



# DRAINAGE ANALYSIS

For

## THE MERCER COUNTY RENEWABLE ENERGY PROJECT

BLOCK 23 LOTS 26.01, 26.02, 28, 29, 31, 33, 37, 39, 61, 62, 85, 107, 108  
BLOCK 1512 LOTS 1, 2, 3, 5, 8, 22

Located in

TOWNSHIP OF WEST WINDSOR  
AND  
TOWNSHIP OF HAMILTON  
MERCER COUNTY, NEW JERSEY

*Prepared by*

HAMMER LAND ENGINEERING  
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A handwritten signature in dark ink, appearing to read "J.D. Hanrahan", is written over a solid black horizontal line.

Joseph D. Hanrahan, PE, LEED AP  
NJ Professional Engineer License # 40339

11588  
March 26, 2012

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## **A. Introduction**

### **1. Purpose of Report**

The purpose of this report is to confirm that that the proposed solar farm will not create any adverse drainage impacts.

### **2. Project Location**

The entire tract area is 288.0 acres and is known as Block 23 Lots 26.01, 26.02, 28, 29, 31, 33, 37, 39, 61, 62, 85, 107, and 108, Block 1512 Lots 1, 2, 3, 5, 8, and 22 as shown on the tax maps for Township of West Windsor and Township of Hamilton. The site is bounded to the north by Paxson Avenue, to the east by South Post Road, to the south by Old Trenton Road, and to the west by Hughes Drive. An aerial map showing the site location can be found in Section 3 of this report.

## **B. Scope of Project**

The project will consist of an approximate 10 megawatt solar farm. The area of disturbance for the solar farm will be approximately 68.3 acres. The solar panels will be located at the easterly portion of the campus. Presently, the project area consists of mostly previously disturbed farmland, open space, meadow, and wooded areas.

The topography of the existing surface will not be raised or lowered from the proposed solar farm. Within the limit of disturbance, existing vegetated areas will be trimmed and existing trees will be removed. The solar panels will be installed on a ground mounting system (poles), driven into the ground using a track mounted hydraulic ram.

## **C. Hydrologic Methodology**

The overall drainage area and internal drainage patterns of the project will not change due to the solar farm. As mentioned above, the existing topography will not be raised or lowered. The existing land uses at the project location are straight row crops with crop residue and contoured, meadow, open space and wooded areas. Please see the Existing Land Use Plan for the existing land use. After the solar farm is entirely installed and all construction is complete the vegetation will be considered meadow. Please see the Developed Land Use Plan for the proposed land use.

Composite curve numbers for the existing and developed scenarios were calculated using TR-55 methodology for comparison. Hydrologic Soil Group B was used for the CN value comparison. The comparison indicated that the developed land cover will have a lower curve number than the existing land cover. For the curve number comparison, please see the Existing and Developed Curve Number Values provided in Section 2 of this report.

The existing drainage patterns will not be altered. Since the existing drainage patterns will be maintained and the developed land use will be meadow, the time of concentration will not change. Due to these above variables, the developed runoff will be less than existing.

Please see the Existing Land Use Map and Developed Land Use Map for area comparisons. Please see Section 2 of this report for Present and Developed CN Value calculations.

#### **D. Conclusion**

In conclusion, the solar farm will generate less stormwater runoff in the proposed condition due to the improvement in surface cover condition while drainage patterns and time on concentration remain unchanged.

PROJECT NUMBER	11591
PROJECT NAME	MERCER COUNTY COMMUNITY
LOCATION	WEST WINDSOR
BY	CLM
CHECKED BY	JDH
DATE	March 26, 2012
EXISTING AREA	
PROPOSED AREA	

# Worksheet 2: Runoff curve number and runoff

11591

<b>Project</b>	MCCC	<b>By</b>	CLM	<b>Date</b>	3/26/2012	
<b>Location</b>	WEST WINDSOR	<b>Checked</b>	JDH	<b>Date</b>	3/26/2012	
<b>Existing Land Use</b>						
<b>1. Runoff curve number</b>						
HSG	Cover description	CN <sup>1</sup>			Area (acres)	Product of CN X Area
B	Meadow	58			10.7	620.6
B	Open Space - good condition	61			13.3	811.3
B	Row Crops - SR + CR - good condition	58			39.9	2314.2
B	Woods - good condition	55			1.4	77
<b>Totals ⇒</b>					65.3	3823.1
<sup>1</sup> : Use only one CN source per line						
CN (weight) $\frac{\text{Total Product} = 3823.1}{\text{Total Area} = 65.3} = 58.55$		USE CN ⇒		59		

# Worksheet 2: Runoff curve number and runoff

11591

<b>Project</b>	MCCC	<b>By</b>	CLM	<b>Date</b>	3/26/2012	
<b>Location</b>	WEST WINDSOR	<b>Checked</b>	JDH	<b>Date</b>	3/26/2012	
<b>Proposed Land Use</b>						
<b>1. Runoff curve number</b>						
HSG	Cover description	CN <sup>1</sup>			Area (acres)	Product of CN X Area
B	Meadow	58			65.3	3787.4
<b>Totals ⇒</b>					65.3	3787.4
$\text{CN (weigh)} \frac{\text{Total Product} = 3787.4}{\text{Total Area} \quad 65.3} = 58.00$		<b>USE CN ⇒</b>		<b>58</b>		



Z:\PUBLIC\HLE\PROJECTS\11591 MCC\DRAWINGS\SP-SITE PLANS\1\_COVER.DWG AERIAL MAP 04/17/2008 12:00 PM ADMIN



NO.	DATE	ISSUE OR REVISION	BY
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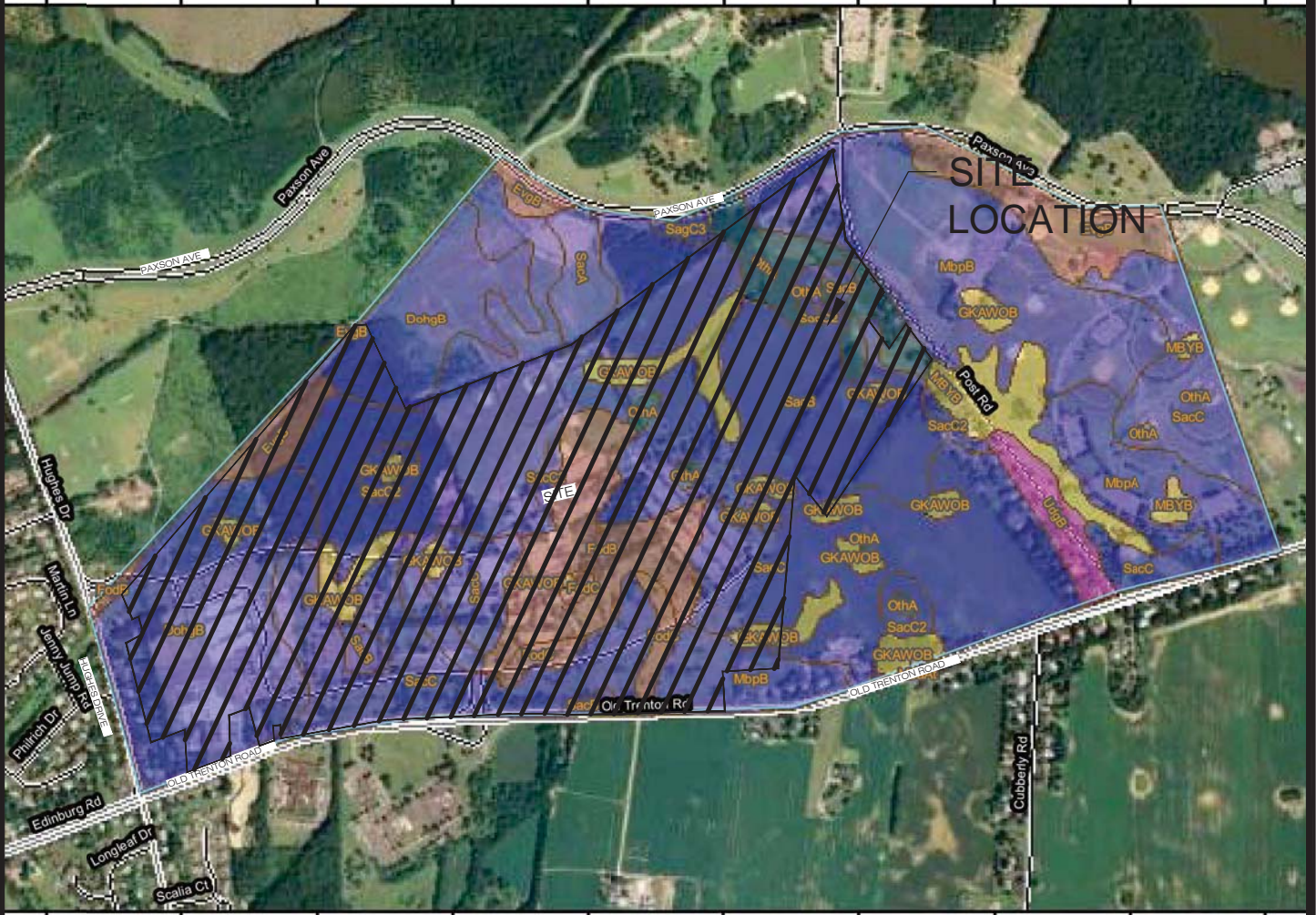
PROJECT:		
<b>AERIAL MAP</b>		
DRAWN BY:	CHECKED BY:	DRAWING NUMBER:
SCALE: AS NOTED		SHEET OF 5
JOB NUMBER: 11591	DATE:	

DUE TO INHERENT ERRORS IN REPRODUCTION METHODS, ERRORS MAY OCCUR WHEN SCALING THIS DRAWING



Hydrologic Soil Group—Mercer County, New Jersey

528600 528900 529200 529500 529800 530100 530400 530700 531000 531300



528600 528900 529200 529500 529800 530100 530400 530700 531000 531300



HORIZONTAL SCALE: 1"=1250'

Z:\PUBLIC\HLE\PROJECTS\11591\_MCCC\DRAWINGS\SP--SITE PLANS\8--10\_ADDITIONAL MAPS.DWG SOILS 04/17/2008 12:00 PM ADMIN

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PROJECT:		
<b>SOIL TYPE MAP</b>		
DRAWN BY: <b>DEK</b>	CHECKED BY: <b>CLM</b>	DRAWING NUMBER: <b>AM-05</b>
SCALE: AS NOTED		SHEET 5 OF 5
JOB NUMBER: 11591	DATE: 1.25.12	

DUE TO INHERENT ERRORS IN REPRODUCTION METHODS, ERRORS MAY OCCUR WHEN SCALING THIS DRAWING

## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Units

### Soil Ratings

 A

 A/D

 B

 B/D

 C

 C/D


 D

 Not rated or not available

### Political Features

 Cities

### Water Features

 Streams and Canals


### Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

## MAP INFORMATION

Map Scale: 1:14,400 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
Coordinate System: UTM Zone 18N NAD83

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

Soil Survey Area: Mercer County, New Jersey  
Survey Area Data: Version 8, Aug 18, 2008

Date(s) aerial images were photographed: 8/5/2006

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

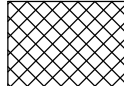
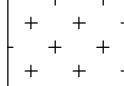

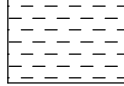
Hydrologic Soil Group— Summary by Map Unit — Mercer County, New Jersey (NJ021)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
DohgB	Downer fine sandy loam, gravelly clay loam substratum, 0 to 5 percent slopes	B	82.8	13.8%
EvgB	Evesboro loamy sand, 0 to 5 percent slopes	A	24.9	4.1%
FodB	Fort Mott loamy sand, 0 to 5 percent slopes	A	30.5	5.1%
FodC	Fort Mott loamy sand, 5 to 10 percent slopes	A	6.0	1.0%
GKAWOB	Glassboro and Woodstown sandy loams, 0 to 5 percent slopes	C	24.8	4.1%
MbaAt	Marsh, fresh water, 0 to 2 percent slopes, frequently flooded		0.3	0.0%
MbpA	Matapeake loam, 0 to 2 percent slopes	B	21.9	3.6%
MbpB	Matapeake loam, 2 to 5 percent slopes	B	73.9	12.3%
MBYB	Mattapex and Bertie loams, 0 to 5 percent slopes	C	14.7	2.5%
OthA	Othello silt loam, 0 to 2 percent slopes	C/D	18.8	3.1%
SacA	Sassafras sandy loam, 0 to 2 percent slopes	B	7.8	1.3%
SacB	Sassafras sandy loam, 2 to 5 percent slopes	B	142.0	23.7%
SacC	Sassafras sandy loam, 5 to 10 percent slopes	B	132.8	22.1%
SacC2	Sassafras sandy loam, 5 to 10 percent slopes, eroded	B	9.1	1.5%
SagC3	Sassafras sandy clay loam, 5 to 10 percent slopes, severely eroded	B	1.7	0.3%
UdgB	Udorthents, gravelly substratum, 0 to 8 percent slopes	D	7.7	1.3%
<b>Totals for Area of Interest</b>			<b>599.5</b>	<b>100.0%</b>



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LAND USE TYPE LEGEND

-  - MEADOW 10.7 ACRES
-  - ROW CROPS 39.9 ACRES
-  - OPEN SPACE 13.3 ACRES
-  - WOODS 1.4 ACRES

REV.	DATE	REVISION DESCRIPTION	DRAWN BY	CHECKED BY



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THE MERCER COUNTY RENEWABLE ENERGY PROJECT  
MERCER COUNTY COMMUNITY COLLEGE  
1200 OLD TRENTON ROAD  
WEST WINDSOR, NJ 08550

DRAWING NO. 732.0108

EXISTING LAND USE MAP

SCALE: 1" = 200'

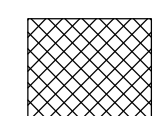
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ELU-01



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LAND USE TYPE LEGEND  
 - MEADOW 65.3 ACRES

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**POWER PARTNERS**

**THE MERCER COUNTY RENEWABLE ENERGY PROJECT**  
 MERCER COUNTY COMMUNITY COLLEGE  
 1200 OLD TRENTON ROAD  
 WEST WINDSOR, NJ 08550

PROJECT NO: **732.0108**

DRAWING TITLE: **DEVELOPED LAND USE MAP**

DRAWING SCALE: **SCALE: 1" = 200'**

DESIGNED BY	PROJECTED BY	DATE
JCH	CLM	02.01.12

DATE: **DLU-01**