SHAWBORO EAST RIDGE SOLAR
PHASE 1A
SHAWBORO, CURRITUCK COUNTY, NORTH CAROLINIA

HYDROLOGY STUDY AND DRAINAGE NARRATIVE

JANUARY 31, 2025

PREPARED BY:

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

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Shawboro Solar Phase 1A – Drainage Narrative

SunEnergy1 is proposing to develop a solar farm on East Ridge Road in Shawboro. The development will take place on approximately 53.15 acres of an 199.88 acre parcel that is currently used as farmland.

The site was modeled with PCSWMM using the SCS Curve Number Method. In accordance with Currituck County Stormwater Manual, we compared the runoff from the site during a 2-year storm under the condition that the site was wooded with the 5-year storm under the proposed conditions. Rainfall depths were taken from NOAA Atlas 14, Volume 2, Version 3. The site consists of Roanoke Soils with a hydraulic soil rating C/D.

In the existing conditions, runoff is collected in field ditches and routed to a large roadside ditch along East Ridge Road. The ditch continues east, then south along Meads Road where it crosses through a pipe and outfalls into the adjacent swamp. The pre-development drainage area is divided into four subcatchments. Subcatchments S01 and S02 are made up of farmland and some residential land along North Indiantown Road. Subcatchment S03 and S04 are both completely farmland. S04 is the location of the proposed development and S03 is directly west of it. Offsite drainage areas were included due to the interconnectivity of the existing drainage pattern.

In the proposed conditions, subcatcment S04 is broken down into eight new drainage areas. Development on the site will be limited to the installation of the solar panels, fence and gravel access roads. Overall impervious coverage for the development area is approximately 11%. The majority of new impervious area will be routed to a stormwater detention basin to store and control runoff to the existing roadside ditch.

The analysis results below show that the project is not causing an increase in water surface elevation or an increase in peak discharge immediately downstream of the site when comparing the 2-year pre-development model to the 5-yr post development model.

Point of Analysis	#1	#2
Node	SU03	J13
Pre HGL	4.76’	4.12’
Post HGL	4.76’	4.12’
Difference	0	0

Point of Analysis	#3		#4	
Conduit	C12		C16	
	Max Flow (cfs)	Max Velocity (fps)	Max Flow (cfs)	Max Velocity (fps)
Pre	15.95	1.05	18.43	1.56
Post	16.05	1.05	18.33	1.55
Difference	+0.10	0	-0.10	-0.01

Appendix A

Stormwater & Erosion Control Calculations

Pre-development

- Curve Number Calculations
- PCSWMM Layout
- PCSWMM Data & Results (Based on 2 yr Storm with site wooded)

Post-development

- Curve Number Calculations
- PCSWMM Layout
- PCSWMM Data & Results (Based on 5 yr Storm)

Area CN Computations

Stormwater Drainage Analysis
Pre-Development

Project Name: Shawboro Solar Phase 1A
Timmons Group Project No. 47198
Date: 1/31/2025
Calculated by: Ben Drew
Checked by: Kim Hamby

Drainage Area # S01

Cover Description	HSG	Curve Number, CN[1]	Area (SF)	Area (AC)
Asphalt, Concrete, Roofs	*All*	98	43,649	1.00
Streets & Roads	A	83	44,607	1.02
Paved; open ditches (w/ rw)	B	89	18,570	0.43
% Impervious = 75	C	92	11,695	0.27
	D	93		
Residential District	A	51	287,297	6.60
1/2-acre average lot size	B	68		
% Impervious = 25	C	79	34,408	0.79
	D	84		
Woods	A	30		
(Assume Good Condition)	B	55		
	C	70		
	D	77		
Row Crop	A	67	435,391	10.00
Straight Row - good	B	78	243,601	5.59
condition[2]	C	85	483,851	11.11
	D	89		
Open Space	A	39		
(Assume Good Condition)	B	61		
	C	74		
	D	80		
Meadow - cont. grass	A	30		
	B	58		
	C	71		
	D	78		

Weighted Pervious CN =	64		Weighted CN =	73

Area (SF)	Area (AC)
1,603,069	36.80

Initial Abstraction (Dstore Perv) =	1.10

Percent Impervious	11.24

[1] CN values obtained from Tables 2-2a and 2-2c of the NRCS TR-55 Manual, rev. June 1986

Area CN Computations

Stormwater Drainage Analysis
Pre-Development

Project Name: Shawboro Solar Phase 1A
Timmons Group Project No. 47198
Date: 1/31/2025
Calculated by: Ben Drew
Checked by: Kim Hamby

Drainage Area # S02

Cover Description	HSG	Curve Number, CN[1]	Area (SF)	Area (AC)
Asphalt, Concrete, Roofs	*All*	98	384,971	8.84
Streets & Roads	A	83	33,790	0.78
Paved; open ditches (w/ rw)	B	89		
% Impervious = 75	C	92	5,890	0.14
	D	93		
Residential District	A	51		
1/2-acre average lot size	B	68		
% Impervious = 25	C	79		
	D	84		
Woods	A	30		
(Assume Good Condition)	B	55		
	C	70		
	D	77		
Row Crop	A	67	815,962	18.73
Straight Row - good	B	78	31,043	0.71
condition[2]	C	85	9,953	0.23
	D	89		
Open Space	A	39	140,776	3.23
(Assume Good Condition)	B	61	164,506	3.78
	C	74	103,375	2.37
	D	80		
Meadow - cont. grass	A	30		
	B	58		
	C	71		
	D	78		

Weighted Pervious CN =	62		Weighted CN =	72

Area (SF)	Area (AC)
1,690,266	38.80

Initial Abstraction (Dstore Perv) =	1.20

Percent Impervious	24.54

[1] CN values obtained from Tables 2-2a and 2-2c of the NRCS TR-55 Manual, rev. June 1986

Area CN Computations

Stormwater Drainage Analysis
Pre-Development

Project Name: Shawboro Solar Phase 1A
Timmons Group Project No. 47198
Date: 1/31/2025
Calculated by: Ben Drew
Checked by: Kim Hamby

Drainage Area # S03

Cover Description	HSG	Curve Number, CN[1]	Area (SF)	Area (AC)
Asphalt, Concrete, Roofs	*All*	98		
Streets & Roads	A	83		
Paved; open ditches (w/ rw)	B	89		
% Impervious = 75	C	92	73,094	1.68
	D	93		
Residential District	A	51		
1/2-acre average lot size	B	68		
% Impervious = 25	C	79		
	D	84		
Woods	A	30		
(Assume Good Condition)	B	55		
	C	70		
	D	77		
Row Crop	A	67		
Straight Row - good	B	78	15,622	0.36
condition[2]	C	85	4,922,364	113.00
	D	89		
Open Space	A	39		
(Assume Good Condition)	B	61		
	C	74		
	D	80		
Meadow - cont. grass	A	30		
	B	58		
	C	71		
	D	78		

Weighted Pervious CN =	84		Weighted CN =	85

Area (SF)	Area (AC)
5,011,080	115.04

Initial Abstraction (Dstore Perv) =	0.38

Percent Impervious	1.09

[1] CN values obtained from Tables 2-2a and 2-2c of the NRCS TR-55 Manual, rev. June 1986

Area CN Computations

Stormwater Drainage Analysis
Pre-Development

Project Name: Shawboro Solar Phase 1A
Timmons Group Project No. 47198
Date: 1/31/2025
Calculated by: Ben Drew
Checked by: Kim Hamby

Drainage Area # S04

Cover Description	HSG	Curve Number, CN[1]	Area (SF)	Area (AC)
Asphalt, Concrete, Roofs	*All*	98		
Streets & Roads	A	83		
Paved; open ditches (w/ rw)	B	89		
% Impervious = 75	C	92	28,415	0.65
	D	93		
Residential District	A	51		
1/2-acre average lot size	B	68		
% Impervious = 25	C	79		
	D	84		
Woods	A	30		
(Assume Good Condition)	B	55		
	C	70		
	D	77	2,347,810	53.90
Row Crop	A	67		
Straight Row - good	B	78		
condition[2]	C	85		
	D	89		
Open Space	A	39		
(Assume Good Condition)	B	61		
	C	74		
	D	80		
Meadow - cont. grass	A	30		
	B	58		
	C	71		
	D	78		

Weighted Pervious CN =	76		Weighted CN =	77

Area (SF)	Area (AC)
2,376,225	54.55

Initial Abstraction (Dstore Perv) =	0.62

Percent Impervious	0.90

[1] CN values obtained from Tables 2-2a and 2-2c of the NRCS TR-55 Manual, rev. June 1986


Legend
Junctions
Outfalls
Storages
Conduits
Subcatchments
SU01
SU02
SU03
SU04
J02
J04
J05
J06
J07
J08
J10
J11
J13
OF1
C01
C02
C04
C07
C08
C09
C12
C13
C14
C15
C16
S01
36.8
64
S02
38.8
62
S03
115.04
84
S04
54.55
76
N
250 m

PCSWMM Report

Shawboro Solar Phase 1A Pre-Development 2-year Model Report

Model 47198-Pre_2yr-PH1A.inp

Timmons Group

January 23, 2025

Table of Contents

Tables

Table 1A: Conduits

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Elev. (ft)	Outlet Elev. (ft)	Entry Loss Coeff.	Exit Loss Coeff.	Cross-Section	Geom1 (ft)	Geom2 (ft)	Geom3
C01	SU01	J02	340	0.035	4.79	4.19	0	0	TRAPEZOIDAL	2.65	10	2
C02	J02	SU03	2040	0.035	4.19	3.54	0	0	TRAPEZOIDAL	2.65	10	2
C03	SU02	J04	20	0.035	4.83	4.86	0	0	TRAPEZOIDAL	3.74	5	1
C04	J04	J06	1520	0.035	4.86	4.2	0	0	TRAPEZOIDAL	2.6	5	1
C06	J04	J05	24	0.012	4.59	4.58	0	0	CIRCULAR	3	0	0
C07	J05	J02	2450	0.035	5.08	4.19	0	0	TRAPEZOIDAL	2.65	8	2
C08	J06	J07	30	0.022	5.53	4.01	0	0	CIRCULAR	1	0	0
C09	J07	J08	2162	0.035	4.09	3.82	0	0	TRAPEZOIDAL	2.99	3	2
C10	J08	SU03	25	0.022	4.05	3.18	0	0	CIRCULAR	1.5	0	0
C11	J08	SU03	25	0.022	3.82	2.16	0	0	CIRCULAR	1.5	0	0
C12	SU03	J10	470	0.035	3.54	3.24	0	0	TRAPEZOIDAL	3.54	10	2
C13	J10	J11	34	0.022	2.37	2.42	0	0	CIRCULAR	5	0	0
C14	J11	SU04	342	0.035	3.26	2.95	0	0	TRAPEZOIDAL	4.62	10	2
C15	SU04	J13	210	0.035	2.95	2.82	0	0	TRAPEZOIDAL	4.62	12	2
C16	J13	OF1	270	0.035	2.82	3.08	0	0	TRAPEZOIDAL	3.84	12	2

Table 1B: Conduits

Name	Geom4	Barrels	Slope (ft/ft)	Max. |Flow| (cfs)	Max. |Velocity| (ft/s)
C01	2	1	0.00176	1.97	0.54
C02	2	1	0.00032	4.7	0.39
C03	1	1	-0.0015	3.34	0.97
C04	1	1	0.00043	1.65	0.5
C06	0	1	0.00042	2.99	1.31
C07	2	1	0.00036	2.95	0.51
C08	0	1	0.05073	0.27	0.83
C09	2	1	0.00012	0.33	0.17
C10	0	1	0.03482	0.49	0.41
C11	0	1	0.06655	0.92	0.92
C12	2	1	0.00064	15.95	1.05
C13	0	1	-0.00147	15.94	2.09
C14	2	1	0.00091	15.94	1.05
C15	2	1	0.00062	18.43	0.98
C16	2	1	-0.00096	18.43	1.56

Table 2: Junctions

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Initial Depth (ft)	Avg. Depth (ft)	Max. Depth (ft)	Max. HGL (ft)	Contributing Area (ac)
J02	4.19	6.84	2.65	0	0.29	0.79	4.98	75.6
J04	4.59	8.7	4.11	0	0.47	1.1	5.69	38.8
J05	4.58	8.66	4.08	0	0.48	1.11	5.69	38.8
J06	4.2	6.89	2.69	0	0.61	1.49	5.69	38.8
J07	4.01	7.08	3.07	0	0.28	0.76	4.77	38.8
J08	3.82	6.87	3.05	0	0.39	0.94	4.76	38.8
J10	2.37	8.14	5.77	1.13	1.53	2.1	4.47	190.64
J11	2.42	8.31	5.89	1.08	1.47	2.01	4.43	190.64
J13	2.82	7.48	4.66	0.68	0.93	1.3	4.12	245.19

Table 3A: Subcatchments

Name	Rain Gage	Outlet	Area (ac)	Flow Length (ft)	Slope (%)	Imperv. (%)	N Imperv	N Perv	Dstore Imperv (in)	Dstore Perv (in)	Zero Imperv (%)
S01	SCS_Type_III_3.74in	SU01	36.8	1860.001	0.51	11.24	0.01	0.17	0.1	1.1	25
S02	SCS_Type_III_3.74in	SU02	38.8	2200	0.39	24.54	0.01	0.17	0.1	1.2	25
S03	SCS_Type_III_3.74in	SU03	115.04	3490.001	0.12	1.09	0.01	0.17	0.1	0.38	25
S04	SCS_Type_III_3.74in	SU04	54.55	2445	0.18	0.9	0.01	0.4	0.1	0.62	25

Table 3B: Subcatchments

Name	Subarea Routing	Percent Routed (%)	Curve Number	Infiltration (in)	Runoff Depth (in)	Runoff Volume (MG)	Peak Runoff (cfs)
S01	PERVIOUS	100	64	1.99	0.48	0.48	1.97
S02	PERVIOUS	100	62	1.75	0.74	0.78	3.35
S03	PERVIOUS	100	84	1.25	1.06	3.3	12.03
S04	PERVIOUS	100	76	1.7	0.48	0.71	2.5

Table 4: Outfalls

Name	Invert Elev. (ft)	Rim Elev. (ft)	Fixed Stage (ft)	Avg. Depth (ft)	Max. Depth (ft)	Max. HGL (ft)	Max. Flow (cfs)	Total Flow (MG)	Contributing Area (ac)
OF1	3.08	6.92	3.5	0.42	0.42	3.5	18.43	4.722	245.19

Table 5: Storages

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Initial Depth (ft)	Curve Name	Max. Depth (ft)	Max. HGL (ft)	Max. Volume (1000 ft³)	Contributing Area (ac)
SU01	4.79	7.58	2.79	0	SU01	0.26	5.05	0.083	36.8
SU02	4.83	8.57	3.74	0	SU02	0.87	5.7	0.295	38.8
SU03	2.16	7.08	4.92	1.34	SU03	2.6	4.76	19.357	190.64
SU04	2.95	7.57	4.62	0.55	SU04	1.28	4.23	3.291	245.19

Area CN Computations

Stormwater Drainage Analysis
Post-Development

Project Name: Shawboro Solar Phase 1A
Timmons Group Project No. 47198
Date: 1/31/2025
Calculated by: Ben Drew
Checked by: Kim Hamby

Drainage Area # S01

Cover Description	HSG	Curve Number, CN[1]	Area (SF)	Area (AC)
Asphalt, Concrete, Roofs	*All*	98	43,649	1.00
Streets & Roads	A	83	44,607	1.02
Paved; open ditches (w/ rw)	B	89	18,570	0.43
% Impervious = 75	C	92	11,695	0.27
	D	93		
Residential District	A	51	287,297	6.60
1/2-acre average lot size	B	68		
% Impervious = 25	C	79	34,408	0.79
	D	84		
Woods	A	30		
(Assume Good Condition)	B	55		
	C	70		
	D	77		
Row Crop	A	67	435,391	10.00
Straight Row - good	B	78	243,601	5.59
condition[2]	C	85	483,851	11.11
	D	89		
Open Space	A	39		
(Assume Good Condition)	B	61		
	C	74		
	D	80		
Meadow	A	30		
	B	58		
	C	71		
	D	78		

Weighted Pervious CN =	64		Weighted CN =	73

Area (SF)	Area (AC)
1,603,069	36.80

Initial Abstraction (Dstore Perv) =	1.10

Percent Impervious	11.24

[1] CN values obtained from Tables 2-2a and 2-2c of the NRCS TR-55 Manual, rev. June 1986

Area CN Computations

Stormwater Drainage Analysis
Post-Development

Project Name: Shawboro Solar Phase 1A
Timmons Group Project No. 47198
Date: 1/31/2025
Calculated by: Ben Drew
Checked by: Kim Hamby

Drainage Area # S02

Cover Description	HSG	Curve Number, CN[1]	Area (SF)	Area (AC)
Asphalt, Concrete, Roofs	*All*	98	384,971	8.84
Streets & Roads	A	83	33,790	0.78
Paved; open ditches (w/ rw)	B	89		
% Impervious = 75	C	92	5,890	0.14
	D	93		
Residential District	A	51		
1/2-acre average lot size	B	68		
% Impervious = 25	C	79		
	D	84		
Woods	A	30		
(Assume Good Condition)	B	55		
	C	70		
	D	77		
Row Crop	A	67	815,962	18.73
Straight Row - good	B	78	31,043	0.71
condition[2]	C	85	9,953	0.23
	D	89		
Open Space	A	39	140,776	3.23
(Assume Good Condition)	B	61	164,506	3.78
	C	74	103,375	2.37
	D	80		
Meadow	A	30		
	B	58		
	C	71		
	D	78		

Weighted Pervious CN =	62		Weighted CN =	72

Area (SF)	Area (AC)
1,690,266	38.80

Initial Abstraction (Dstore Perv) =	1.20

Percent Impervious	24.54

[1] CN values obtained from Tables 2-2a and 2-2c of the NRCS TR-55 Manual, rev. June 1986

Area CN Computations

Stormwater Drainage Analysis
Post-Development

Project Name: Shawboro Solar Phase 1A
Timmons Group Project No. 47198
Date: 1/31/2025
Calculated by: Ben Drew
Checked by: Kim Hamby

Drainage Area # S03

Cover Description	HSG	Curve Number, CN[1]	Area (SF)	Area (AC)
Asphalt, Concrete, Roofs	*All*	98	14,563	0.33
Streets & Roads	A	83		
Paved; open ditches (w/ rw)	B	89		
% Impervious = 75	C	92	73,095	1.68
	D	93		
Residential District	A	51		
1/2-acre average lot size	B	68		
% Impervious = 25	C	79		
	D	84		
Woods	A	30		
(Assume Good Condition)	B	55		
	C	70		
	D	77		
Row Crop	A	67		
Straight Row - good	B	78	15,622	0.36
condition[2]	C	85	4,906,222	112.63
	D	89		
Open Space	A	39		
(Assume Good Condition)	B	61		
	C	74		
	D	80		
Meadow	A	30		
	B	58		
	C	71		
	D	78		

Weighted Pervious CN =	84	Weighted CN =	85

Area (SF)	Area (AC)
5,009,502	115.00

Initial Abstraction (Dstore Perv) =	0.38

Percent Impervious	1.39

[1] CN values obtained from Tables 2-2a and 2-2c of the NRCS TR-55 Manual, rev. June 1986

Area CN Computations

Stormwater Drainage Analysis
Post-Development

Project Name: Shawboro Solar Phase 1A
Timmons Group Project No. 47198
Date: 1/31/2025
Calculated by: Ben Drew
Checked by: Kim Hamby

Drainage Area # S04A

Cover Description	HSG	Curve Number, CN[1]	Area (SF)	Area (AC)
Asphalt, Concrete, Roofs	*All*	98	22,162	0.51
Streets & Roads	A	83		
Paved; open ditches (w/ rw)	B	89		
% Impervious = 75	C	92		
	D	93		
Residential District	A	51		
1/2-acre average lot size	B	68		
% Impervious = 25	C	79		
	D	84		
Woods	A	30		
(Assume Good Condition)	B	55		
	C	70		
	D	77		
Row Crop	A	67		
Straight Row - good	B	78		
condition[2]	C	85		
	D	89		
Open Space	A	39		
(Assume Good Condition)	B	61		
	C	74		
	D	80		
Meadow	A	30		
	B	58		
	C	71	321,543	7.38
	D	78		

Weighted Pervious CN =	71		Weighted CN =	73

Area (SF)	Area (AC)
343,705	7.89

Initial Abstraction (Dstore Perv) =	0.82

Percent Impervious	6.45

[1] CN values obtained from Tables 2-2a and 2-2c of the NRCS TR-55 Manual, rev. June 1986

Area CN Computations

Stormwater Drainage Analysis
Post-Development

Project Name: Shawboro Solar Phase 1A
Timmons Group Project No. 47198
Date: 1/31/2025
Calculated by: Ben Drew
Checked by: Kim Hamby

Drainage Area # S04B

Cover Description	HSG	Curve Number, CN[1]	Area (SF)	Area (AC)
Asphalt, Concrete, Roofs	*All*	98	6,687	0.15
Streets & Roads	A	83		
Paved; open ditches (w/ rw)	B	89		
% Impervious = 75	C	92		
	D	93		
Residential District	A	51		
1/2-acre average lot size	B	68		
% Impervious = 25	C	79		
	D	84		
Woods	A	30		
(Assume Good Condition)	B	55		
	C	70		
	D	77		
Row Crop	A	67		
Straight Row - good	B	78		
condition[2]	C	85		
	D	89		
Open Space	A	39		
(Assume Good Condition)	B	61		
	C	74		
	D	80		
Meadow	A	30		
	B	58		
	C	71	359,381	8.25
	D	78		

Weighted Pervious CN =	71		Weighted CN =	71

Area (SF)	Area (AC)
366,068	8.40

Initial Abstraction (Dstore Perv) =	0.82

Percent Impervious	1.83

[1] CN values obtained from Tables 2-2a and 2-2c of the NRCS TR-55 Manual, rev. June 1986

Area CN Computations

Stormwater Drainage Analysis
Post-Development

Project Name: Shawboro Solar Phase 1A
Timmons Group Project No. 47198
Date: 1/31/2025
Calculated by: Ben Drew
Checked by: Kim Hamby

Drainage Area # S04C

Cover Description	HSG	Curve Number, CN[1]	Area (SF)	Area (AC)
Asphalt, Concrete, Roofs	*All*	98	5,779	0.13
Streets & Roads	A	83		
Paved; open ditches (w/ rw)	B	89		
% Impervious = 75	C	92		
	D	93		
Residential District	A	51		
1/2-acre average lot size	B	68		
% Impervious = 25	C	79		
	D	84		
Woods	A	30		
(Assume Good Condition)	B	55		
	C	70		
	D	77		
Row Crop	A	67		
Straight Row - good	B	78		
condition[2]	C	85		
	D	89		
Open Space	A	39		
(Assume Good Condition)	B	61		
	C	74		
	D	80		
Meadow	A	30		
	B	58		
	C	71	336,204	7.72
	D	78		

Weighted Pervious CN =	71		Weighted CN =	71

Area (SF)	Area (AC)
341,983	7.85

Initial Abstraction (Dstore Perv) =	0.82

Percent Impervious	1.69

[1] CN values obtained from Tables 2-2a and 2-2c of the NRCS TR-55 Manual, rev. June 1986

Area CN Computations

Stormwater Drainage Analysis
Post-Development

Project Name: Shawboro Solar Phase 1A
Timmons Group Project No. 47198
Date: 1/31/2025
Calculated by: Ben Drew
Checked by: Kim Hamby

Drainage Area # S04D

Cover Description	HSG	Curve Number, CN[1]	Area (SF)	Area (AC)
Asphalt, Concrete, Roofs	*All*	98	29,678	0.68
Streets & Roads	A	83		
Paved; open ditches (w/ rw)	B	89		
% Impervious = 75	C	92		
	D	93		
Residential District	A	51		
1/2-acre average lot size	B	68		
% Impervious = 25	C	79		
	D	84		
Woods	A	30		
(Assume Good Condition)	B	55		
	C	70		
	D	77		
Row Crop	A	67		
Straight Row - good	B	78		
condition[2]	C	85		
	D	89		
Open Space	A	39		
(Assume Good Condition)	B	61		
	C	74		
	D	80		
Meadow	A	30		
	B	58		
	C	71	229,545	5.27
	D	78		

Weighted Pervious CN =	71		Weighted CN =	74

Area (SF)	Area (AC)
259,223	5.95

Initial Abstraction (Dstore Perv) =	0.82

Percent Impervious	11.45

[1] CN values obtained from Tables 2-2a and 2-2c of the NRCS TR-55 Manual, rev. June 1986

Area CN Computations

Stormwater Drainage Analysis
Post-Development

Project Name: Shawboro Solar Phase 1A
Timmons Group Project No. 47198
Date: 1/31/2025
Calculated by: Ben Drew
Checked by: Kim Hamby

Drainage Area # S04E

Cover Description	HSG	Curve Number, CN[1]	Area (SF)	Area (AC)
Asphalt, Concrete, Roofs	*All*	98	87,618	2.01
Streets & Roads	A	83		
Paved; open ditches (w/ rw)	B	89		
% Impervious = 75	C	92		
	D	93		
Residential District	A	51		
1/2-acre average lot size	B	68		
% Impervious = 25	C	79		
	D	84		
Woods	A	30		
(Assume Good Condition)	B	55		
	C	70		
	D	77		
Row Crop	A	67		
Straight Row - good	B	78		
condition[2]	C	85		
	D	89		
Open Space	A	39		
(Assume Good Condition)	B	61		
	C	74		
	D	80		
Meadow	A	30		
	B	58		
	C	71	111,657	2.56
	D	78		

Weighted Pervious CN =	71		Weighted CN =	83

Area (SF)	Area (AC)
199,275	4.57

Initial Abstraction (Dstore Perv) =	0.82

Percent Impervious	43.97

[1] CN values obtained from Tables 2-2a and 2-2c of the NRCS TR-55 Manual, rev. June 1986

Area CN Computations

Stormwater Drainage Analysis
Post-Development

Project Name: Shawboro Solar Phase 1A
Timmons Group Project No. 47198
Date: 1/31/2025
Calculated by: Ben Drew
Checked by: Kim Hamby

Drainage Area # S04F

Cover Description	HSG	Curve Number, CN[1]	Area (SF)	Area (AC)
Asphalt, Concrete, Roofs	*All*	98	52,465	1.20
Streets & Roads	A	83		
Paved; open ditches (w/ rw)	B	89		
% Impervious = 75	C	92	23,534	0.54
	D	93		
Residential District	A	51		
1/2-acre average lot size	B	68		
% Impervious = 25	C	79		
	D	84		
Woods	A	30		
(Assume Good Condition)	B	55		
	C	70		
	D	77		
Row Crop	A	67		
Straight Row - good	B	78		
condition[2]	C	85		
	D	89		
Open Space	A	39		
(Assume Good Condition)	B	61		
	C	74		
	D	80		
Meadow	A	30		
	B	58		
	C	71	192,300	4.41
	D	78		

Weighted Pervious CN =	65	Weighted CN =	78

Area (SF)	Area (AC)
268,299	6.16

Initial Abstraction (Dstore Perv) =	1.06

Percent Impervious	26.13

[1] CN values obtained from Tables 2-2a and 2-2c of the NRCS TR-55 Manual, rev. June 1986

Area CN Computations

Stormwater Drainage Analysis
Post-Development

Project Name: Shawboro Solar Phase 1A
Timmons Group Project No. 47198
Date: 1/31/2025
Calculated by: Ben Drew
Checked by: Kim Hamby

Drainage Area # S04G

Cover Description	HSG	Curve Number, CN[1]	Area (SF)	Area (AC)
Asphalt, Concrete, Roofs	*All*	98	32,545	0.75
Streets & Roads	A	83		
Paved; open ditches (w/ rw)	B	89		
% Impervious = 75	C	92	3,757	0.09
	D	93		
Residential District	A	51		
1/2-acre average lot size	B	68		
% Impervious = 25	C	79		
	D	84		
Woods	A	30		
(Assume Good Condition)	B	55		
	C	70		
	D	77		
Row Crop	A	67		
Straight Row - good	B	78		
condition[2]	C	85		
	D	89		
Open Space	A	39		
(Assume Good Condition)	B	61		
	C	74		
	D	80		
Meadow	A	30		
	B	58		
	C	71	167,930	3.86
	D	78		

Weighted Pervious CN =	70	Weighted CN =	76

Area (SF)	Area (AC)
204,232	4.69

Initial Abstraction (Dstore Perv) =	0.86

Percent Impervious	17.31

[1] CN values obtained from Tables 2-2a and 2-2c of the NRCS TR-55 Manual, rev. June 1986

Area CN Computations

Stormwater Drainage Analysis
Post-Development

Project Name: Shawboro Solar Phase 1A
Timmons Group Project No. 47198
Date: 1/31/2025
Calculated by: Ben Drew
Checked by: Kim Hamby

Drainage Area # S04H

Cover Description	HSG	Curve Number, CN[1]	Area (SF)	Area (AC)
Asphalt, Concrete, Roofs	*All*	98	15,680	0.36
Streets & Roads	A	83		
Paved; open ditches (w/ rw)	B	89		
% Impervious = 75	C	92	1,123	0.03
	D	93		
Residential District	A	51		
1/2-acre average lot size	B	68		
% Impervious = 25	C	79		
	D	84		
Woods	A	30		
(Assume Good Condition)	B	55		
	C	70		
	D	77		
Row Crop	A	67		
Straight Row - good	B	78		
condition[2]	C	85		
	D	89		
Open Space	A	39		
(Assume Good Condition)	B	61		
	C	74		
	D	80		
Meadow	A	30		
	B	58		
	C	71	378,216	8.68
	D	78		

Weighted Pervious CN =	71		Weighted CN =	72

Area (SF)	Area (AC)
395,019	9.07

Initial Abstraction (Dstore Perv) =	0.82

Percent Impervious	4.18

[1] CN values obtained from Tables 2-2a and 2-2c of the NRCS TR-55 Manual, rev. June 1986


Legend
Junctions
Outfalls
Storages
Conduits
Orifices
Weirs
Subcatchments
N
250 m
SU01
J02
C01
C02
SU03
J08
C12
C14
J12
J13
OF1
SU04H
SU04F
SU04E
S04G
4.69
70
S04E
4.57
71
C25
J8
C24
J3
J2
C22
SU04G
SU04A
SU04D
S01
36.8
64
S03
115
84
C09
C07
S04H
9.07
71
S04A
7.89
71
S04B
8.4
71
S04C
7.85
71
S02
38.8
62
J07
C08
J06
J05
C06
J04
C04
SU02

PCSWMM Report

Shawboro Solar Phase 1A Post-Development 5-year Model Report

Model 47198-Post_5yr-PH1A.inp

Timmons Group

January 24, 2025

Table of Contents

Tables

Table 1A: Conduits

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Elev. (ft)	Outlet Elev. (ft)	Entry Loss Coeff.	Exit Loss Coeff.	Cross-Section	Geom1 (ft)	Geom2 (ft)	Geom3
C01	SU01	J02	340	0.035	4.79	4.19	0	0	TRAPEZOIDAL	2.65	10	2
C02	J02	SU03	2040	0.035	4.19	3.54	0	0	TRAPEZOIDAL	2.65	10	2
C03	SU02	J04	20	0.035	4.83	4.86	0	0	TRAPEZOIDAL	3.74	5	1
C04	J04	J06	1520	0.035	4.86	4.2	0	0	TRAPEZOIDAL	2.6	5	1
C06	J04	J05	24	0.012	4.59	4.58	0	0	CIRCULAR	3	0	0
C07	J05	J02	2450	0.035	5.08	4.19	0	0	TRAPEZOIDAL	2.65	8	2
C08	J06	J07	30	0.022	5.53	4.01	0	0	CIRCULAR	1	0	0
C09	J07	J08	2162	0.035	4.09	3.82	0	0	TRAPEZOIDAL	2.99	3	2
C10	J08	SU03	25	0.022	4.05	3.18	0	0	CIRCULAR	1.5	0	0
C11	J08	SU03	25	0.022	3.82	2.16	0	0	CIRCULAR	1.5	0	0
C12	SU03	J10	470	0.035	3.54	3.24	0	0	TRAPEZOIDAL	3.54	10	2
C13	J10	J11	34	0.022	2.37	2.42	0	0	CIRCULAR	5	0	0
C14	J11	J12	342	0.035	3.26	2.95	0	0	TRAPEZOIDAL	4.62	10	2
C15	J12	J13	210	0.035	2.95	2.82	0	0	TRAPEZOIDAL	4.62	12	2
C16	J13	OF1	270	0.035	2.82	3.08	0	0	TRAPEZOIDAL	3.84	12	2
C17	SU04A	SU04G	60	0.012	5.1	5	0	0	CIRCULAR	1.5	0	0
C18	SU04G	J3	215	0.035	5	4.65	0	0	TRAPEZOIDAL	2	0	3
C19	SU04B	J3	60	0.012	4.7	4.65	0	0	CIRCULAR	1.5	0	0
C20	J3	J2	225	0.035	4.6	4.42	0	0	TRAPEZOIDAL	2.35	0	3
C21	SU04C	J2	60	0.012	4.6	4.5	0	0	CIRCULAR	1.5	0	0
C22	J2	J5	205	0.035	4.42	4.2	0	0	TRAPEZOIDAL	2.58	0	3
C23	SU04D	J5	78	0.012	4.4	4.2	0	0	CIRCULAR	1.5	0	0
C24	J5	J8	94	0.012	4.2	4.1	0	0	CIRCULAR	1.5	0	0
C25	J8	SU04E	313	0.035	4.1	3.75	0	0	TRAPEZOIDAL	3.25	0	3
C26	SU04E	SU04F	74	0.012	3.75	3.5	0	0	CIRCULAR	1.5	0	0
C27	J14	J12	42	0.012	3.5	2.95	0	0	CIRCULAR	1.5	0	0
C28	SU04H	J13	36	0.022	2.24	2	0	0	CIRCULAR	1.5	0	0

Table 1B: Conduits

Name	Geom4	Barrels	Slope (ft/ft)	Max. |Flow| (cfs)	Max. |Velocity| (ft/s)
C01	2	1	0.00176	1.97	0.53
C02	2	1	0.00032	4.7	0.39
C03	1	1	-0.0015	3.34	0.97
C04	1	1	0.00043	1.64	0.5
C06	0	1	0.00042	2.99	1.31
C07	2	1	0.00036	2.95	0.5
C08	0	1	0.05073	0.27	0.82
C09	2	1	0.00012	0.33	0.17
C10	0	1	0.03482	3.5	4.07
C11	0	1	0.06655	1.75	1.79
C12	2	1	0.00064	16.05	1.05
C13	0	1	-0.00147	16.05	2.11
C14	2	1	0.00091	16.05	1.06
C15	2	1	0.00062	17.32	0.93
C16	2	1	-0.00096	18.33	1.55
C17	0	1	0.00167	1.53	1.88
C18	3	1	0.00163	3.39	1.15
C19	0	1	0.00083	1.2	1.51
C20	3	1	0.0008	4.01	1.01
C21	0	1	0.00167	1.02	1.09
C22	3	1	0.00107	4.84	0.92
C23	0	1	0.00256	1.03	1.27
C24	0	1	0.00106	5.85	3.38
C25	3	1	0.00112	5.83	1.17
C26	0	1	0.00338	10.1	11.94
C27	0	1	0.0131	1.65	2.82
C28	0	1	0.00667	1.12	0.63

Table 2: Junctions

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Initial Depth (ft)	Avg. Depth (ft)	Max. Depth (ft)	Max. HGL (ft)	Contributing Area (ac)
J02	4.19	6.84	2.65	0	0.17	0.79	4.98	75.6
J04	4.59	8.7	4.11	0	0.54	1.1	5.69	38.8
J05	4.58	8.66	4.08	0	0.55	1.11	5.69	38.8
J06	4.2	6.89	2.69	0	0.84	1.49	5.69	38.8
J07	4.01	7.08	3.07	0	0.18	0.76	4.77	38.8
J08	3.82	6.87	3.05	0	0.21	0.94	4.76	38.8
J10	2.37	8.14	5.77	1.13	1.39	2.1	4.47	190.6
J11	2.42	8.31	5.89	1.08	1.33	2.01	4.43	190.6
J12	2.95	7.57	4.62	0.55	0.73	1.26	4.21	236.11
J13	2	7.48	5.48	1.5	1.65	2.12	4.12	245.18
J14	3.5	7	3.5	0	0.31	0.7	4.2	45.51
J2	4.42	7	2.58	0	0.9	1.76	6.18	28.83
J3	4.65	7	2.35	0	0.74	1.53	6.18	20.98
J5	4.2	7.36	3.16	0	1.08	1.97	6.17	34.78
J8	4.1	7.35	3.25	0	1.14	2.06	6.16	34.78

Table 3A: Subcatchments

Name	Rain Gage	Outlet	Area (ac)	Flow Length (ft)	Slope (%)	Imperv. (%)	N Imperv	N Perv	Dstore Imperv (in)	Dstore Perv (in)	Zero Imperv (%)
S01	SCS_Type_III_3.74in	SU01	36.8	1860.001	0.51	11.24	0.01	0.17	0.1	1.1	25
S02	SCS_Type_III_3.74in	SU02	38.8	2200	0.39	24.54	0.01	0.17	0.1	1.2	25
S03	SCS_Type_III_3.74in	SU03	115	3490	0.12	1.39	0.01	0.17	0.1	0.38	25
S04A	SCS_Type_III_4.83in	SU04A	7.89	1367	0.16	6.45	0.01	0.17	0.1	0.82	25
S04B	SCS_Type_III_4.83in	SU04B	8.4	1594.999	0.16	1.83	0.01	0.17	0.1	0.82	25
S04C	SCS_Type_III_4.83in	SU04C	7.85	1774.997	0.18	1.69	0.01	0.17	0.1	0.82	25
S04D	SCS_Type_III_4.83in	SU04D	5.95	1664.999	0.17	11.45	0.01	0.17	0.1	0.82	25
S04E	SCS_Type_III_4.83in	SU04E	4.57	424	1.3	43.97	0.01	0.17	0.1	0.82	25
S04F	SCS_Type_III_4.83in	SU04F	6.16	322	0.54	26.13	0.01	0.17	0.1	1.06	25
S04G	SCS_Type_III_4.83in	SU04G	4.69	740.001	0.79	17.31	0.01	0.17	0.1	0.86	25
S04H	SCS_Type_III_4.83in	SU04H	9.07	2480.003	0.21	4.18	0.01	0.17	0.1	0.82	25

Table 3B: Subcatchments

Name	Subarea Routing	Percent Routed (%)	Curve Number	Infiltration (in)	Runoff Depth (in)	Runoff Volume (MG)	Peak Runoff (cfs)
S01	PERVIOUS	100	64	2.49	0.61	0.61	1.97
S02	PERVIOUS	100	62	2.2	0.9	0.95	3.35
S03	PERVIOUS	100	84	1.42	1.82	5.69	12.11
S04A	PERVIOUS	100	71	2.46	1.79	0.38	1.47
S04B	PERVIOUS	100	71	2.58	1.62	0.37	1.21
S04C	PERVIOUS	100	71	2.59	1.6	0.34	1.1
S04D	PERVIOUS	100	71	2.33	1.93	0.31	1.21
S04E	PERVIOUS	100	71	1.47	3.08	0.38	10.2
S04F	PERVIOUS	100	65	2.29	2.11	0.35	6.38
S04G	PERVIOUS	100	70	2.24	2.16	0.28	3.27
S04H	PERVIOUS	100	71	2.52	1.65	0.41	1.19

Table 4: Outfalls

Name	Invert Elev. (ft)	Rim Elev. (ft)	Fixed Stage (ft)	Avg. Depth (ft)	Max. Depth (ft)	Max. HGL (ft)	Max. Flow (cfs)	Total Flow (MG)	Contributing Area (ac)
OF1	3.08	6.92	3.5	0.42	0.42	3.5	18.33	9.63	245.18

Table 5: Storages

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Initial Depth (ft)	Curve Name	Max. Depth (ft)	Max. HGL (ft)	Max. Volume (1000 ft³)	Contributing Area (ac)
SU01	4.79	7.58	2.79	0	SU01	0.26	5.05	0.083	36.8
SU02	4.83	8.57	3.74	0	SU02	0.87	5.7	0.295	38.8
SU03	2.16	7.08	4.92	1.34	SU03	2.6	4.76	18.405	190.6
SU04A	5.1	7.85	2.75	0	SU04A	1.08	6.18	8.904	7.89
SU04B	4.7	7.45	2.75	0	SU04B	1.48	6.18	9.871	8.4
SU04C	4.6	7.78	3.18	0	SU04C	1.58	6.18	10.65	7.85
SU04D	4.4	7.54	3.14	0	SU04D	1.77	6.17	10.279	5.95
SU04E	3.75	7.9	4.15	0	SU04E	2.41	6.16	0.048	39.35
SU04F	3.5	7.5	4	0	PH1APOND	2.64	6.14	180.272	45.51
SU04G	5	7	2	0	SU04G	1.18	6.18	4.328	12.58
SU04H	2.24	6.53	4.29	1.26	SU04H	1.89	4.13	2.065	9.07

Table 6: Orifices

Name	Inlet Node	Outlet Node	Type	Cross-Section	Height (ft)	Inlet Elev. (ft)	Discharge Coeff.	Max. |Flow| (cfs)
OR1	SU04F	J14	BOTTOM	CIRCULAR	0.5	3.5	0.65	1.55

Table 7: Weirs

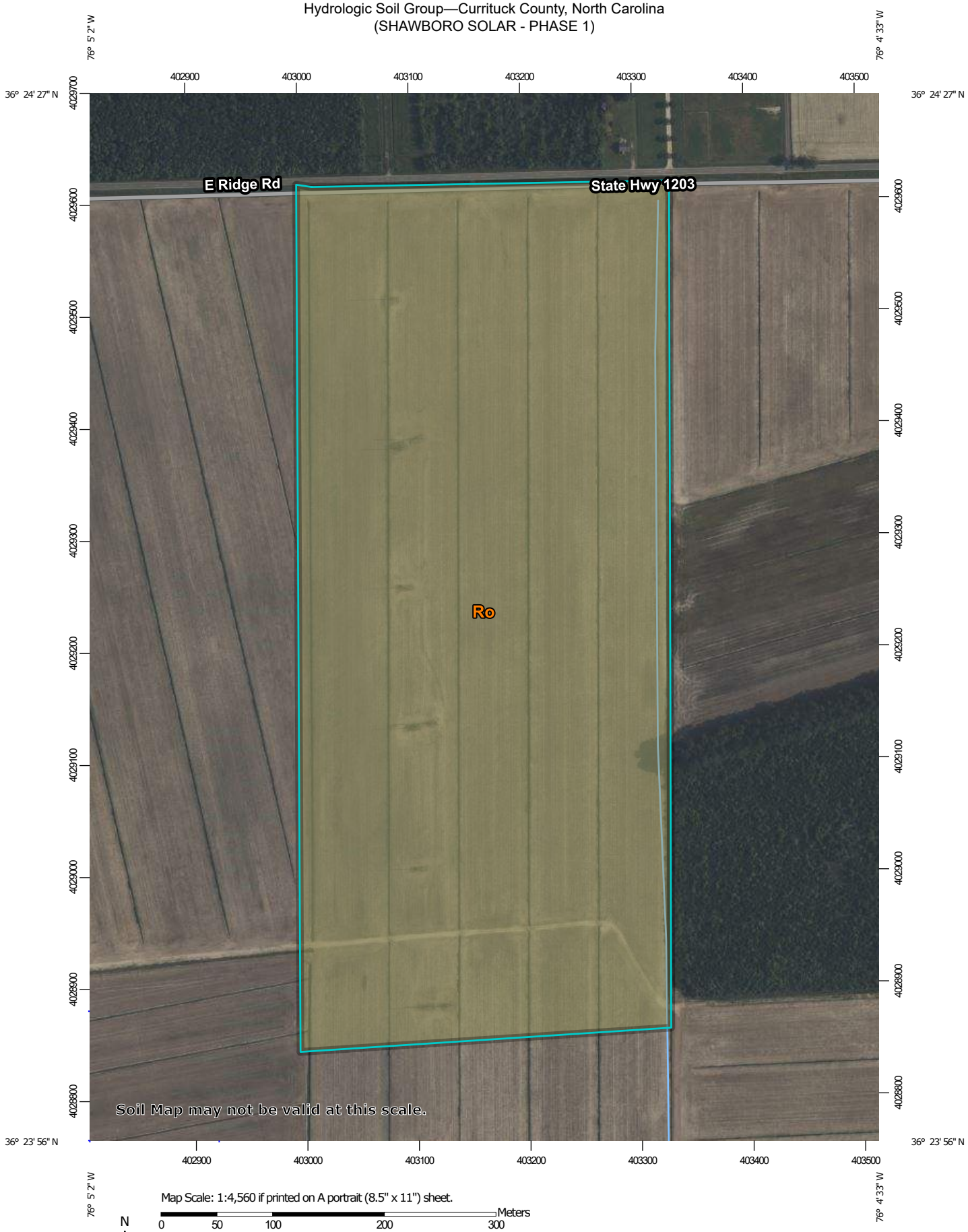
Name	Inlet Node	Outlet Node	Type	Height (ft)	Length (ft)	Side Slope (ft/ft)	Inlet Elev. (ft)	Discharge Coeff. (CFS)	Max. |Flow| (cfs)
W1	SU04F	J14	TRANSVERSE	1	3	0	6.25	3.33	0

Appendix B

Soil Data

- Web Soil Survey

Hydrologic Soil Group—Currituck County, North Carolina
(SHAWBORO SOLAR - PHASE 1)



Map Scale: 1:4,560 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Currituck County, North Carolina
Survey Area Data: Version 24, Sep 9, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 18, 2022—May 31, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Ro	Roanoke fine sandy loam	C/D	63.2	100.0%
Totals for Area of Interest			**63.2**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

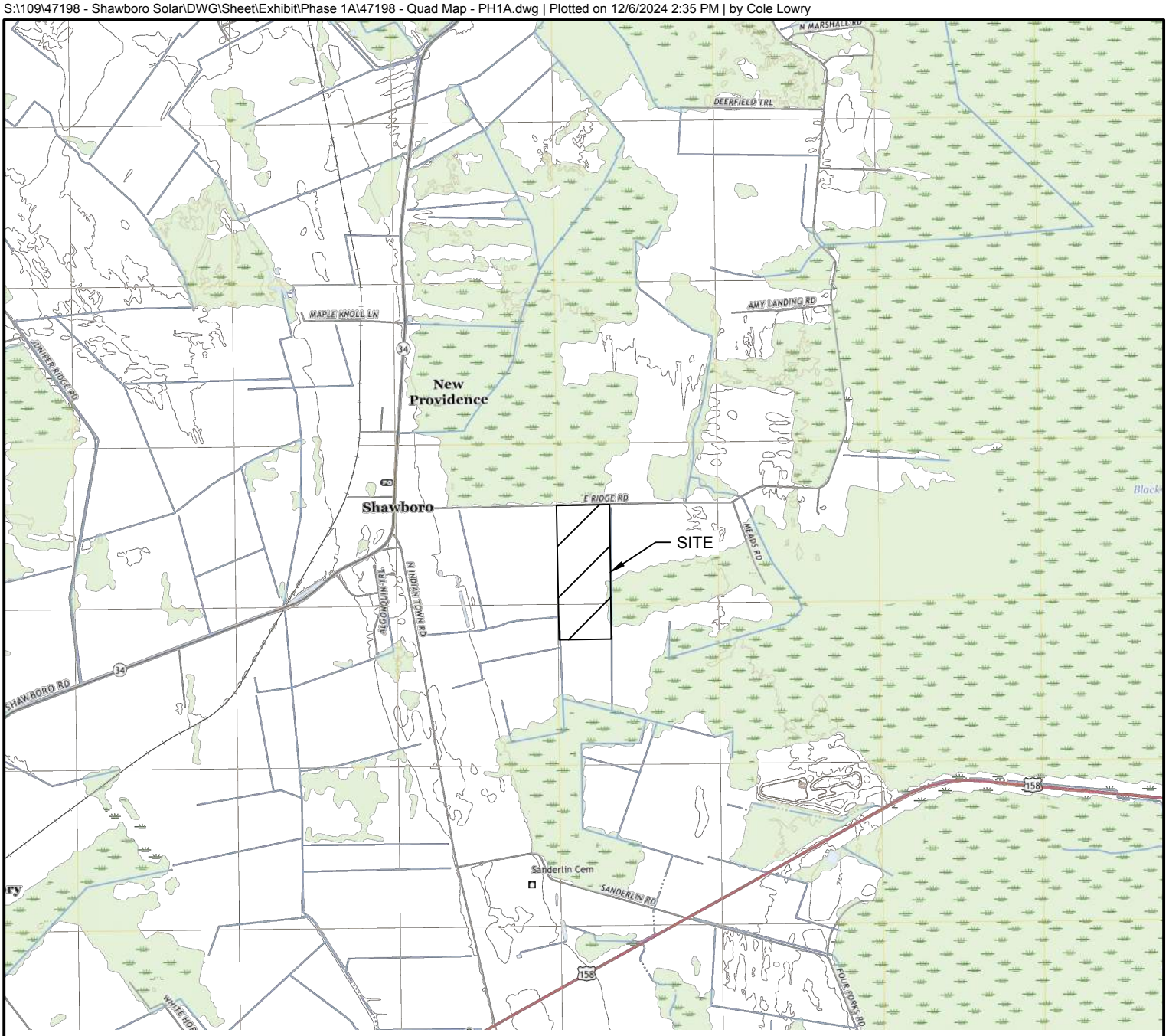
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix C

USGS QUAD Map

S:\109\47198 - Shawboro Solar\DWG\Sheet\Exhibit\Phase 1A\47198 - Quad Map - PH1A.dwg | Plotted on 12/6/2024 2:35 PM | by Cole Lowry



USGS QUAD MAP EXHIBIT

CURRITUCK, NC

2022

1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

FEET

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ELIZABETH CITY OFFICE
1805 West City Drive, Unit E | Elizabeth City, NC 27909
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CRAWFORD TOWNSHIP	*CURRITUCK COUNTY*
Date:12/06/2024	*Scale:1"=3000'*
Sheet 1 of 1	*J.N.:47198*
Drawn by:SL	*Checked by:KH*

TIMMONS GROUP

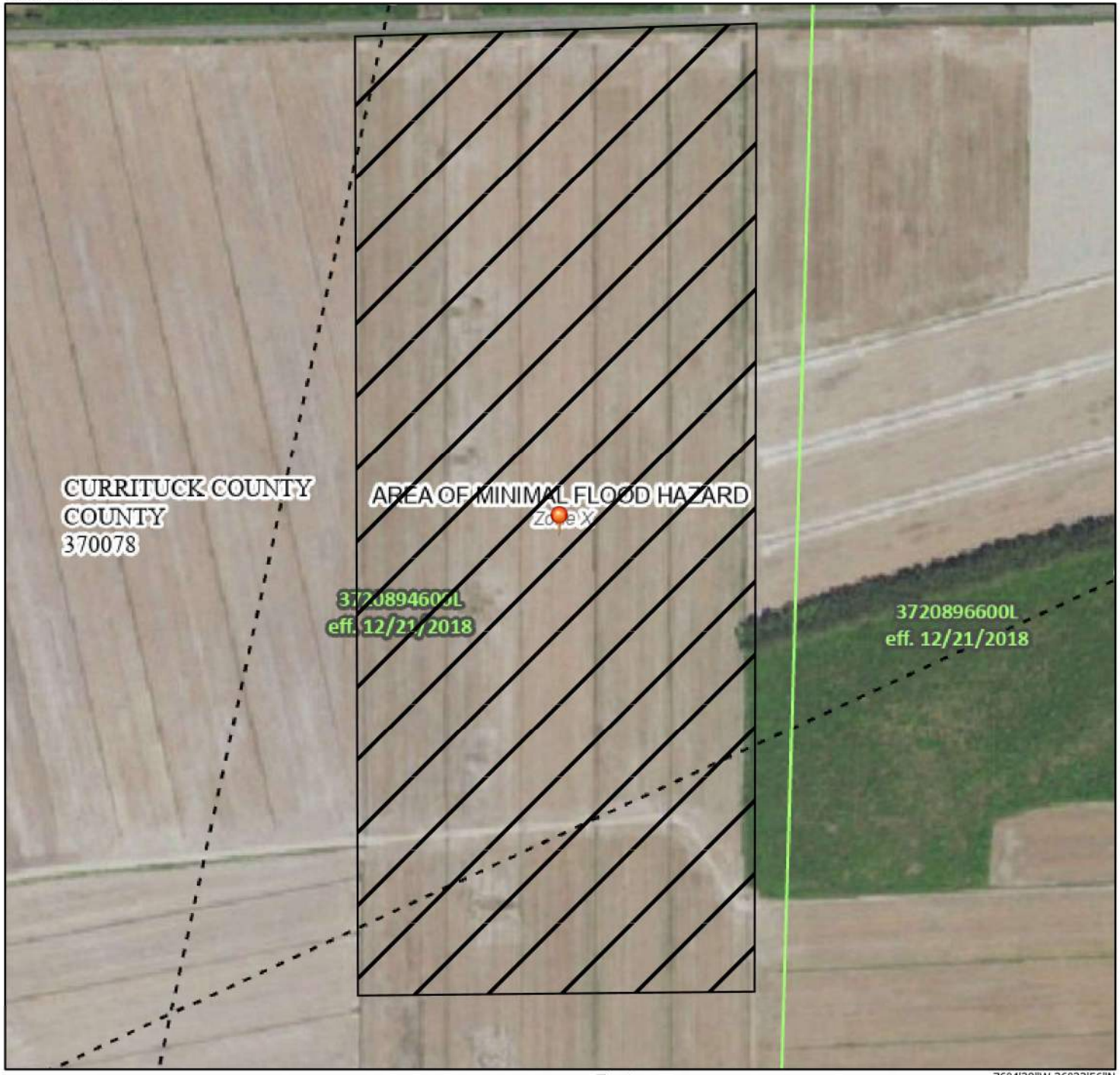
Appendix D

Flood Map

National Flood Hazard Layer FIRMette

FEMA

76°5'6"W 36°24'25"N



76°4'29"W 36°23'56"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 12/6/2024 at 9:49 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Appendix E

Rainfall Data

NOAA Atlas 14, Volume 2, Version 3
Location name: Shawboro, North Carolina, USA*
Latitude: 36.4131°, Longitude: -76.0826°
Elevation: 7.35 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.435** (0.394-0.480)	**0.508** (0.459-0.562)	**0.575** (0.520-0.636)	**0.659** (0.594-0.729)	**0.742** (0.666-0.820)	**0.818** (0.732-0.902)	**0.886** (0.789-0.978)	**0.953** (0.844-1.05)	**1.03** (0.908-1.14)	**1.11** (0.970-1.23)
10-min	**0.695** (0.630-0.767)	**0.812** (0.735-0.898)	**0.920** (0.832-1.02)	**1.05** (0.950-1.17)	**1.18** (1.06-1.31)	**1.30** (1.17-1.44)	**1.41** (1.25-1.55)	**1.51** (1.34-1.67)	**1.63** (1.44-1.81)	**1.75** (1.53-1.94)
15-min	**0.869** (0.787-0.958)	**1.02** (0.924-1.13)	**1.16** (1.05-1.29)	**1.33** (1.20-1.47)	**1.50** (1.35-1.66)	**1.65** (1.48-1.82)	**1.78** (1.59-1.96)	**1.91** (1.69-2.10)	**2.06** (1.81-2.27)	**2.20** (1.92-2.43)
30-min	**1.19** (1.08-1.31)	**1.41** (1.28-1.56)	**1.65** (1.50-1.83)	**1.93** (1.74-2.14)	**2.22** (1.99-2.45)	**2.48** (2.22-2.74)	**2.73** (2.43-3.01)	**2.97** (2.63-3.27)	**3.27** (2.88-3.62)	**3.56** (3.10-3.94)
60-min	**1.49** (1.35-1.64)	**1.77** (1.60-1.96)	**2.12** (1.92-2.35)	**2.52** (2.27-2.78)	**2.96** (2.66-3.27)	**3.37** (3.01-3.71)	**3.75** (3.34-4.14)	**4.16** (3.69-4.59)	**4.70** (4.13-5.19)	**5.20** (4.53-5.75)
2-hr	**1.74** (1.57-1.94)	**2.08** (1.87-2.32)	**2.55** (2.28-2.83)	**3.07** (2.75-3.41)	**3.69** (3.29-4.09)	**4.28** (3.79-4.74)	**4.85** (4.28-5.38)	**5.46** (4.79-6.06)	**6.29** (5.47-6.98)	**7.07** (6.10-7.84)
3-hr	**1.86** (1.68-2.08)	**2.23** (2.00-2.49)	**2.73** (2.45-3.05)	**3.32** (2.97-3.71)	**4.03** (3.59-4.49)	**4.72** (4.17-5.25)	**5.41** (4.76-6.01)	**6.16** (5.38-6.83)	**7.20** (6.22-7.98)	**8.20** (7.01-9.09)
6-hr	**2.22** (2.00-2.47)	**2.64** (2.38-2.96)	**3.25** (2.92-3.63)	**3.95** (3.53-4.41)	**4.81** (4.28-5.36)	**5.66** (5.00-6.28)	**6.51** (5.72-7.21)	**7.44** (6.48-8.22)	**8.73** (7.52-9.66)	**9.99** (8.50-11.1)
12-hr	**2.61** (2.35-2.92)	**3.11** (2.79-3.49)	**3.83** (3.43-4.29)	**4.69** (4.18-5.24)	**5.75** (5.10-6.41)	**6.81** (5.99-7.57)	**7.89** (6.87-8.75)	**9.09** (7.84-10.1)	**10.8** (9.15-11.9)	**12.4** (10.4-13.7)
24-hr	**3.07** (2.83-3.37)	**3.74** (3.44-4.10)	**4.83** (4.43-5.29)	**5.74** (5.26-6.27)	**7.09** (6.44-7.73)	**8.26** (7.44-8.99)	**9.53** (8.50-10.4)	**10.9** (9.65-11.9)	**13.0** (11.3-14.2)	**14.8** (12.7-16.2)
2-day	**3.56** (3.27-3.89)	**4.31** (3.96-4.71)	**5.53** (5.08-6.04)	**6.57** (6.01-7.17)	**8.14** (7.39-8.86)	**9.50** (8.55-10.3)	**11.0** (9.81-12.0)	**12.7** (11.2-13.9)	**15.2** (13.1-16.7)	**17.4** (14.8-19.2)
3-day	**3.78** (3.50-4.12)	**4.58** (4.24-4.99)	**5.85** (5.40-6.37)	**6.93** (6.36-7.52)	**8.51** (7.76-9.23)	**9.86** (8.93-10.7)	**11.3** (10.2-12.3)	**13.0** (11.5-14.1)	**15.4** (13.4-16.9)	**17.6** (15.1-19.4)
4-day	**4.01** (3.73-4.35)	**4.86** (4.51-5.28)	**6.18** (5.72-6.70)	**7.28** (6.72-7.87)	**8.88** (8.13-9.60)	**10.2** (9.30-11.0)	**11.7** (10.5-12.6)	**13.2** (11.8-14.3)	**15.6** (13.7-17.0)	**17.8** (15.4-19.5)
7-day	**4.68** (4.36-5.06)	**5.65** (5.26-6.11)	**7.10** (6.59-7.65)	**8.29** (7.68-8.93)	**10.0** (9.22-10.8)	**11.4** (10.5-12.3)	**13.0** (11.8-14.0)	**14.6** (13.1-15.8)	**17.0** (15.0-18.5)	**19.0** (16.5-20.7)
10-day	**5.28** (4.96-5.66)	**6.34** (5.94-6.79)	**7.85** (7.34-8.40)	**9.10** (8.49-9.73)	**10.9** (10.1-11.6)	**12.4** (11.4-13.2)	**14.0** (12.8-15.0)	**15.6** (14.2-16.8)	**18.1** (16.1-19.5)	**20.0** (17.7-21.8)
20-day	**7.18** (6.76-7.64)	**8.55** (8.06-9.11)	**10.4** (9.78-11.1)	**11.9** (11.2-12.7)	**14.1** (13.1-15.0)	**15.8** (14.7-16.8)	**17.7** (16.2-18.9)	**19.6** (17.9-21.0)	**22.3** (20.1-24.1)	**24.5** (21.8-26.6)
30-day	**8.85** (8.36-9.39)	**10.5** (9.94-11.2)	**12.6** (11.9-13.4)	**14.4** (13.5-15.2)	**16.7** (15.7-17.7)	**18.6** (17.3-19.7)	**20.5** (19.0-21.8)	**22.5** (20.7-24.0)	**25.2** (22.9-27.0)	**27.3** (24.7-29.5)
45-day	**11.0** (10.4-11.7)	**13.0** (12.3-13.8)	**15.5** (14.6-16.5)	**17.6** (16.6-18.7)	**20.6** (19.3-21.8)	**23.0** (21.4-24.4)	**25.4** (23.5-27.1)	**28.0** (25.8-29.9)	**31.7** (28.7-33.9)	**34.6** (31.1-37.2)
60-day	**13.2** (12.5-13.9)	**15.5** (14.7-16.4)	**18.4** (17.4-19.4)	**20.6** (19.5-21.8)	**23.7** (22.3-25.1)	**26.2** (24.5-27.7)	**28.6** (26.7-30.4)	**31.1** (28.9-33.1)	**34.5** (31.7-36.9)	**37.2** (33.8-39.9)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

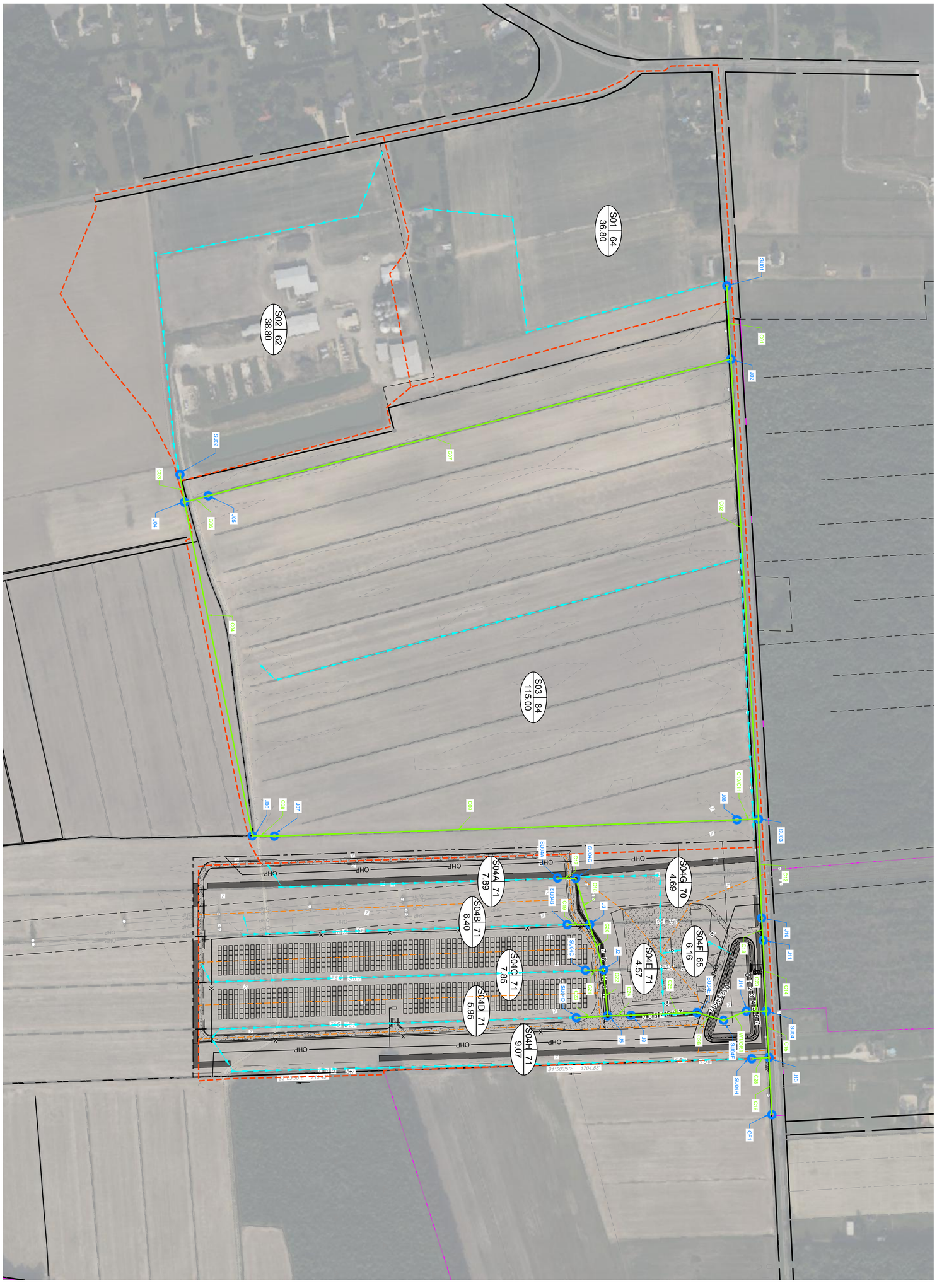
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical

S:\109\47198 - Shawboro Solar\DWG\Sheet\Exhibit\Phase 1A\47198C-Post_DA-PH1A.dwg | Plotted on 1/31/2025 9:03 AM | by Benjamin Drew



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JAN 31, 2025
NOT FOR CONSTRUCTION

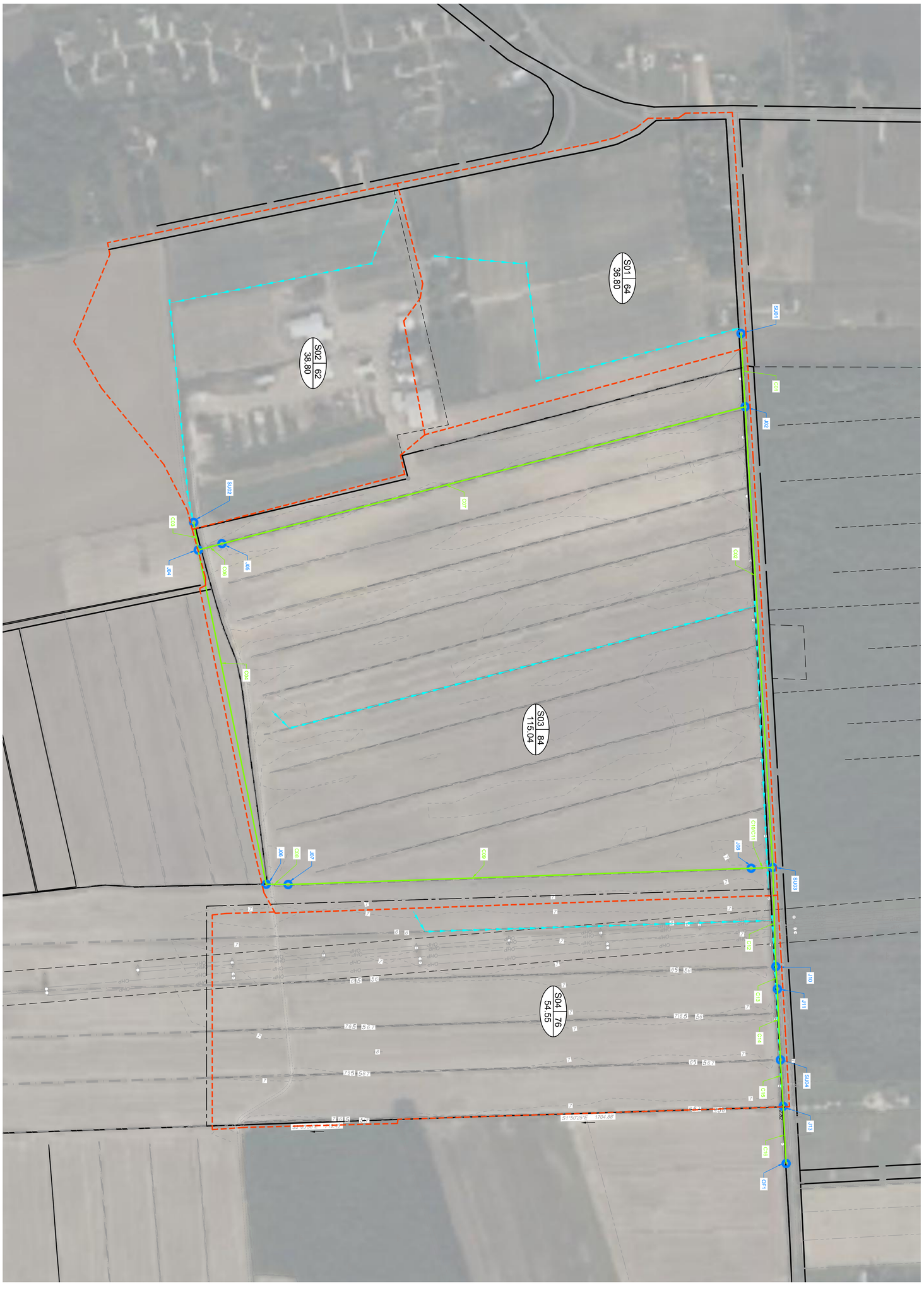
SHAWBORO EAST RIDGE SOLAR PHASE - 1A

CRAWFORD TNSP - CURRITUCK COUNTY - NORTH CAROLINA

POST-DEVELOPMENT DRAINAGE AREA MAP

SHEET NO.	JOB NO.	SCALE	CHECKED BY	DESIGNED BY	DRAWN BY	DATE
POST	47198	1" = 200'	KDH	KDH	BCD	01/31/25

DATE	REVISION DESCRIPTION



0 200' 400'
SCALE 1"=200'

NAD 83

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JAN 31, 2025
NOT FOR CONSTRUCTION

DATE	REVISION DESCRIPTION

SHEET NO. PRE
JOB NO. 47198

SHAWBORO EAST RIDGE SOLAR PHASE - 1A

CRAWFORD TNSP - CURRITUCK COUNTY - NORTH CAROLINA

PRE-DEVELOPMENT DRAINAGE AREA MAP

SCALE	CHECKED BY	DESIGNED BY	DRAWN BY	DATE
1" = 200'	KDH	KDH	BCD	01/24/25

Major Stormwater Plan Form SW-002

Review Process

Contact Information

Currituck County
Planning and Inspections Department
153 Courthouse Road, Suite 110
Currituck, NC 27929

Phone: 252-232-3055

Website: http://www.currituckcountync.gov/planning-zoning/

Email: ccpz@currituckcountync.gov

General

Major stormwater plan approval is required for:

- Major subdivisions.
- Major site plans - development or expansion on a nonresidential, multi-family, or mixed use lot by 5,000 square feet or more of impervious coverage or resulting in 10% or more total impervious coverage.

Step 1: Application Submittal

The applicant must submit a complete application packet consisting of the following:

Submitted on a USB flash drive or a compact disc (CD):

- ompleted Currituck County Major Stormwater Plan Form SW-002.
- Completed Rational Method Form SW-003 or NRCS Method Form SW-004.
- Stormwater management plan drawn to scale. The plan shall include the items listed in the major stormwater plan design standards checklist.
- Alternative stormwater runoff storage analysis and/or downstream drainage capacity analysis, if applicable.
- NCDENR permit applications, if applicable.
- Stormwater Review Fee (see fee schedule)

On receiving an application, staff shall determine whether the application is complete or incomplete. A complete application contains all the information and materials listed above and is in sufficient detail to evaluate and determine whether it complies with appropriate review standards. An application for major stormwater plan must be submitted and approved prior altering an existing drainage system, performing any land disturbing activity or, before construction documents are approved.

Step 2: Staff Review and Action

Once an application is determined complete staff shall approve, approve subject to conditions or disapprove the application.

Major Stormwater Plan
Form SW-002

OFFICIAL USE ONLY:
Permit Number: _____
Date Filed: _____
Date Approved: _____

Contact Information

APPLICANT:
Name: Shawboro East Ridge Solar, LLC
Address: 595 Summer Street, 4th Fllor
Stamford, CT 06901
Telephone: 252.825.1731
E-Mail Address: project.development@sunenergy1.com

PROPERTY OWNER:
Name: East Ridge Land Holdings, LLC
Address: 595 Summer Street, 4th Floor
Stamford, CT 06901
Telephone: 252.825.1731
E-Mail Address: project.development@sunenergy1.com

Property Information

Physical Street Address: 1021 East Ridge Road
Parcel Identification Number(s): 0034000024P0000
FEMA Flood Zone Designation: X

Request

Project Description: Solar Farm
Total land disturbance activity: 2,445,200 sf
Calculated volume of BMPs: 287,344 sf
Maximum lot coverage: N/A sf
Proposed lot coverage: 268,737 sf

TYPE OF REQUEST

- ☐ Major subdivision (10-year, 24-hour rate)
- ■ Major site plan (5-year, 24-hour rate)

METHOD USED TO CALCULATE PEAK DISCHARGE

- ☐ Rational Method
- ☐ NRCS Method (TR-55 and TR-20)
- ☐ Simple volume calculation for small sites (less than 10 acres)
- ■ Alternative stormwater runoff storage analysis
- ☐ Downstream drainage capacity analysis

I hereby authorize county officials to enter my property for the purpose of determining compliance. All information submitted and required as part of this process shall become public record.

[signature] 1-7-25
Applicant Date

[signature] 1-7-25
Property Owner(s) Date

***NOTE: Form must be signed by the owner(s) of record, contract purchaser(s), or other person(s) having a recognized property interest. If there are multiple property owners/applicants a signature is required for each.**

The table below depicts the design standards of the major stormwater plan application. Please make sure to include all applicable listed items to ensure all appropriate standards are reviewed.

Major Stormwater Plan

Design Standards Checklist

Date Received: 1-31-2025

Project Name: Shawboro East Ridge Solar - Phase 1A

Applicant/Property Owner: East Ridge Land Holdings, LLC/Shawboro East Ridge Solar, LLC

	Minor Stormwater Plan Design Standards Checklist	
	General	
1	Property owner name and address.	✔
2	Site address and parcel identification number.	✔
3	North arrow and scale to be 1" = 100' or larger.	✔
	Site Features	
4	Scaled drawing showing existing and proposed site features: Property lines with dimensions, acreage, streets, easements, structures (dimensions and square footage), fences, bulkheads, septic area (active and repair), utilities, vehicular use areas, driveways, and sidewalks.	✔
5	Approximate location of all designated Areas of Environmental Concern (AEC) or other such areas which are environmentally sensitive on the property, such as Maritime Forest, CAMA, 404, or 401 wetlands as defined by the appropriate agency.	✔
6	Existing and proposed ground elevations shown in one foot intervals. All elevation changes within the past six months shall be shown on the plan.	✔
8	Limits of all proposed fill, including the toe of fill slope and purpose of fill.	✔
9	Square footage of all existing and proposed impervious areas (structures, sidewalks, walkways, vehicular use areas regardless of surface material), including a description of surface materials.	✔
10	Existing and proposed drainage patterns, including direction of flow.	✔
11	Location, capacity, design plans (detention, retention, infiltration), and design discharge of existing and proposed stormwater management features.	✔
12	Elevation of the seasonal high water level as determined by a licensed soil scientist.	N/A
13	Plant selection.	N/A
	Permits and Other Documentation	
14	NCDENR stormwater permit application (if 10,000sf or more of built upon area).	✔
15	NCDENR erosion and sedimentation control permit application (if one acre or more of land disturbance).	✔
16	NCDENR coastal area management act permit application, if applicable.	N/A
17	Stormwater management narrative with supporting calculations.	✔
18	Rational Method Form SW-003 or NRCS Method Form SW-004	N/A
19	Alternative stormwater runoff storage analysis and/or downstream drainage capacity analysis, if applicable	✔
20	Design spreadsheets for all BMPs (*Appendix F – Currituck County Stormwater Manual*).	N/A
21	Detailed maintenance plan for all proposed BMPs.	N/A

Certificate		
22	The major stormwater plan shall contain the following certificate: I, Kimberly D. Hamby, PE, owner/agent hereby certify the information included on this and attached pages is true and correct to the best of my knowledge. On the plan entitled Shawboro East Ridge Solar - Phae 1, stormwater drainage improvements shall be installed according to these plans and specifications and approved by Currituck County. Yearly inspections are required as part of the stormwater plan. The owner is responsible for all maintenance required. Currituck County assumes no responsibility for the design, maintenance, or performance of the stormwater improvements. Date:_____ Owner/Agent:_____	☐

Major Stormwater Plan Submittal Checklist

Staff will use the following checklist to determine the completeness of your application. Please make sure all the listed items are included. Staff shall not process an application for further review until it is determined to be complete.

Major Stormwater Plan Form SW-002

Submittal Checklist

Date Received: 1-31-2025

Project Name: Shawboro East Ridge Solar - Phase 1A

Applicant/Property Owner: East Ridge Land Holdings, LLC/Shawboro East Ridge Solar, LL

Major Stormwater Plan Form SW-002 Submittal Checklist – Documents provided on USB flash drive or CD		
1	Completed Major Stormwater Plan Form SW-002	✔
2	Completed Rational Method Form SW-003 or NRCS Method Form SW-004 N/A	
3	Stormwater plan	✔
4	NCDENR permit applications, if applicable	✔

Comments

NEITHER RATIONAL METHOD OR NRCS METHOD ARE USED. DRAINAGE MODEL DATA USED FOR CALCULATIONS ARE INCLUDED IN THE DRAINAGE NARRATIVE.

Check if this project is ARPA-funded ☐
Attach a copy of the Letter of Intent to Fund

FINANCIAL RESPONSIBILITY/OWNERSHIP FORM
SEDIMENTATION POLLUTION CONTROL ACT

No person may initiate any land-disturbing activity on one or more acres as covered by the Act, including any activity under a common plan of development of this size as covered by the NCG01 permit, before this form and an acceptable erosion and sedimentation control plan have been completed and approved by the Land Quality Section, N.C. Department of Environmental Quality. Submit the completed form to the appropriate Regional Office. (Please type or print and, if the question is not applicable or the e-mail address or phone number is unavailable, place N/A in the blank.)

Part A.

1. Project Name Shawboro East Ridge Solar - Phase 1A

   **If this project involves American Rescue Plan Act (ARPA) funds, list the Project Name or Project Number (e.g., SRP-D-ARP-0121) below under which you were approved for funding through the Division of Water Infrastructure (DWI).*

2. Location of land-disturbing activity: County Currituck City or Township Shawboro
   Highway/Street East Ridge Road Latitude(decimal degrees) 36.406833 Longitude(decimal degrees) -76.080057

3. Approximate date land-disturbing activity will commence: 3/20/25

4. Purpose of development (residential, commercial, industrial, institutional, etc.): commercial

5. Total acreage disturbed or uncovered (including off-site borrow and waste areas): 56.13

6. Amount of fee enclosed: $5,700.00. The application fee of $100.00 per acre (rounded up to the next acre) is assessed without a ceiling amount (Example: 8.10-acre application fee is $900). Checks should be addressed to NCDEQ.

7. Has an erosion and sediment control plan been filed? Yes ☑ Enclosed ☑ No ☐

8. Person to contact should erosion and sediment control issues arise during land-disturbing activity:
   Name Nicholas Tillson E-mail Address nick.tillson@sunenergy1.com
   Phone: Office # 704.221.7763 Mobile #

9. Landowner(s) of Record (attach accompanied page to list additional owners):

East Ridge Land Holdings, LLC		252.825.1731	
Name		Phone: Office #	Mobile #
595 Summer St., 4th Floor		595 Summer St., 4th Floor	
Current Mailing Address		Current Street Address	
Stamford, CT 06901		Stanford, CT 06901	
City	State Zip	City	State Zip

10. Deed Book No. 1791 Page No. 767 Provide a copy of the most current deed.

Part B.

1. Company(ies) who are financially responsible for the land-disturbing activity (Provide a comprehensive list of all responsible parties on accompanied page.) *If the company is a sole proprietorship or if the landowner(s) is an individual(s), the name(s) of the owner(s) may be listed as the financially responsible party(ies).*

Shawboro East Ridge Solar, LLC
Company Name

project.development@sunenergy1.com
E-mail Address

595 Summer St., 4th Floor
Current Mailing Address

595 Summer St., 4th Floor
Current Street Address

Stamford, CT 06901
City State Zip

Stamford, CT 06901
City State Zip

Phone: Office # 252.825.1731

Mobile # _____

Note: If the Financially Responsible Party is not the owner of the land to be disturbed, include with this form the landowner's signed and dated written consent for the applicant to submit a draft erosion and sedimentation control plan and to conduct the anticipated land disturbing activity.

2. (a) If the Financially Responsible Party is a domestic company registered on the NC Secretary of State business registry, give name and street address of the Registered Agent:

East Ridge Land Holdings, LLC
Name of Registered Agent

project.development@sunenergy1.com
E-mail Address

2626 Glenwood Ave., Suite 550
Current Mailing Address

2626 Glenwood Ave., Suite 550
Current Street Address

Raleigh, NC 27608
City State Zip

Raleigh, NC 27608
City State Zip

Phone: Office # _____

Mobile # _____

_____
Name of Individual to Contact (if Registered Agent is a company)

(b) If the Financially Responsible Party is not a resident of North Carolina, give name and street address of the designated North Carolina agent who is registered on the NC Secretary of State business registry:

Shawboro East Ridge Solar, LLC
Name of Registered Agent

project.development@sunenergy1.com
E-mail Address

595 Summer St., 4th Floor
Current Mailing Address

595 Summer St., 4th Floor
Current Street Address

Stamford, CT 06901
City State Zip

Stamford, CT 06901
City State Zip

Phone: Office # 252.825.1731

Mobile # _____

_____
Name of Individual to Contact (if Registered Agent is a company)

(c) If the Financially Responsible Party is engaging in business under an assumed name, give name under which the company is Doing Business As. If the Financially Responsible Party is an individual, General Partnership, or other company not registered and doing business under an assumed name, **attach a copy of the Certificate of Assumed Name.**

Company DBA Name

The above information is true and correct to the best of my knowledge and belief and was provided by me under oath. (This form must be signed by the Financially Responsible Person if an individual(s) or his attorney-in-fact, or if not an individual, by an officer, director, partner, or registered agent with the authority to execute instruments for the Financially Responsible Party). I agree to provide corrected information should there be any change in the information provided herein.

Kenny Habul	Manager / CEO
Type or print name	Title or Authority
Signature	12/12/24 Date

I, Jacob Cody Jannise, a Notary Public of the County of Pitt State of North Carolina, hereby certify that Kenny Habul appeared personally before me this day and being duly sworn acknowledged that the above form was executed by him/her.

Witness my hand and notarial seal, this 12 day of December, 2024

JACOB CODY JANNISE NOTARY PUBLIC WASHINGTON COUNTY, NC Seal

Notary

My commission expires March 16, 2029

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

June 2, 2020

Permit # 2805

Subject: Driveway Permit – Shawboro East Ridge Solar, LLC
County: Currituck

SunEnergy1, LLC
192 Raceway Drive
Mooreseville, NC 28117

Dear Applicant,

Attached for your files is a copy of a Commercial / Residential Driveway Permit, which has been properly executed. Please note any comments, which may appear on the permit form.

Sincerely,

David Otts, P.E.
District One Engineer

Attachments

Cc: Division Engineer (W/Attachments)
County Maintenance Engineer (W/Attachments)

1929 North Road Street, Elizabeth City, NC 27909 Phone: (252)331-4737; Fax: (252)331-4739

APPLICATION IDENTIFICATION		N.C. DEPARTMENT OF TRANSPORTATION STREET AND DRIVEWAY ACCESS PERMIT APPLICATION
Driveway Permit No. 2805	Date of Application ~~8/5/19~~ 6.2.2020 11/3/20	
County: Currituck		
Development Name: Shawboro East Ridge Solar, LLC		

LOCATION OF PROPERTY:

Route/Road: Approx 1550 feet from the intersection of Shawboro Road and East Ridge Road, headed east, we plan to install a 40 foot driveway entrance on the south side of the road. Entrance #1

Exact Distance 1550 ☐ Miles ☒ Feet N ☐ S ☐ E ☒ W ☐

From the Intersection of Route No. Shawboro Road (SR1205) and Route No. E. Ridge Rd (SR1203) Toward Meads Rd (SR1204)

Property Will Be Used For: ☐ Residential /Subdivision ☒ Commercial ☐ Educational Facilities ☐ TND ☐ Emergency Services ☐ Other

Property: ☐ is ☒ is not within Shawboro City Zoning Area.

AGREEMENT

- I, the undersigned property owner, request access and permission to construct driveway(s) or street(s) on public right-of-way at the above location.
- I agree to construct and maintain driveway(s) or street entrance(s) in absolute conformance with the current "Policy on Street and Driveway Access to North Carolina Highways" as adopted by the North Carolina Department of Transportation.
- I agree that no signs or objects will be placed on or over the public right-of-way other than those approved by NCDOT.
- I agree that the driveway(s) or street(s) will be constructed as shown on the attached plans.
- I agree that that driveway(s) or street(s) as used in this agreement include any approach tapers, storage lanes or speed change lanes as deemed necessary.
- I agree that if any future improvements to the roadway become necessary, the portion of driveway(s) or street(s) located on public right-of-way will be considered the property of the North Carolina Department of Transportation, and I will not be entitled to reimbursement or have any claim for present expenditures for driveway or street construction.
- I agree that this permit becomes void if construction of driveway(s) or street(s) is not completed within the time specified by the "Policy on Street and Driveway Access to North Carolina Highways".
- I agree to pay a $50 construction inspection fee. Make checks payable to NCDOT. This fee will be reimbursed if application is denied.
- I agree to construct and maintain the driveway(s) or street(s) in a safe manner so as not to interfere with or endanger the public travel.
- I agree to provide during and following construction proper signs, signal lights, flaggers and other warning devices for the protection of traffic in conformance with the current "Manual on Uniform Traffic Control Devices for Streets and Highways" and Amendments or Supplements thereto. Information as to the above rules and regulations may be obtained from the District Engineer.
- I agree to indemnify and save harmless the North Carolina Department of Transportation from all damages and claims for damage that may arise by reason of this construction.
- I agree that the North Carolina Department of Transportation will assume no responsibility for any damages that may be caused to such facilities, within the highway right-of-way limits, in carrying out its construction.
- I agree to provide a Performance and Indemnity Bond in the amount specified by the Division of Highways for any construction proposed on the State Highway system.
- The granting of this permit is subject to the regulatory powers of the NC Department of Transportation as provided by law and as set forth in the N.C. Policy on Driveways and shall not be construed as a contract access point.
- I agree that the entire cost of constructing and maintaining an approved private street or driveway access connection and conditions of this permit will be borne by the property owner, the applicant, and their grantees, successors, and assignees.
- **I AGREE TO NOTIFY THE DISTRICT ENGINEER WHEN THE PROPOSED WORK BEGINS AND WHEN IT IS COMPLETED.**

APPLICATION IDENTIFICATION		N.C. DEPARTMENT OF TRANSPORTATION
Driveway Permit No. 2805	Date of Application ~~6/5/19~~ 9.2.2020 11/13/20	STREET AND DRIVEWAY ACCESS PERMIT APPLICATION
County: Currituck		
Development Name: Shawboro East Ridge Solar, LLC		

LOCATION OF PROPERTY:

Route/Road: Approx 1315 feet from the intersection of Shawboro Road and East Ridge Road, headed east, we plan to install a 40 foot driveway entrance on the south side of the road. Entrance #2

Exact Distance 1315 ☐ Miles ☒ Feet N ☐ S ☐ E ☒ W ☐

From the Intersection of Route No. Shawboro Road (SR1205) and Route No. E. Ridge Rd (SR1203) Toward Meads Rd (SR1204)

Property Will Be Used For: ☐ Residential /Subdivision ☒ Commercial ☐ Educational Facilities ☐ TND ☐ Emergency Services ☐ Other

Property: ☐ is ☒ is not within Shawboro City Zoning Area.

AGREEMENT

- I, the undersigned property owner, request access and permission to construct driveway(s) or street(s) on public right-of-way at the above location.
- I agree to construct and maintain driveway(s) or street entrance(s) in absolute conformance with the current "Policy on Street and Driveway Access to North Carolina Highways" as adopted by the North Carolina Department of Transportation.
- I agree that no signs or objects will be placed on or over the public right-of-way other than those approved by NCDOT.
- I agree that the driveway(s) or street(s) will be constructed as shown on the attached plans.
- I agree that that driveway(s) or street(s) as used in this agreement include any approach tapers, storage lanes or speed change lanes as deemed necessary.
- I agree that if any future improvements to the roadway become necessary, the portion of driveway(s) or street(s) located on public right-of-way will be considered the property of the North Carolina Department of Transportation, and I will not be entitled to reimbursement or have any claim for present expenditures for driveway or street construction.
- I agree that this permit becomes void if construction of driveway(s) or street(s) is not completed within the time specified by the "Policy on Street and Driveway Access to North Carolina Highways".
- I agree to pay a $50 construction inspection fee. Make checks payable to NCDOT. This fee will be reimbursed if application is denied.
- I agree to construct and maintain the driveway(s) or street(s) in a safe manner so as not to interfere with or endanger the public travel.
- I agree to provide during and following construction proper signs, signal lights, flaggers and other warning devices for the protection of traffic in conformance with the current "Manual on Uniform Traffic Control Devices for Streets and Highways" and Amendments or Supplements thereto. Information as to the above rules and regulations may be obtained from the District Engineer.
- I agree to indemnify and save harmless the North Carolina Department of Transportation from all damages and claims for damage that may arise by reason of this construction.
- I agree that the North Carolina Department of Transportation will assume no responsibility for any damages that may be caused to such facilities, within the highway right-of-way limits, in carrying out its construction.
- I agree to provide a Performance and Indemnity Bond in the amount specified by the Division of Highways for any construction proposed on the State Highway system.
- The granting of this permit is subject to the regulatory powers of the NC Department of Transportation as provided by law and as set forth in the N.C. Policy on Driveways and shall not be construed as a contract access point.
- I agree that the entire cost of constructing and maintaining an approved private street or driveway access connection and conditions of this permit will be borne by the property owner, the applicant, and their grantees, successors, and assignees.
- **I AGREE TO NOTIFY THE DISTRICT ENGINEER WHEN THE PROPOSED WORK BEGINS AND WHEN IT IS COMPLETED.**

APPLICATION IDENTIFICATION		N.C. DEPARTMENT OF TRANSPORTATION
Driveway Permit No. 2805	Date of Application ~~6/5/19~~ 9.8.2020 11/3/20	STREET AND DRIVEWAY ACCESS PERMIT APPLICATION
County: Currituck		
Development Name: Shawboro East Ridge Solar, LLC		

LOCATION OF PROPERTY:

Route/Road: Approx 1315 feet from the intersection of Shawboro Road and East Ridge Road, headed east, we plan to install a 40 foot driveway entrance on the north side of the road. Entrance #3

Exact Distance 1315 ☐ Miles ☒ Feet N ☐ S ☐ E ☒ W ☐

From the Intersection of Route No. Shawboro Road (SR1205) and Route No. E. Ridge Rd (SR1203) Toward Meads Rd (SR1204)

Property Will Be Used For: ☐ Residential /Subdivision ☒ Commercial ☐ Educational Facilities ☐ TND ☐ Emergency Services ☐ Other

Property: ☐ is ☒ is not within Shawboro City Zoning Area.

AGREEMENT

- I, the undersigned property owner, request access and permission to construct driveway(s) or street(s) on public right-of-way at the above location.
- I agree to construct and maintain driveway(s) or street entrance(s) in absolute conformance with the current "Policy on Street and Driveway Access to North Carolina Highways" as adopted by the North Carolina Department of Transportation.
- I agree that no signs or objects will be placed on or over the public right-of-way other than those approved by NCDOT.
- I agree that the driveway(s) or street(s) will be constructed as shown on the attached plans.
- I agree that that driveway(s) or street(s) as used in this agreement include any approach tapers, storage lanes or speed change lanes as deemed necessary.
- I agree that if any future improvements to the roadway become necessary, the portion of driveway(s) or street(s) located on public right-of-way will be considered the property of the North Carolina Department of Transportation, and I will not be entitled to reimbursement or have any claim for present expenditures for driveway or street construction.
- I agree that this permit becomes void if construction of driveway(s) or street(s) is not completed within the time specified by the "Policy on Street and Driveway Access to North Carolina Highways".
- I agree to pay a $50 construction inspection fee. Make checks payable to NCDOT. This fee will be reimbursed if application is denied.
- I agree to construct and maintain the driveway(s) or street(s) in a safe manner so as not to interfere with or endanger the public travel.
- I agree to provide during and following construction proper signs, signal lights, flaggers and other warning devices for the protection of traffic in conformance with the current "Manual on Uniform Traffic Control Devices for Streets and Highways" and Amendments or Supplements thereto. Information as to the above rules and regulations may be obtained from the District Engineer.
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- **I AGREE TO NOTIFY THE DISTRICT ENGINEER WHEN THE PROPOSED WORK BEGINS AND WHEN IT IS COMPLETED.**

APPLICATION IDENTIFICATION		N.C. DEPARTMENT OF TRANSPORTATION STREET AND DRIVEWAY ACCESS PERMIT APPLICATION
Driveway Permit No. 2805	Date of Application ~~8/5/19~~ 9.3.2020	
County: Currituck		
Development Name: Shawboro East Ridge Solar, LLC		

LOCATION OF PROPERTY:

Route/Road: Approx 1685 feet from the intersection of Meads Road and East Ridge Road, headed south, we plan to install a 40 foot driveway entrance on the west side of the road. Entrance #4

Exact Distance 1685 ☐ Miles ☒ Feet N ☐ S ☒ E ☐ W ☐

From the Intersection of Route No. Meads Road (SR1204) and Route No. E. Ridge Rd (SR1203) Toward Dead End Meads Road

Property Will Be Used For: ☐ Residential /Subdivision ☒ Commercial ☐ Educational Facilities ☐ TND ☐ Emergency Services ☐ Other

Property: ☐ is ☒ is not within Shawboro City Zoning Area.

AGREEMENT

- I, the undersigned property owner, request access and permission to construct driveway(s) or street(s) on public right-of-way at the above location.
- I agree to construct and maintain driveway(s) or street entrance(s) in absolute conformance with the current "Policy on Street and Driveway Access to North Carolina Highways" as adopted by the North Carolina Department of Transportation.
- I agree that no signs or objects will be placed on or over the public right-of-way other than those approved by NCDOT.
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- I agree that if any future improvements to the roadway become necessary, the portion of driveway(s) or street(s) located on public right-of-way will be considered the property of the North Carolina Department of Transportation, and I will not be entitled to reimbursement or have any claim for present expenditures for driveway or street construction.
- I agree that this permit becomes void if construction of driveway(s) or street(s) is not completed within the time specified by the "Policy on Street and Driveway Access to North Carolina Highways".
- I agree to pay a $50 construction inspection fee. Make checks payable to NCDOT. This fee will be reimbursed if application is denied.
- I agree to construct and maintain the driveway(s) or street(s) in a safe manner so as not to interfere with or endanger the public travel.
- I agree to provide during and following construction proper signs, signal lights, flaggers and other warning devices for the protection of traffic in conformance with the current "Manual on Uniform Traffic Control Devices for Streets and Highways" and Amendments or Supplements thereto. Information as to the above rules and regulations may be obtained from the District Engineer.
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- I agree that the entire cost of constructing and maintaining an approved private street or driveway access connection and conditions of this permit will be borne by the property owner, the applicant, and their grantees, successors, and assignees.
- **I AGREE TO NOTIFY THE DISTRICT ENGINEER WHEN THE PROPOSED WORK BEGINS AND WHEN IT IS COMPLETED.**

APPLICATION IDENTIFICATION		N.C. DEPARTMENT OF TRANSPORTATION STREET AND DRIVEWAY ACCESS PERMIT APPLICATION
Driveway Permit No. 2805	Date of Application ~~6/5/19~~ 11/3/2020	
County: Currituck		
Development Name: Shawboro East Ridge Solar, LLC		

LOCATION OF PROPERTY:

Route/Road: Approx 405 feet from the intersection of Meads Road and East Ridge Road, headed east, we plan to install a 40 foot driveway entrance on the north side of the road. Entrance #5

Exact Distance 405 ☐ Miles ☒ Feet N ☐ S ☐ E ☒ W ☐

From the Intersection of Route No. Meads Road (SR1204) and Route No. E. Ridge Rd (SR1203) Toward Amy Landing Road

Property Will Be Used For: ☐ Residential /Subdivision ☒ Commercial ☐ Educational Facilities ☐ TND ☐ Emergency Services ☐ Other

Property: ☐ is ☒ is not within Shawboro City Zoning Area.

AGREEMENT

- I, the undersigned property owner, request access and permission to construct driveway(s) or street(s) on public right-of-way at the above location.
- I agree to construct and maintain driveway(s) or street entrance(s) in absolute conformance with the current "Policy on Street and Driveway Access to North Carolina Highways" as adopted by the North Carolina Department of Transportation.
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- I agree that this permit becomes void if construction of driveway(s) or street(s) is not completed within the time specified by the "Policy on Street and Driveway Access to North Carolina Highways".
- I agree to pay a $50 construction inspection fee. Make checks payable to NCDOT. This fee will be reimbursed if application is denied.
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- I agree to provide a Performance and Indemnity Bond in the amount specified by the Division of Highways for any construction proposed on the State Highway system.
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- I agree that the entire cost of constructing and maintaining an approved private street or driveway access connection and conditions of this permit will be borne by the property owner, the applicant, and their grantees, successors, and assignees.
- **I AGREE TO NOTIFY THE DISTRICT ENGINEER WHEN THE PROPOSED WORK BEGINS AND WHEN IT IS COMPLETED.**

APPLICATION IDENTIFICATION		N.C. DEPARTMENT OF TRANSPORTATION STREET AND DRIVEWAY ACCESS PERMIT APPLICATION
Driveway Permit No. 2806	Date of Application ~~6/5/19~~ 10.2.2020 4/13/20	
County: Currituck		
Development Name: Shawboro East Ridge Solar, LLC		

LOCATION OF PROPERTY:

Route/Road: Approx 1175 feet from the intersection of Meads Road and East Ridge Road, headed east, we plan to install a 40 foot driveway entrance on the north side of the road. Entrance #6

Exact Distance 1175 ☐ Miles ☒ Feet N ☐ S ☐ E ☒ W ☐

From the Intersection of Route No. Meads Road (SR1204) and Route No. E. Ridge Rd (SR1203) Toward Amy Landing Road

Property Will Be Used For: ☐ Residential /Subdivision ☒ Commercial ☐ Educational Facilities ☐ TND ☐ Emergency Services ☐ Other

Property: ☐ is ☒ is not within Shawboro City Zoning Area.

AGREEMENT

- I, the undersigned property owner, request access and permission to construct driveway(s) or street(s) on public right-of-way at the above location.
- I agree to construct and maintain driveway(s) or street entrance(s) in absolute conformance with the current "Policy on Street and Driveway Access to North Carolina Highways" as adopted by the North Carolina Department of Transportation.
- I agree that no signs or objects will be placed on or over the public right-of-way other than those approved by NCDOT.
- I agree that the driveway(s) or street(s) will be constructed as shown on the attached plans.
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- I agree that this permit becomes void if construction of driveway(s) or street(s) is not completed within the time specified by the "Policy on Street and Driveway Access to North Carolina Highways".
- I agree to pay a $50 construction inspection fee. Make checks payable to NCDOT. This fee will be reimbursed if application is denied.
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- I agree to provide a Performance and Indemnity Bond in the amount specified by the Division of Highways for any construction proposed on the State Highway system.
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- I agree that the entire cost of constructing and maintaining an approved private street or driveway access connection and conditions of this permit will be borne by the property owner, the applicant, and their grantees, successors, and assignees.
- **I AGREE TO NOTIFY THE DISTRICT ENGINEER WHEN THE PROPOSED WORK BEGINS AND WHEN IT IS COMPLETED.**

APPLICATION IDENTIFICATION		N.C. DEPARTMENT OF TRANSPORTATION STREET AND DRIVEWAY ACCESS PERMIT APPLICATION
Driveway Permit No. 2805	Date of Application ~~8/5/19~~ 6.2.2020 +1+3/20	
County: Currituck		
Development Name: Shawboro East Ridge Solar, LLC		

LOCATION OF PROPERTY:

Route/Road: Approx 2135 feet from the intersection of Meads Road and East Ridge Road, headed north east, we plan to install a 40 foot driveway entrance on the east side of the road. Entrance #7

Exact Distance 2135 ☐ Miles ☒ Feet N ☒ S ☐ E ☒ W ☐

From the Intersection of Route No. Meads Road (SR1204) and Route No. E. Ridge Rd (SR1203) Toward Amy Landing Road

Property Will Be Used For: ☐ Residential /Subdivision ☒ Commercial ☐ Educational Facilities ☐ TND ☐ Emergency Services ☐ Other

Property: ☐ is ☒ is not within Shawboro City Zoning Area.

AGREEMENT

- I, the undersigned property owner, request access and permission to construct driveway(s) or street(s) on public right-of-way at the above location.
- I agree to construct and maintain driveway(s) or street entrance(s) in absolute conformance with the current "Policy on Street and Driveway Access to North Carolina Highways" as adopted by the North Carolina Department of Transportation.
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- I agree to pay a $50 construction inspection fee. Make checks payable to NCDOT. This fee will be reimbursed if application is denied.
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- I agree that the North Carolina Department of Transportation will assume no responsibility for any damages that may be caused to such facilities, within the highway right-of-way limits, in carrying out its construction.
- I agree to provide a Performance and Indemnity Bond in the amount specified by the Division of Highways for any construction proposed on the State Highway system.
- The granting of this permit is subject to the regulatory powers of the NC Department of Transportation as provided by law and as set forth in the N.C. Policy on Driveways and shall not be construed as a contract access point.
- I agree that the entire cost of constructing and maintaining an approved private street or driveway access connection and conditions of this permit will be borne by the property owner, the applicant, and their grantees, successors, and assignees.
- **I AGREE TO NOTIFY THE DISTRICT ENGINEER WHEN THE PROPOSED WORK BEGINS AND WHEN IT IS COMPLETED.**

APPLICATION IDENTIFICATION		N.C. DEPARTMENT OF TRANSPORTATION STREET AND DRIVEWAY ACCESS PERMIT APPLICATION
Driveway Permit No. 2805	Date of Application ~~6/5/19~~ 6.2.2020 4/13/20	
County: Currituck		
Development Name: Shawboro East Ridge Solar, LLC		

LOCATION OF PROPERTY:

Route/Road: Approx 2560 feet from the intersection of Meads Road and East Ridge Road, headed north east, we plan to install a 40 foot driveway entrance on the east side of the road. Entrance #8

Exact Distance 2560 ☐ Miles ☒ Feet N ☒ S ☐ E ☒ W ☐

From the Intersection of Route No. Meads Road (SR1204) and Route No. E. Ridge Rd (SR1203) Toward Amy Landing Road

Property Will Be Used For: ☐ Residential /Subdivision ☒ Commercial ☐ Educational Facilities ☐ TND ☐ Emergency Services ☐ Other

Property: ☐ is ☒ is not within Shawboro City Zoning Area.

AGREEMENT

- I, the undersigned property owner, request access and permission to construct driveway(s) or street(s) on public right-of-way at the above location.
- I agree to construct and maintain driveway(s) or street entrance(s) in absolute conformance with the current "Policy on Street and Driveway Access to North Carolina Highways" as adopted by the North Carolina Department of Transportation.
- I agree that no signs or objects will be placed on or over the public right-of-way other than those approved by NCDOT.
- I agree that the driveway(s) or street(s) will be constructed as shown on the attached plans.
- I agree that that driveway(s) or street(s) as used in this agreement include any approach tapers, storage lanes or speed change lanes as deemed necessary.
- I agree that if any future improvements to the roadway become necessary, the portion of driveway(s) or street(s) located on public right-of-way will be considered the property of the North Carolina Department of Transportation, and I will not be entitled to reimbursement or have any claim for present expenditures for driveway or street construction.
- I agree that this permit becomes void if construction of driveway(s) or street(s) is not completed within the time specified by the "Policy on Street and Driveway Access to North Carolina Highways".
- I agree to pay a $50 construction inspection fee. Make checks payable to NCDOT. This fee will be reimbursed if application is denied.
- I agree to construct and maintain the driveway(s) or street(s) in a safe manner so as not to interfere with or endanger the public travel.
- I agree to provide during and following construction proper signs, signal lights, flaggers and other warning devices for the protection of traffic in conformance with the current "Manual on Uniform Traffic Control Devices for Streets and Highways" and Amendments or Supplements thereto. Information as to the above rules and regulations may be obtained from the District Engineer.
- I agree to indemnify and save harmless the North Carolina Department of Transportation from all damages and claims for damage that may arise by reason of this construction.
- I agree that the North Carolina Department of Transportation will assume no responsibility for any damages that may be caused to such facilities, within the highway right-of-way limits, in carrying out its construction.
- I agree to provide a Performance and Indemnity Bond in the amount specified by the Division of Highways for any construction proposed on the State Highway system.
- The granting of this permit is subject to the regulatory powers of the NC Department of Transportation as provided by law and as set forth in the N.C. Policy on Driveways and shall not be construed as a contract access point.
- I agree that the entire cost of constructing and maintaining an approved private street or driveway access connection and conditions of this permit will be borne by the property owner, the applicant, and their grantees, successors, and assignees.
- **I AGREE TO NOTIFY THE DISTRICT ENGINEER WHEN THE PROPOSED WORK BEGINS AND WHEN IT IS COMPLETED.**

SIGNATURES OF APPLICANT

PROPERTY OWNER (APPLICANT)		WITNESS	
COMPANY		NAME	
SIGNATURE		SIGNATURE	
ADDRESS		ADDRESS	
	Phone No.		

AUTHORIZED AGENT		WITNESS	
COMPANY	SunEnergy1, LLC – Cody Jannise	NAME	Ellen Aycock
SIGNATURE	Cody Jannise	SIGNATURE	Ellen Aycock
ADDRESS	192 Raceway Drive	ADDRESS	6750 NC Highway 30 East
	Mooresville, NC 28117 Phone No. 252-508-6014		Bethel, NC 27812

APPROVALS

APPLICATION RECEIVED BY DISTRICT ENGINEER

SIGNATURE DATE

APPLICATION APPROVED BY LOCAL GOVERNMENTAL AUTHORITY (when required)

SIGNATURE TITLE DATE

APPLICATION APPROVED BY NCDOT

J.B. DISTRICT ENG. 8/12/20

SIGNATURE TITLE DATE

INSPECTION BY NCDOT

SIGNATURE TITLE DATE

COMMENTS:

ENTRANCE #1, 2, AND 9 WILL REQUIRE 48" DIAMETER PIPES, WHILE ENTRANCE # 3, 5, 6, 7 AND 8 MUST BE AN 18" DIAMETER PIPE.


Shawboro Rd.
E. Ridge Rd.
Entrance 1
1550 ft. From Intersection of
Shawboro Rd. and E. Ridge Rd.
Entrance 2
1315 ft. From Intersection of
E. Ridge Rd. and Meads Rd.
Entrance 3
1315 ft. From Intersection of
E. Ridge Rd. and Meads Rd.
E. Ridge Rd.
Entrance 5
405 ft. From Intersection of
E. Ridge Rd. and Meads Rd.
Entrance 6
1175 ft. From Intersection of
E. Ridge Rd. and Meads Rd.
E. Ridge Rd.
Entrance 8
2560 ft. From Intersection of
E. Ridge Rd. and Meads Rd.
Entrance 7
2135 ft. From Intersection of
E. Ridge Rd. and Meads Rd.
Meads Rd.
Entrance 4
1685 ft. From Intersection of
E. Ridge Rd. and Meads Rd.