

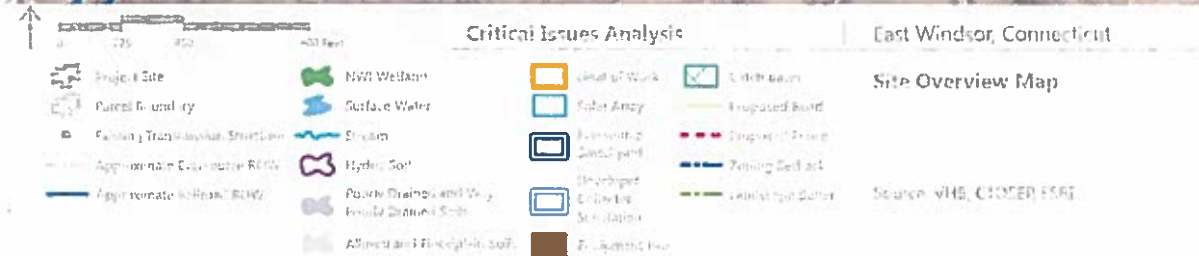
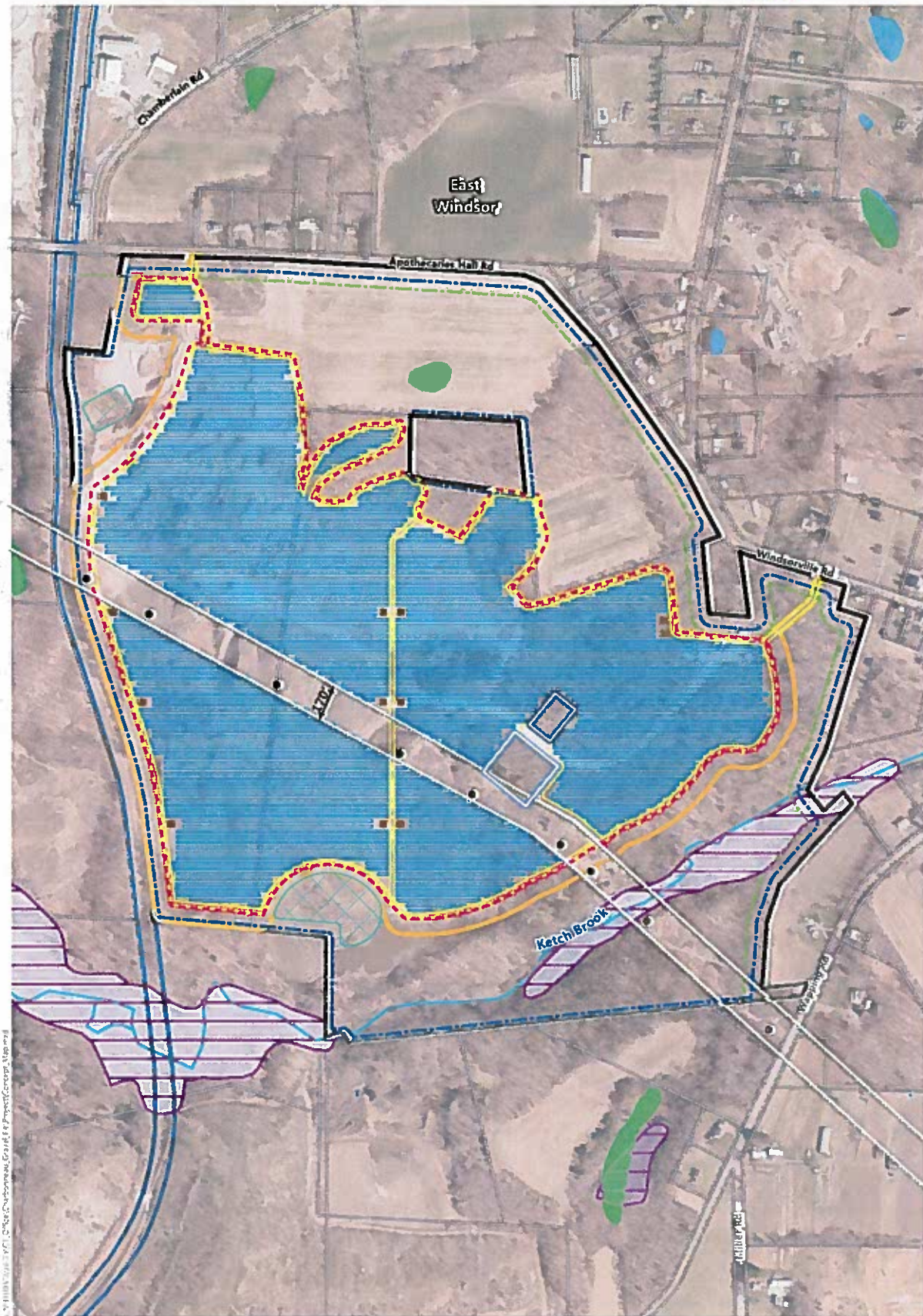


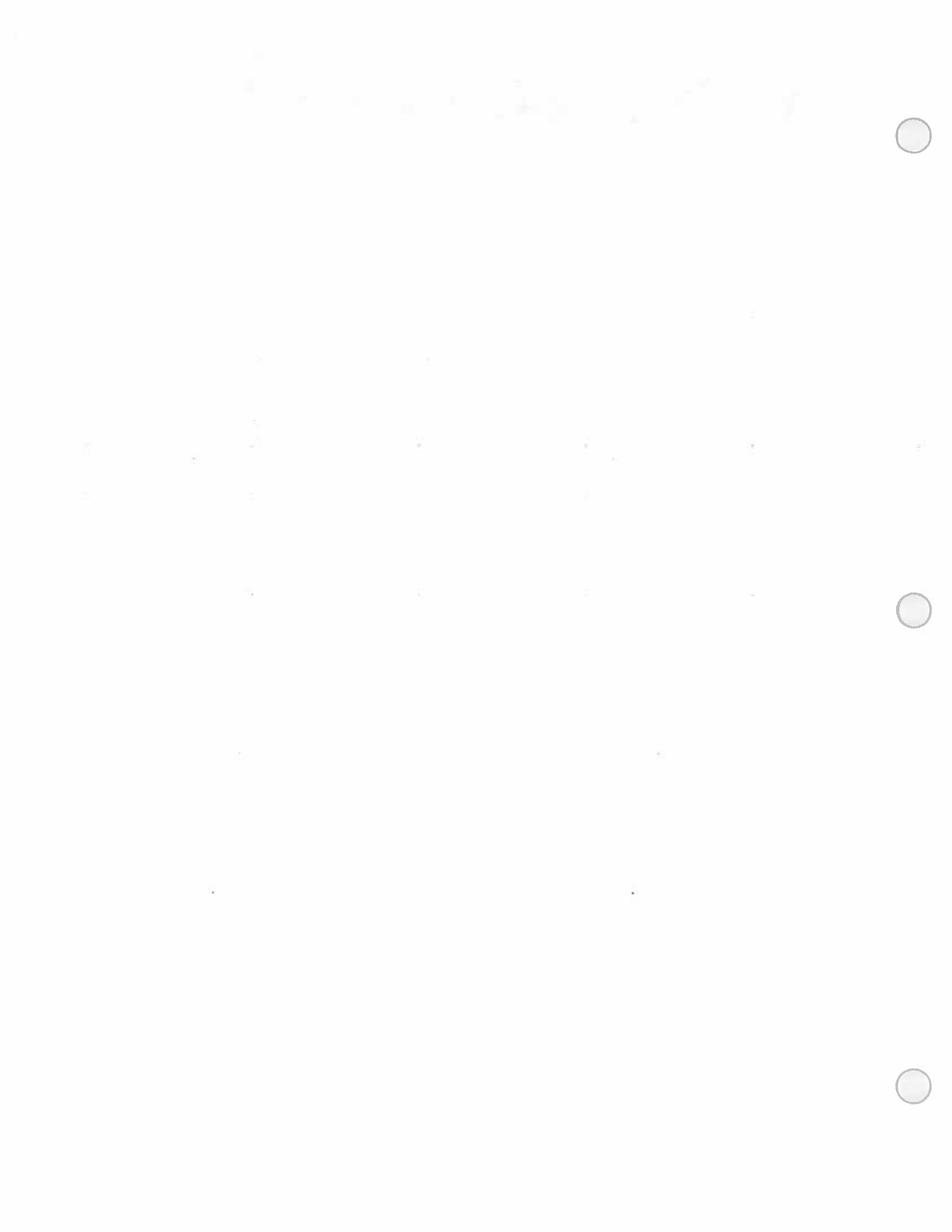
# **GRAVEL PIT SOLAR PARK**

## **Appendix 6-1:**

### **Site Plan**









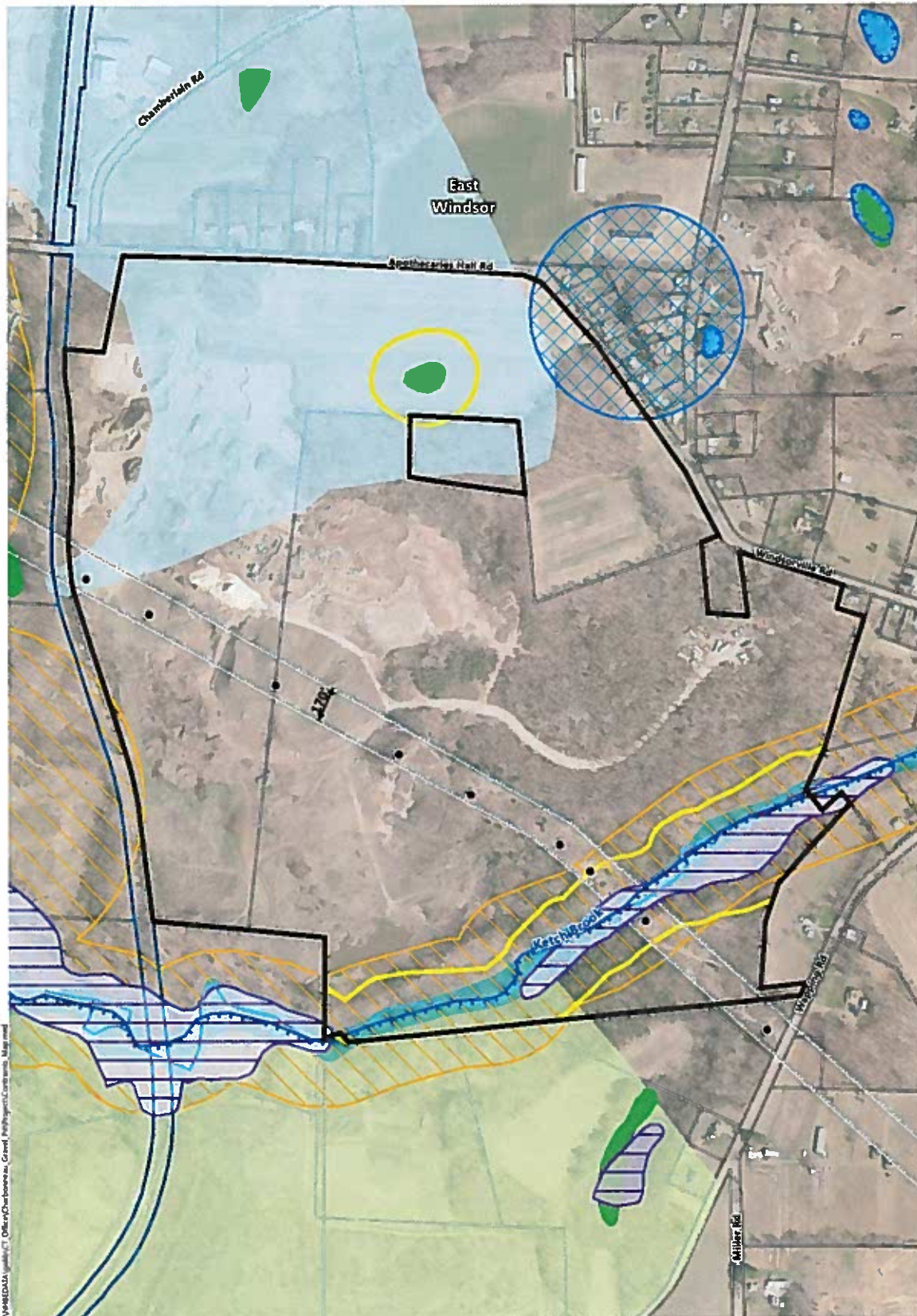
**GRAVEL PIT  
SOLAR PARK**

**Appendix 6-2:**

**Zoning and Environmental Figures**







0 225 450 900 Feet

### Critical Issues Analysis

East Windsor, Connecticut

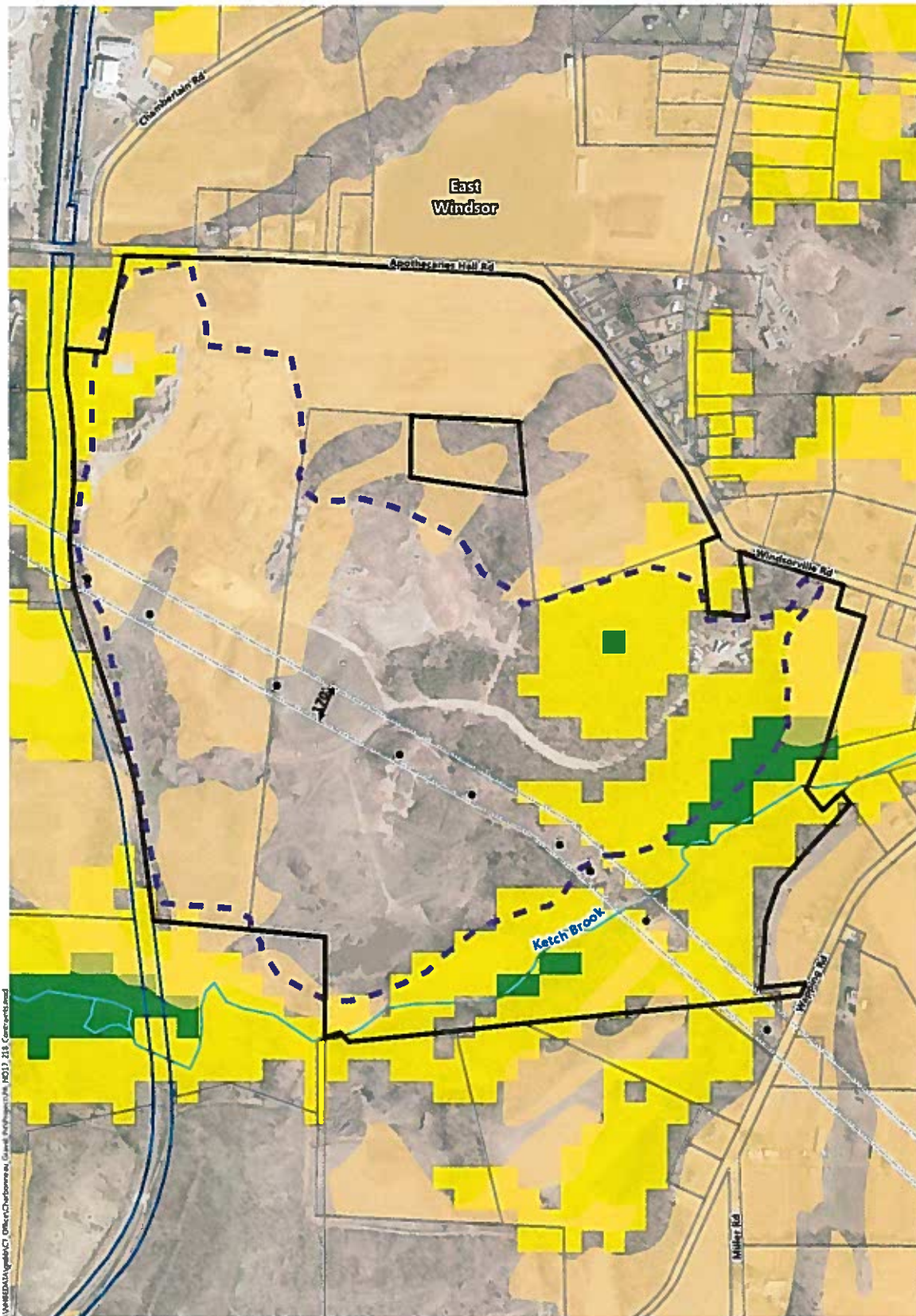
- |                                 |                                 |  |
|---------------------------------|---------------------------------|--|
| Project Site                    | NW1 Wetland                     | Ground Water Quality - GAA, GAAs             |
| Parcel Boundary                 | Surface Water                   | Ground Water Quality - GB                    |
| Existing Transmission Structure | Stream                          | NDD8 Area                                    |
| Approximate Eversource ROW      | Surface Water Quality - Class A | Hydric Soil                                  |
| Approximate Railroad ROW        | 100-Yr Floodplain (FEMA)        | Poorly Drained and Very Poorly Drained Soils |
| Upland Review Area              | Aquifer Protection Area         | Alluvial and Floodplain Soils                |

### Site Constraints Map

Source: VHB, CTDEEP, FEMA, ESRI







\\VMSBDA\Agg\BACT\_000\CT\Cartoon\Cartoon\_Guard\_Rail\Project\PA\_17-218\_Constraints.mxd

- Project Site
- Parcel Boundary
- Existing Transmission Structure
- Approximate Eversource ROW
- Approximate Railroad ROW
- Limits of Active and Reclaimed Mine
- Stream
- Prime Farmland Soil
- Edge Forest
- Core Forest (<250 ac)

### Critical Issues Analysis

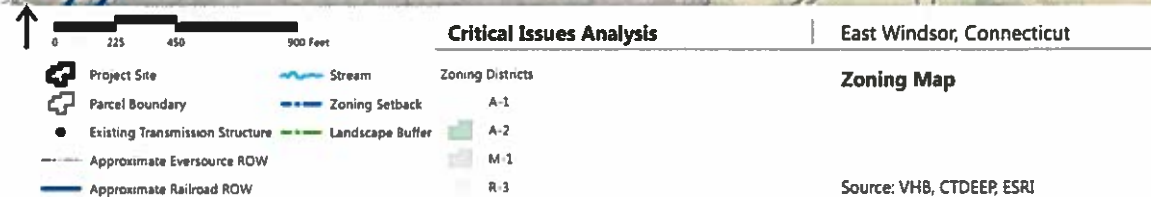
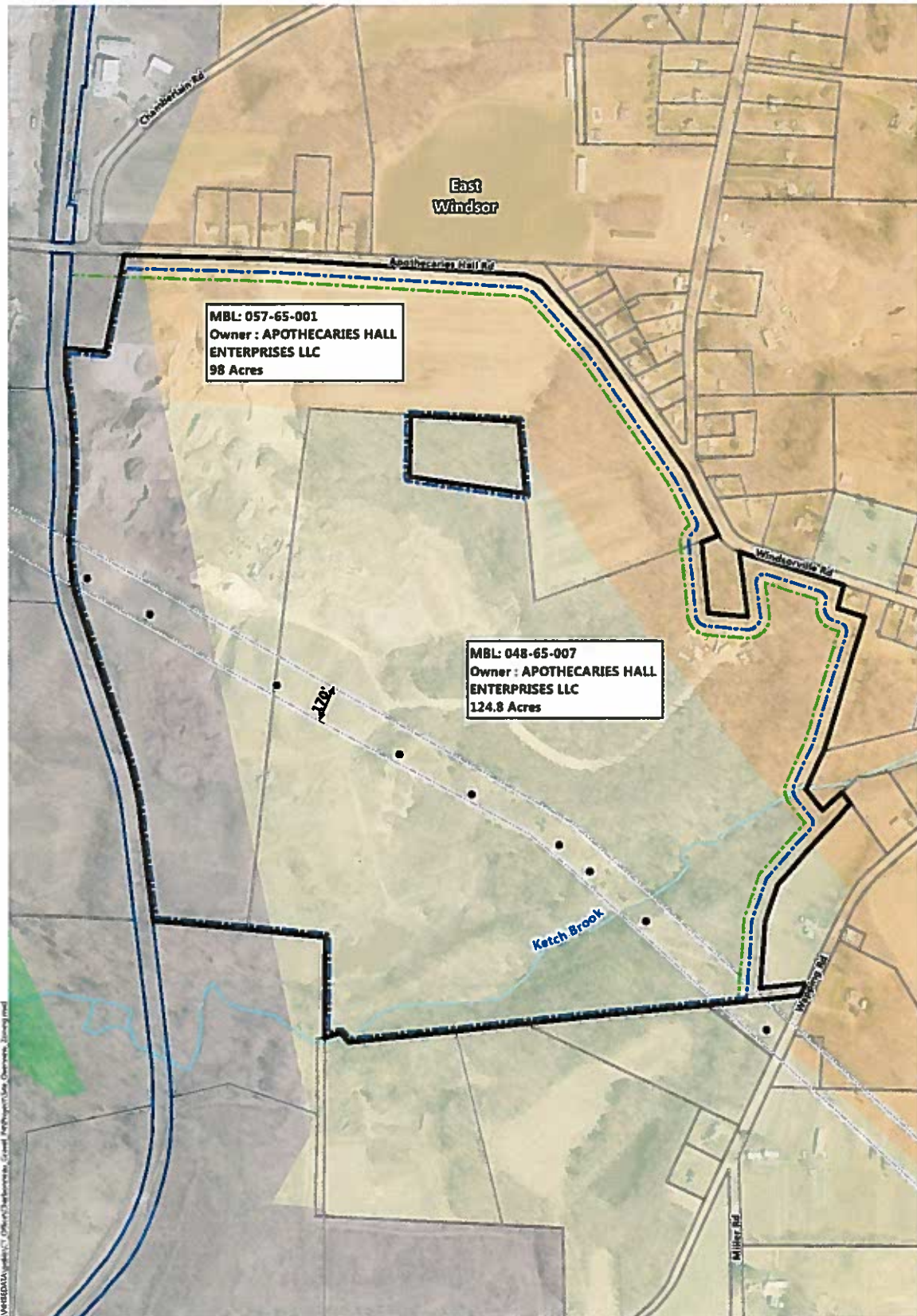
East Windsor, Connecticut

PA No. 17-218 Constraints

Source: VHB, CTDEEP, NRCS, ESRI

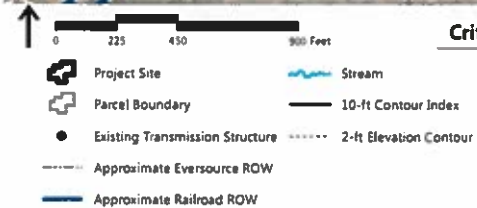
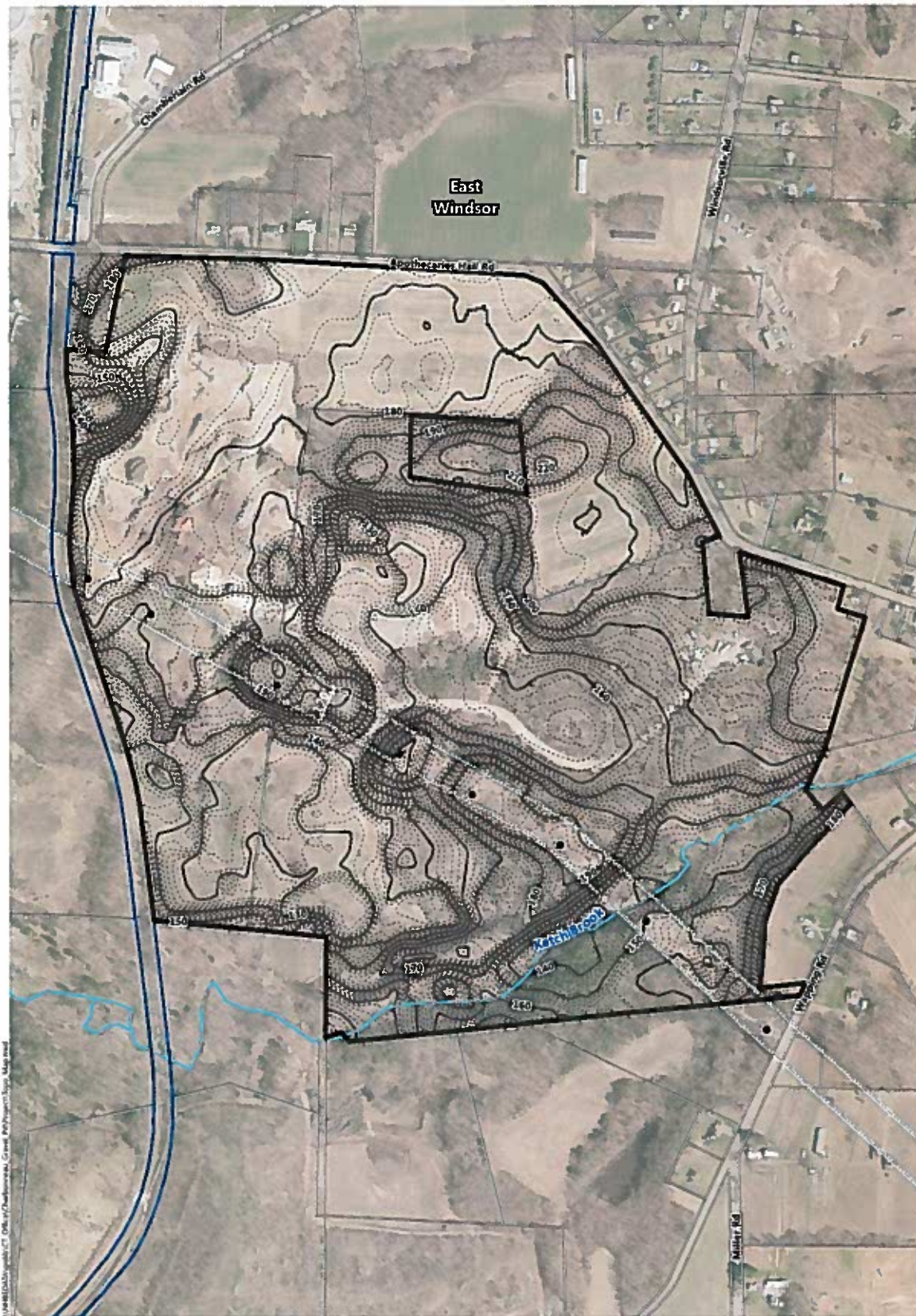












### Critical Issues Analysis

East Windsor, Connecticut

### Site Topographic Map

Source: VHB, CTDEEP, ESRI







# **GRAVEL PIT SOLAR PARK**

**Appendix 6-3:  
Gravel Pit Solar Park Site Option  
CONFIDENTIAL**

x



81  
20  
25  
30  
35  
40  
45  
50  
55  
60  
65  
70  
75  
80  
85  
90  
95  
100



110  
115  
120  
125  
130  
135  
140  
145  
150  
155  
160  
165  
170  
175  
180  
185  
190  
195  
200





# **GRAVEL PIT SOLAR PARK**

**REDACTED**







**GRAVEL PIT  
SOLAR PARK**

**Appendix 6-4:**

**Interconnection Surrounding Area Map**









**GRAVEL PIT  
SOLAR PARK**

**Appendix 6-5:**

**Interconnection Request**





**APPENDIX 1**  
**INTERCONNECTION REQUEST**

The undersigned Interconnection Customer submits this request to interconnect its Large Generating Facility to the Administered Transmission System under Schedule 22 - Large Generator Interconnection Procedures ("LGIP") of the ISO New England Inc. Open Access Transmission Tariff (the "Tariff"). Capitalized terms have the meanings specified in the Tariff.

**PROJECT INFORMATION**

Proposed Project Name: Gravel Pit Solar Park

1. This Interconnection Request is for (check one):

- ☒ A proposed new Large Generating Facility
- ☐ An increase in the generating capacity or a modification that has the potential to be a Material Modification of an existing Generating Facility
- ☐ Commencement of participation in the wholesale markets by an existing Generating Facility
- ☐ A change from Network Resource Interconnection Service to Capacity Network Resource Interconnection Service

2. The types of Interconnection Service requested:

- ☐ Network Resource Interconnection Service (energy capability only)
- ☒ Capacity Network Resource Interconnection Service (energy capability and capacity capability)

If Capacity Network Resource Interconnection Service, does Interconnection Customer request Long Lead Facility treatment? Check: ☐ Yes or ☒ No

If yes, provide, together with this Interconnection Request, the Long Lead Facility deposit and other required information as specified in Section 3.2.3 of the LGIP, including (if the Large Generating Facility will be less than 100 MW) a justification for Long Lead Facility treatment.

3. This Interconnection Customer requests (check one, selection is not required as part of the initial Interconnection Request):

- ☐ An Interconnection Feasibility Study to be completed as a separate and distinct study
- ☐ An Interconnection System Impact Study with the Feasibility Study to be performed as the first step of the study

(The Interconnection Customer shall select either option and may revise any earlier selection up to within five (5) Business Days following the Scoping Meeting.)



## 4. The Interconnection Customer shall provide the following information:

Address or Location of the Facility (including Town/City, County and State):

Broad Brook \_\_\_\_\_ CT \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Approximate location of the proposed Point of Interconnection (information is not required as part of the initial Interconnection Request):

Interconnection to existing 115 kV transmission line running across the property between  
Eversources's Barbour Hill Substation and Endfield Substation.

Type of Generating Facility to be Constructed: Solar

Generating Facility Fuel Type: Solar

Generating Facility Capacity (MW):

	Maximum Net MW Electrical Output	Maximum Gross MW Electrical Output
At or above 90 degrees F	26	26
At or above 50 degrees F	26	26
At or above 20 degrees F	26	26
At or above 0 degrees F	26	26

General description of the equipment configuration (# of units and GSUs):

Twelve (12) 2200 kW inverters; each individually stepped up to 34.5 kV by GSU's (12 total). 34.5 kV metal-clad switchgear steps up to a 115 kV, 3-breaker ring bus to bifurcate and interconnect with the existing 115 kV transmission line running across the site.

Requested Commercial Operations Date:

12/1/2019

Requested Initial Synchronization Date:

10/1/2019

Requested In Service Date:

9/1/2019





## Evidence of Site Control (check one):

☒ If for Capacity Network Resource Interconnection Service, Site Control is provided herewith, as required.

☐ If for Network Resource Interconnection Service: (Check one)

☐ Is provided herewith

☐ In lieu of evidence of Site Control, a \$10,000 deposit is provided (refundable within the cure period as described in Section 3.3.3 of the LGIP).

☐ Site Control is not provided because the proposed modification is to the Interconnection Customer's existing Large Generating Facility and, by checking this option, the Interconnection Customer certifies that it has Site Control and that the proposed modification does not require additional real property.

## The technical data specified within the applicable attachment to this form (check one):

☐ Is included with the submittal of this Interconnection Request form

☒ Will be provided on or before the execution and return of the Feasibility Study Agreement (Attachment B) or the System Impact Study Agreement (Attachment A), as applicable

The ISO will post the Project Information on the ISO web site under "New Interconnections" and OASIS.

---

---

**CUSTOMER INFORMATION**

Company Name: PowerBridge, LLC

ISO Customer ID# (If available): \_\_\_\_\_

(Interconnection Customer)

Company Address: PO Box No.: \_\_\_\_\_

Street Address: 501 Kings Highway East

City, State ZIP: Fairfield CT 06825

Company Representative: Name: James Nash

Title: VP - Engineering

Company Representative's Company and Address (if different from above):

Company Name: \_\_\_\_\_

PO Box No.: \_\_\_\_\_

Street Address: \_\_\_\_\_

City, State ZIP: \_\_\_\_\_

Phone: (203) 416-5590

Fax: (203) 416-5590

E-mail: jnash@powerbridge.us



---

---

This Interconnection Request is submitted by:

Authorized Signature: \_\_\_\_\_

Name (type or print): \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



*In order for an Interconnection Request to be considered a valid request, it must:*

- (a) Be accompanied by a deposit of \$50,000.000, that is provided electronically and which may be refundable in accordance with Section 3.3.1 of the LGIP;*
- (b) For Capacity Network Resource Interconnection Service, include documentation demonstrating Site Control. If for Network Resource Interconnection Service, demonstrate Site Control or post an additional deposit of \$10,000.00. If the Interconnection Customer with an Interconnection Request for Network Resource Interconnection Service demonstrates Site Control within the cure period specified in Section 3.3.1 of the LGIP, the additional deposit of \$10,000.00 shall be refundable  
(An Interconnection Customer does not need to demonstrate Site Control for an Interconnection Request for a modification to its existing Large Generating Facility where the Interconnection Customer has certified that it has Site Control and that the proposed modification does not require additional real property);*
- (c) Include a detailed map, such as a map of the quality produced by the U.S. Geological Survey, which clearly indicates the site of the new facility and pertinent surrounding structures; and*
- (d) Include all information required on the Interconnection Request form and attachments thereto; and*
- (e) Include the deposit and all information required for Long Lead Facility treatment, if such treatment is requested in accordance with Section 3.2.3 of the LGIP.*

*The Interconnection Request must be submitted to the System Operator via the Interconnection Request Tracking Tool or IRTT, a web-based application for submitting, tracking and viewing Interconnection Requests available on the ISO New England website.*



Attachment A (page 1)  
To Appendix 1  
Interconnection Request  
Technical Data Required For  
Interconnection System Impact  
Study

The technical data required below must be submitted no later than the date of execution of the System Impact Study Agreement pursuant to Section 7.2 of the LGIP.

### LARGE GENERATING FACILITY DATA

#### UNIT RATINGS

Kva	°F	Voltage
Power Factor		
Speed (RPM)		Connection (e.g. Wye)
Short Circuit Ratio		Frequency, Hertz
Stator Amperes at Rated Kva		Field Volts
Max Turbine MW	°F	

#### GREATEST UNIT RATING AT AMBIENT TEMPERATURE OF 90° OR ABOVE

Gross Unit Rating (MW)	Gross Lagging (MVAR)
Net Unit Rating (MW)	Gross Leading (MVAR)
Station Service (MW)	Station Service (MVAR)
Temperature (°F)	

#### GREATEST UNIT RATING AT AMBIENT TEMPERATURE OF 50° OR ABOVE

Gross Unit Rating (MW)	Gross Lagging (MVAR)
Net Unit Rating (MW)	Gross Leading (MVAR)
Station Service (MW)	Station Service (MVAR)
Temperature (°F)	





Attachment A (page 2)  
To Appendix 1  
Interconnection Request  
Technical Data Required For  
Interconnection System Impact  
Study

### GREATEST UNIT RATING AT AMBIENT TEMPERATURE OF 20° OR ABOVE

Gross Unit Rating (MW)	Gross Lagging (MVAR)
Net Unit Rating (MW)	Gross Leading (MVAR)
Station Service (MW)	Station Service (MVAR)
Temperature (°F)	

### GREATEST UNIT RATING AT AMBIENT TEMPERATURE OF 0° OR ABOVE

Gross Unit Rating (MW)	Gross Lagging (MVAR)
Net Unit Rating (MW)	Gross Leading (MVAR)
Station Service (MW)	Station Service (MVAR)
Temperature (°F)	

### COMBINED TURBINE-GENERATOR-EXCITER INERTIA DATA

Inertia Constant, H	=	kW sec/kVA
Moment-of-Inertia, WR2	=	lb. ft. <sup>2</sup>

### REACTANCE DATA (PER UNIT-RATED KVA)

	DIRECT AXIS	QUADRATURE AXIS
Synchronous – saturated	X <sub>dv</sub>	X <sub>qv</sub>
Synchronous – unsaturated	X <sub>di</sub>	X <sub>qi</sub>
Transient – saturated	X' <sub>dv</sub>	X' <sub>qv</sub>
Transient – unsaturated	X' <sub>di</sub>	X' <sub>qi</sub>
Subtransient – saturated	X'' <sub>dv</sub>	X'' <sub>qv</sub>
Subtransient – unsaturated	X'' <sub>di</sub>	X'' <sub>qi</sub>
Negative Sequence – saturated	X <sub>2v</sub>	
Negative Sequence – unsaturated	X <sub>2i</sub>	
Zero Sequence – saturated	X <sub>0v</sub>	
Zero Sequence – unsaturated	X <sub>0i</sub>	
Leakage Reactance	X <sub>lm</sub>	



Attachment A (page 3)  
To Appendix 1  
Interconnection Request  
Technical Data Required For  
Interconnection System Impact  
Study

**FIELD TIME CONSTANT DATA (SEC)**

Open Circuit	$T'_{qo}$	$T'_{do}$
Three-Phase Short Circuit Transient	$T'_{d3}$	$T'_{q}$
Line to Line Short Circuit Transient	$T'_{d2}$	
Line to Neutral Short Circuit Transient	$T'_{d1}$	
Short Circuit Subtransient	$T''_d$	$T''_q$
Open Circuit Subtransient	$T''_{do}$	$T''_{qo}$

**ARMATURE TIME CONSTANT DATA (SEC)**

Three Phase Short Circuit	$T_{a3}$
Line to Line Short Circuit	$T_{a2}$
Line to Neutral Short Circuit	$T_{a1}$

NOTE: If requested information is not applicable, indicate by marking "N/A."



Attachment A (page 4)  
To Appendix 1  
Interconnection Request  
Technical Data Required For  
Interconnection System Impact Study

**MW CAPABILITY AND PLANT CONFIGURATION  
LARGE GENERATING FACILITY DATA  
ARMATURE WINDING RESISTANCE DATA (PER UNIT)**

Positive	R1		
Negative	R2		
Zero	R0		
Rotor Short Time Thermal Capacity I22t	=		
Field Current at Rated kVA, Armature Voltage and PF	=	amps	
Field Current at Rated kVA and Armature Voltage, 0 PF	=	amps	
Three Phase Armature Winding Capacitance	=	microfarad	
Field Winding Resistance	=	ohms	°C
Armature Winding Resistance (Per Phase)	=	ohms	°C

**CURVES**

Provide Saturation, Vee, Reactive Capability, Capacity Temperature Correction curves. Designate normal and emergency Hydrogen Pressure operating range for multiple curves.



Attachment A (page 5)  
To Appendix 1  
Interconnection Request  
Technical Data Required For  
Interconnection System Impact Study

**GENERATOR STEP-UP TRANSFORMER DATA RATINGS**

Capacity	Self-cooled/Maximum Nameplate kVA
Voltage Ratio	Generator side/System side/Tertiary kV
Winding Connections	Generator side/System side/Tertiary (Delta or Wye)

Fixed Taps Available

Present Tap Setting

**IMPEDANCE**

Positive Z1 (on self-cooled kVA rating)	%	X/R
Zero Z0 (on self-cooled kVA rating)	%	X/R





Attachment A (page 6)  
To Appendix 1  
Interconnection Request  
Technical Data Required For  
Interconnection System Impact Study

**EXCITATION SYSTEM DATA**

Identify appropriate IEEE model block diagram of excitation system and power system stabilizer ("PSS") for computer representation in power system stability simulations and the corresponding excitation system and PSS constants for use in the model.

**GOVERNOR SYSTEM DATA**

Identify appropriate IEEE model block diagram of governor system for computer representation in power system stability simulations and the corresponding governor system constants for use in the model.

**WIND AND INVERTER-BASED GENERATORS**

A completed Attachment A-1 Supplementary Wind and Inverter-Based Generating Facility Form to this Attachment A, must be supplied for all Interconnection Requests for wind and inverter-based Generating Facilities.

**MODEL REQUIREMENTS**

For all Generating Facility types: A completed, fully functioning, public (*i.e.*, non-proprietary, non-confidential) Siemens PTI's ("PSSE") power flow model or other compatible formats, such as IEEE and General Electric Company Power Systems Load Flow ("PSLF") data sheet, must be supplied with this Attachment A. If additional public data sheets are more appropriate to the proposed device then they shall be provided and discussed at the Scoping Meeting. For all Interconnection Studies commencing after January 1, 2017, all power flow models must be standard library models in PSS/E or applicable applications. After January 1, 2017, user-models will not be accepted.



Attachment A (page 7)  
To Appendix 1  
Interconnection Request  
Technical Data Required For  
Interconnection System Impact Study

A PSCAD model for all wind and inverter-based Generating Facilities must be supplied with this Attachment A. If a PSCAD model is deemed required for other Generating Facility types at the Scoping Meeting, such PSCAD model must be provided to the System Operator within ninety (90) Calendar Days of the Scoping Meeting date or the executed Interconnection System Impact Study Agreement (whichever is later). A benchmarking analysis, consistent with the requirements in the ISO New England Planning Procedures, confirming acceptable performance of the PSS/E model in comparison to the PSCAD model, shall be provided at the time PSCAD model is submitted.



Attachment A (page 8)  
To Appendix 1  
Interconnection Request  
Technical Data Required For  
Interconnection System Impact Study

**INDUCTION GENERATORS:**

- (\*) Field Volts:
- (\*) Field Amperes:
- (\*) Motoring Power (kW):
- (\*) Neutral Grounding Resistor (If Applicable):
- (\*) I22t or K (Heating Time Constant):
- (\*) Rotor Resistance:
- (\*) Stator Resistance:
- (\*) Stator Reactance:
- (\*) Rotor Reactance:
- (\*) Magnetizing Reactance:
- (\*) Short Circuit Reactance:
- (\*) Exciting Current:
- (\*) Temperature Rise:
- (\*) Frame Size:
- (\*) Design Letter:
- (\*) Reactive Power Required In Vars (No Load):
- (\*) Reactive Power Required In Vars (Full Load):
- (\*) Total Rotating Inertia, H: Per Unit on KVA Base

Note: Please consult System Operator prior to submitting the Interconnection Request to determine if the information designated by (\*) is required.

**Applicant Signature**

I hereby certify that, to the best of my knowledge, all the information provided in this Attachment A to the Interconnection Request is true and accurate.

For Interconnection Customer: \_\_\_\_\_ Date: \_\_\_\_\_



Attachment B (page 1)  
To Appendix 1  
Interconnection Request  
Technical Data Required For  
Interconnection Feasibility  
Study

The technical data required below must be submitted no later than the date of the execution of the Feasibility Study Agreement pursuant to Section 6.1 of the LGIP.

### LARGE GENERATING FACILITY DATA UNIT RATING

kVA	°F	Phase to Phase Voltage, kV	
Rated Power Factor			
Speed (RPM)		Connection (e.g. Wye)	_____
Short Circuit Ratio		Frequency, Hertz	_____
Stator Amperes at Rated, kVA		Field Volts	_____
Max Turbine MW	°F		

### GREATEST UNIT RATING AT AMBIENT TEMPERATURE OF 50 °F OR ABOVE

Gross Unit Rating (MW)	Gross Lagging (MVAR)
Net Unit Rating (MW)	Gross Leading (MVAR)
Station Service (MW)	Station Service (MVAR)
Temperature (°F)	

### DATA (PER UNIT-RATED KVA AND RATED VOLTAGE)

#### Saturated Reactance

Direct axis positive sequence	X'' <sub>dv</sub>	_____
negative sequence	X'' <sub>2v</sub>	_____
zero sequence	X'' <sub>0v</sub>	_____

#### Resistance

Generator AC resistance	R <sub>a</sub>	_____
negative sequence	R <sub>2</sub>	_____
zero sequence	R <sub>0</sub>	_____

#### Time Constant (seconds)

Three-phase short circuit armature time constant T<sub>a3</sub> \_\_\_\_\_





Attachment B (page 2)  
To Appendix 1  
Interconnection Request  
Technical Data Required For  
Interconnection Feasibility Study

**CURVES**

Provide Saturation, Vee, Reactive Capability, Capacity Temperature Correction curves. Designate normal and emergency Hydrogen Pressure operating range for multiple curves.

**GENERATOR STEP-UP TRANSFORMER DATA RATINGS**

Capacity Self-cooled/Maximum Nameplate  
kVA  
Voltage Ratio Generator side/System side/Tertiary  
kV  
Winding Connections Low V/High V/Tertiary V (Delta or Wye)

Fixed Taps Available

Present Tap Setting

---

**IMPEDANCE  
For 2-Winding Transformers**

Positive	Z1 (on self-cooled kVA rating)	_____	%	_____	X/R
Zero	Z0 (on self-cooled kVA rating)	_____	%	_____	X/R



Attachment B (page 3)  
To Appendix 1  
Interconnection Request  
Technical Data Required For  
Interconnection Feasibility Study

**IMPEDANCE**  
**For 3-winding transformers**

Positive	Z1H-L (on self-cooled kVA rating)	_____	%, X/R	_____
	Z1H-T (on self-cooled kVA rating)	_____	%, X/R	_____
	Z1L-T (on self-cooled kVA rating)	_____	%, X/R	_____
Zero	Z0H-L (on self-cooled kVA rating)	_____	%, X/R	_____
	Z0H-T (on self-cooled kVA rating)	_____	%, X/R	_____
	Z0L-T (on self-cooled kVA rating)	_____	%, X/R	_____

**FEEDER IMPEDANCE (Per Unit)**  
**From GSU to Point of Interconnection**

Positive	R1	+ j X1	on 100 MVA base
Zero	R0	+ j X0	on 100 MVA base

**WIND GENERATORS**

Number of generators to be interconnected pursuant to this Interconnection Request: \_\_\_\_\_

Elevation: \_\_\_\_\_ Single Phase \_\_\_\_\_ Three Phase

Inverter manufacturer, model name, number, and version:

\_\_\_\_\_

List of adjustable setpoints for the protective equipment or software:

\_\_\_\_\_



**Attachment B (page 4)  
To Appendix 1  
Interconnection Request  
Technical Data Required For  
Interconnection Feasibility Study**

For all generator types: A completed fully functioning, public (i.e., non-proprietary, non-confidential) Siemens PTI's ("PSSE") power flow model or other compatible formats, such as IEEE and General Electric Company Power Systems Load Flow ("PSLF") data sheet, must be supplied with this Attachment B. If additional public data sheets are more appropriate to the proposed device then they shall be provided and discussed at the Scoping Meeting. For all Interconnection Feasibility Studies commencing after January 1, 2017, all power flow models must be standard library models in PSS/E or applicable applications. User-models will not be accepted. A PSCAD model shall be provided pursuant to Sections 3.3.4 and 7.2 of the LGIP for all wind and inverter-based generating facilities or if deemed required at the Scoping Meeting. A benchmarking analysis, consistent with the requirements the ISO New England Planning Procedures, confirming acceptable performance of the PSS/E model in comparison to the PSCAD model shall be provided

**Applicant Signature**

I hereby certify that, to the best of my knowledge, all the information provided in this Attachment B to the Interconnection Request is true and accurate.

For Interconnection Customer: \_\_\_\_\_ Date: \_\_\_\_\_







# **GRAVEL PIT SOLAR PARK**

**Appendix 6-6:  
Pre-Feasibility Study  
CONFIDENTIAL**





# **GRAVEL PIT SOLAR PARK**

**REDACTED**





# **GRAVEL PIT SOLAR PARK**

**Appendix 6-7:  
Electrical One-Line Diagram  
CONFIDENTIAL**





# **GRAVEL PIT SOLAR PARK**

**REDACTED**



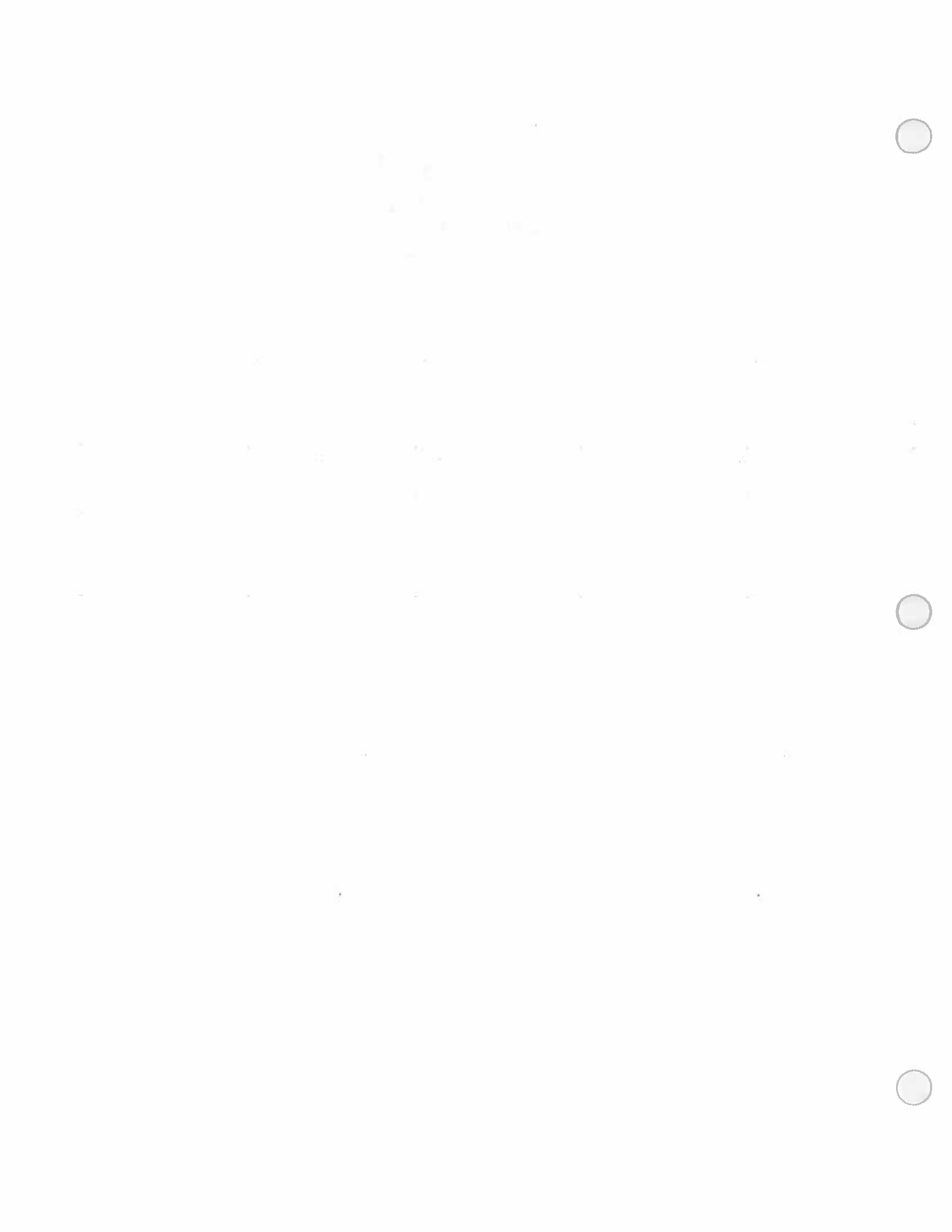
4-11-12  
1-12-12





# **GRAVEL PIT SOLAR PARK**

**Appendix 8-1:  
Inverter Technical Specifications  
CONFIDENTIAL**





# **GRAVEL PIT SOLAR PARK**

**REDACTED**

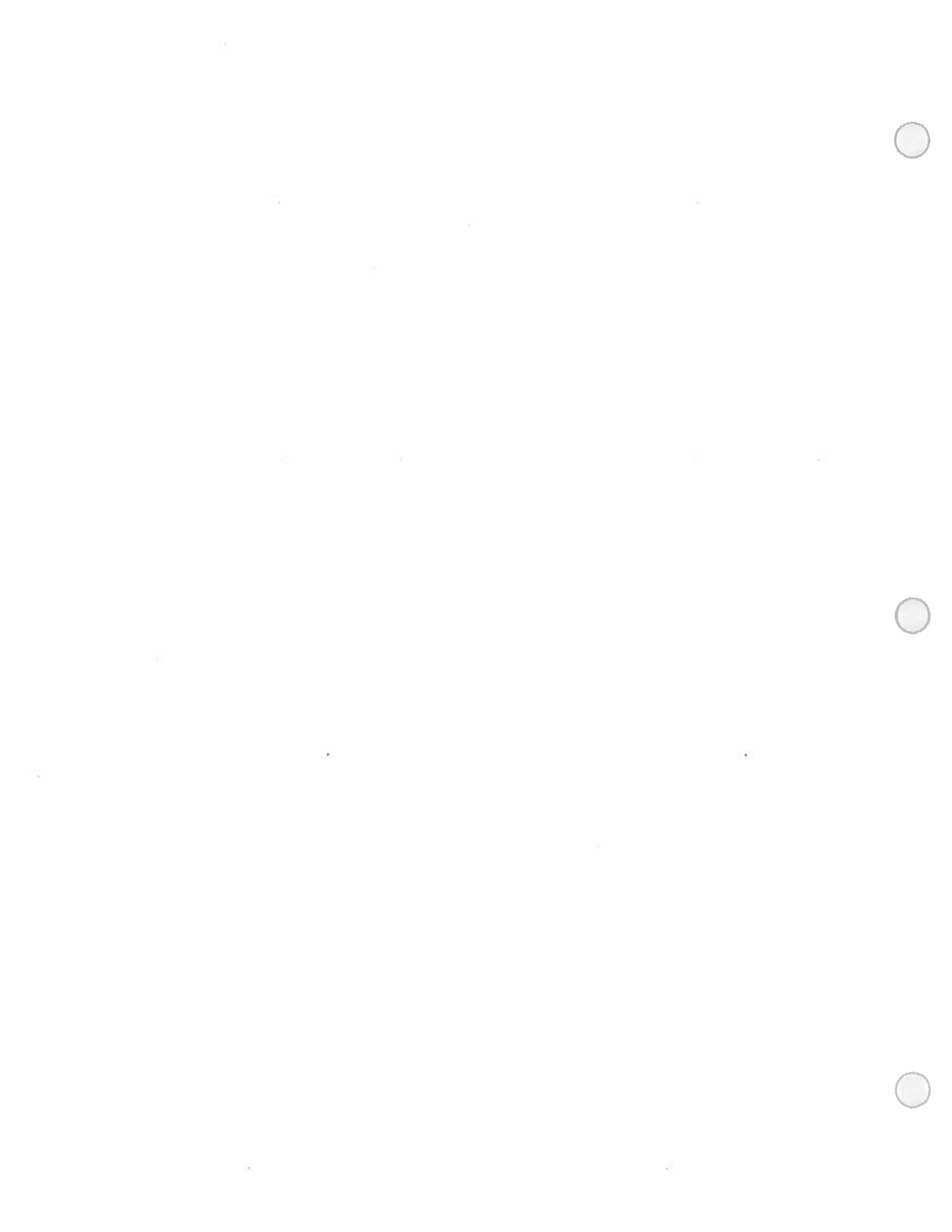




**GRAVEL PIT  
SOLAR PARK**

**Appendix 11-1:**

**Project Organizational Chart**



# Gravel Pit Solar Park Management Organization

