

Oak Bluffs Water District Proposed Solar Basemap

DRI 660 – O.B. Water District Solar Array Locus

PWSO EP_PT_WithoutWPA_400ft

Trails

Special Designation

- Trail - Existing
- Trail - Planned
- Ancient Way
- Special Way
- Ancient and Special Way
- Connector Road
- Basement
- Fire Trail

**Oak Bluffs (pub. 2014)
POLY_TYPE**

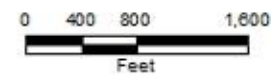
- Parcel
- Road/Right of Way
- Water

**Oak Bluffs Overlay Zoning
DESCRIBE**

- Coastal District
- Copeland Plan District
- Floodplain District (Final dPRM 2010)
- Island Roads District - Major Roads Zone
- Island Roads District - Special Ways Zone
- Lagoon Pond District
- Oak Bluffs Harbor District
- Sengelkontacket Pond District
- Southern Woodlands District
- Special Places District
- Wireless Communication District
- State listed Rare Species

Proposed Solar Farm

State Forest



Disclaimer: This map is for planning purposes only. The data is not suitable for boundary determination or property transaction. The copyright of this is not the District's. For more details, please contact the District.

Created by Paul Dale,
 GIS Developer, O.B. Water District
 Date: 10/20/2023
 Coordinate System: StatePlane Massachusetts North NAD83 meters

Lagoon Pond Watershed

Oak Bluffs Water District Proposed Solar Basemap

PWSD SP_PT_WithoutWPA_6008

Trails
Special Designation

- Trail - Existing
- Trail - Planned
- Ancient Way
- Special Way
- Ancient and Special Way
- Connector Road
- Basement
- Fire Trail

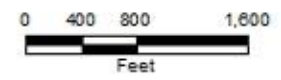
Major Watershed

Oak Bluffs (pub. 2014)
POLY_TYPE

- Parcel
- Road/Right of Way
- Water

Oak Bluffs Overlay Zoning
DESCRIBE

- Coastal District
- Copeland Plan District
- Floodplain District (Final dFRM 2010)
- Island Roads District - Major Roads Zone
- Island Roads District - Special Ways Zone
- Lagoon Pond District
- Oak Bluffs Harbor District
- Sengelkottacker Pond District
- Southern Woodlands District
- Special Places District
- Wireless Communication District
- State listed Rare Species



Disclaimer: This map is for planning purposes only. The data are not suitable for boundary determination or property transaction. The copyright of this is not the District's for the base data is used as indicated by the author.

Created by Paul Dale,
GIS Developer, GIS
Oak Bluffs Water District
Coordinate System: GCS:North America NAD83, meters

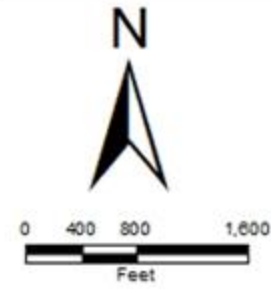
Water Resource Areas of Contribution

Oak Bluffs Water District Proposed Solar Basemap

	ZONE2_POLY_DISBOUND
	PWSD EP_PT_WithOutWPA_4000
Trails	
Special Designation	
	Trail - Existing
	Trail - Planned
	Ancient Way
	Special Way
	Ancient and Special Way
	Connector Road
	Basement
	Fire Trail
Oak Bluffs (pub. 2014)	
POLY_TYPE	
	Parcel
	Road/Right of Way
	Water
Oak Bluffs Overlay Zoning	
DESCRIBE	
	Coastal District
	Copeland Plan District
	Floodplain District (Final dFIRM 2010)
	Island Roads District - Major Roads Zone
	Island Roads District - Special Ways Zone
	Lagoon Pond District
	Oak Bluffs Harbor District
	Sengekontacket Pond District
	Southern Woodlands District
	Special Places District
	Wireless Communication District
	State listed Rare Species

ZONE 2 Area of Contribution (Blue)

Solar
Array



Disclaimer: The maps are for planning purposes only. The areas are not adequate for building, development or business transactions. The user will print or download a copy. Please do not disseminate or redistribute the data.

Created by: Paul Rife
Map Date: 08/26/2015
File Name: Oak Bluffs Solar Basemap
Data Source: Southern Ocean Planning Team, National Oceanic and Atmospheric Administration



ZONE 2 Area of Contribution (Blue)

Oak Bluffs Water District Proposed Solar Basemap

PWSD EP_PT_WithoutWPA_4008

Trails
Special Designation

- Trail - Existing
- Trail - Planned
- Ancient Way
- Special Way
- Ancient and Special Way
- Connector Road
- Basement
- Fire Trail

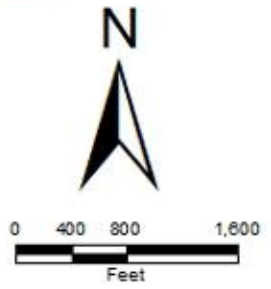
Oak Bluffs (pub. 2014)
POLY_TYPE

- Parcel
- Road/Right of Way
- Water

Oak Bluffs Overlay Zoning
DESCRIBE

- Coastal District
- Copeland Plan District
- Floodplain District (Final dPRM 2010)
- Island Roads District - Major Roads Zone
- Island Roads District - Special Ways Zone
- Lagoon Pond District
- Oak Bluffs Harbor District
- Sengekontacket Pond District
- Southern Woodlands District
- Special Places District
- Wireless Communication District
- State listed Rare Species

Green Areas Mapped as
Protected Open Space

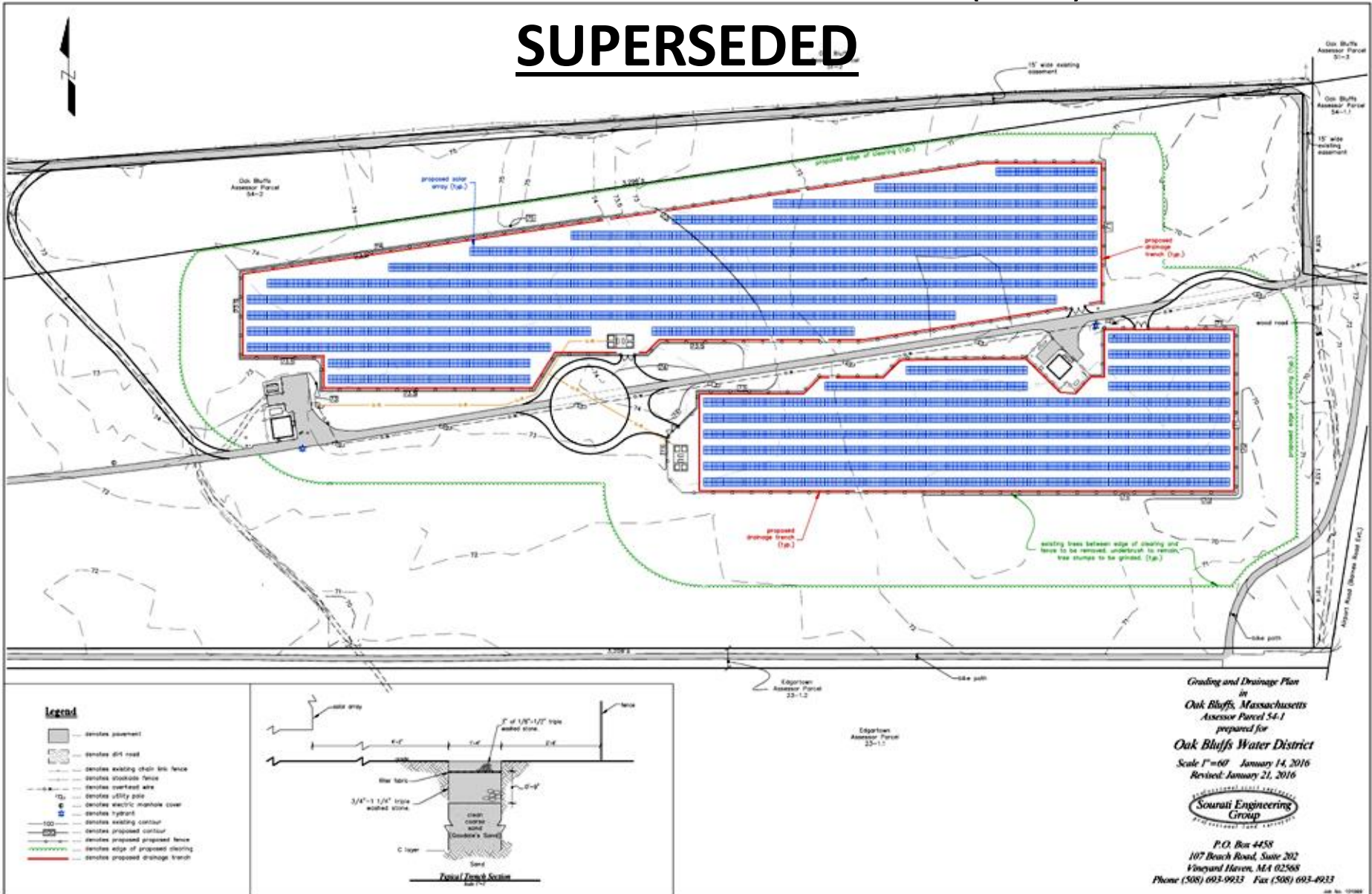


Disclaimer: This map is for planning purposes only. The data is not adequate for boundary determination or location information. The copyright is for all rights reserved. These data are used or may be used by the user.

Created by Paul Pika
Date: December 21, 2012
File Name: OWS Solar Basemap
Data Source:
Coordinate System: StatePlane Massachusetts NAD83, meters

O.B. Water District Solar Farm Plan (1/25)

SUPERSEDED

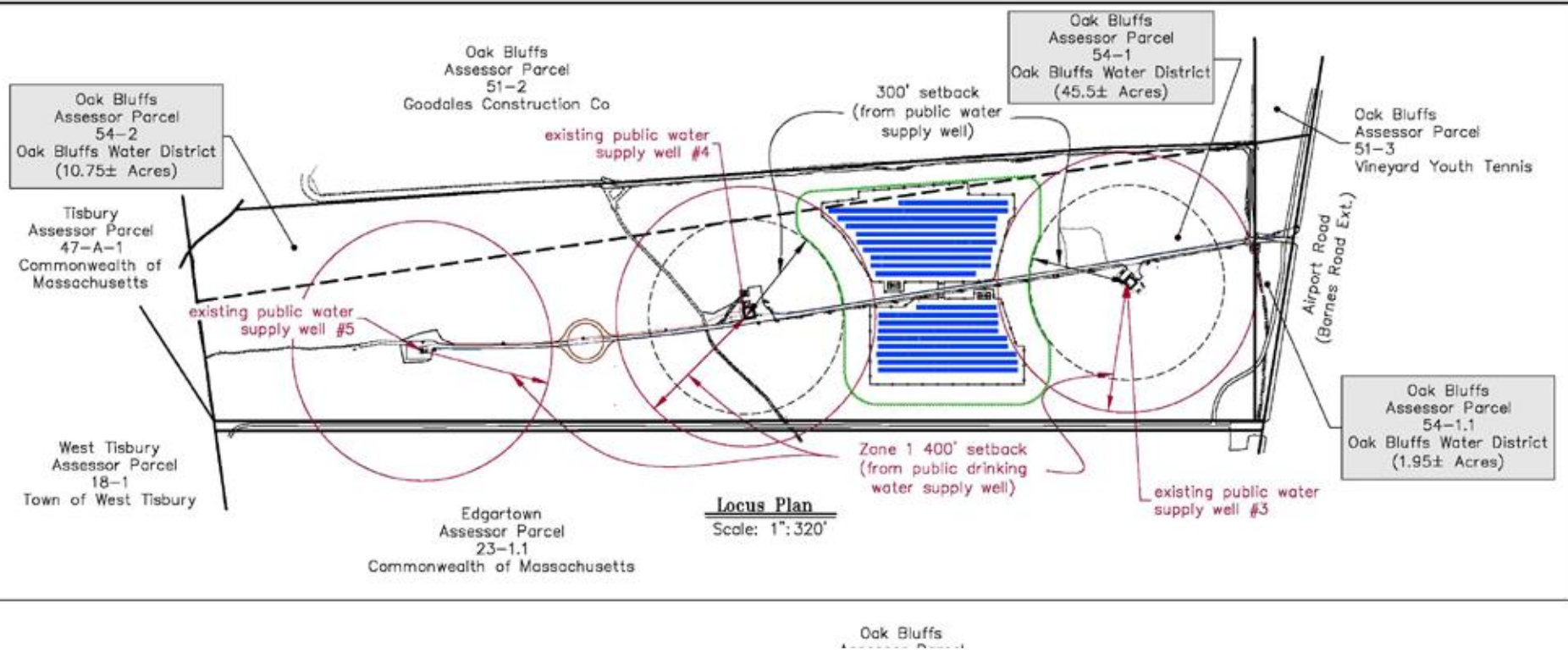


Grading and Drainage Plan
in
Oak Bluffs, Massachusetts
Assessor Parcel 54-1
prepared for
Oak Bluffs Water District
Scale 1"=60' January 14, 2016
Revised January 21, 2016

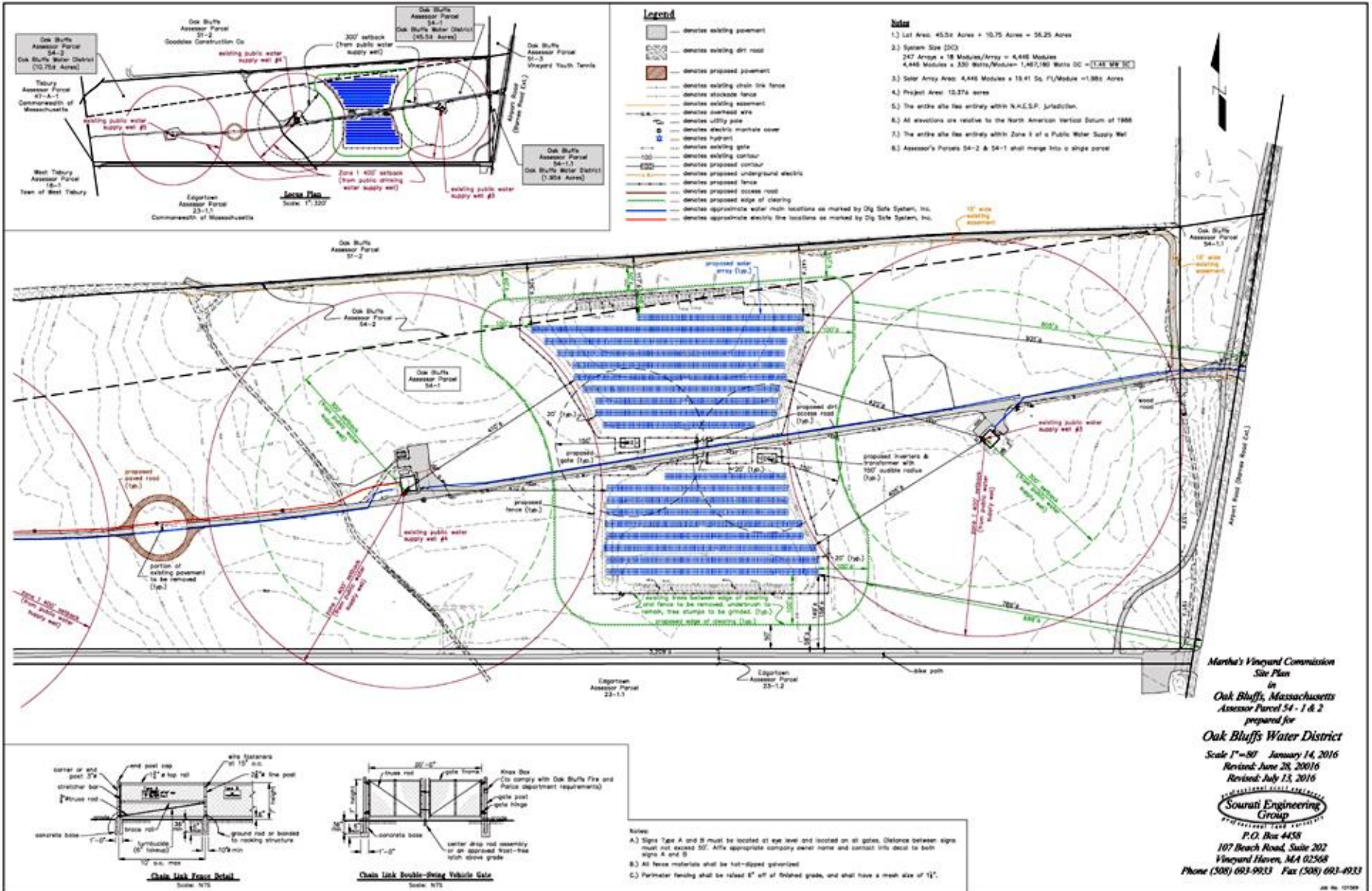


P.O. Box 4458
107 Beach Road, Suite 202
Vineyard Haven, MA 02568
Phone (508) 693-9923 Fax (508) 693-4923

O.B. Water District Solar Farm Site Plan (Revised 7/13/16)



O.B. Water District Solar Farm Site Plan (Revised 7/13/16)

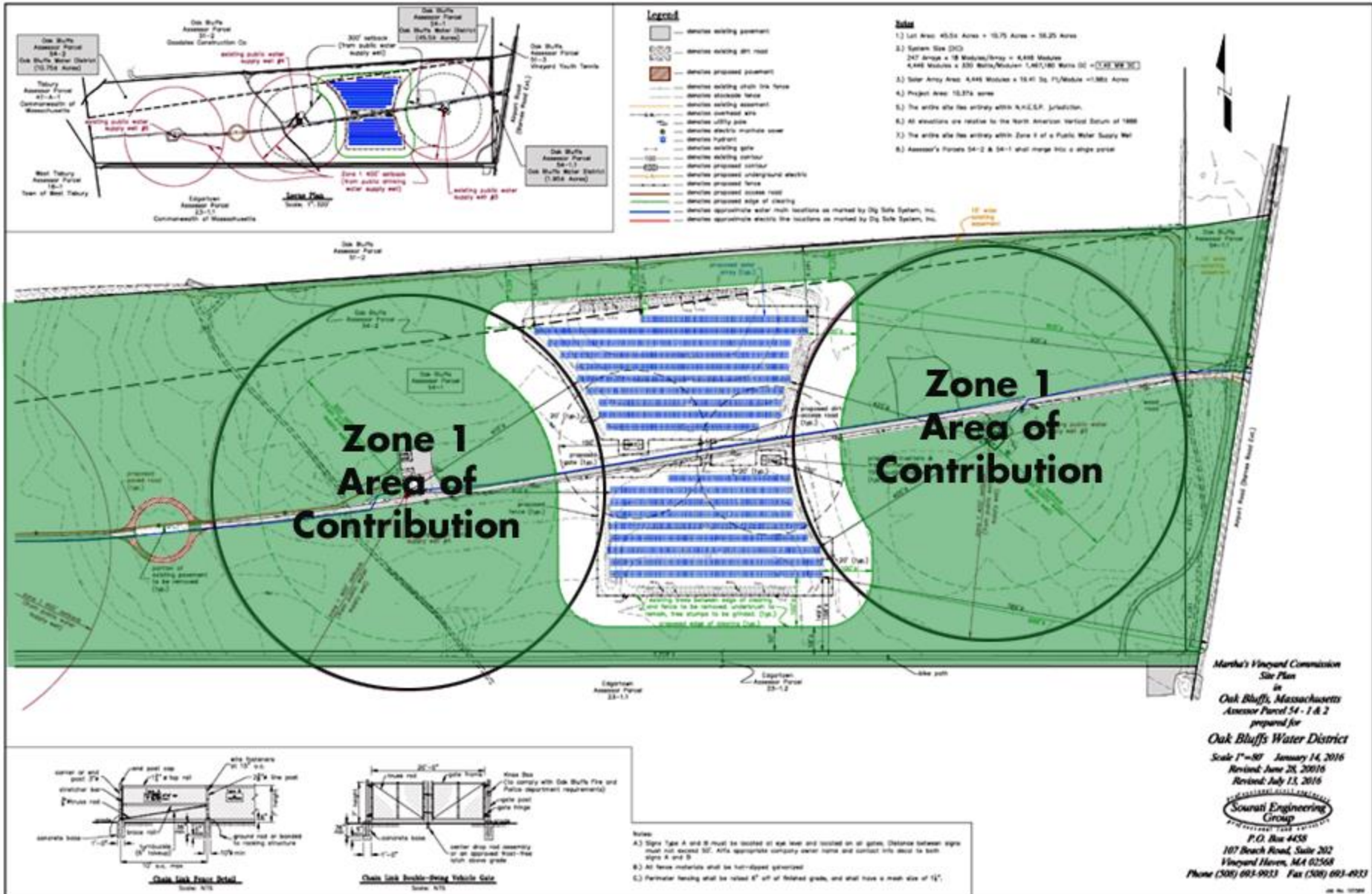


Martha's Vineyard Commission
Site Plan
in
Oak Bluffs, Massachusetts
Assessor Parcel 54 - 1 & 2
prepared for
Oak Bluffs Water District
Scale 1"=80' January 14, 2016
Revised: June 28, 2016
Revised: July 13, 2016

Soumar Engineering Group
P.O. Box 4458
107 Beach Road, Suite 202
Vineyard Haven, MA 02568
Phone (508) 693-9933 Fax (508) 693-8933

2016 No. 107589

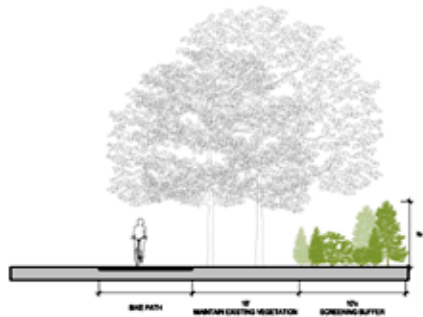
10.37 Acres to be Cleared



Area to be cleared in red



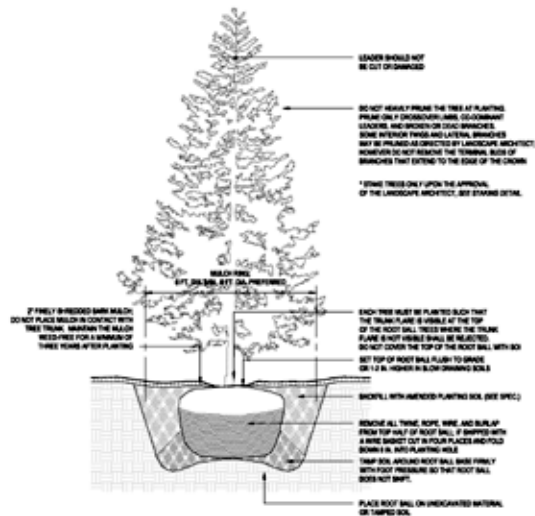
Landscape Plans



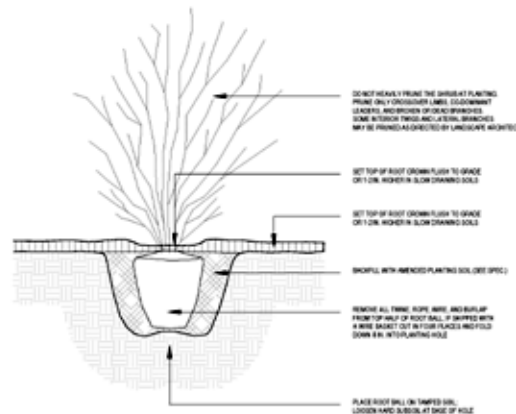
1 DETAIL AT BIKE PATH



2 DETAIL AT ROAD



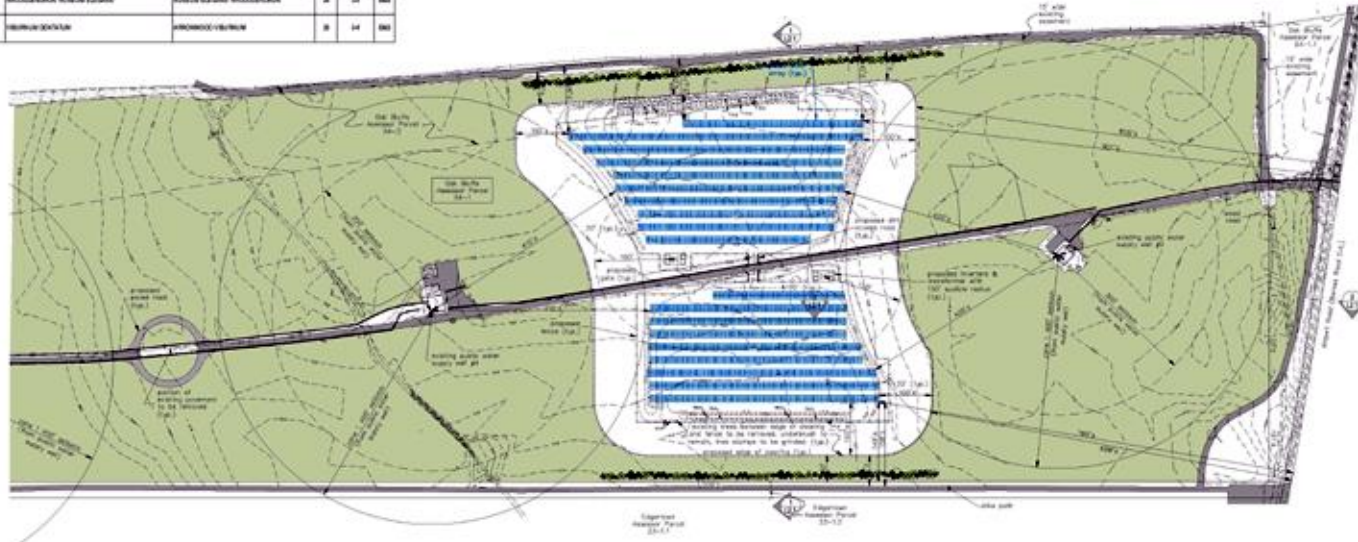
3 TREE PLANTING



4 SHRUB PLANTING

OAK BLUFFS SOLAR PLANT SCHEDULE

SYM	BOTANICAL NAME	COMMON NAME	QTY	SIZE	NOTES
SCREEN PLANTING - NORTH					
●	AMPELIS VIRGINIANA	SHARON RED CEDAR	9	12'	800
●	AMPELIS VIRGINIANA	SHARON RED CEDAR	4	12'	800
●	POSA BLAUCA	WHITE SPINDLE	9	12'	800
○	SETI-LARUM	HAWKEYE	7	30"	800
○	PROCESSIONARIA NOBILIS LUGENSIS	POSSUM BLOSSOM THUNDERBOLT	3	14'	800
○	FRAXINUS OXYCARPA	SPRINGWOOD-LEBURNUM	3	14'	800
SCREEN PLANTING - BIKE PATH					
●	AMPELIS VIRGINIANA	SHARON RED CEDAR	11	12'	800
●	AMPELIS VIRGINIANA	SHARON RED CEDAR	3	12'	800
●	POSA BLAUCA	WHITE SPINDLE	9	12'	800
○	SETI-LARUM	HAWKEYE	7	30"	800
○	PROCESSIONARIA NOBILIS LUGENSIS	POSSUM BLOSSOM THUNDERBOLT	3	14'	800
○	FRAXINUS OXYCARPA	SPRINGWOOD-LEBURNUM	3	14'	800



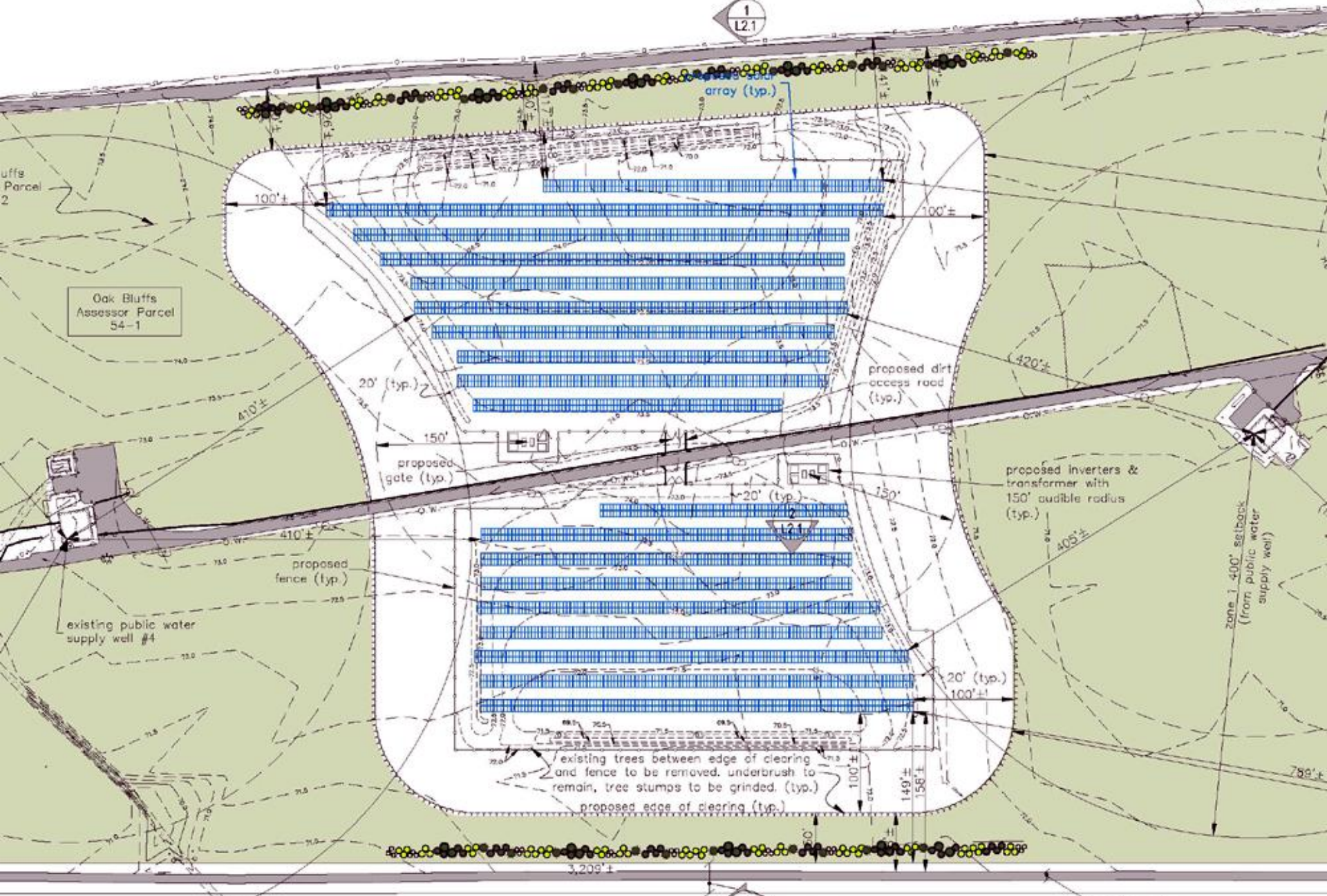
**OAK BLUFFS
 WATER DISTRICT
 ALWARDT WAY
 OAK BLUFFS, MA**

PROJECT NUMBER: 1801
 DRAWN BY: LAL
 CHECKED BY: JPH
 SCALE: 1"=100'
 DATE: 07.18.18
 PIV DRAFT: 08.31.18

**DRAFT -
 NOT FOR CONSTRUCTION**

LANDSCAPE PLAN

15' wide existing easement



Bluffs Assessor Parcel 2

Oak Bluffs Assessor Parcel 54-1



Edgartown Assessor Parcel

Edgartown Assessor Parcel 23-1.2

bike path

zone 1 400' setback (from public water supply well)

proposed inverters & transformer with 150' audible radius (typ.)

proposed dirt access road (typ.)

existing trees between edge of clearing and fence to be removed, underbrush to remain, tree stumps to be grinded. (typ.)

3,209'±

20' (typ.)
100'±

150'
proposed gate (typ.)

proposed fence (typ.)

existing public water supply well #4

100'±

100'±

410'±

410'±

420'±

405'±

789'±

74.0

73.0

73.0

73.0

73.0

73.0

100'±

20' (typ.)

20' (typ.)

750'

20' (typ.)

100'±

149'±

156'±

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0

70.0













70.0

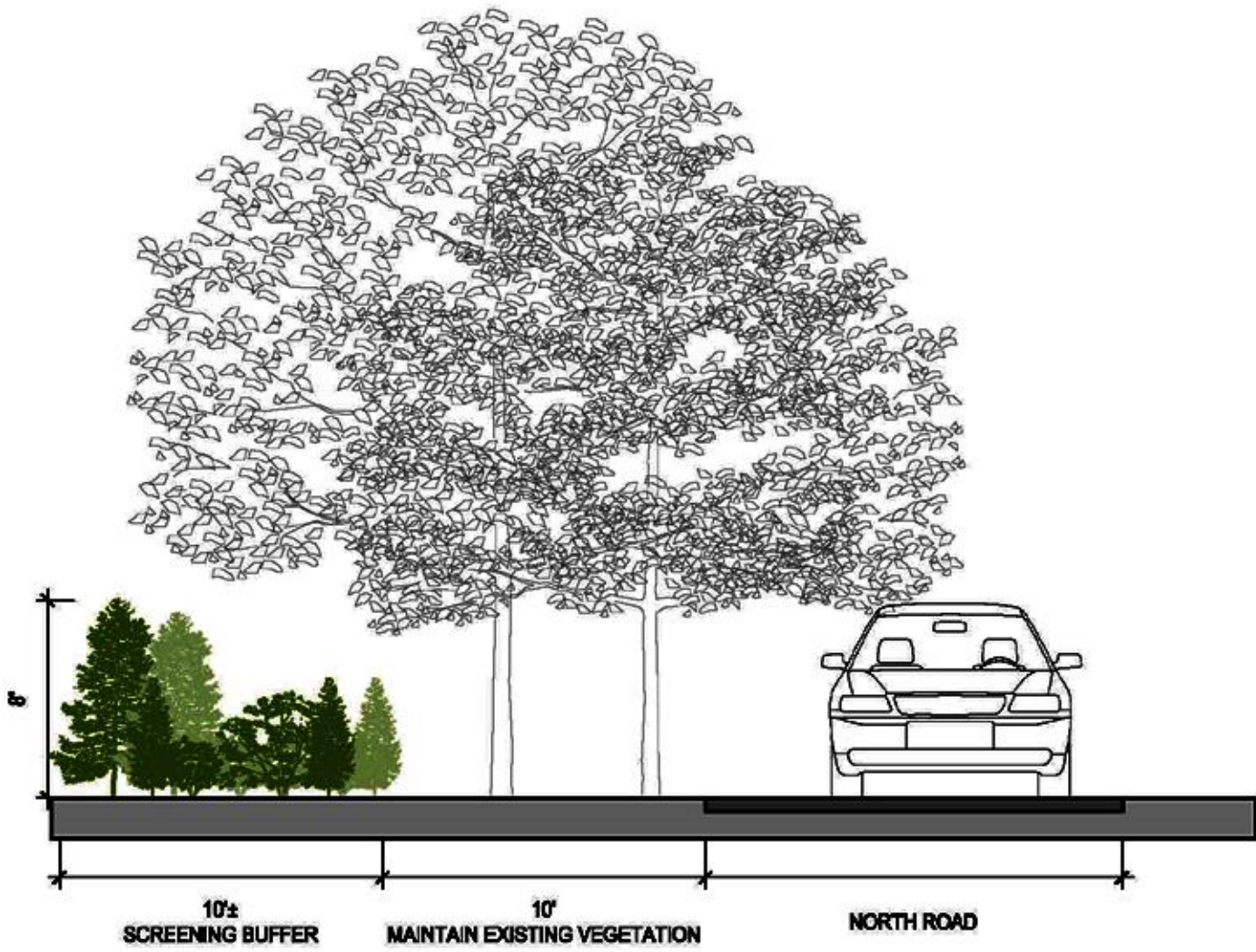
70.0

70.0

70.0

OAK BLUFFS SOLAR PLANT SCHEDULE

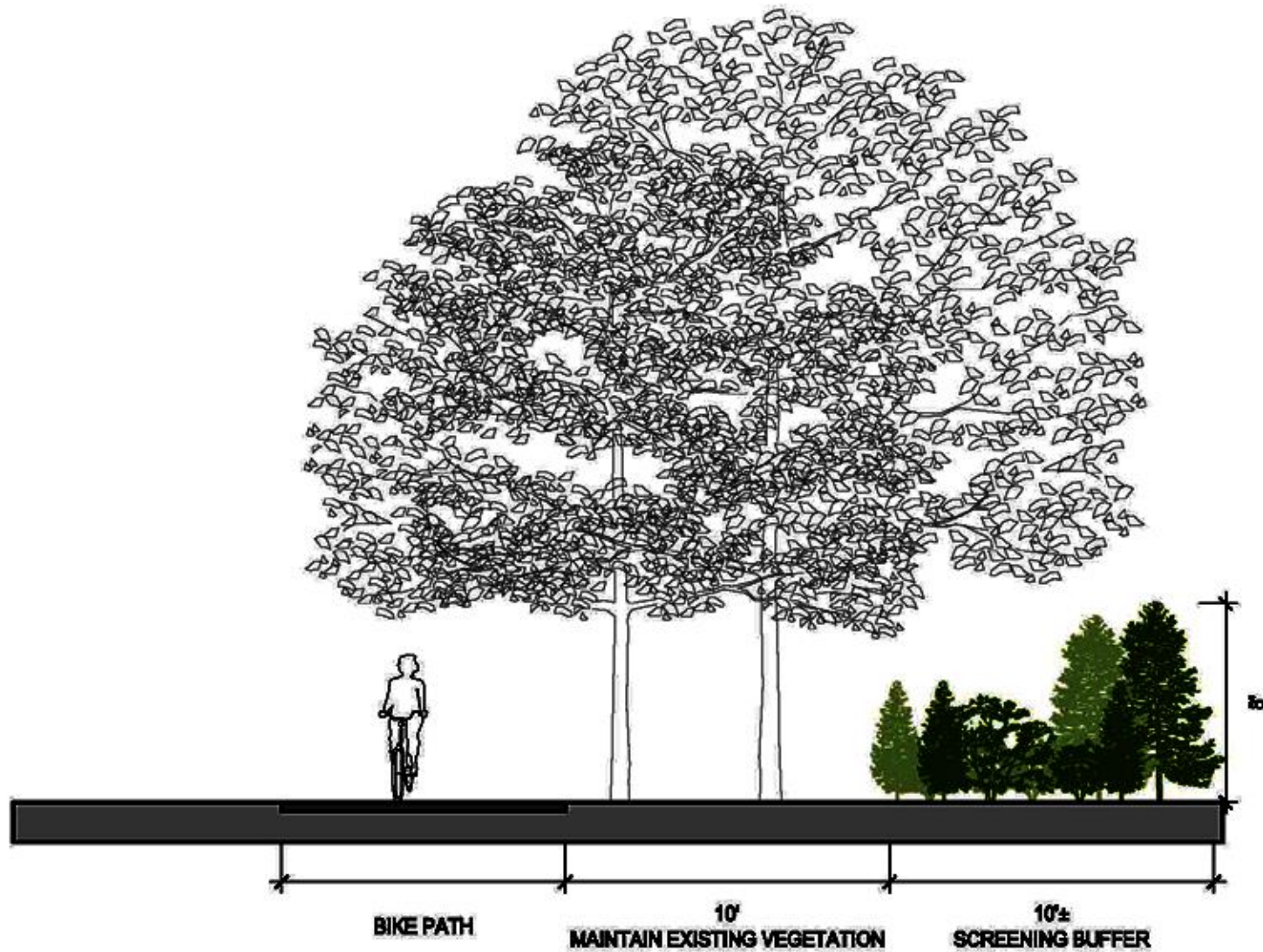
SYM.	BOTANICAL NAME	COMMON NAME	QTY	SIZE	ROOT
SCREEN PLANTING - NORTH					
	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	12	6-7'	B&B
	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	42	4-5'	B&B
	PICEA GLAUCA	WHITE SPRUCE	15	5-6'	B&B
	ILEX GLABRA	INKBERRY	37	30-36"	B&B
	RHODODENDRON 'ROSEUM ELEGANS'	ROSEUM ELEGANS' RHODODENDRON	33	3-4'	B&B
	VIBURNUM DENTATUM	ARROWWOOD VIBURNUM	36	3-4'	B&B
SCREEN PLANTING - BIKE PATH					
	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	11	6-7'	B&B
	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	35	4-5'	B&B
	PICEA GLAUCA	WHITE SPRUCE	10	5-6'	B&B
	ILEX GLABRA	INKBERRY	21	30-36"	B&B
	RHODODENDRON 'ROSEUM ELEGANS'	ROSEUM ELEGANS' RHODODENDRON	24	3-4'	B&B
	VIBURNUM DENTATUM	ARROWWOOD VIBURNUM	25	3-4'	B&B



2

DETAIL AT ROAD

1"=4'

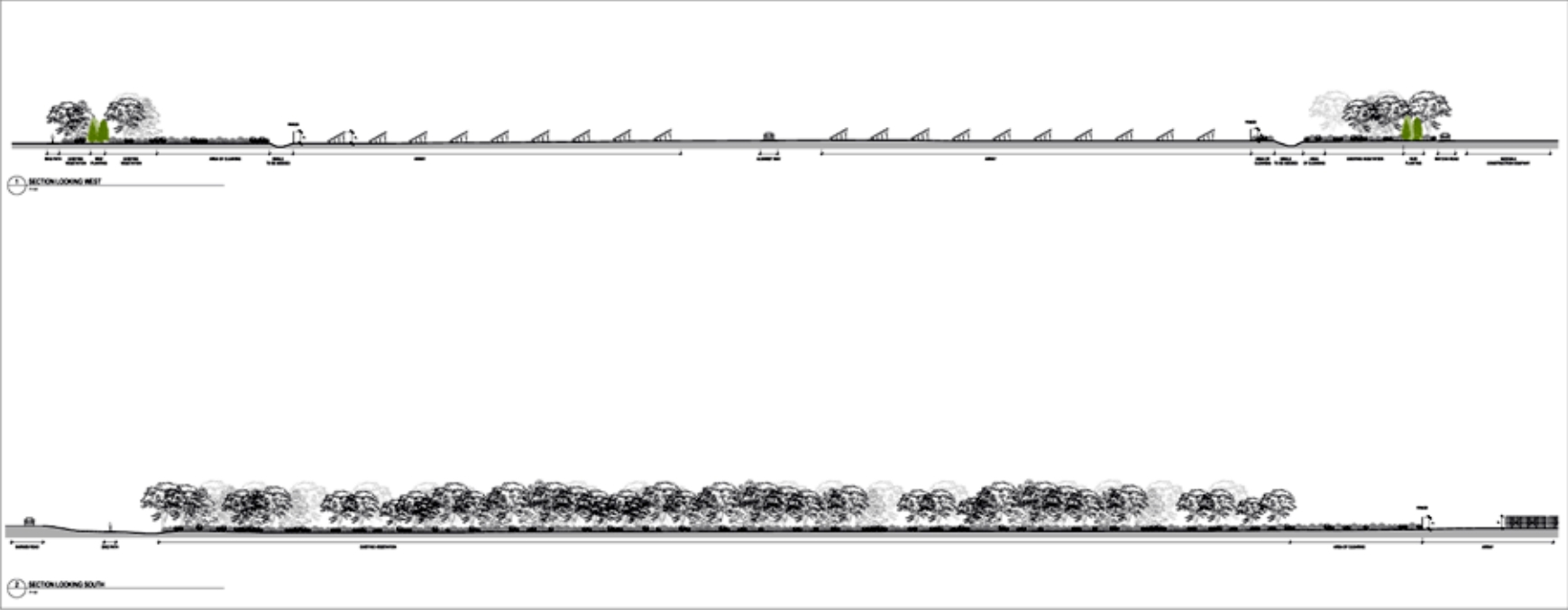


1

DETAIL AT BIKE PATH

1"=4'

Landscape Sections



HORNBLUTH + SOLER
LANDSCAPE ARCHITECTS

OAK BLUFFS
WATER DISTRICT
ALWARD WAY
OAK BLUFFS, PA

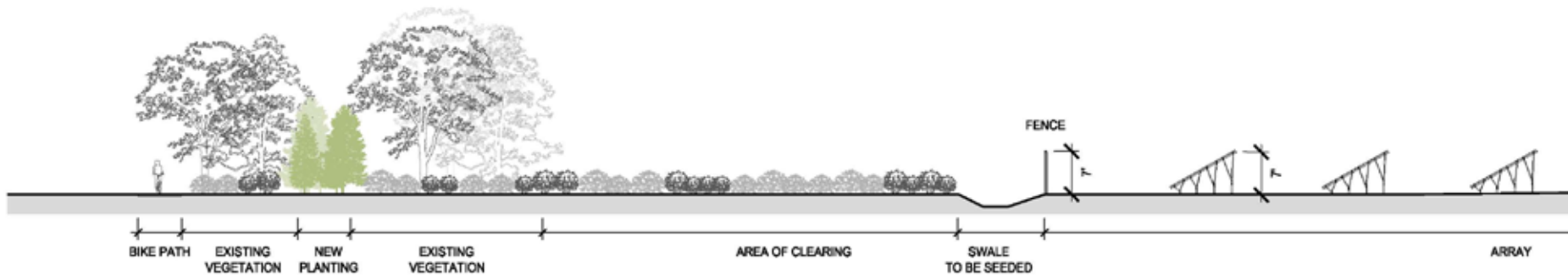
PRICING SET -
NOT FOR CONSTRUCTION

SECTIONS

L2.1

Section Looking West

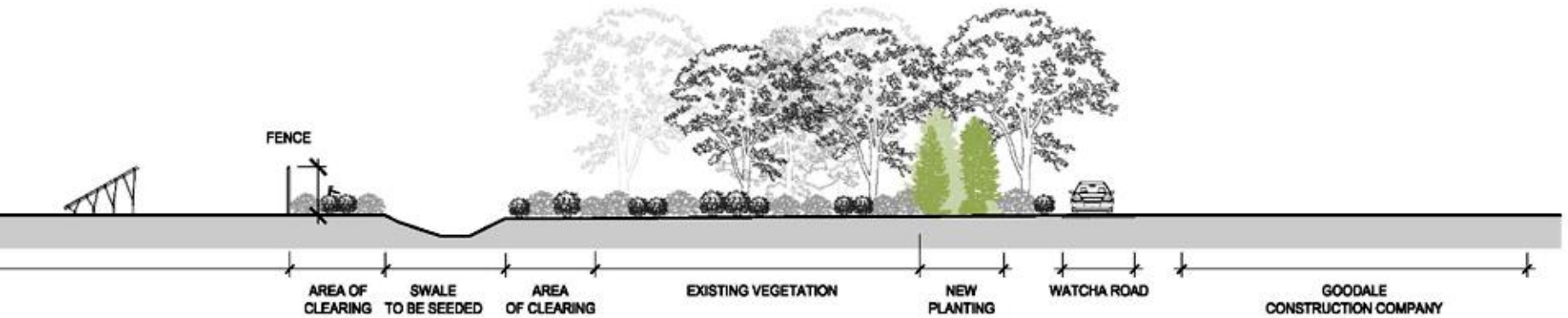
Bike Path, Existing Vegetation, Proposed Plantings, Stumps, Panel Area



1 SECTION LOOKING WEST
1"=18'

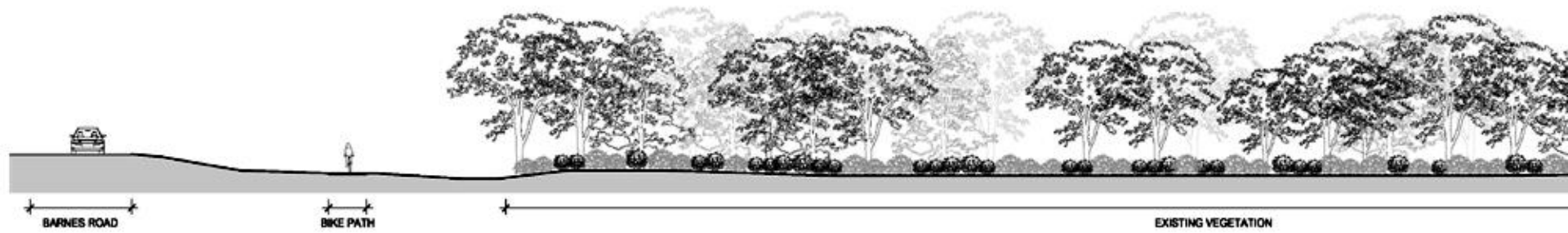
Section Looking West

Panel Area, Swale, Stumps, Existing Vegetation, Plantings, Watcha Road.



Section Looking South

Barnes Road, Bike Path, Existing Vegetation



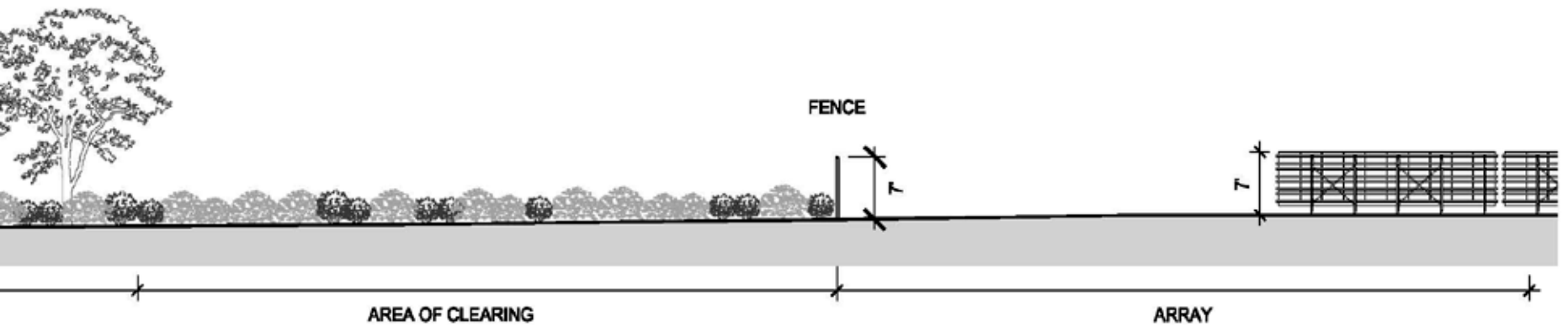
2

SECTION LOOKING SOUTH

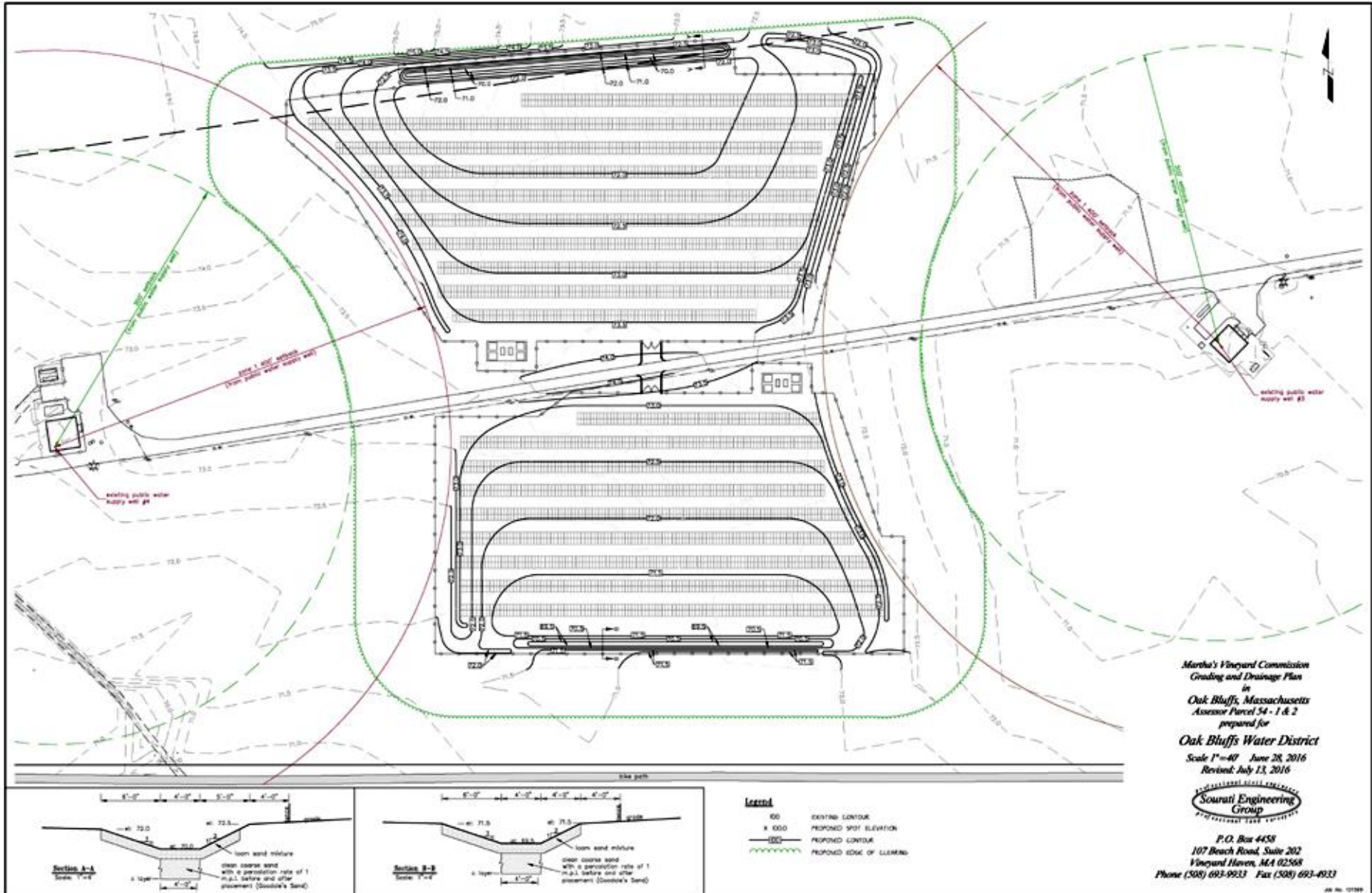
1"=16'

Section Looking South

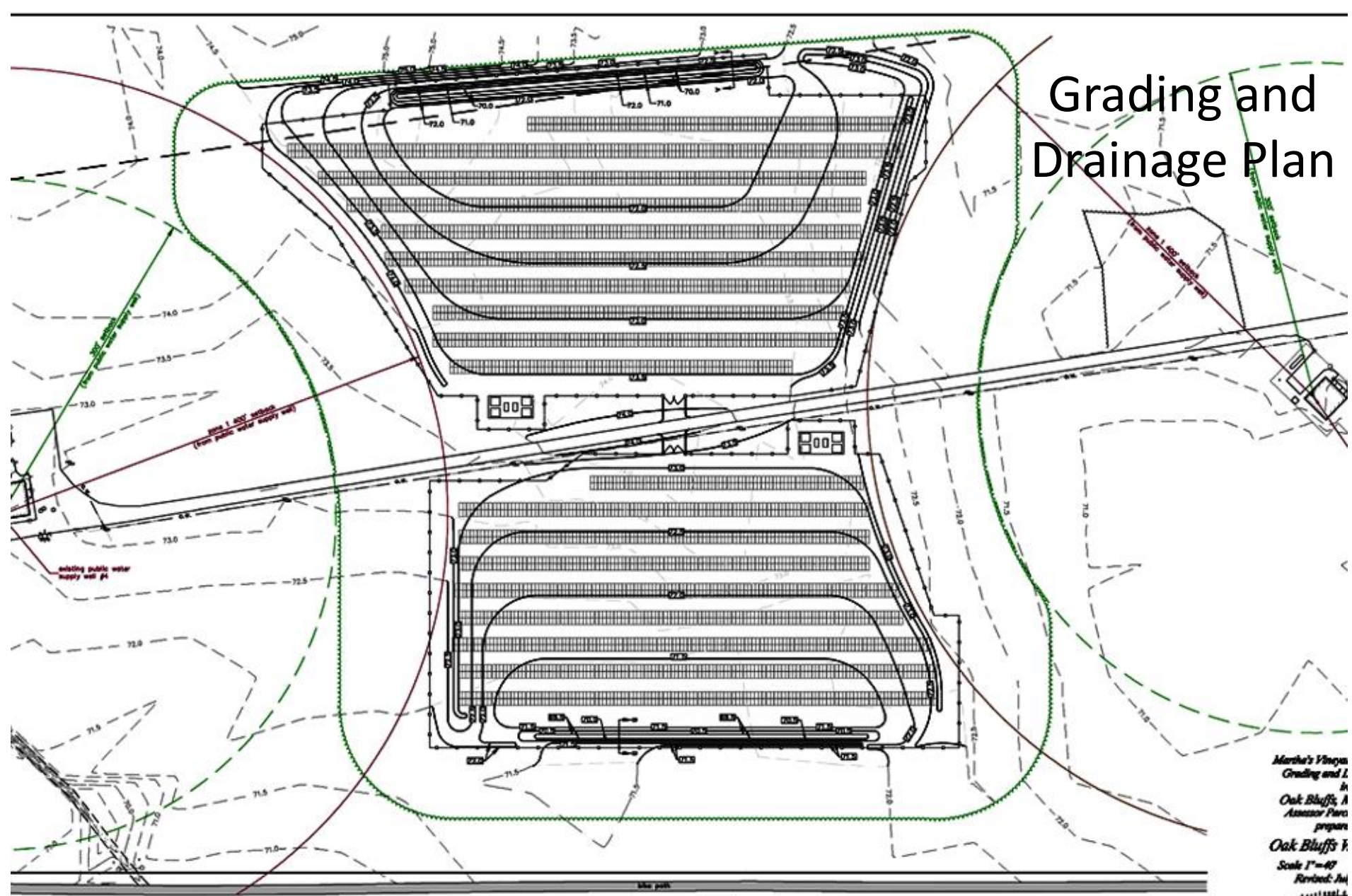
Existing Vegetation, Stumps, Fence, Panels



Grading and Drainage Plan



Grading and Drainage Plan



Martha's Vineyard
Grading and L
in
Oak Bluffs, A
Assessor Plans
prepare

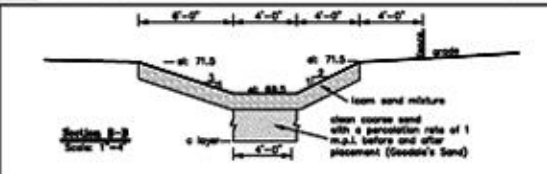
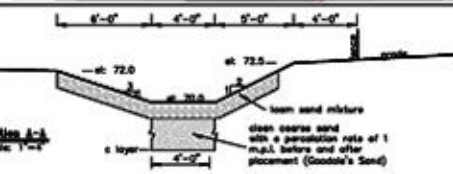
Oak Bluffs T

Scale 1"=40'

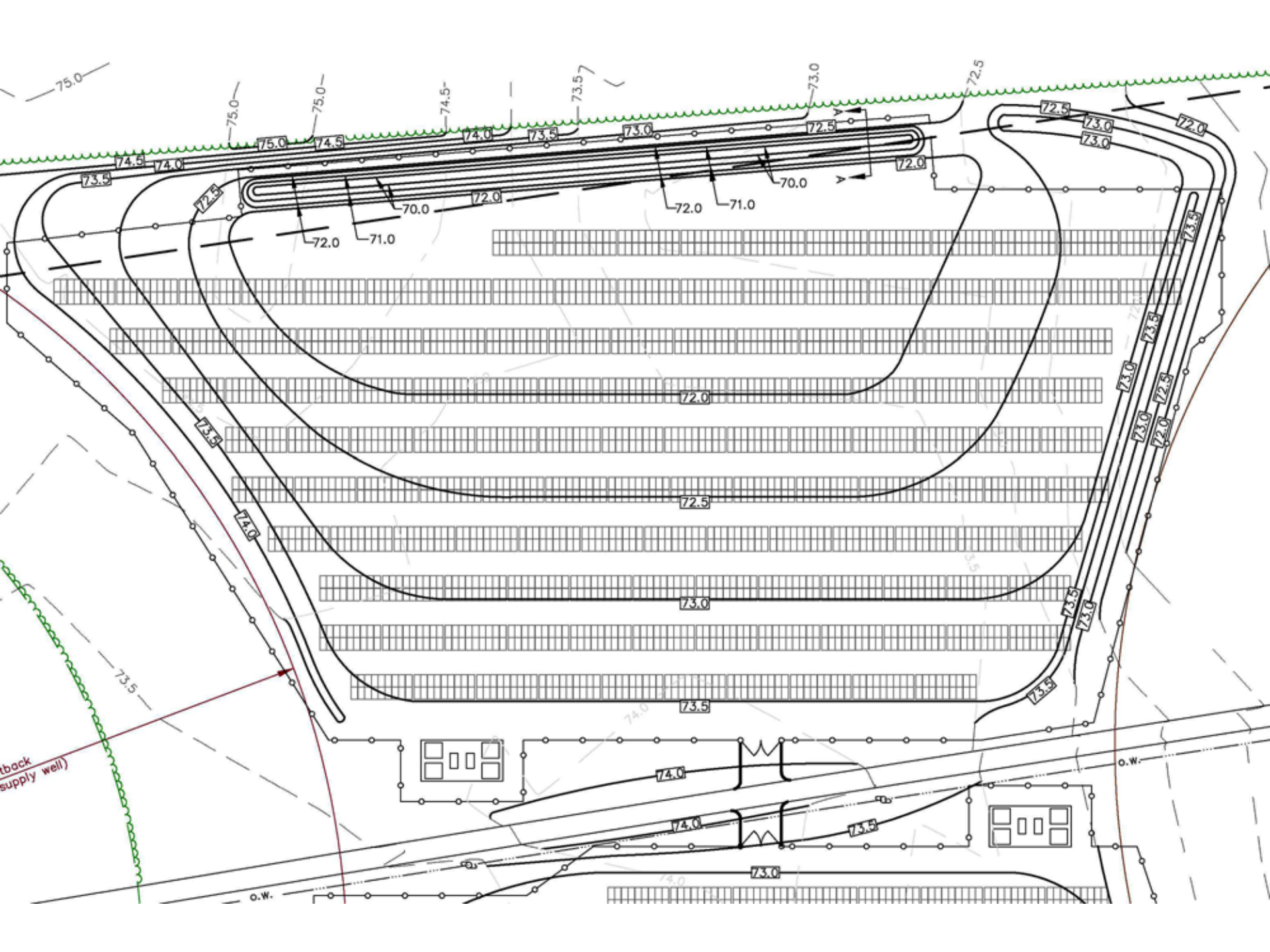
Revised: Jul

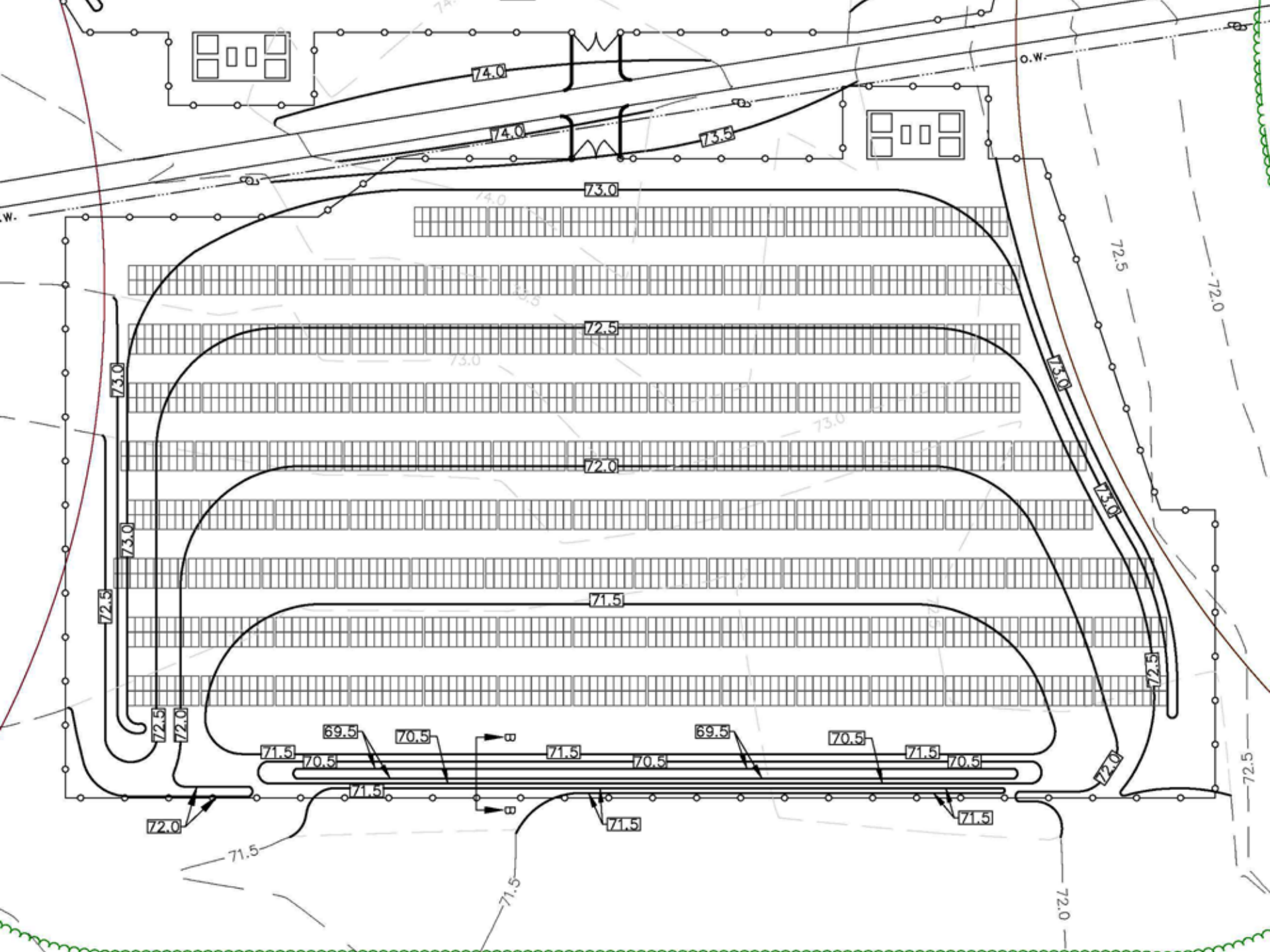
Souratt E
Gr

P.O. Box
107 Beach Row
Vineyard Haven
Phone (508) 693-9933

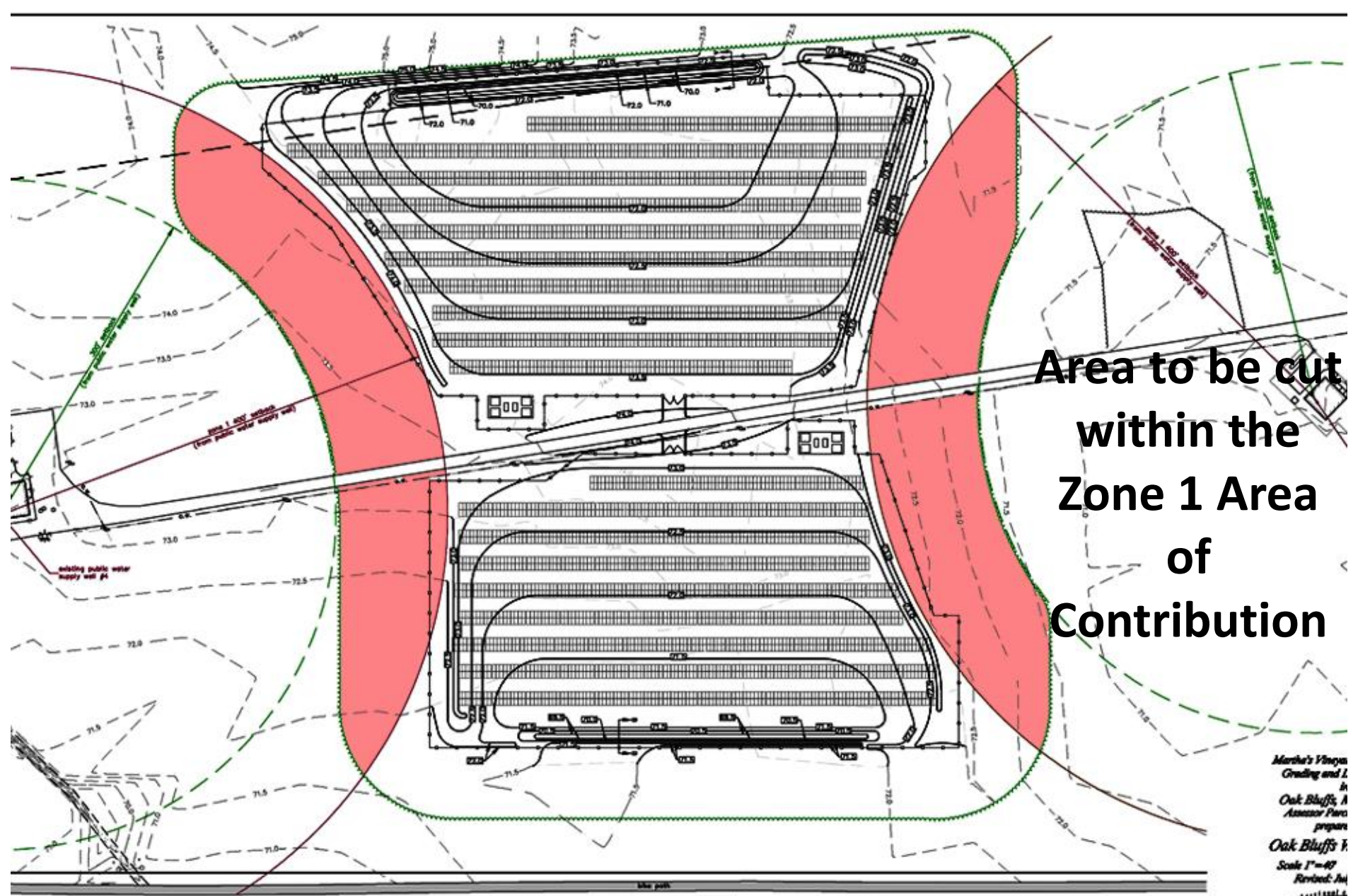


- Legend**
- 100 EXISTING CONTOUR
 - X 1000 PROPOSED SPOT ELEVATION
 - (---) PROPOSED CONTOUR
 - (---) PROPOSED EDGE OF CLEARING



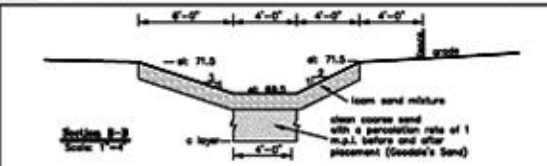
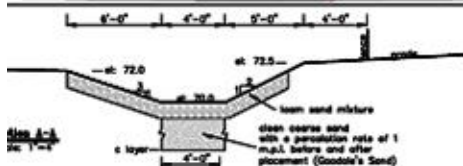


**Area to be cut
within the
Zone 1 Area
of
Contribution**



Martha's Vineyard
Grading and L.
in
Oak Bluffs, A
Assessor Plans
prepare
Oak Bluffs I.
Scale 1"=40'
Revised: Jul
Sourat E
Gr
1998/1999/2001

P.O. Box
107 Beach Row
Vineyard Haven
Phone (508) 693-9933



Legend

100	EXISTING CONTOUR
X 1000	PROPOSED SPOT ELEVATION
(---)	PROPOSED CONTOUR
(---)	PROPOSED EDGE OF CLEARING

Image from Blue Wave website



Little Quittacas Pond, Rochester, Massachusetts

















Applicant Rationale

Analysis of Environmental Benefits

Proposed Solar Facility

4 Alwardt Way, Oak Bluffs, MA

Applicant Rationale

OAK BLUFFS EMISSIONS REDUCTIONS

Oak Bluffs System Size = 1.46 MWDC = 1,460 kWDC

Amount of time the system will generate power annually:	$8760 \frac{\text{hours}}{\text{year}} * 12.7\% \text{ Capacity factor}$	$\approx 1112.5 \frac{\text{hours}}{\text{year}}$
Amount of electricity the system will generate:	$1460 \text{ kWDC} * 1112.5 \frac{\text{hours}}{\text{year}}$	$\approx 1,625,000 \frac{\text{kWh}}{\text{year}}$
Amount of carbon sequestered annually:	$0.000703 \frac{\text{metric tons CO}_2}{\text{kWh}} * 1,625,000 \frac{\text{kWh}}{\text{year}}$	= 1,141 metric tons CO₂

Emission Factor

$7.03 \times 10^{-4} \text{ metric tons CO}_2 / \text{kWh}$

(eGRID, U.S. annual non-baseload CO₂ output emission rate, year 2012 data)

<https://www.epa.gov/energy/ghg-equivalencies-calculator-calculations-and-references>

Applicant Rationale

EMISSIONS EQUIVALENTS

1,141 metric tons of CO₂ is equivalent to the following:

Carbon Sequestered by:



Greenhouse Gas Emissions from:



<https://www.epa.gov/energy/ghg-equivalencies-calculator-calculations-and-references>

Applicant Rationale

EMISSIONS EQUIVALENTS

Equivalent CO₂ Sequestration:

1.4 MW Solar Project = 1,141 metric tons of CO₂ = 1,081 acres of forest

Comparison to Tree Clearing:

1,081 acres (sequestered) / 10 acres (to be cleared) = **108 times** more carbon sequestered by project than existing forest

Applicant Rationale

EMISSION FACTOR DESCRIPTION

Measuring CO₂ Emissions Reductions

The Greenhouse Gas Equivalencies Calculator uses the **Emissions & Generation Resource Integrated Database (eGRID) U.S. annual non-baseload CO₂ output emission rate** to convert reductions of kilowatt-hours into avoided units of carbon dioxide emissions. Most users of the Equivalencies Calculator who seek equivalencies for electricity-related emissions want to know equivalencies for **emissions reductions** from energy efficiency or renewable energy programs. These programs are not generally assumed to affect baseload emissions (the emissions from power plants that run all the time), but rather non-baseload generation (power plants that are brought online as necessary to meet demand). For that reason, the Equivalencies Calculator uses a non-baseload emission rate.

Emission Factor

7.03×10^{-4} metric tons CO₂ / kWh

(eGRID, U.S. annual non-baseload CO₂ output emission rate, year 2012 data)

<https://www.epa.gov/energy/ghg-equivalencies-calculator-calculations-and-references>

Staff Analysis Carb. Seq. Equivalence

- **The Equivalence rationale credits the energy produced with solar panels as avoided emissions if the same amount of energy were produced using the existing dirty energy practices such as coal and natural gas.**
- **A tree actually absorbs carbon dioxide, ozone, methane, nitrous oxides, chlorofluorocarbons and other pollutants and produces oxygen.**
- **A forest provides an ecosystem and habitat.**
- **You could consider solar array proposals that require clearing of forest as diverting the SREC capacity away from a potentially cleaner overall system that would exist if solar arrays were only allowed in appropriate locations such as rooftops, Brownfields, parking lots, landfills, etc... as requested by Massachusetts Environmental Organizations in a letter of April 2016.**



VIEW FROM BIKE PATH
(EXISTING)

OAK BLUFFS SOLAR - -AUGUST 31, 2016

HORIUCHI & SOLIEN
LANDSCAPE ARCHITECTS



VIEW FROM BIKE PATH
(PROPOSED WITH SCREEN PLANTINGS)

TerraFarm Data Sheet



TerraFarm Ground Mount - Landscape

Application:	Commercial to Utility Scale
Grounding:	ETL listed, Electrically bonded system, verified Wiley
Panel Orientation:	Landscape
Array Configurations:	Up to 7 panels high and up to 12 panels long
Tilt Angle:	5 – 45 degrees
Lower Panel Clearance:	Up to 48 inches, standard
Loading Conditions:	Up to 160 mph wind speed, 80 psf snow load, Exposure C
Warranty:	20-year limited warranty
Engineering:	Professional Engineer Stamped Drawings Available in 50 States Custom Engineered to Exceed Applicable ASCE, IBC, and UL Standards.
Material:	Galvanized steel (G90 or Better)
East-West Slope:	20% maximum
North-South Slope:	60% maximum, limited by installation equipment
Max Fuse Rating:	30 Amp Fuse Rating

Max Capacity of PV modules:

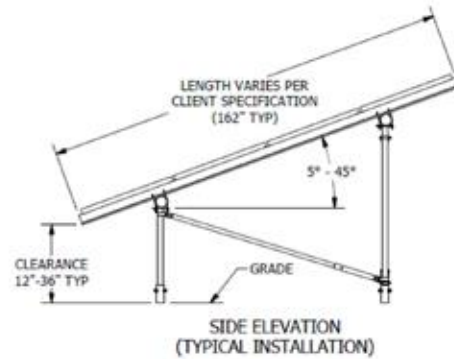
12 High x 12 Wide (144 Panels):	Listed Frameless (Thin Film) PV Module (21"-26" x 47"-51")
7 High x 10 Wide (70 Panels):	54 Cell Listed Aluminum Framed PV Module (37"-41" x 56"-60")
7 High x 9 Wide (63 Panels):	60 Cell Listed Aluminum Framed Module (37"-41" x 63"-67")
7 High x 8 Wide (56 Panels):	72 Cell Listed Aluminum Framed Module (37"-41" x 75"x79")

ETL CLASSIFIED

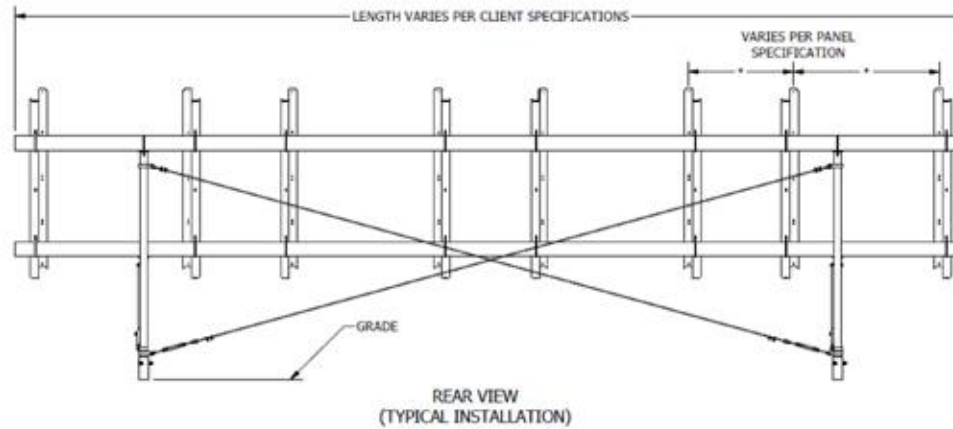


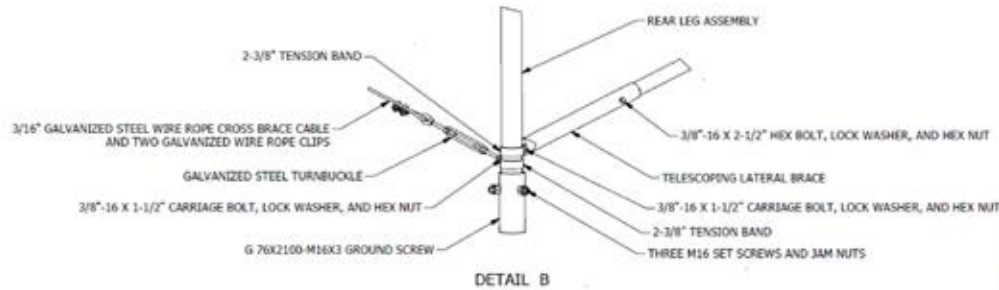
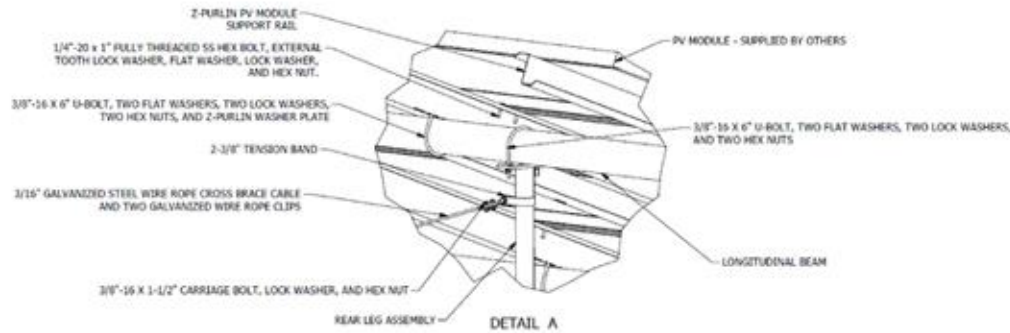
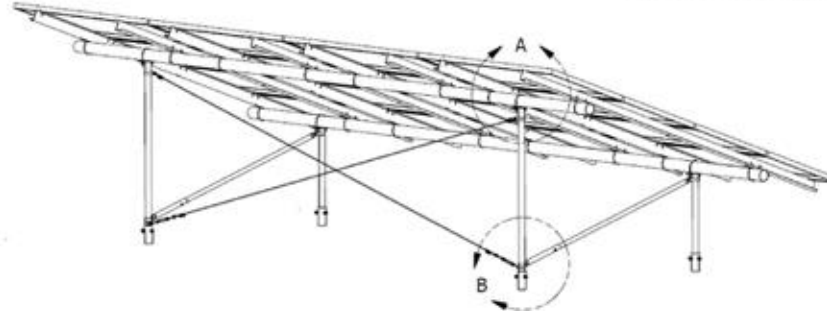
Intertek

Benefits

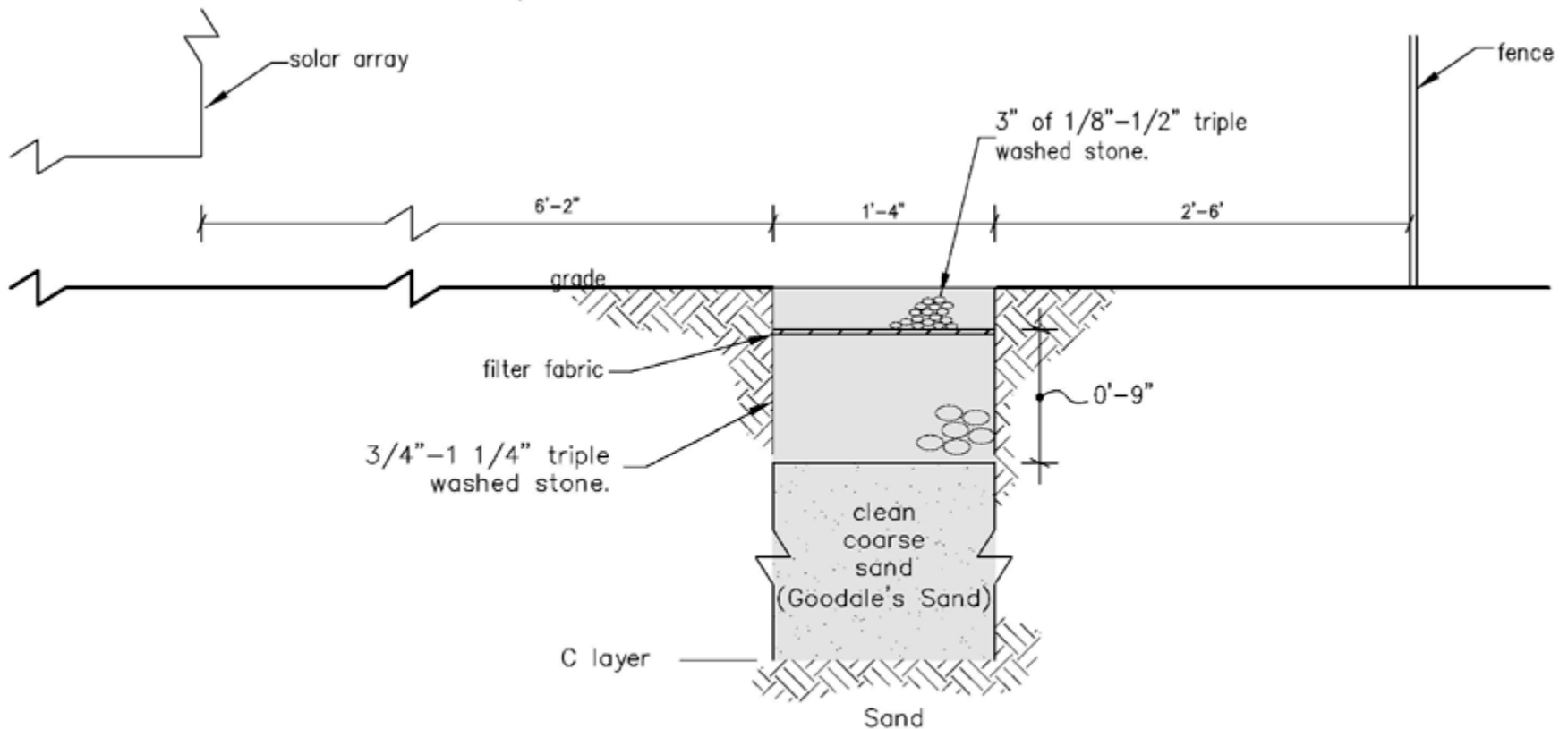


- Minimal hardware to assemble
- No in-field drilling, cutting, or welding
- Significantly reduces installed labor costs
- Integrated foundation solution
- Turn-key installation service available, Foundation to Panels
- Pre-assembly options available
- Maximum adjustability for following grade





Trench Detail



Typical Trench Section

Scale: 1"=1'

SILVANTIS® F-SERIES: 310 W TO 335 W

72-Cell High Wattage Modules

SunEdison introduces the next generation of high performance solar modules based on innovative Continuous Cz (CCz) monocrystalline cells and industry leading PID-free technology. Best-in-class efficiency coupled with durability and superior design elements provide products with maximum long-term investment performance. At the same time the F-series minimizes cost incurred throughout the products lifecycle, such as installation expense and overall operation and maintenance.

SunEdison is a leader in utility-scale solar systems with over two and a half-million Silvantis modules deployed in some of the world's harshest climates and most remote locations. This experience, coupled with over 50 years of expertise in silicon technology and innovation enables SunEdison to design and produce highly advanced solar solutions.



SILVANTIS ADVANTAGE

- 17.1% module efficiency with positive power tolerance
- PID-free: multi-MPPT transformerless inverter compatible
- Tariff-free: not subject to U.S. countervailing or antidumping tariffs
- Based on SunEdison's proprietary CCz technology
- Low-profile (35 mm) frame reduces shipping and storage costs

QUALITY & SAFETY

- Industry leading PID test conditions:
 - » 96 hours, 85°C, 85% relative humidity, -1 kV
- IEC certified by TÜV SÜD:
 - » 61215 long-term operation in a variety of climates including snow loading up to 5400 Pa and hail testing
 - » 61730 to ensure electrical safety
 - » 60068-2-68 dust and sand testing for desert climates
 - » 61701 salt mist corrosion resistant Level 1 for marine regions, Level 6 for desert regions
 - » 62716 ammonia testing for agricultural environments
- Manufactured to AQL 0.4 Level II quality and tested up to 3x beyond IEC standards
- CSA certified to UL 1703 for 1,000 V systems in the US and Canada
- MCS certified by BABT for the UK

ROBUST DESIGN

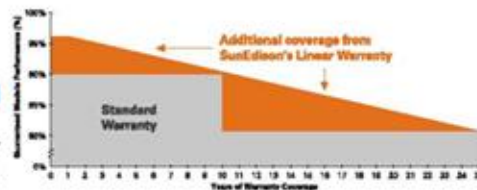
- Reliability tested beyond international standards
- Proven field performance in harsh environments

SUNEDISON WARRANTY

- 10-year limited warranty for materials and workmanship
- 25-year linear power warranty at STC:
 - » Year 1: $\leq 3.5\%$ of rated power
 - » After year 1: $\leq 0.7\%$ rated power degradation per year

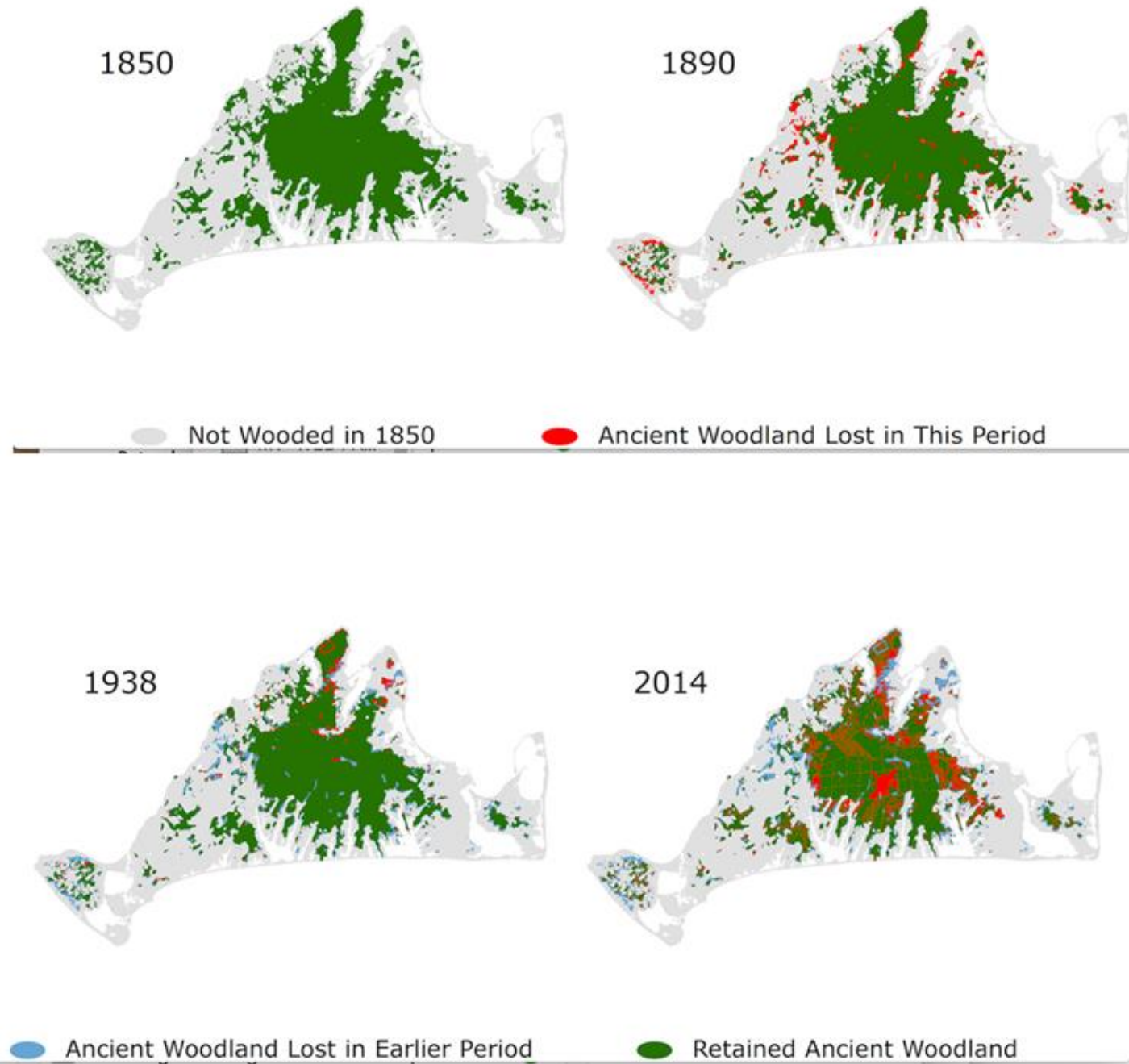


sunedison.com

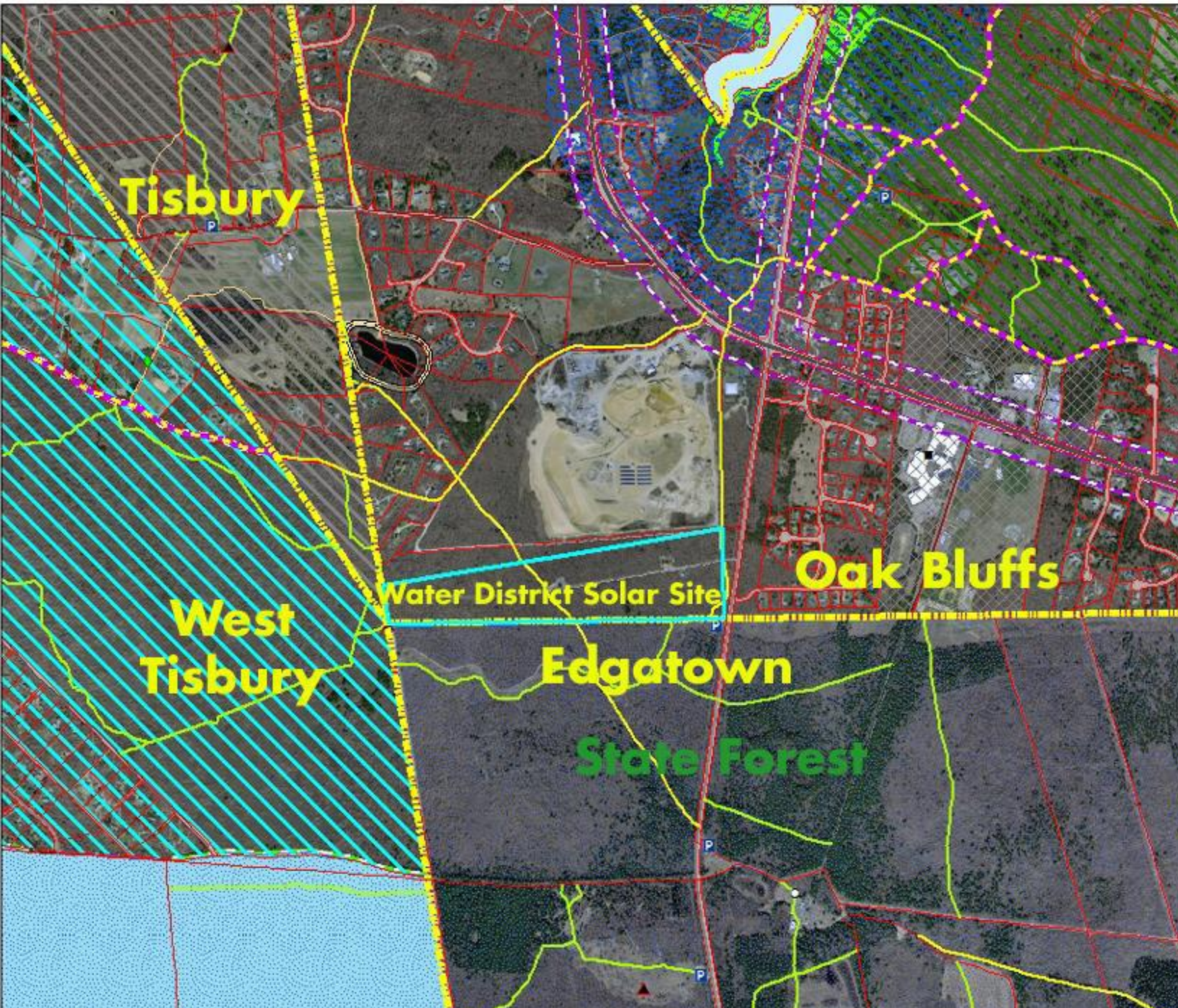


Historic Loss of
Ancient Woodland
on
Martha's Vineyard

Submitted by
David Foster
Director of
Harvard Forest



Oak Bluffs Water District Proposed Solar Basemap



Trails

Special Designation

- Trail - Existing
- Trail - Planned
- Ancient Way
- Special Way
- Ancient and Special Way
- Connector Road
- Basement
- Fire Trail

Oak Bluffs (pub. 2014)

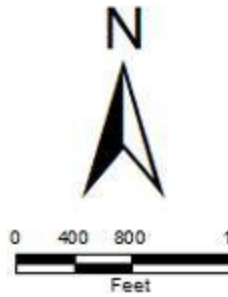
POLY_TYPE

- Parcel
- Road/Right of Way
- Water

Oak Bluffs Overlay Zoning

DESCRIBE

- Coastal District
- Copeland Plan District
- Floodplain District (Final dFIRM)
- Island Roads District - Major Road
- Island Roads District - Special
- Lagoon Pond District
- Oak Bluffs Harbor District
- Sengekontacket Pond District
- Southern Woodlands District
- Special Places District
- Wireless Communication District



Disclaimer: This map is for planning purposes only and is not suitable for actual construction or property interpretation. The compiler does not assume any responsibility for the data or its use or misinterpretation.

Created by Paul Day