



WestLand Resources, Inc.
Engineering and Environmental Consultants

March 1, 2012

Ms. Sherry Ruther
Environmental Planning Manager
PIMA COUNTY ADMINISTRATION
OFFICE OF SUSTAINABILITY & CONSERVATION
201 N. Stone Ave. - 6th Flr
Tucson, Arizona 85711
Sherry.Ruther@dcd.pima.gov

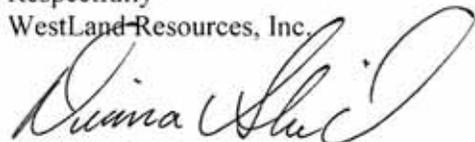
**RE: FRV SOLAR FARM PRE-CONSTRUCTION SURVEY FOR WESTERN BURROWING OWL
WESTLAND PROJECT NO. 1685.07**

Dear Ms. Ruther:

WestLand Resources Inc. (WestLand), on behalf of FRV Tucson Solar, LLC (FRV) has completed pre-construction surveys for the western burrowing owl (*Athene cunicularia hypugaea*) and burrows in at the FRV solar farm in accordance with the Arizona Burrowing Owl Working Group's *Burrowing Owl Project Clearance Guidance for Landowners*, dated January 2009. This effort was conducted pursuant to Condition 11 of the Type II Conditional Use Permit. We are providing the survey report for your records.

Should you have any questions please feel free to contact me at (520) 206-9585.

Respectfully
WestLand Resources, Inc.



Diana Shiel
Project Manager

DLS:emr

Enclosure: Western Burrowing Owl Survey FRV Solar Farm, Pima County, AZ (Feb. 22 & 23, 2012)

cc: Christina White, FRV (hard copy mailed, electronic file provided)
Asia Philbin Tucson Water (electronic file provided)
Tom Drzazgowski, Pima County Development Services (hard copy mailed, electronic file provided)
Terri Tillman, Pima County Development Services (electronic file provided)
Carolyn Campbell, Coalition for Sonoran Desert Protection (electronic file provided)
James Driscoll, AGFD Raptor Management Coordinator (electronic file provided)
Mike Ingraldi, AGFD Supervisor (electronic file provided)

**WESTERN BURROWING OWL SURVEY FOR
THE FRV SOLAR FARM IN PIMA COUNTY, ARIZONA**

Prepared for: FRV Tucson Solar, LLC
Prepared by: WestLand Resources, Inc.
Date: March 1, 2012
Project No.: 1685.07

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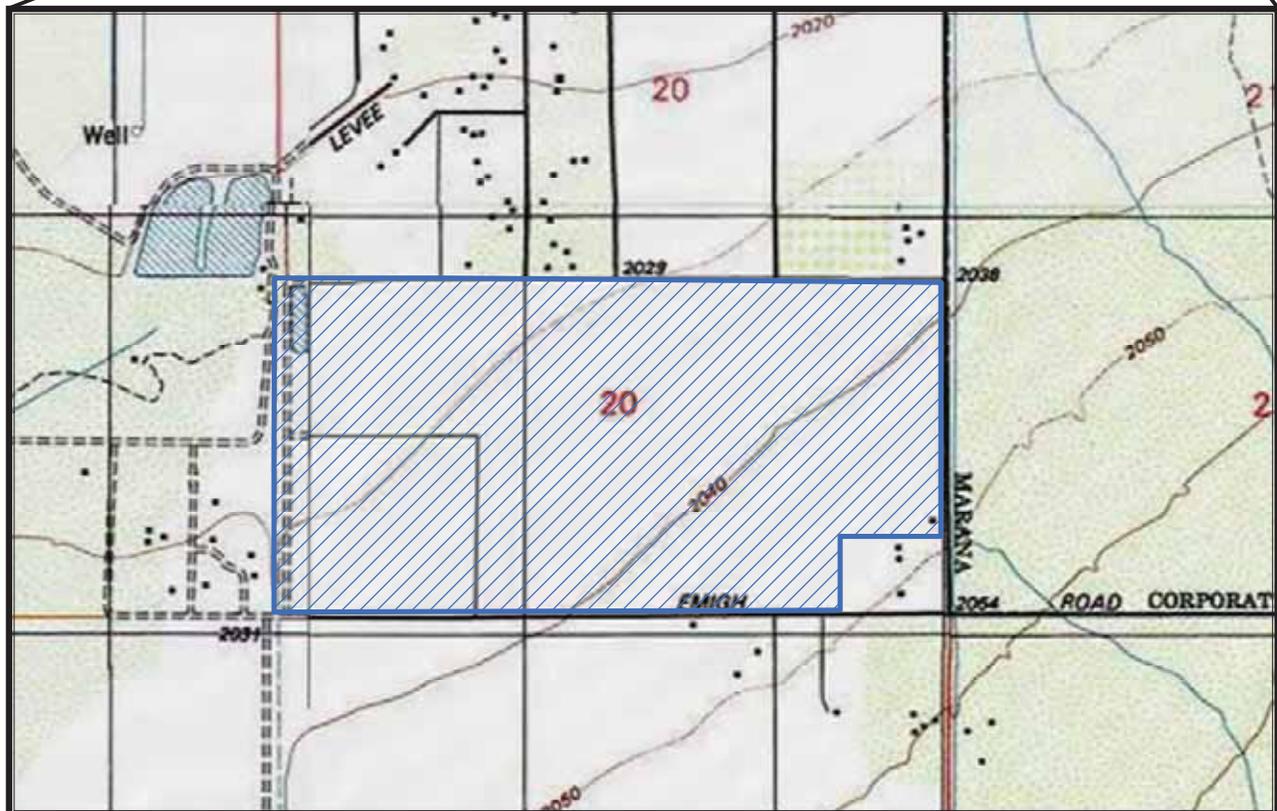
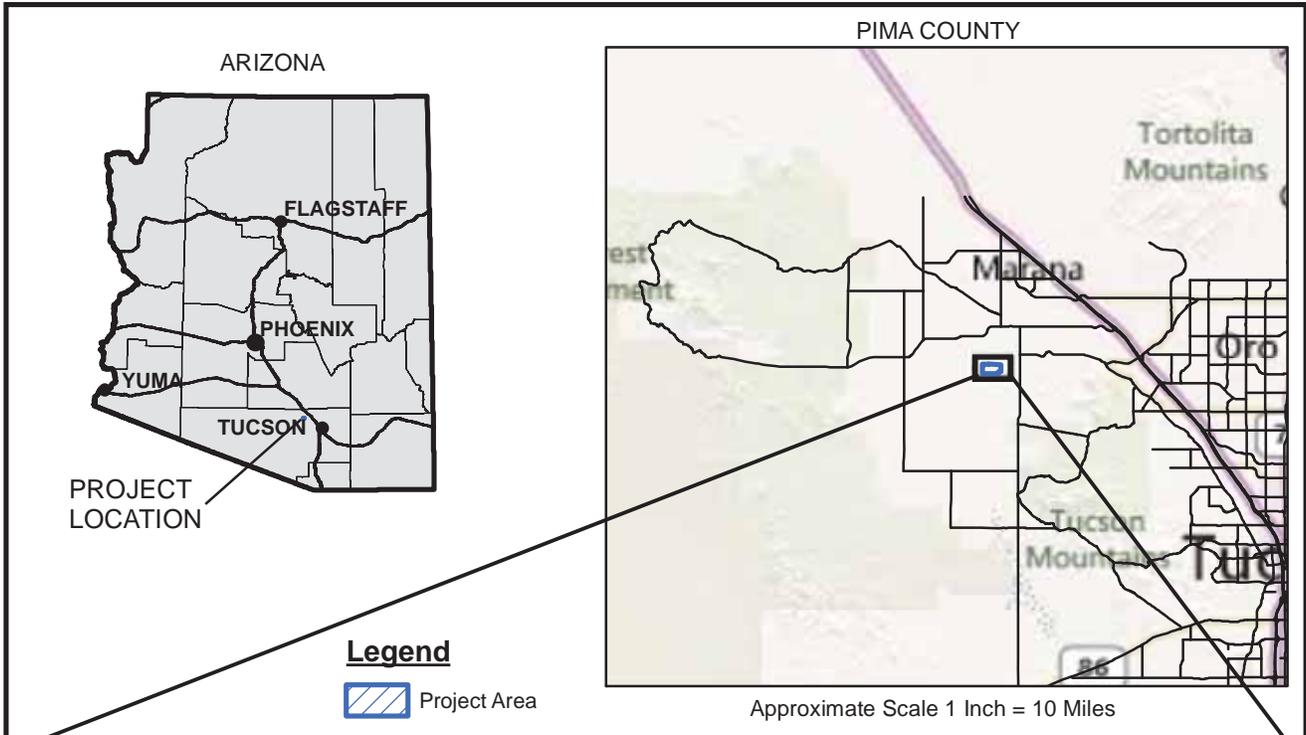
LIST OF ATTACHMENTS

(follow text)

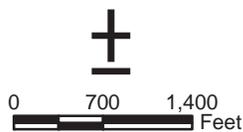
- Attachment A. Photo Sheets
- Attachment B. AGFD Survey Report Form

1. INTRODUCTION AND BACKGROUND

WestLand Resources, Inc., (WestLand) was retained by FRV Tucson Solar, LLC (FRV) to conduct a survey for the western burrowing owl (*Athene cunicularia hypugaea*; WBO) and burrows in support of environmental clearance for a proposed 25-MWdc (megawatt direct current) solar photovoltaic power generation facility (the Project) to be constructed on a 305-acre parcel of land (Chu Farm) owned by the City of Tucson and leased to FRV in Avra Valley, Pima County, Arizona. Chu Farm is in the south ½ of Section 20, Township 12 South, Range 11 East, Gila and Salt River Meridian, situated between Overton Road and Emigh Road and between Avra Road and Sanders Road, and is accessible by traveling south on Sanders Road (the Project Area; *Figure 1*).



T12S, R11E, Portion of Section 20,
Pima County, Arizona,
Avra & Marana USGS 7.5' Quadrangles



FRV SOLAR FARM
Western Burrowing Owl Survey

Vicinity Map
Figure 1

The WBO is identified as a species of concern in the proposed City of Tucson Habitat Conservation Plan. The entire Project Area occurs within mapped Priority Conservation Area modeled as high value habitat for WBO in Pima County's Conservation Lands System, which was developed in conjunction with the Sonoran Desert Conservation Plan and identifies biologically significant resources in Pima County. Initial survey of the Project Area (identified as Chu Farm) was conducted in 2006 by Arizona Game and Fish Department (AGFD) as part of a larger regional study. The survey results were included in the document in which AGFD published the results of WBO habitat assessments and occupancy surveys within the City of Tucson's Avra Valley properties (Grandmaison and Urreiztieta 2006)¹. The AGFD effort first evaluated WBO nesting potential by characterizing multiple properties according to vegetation density, presence of concrete irrigation canals, and availability of usable burrows. This evaluation directed breeding season surveys toward properties with high nesting habitat potential. Winter non-breeding and summer breeding surveys were conducted for select properties, including the Project Area, during the winter (January-February) and summer of 2006. Numerous potentially appropriate burrows were identified at Chu Farm. The report indicated no occupancy of Chu Farm during the winter survey. During the summer survey, owl pellets were found, but no WBO were observed.

WestLand completed preliminary surveys providing coverage of the entire Project Area on July 27-29, 2011. The purpose of the 2011 survey was to determine the status of occupancy by WBO in advance of proposed construction of the solar facility, to allow time to accommodate any owls, if present. Four burrows of appropriate entrance dimensions were identified on the Project Area in July 2011, but no sign of WBO was found.

This 2012 pre-construction survey has been conducted pursuant to the Type II Conditional Use Permit granted by Pima County for the Project and was completed within 30 days of anticipated ground disturbance activities for construction of the Project.

2. METHODS

WestLand followed the recommended WBO survey protocol found in the January 2009 *Burrowing Owl Project Clearance Guidance for Landowners* produced by the Arizona Burrowing Owl Working Group (ABOWG). Surveys providing coverage of the entire Project Area were conducted on February 22 and 23, 2012 in anticipation of construction activities to commence mid-March 2012. A two-person crew of biologists² who had attended a WBO training seminar conducted by the ABOWG surveyed the Project Area on two consecutive days.

The survey was conducted by walking parallel transects at approximately 10-meter (33-ft) intervals to cover the entire Project Area, adjusting the transect width to ensure that the entire Project Area surface was inspected. The surveyors searched for WBO, potential WBO burrows, and WBO sign (pellets, prey remains,

¹ Grandmaison, DD., and L. Urreiztieta. 2006. The City of Tucson Habitat Conservation Plan: Burrowing Owl Occupancy Surveys within the City of Tucson's Avra Valley Properties. Arizona Game and Fish Department, Research Branch, Phoenix, AZ.

² Mr. Scott Carroll and Ms. Lindsay Carney

feathers, feces, and whitewash [liquid bird excrement]). The surveyors used binoculars to scan the area periodically. All burrows 8 centimeters (3 inches) or greater in diameter were assessed for potential use by owls. Burrows were categorized according to ABOWG guidelines: “active” if there were signs of recent WBO use, “potentially active” if there was evidence of use, but not recent, and “inactive” if there was no evidence of use. WBO signs would be cleared from around any potentially active burrows if found, and revisited to inspect for recent WBO use.

3. SITE DESCRIPTION

The Project Area is within the alluvial basin of the Avra Valley, northwest of the Tucson Mountains. It is located approximately 2.5 miles east of Brawley Wash, the main drainage within the Avra Valley and 0.5 miles east of the East Branch Brawley Wash. The Project Area lies within unincorporated Pima County, adjacent to the western boundary of the Town of Marana. The eastern boundary of the Project Area follows the Sanders Road right-of-way, and the southern boundary follows the Emigh Road right-of-way. Lands adjacent to the north boundary have some existing residential development and agricultural fields. Lands east of Sanders Road are undeveloped desertscrub. Lands south and west contain low density residential development and undeveloped desertscrub. *Figure 2* is an aerial overview of the Project Area.

The Project Area is on abandoned agricultural land. Topography is essentially flat, exhibiting little topographic relief but generally slopes from southeast to northwest, ranging in elevation from about 2,025 feet to 2,055 feet. Surface flows across the Project Area are generally conveyed as sheet flow. Upgradient flow reports to a constructed channel along the western boundary of the Project Area. This channel discharges to the East Branch Brawley Wash at the northwestern corner of the Project Area.

The Project Area has had most of its natural resource value removed during farming operations. The Project Area is located within a transition zone between the Arizona Upland subdivision and the Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community, as mapped by Brown and Lowe (1980)³. The Project Area is fallow agricultural land and supports a very modest diversity of vegetation. Most of the site is characterized by low-growing grasses and velvet mesquite (*Prosopis velutina*) less than 5 feet in height. Also present are small numbers of whitethorn acacia (*Acacia constricta*), burroweed (*Isocoma tenuisecta*), four-wing saltbush (*Atriplex canescens*), desert broom (*Baccharis sarothroides*), and blue paloverde (*Parkinsonia florida*). Mesquite and shrub densities across the site are not uniform, generally increasing in number and size from east to west.

³ Brown, D. E. and C. H. Lowe. 1980. Biotic Communities of the Southwest (map only). University of Utah Press.



Legend

 Project Area

 Burrow & Photo Location (2011)

 Burrow & Photo Location (2012)



T12S, R11E, Portion of Section 20,
Pima County, Arizona,
Avra & Marana USGS 7.5' Quadrangles
Photo Source: National Agriculture
Imagery Program, 2010



FRV SOLAR FARM
Western Burrowing Owl Survey

Locations of Recorded Burrows
Figure 2

4. SURVEY RESULTS

Eleven burrows of appropriate entrance dimensions for WBO use were identified on the Project Area, but no sign of WBO or WBO occupancy was found within the Project Area. Some of the burrows appeared to be completely inactive (even from rodent use), with debris across the entrance, cobwebs inside the entrance, and/or the floor of the entrance with no loose soil or other sign of recent use. The eleven recorded burrows were photographed (*Attachment A*) and GPS locations recorded on the AGFD WBO survey report form (*Attachment B*). *Figure 2* depicts the location of the photographed burrows on an aerial overview map.

5. SUMMARY

No evidence of WBO was found at the Project Area during the February 22 and 23, 2012 surveys conducted. These surveys were conducted in accordance with the January 2009 *Burrowing Owl Project Clearance Guidance for Landowners* produced by the ABOWG. Eleven burrows located had entrances of appropriate size for use by WBO, but no WBO sign or sign of any recent activity at the burrows was found.

The ABOWG clearance protocol recommends that project initiation be avoided in March due to the possibility of new owls arriving during construction. Given the project schedule, it should be noted that if owls or occupied burrows are detected during project implementation, the burrows must be avoided⁴ until status of the burrow can be determined and owls removed by properly permitted individuals/groups, or until conservation measures⁵ are implemented.

FRV has proposed extensive conservation efforts for WBO at the Project Area as part of their plan review process with Pima County that include construction of a WBO habitat management area, burrow complexes, active introduction of WBO, and a five-year monitoring plan. FRV worked with Tucson Water, the Coalition for Sonoran Desert Protection, AGFD, and the U.S. Fish and Wildlife Service (USFWS), including members of the ABOWG, to develop the habitat design and monitoring program as outlined in the Project's Onsite Habitat and Vegetation Restoration Plan⁶.

⁴ A 35-m (100-foot) radius buffer, excluding all heavy machinery and foot traffic, should be set up around active burrow entrances during construction until the appropriate conservation measures are determined.

⁵ Potential conservation measures include: 1) collapsing all burrows of suitable dimensions by a permitted individual, 2) identifying open space areas to be protected as a buffer around occupied and suitable owl burrows, 3) passive exclusion of owls, or 4) translocation of owls by a permitted individual.

⁶ WestLand 2011. *Onsite Habitat and Vegetation Restoration Plan – Solar Farm Project*. Report dated October 25, 2011- approved by Pima County November 1, 2011.

ATTACHMENT A

PHOTOSHEETS

Burrow 1- Photo error – previously identified as natural burrow (#1) in 2011; measured 5.5" in diameter



Burrow 2- previously identified as natural burrow (#2) in 2011, now collapsed



Burrow 3- previously identified as natural burrow (#3) in 2011; measured 5.5" in diameter



Burrow 5- natural, measured approximately 6" in diameter



Burro 6- artificial, measured approximately 5" in diameter



Burrow 7- natural, measured approximately 6" in diameter



Burrow 8- natural, measured approximately 6" in diameter



Burrow 9- natural, measured approximately 6" in diameter



Burrow 10- natural, measured approximately 9" in diameter



Burrow 11- natural, measured approximately 10" in diameter

ATTACHMENT B

**AGFD SURVEY
REPORT FORMS**

APPENDIX B. BURROWING OWL SURVEY REPORT FORM

GPS CAM

Surveyor(s): L. Carney
S. Carroll

Date of Survey: 2/22/2012

Project Location Information

Project Name: FRV-Solar

City:

County: Pima

Legal Description (address, 1/4 Section, Township, Range): T12S, R11E, S20 1/2 1/4 edge

Weather Conditions During Survey

Precipitation: Y/ (circle one)

Wind Speed (mph): 0-3

Temperature: 40 F / °C (circle)

% Cloud Cover: 0%

Survey Data

Area Surveyed: _____ acres / ha / km² / m² (circle one)

Adult burrowing owls detected: 0

Juvenile burrowing owls detected: 0

Total # burrowing owls detected: 0

Total # Active burrows: 0

Total # Potentially Active burrows: 0

Habitat Description within Project Area (check if applicable)

Open, treeless area

Creosote flats

Wash corridor

Suitable burrows

Fossorial mammals present – list species:

Sonoran desert scrub

Agriculture

Urban development

Attach map of surveyed area with locations of survey transects. Identify locations of owls and suitable burrows. List owl detections and active or potentially active burrow locations in the following table (please include coordinates and datum) Attach additional pages if necessary:

- NONE -

Observation Type (Owl or Burrow)	Coordinates

Observation Type (Owl or Burrow)	Coordinates

Return completed forms (regardless of whether burrowing owls are detected) along with the surveyor's certification to:

Raptor Management Coordinator
 Arizona Game and Fish Department
 Nongame Branch
 5000 West Carefree Highway
 Phoenix, AZ 85086
 (623) 236-7500
raptors@azgfd.gov

Transect 1 477994E; 3581241N 6 477695; 3581885
 47797ME; 3581845N 477655; 3581065
 2 477945; 3581241N 7 477615; 3581845
 477925; 3581845N 477575; 3581065
 3 477905; 3581241N 8 477535; 3581845
 477865; 3581845N 477495; 3581065
 4 477825; 3581241N 9 477455; 3581845
 5 477785; 3581845
 477735; 3581065N

APPENDIX B. BURROWING OWL SURVEY REPORT FORM

GPS CAM 1

Surveyor(s): L. Carney, S. Carroll

Date of Survey: 2/23/2012

Project Location Information

Project Name: FRV-Solar

City:

County: Pima

Legal Description (address, 1/4 Section,

Township, Range): T12S, R11E, S 20 S 1/2 E edge

Weather Conditions During Survey

Precipitation: Y (circle one)

Wind Speed (mph): 0-3

Temperature: 47°F / °C (circle)

% Cloud Cover: 0%

Survey Data

Area Surveyed: acres / ha / km² / m² (circle one)

Adult burrowing owls detected: 0

Juvenile burrowing owls detected: 0

Total # burrowing owls detected: 0

Total # Active burrows: 6

Total # Potentially Active burrows: 0

Habitat Description within Project Area (check if applicable)

Open, treeless area

Creosote flats

Wash corridor

Suitable burrows

Fossorial mammals present - list species:

Sonoran desert scrub

Agriculture

Urban development

Attach map of surveyed area with locations of survey transects. Identify locations of owls and suitable burrows. List owl detections and active or potentially active burrow locations in the following table (please include coordinates and datum) Attach additional pages if necessary:

Observation Type (Owl or Burrow)	Coordinates
#1	476993, 3581485N
#2 2636	476880, 3581446N
#3 2637	476664, 3581626N
#4 2645	476409, 3581605N
#5 New 2638	476701E, 3581660N
#6 New 2639	476705E, 3581827N
#7 New 2640	476660E, 3581543N

Observation Type (Owl or Burrow)	Coordinates
#8 New 2641	476681E, 3581541N
#9 New 2642	476678E, 3581519N
#10 New 2643	476678E, 3581510N
#11 New 2644	476500E, 3581850N

Burrows collapsed
 collapsed
 6" wide
 5" wide pipe
 6" wide

6" wide
 6" wide
 9" wide
 10" wide pipe

Return completed forms (regardless of whether burrowing owls are detected) along with the surveyor's certification to:

Raptor Management Coordinator
 Arizona Game and Fish Department
 Nongame Branch
 5000 West Carefree Highway
 Phoenix, AZ 85086
 (623) 236-7500
 raptors@azgfd.gov

Transect	Coordinates	Notes
1	477415, 3581065	6
	477375, 3581845	476800, 3581200
2	477335, 3581065	7
	477205, 3581845	476800, 3581845
3	477210, 3581065	476740, 3581065
	477150, 3581845	8
4	477100, 3581065	476800, 3581845
	477040, 3581845	476620, 3581065
5	476980, 3581065	9
		476500, 3581845
		476500, 3581065
		10
		476440, 3581845
		476400, 3581065