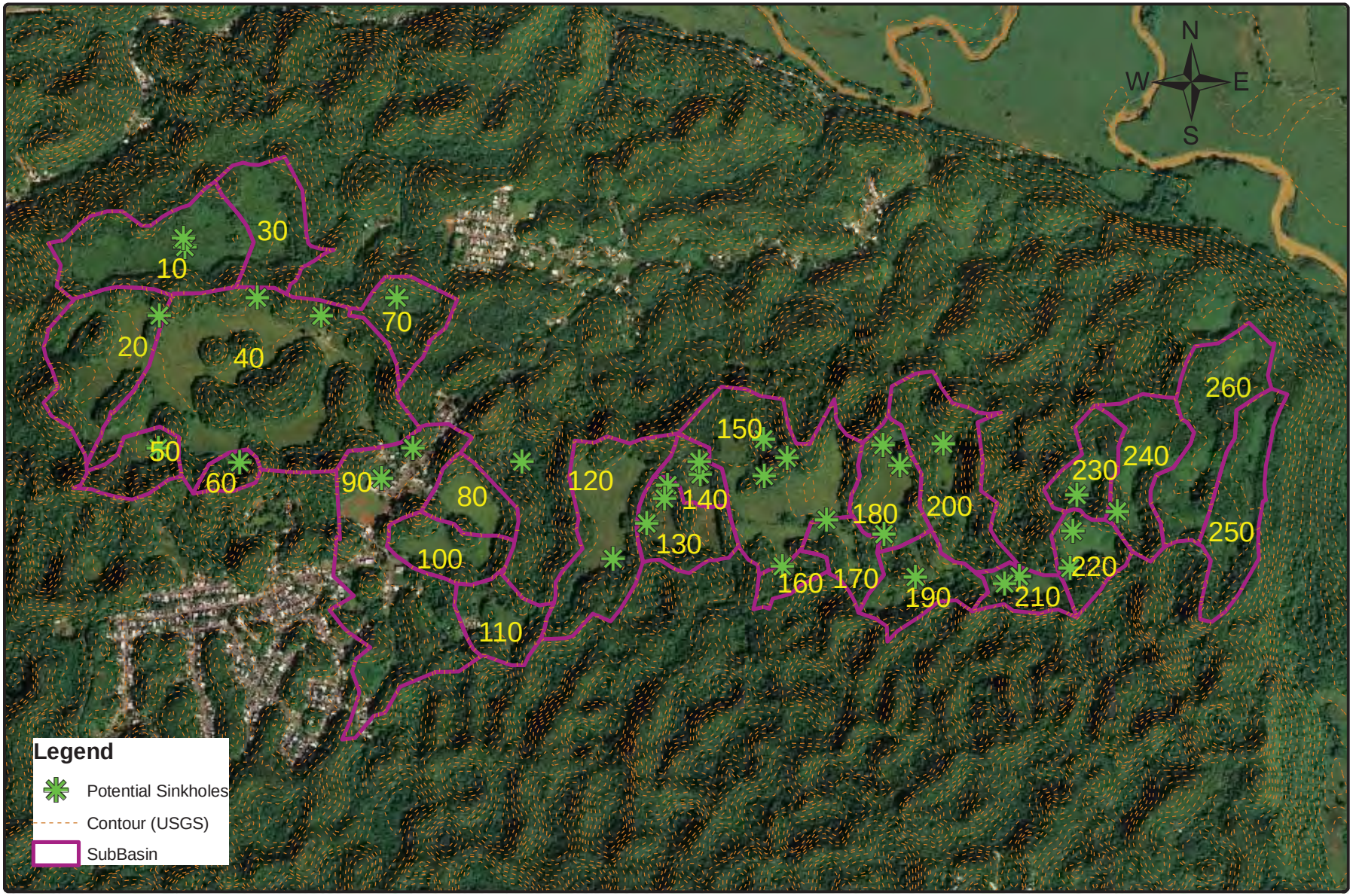
Appendix E: Watershed Map



1:18,000

0 145 290 580 870 1,160 Meters

WATERSHED MAP

M SOLAR GENERATING, LLC
PUERTO RICO

PMG

Appendix F. Precipitation Data

NOAA Atlas 14, Volume 3, Version 4 MANATI 2 E
Station ID: 66-5807
Location name: Vega Baja, PR, Puerto Rico*
Coordinates: 18.4333, -66.4500
Elevation:
Elevation (station metadata): 250 ft*
* source: Google Maps

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	0.447 (0.442-0.475)	0.571 (0.562-0.579)	0.620 (0.611-0.632)	0.660 (0.648-0.671)	0.701 (0.690-0.718)	0.733 (0.720-0.752)	0.760 (0.746-0.784)	0.788 (0.770-0.817)	0.821 (0.798-0.857)	0.842 (0.819-0.886)
10-min	0.611 (0.605-0.649)	0.780 (0.768-0.792)	0.848 (0.835-0.863)	0.901 (0.886-0.917)	0.958 (0.943-0.981)	1.00 (0.983-1.03)	1.04 (1.02-1.07)	1.08 (1.05-1.12)	1.12 (1.09-1.17)	1.15 (1.12-1.21)
15-min	0.784 (0.776-0.834)	1.00 (0.985-1.02)	1.09 (1.07-1.11)	1.16 (1.14-1.18)	1.23 (1.21-1.26)	1.29 (1.26-1.32)	1.33 (1.31-1.38)	1.38 (1.35-1.43)	1.44 (1.40-1.50)	1.48 (1.44-1.55)
30-min	1.25 (1.24-1.33)	1.60 (1.58-1.63)	1.74 (1.72-1.77)	1.85 (1.82-1.89)	1.97 (1.94-2.02)	2.06 (2.02-2.11)	2.13 (2.10-2.20)	2.21 (2.16-2.29)	2.31 (2.24-2.41)	2.36 (2.30-2.49)
60-min	1.86 (1.84-1.98)	2.38 (2.34-2.41)	2.58 (2.54-2.63)	2.75 (2.70-2.80)	2.92 (2.88-2.99)	3.05 (3.00-3.13)	3.17 (3.11-3.27)	3.28 (3.21-3.40)	3.42 (3.33-3.57)	3.51 (3.41-3.69)
2-hr	2.35 (2.33-2.51)	3.03 (2.96-3.10)	3.42 (3.33-3.50)	3.70 (3.60-3.81)	4.05 (3.92-4.17)	4.30 (4.15-4.45)	4.53 (4.36-4.73)	4.76 (4.56-5.00)	5.05 (4.81-5.36)	5.26 (4.98-5.62)
3-hr	2.61 (2.54-2.71)	3.25 (3.17-3.36)	3.74 (3.63-3.88)	4.11 (3.97-4.27)	4.58 (4.39-4.77)	4.93 (4.70-5.16)	5.25 (5.00-5.55)	5.59 (5.27-5.95)	6.00 (5.61-6.49)	6.32 (5.86-6.88)
6-hr	3.02 (2.86-3.22)	3.84 (3.64-4.07)	4.64 (4.40-4.95)	5.27 (4.95-5.61)	6.07 (5.65-6.49)	6.67 (6.17-7.18)	7.26 (6.66-7.89)	7.87 (7.13-8.63)	8.66 (7.77-9.63)	9.26 (8.23-10.4)
12-hr	3.35 (3.10-3.67)	4.32 (3.99-4.74)	5.54 (5.09-6.08)	6.53 (5.95-7.19)	7.88 (7.07-8.72)	8.96 (7.93-9.98)	10.1 (8.81-11.3)	11.2 (9.67-12.8)	12.8 (10.8-14.8)	14.1 (11.7-16.5)
24-hr	3.90 (3.63-4.21)	5.08 (4.74-5.48)	6.73 (6.24-7.24)	8.07 (7.45-8.67)	9.92 (9.08-10.7)	11.4 (10.4-12.3)	13.0 (11.8-14.0)	14.6 (13.1-15.8)	16.9 (15.1-18.4)	18.7 (16.6-20.5)
2-day	4.82 (4.43-5.27)	6.25 (5.75-6.85)	8.25 (7.56-9.02)	9.86 (9.01-10.8)	12.1 (11.0-13.4)	14.0 (12.5-15.5)	15.9 (14.1-17.7)	17.9 (15.7-20.1)	20.7 (17.9-23.4)	23.0 (19.7-26.2)
3-day	5.10 (4.70-5.58)	6.62 (6.09-7.24)	8.71 (7.99-9.52)	10.4 (9.51-11.4)	12.8 (11.6-14.1)	14.7 (13.2-16.3)	16.8 (14.9-18.7)	18.9 (16.6-21.2)	21.9 (19.0-24.8)	24.3 (20.8-27.7)
4-day	5.39 (4.97-5.90)	6.98 (6.43-7.63)	9.17 (8.41-10.0)	11.0 (10.0-12.0)	13.5 (12.2-14.8)	15.5 (13.9-17.2)	17.6 (15.7-19.6)	19.9 (17.5-22.3)	23.1 (20.0-26.2)	25.6 (21.9-29.3)
7-day	6.18 (5.72-6.73)	7.93 (7.32-8.65)	10.2 (9.41-11.2)	12.1 (11.1-13.2)	14.7 (13.4-16.1)	16.7 (15.1-18.5)	18.9 (17.0-21.0)	21.2 (18.8-23.6)	24.4 (21.4-27.3)	26.9 (23.4-30.3)
10-day	7.11 (6.62-7.67)	9.06 (8.41-9.79)	11.4 (10.6-12.3)	13.3 (12.3-14.4)	15.9 (14.6-17.3)	18.0 (16.4-19.6)	20.1 (18.2-22.0)	22.3 (20.1-24.6)	25.4 (22.6-28.1)	27.8 (24.5-31.0)
20-day	9.46 (8.86-10.1)	11.9 (11.1-12.8)	14.5 (13.5-15.5)	16.5 (15.4-17.7)	19.2 (17.9-20.7)	21.3 (19.7-23.0)	23.5 (21.6-25.5)	25.7 (23.5-28.0)	28.7 (25.9-31.4)	31.0 (27.8-34.1)
30-day	11.7 (11.0-12.5)	14.6 (13.7-15.6)	17.3 (16.3-18.5)	19.5 (18.3-20.8)	22.3 (20.8-23.8)	24.4 (22.7-26.2)	26.5 (24.5-28.5)	28.6 (26.4-30.9)	31.4 (28.7-34.2)	33.6 (30.4-36.7)
45-day	14.4 (13.6-15.4)	18.0 (17.0-19.1)	21.1 (19.8-22.4)	23.6 (22.2-25.0)	26.8 (25.1-28.6)	29.3 (27.3-31.4)	31.7 (29.4-34.2)	34.1 (31.5-37.0)	37.4 (34.3-40.7)	39.9 (36.3-43.7)
60-day	17.3 (16.3-18.3)	21.4 (20.2-22.7)	24.7 (23.4-26.2)	27.4 (25.9-29.0)	30.9 (29.1-32.7)	33.5 (31.5-35.6)	36.1 (33.7-38.4)	38.7 (36.0-41.4)	42.1 (38.9-45.3)	44.7 (41.0-48.3)

[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.

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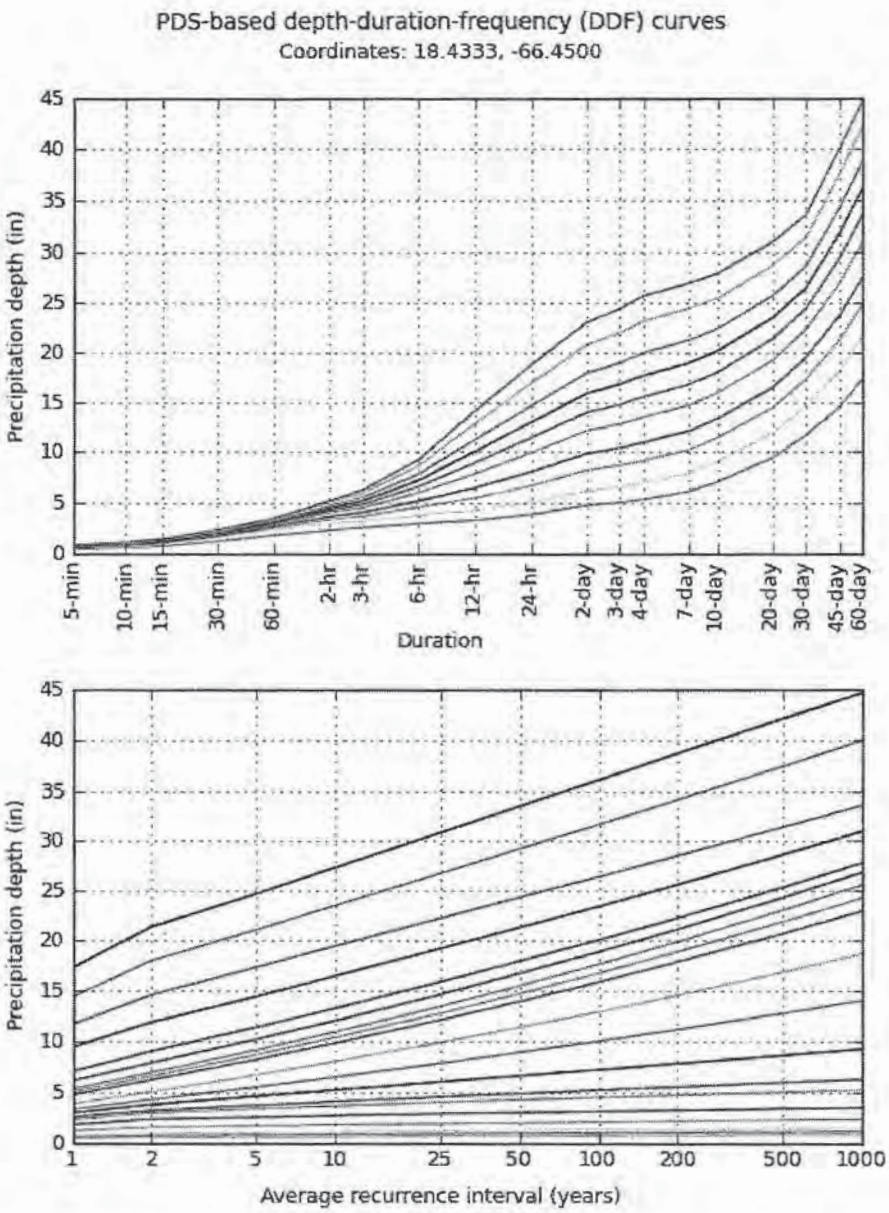
PF graphical



Average recurrence interval (years)
1
2
5
10
25
50
100
200
500
1000

NOAA/NWS/OHD/HDSC

Created (GMT): Fri Aug 24 11:42:00 2012

Duration	
5-min	2-day
10-min	3-day
15-min	4-day
30-min	7-day
60-min	10-day
2-hr	20-day
3-hr	30-day
6-hr	45-day
12-hr	60-day
24-hr	

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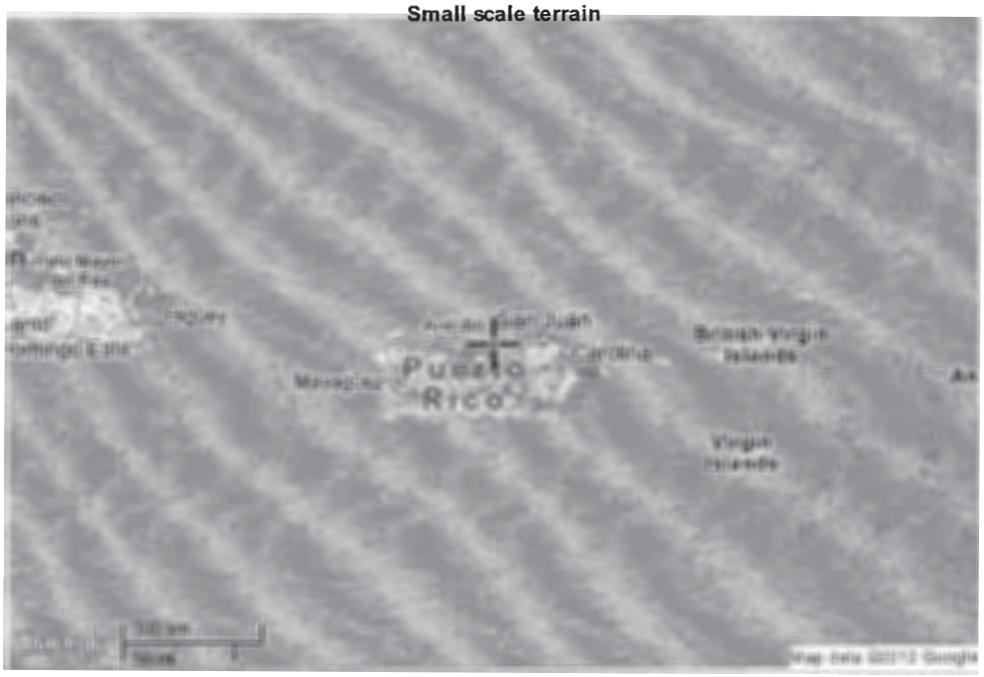
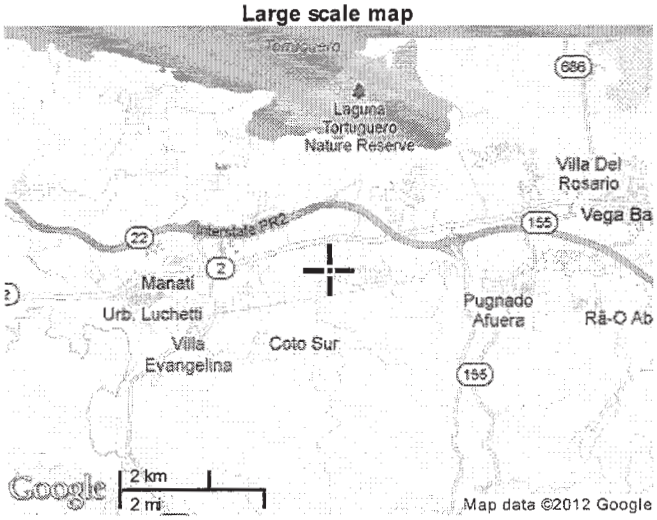
Maps & aerials

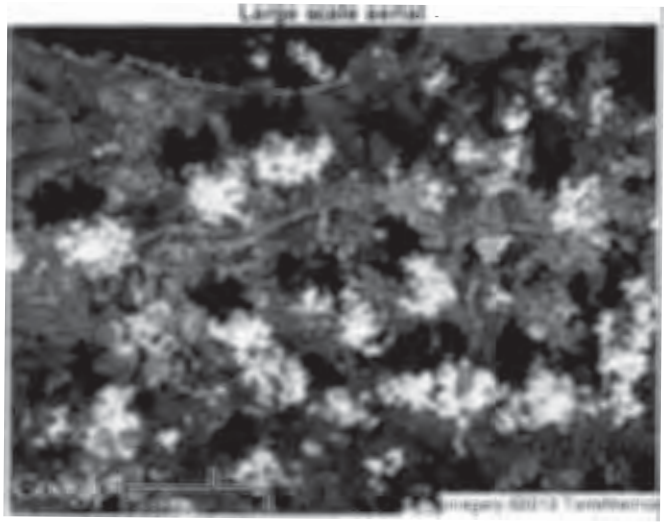
Small scale terrain



Large scale terrain

Large scale map





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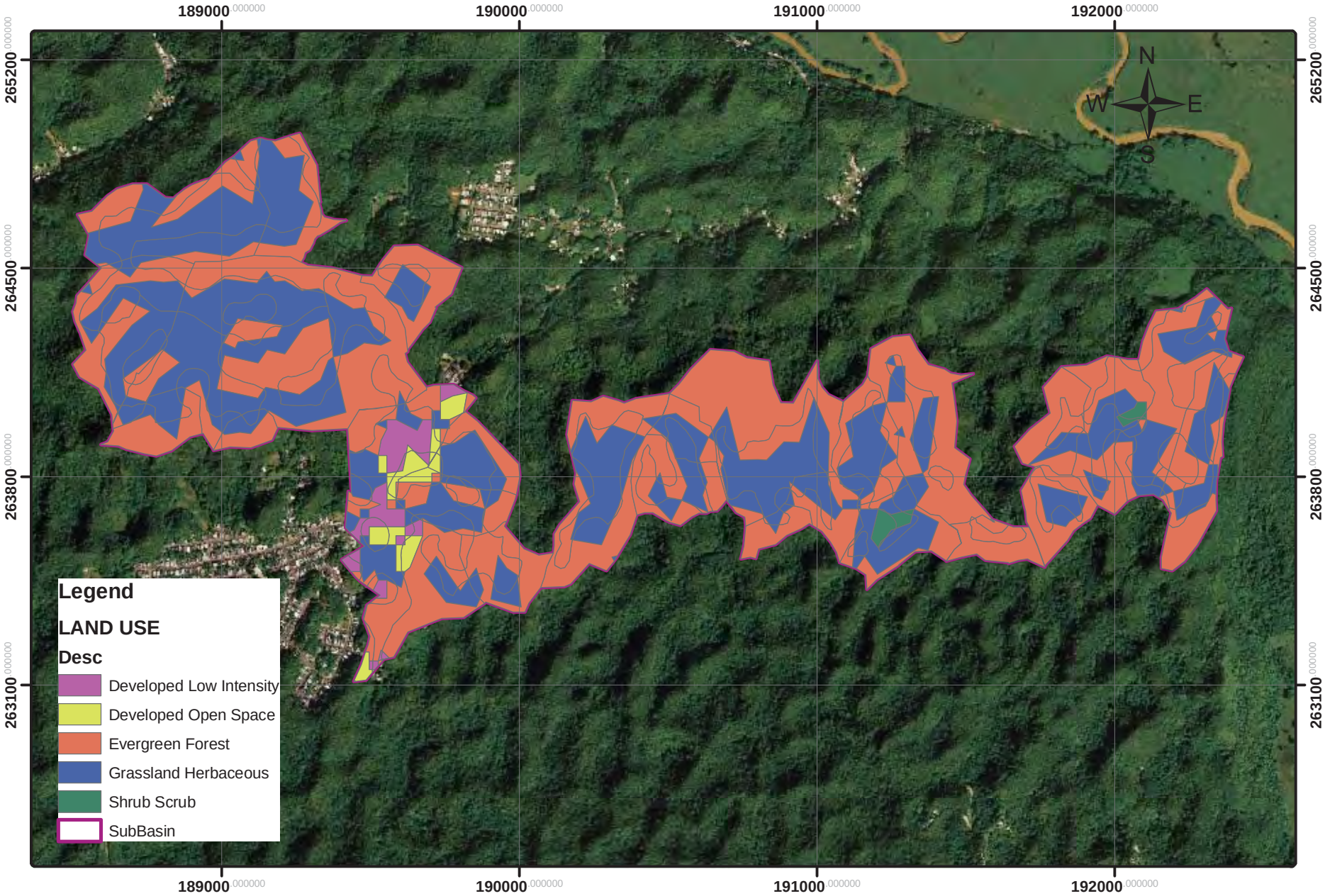
National Oceanic and Atmospheric Administration
National Weather Service
Office of Hydrologic Development
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Appendix G: Land Cover Map



1:18,000

0 140 280 560 840 1,120 Meters

LAND USE MAP

M SOLAR GENERATING, LLC
PUERTO RICO

PMG