LESA ASSESSMENT
LAUREL 3 SOLAR PROJECT
(T16S, R12E, S16, S21, S22, S27, S28, SBB&M)

IMPERIAL COUNTY, CALIFORNIA

September 2017

EMA Report No. 2387-01

Prepared for:

90FI 8me LLC
111 Woodmere Road, Suite 250
Folsom, CA 95630

ENVIRONMENTAL MANAGEMENT ASSOCIATES

LAND EVALUATION AND SITE ASSESSMENT MODEL

LAUREL 3 SOLAR PROJECT
(T16S, R12E, S16, S21, S22, S27, S28, SBB&M)
IMPERIAL COUNTY, CALIFORNIA

The Land Evaluation and Site Assessment (LESA) model is an approach for rating the relative quality of land resources based upon specific measurable features. The LESA model was first developed by the federal Natural Resources Conservation Service (NRCS) in 1981. It was subsequently adapted in 1990 by the California Department of Conservation to evaluate land use decisions that affect the conversion of agriculture lands in California. The formulation of the California LESA Model is intended to provide lead agencies under the California Environmental Quality Act (CEQA) with an optional methodology to ensure that significant effects on the environment of agricultural land conversions are quantitatively and consistently considered in the environmental review process.

For determining the potential CEQA significance resulting from the conversion of agricultural lands to some other purpose, the California Agricultural LESA Model has developed Scoring Thresholds which are used to compare the Final LESA Score and the Weighted Factor Scores for the Project with suggested Scoring Decisions. These LESA Scores do not take into consideration any proposed mitigation measures or other factors that might affect a lead agency's determination of the significance of the agricultural lands conversion impact under CEQA.

The information provided on the following pages present documentation of the LESA assessment prepared using the California Agricultural LESA Model for the Laurel 3 Solar Project (Project) (APNs 051-270-027 (portion), 051-270-047, 051-300-008, 051-300-009, 051-300-030 (portion), 051-300-039, 051-330-001). The proposed Laurel 3 Solar Project would be constructed on approximately 587 acres of privately owned land located approximately 10 miles southwest of El Centro, south of Interstate 8, east and north of the Mandrapa Road, and west and north of the Campo Verde Solar Project (Figure 1 and Figure 2).

LESA ASSESSMENT

LAUREL 3 SOLAR PROJECT
IMPERIAL COUNTY, CALIFORNIA

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

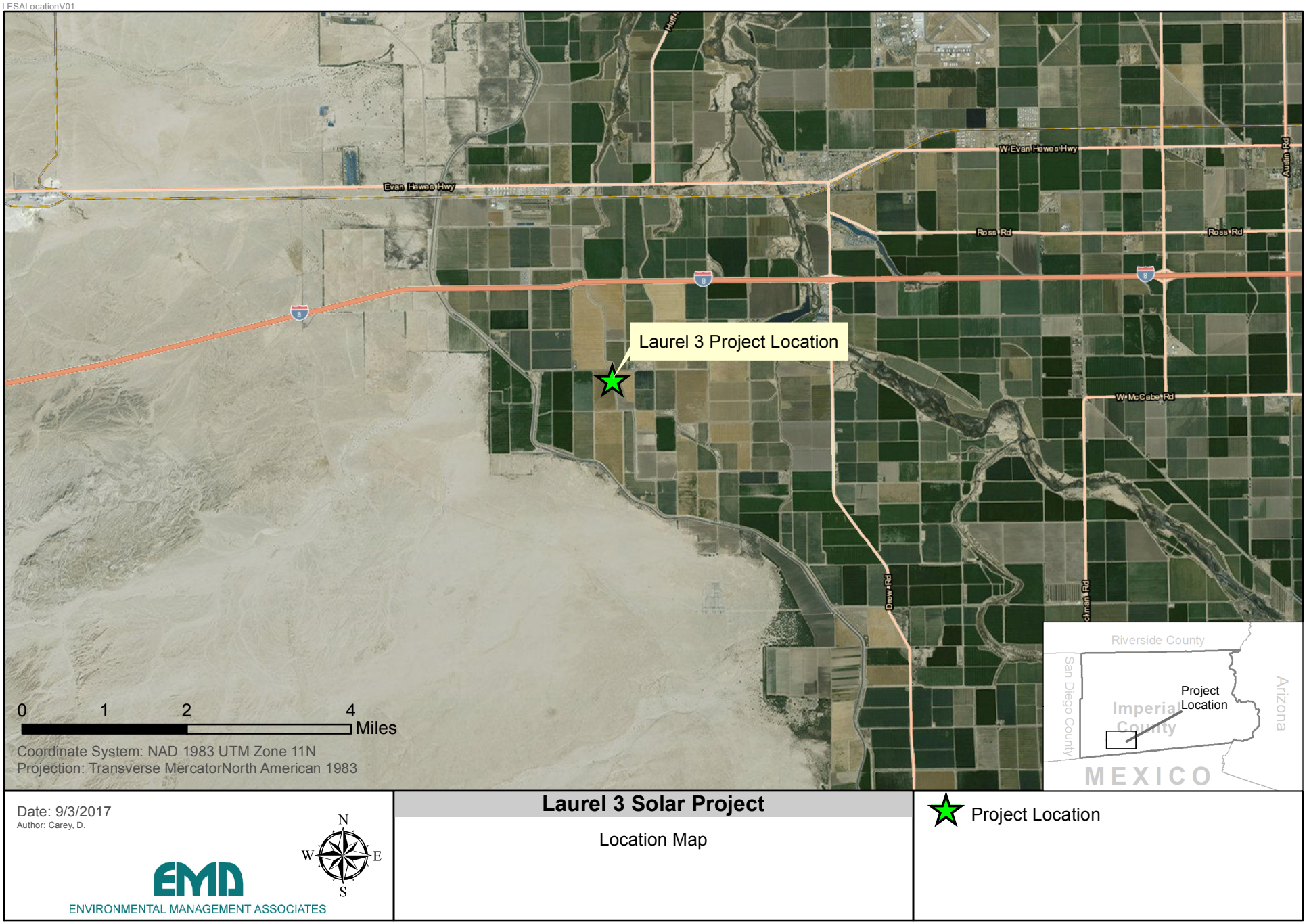


Figure 1: Location Map

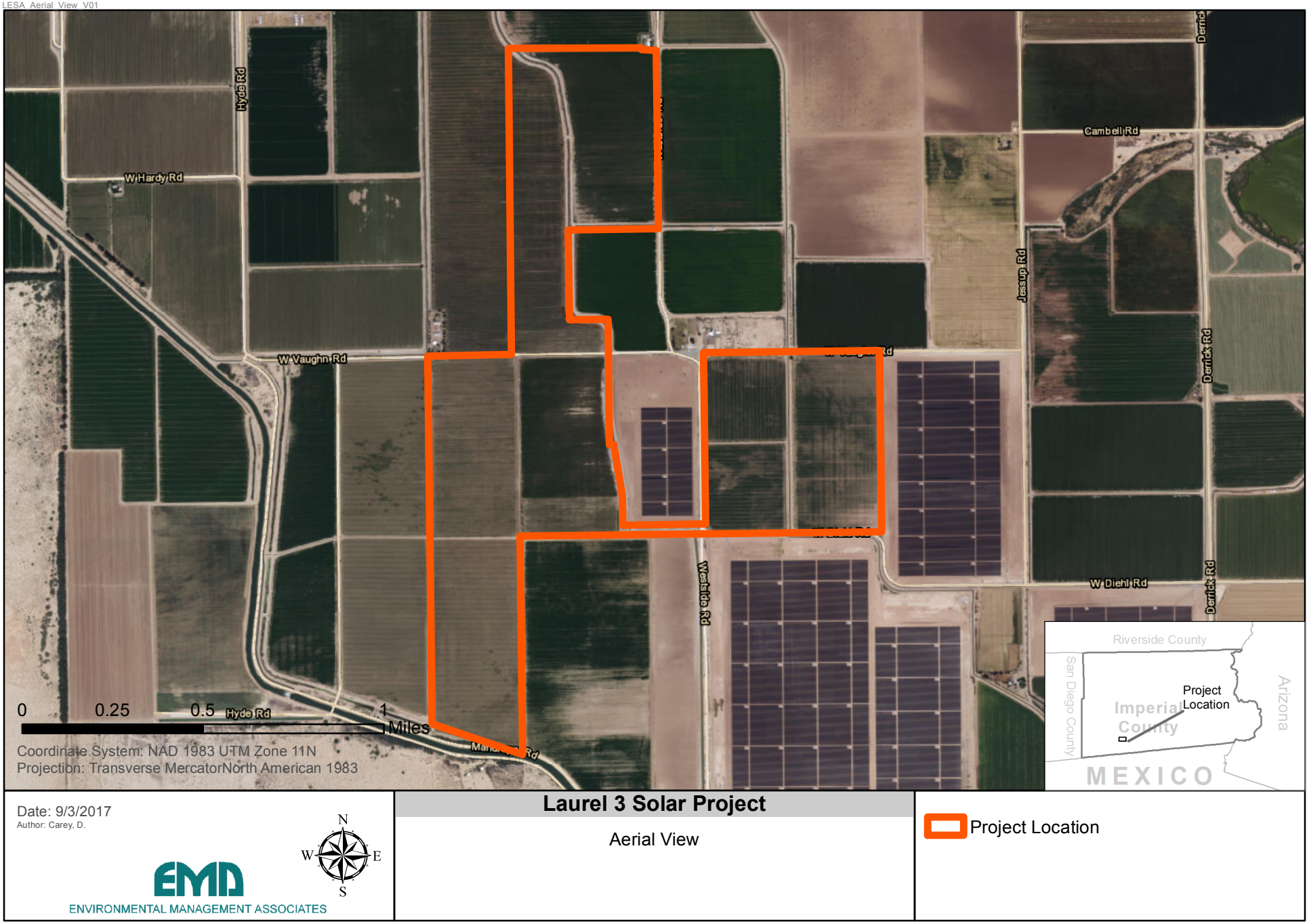


Figure 2 : Development Area on an Aerial Photographic Base

Land Evaluation Worksheet							
A	B	C	D	E	F	G	H
Soil Map Unit*	Project Acres	Proportion of Project Area	LCC** (irrigated)	LCC Rating (irrigated)***	LCC Score (C x E)	Storie Index**	Storie Index Score (C x G)
110	63.0	0.107	IIw	80	8.52	46	4.90
114	87.4	0.149	IIIw	60	8.91	36	5.35
115	215.6	0.367	IIIw	60	22.02	68	24.96
118	3.4	0.006	IIIw	60	0.36	88	0.53
122	48.9	0.083	IIw	80	6.64	77	6.39
123	50.5	0.086	IIIw	60	5.16	77	6.62
135	8.8	0.015	IIIw	60	0.90	55	0.83
142	51.5	0.088	IIIw	60	5.28	73	6.42
144	58.5	0.100	IIw	80	8.00	77	7.70
145	0.1	0.000	N/A	0	0.00	0	0.00
Totals	587.6	1.000		**LCC Total Score**	65.79	**Storie Index Total Score**	63.69

Total Project Area (acres)=	587.6

* The Soil Map Unit information and acreage were determined from the current soil survey information available at the USDA Natural Resources Conservation Service website: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx (Figure 3).

** The Land Capability Classification and Storie Index information was obtained from the current soil survey information available at the USDA Natural Resources Conservation Service website: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx (Appendix A).

*** The LCC Rating for irrigated land was determined from the LCC Point Rating Table 2 from the LESA Instruction Manual (California Department of Conservation 1997).

Tables — California Revised Storie Index (CA) — Summary By Map Unit

Summary by Map Unit — Imperial County, California, Imperial Valley Area (CA683)

Map unit symbol	Map unit name	Rating	Component name (percent)	Acres in AOI	Percent of AOI
110	Holtville silty clay, wet	Grade 3 - Fair	Holtville, WET (85%)	63.0	10.7%
114	Imperial silty clay, wet	Grade 4 - Poor	Imperial, WET (85%)	87.4	14.9%
115	Imperial-Glenbar silty clay loams, wet, 0 to 2 percent slopes	Grade 2 - Good	Glenbar, WET (40%)	215.6	36.7%
			Meloland (10%)		
118	Indio loam, wet	Grade 1 - Excellent	Indio, WET (85%)	3.4	0.6%
122	Meloland very fine sandy loam, wet	Grade 2 - Good	Meloland, WET (85%)	48.9	8.3%
123	Meloland and Holtville loams, wet	Grade 2 - Good	Meloland, WET (40%)	50.5	8.6%
			Holtville, WET (40%)		
135	Rositas fine sand, wet, 0 to 2 percent slopes	Grade 3 - Fair	Rositas, WET (85%)	8.8	1.5%
142	Vint loamy very fine sand, wet	Grade 2 - Good	Vint, WET (90%)	51.5	8.8%
			Meloland (5%)		
144	Vint and Indio very fine sandy loams, wet	Grade 2 - Good	Vint, WET (50%)	58.5	10.0%
			Meloland (5%)		
145	Water	Not Applicable for Storie Index	Water (100%)	0.1	0.0%
Totals for Area of Interest				**587.6**	**100.0%**

Figure 3: Development Area Soils Map

	Site Assessment Worksheet 1		
	Project Size Score*		
	I	J	K
	LCC Class I-II	LCC Class III	LCC Class IV-VIII
Project Acres per LCC Class	63.0		
Project Acres per LCC Class		87.4	
Project Acres per LCC Class		215.6	
Project Acres per LCC Class		3.4	
Project Acres per LCC Class	48.9		
Project Acres per LCC Class		50.5	
Project Acres per LCC Class		8.8	
Project Acres per LCC Class		51.5	
Project Acres per LCC Class	58.5		
Total Project Acres per LCC Class	**170.4**	**417.1**	**0.0**
**** Project Size Scores***	**100**	**100**	**0**
Highest Project Size Score	**100**		

* Project Size Score was determined from the Project Size Scoring Table from the LESA Instruction Manual (California Department of Conservation 1997).

Site Assessment Worksheet 2				
Water Resources Availability				
A	**B**	**C**	**D**	**E**
Project Portion	**Water Source**	**Proportion of Project Area**	**Water Availability Score***	**Weighted Availability Score (C x D)**
1	Irrigation District Only	1.0	100	100
2				
3				
4				
5				
6				
		(Must Sum to 1.0)	***Total Water Resource Score***	100

* The Water Availability Score was determined using the Water Resources Availability Scoring Table from the LESA Instruction Manual (California Department of Conservation 1997).

Site Assessment Worksheet 3

Surrounding Agricultural Land & Surrounding Protected Resource Land

A	B	C	D	E	F	G
Zone of Influence*					Surrounding Agricultural Land Score (From LESA Manual Table 6)	Surrounding Protected Resource Land Score (From LESA Manual Table 7)**
Total Acres	Acres in Agriculture	Acres of Protected Resource Land	Percent in Agriculture (B/A)	Percent Protected Resource Land (C/A)		
3955.1	1887	1240	47.7	31	20	0

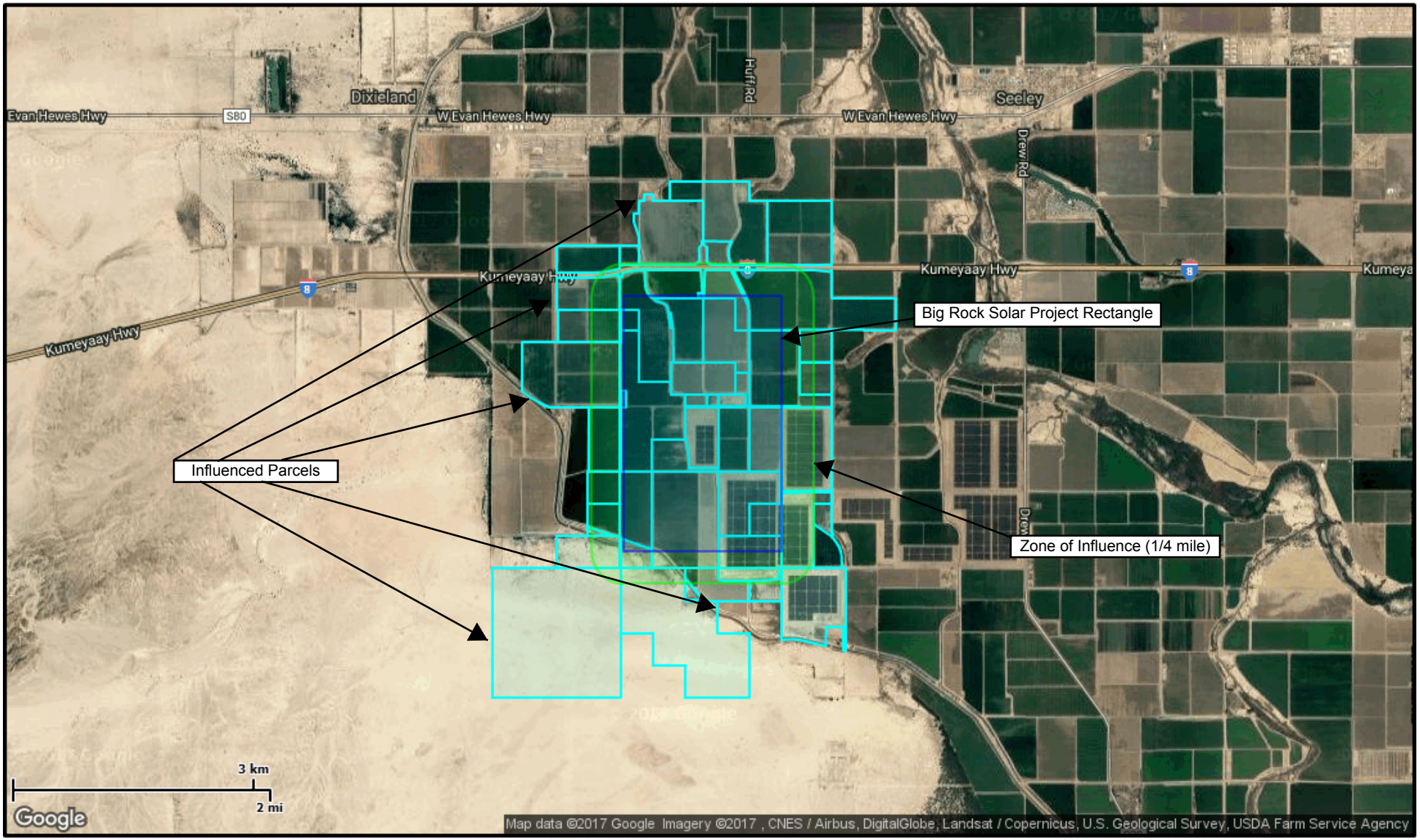
* In conformance with the instructions in the LESA Instruction Manual (California Department of Conservation 1997), the Zone of Influence was determined by drawing the smallest rectangle that could completely encompass the entire Project Area. A second rectangle was then drawn which extended one quarter mile on all sides beyond the first rectangle. The Zone of Influence is represented by the entire area of all parcels with any lands inside the outer rectangle, less the area of the proposed project (Figure 4).

** The LESA Instruction Manual (California Department of Conservation 1997) describes *Protected Resource Land* as those lands with long term use restrictions that are compatible with or supportive of agricultural uses of land. Included among them are the following: Williamson Act contracted lands; Publicly owned lands maintained as park, forest, or watershed resources; and Lands with agricultural, wildlife habitat, open space, or other natural resource easements that restrict the conversion of such land to urban or industrial uses.

Surrounding Parcels***	Acres	Protected Resource Land?	Percent Protected Resource Land	Acres in Protected Land	Agricultural Land?	Percent Agricultural Land	Acres of Agriculture
051-260-023	64.0	N	0	0	Y	100	64.0
051-260-031	79.9	N	0	0	Y	100	79.9
051-270-020	101.9	N	0	0	Y	100	101.9
051-270-021	1.2	N	0	0	Y	100	1.2
051-270-028	52.3	N	0	0	Y	100	52.3
051-270-037	58.6	N	0	0	Y	100	58.6
051-270-038	1.0	N	0	0	Y	100	1.0
051-270-041	279.0	N	0	0	Y	100	279.0
051-270-046	0.1	N	0	0	Y	100	0.1
051-290-014	78.2	N	0	0	Y	100	78.2
051-290-018	79.9	N	0	0	Y	100	79.9
051-290-035	236.3	N	0	0	Y	100	236.3
051-290-038	14.1	N	0	0	Y	100	14.1
051-300-010	5.2	N	0	0	N	0	0.0
051-300-011	79.6	N	0	0	Y	100	79.6
051-300-016	10.9	N	0	0	Y	90	9.8
051-300-025	164.9	N	0	0	N	0	0.0
051-300-026	13.5	N	0	0	Y	80	10.8
051-300-027	12.6	N	0	0	N	0	0.0
051-300-031	2.6	N	0	0	Y	100	2.6
051-300-032	165.8	N	0	0	Y	100	165.8
051-300-035	40.4	N	0	0	Y	100	40.4
051-300-036	40.3	N	0	0	Y	100	40.3
051-300-038	76.0	N	0	0	Y	53	40.3
051-320-006	40.0	N	0	0	Y	100	40.0
051-320-007	35.3	N	0	0	Y	100	35.3
051-320-008	4.7	N	0	0	N	0	0.0
051-320-009	79.8	Y	100	80	N	0	0.0
051-330-002	30.4	N	0	0	Y	3	0.9
051-330-003	246.6	N	0	0	Y	92	226.8
051-330-005	78.0	N	0	0	N	0	0.0
051-330-015	115.0	N	0	0	N	0	0.0
051-330-016	0.9	N	0	0	N	0	0.0
051-330-017	2.6	N	0	0	Y	30	0.8
051-330-019	101.8	N	0	0	Y	8	8.1
051-330-020	40.0	N	0	0	N	0	0.0
051-330-022	37.0	N	0	0	N	0	0.0
051-330-023	18.8	N	0	0	Y	68	12.8
051-340-002	639.4	Y	100	639	N	0	0.0
051-350-002	400.3	Y	100	400	N	0	0.0
051-350-003	8.3	N	0	0	N	0	0.0
051-350-004	57.5	N	0	0	Y	94	54.0
051-350-005	27.9	N	0	0	N	0	0.0
051-350-006	26.4	N	0	0	Y	97	25.6
051-350-009	120.0	Y	100	120	Y	0	0.0
051-350-018	186.2	N	0	0	Y	25	46.6
Total	**3955.1**		**Total**	**1240**		**Total**	**1887**

***The Imperial County Assessors website was accessed to identify the surrounding parcel numbers (http://www.co.imperial.ca.us/assessor/). The percentage of agriculture was determined from a map overlay used to estimate the proportion of land in agriculture and the California Department of Conservation Important Farmland Map Series.

Figure 4: Zone of Influence



1" = 6,019 ft	Zone of Influence	Laurel 3 Solar Project 09/04/2017	N W E S	IMPERIAL COUNTY CALIFORNIA

This map represents a visual display of related geographic information. Data provided hereon is not a guarantee of actual field conditions. To be sure of complete accuracy, please contact Imperial County staff for the most up-to-date information.

Final LESA Score Sheet			
	Factor Scores	Factor Weight	Weighted Factor Scores
LE Factors			
Land Capability Classification	65.79	0.25	16.45
Storie Index	63.69	0.25	15.92
LE subtotal		0.50	32.37
SA Factors			
Project Size	100	0.15	15.00
Water Resource Availability	100	0.15	15.00
Surrounding Agricultural Land	20	0.15	3.00
Protected Resource Land	0	0.05	0.00
SA Subtotal		0.50	33.00
		Total LESA Score	**65.37**

California LESA Model Scoring Thresholds	
Total LESA Score	**Scoring Decision**
0 to 39 Points	Not Considered Significant
40 to 59 Points	Considered Significant only if LE and SA subscores are each greater than or equal to 20 points
60 to 79 Points	Considered Significant unless either LE or SA subscore is less than 20 points
80 to 100 Points	Considered Significant

APPENDIX A: LAUREL 3 SOLAR PROJECT SOILS DETAILS

Imperial County, California, Imperial Valley Area

110—Holtville silty clay, wet

Map Unit Setting

National map unit symbol: h8zj
Elevation: -230 to 200 feet
Mean annual precipitation: 0 to 3 inches
Mean annual air temperature: 72 to 75 degrees F
Frost-free period: 300 to 350 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition

Holtville, wet, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Holtville, Wet

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed sources

Typical profile

H1 - 0 to 17 inches: silty clay
H2 - 17 to 24 inches: clay
H3 - 24 to 35 inches: silt loam
H4 - 35 to 60 inches: loamy very fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 10.0
Available water storage in profile: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 7w

Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Glenbar
Percent of map unit: 5 percent
Hydric soil rating: No

Imperial
Percent of map unit: 5 percent
Hydric soil rating: No

Indio
Percent of map unit: 3 percent
Hydric soil rating: No

Vint
Percent of map unit: 2 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Imperial County, California, Imperial Valley Area
Survey Area Data: Version 8, Sep 12, 2016

Imperial County, California, Imperial Valley Area

114—Imperial silty clay, wet

Map Unit Setting

National map unit symbol: h8zn
Elevation: -230 to 200 feet
Mean annual precipitation: 0 to 3 inches
Mean annual air temperature: 72 to 75 degrees F
Frost-free period: 300 to 350 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Imperial, wet, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Imperial, Wet

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium derived from mixed and/or clayey lacustrine deposits derived from mixed

Typical profile

H1 - 0 to 12 inches: silty clay
H2 - 12 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 20.0
Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Glenbar
Percent of map unit: 4 percent
Hydric soil rating: No

Meloland
Percent of map unit: 4 percent
Hydric soil rating: No

Holtville
Percent of map unit: 4 percent
Hydric soil rating: No

Niland
Percent of map unit: 3 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Imperial County, California, Imperial Valley Area
Survey Area Data: Version 8, Sep 12, 2016

Imperial County, California, Imperial Valley Area

115—Imperial-Glenbar silty clay loams, wet, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: h8zp
Elevation: -230 to 200 feet
Mean annual precipitation: 0 to 3 inches
Mean annual air temperature: 72 to 75 degrees F
Frost-free period: 300 to 350 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Imperial, wet, and similar soils: 40 percent
Glenbar, wet, and similar soils: 40 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Imperial, Wet

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium derived from mixed and/or clayey lacustrine deposits derived from mixed

Typical profile

H1 - 0 to 12 inches: silty clay loam
H2 - 12 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 20.0
Available water storage in profile: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): 3w

Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Glenbar, Wet

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed

Typical profile

H1 - 0 to 13 inches: silty clay loam
H2 - 13 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 15.0
Available water storage in profile: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Holtville

Percent of map unit: 10 percent
Hydric soil rating: No

Meloland

Percent of map unit: 10 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Imperial County, California, Imperial Valley Area
Survey Area Data: Version 8, Sep 12, 2016

Imperial County, California, Imperial Valley Area

118—Indio loam, wet

Map Unit Setting

National map unit symbol: h8zs
Elevation: -230 to 200 feet
Mean annual precipitation: 0 to 3 inches
Mean annual air temperature: 72 to 75 degrees F
Frost-free period: 300 to 350 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition

Indio, wet, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Indio, Wet

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed and/or eolian deposits derived from mixed

Typical profile

H1 - 0 to 12 inches: loam
H2 - 12 to 72 inches: stratified loamy very fine sand to silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B

Hydric soil rating: No

Minor Components

Vint
Percent of map unit: 6 percent
Hydric soil rating: No

Meloland
Percent of map unit: 3 percent
Hydric soil rating: No

Holtville
Percent of map unit: 3 percent
Hydric soil rating: No

Glenbar
Percent of map unit: 3 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Imperial County, California, Imperial Valley Area
Survey Area Data: Version 8, Sep 12, 2016

Imperial County, California, Imperial Valley Area

122—Meloland very fine sandy loam, wet

Map Unit Setting

National map unit symbol: h8zx
Elevation: -230 to 200 feet
Mean annual precipitation: 0 to 3 inches
Mean annual air temperature: 72 to 75 degrees F
Frost-free period: 300 to 350 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition

Meloland, wet, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Meloland, Wet

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed and/or eolian deposits derived from mixed

Typical profile

H1 - 0 to 12 inches: very fine sandy loam
H2 - 12 to 26 inches: stratified loamy fine sand to silt loam
H3 - 26 to 71 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 13.0
Available water storage in profile: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 7w

Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Imperial
Percent of map unit: 3 percent
Hydric soil rating: No

Indio
Percent of map unit: 3 percent
Hydric soil rating: No

Holtville
Percent of map unit: 3 percent
Hydric soil rating: No

Glenbar
Percent of map unit: 3 percent
Hydric soil rating: No

Vint
Percent of map unit: 3 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Imperial County, California, Imperial Valley Area
Survey Area Data: Version 8, Sep 12, 2016

Imperial County, California, Imperial Valley Area

123—Meloland and Holtville loams, wet

Map Unit Setting

National map unit symbol: h8zy
Elevation: -230 to 300 feet
Mean annual precipitation: 0 to 3 inches
Mean annual air temperature: 72 to 75 degrees F
Frost-free period: 300 to 350 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition

Meloland, wet, and similar soils: 40 percent
Holtville, wet, and similar soils: 40 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Meloland, Wet

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed sources and/or eolian deposits derived from mixed sources

Typical profile

H1 - 0 to 12 inches: loam
H2 - 12 to 26 inches: stratified loamy fine sand to silt loam
H3 - 26 to 38 inches: clay
H4 - 38 to 60 inches: stratified silt loam to loamy fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 13.0
Available water storage in profile: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Holtville, Wet

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium and/or lacustrine deposits derived from mixed

Typical profile

H1 - 0 to 12 inches: loam
H2 - 12 to 24 inches: clay
H3 - 24 to 36 inches: silt loam
H4 - 36 to 60 inches: loamy very fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 10.0
Available water storage in profile: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Glenbar

Percent of map unit: 4 percent
Hydric soil rating: No

Imperial

Percent of map unit: 4 percent
Hydric soil rating: No

Indio

Percent of map unit: 4 percent
Hydric soil rating: No

Rositas

Percent of map unit: 4 percent
Hydric soil rating: No

Vint

Percent of map unit: 4 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Imperial County, California, Imperial Valley Area
Survey Area Data: Version 8, Sep 12, 2016

Imperial County, California, Imperial Valley Area

135—Rositas fine sand, wet, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: h90b
Elevation: -230 to 350 feet
Mean annual precipitation: 0 to 3 inches
Mean annual air temperature: 70 to 75 degrees F
Frost-free period: 300 to 350 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Rositas, wet, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rositas, Wet

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed and/or eolian deposits derived from mixed

Typical profile

H1 - 0 to 9 inches: fine sand
H2 - 9 to 60 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Vint
Percent of map unit: 4 percent
Hydric soil rating: No

Superstition
Percent of map unit: 4 percent
Hydric soil rating: No

Carsitas
Percent of map unit: 4 percent
Hydric soil rating: No

Antho
Percent of map unit: 3 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Imperial County, California, Imperial Valley Area
Survey Area Data: Version 8, Sep 12, 2016

Imperial County, California, Imperial Valley Area

142—Vint loamy very fine sand, wet

Map Unit Setting

National map unit symbol: h90k
Elevation: -230 to 150 feet
Mean annual precipitation: 0 to 3 inches
Mean annual air temperature: 72 to 75 degrees F
Frost-free period: 300 to 350 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition

Vint, wet, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Vint, Wet

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed and/or eolian deposits derived from mixed

Typical profile

H1 - 0 to 10 inches: loamy very fine sand
H2 - 10 to 60 inches: loamy fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Available water storage in profile: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Indio

Percent of map unit: 5 percent
Hydric soil rating: No

Meloland

Percent of map unit: 5 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Imperial County, California, Imperial Valley Area
Survey Area Data: Version 8, Sep 12, 2016

Imperial County, California, Imperial Valley Area

144—Vint and Indio very fine sandy loams, wet

Map Unit Setting

National map unit symbol: h90m
Elevation: -230 to 300 feet
Mean annual precipitation: 0 to 3 inches
Mean annual air temperature: 72 to 75 degrees F
Frost-free period: 300 to 350 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition

Vint, wet, and similar soils: 50 percent
Indio, wet, and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Vint, Wet

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed sources and/or eolian deposits derived from mixed sources

Typical profile

H1 - 0 to 10 inches: very fine sandy loam
H2 - 10 to 40 inches: loamy fine sand
H3 - 40 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 10.0
Available water storage in profile: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): 2w

Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Indio, Wet

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium and/or eolian deposits derived from mixed

Typical profile

H1 - 0 to 12 inches: very fine sandy loam
H2 - 12 to 40 inches: stratified loamy very fine sand to silt loam
H3 - 40 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 10.0
Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Rositas

Percent of map unit: 5 percent
Hydric soil rating: No

Meloland

Percent of map unit: 5 percent

Hydric soil rating: No

Data Source Information

Soil Survey Area: Imperial County, California, Imperial Valley Area
Survey Area Data: Version 8, Sep 12, 2016

Imperial County, California, Imperial Valley Area

145—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Data Source Information

Soil Survey Area: Imperial County, California, Imperial Valley Area
Survey Area Data: Version 8, Sep 12, 2016

California Revised Storie Index (CA)

The Revised Storie Index is a rating system based on soil properties that govern the potential for soil map unit components to be used for irrigated agriculture in California.

The Revised Storie Index assesses the productivity of a soil from the following four characteristics:

- Factor A: degree of soil profile development

- Factor B: texture of the surface layer

- Factor C: steepness of slope

- Factor X: drainage class, landform, erosion class, flooding and ponding frequency and duration, soil pH, soluble salt content as measured by electrical conductivity, and sodium adsorption ratio

Revised Storie Index numerical ratings have been combined into six classes as follows:

- Grade 1: Excellent (81 to 100)

- Grade 2: Good (61 to 80)

- Grade 3: Fair (41 to 60)

- Grade 4: Poor (21 to 40)

- Grade 5: Very poor (11 to 20)

- Grade 6: Nonagricultural (10 or less)

Reference:

O'Geen, A.T., Southard, S.B., Southard, R.J. 2008. A Revised Storie Index for Use with Digital Soils Information. University of California Division of Agriculture and Natural Resources. Publication 8355. http://anrcatalog.ucanr.edu/pdf/8335.pdf

Report—California Revised Storie Index (CA)

California Revised Storie Index (CA)–Imperial County, California, Imperial Valley Area			
Map symbol and soil name	Pct. of map unit	California Revised Storie Index (CA)	
		Rating class	Value
110—Holtville silty clay, wet			
Holtville, WET	85	Grade 3 - Fair	46
114—Imperial silty clay, wet			
Imperial, WET	85	Grade 4 - Poor	36
115—Imperial-Glenbar silty clay loams, wet, 0 to 2 percent slopes			
Glenbar, WET	40	Grade 2 - Good	68
Imperial, WET	40	Grade 3 - Fair	57

California Revised Storie Index (CA)–Imperial County, California, Imperial Valley Area			
Map symbol and soil name	Pct. of map unit	California Revised Storie Index (CA)	
		Rating class	Value
118—Indio loam, wet			
Indio, WET	85	Grade 1 - Excellent	88
122—Meloland very fine sandy loam, wet			
Meloland, WET	85	Grade 2 - Good	77
123—Meloland and Holtville loams, wet			
Holtville, WET	40	Grade 2 - Good	77
Meloland, WET	40	Grade 2 - Good	77
135—Rositas fine sand, wet, 0 to 2 percent slopes			
Rositas, WET	85	Grade 3 - Fair	55
142—Vint loamy very fine sand, wet			
Vint, WET	90	Grade 2 - Good	73
144—Vint and Indio very fine sandy loams, wet			
Vint, WET	50	Grade 2 - Good	77
Indio, WET	40	Grade 1 - Excellent	88
145—Water			
Water	100	Not Applicable for Storie Index	

Data Source Information

Soil Survey Area: Imperial County, California, Imperial Valley Area
Survey Area Data: Version 8, Sep 12, 2016