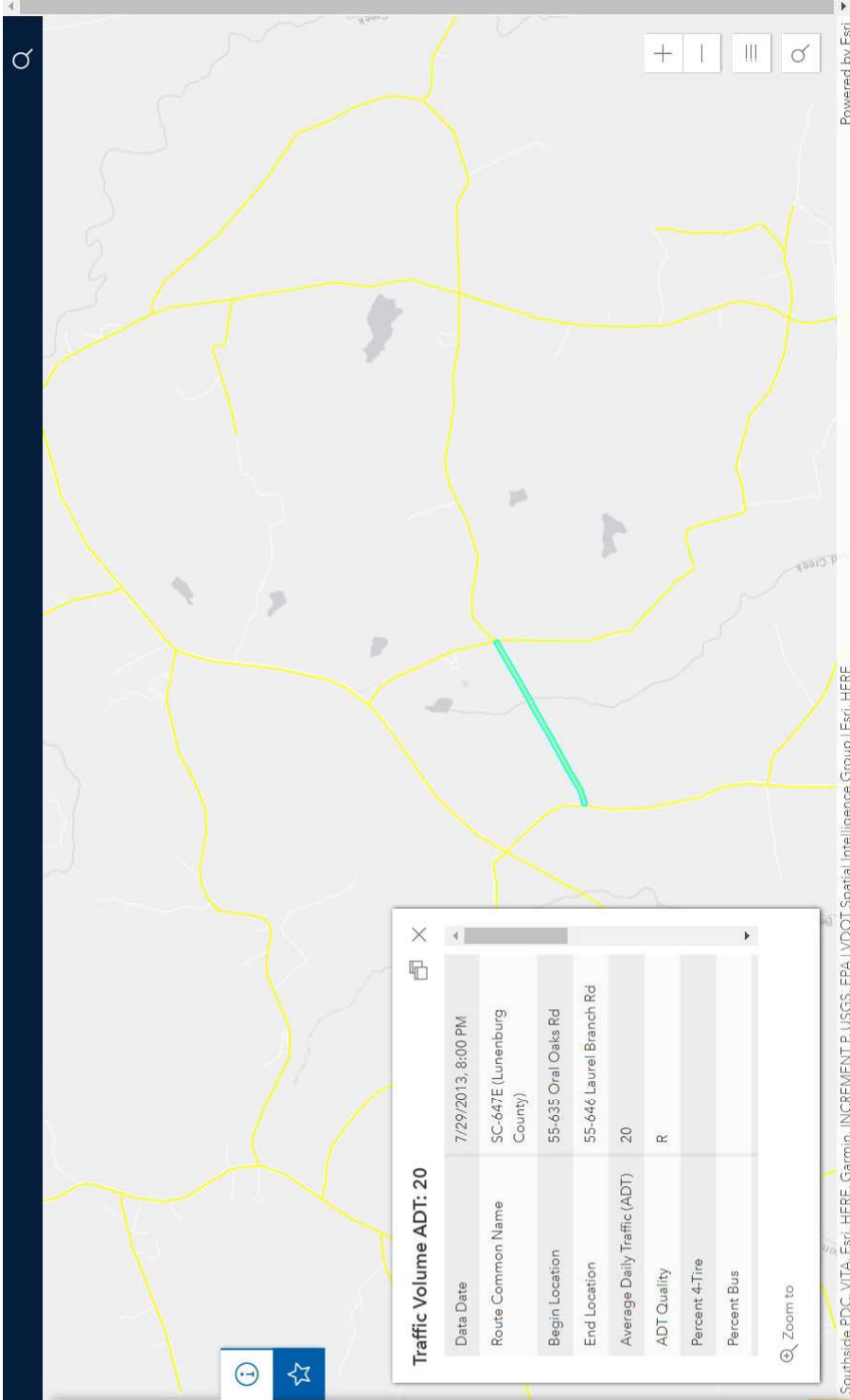


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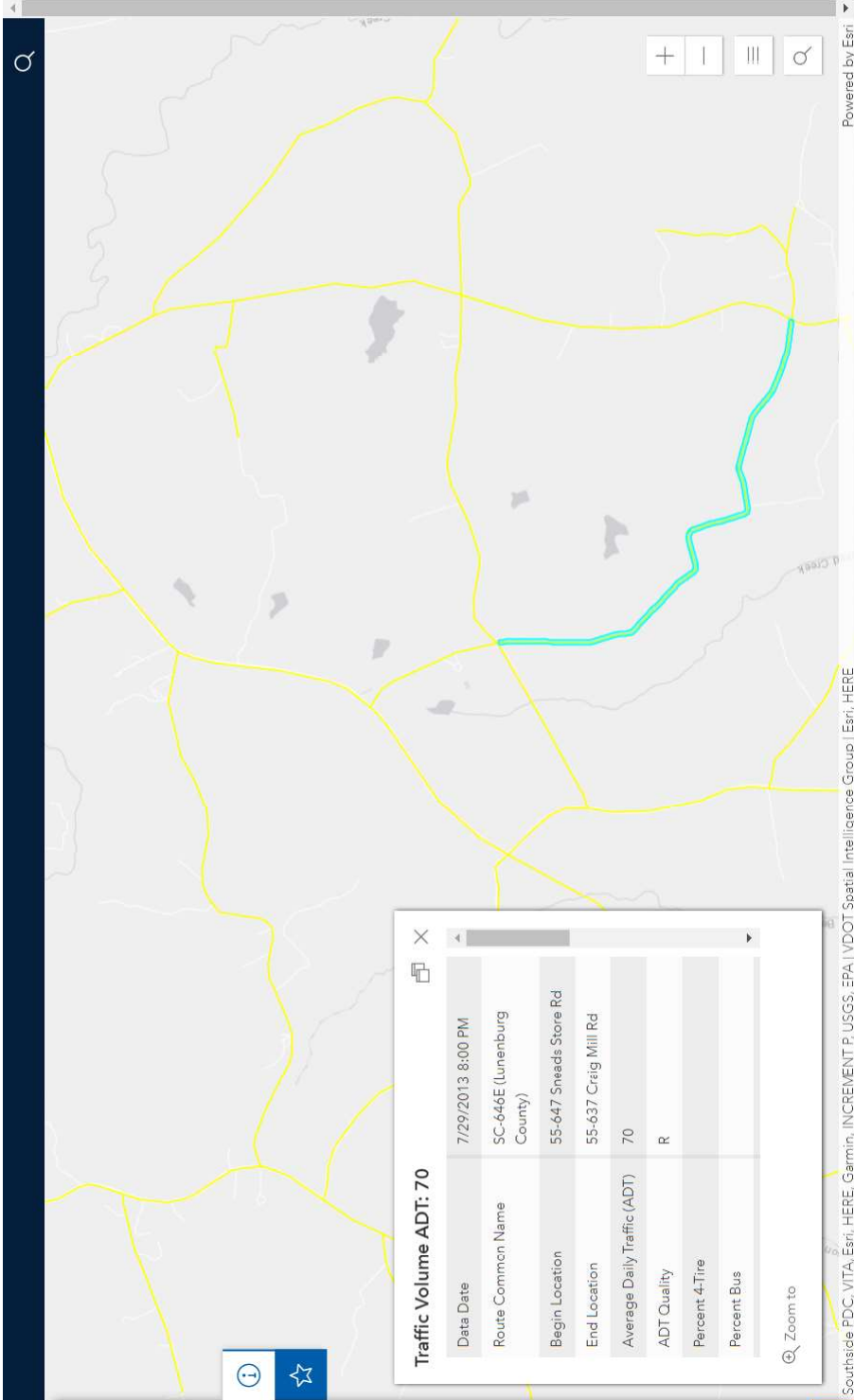
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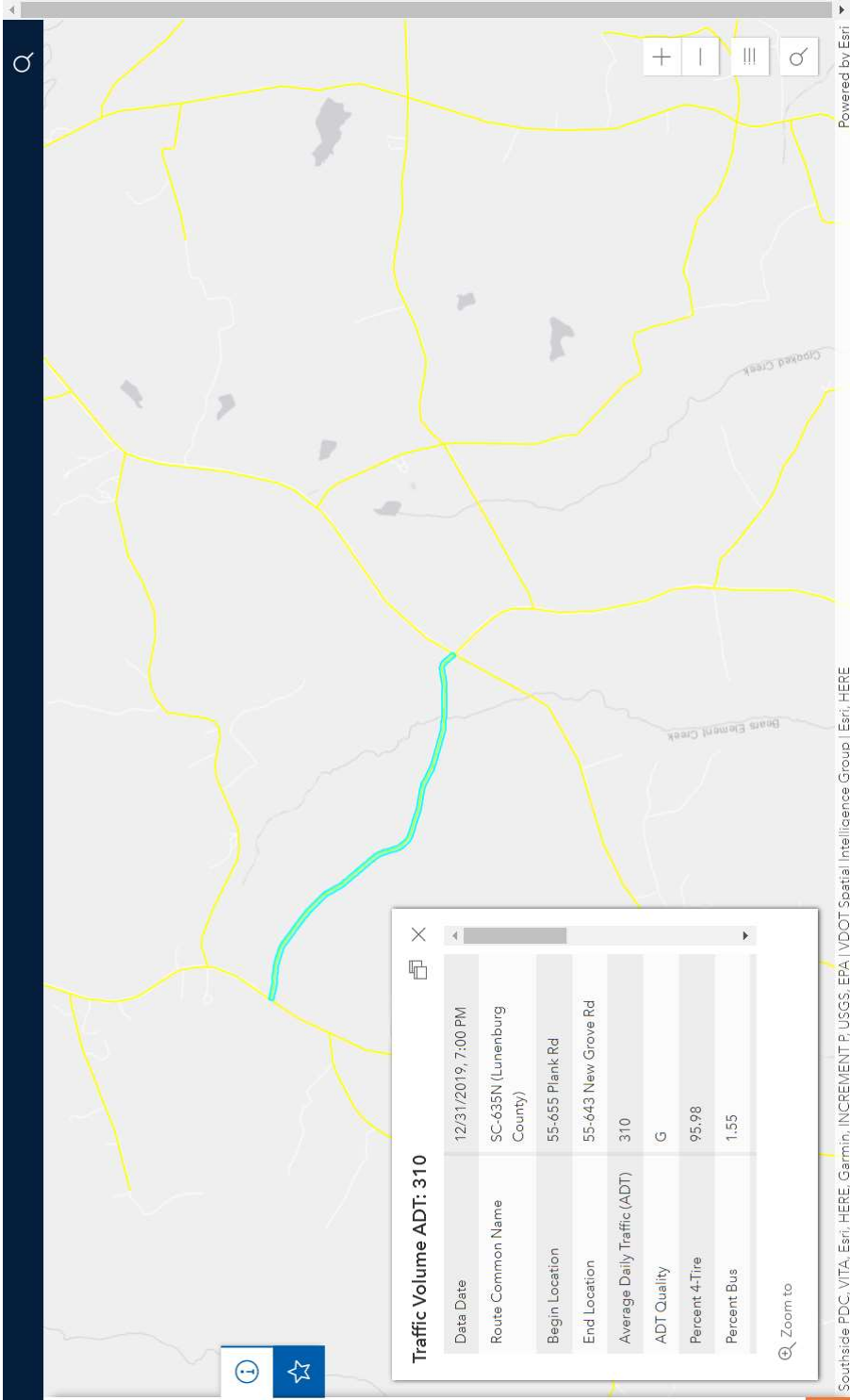
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## **APPENDIX B: TRIP GENERATION CALCULATIONS**



## Peak Construction Workforce Trip Generation Calculations and Assumptions

### Proposed Dominion Laurel Branch Solar Facility - Lunenburg County, VA

Construction Site Driveway Trips				
Workforce Trips		Non-Heavy Vehicle Deliveries	Heavy Vehicle Deliveries	Total
<b>AM Peak Hour:</b>				
Enter	143	1	2	146
Exit	0	1	2	3
Total	143	2	4	149
<b>PM Peak Hour:</b>				
Enter	0	1	2	3
Exit	143	1	2	146
Total	143	2	4	149
<b>Weekday Daily:</b>				
Enter	218	5	20	243
Exit	218	5	20	243
Total	436	10	40	486

#### CALCULATIONS

(150 workers x 100% arrive x (100% - 10% carpool x 1 vehicle/2 carpool workers)) + (3 Delivery Vehicles arrive) = 146  
 (150 workers x 0% depart) + (3 Delivery Vehicles depart) = 3

(150 workers x 0% arrive) + (3 Delivery Vehicles arrive) = 3  
 (150 workers x 100% depart x (100% - 10% carpool x 1 vehicle/2 carpool workers)) + (3 Delivery Vehicles depart) = 146

(150 workers x 100% arrive in AM x (100% - 10% carpool x 1 vehicle/2 carpool workers)) + (150 workers x 50% return from lunch/errands midday) + (25 Delivery Vehicles arrive) = 243  
 (150 workers x 100% depart in PM x (100% - 10% carpool x 1 vehicle/2 carpool workers)) + (35 workers x 50% leave for lunch/errands midday) + (25 Delivery Vehicles depart) = 243

Construction Assumption	AM Peak Hour	PM Peak Hour	Off-Peak	Notes
# of Peak Workers On-Site at One Time:	150	150	150	Assume 150 tradespeople per day
% Workers Arriving:	100%	0%	50%	Assumed hours of operation 7am-5pm (may be longer). Peak Hours of adjacent street traffic assumed to occur between 7am-8am and 4pm-6pm. Therefore, the majority of construction worker traffic is likely to occur outside of the morning peak hour of adjacent street traffic and some may depart after the evening peak hour. However, as a conservative measure, assumed 100 percent of workers arrive after 7am and depart before 6pm. As a conservative measure, assumed half of workforce depart and return once during off-peak times. Assumed none of the workers get picked up/dropped off.
% Workers Departing:	0%	100%	50%	Assumed hours of operation 7am-5pm (may be longer). Peak Hours of adjacent street traffic assumed to occur between 7am-8am and 4pm-6pm. Therefore, the majority of construction worker traffic is likely to occur outside of the morning peak hour of adjacent street traffic and some may depart after the evening peak hour. However, as a conservative measure, assumed 100 percent of workers arrive after 7am and depart before 6pm. As a conservative measure, assumed half of workforce depart and return once during off-peak times. Assumed none of the workers get picked up/dropped off.
% Carpool <sup>1</sup> :	10.0%	10.0%	0.0%	Assumed 10% carpooling during commuting
Carpool VOR <sup>2</sup> :	2.00	2.00	1.00	Assumed two workers per car during commuting
# Shuttle Trips:	0	0	0	Assumed all workers and deliveries will occur via the construction driveway; no laydown site is proposed
# Truck Deliveries:	2	2	16	Assumed worker hours of operation 7am-5pm and assumed 20 deliveries per day that would be distributed evenly throughout the day.
# Non-Truck Deliveries:	1	1	3	Occasionally, non-heavy vehicle deliveries will occur. For trip generation analysis purposes, assumed 5 deliveries per day. Conservatively assumed some occurs during peak hours of adjacent street traffic.

<sup>1</sup>Enter % per population - formulas above account for VOR

<sup>2</sup>VOR for carpools only

NOTE: Assumes an 80 MW AC facility with 9 months of peak construction and 2 to 3 months of ramp-up/ramp-down construction activity

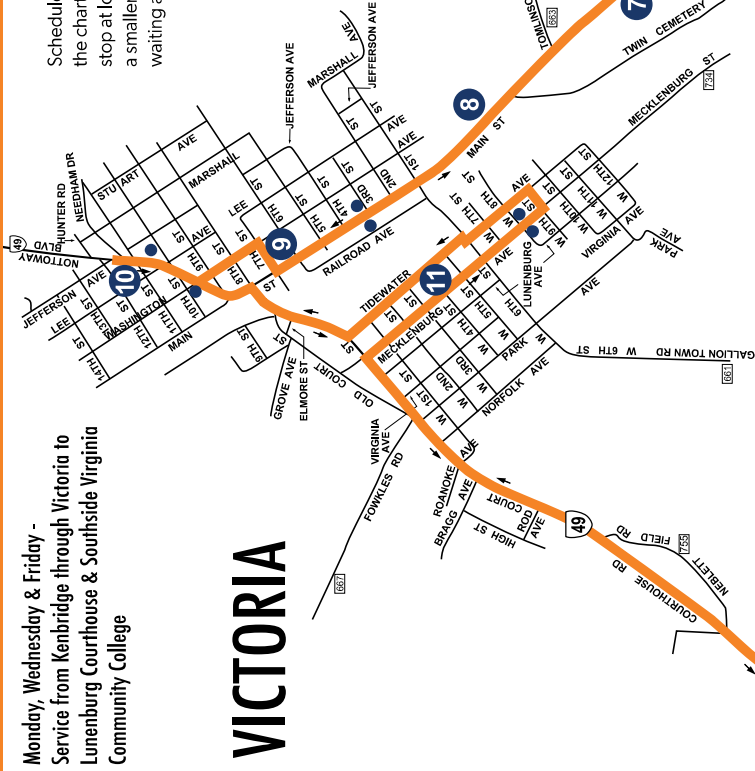
Source: Tetra Tech

## **APPENDIX C: PUBLIC TRANSPORTATION INFORMATION**

## TOWN & COUNTY TRANSIT ORANGE LINE

Monday, Wednesday & Friday -  
Service from Kenbridge through Victoria to  
Lunenburg Courthouse & Southside Virginia  
Community College

## VICTORIA



Scheduled stops and times are shown in  
the chart and on the map. The bus will  
stop at locations denoted on the map by  
a smaller circle [●], if there are passengers  
waiting at the stops.

## TOWN & COUNTY TRANSIT GREEN LINE

Tuesday & Thursday -  
Service from Lunenburg Courthouse & Southside Virginia Community College  
to Victoria, Kenbridge, and Blackstone. (includes Orange Line)

## KENBRIDGE



Accessible

# TOWN & COUNTY TRANSIT

Servicing the County of Lunenburg and the Towns of Kenbridge and Victoria, this route operates from 7:00 AM to 4:15 PM on Monday, Wednesday, Friday, and on Tuesday and Thursday until 4:45 PM. On Tuesday and Thursday this route travels to the Town of Blackstone.

## ORANGE LINE Mon, Wed, Fri

	AM											PM		
1A W. 7th St. & Broad St.	7:00	9:00	-	10:15	-	11:30	1:00	2:20	-	4:15				
2 Kenbridge Elementary	7:02	8:53	9:02	10:13	10:17	11:27	1:02	2:13	2:22	4:13				
3 Mildred's Meals	7:04	8:51	9:04	10:11	10:19	11:25	1:04	2:11	2:24	4:11				
4 Kenbridge Family Practice	7:06	8:49	9:06	10:09	10:21	11:23	1:06	2:09	2:26	4:09				
5 Southside Shopping Center	7:10	8:45	9:10	10:05	10:25	11:19	1:10	2:05	2:30	4:05				
6 Community Health Center	7:15	8:40	9:15	10:00	10:30	11:14	1:15	2:00	2:35	4:00				
7 Village Estates Apts.	7:18	8:37	9:18	9:58	10:32	11:12	1:18	1:58	2:37	3:58				
8 Food Lion, Victoria	7:20	8:35	9:20	9:55	10:35	11:09	1:20	1:55	2:40	3:55				
9 Victoria Public Library	7:22	8:33	9:22	9:53	10:37	11:07	1:22	1:53	2:42	3:53				
10 Vaughn's Grocery	7:25	8:30	9:25	9:50	10:40	11:00	1:25	1:50	2:45	3:50				
11 Victoria Place Apts.	7:28	8:27	9:28	9:47	10:43	10:59	1:28	1:47	2:48	3:47				
12 Lunenburg Co. Courthouse	7:35	8:20	9:40	-	10:50	-	1:40	-	2:55	3:40				
13 SVCC	8:00	-	-	-	-	-	-	-	3:25	-				

## GREEN LINE Tues, Thurs

	AM											PM		
1B Walmart, Blackstone	-	-	-	10:35	-	-	-	2:35	-	-				
1A W. 7th St. & Broad St.	7:00	9:00	-	10:15	10:50	12:10	1:00	2:20	2:50	4:45				
2 Kenbridge Elementary	7:02	8:53	9:02	10:13	10:52	12:08	1:02	2:13	2:52	4:43				
3 Mildred's Meals	7:04	8:51	9:04	10:11	10:54	12:06	1:04	2:11	2:54	4:41				
4 Kenbridge Family Practice	7:06	8:49	9:06	10:09	10:56	12:04	1:06	2:09	2:56	4:39				
5 Southside Shopping Center	7:10	8:45	9:10	10:05	11:00	12:00	1:10	2:05	3:00	4:35				
6 Community Health Center	7:15	8:40	9:15	10:00	11:05	11:55	1:15	2:00	3:05	4:30				
7 Village Estates Apts.	7:18	8:37	9:18	9:58	11:07	11:52	1:18	1:58	3:07	4:28				
8 Food Lion, Victoria	7:20	8:35	9:20	9:55	11:10	11:49	1:20	1:55	3:10	4:25				
9 Victoria Public Library	7:22	8:33	9:22	9:53	11:12	11:47	1:22	1:53	3:12	4:23				
10 Vaughn's Grocery	7:25	8:30	9:25	9:50	11:15	11:40	1:25	1:50	3:15	4:20				
11 Victoria Place Apts.	7:28	8:27	9:28	9:47	11:18	11:37	1:28	1:47	3:18	4:17				
12 Lunenburg Co. Courthouse	7:35	8:20	9:40	-	11:30	-	1:40	-	3:25	4:10				
13 SVCC	8:00	-	-	-	-	-	-	-	3:50	-				



**TAB I**

Decommissioning and  
Reclamation Plan



# **Laurel Branch Solar Project**

## Decommissioning and Reclamation Plan

March 4, 2022

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**Prepared for**

**Lunenburg County, Virginia**

**Prepared by**



**Dominion  
Energy®**



**TETRA TECH**

4101 Cox Road, Suite 120  
Glen Allen, VA 23060

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Appendix A: Decommissioning Estimate



## Acronyms and Abbreviations

MW	megawatt
PV	photovoltaic
Project	Laurel Branch Solar Project
DC	direct current
AC	alternating current
SCADA	Supervisory Control and Data Acquisition
BMP	best management practice
bgs	below ground surface
SF	square feet
LF	linear feet
ea	each
NA	not applicable

## 1.0 INTRODUCTION

Dominion Energy Virginia (“Dominion”) will construct, own, and operate the approximately 80-megawatt (MW) capacity photovoltaic (“PV”) Laurel Branch Solar Project (“Project”). The Project will encompass approximately 499 acres in Lunenburg County, on a portion of nineteen (19) parcels in Lunenburg County, Virginia (the “County”) totaling approximately 1,969 acres. Dominion provides this draft Decommissioning and Reclamation Plan is provided to comply with the County’s Ordinance for Solar Energy Facilities (the “Solar Ordinance”).<sup>1</sup> The required Decommissioning Estimate (See Section 5) is provided as Appendix A.

Prior to operation, a final Decommissioning and Reclamation Plan (the “Final Plan”) will be provided to the Zoning Administrator for review and approval. Once approved, the Final Plan and the Decommissioning Estimate will be reviewed once every five (5) years by an independent third party.

## 2.0 PROJECT BACKGROUND

The Project is located to the southwest of the Town of Kenbridge, between Plank Road and Sneads Store Road and along Oral Oaks Road. The solar facility will consist of approximately 190,998 solar modules, associated solar module racking system and foundations, 100 solar inverters, 21 medium voltage step-up transformers, and associated electrical equipment and materials necessary to collect the energy produced. The facility will be secure, surrounded by a 7-foot tall chain link and barbed wire fence (i.e. 6-foot tall plus 1 foot of barbed wire). The anticipated life of the Project is 35 years, based on typical life spans of solar facilities.

## 3.0 EXISTING SITE CONDITIONS

The Project lease will encompass approximately 1,969 acres. Land use prior to development was primarily timber and agriculture. The Project study area consists of moderate topography as it lies on multiple ridges and stream valleys. Neighboring land uses include timbering and agriculture.

## 4.0 DESCRIPTION OF WORK TO CONSTRUCT LARGE SCALE SOLAR FACILITY

### 4.1 Major Activities

#### 4.1.1 Cable Trenching

Trenching requirements for the electrical cables and telecommunication lines would consist of a trench up to approximately three feet deep and one to four feet wide. The trenches would be filled with base material above and below the conductors and communications lines to ensure adequate thermal conductivity and electrical insulating characteristics. The topsoil from trench excavation would be set aside before the trench is backfilled and would ultimately comprise the uppermost layer

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<sup>1</sup> See Solar Ordinance Section 4.3.e (Draft Decommissioning and Reclamation Plan).

of the trench. Any excess material from the foundation and trench excavations will be incorporated onsite and will not be exported.

#### **4.1.2 Foundations**

The solar modules will be installed on steel racking structures. The posts for the racking structures will be driven approximately 9 feet into the ground using a post-driving machine. The solar inverters and medium voltage step-up transformers will be set on concrete pads, which are typically 12 to 18 inches deep.

#### **4.1.3 Modules Racking System**

Galvanized beams and other structural members will be bolted to the foundation posts of the racking system. The solar modules will then be mounted on these structural members using different pieces of hardware.

#### **4.1.4 Solar Inverters and Medium Voltage Step-Up Transformers**

The solar inverters and medium voltage step-up transformers will be offloaded from delivery trucks and placed on concrete foundations. These pieces of equipment will be bolted to the concrete foundations. The underground electrical and communication cables will be routed and connected to these pieces of equipment.

### **4.2 System Overview and Components**

Photovoltaic is a solar energy technology. Solar energy technology refers to the generation of electrical current from sun light. PV solar modules absorb sunlight and use silicone cells to generate electrical current. The PV modules are mounted on a single axis tracking racking system, which allows the modules to track the sun throughout the day. System components are described below.

#### **4.2.1 Combiner Boxes**

Combiner boxes allow for the paralleling of multiple conductors/feeder inputs and allow for fewer outputs.

#### **4.2.2 Inverters**

Inverters are high-speed switching and power conversion devices which transform direct current (DC) to alternating current (AC). In the case of the Project, there are 100 solar inverters.

#### **4.2.3 Transformers, Recloser, Disconnect Switch**

Transformers are an apparatus for reducing or increasing the voltage of an alternating current. There are 21 medium voltage step-up transformers on this Project for distribution to the electrical grid. The Recloser and Disconnect Switches are protection devices that allow for isolation of the solar farm from the wider distribution system.

#### **4.2.4 Underground Cables and Conduits**

Underground power (AC and DC) cables, communication and grounding cables on the Project will be either direct buried or placed in conduit. The cables will be rated in accordance with their application.

The cables will be located in a conduit as per code when transitioning from below grade to above grade.

#### **4.2.5 Access and Internal Roads**

The Project will have internal roads to provide access to facility equipment. Internal access roads will be constructed using an aggregate base over compacted native soils.

#### **4.2.6 Buildings and Enclosures**

The Project will not contain any permanent occupied building structures after construction is complete and the plant is operating. The site may have storage containers used for storing spare parts and materials, but these will not be affixed to a foundation. Except for periodic maintenance, the site is unmanned.

#### **4.2.7 Security Fencing**

To ensure security of the facility, the property will be fenced with six-foot-high chain link fencing topped by one foot of three-stranded barbed wire. Access to the site will be controlled via locked access gates.

#### **4.2.8 Project Life**

The facility has an estimated useful life of at least 35 years with an opportunity for extension depending on equipment replacements or refurbishments.

#### **4.2.9 SCADA and Communications Equipment Enclosure**

Supervisory Control and Data Acquisition (SCADA) refers to the entire communication and control components. The SCADA equipment for the solar farm will be mounted inside of an enclosure that measures approximately 24 feet long by 10.5 feet wide. The enclosure is affixed to a foundation or mounted on piles, depending on soil conditions. The SCADA system includes an internet router, server(s), a firewall, battery backup, and other hardware to monitor the solar farm.

## **5.0 DECOMMISSIONING PROCESS**

Decommissioning consists of the removal of above- and below-ground facility components, management of excess wastes and materials, and the restoration of ground surface irregularities and herbaceous vegetation. As per the lease agreement with the landowner, the Project area is to be restored in a manner consistent with its condition prior to facility construction. Decommissioning activities are expected to take between 10 to 12 months. The estimated deconstruction schedule is as follows: Site Preparation - 2 weeks; Equipment Removal - 8 to 10 months; Site Restoration and Waste Management - 1 to 2 months.

Removal of all physical improvements will be done in accordance with applicable regulations of the time. Prior to initiating decommissioning, notice will be provided to the Zoning Administrator by certified mail of the proposed date of discontinued operations and plans for removal. An estimated construction schedule and a traffic study modelling the decommissioning processes will be provided

for review by County staff (in cooperation with the Virginia Department of Transportation if deemed necessary).

## 5.1 Site Preparation

Site preparation activities include installing erosion and sediment control best management practices (BMPs) and vegetation clearance. Prior to decommissioning, the site will be visually inspected to determine if vegetation clearance is needed to access equipment. Appropriate temporary erosion and sedimentation control (construction-related) BMPs will be used during the decommissioning phase of the Project. The BMPs will be inspected on a regular basis to ensure proper erosion and sediment control during the decommissioning effort.

## 5.2 Equipment Removal

After the facility has been disconnected and isolated from the utility power grid and all electrical components have been disconnected within the facility, equipment will be dismantled and removed. As described in this section, removal of all solar electric systems, buildings, cabling, electrical components, security barriers, roads, foundations, pilings, and any other associated facilities shall be removed. Decommissioning will be undertaken by licensed subcontractors using similar techniques and equipment to those used in the construction of the Project.

Primary equipment and materials to be removed as part of decommissioning are included in the following Table 1.

**Table 1. Primary Equipment to be Removed**

Component	Quantity
Solar Modules (71.2 lb ea)	190,998 ea
Steel Trackers (101 LF)	415 ea
Steel Trackers (202 LF)	1,561 ea
Steel Piles	13,000 ea
MV cable length	10,000 LF
Inverters and foundations	100 ea
Transformers and foundations	21 ea
Substation footprint	55,000 SF
Access Road	40,625 LF
Perimeter Fence	119,133 LF

Equipment removal of primary components is described further in the following subsections:

### 5.2.1 Disassembly and Removal of Solar Modules

Removal of approximately 190,998 solar modules will be completed by manual labor. The module components will be mechanically disconnected from the solar array and transferred to a staging location for transporting to an offsite facility. Panels suitable for reuse will be sold for market value and panels not suitable for reuse will be processed at an offsite facility for recycling. The Project will use silicon-based solar PV modules. The modules will be electrically and mechanically disconnected from the solar array and packaged for shipment per manufacturer's requirements.

### **5.2.2 Disassembly and Removal of Tracking System**

The racking structure consists of approximately 1,976 steel trackers mounted on approximately 13,000 steel piles. The trackers total 357,237 feet in length. All of these materials can be recycled and/or reused. Disassembly and removal of the racking structure will be performed manually.

### **5.2.3 Removal of Steel Piles/Posts**

Approximately 13,000 steel piles associated with the tracking system are estimated for removal. Steel piles will be completely removed by hoisting with a piece of heavy equipment. Steel piles are assumed to be 15 feet, imbedded to a depth of 9 feet below ground surface (bgs). Steel components will be segregated and transferred to a staging location for offsite recycling.

### **5.2.4 Removal of Inverters and Transformers**

Twenty-one transformers and 100 inverters and associated concrete foundations will be removed and transferred to a staging location for offsite disposal or recycling at an approved facility.

### **5.2.5 Removal of Substation**

The substation will be mechanically disassembled with the use of support equipment for hoisting components. Steel will be segregated for offsite recycling or sold for scrap. The substation site restoration will include the removal of the gravel and concrete foundation, soil preparation, grading, and seeding.

### **5.2.6 Below-ground Electrical Cables**

Electrical cabling is typically installed underground, installed in aboveground cable trays, or attached to the module racking structure. It is assumed that all cabling and conduit will be installed at a minimum depth of 4 feet bgs. Below ground conduit and cable will be removed.

### **5.2.7 Above-ground Transmission Lines and Poles**

The Project does not include an above ground transmission line. As such, removal of overhead transmission lines and poles are not included in this Plan.

### **5.2.8 Access Road Excavation and Removal**

Within the Project limits, access roads will be removed and restored as part of decommissioning. The Project includes an estimated 40,625 linear feet of access roads. Gravel associated with the access roads will be stockpiled for recycling or reuse. Underlying geotextile fabric will be collected for offsite disposal.

### **5.2.9 Perimeter Fence Removal**

Approximately 119,133 linear feet of steel fencing will be removed from the site. Gates will be removed as whole units and welded wire fabric will be cut to manageable sized pieces and staged. Fencing will be assessed prior to dismantling to determine if the fencing can be stored and reused on other construction sites. If reuse is not deemed practical, the fencing will be dismantled and recycled or sold for scrap.

The following describes the methods for dismantling and removal of various Project Components:



**PV arrays and associated equipment**

- Disconnect all wiring, cables and electrical interconnections.
- Remove PV arrays from racks.
- Dismantle and remove all racks and extract all pile-drive support structures (see Equipment foundations).

**Inverter units**

- Remove inverter units from bases.
- Remove concrete foundations (see Equipment foundations).

**Generation Tie-Line cables**

- All above ground cables will be removed and transported off-site to an approved recycling facility or landfill.
- Underground cable runs will be removed in their entirety. Removed cable will be recycled or taken to a landfill as appropriate.

**Equipment foundations**

- The inverter units and pile-drive support structures for the solar arrays will have foundations that require removal. Other underground infrastructure requiring removal may include concrete protective electrical structures. Any foundation structures and below ground concrete will be fully removed from the ground and the affected area will be backfilled as necessary with native soil.

**Access roads**

- Landowners shall be consulted to determine if any access roads are desired to remain in place for future use.
- Should roads be removed, all aggregate and other underlying materials (e.g. geotextile fabric) will be excavated.
- As necessary, all compacted areas will be disced or tilled to restore soil densities consistent with the surrounding area. Topsoil will be distributed to provide substantially similar growing media as was present within the areas prior to site disturbance.

**Other components**

- Fences, gates, and guards will be removed.

**5.3 Site Restoration**

The current Project area is primarily used for agricultural purposes. The area will be restored to a similar state such that this use could be resumed. Any land used for agricultural purposes prior to construction of the Project will be returned to a tillable condition so that it is suitable for agricultural or forestal uses. The site shall be graded and re-seeded or replanted within twelve (12) months of removal of solar facilities to restore it to as natural a pre-development condition as possible. Re-grading and re-seeding or replanting shall be initiated within a six-month period of removal of equipment. Any exception to site restoration, such as leaving access roads in place or re-seeded or

replanted must be requested by the landowner in writing, and this request must be approved by the Board of Supervisors.

## **5.4 Managing Excess Materials and Waste**

A variety of excess materials and wastes will be generated during decommissioning. To the extent practicable, Dominion will coordinate with manufacturers, contractors, waste firms, and other entities to maximize the reuse and/or recycling of materials. Those materials deemed reusable/recyclable will be transported offsite and managed at approved receiving facilities following all applicable federal, state, and county waste management regulations of the time.

All residual waste will be removed by a licensed contractor and transported to an approved landfill. No waste materials will remain on the Project site.

The following main waste streams will be generated from decommissioning the solar facility:

### **5.4.1 PV Panels**

The Project will coordinate the collection and reuse and/or recycling of the PV modules and for minimizing the potential for modules to be discarded. If there is no possibility for reuse, PV panels will either be returned to the manufacturer for appropriate recycling/disposal or will be transported to a recycling facility where the glass, metal and semiconductor will be recycled. Best management practices at the time of decommissioning shall be utilized.

### **5.4.2 Racking and Supports**

All steel racks and pile-driven supports will be transported offsite and recycled at an approved recycling facility.

### **5.4.3 Inverters**

All metal components of the inverters will be recycled at an approved recycling facility to the extent practical. Transformers will be transported off-site for reuse. If no reuse option is available, transformers will be recycled or disposed at an approved facility.

### **5.4.4 Gravel and Aggregates**

Should access roads be removed, any used gravel or aggregates will be tested for contamination prior to removal. All uncontaminated materials will be transported offsite for salvage processing and then reused for construction fill. In the unlikely event that the used gravel or aggregates are found to be contaminated, these will be disposed at an approved facility.

### **5.4.5 Concrete**

All concrete, including all foundations, will be broken down and transported to an approved landfill or recycling facility.

### **5.4.6 Cables and Wiring**

All copper and/or aluminum wiring and associated electronic equipment (e.g., isolation switches, fuses, metering) will be recycled to the extent practical. Any materials not deemed recyclable will be disposed of at an approved landfill.

### **5.4.7 Fencing**

All fencing materials will be recycled at a metal recycling facility to the extent practical.

### **5.4.8 Debris and Residual Waste**

Any remaining debris or residual waste will be collected and all recyclable materials will be sorted. All sorted materials will be removed and sent to either an approved recycling or disposal facility. Any hazardous material from the property shall be disposed of in accordance with federal and state law.

Approximately 6,963 tons of steel are estimated to be generated, primarily from steel piles, fence, and racking structure. Additional steel sources include conduit, substation components, and storage containers. It is assumed storage containers will be reused on other projects. Steel will be accumulated in the staging area and salvaged for market value or recycled.

Approximately 4,444 tons of concrete will be generated from building and equipment foundations. Concrete will be broken into manageably sized pieces and staged for offsite recycling or disposal.

Used equipment, including inverters and transformers will be sold for market value or recycled. Prior to offsite recycling of transformers, oil will be removed from units, collected in appropriate containers, and transported to an approved recycling facility.

Approximately 8,025 cubic yards of gravel are estimated to be recovered from the access road. The gravel will be stockpiled and loaded for recycling or reuse elsewhere. It is assumed gravel will be used on another project and transportation will be managed by others.

General construction and demolition debris are anticipated to be generated as part of decommissioning. Construction and demolition debris will be disposed at an approved offsite disposal facility.

## **5.5 Decommissioning Estimate and Financial Assurance**

5.5.1 The estimated cost of decommissioning and reclamation in current dollars (excluding salvage value) is attached as Appendix A (the “Decommissioning Estimate”). The Decommissioning Estimate includes a mechanism for calculating increased removal costs due to inflation.

5.5.2 The Decommissioning Estimate shall be reviewed and recalculated, as may be necessary, every five (5) years.

5.5.3 Dominion shall ensure that funds will be available for decommissioning and reclamation as set forth herein and in Exhibit A by providing evidence to the Zoning Administrator that it has an investment grade credit rating with Moody’s and/or Standard and Poor’s. If the Project is subsequently sold to a non-investment grade entity, the decommissioning surety requirements set forth in subsection 5.5.4 will be required.

5.5.4 If a decommissioning surety is required pursuant to Section 5.5.3 above, a performance bond issued by a surety registered with the Virginia Commissioner of Insurance (and on the authorized insurance provider list published by the Commissioner) shall be provided to the County. The performance bond will be in an amount equal to 100% of the Decommissioning

Estimate (as calculated at the time) and will be for a term of one (1) year and will be continuously renewed, extended, or replaced. The performance bond will remain in effect until site restoration is completed and the site is restored in accordance with this plan, unless all or a portion of the bond is earlier released by the County as set forth in Section 5.5.5 below.

- 5.5.5 The bond surety shall be updated when the Decommissioning Estimate is updated. If the recalculated estimated cost exceeds the original estimated cost by ten percent (10%), then the bond shall be increased accordingly to satisfy the new cost estimate. If the recalculated estimated cost is less than ninety percent (90%) of the original estimated cost, then the County may approve reducing the amount of the bond to the recalculated estimate of cost. The County shall release the bond upon on the owner's or occupant's compliance with the Final Plan. The County may approve the partial release of the bond.



## APPENDIX B: DECOMMISSIONING ESTIMATE

## Decommissioning Cost Estimate Summary

This decommissioning cost estimate was developed based on 2021 Quarter 4 cost data. Actual costs and revenues will be dependent on salvage values and labor, equipment, and material cost at the time of decommissioning. Limited project design details were available during the preparation of this cost estimate; therefore, various assumptions on components and quantities were made and are included based on similarly sized solar projects. These primary assumptions are included in Table B-1.

**Table B-1. Solar Project Components and Quantity Assumptions**

Component	Quantity
Facility Capacity	80 MWac
Basis of Rates	2021 Q4 rates for Roanoke, VA
Solar Modules (71.2 lb ea)	190,998 ea
Module Type	Bifacial Monocrystalline
Modules assumed for reuse	95%
Modules assumed for recycling	5%
Steel Trackers (101 LF)	415 ea
Steel Trackers (202 LF)	1,561 ea
Steel Piles	13,000 ea
MV cable length	10,000 LF
Transmission line and poles	NA
Inverters	100 ea
Transformers	21 ea
Substation footprint	55,000 SF
Switchyard footprint <sup>(1)</sup>	75,000 SF
Access Road	40,625 LF
Perimeter Fence	119,133 LF

(1) The switchyard will not be decommissioned. Removal is not included in the estimate.

The cost and salvage estimates and associated assumptions are summarized in the following sections.

## Decommissioning Costs

Decommissioning costs include labor, equipment, and materials associated with decommissioning, as well as transportation and disposal costs for system components that are not sold for salvage. The major decommissioning activities include site preparation, equipment removal, site restoration, waste management, and overhead and management. These major activities are outlined in Table B-2.

Costs for damages to public roads are not included in the decommissioning estimate. Transportation services requiring use of public roads would be performed by subcontractors. If the subcontractor causes damage to public roads as a result of their work on this project, they would be responsible for repair of any damages.

Overhead and management costs include supervision and coordination, operating expenses for necessary equipment and facilities, and costs associated with obtaining preconstruction permits.

**Table B-2. Estimated Decommissioning Costs**

Item	Extended Cost
<b>Site Preparation</b>	
Materials	\$24,156
Labor	\$45,012
Equipment	\$12,756
<b>Equipment Removal</b>	
Materials	\$341,311
Labor	\$1,242,487
Equipment	\$1,518,950
<b>Site Restoration</b>	
Materials	\$480,429
Labor	\$32,570
Equipment	\$327,492
<b>Waste Management</b>	
Materials	\$219,102
Labor	-
Equipment	-
<b>Total Decommissioning Cost (with overhead and management)</b>	<b>\$4,244,656</b>

## Decommissioning Salvage

Upon decommissioning, many of the materials and components of the solar facility may be able to be sold for salvage/reuse. The total salvage value is estimated to be \$19,120,383 as outlined in Table B-3.

**Table B-3. Estimated Decommissioning Salvage Costs**

Item	Extended Salvage
<b>Equipment Salvage</b>	
Steel Salvage	\$835,503
Copper Salvage	\$13,066
Solar Modules	\$18,271,814
<b>Total Salvage Value</b>	<b>\$19,120,383 (-)</b>

## Decommissioning Cost Summary and Financial Assurance

The total decommissioning estimate including labor, materials, equipment, and disposal costs, without any reduction for salvage value is \$4,244,656. A detailed cost breakdown is provided in this attachment.

Upon the fifth anniversary of the Project's commissioning, and every fifth year thereafter until the Project's decommissioning, the applicant will engage a professional engineer licensed in the Commonwealth of Virginia to recertify the decommissioning cost estimate.

The applicant proposes to fund the final security amount through a Performance Bond issued by a surety registered with the Virginia Commissioner of Insurance and is, at the time of delivery of the bond, on the authorized insurance provider list published by the Commissioner. The Performance Bond will be in an amount equal to 100% of the estimated decommissioning and reclamation cost. The Performance Bond will be for a term of one year and will be continuously renewed, extended, or replaced so that it remains in effect for the remaining term of the agreement or until the secured decommissioning obligations are satisfied, whichever occurs later. The value of the security shall be based on the most recent estimated cost of decommissioning the solar farm. The security shall remain in effect until site restoration is completed and the site is restored to pre-construction conditions.

### **Inflation Adjusted Amount**

The total present value decommissioning cost without any reduction for salvage value is \$4,244,656. The adjusted decommissioning costs after 35 years at a 2% inflation rate (compounded annually) is \$8,488,843.

The following formula is used as a mechanism to calculate increased removal costs due to inflation:

$$FV = PV (1 + r)^n$$

Where:

FV = Future Value

PV = Present Value

r = interest rate per period (assumed average of 2% per year)

n = number of compounding periods (years)

**Detailed Cost Summary**



Unit Cost Estimate by WBS

Quantity	Description	Unit	Material	Labor	Equipment	Unit Rate Total	Ext. Mat.	Ext. Labor	Ext. Equip.	Est. Total	Data Release	CCI Location	Notes
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Laurel Branch Solar > Site Preparation

40825	Synthetic erosion control, silt fence, brush and remove 3' high	L.F.	\$ 0.57	\$ 1.08	\$ 0.29	\$ 1.95	\$ 23,156.25	\$ 44,281.25	\$ 11,781.25	\$ 79,218.75	Year 2021 Quarter 4 (240-241)	VIRGINIA / ROANOKE (240-241)	assumed for use along length of access road
1	Staging Area Setup	Ea.	\$ 1,000.00	\$ -	\$ -	\$ 1,000.00	\$ 1,000.00	\$ -	\$ -	\$ 1,000.00	Year 2021 Quarter 4 (240-241)	VIRGINIA / ROANOKE (240-241)	
5	Selective tree and shrub removal, selective clearing brush mowing, light density, tractor with rotary mower, excludes removal offsite	Acre	\$ -	\$ 140.20	\$ 194.93	\$ 341.13	\$ -	\$ 731.00	\$ 974.05	\$ 1,706.05	Year 2021 Quarter 4 (240-241)	VIRGINIA / ROANOKE (240-241)	

Laurel Branch Solar > Site Preparation Subtotal

											\$ 24,156.25 \$ 45,012.25 \$ 12,765.90 \$ 81,924.40		
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Laurel Branch Solar > Equipment Removal

243	Rent backhoe-loader 45 to 60 HP 3/4 CY capacity, incl. Hourly Oper. Cost.	Week	\$ -	\$ -	\$ 1,132.91	\$ 1,132.91	\$ -	\$ -	\$ 275,297.13	\$ 275,297.13	Year 2021 Quarter 4 (240-241)	VIRGINIA / ROANOKE (240-241)	Assume 6963 tons steel, 6800 bns PV modules(71.2b x 900996 module), and 4444 tons of concrete (assume 80,000SF foundations) = 16207 bns of material. Assume 0.25 ton per load = 72628 loads. 72628 loads at 6 loads per hour = 12105 hours at 50 hour weeks = 243 weeks.
607	Rent loader, skid steer, wheeled, 10 CF, 30 HP, Incl. Hourly Oper. Cost.	Week	\$ -	\$ -	\$ 940.53	\$ 940.53	\$ -	\$ -	\$ 570,801.71	\$ 570,801.71	Year 2021 Quarter 4 (240-241)	VIRGINIA / ROANOKE (240-241)	To move equipment and materials across site to interim staging areas - assume 0.1 tons per load and 6 loads per hour for 16207 bns of material =50843 hours = 607 weeks
649	Field personnel, general purpose laborer, average	Week	\$ -	\$ 872.50	\$ -	\$ 872.50	\$ -	\$ 566,252.50	\$ -	\$ 566,252.50	Year 2021 Quarter 4 (240-241)	VIRGINIA / ROANOKE (240-241)	Disassemble modules and racking system (6 modules per hour at 190998 modules = 31833 hours), unbolting of transformers and inverters (5 hours each, 121 items = 605 hours), fence cutting (NA - accounted for in separate line item) = 32438 labor hours = 649 labor weeks (50 weeks).
217	Crane crew, daily use for small jobs, 12-ton truck-mounted hydraulic crane, permit to pour	Day	\$ -	\$ 244.30	\$ 770.28	\$ 1,014.58	\$ -	\$ 53,013.10	\$ 167,160.76	\$ 220,163.86	Year 2021 Quarter 4 (240-241)	VIRGINIA / ROANOKE (240-241)	Remove 13000 steel piles 60 per day = 217 10 hour days
243	Rent front end loader, 4WD, art. incl. Hourly Oper. Cost.	Week	\$ -	\$ -	\$ 1,601.00	\$ 1,601.00	\$ -	\$ -	\$ 389,043.00	\$ 389,043.00	Year 2021 Quarter 4 (240-241)	VIRGINIA / ROANOKE (240-241)	Loader for movement to staging area and for offsite loading - 16207 bns of material. Assume 0.25 ton per load = 72628 loads. 72628 loads at 6 loads per hour = 12105 hours at 50 hour weeks = 240 weeks.
60000	Disassembly of concrete, floors, reinforcement, 4" thick, up to 2 stories, excludes handling, packaging or disposal costs	S.F.	\$ -	\$ 2.23	\$ 0.93	\$ 3.16	\$ -	\$ 133,800.00	\$ 55,800.00	\$ 189,600.00	Year 2021 Quarter 4 (240-241)	VIRGINIA / ROANOKE (240-241)	assumes 60000 SF concrete foundations
119133	Fencing demolition, remove chain link posts & fabric, 8 to 10' high	L.F.	\$ -	\$ 1.59	\$ 0.51	\$ 2.10	\$ -	\$ 189,421.47	\$ 60,767.83	\$ 250,179.30	Year 2021 Quarter 4 (240-241)	VIRGINIA / ROANOKE (240-241)	5% of panels will be recycled / require processing at 71.2 lb each. EOL processing fee is based on a salvage and reuse value analysis provided for another project in 2020.
678953	PV EOL processing for recycling	Lb.	\$ 0.17	\$ -	\$ -	\$ 0.17	\$ 115,992.01	\$ -	\$ -	\$ 115,992.01	Year 2021 Quarter 4 (240-241)	VIRGINIA / ROANOKE (240-241)	11 panels per CY. Assume facility is 1 hr away
17983	Transportation of PV modules to recycling facility	C.Y.	\$ 13.00	\$ -	\$ -	\$ 13.00	\$ 225,719.00	\$ -	\$ -	\$ 225,719.00	Year 2021 Quarter 4 (240-241)	VIRGINIA / ROANOKE (240-241)	
1	Overhead and Management	Ea.	\$ -	\$ 300,000.00	\$ -	\$ 300,000.00	\$ -	\$ 300,000.00	\$ -	\$ 300,000.00	Year 2021 Quarter 4 (240-241)	VIRGINIA / ROANOKE (240-241)	

Laurel Branch Solar > Equipment Removal Subtotal

											\$ 341,311.01 \$ 1,242,487.07 \$ 1,518,950.43 \$ 3,102,748.51		
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Laurel Branch Solar > Site Restoration

43	Rent water truck, off highway, 6000 gallon capacity, incl. Hourly Oper. Cost.	Week	\$ -	\$ -	\$ 5,695.32	\$ 5,695.32	\$ -	\$ -	\$ 244,898.76	\$ 244,898.76	Year 2021 Quarter 4 (240-241)	VIRGINIA / ROANOKE (240-241)	assumes 10 mo duration
78889	Topsoil placement and grading, lean or topsoil screened, 6" deep, burn and pack, truck dumped	S.Y.	\$ 5.95	\$ 0.33	\$ 0.57	\$ 6.85	\$ 469,390.55	\$ 26,033.37	\$ 44,966.73	\$ 540,388.65	Year 2021 Quarter 4 (240-241)	VIRGINIA / ROANOKE (240-241)	coverage of access road (65000 SF = 72222 SY) and removed foundations (60000 SF = 6667 SY) = 78889 SY
15	Seeding, mechanical seeding, 215 lb./acre, bulk, scrappers, bank measure, sand and gravel, 5.000' haul, 21 C.Y. bucket, self propelled scrapers, 1/4 push dozer	Acre	\$ 735.93	\$ 173.60	\$ 186.54	\$ 1,095.07	\$ 11,038.95	\$ 2,604.00	\$ 2,798.10	\$ 16,441.05	Year 2021 Quarter 4 (240-241)	VIRGINIA / ROANOKE (240-241)	
8025	Removal of gravel from access rd 4"	B.C.Y.	\$ -	\$ 0.49	\$ 4.34	\$ 4.83	\$ -	\$ 3,932.25	\$ 34,828.50	\$ 38,760.75	Year 2021 Quarter 4 (240-241)	VIRGINIA / ROANOKE (240-241)	removal of gravel from access rd 4", 40825 LF

Laurel Branch Solar > Site Restoration Subtotal

											\$ 480,426.50 \$ 32,568.62 \$ 327,492.09 \$ 840,480.21		
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Laurel Branch Solar > Waste Management

[illegible]

Unit Cost Estimate by WBS

Quantity	Description	Unit	Material	Labor	Equipment	Unit Rate Total	Ext. Mat.	Ext. Labor	Ext. Equip.	Ext. Total	Data Release	CCI Location	Notes
Laurel Branch Solar > Material and Equipment Salvage													
6405	Copper wire salvage value, unit cost credit, excludes handling, packaging, or disposal costs	Lb.	\$ 2.04	\$ -	\$ -	\$ 2.04	\$ 13,066.20	\$ -	\$ -	\$ 13,066.20	Year 2021 Quarter 4	VIRGINIA / ROANOKE (240-241)	copper wire from above ground wiring, 10,000 LF MW cabling = 6405 lb * 1.75lb/640.5lb per 1000LF base and copper 1.75lb, 10000 lb = 10 1000-lb sections >= 10 1640.5 =6405 lb
13925058	Steel salvage value, unit cost credit, excludes handling, packaging, or disposal costs	Lb.	\$ 0.06	\$ -	\$ -	\$ 0.06	\$ 835,503.48	\$ -	\$ -	\$ 835,503.48	Year 2021 Quarter 4	VIRGINIA / ROANOKE (240-241)	steel from piles = 25 lb/ft, 15 ft ea WG HDG steel beam= 375 lb/pile, assume 13000 piles = 4,875,000 lb steel from trackers = assume 25lb/LF x 357237 LF= 8,930,925 lb steel from trackers steel fencing: 119133 LF at 100 lb/100 LF = 119133 lb
181448	End-of-life salvage value for solar modules (suitable for reuse)	Ea.	\$ 100.70	\$ -	\$ -	\$ 100.70	\$ 18,271,813.60	\$ -	\$ -	\$ 18,271,813.60	Year 2021 Quarter 4	VIRGINIA / ROANOKE (240-241)	assumes 95% of modules will be suitable for reuse (181448) and 5% (9550) will be recycled. 181448 modules x \$100.70/module or \$0.19/W at 530W per module. Value of PV module is based on a salvage and reuse value analysis provided for another project in 2020.
Laurel Branch Solar > Material and Equipment Salvage Subtotal													
			\$ 102.80	\$ -	\$ -	\$ 102.80	\$ 19,120,383.28	\$ -	\$ -	\$ 19,120,383.28			

# LAUREL BRANCH SOLAR PROJECT

## CONDITIONAL USE PERMIT SITE PLAN

### PRELIMINARY - NOT FOR CONSTRUCTION

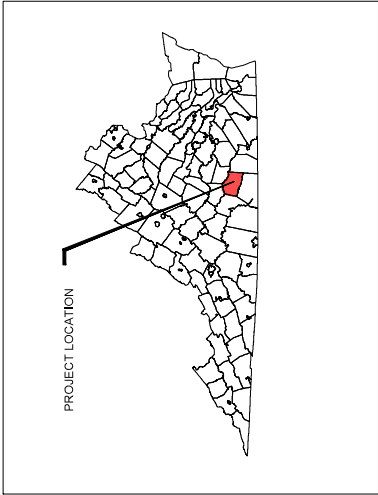
LUNENBURG COUNTY,  
VIRGINIA

FEBRUARY 2022

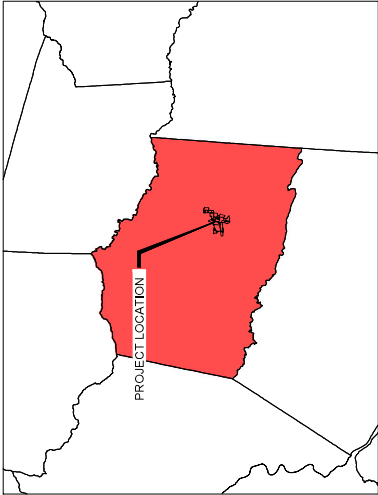
SITE METRICS TO INCLUDE		ACRES
TOTAL PROPERTY ACRES		1,969.4
ESTIMATED ACRES WITHIN FENCE		579
SPA WETLAND ACRES		654
LANDSCAPE BUFFER ACRES		111.5
PERCENT IMPROVED		31.6%
INVERTER SIZE		840 kW
INVERTER QUANTITY		94
AC CAPACITY AT 0.95 PF AT PVI		80 MW
DC CAPACITY		98.36 MW
LF OF FENCE		111,676
LF OF ROAD		42,506

DRAWING INDEX	
SHEET No.	DRAWING TITLE
CP000	EXISTING CONDITIONS SKETCH PLAN SHEET
CP001	POST-DEVELOPMENT CONSTRUCTION SKETCH PLAN SHEET
CP002	ADJACENT PARCEL INFORMATION SHEET
CP003	EXISTING CONDITIONS SKETCH PLAN SHEET
CP004	EXISTING CONDITIONS SKETCH PLAN SHEET
CP005	EXISTING CONDITIONS SKETCH PLAN SHEET
CP006	EXISTING CONDITIONS SKETCH PLAN SHEET
CP007	EXISTING CONDITIONS SKETCH PLAN SHEET
CP008	EXISTING CONDITIONS SKETCH PLAN SHEET
CP009	EXISTING CONDITIONS SKETCH PLAN SHEET
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CP046	EXISTING CONDITIONS SKETCH PLAN SHEET
CP047	EXISTING CONDITIONS SKETCH PLAN SHEET
CP048	EXISTING CONDITIONS SKETCH PLAN SHEET
CP049	EXISTING CONDITIONS SKETCH PLAN SHEET
CP050	EXISTING CONDITIONS SKETCH PLAN SHEET

No.	Name	APN	Address*	zoning	Assess	SHEET LOCATION
1	Duke Lee Farms Inc.	058-06-0-01	131 Laurel Branch Road	ASR1	2.0	CP100, CP101, CP102
2	Duke Lee Farms Inc.	058-06-0-02	131 Laurel Branch Road	ASR1	2.0	CP100, CP101, CP102
3	Duke Lee Farms Inc.	058-06-0-03	131 Laurel Branch Road	ASR1	2.0	CP100, CP101, CP102
4	Cambridge James M and Wendie S.	058-06-0-04	131 Laurel Branch Road	ASR1	2.0	CP100, CP101, CP102
5	Duke Lee Farms Inc.	058-06-0-05	131 Laurel Branch Road	ASR1	2.0	CP100, CP101, CP102
6	Duke Lee Farms Inc.	058-06-0-06	131 Laurel Branch Road	ASR1	2.0	CP100, CP101, CP102
7	Duke Lee Farms Inc.	058-06-0-07	131 Laurel Branch Road	ASR1	2.0	CP100, CP101, CP102
8	Duke Lee Farms Inc.	058-06-0-08	131 Laurel Branch Road	ASR1	2.0	CP100, CP101, CP102
9	Duke Lee Farms Inc.	058-06-0-09	131 Laurel Branch Road	ASR1	2.0	CP100, CP101, CP102
10	Duke Lee Farms Inc.	058-06-0-10	131 Laurel Branch Road	ASR1	2.0	CP100, CP101, CP102
11	Duke Lee Farms Inc.	058-06-0-11	131 Laurel Branch Road	ASR1	2.0	CP100, CP101, CP102
12	Duke Lee Farms Inc.	058-06-0-12	131 Laurel Branch Road	ASR1	2.0	CP100, CP101, CP102
13	Duke Lee Farms Inc.	058-06-0-13	131 Laurel Branch Road	ASR1	2.0	CP100, CP101, CP102
14	Duke Lee Farms Inc.	058-06-0-14	131 Laurel Branch Road	ASR1	2.0	CP100, CP101, CP102
15	Duke Lee Farms Inc.	058-06-0-15	131 Laurel Branch Road	ASR1	2.0	CP100, CP101, CP102
16	Duke Lee Farms Inc.	058-06-0-16	131 Laurel Branch Road	ASR1	2.0	CP100, CP101, CP102
17	Duke Lee Farms Inc.	058-06-0-17	131 Laurel Branch Road	ASR1	2.0	CP100, CP101, CP102
18	Duke Lee Farms Inc.	058-06-0-18	131 Laurel Branch Road	ASR1	2.0	CP100, CP101, CP102
19	Duke Lee Farms Inc.	058-06-0-19	131 Laurel Branch Road	ASR1	2.0	CP100, CP101, CP102
20	Duke Lee Farms Inc.	058-06-0-20	131 Laurel Branch Road	ASR1	2.0	CP100, CP101, CP102



STATE VICINITY MAP  
LAUREL BRANCH SOLAR PROJECT  
LUNENBURG COUNTY, VIRGINIA



COUNTY VICINITY MAP  
LAUREL BRANCH SOLAR PROJECT  
LUNENBURG COUNTY, VIRGINIA

PREPARED BY:



complex world | CLEAR SOLUTIONS™

4104 COX ROAD - SUITE 120, GLEN ALLEN, VA 23060  
TEL (804) 290-4321 | FAX: (804) 270-2739

PREPARED FOR:



800 E CANAL STREET, RICHMOND, VA 23219



STAMP

NOT FOR  
CONSTRUCTION

PRELIMINARY

LAUREL BRANCH  
SOLAR PROJECT  
DOMINION ENERGY  
LUNENBURG COUNTY  
VIRGINIA

PROJECT NUMBERS:

194-1058-0025

SHEET TITLE:

COVER SHEET

SHEET SIZE: ARCH (D)  
24" X 36" (60" X 914)

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NO.	REVISION	DATE	INT.
A	FOR REVIEW	01/14/2022	GAR
B	FOR REVIEW	02/03/2022	GAR
C	FOR REVIEW	02/09/2022	GAR



DATE: 01/14/2022  
DRAWN BY: OR  
ENGINEER: MS  
APPROVED BY: ED

PROJECT PHASE:  
CONDITIONAL USE PERMIT SITE PLANS  
SCALE: N/A

SHEET NO.:  
CP000



1

NOT FOR  
CONSTRUCTION

# PRELIMINARY

LAUREL BRANCH  
SOLAR PROJECT  
DOMINION ENERGY  
LUNenburg COUNTY  
VIRGINIA

PROJECT NUMBERS:  
194-1058-0025

**SHEET TITLE:**  
**EXISTING CONDITION**  
**INDEX SHEET**

**SHEET SIZE:** ARCH "D"  
24" X 36" (610 x 914)

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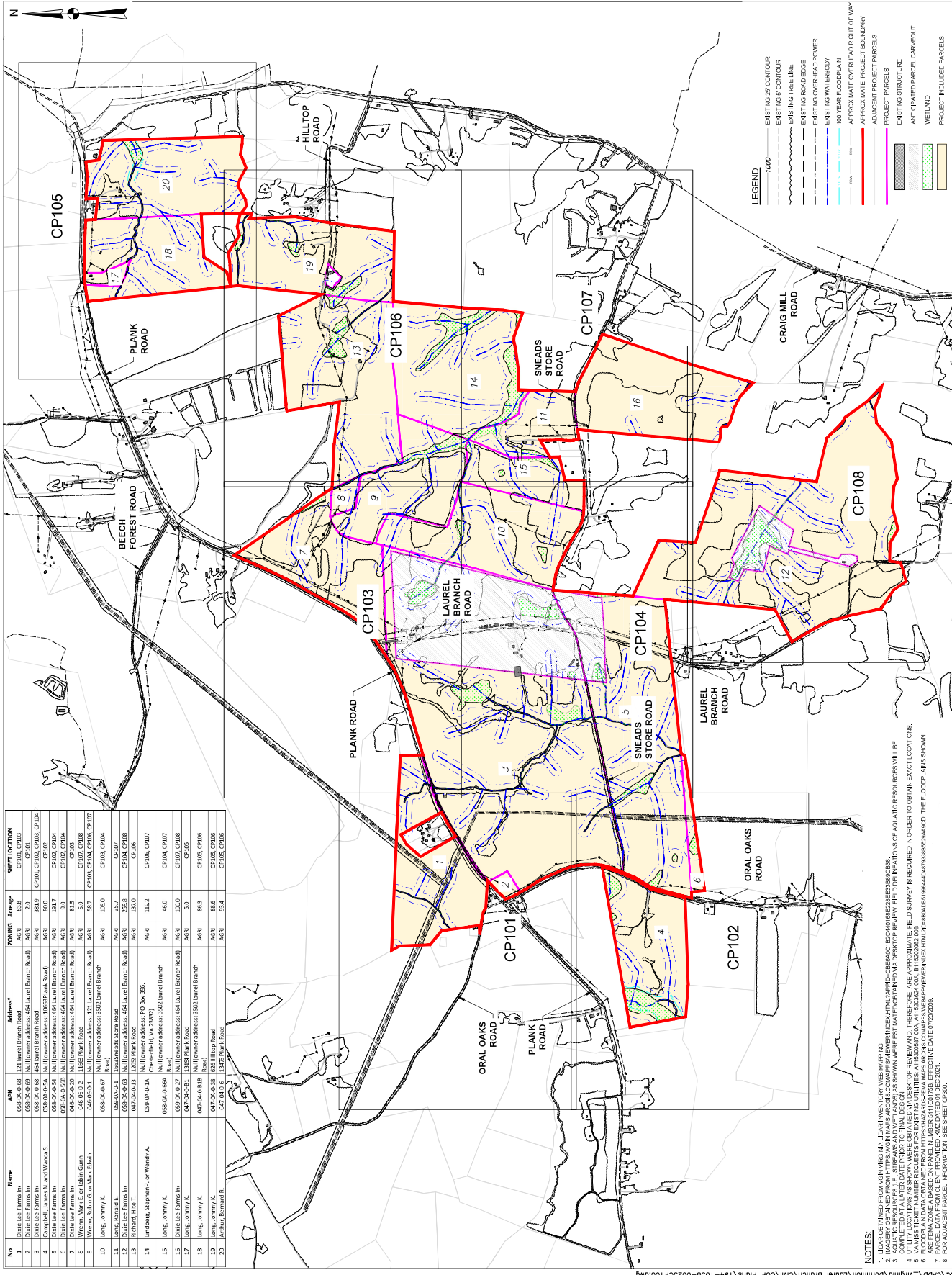
NO.	REVISION	DATE	IN
A	FOR REVIEW	01/14/2022	G
B	FOR REVIEW	02/03/2022	G
C	FOR REVIEW	02/08/2022	G



DATE:	01/14/2020
DRAWN BY:	G
ENGINEER:	M
APPROVED BY:	E

PROJECT PHASE:  
CONDITIONAL USE PERMIT SITE PLAN  
SCALE:  
1" = 800'

SHEET NO.:  
CD100



NOTES:

- [illegible]

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**STAMP:**

NOT FOR CONSTRUCTION

# PRELIMINARY

LAUREL BRANCH  
SOLAR PROJECT  
DOMINION ENERGY  
LUNENBURG COUNTY  
VIRGINIA

PROJECT NUMBERS:  
194-1058-0025

SHEET TITLE:  
POST-DEVELOPMENT  
CONDITIONS  
INDEX SHEET

**SHEET SIZE:** ARCH "D"  
24" X 36" (610 X 914)

0 1/2" 1"

NO.	REVISION	DATE	INT.
A	FOR REVIEW	01/14/2022	GAR
B	FOR REVIEW	02/03/2022	GAR
C	FOR REVIEW	02/08/2022	GAR

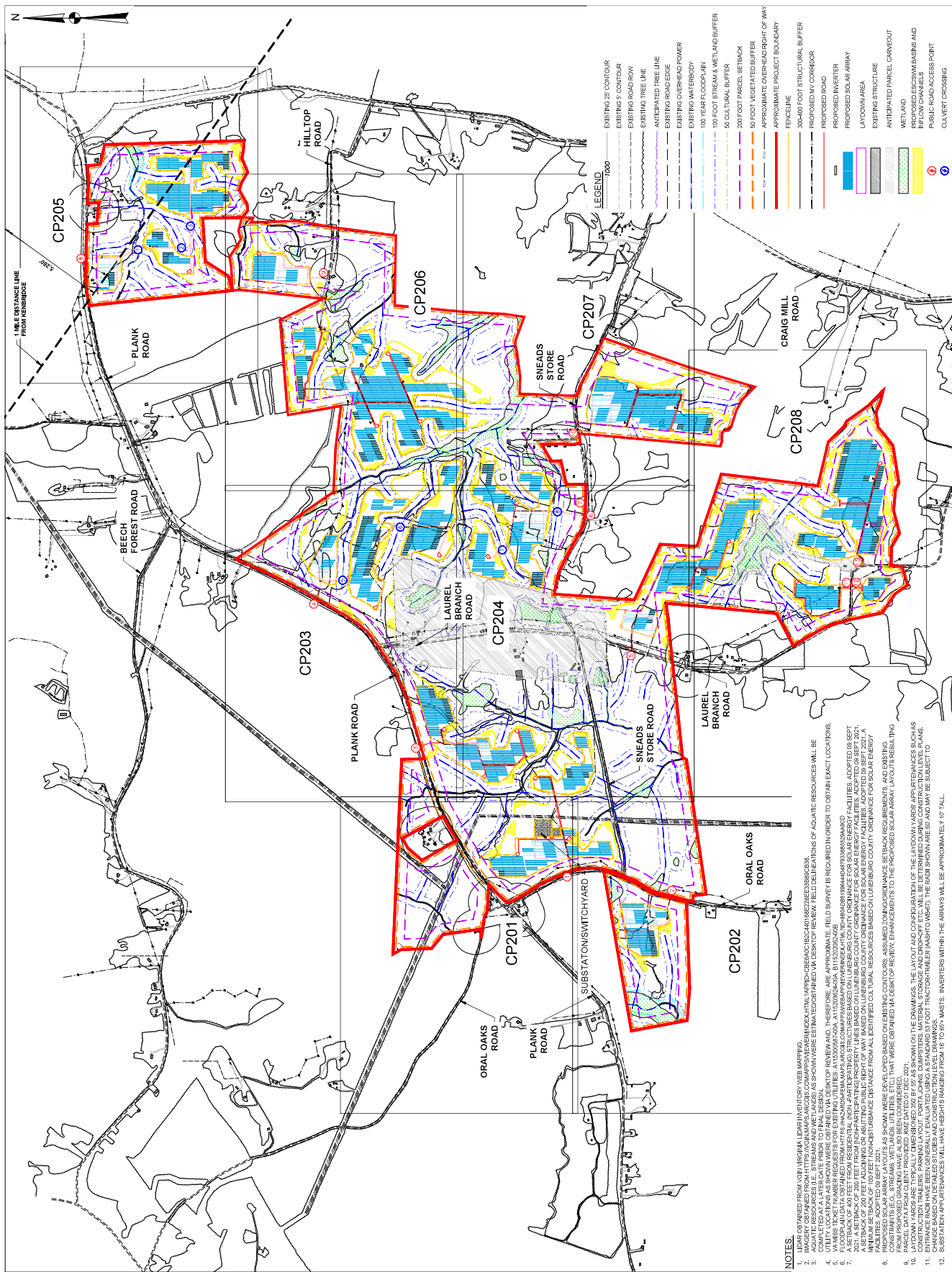


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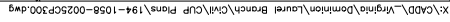
DATE:	01/14/2022
DRAWN BY:	GR
ENGINEER:	MS
APPROVED BY:	EO
PROJECT PHASE: CONDITIONAL USE PERMIT SITE PLANS	
SCALE:	1" = 800'

SHEET NO.: CP200

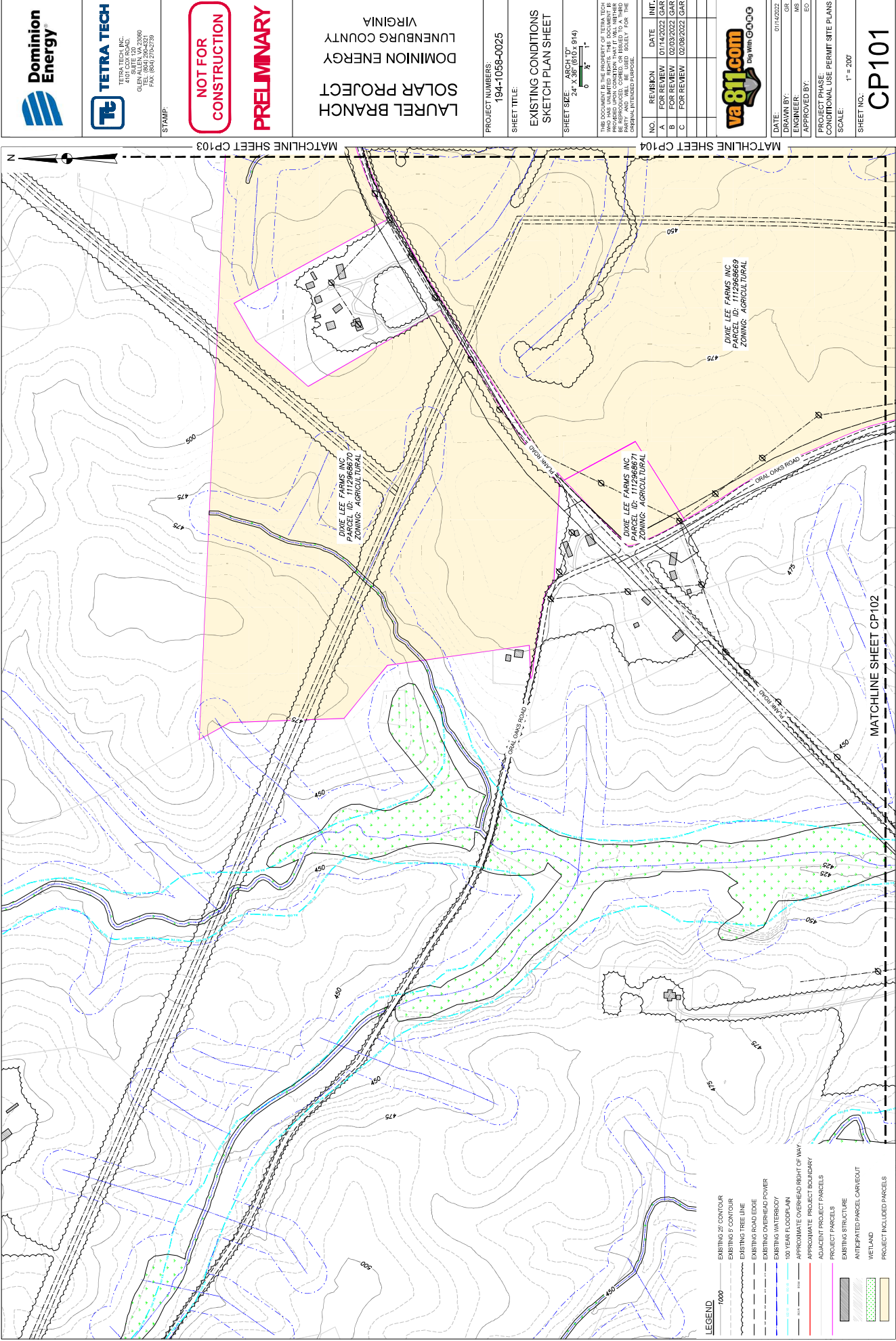


NOTES:

1. LISTS OBTAINED FROM VIRGINIA AQUARIUM, ENVIRONMENTAL VIEW MAPPING.
2. IMAGES OBTAINED FROM HTFS AND VIRGINIA ARCHIVES COMBINED WITH AERIAL PHOTOGRAPHS OBTAINED FROM HTFS AND VIRGINIA ARCHIVES. THE DATA WAS USED TO IDENTIFY AND LOCATE THE EXISTING AND PROPOSED AQUATIC RESOURCES WILL BE COMPLETED AT A LATER DATE PRIOR TO FINAL DESIGN.
3. UTILITY LOCATIONS AS SHOWN WERE OBTAINED FROM A DESKTOP REVIEW AND, THEREFORE, ARE APPROXIMATE. FIELD SURVEY IS REQUIRED IN ORDER TO OBTAIN EXACT LOCATIONS.
4. FLOODPLAIN DATA OBTAINED FROM HTFS AND VIRGINIA ARCHIVES COMBINED WITH AERIAL PHOTOGRAPHS OBTAINED FROM HTFS AND VIRGINIA ARCHIVES. THE DATA WAS USED TO IDENTIFY AND LOCATE THE EXISTING AND PROPOSED AQUATIC RESOURCES WILL BE COMPLETED AT A LATER DATE PRIOR TO FINAL DESIGN.
5. A SETBACK OF 30 FEET FROM RESIDENTIAL (R1) PARTICIPATING STRUCTURES BASED ON LUNenburg COUNTY ORDINANCE FOR SOLAR ENERGY FACILITIES, ADOPTED BY SEPT 2017. A SETBACK OF 20 FEET FROM INDUSTRIAL (I1) PARTICIPATING STRUCTURES BASED ON LUNenburg COUNTY ORDINANCE FOR SOLAR ENERGY FACILITIES, ADOPTED BY SEPT 2017. A SETBACK OF 20 FEET AROUND ANY EXISTING OR PROPOSED PUBLIC UTILITY OR POWER LINE BASED ON LUNenburg COUNTY ORDINANCE FOR SOLAR ENERGY FACILITIES, ADOPTED BY SEPT 2017.
6. PROPOSED SOLAR PANEL AVAILABILITY AS SHOWN WERE DEVELOPED BASED ON EXISTING CONDITIONS, ASSIGNED MANAGEMENT SETBACK REQUIREMENTS, AND EXISTING PROPOSED GROUND GRADE. THE DATA WAS OBTAINED IN ORDER TO IDENTIFY, ENHANCEMENTS TO THE PROPOSED SOLAR PANEL AVAILABILITY RESULTING FROM PROPOSED GRADING HAS ALSO BEEN CONSIDERED.
7. PARCEL DATA FROM CLIENT PROVIDED AND DATED 01 DEC 2017.
8. CONSTRUCTION TRAILERS, PARKING LOT, PORTA POTS, AND DUMPSTERS. THE LOCATION AND CONFIGURATION OF THE EXISTING VARIOUS UTILITIES SUCH AS CONSTRUCTION TRAILERS, PARKING LOT, PORTA POTS, AND DUMPSTERS, MATERIAL STORAGE AND DROP-OFF SITE, WILL BE DETERMINED DURING CONSTRUCTION. LEVEL PLANS BASED ON EXISTING CONDITIONS AND CONSTRUCTION LEVEL PLANS. THE EXISTING AND PROPOSED CONSTRUCTION LEVEL PLANS WILL BE SUBJECT TO SUBSEQUENT ADJUSTMENTS BASED ON FIELD SURVEY DATA.
9. SUBSTATION APPEARANCES WILL HAVE HEIGHTS BASED FROM 16 TO 60' VARIOUS DIFFERENCES WITHIN THE AVARAYS WILL BE APPROXIMATELY 1' TALL.







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NOT FOR CONSTRUCTION

PRELIMINARY

LAUREL BRANCH SOLAR PROJECT

DOMINION ENERGY

LUNENBURG COUNTY

VIRGINIA

PROJECT NUMBERS:

194-1058-0025

SHEET TITLE:

EXISTING CONDITIONS

SKETCH PLAN SHEET

SHEET SIZE:

ARCH (D)

24" X 36" (610 X 914)

0 8 16

1"

NO. REVISION DATE INT.

A FOR REVIEW 01/14/2022 GAR

B FOR REVIEW 02/03/2022 GAR

C FOR REVIEW 02/09/2022 GAR

DATE: 01/16/2022

DRAWN BY: OR

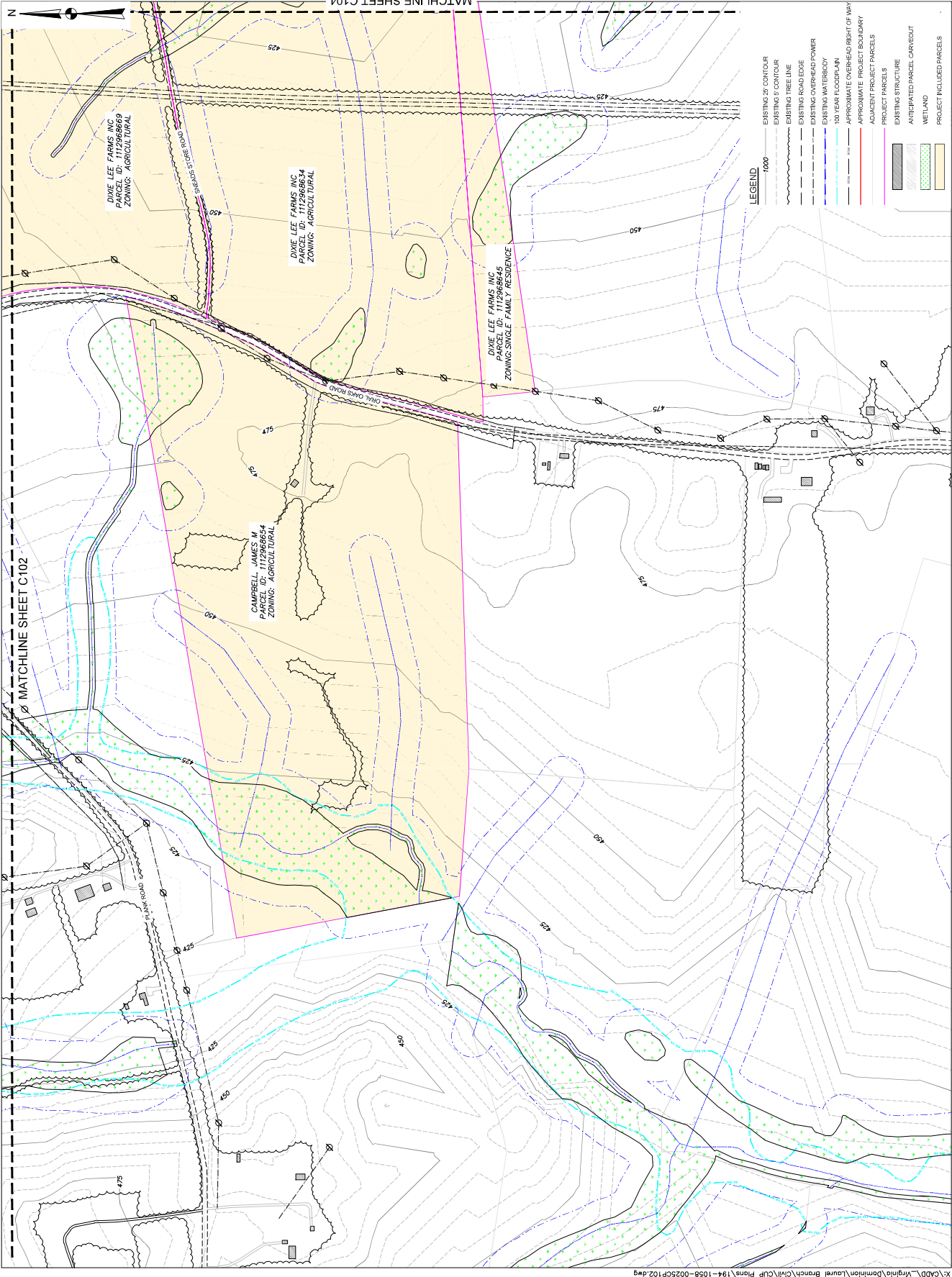
ENGINEER: MS

APPROVED BY: ED

PROJECT PHASE: CONDITIONAL USE PERMIT SITE PLANS

SCALE: 1" = 200'

SHEET NO.: CP101



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PRELIMINARY

LAUREL BRANCH SOLAR PROJECT

DOMINION ENERGY LUNENBURG COUNTY VIRGINIA

PROJECT NUMBERS: 194-1058-0025

SHEET TITLE: EXISTING CONDITIONS SKETCH PLAN SHEET

SHEET SIZE: ARCH D 24" X 36" (914 X 914)

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B	FOR REVIEW	02/03/2022	GAR
C	FOR REVIEW	02/09/2022	GAR

DATE: 01/14/2022

DRAWN BY: OR

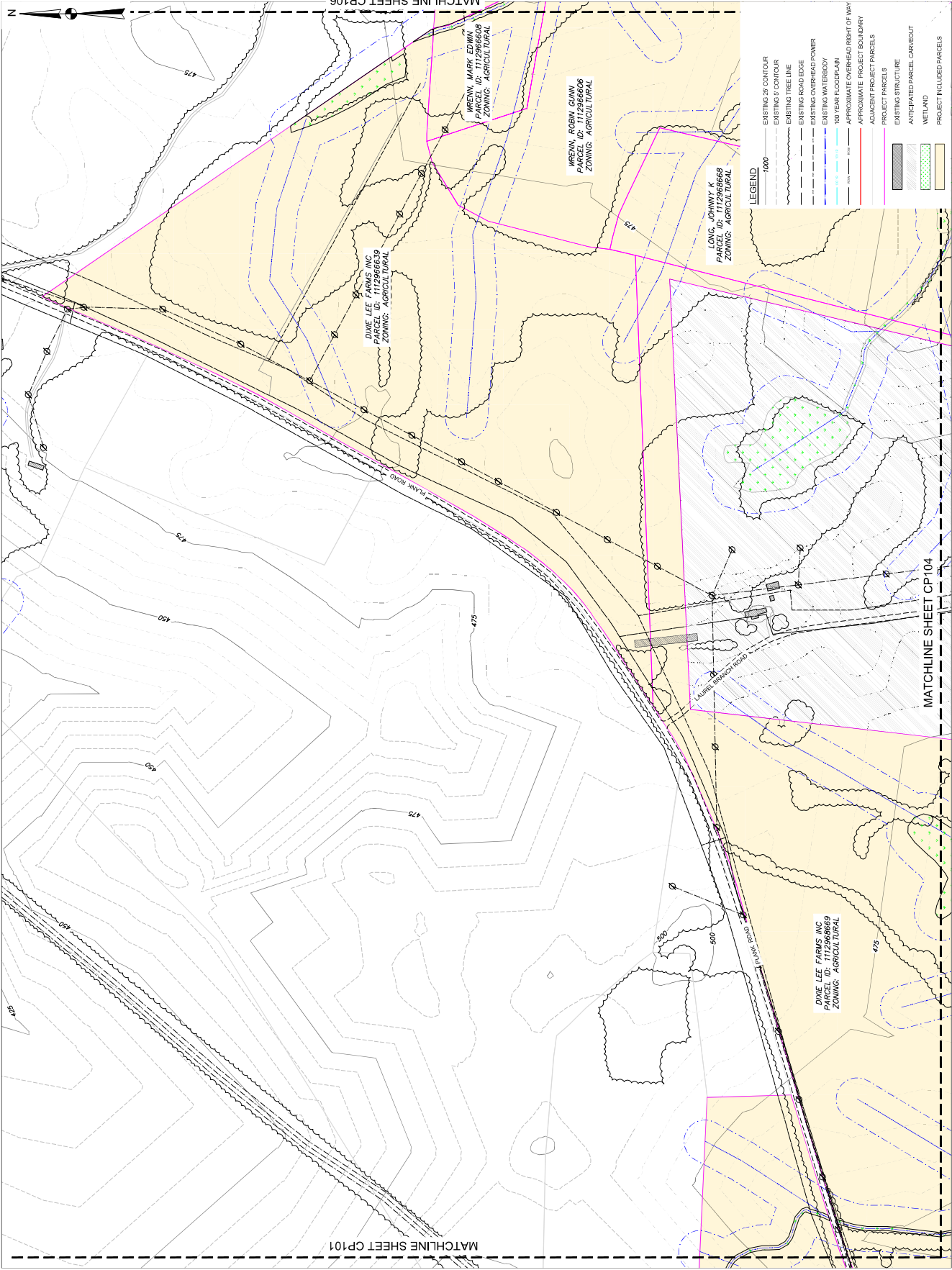
ENGINEER: MS

APPROVED BY: ED

PROJECT PHASE: CONDITIONAL USE PERMIT SITE PLANS

SCALE: 1" = 200'

SHEET NO.: CP102



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PRELIMINARY

LAUREL BRANCH SOLAR PROJECT

DOMINION ENERGY

LUNENBURG COUNTY

VIRGINIA

PROJECT NUMBERS:

194-1058-0025

SHEET TITLE:

EXISTING CONDITIONS

SKETCH PLAN SHEET

SHEET SIZE:

ARCH (D)

24" X 36" (610 X 914)

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C	FOR REVIEW	02/09/2022	GAR

DATE:	01/14/2022
DRAWN BY:	OR
ENGINEER:	MS
APPROVED BY:	ED

PROJECT PHASE:

CONDITIONAL USE PERMIT SITE PLANS

SCALE:


1" = 200'

SHEET NO.:


CP103

X:\CADD\Virginia\Dominion Branch\Laurel\CP Plans\194-1058-0025\CP103.dwg





**Dominion Energy**



**TETRA TECH**  
TETRA TECH, INC.  
4491 COS ROAD,  
GLENN ALLEN, VA 22086  
TEL: (804) 770-1000  
FAX: (804) 274-2729

STAMP:

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PRELIMINARY

**LAUREL BRANCH SOLAR PROJECT**  
DOMINION ENERGY  
LUNENBURG COUNTY  
VIRGINIA


PROJECT NUMBERS:  
194-1058-0025

SHEET TITLE:  
EXISTING CONDITIONS  
SKETCH PLAN SHEET

SHEET SIZE: ARCH (D)  
24" X 36" (914 X 914)  
0 8 16

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C	FOR REVIEW	02/09/2022	GAR



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DATE: 01/14/2022

DRAWN BY: OR

ENGINEER: MS

APPROVED BY: ED

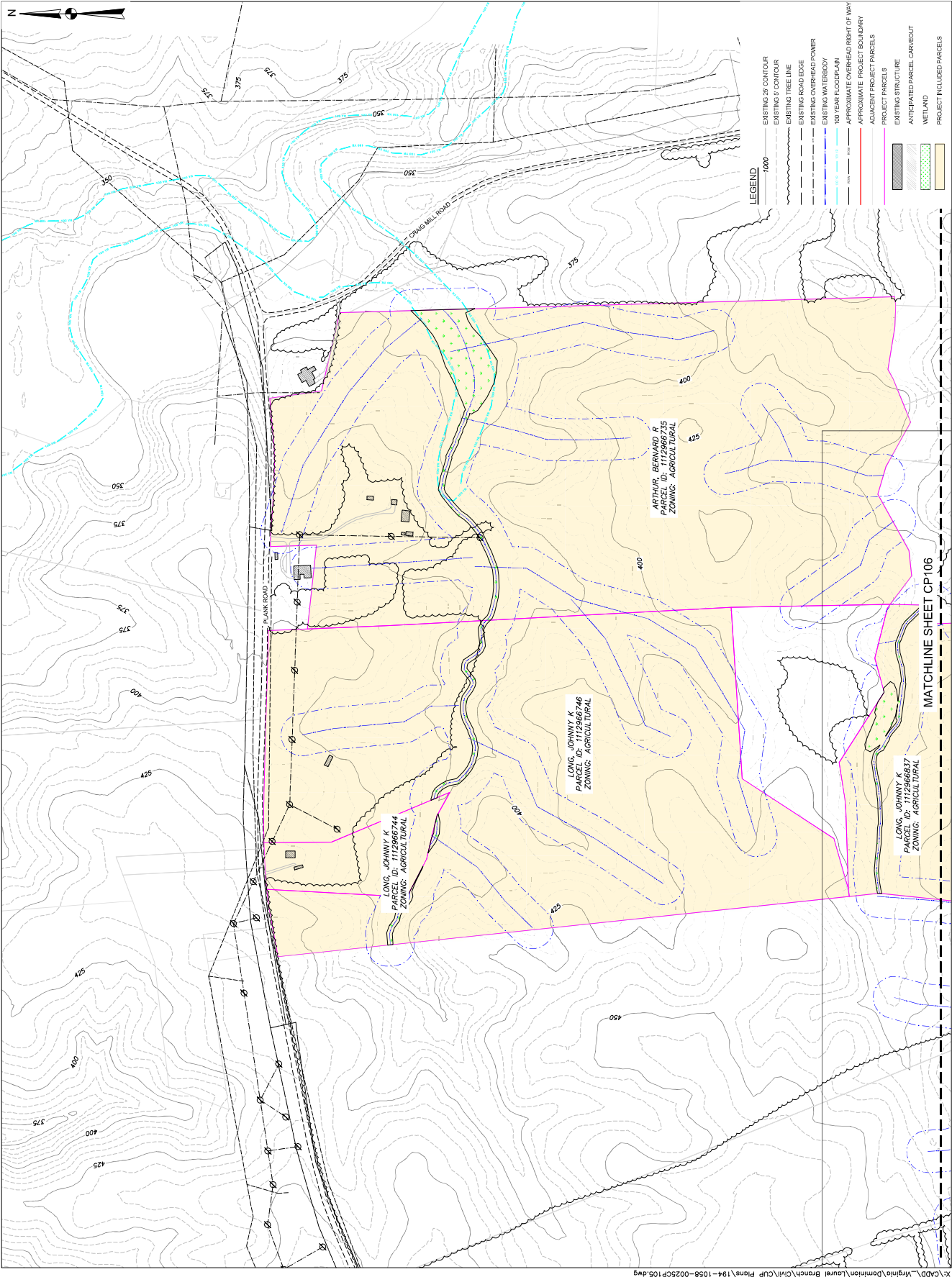
PROJECT PHASE: CONDITIONAL USE PERMIT SITE PLANS

SCALE: 1" = 200'

SHEET NO.: **CP104**

The map displays a topographic representation of a solar project site. Key features include:   
 - **Topography:** Contour lines indicating elevations of 420, 450, and 480 feet.   
 - **Infrastructure:** Laurel Branch Road and a 100-year floodplain.   
 - **Property Boundaries:** Labeled parcels include Dixie Lee Farms Inc. (112968659, 112968634, 112968658) and Long Johnny K. (112968658).   
 - **Site Planning:** Project parcels are outlined in pink, with anticipated parcel carveouts shown in green.   
 - **Legend:** Defines symbols for existing contours, tree lines, road edges, waterbodies, floodplains, project boundaries, adjacent project parcels, project parcels, existing structures, anticipated parcel carveouts, wetlands, and project included parcels.   
 - **Matchlines:** Indicate connections to sheets CP101, CP102, CP103, and CP108.

X:\CADD\Virginia\Dominion Branch\Laurel Branch\194-1058-0025\CP104.dwg



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PRELIMINARY

SOLAR BRANCH

LUNENBURG COUNTY

VIRGINIA

PROJECT NUMBERS:  
194-1058-0025

SHEET TITLE:  
EXISTING CONDITIONS  
SKETCH PLAN SHEET

SHEET SIZE: ARCH (D)  
24" X 36" (60" X 914)  
0 30 60 120  
1" = 30'

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C	FOR REVIEW	02/09/2022	GAR

DATE: 01/16/2022

DRAWN BY: OR

ENGINEER: MS

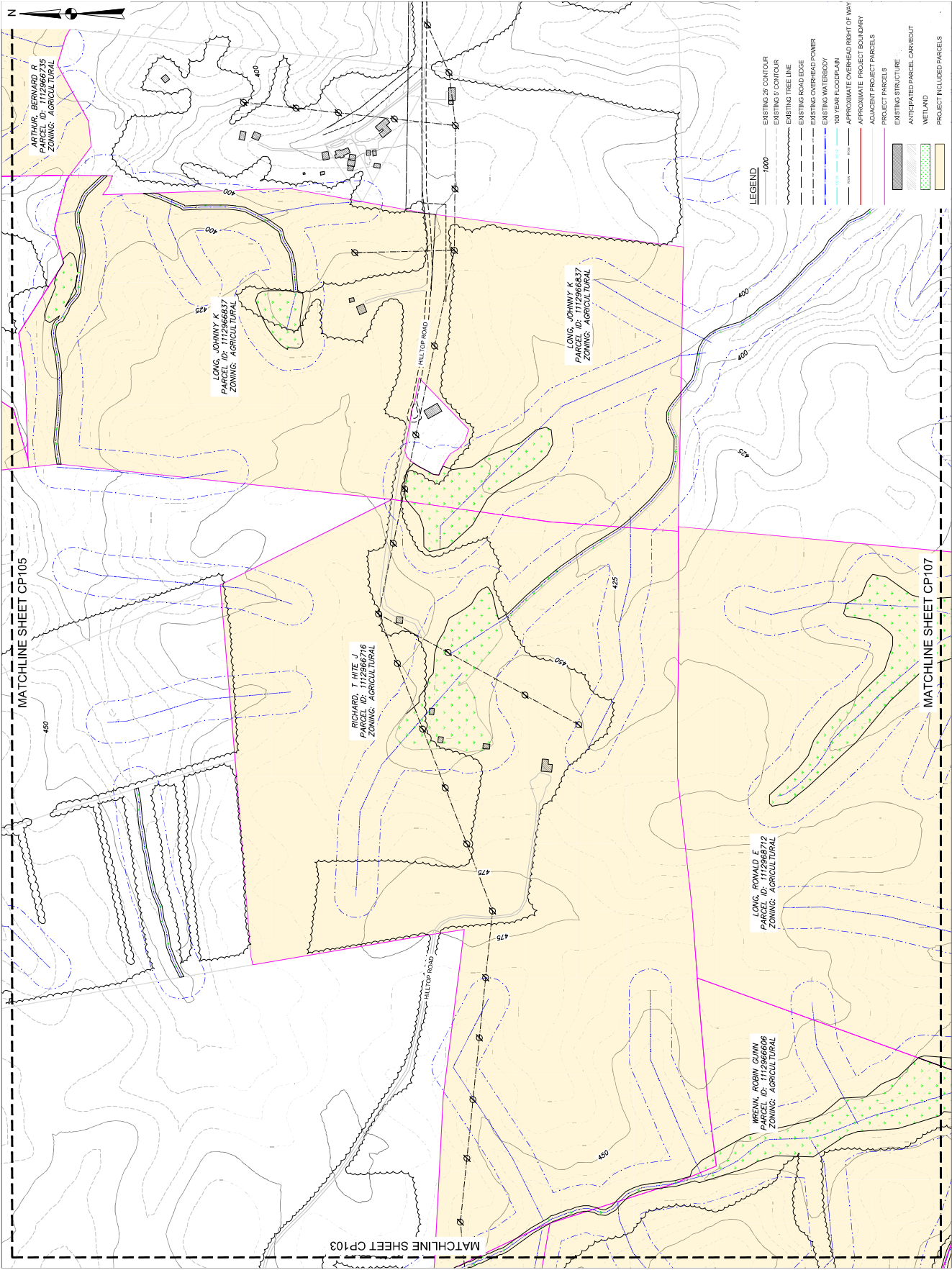
APPROVED BY: ED

PROJECT PHASE: CONDITIONAL USE PERMIT SITE PLANS

SCALE: 1" = 200'

SHEET NO.: CP105





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LAUREL BRANCH SOLAR PROJECT  
DOMINION ENERGY  
LUNENBURG COUNTY  
VIRGINIA

PROJECT NUMBERS:  
194-1058-0025

SHEET TITLE:  
EXISTING CONDITIONS  
SKETCH PLAN SHEET

SHEET SIZE: ARCH (D)  
24" X 36" (610 X 914)  
1" = 32'

NO. REVISION DATE INT.

A FOR REVIEW 01/14/2022 GAR

B FOR REVIEW 02/03/2022 GAR

C FOR REVIEW 02/09/2022 GAR

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DATE: 01/16/2022

DRAWN BY: OR

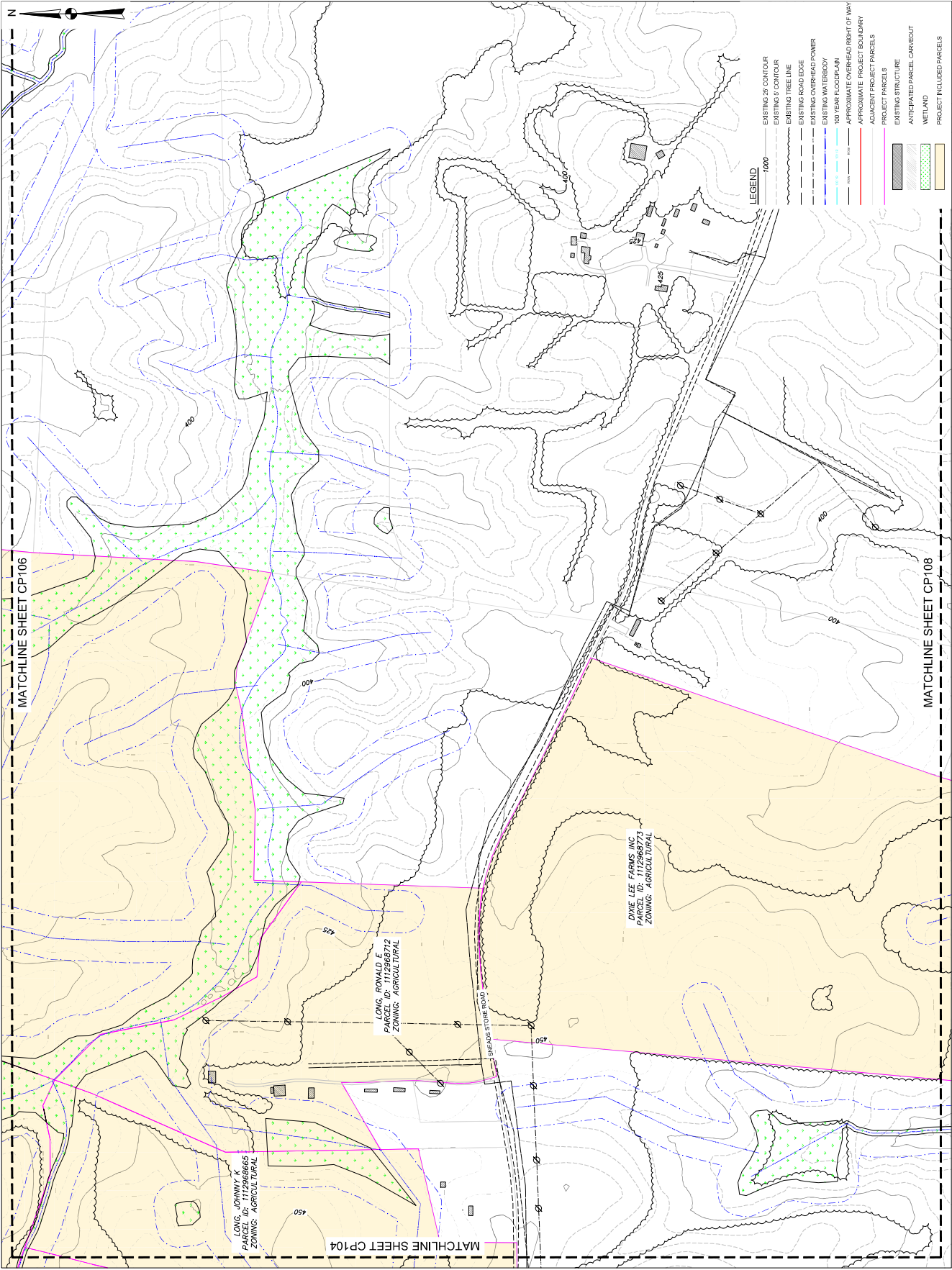
ENGINEER: MS

APPROVED BY: ED

PROJECT PHASE: CONDITIONAL USE PERMIT SITE PLANS

SCALE: 1" = 200'

SHEET NO.: CP106



TETRA TECH, INC.  
4410 COS ROAD,  
GLENN ALLEN, VA 22086  
TEL: (804) 272-2779  
FAX: (804) 272-2779

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PRELIMINARY

SOLAR PROJECT

LUNEBURG COUNTY

VIRGINIA

PROJECT NUMBERS:

194-1058-0025

SHEET TITLE:

EXISTING CONDITIONS

SKETCH PLAN SHEET

SHEET SIZE:

ARCH (D)

24" X 36" (610 X 914)

1"

2"

1"

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B	FOR REVIEW	02/03/2022	GAR
C	FOR REVIEW	02/09/2022	GAR

DATE:

01/16/2022

DRAWN BY:

MS

ENGINEER:

MS

APPROVED BY:

ED

PROJECT PHASE:

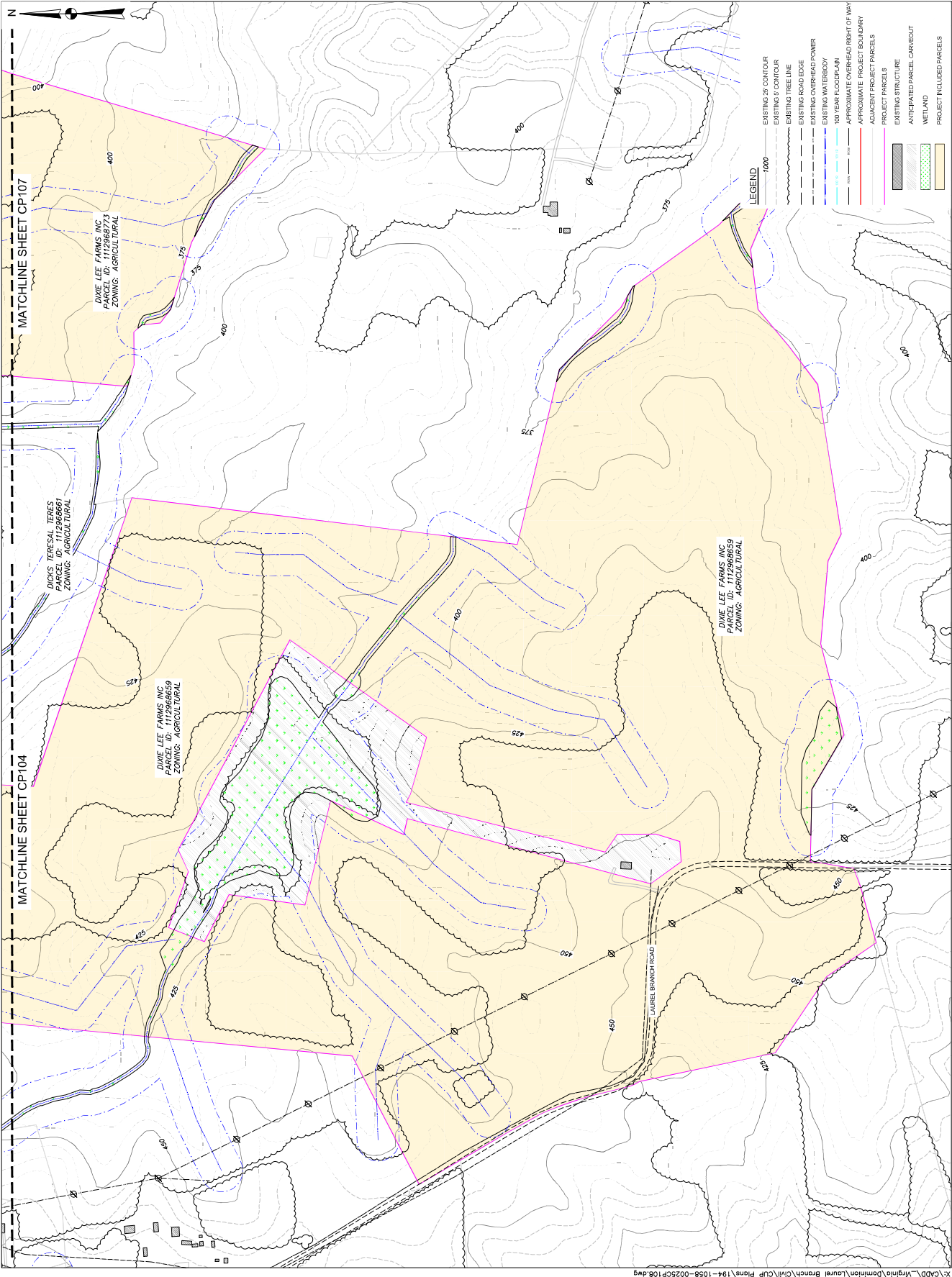
CONDITIONAL USE PERMIT SITE PLANS

SCALE:

1" = 200'

SHEET NO.:

CP107



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LAUREL BRANCH SOLAR PROJECT  
DOMINION ENERGY  
LUNENBURG COUNTY  
VIRGINIA

PROJECT NUMBERS:  
194-1058-0025

SHEET TITLE:  
EXISTING CONDITIONS  
SKETCH PLAN SHEET

SHEET SIZE: ARCH (D)  
24" X 36" (60" X 914)

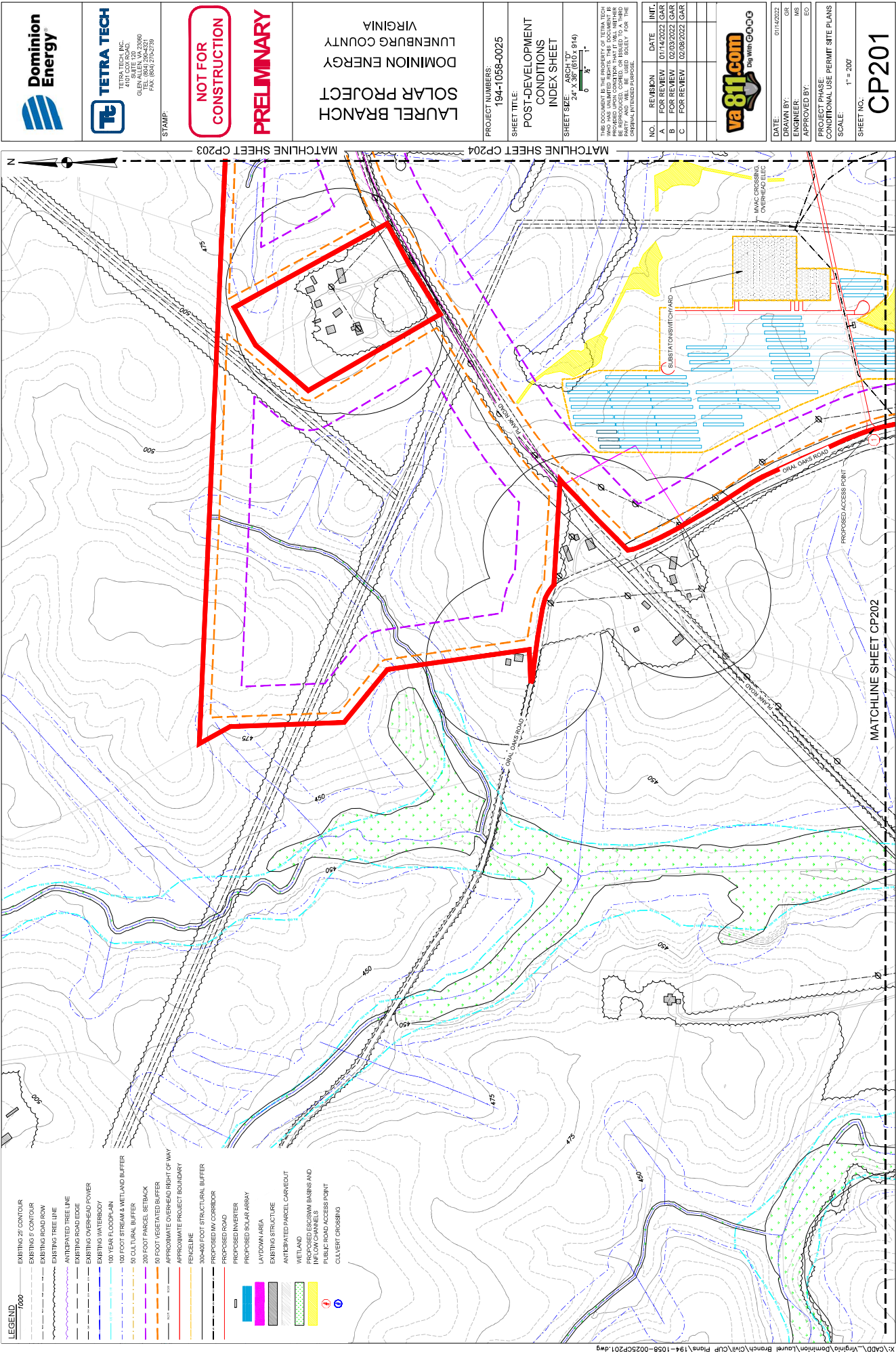
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A	FOR REVIEW	01/14/2022	GAR
B	FOR REVIEW	02/03/2022	GAR
C	FOR REVIEW	02/09/2022	GAR



DATE:	01/14/2022
DRAWN BY:	OR
ENGINEER:	MS
APPROVED BY:	ED
PROJECT PHASE:	CONDITIONAL USE PERMIT SITE PLANS
SCALE:	1" = 200'
SHEET NO.:	CP108





- LEGEND**
- 1000
  - EXISTING 25' CONTOUR
  - EXISTING 5' CONTOUR
  - EXISTING ROAD ROW
  - EXISTING TREE LINE
  - ANTICIPATED TREE LINE
  - EXISTING ROAD EDGE
  - EXISTING OVERHEAD POWER
  - EXISTING WATERBODY
  - 100' YEAR FLOODPLAIN
  - 100' FOOT STREAM & WETLAND BUFFER
  - 50' CULTURAL BUFFER
  - 200' FOOT PARCEL SETBACK
  - 50' FOOT VEGETATED BUFFER
  - APPROXIMATE OVERHEAD RIGHT OF WAY
  - APPROXIMATE PROJECT BOUNDARY
  - FENCE LINE
  - 30'-400' FOOT STRUCTURAL BUFFER
  - PROPOSED MY CORRIDOR
  - PROPOSED ROAD
  - PROPOSED INVERTER
  - PROPOSED SOLAR ARRAY
  - LAYDOWN AREA
  - EXISTING STRUCTURE
  - ANTICIPATED PARCEL CARRIED OUT
  - WETLAND, SWAMPY BASINS AND INFLOW CHANNELS
  - PUBLIC ROAD ACCESS POINT
  - CULVERT CROSSING



NOT FOR CONSTRUCTION

PRELIMINARY

LAUREL BRANCH  
SOLAR PROJECT  
DOMINION ENERGY  
LUNENBURG COUNTY  
VIRGINIA

PROJECT NUMBERS:  
194-1058-0025

SHEET TITLE:  
POST-DEVELOPMENT  
CONDITIONS  
INDEX SHEET

SHEET SIZE: A36X170"  
24" X 36" (610 X 914)

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NO.	REVISION	DATE	INT.
A	FOR REVIEW	01/14/2022	GAR
B	FOR REVIEW	02/03/2022	GAR
C	FOR REVIEW	02/09/2022	GAR



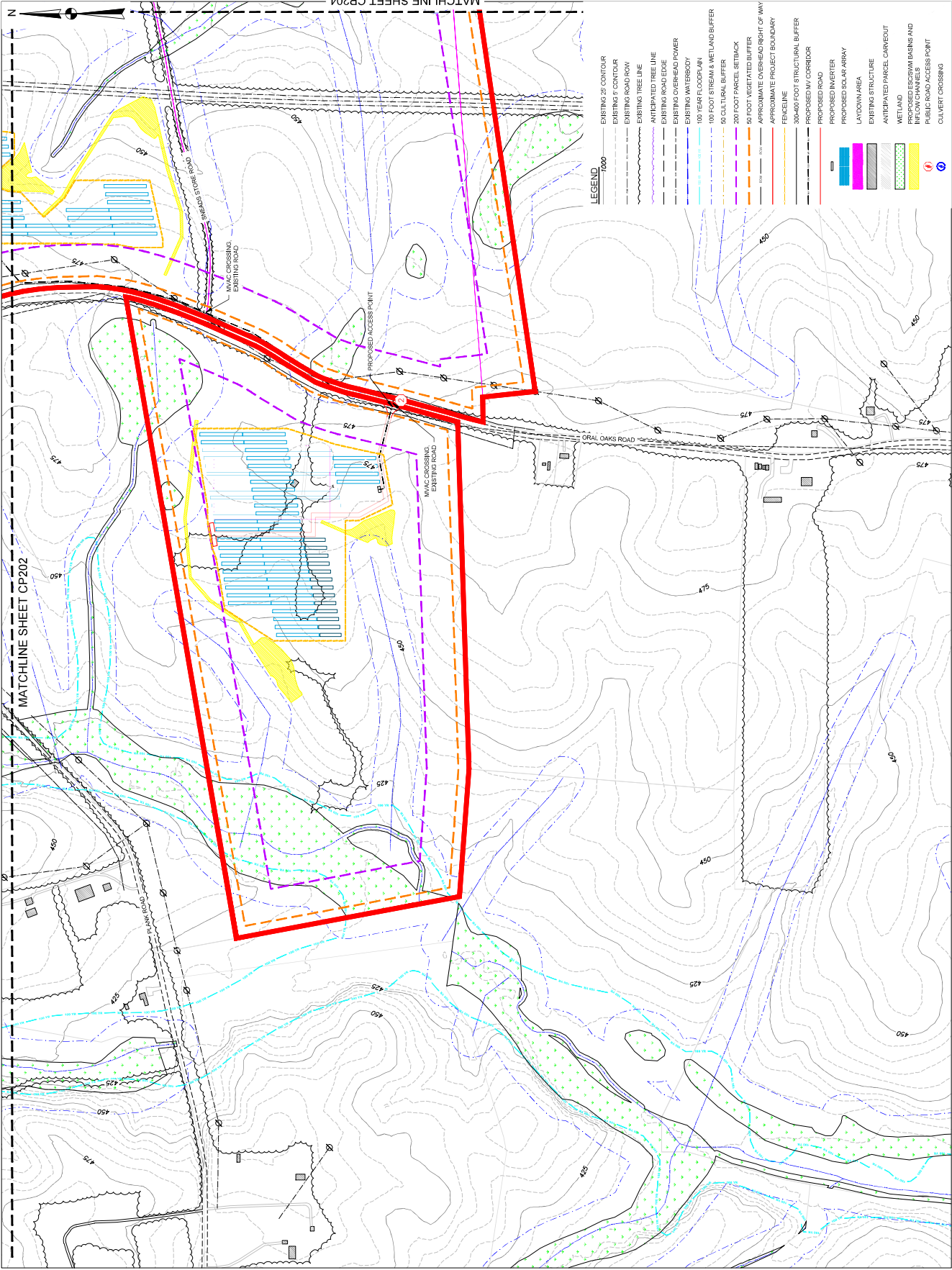
DATE: 01/16/2022  
DRAWN BY: OR  
ENGINEER: MS  
APPROVED BY: EO

PROJECT PHASE:  
CONDITIONAL USE PERMIT SITE PLANS

SCALE: 1" = 200'

SHEET NO.:  
CP201





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LAUREL BRANCH SOLAR PROJECT

LUNENBURG COUNTY VIRGINIA

PROJECT NUMBERS:  
194-1058-0025

SHEET TITLE:  
POST-DEVELOPMENT CONDITIONS INDEX SHEET

SHEET SIZE: 36" X 48" (914 X 1219)  
24" X 36" (610 X 914)

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NO.	REVISION	DATE	INT.
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C	FOR REVIEW	02/09/2022	GAR

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DATE: 01/14/2022

DRAWN BY: OR


ENGINEER: MS

APPROVED BY: ED

PROJECT PHASE: CONDITIONAL USE PERMIT SITE PLANS

SCALE: 1" = 200'

SHEET NO.: CP202



**TETRA TECH**  
TETRA TECH, INC.  
4415 COS ROAD,  
GLENN ALLEN, VA 22086  
TEL: (804) 274-2779  
FAX: (804) 274-2779

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**LAUREL BRANCH SOLAR PROJECT**  
DOMINION ENERGY  
LUNENBURG COUNTY  
VIRGINIA


PROJECT NUMBERS:  
194-1058-0025

SHEET TITLE:  
POST-DEVELOPMENT  
CONDITIONS  
INDEX SHEET

SHEET SIZE: ARCH (D)  
24" X 36" (610 X 914)  
1" = 200'

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C	FOR REVIEW	02/09/2022	GAR

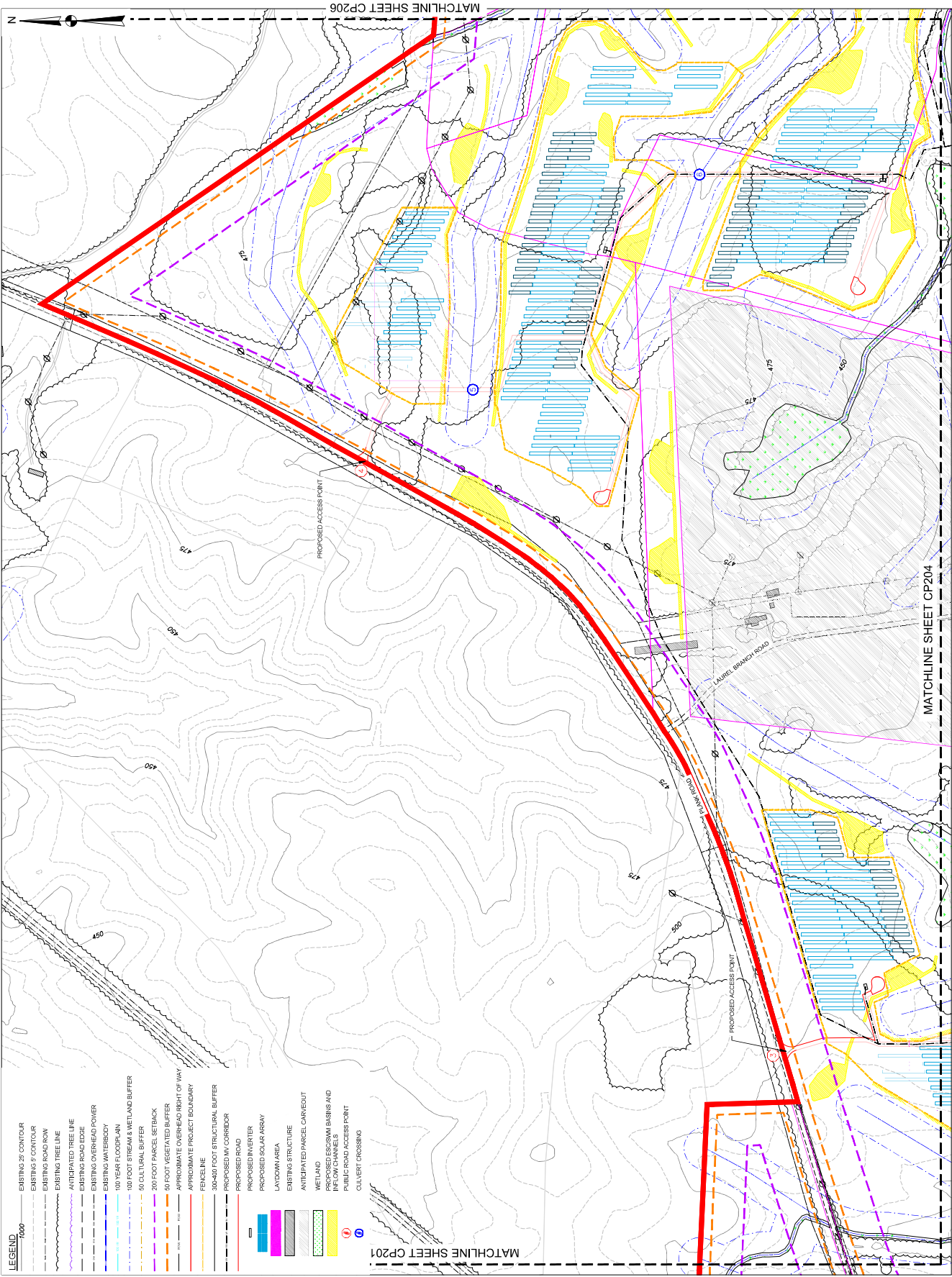


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DATE: 01/16/2022  
DRAWN BY: OR  
ENGINEER: MS  
APPROVED BY: ED

PROJECT PHASE: CONDITIONAL USE PERMIT SITE PLANS  
SCALE: 1" = 200'

SHEET NO.: **CP203**



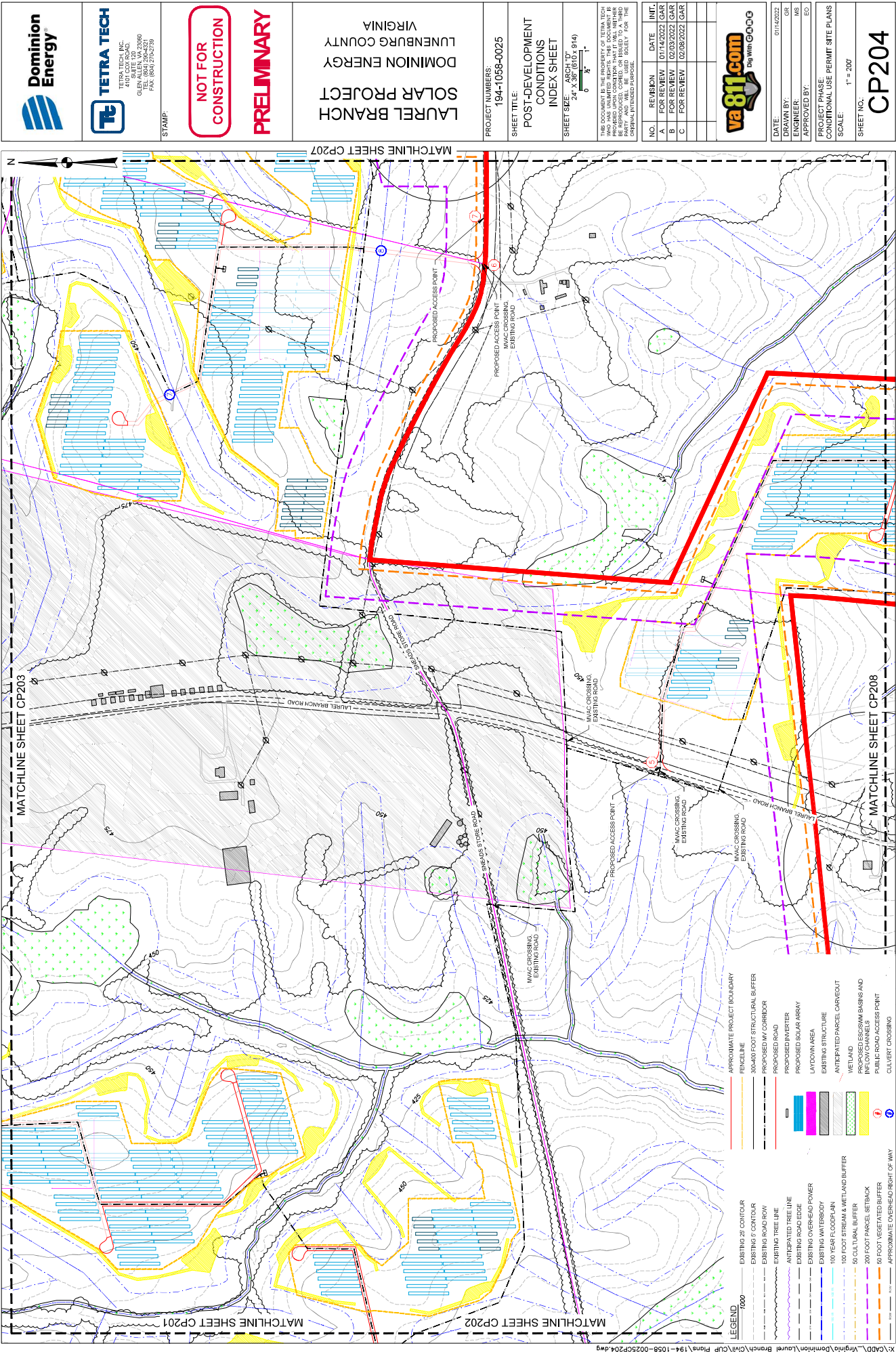
The map displays a topographic area with contour lines ranging from 450 to 500 feet. A prominent red line indicates the proposed solar array layout, which follows a path through the terrain. Various colored lines and areas represent different project components and buffers: yellow for wetland buffers, blue for floodplains, and green for other environmental features. A network of roads is shown, including Laurel Branch Road and a proposed road. The map includes several 'PROPOSED ACCESS POINT' labels and a 'CULVERT CROSSING' near the bottom. Matchlines on the left and right edges indicate connections to sheets CP201 and CP204. A north arrow is located in the upper left corner.

**LEGEND**

- 1000' EXISTING 25' CONTOUR
- EXISTING 5' CONTOUR
- EXISTING ROAD ROW
- EXISTING TREE LINE
- ANTICIPATED TREE LINE
- EXISTING ROAD EDGE
- EXISTING OVERHEAD POWER
- EXISTING WATERBODY
- 100 YEAR FLOODPLAIN
- 100 FOOT STREAM & WETLAND BUFFER
- 50 CULTURAL BUFFER
- 200 FOOT FENCEL SETBACK
- 50 FOOT VEGETATED BUFFER
- APPROXIMATE OVERHEAD RIGHT OF WAY
- APPROXIMATE PROJECT BOUNDARY
- FENCELINE
- 300-400 FOOT STRUCTURAL BUFFER
- PROPOSED ROAD
- PROPOSED INVERTER
- PROPOSED SOLAR ARRAY
- LAYDOWN AREA
- EXISTING STRUCTURE
- ANTICIPATED PARCEL CANNED OUT
- WETLAND ECOSYSTEM BASIS AND NCE CHANNELS
- PUBLIC ROAD ACCESS POINT
- CULVERT CROSSING

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PRELIMINARY

LAUREL BRANCH SOLAR PROJECT

LUNENBURG COUNTY VIRGINIA

PROJECT NUMBERS: 194-1058-0025

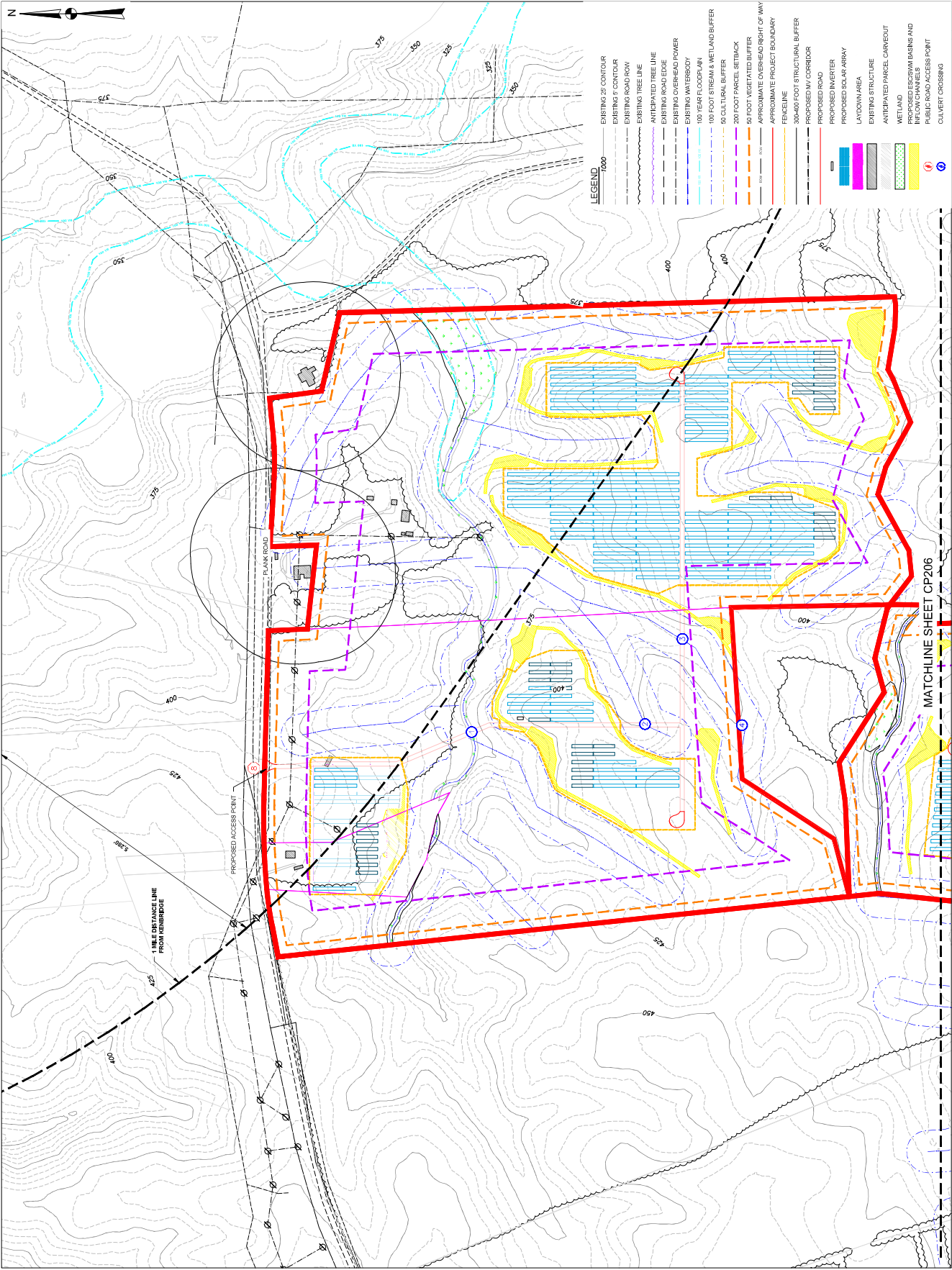
SHEET TITLE: POST-DEVELOPMENT CONDITIONS INDEX SHEET

SHEET SIZE: ARCH (D) 24" X 36" (914 X 914)

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C	FOR REVIEW	02/09/2022	GAR

DATE:	01/16/2022
DRAWN BY:	OR
ENGINEER:	MS
APPROVED BY:	ED
PROJECT PHASE:	CONDITIONAL USE PERMIT SITE PLANS
SCALE:	1" = 200'
SHEET NO.:	CP204



TETRA TECH, INC.  
4491 COW ROAD,  
GLENN ALLEN, VA 22086  
TEL: (804) 274-2779  
FAX: (804) 274-2779

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PRELIMINARY

LAUREL BRANCH SOLAR PROJECT

LUNENBURG COUNTY VIRGINIA

PROJECT NUMBERS:

194-1058-0025

SHEET TITLE:

POST-DEVELOPMENT CONDITIONS INDEX SHEET

SHEET SIZE:

36" X 36" (9.14 X 9.14)

NO. REVISION

DATE

INT.

A FOR REVIEW

01/14/2022

GAR

B FOR REVIEW

02/03/2022

GAR

C FOR REVIEW

02/09/2022

GAR

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No Win GO-OG

DATE:

01/14/2022

DRAWN BY:

OR

ENGINEER:

MS

APPROVED BY:

ED

PROJECT PHASE:

CONDITIONAL USE PERMIT SITE PLANS

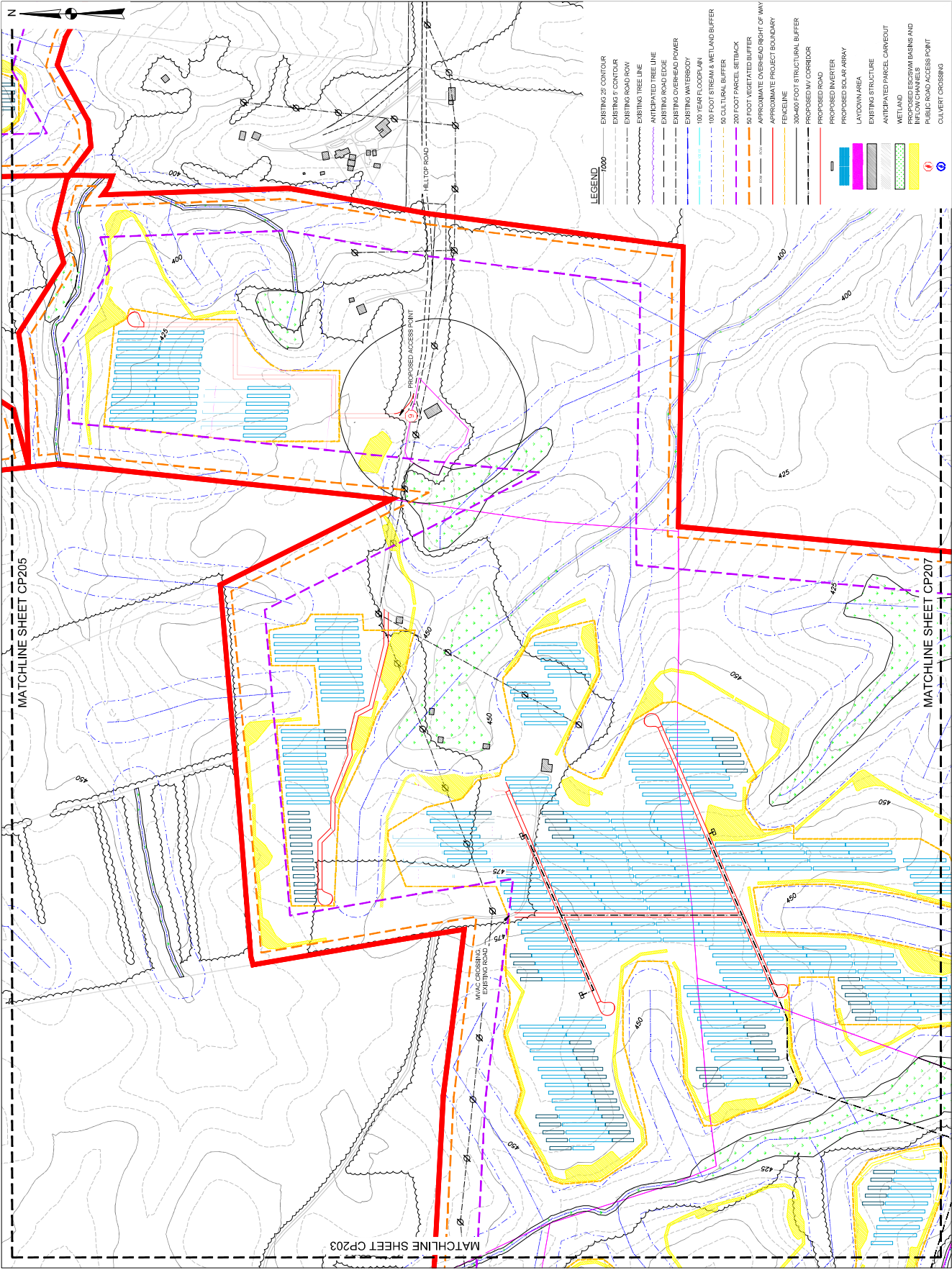
SCALE:

1" = 200'

SHEET NO.:

CP205





TETRA TECH, INC.  
4101 LEE ROAD,  
GLENN ALLEN, VA 22086  
TEL: (804) 274-2779  
FAX: (804) 274-2779

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NOT FOR CONSTRUCTION

PRELIMINARY

LAUREL BRANCH SOLAR PROJECT

LUNENBURG COUNTY VIRGINIA

PROJECT NUMBERS:

194-1058-0025

SHEET TITLE:

POST-DEVELOPMENT CONDITIONS INDEX SHEET

SHEET SIZE:

A3(11" x 17")

24" x 36" (610 x 914)

0 30 60 120

1" = 30'

NO. REVISION DATE INT.

A FOR REVIEW 01/14/2022 GAR

B FOR REVIEW 02/03/2022 GAR

C FOR REVIEW 02/09/2022 GAR

DATE: 01/14/2022

DRAWN BY: OR

ENGINEER: MS

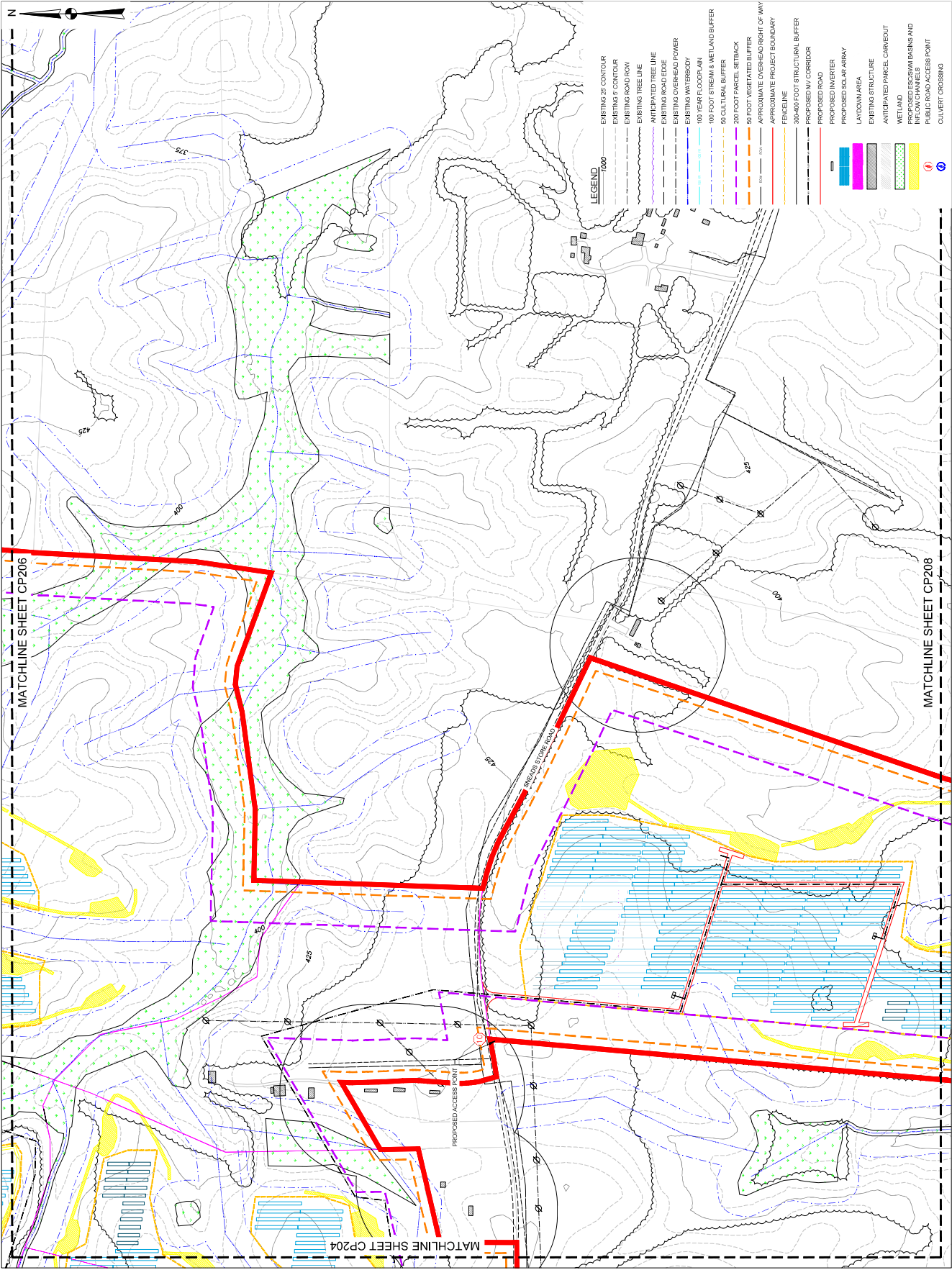
APPROVED BY: ED

PROJECT PHASE: CONDITIONAL USE PERMIT SITE PLANS

SCALE: 1" = 200'

SHEET NO.:

CP206



**TETRA TECH**  
TETRA TECH, INC.  
4410 COS ROAD,  
GLENN ALLEN, VA 22086  
TEL: (804) 270-2200  
FAX: (804) 270-2779

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**PRELIMINARY**

**LAUREL BRANCH  
SOLAR PROJECT**  
DOMINION ENERGY  
LUNENBURG COUNTY  
VIRGINIA

PROJECT NUMBERS:  
194-1058-0025

SHEET TITLE:  
POST-DEVELOPMENT  
CONDITIONS  
INDEX SHEET

SHEET SIZE: ARCH (D)  
24" X 36" (610 X 914)  
1" = 20'

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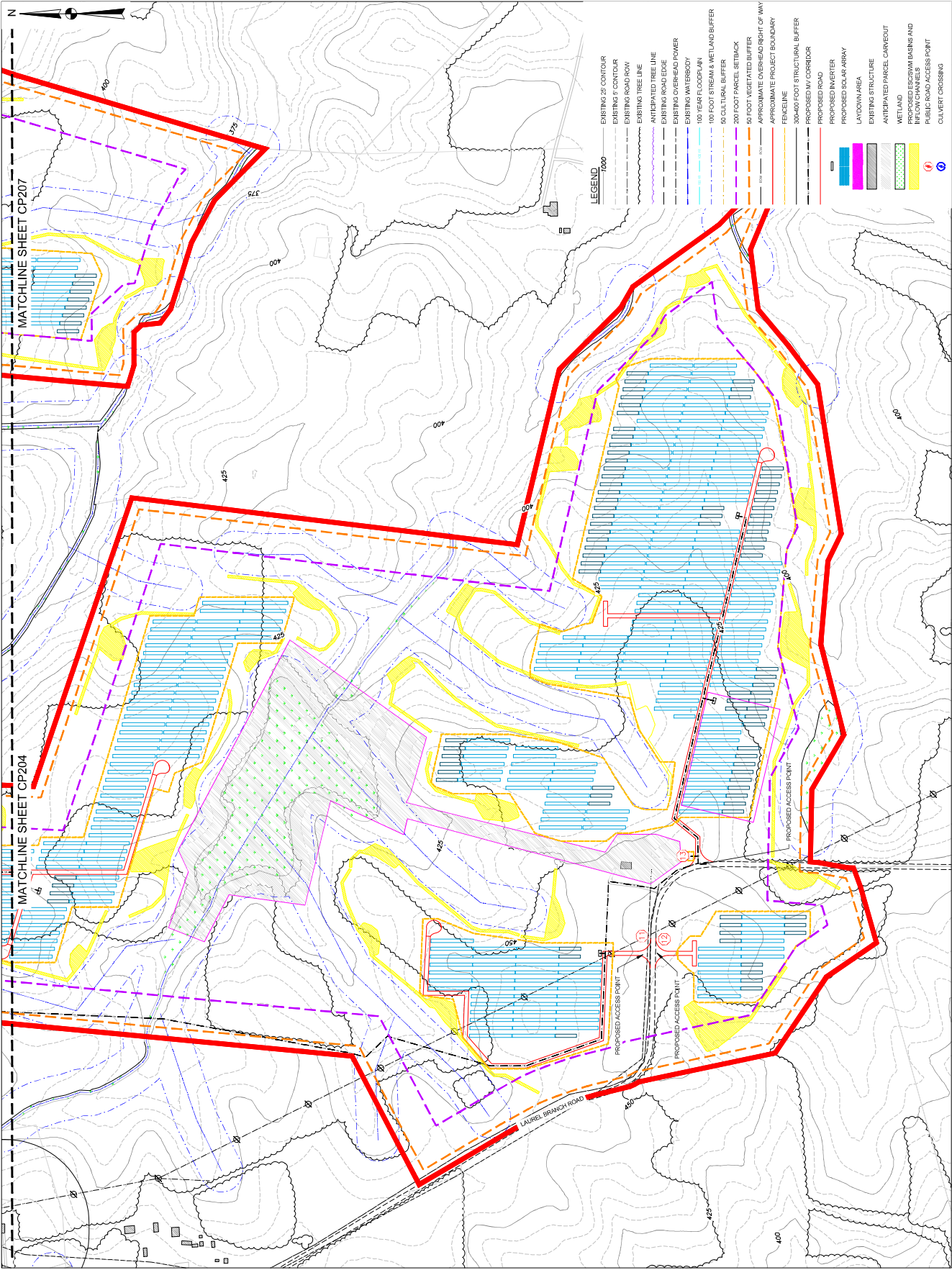


DATE: 01/14/2022  
DRAWN BY: MS  
ENGINEER: MS  
APPROVED BY: ED

PROJECT PHASE:  
CONDITIONAL USE PERMIT SITE PLANS  
SCALE: 1" = 200'

SHEET NO.:  
**CP207**





**DOMINION ENERGY**  
LUNENBURG COUNTY  
VIRGINIA

**TETRA TECH**  
TETRA TECH, INC.  
4101 COS ROAD,  
GLENN ALLEN, VA 22086  
TEL: (804) 272-2789  
FAX: (804) 272-2779

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**LAUREL BRANCH SOLAR PROJECT**  
DOMINION ENERGY  
LUNENBURG COUNTY  
VIRGINIA

PROJECT NUMBERS:  
194-1058-0025

SHEET TITLE:  
POST-DEVELOPMENT  
CONDITIONS  
INDEX SHEET

SHEET SIZE: A30x120"  
24" x 36" (6.0 x 9.14)  
1" = 30'

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C	FOR REVIEW	02/09/2022	GAR

va811.com  
No Win GOOG

DATE: 01/14/2022  
DRAWN BY: OR  
ENGINEER: MS  
APPROVED BY: ED

PROJECT PHASE: CONDITIONAL USE PERMIT SITE PLANS  
SCALE: 1" = 200'

SHEET NO.: **CP208**





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LAUREL BRANCH  
SOLAR PROJECT  
DOMINION ENERGY  
LUNENBURG COUNTY  
VIRGINIA

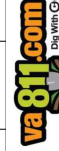
PROJECT NUMBERS:  
194-1058-0025

SHEET TITLE:  
LANDSCAPE BUFFER  
SHEET

**SHEET SIZE:** ARCH "D"  
24" X 36" (610 x 914)

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A	FOR REVIEW	01/14/2022	G
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C	FOR REVIEW	02/08/2022	G



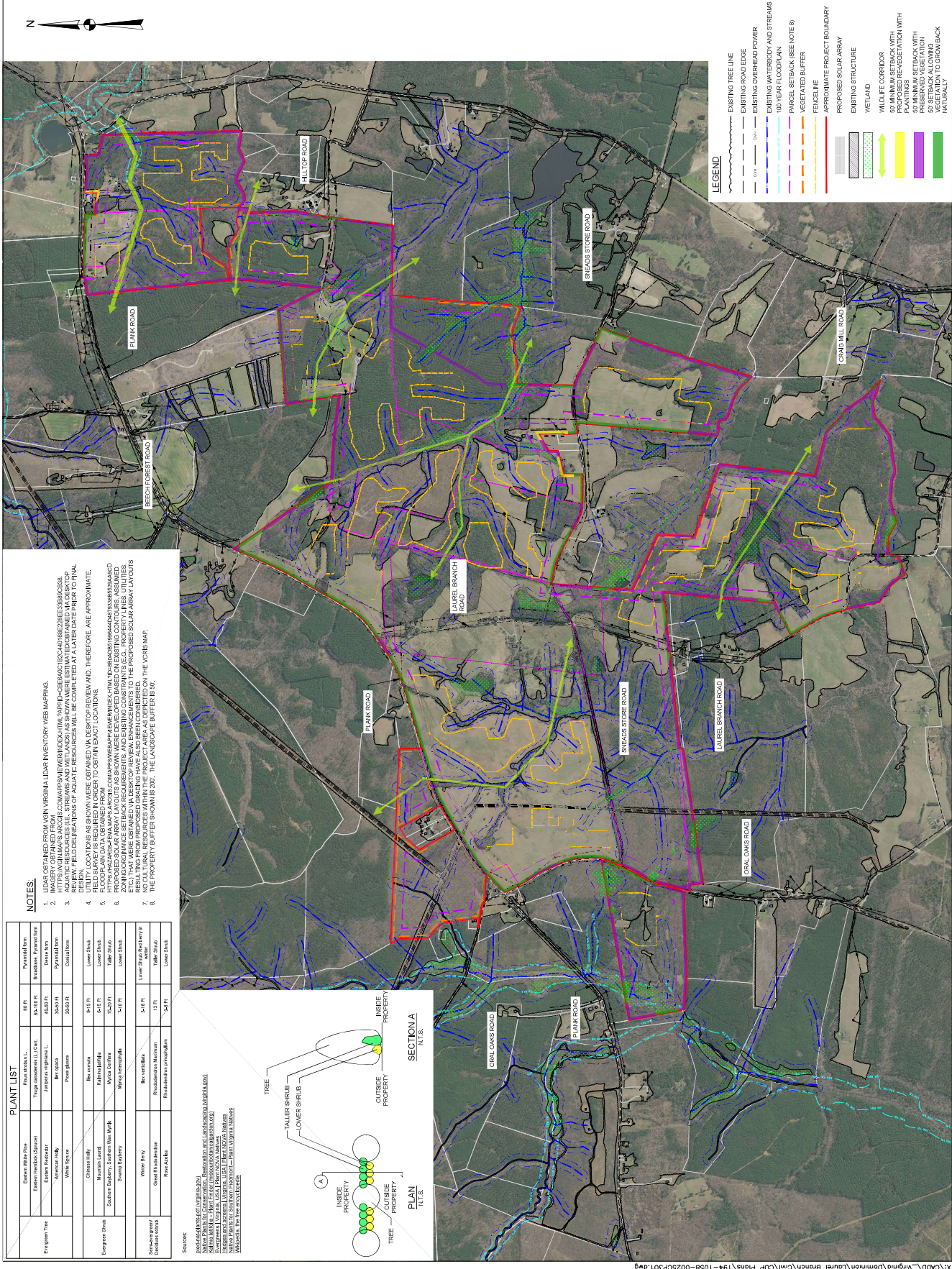
DATE:	01/14/2020
DRAWN BY:	G
ENGINEER:	M
APPROVED BY:	E

PROJECT PHASE:  
CONDITIONAL USE PERMIT SITE PLAN

SCALE:

SHEET NO.: 1" = 800'

CP301







**TETRA TECH**

TETRA TECH, INC.  
4101 COX ROAD,  
SUITE 120  
GLEN ALLEN, VA 23060  
TEL: (804) 290-4321

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LAUREL BRANCH  
SOLAR PROJECT  
DOMINION ENERGY  
LUNENBURG COUNTY  
VIRGINIA

PROJECT NUMBERS:  
194-1058-0025

SHEET TITLE:  
DESKTOP EVALUATION  
UTILITY MAP

**SHEET SIZE:** ARCH "D"  
24" X 36" (610 x 914)

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A	FOR REVIEW	01/14/2022	GAR
B	FOR REVIEW	02/03/2022	GAR
C	FOR REVIEW	02/08/2022	GAR



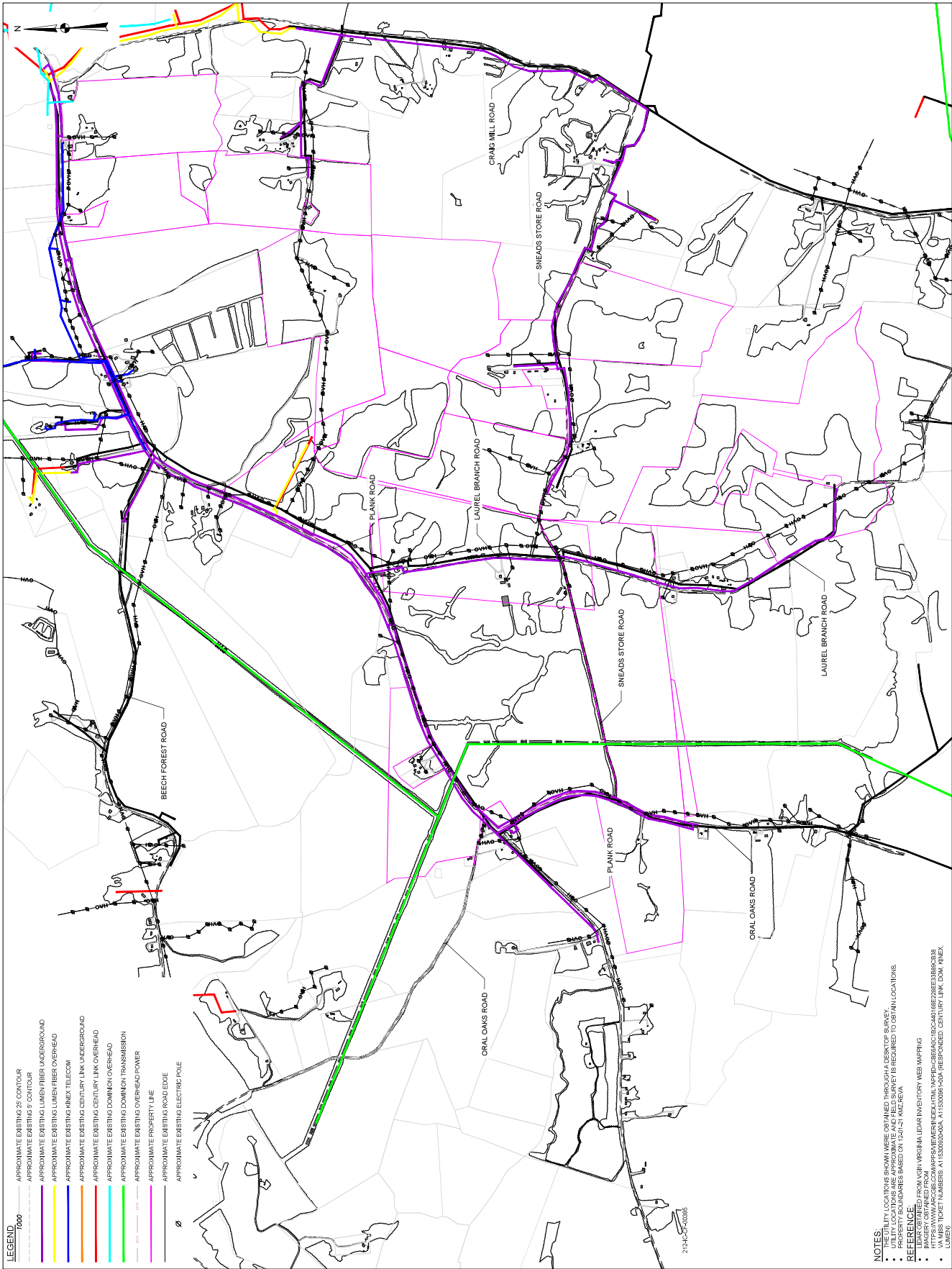
DATE:	01/14/2022
DRAWN BY:	GR
ENGINEER:	MS
APPROVED BY:	EO

PROJECT PHASE:  
CONDITIONAL USE PERMIT SITE PLANS

SCALE:

SHEET NO.:

CP302



**NOTES:**

- THE UTILITY LOCATIONS SHOWN WERE OBTAINED THROUGH A DESKTOP SURVEY.
- UTILITY LOCATIONS ARE APPROXIMATE AND FIELD SURVEYS IS REQUIRED TO OBTAIN LOCATIONS.
- PROPERTY BOUNDARIES BASED ON 1201-21 N. MILVIA

**REFERENCE:**

- 2017 CITY OF CHICAGO VIRGINIA LIDAR INVENTORY WEB MAPPING
- IMAGES OBTAINED FROM:
- <https://www.arcgis.com/home/item.html?id=1241044D-82E640-BC0471-6E2E238363C8-3358>
- VIA MISS TIK TOK NUMBERS 11530022-0041, 1153061-4000, 11530022-0041
- CITY OF CHICAGO UTILITY LINK CODE: 3139





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LUNEBURG COUNTY  
VIRGINIA

PROJECT NUMBERS:  
194-1058-0025

SHEET TITLE:  
DRAFT GRADING PLAN  
SHEET

SHEET SIZE: ARCH (D)  
24" x 36" (910 x 914)

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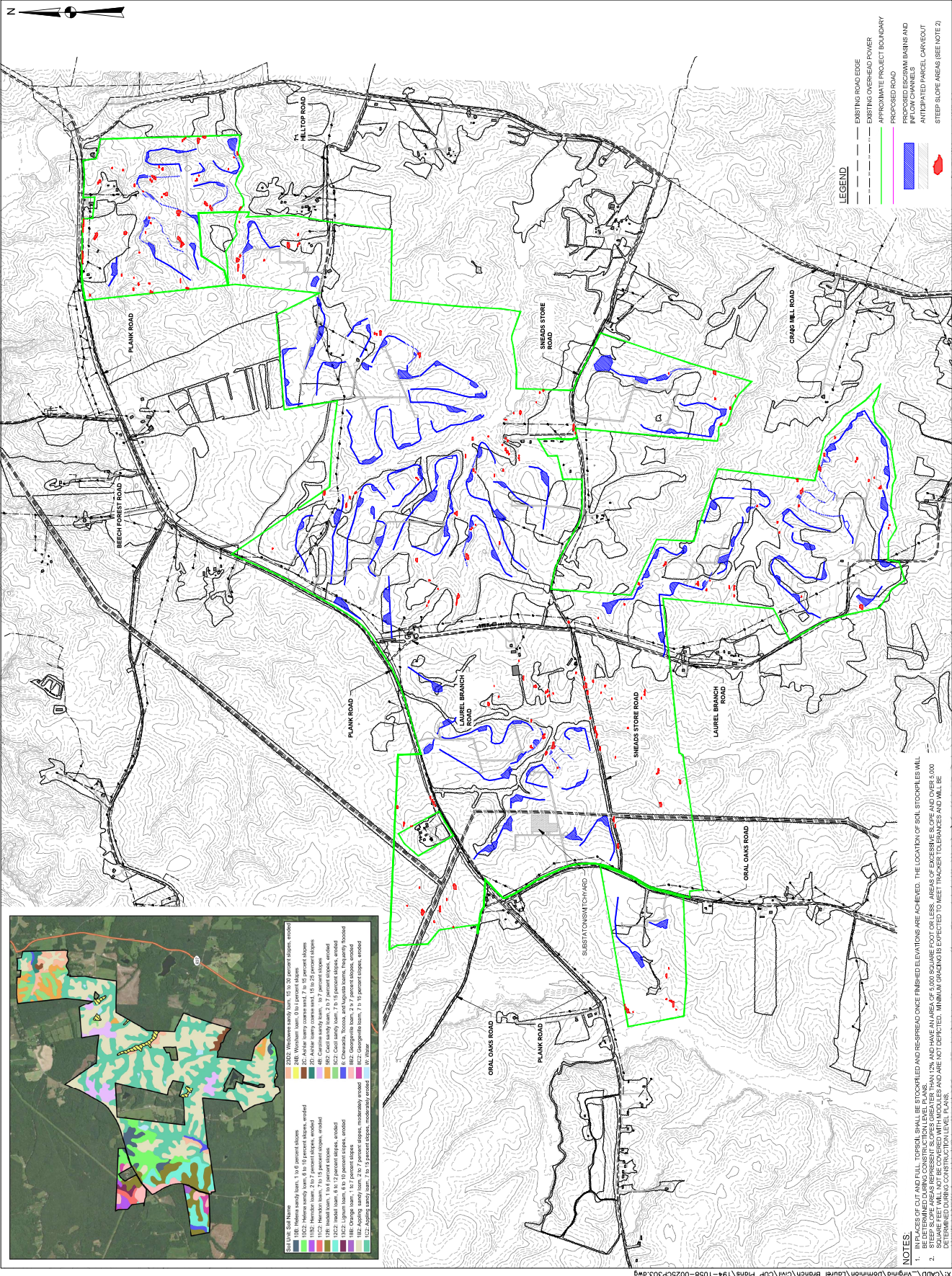
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C	FOR REVIEW	02/09/2022	GAR

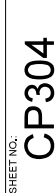


DATE: 01/14/2022  
DRAWN BY: OR  
ENGINEER: MS  
APPROVED BY: ED

PROJECT PHASE:  
CONDITIONAL USE PERMIT SITE PLANS  
SCALE: 1" = 80'

SHEET NO.:  
CP303





- CORNER AND PULL POSTS - 2" SCH 40 (O.D. = 2 3/8"

7 SCREENING SHALL BE USED ON WASTE RECEPTACLES TO PREVENT VIEW FROM PUBLIC RESIDENCIES AND ROADS.

1000


**15 min**

GROUND CLEARANCE }

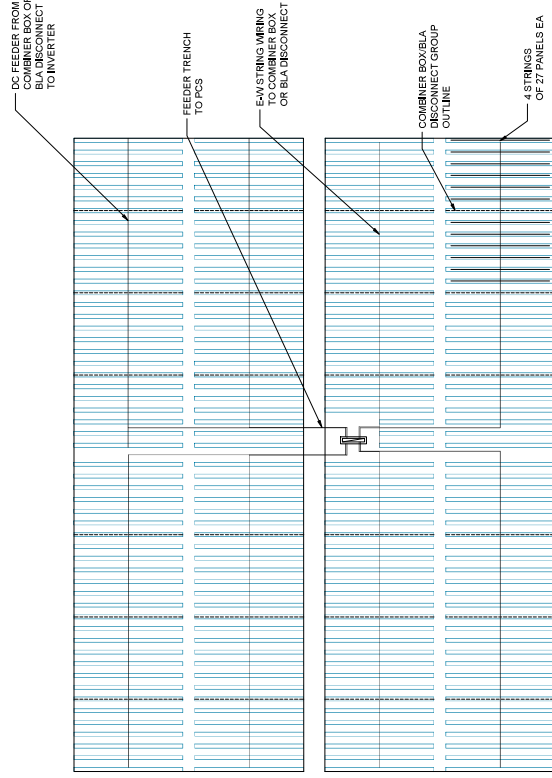
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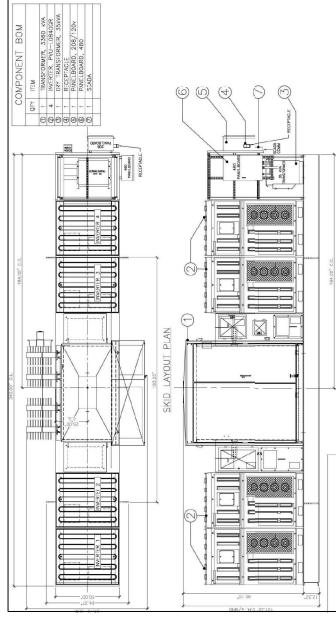




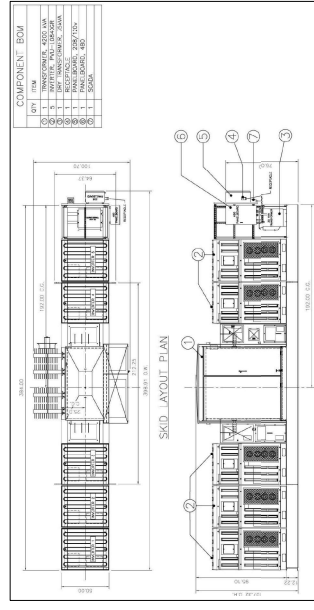
TYPICAL BLOCK 5.04MW AC MECHANICAL LAYOUT



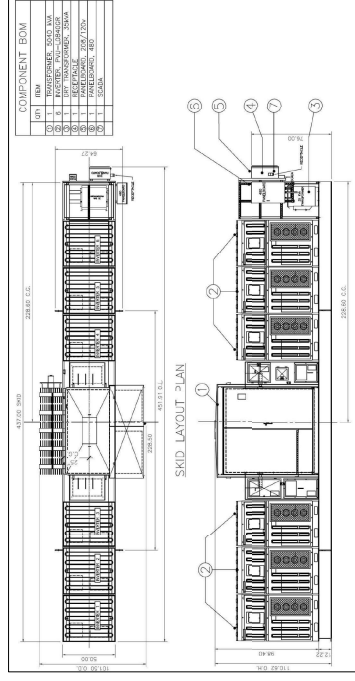
TYPICAL BLOCK 5.04MW AC ELECTRICAL LAYOUT



**INVERTER DETAIL OPTION 1**

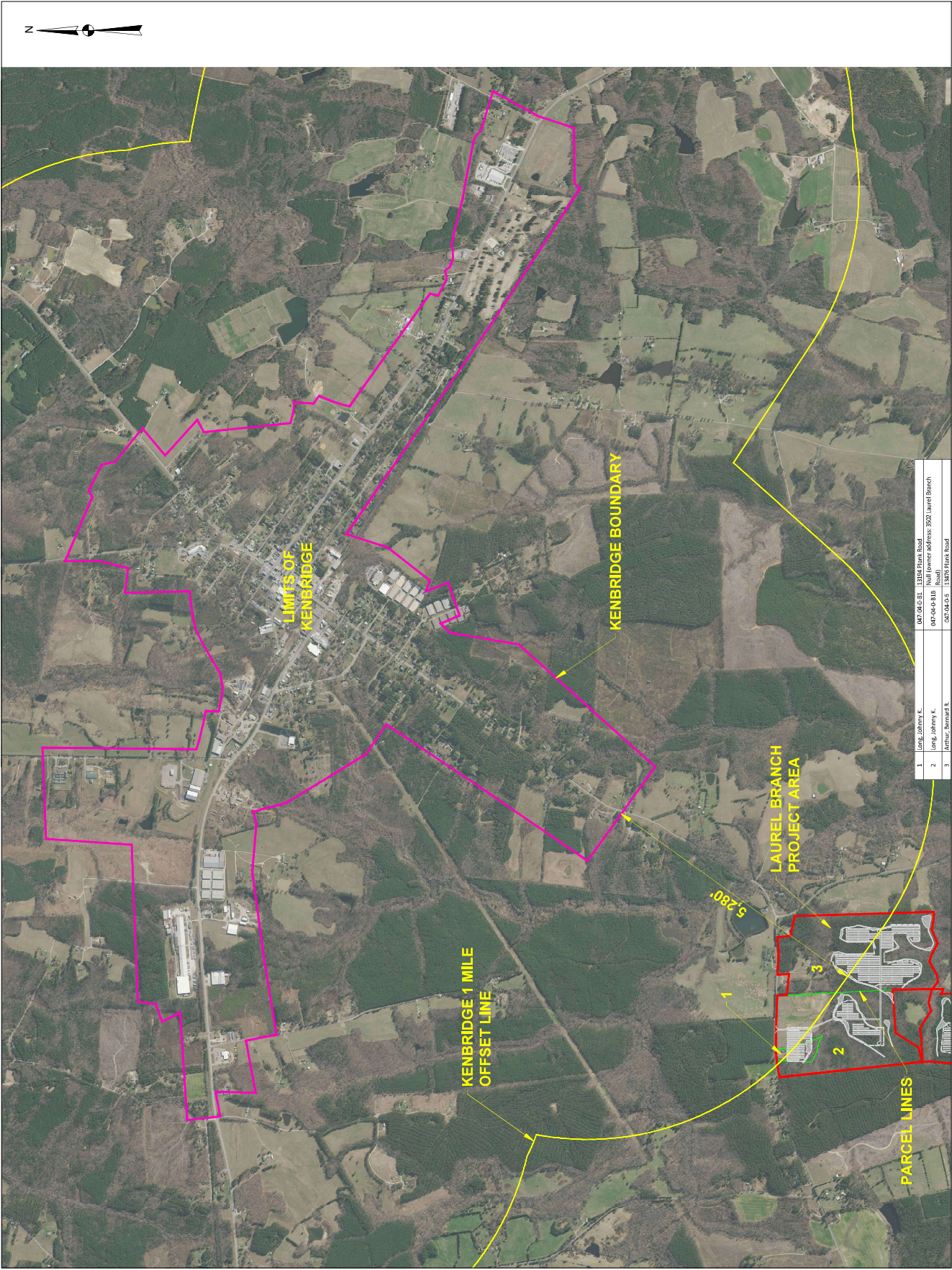


**INVERTER DETAIL OPTION 2**



**INVERTER DETAIL OPTION 3**





**TETRA TECH**  
TETRA TECH, INC.  
4101 LEE ROAD,  
GLENN ALLEN, VA 22086  
TEL: 804.771.1000  
FAX: 804.771.2729

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SOLAR PROJECT  
DOMINION ENERGY  
LUNENBURG COUNTY  
VIRGINIA

PROJECT NUMBERS:  
194-1058-0025

SHEET TITLE:  
TOWNSHIP DISTANCE  
FIGURE

SHEET SIZE: ARCH (D)  
24" X 36" (610 X 914)  
1" = 1'

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DATE:	01/14/2022
DRAWN BY:	OR
ENGINEER:	MS
APPROVED BY:	ED

PROJECT PHASE:  
CONDITIONAL USE PERMIT SITE PLANS  
SCALE: 1" = 800'

SHEET NO.: **FIGURE 1**

1	Long, Johnny K.	047-04-0-31	13194 Blank Road
2	Long, Johnny K.	047-04-0-31B	Null (owner address: 3502 Laurel Branch
3	Arthur, Bernard R.	047-04-0-3	13075 Blank Road