

APPENDIX K

VIEWSHED ANALYSIS

Wistaria Ranch Solar Energy Center

Viewshed Analysis

Prepared for:

Wistaria Ranch Solar, LLC

By:

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1.0 Summary of Qualifications

1.1 Firm's Background

DEVELOPMENT DESIGN & ENGINEERING (DD&E) is a leading planning, project management, civil engineering, surveying, real estate and business development firm with offices in El Centro, California and Yuma, Arizona. DD&E was established in 1998 and currently retains a diverse and professional staff that includes three registered civil engineers, two registered land surveyors, three senior project managers, two graduate engineers, two engineering technicians, one graduate in the field of landscape architecture and a planning staff of four.

The principal staff of Development Design & Engineering, Inc. has combined work experience of over 100 years in engineering design, planning and business development in Imperial County.

DD&E works toward strong public-private partnerships by strategically involving stakeholders throughout the development process. Our staff routinely interacts with the local community, State, County and City Government and works closely with their respective Departments in the review, approval and processing of private, public, residential, commercial and industrial projects as well as surveying mapping services and civil engineering services for various local government agencies in Imperial County including the County of Imperial, City of El Centro, City of Brawley and City of Imperial, and Imperial Irrigation District. The firm boasts a demonstrated track record of project entitlement and commitment to the economic development of the Imperial Valley.

SERVICES & EXPERIENCE

DD&E has a wealth of experience in working with projects funded either in full or in part by various grant programs. Included are 15 completed multi-family housing projects throughout Imperial County. We have also been the design engineers for municipal improvement projects.

Though its Land Planning services DD&E is well experienced in application preparation, processing for permitting, Conditional Use Permits, Zone Changes, Variances, and General Plan Amendments. Other areas of expertise include Preparation of Specific Plans and Amendments as well as land planning services for local government agencies.

1.2 Preparer's Background & Qualifications

Annette Leon is a Project Planner for Development Design & Engineering. She has worked on many complex projects at the firm. Her past experience and academic accomplishments have made her an asset to Development Design & Engineering. Ms. Leon holds a professional undergraduate degree from the University of Nevada Las Vegas (UNLV), Bachelor of Landscape Architecture (B.LArch). She was awarded a National Honor Award in 2009 from the American Society of Landscape Architects (ASLA) for possessing the highest knowledge and skill set amongst her landscape architectural peers. Ms. Leon has also been the recipient of awards including, Best of Jury 2009 while at UNLV, Interdisciplinary Energy Design Resource, Design Shift Competition Winner (2012) as well as being the recipient of the 2013 Graduate Fellowship Fund Scholar at Cal Poly, Pomona. She is currently a 2015 graduate candidate at California State Polytechnic University, Pomona (Cal Poly, Pomona), where she will be receiving a professional graduate degree, Master in Urban and Regional Planning (MURP). She is currently finishing her thesis regarding agricultural preservation in the age of renewable energy, case study Imperial County. Her academic research has been focused primarily in Imperial County.

2.0 Analysis

2.1 Introduction

The purpose of this analysis is to provide the Project Proponent with design guidance for the Wistaria Ranch Solar Energy Center. This report was used to assist the Project Proponent's implementation of a Project that would fit with the agricultural character of Imperial County. DD&E reviewed the Project and Imperial County's Key Observation Point (KOP) Analysis. Specifically, there were 10 Key Observation Points identified in the Draft Environmental Impact Report (DEIR), Authored by Ericsson Grant (EGI) for Wistaria Ranch Solar Energy Center. A Key Observation Point is defined as a point along a travel route or an area where the view of the proposed Project would be visible. This report analyzed the viewshed of 10 points that were indicated in the DEIR along with the viewshed of nearby structures.

2.2 Analysis Method

After reviewing the area as a whole, DD&E agreed with the County's focus on the ten (10) Key Observation Points since there appears to be no impact to other structures within the area. The ten (10) Key Observation Points were analyzed using visual simulation that was prepared by WW Design Consulting, INC, 2013 for the DEIR, satellite imagery from Google Earth and physical site visits. A matrix was

Viewshed Analysis

Wistaria Ranch Solar Energy Center

created and was used as the primary instrument to identify existing conditions. The matrix included elements, which currently obstruct the viewshed. Elements include: structures, equipment, overgrown vegetation, mature tree/s, scraps and oddments. Table 1 illustrates the sample of the KOP Determination Matrix (for final Matrix please see section 2.4 Conclusion).

Table 1

Sample of Instrument, *KOP Determination Matrix*

KOP #	Obstructions to Viewshed					Recommended Landscaping
	Structures	Equipment	Overgrown Vegetation	Mature Trees	Scraps & Oddments	Yes/No
KOP 1						
KOP 2						
KOP 3						
KOP 4						
KOP 5						
KOP 6						
KOP 7						
KOP 8						
KOP 9						
KOP 10						
Note: X signifies that there is an obstruction to the viewshed.						

2.3 Key Observation Point (KOP) Site Analysis

2.3.1 Key Observation Point (KOP) #1 Site Analysis

KOP #1 is representative of the view from two structures (905 and 907 Brockman Road, El Centro CA 92243). Wistaria Ranch Solar Energy Center proposes to develop a portion of its solar project just east of the two structures. Based on a site analysis that was done, it has been determined that elements currently obstruct the view of both structures. Figure 1 and 2 depict the current site conditions of the structures and based on this analysis the site is presently disturbed therefore no landscaping is recommended.

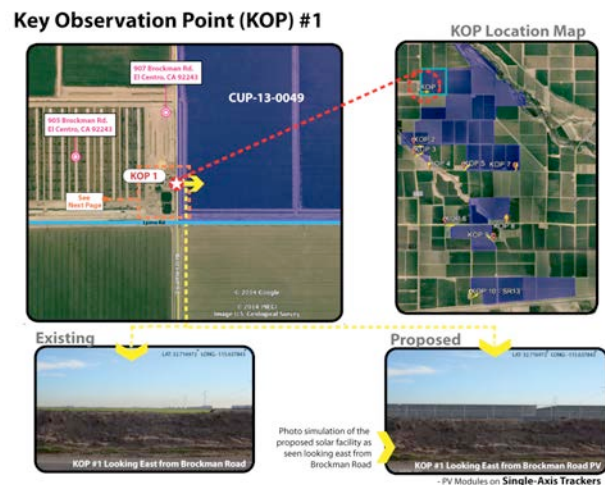


Figure 1

Key Observation Point (KOP) #1



KOP #1: View looking east toward CUP 13-0049 near the intersection of Brockman Road and Lyons Road. This location represents the view from two residences that on the west side of Brockman Road across from CUP-0049. This location is near the northwest corner of CUP-0049.



No Mitigation Required: Cattle Feed lot is not sensitive to aesthetics.



No Mitigation Required: Cattle Feed lot is not sensitive to aesthetics.



No Mitigation Required: Cattle Feed lot is not sensitive to aesthetics.

Figure 2

2.3.2 Key Observation Point (KOP) #2 Site Analysis

KOP #2 is representative of the view looking east from two structures (691 and 695 Brockman Road, Calexico CA 92231-9717). Wistaria Ranch Solar Energy Center proposes to develop a portion of its solar project just east of the two structures. Based on a site analysis that was done, it has been determined that elements currently obstruct the view of both structures. Figure 3 and 4 depict the current site conditions of the structures and based on this analysis the site is presently disturbed therefore no additional landscaping is recommended.

Key Observation Point (KOP) #2

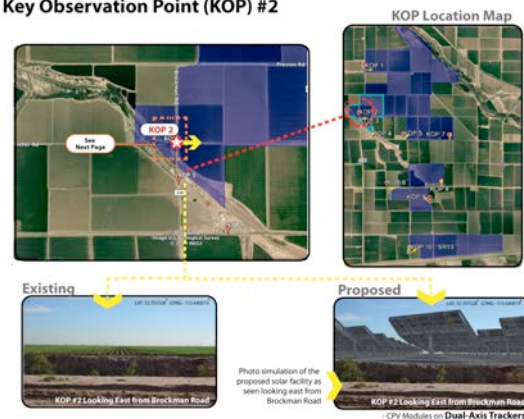


Figure 3

Key Observation Point (KOP) #2



KOP #2: View looking east towards CUP-0042 from the western side of Brockman Road. This location represents the view from two residences in the center portion of the northern cluster of CUPs.



No mitigation required, existing trees break up the view looking east of KOP #2



No mitigation required, existing trees break up the view

Figure 4

2.3.3 Key Observation Point (KOP) #3 Site Analysis

KOP #3 is representative of the view looking northeast from five locations (652, 648a, 648b, 644, and 640 Brockman Road, Calexico CA 92231-9717). Wistaria Ranch Solar Energy Center proposes to develop a portion of its solar project just northeast of the five structures. Based on a site analysis that was done, it has been determined that elements currently obstruct the view of all five structures. Figure 5 and 6 depict the current site conditions of the structures and based on this analysis the site is presently disturbed therefore no additional landscaping is recommended.

Key Observation Point (KOP) #3

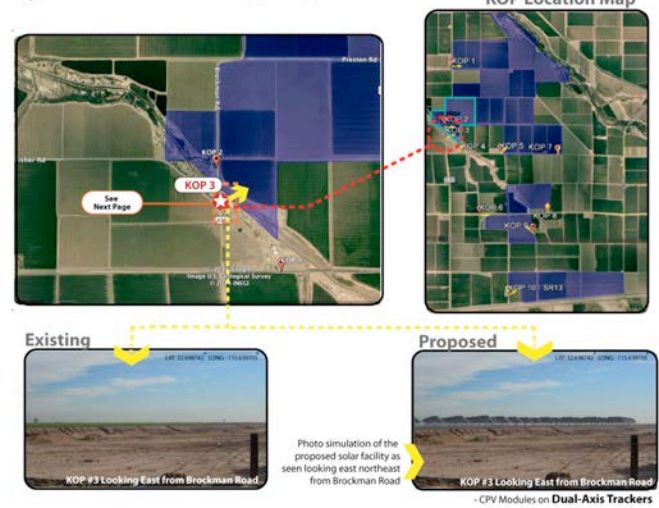
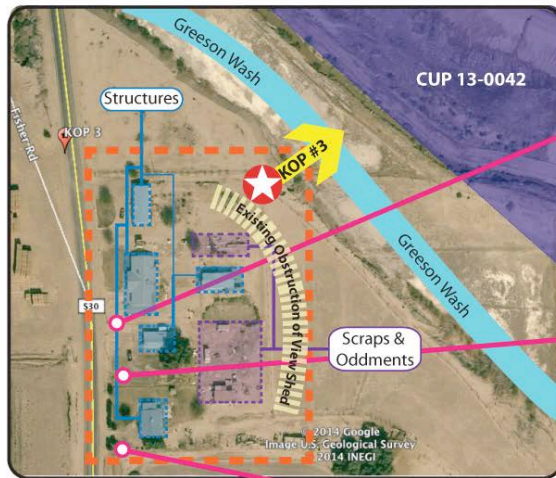


Figure 5

Key Observation Point (KOP) #3



Housing obstructs the view shed, therefore no mitigation is required.



www.google.com

Scraps & Oddments obstruct the view shed, therefore no mitigation is required.



www.google.com

Scraps & Oddments obstruct the view shed, therefore no mitigation is required.



www.google.com

KOP #3:

View looking east northeast toward CUP 13-0042 from the western side of Brockman Road. The location represents the view a group of five residential structures. This location is across from CUP 13-0042.

Figure 6

2.3.4 Key Observation Point (KOP) #4 Site Analysis

KOP #4 is representative of the view looking north from a single structure (1160 Kubler Road, Calxico CA, 92231-9749). Wistaria Ranch Solar Energy Center proposes to develop a portion of its solar project just north at the southern tip of CUP 13-0042. Based on a site analysis that was done, it has been determined that elements currently obstruct the view of all five structures. Figure 7 and 8 depict the current site conditions of the structure and based on this analysis the site is presently disturbed therefore no additional landscaping is recommended.

Key Observation Point (KOP) #4

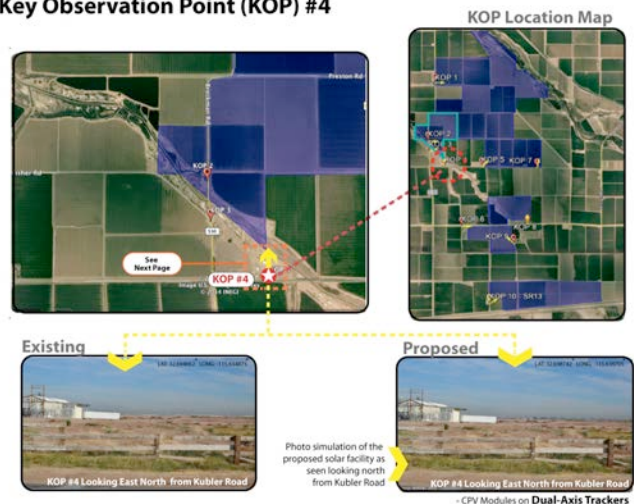
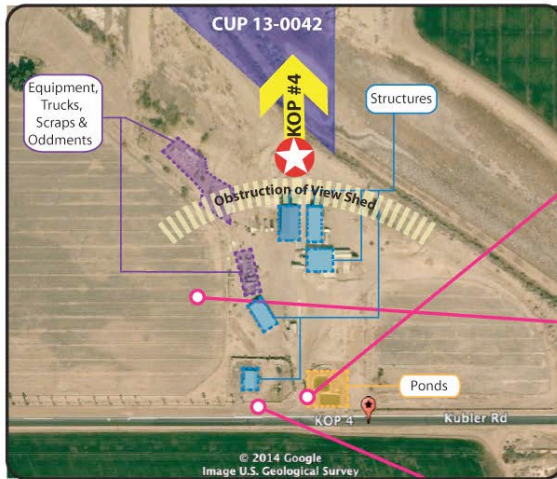


Figure 7

Key Observation Point (KOP) #4



KOP #4:

View looking north toward the Project CUP 13-0042 from the south side of Kubler Road. View is located from a farm/residential structure located near the southwestern corner of the CUP. The Project boundary is adjacent to the northern side the barn ; however. the panels shown in simulation are located approximately 0.5 mile from the KOP.



Figure 8

2.3.5 Key Observation Point (KOP) #5 Site Analysis

KOP #5 is representative of the view looking north from a single structure (619 Rockwood Road, Calexico CA, 92231-9749). Wistaria Ranch Solar Energy Center proposes to develop a portion of its solar project just northeast of the resident. Based on a site analysis that was done, it has been determined that elements currently obstruct the view of the structures. Figure 9 and 10 depict the current site conditions of the resident and based on this analysis the site is presently disturbed therefore no landscaping is recommended.

Key Observation Point (KOP) #5

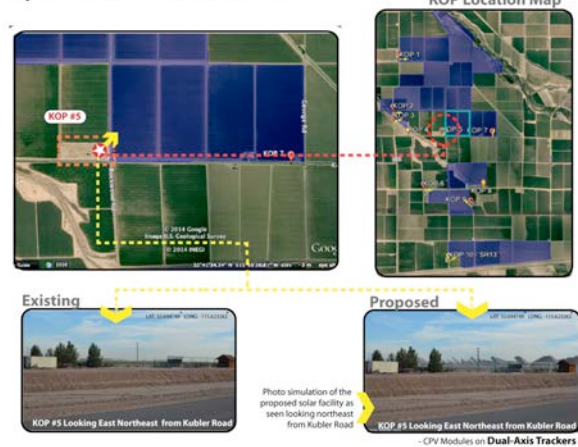
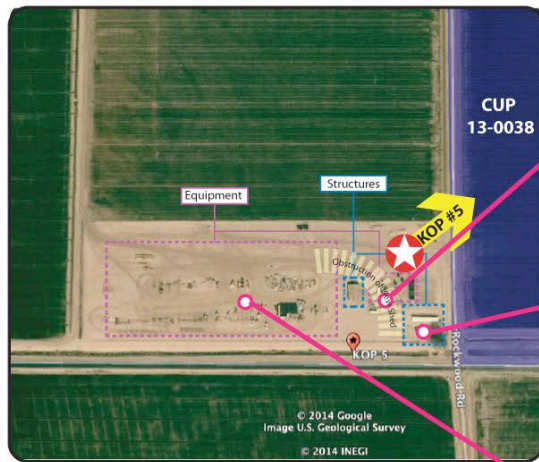


Figure 9

Key Observation Point (KOP) #5



KOP #5:

View looking northeast toward CUP 13-0038 from the north side of Kubler Road. View is located along the central portion along the southern boundary of the northern section of the Project area. This view is from the eastern boundary of a residential property adjacent to the Project area.

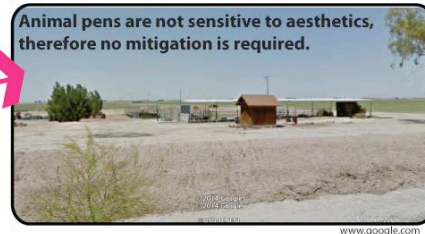


Figure 10

2.3.6 Key Observation Point (KOP) #6 Site Analysis

KOP #6 is representative of the view looking north from a single structure (1065 US Highway 98, Calexico CA, 92231-9640). Wistaria Ranch Solar Energy Center proposes to develop a portion of its solar project just east of the structure. Based on a site analysis that was done, it has been determined that elements currently obstruct the view of the structure. Figure 11 and 12 depict the current site conditions of the structures and based on this analysis the site is presently disturbed therefore no additional landscape is recommended.

Key Observation Point (KOP) #6

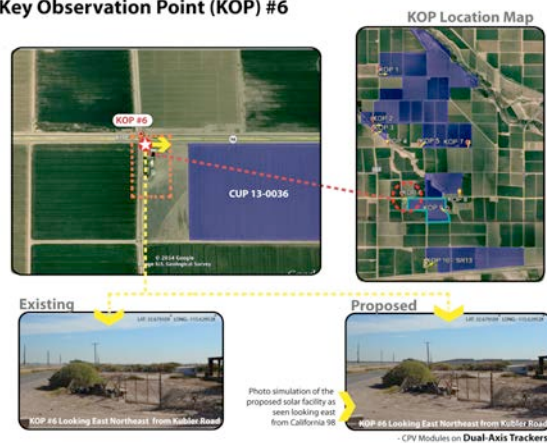
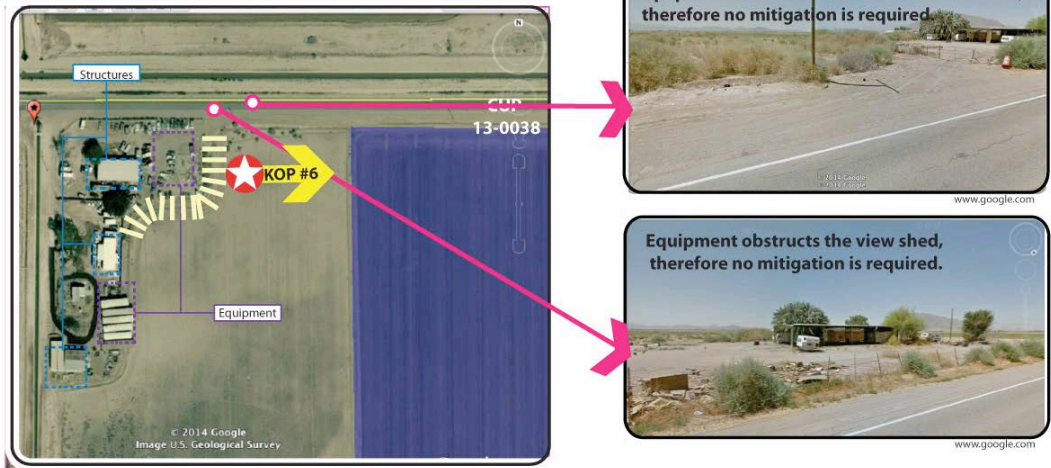


Figure 11

Key Observation Point (KOP) #6



KOP #6:
This KOP is located adjacent to a residential property at the western most portion of the central section of the Project area (CUP 13-0036). This view is looking east through the residential site along SR-98, the major east-west arterial roadway through the Project Area.

Figure 12

2.3.7 Key Observation Point (KOP) #7 Site Analysis

KOP #7 is representative of the view looking north from a three structures (603 George Road, Calexico CA 92231-9749, 865 & 852 Kubler Road, Calexico, CA 92231-9749). Wistaria Ranch Solar Energy Center proposes to develop a portion of its solar project just north of the structures. Based on a site analysis that was done, it has been determined that elements do not currently obstruct the view of the structures. Figure 13 and 14 depict the current site conditions of the structures and based on this analysis the viewshed is not presently disturbed therefore landscaping is recommended.

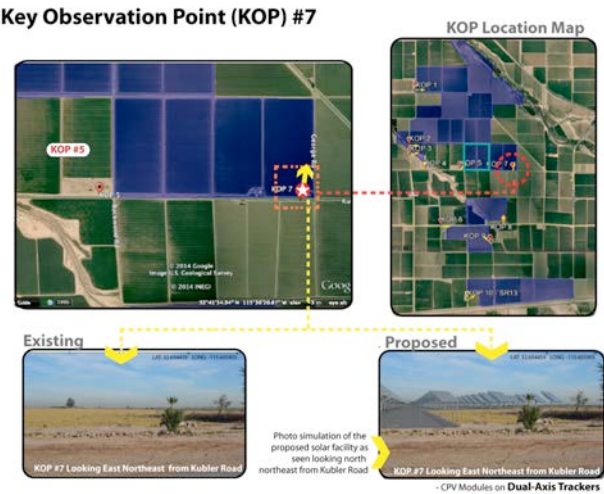
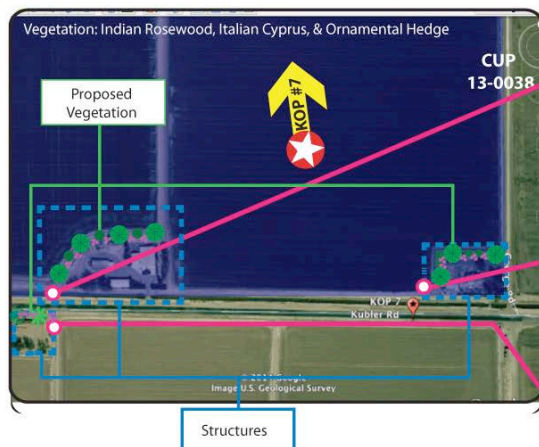


Figure 13

Key Observation Point (KOP) #7



KOP #7:

View looking north-northeast from the eastern edge of a grouping of residences to the Project boundary. This KOP is located at the southeastern corner of the northern section of the Project area (CUP-130039) and shows the CPV modules at close proximity.



Figure 14

2.3.8 Key Observation Point (KOP) #8 & #9 Site Analysis

KOP #8 is representative of the view looking north from a three structures (904, 874, and 876 W US Highway 98, Calexico CA 92231). Wistaria Ranch Solar Energy Center proposes to develop a portion of its solar project just north of the structures. Based on a site analysis that was done, it has been determined that elements currently obstruct the view of the structures. Figure 15 and 16 depict the current site conditions of the structures and based on this analysis the site's viewshed is presently disturbed therefore no landscaping is recommended.

Key Observation Point (KOP) #8 & #9

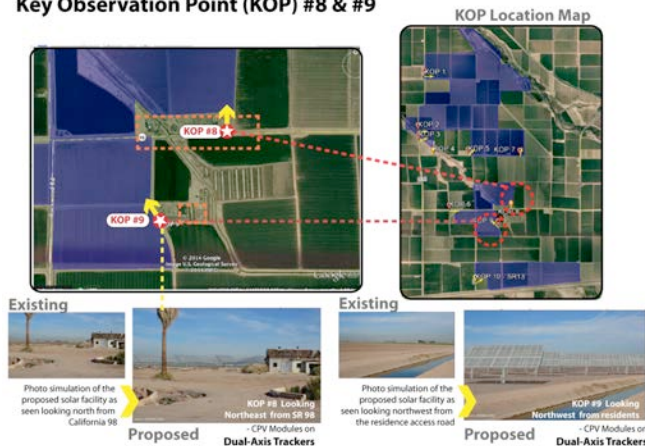


Figure 15

Key Observation Point (KOP) #8 & 9

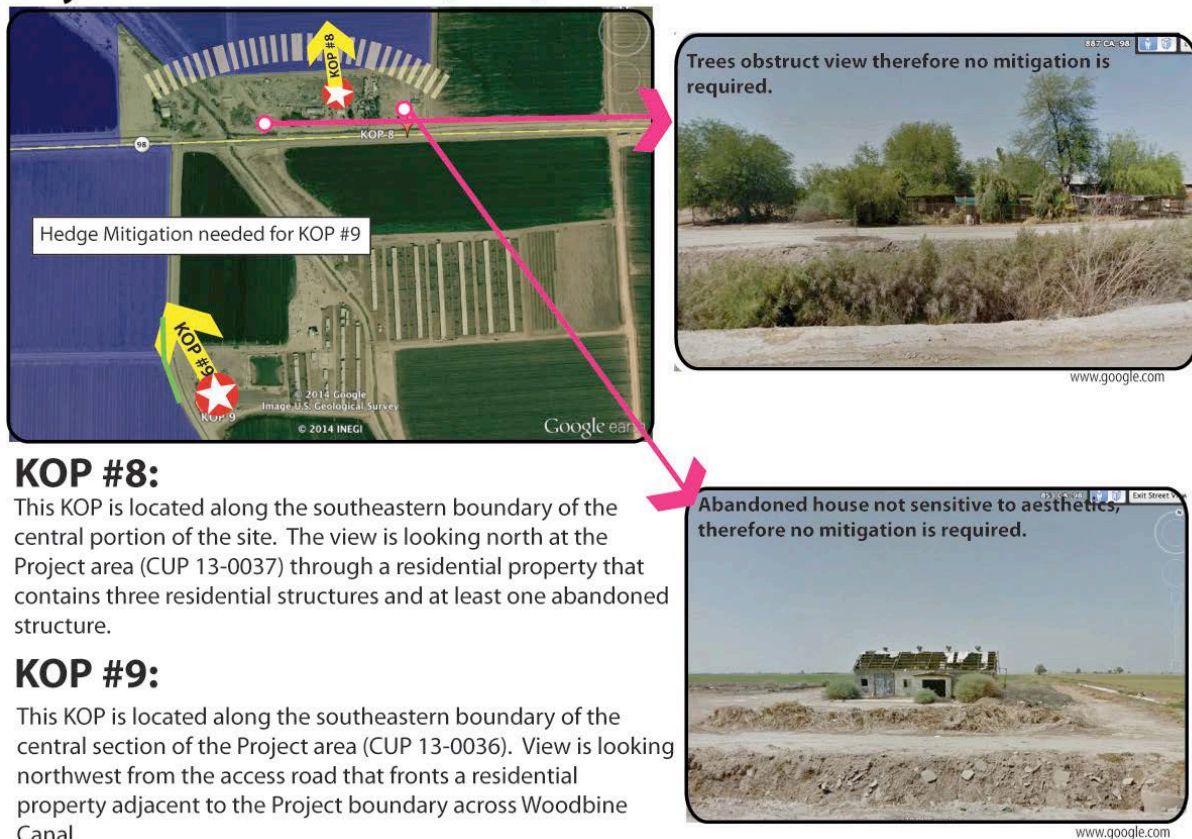


Figure 16

KOP #9 is representative of the view looking north from a single structure (903 US Highway 98, Calexico CA 92231). Wistaria Ranch Solar Energy Center proposes to develop a portion of its solar project just west of the structure. Based on a site analysis that was done, it has been determined that elements do not currently obstruct the view of the structure Figure 15 and 16 depict the current site conditions of the structure and based on this analysis the site's viewshed is not presently disturbed therefore landscaping is recommended.

2.3.9 Key Observation Point (KOP) #10 Site Analysis

KOP #10 is representative of the view looking north east from a single structure (105 Rockwood Road, Calexico CA 92231-9603). Wistaria Ranch Solar Energy Center proposes to develop a portion of its solar project just north east of the structure. Based on a site analysis that was done, it has been determined that elements currently obstruct the view of the structure. Figure 17 depict the current site conditions of the structure and based on this analysis the site's viewshed is presently disturbed therefore no additional landscape is recommended.

Key Observation Point (KOP) #10

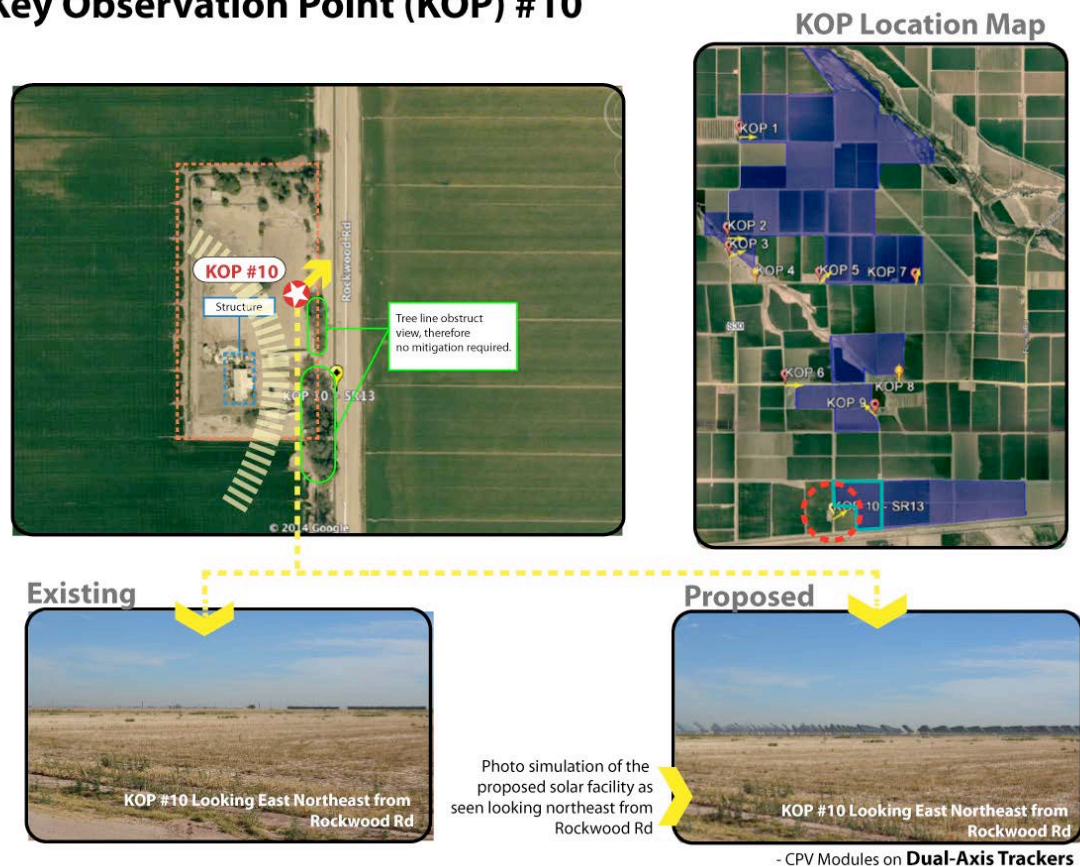


Figure 17

2.4 Conclusion

Based on the review of the overall Project and the ten (10) Key Observation Points that were analyzed through the following mechanisms described in section 2.2 Analysis Methods of this report, it has been recommended that the following CUPs should provide for landscaping in certain areas along their borders.

Common to all assessments of environmental effects are a combination of objectives and subjective judgments. Therefore, a matrix was created and used as the primary instrument to identify existing conditions. The purpose of the matrix was to keep recorded observations as consistent as possible.¹ The matrix included elements, which currently obstruct the viewshed. Elements include, structures, equipment, overgrown vegetation, mature tree, scraps and oddments. Table 3 illustrates the final KOP Determination Matrix.

In conclusion it is recommended that Wistaria Ranch Solar provide for a landscaped buffer along its boundary with three residences. They are KOP #7 (603 George Road, Calexico CA 92231-9749, 865 & 852, Kubler Road, Calexico, CA 92231-9749), and the residential structure located at KOP #9 (903 US Highway 98, Calexico CA 92231). The landscaping would provide a buffer and create visually appealing landscaping, which would create a more rural agricultural feel for the Wistaria Ranch Solar Energy Center.

Table 2

Final KOP Determination Matrix

KOP #	Obstructions to Viewshed					Recommended Landscaping
	Structures	Equipment	Overgrown Vegetation	Mature Trees	Scraps & Oddments	Yes/No
KOP 1	X		X	X		No
KOP 2	X			X		No
KOP 3	X		X		X	No
KOP 4	X	X			X	No
KOP 5	X	X				No
KOP 6		X	X		X	No
KOP 7						Yes
KOP 8	X		X	X	X	No
KOP 9						Yes
KOP 10				X		No
Note: X signifies that there is an obstruction to the viewshed.						

¹

The Landscape Institute, Institute of Environmental Management & Assessment, 2002, Guidelines for Landscape and Visual Impact Assessment, 2nd edition. Spon Press, New York, New York

3.0 References

Ericsson Grant (EGI), 2014. Wistaria Ranch Solar Energy Center Draft Environmental Impact Report (DEIR), 2014. *Section 4.0 Aesthetics*

The Landscape Institute, Institute of Environmental Management & Assessment, 2002, Guidelines for Landscape and Visual Impact Assessment, 2nd edition. Spon Press, New York, New York

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WW Design Concepts, 2013. Wistaria Ranch Solar Energy Center Draft Environmental Impact Report (DEIR), 2014. *Section 4.0 Aesthetics, Graphic Simulation*