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ATTORNEYS AT LAW

NEW APPLICATION

0000123808

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ORIGINAL

March 22, 2011

Arizona Corporation Commission
DOCKETED
MAR 22 2011
DOCKETED BY

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Docket Control
Arizona Corporation Commission
1200 W. Washington St.
Phoenix, AZ 85007-2927

L-00000CC-11-0127-00161

Re: *In the Matter of the Application of Southwest Transmission Cooperative, Inc. for a Certificate of Environmental Compatibility for the Marana Tap to Sandario Tap Transmission Line Rebuild Project Located in Pima County, Arizona; Docket No. _____, Case No. ___*

Dear Sir or Madam:

Pursuant to A.R.S. § 40-360, *et seq.*, and A.A.C. R14-3-201, *et seq.*, enclosed are 25 copies of the Application of the Southwest Transmission Cooperative for a Certificate of Environmental Compatibility for its Marana Tap to Sandario Tap Transmission Rebuild Project. Pursuant to A.R.S. § 40-360.09.7, also enclosed is the filing fee in the amount of One Thousand Dollars ($1,000).

Communications concerning the Application should be directed to:

Michael M. Grant
Gallagher & Kennedy, P.A.
2575 E. Camelback Rd.
Phoenix, AZ 85016-9225
Telephone: (602) 530-8291
Attorneys for Southwest Transmission Cooperative, Inc.

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Very truly yours,

GALLAGHER & KENNEDY, P.A.

By:
Michael M. Grant

MMG/plp
15169-17/2684292
Enclosures

cc (hand delivered w/enclosures): The Honorable John Foreman, Attorney General's Office

cc (mailed w/o enclosures): Michelle Freeark, Southwest Transmission Cooperative, Inc.
Kevin Barnes, Southwest Transmission Cooperative, Inc.

Original and 25 copies filed with Docket Control this 22nd day of March, 2011.

BEFORE THE ARIZONA POWER PLANT
AND TRANSMISSION LINE SITING COMMITTEE

IN THE MATTER OF THE APPLICATION OF SOUTHWEST TRANSMISSION COOPERATIVE, INC. FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY FOR THE MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT LOCATED IN PIMA COUNTY, ARIZONA	Docket No. Case No.

Prepared by:

WestLand Resources, Inc.
Engineering and Environmental Consultants
4001 E. Paradise Falls Drive
Tucson, Arizona 85712
(520) 206-9585

March 2011

BEFORE THE ARIZONA POWER PLANT

AND TRANSMISSION LINE SITING COMMITTEE

IN THE MATTER OF THE APPLICATION OF SOUTHWEST TRANSMISSION COOPERATIVE, INC. FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY FOR THE MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT LOCATED IN PIMA COUNTY, ARIZONA	Docket No. Case No.

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Engineering and Environmental Consultants
4001 E. Paradise Falls Drive
Tucson, Arizona 85712
(520) 206-9585

March 2011

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3.0 STATE EACH DATE ON WHICH THE APPLICANT HAS FILED A TEN-YEAR PLAN IN COMPLIANCE WITH A.R.S. § 40-360.02 AND DESIGNATE EACH SUCH FILING IN WHICH THE FACILITIES FOR WHICH THIS APPLICATION IS MADE WERE DESCRIBED. IF THEY HAVE NOT BEEN PREVIOUSLY DESCRIBED IN A TEN-YEAR PLAN, STATE THE REASONS THEREFOR. 2

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Attachment 1

APPLICATION REQUIREMENTS

1.0 Name and Address of Applicant.

Southwest Transmission Cooperative, Inc.
P.O. Box 2195
1000 South Highway 80
Benson, Arizona 85602
(520) 586-5195

2.0 Name, Address and Telephone Number of a Representative of the Applicant Who Has Access to Technical Knowledge and Background Information Concerning the Application in Question and Who Will Be Available to Answer Questions or Furnish Additional Information.

Charles Walling, P.E.
Manager of Engineering
Sierra Southwest Cooperative, Inc.
P.O. Box 2195
1000 South Highway 80
Benson, Arizona 85602
(520) 586-5215

3.0 State Each Date on Which The Applicant Has Filed a Ten-Year Plan in Compliance with A.R.S. § 40-360.02 and Designate Each Such Filing in Which the Facilities for Which this Application is Made Were Described. If They Have Not Been Previously Described in a Ten-Year Plan, State the Reasons Therefor.

In compliance with A.R.S. § 40-360.02, Southwest Transmission Cooperative, Inc. ("SWTC") or its predecessor, the Arizona Electric Power Cooperative, Inc. ("AEPCO"), has filed a ten-year plan each year from the inception of the statutory requirement through 2010. The Marana Tap to Sandario Tap Transmission Line Rebuild Project was described in the following plan filings:

The project was first described in SWTC's 2008 – 2017 Ten-Year Plan. However, the projects were presented as three separate projects in that Ten-Year Plan and were identified as: Avra to Marana 115 kV Line Upgrade, Avra Valley to Sandario Tap 115 kV Line Upgrade and Marana to Marana Tap 115 kV Line Upgrade. These separate projects have since been combined and are now collectively referred to as the Marana Tap to Sandario Tap Transmission Line Rebuild Project. The Rebuild Project was included in SWTC's 2009, 2010 and 2011 Ten-Year Plan filings.

4.0 Description of Proposed Project.

a. With respect to an electric generating power plant.

Not applicable.

b. With respect to a proposed transmission line.

i. Nominal voltage for which the line is designed, description of the proposed structures and switchyards or substations associated therewith and purpose for constructing said transmission line.

SWTC proposes to rebuild the existing 115 kilovolt ("kV") Marana Tap to Sandario Tap transmission line using an enhanced design that will accommodate both the current and future needs of SWTC's Class A member distribution cooperatives. The transmission line upgrade begins at the existing Western Area Power Authority ("WAPA") Saguaro to Rattlesnake 115 kV transmission line just south of the intersection of Trico Marana Road and North Trico Road. From this point, the upgrade proceeds to SWTC's Marana Substation. From there, the upgrade parallels North Trico Road to its junction with SWTC's existing Sandario 115 kV line located approximately 1 mile ("mi") south of Manville Road (the "Project"). Exhibits A-1 and A-2 show the Project location and an aerial overview, respectively. Figures 1a through 1d show the Project's position along Trico Road, locations of existing structures which will be removed and the location of the proposed materials yard. The exact locations of the new structures have not been determined at this time.

The existing transmission line was constructed in 1961 and, since that time, the conductor has not been upgraded. The existing line is currently at capacity and under certain conditions would not be able to transmit additional loads without failure

should an emergency occur elsewhere in the system. There are two single contingency failure potentials on the SWTC system and three single contingency failures on Tucson Electric Power's system that could cause failure on the existing transmission line. To address those issues, SWTC will replace the existing conductor with a larger conductor at the same 115 kV voltage. To accommodate this upgrade, all the existing structures will be replaced in order to support the new, heavier conductor. The existing shield wire will also be replaced with an optical ground wire ("OPGW"). The new conductor will be non-specular.

The Project includes replacement of the wood structures with either concrete or self-weathering steel monopoles (Exhibit G). The new structures are 10 to 20 feet (ft) taller than the existing wood poles, but the total number of structures will be reduced from 113 to 95. The conductors and the spacing between the conductors and potential grounding sources will also provide protection from avian electrocution. Each structure stands approximately 60 to 70 ft high and the Project requires an approximately 50-by-50-ft cleared area around each new structure for construction.

ii. Description of geographical points between which the transmission line will run, the straight-line distance between such points and the length of the transmission line for each alternative route for which the application is made.

The 11.98-mile transmission line upgrade begins at the existing WAPA Saguaro to Rattlesnake 115 kV transmission line just south of the intersection of Trico Marana Road and North Trico Road. From this point, the upgrade proceeds to SWTC's Marana Substation for approximately 0.25 mi. From the Marana Substation, the upgrade parallels North Trico Road for approximately 11.73 mi to the junction with SWTC's existing Sandario 115 kV line located approximately 1 mi south of Manville Road. Exhibits A-1 and A-2 show the Project location and provide an aerial overview.

SWTC considered no alternatives beyond the "No-Action Alternative" and the "Preferred Alternative," because the nature and purpose of the Project are to upgrade an existing transmission line along the same route it has occupied for 50 years. The site is essential to the Project's purpose and the existing route and the design of the Preferred Alternative purposefully address practical on-site impact minimization.

iii. Nominal width of the right-of-way required, nominal length of spans, maximum height of supporting structures and minimum height of conductor above ground.

Existing easements vary in width from 30 ft to 80 ft along the Project. Some of the easements need to be enlarged and those revised easements are currently being negotiated with landowners. The nominal length of the spans is 725 ft and the maximum height of the new monopole structures is 70 ft. The minimum height of the conductors above ground is 22.6 ft as required by Rural Utilities Service standards.

iv. **To the extent available, the estimated costs of the proposed rebuild Project.**

The estimated cost of the Marana Tap to Sandario Tap Transmission Line Rebuild Project is $6,287,408.00.

v. **Description of proposed route and switchyard locations.**

Exhibits A-1 and A-2 show the Project location and provide an aerial overview. The Project is located primarily on privately-owned lands within an existing alignment parallel to Trico Road. Trico Road is a Pima County public road for approximately 4.45 mi from the northern end of the Project. The remaining Trico Road alignment consists primarily of private access roads; however, approximately one mile of the Project route crosses Arizona State Trust land.

Existing land uses on and adjacent to the Project Area include Trico Road and a series of dirt and paved roads, a mixture of fallow and cultivated agricultural fields and a system of concrete and earthen irrigation canals and associated berms that are no longer in use. Another above-ground electrical distribution line, owned by Trico Electric Cooperative, parallels the existing SWTC transmission line along the other side of Trico Road. Development in the vicinity of the Project Area primarily consists of agricultural lands interspersed with low-density single-family rural farm residences.

vi. **For each alternative route for which the application is made, list the ownership percentages of land traversed by the entire route (federal, state, Indian, private. etc.).**

The Project is primarily located on privately-owned lands within an existing alignment along Trico Road. Trico Road is a Pima County public road for approximately 4.5 mi (47 percent of the 11.98-mi route). A roughly 1-mi segment (8 percent of the route) of the Project crosses Arizona State Trust land. The remaining approximately 6.48 miles (45 percent) of the Trico Road alignment are on private lands.

5.0 List the Areas of Jurisdiction [as Defined in A.R.S. § 40-360(1)] Affected By Each Alternative and Designate Those Proposed Alternatives, if Any, Which Are Contrary to the Zoning Ordinances or Master Plans of Any Such Areas of Jurisdiction.

The Project is located within Pima County and is not inconsistent with any County zoning ordinance or master plan. The Project passes through about one mile of land administered by the Arizona State Land Department ("ASLD"). The ASLD does not currently have a Comprehensive Management Plan for lands in the vicinity of the Project Area. The nature of the Project is consistent with existing uses within the Project Area.

6.0 Describe Any Environmental Studies the Applicant Has Performed or Caused to Be Performed in Connection with this Application or Intends to Perform or Cause to Be Performed in Such Connection, Including the Contemplated Date of Completion.

Table 6-1 summarizes the Regulations, Authorization and Environmental Studies for the Project.

Table 6-1. Regulations, Authorizations and Environmental Studies for the Project.

Agency	Regulation/Authorization	Environmental Studies and/or Reports	Known or Projected Date of Completion	Application Exhibit
Rural Utilities Service	National Environmental Policy Act	Environmental Report	March 2011	Exhibit B
U.S. Army Corps of Engineers	Clean Water Act, Section 404 Preliminary Jurisdictional Determination Review	Preliminary Jurisdictional Determination	June 2011	
Arizona Department of Environmental Quality	Clean Water Act, Section 402 Arizona Pollutant Discharge Elimination System Permit	Stormwater Pollution Prevention Plan; Spill Prevention Countermeasure Control Plan	Prior to Construction	--
Arizona State Historic Preservation Act	National Historic Preservation Act, Section 106 Consultation	Class III Cultural Resources Survey Report	April 2011	Exhibit E
Arizona State Land Department	Permit to Remove Native Vegetation	Native Plant Inventory	Prior to Construction	--
Rural Utility Service	National Environmental Policy Act	Biological Evaluation	November 2009	Exhibit C

Attachment 1

APPLICANT AUTHORIZATION

James C. Burson, P.E.
Senior Vice President and Chief Operating Officer
Southwest Transmission Cooperative, Inc.

EXHIBIT A
Project Location Maps

Exhibit A-1 Project Vicinity Map
Exhibit A-2 Aerial Overview
Exhibit A-3 Land Ownership

EXHIBIT A-1
Project Vicinity Map

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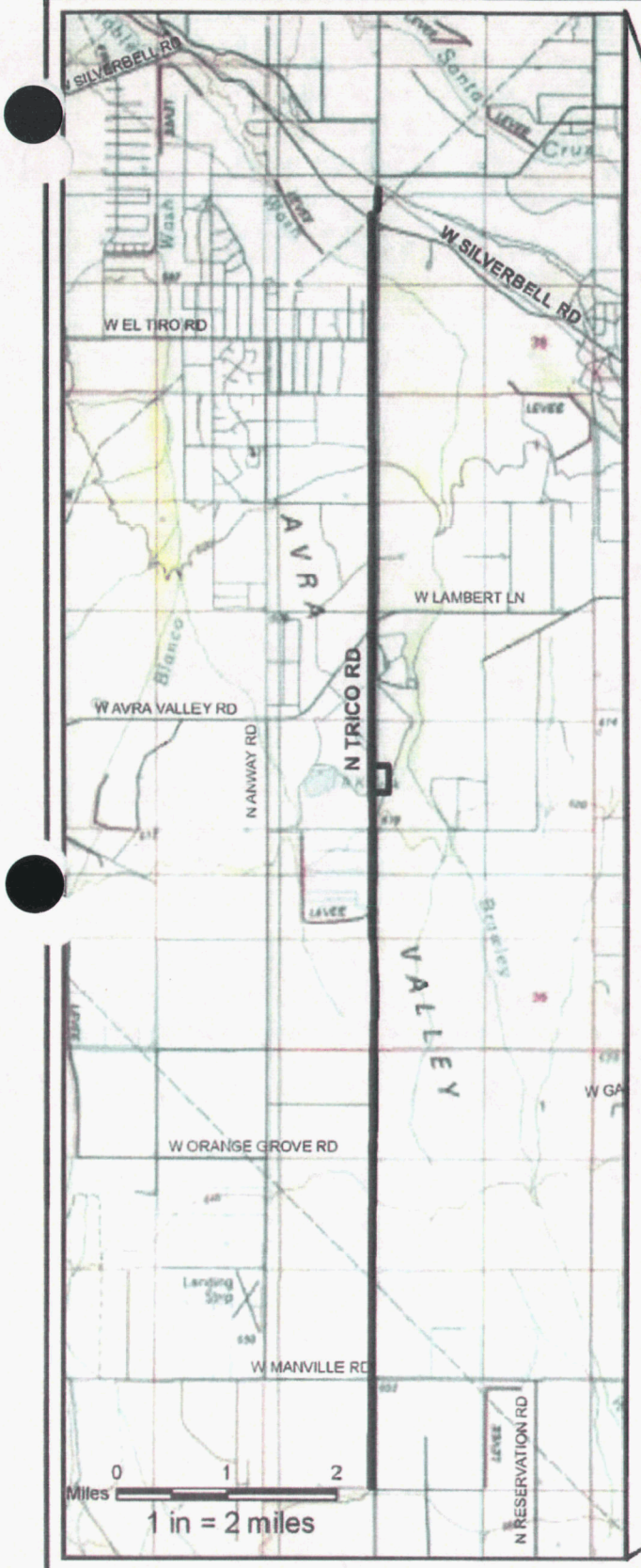

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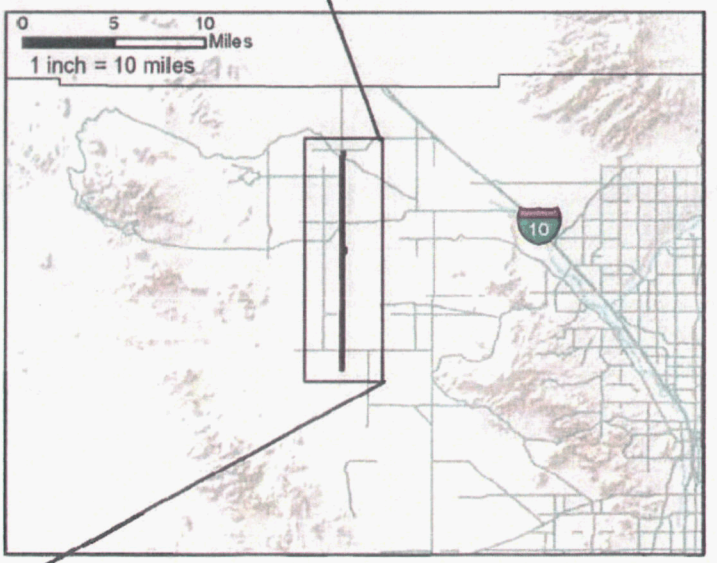

T.11S.,R.10E. Portion of Sections 26, 27, & 34,
T.12S.,R.10E. Portion of Sections 3, 10, 15, 22, 27, 34, & 35,
T.13S.,R.10E. Portion of Sections 2, 3, 10, 11, 14, 15, 22, & 23,
Pima County, Arizona,
West of Avra & West of Marana USGS 7.5' Quadrangles

WestLand Resources, Inc.
Engineering and Environmental Consultants

Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project
CEC Application

Project Vicinity Map
Exhibit A-1

EXHIBIT A-2

Aerial Overview

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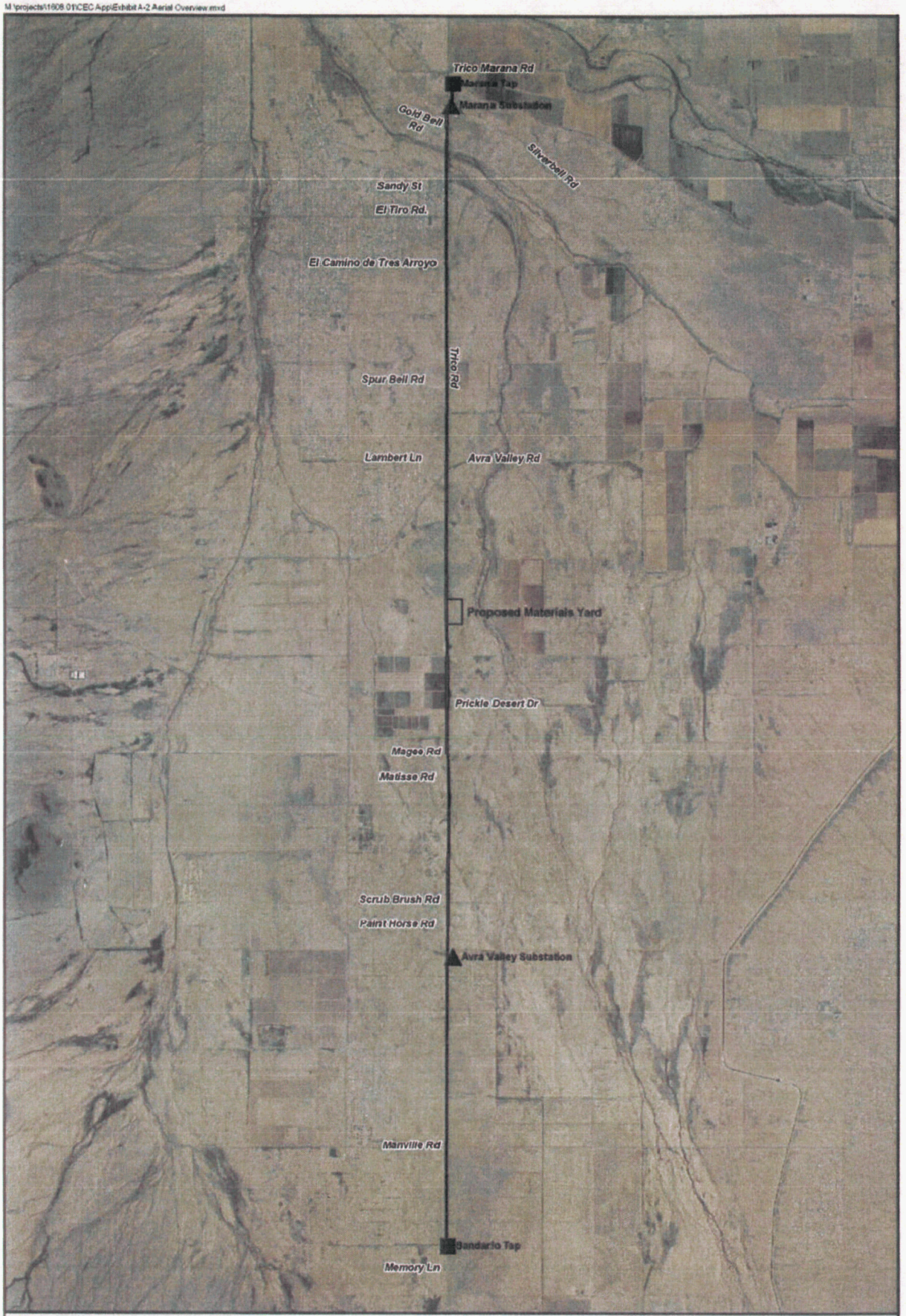

T.11S.,R.10E. Portion of Sections 26, 27, & 34,
T.12S.,R.10E. Portion of Sections 3, 10, 15, 22, 27, 34, & 35,
T.13S.,R.10E. Portion of Sections 2, 3, 10, 11, 14, 15, 22, & 23,
Pima County, Arizona.
Photo Source: National Agriculture Imagery Program, 2007

WestLand Resources, Inc.
Engineering and Environmental Consultants

N

0 2,400 4,800
Feet

Legend

- Substation
- Tap
- Project Area

Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project
CEC Application

Aerial Overview
Exhibit A-2

EXHIBIT A-3
Land Ownership

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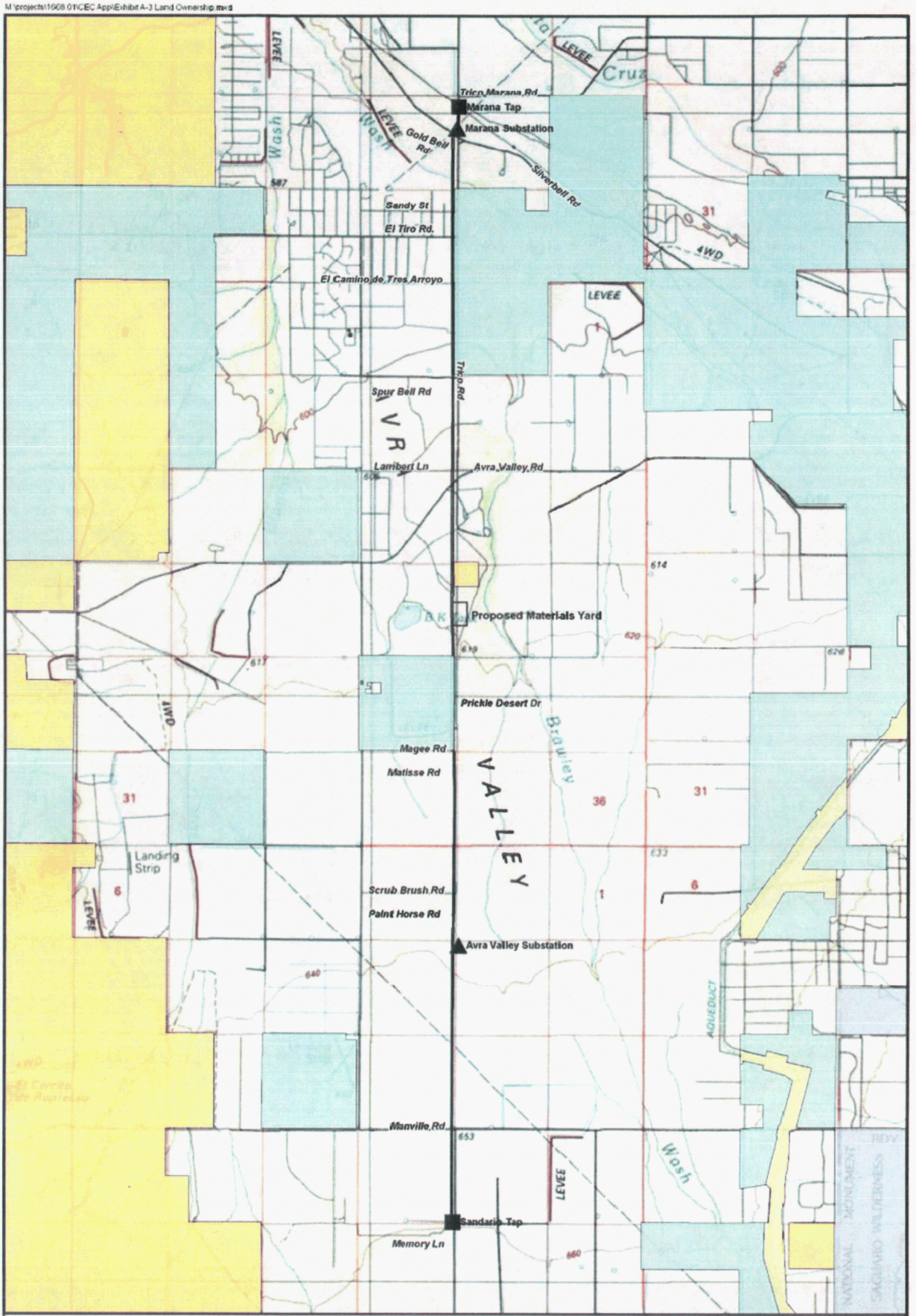

T.11S..R.10E. Portion of Sections 26, 27, & 34.
T.12S..R.10E. Portion of Sections 3, 10, 15, 22, 27, 34, & 35.
T.13S..R.10E. Portion of Sections 2, 3, 10, 11, 14, 15, 22, & 23.
Pima County, Arizona.
USGS Source: ESRI ARCGIS ONLINE

WestLand Resources, Inc.
Engineering & Environmental Consultants

0 2,500 5,000
Feet

N

Legend

- Substation
- Tap
- Bureau of Land Management (BLM)
- Bureau of Reclamation
- National Park Service (NPS)
- Private Land
- State Land

Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project
CEC Application

Land Ownership
Exhibit A-3

EXHIBIT B

ENVIRONMENTAL REPORT

ENVIRONMENTAL REPORT

SOUTHWEST TRANSMISSION COOPERATIVE, INC. MARANA TAP TO SANDARIO TAP REBUILD PROJECT PIMA COUNTY, ARIZONA

Lead Federal Agency:

U.S. DEPARTMENT OF AGRICULTURE
RURAL UTILITIES SERVICE

Prepared for:

SOUTHWEST TRANSMISSION COOPERATIVE, INC.
P.O. Box 2195
Benson, Arizona 85602

Prepared by:

WestLand Resources, Inc.
Engineering and Environmental Consultants
4001 E. Paradise Falls Drive
Tucson, Arizona 85712

February, 2010
Job No. 1608.01 700 700

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1.0 INTRODUCTION AND NEED FOR THE PROJECT

1.1 INTRODUCTION

Southwest Transmission Cooperative, Inc. (SWTC) proposes to rebuild an existing 11.98-mile (mi)-long 115-kilovolt (kV) transmission line (the Project) along Trico Road from the Western Area Power Administration's (WAPA) Marana Tap to the SWTC Marana Substation, then south to the SWTC Avra Valley Substation, continuing south to the SWTC Sandario Tap turning structure located approximately 1 mi south of Manville Road (the Project Area, Figures 1 and 2). SWTC is a non-profit rural, electric cooperative owned by six Class A members. The six Class A members are non-profit electric distribution cooperatives that deliver power to end-use customers in the rural areas of Arizona and other parts of the Southwest.

The U.S. Department of Agriculture (USDA) Rural Utilities Service (RUS) is serving as the lead federal agency for the Project. WestLand Resources, Inc. (WestLand) has been retained by SWTC to assist with the preparation of an Environmental Report (ER) to document the potential effects of the Project per the requirements of RUS regulations under 7 Code of Federal Regulation (CFR) § 1794.

1.2 NEED FOR THE PROJECT

The Project is necessary to support existing local electric needs and SWTC's ability to accommodate emergency needs. The existing transmission line was constructed in 1961 and, to date, the conductor has not been upgraded. The existing line is currently at capacity and under certain conditions would be unable to transmit additional loads without failure should an emergency occur elsewhere in the system. SWTC proposes to replace the existing conductor with a larger conductor rated at the same 115 kV voltage. In order to accommodate this upgrade, all the existing structures would need to be replaced to support the new heavier conductor. The Project would include replacing the existing wooden structures with either concrete or self-weathering steel monopoles. The new structures would be 10 to 20 feet (ft) taller than the existing wood poles, but would reduce the total number of structures from 113 to approximately 95.

1.3 Regulatory Authority

Projects meeting certain criteria outlined in the RUS Environmental Policies and Procedures (7 CFR §§ 1794.22[a] and 1794.23[c]) require the submission of an ER for RUS review. The Project qualifies as an action that is categorically excluded from requiring the preparation of an Environmental Assessment or Environmental Impact Statement as described in 7 CFR §1794.22(a).

This ER was prepared to examine potential impacts to human and natural environments associated with the rebuilding of the existing 11.98-mi-long 115 kV transmission line, and has been prepared using guidance from RUS Bulletin 1794A-601 (Revised) pursuant to the National Environmental Policy Act.

2.0 PROJECT DESCRIPTION AND ALTERNATIVES

2.1 PROJECT DESCRIPTION AND LOCATION

SWTC proposes to rebuild the existing 115 kV transmission line using an enhanced design that would accommodate both current and future needs of SWTC's Class A members. The transmission line upgrade would begin at the existing WAPA Saguaro to Rattlesnake 115 kV transmission line just south of the intersection of Trico Marana Road and North Trico Road. From this point, the upgrade would proceed to SWTC's Marana Substation. From the Marana Substation, the upgrade parallels North Trico Road to the junction with SWTC's existing Sandario 115 kV line located approximately 1 mi south of Manville Road. Figures 1 and 2 show the Project location. Figure 3 shows the Project plan view, which illustrates the proposed Project Area's position along Trico Road, locations of the existing structures to be removed, and the location of a proposed materials yard. Engineering required to determine the exact locations of the new structures has not been completed at this time.

The existing transmission line was constructed in 1961 and, to date, the conductor has not been upgraded. The existing line is currently at capacity and under certain conditions would be unable to transmit additional loads without failure should an emergency occur elsewhere in the system. SWTC proposes to replace the existing conductor with a larger conductor at the same 115 kV voltage. In order to accommodate this upgrade, all the existing structures would need to be replaced to support the new heavier conductor. The existing shield wire will be replaced with optical ground wire; which will result in more reliable communications with SWTC's system.

The Project would include replacing the wooden structures with either concrete or self-weathering steel monopoles (Figure 4). The new structures would be 10 to 20 feet (ft) taller than the existing wood poles, but would reduce the total number of structures from 113 to approximately 95.

The conductors and the spacing between the conductors and potential grounding sources would provide protection from avian electrocution. Each pole would stand approximately 60 ft high and would require the development of an approximately 50 by 50 ft cleared area (2,500 square feet) for construction.

2.2 ALTERNATIVES TO THE PROPOSED PROJECT

No alternatives were considered beyond the "No-Action Alternative" and the "Preferred Alternative" because the nature and purpose of the Project is to upgrade an existing transmission line. The need for the replacement of the existing line has been demonstrated, the site is essential to the Project purpose, and the design of the Preferred Alternative purposefully addresses practical on-site impact minimization.

2.2.1 No-Action Alternative

Under the No-Action Alternative, SWTC would not rebuild the transmission line. As stated above, the existing line is currently at capacity; therefore, rebuilding the transmission line is necessary to support existing local electric needs as well as SWTC's ability to accommodate emergency needs under certain circumstances should failure occur elsewhere in its system. Not rebuilding the existing transmission line

would result in unacceptable power quality and reliability. As demand in the area increases, service reliability would continue to deteriorate. The No-Action Alternative would, therefore, not meet the purpose and need of the Project and was eliminated from further consideration.

2.2.2 Preferred Alternative

SWTC proposes to rebuild the existing 115 kV transmission line using an enhanced design that would accommodate both current and future needs of SWTC's Class A members. The transmission line upgrade would begin at the existing WAPA Saguaro to Rattlesnake 115 kV transmission line just south of the intersection of Trico Marana Road and North Trico Road. From this point, the upgrade would proceed to SWTC's Marana Substation. From the Marana Substation, the upgrade parallels North Trico Road to the junction with SWTC's existing Sandario 115 kV line located approximately 1 mi south of Manville Road.

SWTC proposes to replace the existing conductor with a larger conductor at the same 115 kV voltage. In order to accommodate this upgrade, all the existing structures would need to be replaced to support the new, heavier conductor. The Project would include replacing the wooden structures with either concrete or self-weathering steel monopoles. The new structures would be 10 to 20 feet (ft) taller than the existing wood poles, but would reduce the total number of structures from 113 to approximately 95.

The conductors and the spacing between the conductors and potential grounding sources would provide protection from avian electrocution. Each pole would stand approximately 60 to 70 ft high and would require the development of an approximately 50-by-50-ft cleared area (2,500 square feet) for construction around each structure.

The following section describes the construction and maintenance activities necessary for the Preferred Alternative.

2.2.2.1 Clearing and Access

Vehicle access to the transmission line would be required for both construction and maintenance of the line. The Project would largely be constructed adjacent to existing roadways and on lands that have already been cleared for the original construction and maintenance of the existing transmission line. Where the proposed alignment traverses areas not previously cleared for existing corridors or where vegetation has reestablished itself since the construction of the existing line in 1961, clearing would be required for access and for the new structure locations.

Approximately 7.5 mi of the 11.98-mi-long Project alignment (approximately 64 percent of the total length of the proposed Project) are located on or adjacent to cultivated or fallow agricultural lands.[1] The width of the Project Area varies along the alignment, measuring 80 ft at its widest point and 30 ft at the narrowest.

1 Measurement was taken from Pima County Mapguide using Composite-Vegetation mapping layers: http://www.dot.co.pima.az.us/gis/maps/mapguide/mgmap.cfm?path=/cmo/sdcpmaps/sdcp.mwf

The Project would require approximately 17.52 acres (ac) of impact for removal of existing structures and the placement of new structures, and a materials yard (Table 1). These impacts would occur largely within previously disturbed areas.

Table 1. Acres of Impact Associated with the Marana Tap to Sandario Tap Rebuild Project

Clearing Type	Approximate Dimensions of Impact	Total Approximate Area of Impact (ac)
New Structure Construction	95 new structures; 50-by-50-ft Disturbance Envelope	5.45
Structure Removal	18 existing structures; 20-by-20-ft Disturbance Envelope	.07
Proposed Materials Yard	Approximately 725-by-725-ft Disturbance Envelope	12.0
		17.52

2.2.2.2 Material Transportation and Laydown

SWTC would establish one proposed materials area during construction (Figure 3). This area is planned within fallow agricultural lands adjacent to the existing transmission line. Laydown materials would include structures, post insulators, fasteners, rolls of conductor, and optical ground wire. Construction materials would be transported to the proposed alignment by truck via Trico Road.

2.2.2.3 Existing Structure Removal

One hundred and thirteen (113) structures would be removed from the Project Area. Existing structures would be cut below ground level and buried. As a result of the structure removal activities, an estimated 20-by-20-ft area around each existing structure would be impacted.

2.2.2.4 Assembly

Assembly includes mounting post insulators onto each structure. Structure assembly would take place at each erection location. A diagram of a typical monopole structure is shown in Figure 4.

2.2.2.5 Hole Auguring

For each tangent structure, construction would require auguring a single 5-ft-diameter hole to a depth of approximately 10 to 12 ft (Figure 4). An estimated 50-by-50-ft area around each structure would potentially be impacted.

2.2.2.6 Erection

Erection of each structure would require a crane to lift the assembled structure from the ground and set it into the augured hole or onto a foundation; augured holes would be backfilled with concrete slurry.

2.2.2.7 Stringing and Tensioning

The conductor would be strung on the insulators using pulleys and a rope attached to an all-wheel vehicle that would be driven between structures. The conductor would be pulled to the appropriate tension using a truck-mounted tensioning rig that is temporarily anchored at pulling locations.

2.2.2.8 Transmission Line Maintenance and Operation

Ground disturbance would be temporary at the site used for material laydown, assembling and installing the structures, and stringing and tensioning the transmission line.

Maintenance of the transmission line would be performed on a routine (and potentially emergency) basis. Included in the routine maintenance activities would be vegetation management to remove vegetation as needed and to maintain suitable vegetation clearance corridors (VCCs). VCCs are based on industry reliability standards that define the area around transmission lines that needs to be maintained free of vegetation in order to provide safe and reliable electrical service. Hazardous vegetation removal would help prevent service interruptions and provide protection against wildfires that could result from vegetation coming into contact with transmission lines. Hazardous vegetation may be identified and removed outside the VCC if necessary.

Transmission line repair and maintenance activities include the replacement of structures, conductor, and other system components, as required. The transmission line would be visually inspected biannually and a more rigorous manual inspection of components and attachment points would occur every 5 years. SWTC would also conduct routine inspections of the access road to ensure that it remains functional. Maintenance activities on the existing access road may include grading and vegetation removal.

3.0 AFFECTED ENVIRONMENT

The following section describes the existing condition of the environmental resources within the Project Area and discusses the consequences of Project implementation to the surrounding environment and resource protection and mitigation measures that are proposed to avoid and minimize impacts.

3.1 LAND USE

3.1.1 General Land Use

The Project is primarily located on privately owned lands within an existing alignment along Trico Road. Trico Road is a Pima County public road for approximately 4.5 mi from the northern extent of the Project to the El Paso Gas Road. The remaining Trico Road alignment consists of private access roads. An approximately 1-mi segment of the Project crosses State Trust land. Surface management within the Project Area is depicted on Figure 5.

Existing land uses on and adjacent to the Project Area include Trico Road and a series of dirt and paved roads; a mixture of fallow and cultivated agricultural fields; and a system of concrete and earthen irrigation canals and associated berms that are no longer in use. Another above-ground electrical distribution line located east of Trico Road, owned by Trico Electric Cooperative, Inc., parallels the existing SWTC transmission line along Trico Road. Development in the vicinity of the Project Area primarily consists of agricultural lands interspersed with low-density, single-family rural residences.

Based on Pima County Comprehensive Plan land use designations,[2] the following land use intensity categories are designated within the Project Area: Low-Intensity Rural, Heavy Industrial, Medium-Intensity Rural, Resource Transition, Urban Industrial, Rural Activity Center, Low-Intensity Urban 3.0, Community Activity Center, and Multifunctional Corridor (Figure 6).

Based on 2007 aerial imagery analysis, 27 residences occur within 500 ft of the Project. Two convenience stores/gas stations also exist along the northern portions of the Project Area.

3.1.2 Important Farmland, Prime Forest Land, and Prime Rangeland

The Project Area contains areas that are designated as prime irrigated farmland by the Natural Resources Conservation Service (Figure 7). Important farmlands occur within the Project Area along an approximately 3-mi segment that extends from the Sandario Tap structure north to the Avra Valley Substation, along an approximately 0.3-mi segment south of Avra Valley Road, and along an approximately 0.1-mi segment from the Marana Tap south.

2 Land intensity information was obtained from the Pima County Department of Transportation's GIS system maintained at http://www.dot.pima.gov/gis/maps/mapguide/mgmap.cfm?path=/cmo/sdcpmaps/sdcp.mwf

Soils within the Project Area are depicted in Figure 8 and listed in Table 2.

Table 2. Soils within the Project Area

Code	Mapping Unit
RdB	Rillito Sandy Loam, 1 to 3 percent slopes
RtB	Rillito-Tres Hermanos Complex, 1 to 5 percent slopes
So	Sonoita Clay Loam
ReC	Rillito Gravelly Sandy Loam, 0 to 8 percent slopes
LdB	Laveen Gravelly Sandy Loam, 1 to 3 percent slopes
CsB	Cowan Loamy Sand, 1 to 3 percent slopes
CsA	Cowan Loamy Sand, 0 to 1 percent slopes
VaA	Valencia Sandy Loam, 0 to 1 percent slopes
VaB	Valencia Sandy Loam, 1 to 3 percent slopes
SmA	Sonoita Sandy Loam, 0 to 1 percent slopes
Sn	Sonoita Loam
MhA	Mohave Loam, 1 to 3 percent slopes
Au	Anway Loam
Ge	Glendale Silty Clay Loam
Gc	Gila Silty Clay Loam
Aw	Anway Silty Clay Loam
AhA	Anthony Sandy Loam, 0 to 1 percent slopes
Mo	Mohave Clay Loam
At	Anway Sandy Loam

3.1.3 Formally Classified Lands

There are no formally classified lands within the Project Area. The closest formally classified lands are located within the Ironwood Forest National Monument, approximately 2.5 to 3 mi west of the Project, and Saguaro National Park West, approximately 7 mi southeast of the Project. No other federal or state parks, forests, or eligible national monuments or landmarks are in the Project vicinity.

3.2 FLOODPLAINS

The Federal Emergency Management Agency has mapped flood zones on their Flood Insurance Rate Maps (FIRMs) that cover the Project Area. The FIRMs depicting the Project Area were compiled in Figure 9 to depict the varying levels of flood risk mapped for the Project Area (Figure 9). The majority of the Project Area occurs outside the 500-year and 100-year flood zones; however, portions have been designated as special flood hazard areas.

Brawley Wash is mapped Zone AE (area with a 1 percent annual chance of flooding; a high-risk area) and Zone X (shallow 100-year; 500-year flood; a low- to moderate-risk area). These areas are characterized as occurring outside the 1 percent annual chance floodplain, with 1 percent annual chance sheet flow flooding where average depths are less than 1 ft, with 1 percent annual chance stream flooding where the contributing drainage area is less than 1 square mile, or protected from the 1 percent annual chance flood by levees.

Flood designations in the Project Area occurring within approximately 3 mi north of the Avra Valley Substation include Zone AO1 (flood depth of 1 ft) and Zone AO2 (flood depth of 2 ft).

The remainder of the Project Area occurs in Zone X outside the 500-year floodplain; a low-risk designation.

3.3 SURFACE WATER

Elevations within the Project Area range from approximately 1,920 to 2,170 ft above mean sea level. Surface water flows across the site generally northwesterly to southeasterly as sheet flow. No perennial or intermittent drainage systems, springs, wetlands, or any other special aquatic sites are present within or near the Project Area. Surface water drainage within the Project Area is ephemeral and occurs on the site only during and shortly after precipitation events of sufficient size to cause flow.

A Clean Water Act (CWA) Section 404 permit is required if a project will result in the discharge of dredged or fill material into waters of the United States (waters). The US Army Corps of Engineers (Corps) administers the Section 404 program.

SWTC retained WestLand to conduct and prepare a preliminary jurisdictional delineation within the Project Area per Regulatory Guidance Letter 08-02. The linear and lateral boundaries of potentially jurisdictional drainages within the Project Area, as indicated by the ordinary high water mark, were mapped based on aerial photograph interpretation and field verification. During the field survey, ordinary high water was identified by the presence of one or more of the following characteristics: a well-defined channel as indicated by an incision or scour line, a debris line, a change in substrate, water stains on bedrock, or the presence of vegetation.

3.4 CULTURAL RESOURCES

WestLand conducted a cultural resources inventory of the Project Area in accordance with Section 106 of the National Historic Preservation Act (NHPA). WestLand's archaeological records search, literature search, and archaeological survey also met the Arizona State Museum (ASM) standards for a complete archaeological inventory of Arizona State Land Department lands as specified in Arizona Board of Regents Rules, Chapter 8, Section 200, *et seq.* WestLand senior archaeologist Mark L. Chenault, Ph.D., served as principal investigator for the project. WestLand conducted the fieldwork on May 4, 5, and 8, 2009.

WestLand prepared *A Cultural Resources Inventory for the Proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project, Pima County, Arizona* was prepared to document the methodologies, findings, and recommendations of the Class III cultural resources survey. The cultural resource sites located within the Project Area are depicted on Figure 10 and a summary of the cultural resources findings within the Project Area and WestLand's management recommendations are provided in Table 3. RUS will consult with the State Historic Preservation Office (SHPO) under section 106 of the NHPA.

3.5 VEGETATION

Approximately 7.5 mi of the 11.98-mi-long Project alignment (approximately 63 percent of the total length of the proposed Project) are located on or adjacent to cultivated or fallow agricultural lands. The remaining portion of the alignment supports sparse vegetation generally consistent with Sonoran desertscrub as described by Brown (1994).

Common native vegetation along the Project alignment includes creosote bush (*Larrea tridentata*), burroweed (*Isocoma tenuisecta*), triangle-leaf bursage (*Ambrosia deltoidea*), and desert broom (*Baccharis sarothroides*). Non-native Russian thistle (*Salsola* sp.) was also frequently noted along the roads and abandoned agricultural fields throughout the alignment. The most common tree species along the alignment is velvet mesquite (*Prosopis velutina*). Little leaf palo verde (*Cercidium microphyllum*) and blue palo verde (*C. floridum*) are present along the alignment, but less abundantly than mesquite. Trees along the alignment are widely scattered. Short-statured, very widely scattered mesquite were noted on uplands within the southern portions of the Project Area, while larger mesquite and palo verde occur along the alignment where surface waters collect along roadways and active agricultural fields. One large wash, Brawley Wash, traverses the Project alignment. The riparian corridor along this wash is approximately 30 ft wide where it crosses the project alignment and supports species that include mesquite, whitethorn acacia (*Acacia constricta*), desert hackberry (*Celtis pallida*), and desert broom.

Representative photographs of the site are provided in Appendix A.

Table 3. Cultural Resources Findings and Management Recommendations

ASM Site Number	Location	Land Status	Site Type	Age and Cultural Affiliation	Register Eligibility Recommendation	SHPO Concurrence	Recommended Treatment
AZ AA:11:12 Hog Farm Ballcourt Site	T11S, R10E, S16, 21, 22, 26, 27	Private land	Settlement (ballcourt village)	Formative Native American (Hohokam), Historic Euroamerican	Recommended eligible	Determined eligible by SHPO on 12/08/2003	Avoidance or the preparation of a monitoring and discovery plan
AZ AA:11:107	T13S, R10E, S2, 3	Private land	Settlement (village)	Archaic (?), Formative, and Historic Native American	Recommended eligible	Determined eligible by SHPO on 12/03/2002	Avoidance or the preparation of a monitoring and discovery plan
AZ AA:11:108	T13S, R10E, S2	Private land	Resource (processing)	Formative Native American	Recommended eligible	Determined eligible by SHPO on 12/03/2002	Avoidance or the preparation of a monitoring and discovery plan
AZ AA:11:109	T12S, R10E, S26, 27	Arizona state lands; private land	Trash dump	Historic: Euroamerican	Recommended eligible	No	Avoidance or the preparation of a monitoring and discovery plan
AZ AA:11:131 Avra Valley Road	T12S, R10E, S15	Private land	Road	Historic: Euroamerican	Recommended not eligible	No	None
AZ AA:11:135	T11S, R10E, S26, 27, 34, 35	Arizona state lands; private land	Resource (campsite)	Prehistoric (Formative period): Native American	Recommended eligible	No	Avoidance or the preparation of a monitoring and discovery plan
AZ AA:11:238 Manville Road	T13S, R10E, S14, 15	Pima County	Road	Historic: Euroamerican	Recommended not eligible	No	None
AZ BB:16:48 EPNG Line No. 1103	T13S, R10E, S10, 11	Private	Natural gas line	Historic: Euroamerican	Exempt from Section 106 review (ACHP 2002)	NA	None
AZ AA:11:237 EPNG Line No. 1103 (branch line)	T11S, R10E, S23, 27	Private	Natural gas line	Historic: Euroamerican	Exempt from Section 106 review (ACHP 2002)	NA	None

Table 3. Cultural Resources Findings and Management Recommendations

ASM Site Number	Location	Land Status	Site Type	Age and Cultural Affiliation	Register Eligibility Recommendation	SHPO Concurrence	Recommended Treatment
AZ AA:11:239 Avra Auxiliary Airfield No. 4	T12S R10E, portion of S14, 15, 22, 23	Private and BLM	Military airfield	Historic: Euroamerican	Recommended eligible	No	Avoidance or the preparation of a monitoring and discovery plan
AZ AA:11:240 WAPA Tucson-Saguaro line	T11S, R10E, S26	Private	Electrical transmission line	Historic: Euroamerican	Recommended not eligible	No	None

3.6 SPECIAL-STATUS SPECIES

Twenty-five species are currently identified on the U.S. Fish and Wildlife Service (USFWS) Pima County list; 14 endangered species, 2 threatened species, 5 species that are candidates for listing, 2 species that are listed under conservation agreements, 1 species that has been delisted, and 1 species that was delisted and is currently petitioned for re-listing (Appendix B). All species listed on the USFWS Pima County list were determined to have limited to no potential to occur within the Project Area because their known ranges are outside the Project Area and/or they are found in habitats dissimilar to those occurring within the Project Area.

Five species were identified by a search of the Arizona Game and Fish (AGFD) Heritage Data Management System (HDMS) as occurring within 2 mi of the Project Area: 1 species is listed as a candidate species, 1 was petitioned for listing under the Endangered Species Act (ESA), and 3 are either listed by the state or the Bureau of Land Management (BLM) as special-status species (Appendix C, Table 4). Three of the special-status species that were evaluated based on the results of the HDMS database search were determined not likely to occur within the Project Area. The remaining two species—the Thornber fishhook cactus (*Mammillaria thornberi*) and the cave myotis (*Myotis velifer*)—have a reasonable potential to occur within the Project Area. The Thornber fishhook cactus is a Salvage-Restricted plant species by the State of Arizona and the cave myotis is considered as having a Sensitive status by the BLM.

In addition to evaluating the species listed by the USFWS for Pima County (USFWS 2009) and identified in a search of the AGFD HDMS as occurring within 2 mi of the Project Area (AGFD 2009), WestLand is also providing an evaluation of species identified in the Pima County Multiple Species Conservation Plan Draft V (Pima County Office of Conservation Science and Environmental Policy 2008).

The purpose of this screening analysis is to identify which of these species have the potential based upon known distribution and habitat preferences to occur within and adjacent to the Project alignment. The likelihood of potential occurrence of species within the Project Area occurs along a continuum. Five categories of potential occurrence were used in the screening analysis:

1) Known to Occur
2) Likely to Occur
3) Limited Potential to Occur
4) Not Likely to Occur
5) No Potential to Occur

The results of the screening analysis are summarized in Table 4, below.

Status Key:

US Fish and Wildlife Service Categories:

Endangered - Taxa in danger of extinction throughout all, or a significant portion, of its range.

Threatened - Taxa likely to become Endangered in the foreseeable future throughout all, or a significant portion, of its range.

Candidate - Taxa for which sufficient data exist to support proposals to list, but formal proposals to list the species as Threatened or Endangered have not been made by the USFWS because this action is precluded by other listing activity.

Conservation Agreement - Taxa for which an agreement has been made with the USFWS to improve the status of the species and diminish threats to where listing is no longer necessary under the Endangered Species Act.

Other Categories:

S: Sensitive, under BLM

WSC: Wildlife of Special Concern in Arizona, under the AGFD

HS: Highly Safeguarded, no collection allowed under the Arizona Dept. of Agriculture

SR: Salvage Restricted, collection only with permit under the ADA

PVS: Priority Vulnerable Species covered under the County's Multiple Species Conservation Plan Draft V

Table 4. Special-Status Species Screening Analysis

Species	Status			Known Distribution and Habitat Needs	Potential Occurrence within the Project Area
	ESA	BLM/State	County		
Acuña cactus (*Echinomastus erectocentrus acunensis*)	Candidate; No Critical Habitat; No Recovery Plan	HS	PVS	*Habitat:* Well-drained knolls and gravel ridges in Sonoran Desertscrub. *Range:* Western Pima to Maricopa, and Pinal counties, including Organ Pipe Cactus National Monument, Ajo, Coffee Pot Mountain, and Florence. Potential habitats exist in Sand Tank Mountains of the Barry M. Goldwater Air Force Range and the Tohono O'odham tribal lands. *Elevation:* 1,300 - 2,000 ft. *Data source*: (AGFD 2004b)	No potential to occur. Project Area lacks suitable habitat (well-drained knolls and gravel ridges between major washes on granite soils).
Gentry indigo bush *(Dalea tentaculoides)*		S/HS	PVS	*Habitat:* Found along canyon bottoms on cobble terraces subject to occasional flooding. Historic collection records indicate possible growth on rocky hillsides. Occurs in disturbance-prone environments. *Range:* Located in the Sycamore Canyon drainage of the Atascosa and Pajarito Mountains and in the Baboquivari Mountains (in the 1930s), reported in Mendoza Canyon in 1965. *Elevation:* 3,600 - 4,580 ft. *Data source*: (AGFD 2001g)	No potential to occur. The Project Area occurs outside this plant's known geographic and elevational ranges.

Table 4. Special-Status Species Screening Analysis

Species	Status			Known Distribution and Habitat Needs	Potential Occurrence within the Project Area
	ESA	BLM/State	County		
Gooddings onion (*Allium gooddingii*)	Conservation Agreement; No Critical Habitat; No Recovery Plan	HS		*Habitat:* Forested drainage bottoms and moist, north-facing slopes of mixed conifer and spruce fir forests. *Range:* Known to occur in the White Mountains and Santa Catalina Mountains. *Elevation:* 7,000 - 10,600 ft. *Data source*: (AGFD 1999a)	No potential to occur. This plant is restricted to mountain ranges in central and western Arizona, including the White, Santa Catalina, and Chuska mountains, and in New Mexico. The Project Area is below the lower elevation limit for this species.
Huachuca water umbel (*Lilaeopsis schaffneriana ssp. recurva*)	Endangered; Critical Habitat (50 CFR 17); No Recovery Plan	HS	PVS	*Habitat:* Cienegas, perennial low-gradient streams, wetlands. *Range:* Disjunct locations in Cochise and Santa Cruz counties. Historically in Pima County, Tucson. *Elevation:* 3,500 - 6,500 ft. *Data source*: (AGFD 2003i)	No potential to occur. Suitable habitat (cienegas, perennial low-gradient streams, or wetlands) is not present within the Project Area.
Kearney blue star (*Amsonia kearneyana*)	Endangered; No Critical Habitat; Recovery Plan (USFWS 1993a)	HS		*Habitat:* West-facing drainages in the Baboquivari Mountains. *Range:* South and Sycamore canyons, Baboquivari Mountains, Pima County. Introduced into Brown Canyon, east side of the Baboquivari Mountains. *Elevation:* 3,600 - 3,800 ft. *Data source*: (AGFD 2003a)	No potential to occur. To date, this species is known to occur only in the Baboquivari Mountains in Arizona; originally only from one location, but it has since been located in more localities along the slopes of the Baboquivari Mountains.
Needle-spined pineapple cactus *(Echinomastus erectocentrus var. erectocentrus)*		SR	PVS	*Habitat:* Light-colored gravel on gentle slopes, hills, and alluvial fans in upland desert or Semidesert Grassland. May inhabit disturbed areas (e.g., I-10 goes through a population). *Range:* South-central to southeastern Arizona. Occurs mainly in southeastern Pima and western Cochise counties, with a few occurrences along the San Pedro River in southeastern Pinal County. Found mainly south and east of Tucson (including the Rincon Valley, Little Rincon Mountains, and Santa Rita Mountains), San Pedro River, near Cienega Creek preserve, Empire Mountains, and the Little Dragoon Mountains. *Elevation:* 2,850 - 4,960 ft. *Data source*: (AGFD 2003e)	No potential to occur. The Project Area occurs outside this plant's known geographic and elevational ranges.
Nichol Turk's head cactus (*Echinocactus horizonthalonius var. nicholii*)	Endangered; No Critical Habitat; Recovery Plan (USFWS 1986a)	HS	PVS	*Habitat:* Habitat is characterized by open vegetation, few trees, and scattered low shrubs. Bedrock habitat at higher elevations; gravelly bajadas with limestone clasts at lower elevations. *Range:* Found in the Waterman Mountains in north central Pima County and the Vekol Mountains in southwestern Pinal County. *Elevation:* 2,000 - 3,600 ft. *Data source*: (AGFD 2004a)	No potential to occur. Nichol Turk's head cactus occurs only on Paleozoic limestone outcrops in south-central Arizona, specifically the Horquilla Formation (and older alluvial fans immediately below the Horquilla Formation bedrock), which are not present within the Project Area.

Table 4. Special-Status Species Screening Analysis

Species	Status			Known Distribution and Habitat Needs	Potential Occurrence within the Project Area
	ESA	BLM/State	County		
Pima pineapple cactus (*Coryphantha scheeri var. robustispina*)	Endangered; No Critical Habitat; No Recovery Plan	HS	PVS	*Habitat:* Sonoran Desertscrub or Semidesert Grassland communities. *Range:* Southeastern Arizona. Known range bounded by Santa Cruz County, Santa Rita Mountains (east); Pima County, Baboquivari Mountains (west), Tucson (north), Arizona-Mexican border (south). *Elevation:* 2,300 - 5,000 ft. *Data source*: (AGFD 2001e)	No potential to occur. The Project does not occur within the geographical range of the Pima pineapple cactus. The Project Area is below the lower elevation limit for this species.
Thornber fishhook cactus (*Mammilaria thornberi*)		SR		*Habitat*: Deep, hot, arid, gravelly soils on floodplains, alluvial fans, and deeply dissected uplands. *Range*: Avra Valley/Saguaro National Monument and on the Papago Indian Reservation, Pima and Pinal counties, Arizona. Possibly in northern Sonora, Mexico. *Elevation*: 780 – 2,400 ft *Data Source*: (NatureServe 2009)	Likely to occur. This species is reported by AGFD HDMS as occurring within 2 mi of the Project Area, and the Project Area contains habitat similar to that which is known to support this cactus. No Thornber fishhook cacti were observed during field reconnaissance; however, no species-specific survey or native plant inventory was conducted within the Project Area. This plant is not afforded protection under the ESA.
Arkenstone cave pseudoscorpion *(Albiorix anophrhalmus)*			PVS	*Habitat:* Found in cave interiors, in complete darkness, and where the temperature and humidity remain constant. It can be found under small pieces of broken limestone rock scattered throughout the interior of the cave. *Range:* Pima County, Arizona *Data source*: (SDCP 2002)	No potential to occur. The Project Area does not provide habitat for this species.
San Xavier talussnail (*Sonorella eremita*)	Conservation Agreement; No Critical Habitat; No Recovery Plan			*Habitat:* Deep limestone rockslides with outcrops of limestone and decomposed granite. *Range:* Occurs only on San Xavier Hill in Pima County, Arizona. *Elevation:* 3,850 - 3,920 ft. *Data source*: (AGFD 2003j)	No potential to occur. The San Xavier talussnail occurs only on San Xavier Hill in Pima County, Arizona.
Desert pupfish (*Cyprinodon macularius*)	Endangered; Critical Habitat (50 CFR 17); Recovery Plan (USFWS 1993b)	WSC		*Habitat:* Shallow springs, small streams, and marshes. Tolerates saline and warm water. *Range:* No naturally occurring populations remain in Arizona. *Elevation:* below 5,000 ft. *Data source*: (AGFD 2001f)	No potential to occur. No naturally occurring populations remain in Arizona. The Project Area lacks aquatic habitat.

Table 4. Special-Status Species Screening Analysis

Species	Status			Known Distribution and Habitat Needs	Potential Occurrence within the Project Area
	ESA	BLM/State	County		
Desert sucker *(Catostomus clarki)*		S	PVS	*Habitat:* The desert sucker is found in rapids and flowing pools of streams, primarily over bottoms of gravel-rubble with sandy silt in the interstices. *Range:* Occurs throughout the entire Gila River basin and in the Bill Williams tributaries. *Elevation:* 480 - 8,840 ft. *Data source*: (AGFD 2002b)	No potential to occur. The Project Area lacks aquatic habitat for this fish.
Gila chub (*Gila intermedia*)	Endangered; Critical Habitat (50 CFR 17); No Recovery Plan	WSC	PVS	*Habitat:* Pools, springs, cienegas, and streams. *Range:* Currently known from the Santa Cruz River (Cienega Creek, Sabino Canyon, Sheehy Spring), Middle Gila River (Eagle, Bonita and Harden Cienega Creeks and San Carlos and Blue Rivers), San Pedro River (Bass, O'Donnell and Redfield Canyons, Babocomari River and Turkey Creek), Agua Fria River (Silver and Sycamore [rare] Creeks), Verde River (Spring and Walker Creeks). *Elevation:* 2,000 - 3,500 ft. *Data source*: (AGFD 2002h)	No potential to occur. Aquatic habitat (pools, springs, cienegas, and streams) is not present within the Project Area.
Gila longfin dace (*Agosia chrysogaster chrysogaster)*		S	PVS	*Habitat:* Ranging habitat, from intermittent hot low-desert streams to cool brooks at higher elevations. Occupy relatively small or medium-size streams, with sandy or gravelly bottoms, eddies, pools near overhanging banks or other cover. *Range:* Primarily in the Gila and Bill Williams drainages and introduced into the Virgin River basin, Arizona. *Elevation:* below 4,900 ft, but have been recorded ranging to 6,700 ft. *Data source*: (AGFD 2006a)	No potential to occur. The Project Area lacks aquatic habitat for this fish.
Gila topminnow (*Poeciliopsis occidentalis occidentalis*)	Endangered; No Critical Habitat; Recovery Plan (USFWS 1998a)	WSC	PVS	*Habitat:* Intermittent or perennial streams, springs, and cienegas, vegetated shallows. *Range:* Known to occupy several localities in the Gila River drainage and one locality in the Bill Williams River drainage. *Elevation:* below 4,500 ft. *Data source*: (AGFD 2001l)	No potential to occur. The Project Area lacks aquatic habitat (headwater springs and vegetated margins and backwater areas of intermittent and perennial streams and rivers) for this fish.
Sonora sucker *(Catostomus insignis)*			PVS	*Habitat:* Found in an assortment of habitats from warm water rivers to trout streams. "It has an affinity for gravelly or rocky pools, or at least for relatively deep, quiet waters." *Range:* Found in central Arizona and Santa Cruz Co., "widespread in the Gila and Bill Williams river basins in Arizona." *Elevation:* 1,210 - 8,730 ft.	No potential to occur. The Project Area lacks aquatic habitat for this fish.

Table 4. Special-Status Species Screening Analysis

Species	Status			Known Distribution and Habitat Needs	Potential Occurrence within the Project Area
	ESA	BLM/State	County		
				Data source: (AGFD 2002c)	
Chiricahua leopard frog (*Lithobates [Rana] chiricahuensis*)	Threatened; No Critical Habitat; Recovery Plan (USFWS 2007)			*Habitat:* Streams, rivers, backwaters, ponds, and stock tanks that are free from introduced fish and bullfrogs. Habitat types may include oak, mixed oak, pine woodlands, chaparral, grassland, and even desert. *Range:* Arizona range is divided into two areas. The first (northern population) extends from montane central Arizona east and south along the Mogollon Rim to montane parts of west-southwestern New Mexico. The second is located in the mountains and valleys south of the Gila River in southeastern Arizona and southwestern New Mexico, and extends into Mexico (adjacent Sonora) along the eastern slopes of the Sierra Madre Occidental. *Elevation:* 3,300 - 8,900 ft. *Data source*: (AGFD 2006c)	No potential to occur. Requires permanent or nearly permanent water sources such as streams, rivers, or ponds.
Lowland leopard frog *(Lithobates [Rana] yavapaiensis)*		WSC	PVS	*Habitat:* Aquatic systems in Semidesert Grassland to Great Basin Conifer Woodland. *Range:* Found in central and southeastern part of state, with close to 60 percent of all localities occurring in Gila, Maricopa and Yavapai counties. They are now absent from the lower Colorado River and have declined significantly in southeastern Arizona. *Elevation:* 480 - 8,200 ft. *Data source*: (AGFD 2006d)	No potential to occur. The Project Area does not contain any permanent or nearly permanent aquatic resources.
Desert box turtle *(Terrapene ornata luteola)*			PVS	*Habitat:* Primarily low valleys, plains, and gentle bajadas within Semidesert Grassland and Chihuahuan Desertscrub communities. Occasionally found in Sonoran Desertscrub and Madrean Evergreen Woodland. *Range:* Occurs in southeastern Arizona, southern New Mexico, west Texas, and into the northern Mexican states of Sonora and Chihuahua. *Elevation:* 0 - 6,600 ft. *Data Source:* (Brennan 2006), (Degenhart 1974)	Not likely to occur. The Project Area occurs outside the known range of the species in Arizona (AGFD Undated). It is known to occur in Las Cienegas Conservation Area, in the Santa Cruz River near Sahuarita, and Altar Valley. Pima County is the westernmost edge of this species' range (RECON 2001).
Giant spotted whiptail *(Aspidoscelis burti stictogrammus)*		S	PVS	*Habitat:* Inhabits mountain canyons, arroyos, and mesas in arid and semi-arid regions, entering lowland desert along stream courses. Found in dense shrubby vegetation, often among rocks near permanent and intermittent streams.	Not likely to occur. The Project Area does not contain near permanent or permanent water sources. The Project Area does not provide habitat known to support this

Table 4. Special-Status Species Screening Analysis

Species	Status			Known Distribution and Habitat Needs	Potential Occurrence within the Project Area
	ESA	BLM/State	County		
				Occurs in riparian habitat dominated by sycamore, cottonwood, and ash. *Range:* Southeastern Arizona, including Mineral Hot Springs, Cochise County, and the Santa Catalina, Santa Rita, Baboquivari, and Pajarito mountains, vicinity of Oracle, Pinal County. *Elevation:* Up to 4,500 ft *Data source:* (AGFD 2001a)	species.
Ground snake *(Sonora semiannulata)*			PVS	*Habitat:* Semidesert Grassland, Juniper Woodland (mixed shrub), and Sonoran Desertscrub habitat types. *Range:* The ground snake is common to rocky slope and grassland flats of the Sulphur Spring Valley in Arizona. *Elevation:* Below 5,500 ft. *Data source:* (SDCP 2002)	Likely to occur. This species prefers denser soils generally associated with valley bottoms in the town of Marana and the Brawley Wash floodplain (Town of Marana 2009). The ground snake is nocturnal and requires loose soil for burrowing. The Project construction could cause mortality or injury to individual ground snakes where construction takes place in suitable areas for this snake.
Northern Mexican gartersnake (*Thamnophis eques megalops*)	Candidate	WSC	PVS	*Habitat*: In Arizona, these snakes are most abundant in densely vegetated habitat surrounding cienegas, cienega-streams, and stock tanks and in or near water along streams in valley floors and generally open areas, but not in steep mountain canyon stream habitat. *Range:* Found in the southeast corner of the state from the Santa Cruz Valley east and generally south of the Gila. Recent valid records occur from the San Rafael and Sonoita grasslands area and from Arivaca. Known from the Agua Fria River, Oak Creek, the Verde River, and from several upper Salt/Black River sites, including smaller tributaries. *Elevation:* 3,000 - 8,500 ft. *Data source*: (AGFD 2001m)	No potential to occur. There are no aquatic resources within the Project Area.

Table 4. Special-Status Species Screening Analysis

Species	Status			Known Distribution and Habitat Needs	Potential Occurrence within the Project Area
	ESA	BLM/State	County		
Organ pipe shovel-nosed snake *(Chionactis palarostris)*			PVS	*Habitat:* In Arizona, occupies palo verde-saguaro habitats, and is fossorial in sandy and sandy-gravelly soils; prefers bajadas and hilly terrain. *Range:* Along Sonoyta-Ajo road in Organ Pipe Cactus National Monument and the surrounding area, from Mexican U.S. border to 23 mi north. *Elevation:* Up to 2,500 ft. *Data source*: (AGFD 2003b)	No potential to occur. The Project Area occurs outside this snake's known geographic range.
Sonoyta mud turtle (*Kinosternon sonoriense longifemorale*)	Candidate; No Critical Habitat; No Recovery Plan			*Habitat:* Ponds and streams *Range:* Found in Quitobaquito Springs. *Elevation:* 1,100 ft. *Data source*: (AGFD 2005a)	No potential to occur. There are no natural or man-made aquatic resources and the Project Area is far outside of the species' geographic range (Quitobaquito Springs).
Red-backed whiptail lizard *(Cnemidophorus burti xanthonotus)*			PVS	*Habitat:* In Arizona, found in canyons and hills in Madrean Evergreen Woodlands down to Sonoran Desertscrub habitats, among dense shrubby vegetation near and on the banks of semi-arid permanent streams and arroyos. *Range:* Quitobaquito Hills, Ajo Range, and Ajo, Puerto Blanco and Agua Dulce mountains in Pima County. Sand Tank and Sauceda mountains in Maricopa County. *Elevation:* 1,070 - 3,500 ft. *Data source*: (AGFD 2003c)	No potential to occur. The Project Area occurs outside this lizard's known geographic range.
Texas horned lizard (*Phrynosoma cornutum*)		S		*Habitat*: In Arizona, Chihuahuan Desert and Semidesert Grassland; sandy to gravelly flat ground with or without rocky cover, usually with scattered desert and grassland shrubs or on mesquite-dominated flats. *Range:* Extreme southeast corner of Arizona, west to the western edge of the San Pedro Valley and north to Willcox. This includes the counties of Cochise, Graham, and Pima. *Elevation:* 3,580 - 4,940 ft. *Data Source*: (AGFD 2002j)	Limited potential to occur. Although this species was identified by the AGFD HDMS as occurring within 2 mi of the Project Area, the Project Area occurs outside this species' range (AGFD 2002j). This species is not afforded protection under the ESA.

Table 4. Special-Status Species Screening Analysis

Species	Status			Known Distribution and Habitat Needs	Potential Occurrence within the Project Area
	ESA	BLM/State	County		
Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*)	Petitioned for Listing under the ESA	S	PVS	*Habitat:* Found in arid deserts with sandy washes, dunes, and rocky hillsides. They prefer areas with scattered mesquite-creosote bush. *Range:* South central Arizona, in Pima and Pinal counties. *Elevation:* 0 - 4,700 ft. *Data Source*: (AGFD 2002d)	Not likely to occur. This snake moves by using a sideways swaying motion under or on the surface of sand or loose soil and the Project Area contains this substrate only where it crosses Brawley Wash. The last verifiable record of this snake in Pima County was in 1979 near the intersection of Avra Valley Road and Sanders Road in Avra Valley (73 FR 146, 43907). According to the petition for this species' listing, the current distribution of this snake is believed to be in southern Pinal County and Maricopa County (73 FR 146, 43907).
Abert's towhee (*Pipilo aberti*)			PVS	*Habitat:* Found in mesquite bosques and cottonwood-willow associations with an understory of dense shrubs. This towhee occurs in brushy riparian habitat within the Lower Sonora zone. *Range:* It occurs in central Arizona and can be found in suitable habitat along rivers, streams, and washes. *Elevation:* Found nesting at elevations between 80 - 4,900 ft. *Data source*: (SDCP 2002)	Limited potential to occur. This species has potential to use the riparian habitat along Brawley Wash and dense ribbons of vegetation along active agriculture south of Avra Valley Road within the Project Area. Abert's towhee has been observed in well-watered areas within residential development in the Phoenix area, which suggests that water is an important habitat element for this species (Peterson 1996).
Bell's vireo (*Vireo bellii*)			PVS	*Habitat:* Bell's vireo inhabits lowland riparian areas with willows, mesquite, and seepwillows. The vireo prefers dense, low, shrubby vegetation in riparian areas. *Range:* The breeding range includes Arizona. Bell' s vireo has been observed in the Cienega Creek Natural Preserve and along the effluent-dominated Santa Cruz River. This species also occurs in Saguaro National Park, Organ Pipe National Monument, Buenos Aires National Wildlife Refuge, Tucson Mountain Park, and Colossal Cave. *Elevation:* At elevations up to 5,120 ft. *Data sources*: (AGFD 2002k), (Biota Information System of New Mexico 1997)	Limited potential to occur. This species has potential to use the riparian habitat along Brawley Wash and dense ribbons of vegetation along active agriculture south of Avra Valley Road within the Project Area.

Table 4. Special-Status Species Screening Analysis

Species	Status			Known Distribution and Habitat Needs	Potential Occurrence within the Project Area
	ESA	BLM/State	County		
American peregrine falcon (*Falco peregrinus anatum*)	Delisted [Note 1]			*Habitat:* Areas with rocky, steep cliffs near water where prey (primarily shorebirds, songbirds, and waterfowl) concentrate. Nests are found on ledges of cliffs and sometimes on man-made structures such as towers and bridge abutments. *Range:* In Arizona from Apache, Cochise, Gila, Graham, Greenlee, La Paz, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai, and Yuma Counties, particularly along cliffs such as the Mogollon Rim, Grand Canyon, and Colorado Plateau. *Elevation:* 400 - 9,000 ft. *Data source*: (AGFD 2002g)	Limited potential to occur. The Project Area does not support the concentration of prey that this species requires and provides no nesting substrate. This species could potentially fly over the Project Area. This species is not afforded legal protection under the ESA.
California least tern (*Sterna antillarum browni*)	Endangered No Critical Habitat; Recovery Plan (USFWS 1985)			*Habitat:* Open, bare, or sparsely vegetated sand, sandbars, gravel pits, or exposed flats along shorelines of inland rivers, lakes, reservoirs, or drainage systems. *Range:* The Pacific Coast of California, from San Francisco to Baja, California. Breeding occasionally documented in Arizona, migrants may occur more frequently. *Elevation:* Below 2,000 ft. *Data source*: (USFWS 2009)	No potential to occur. The Project Area does not provide suitable habitat for this species.
Cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*)	Petitioned for Relisting [Note 5]	WSC	PVS	*Habitat:* Mature cottonwood/willow, mesquite bosques, and Sonoran Desertscrub. Nests in broadleaf riparian trees or Saguaro cacti. *Range:* Formerly common in mesquite bosques throughout central southern Arizona, found south of Tortolita Mts., west of Tortilla Mts., Rincon Mts., Pajarito Mts., Puerto Blanco Mts., Ajo Mts., Santa Catalina Mts., Santa Rita Mts., Tucson area, Gila River near Bonita Creek and San Francisco River, San Pedro River near Dudleyville, and Sonoyta Creek. *Elevation:* below 4,000 ft. *Data source*: (AGFD 2001i)	Not likely to occur. WestLand requested technical assistance from the USFWS regarding the need for survey for this species within the Project Area and the USFWS concurred with WestLand's determination that, while the site does support a few pygmy-owl habitat elements, occupancy or use of this parcel by the pygmy-owl is unlikely due to overall lack of suitable pygmy-owl habitat, the extent and intensity of existing development (agriculture) adjacent to the Project Area, and the distance of the Project Area from known pygmy-owl locations (Appendix D).
Masked bobwhite (*Colinus virginianus ridgewayi*)	Endangered; No Critical Habitat; Recovery Plan (USFWS 1995a)	WSC		*Habitat:* Desert grasslands with diversity of dense native grasses, forbs, and brush. *Range:* Northern edge of range extended to bottomlands of Altar and Santa Cruz valleys. *Elevation:* 1,000 - 4,000 ft. *Data source*: (AGFD 2001d)	No potential to occur. No desert grassland habitat is present and the nearest known occurrence of this species is more than 40 mi southeast of Tucson.

Table 4. Special-Status Species Screening Analysis

Species	Status			Known Distribution and Habitat Needs	Potential Occurrence within the Project Area
	ESA	BLM/State	County		
Mexican spotted owl (*Strix occidentalis lucida*)	Threatened; Critical Habitat (50 CFR 17); Recovery Plan (USFWS 1995b)	WSC		*Habitat:* Nests in canyons and dense forests with multi-layered foliage structure. *Range:* Distributed in forested mountains statewide, along with steep canyons on the Colorado Plateau, including the Grand Canyon, and in the following counties: Apache, Cochise, Coconino, Gila, Graham, Greenlee, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, and Yavapai. *Elevation:* 4,100 - 9,000 ft. *Data source*: (AGFD 2005b)	No potential to occur. The Project Area lacks suitable habitat (canyons and dense forests). The site is below the elevational range of this species.
Rufous-winged sparrow (*Aimophila carpalis)*			PVS	*Habitat:* Sparse Semidesert Grasslands mixed with mesquite. *Range:* Year-round resident of south-central to southeastern Arizona, south to Sonora and central Sinaloa in Mexico. *Elevation:* 0 - 4,900 ft. Data Source: (Birdlife International 2007), (Sibley 2000)	Not likely to occur. This species uses semi-desert grassland habitat, which does not occur within the Project Area.
Southwestern willow flycatcher (*Empidonax traillii extimis*)	Endangered; Critical Habitat (50 CFR Part 17); Recovery Plan (USFWS 2002a)	WSC	PVS	*Habitat:* Cottonwood/Willow and Tamarisk vegetation communities along rivers and streams. *Range:* Breeds locally along Colorado River, near mouth of Little Colorado River, and south of Yuma; at Little Colorado River headwaters near Greer and Eagar; very locally along the middle Gila, Salt, and Verde rivers; middle to lower San Pedro River; and upper San Francisco River near Alpine. *Elevation:* below 8,500 ft. *Data source*: (AGFD 2002f)	Not likely to occur. This species is a riparian obligate, requiring dense foliage and surface water. No perennial or intermittent water sources or riparian obligate vegetation occurs within or adjacent to the Project Area.
Swainson's hawk (*Buteo swainsoni*)			PVS	*Habitat:* The species occurs in Grasslands, Semidesert Grasslands, and Savanna Grasslands, either apart or intermixed with open desertscrub habitats of the Sonoran, Mohave, Chihuahuan, and Great Basin Deserts. Historically and in existing native habitat, Swainson's hawks forage in open stands of grass-dominated vegetation, sparse shrub-lands, and small open woodlands. *Range:* Summer resident of grassy plains in southeastern Arizona, but also found sparingly to central and south-central Arizona. Nest commonly in the Basin and Range biogeographic province to the south. Historically, there were likely pockets of suitable Semidesert Grassland from Nogales north to Tucson and following the upper elevation limits of the Sonoran Desert to Phoenix. *Elevation:* 1,890 - 5,650 ft. *Data source*: (AGFD 2001c)	Limited potential to occur. This hawk is known to nest near the Santa Cruz River, both in Green Valley and possibly at the North Simpson Restoration Site in northern Pima County. Agricultural fields within the Project Area potentially provide foraging habitat; however, the Project does not provide the grassland habitat preferred by this species. This hawk could potentially fly over the Project Area.

Table 4. Special-Status Species Screening Analysis

Species	Status			Known Distribution and Habitat Needs	Potential Occurrence within the Project Area
	ESA	BLM/State	County		
Western burrowing owl (*Athene cunicularia hypugaea)*		S	PVS	*Habitat:* Found in open, well-drained grasslands, steppes, deserts, prairies, and agricultural lands, often associated with burrowing mammals. May be found in open areas such as vacant lots near human habitation, golf courses, or airports. *Range:* Range includes southern and southeastern Arizona, and agricultural areas of Maricopa and Pinal counties. *Elevation:* 650 - 6,140 ft. *Data source*: (AGFD 2001b)	Likely to occur. WestLand biologists searched for potential burrow sites and none were found during field reconnaissance; however, this species is known to occur in open areas and agricultural lands. Individual burrowing owls would not be impacted by Project construction.
Yellow-billed cuckoo (*Coccyzus americanus*)	Candidate; No Critical Habitat; No Recovery Plan	WSC	PVS	Habitat: Large blocks of riparian woodlands (cottonwood, willow, or tamarisk galleries). Range: Southern and central Arizona and extreme northeast. Elevation: below 6,500 ft. *Data source:* (AGFD 2002e)	Not likely to occur. This species is reported by AGFD HDMS as occurring within 2 mi of the Project Area; however, no suitable nesting habitat (large blocks of riparian woodlands) is present on or adjacent to the Project Area.
Allen's big-eared bat *(Idionycteris phyllotis)*			PVS	*Habitat:* In Arizona, most often in ponderosa pine, pinyon-juniper, Mexican woodland, and riparian areas of sycamores, cottonwoods, and willows. May occur in white fir and in Mohave desertscrub. Boulder piles, cliffs, rocky outcrops, or lava flows at/near most collection locations. Typically netted along streams/over ponds where they may be seeking insects, water, or both. Roosts in caves and abandoned mineshafts. *Range:* Specimen locations range across most of Arizona, but not known from the southwestern deserts of Arizona. *Elevation:* 1,320 - 9,800 ft. *Data Source*: (AGFD 2001h)	Not likely to occur. This species forages over open water and roosts in caves and abandoned mineshafts.
Arizona shrew *(Sorex arizonae)*			PVS	*Habitat:*Found primarily in riparian edges in pine-oak forests. *Range:* In Arizona, known only from the Chiricahua, Huachuca and Santa Rita mountains (Cochise and Santa Cruz counties). Populations are small and isolated. *Data source:* (SDCP 2002)	No potential to occur. The Project Area occurs outside this species' known geographic range and supports no habitat for the species.
California leaf-nosed bat (*Macrotus californicus*)		WSC	PVS	*Habitat:* Mostly found in Sonoran Desertscrub; primary summer and winter range essentially the same; primarily roost in mines, caves, and rock shelters. Day roosts in mines are usually within about 80 ft of the entrance. *Range:* Primarily south of Mogollon Plateau; additional reports in extreme southeastern and in summer extreme northwestern Mohave County. Year-round occupant of some roosts. Winter range essentially the same as summer range. *Elevation:* below 4,000 ft. *Data source:* (AGFD 2001j)	Limited potential to occur. This species may forage over the Project Area, but the Project Area does not provide any potential roosting substrate.

Table 4. Special-Status Species Screening Analysis

Species	Status			Known Distribution and Habitat Needs	Potential Occurrence within the Project Area
	ESA	BLM/State	County		
Cave myotis (*Myotis velifer*)		S		*Habitat:* Desertscrub of creosote, brittlebush, palo verde and cacti. Roost in caves, tunnels, mineshafts, under bridges, and sometimes in buildings, within a few miles of water. *Range:* South of Mogollon Plateau from Lake Mohave, Burro Creek, Montezuma Well, San Carlos Apache Reservation, and the Chiricahua Mountains south to Mexico. Although known from as far southwest as the Harquahala Mountains, Gila Bend, Organ Pipe Cactus National Monument, and about 20 mi north of Yuma near the Colorado River, it has not been recorded from the extreme southwestern part of the state. *Elevation:* 300 - 5,000 ft. *Data source:* (AGFD 2002i)	Likely to occur. This insectivorous bat species likely uses the Project Area while foraging. It is reported by AGFD HDMS as occurring within 2 mi of the Project Area. Potential roosting habitat for this species is provided by the Brawley Wash Bridge. This bat forages just over the top of vegetation, staying close to the vegetation 6 to 15 ft above the ground (AGFD 2002i). The Project would not adversely impact the cave myotis because the vegetation removed as a result of the Project would not likely affect this bat's ability to continue to forage over the Project Area and the Project will not impact the Brawley Wash Bridge. No species-specific survey was conducted within the Project Area for this bat. This species is not afforded legal protection under the ESA.
Jaguar (*Panthera onca*)	Endangered; No Critical Habitat; No Recovery Plan	WSC		*Habitat:* In Arizona, ranges widely throughout a variety of habitats from Sonoran Desert to conifer forests. *Range:* Rarely has this species been recorded from southern Arizona, New Mexico, and southern Texas. Currently, its known range in Arizona is in southeastern Arizona. Confirmed occurrences of this species account for only a fraction of the reports. *Elevation:* below 8,000 ft. *Data source:* (AGFD 2004d)	No potential to occur. Jaguars have been reported regularly but uncommonly in Arizona throughout the 1900s up to the present (Girmendonk, 1994; Brown and González, 2001), but confirmed occurrences account for only a fraction of the reports.
Lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*)	Endangered; No Critical Habitat; Recovery Plan (USFWS 1994a)	WSC	PVS	*Habitat:* Desertscrub habitat with agave and columnar cacti present as food plants. Roosts in caves, mine tunnels, and old buildings. *Range:* Southern Arizona from the Picacho Mountains southwesterly to the Agua Dulce Mountains and southeasterly to the Galiuro and Chiricahua Mountains and then southerly into Mexico and beyond. Also two late-summer records of immature individuals from the Phoenix area and one from the Pinaleño Mountains. *Elevation:* below 6,000 ft. *Data source:* (AGFD 2003h)	Limited potential to occur. Although lesser long-nosed bats are found throughout the region, the site contains no roost sites or forage plants for this species. This species may fly over the Project Area in search of forage.

Table 4. Special-Status Species Screening Analysis

Species	Status			Known Distribution and Habitat Needs	Potential Occurrence within the Project Area
	ESA	BLM/State	County		
Merriam's mouse *(Peromyscus merriami)*			PVS	*Habitat*: Riparian or low desert habitats. Found in dense brush, mesquite bosque. *Range:* South-central Arizona south through Sonora to central Sinaloa, Mexico, including Pima, Pinal, and Santa Cruz counties. *Elevation:* 1,600 - 3,850 ft. *Data source:* (AGFD 2001k)	Limited potential to occur. This species may potentially use areas where dense brush is found within the Project Area along Brawley Wash.
Mexican long-tongued bat *(Choeronycteris mexicana)*		WSC	PVS	*Habitat:* Primarily mesic areas in canyons of mixed oak-conifer forests, but a few are found in palo verde-saguaro areas. Caves and abandoned mines are favored daytime retreats where they prefer to roost in the dimly lit areas often near the entrance. They are also often found in shallow caves or rock shelters. *Range:* Southeast Arizona, from the Chiricahua Mountains extending as far north as the Santa Catalina Mountains and as far west as the Baboquivari Mountains. AGFD HDMS unpublished records show them in Pinal, Pima, Graham, Santa Cruz, and Cochise counties. *Elevation:* 2,540 - 7,320 ft. *Data source:* (AGFD 2006b)	Not likely to occur. The Project Area occurs below this species' lower elevational range and does not provide suitable roosting or foraging habitat.
Ocelot (*Leopardus pardalis*)	Endangered; No Critical Habitat; Recovery Plan (USFWS 1990)			*Habitat:* Humid tropical and subtropical forests, savannahs, and semi-arid thornscrub. *Range:* Very little natural history information is known regarding the ocelot in Arizona. Infrequent and unconfirmed reports for southern Arizona suggest its occurrence anywhere in southern Arizona is very unlikely at this time. *Elevation:* below 8,000 ft. *Data source:* (AGFD 2004c)	No potential to occur. Very little natural history information is known regarding the ocelot in Arizona. The infrequent and unconfirmed reports of this species for southern Arizona suggest its occurrence anywhere in southern Arizona is very unlikely at this time.
Pale Townsend's big-eared bat *(Corynorhinus townsendii pallescens)*			PVS	*Habitat:* In Arizona, summer day roosts are found in caves and mines from desertscrub up to woodlands and coniferous forests. Night roosts may often be in abandoned buildings. In winter, they hibernate in cold caves, lava tubes, and mines mostly in uplands and mountains from the vicinity of the Grand Canyon to the southeastern part of the state. *Range:* Widespread in Arizona, including Cochise, Coconino, Gila, Graham, La Paz, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai, and Yuma counties. *Elevation:* 550 - 7,520 ft. *Data source:* (AGFD 2003d)	Likely to occur. This species may forage over the Project Area. The Project vicinity may provide suitable night roosting substrate, but it does not provide substrate suitable for summer day roosting or hibernation.

Table 4. Special-Status Species Screening Analysis

Species	Status			Known Distribution and Habitat Needs	Potential Occurrence within the Project Area
	ESA	BLM/State	County		
Sonoran pronghorn (*Antilocapra Americana sonoriensis*)	Endangered; No Critical Habitat; Recovery Plan (USFWS 1998b)			*Habitat:* Broad, intermountain alluvial valleys with creosote-bursage and palo verde-mixed cacti associations. *Range:* Found on the Cabeza Prieta National Wildlife Refuge, the Organ Pipe Cactus National Monument, the Luke Air Force Barry M. Goldwater Gunnery Range, and possibly the Tohono O'odham Indian Reservation. *Elevation:* 2,000 - 4,000 ft. *Data source:* (AGFD 2002a)	No potential to occur. Sonoran pronghorn occur in western Pima County, including the Barry Goldwater Air Force Range and the Cabeza Prieta National Wildlife Refuge.
Western red bat *(Lasiurus blossevillii)*		WSC	PVS	*Habitat:* Riparian and other wooded areas. Roosts by day in trees. Summer roosts usually in tree foliage, sometimes in leafy shrubs or herbs. Often found in trees of fruit orchards. May also roost in saguaro boots and occasionally in cave-like situations although they generally avoid caves and buildings during both summer/winter. *Range:* Thirty records (as of 2001) scattered throughout the state, except in desert areas. Summer resident only, records from June 12 to August 21. *Elevation:* 1,900 - 7,200 ft. *Data source:* (AGFD 2003f)	Not likely to occur. The Project Area does not contain habitat required by this species.
Western yellow bat *(Lasiurus xanthinus)*		WSC	PVS	*Habitat:* Urban situations with palm trees. Low-to-mid elevation riparian communities with broad-leaved deciduous trees. May be associated with Washington fan palm trees, other palms, or other leafy vegetation such as sycamores, hackberries, and cottonwoods which provide roost sites. Individuals have been found roosting about 15 ft above the ground in a hackberry and sycamores. *Range:* Known primarily from Tucson and Phoenix. Also taken in Yuma (including the Yuma Proving Ground), Sasabe, along the Bill Williams River, and in the Chiricahua Mountains. Found in Guadalupe Canyon, Peloncillo Mountains, Hidalgo County, New Mexico, extremely close to Arizona. *Elevation:* 550 - 6,000 ft. *Data source:* (AGFD 2003g)	Limited potential to occur. This species could potentially roost in palms that have been planted within the residential development in the Project's proximity.

3.7 FISH AND WILDLIFE SPECIES

The Project Area does not contain any aquatic habitat to support fish species. Wildlife species that were noted within the Project Area are species common to sparsely vegetated habitats within the Sonoran desertscrub biotic community, such as antelope jackrabbit (*Lepus alleni*), cottontail rabbit (*Sylvilagus floridanus*), round-tailed ground squirrel (*Spermophilus tereticaudus*), raven (*Corvus corax*), curve-billed thrasher (*Toxostoma curvirostre*), mourning dove (*Zenaida macroura*), whiptail lizard (*Cnemidophorus* sp.), and spiny lizard (*Sceloporus magister*).

3.8 AIR QUALITY

In accordance with the Clean Air Act (CAA), the EPA sets National Ambient Air Quality Standards (40 CFR part 50) for six criteria pollutants that are deemed harmful to public health and safety. These six criteria pollutants are carbon monoxide (CO), lead (Pb), particulate matter (PM_{10} and $PM_{2.5}$), nitrogen dioxide (NO_2), ozone (O_3), and sulfur dioxide (SO_2).The Project is located within the Rillito PM_{10} Nonattainment Area (RNA). At the time of designation, the increase in fugitive dust emissions in this area was primarily due to the agricultural lands, Arizona Portland Cement, and vehicular traffic. A State Implementation Plan was developed for the RNA and consisted of emission-control measures that the State of Arizona implemented to meet the PM_{10} National Ambient Air Quality Standards (NAAQS). As a result of the emission-control measures, the 24-hour or annual PM_{10} NAAQS within the RNA have not been exceeded since 1991.[3] Because the RNA has continued to meet the PM_{10} emission standard, the Arizona Department of Environmental Quality (ADEQ) submitted a formal request to the EPA in June 2008 to redesignate the RNA from nonattainment to attainment for the 24-hour PM_{10} NAAQS.[4]

Under Section 162(a) of the CAA, Class 1 federal lands or Air Sheds are granted special air quality protection. Class 1 federal Air Sheds include areas such as national parks, national wilderness areas, and national monuments. Saguaro National Park West is the closest Class 1 federal Air Shed to the Project. The Project is located approximately 7 mi northwest of Saguaro National Park West.

3.9 WATER QUALITY

Section 404 of the CWA regulates the disposal of dredged or fill material in waters of the US. Projects that result in greater than 1 ac of disturbance require the preparation of a stormwater pollution prevention plan (SWPPP) to comply with the terms and conditions of the Arizona Pollutant Discharge Elimination System permit.

Brawley Wash, an ephemeral drainage that intersects the north end of the Project Area and other small unnamed ephemeral washes, are potentially jurisdictional. No special aquatic resources are present within the Project Area.

3 http://www.epa.gov/region/air/az/rillito/index.html
4 http://www.azdeq.gov/environ/air/plan/download/rillito.pdf

3.10 AESTHETICS

The existing landscape has been previously altered by the construction of numerous roads and overhead utility lines as well as residential and commercial development. Approximately 7.5 mi of the 11.98-mi-long Project alignment (approximately 62 percent of the total length of the Project) are located on or adjacent to cultivated or fallow agricultural lands and 78 ac or 55 percent of the Project Area consists of areas that have been previously disturbed. Representative photographs are provided in Appendix A.

The proposed Project Area occurs within approximately 2.5 to 3 mi of the Ironwood Forest National Monument. The Project traverses Avra Valley Road, which is a designated Scenic route per the Pima County Major Streets and Scenic Routes Plan.

3.11 TRANSPORTATION

The Project occurs along Trico Road and the Trico Road alignment, which includes both paved and unpaved and public and private roads. Trico Road is a Pima County public road for approximately 4.5 mi from the northern extent of the Project to El Paso Gas Road. The remaining Trico Road alignment consists of private access roads. Trico Road is classified as a Major Rural Collector from the northern extent of the Project south to Avra Valley Road and has no classification south of Avra Valley Road. The Federal Highway Administration Highway Functional Classification System defines rural collector routes as routes that primarily serve intra-county travel rather than state-wide travel. Collector roads are also defined as those routes that (regardless of traffic volume) generally have travel distances that are shorter than arterial routes. A *major* collector route is defined as: (1) providing service to larger towns not directly served by the higher systems, and to other traffic generators of importance, such as consolidated schools, shipping points, county parks, and industry; (2) linking these places with nearby larger towns or cities, or with routes of higher classification; and (3) serving more important intra-county travel corridors.

3.12 NOISE, RADIO, AND TELEVISION INTERFERENCE

No noise monitoring or study was included as part of this analysis. The land uses adjacent to the Project are a mix of undeveloped land, fallow and cultivated agriculture, low-density residences, and commercial development. The noise sources represent daily activities of the general population, including motor vehicle use mainly along Trico Road, Avra Valley Road, and Manville Road.

No communication towers, microwave relay stations, frequency modulation, commercial amplitude radio transmitters, or other similar electronic installations were identified within the Project vicinity during field reconnaissance.

3.13 HUMAN HEALTH AND SAFETY

Potential health and safety hazards related to the Project include the potential for contamination by fuels, chemicals, or other toxic or hazardous substances and the use of, or accidents involving, hazardous

materials or heavy equipment during construction activities. A Phase I Environmental Assessment has not been conducted as part of this ER.

Current and voltage are required to transmit energy over electrical transmission lines. The current is the source of a magnetic field and voltage is the source of an electric field. Electromagnetic fields surround every electrical device, including power lines. Naturally occurring electromagnetic fields are associated with lightning, magnetic cores, and electric potentials found in living cells.

3.14 SOCIOECONOMIC AND COMMUNITY RESOURCES

Existing land uses on and adjacent to the Project Area include Trico Road and a series of dirt and paved roads; additional utility infrastructure, including another above-ground electrical transmission line owned by Trico Energy Cooperative, Inc.; and a mixture of fallow and cultivated agricultural fields.

One school, an elementary school, occurs within 1 mi of the Project. Roadrunner Elementary is located 1 mi west of northern portions of the Project. A fire station, Fire Station 191 of the Avra Valley Fire District, occurs along the Project, northeast of the intersection of Silverbell and Trico roads adjacent to the Marana Substation. The closest police stations are the Town of Marana Police Headquarters and Avra Valley Pima County Sheriff's Office located 5.5 mi east of the northern extent of the Project and 5 mi east of southern portions of the Project, respectively.

Title VI of the Civil Rights Act of 1964 and related statutes assure that individuals are not excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving federal financial assistance on the basis of race, color, national origin, age, sex, and disability. Executive Order 12898 on Environmental Justice directs that programs, policies, and activities not have a disproportionately high and adverse human health and environmental effect on minority and low-income populations.

Based on the 2007 income year, it is estimated that 14.9 percent of the population in Pima County lives below the poverty level, as compared to an average of 14.1 percent for the state of Arizona and 13.3 percent for the nation.[5] Table 5 provides race census data from the state of Arizona, Pima County, and Avra Valley Census Demographic Profile (CDP), which includes the Project Area.

5 Source: United States Census Bureaus web page, http://quickfacts.census.gov/qfd/states/04/04019.html

Table 5. Race Census Data from Arizona, Pima County, and Avra Valley CDP (Source: United State Census Bureau, Avra Valley CDP Fact Sheet [2000], Pima County, Arizona State and County Quick Facts [2007])

Race	Arizona (%)	Pima County (%)	Avra Valley CDP (%)
White	88.5	87.0	84.0
White (not Hispanic)	59.1	57.8	--
Hispanic or Latino	29.6	32.7	20.7
Black	4.0	3.6	1.8
American Indian and Alaska Native Persons	4.7	3.4	1.7
Asian	2.5	2.6	0.4
Native Hawaiian and Other Pacific Islander	0.2	0.2	0.0
Some Other Race	--	--	9.6
Two or More Races	1.8	1.7	2.4

4.0 ENVIRONMENTAL IMPACTS

4.1 LAND USE

4.1.1 General Land Use

The Project Area is approximately 155 ac in size and largely consists of disturbed areas; 85 ac or 55 percent of the Project Area consists of areas that have been previously disturbed and approximately 70 ac or 45 percent of the Project Area consists of areas that have not been previously disturbed or cleared of vegetation. The Project would require an estimated 17.52 ac of impact for a proposed materials yard, the removal of existing structures, and the placement of new structures (Table 1). Impacts would largely occur within disturbed areas adjacent to roads and agriculture. The Project would follow the recommendations of the District Conservationist to minimize soil erosion.

4.1.2 Important Farmland, Prime Forest Land, and Prime Rangeland

Important farmlands occur within the Project Area along an approximately 2-mi segment that extends from the Sandario Tap structure to the Avra Valley Substation along the east side of Trico Road and along an approximately ¼-mi segment south of Avra Valley Road along both sides of Trico Road.

Impacts to important farmlands associated with the Project would be minimal and would occur within an existing easement on lands that are largely disturbed from previous land-clearing activities.

Per RUS guidelines, discussion of adverse impacts to important farmland is not required for utility lines supported by single-pole structures located immediately adjacent to a road right-of-way or for a project that entails the upgrading of existing lines using the same or equivalent support structures.

4.1.3 Formally Classified Lands

The Project would impact no formally classified lands.

4.2 FLOODPLAINS

Portions of the Project would be located within the 100-year floodplain in areas mapped as Zone AE (area with a 1 percent annual chance of flooding; a high-risk area) and Zone X (shallow 100-year; 500-year flood; a low- to moderate-risk area). Structures placed within the floodplain would be constructed to withstand potential flooding risks and would not modify the natural flows of floodwaters. No long-term or adverse impacts to the floodplain would result from the Project.

4.3 SURFACE WATER

No wetlands are present within the Project Area. The one ephemeral wash, Brawley Wash, that traverses the Project Area is considered potentially jurisdictional and subject to regulation under Section 404 of the

CWA. The Project would not result in any impacts to this wash or any other wash that may be considered jurisdictional by the Corps.

4.4 CULTURAL RESOURCES

WestLand believes that the Project has the potential to adversely affect five Arizona State and National Registers of Historic Places-eligible historic properties (AZ AA:11:12, AZ AA:11:107, AZ AA:11:108, AZ AA:11:109, and AZ AA:11:135 [all ASM]) and provides the general recommendation that the planning and design of the proposed undertaking consider options to avoid affecting these register-eligible sites. However, if avoidance is not possible, WestLand recommends that a qualified archaeological consultant prepare an archaeological monitoring, testing, or data recovery plan that specifies appropriate actions to minimize and resolve the impacts of SWTC's proposed construction activities on the register-eligible sites. This treatment plan should include plans for phased excavations, archival research, photographic documentation, and cartographic documentation, as appropriate, for the resources described above. In addition, WestLand recommends that all construction activities within the boundaries of the sites determined or recommended eligible for inclusion in the State and National Registers of Historic Places be monitored by a qualified archaeologist. All ground-disturbing activities have the potential to unearth human remains, and these must be treated in accordance with Arizona State Statutes (Arizona State Historic Preservation Act [A.R.S. §41-861 *et seq.*] and the Arizona Antiquities Act [A.R.S. §41-841 *et seq.*]).

4.5 VEGETATION

Some native vegetation clearing would result from the Project. Clearing would occur in association with the placement of the 95 new structures to support the new conductor, the removal of 113 existing structures, and the use of an approximately 800 ft by 1,320 ft proposed materials yard. Areas that require vegetation clearing lie adjacent to disturbed areas along the Trico Road alignment that contain both paved and dirt roads, other utility infrastructure, and fallow and active agricultural fields.

4.6 SPECIAL-STATUS SPECIES

Species listed on the USFWS Pima County list were determined to have limited to no potential to occur within the Project Area because their known ranges are outside the Project Area and/or they are found in habitats dissimilar to those occurring within the Project Area; therefore, the Project is not anticipated to affect those species.

Two species, the Thornber fishhook cactus and the cave myotis which were identified by a search of the AGFD HDMS as occurring within 2 mi of the Project Area, have a reasonable potential to occur within the Project Area. The Thornber fishhook cactus is listed as a Salvage-Restricted plant species by the State of Arizona and the cave myotis is considered a Sensitive species by the BLM.

Three species listed as Priority Vulnerable Species under the County's Draft Multiple Species Conservation Plan have a reasonable potential to occur within the Project Area. These are the ground snake (*Sonora semiannulata*), western burrowing owl (*Athene cunicularia hypugaea*), and pale Townsend's big-eared bat (*Corynorhinus townsendii pallescens*).

Thornber fishhook cactus

The Project Area contains habitat similar to that which is known to support the Thornber fishhook cactus. No Thornber fishhook cacti were observed during field reconnaissance; however, no species-specific survey or native plant inventory was conducted within the Project Area. Individual Thornber fishhook cactus could be directly impacted within the Project Area containing native vegetation during Project construction.

Ground snake

The ground snake prefers the denser soils generally associated with the valley bottoms in the town of Marana and the Brawley Wash floodplain (Town of Marana 2009). The ground snake is nocturnal, active during summer months, and requires loose soil for burrowing (Town of Marana 2009). The Project would not likely impact active ground snakes because construction would occur during the day; however, construction could cause mortality or injury to individual ground snakes where construction takes place in suitable areas for nesting or hibernation.

Western burrowing owl

WestLand biologists searched for potential burrow sites and none were found during field reconnaissance; however, the open vegetation and agriculture in the Project Area provide suitable foraging areas for the burrowing owl. WestLand recommends that protocol-level western burrowing owl surveys be conducted within the Project Area. The AGFD *Burrowing Owl Project Clearance Guidance for Landowners* protocol recommends that surveys be conducted during the breeding period (March to mid-July) in areas with suitable habitat. It is recommended that surveys occur 90 days prior to any construction activity on the property and that a second survey may need to be conducted within 30 days of construction activity if the first survey occurred outside the breeding season, or mid-July to late February.[6]

It is not anticipated that individual burrowing owls would be impacted by the Project construction. It is important to note that in some circumstances, burrowing owls can co-exist with development.

If a burrow is discovered within an area that would be impacted by the Project and that burrow is occupied by owls, the owls can be removed prior to construction activities. Although this species is protected by the Migratory Bird Treaty Act, the USFWS will grant a special permit to remove the owls from the area proposed for development. It is important to note that a permitted biologist must perform this removal in accordance with established protocols. The procedure involves trapping the burrowing

6 Conservation measures include collapsing unoccupied suitable burrows, identifying open space buffer areas around occupied and suitable burrows, passive exclusion of owls, and trans-location of owls.

owls in their burrows, which are then excavated. The owls are then trans-located to suitable environments where artificial burrows have been provided. This procedure is routinely used in Maricopa County and elsewhere to remove burrowing owls from the path of development.

Cave myotis

The cave myotis likely uses the Project Area while foraging for insects, and potential roosting habitat for this species is provided by the Brawley Wash Bridge within the Project Area. This bat forages just over the top of vegetation, staying close to the vegetation 6 to 15 ft above the ground (AGFD 2002i). The Project would not adversely impact the cave myotis because the vegetation removed as a result of the Project would not likely affect this bat's ability to continue to forage over the Project Area, nor would the Project impact the Brawley Wash Bridge. No species-specific survey was conducted within the Project Area for this bat.

Pale Townsend's big-eared bat

Pale Townsend's big-eared bat may forage for insects over the Project Area, and the Project vicinity may provide suitable night roosting substrate (abandoned buildings), but it does not provide substrate suitable for summer day roosting or hibernation. Project implementation would not affect this species' ability to forage, and no potential night roosts would be impacted by the Project; therefore, this species would not be adversely affected by the Project.

4.7 FISH AND WILDLIFE

Construction activities would cause temporary and permanent disturbance to wildlife. Impacts would result from ground disturbance within the Project Area. Project activities could result in mortality and injury to ground-dwelling mammals and reptiles.

4.8 AIR QUALITY

No increase in pollutant emissions or adverse effects to air quality are anticipated as a result of the Project. A temporary increase would occur in emissions from vehicles and construction equipment and fugitive dust from road-clearing and trenching activities during the construction of the transmission line. After the replacement of the transmission line, vehicle and dust emissions in the Project Area are expected to return to pre-construction levels.

4.9 WATER QUALITY

Potential Project impacts to water resources could include accelerated erosion or sedimentation during construction activities. A SWPPP would be developed to minimize the potential for the Project to cause adverse effects to existing downstream waters through the implementation of Best Management Practices. Periodic inspections would occur during construction activities in accordance with ADEQ requirements.

4.10 AESTHETICS

Impacts to visual resources are determined by comparing the proposed project to the existing visual surroundings. The existing landscape has been previously altered by the construction of numerous roads and overhead utility lines as well as residential and commercial development. The new transmission line would follow the alignment of the existing transmission line. Although the new transmission structures would be 10 to 20 ft higher than the existing structures, the span between the structures would be increased. Therefore, the number of new structures would be reduced from 113 to 95. For these reasons, the proposed new transmission structures would cause no significant visual impacts to the existing landscape. Appendix E provides photographs taken along the Project Area depicting two existing viewsheds and comparative images illustrating the same viewsheds after Project construction.

4.11 TRANSPORTATION

The transmission line would be rebuilt within the same general alignment that runs parallel to Trico Road. Construction of new roads within the alignment would not be required for future maintenance of the transmission line.

No road closures are anticipated to be required during construction activities. Traffic flow would be managed by contractor crew members during construction. Traffic-control signage would be posted when needed to identify construction areas.

4.12 NOISE, RADIO, AND TELEVISION INTERFERENCE

The Project is not expected to conflict with local noise standards or ordinances, and the noise generated by the Project would likely be near the current background noise levels within the Project Area.

The use of construction equipment during the replacement of the transmission line would cause temporary elevated noise levels within the Project Area. These increases in noise levels would have minor effects on local residents. Construction activities are planned for normal business hours, when increased noise levels are more tolerable, to minimize the impacts of the construction noise.

Noise associated with the transmission line operation is not expected to differ from that generated by the existing transmission line.

During maintenance activities, noise would be generated by crews conducting maintenance or repairs. These noises could be considered only a nuisance.

No radio or television interference is anticipated to result from the Project.

4.13 HUMAN HEALTH AND SAFETY

Implementation of the Project would not give forth any hazardous emissions. SWTC has a current Spill Prevention, Control, and Countermeasure Plan for the potential accidental release of oil and/or oil-based substances associated with their substations. A SWPPP would also be developed and implemented during construction activities to minimize stormwater runoff and eliminate any negative impacts to downstream waters.

The implementation of the Project would not affect any local or regional emergency response or evacuation plans. During construction of the Project, standard health and safety practices would be conducted in accordance with Occupational Health and Safety Administration and SWTC policies and procedures. Worker safety concerns would be reduced to less than significant levels and activities are not expected to result in unusual safety concerns.

The Project would not cause an increase in electromagnetic field exposure.

4.14 SOCIOECONOMIC AND COMMUNITY RESOURCES

The construction, operation, and maintenance of the rebuilt transmission line would not cause any impact to the socioeconomic condition of the Project vicinity. The Project would not cause an increased need for police, fire, medical, or other community resources.

The Project is necessary to support existing local electric needs and SWTC's ability to accommodate emergency needs. The existing transmission line was constructed in 1961 and, to date; the conductor has not received upgrading. The existing line is currently at capacity and would be unable to transmit additional loads without failure should an emergency occur elsewhere in the system. The Project entails the replacement of the existing conductor with a larger conductor at the same 115-kV voltage. Because this Project entails the necessary replacement of existing infrastructure and does not cause a disproportionately high and adverse human health or environmental impact within the Project vicinity, it does not constitute a disproportionate impact under Executive Order 12898. The Project would cause no anticipated impacts to minority or low-income populations.

5.0 CONSULTATION AND COORDINATION

SWTC would conform to all applicable regulations for all agencies involved in the Project (Table 6).

Table 6. Agencies Involved in the Project and Required Permit Authorizations

Permitting Agency	Permit/Authorization
USDA Rural Utilities Service	National Environmental Policy Act; National Historic Preservation Act Section 106
US Army Corps of Engineers	Clean Water Act Section 404, Preliminary Jurisdictional Determination Approval pursuant to RGL 08-02
US Fish and Wildlife Service	Endangered Species Act informal consultation and concurrence
Arizona Department of Environmental Quality	Clean Water Act Section 402, Arizona Pollutant Discharge Elimination System Permit
Arizona State Historic Preservation Office	National Historic Preservation Act Section 106 consultation and concurrence
Arizona Department of Agriculture	Notice of Intent to Clear Land pursuant to Arizona Revised Statute Section 3-904
Arizona State Land Department	Right-of-Way Permit

6.0 PUBLIC SCOPING

6.1 SCOPING AND PUBLIC INVOLVEMENT

A public open house was conducted on April 14, 2009, at Roadrunner Elementary School located at 16651 West Calle Carmela, Marana, Arizona, 85653. SWTC and WestLand staff members were present during this open house to provide information to the public such as project location, project schedule, and project design.

Initial project scoping letters were sent on behalf of RUS to solicit comments regarding the Project from various federal, state, and local agencies and other organizations on August 14, 2009, as listed below.

Federal agencies:

- US Army Corps of Engineers
- US Fish and Wildlife Service
- USDA Natural Resource Conservation Service

State and local agencies:

- Arizona Department of Environmental Quality
- ADA Plant Services Division
- Arizona State Land Department Right of Way Division
- Arizona State Land Department Planning Section
- State Historic Preservation Office
- Arizona Game & Fish Department
- Pima County Planning Division
- Pima County Board of Supervisors
- Pima County Department of Environmental Quality
- Town of Marana Development Services
- Pima Association of Governments

Other organizations:

- Audubon Society
- Center for Biological Diversity
- Coalition for Sonoran Desert Protection
- Defenders of Wildlife
- Drylands Institute
- Sky Island Alliance
- Trico Electric Cooperative, Inc.

Responses were received from the Arizona State Land Department, Trico Electric Cooperative, Inc, the Corps, USFWS, Pima County Development Services, SHPO, Arizona Department of Environmental Quality, and AGFD (Appendix F and Table 7).

6.2 TRIBAL SCOPING AND COORDINATION

In a letter dated June 17, 2009, SWTC requested that RUS initiate tribal consultation with the following:

- Ak-Chin Indian Community
- Tohono O'odham Nation
- Salt River Pima-Maricopa Indian Community
- Gila River Indian Community
- Pascua Yaqui Tribe
- Hopi Tribe
- Zuni Pueblo
- San Carlos Apache Tribe
- White Mountain Apache Tribe

Table 7. Summary of Agency/Interested Party Comments and Responses.

Date	Agency/ Interested Party	Summary of Comment	SWTC Response to Comment
August 20, 2009	Trico Electric Cooperative, Inc.	Trico is aware of the project and has no comment.	N/A
September 1, 2009	Arizona State Land Department	SWTC should be advised to contact the Arizona State Land Department's Agriculture and Grazing Lessees in S27/T12S/R10E prior to commencing this rebuild project.	The Arizona State Land Department's Agriculture and Grazing Lessees potentially affected by proposed activities will be notified of activities prior to commencing Project activities.
		SWTC should be informed that ALL activity on State Trust land must be strictly limited to the existing 50' wide easement.	Activities within State Trust lands will be contained within the existing 50 ft wide easement.
September 3, 2009	State Historic Preservation Office	The proposed project meets the definition of an undertaking for Rural Utilities Services and thus is subject to the provisions of Section 106 of the National Historic Preservation Act and implementing regulations at 36 CFR 800.	SWTC acknowledges that the Project is subject to the provisions of Section 106 of the NHPA and implementing regulations at 36 CFR 800. A cultural resources inventory of the Project Area in accordance with Section 106 of the NHPA was conducted in 2009 as part of this Project.
		The SHPO needs to review and comment on the supporting cultural resources survey report in order to assist RUS in complying with federal law.	SHPO will be consulted regarding any potential impacts to eligible cultural resources. Upon its completion, *A Cultural Resources Inventory for the Proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project, Pima County, Arizona,* prepared by WestLand Resources, Inc., will be submitted to RUS and subsequently forwarded to SHPO for review.
September 14, 2009	Pima County Development Services	The project is located within and/or adjacent to Pima County road right-of-way and any work should be coordinated with Pima County Department of Transportation (DOT).	DOT will be notified of Project activities planned within Pima County road right-of-way.
		The conditions of the right-of-way application approval should preserve and protect natural and cultural resources (plant survey and preservation plan, cultural resources survey), prevent and reduce air pollution (paved roadway), and insure safe public transportation facilities (provisions for drainage and appropriate roadway design, width, horizontal and vertical alignment).	As part of the Project, SWTC has incorporated elements that minimize to the extent practicable impacts to the environment including biological and cultural resources, air quality, and human health, welfare, and safety.
		Scenic Route requirements per the Pima County Major Streets and Scenic Routes Plan apply to Avra Valley Road., Trico Road is not a Scenic Route	SWTC has taken into consideration the status of Avra Valley Road as a scenic route. The proposed Project does not substantially alter the existing viewsheds and no

Table 7. Summary of Agency/Interested Party Comments and Responses.

Date	Agency/ Interested Party	Summary of Comment	SWTC Response to Comment
			significant visual impacts to the existing landscape are anticipated along the Project Area.
		The NEPA process requires the project meet the requirements of Section 106 of the NHPA, and review by the SHPO.	The Project will meet the requirements of Section 106 of the NHPA, and will be reviewed by SHPO.
		It is recommended that the1992 Three Points to Marana Class III survey be reviewed to determine whether it meets contemporary archaeological standards, and if this report does not meet current standards it is recommended that Class III survey be conducted within those areas covered by that survey area. It is also recommended that any areas that have not been surveyed for cultural resources in the last 10 years be surveyed.	A cultural resources inventory of the entire Project Area in accordance with contemporary archaeological standards was conducted in 2009 as part of this Project.
		When the project moves to construction, it will be subject to Arizona state laws protecting cultural resources and human remains.	In the event that human remains, including human skeletal remains, cremations, and/or ceremonial objects and funerary objects are found during excavation or construction, ground-disturbing activities would cease in the immediate vicinity of the activity and the Arizona State Museum will be notified of the discovery. The remains would then be removed from the site by a qualified professional archaeologist pending consultation as appropriate.
September 15, 2009	Arizona Department of Environmental Quality	Stormwater discharges associated with construction activities (clearing, grading, or excavating) which disturb one acre or more must obtain a general permit for coverage of stormwater discharges under the Arizona Pollutant Discharge Elimination System's Construction General Permit. Permit coverage is also required for activities that will disturb less than one acre of land but the project is part of a larger common plan that will ultimately disturb on e or more acres. The applicant should contact Surface Water Permits Unit in the Water Quality Division for more information about this process.	A SWPPP will be developed to minimize the potential for the Project to cause adverse effects to existing downstream waters through the implementation of Best Management Practices. Periodic inspections would occur during construction activities in accordance with ADEQ requirements.

Table 7. Summary of Agency/Interested Party Comments and Responses.

Date	Agency/ Interested Party	Summary of Comment	SWTC Response to Comment
		If project occur inside the Ordinary High Water Mark (OHWM) of any water of the US, then a Clean Water Act Section 404 permit is required for the project, along with a state-issued 401 certification of the permit.	No impacts inside the OHWM will result from the Project.
October 1, 2009	US Fish and Wildlife Service	Assure that the replacement structures are compliant with the current guidelines for reducing raptor electrocution and bird strikes.	The new structures will be compliant with the current guidelines for reducing raptor electrocution.
		Avoid the placement of poles in washes or other areas of enhanced natural vegetation.	Washes and other areas of enhanced natural vegetation will be avoided to the extent practical.
		Survey pole location and other areas of proposed ground disturbance for the presence of burrowing owls. If burrowing owls are present, implement project actions that will avoid impacts to burrowing owls.	Survey for western burrowing owl is planned prior to construction activities. If a burrow is discovered within an area that would be impacted by the Project and that burrow is occupied by owls, the owls will be removed prior to construction activities.
October 7, 2009	US Army Corps of Engineers	A Corps of Engineers permit is required for the discharge of dredged or fill material in "waters of the US".	A preliminary jurisdictional waters delineation was completed and will be submitted to the Corps for review. No impacts inside the OHWM are planned as part of the Project.
November 23, 2009 and September 8, 2009	Arizona Game and Fish Department	All transmission lines must be designed to prevent or minimize the risk of electrocution of raptors.	The new structures will be compliant with the current guidelines for reducing raptor electrocution.
		Avoid project activities that are likely to disturb nesting birds during the breeding season and include in the project plan a means of determining any work which may destroy a bird's nest, or cause a bird to abandon a nest. Nest surveys should be completed and occupied raptor nest on utility poles should be identified prior to initiation of work. The clearing of vegetation which may harbor bird nests should be done outside of the breeding season; likewise work which only temporarily disturbs nesting birds is reasonable to implement during the nesting season.	To the maximum extent practical, SWTC will avoid Project activities that are likely to disturb nesting birds during the breeding season.
		Avoid removal of deadfall and snags whenever practical.	The removal of deadfall and snags will be avoided when practical.
		Report to the USFWS and AGFD any observations of Tucson shovel-nosed snake, if encountered.	If SWTC or its contractors note the presence of Tucson shovel-nosed snake within the Project Area, USFWS and AGFD will be notified.

Table 7. Summary of Agency/Interested Party Comments and Responses.

Date	Agency/ Interested Party	Summary of Comment	SWTC Response to Comment
		Coordinate plant salvage efforts with the Arizona Department of Agriculture, in accordance with the Arizona Native Plant Law. In addition, the applicable land management agencies should be consulted regarding guidelines for revegetation efforts.	SWTC will conduct Project activities in accordance with Arizona Native Plant Law requirements.
		Contact the Corps of Engineers for Best Management Practices and guidelines for minimizing and mitigating impacts to riparian areas.	Washes and other areas of enhanced natural vegetation will be avoided to the extent practical.
		AGFD's HDMS shows that the special status species occur from within the Project vicinity.	An online search of the AGFD HDMS was conducted and species listed as occurring from within 2 miles of the Project were evaluated for their potential to occur from within the Project Area. These species are discussed in the Environmental Report and Application for a Certificate of Environmental Compatibility for the Project.

7.0 REFERENCES

Advisory Council on Historic Preservation (ACHP). 2002. Exemption Regarding Historic Preservation Review Process for Projects Involving Historic Natural Gas Pipelines. *Federal Register* 67(66):1, 2.

Arizona Game & Fish Department (AGFD). 2009. Arizona's Natural Heritage Program: Heritage Data Management System (HDMS). Website: http://www.azgfd.gov/w_c/edits/species_concern.shtml.

———. 2006a. *Agosia chrysogaster chrysogaster.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed May 12, 2008.

———. 2006b. *Choeronycteris mexican.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed May 12, 2008.

———. 2006c. *Rana chiricahuensis.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2006d. *Rana yavapaiensis.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed May 12, 2008.

———. 2005a. *Kinosternon sonoriense longifemorale.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2005b. *Strix occidentalis lucida.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2004a. *Echinocactus horizonthalonius* var. *nicholii.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2004b. *Echinomastus erectocentrus var. acunensis.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2004c. *Leopardus pardalis.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2004d. *Panthera onca.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed May 12, 2008.

———. 2003a. *Amsonia kearneyana.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2003b. *Chionactis palarostris.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed May 12, 2008.

———. 2003c. *Cnemidophorus burti xanthonotus.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed May 12, 2008.

———. 2003d. *Corynorhinus townsendii pallescens.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed May 12, 2008.

———. 2003e. *Echinomastus erectocentrus var. erectocentrus*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed May 12, 2008.

———. 2003f. *Lasiurus blossevillii.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed May 12, 2008.

———. 2003g. *Lasiurus xanthinus.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed May 12, 2008.

———. 2003h. *Leptonycteris yerbabuenae.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2003i. *Lilaeopsis schaffneriana* var. *recurva.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2003j. *Sonorella eremita.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2002a. *Antilocapra americana sonoriensis* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2002b. *Catostomus "Pantosteus" clarki.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed May 12, 2008.

———. 2002c. *Catostomus "Pantosteus" insignis.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed May 12, 2008.

———. 2002d. *Chionactis occipitalis klauberi.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2002e. *Coccyzus americanus occidentalis.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2002f. *Empidonax traillii extimus.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2002g. *Falco peregrinus anatum.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 29, 2009.

———. 2002h. *Gila intermedia.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2002i. *Myotis velifer.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 29, 2009.

———. 2002j. *Phrynosoma cornutum.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 29, 2009.

———. 2002k. *Vireo bellii arizonae.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed May 12, 2008.

———. 2001a. *Aspidoscelis burti stictogrammus.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. Accessed May 12, 2008.

———. 2001b. *Athene cunicularia hypugaea.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. Accessed May 12, 2008.

———. 2001c *Buteo swainsoni.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. Accessed May 12, 2008.

———. 2001d. C*olinus virginianus ridgwayi.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. Accessed June 2, 2009.

———. 2001e. *Coryphantha scheeri* var. *robustispina.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2001f.*Cyprinodon macularius*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. Accessed June 2, 2009.

———. 2001g. *Dalea tentaculoides*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed May 12, 2008.

———. 2001h. *Idionycteris phyllotis.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. Accessed May 12, 2008.

———. 2001i. *Glaucidium brasilianum cactorum*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. Accessed June 2, 2009.

———. 2001j. *Macrotus Californicus*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. Accessed May 12, 2008.

———. 2001k. *Peromyscus merriami.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. Accessed May 12, 2008.

———. 2001l. *Poeciliopsis occidentalis occidentalis*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. Accessed June 2, 2009.

———. 2001m. *Thamnophis eques megalops.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. Accessed June 2, 2009.

———. 1999a. *Allium gooddingii.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. No date. Arizona Game and Fish Department Ornate Box Turtle Range *(Terrapene ornata)* in Arizona. Accessed online at: http://www.azgfd.gov/w_c/documents/TEOR.pdf

Biota Information System of New Mexico (BISON-M). 1997. *"Bell's Vireo (Vireo bellii)."* New Mexico Game and Fish Department. Accessed online: http://www.bison-m.org/booklet.aspx?id=042190 (May 14, 2008)

Birdlife International. 2007. Species factsheet: *Aimophila carpalis*. Available at: http://www.birdlife.org/datazone/species/index.html?action=SpcHTMDetails.asp&sid=9022&m=0. Accessed May 15th, 2008.

Brennan, T.C., and A.T. Holycross. 2006. *A Field Guide to Amphibians and Reptiles in Arizona.* Arizona Game and Fish Department. Phoenix, AZ.

Brown, D.E. (ed.). 1994. *Biotic Communities: Southwestern United States and Northwestern Mexico.* University of Utah Press: Salt Lake City.

Brown, D.E. and C.A.L. González, 2001. Borderland Jaguars/Tigres de la Frontera. Published in Paperback by Univ of Utah Pr (Trd) (November, 2001)

Degenhart, W.G. and J.L. Christiansen. 1974. Distribution and Habitats of Turtles in New Mexico. *The Southwestern Naturalist*, 19(1):21-46.

Girmendonk, A.L. 1994. Ocelot, jaguar, and jaguarundi sighting reports: Arizona and Sonora, Mexico. Arizona Game & Fish Department *Nongame and Endangered Wildlife Technical Report* 35. Phoenix, Arizona.

NatureServe. 2009. NatureServe Explorer Website, Version 7.1. http://www.natureserve.org/explorer/. Accessed June 29, 2009

Peterson, R.T. 1996. Peterson Multimedia Guide: North American Birds, Version 1.0. Houghton Mifflin Company.

Pima County Office of Conservation Science and Environmental Policy. 2008. Draft Pima County Multiple Species Conservation Plan Version 5. December 18, 2008.

RECON. 2001. Priority Vulnerable Species. Pima County Administration

Sibley, D.A. 2000. *The Sibley Guide to Birds*. Chanticleer Press. New York, New York.

Sonoran Desert Conservation Plan (SDCP) Priority Vulnerable Species Fact Sheets. 2002. Published on the Internet http://www.pima.gov/CMO/SDCP/species/fsheets/PV.pdf [accessed May 22, 2008].U.S. Fish and Wildlife Service. *Threatened and Endangered Species County List.* Accessed online April 2009. http://www.fws.gov/arizonaes/Documents/CountyLists/Pima.pdf

Town of Marana. 2009. Town of Marana Draft Habitat Conservation Plan. March 2009.

U.S. Fish and Wildlife Service. *Threatened and Endangered Species County List.* Accessed online April 2009. http://www.fws.gov/arizonaes/Documents/CountyLists/Pima.pdf

———. 2007. Chiricahua Leopard Frog Final Recovery Plan. USDI Fish and Wildlife Service, Albuquerque, New Mexico. Available at internet site: http://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/CLF/Final_CLF_Plan.pdf. Accessed May 21, 2008.

———. 2002a. Final Recovery Plan Southwestern Willow Flycatcher. USDI Fish and Wildlife Service, Albuquerque, New Mexico. Available at internet site: http://www.fws.gov/southwest/es/arizona/SWWF_RP.htm. Accessed May 21, 2008.

———. 1998a. Gila Topminnow Revised Recovery Plan. USDI Fish and Wildlife Service, Albuquerque, New Mexico. Available at internet site: http://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/GilaTopminnow/gtop94fn.pdf. Accessed May 21, 2008.

———.1998b. Final Revised Sonoran Pronghorn Recovery Plan. USDI Fish and Wildlife Service, Albuquerque, New Mexico. Available at internet site: http://www.fws.gov/southwest/es/arizona/Documents/RecoveryPlans/SonoranPronghorn.pdf. Accessed May 21, 2008

———.1995a. Masked Bobwhite Recovery Plan. USDI Fish and Wildlife Service, Albuquerque, New Mexico. Available at internet site: http://www.fws.gov/southwest/es/arizona/Documents/RecoveryPlans/MaskBobwhite.pdf. Accessed May 21, 2008

———.1995b. Mexican Spotted Owl Recovery Plan. USDI Fish and Wildlife Service, Albuquerque, New Mexico. Available at internet site: http://www.fws.gov/southwest/es/arizona/Documents/RecoveryPlans/MexicanSpottedOwl.pdf. Accessed May 21, 2008

———.1994a. Lesser Long-nosed Bat Recovery Plan. USDI Fish and Wildlife Service, Albuquerque, New Mexico. Available at internet site: http://www.fws.gov/southwest/es/arizona/Documents/RecoveryPlans/LesserLongNoseBat.pdf. Accessed May 21, 2008

———.1993a. Kearney's Blue Star Recovery Plan. USDI Fish and Wildlife Service, Albuquerque, New Mexico. Available at internet site: http://www.fws.gov/southwest/es/arizona/Documents/RecoveryPlans/Kearney_93.pdf .pdf. Accessed May 21, 2008

———.1993b. Desert Pupfish Recovery Plan. USDI Fish and Wildlife Service, Albuquerque, New Mexico. Available at internet site: http://www.fws.gov/southwest/es/arizona/Documents/RecoveryPlans/DesertPupfishRecoveryPlan.pdf. Accessed May 21, 2008

———.1990. Listed Cats of Texas and Arizona Recovery Plan. USDI Fish and Wildlife Service, Albuquerque, New Mexico. Available at internet site: http://ecos.fws.gov/docs/recovery_plan/900822.pdf Accessed August 6, 2009.

———.1986a. Recovery Plan for the Nickol Turk's Head Cactus. USDI Fish and Wildlife Service, Albuquerque, New Mexico. Available at internet site: http://www.fws.gov/southwest/es/arizona/Documents/RecoveryPlans/Nichol_Turks_Head_Cactus_RP.pdf. Accessed May 21, 2008

———. 1985. Revised California Least Tern Recovery Plan. USDI Fish and Wildlife Service, Portland, Oregon. Available at internet site: http://ecos.fws.gov/docs/recovery_plan/850927.pdf. Accessed August 6, 2009.

FIGURES

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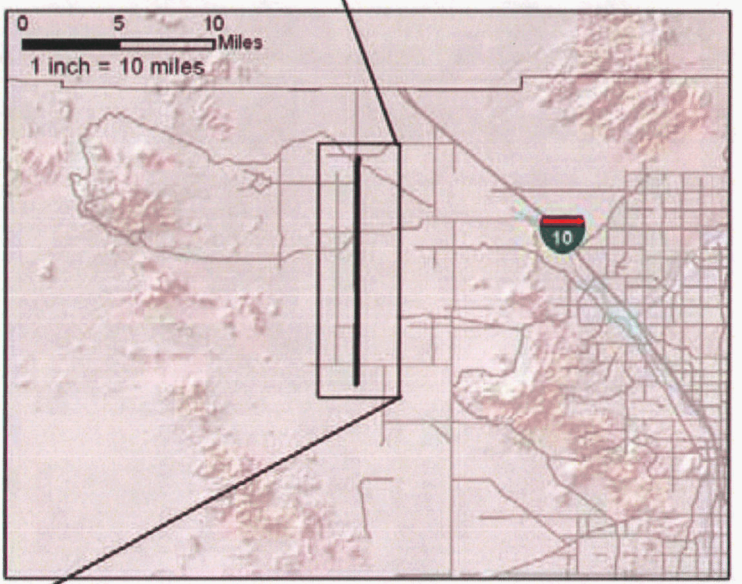

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13S.,R.10E. Portion of Sections 2, 3, 10, 11, 14, 15, 22, & 23,
Pima County, Arizona,
West of Avra & West of Marana USGS 7.5' Quadrangles

WestLand Resources, Inc.
Engineering and Environmental Consultants

Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project
Environmental Report

Vicinity Map
Figure 1

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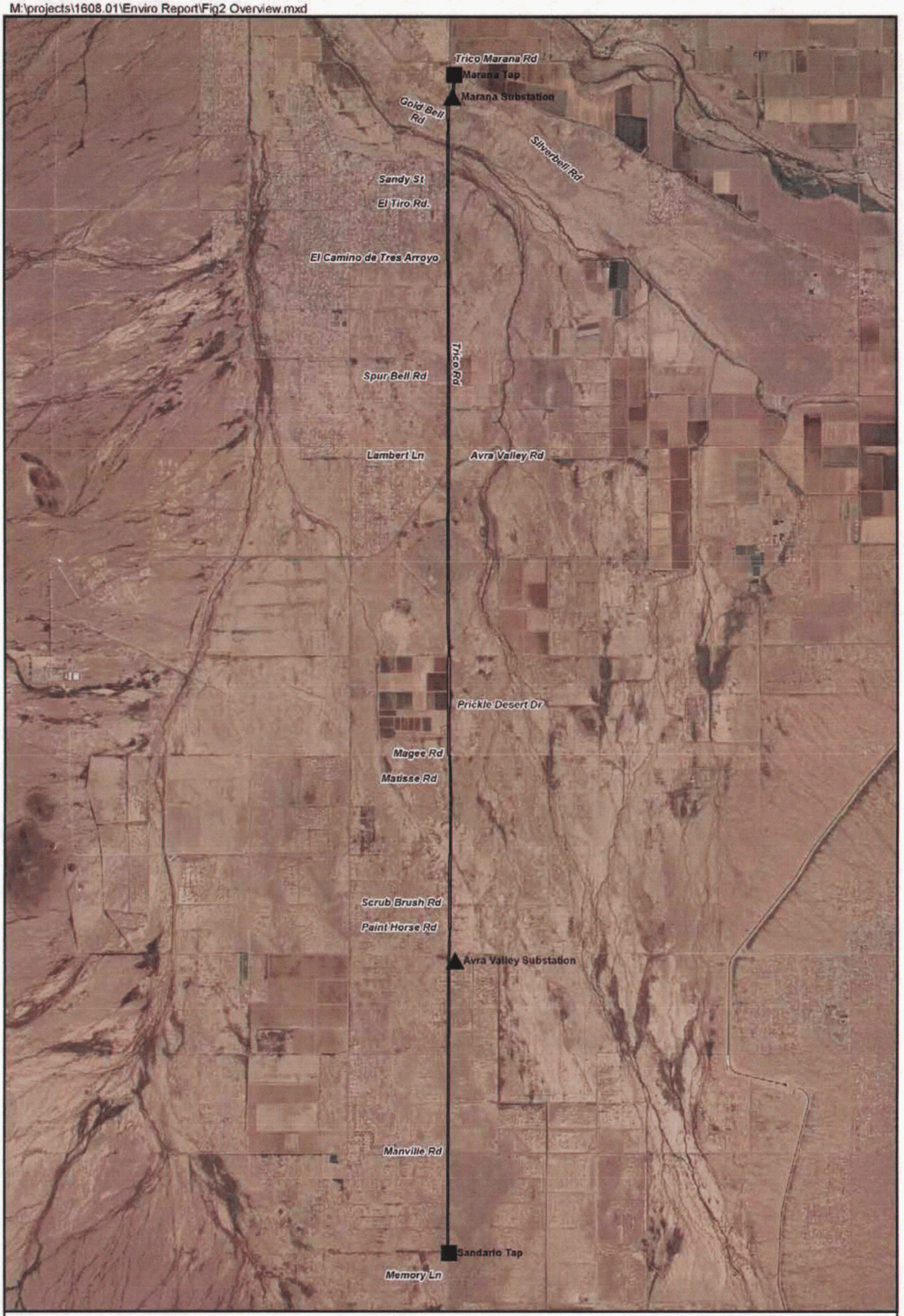

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T.13S..R.10E. Portion of Sections 2, 3, 10, 11, 14, 15, 22, & 23,
Pima County, Arizona.
Photo Source: National Agriculture Imagery Program, 2007

WestLand Resources, Inc.
Engineering and Environmental Consultants

N

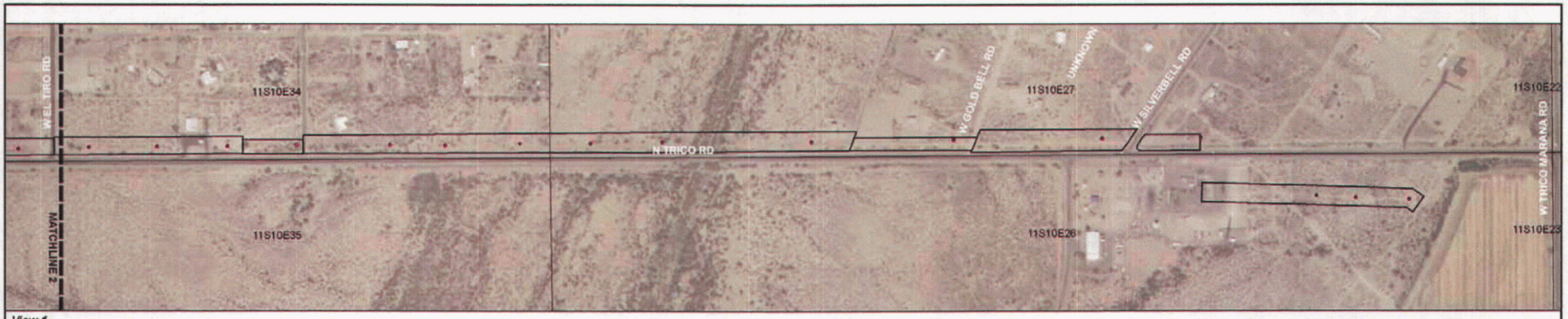
0 2,500 5,000
Feet

Legend

- Project Area
- Substation
- Tap

Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project
Environmental Report

Aerial Overview
Figure 2



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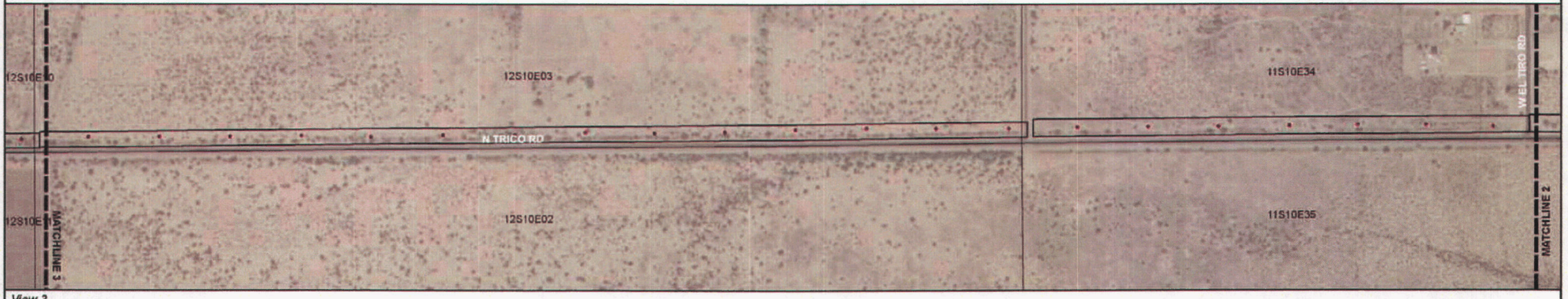

View 2

Legend

- Project Area
- Existing Transmission Line Structure

0 250 500
Feet
1 inch = 500 feet

W S N E

WestLand Resources, Inc.
Engineering and Environmental Consultants

Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project

Project Plan View

Figure 3a

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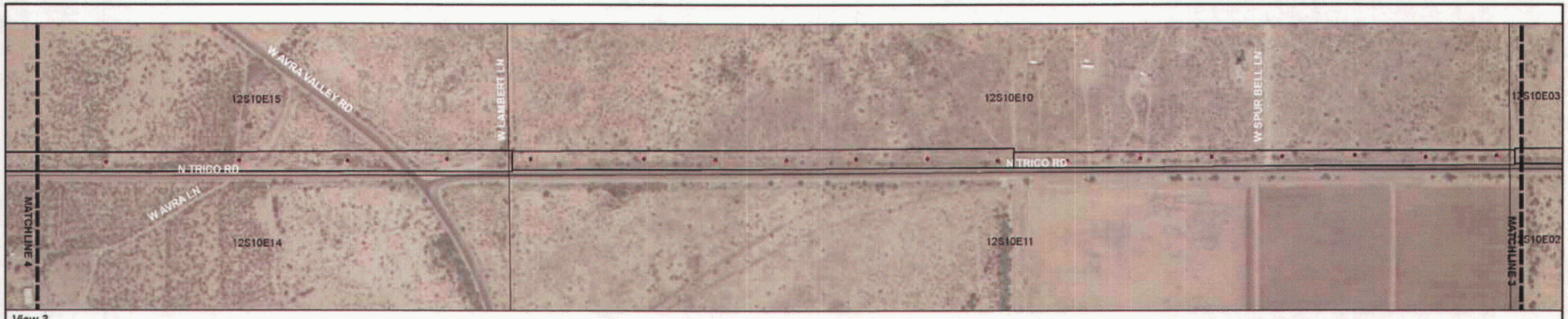

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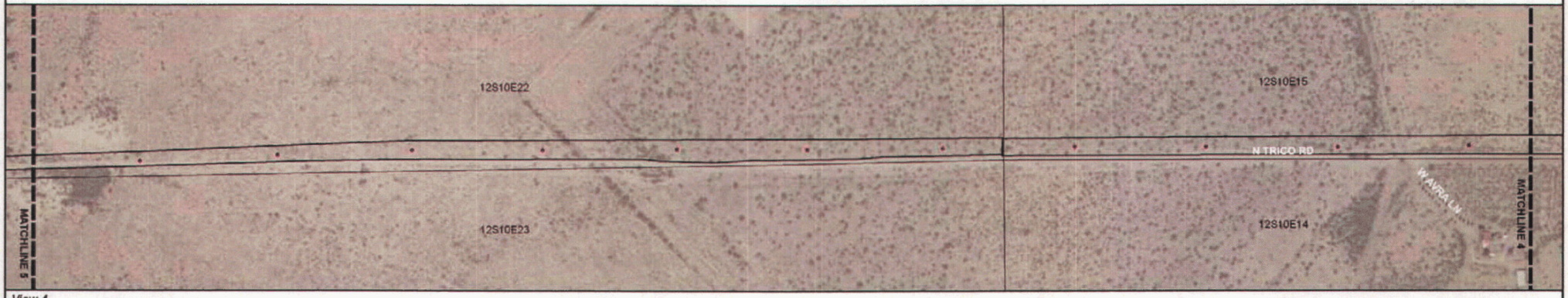

View 4

Legend

- Project Area
- Existing Transmission Line Structure

0 250 500
Feet
1 inch = 500 feet

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S
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Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project

Project Plan View

Figure 3b

WestLand Resources, Inc.
Engineering and Environmental Consultants

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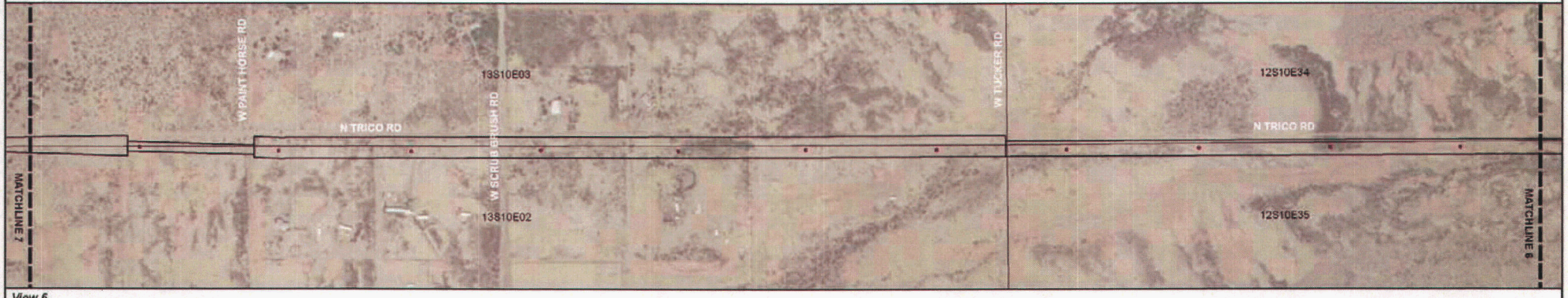
View 5



View 6

Legend

- Project Area
- Existing Transmission Line Structure

0 250 500
Feet
1 inch = 500 feet

W S N E

WestLand Resources, Inc.
Engineering and Environmental Consultants

Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project

Project Plan View

Figure 3c

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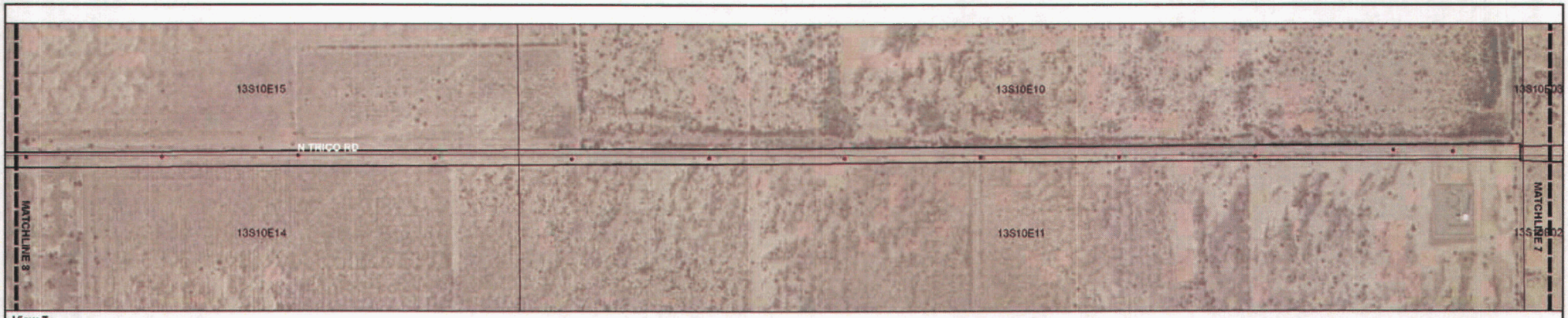
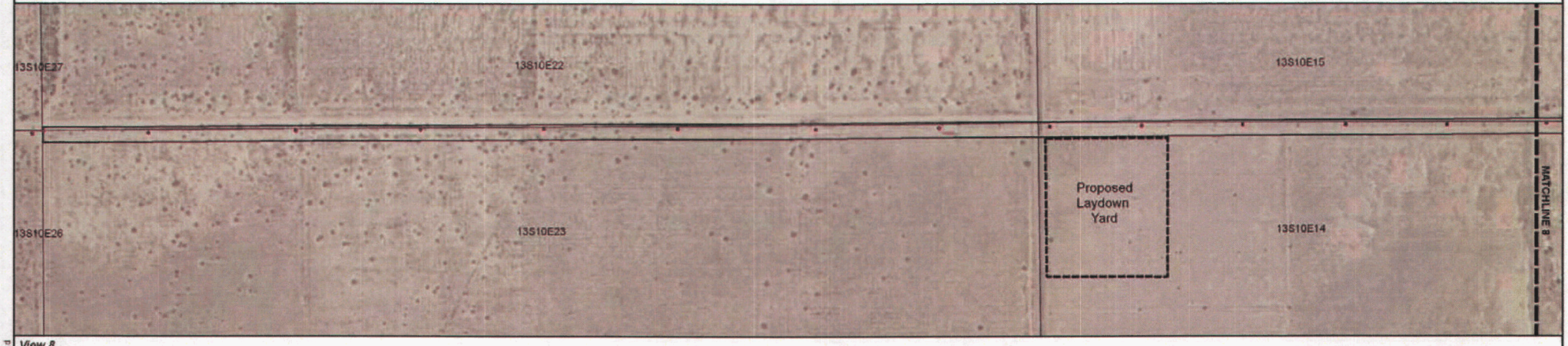


View 7



View 8

Legend

- Project Area
- Existing Transmission Line Structure

0 250 500
Feet
1 inch = 500 feet

W N S E

WestLand Resources, Inc.
Engineering and Environmental Consultants

Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project

Project Plan View

Figure 3d

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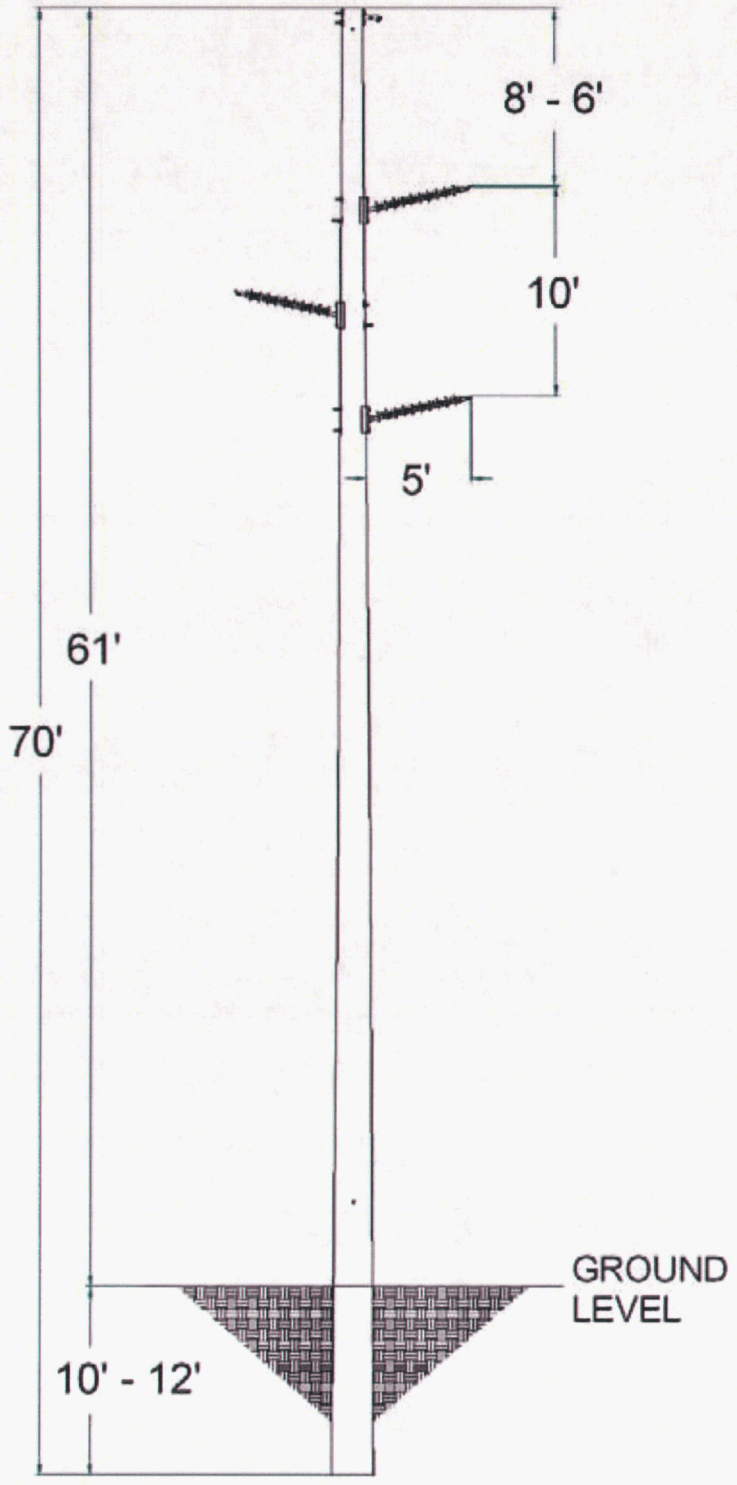
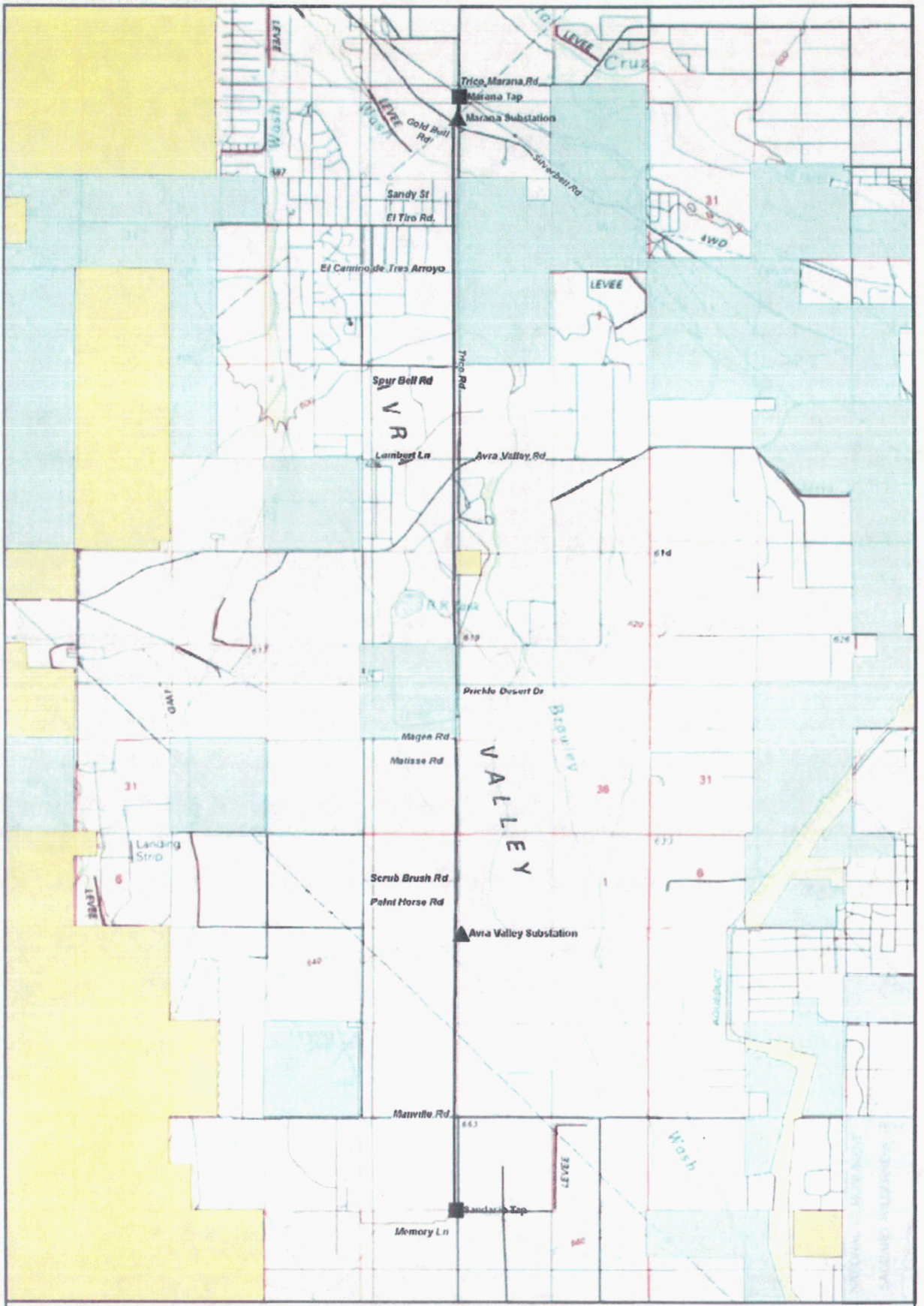


Data Source: Southwest Transmission Cooperative, Inc.

Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project
Environmental Report

Typical of Single Steel Pole Structure
Figure 4

WestLand Resources, Inc.
Engineering and Environmental Consultants


Trico Marana Rd
Marana Tap
Marana Substation
Gold Bell Rd
Shorebell Rd
Sandy St
El Tiro Rd.
El Camino de Tres Arroyo
LEVEE
Trico Rd
Spur Bell Rd
Lambert Ln
Avra Valley Rd
Prickle Desert Dr
Magee Rd
Matisse Rd
Landing Strip
Scrub Brush Rd
Paint Horse Rd
Avra Valley Substation
Manville Rd
Sandario Tap
Memory Ln
VALLEY
Wash
4WD
T11S ,R 10E Portion of Sections 28, 27 & 34
T12S R 10E Portion of Sections 3 10 15 22 27 34 & 35.
T13S ,R 10E Portion of Sections 2, 3, 10 11 14, 15, 22, & 23.
Pima County, Arizona
USGS Source: ESRI ARCGIS ONLINE
WestLand Resources, Inc.
0 2,500 5,000
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Legend
Substation
Tap
Prop. Line
Bureau of Land Management
Bureau of Reclamation
National Park Service Lands
Private Land
State Land
Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project
Environmental Report
Surface Management
Figure 5

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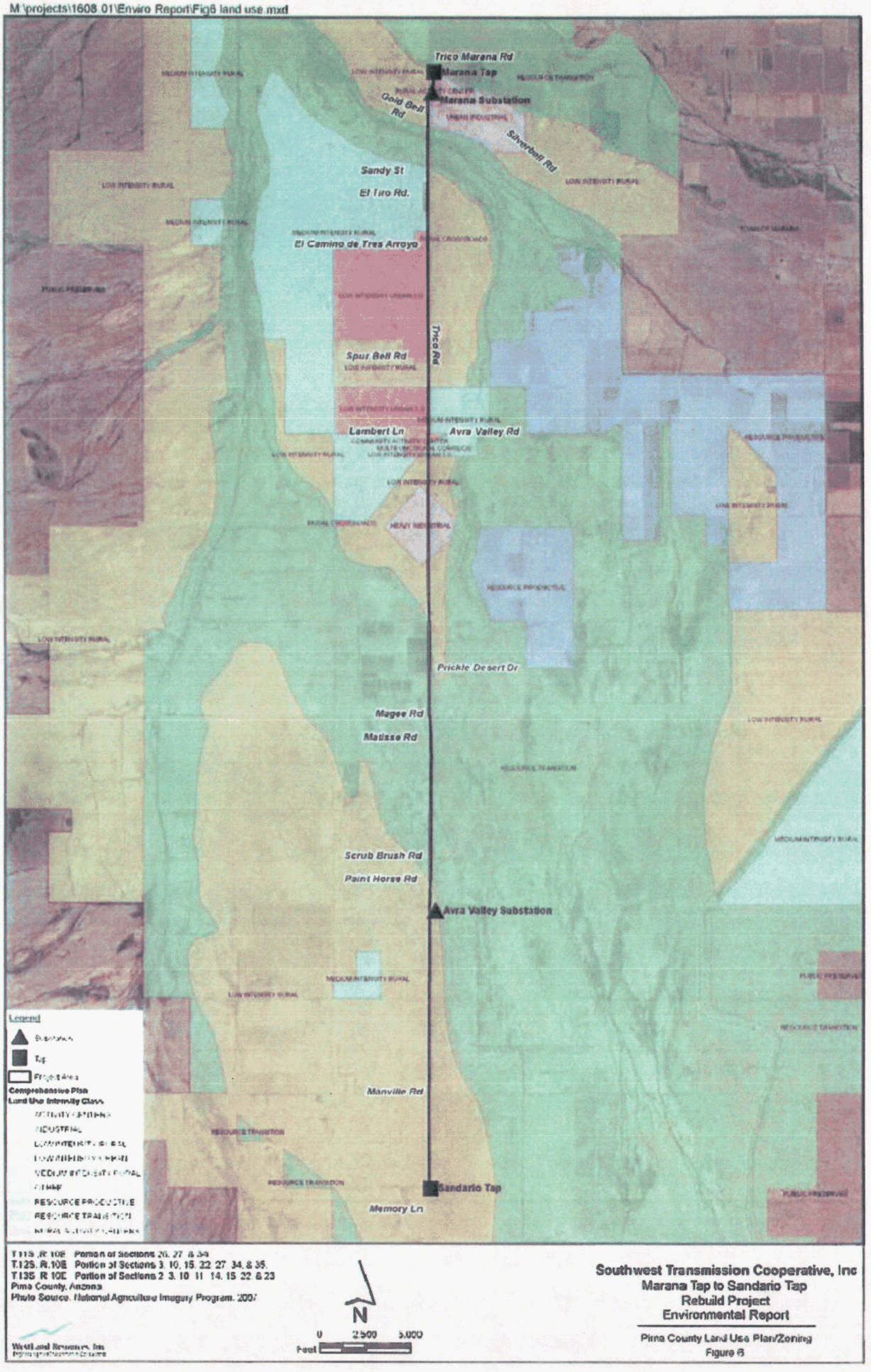

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T12S, R10E Portion of Sections 3, 10, 15, 22, 27, 34, & 35
T13S, R10E Portion of Sections 2, 3, 10, 11, 14, 15, 22, & 23
Pima County, Arizona
Photo Source: National Agriculture Imagery Program, 2007

N

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Feet

Western Land Resources, Inc.

Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project
Environmental Report

Pima County Land Use Plan/Zoning
Figure 6

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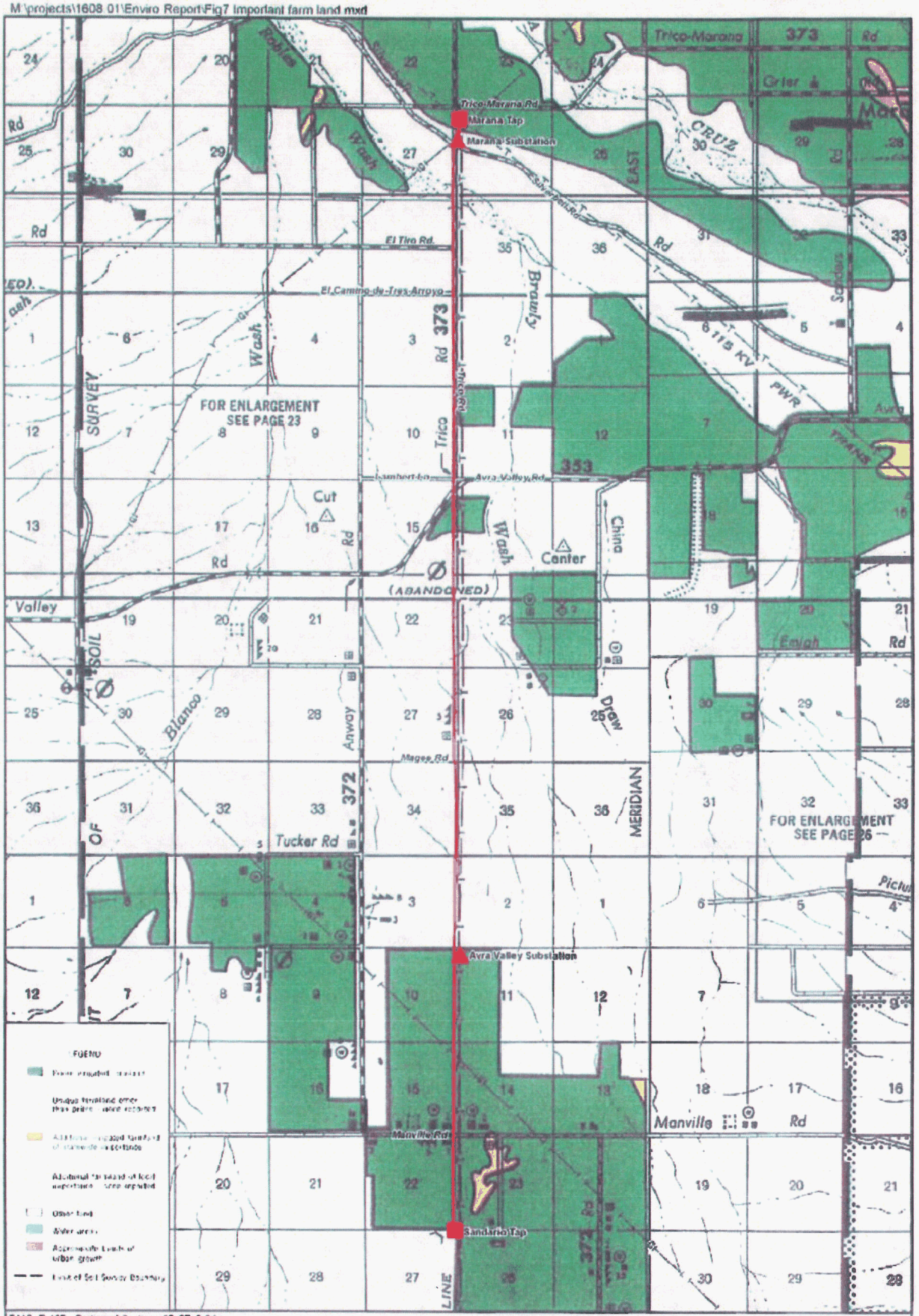

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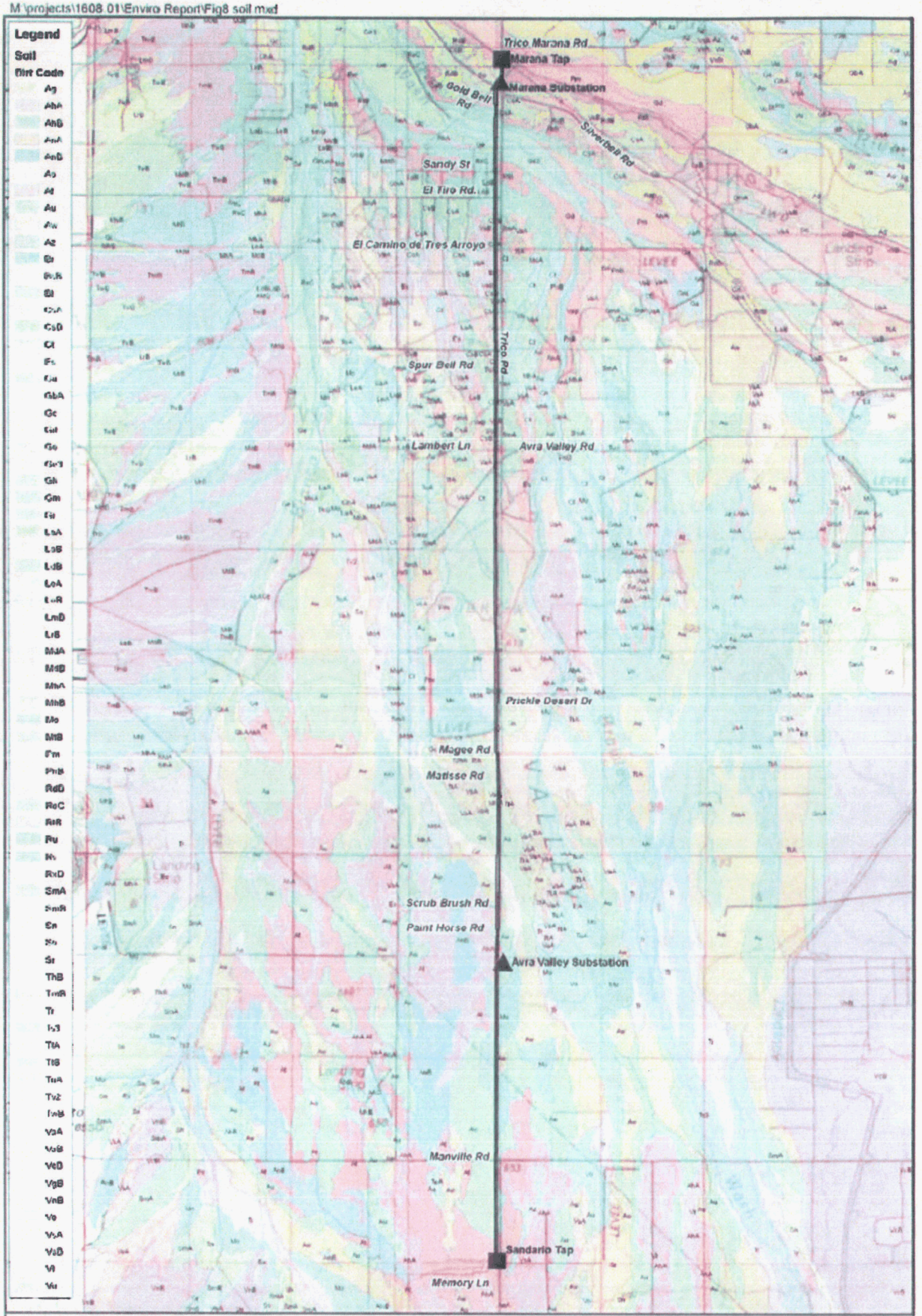

T11S, R 10E Portion of Sections 26, 27, & 34.
T12S, R 10E Portion of Sections 3, 10, 15, 22, 27, 34, & 35.
T13S, R 10E Portion of Sections 2, 3, 10, 11, 14, 15, 22, & 23.
Pima County, Arizona.
USGS Source: ESRI ARCGIS ONLINE
Soil Data: Obtained from Pima County FTP, NCRS Created

WestLand Resources Inc.

N

0 2,500 5,000
Feet

Legend
Substation
Project Area

Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project
Environmental Report

Soil Map
Figure 8

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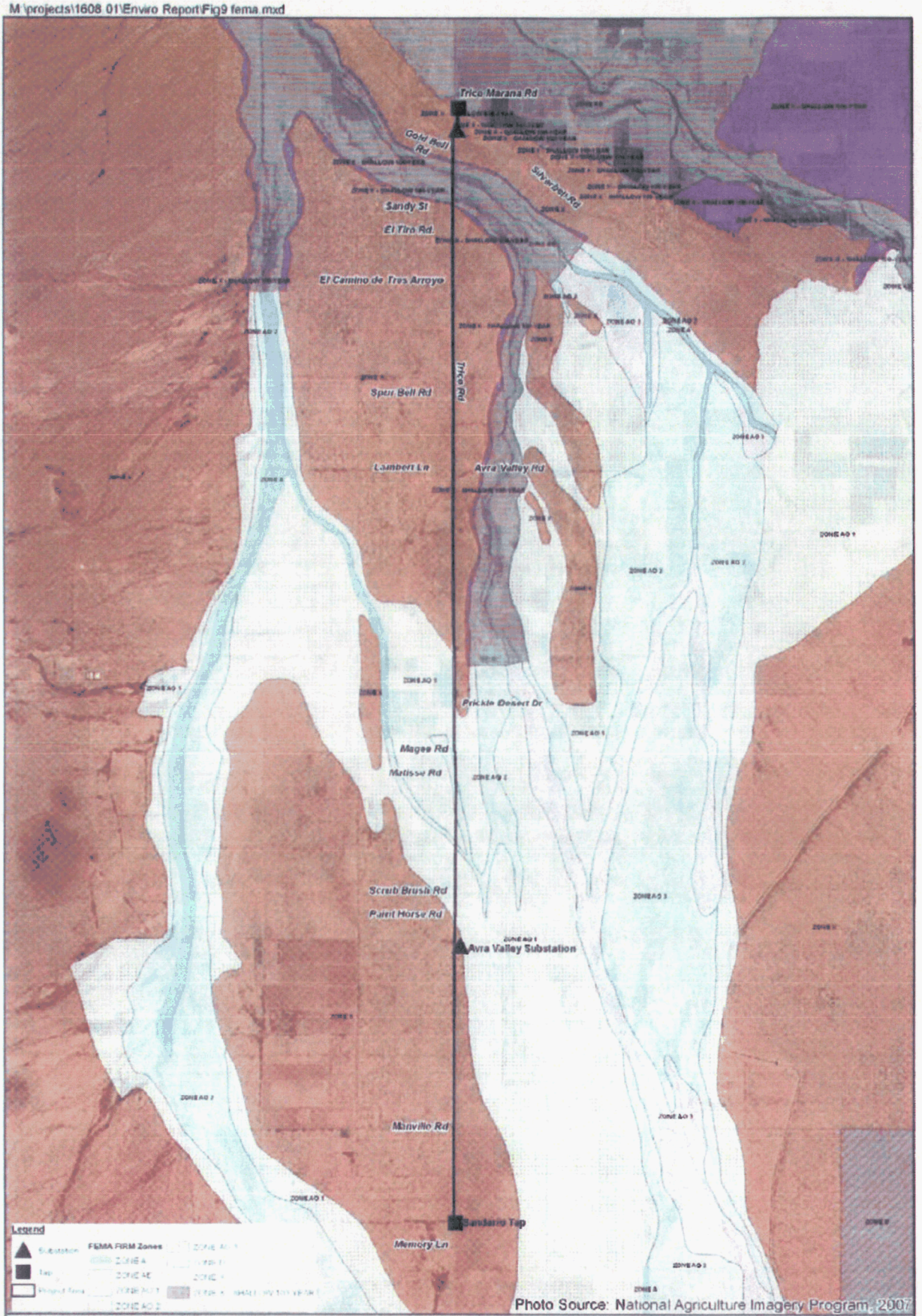

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T12S, R 10E Portion of Sections 3, 10, 15, 22, 27, 34, & 35
T13S, R 10E Portion of Sections 2, 3, 10, 11, 14, 15, 22, & 23.
Pima County, Arizona
FEMA Flood Panels: 04019C0955 K, 04019C0960 K,
04019C0950 K, 04019C0965 K, 04019C0970 K, 04019C0980 K,
04019C1550 K, 04019C1560 K, 04019C1575 K & 04019C 000K

Westland Resources, Inc.

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0 2,500 5,000
Feet

Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project
Environmental Report

FEMA Floodplain Zones
Figure 9

Page Intentionally Redacted To Protect Sensitive Archaeological Data

APPENDIX A

REPRESENTATIVE PHOTOGRAPHS

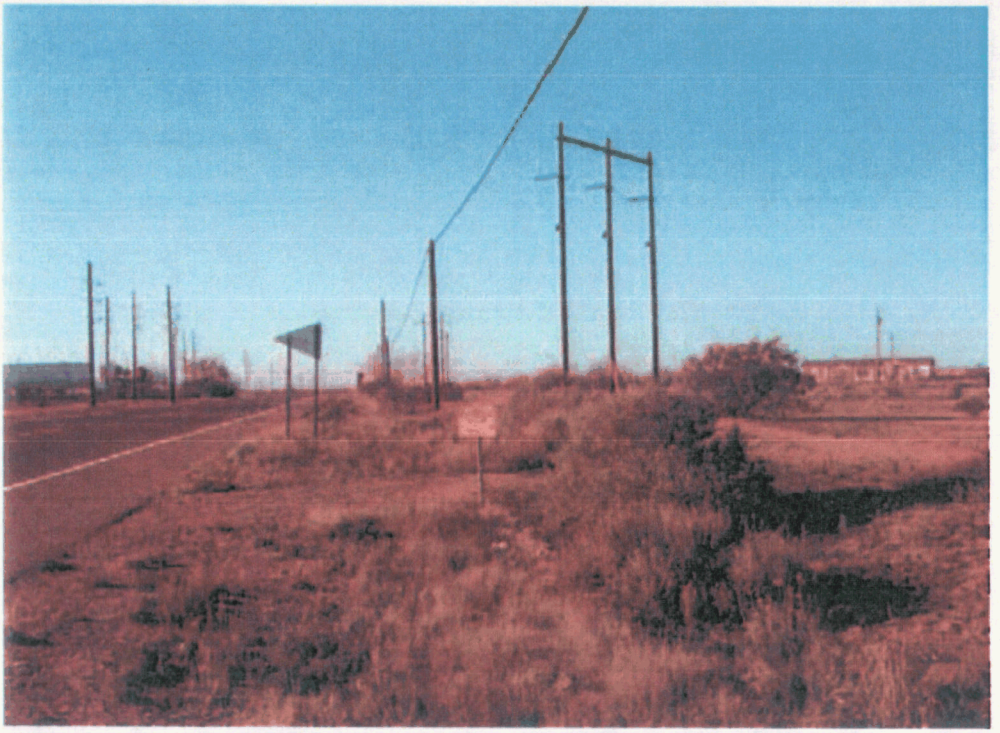


PHOTO 1: From Marana Substation looking south along Project Area.

PHOTO 2. From El Camino de Tres Arroyo looking south along Project Area.

PHOTO 3. From West Spur Bell Lane looking south along Project Area.

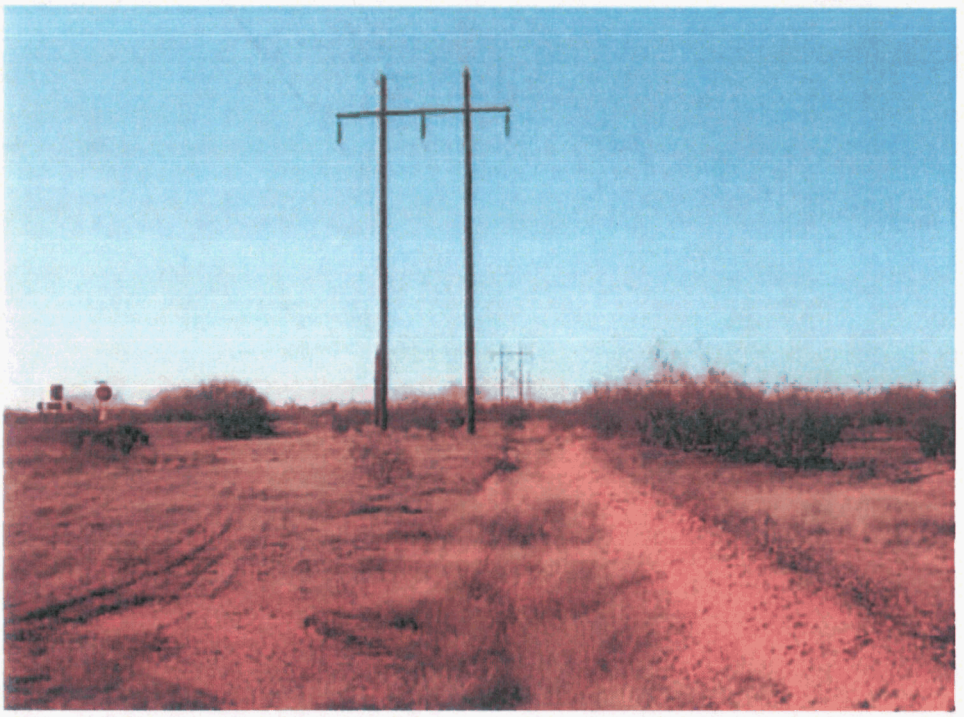


PHOTO 4. From Lambert Lane looking south along Project Area.

PHOTO 5. From Prickle Desert Road looking south along Project Area.

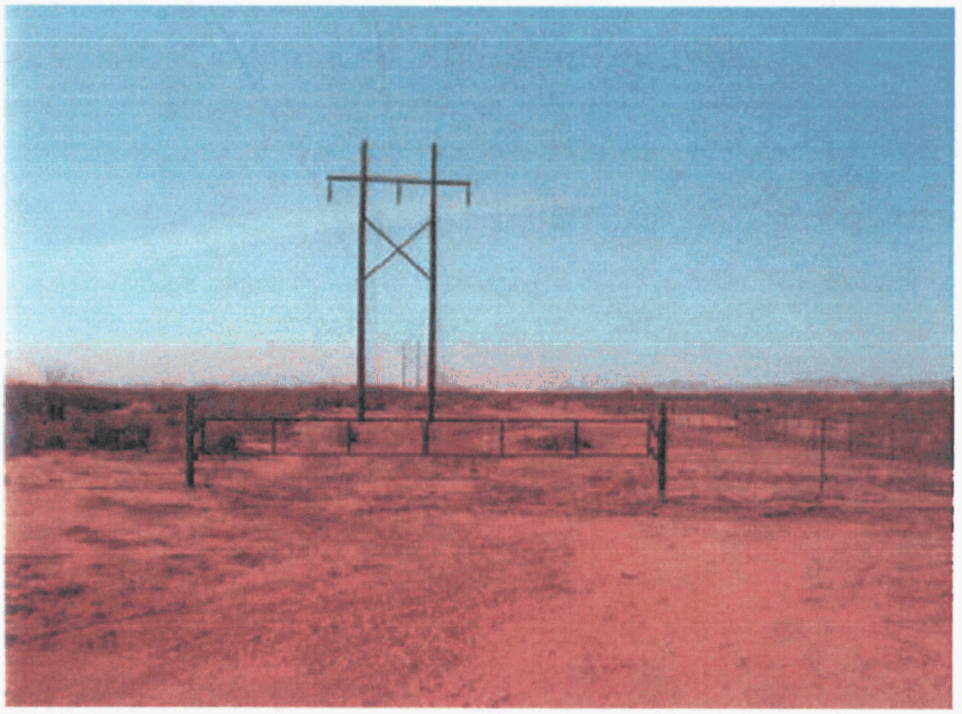


PHOTO 6. From Matisse Road looking south along Project Area.

PHOTO 7. From Scrub Brush Road looking north along Project Area.

PHOTO 8. From south of Scrub Brush Road looking south toward the Avra Valley Substation.

PHOTO 9. From Manville Road looking north along Project Area.

PHOTO 10. From Sandario Tap looking north along Project Areat.

APPENDIX B

US FISH AND WILDLIFE SERVICE SPECIES LIST FOR PIMA COUNTY, ARIZONA

Pima County

COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
Chiricahua leopard frog	*Lithobates [Rana] chiricahuensis*	Threatened	Cream colored tubercles (spots) on a dark background on the rear of the thigh, dorsolateral folds that are interrupted and deflected medially, and a call given out of water distinguish this spotted frog from other leopard frogs.	Apache, Cochise, Coconino, Gila, Graham, Greenlee, Navajo, Pima, Santa Cruz, Yavapai	3,300-8,900 ft	Streams, rivers, backwaters, ponds, and stock tanks that are mostly free from introduced fish, crayfish, and bullfrogs.	Require permanent or nearly permanent water sources. Populations north of the Gila River may be a closely-related, but distinct, undescribed species. A special rule allows take of frogs due to operation and maintenance of livestock tanks on State and private lands.
Desert pupfish	*Cyprinodon macularius*	Endangered	Small (2 inches) smoothly rounded body shape with narrow vertical bars on the sides. Breeding males blue on head and sides with yellow on tail. Females and juveniles tan to olive colored back and silvery sides.	Cochise, Graham, Maricopa, Pima, Santa Cruz, Yavapai	< 4,000 ft	Shallow springs, small streams, and marshes. Tolerates saline and warm water.	Two subspecies are recognized: Desert Pupfish (C.m. macularis) and Quitobaquito Pupfish (C.m. eremus). Critical habitat includes Quitobaquito Springs, Pima County, portions of San Felipe Creek, Carrizo Wash, and Fish Creek Wash, Imperial County, California.
Gila chub	*Gila intermedia*	Endangered	Deep compressed body, flat head. Dark olive-gray color above, silver sides. Endemic to Gila River Basin.	Cochise, Gila, Graham, Greenlee, Pima, Pinal, Santa Cruz, Yavapai	2,000-5,500 ft	Pools, springs, cienegas, and streams.	Found on multiple private lands, including the Nature Conservancy and the Audubon Society. Also occurs on Federal and state lands and in Sonora, Mexico. Critical habitat occurs in Cochise, Gila, Graham, Greenlee, Pima, Pinal, Santa Cruz, and Yavapai counties.
Gila topminnow	*Poeciliopsis occidentalis occidentalis*	Endangered	Small (2 inches), guppy-like, live bearing, lacks dark spots on its fins. Breeding males are jet black with yellow fins.	Cochise, Gila, Graham, Maricopa, Pima, Santa Cruz, Yavapai	< 4,500 ft	Small streams, springs, and cienegas vegetated shallows.	Species historically also occurred in backwaters of large rivers but is currently isolated to small streams and springs.
Huachuca water umbel	*Lilaeopsis schaffneriana ssp. recurva*	Endangered	Herbaceous, semi-aquatic perennial in the parsley family (Umbelliferae) with slender erect, hollow, leaves that grow from the nodes of creeping rhizomes. Flower: 3 to 10 flowered umbels arise from root nodes.	Cochise, Pima, Santa Cruz	3,500-6,500 ft	Cienegas, perennial low gradient streams, wetlands.	Species also occurs in adjacent Sonora, Mexico, west of the continental divide. Critical habitat in Cochise and Santa Cruz counties (64 FR 37441, July 12, 1999).

COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
Jaguar	*Panthera onca*	Endangered	Largest species of cat native to Southwest. Muscular, with relatively short, massive limbs and a deep-chested body. Usually cinnamon-buff in color with many black spots. Weights ranges from 90-300 lbs.	Cochise, Santa Cruz, Pima	1,600-9,000 ft	Found in Sonoran desertscrub up through subalpine conifer forest.	Also occurs in New Mexico. A Jaguar conservation team is being formed that is being led by Arizona and New Mexico state entities along with private organizations.
Kearney blue star	*Amsonia kearneyana*	Endangered	A herbaceous perennial about 2 feet tall in the dogbane family (Apocynaceae). Thickened woody root and many pubescent (hairy) stems that rarely branch. Flowers: white terminal inflorescence in April and May.	Pima	3,600-3,800 ft	West-facing drainages in the Baboquivari Mountains.	Plants grow in stable, partially shaded, coarse alluvium along a dry wash in the Baboquivari Mountains. Range is extremely limited. Protected by Arizona Native Plant Law.
Lesser long-nosed bat	*Leptonycteris curasoae yerbabuenae*	Endangered	Elongated muzzle, small leaf nose, and long tongue. Yellowish brown or gray above and cinnamon brown below. Tail minute and appears to be lacking. Easily disturbed.	Cochise, Gila, Graham, Greenlee, Pima, Pinal, Maricopa, Santa Cruz, Yuma	1,600-11,500 ft	Desert scrub habitat with agave and columnar cacti present as food plants.	Day roosts in caves and abandoned tunnels. Forages at night on nectar, pollen and fruit of paniculate agaves and columna cacti. This species is migratory and is present in Arizona usually from April to September and south of the border the remainder of the year.
Masked bobwhite	*Colinus virginianus ridgewayi*	Endangered	Males have a brick-red breast and black head and throat. Females are generally nondescript but resemble other races such as the Texas bobwhite.	Pima	1,000-4,000 ft	Desert grasslands with diversity of dense native grasses, forbs, and brush.	Species is closely associated with Prairie acacia (*Acacia angustissima*). Formerly occurred in Altar and Santa Cruz valleys, as well as Sonora, Mexico. Presently only known from reintroduced populations on Buenos Aires NWR.
Mexican spotted ow	*Strix occidentalis lucida*	Threatened	Medium sized with dark eyes and no ear tufts. Brownish and heavily spotted with white or beige.	Apache, Cochise, Coconino, Gila, Graham, Greenlee, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai	4,100-9,000 ft	Nests in canyons and dense forests with multi-layered foliage structure.	Generally nest in older forests of mixed conifer or ponderosa pine/gambel oak type in canyons, and use variety of habitats for foraging. Sites with cool microclimates appear to be of importance or are preferred. Critical habitat was finalized on August 31, 2004 (69 FR 53182) in Arizona in Apache, Cochise, Coconino, Gila, Graham, Greenlee, Maricopa, Navajo, Pima, Pinal, Santa Cruz, and Yavapai counties.

COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
Nichol Turk's head cactus	*Echinocactus horizonthalonius var. nicholii*	Endangered	Blue-green to yellowish-green, columnar, 18 inches tall, 8 inches in diameter. Spine clusters have 5 radial and 3 central spines; one curves downward and is short; 2 spines curve upward and are red or pale gray. Flowers: pink; fruit: woolly white.	Pima, Pinal	2,400-4,100 ft	Sonoran desertscrub.	Found in unshaded microsites in Sonoran desertscrub on dissected alluvial fans at the foot of limestone mountains and on inclined terraces and saddles on limestone mountain sides.
Ocelot	*Leopardus (=Felis) pardalis*	Endangered	Medium-sized spotted cat that is yellowish with black streaks and stripes running from front to back. Tail is spotted and about 1/2 the length of head and body. Face is less heavily streaked than the back and sides.	Cochise, Pima, Santa Cruz	< 8,000 ft	Desert scrub in Arizona. Humid tropical and sub-tropical forests, and savannahs in areas south of the U.S.	May persist in partly-cleared forests, second-growth woodland, and abandoned cultivated areas reverted to brush. Universal component is presence of dense cover. Unconfirmed reports of individuals in the southern part of the State continue to be received.
Pima pineapple cactus	*Coryphantha scheeri var. robustispina*	Endangered	Hemispherical stems 4-7 inches tall 3-4 inches diameter. Central spine 1 inch long straw colored hooked surrounded by 6-15 radial spines. Flower: yellow, salmon, or rarely white narrow floral tube.	Pima, Santa Cruz	2,300-5,000 ft	Sonoran desertscrub or semi-desert grassland communities.	Occurs in alluvial valleys or on hillsides in rocky to sandy or silty soils. This species can be confused with juvenile barrel cactus (Ferocactus). However, the spines of the later are flattened, in contrast with the round cross-section of the Coryphanta spines. About 80-90% of individuals occur on state or private land.
Sonoran pronghorn	*Antilocapra americana sonoriensis*	Endangered	Upperparts tan; underparts, rump, and two bands across the neck are white. Male has two black cheek pouches. Hoofed with slightly curved black horns having a single prong. Smallest and palest of the pronghorn subspecies.	Maricopa, Pima, Yuma	2,000-4,000 ft	Broad intermountain alluvial valleys with creosote-bursage and palo verde-mixed cacti associations.	Typically, bajadas are used as fawning areas and sandy dune areas provide food seasonally. Cacti (jumping cholla) appears to make up substantial part of diet. This subspecies also occurs in Mexico.

COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
Southwestern willow flycatcher	*Empidonax traillii extimus*	Endangered	Small passerine (about 6 inches) grayish-green back and wings, whitish throat, light olive-gray breast and pale yellowish belly. Two wingbars visible. Eye-ring faint or absent.	Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai, Yuma	< 8,500 ft	Cottonwood/willow and tamarisk vegetation communities along rivers and streams.	Migratory riparian-obligate species that occupies breeding habitat from late April to September. Distribution within its range is restricted to riparian corridors. Difficult to distinguish from other members of the Empidonax complex by sight alone. Training seminar required for those conducting flycatcher surveys. Critical habitat was finalized on October 19, 2005 (50 CFR 60886). In Arizona there are critical habitat segments in Apache, Cochise, Gila, Graham, Greenlee, Maricopa, Mohave, Pima, Pinal, and Yavapai counties.
Acuna cactus	*Echinomastus erectocentrus var. acunensis*	Candidate	Less than 12 inches tall; spine clusters borne on tubercles, each with a groove on the upper surface. 2-3 central spines and 12 radial spines. Radial spines are dirty white with maroon tips. Flowers pink to purple.	Pima, Pinal	1,300-2,000 ft	Well drained knolls and gravel ridges in Sonoran desertscrub.	Immature plants distinctly different from mature plants. Immatures are disc-shapec or spherical and have no central spines until they are about 1.5 inches.
Northern Mexican Gartersnake	*Thamnophis eques megalops*	Candidate	Background color ranges from olive, olive-brown, to olive-gray. Body has three yellow or light colored stripes running down the length of the body, darker towards tail. Species distinguished from other native gartersnakes by the lateral stripes reaching the 3rc and 4th scale rows. Paired black spots extend along dorsolateral fields.	Apache, Coconino, Cochise, Gila, Graham, Navajo, Pima, Pinal, Yavapai	130-8,500 ft	Cienegas, stock tanks, large-river riparian woodlands and forests, streamside gallery forests.	Core population areas in the U.S. include mid/upper Verde River drainage, mid/lower Tonto Creek, and the San Rafael Valley and surrounding area. Status on tribal lands unknown. Distributed south into Mexico along the Sierra Madre Occidental and Mexican Plateau. Strongly associated with the presence of a native prey base including leopard frogs and native fish.
Sonoyta mud turtle	*Kinosternon sonoriense longifemorale*	Candidate	Aquatic; dark, medium-sized; shell up to 7 inches long; head, neck, and limbs mottled; carapace is olive brown to dark brown; plastron hinged; long barbels on chin, webbed feet.	Pima	1,100 ft	Ponds and streams.	Found only in Quitobaquito Springs in Organ Pipe Cactus National Monument, Arizona. Species also occurs in Rio Sonoyta, Sonora, Mexico.

COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
Yellow-billed cuckoo	*Coccyzus americanus*	Candidate	Medium-sized bird with a slender, long-tailed profile, slightly down-curved bill that is blue-black with yellow on the lower half. Plumage is grayish-brown above and white below, with rufous primary flight feathers.	Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai, Yuma	< 6,500 ft	Large blocks of riparian woodlands (cottonwood, willow, or tamarisk galleries).	Neotropical migrant that winters primarily ir South America and breeds primarily in the U.S. (but also in southern Canada and northern Mexico). As a migrant it is rarely detected; can occur outside of riparian areas. Cuckoos are found nesting statewide, mostly below 5,000 feet in central, western, and southeastern Arizona. Concern for cuckoos are primarily focused upon alterations to its nesting and foraging habitat. Nesting cuckoos are associated with relatively dense, wooded, streamside riparian habitat, with varying combinations of Fremont cottonwood, willow, velvet ash, Arizona walnut, mesquite, and tamarisk. Some cuckoos have also been detected nesting in velvet mesquite, netleaf hackberry, Arizona sycamore, Arizona alder, and some exotic neighborhood shade trees.
Gooddings onion	*Allium gooddingii*	Conservation Agreement	Herbaceous perennial plant; broad, flat, rather blunt leaves flowering stalk 14-18 inches tall, flattened, and narrowly winged toward apex; fruit is broader than long; seeds are short and thick.	Apache, Greenlee, Pima	7,500-11,250 ft	Shaded sites on north-trending drainages, on slopes, or in narrow canyons, within mixed conifer and spruce fir forests.	Known from the White, Santa Catalina, anc Chuska Mountains. Also found in New Mexico on the Lincoln and Gila National Forests. A Conservation Agreement between the Service and the Forest Servic signed in February 1998.
San Xavier talussnail	*Sonorella eremita*	Conservation Agreement	Land snail, less than one inch in diameter (about .75 inches) round shell with 4.5 whorls; white to pinkish tint and chestnut-brown shoulder band	Pima	3,850-3,920 ft	Inhabits a deep, northwest-facing limestone rockslide.	Restricted to 50 by 100 foot area of land privately owned in southeastern Arizona. A Conservation Agreement was finalized in 1995 and renewed in May 2008.

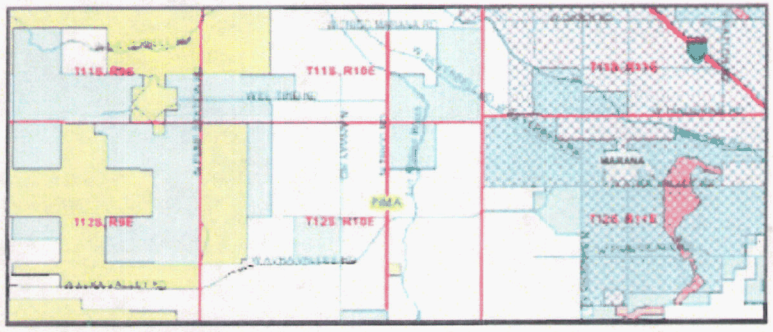
COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
American peregrine falcon	*Falco peregrinus anatum*	Delisted	A crow-sized falcon with slate blue-gray on the back and wings, and white on the underside; a black head with vertical "bandit's mask" pattern over the eyes; long pointed wings; and a long wailing call made during breeding. Very adept flyers and hunters, reaching diving speeds of 200 mph.	Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai, Yuma	3,500-9,000 ft	Areas with rocky, steep cliffs, primarily near water, where prey (primarily shorebirds, songbirds, and waterfowl) concentrations are high. Nests are found on ledges of cliffs, and sometimes on man-made structures such as office towers and bridge abutments.	Species recovered with over 1,650 breeding birds in the US and Canada.
Cactus ferruginous pygmy-owl	*Glaucidium brasilianum cactorum*	Delisted; petitioned for relisting	Small reddish-brown owl with a cream-colored belly streaked with reddish-brown. Males average 2.2 oz and females average 2.6 oz. Length is approximately 6.5 in., including a relatively long tail. Lacks ear tufts, and has paired black spots on the back of the head.	Pima, Pinal	< 4,000 ft	Areas of desert woodlands with tall canopy cover. Primarily found in Sonoran desert scrub and occasionally in riparian drainages and woodlands within semi-desert grassland communities. Prefers to nest in cavities in saguaro cacti but has been found in low-density suburban developments that include natural open spaces.	Not recognized as a protected taxonomic entity under the Act, but protected from direct take of individuals and nests/eggs under the Migratory Bird Treaty Act. A 2004 petition for relisting under the Act is currently being evaluated. Due to low population numbers, captive breeding research was initiated in 2006 with some success.

APPENDIX C

ARIZONA GAME & FISH DEPARTMENT HERITAGE DATA MANAGEMENT SYSTEM ON-LINE ENVIRONMENTAL REVIEW TOOL RESULTS

Arizona's On-line Environmental Review Tool
Search ID: 20090501008741
Project Name: Transmission Rebuild
Date: 5/1/2009 9:31:33 AM

Project Location



The Department appreciates the opportunity to provide in-depth comments and project review when additional information or environmental documentation becomes available.

Special Status Species Occurrences/Critical Habitat/Tribal Lands within 2 miles of Project Vicinity:

Name	Common Name	ESA	USFS	BLM	State
Bat Colony					
Chionactis occipitalis klauberi	Tucson Shovel-nosed Snake			S	
Coccyzus americanus	Yellow-billed Cuckoo (Western U.S. DPS)	C			WSC
Mammillaria thornberi	Thornber Fishhook Cactus				SR
Myotis velifer	Cave Myotis	SC		S	
Phrynosoma cornutum	Texas Horned Lizard	SC		S	

Project Name: Transmission Rebuild
Submitted By: Diana Shiel
On behalf of: OTHER
Project Search ID: 20090501008741
Date: 5/1/2009 9:31:24 AM
Project Category: Energy Storage/Production/Transfer,Energy Transfer,power line/electric (maintenance to existing)
Project Coordinates (UTM Zone 12-NAD 83): 471387.700, 3585646.019 meter
Project Length: 9465.547 meter
County: PIMA
USGS 7.5 Minute Quadrangle ID: 1679
Quadrangle Name: WEST OF MARANA
Project locality is currently being scoped

Location Accuracy Disclaimer

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Receipt is solely responsible for the project location and thus the correctness of the Project Review Receipt content.

 APPLICATION INITIALS: _____

Please review the entire receipt for project type recommendations and/or species or location information and retain a copy for future reference. If any of the information you provided did not accurately reflect this project, or if project plans change, another review should be conducted, as this determination may not be valid.

Arizona's On-line Environmental Review Tool:

1. This On-line Environmental Review Tool inquiry has generated recommendations regarding the potential impacts of your project on Special Status Species (SSS) and other wildlife of Arizona. SSS include all U.S. Fish and Wildlife Service federally listed, U.S. Bureau of Land Management sensitive, U.S. Forest Service sensitive, and Arizona Game and Fish Department (Department) recognized species of concern.
2. These recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation). These recommendations are preliminary in scope, designed to provide early considerations for all species of wildlife, pertinent to the project type you entered.
3. This receipt, generated by the automated On-line Environmental Review Tool does not constitute an official project review by Department biologists and planners. Further coordination may be necessary as appropriate under the National Environmental Policy Act (NEPA) and/or the Endangered Species Act (ESA).

The U.S. Fish and Wildlife Service (USFWS) has regulatory authority over all federally listed species under the ESA. Contact USFWS Ecological Services Offices: http://arizonaes.fws.gov/.

Phoenix Main Office
2321 W. Royal Palm Road, Suite 103
Phoenix, AZ 85021
Phone 602-242-0210
Fax 602-242-2513

Tucson Sub-Office
201 North Bonita, Suite 141
Tucson, AZ 85745
Phone 520-670-6144
Fax 520-670-6154

Flagstaff Sub-Office
323 N. Leroux Street, Suite 101
Flagstaff, AZ 86001
Phone 928-226-0614
Fax 928-226-1099

Disclaimer:

1. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area.
2. The Department's Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there.
3. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HDMS data contains information about species occurrences that have actually been reported to the Department.

Arizona Game and Fish Department Mission

To conserve, enhance, and restore Arizona's diverse wildlife resources and habitats through aggressive protection and

 APPLICATION INITIALS: _____

management programs, and to provide wildlife resources and safe watercraft and off-highway vehicle recreation for the enjoyment, appreciation, and use by present and future generations.

Project Category: Energy Storage/Production/Transfer,Energy Transfer,power line/electric (maintenance to existing)

Project Type Recommendations:

During planning and construction, minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g. microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g. livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before and after project activities to reduce the spread of invasive species. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants http://www.azda.gov/PSD/quarantine5.htm. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control: http://www.usda.gov/wps/portal/usdahome. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml.

Impacts to raptors by above ground power lines and poles have been well documented. A number of structural improvements can minimize potential impacts to raptors and other migratory birds. Arizona Public Service (APS) offers guidelines to reduce mortality to these species http://www.aps.com/my_community/Environmental/Environmental_10.html. In addition, indirect affects to wildlife due to construction (timing of activity, clearing of rights-of-way, associated bridges and culverts, affects to wetlands, fences) should also be considered and mitigated. Please contact the Project Evaluation Program for further recommendations regarding trenching and power line associated activities.

Project Location and/or Species recommendations:

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project (refer to page 1 of the receipt). Please contact:
Ecological Services Office
US Fish and Wildlife Service

2321 W. Royal Palm Rd.
Phoenix, AZ 85021-4951
Phone: 602-242-0210
Fax: 602-242-2513

HDMS records indicate that one or more native plants listed on the Arizona Native Plant Law and Antiquities Act have been documented within the vicinity of your project area (refer to page 1 of the receipt). Please contact:

Arizona Department of Agriculture

1688 W Adams

 APPLICATION INITIALS: _____

Phoenix, AZ 85007
Phone: 602-542-4373

Recommendations Disclaimer:

1. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project.
2. These recommendations are proposed actions or guidelines to be considered during **preliminary project development.**
3. Additional site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. The Department is interested in the conservation of all fish and wildlife resources, including those Special Status Species listed on this receipt, and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
6. **Further coordination requires the submittal of this initialed and signed Environmental Review Receipt with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map).**
7. Upon receiving information by AZGFD, please allow 30 days for completion of project reviews. Mail requests to:

Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000

Phone Number: (623) 236-7600
Fax Number: (623) 236-7366

Terms of Use

By using this site, you acknowledge that you have read and understand the terms of use. Department staff may revise these terms periodically. If you continue to use our website after we post changes to these terms, it will mean that you accept such changes. If at any time you do not wish to accept the Terms, you may choose not to use the website.

1. This Environmental Review and project planning website was developed and intended for the purpose of screening projects for potential impacts on resources of special concern. By indicating your agreement to the terms of use for this website, you warrant that you will not use this website for any other purpose.
2. Unauthorized attempts to upload information or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act .
3. The Department reserves the right at any time, without notice, to enhance, modify, alter, or suspend the website and to terminate or restrict your access to the website.
4. This Environmental Review is based on the project study area that was entered. The review must be redone if the project study area, location, or the type of project changes. If additional information becomes available, this review may need to be reconsidered.
5. A signed and initialed copy of the Environmental Review Receipt indicates that the entire receipt has been read by the signer of the Environmental Review Receipt.

Security:

The Environmental Review and project planning web application operates on a complex State computer system. This system is

 APPLICATION INITIALS: _____

monitored to ensure proper operation, to verify the functioning of applicable security features, and for other like purposes. Anyone using this system expressly consents to such monitoring and is advised that if such monitoring reveals possible evidence of criminal activity, system personnel may provide the evidence of such monitoring to law enforcement officials. Unauthorized attempts to upload or change information; to defeat or circumvent security measures; or to utilize this system for other than its intended purposes are prohibited.

This website maintains a record of each environmental review search result as well as all contact information. This information is maintained for internal tracking purposes. Information collected in this application will not be shared outside of the purposes of the Department.

If the Environmental Review Receipt and supporting material are not mailed to the Department or other appropriate agencies within six (6) months of the Project Review Receipt date, the receipt is considered to be null and void, and a new review must be initiated.

Print this Environmental Review Receipt using your Internet browser's print function and keep it for your records. Signature of this receipt indicates the signer has read and understands the information provided.

Signature:_____

Date: _____

Proposed Date of Implementation: _____

Please provide point of contact information regarding this Environmental Review.

Application or organization responsible for project implementation

Agency/organization:_____

Contact Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

Person Conducting Search (if not applicant)

Agency/organization:_____

Contact Name: _____

Address: _____

 APPLICATION INITIALS: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

 APPLICATION INITIALS: _____

APPENDIX D

US FISH AND WILDLIFE SERVICE RESPONSE TO TECHNICAL ASSISTANCE REQUEST REGARDING THE CACTUS FERRUGINOUS PYGMY-OWL

Amanda Best

From: scott_richardson@fws.gov
Sent: Tuesday, April 14, 2009 2:11 PM
To: Amanda Best
Cc: Brian Lindenlaub; scott_richardson@fws.gov
Subject: Re: technical assistance request for SWTC Project

Dear Amanda,

Thank you for your correspondence of April 6, 2009. This correspondence documents our response to your request for information regarding the need to conduct cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum;* pygmy-owl) surveys along the proposed Southwest Transmission Cooperative's 11.75 mile rebuild of an electrical transmission line along Trico Road to approximately one mile south of Manville Road in Avra Valley, Pima County, Arizona. As you are aware, a final rule to remove the pygmy-owl from the Endangered Species list was published April 14, 2006 and became effective May 15, 2006. Therefore, the protective regulations of the Act no longer apply to the pygmy-owl. However, upon request, we continue to provide technical assistance related to the conservation of the pygmy-owl, and we have the following comments regarding your request for survey recommendations.

Based on the information provided to us in your correspondence, we concur with your determination that, while the site does support a few pygmy-owl habitat elements, occupancy or use of this parcel by the pygmy-owl is unlikely due to overall lack of suitable pygmy-owl habitat, the extent and intensity of existing development (agriculture) adjacent to the parcel, and the distance of this parcel from known pygmy-owl locations. The lack of saguaros suggests that pygmy-owl nesting components are lacking and the pygmy-owl survey protocol is set up to primarily detect pygmy-owls during the nesting season. Therefore, we do not recommend that pygmy-owl surveys be conducted prior to the development of this project.

Should circumstances regarding this project change from the information provided to us, or should new information become available regarding the distribution of listed species, we recommend that you contact us for further review. If you have additional questions, please contact Scott Richardson at 520-670-6144 (x 242) or Sherry Barrett at (x 223). Thank you for your consideration of endangered species.

Sincerely,

Scott Richardson
U.S. Fish and Wildlife Service
Tucson Suboffice
(520) 670-6150 x 242

Amanda Best <abest@westlandresources.com>

04/07/2009 03:44 PM

To "scott_richardson@fws.gov" <scott_richardson@fws.gov>
cc Brian Lindenlaub <blindenlaub@westlandresources.com>
Subject technical assitance request for SWTC Project

Scott,

Per our phone discussion this afternoon, please find attached our request for technical assistance regarding CFPO survey for the SWTC Marana Tap to Sandario Tap Rebuild Project. Please give me a call if you have any questions or require additional information.

Thank you and regards,
Amanda

Amanda L. Best| Environmental Specialist
WestLand Resources, Inc.
4001 E Paradise Falls Drive | Tucson, AZ 85712
Office: (520) 206-9585 | Fax: (520) 206-9518

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APPENDIX E

VISUAL IMPACT EXHIBIT

Image 1. Existing Viewshed 1.

Image 2. Post-construction Illustration of Viewshed 1.

Image 3. Existing Viewshed 2.

Image 4. Post-construction Illustration of Viewshed 2.

APPENDIX F

AGENCY SCOPING RESPONSE LETTERS

Amanda Best

om: Ruben Ojeda [ROjeda@land.az.gov]
nt: Tuesday, September 01, 2009 2:26 PM
: Amanda Best
Cc: Cynthia Stefanovic; James Rees; Stephen Williams
Subject: Fwd: SWTC Rebuild Project (Westland Project No. 1608.01 8330A 8330)

SWTC REBUILD.pdf (410 KB) | Westland_1608.01 8330A 8330.pd... | Ruben Ojeda.vcf (292 B)

Dear Ms. Best,
I am in receipt of your letter dated August 14, 2009 requesting comments on the rebuild project for Marana Tap to Sandario Tap Transmission Line rebuild project, copy of letter attached. Staff has reviewed the request and by receipt of this email the State Land Department authorizes Westland Resources on Behalf of Southwest Transmission Cooperative (SWTC) to proceed with the Marana Tap to Sandario Tap Transmission Line rebuild project

Authorization for the rebuild project is contingent on Westland Resources fulfilling the following below recommendations:

Recommendations: SWTC should be advised to contact the ASLD's Agriculture and Grazing Lessees in S27/T12S/R10E prior to commencing this rebuild project. Also, SWTC should be informed that ALL activity on State Trust land must be strictly limited to the existing 50' wide easement.

If you have any further questions or concerns, please do not hesitate to contact me.

Sincerely,

ben Ojeda
V Section Manager
izona State Land Department
1616 W Adams Street
Phoenix, AZ 85007
Phone: (602) 542-2648
Facsimile: (602) 542-2720
E-mail: rojeda@land.az.gov
Website: www.land.state.az.us

>>> James Rees 8/31/2009 4:51 PM >>>
Ruben,

Westland Resources, Inc. sent you a letter dated August 14, 2009 pertaining to the planned rebuild of a SWTC 115kV overhead subtransmission line parallel to Trico Road west and southwest of Marana (See attached map). This rebuild project will cross State Trust land in the E2E2 of S27 T12S R10E only (See #14-52251).

According to the letter the replacement monopoles will be approximately 10 to 20 feet taller than the existing wooden structures, but will replace the old structures at one monopole for every two wooden structures. This power line is along an existing arterial road (i.e. Trico Road). The ASLD's current Agriculture and Grazing Lessees should not be any more affected by the rebuilt power line than they are by the existing power line. Finally, this power line does not affect any of the ASLD's 5-Year Plan parcels.

Recommendations: SWTC should be advised to contact the ASLD's Agriculture and Grazing Lessees in S27 T12S R10E prior to commencing this rebuild project. Also, SWTC should be informed that ALL activity on State Trust land must be strictly limited to the existing 50' wide easement. That having been said, I see no reason why this rebuild project shouldn't be given the green light.

ncerely,

TRICO
Electric Cooperative, Inc.
A Touchstone Energy® Cooperative

AUG 21 2009

August 20, 2009

Ms Amanda L Best
Westland Resources, Inc.
4001 E Paradise Falls Dr
Tucson AZ 85712

Re: Southwest Transmission Cooperative, Inc. Marana Tap to Sandario Tap Transmission Line Rebuild Project
Westland Project No. 1608.01 8330A

Dear Ms. Best;

In regards to the plans listed above: Trico is aware of this project. We have no questions or comments at this time. We do have facilities in the area of the above project. If you need any additional information regarding project No. 1608.01 8330A 8330, feel free to call Paul Newton at 744-2944 ext. 1320 and he will be happy to talk with you.

Sincerely,

Melinda Dalton

Melinda Dalton
Right-of-Way Assistant

EXHIBIT C

BIOLOGICAL EVALUATION

BIOLOGICAL EVALUATION

SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT IN PIMA COUNTY, ARIZONA

Prepared for:
Southwest Transmission Cooperative, Inc.
1000 S. Highway 80
Benson, Arizona 85602-7007

Prepared by:

WestLand Resources, Inc.
Engineering and Environmental Consultants
4001 E. Paradise Falls Drive
Tucson, Arizona 85712

November 23, 2009
(Revised November 10, 2010)
Project No. 1608.01 340 340

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1. INTRODUCTION

WestLand Resources, Inc. (WestLand) was retained by Southwest Transmission Cooperative, Inc. (SWTC) to provide environmental services in support of their Marana Tap to Sandario Tap transmission line rebuild project (the Project). SWTC is proposing to rebuild an existing 11.98-mile long, 115-kilovolt (kV) transmission line along Trico Road from the Western Area Power Authority's Marana Tap located north of Silverbell Road to the SWTC Sandario Tap turning structure located approximately one mile south of Manville Road (the Project Area, Figures 1 and 2a through 2d).

The purpose of this Biological Evaluation (BE) is to determine the potential for the occurrence of any species listed by U.S. Fish and Wildlife Service (USFWS) as endangered, threatened, proposed, candidate, or conservation agreement or special status species identified by Arizona Game and Fish Department (AGFD) as occurring within the proximity of the Project, and to determine if any of these species would be potentially impacted by the proposed Project.

This BE is presented in 6 sections:

- Section 1: *Introduction.* This section introduces the BE and its purpose, and describes the document's organization.
- Section 2: *Project Description.* This section briefly describes the proposed Project.
- Section 3: *Methods.* This section describes the methods used to conduct the BE.
- Section 4: *Results.* This describes the Project Area and presents the findings of a screening analysis conducted to determine the potential occurrence of any special status species.
- Section 5: *Conclusion.* This section summarizes the findings of the BE.
- Section 6: *References.* This section provides a list of the references that were cited and used to conduct the BE.

2. PROJECT DESCRIPTION

SWTC proposes to rebuild the existing 115-kV transmission line using an enhanced design that would accommodate both current and future needs of SWTC's Class A members. The transmission line upgrade would begin at the existing WAPA Saguaro to Rattlesnake 115-kV transmission line just south of the intersection of Trico Marana Road and North Trico Road. From this point, the upgrade would proceed to SWTC's Marana Substation. From the Marana Substation, the upgrade parallels North Trico Road to the junction with SWTC's existing Sandario 115-kV line located approximately 1 mi south of Manville Road (Figure 1). Figures 2a through 2d show the Project plan view and illustrate the proposed Project Area's position along Trico Road, locations of the existing structures to be removed, and the location of a proposed materials yard. Engineering required to determine the exact locations of the new structures has not been completed at this time.

The existing transmission line was constructed in 1961 and, to date, the conductor has not been upgraded. The existing line is currently at capacity and under certain conditions would be unable to transmit additional loads without failure should an emergency occur elsewhere in the system. SWTC proposes to replace the existing conductor with a larger conductor rated at the same 115 kV voltage. In order to accommodate this upgrade, all the existing structures would need to be replaced to support the new, heavier conductor.

The Project would include replacing the wooden structures with either concrete or self-weathering steel monopoles. The new structures would be 10 to 20 feet (ft) taller than the existing wood poles, but would reduce the total number of structures from 113 to 95. The conductors and the spacing between the conductors and potential grounding sources would provide protection from avian electrocution. Each pole would stand approximately 60 to 70 ft high and would require the development of an approximately 50-by-50-ft cleared area (2,500 square feet) for construction. The Project would require approximately 17.52 ac of impact for removal of existing structures, the placement of new structures, and a materials yard. These impacts would occur largely within previously disturbed areas.

3. METHODS

Biological resources within the Project Area were evaluated to determine if there is a potential for the Project Area to support any special-status species identified by the USFWS and AGFD as either listed under the Endangered Species Act (ESA) in Pima County, Arizona or having a known reported occurrence from within 2 miles of the Project. WestLand biologists conducted site visits on April 4 and June 5, 2009. Habitat conditions were evaluated within the Property for comparisons with habitats known to support the special-status species. The potential presence of these species in the Project Area was evaluated based upon: 1) field observations and habitat assessment of the Project Area; 2) review of information regarding the natural history of the special-status species; 3) evaluation of the known range and distribution for the special-status species; and 4) comparisons of this information with habitats present in the Project Area. Species were discounted from occurring if the Project Area is located outside of their known range or if required habitat components are not present. Species range and habitat data were obtained primarily from information provided by AGFD Heritage Data Management System (HDMS) animal abstracts. Occurrence records were obtained through a search of the AGFD's Online Environmental Review Tool which queries the HDMS for special status species which have been reported within 2 miles of the Project.

4. RESULTS

4.1. Site Description

Elevations within the Project Area range from approximately 1,920 to 2,170 ft above sea level. The Project occurs along existing transmission lines and roads within an area that consists largely of active and abandoned agriculture. There are no perennial or intermittent drainage systems, springs, wetlands, or any other special aquatic sites within or near the Project Area. All drainage features on or in the vicinity of the Project Area are ephemeral and surface water occurs on the site only during and shortly after precipitation events of sufficient size to cause flow.

Existing land uses on and adjacent to the Project Area include a mixture of fallow and cultivated agricultural fields, dirt and paved roads, and a system of concrete and earthen irrigation canals that are no longer in use and associated berms. Approximately 7.5 miles of the 11.98-mile long project alignment (approximately 64 percent of the total length of the proposed project) is located on or adjacent to cultivated or fallow agricultural lands.[1] The remaining portion of the alignment supports sparse vegetation generally consistent with Sonoran desertscrub as described by Brown (1994).

Common native vegetation along the Project alignment includes creosotebush (*Larrea tridentata*), burroweed (*Isocoma tenuisecta*), triangle-leaf bursage (*Ambrosia deltoidea*), and desert broom (*Baccharis sarothroides*). Non-native Russian thistle (*Salsola* sp.) was also frequently noted along the roads and abandoned agriculture throughout the alignment. The most common tree species along the alignment is velvet mesquite (*Prosopis velutina*). Little leaf palo verde (*Cercidium microphyllum*) and blue palo verde (*C. floridum*) are present along the alignment, but less abundant than mesquite. Trees along the alignment are widely scattered. Short-statured, very widely scattered mesquite were noted on uplands within southern portions of the Project Area, while larger mesquite and palo verde occur along the alignment where surface waters collect along roadways and active agriculture. One large wash, the Brawley Wash, traverses the Project alignment. The riparian corridor along this wash is approximately 30 ft in width where it crosses the project alignment and supports species including mesquite, whitethorn acacia (*Acacia constricta*), desert hackberry (*Celtis pallida*), and desert broom.

Representative photographs of the site are provided in Appendix A.

[1] Measurement was taken from Pima County Mapguide using Composite-Vegetation mapping layers: http://www.dot.co.pima.az.us/gis/maps/mapguide/mgmap.cfm?path=/cmo/sdcpmaps/sdcp.mwf

4.2. Screening Analysis

Twenty-eight special-status species were considered in a screening analysis to determine the potential for their occurrence within the Project Area (Table 1). Species considered are either listed under the Endangered Species Act (ESA) by the USFWS for Pima County (USFWS 2009; Appendix B) or identified in a search of the AGFD HDMS as occurring within 2 miles of the Project Area (Appendix C).

Twenty-five species are currently identified on the USFWS Pima County list; 14 endangered species, 2 threatened species, 5 species that are candidates for listing, 2 species that are listed under conservation agreements, 1 species that has been delisted, and 1 species that was delisted and is currently petitioned for relisting

Five species were identified by a search of the AGFD HDMS as occurring within 2 miles of the Project Area, 1 species that is listed as a candidate species under the ESA, 1 that was petitioned for listing under the ESA, and 3 that are either listed by the state or the Bureau of Land Management (BLM) as special status species (Table 1).

The purpose of this screening analysis is to identify which of these species have the potential based upon known distribution and habitat preferences to occur within and adjacent to the Project alignment. The likelihood of potential occurrence of species within the Project occurs along a continuum. Five categories of potential occurrence were used in the screening analysis:

1) Known to Occur
2) Likely to Occur
3) Limited Potential to Occur
4) Not Likely to Occur
5) No Potential to Occur

The results of the screening analysis are summarized in Table 1. None of the species evaluated are known to occur within the Project Area. All species listed on the USFWS Pima County list were determined to have limited or no potential to occur within the Project Area because their known ranges are outside the Project Area and/or they are found in habitats dissimilar to those occurring within the Project Area. Three of the special status species that were evaluated based on the results of the HDMS database search were determined not likely to occur within the Project Area. Two species, the Thornber fishhook cactus (*Mammillaria thornberi*) and the cave myotis (*Myotis velifer*) have a reasonable potential to occur within the Project Area. These species are listed as a Salvage Restricted plant species by the State of Arizona and a Sensitive species by the BLM, respectively.

Table 1. Biological Evaluation Species Screening Analysis

Species	Status[1]	Known Distribution and Habitat Needs	Potential Occurrence within Project Area
Acuña cactus (*Echinomastus erectocentrus acunensis*)	Candidate	*Habitat:* Well-drained knolls and gravel ridges in Sonoran Desertscrub. *Range:* Western Pima to Maricopa, and Pinal counties, including Organ Pipe Cactus National Monument, Ajo, Coffee Pot Mountain, and Florence. Potential habitats exist in Sand Tank Mountains of the Barry M. Goldwater Air Force Range and the Tohono O'odham tribal lands. *Elevation:* 1,300 - 2,000 ft. *Data source*: (AGFD 2004b)	No potential to occur. Project Area lacks suitable habitat (well-drained knolls and gravel ridges between major washes on granite soils).
Gooddings onion (*Allium gooddingii*)	Conservation Agreement	*Habitat:* Forested drainage bottoms and moist, north-facing slopes of mixed conifer and spruce fir forests. *Range:* Known to occur in the White Mountains and Santa Catalina Mountains. *Elevation:* 7,000 - 10,600 ft. *Data source*: (AGFD 1999a)	No potential to occur. This plant is restricted to mountain ranges in central and western Arizona including the White, Santa Catalina and Chuska Mountains, and in New Mexico. The Project Area is below the lower elevation limit for this species.
Huachuca water umbel (*Lilaeopsis schaffneriana ssp. recurva*)	Endangered	*Habitat:* Cienegas, perennial low-gradient streams, wetlands. *Range:* Disjunct locations in Cochise and Santa Cruz counties. Historically in Pima County, Tucson. *Elevation:* 3,500 - 6,500 ft. *Data source*: (AGFD 2003c)	No potential to occur. Suitable habitat (cienegas, perennial low gradient streams or wetlands) is not present within the Project Area.
Kearney blue star (*Amsonia kearneyana*)	Endangered	*Habitat:* West-facing drainages in the Baboquivari Mountains. *Range:* South and Sycamore canyons, Baboquivari Mountains, Pima County. Introduced into Brown Canyon, east side of the Baboquivari Mountains. *Elevation:* 3,600 - 3,800 ft. *Data source*: (AGFD 2003a)	No potential to occur. To date this species is known to occur only in the Baboquivari Mountains in Arizona; originally only from one location, but it has since been located in more localities along the slopes of the Baboquivari Mountains.
Nichol Turk's head cactus (*Echinocactus horizonthalonius var. nicholii*)	Endangered	*Habitat:* Habitat is characterized by open vegetation, few trees and scattered low shrubs. Bedrock habitat at higher elevations; gravelly bajadas with limestone clasts at lower elevations. *Range:* Found in the Waterman Mountains in north central Pima County, and the Vekol Mountains in southwestern Pinal County. *Elevation:* 2,000 - 3,600 ft. *Data source*: (AGFD 2004a)	No potential to occur. Nichol Turk's head cactus occurs only on Paleozoic limestone outcrops in south-central Arizona, specifically the Horquilla Formation (and older alluvial fans immediately below the Horquilla Formation bedrock), which are not present within the Project Area.

Table 1. Biological Evaluation Species Screening Analysis

Species	Status[1]	Known Distribution and Habitat Needs	Potential Occurrence within Project Area
Pima pineapple cactus (*Coryphantha scheeri var. robustispina*)	Endangered	*Habitat:* Sonoran Desertscrub or Semidesert Grassland communities. *Range:* Southeastern Arizona. Known range bounded by Santa Cruz County, Santa Rita Mountains (east); Pima County, Baboquivari Mountains (west), Tucson (north), Arizona-Mexican border (south). *Elevation:* 2,300 - 5,000 ft. *Data source*: (AGFD 2001b)	No potential to occur. The Project does not occur within the geographical range of the PPC. The Project Area is below the lower elevation limit for this species.
Thornber fishhook cactus (*Mammilaria thornberi*)	None [Note 1]	*Habitat*: Deep, hot, arid, gravelly soils on flood plains, alluvial fans and deeply dissected uplands. *Range*: Avra Valley/Saguaro National Monument and on the Papago Indian Reservation, Pima and Pinal Cos., Arizona. Possibly in northern Sonora, Mexico. *Elevation*: 780 – 2,400 ft *Data Source:* (NatureServe 2009)	Likely to occur. This species is reported by AGFD HDMS as occurring within 2 miles of the Project Area and the Project Area contains habitat similar to that which is known to support this cactus. No Thornber fishhook cacti were observed during field reconnaissance; however, no species specific survey or native plant inventory was conducted within the Project Area. Potential impacts to this cactus would be mitigated through the Project's compliance with the Arizona Native Plant Law and the Pima County Native Plant Preservation Ordinance. This plant is not afforded protection under the ESA.
San Xavier talussnail (*Sonorella eremita*)	Conservation Agreement	*Habitat:* Deep limestone rockslides with outcrops of limestone and decomposed granite. *Range:* Occurs only on San Xavier Hill in Pima County, Arizona. *Elevation:* 3,850 - 3,920 ft. *Data source*: (AGFD 2003d)	No potential to occur. The San Xavier talussnail occurs only on San Xavier Hill in Pima County, Arizona.
Desert pupfish (*Cyprinodon macularius*)	Endangered	*Habitat:* Shallow springs, small streams, and marshes. Tolerates saline and warm water. *Range:* No naturally occurring populations remain in Arizona. *Elevation:* below 5,000 ft. *Data source*: (AGFD 2001c)	No potential to occur. No naturally occurring populations remain in Arizona. The Project Area lacks aquatic habitat.
Gila chub (*Gila intermedia*)	Endangered	*Habitat:* Pools, springs, cienegas, and streams. *Range:* Currently known from the Santa Cruz River (Cienega Creek, Sabino Canyon, Sheehy Spring), Middle Gila River (Eagle, Bonita and Harden Cienega Creeks and San Carlos and Blue Rivers), San Pedro River (Bass, O'Donnell and Redfield Canyons, Babocomari River and Turkey Creek), Agua Fria River (Silver and Sycamore [rare] Creeks), Verde River (Spring and Walker Creeks). *Elevation:* 2,000 - 3,500 ft. *Data source*: (AGFD 2002f)	No potential to occur. Aquatic habitat (pools, springs, cienegas, and streams) is not present within the Project Area.

Table 1. Biological Evaluation Species Screening Analysis

Species	Status[1]	Known Distribution and Habitat Needs	Potential Occurrence within Project Area
Gila topminnow (*Poeciliopsis occidentalis occidentalis*)	Endangered	*Habitat:* intermittent or perennial streams, springs, and cienegas, vegetated shallows. *Range:* Known to occupy several localities in the Gila River drainage, and one locality in the Bill Williams River drainage. *Elevation:* below 4,500 ft. *Data source*: (AGFD 2001e)	No potential to occur. The Project Area lacks aquatic habitat (headwater springs and vegetated margins and backwater areas of intermittent and perennial streams and rivers) for this fish.
Chiricahua leopard frog (*Lithobates [Rana] chiricahuensis*)	Threatened	*Habitat:* Streams, rivers, backwaters, ponds, and stock tanks that are free from introduced fish and bullfrogs. Habitat types may include oak, mixed oak, pine woodlands, chaparral, grassland, and even desert. *Range:* Arizona range is divided into two areas. The first (northern population) extends from montane central Arizona east and south along the Mogollon Rim to montane parts of west-southwestern New Mexico. The second is located in the mountains and valleys south of the Gila River in southeastern Arizona and southwestern New Mexico, and extends into Mexico (adjacent Sonora) along the eastern slopes of the Sierra Madre Occidental. *Elevation:* 3,300 - 8,900 ft. *Data source*: (AGFD 2006)	No potential to occur. Requires permanent or nearly permanent water sources such as streams, rivers, or ponds.
Northern Mexican gartersnake (*Thamnophis eques megalops*)	Candidate	*Habitat*: In Arizona, these snakes are most abundant in densely vegetated habitat surrounding cienegas, cienega-streams, and stock tanks and in or near water along streams in valley floors and generally open areas, but not in steep mountain canyon stream habitat. *Range:* Found in the southeast corner of state from the Santa Cruz Valley east and generally south of the Gila. Recent valid records occur from the San Rafael and Sonoita grasslands area and from Arivaca. Known from the Agua Fria River, Oak Creek, the Verde River, and from several upper Salt/Black River sites, including smaller tributaries. *Elevation:* 3,000 and 8,500 ft *Data source*: (AGFD 2001f)	No potential to occur. There are no aquatic resources within the Project Area.
Sonoyta mud turtle (*Kinosternon sonoriense longifemorale*)	Candidate	*Habitat:* Ponds and streams *Range:* Found in Quitobaquito Springs. *Elevation:* 1,100 ft. *Data source*: (AGFD 2005a)	No potential to occur. There are no natural or man-made aquatic resources and the Project Area is far outside of the species geographic range (Quitobaquito Springs).

Table 1. Biological Evaluation Species Screening Analysis

Species	Status[1]	Known Distribution and Habitat Needs	Potential Occurrence within Project Area
Texas horned lizard (*Phrynosoma cornutum*)	None [Note 2]	*Habitat*: In Arizona, Chihuahuan Desert and Semidesert Grassland; sandy to gravelly flat ground with or without rocky cover, usually with scattered desert and grassland shrubs or on mesquite dominated flats. *Range:* Extreme southeast corner of the Arizona, west to the western edge of San Pedro Valley and north to Wilcox. This includes the counties of Cochise, Graham, and Pima. *Elevation:* 3,580 – 4,940 ft. *Data Source*: (AGFD 2002h)	Limited potential to occur. Although this species was identified by the AGFD HDMS as occurring within 2 miles from the Project Area, the Project Area occurs outside this species range (AGFD 2002h). This species is not afforded protection under the ESA.
Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*)	Candidate	*Habitat:* Found in arid deserts with sandy washes, dunes and rocky hillsides. They prefer areas with scattered mesquite-creosote bush. *Range:* South central Arizona, in Pima and Pinal counties. *Elevation:* 0-4,700 ft. *Data Source*: (AGFD 2002b)	Not likely to occur. This snake moves by using a sideways swaying motion under or on the surface of sand or loose soil and the Project Area contains this substrate only where is crosses the Brawley Wash. The last verifiable record of this snake in Pima County was in 1979 near the intersection of Avra Valley Road and Sanders Road in Avra Valley (73 FR 146, 43907). According to the petition for this species' listing the current distribution of this snake is believed to be in southern Pinal Co. and Maricopa Co. (73 FR 146, 43907).
American peregrine falcon (*Falco peregrinus anatum*)	Delisted [Note 3]	*Habitat:* Areas with rocky, steep cliffs near water where prey (primarily shorebirds, songbirds, and waterfowl) concentrate. Nests are found on ledges of cliffs, and sometimes on man-made structures such as towers and bridge abutments. *Range:* In Arizona from Apache, Cochise, Gila, Graham, Greenlee, La Paz, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai, and Yuma Counties, particularly along cliffs such as the Mogollon Rim, Grand Canyon, and Colorado Plateau. *Elevation:* 400 to 9,000 ft *Data source*: (AGFD 2002e)	Not likely to occur. The Project Area does not support the concentration of prey that this species requires and provides no nesting substrate. This species is not afforded legal protection under the ESA.

Table 1. Biological Evaluation Species Screening Analysis

Species	Status[1]	Known Distribution and Habitat Needs	Potential Occurrence within Project Area
Cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*)	Petitioned for Relisting [Note 4]	*Habitat:* Mature cottonwood/willow, mesquite bosques, and Sonoran Desertscrub. Nests in broadleaf riparian trees or Saguaro cacti. *Range:* Formerly common in mesquite bosques throughout central southern Arizona, found south of Tortolita Mts., west of Tortilla Mts., Rincon Mts., Pajarito Mts., Puerto Blanco Mts., Ajo Mts., Santa Catalina Mts., Santa Rita Mts., Tucson area, Gila River near Bonita Creek and San Francisco River, San Pedro River near Dudleyville, and Sonoyta Creek. *Elevation:* below 4,000 ft. *Data source*: (AGFD 2001d)	Not likely to occur. WestLand requested technical assistance from USFWS regarding the need for survey for this species within the Project Area and USFWS concurred with WestLand's determination that, while the site does support a few pygmy-owl habitat elements, occupancy or use of this parcel by the pygmy-owl is unlikely due to overall lack of suitable pygmy-owl habitat, the extent and intensity of existing development (agriculture) adjacent to the Project Area, and the distance of the Project Area from known pygmy-owl locations (Appendix D).
California least tern (*Sterna antillarum browni*)	Endangered	*Habitat:* Open, bare, or sparsely vegetated sand, sandbars, gravel pits, or exposed flats along shorelines of inland rivers, lakes, reservoirs, or drainage systems. *Range:* The Pacific Coast of California, from San Francisco to Baja, California. Breeding occasionally documented in Arizona, migrants may occur more frequently. *Elevation:* Below 2,000 ft. *Data source*: (USFWS 2009)	No potential to occur. The Project Area does not provide suitable habitat for this species.
Masked bobwhite (*Colinus virginianus ridgewayi)*	Endangered	*Habitat:* Desert grasslands with diversity of dense native grasses, forbs, and brush. *Range:* Northern edge of range extended to bottomlands of Altar and Santa Cruz valleys. *Elevation:* 1,000 - 4,000 ft. *Data source*: (AGFD 2001a)	No potential to occur. There is no desert grassland habitat and the nearest known occurrence of this species is more than 40 miles southeast of Tucson.
Mexican spotted owl (*Strix occidentalis lucida*)	Threatened	*Habitat:* Nests in canyons and dense forests with multi-layered foliage structure. *Range:* Distributed in forested mountains statewide, along with steep canyons on the Colorado Plateau including the Grand Canyon. They have been found in the following counties: Apache, Cochise, Coconino, Gila, Graham, Greenlee, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, and Yavapai. *Elevation:* 4,100 – 9,000 ft. *Data source*: (AGFD 2005b)	No potential to occur. The Project Area lacks suitable habitat (canyons and dense forests). The site is below the elevational range of this species.
Southwestern willow flycatcher (*Empidonax traillii extimis*)	Endangered	*Habitat:* Cottonwood/Willow and Tamarisk vegetation communities along rivers and streams. *Range:* Breeds locally along Colorado River, near mouth of Little Colorado River, and south of Yuma; at Little Colorado River headwaters near Greer and Eagar; very locally along the middle Gila, Salt, and	Not likely to occur. This species is a riparian obligate, requiring dense foliage and surface water. No perennial or intermittent water sources or riparian obligate vegetation occurs within or adjacent to the Project Area.

Table 1. Biological Evaluation Species Screening Analysis

Species	Status[1]	Known Distribution and Habitat Needs	Potential Occurrence within Project Area
		Verde rivers; middle to lower San Pedro River; and upper San Francisco River near Alpine. *Elevation:* below 8,500 ft. *Data source*: (AGFD 2002d)	
Yellow-billed cuckoo (*Coccyzus americanus*)	Candidate	Habitat: Large blocks of riparian woodlands (cottonwood, willow, or tamarisk galleries). Range: Southern and central Arizona and extreme northeast. Elevation: below 6,500 ft. *Data source:* (AGFD 2002c)	Not likely to occur. This species is reported by AGFD HDMS as occurring within 2 miles of the Project Area, however, no suitable nesting habitat (large blocks of riparian woodlands) is present on or adjacent to the Project Area.
Cave myotis (*Myotis velifer*)	None [Note 5]	*Habitat:* Desertscrub of creosote, brittlebush, palo verde and cacti. Roost in caves, tunnels, mineshafts, under bridges, and sometimes in buildings, within a few miles of water. *Range:* South of Mogollon Plateau from Lake Mohave, Burro Creek, Montezuma Well, San Carlos Apache Reservation and the Chiricahua Mountains south to Mexico. Although known from as far southwest as the Harquahala Mountains, Gila Bend, Organ Pipe Cactus National Monument and about 20 miles north of Yuma near the Colorado, it has not been recorded from the extreme southwestern part of the state. *Elevation:* 300 - 5,000 ft. *Data source:* (AGFD 2002g)	Likely to occur. This insectivorous bat species likely uses the Project Area while foraging. It is reported by AGFD HDMS as occurring within 2 miles of the Project Area. Potential roosting habitat for this species is provided by the Brawley Wash bridge. This bat forages just over the top of vegetation, staying close to the vegetation 6 to 15 ft above the ground (AGFD 2002g). The Project will not adversely impact the cave myotis because the vegetation removed as a result of the Project will not likely affect this bat's ability to continue to forage over the Project Area and the Project will not impact the Brawley Wash bridge. No species specific survey was conducted within the Project Area for this bat. This species is not afforded legal protection under the ESA.
Jaguar (*Panthera onca*)	Endangered	*Habitat:* In Arizona, ranges widely throughout a variety of habitats from Sonoran Desert to conifer forests. *Range:* Rarely this species has been recorded from southern Arizona, New Mexico, and southern Texas. Currently its known range in Arizona is in southeastern Arizona. Confirmed occurrences of this species account for only a fraction of the reports. *Elevation:* below 8,000 ft. *Data source:* (AGFD 2004d)	No potential to occur. Jaguars have been reported regularly but uncommonly in Arizona throughout the 1900s up to the present (Girmendonk, 1994; Brown and González, 2001), but confirmed occurrences account for only a fraction of the reports.
Lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*)	Endangered	*Habitat:* Desertscrub habitat with agave and columnar cacti present as food plants. Roosts in caves, mine tunnels, and old buildings. *Range:* Southern Arizona from the Picacho Mountains southwesterly to the Agua Dulce Mountains and southeasterly to the Galiuro and Chiricahua	Limited potential to occur. Although lesser long-nosed bats are found throughout the region; the site contains no roost sites or forage plants for this species. This bat may fly over the Project Area in search of forage.

Table 1. Biological Evaluation Species Screening Analysis

Species	Status[1]	Known Distribution and Habitat Needs	Potential Occurrence within Project Area
		Mountains and then southerly into Mexico and beyond. Also 2 late-summer records of immature individuals from the Phoenix area and 1 from the Pinaleno Mountains. *Elevation:* below 6,000 ft. *Data source:* (AGFD 2003b)	
Ocelot (*Leopardus pardalis*)	Endangered	*Habitat:* Humid tropical and subtropical forests, savannahs, and semi-arid thornscrub. *Range:* Very little natural history information is known regarding the ocelot in Arizona. Infrequent and unconfirmed reports of this species for southern Arizona suggest its occurrence anywhere in southern Arizona is very unlikely at this time. *Elevation:* below 8,000 ft. *Data source:* (AGFD 2004c)	No potential to occur. Very little natural history information is known regarding the ocelot in Arizona. The infrequent and unconfirmed reports of this species for southern Arizona suggest its occurrence anywhere in southern Arizona is very unlikely at this time.
Sonoran pronghorn (*Antilocapra Americana sonoriensis*)	Endangered	*Habitat:* Broad, intermountain alluvial valleys with creosote-bursage and palo verde-mixed cacti associations. *Range:* Found on the Cabeza Prieta National Wildlife Refuge, the Organ Pipe Cactus National Monument, the Luke Air Force Barry M. Goldwater Gunnery Range, and possibly the Tohono O'odham Indian Reservation. *Elevation:* 2,000 - 4,000 ft. *Data source:* (AGFD 2002a)	No potential to occur. Sonoran pronghorn occur in western Pima County, including the Barry Goldwater Air Force Range and the Cabeza Prieta National Wildlife Refuge.

1. U.S. Fish & Wildlife Service Categories:
   Endangered - Taxa in danger of extinction throughout all, or a significant portion, of its range.
   Threatened - Taxa likely to become Endangered in the foreseeable future throughout all, or a significant portion, of its range.
   Candidate - Taxa for which sufficient data exist to support proposals to list, but formal proposals to list the species as Threatened or Endangered have not been made by the USFWS because this action is precluded by other listing activity.
   Conservation Agreement - Taxa for which an agreement has been made with the USFWS to improve the status of the species and diminish threats to where listing is no longer necessary under the Endangered Species Act.

Notes:
Note 1. The Thornber fishhook cactus is not federally listed but is a state Salvage Restricted plant.
Note 2. The Texas horned lizard is not listed under the ESA but it is listed as sensitive by the BLM.
Note 3. The American peregrine falcon is currently not listed under the ESA, but remains on the list published by USFWS for Pima County as a delisted species.
Note 4. The cactus ferruginous pygmy-owl is not currently listed under the ESA. It was once listed as endangered and has been petitioned for relisting
Note 5. The cave myotis is not listed under the ESA but it is listed as sensitive by the BLM.

5. CONCLUSION

Twenty-eight special-status species were considered in a screening analysis to determine the potential for their occurrence within the Project Area. Species considered are either listed by the USFWS for Pima County (USFWS 2009; Appendix B) or identified in a search of the AGFD HDMS as occurring within 2 miles of the Project Area (Appendix C).

All species listed on the USFWS Pima County list were determined to have limited or no potential to occur within the Project Area because their known ranges are outside the Project Area and/or they are found in habitats dissimilar to those occurring within the Project Area.

Two species identified by a search of the AGFD HDMS as occurring within 2 miles of the Project Area, the Thornber fishhook cactus and the cave myotis have a reasonable potential to occur within the Project Area. These species are listed as a Salvage Restricted plant species by the State of Arizona and a Sensitive species by the BLM) respectively.

The Project Area contains habitat similar to that which is known to support the Thornber fishhook cactus. No Thornber fishhook cacti were observed during field reconnaissance; however, no species specific survey or native plant inventory was conducted within the Project Area. Potential impacts to this cactus would be mitigated through the Project's compliance with the Pima County Native Plant Preservation Ordinance. This plant is not afforded legal protection under the ESA.

The cave myotis likely uses the Project Area while foraging for insects and potential roosting habitat for this species is provided by the Brawley Wash Bridge within the Project Area. This bat forages just over the top of vegetation, staying close to the vegetation 6 to 15 ft above the ground (AGFD 2002g). The Project will not adversely impact the cave myotis because the vegetation removed as a result of the Project will not likely affect this bat's ability to continue to forage over the Project Area and the Project will not impact the Brawley Wash Bridge. No species specific survey was conducted within the Project Area for this bat. This species is not afforded legal protection under the ESA.

6. REFERENCES

Arizona Game & Fish Department (AGFD). 2009. Arizona's Natural Heritage Program: Heritage Data Management System (HDMS). Website: http://www.azgfd.gov/w_c/edits/species_concern.shtml.

———. 2006. *Rana chiricahuensis*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2005a. *Kinosternon sonoriense longifemorale.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2005b. *Strix occidentalis lucida.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2004a. *Echinocactus horizonthalonius* var. *nicholii*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2004b. *Echinomastus erectocentrus var. acunensis*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2004c. *Leopardus pardalis*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2004d. *Panthera onca*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed May 12, 2008.

———. 2003a. *Amsonia kearneyana*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2003b. *Leptonycteris yerbabuenae.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2003c. *Lilaeopsis schaffneriana* var. *recurva.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2003d. *Sonorella eremita.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2002a. *Antilocapra americana sonoriensis* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2002b. *Chionactis occipitalis klauberi.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2002c. *Coccyzus americanus occidentalis.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2002d. *Empidonax traillii extimus.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2002e. *Falco peregrinus anatum.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 29, 2009.

———. 2002f. *Gila intermedia.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2002g. *Myotis velifer.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 29, 2009.

———. 2002h. *Phrynosoma cornutum.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 29, 2009.

———. 2001a. C*olinus virginianus ridgwayi.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. Accessed June 2, 2009.

———. 2001b. *Coryphantha scheeri* var. *robustispina.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 2001c.*Cyprinodon macularius.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. Accessed June 2, 2009.

———. 2001d. *Glaucidium brasilianum cactorum.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. Accessed June 2, 2009.

———. 2001e. *Poeciliopsis occidentalis occidentalis*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. Accessed June 2, 2009.

———. 2001f. *Thamnophis eques megalops.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. Accessed June 2, 2009.

———. 1999a. *Allium gooddingii.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 2, 2009.

———. 1999b. Heritage data management system index of cactus ferruginous pygmy-owls for Arizona (November 8, 1999 printout). Arizona Game & Fish Department. Phoenix. Accessed May 12, 2008.

Brown, D.E. (ed.). 1994. *Biotic communities: Southwestern United States and Northwestern Mexico.* University of Utah Press: Salt Lake City.

Brown, D.E. and C.A.L. González, 2001. Borderland Jaguars/Tigres de la Frontera. Published in Paperback by Univ of Utah Pr (Trd) (November, 2001)

Ecosphere Environmental Services, Inc. 1992. A range study of *Coryphantha scheeri* var. *robustispina.* Report prepared for U.S. Bureau of Reclamation Arizona Projects Office. Contract No. 1-CS-32-01950. Phoenix, Arizona. Girmendonk, A.L. 1994. Ocelot, jaguar, and jaguarundi sighting reports: Arizona and Sonora, Mexico. Arizona Game & Fish Department *Nongame and Endangered Wildlife Technical Report* 35. Phoenix, Arizona.

NatureServe. 2009. NatureServe Explorer Website, Version 7.1. http://www.natureserve.org/explorer/. Accessed June 29, 2009

U.S. Fish and Wildlife Service. *Threatened and Endangered Species County List.* Accessed online April 2009. http://www.fws.gov/arizonaes/Documents/CountyLists/Pima.pdf

———. 2008. 90-Day Finding on a Petition to List the Tucson Shovel-nosed Snake (*Chionactis occipitalis klauberi*) as Threatened or Endangered with Critical Habitat. Federal Register, Volume 73, No. 146. Published on July 29, 2008.

FIGURES

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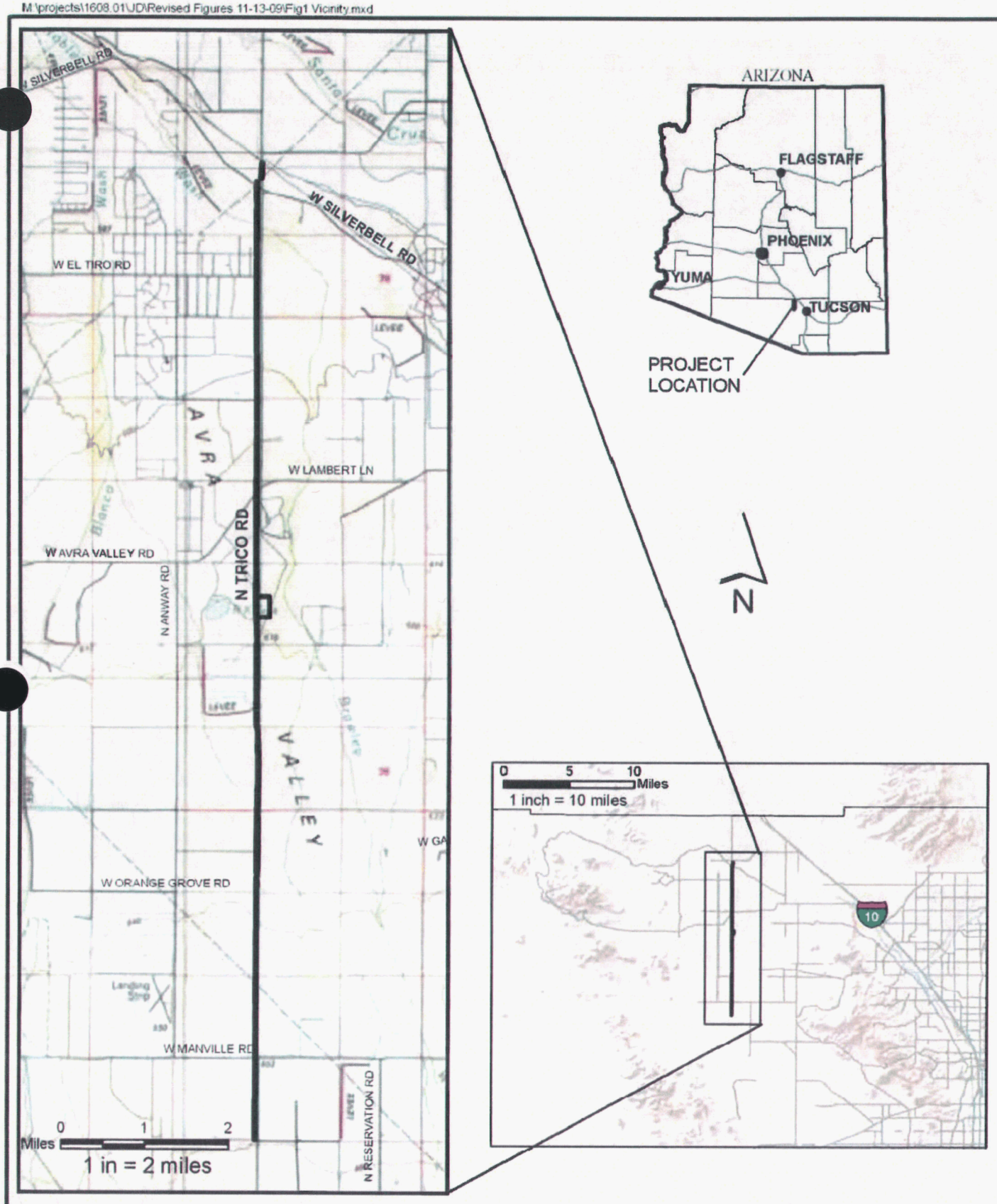

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T.12S.,R.10E. Portion of Sections 3, 10, 15, 22, 27, 34, & 35,
T.13S.,R.10E. Portion of Sections 2, 3, 10, 11, 14, 15, 22, & 23,
Pima County, Arizona.
West of Avra & West of Marana USGS 7.5' Quadrangles

WestLand Resources, Inc.
Engineering and Environmental Consultants

Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project

Vicinity Map
Figure 1

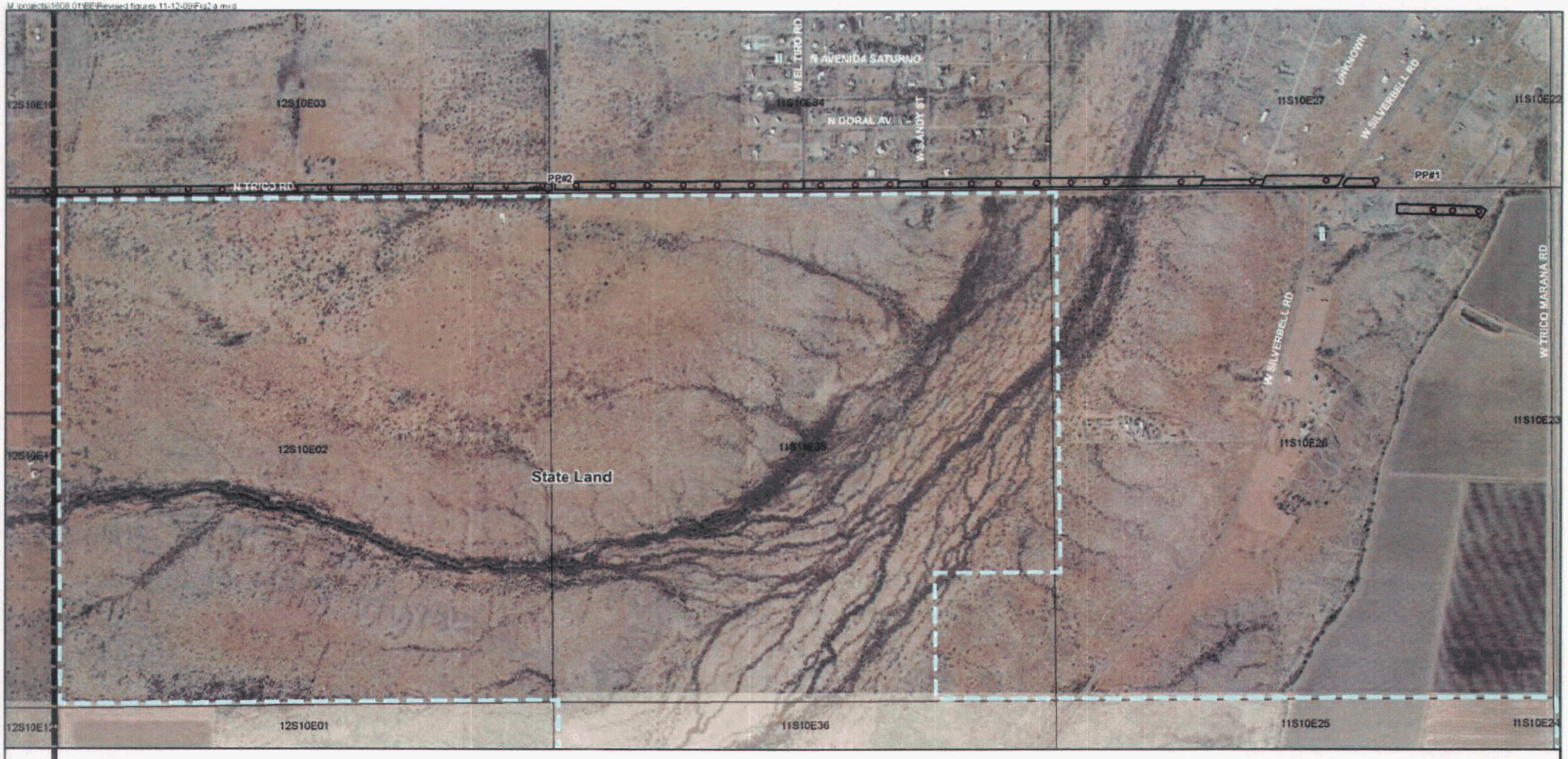


Figure 2b

Legend

- Project Area
- Existing Transmission Line Structure
- State Land Boundary
- PP# Photo Location and Direction

0 500 1,000
Feet
1 inch = 1,000 feet

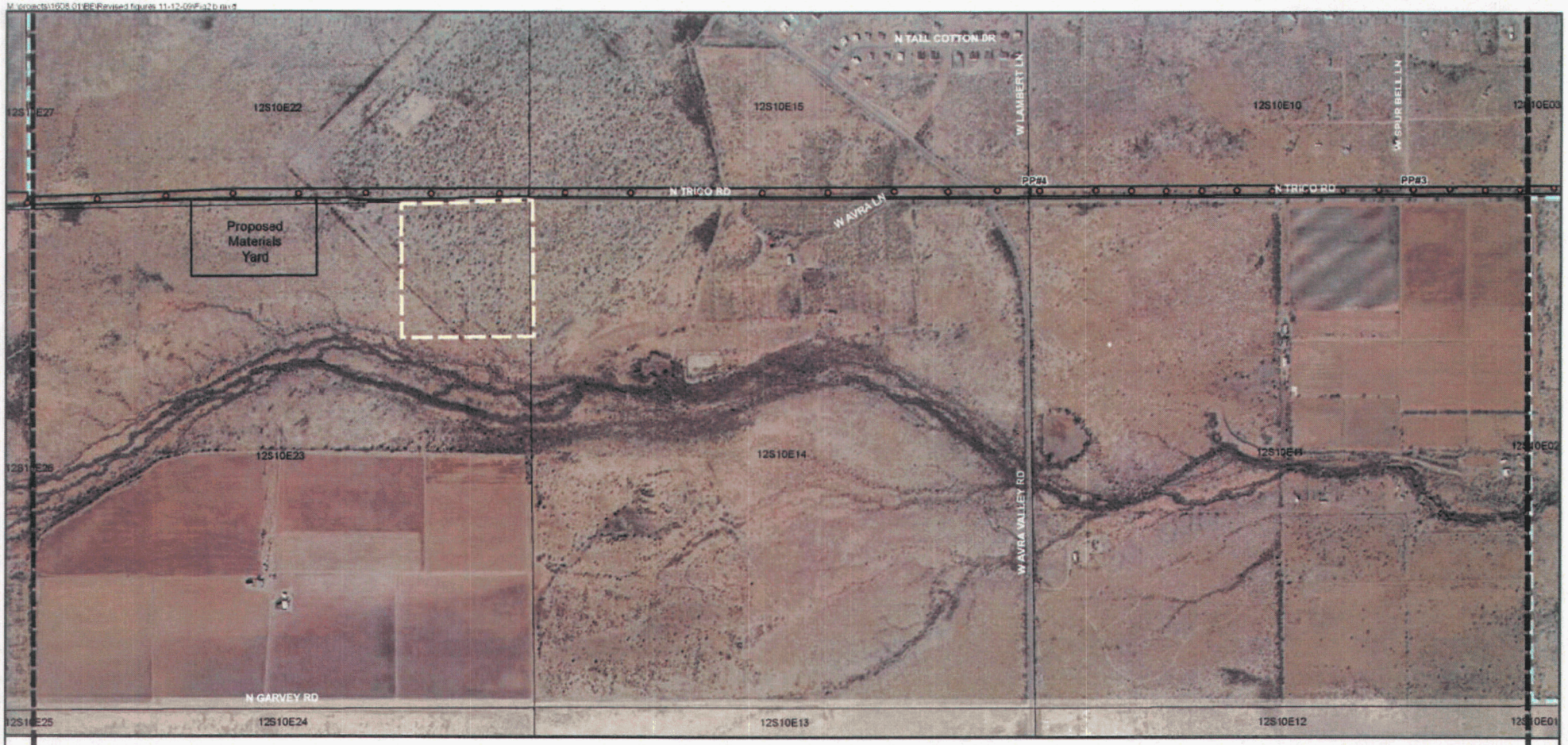
W S N E

WestLand Resources, Inc.
Engineering and Environmental Consultants

Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project

Aerial Overview

Figure 2a



Legend

- Project Area
- Existing Transmission Line Structure
- BLM Boundary
- State Land Boundary
- PP# Photo Location and Direction

0 500 1,000
Feet
1 inch = 1,000 feet

W S N E

WestLand Resources, Inc.
Engineering and Environmental Consultants

Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project

Aerial Overview

Figure 2b

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Legend

- Project Area
- Existing Transmission Line Structure
- State Land Boundary
- PP# Photo Location and Direction

0 500 1,000
Feet
1 inch = 1,000 feet

W S N E

WestLand Resources, Inc.
Engineering and Environmental Consultants

Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project

Aerial Overview

Figure 2c

Legend

- Project Area
- Existing Transmission Line Structure
- PP# Photo Location and Direction

0 500 1,000
Feet
1 inch = 1,000 feet

W S N E

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Engineering and Environmental Consultants

Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project

Aerial Overview

Figure 2d

APPENDIX A

REPRESENTATIVE PHOTOGRAPHS

PHOTO 1: From Marana Substation looking south along Project Area.

PHOTO 2. From El Camino de Tres Arroyo looking south along Project Area.

PHOTO 3. From West Spur Bell Lane looking south along Project Area.

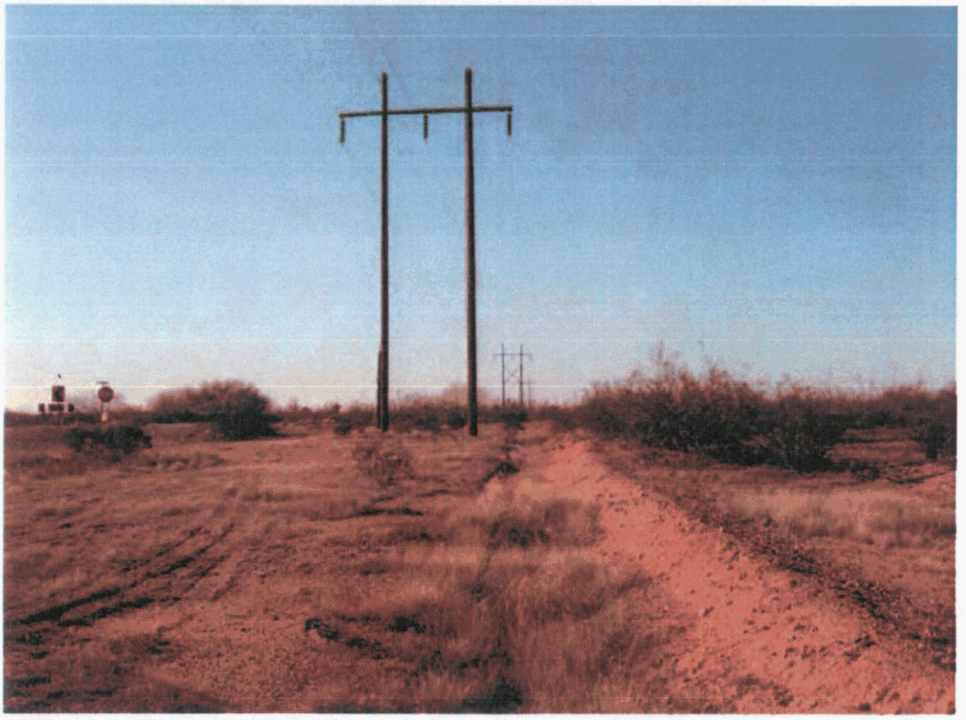


PHOTO 4. From Lambert Lane looking south along Project Area.

PHOTO 5. From Prickle Desert Road looking south along Project Area.

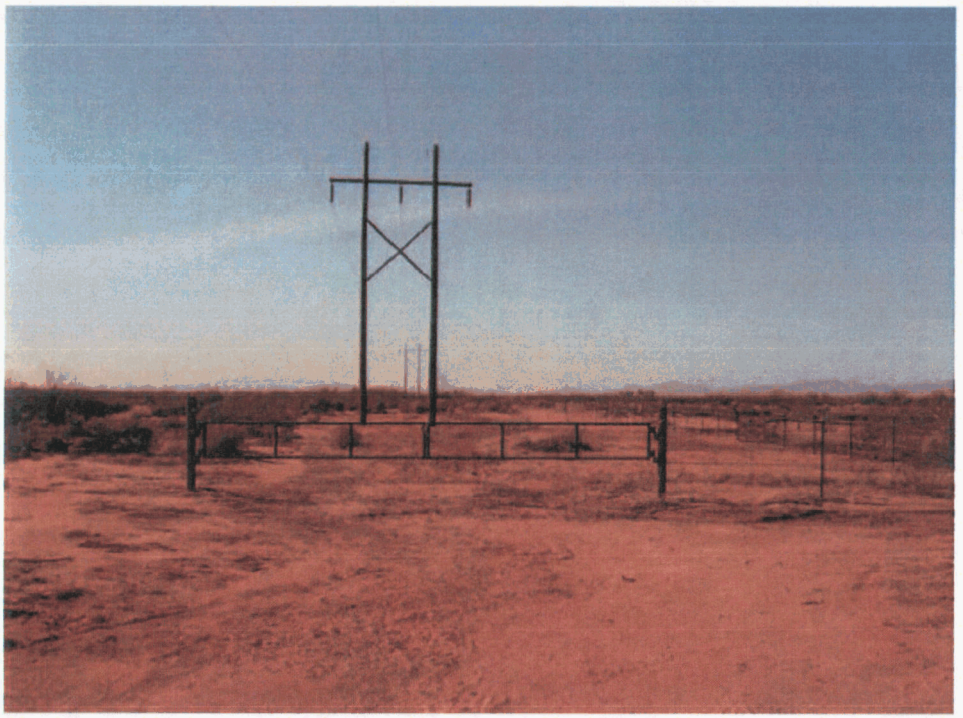


PHOTO 6. From Matisse Road looking south along Project Area.

PHOTO 7. From Scrub Brush Road looking north along Project Area.

PHOTO 8. From south of Scrub Brush Road looking south toward the Avra Valley Substation.

PHOTO 9. From Manville Road looking north along Project Area.

PHOTO 10. From Sandario Tap looking north along Project Areat.

APPENDIX B

USFWS SPECIES LIST FOR PIMA COUNTY, ARIZONA

Pima County

COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
Chiricahua leopard frog	*Lithobates [Rana] chiricahuensis*	Threatened	Cream colored tubercles (spots) on a dark background on the rear of the thigh, dorsolateral folds that are interrupted and deflected medially, and a call given out of water distinguish this spotted frog from other leopard frogs.	Apache, Cochise, Coconino, Gila, Graham, Greenlee, Navajo, Pima, Santa Cruz, Yavapai	3,300-8,900 ft	Streams, rivers, backwaters, ponds, and stock tanks that are mostly free from introduced fish, crayfish, and bullfrogs.	Require permanent or nearly permanent water sources. Populations north of the Gila River may be a closely-related, but distinct, undescribed species. A special rule allows take of frogs due to operation and maintenance of livestock tanks on State and private lands.
Desert pupfish	*Cyprinodon macularius*	Endangered	Small (2 inches) smoothly rounded body shape with narrow vertical bars on the sides. Breeding males blue on head and sides with yellow on tail. Females and juveniles tan to olive colored back and silvery sides.	Cochise, Graham, Maricopa, Pima, Santa Cruz, Yavapai	< 4,000 ft	Shallow springs, small streams, and marshes. Tolerates saline and warm water.	Two subspecies are recognized: Desert Pupfish (C.m. macularis) and Quitobaquito Pupfish (C.m. eremus). Critical habitat includes Quitobaquito Springs, Pima County, portions of San Felipe Creek, Carrizo Wash, and Fish Creek Wash, Imperial County, California.
Gila chub	*Gila intermedia*	Endangered	Deep compressed body, flat head. Dark olive-gray color above, silver sides. Endemic to Gila River Basin.	Cochise, Gila, Graham, Greenlee, Pima, Pinal, Santa Cruz, Yavapai	2,000-5,500 ft	Pools, springs, cienegas, and streams.	Found on multiple private lands, including the Nature Conservancy and the Audubon Society. Also occurs on Federal and state lands and in Sonora, Mexico. Critical habitat occurs in Cochise, Gila, Graham, Greenlee, Pima, Pinal, Santa Cruz, and Yavapai counties.
Gila topminnow	*Poeciliopsis occidentalis occidentalis*	Endangered	Small (2 inches), guppy-like, live bearing, lacks dark spots on its fins. Breeding males are jet black with yellow fins.	Cochise, Gila, Graham, Maricopa, Pima, Santa Cruz, Yavapai	< 4,500 ft	Small streams, springs, and cienegas vegetated shallows.	Species historically also occurred in backwaters of large rivers but is currently isolated to small streams and springs.
Huachuca water umbel	*Lilaeopsis schaffneriana ssp. recurva*	Endangered	Herbaceous, semi-aquatic perennial in the parsley family (Umbelliferae) with slender erect, hollow, leaves that grow from the nodes of creeping rhizomes. Flower: 3 to 10 flowered umbels arise from root nodes.	Cochise, Pima, Santa Cruz	3,500-6,500 ft	Cienegas, perennial low gradient streams, wetlands.	Species also occurs in adjacent Sonora, Mexico, west of the continental divide. Critical habitat in Cochise and Santa Cruz counties (64 FR 37441, July 12, 1999).

COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
Jaguar	*Panthera onca*	Endangered	Largest species of cat native to Southwest. Muscular, with relatively short, massive limbs and a deep-chested body. Usually cinnamon-buff in color with many black spots. Weights ranges from 90-300 lbs.	Cochise, Santa Cruz, Pima	1,600-9,000 ft	Found in Sonoran desertscrub up through subalpine conifer forest.	Also occurs in New Mexico. A Jaguar conservation team is being formed that is being led by Arizona and New Mexico state entities along with private organizations.
Kearney blue star	*Amsonia kearneyana*	Endangered	A herbaceous perennial about 2 feet tall in the dogbane family (Apocynaceae). Thickened woody root and many pubescent (hairy) stems that rarely branch. Flowers: white terminal inflorescence in April and May.	Pima	3,600-3,800 ft	West-facing drainages in the Baboquivari Mountains.	Plants grow in stable, partially shaded, coarse alluvium along a dry wash in the Baboquivari Mountains. Range is extremely limited. Protected by Arizona Native Plant Law.
Lesser long-nosed bat	*Leptonycteris curasoae yerbabuenae*	Endangered	Elongated muzzle, small leaf nose, and long tongue. Yellowish brown or gray above and cinnamon brown below. Tail minute and appears to be lacking. Easily disturbed.	Cochise, Gila, Graham, Greenlee, Pima, Pinal, Maricopa, Santa Cruz, Yuma	1,600-11,500 ft	Desert scrub habitat with agave and columnar cacti present as food plants.	Day roosts in caves and abandoned tunnels. Forages at night on nectar, pollen and fruit of paniculate agaves and columna cacti. This species is migratory and is present in Arizona usually from April to September and south of the border the remainder of the year.
Masked bobwhite	*Colinus virginianus ridgewayi*	Endangered	Males have a brick-red breast and black head and throat. Females are generally nondescript but resemble other races such as the Texas bobwhite.	Pima	1,000-4,000 ft	Desert grasslands with diversity of dense native grasses, forbs, and brush.	Species is closely associated with Prairie acacia (Acacia angustissima). Formerly occurred in Altar and Santa Cruz valleys, as well as Sonora, Mexico. Presently only known from reintroduced populations on Buenos Aires NWR.
Mexican spotted owl	*Strix occidentalis lucida*	Threatened	Medium sized with dark eyes and no ear tufts. Brownish and heavily spotted with white or beige.	Apache, Cochise, Coconino, Gila, Graham, Greenlee, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai	4,100-9,000 ft	Nests in canyons and dense forests with multi-layered foliage structure.	Generally nest in older forests of mixed conifer or ponderosa pine/gambel oak type in canyons, and use variety of habitats for foraging. Sites with cool microclimates appear to be of importance or are preferred. Critical habitat was finalized on August 31, 2004 (69 FR 53182) in Arizona in Apache, Cochise, Coconino, Gila, Graham, Greenlee, Maricopa, Navajo, Pima, Pinal, Santa Cruz, and Yavapai counties.

COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
Nichol Turk's head cactus	*Echinocactus horizonthalonius var. nicholii*	Endangered	Blue-green to yellowish-green, columnar, 18 inches tall, 8 inches in diameter. Spine clusters have 5 radial and 3 central spines; one curves downward and is short; 2 spines curve upward and are red or pale gray. Flowers: pink; fruit: woolly white.	Pima, Pinal	2,400-4,100 ft	Sonoran desertscrub.	Found in unshaded microsites in Sonoran desertscrub on dissected alluvial fans at the foot of limestone mountains and on inclined terraces and saddles on limestone mountain sides.
Ocelot	*Leopardus (=Felis) pardalis*	Endangered	Medium-sized spotted cat that is yellowish with black streaks and stripes running from front to back. Tail is spotted and about 1/2 the length of head and body. Face is less heavily streaked than the back and sides.	Cochise, Pima, Santa Cruz	< 8,000 ft	Desert scrub in Arizona. Humid tropical and sub-tropical forests, and savannahs in areas south of the U.S.	May persist in partly-cleared forests, second-growth woodland, and abandoned cultivated areas reverted to brush. Universal component is presence of dense cover. Unconfirmed reports of individuals in the southern part of the State continue tc be received.
Pima pineapple cactus	*Coryphantha scheeri var. robustispina*	Endangered	Hemispherical stems 4-7 inches tall 3-4 inches diameter. Central spine 1 inch long straw colored hooked surrounded by 6-15 radial spines. Flower: yellow, salmon, or rarely white narrow floral tube.	Pima, Santa Cruz	2,300-5,000 ft	Sonoran desertscrub or semi-desert grassland communities.	Occurs in alluvial valleys or on hillsides in rocky to sandy or silty soils. This species can be confused with juvenile barrel cactus (Ferocactus). However, the spines of the later are flattened, in contrast with the round cross-section of the Coryphanta spines. About 80-90% of individuals occur on state or private land.
Sonoran pronghorn	*Antilocapra americana sonoriensis*	Endangered	Upperparts tan; underparts, rump, and two bands across the neck are white. Male has two black cheek pouches. Hoofed with slightly curved black horns having a single prong. Smallest and palest of the pronghorn subspecies.	Maricopa, Pima, Yuma	2,000-4,000 ft	Broad intermountain alluvial valleys with creosote-bursage and palo verde-mixed cacti associations.	Typically, bajadas are used as fawning areas and sandy dune areas provide food seasonally. Cacti (jumping cholla) appears to make up substantial part of diet. This subspecies also occurs in Mexico.

COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
Southwestern willow flycatcher	*Empidonax traillii extimus*	Endangered	Small passerine (about 6 inches) grayish-green back and wings, whitish throat, light olive-gray breast and pale yellowish belly. Two wingbars visible. Eye-ring faint or absent.	Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai, Yuma	< 8,500 ft	Cottonwood/willow and tamarisk vegetation communities along rivers and streams.	Migratory riparian-obligate species that occupies breeding habitat from late April to September. Distribution within its range is restricted to riparian corridors. Difficult to distinguish from other members of the Empidonax complex by sight alone. Training seminar required for those conducting flycatcher surveys. Critical habitat was finalized on October 19, 2005 (50 CFR 60886). In Arizona there are critical habitat segments in Apache, Cochise, Gila, Graham, Greenlee, Maricopa, Mohave, Pima, Pinal, and Yavapai counties.
Acuna cactus	*Echinomastus erectocentrus var. acunensis*	Candidate	Less than 12 inches tall; spine clusters borne on tubercles, each with a groove on the upper surface. 2-3 central spines and 12 radial spines. Radial spines are dirty white with maroon tips. Flowers pink to purple.	Pima, Pinal	1,300-2,000 ft	Well drained knolls and gravel ridges in Sonoran desertscrub.	Immature plants distinctly different from mature plants. Immatures are disc-shapec or spherical and have no central spines until they are about 1.5 inches.
Northern Mexican Gartersnake	*Thamnophis eques megalops*	Candidate	Background color ranges from olive, olive-brown, to olive-gray. Body has three yellow or light colored stripes running down the length of the body, darker towards tail. Species distinguished from other native gartersnakes by the lateral stripes reaching the 3rc and 4th scale rows. Paired black spots extend along dorsolateral fields.	Apache, Coconino, Cochise, Gila, Graham, Navajo, Pima, Pinal, Yavapai	130-8,500 ft	Cienegas, stock tanks, large-river riparian woodlands and forests, streamside gallery forests.	Core population areas in the U.S. include mid/upper Verde River drainage, mid/lower Tonto Creek, and the San Rafael Valley and surrounding area. Status on tribal lands unknown. Distributed south into Mexico along the Sierra Madre Occidental and Mexican Plateau. Strongly associated with the presence of a native prey base including leopard frogs and native fish.
Sonoyta mud turtle	*Kinosternon sonoriense longifemorale*	Candidate	Aquatic; dark, medium-sized; shell up to 7 inches long; head, neck, and limbs mottled; carapace is olive brown to dark brown; plastron hinged; long barbels on chin, webbed feet.	Pima	1,100 ft	Ponds and streams.	Found only in Quitobaquito Springs in Organ Pipe Cactus National Monument, Arizona. Species also occurs in Rio Sonoyta, Sonora, Mexico.

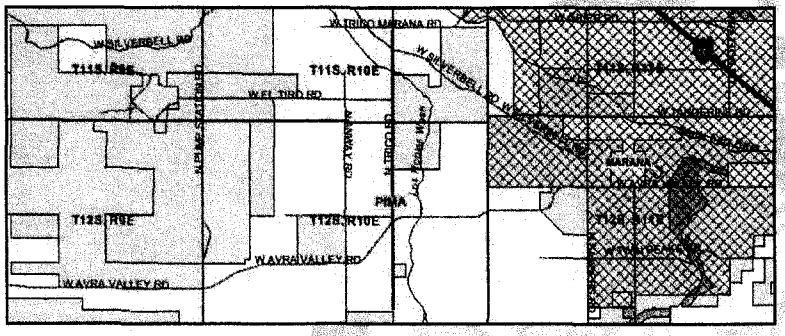
COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
Yellow-billed cuckoo	*Coccyzus americanus*	Candidate	Medium-sized bird with a slender, long-tailed profile, slightly down-curved bill that is blue-black with yellow on the lower half. Plumage is grayish-brown above and white below, with rufous primary flight feathers.	Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai, Yuma	< 6,500 ft	Large blocks of riparian woodlands (cottonwood, willow, or tamarisk galleries).	Neotropical migrant that winters primarily ir South America and breeds primarily in the U.S. (but also in southern Canada and northern Mexico). As a migrant it is rarely detected; can occur outside of riparian areas. Cuckoos are found nesting statewide, mostly below 5,000 feet in central, western, and southeastern Arizona. Concern for cuckoos are primarily focused upon alterations to its nesting and foraging habitat. Nesting cuckoos are associated with relatively dense, wooded, streamside riparian habitat, with varying combinations of Fremont cottonwood, willow, velvet ash, Arizona walnut, mesquite, and tamarisk. Some cuckoos have also been detected nesting in velvet mesquite, netleaf hackberry, Arizona sycamore, Arizona alder, and some exotic neighborhood shade trees.
Gooddings onion	*Allium gooddingii*	Conservation Agreement	Herbaceous perennial plant; broad, flat, rather blunt leaves flowering stalk 14-18 inches tall, flattened, and narrowly winged toward apex; fruit is broader than long; seeds are short and thick.	Apache, Greenlee, Pima	7,500-11,250 ft	Shaded sites on north-trending drainages, on slopes, or in narrow canyons, within mixed conifer and spruce fir forests.	Known from the White, Santa Catalina, and Chuska Mountains. Also found in New Mexico on the Lincoln and Gila National Forests. A Conservation Agreement between the Service and the Forest Service signed in February 1998.
San Xavier talussnail	*Sonorella eremita*	Conservation Agreement	Land snail, less than one inch in diameter (about .75 inches) round shell with 4.5 whorls; white to pinkish tint and chestnut-brown shoulder band	Pima	3,850-3,920 ft	Inhabits a deep, northwest-facing limestone rockslide.	Restricted to 50 by 100 foot area of land privately owned in southeastern Arizona. A Conservation Agreement was finalized in 1995 and renewed in May 2008.

COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
American peregrine falcon	*Falco peregrinus anatum*	Delisted	A crow-sized falcon with slate blue-gray on the back and wings, and white on the underside; a black head with vertical "bandit's mask" pattern over the eyes; long pointed wings; and a long wailing call made during breeding. Very adept flyers and hunters, reaching diving speeds of 200 mph.	Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai, Yuma	3,500-9,000 ft	Areas with rocky, steep cliffs, primarily near water, where prey (primarily shorebirds, songbirds, and waterfowl) concentrations are high. Nests are found on ledges of cliffs, and sometimes on man-made structures such as office towers and bridge abutments.	Species recovered with over 1,650 breeding birds in the US and Canada.
Cactus ferruginous pygmy-owl	*Glaucidium brasilianum cactorum*	Delisted; petitioned for relisting	Small reddish-brown owl with a cream-colored belly streaked with reddish-brown. Males average 2.2 oz and females average 2.6 oz. Length is approximately 6.5 in., including a relatively long tail. Lacks ear tufts, and has paired black spots on the back of the head.	Pima, Pinal	< 4,000 ft	Areas of desert woodlands with tall canopy cover. Primarily found in Sonoran desert scrub and occasionally in riparian drainages and woodlands within semi-desert grassland communities. Prefers to nest in cavities in saguaro cacti but has been found in low-density suburban developments that include natural open spaces.	Not recognized as a protected taxonomic entity under the Act, but protected from direct take of individuals and nests/eggs under the Migratory Bird Treaty Act. A 200(petition for relisting under the Act is currently being evaluated. Due to low population numbers, captive breeding research was initiated in 2006 with some success.

APPENDIX C

ARIZONA GAME AND FISH DEPARTMENT HERITAGE DATA MANAGEMENT SYSTEM ON-LINE ENVIRONMENTAL REVIEW TOOL RESULTS

Project Location



The Department appreciates the opportunity to provide in-depth comments and project review when additional information or environmental documentation becomes available.

Special Status Species Occurrences/Critical Habitat/Tribal Lands within 2 miles of Project Vicinity:

Name	Common Name	ESA	USFS	BLM	State
Bat Colony					
Chionactis occipitalis klauberi	*Tucson Shovel-nosed Snake*			S	
Coccyzus americanus	Yellow-billed Cuckoo (Western U.S. DPS)	C			WSC
Mammillaria thornberi	Thornber Fishhook Cactus				SR
Myotis velifer	Cave Myotis	SC		S	
Phrynosoma cornutum	Texas Horned Lizard	SC		S	

Project Name: Transmission Rebuild
Submitted By: Diana Shiel
On behalf of: OTHER
Project Search ID: 20090501008741
Date: 5/1/2009 9:31:24 AM
Project Category: Energy Storage/Production/Transfer,Energy Transfer,power line/electric (maintenance to existing)
Project Coordinates (UTM Zone 12-NAD 83): 471387.700, 3585646.019 meter
Project Length: 9465.547 meter
County: PIMA
USGS 7.5 Minute Quadrangle ID: 1679
Quadrangle Name: WEST OF MARANA
Project locality is currently being scoped

Location Accuracy Disclaimer

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Receipt is solely responsible for the project location and thus the correctness of the Project Review Receipt content.

 APPLICATION INITIALS: _____

Please review the entire receipt for project type recommendations and/or species or location information and retain a copy for future reference. If any of the information you provided did not accurately reflect this project, or if project plans change, another review should be conducted, as this determination may not be valid.

Arizona's On-line Environmental Review Tool:

1. This On-line Environmental Review Tool inquiry has generated recommendations regarding the potential impacts of your project on Special Status Species (SSS) and other wildlife of Arizona. SSS include all U.S. Fish and Wildlife Service federally listed, U.S. Bureau of Land Management sensitive, U.S. Forest Service sensitive, and Arizona Game and Fish Department (Department) recognized species of concern.
2. These recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation). These recommendations are preliminary in scope, designed to provide early considerations for all species of wildlife, pertinent to the project type you entered.
3. This receipt, generated by the automated On-line Environmental Review Tool does not constitute an official project review by Department biologists and planners. Further coordination may be necessary as appropriate under the National Environmental Policy Act (NEPA) and/or the Endangered Species Act (ESA).

The U.S. Fish and Wildlife Service (USFWS) has regulatory authority over all federally listed species under the ESA. Contact USFWS Ecological Services Offices: http://arizonaes.fws.gov/.

Phoenix Main Office
2321 W. Royal Palm Road, Suite 103
Phoenix, AZ 85021
Phone 602-242-0210
Fax 602-242-2513

Tucson Sub-Office
201 North Bonita, Suite 141
Tucson, AZ 85745
Phone 520-670-6144
Fax 520-670-6154

Flagstaff Sub-Office
323 N. Leroux Street, Suite 101
Flagstaff, AZ 86001
Phone 928-226-0614
Fax 928-226-1099

Disclaimer:

1. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area.
2. The Department's Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there.
3. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HDMS data contains information about species occurrences that have actually been reported to the Department.

Arizona Game and Fish Department Mission

To conserve, enhance, and restore Arizona's diverse wildlife resources and habitats through aggressive protection and

 APPLICATION INITIALS: _____

management programs, and to provide wildlife resources and safe watercraft and off-highway vehicle recreation for the enjoyment, appreciation, and use by present and future generations.

Project Category: Energy Storage/Production/Transfer,Energy Transfer,power line/electric (maintenance to existing)

Project Type Recommendations:

During planning and construction, minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g. microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g. livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before and after project activities to reduce the spread of invasive species. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants http://www.azda.gov/PSD/quarantine5.htm. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control: http://www.usda.gov/wps/portal/usdahome. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml.

Impacts to raptors by above ground power lines and poles have been well documented. A number of structural improvements can minimize potential impacts to raptors and other migratory birds. Arizona Public Service (APS) offers guidelines to reduce mortality to these species http://www.aps.com/my_community/Environmental/Environmental_10.html. In addition, indirect affects to wildlife due to construction (timing of activity, clearing of rights-of-way, associated bridges and culverts, affects to wetlands, fences) should also be considered and mitigated. Please contact the Project Evaluation Program for further recommendations regarding trenching and power line associated activities.

Project Location and/or Species recommendations:

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project (refer to page 1 of the receipt). Please contact:
Ecological Services Office
US Fish and Wildlife Service

2321 W. Royal Palm Rd.
Phoenix, AZ 85021-4951
Phone: 602-242-0210
Fax: 602-242-2513

HDMS records indicate that one or more native plants listed on the Arizona Native Plant Law and Antiquities Act have been documented within the vicinity of your project area (refer to page 1 of the receipt). Please contact:

Arizona Department of Agriculture

1688 W Adams

 APPLICATION INITIALS: _____

Phoenix, AZ 85007
Phone: 602-542-4373

Recommendations Disclaimer:

1. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project.
2. These recommendations are proposed actions or guidelines to be considered during **preliminary project development.**
3. Additional site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. The Department is interested in the conservation of all fish and wildlife resources, including those Special Status Species listed on this receipt, and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
6. **Further coordination requires the submittal of this initialed and signed Environmental Review Receipt with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map).**
7. Upon receiving information by AZGFD, please allow 30 days for completion of project reviews. Mail requests to:

Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000

Phone Number: (623) 236-7600
Fax Number: (623) 236-7366

Terms of Use

By using this site, you acknowledge that you have read and understand the terms of use. Department staff may revise these terms periodically. If you continue to use our website after we post changes to these terms, it will mean that you accept such changes. If at any time you do not wish to accept the Terms, you may choose not to use the website.

1. This Environmental Review and project planning website was developed and intended for the purpose of screening projects for potential impacts on resources of special concern. By indicating your agreement to the terms of use for this website, you warrant that you will not use this website for any other purpose.
2. Unauthorized attempts to upload information or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act .
3. The Department reserves the right at any time, without notice, to enhance, modify, alter, or suspend the website and to terminate or restrict your access to the website.
4. This Environmental Review is based on the project study area that was entered. The review must be redone if the project study area, location, or the type of project changes. If additional information becomes available, this review may need to be reconsidered.
5. A signed and initialed copy of the Environmental Review Receipt indicates that the entire receipt has been read by the signer of the Environmental Review Receipt.

Security:

The Environmental Review and project planning web application operates on a complex State computer system. This system is

 APPLICATION INITIALS: _____

monitored to ensure proper operation, to verify the functioning of applicable security features, and for other like purposes. Anyone using this system expressly consents to such monitoring and is advised that if such monitoring reveals possible evidence of criminal activity, system personnel may provide the evidence of such monitoring to law enforcement officials. Unauthorized attempts to upload or change information; to defeat or circumvent security measures; or to utilize this system for other than its intended purposes are prohibited.

This website maintains a record of each environmental review search result as well as all contact information. This information is maintained for internal tracking purposes. Information collected in this application will not be shared outside of the purposes of the Department.

If the Environmental Review Receipt and supporting material are not mailed to the Department or other appropriate agencies within six (6) months of the Project Review Receipt date, the receipt is considered to be null and void, and a new review must be initiated.

Print this Environmental Review Receipt using your Internet browser's print function and keep it for your records. Signature of this receipt indicates the signer has read and understands the information provided.

Signature:_____

Date: _____

Proposed Date of Implementation: _____

Please provide point of contact information regarding this Environmental Review.

Application or organization responsible for project implementation

Agency/organization:_____

Contact Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

Person Conducting Search (if not applicant)

Agency/organization:_____

Contact Name: _____

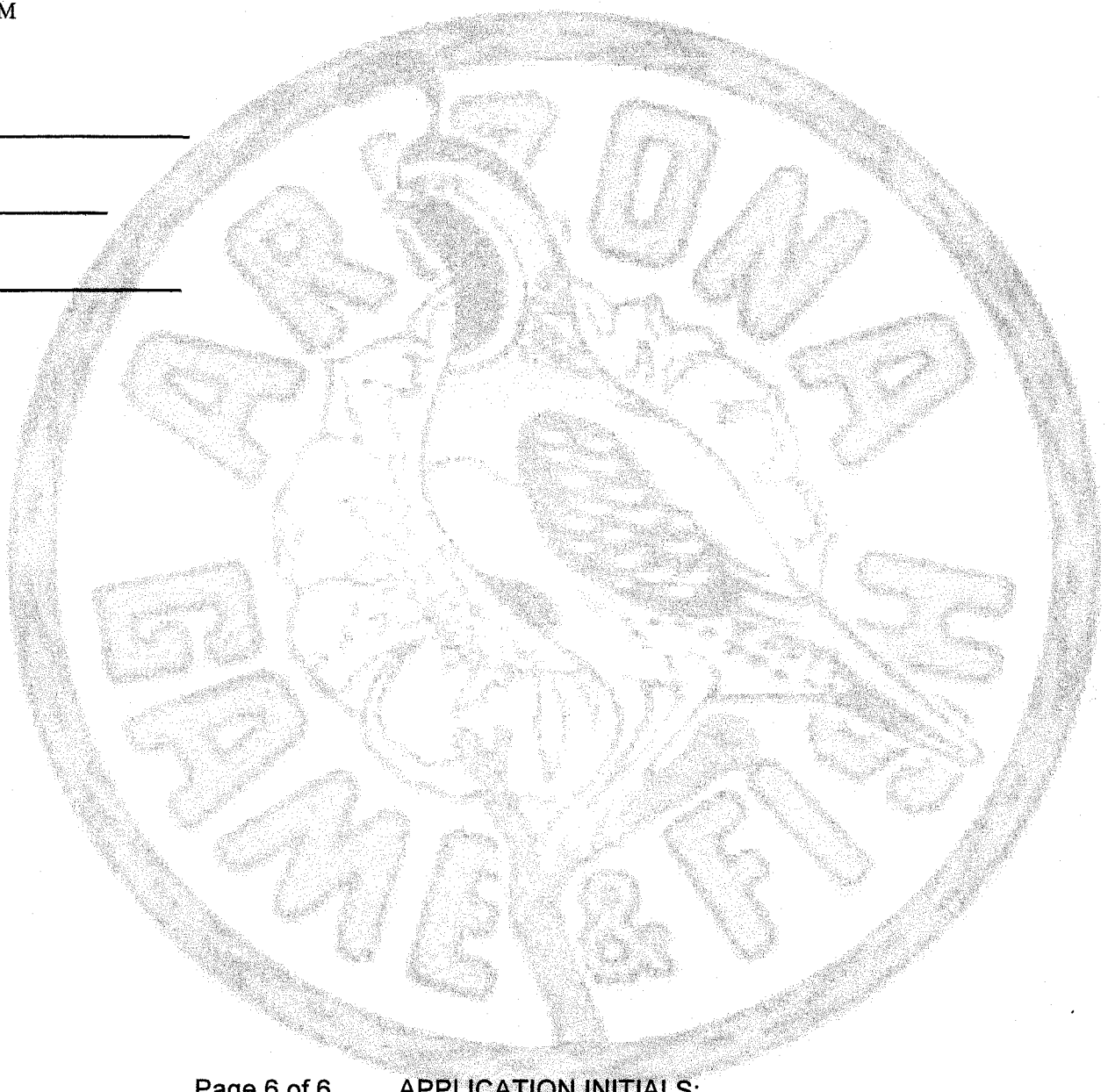
Address: _____

 APPLICATION INITIALS: _____

City, State, Zip: _____

Phone: _____

E-mail: _____



 APPLICATION INITIALS: _____

APPENDIX D

US FISH AND WILDLIFE SERVICE RESPONSE TO TECHNICAL ASSISTANCE REQUEST REGARDING THE CACTUS FERRUGINOUS PYGMY-OWL

From: scott_richardson@fws.gov [mailto:scott_richardson@fws.gov]
Sent: Tuesday, April 14, 2009 2:11 PM
To: Amanda Best
Cc: Brian Lindenlaub; scott_richardson@fws.gov
Subject: Re: technical assistance request for SWTC Project

Dear Amanda,

Thank you for your correspondence of April 6, 2009. This correspondence documents our response to your request for information regarding the need to conduct cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum;* pygmy-owl) surveys along the proposed Southwest Transmission Cooperative's 11.75 mile rebuild of an electrical transmission line along Trico Road to approximately one mile south of Manville Road in Avra Valley, Pima County, Arizona. As you are aware, a final rule to remove the pygmy-owl from the Endangered Species list was published April 14, 2006 and became effective May 15, 2006. Therefore, the protective regulations of the Act no longer apply to the pygmy-owl. However, upon request, we continue to provide technical assistance related to the conservation of the pygmy-owl, and we have the following comments regarding your request for survey recommendations.

Based on the information provided to us in your correspondence, we concur with your determination that, while the site does support a few pygmy-owl habitat elements, occupancy or use of this parcel by the pygmy-owl is unlikely due to overall lack of suitable pygmy-owl habitat, the extent and intensity of existing development (agriculture) adjacent to the parcel, and the distance of this parcel from known pygmy-owl locations. The lack of saguaros suggests that pygmy-owl nesting components are lacking and the pygmy-owl survey protocol is set up to primarily detect pygmy-owls during the nesting season. Therefore, we do not recommend that pygmy-owl surveys be conducted prior to the development of this project.

Should circumstances regarding this project change from the information provided to us, or should new information become available regarding the distribution of listed species, we recommend that you contact us for further review. If you have additional questions, please contact Scott Richardson at 520-670-6144 (x 242) or Sherry Barrett at (x 223). Thank you for your consideration of endangered species.

Sincerely,

Scott Richardson
U.S. Fish and Wildlife Service
Tucson Suboffice
(520) 670-6150 x 242

EXHIBIT D

VEGETATION, FISH, AND WILDLIFE

Exhibit D
Vegetation, Fish, and Wildlife

An evaluation of proposed impacts to vegetation, fish, and wildlife is provided in the Environmental Report (Exhibit B). Findings are summarized below.

Vegetation

Approximately 7.5 mi of the 11.98-mi-long Project alignment (approximately 64 percent of the total length of the proposed Project) are located on or adjacent to cultivated or fallow agricultural lands. The remaining portion of the alignment supports sparse vegetation generally consistent with Sonoran desertscrub as described by Brown[1].

Common native vegetation along the Project alignment includes creosotebush (*Larrea tridentata*), burroweed (*Isocoma tenuisecta*), triangle-leaf bursage (*Ambrosia deltoidea*), and desert broom (*Baccharis sarothroides*). Non-native Russian thistle (*Salsola* sp.) was also frequently noted along the roads and abandoned agricultural fields throughout the alignment. The most common tree species along the alignment is velvet mesquite (*Prosopis velutina*). Little leaf palo verde (*Cercidium microphyllum*) and blue palo verde (*C. floridum*) are present along the alignment, but less abundantly than mesquite. Trees along the alignment are widely scattered. Short-statured, very widely scattered mesquite were noted on uplands within the southern portions of the Project Area, while larger mesquite and palo verde occur along the alignment where surface waters collect along roadways and active agricultural fields. One large wash, Brawley Wash, traverses the Project alignment. The riparian corridor along this wash is approximately 30 ft wide where it crosses the project alignment and supports species that include mesquite, whitethorn acacia (*Acacia constricta*), desert hackberry (*Celtis pallida*), and desert broom.

Some native vegetation clearing would result from the Project. The Project would require approximately 17.52 ac of impact for removal of existing structures, the placement of new structures, and a materials yard (Table 1). These impacts would occur largely within previously disturbed areas (Table 1). Areas that require vegetation clearing lie adjacent to disturbed areas along the Trico Road alignment that contain both paved and dirt roads, other utility infrastructure, and fallow and active agricultural fields.

---

[1] Brown, D.E. (ed.). 1994. *Biotic Communities: Southwestern United States and Northwestern Mexico.* University of Utah Press: Salt Lake City.

Table 1. Acres of Impact Associated with the Marana Tap to Sandario Tap Rebuild Project

Clearing Type	Approximate Dimensions of Impact	Total Approximate Area of Impact (ac)
New Structure Construction	95 new structures; 50-by-50-ft Disturbance Envelope	5.45
Structure Removal	115 existing structures; 20-by-20-ft Disturbance Envelope	0.07
Proposed Materials Yard	Approximately 725-by-725-ft Disturbance Envelope	12.0
		17.52

The Thornber fishhook cactus (*Mammillaria thornberi*), which is listed as a Salvage-Restricted plant species by the State of Arizona, has a reasonable potential to occur within the Project Area. No Thornber fishhook cacti were observed during field reconnaissance; however, no species-specific survey or native plant inventory was conducted within the Project Area. Individual Thornber fishhook cactus could be directly impacted within the Project Area containing native vegetation during Project construction.

Fish

The Project Area does not contain any aquatic habitat to support fish species.

Wildlife

Wildlife species that were noted within the Project Area are species common to sparsely vegetated habitats within the Sonoran desertscrub biotic community, such as antelope jackrabbit (*Lepus alleni*), cottontail rabbit (*Sylvilagus floridanus*), round-tailed ground squirrel (*Spermophilus tereticaudus*), raven (*Corvus corax*), curve-billed thrasher (*Toxostoma curvirostre*), mourning dove (*Zenaida macroura*), whiptail lizard (*Cnemidophorus* sp.), and spiny lizard (*Sceloporus magister*).

In general, construction activities would cause temporary and permanent disturbance to wildlife. Impacts would result from ground disturbance within the Project Area. Project activities could result in mortality and injury to ground-dwelling mammals and reptiles.

Wildlife species listed on the USFWS Pima County list were determined to have limited to no potential to occur within the Project Area because their known ranges are outside the Project Area and/or they are found in habitats dissimilar to those occurring within the Project Area; therefore, the Project is not anticipated to affect those species.

The cave myotis (*Myotis velifer*), which is considered a Sensitive species by the Bureau of Land Management, has a reasonable potential to occur within the Project Area. Also, three wildlife species listed as Priority Vulnerable Species under the County's Draft Multiple Species Conservation Plan have a reasonable potential to occur within the Project Area. These are the ground snake (*Sonora semiannulata*), western burrowing owl (*Athene cunicularia hypugaea*), and pale Townsend's big-eared bat (*Corynorhinus townsendii pallescens*).

Ground snake

The ground snake prefers the denser soils generally associated with the valley bottoms in the town of Marana and the Brawley Wash floodplain[2]. The ground snake is nocturnal, active during summer months, and requires loose soil for burrowing[2]. The Project would not likely impact active ground snakes because construction would occur during the day; however, construction could cause mortality or injury to individual ground snakes where construction takes place in suitable areas for nesting or hibernation.

Western burrowing owl

WestLand biologists searched for potential burrow sites and none were found during field reconnaissance; however, the open vegetation and agriculture in the Project Area provide suitable foraging areas for the burrowing owl. WestLand recommends that protocol-level western burrowing owl surveys be conducted within the Project Area. The AGFD *Burrowing Owl Project Clearance Guidance for Landowners* protocol recommends that surveys be conducted during the breeding period (March to mid-July) in areas with suitable habitat. It is recommended that surveys occur 90 days prior to any construction activity on the property and that a second survey may need to be conducted within 30 days of construction activity if the first survey occurred outside the breeding season, or mid-July to late February.[3]

It is not anticipated that individual burrowing owls would be impacted by the Project construction. It is important to note that in some circumstances, burrowing owls can co-exist with development.

If a burrow is discovered within an area that would be impacted by the Project and that burrow is occupied by owls, the owls can be removed prior to construction activities. Although this species is protected by the Migratory Bird Treaty Act, the USFWS will grant a special permit to remove the owls from the area proposed for development. It is important to note that a permitted biologist must perform this removal in accordance with established protocols. The procedure involves trapping the burrowing owls in their burrows, which are then excavated. The owls are then trans-located to suitable environments where artificial burrows have been provided. This procedure is

[2] Town of Marana. 2009. Town of Marana Draft Habitat Conservation Plan. March 2009.

[3] Conservation measures include collapsing unoccupied suitable burrows, identifying open space buffer areas around occupied and suitable burrows, passive exclusion of owls, and trans-location of owls.

routinely used in Maricopa County and elsewhere to remove burrowing owls from the path of development.

Cave myotis

The cave myotis likely uses the Project Area while foraging for insects, and potential roosting habitat for this species is provided by the Brawley Wash Bridge within the Project Area. This bat forages just over the top of vegetation, staying close to the vegetation 6 to 15 ft above the ground[4]. The Project would not adversely impact the cave myotis because the vegetation removed as a result of the Project would not likely affect this bat's ability to continue to forage over the Project Area, nor would the Project impact the Brawley Wash Bridge. No species-specific survey was conducted within the Project Area for this bat.

Pale Townsend's big-eared bat

Pale Townsend's big-eared bat may forage for insects over the Project Area, and the Project vicinity may provide suitable night roosting substrate (abandoned buildings), but it does not provide substrate suitable for summer day roosting or hibernation. Project implementation would not affect this species' ability to forage, and no potential night roosts would be impacted by the Project; therefore, this species would not be adversely affected by the Project.

[4] Arizona Game and Fish Department. 2002. *Myotis velifer.* Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. Accessed June 29, 2009.

EXHIBIT E

SCENIC AREAS AND CULTURAL RESOURCES

E-1 CLASS III CULTURAL RESOURCES SURVEY REPORT
E-2 VISUAL ANALYSIS

EXHIBIT E-1

Class III Cultural Resources Survey Report

A CULTURAL RESOURCES INVENTORY FOR THE PROPOSED MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT PIMA COUNTY, ARIZONA

Prepared by:
Avi Buckles
A. Stanley Granger
Christine Jerla
Tom Klimas
Mary Prasciunas

Reviewed and submitted by:
Mark Chenault, Ph.D.
William L. Deaver, M.A., R.P.A.

WestLand Resources, Inc.
Engineering and Environmental Consultants
4001 East Paradise Falls Drive
Tucson, Arizona 85712
(520) 206-9585

Cultural Resources Report 2009-17

November 16, 2010
Project No. 1608.01 520 520

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ABSTRACT

REPORT DATE: November 16, 2010

PROJECT TITLE: Marana Tap to Sandario Tap Cultural Resources Inventory

WESTLAND PROJECT NUMBER: 1608.01 520 520

PROJECT SPONSOR: Southwest Transmission Cooperative, Inc.

REPORT TITLE: A Cultural Resources Inventory for the Proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project, Pima County, Arizona

LOCATION: Township 11 South, Range 10 East, portions of Sections 26, 27, and 34; Township 12 South, Range 10 East, portions of Sections 3, 10, 15, 22, 27, 34, and 35; and Township 13 South, Range 10 East, portions of Sections 2, 3, 10, 11, 14, 15, 22, and 23, Gila and Salt River Baseline and Meridian

USGS 7.5' QUADRANGLES: West of Avra and West of Marana

LAND OWNERSHIP: Private and Arizona State Land Department

PERMIT NUMBER: Arizona Antiquities Act Blanket Permit No. 2009-053bl

NUMBER OF ACRES: Approximately 166

FIELD PERSONNEL AND FIELD-PERSON DAYS: WestLand archaeologists Tom Klimas, Stan Granger, Avi Buckles, and Mary Prasciunas; May 4, 5, and 8, 2009, and November 2, 2009 (a total of seven field-person days)

NUMBER OF PREVIOUSLY RECORDED SITES: 7

NUMBER OF NEWLY RECORDED SITES: 4

NUMBER OF ISOLATED OCCURRENCES: 5

REGISTER-ELIGIBLE PROPERTIES: 6

REGISTER-INELIGIBLE PROPERTIES: 3

PROPERTIES EXEMPT FROM SECTION 106 REVIEW: 2

PROJECT DESCRIPTION: Southwest Transmission Cooperative, Inc. (SWTC), proposes to replace an existing transmission line south of Marana, Pima County, Arizona, along Trico Road. The existing wooden-pole structures will be removed and replaced with metal single-pole structures. This undertaking has the potential to adversely affect historic properties. In compliance with the provisions of Section 106 of the National Historic Preservation Act (1966, as amended), SWTC retained WestLand Resources, Inc.

(WestLand), to inventory historic properties within the area of potential effect (APE) and to evaluate whether or not the proposed action would adversely affect any or all of these properties. The APE includes the transmission line right-of-way and associated construction materials storage yards. The inventory consisted of a review of archaeological records, historical maps, and archaeological literature and a pedestrian archaeological survey. The survey identified 11 archaeological sites.

RECOMMENDATION: WestLand recommends that six of the archaeological sites are eligible for inclusion in the National Register of Historic Places and that the proposed undertaking could adversely affect these six sites. WestLand also recommends that three of the sites are not eligible for inclusion in the National Register of Historic Places and, as such, will not be adversely affected by the current undertaking. Two sites are active gas lines and exempted from Section 106 review (Advisory Council on Historic Preservation 2002).

WestLand recommends that SWTC consider options in the planning and design of the undertaking to avoid the six register-eligible properties. If avoidance is not a viable alternative, then WestLand recommends that SWTC implement treatments to minimize or resolve the adverse effects to the archaeological resources. Given the nature of the proposed construction activities, WestLand recommends that monitoring of the construction activities is the most appropriate treatment. WestLand recommends that a qualified archaeological consultant prepare a monitoring and discovery plan. In addition, any ground-disturbing activities associated with the undertaking have the potential to unearth human remains, and these must be treated in accordance with Arizona State Statutes (A.R.S. 41-844 and A.R.S. 41-865).

PROJECT BACKGROUND

Southwest Transmission Cooperative, Inc. (SWTC), proposes to rebuild 11.75 miles (mi) (19.0 kilometers [km]) of an existing 115-kV transmission line using an enhanced design. In order to accommodate the upgraded conductor, the existing wooden structures will be replaced with either concrete or self-weathering steel monopoles. The new structures will be between 10 to 20 feet (ft) (3 to 6 meters [m]) taller than the existing wooden structures, but would reduce the number of structures from 113 to 95. Each new structure will require the development of an approximately 50-by-50-ft (15-by-15-m) pad (2,500 ft^2 [225 m^2]) for construction. In addition, the construction will necessitate the clearing of a 10- to 20-acre (ac) (4- to 8-hectare [ha]) materials yard for the storage of construction-related materials and heavy equipment. This is an undertaking with the potential to affect historic properties.

The transmission line upgrade will begin at the existing Western Area Power Administration (WAPA) Saguaro to Rattlesnake 115-kV transmission line at a point located just south of the intersection of Trico Marana Road and North Trico Road. From this point, the upgrade will proceed to SWTC's Marana Substation. From the Marana Substation, the upgrade parallels North Trico Road to the junction with SWTC's existing Sandario 115-kV line located approximately 1 mi (1.6 km) south of Manville Road. The area of potential effect (APE) includes the transmission line right-of-way and two alternative materials storage yards. The right-of-way varies along the alignment, measuring 136 ft (41 m) at its widest point and 50 ft (15 m) at its narrowest. Both materials yard alternatives are located along Trico Road in the central portion of the APE. Materials Yard Alternative 1 is located west of Trico Road and measures approximately 700 by 700 ft (213 by 213 m). Materials Yard Alternative 2 is located east of Trico Road and measures approximately 1,320 by 800 ft (402 by 243 m).

The APE is located in Township 11 South, Range 10 East, portions of Sections 26, 27, and 34; Township 12 South, Range 10 East, portions of Sections 3, 10, 15, 22, 27, 34, and 35; and Township 13 South, Range 10 East, portions of Sections 2, 3, 10, 11, 14, 15, 22, and 23, Gila and Salt River Baseline and Meridian, and is found on the West of Avra and West of Marana USGS 7.5' quadrangles, Pima County, Arizona ***(Figures 1 and 2; Photo 1)***.

Photo 1. Overview of APE, looking north from central portion of APE

File: M:\projects\1608.01\ARC\MXD\Figures\Fig1_Vicinity.mxd

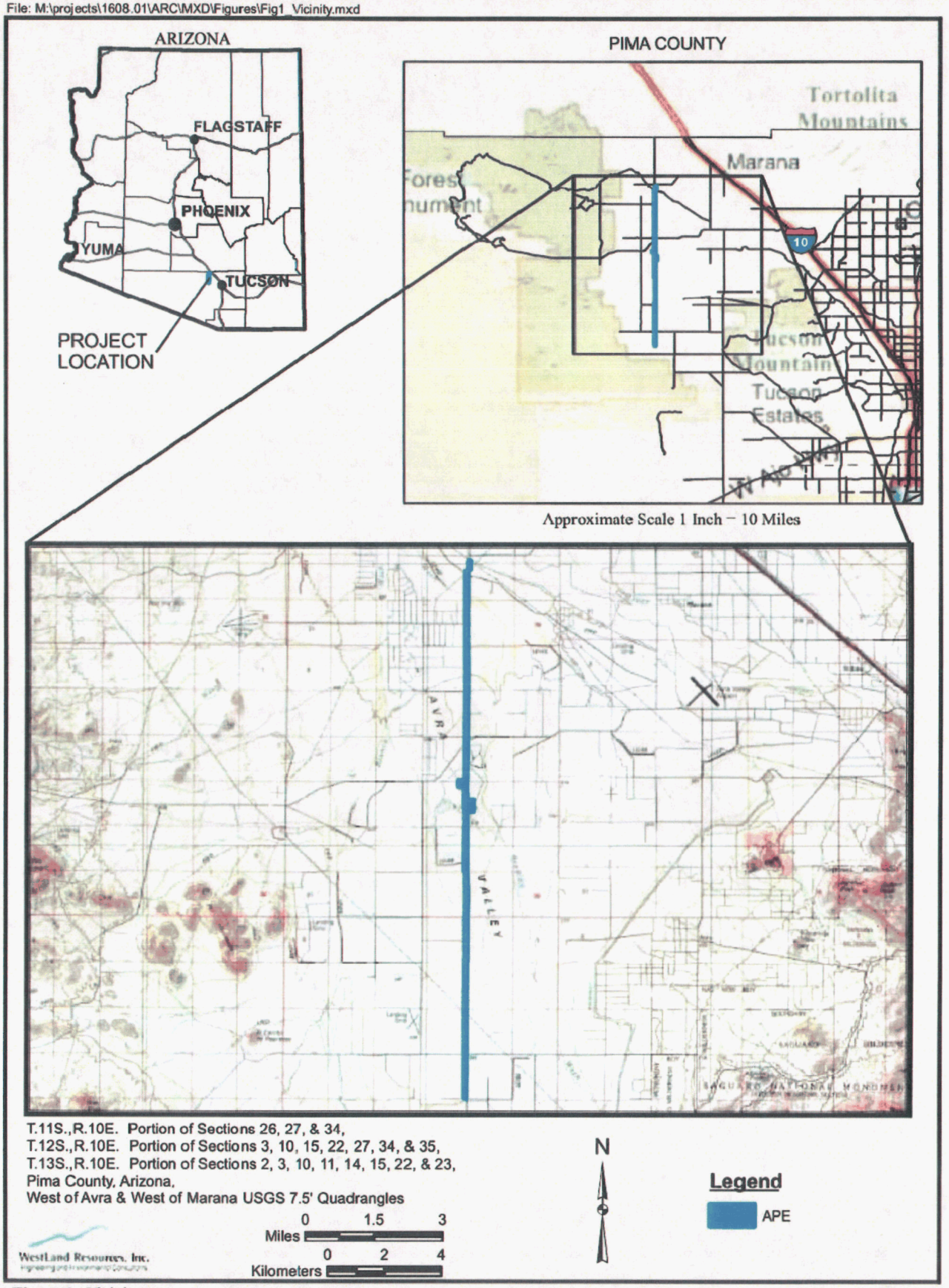

Figure 1. Vicinity map

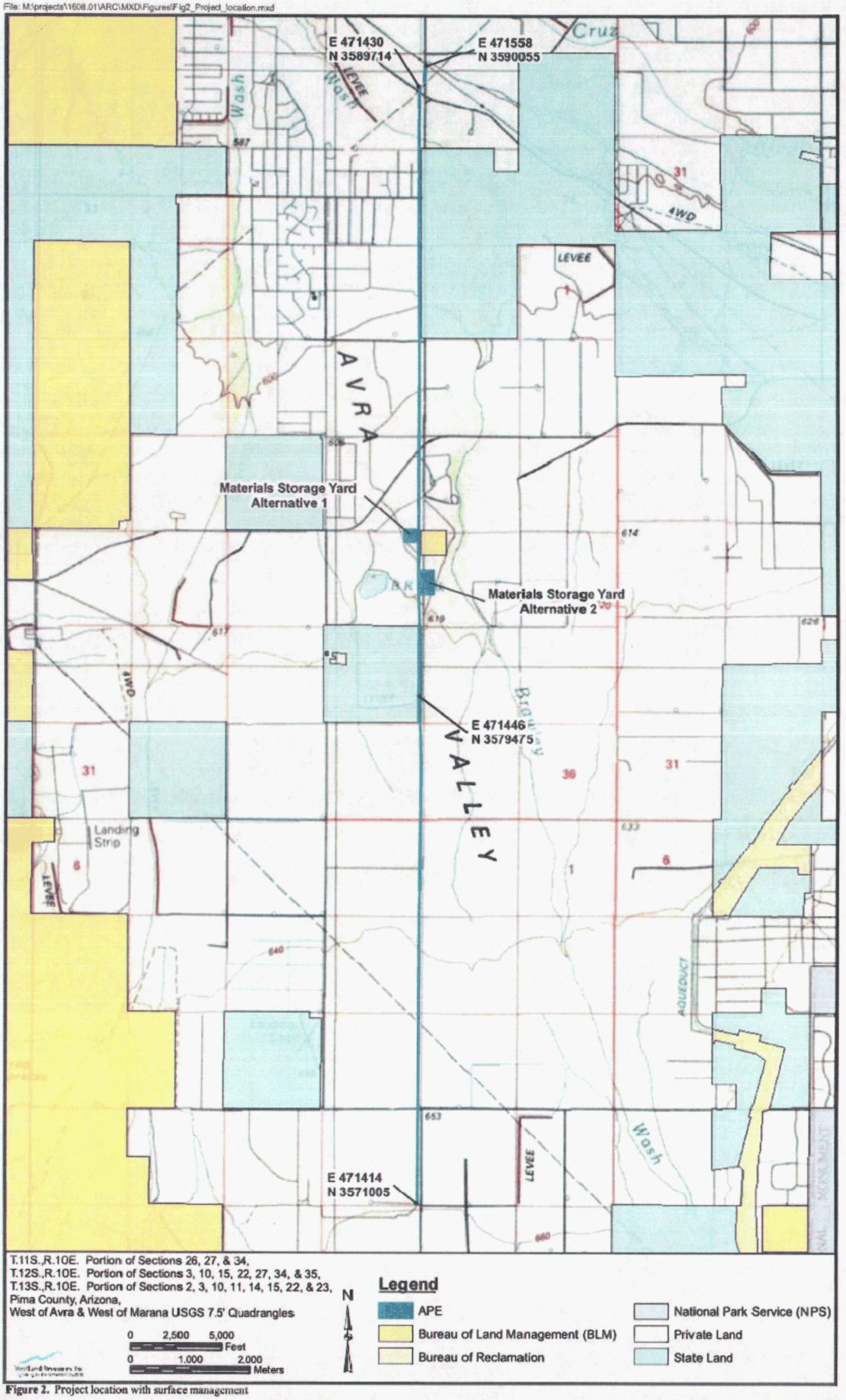

Figure 2. Project location with surface management

SWTC retained WestLand Resources, Inc. (WestLand), to conduct a cultural resources inventory of the APE. The purpose of the inventory was to identify and record any prehistoric or historic cultural resources within the APE and to evaluate whether the planned undertaking would adversely affect cultural properties either included, or eligible for inclusion, in the National Register of Historic Places. The survey was conducted under Arizona Antiquities Act Blanket Permit No. 2009-053bl. Federal funds are supporting the project through the Rural Utilities Service, an entity of the United States Department of Agriculture. The cultural resources inventory was conducted in fulfillment of the requirements of Section 106 of the National Historic Preservation Act and in accordance with the implementing regulations (36 CFR 800 *et seq.*). WestLand senior archaeologist Mark L. Chenault, Ph.D., served as principal investigator for the project. The fieldwork was conducted on May 4, 5, and 8, 2009, and November 2, 2009, by WestLand archaeologists Tom Klimas, Stan Granger, Avi Buckles, and Mary Prasciunas (seven field-person days).

ENVIRONMENTAL SETTING

The APE is located in the Avra Valley of southern Arizona, a north-to-south-trending tectonic basin bounded by the Tucson Mountains to the east, the Sierrita Mountains to the south, and the Roskruge and Silverbell mountains to the west. Brawley Wash is the major drainage in the valley and flows into the Santa Cruz River at the valley's north end, where it is renamed Robles Wash. At its southern end, the valley's name changes to the Altar Valley, but it is essentially a southern extension of the Avra Valley.

The Avra Valley falls within the Basin and Range physiographic province, which is characterized by north-to-south-trending mountain ranges and deep alluvial valleys. The region has a semi-arid climate with a bimodal rainfall pattern, which distinguishes it from other subdivisions of the Sonoran Desertscrub (Sellers and Hill 1974). Summer temperatures are typically hot and winter temperatures are relatively moderate. Bimodal rainfall occurs in the summer and winter, averaging 13 inches (327 millimeters) per year. Summer rains are usually short, intense afternoon rainstorms that yield 30 to 60 percent of the annual rainfall total. Winter rains tend to be gentler and can last for several days. During this period of rainfall, the Sonoran Desert can receive 10 to 40 percent of its annual total. Little to no rain falls between the winter and summer months (Turner and Brown 1994:201).

The semi-arid climate supports a unique biotic community that is classified as the Arizona Upland subdivision of the Sonoran Desertscrub. Native plant life within this landscape includes foothills palo verde *(Cercidium microphyllum)*, mesquite *(Prosopis* sp.*)*, ironwood *(Olneya tesota)*, creosote *(Larrea tridentata)*, ocotillo *(Fouquieria splendens)*, and numerous species of cacti, including chain-fruit cholla *(Opuntia fulgida)*, Engelmann prickly pear *(Opuntia phaeacantha)*, and staghorn cholla *(Opuntia versicolor)*, as well as desert forbs and grasses (Turner and Brown 1994:200). The native Sonoran habitat supports a variety of wildlife, including desert mule deer *(Odocoileus hemionus crooki)*, coyote *(Canis latrans)*, and javelina *(Dicotyles tajacu)*, as well as numerous smaller mammals such as black-tailed jackrabbit *(Lepus californius)*, desert cottontail *(Sylvilagus audoboni)*, and cactus mouse *(Peromyscus eremicus)*. The biotic community also supports a rich diversity of bird life, including such species as Harris' hawk *(Parabuteo unicintus)*, Gambel quail *(Lophortyx gambeli)*, elf owl *(Micrathene whitneyi)*,

cactus wren *(Campylorhynchus brunneicapillus)*, curved-bill thrasher *(Toxostoma curvirostra)*, and Gila woodpecker *(Melanerpes uropygialis)*. Also found in the community are numerous reptiles and lizards, such as the regal horned lizard *(Phrynosoma solare)*, Gila monster *(Heloderma suspectum)*, Arizona coral snake *(Micruroides euryxanthus)*, and western diamondback rattlesnake *(Crotalus atrox)* (Turner and Brown 1994:203).

CULTURAL AND HISTORICAL CONTEXT FOR SOUTHERN ARIZONA

In order to place the Avra Valley and surrounding region within the larger context of human cultural dynamics in southern Arizona, a general outline of southern Arizona's cultural history is provided below and illustrated graphically in ***Chart 1***. Archaeological resources specific to the APE are discussed in the sections following this outline.

PALEOINDIAN PERIOD (CA. 11,500–8500 B.C.)

Archaeologists refer to the first inhabitants of southern Arizona as Paleoindians, a migratory, nomadic hunting people who roamed across North America at the end of the Pleistocene epoch. Two diagnostic characteristics of Paleoindians are large fluted lanceolate projectile points and the association of these points with the fossil remains of now extinct animals, particularly mammoth *(Mammuthus* spp.*)* and ancient bison *(Bison antiquus)* (Reid and Whittlesey 1997:30–37). While originally conceptualized as purely "big-game hunters," some Paleoindians are now known to have exploited plant resources in ways akin to later Archaic peoples (Mabry et al. 1997:105–107; Reid and Whittlesey 1997).

The oldest evidence of human occupation in the Southwest is attributed to the Clovis complex. This complex is identified by a distinctive lanceolate spear point with a concave base, longitudinal fluting, and lateral and marginal grinding (Slaughter 1992a:72). Several important Clovis sites are located in the upper San Pedro Valley of southeastern Arizona, including Naco, Lehner, Escapule, and Murray Springs (Faught and Freeman 1998:41). Much of the evidence for a Clovis presence in southern Arizona comes from isolated occurrences of Clovis points (either whole or in fragments); for example, isolated Clovis points have been recovered in the Phoenix Basin and along the Gila River near Coolidge and Florence; in Saguaro National Park East and Willow Springs in the Tucson Basin; in the Avra Valley area west of the Tucson Basin; near Kartchner Caverns in the San Pedro Valley; along Big Wash near Oracle Junction; in the area south of Gila Bend; on the northwestern bajada of the Pinaleño Mountains; and in the Sanchez area in the Safford Valley (Agenbroad 1967; Ayres 1970; Faught and Freeman 1998:44; Huckell 1982; Neily 1985:10; North et al. 2005; Seymour et al. 1997:1–8).

The Folsom complex succeeded the Clovis complex. Folsom, like Clovis, is identified by a distinctive style of projectile point. Folsom points are also lanceolate fluted spear points; however, Folsom points are distinguished from Clovis points by the extent of the fluting, which extends the full length of the blade, from the proximal end to the distal end. In addition, the margins of these points were retouched after fluting. In Arizona, Folsom points have been found only in surface contexts on the Colorado Plateau and in the mountainous Mogollon Rim country. No Folsom points have been identified in southern Arizona (Faught and Freeman 1998:45).

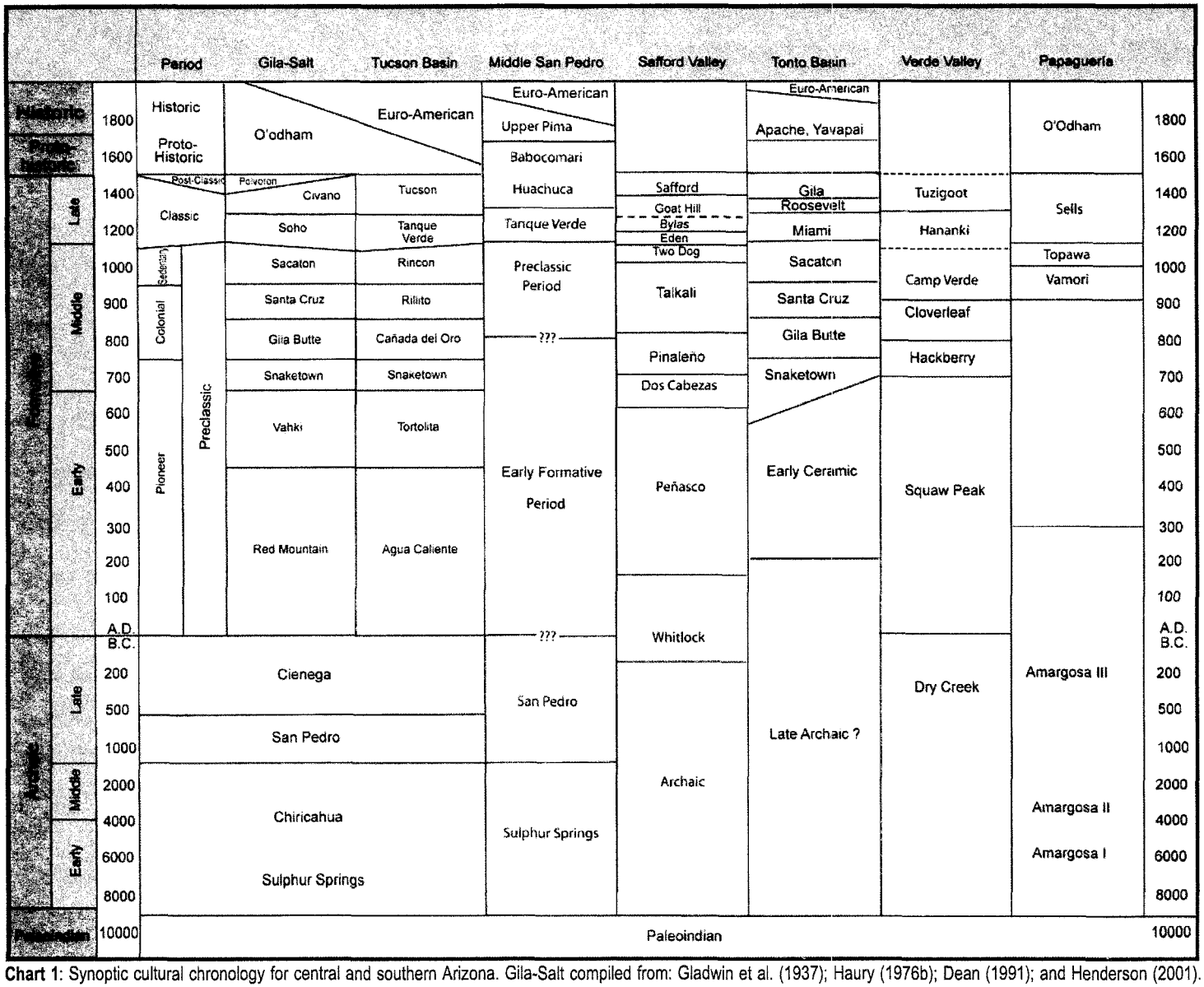

Chart 1: Synoptic cultural chronology for central and southern Arizona. Gila-Salt compiled from: Gladwin et al. (1937); Haury (1976b); Dean (1991); and Henderson (2001). Tucson Basin from: Kelly (1978); Dean (1991); Deaver and Ciolek-Torrello (1995); and Wallace (2003). Middle San Pedro from Heckman et al. (2000). Safford Valley from Neuzil (2005). Tonto Basin from Clark and Vint (2004). Verde Valley from Breternitz (1960); Papaguería from Haury (1950).

Plainview is a third Paleoindian tradition or tool complex that has been identified on the Colorado Plateau and in the southern Basin and Range province (although not, to date, elsewhere in Arizona). The Plainview tradition is attributed to the late Pleistocene or early Holocene period. Plainview points comprise several subtypes, including Meserve, Milnesand, and Belen points. All these points resemble Clovis points in their basic configuration, but they are unfluted (Faught and Freeman 1998:47). A Plainview point was discovered on the bajada of the Winchester Mountains in the Sulphur Springs Valley (Carlson et al. 1989). A few fragmentary projectile points resembling the Plainview type have also been found on the western flank of the Picacho Mountains, the eastern Santa Catalina bajada, and in the interior of the Tortolita Mountains (Huckell 1984; Wallace and Holmlund 1986). Later Paleoindian complexes have not been identified anywhere in southern Arizona (Faught and Freeman 1998).

ARCHAIC PERIOD (CA. 8500 B.C.–A.D. 1)

The Archaic period was characterized by the collecting of a broad spectrum of wild plant and animal resources for subsistence. The large Pleistocene animals hunted in the Paleoindian period had become extinct by the beginning of the Archaic period, although it has been suggested that the two subsistence strategies overlapped temporally and possibly spatially (Faught and Freeman 1998:50). The hunting of megafauna may have been an opportunistic component of what was otherwise a subsistence strategy resembling that typified by the term *Archaic*. Nevertheless, a rough temporal marker of 8500–8000 B.C. has been chosen as the starting point of the Archaic period, as it was around this time that a ground stone tool industry consisting (initially) of one-handed manos and slab metates became common across the Southwest (Huckell 1996:306, 327). This has been taken to imply that many plant resources (seeds in particular) were not exploited by people using Paleoindian subsistence strategies and that the beginning of the Archaic marks a broadening of the resource base.

The phrase *Archaic period* refers both to a division of time and the lifeway practiced by the ancient peoples during that time. Geographically, the period of time designated by archaeologists as the Archaic is subdivided into several regions spanning the Southwest as a whole. In the southern Basin and Range region of the Southwest, the broad cultural manifestation termed the *Archaic* is known as the Cochise culture. This culture is distinguishable from four co-traditions: the Colorado Plateau/Great Basin Complex, the Oshara Tradition, the Amargosa, and the Chihuahua Tradition. Temporally, the Cochise culture is subdivided into three broad divisions: Early, Middle, and Late.

The Early Archaic period (ca. 8500–6000 B.C.) of the Cochise culture is known as the Sulphur Springs phase. Sayles and Antevs (1941) originally defined this phase in the Sulphur Springs Valley in southeastern Arizona (Reid and Whittlesey 1997:44). Their archaeological work took place prior to the advent of radiocarbon dating techniques, so there was no independent chronological evidence for dating this early Cochise manifestation. The absence of independent dates contributed to Sayles originally concluding that a Paleoindian tradition (typified by the exploitation of megafauna) co-existed with a hunting-and-gathering tradition that exploited smaller game and various plant resources, as reflected in an artifact assemblage composed of flat milling stones, unifacial scrapers, and other lithic implements. This assessment turned out to be incorrect; however, reexamination of the Sulphur Springs material did establish a reliable beginning date of ca. 8500 B.C. for the Sulphur Springs phase (Huckell 1996:339).

Even though they have now been dated with certainty, the sites investigated by Sayles did not include any artifacts that were stylistically distinctive and, therefore, temporally diagnostic. There has been a lack of diagnostic projectile points recovered from Early Archaic sites in southern Arizona that can be directly correlated in time with the Sulphur Springs phase, and sites dating to this era are not always recognizable without direct methods of dating, such as radiocarbon (Huckell 1996:329).

The Middle Archaic period (ca. 6000–1200 B.C.) of the Cochise culture—known as the Chiricahua phase—is typified by the addition of shallow basin metates, mortars and pestles, various bifacial tools, and distinctive side-notched projectile points (Chiricahua points) to the overall tool assemblage (Freeman 1999; Huckell 1996:342; Mabry 1998). Generally, the Middle Archaic period was a time during which regional variations in the material culture across the Southwest became less pronounced. In particular, projectile points took on a similarity of design over large geographic regions (Mabry 1998). Chiricahua points, for example, are similar in style and manufacture technique to Northern Side-notched, Pinto, and San Jose points, all found in other areas of Arizona (Slaughter 1992a:70). It is during the Middle Archaic period that evidence of permanent or semi-permanent domestic architecture appears, although bands of people probably remained highly mobile. The first Mesoamerican cultigens (including maize) also arrived in the Southwest during this period, perhaps as early as 2000 B.C. (Huckell 1996:343; Mabry 2005:114, 115).

The Late Archaic period (ca. 1200 B.C.–A.D. 1) appears to have been a time of increasing adaptation to agriculture as the primary subsistence strategy. The prevalence of maize agriculture has led some researchers to refer to this period as the Early Agricultural period (Huckell 1996). It is unclear whether the adoption of agriculture along with its corresponding changes in social and political relationships and settlement patterns occurred simultaneously across the Southwest. The earliest direct dating of maize from various parts of the Southwest suggests an essentially contemporaneous adoption of this cultigen about 4,000 years ago (Mabry 2005). However, adaptations to this early agricultural product were not the same in all regions, with many people retaining a way of life that could continue to be characterized as Archaic (Diehl 2005; Huckell 1996). Hunting-and-gathering practices remained a vital subsistence strategy throughout the Late Archaic/Early Agricultural period as evidenced by macrobotanical, zooarchaeological, and human osteological data (Diehl 2005:182). Additional evidence suggests that some groups did not cultivate maize at all. The Coffee Camp site, for instance, at the southern edge of the Santa Cruz Flats provides evidence of a semi-sedentary lifestyle coupled with a continued reliance on wild plant and animal resources (Halbirt and Henderson 1993).

In the south, the Cochise culture entered its penultimate cultural stage, the San Pedro phase (1500–800 B.C.), which was named for the type-site first investigated by Sayles on the San Pedro River (Sayles and Antevs 1941). Apart from its distinctive corner- and side-notched projectile points, the San Pedro phase is typified by 1) small oval pithouses, often with large interior bell-shaped storage pits and similar extramural pits (both of which reflect the importance of storage in a subsistence economy that includes the growing of crops); 2) flexed inhumations; 3) refinements in ground stone technology; and 4), in the Santa Cruz River Valley, canal-irrigated farming. Also notable during the Late Archaic period was a ceramic tradition of figurines, beads, and miniature vessels (Heidke 2005; Stinson 2005). Although the miniature vessels are argued to be incipient pottery (Heidke 2005), these objects have decorative qualities

reminiscent of baskets and are similar to ceramic effigies found in Early Formative period contexts at other sites (Haury 1976b). Late Archaic incipient pottery may be part of the ceramic effigy tradition.

Until relatively recently, the San Pedro phase was considered the final stage of the Cochise culture. Archaeological work in Tucson and other areas, however, has led to the definition of an additional phase, the Cienega phase, for the final pre-ceramic stage of the Cochise culture in southern Arizona (Gregory 2001:253; Huckell 1996:345). The Cienega phase, in contrast to the earlier San Pedro phase, is characterized by round, rather than oval, pithouses; distinctive projectile points with deep diagonal corner-notching (Cienega points); and a more diverse ground stone artifact assemblage (Huckell 1996:345; Stevens and Sliva 2002:300). Dates proposed for this phase are ca. 800 B.C.–A.D. 150 (Gregory 2001).

FORMATIVE PERIOD (A.D. 1–1450)

The Formative period is differentiated from the Archaic period by the addition of pottery to the material culture repertoire. Pottery is defined here as fired-clay containers and is distinct from the ceramic artifacts recovered from Late Archaic period contexts. The Formative period in southern Arizona is typically considered synchronous with the tenure of the Hohokam culture. However, this may or may not be the case (see Deaver and Ciolek-Torrello 1995; DiPeso 1956; Hayden 1970; Schroeder 1957, 1960, 1979). The original Hohokam cultural sequence was formulated on the notion that the river valleys radiating outward from the Gila and Salt rivers were uninhabited (Doyel 1977; Haury 1976a) or that the valley bottomlands were unused by the indigenous Archaic peoples. Recent archaeological evidence provides resounding proof that the river valleys of central and southern Arizona were inhabited and farmed during the Late Archaic period by relatively substantial populations of indigenous peoples endowed with technologies and a scale of cultural development more impressive than previously acknowledged.

The Hohokam cultural sequence consists of four periods, with each period encompassing one or more developmental phases. From oldest to youngest, the periods are the Pioneer, Colonial, Sedentary, and Classic periods (Gladwin 1965; Haury 1976b, 1978). In the original formulation, the periods represent the thesis that the Hohokam culture derives from Mesoamerican immigrants who "pioneered" a new way of life in the Gila and Salt River valleys of Arizona. After a few hundred years, the descendents of the original immigrants migrated from this heartland and colonized the adjoining river valleys of central and southern Arizona. The success of the Hohokam colonists is attributed to their sophisticated technological, social, political, and religious systems. Of particular importance to their success was their mastery of large-scale canal irrigation. Once in place, the Hohokam colonists became "sedentary" agriculturalists. In a few centuries, the Hohokam culture reached its zenith, or "classic" cultural development.

Charles DiPeso (1956), Albert Schroeder (1957, 1960, 1979), and Julian Hayden (1970) formulated alternative models of cultural development for the Hohokam culture area. In their various formulations, an existing indigenous population was influenced, coerced, or conquered by immigrant Hohokam from Mesoamerica. Archaeological work across the Hohokam culture area in the past few decades has given credence to this alternative thesis (Whittlesey et al. 1994). The river valleys and basins were not empty niches awaiting conquest by the Hohokam, but were populated by farmers, perhaps in relatively

substantial numbers. We know in the Tucson Basin that irrigation agriculture did not originate with the Hohokam, but had been practiced for more than 2,000 years before the Hohokam culture appeared on the scene. With regard to Hohokam origins, the evidence from the Tucson Basin and other areas points to the fact that the objects of material culture, iconography, and ceremonialism that archaeologists identify as Hohokam derive from the middle Gila River Valley. It may have been the very fact that these areas were already populated that enabled the development and spread of the Hohokam cultural tradition and not, as originally believed, the absence of population. Thus there are two scenarios for Hohokam origins. One relates to the Hohokam heartland on the middle Gila River Valley where the culture originates and the other relates to the outlying river valleys and basins where this cultural tradition is imported and where the indigenous traditions are transformed to more and lesser degrees into regional expressions of the Hohokam culture.

The prevailing practice has been to impose the Hohokam cultural sequence on the cultural sequences in the various river valleys and basins in the so-called Hohokam culture area. This practice creates the impression of a unified pattern of cultural development. Although this section will argue that there are broadscale trends in cultural dynamics, these trends occur at a scale beyond the Hohokam culture area and the resulting cultural sequences in the various river valleys and basins vary in ways that create unique cultural traditions and trajectories. In this discussion, the Hohokam culture is characterized as a "core" that exists in the middle Gila River Valley and "peripheries" that represent the eventual expansion of the culture throughout most of the river valleys of central and southern Arizona. The variability in the Late Archaic adaptations across the Basin and Range province of central and southern Arizona creates a variable baseline for the emergence of later Formative archaeological cultures. It is this variability that is masked by the imposition of the Hohokam cultural sequence. The cultural traditions in these peripheries were affected by far-reaching cultural, environmental, and cosmological phenomena which provided a similar structure and rhythm to the prehistoric traditions seen in all these regions. The cultural expressions and trajectories of each area were singularly unique, however, shaped by the responses of the indigenous peoples to these far-reaching phenomena in the contexts of the local physiographic, environmental, cultural, and cosmological environments, giving rise to particular local culture histories.

For this reason, this culture history divides the Formative period into three periods referred to simply as Early, Middle, and Late. This three-part division closely corresponds to DiPeso's (1956), Hayden's (1970), and Schroeder's (1957, 1960, 1979) outlines of prehistory by recognizing the Hohokam culture as a major influence in the prehistory of central and southern Arizona. The Early, Middle, and Late Formative periods are equivalent to DiPeso's Formative O'otam, Hohokam Intrusion, and O'otam Reassertion periods, respectively. Put quite simply, the early-middle-late divisions represent the time before the Hohokam, the time of the Hohokam, and the time of the Hohokam transformation and collapse (Deaver and Van West 2001:20–24).

The three Formative periods correspond to the Hohokam cultural sequence in the following way ***(see Chart 1)***. The Early Formative period encompasses the Pioneer period through the end of the Vahki phase. The Middle Formative period begins with the Snaketown phase of the Pioneer period and covers the Colonial and Sedentary periods. The Late Formative period corresponds to the Classic period. The slight mismatch in the two sequences is the result of looking at Hohokam prehistory from the outside

looking in, from the so-called Hohokam peripheries such as the Papaguería, the Tucson Basin, the upper and lower Santa Cruz River valleys, the Gila Bend region, the San Pedro River Valley, the Safford Basin, southeastern Arizona, and the Tonto Basin toward the heartland in the middle Gila and lower Salt River valleys. The chronological schemes and the dating of the various periods and phases are derived from a variety of sources. The timing of the various periods and phases in the chronological scheme are derived principally from Deaver and Whittlesey (2004b), Deaver and Ciolek-Torrello (1995), Wallace (2003), and Henderson (2001). These works represent some of the more recent and comprehensive investigations into the timing of cultural developments. The conceptual structure of the cultural developments and phase equivalents has been maintained, with one notable exception. Based on chronological studies by Deaver and Ciolek-Torrello (1995), Henderson (2001), and Wallace (2003), the Estrella and Sweetwater phases have been excluded. Estrella Red-on-gray and Sweetwater Red-on-gray exist as pottery horizons, but the frequency of painted pottery is too rare to reliably identify archaeological contexts to this time period. In the absence of painted pottery, the contexts are conceptually assigned to the regional equivalents of the Vahki phase. Otherwise, the conceptual equivalence of archaeological phases across the Hohokam region is maintained even when published chronologies differ. The distribution of chronological information is so variable from area to area that the difference in the timing of developments is probably more a function of limited data and older perceptions for the timing of events. An outline of prehistory for southern Arizona from this perspective is presented below.

Early Formative Period (A.D. 1–670): The Late Archaic Legacy

Discussion and definition of the Early Formative period is intertwined with perceptions and definitions of the Hohokam culture. For this discussion, the Hohokam culture is generally characterized as a way of life expressed through architecture, material culture, settlement organization, iconography, mortuary ritual, and ceremonialism that is distinguishable from analogous qualities attributed to other archaeological cultures such as the Mogollon, Trincheras, and Ancestral Pueblo. The qualities that distinguish the Hohokam culture from other groups in the American Southwest appear at the end of the Early Formative period (Deaver and Ciolek-Torrello 1995:483, 484). It is at this time that the Hohokam culture is recognizable as a distinctive regional cultural force (Wilcox 1979, 1988; Wilcox and Sternberg 1983).

The Early Formative period is the time before the emergence of the Hohokam as a regional cultural tradition. The cultural landscape during this period sets the stage for the eventual emergence of the Hohokam and other archaeological cultures as well. Archaeological excavations across central and southern Arizona have documented a period of time where the river valleys and basins were occupied by pottery-making farmers. There are strong similarities in architecture, burial custom, and material culture across regions that are eventually ascribed to the Hohokam, Mogollon, and Trincheras cultures, to name a few (see Deaver and Ciolek-Torrello 1995). The similarities in cultural practices are sufficient to preclude distinguishing distinctive cultural traditions (Deaver and Ciolek-Torrello 1995; Huckell 1987:295; Whittlesey 1995:468–470; Whittlesey et al. 1994). This pan-regional cultural expression developed from the Late Archaic Cochise culture (Reid and Whittlesey 1997).

The Early Formative period encompasses three intervals that are marked by technological changes in pottery that occur synchronously with other changes in material culture. These intervals are the Plain

ware, Red ware, and Red-on-brown horizons (Deaver and Ciolek-Torrello 1995; Whittlesey 1995). Deaver and Ciolek-Torrello (1995:512) provides the following chronology for these pottery horizons: Plain ware, A.D 1–425; Red ware, A.D 425–650; and Red-on-brown, A.D. 650–700. Various versions of the timing of these developments exist (for example, see Henderson [2001] and Wallace [2003]), but in the present discussion the conceptual framework is more critical than the accuracy of the actual dates. Furthermore, there is not a direct correlation for each of these horizons to defined cultural phases, particularly the Red-on-brown horizon. Most chronological sequences associate the Red-on-brown horizon with the Estrella and Sweetwater phases of the Hohokam cultural sequence. Analysis of extensive sets of chronometric data from the excavations at Grewe (Henderson 2001:206) in the middle Gila River Valley and at Valencia Vieja (Wallace and Lindeman 2003:125) in the Tucson Basin confirm Deaver and Ciolek-Torrello's (1995:511, 512) suspicion that the range of dates associated with red ware horizon contexts overlaps with the range of dates associated with the later Snaketown phase to the extent that there is literally no time left to squeeze in the Estrella and Sweetwater phases. The Red-on-brown horizon represents the initiation of painted pottery sequences in central and southern Arizona, and is an important development given the eventual emergence of painted pottery as a durable medium for conveying emblems of cultural identity and chronological age. The production of the first red-on-brown pottery is of such low volume that it is lacking in many archaeological deposits. In the absence of painted red-on-brown pottery, these contexts are typically attributed to the Red ware horizon or the analogous archaeological phase. The three ceramic horizons serve more as indicators of chronological age and the existence of far-reaching mechanisms of communication and interaction than markers of archaeological phases. Cultural developments during the Early Formative period are summarized below.

Early Formative period pottery is manufactured from brown-colored clay. Vessels are formed by coiling or hand-modeling and shaped by a combination of techniques, including hand-finishing, scraping, and paddle-and-anvil (Whittlesey 1995:470). Surfaces can be hand-smoothed or stone-polished, and sometimes vessel interiors are smudged (Whittlesey 1995:470). During the Plain ware horizon, the clay is typically non-micaceous, tempered with local sands, and lacks the addition of crushed, micaceous rock temper that characterizes the Hohokam Gila Plain and Vahki Plain (Whittlesey 1995:470). In most of the outlying regions, the pottery continues to be non-micaceous throughout the Early Formative period, but in the middle Gila River Valley, potters add crushed micaceous rock to the clays beginning in the Red ware horizon, a practice that persists well into the Middle Formative period. This is one of the distinctive qualities of the Hohokam pottery tradition and is perhaps the first archaeologically recognizable indicator of a Hohokam identity.

Initially, vessel forms are limited to the so-called neckless seed jars and hemispherical bowls. Forms characterizing the later Hohokam tradition such as the flare-rimmed bowl and effigy vessels are absent. Over the course of the period, the variety of vessel forms increases. By the Red ware horizon, the inventory of vessel forms includes jars with flaring necks, rectangular or trough-shaped bowls, and flare-rimmed bowls. The latter are considered to be the hallmark of the Hohokam ceramic tradition (Haury 1976b:222; Heidke 1990:95; Whittlesey 1995:471). The proliferation of vessel forms continues into the Red-on-brown horizon when effigy vessels appear and the practice of grooving the exterior of shallow red ware or red-on-brown bowls by accentuating the troughs between the clay coils occurs in the Gila River Valley (Haury 1976b:221).

Architectural styles show continuity with the Late Archaic period. The small-house-large-house dichotomy between residential structures and communal structures that emerged during the Late Archaic period continues. Early in the period, structures tend to be circular with protruding entryways, but bean-shaped structures also appear during this time. The latter structures particularly show an affinity with contemporary architectural styles in the Mogollon region. Houses are arranged in loose groupings associated with specialized or communal structures that are an order of magnitude larger than the typical residential structure. Later, there is a shift from circular to sub-rectangular structures (Lindeman 2003:321; Whittlesey 1995:471). The distinction between the residential structures and the communal structures is accentuated by the fact that the larger communal structures continue to be circular or bean-shaped. By the time red ware pottery is produced, structures are consistently sub-rectangular or square-ish, including the larger communal structures (Lindeman 2003).

Mortuary practices for the Early Formative period are known from a limited set of data. Available evidence indicates a continued preference for flexed and seated inhumations, but cremation also occurs. The Hohokam preference for the cremation mortuary practice has not yet emerged.

Qualities of the Late Archaic period flaked and ground stone technologies continue into the early part of the period and are eventually replaced by technologies more typically associated with later Formative period adaptations. Corner-notched, expanding-stemmed projectile points characteristic of the Late Archaic period are found in Plain ware horizon contexts, but are replaced by smaller contracting-stemmed projectile points in the Red ware horizon (Sliva 2003). This shift in projectile point styles undoubtedly marks the end of the atlatl-dart complex and the broad adoption of the bow-and-arrow complex. The ground stone milling apparatus shows a similar transition during the Early Formative period. Early in the period, milling implements are similar to Late Archaic period milling implements, but by the time of the Red ware horizon a milling technology emphasizing the open-ended trough metate has become the standard industry (Adams 2003). This shift in milling technology is probably related to shifts in the way maize and other grains were used and processed. Other additions to the stone objects in the latter part of the Early Formative period are stone palettes with raised borders and stone axes (Adams 2003).

Shell ornaments occur throughout prehistory, but the wholesale import, production, and exchange of shell ornaments are associated with the Hohokam culture. The available evidence indicates that characteristics of the Hohokam shell industry do not exist in Early Formative period assemblages, which are dominated by glycemeris bracelets, geometric pendants and beads, and whole shell beads (Vokes 2003). Anthropomorphic and zoomorphic representations either do not occur, or are rare.

Regional interaction also appears to follow along the Late Archaic period pattern of a broad-based, low-volume exchange of objects. Shell and other exotic items occur in relatively low numbers. Interaction between neighboring river valleys and basins is difficult to trace specifically except with regard to pottery. Based on the mineralogical and lithological qualities of the non-plastic inclusions in the pottery vessels, interaction between different areas can be traced. Studies of pottery from El Arbolito in the Tucson Basin indicated that most of the pottery found at that site was produced outside the Tucson Basin (Huckell 1987:293–295). Interaction and the exchange of items between the Gila River Valley and the outlying river valleys and basins are represented by the presence of plain brown wares and red wares with

abundant crushed-micaceous-rock inclusions. The types Vahki Plain and Vahki Red are characterized by the abundance of micaceous rock and the resulting micaceous sheen imparted to the vessel surfaces. These types occur in traces in contemporary assemblages from the Salt River Valley and the Tucson Basin (Cable 1985; Heidke 2003:189; Henderson 1992:202). This pattern of interaction between the middle Gila River Valley and the outlying areas is quite different from that which emerges later during the Middle Formative period.

With regard to cultural identity, cultural affiliation, and the Hohokam culture, the available evidence indicates that the Hohokam culture in its original formulation does not yet exist on the cultural horizon. Instead, the demographic and cultural landscape is characterized by population clusters along the rivers of central and southern Arizona in those locations most suitable for agriculture. These populations share similar cultural practices, and, as such, it seems reasonable to conclude that they are part of a similar archaeological culture. Toward the end of the Early Formative period, certain material items appear that are indicative of the later emergence of the Hohokam culture. These are the practice of adding micaceous rock to the pottery clay and the production of palettes with raised borders, grooved stone axes, and effigy vessels. The Hohokam iconography that includes zoomorphic and anthropomorphic representations in shell, stone, and pottery designs does not occur.

Middle Formative Period (A.D. 670–1150): Hohokam Ascension and Reorganization

The Middle Formative period is marked by the rapid appearance of a robust and regionally influential Hohokam cultural pattern that has its heartland in the middle Gila River Valley. The extent of the Hohokam realm is suggested in ***Figure 3*** relative to the watersheds of the river valleys and basins of central and southern Arizona. The Middle Formative period corresponds approximately to what archaeologists have called the late Pioneer, Colonial, and Sedentary periods of the Hohokam sequence. The Middle Formative period can be divided into two intervals. The first interval relates to the establishment and expansion of the Hohokam culture across a large area of central and southern Arizona. This interval equates with the terminal phase of the Pioneer period (the Snaketown phase) and the entire Colonial period. The second interval equates with a reorganization of the Hohokam culture area that occurs during the Sedentary period (Doyel 1991a; Masse 1980).

Hints of the Hohokam culture and what is to come occur at the end of the Early Formative period with the appearance of effigy vessels, palettes with raised borders, and stone axes. Still, the Hohokam culture emergence is an abrupt and radical shift in the nature of regional interaction and relationships. This discussion is based on the assertion that the demographic landscape of central and southern Arizona was characterized by discrete, autonomous settlement systems concentrated along the rivers in the most productive areas for agriculture. The advent of the Hohokam culture is marked in part by an integration of these autonomous populations into a widespread cultural network.

The most recognizable marker of the Hohokam culture is a unique pottery style with associated iconography; this is the Snaketown style (Deaver 1984:253, 1989:67) or the Snaketown horizon (Deaver and Ciolek-Torrello 1995:486–488, 518). The style is characterized by interlocking curvilinear scrolls and

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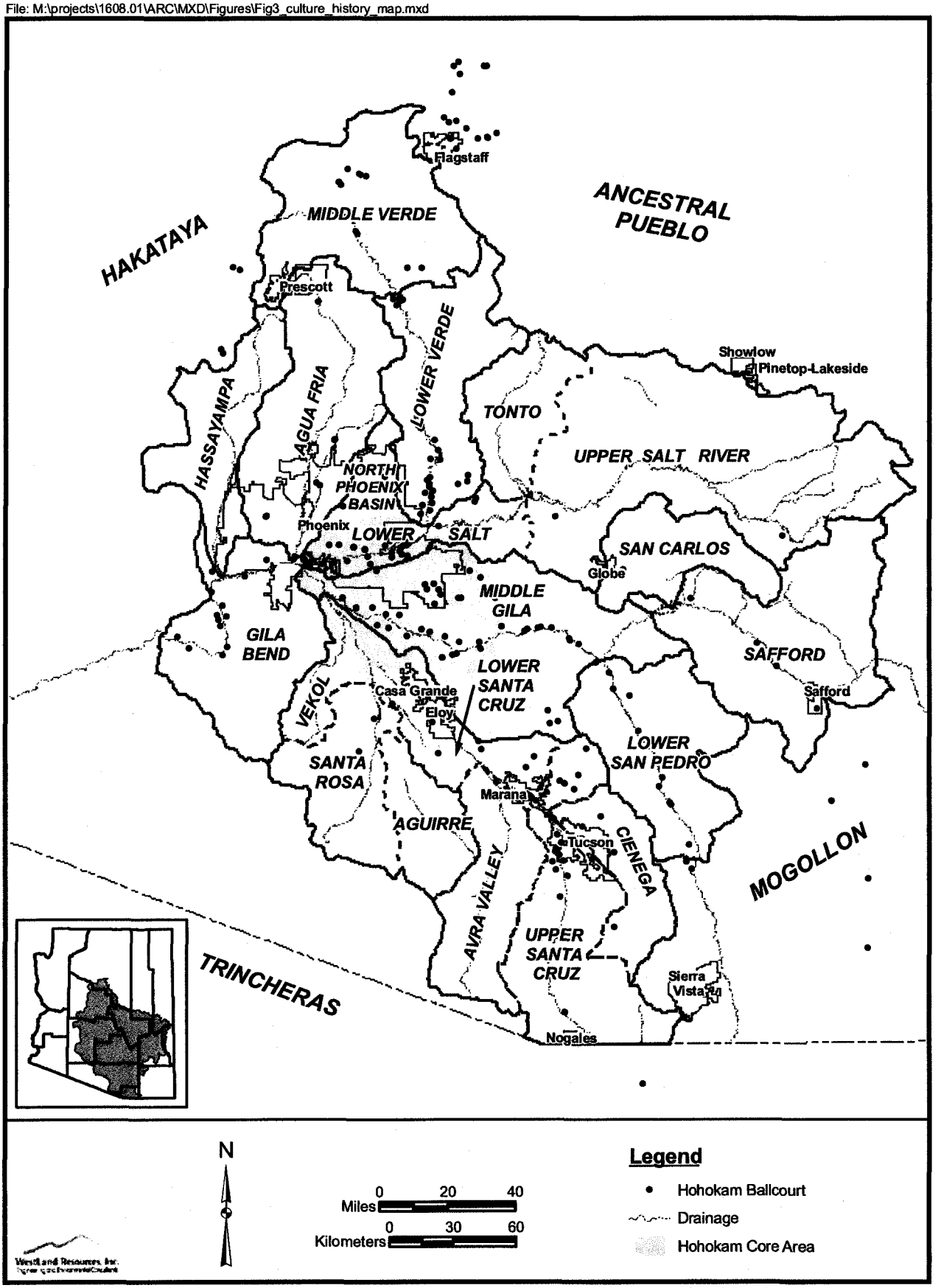

Figure 3. The Hohokam culture area of central and southern Arizona (adapted from Whittlesey et al. 1997:458)

rectilinear greques depicted in a hachure pattern (Haury 1976b:214–216) and is expressed on Snaketown Red-on-buff that is made in the middle Gila River Valley. This pottery type can be found at many sites throughout the Southwest. Unlike the previous period, Snaketown Red-on-buff occurs in increased numbers, indicating an increased outflow of materials from the Hohokam heartland into the adjoining regions. Deaver (1989:67) has speculated that in the Tucson Basin two processes are at play during the Snaketown phase. The first process is the increasing proportion of Snaketown Red-on-buff imported from the Gila River Valley. The second is the transformation of the indigenous Tucson Basin pottery tradition resulting from the adoption of the Gila River practice of adding crushed micaceous rock to the pottery clay and the production of local pottery decorated with the Snaketown style. These processes indicate a fundamental shift in relationships among settlement clusters across the region, with the pattern established that the Gila River area is the donor and the outlying populations the recipients of Hohokam culture. This pattern is reified with the spread of the ballcourt ceremonialism in the Colonial period.

In the Hohokam heartland, the Snaketown phase (A.D. 670–770) brought numerous changes. New traits include the establishment of the courtyard group as the principal structural component of settlements, the appearance of trash mounds, the introduction and exportation of buff ware ceramics, the construction and use of capped earthen mounds, and cremation as the dominant mortuary practice. Along with the Snaketown style on pottery, there is also the initiation of an iconography that includes the depiction of anthropomorphic and zoomorphic representations on stone, shell, and pottery. Domestic-use structures increased in size during the Snaketown phase, but the large square communal structures of the preceding horizon were no longer constructed. The basic unit of Hohokam social organization was the courtyard group, which consisted of several houses arranged so that the entryways opened onto a common area (Doyel 1991a). Whereas houses are constructed, abandoned, and replaced over time, the courtyards become the enduring archaeological manifestation of the social group. The dominant architectural style becomes the house-in-pit (Haury 1976b). Plain ware pottery continues to be made from brown to gray firing clay, but in the painted pottery industry there is a shift to a lighter buff-colored clay body. Pottery is manufactured using the paddle-and-anvil method. Stone palettes, censers, and figurines become common and are often included as burial goods. Although evidence indicates that canal irrigation had been present earlier, large-scale irrigation systems begin to develop during the Snaketown phase (Foster et al. 1995).

If nothing more, the Snaketown phase marks the appearance of a uniquely identifiable cultural group that archaeologists call the Hohokam. The export of Snaketown Red-on-buff reveals what is a key element of subsequent Hohokam regional relationships: that the middle Gila River Valley is the source area for the objects carrying the iconography associated with the Hohokam culture. The Colonial period is initiated by the appearance of ballcourts across most of central and southern Arizona at around A.D. 800 (Doyel 1980, 1991a; Wilcox and Sternberg 1983). The distribution of the ballcourts establishes on the landscape an explicit expression of the Hohokam realm of interaction and influence and probably reflects a level of regional integration unlike anything that previously existed. The ballcourt complex is one of the strongest indicators of Mesoamerican influence among the Hohokam (Wilcox 1991). The appearance of the ballcourts correlates with technological and stylistic shifts in the material culture. Painted pottery shifts from the previous brown-to-gray-firing clay body to one characterized by a light buff color. The surfaces of the buff wares are often coated with a thin wash to further lighten the surface. Painted decoration continues to be red, but the decorative style shifts. Interlocking scrolls become a main feature of the

Hohokam design motif, but there is an expansion of the decorative repertoire to include zoomorphic, anthropomorphic, and a variety of geometric elements. Reptiles and birds feature prominently. This new iconography is also expressed in shell and stone-working. Many of the most elaborately carved censers, palettes, and shell ornaments are associated with the Hohokam Colonial period.

Populations throughout the Hohokam realm apparently increased during the Colonial period, perhaps due to improved irrigation technology that facilitated reliable cultivation of maize, beans, squash, and cotton (Reid and Whittlesey 1997). The practice of inhumation was replaced by cremation burial (Wilcox and Sternberg 1983). During the Colonial period, cremation burials characteristically consisted of a pit containing the incinerated and crushed remains of the deceased and broken funerary offerings (Haury 1976b). The house-in-pit architectural style and the courtyard group as the basic unit of social organization continued. At the Grewe site, courtyard locations showed a trend toward becoming more permanent (Craig 2000).

Beyond the middle Gila River Valley heartland, local expressions of the Hohokam culture emerged in the Agua Fria River Valley, the Gila Bend area along the Gila River, the Papaguería in the Santa Rosa and Vekol valleys, the Tucson Basin, the lower San Pedro River Valley, the Safford area along the Gila River, and in the Tonto Basin along the Salt River. Also apparent at this time was the increase in population in the Phoenix area along the lower Salt River, an area fast becoming a dominant center in the Hohokam world. Expression of the Hohokam culture varied from one area to the next (Whittlesey 1998), suggesting that previous cultural traditions in these areas influenced the character of the Hohokam cultural adoption. Some areas such as the Tucson Basin, the lower San Pedro River Valley, the Salt River arm of the Tonto Basin, the Gila Bend area, the Papaguería, and the lower Salt River represent what might be loosely called Hohokam clones. This is simply that the expressions of the Hohokam culture in these areas were strongly similar to those in the middle Gila River Valley. One consistent pattern in the so-called Hohokam peripheries was that a new Hohokam cultural expression was imposed on the local cultural traditions. What differed from area to area in the peripheries was how the local cultural traditions were affected.

It is evident that the populations of central and southern Arizona were now integrated into a single interaction network. It is also evident that the spread of the Hohokam iconography flowed outward from the middle Gila River Valley. Much, if not all, of the red-on-buff pottery found across the Hohokam realm may have originated from a relatively localized production area there. Across the Hohokam region during the Colonial period, settlements emerged that were dedicated to the production of particular objects. Settlements in the New River area emphasized the production of vesicular basalt grinding implements (Doyel and Elson 1985); sites in the Santa Cruz Flats area emphasized the production of shell ornaments (Marmaduke and Martynec 1993); and sites in the Tucson Basin emphasized the production of turquoise ornaments (Bernard-Shaw 1989). The movement of goods along the routes of exchange and interaction increased in volume. Red-on-buff pottery is found in substantial numbers in many of the outlying regions. In some areas, red-on-buff pottery from the middle Gila River Valley is the only painted pottery present. In other areas, such as the Tucson Basin, the lower San Pedro River Valley, and the Safford area, local centers were developed for the production of pottery in Hohokam forms and decorated with Hohokam iconography. It is clear that goods were moving in large quantities and over large distances across the Hohokam realm, suggesting the presence of a market system (Abbott et al. 2007)

during the Colonial period. In summary, the Colonial period represents the establishment of a Hohokam cultural tradition across much of central and southern Arizona that is endowed with material, technological, ritual, ceremonial, and economic qualities unlike anything that preceded it. Whatever the Hohokam was, it is clear that it facilitated a change in the way settlements across a large region were related to one another.

The Hohokam Sedentary period marks an interval of reorganization of the expansive, integrated Hohokam regional network. This reorganization begins at the conclusion of the Colonial period at about A.D. 975. In the Phoenix Basin, settlements increased in size and some, such as Snaketown, had large central plazas and multiple ballcourts. Irrigation systems expanded throughout the Phoenix Basin. Doyel (1981:70) believed that the vast majority of the canals mapped by Midvale (1965) in the Phoenix Basin were completed by the Sedentary period. In pottery, the characteristic decorative style of the Colonial period was replaced by one that emphasized geometric design. The structural organization of the pottery shifted from one similar to basketry in the Colonial period to one resembling the contemporary textiles in the Sedentary period (Deaver 2004:431, 432). Shifts in vessel forms also occurred, and the distinctive "Gila shoulder" became a marker for the period and for Hohokam pottery in general. After a hiatus during the Colonial period, red ware again became part of the ceramic repertoire. Copper bells have been recovered from Sedentary period contexts (Haury 1976b). The preferred architectural style was the house-in-pit. Houses were ellipsoidal and somewhat larger than the structures of the Colonial period. The etching of shell was practiced. Many archaeologists believe that Hohokam participation in exchange networks was at its zenith during the Colonial and Sedentary periods (Crown 1991a, 1991b; Doyel 1991a, 1991b). Sedentary period materials from non-local sources included shell; copper bells; obsidian and other fine-grained stone used in flaked lithic tool production; and andesite and quartz-basalt for ground stone tools (Doyel 1991a:252). These materials indicate contact with the Anasazi, Mogollon, Dragoon, Trincheras, Yuman, and California coastal groups (Doyel 1991a).

The reorganization of the Hohokam realm was marked in part by shifts in the nature of the interaction between the Hohokam heartland and the so-called peripheries. The Tucson Basin is discussed here as an example. In the Tucson Basin chronology, the Hohokam Sedentary period (A.D. 950–1150) is divided into Early, Middle, and Late Rincon subphases (Wallace and Craig 1988) based on presumed changes in pottery decoration. The Sedentary period was marked by an apparent rejection of the tenets of Hohokam culture, the mass abandonment of existing settlements, and the founding of new settlements across the basin. Early in the Sedentary period, the previously strong connections between the Tucson and Gila basins began to wane. This is seen in the diminishing quantities of imported Gila Basin pottery and an apparent concomitant increase in the amount of local pottery produced. The local pottery during the Early Rincon subphase is distinguished by a degeneration in the execution of the line work and a bolder, simplified decorative style. The decrease in the quantity of buff wares suggests that the exchange network had been interrupted. The abandonment of the ballcourts in the Tucson Basin (Doelle and Wallace 1991) further suggests a broadscale rejection of key aspects of Hohokam social organization. To date, no settlements from this period have been identified that emphasize the production of objects such as those present during the Colonial period. There is an ongoing debate about the existence of pottery-production locales during the Sedentary period (see Whittlesey 2004 for discussion). Regardless of the outcome of this debate, it is evident that local pottery is not widely exchanged on a regional basis during this time.

Tucson-made pottery was moved within the Tucson Basin and to a lesser extent into the middle San Pedro River Valley to the east and the Avra Valley to the west.

By A.D. 1000, most of the large Colonial settlements had been abandoned. The population across the Tucson Basin dispersed and numerous new settlements were founded (Doelle and Wallace 1991; Whittlesey 2004:527–529). These pronounced changes in settlement location may have been related to environmental factors or a response to social upheavals. Correlating with these broadscale shifts in settlement and population were the appearance of a distinctive pottery style and technological innovations in the indigenous pottery industry. These innovations resulted in a variety of bichromatic and polychromatic decorative expressions (Deaver 1984; Deaver and Whittlesey 2004a) that were unmatched in the Gila Basin and are found nowhere else in southern and central Arizona. At the end of the Middle Rincon subphase, after four or five generations, another upheaval in the Tucson Basin occurred, and settlements that had been newly founded around A.D. 1000 were abandoned by A.D. 1100 (Deaver and Whittlesey 2004).

Similar and different examples of abandonment, population shifts, and social reorganization occur across the Hohokam realm. Whether or not these are akin to the Tucson Basin example is a subject to be further studied and evaluated. A contrasting example to the east in the middle San Pedro River Valley involves the Dragoon culture (Franklin 1980; Whittlesey and Heckman 2000). During the period equivalent to the Colonial period, settlements in the middle and upper San Pedro River valleys bore strong similarities to the San Simon branch of the Mogollon culture and contrasted markedly with the Hohokam-influenced settlements in the lower San Pedro River Valley. The pottery in particular exhibited a technology and decorative style similar to the contemporary traditions to the east, southeast, south, and southwest. But around A.D. 1000 or so, when the Tucson Basin was apparently rejecting the tenets of Hohokam culture, many Hohokam cultural characteristics appeared at the settlements of the middle and upper San Pedro River valleys. A reorganization occurred in the San Pedro River Valley, but the result differed from that in the neighboring Tucson Basin. What is evident from these two examples is that the Hohokam realm reorganizes during the latter part of the Middle Formative period and the Colonial period patterns of interaction, integration, and affiliation are deconstructed and reconstructed.

The reorganization that occurs in the latter part of the Middle Formative period harkens back to DiPeso's O'otam model, where the indigenous populace of southern Arizona rose up to vanquish their Hohokam overlords and reestablish their traditional way of life. Clearly, after a few centuries under Hohokam domination, the O'otam reassertion bore little resemblances to the Early Formative period culture. Still, what is important in DiPeso's model is the notion that after being part of the Hohokam realm for a few centuries, the outlying regions may have begun to reclaim the autonomy that they apparently had during the Early Formative period.

Late Formative Period (A.D. 1150–1450): Hohokam Redefinition and Collapse

The Late Formative period is marked by significant shifts in population and settlement along with changes in architecture and other aspects of the material culture seemingly related to a chain of events that spawned cultural and social reorganization across the deserts of central and southern Arizona.

Coinciding with the abandonment of Chaco Canyon, peoples from the Colorado Plateau region began migrating southward into the desert regions. To the southeast, Paquimé in northern Chihuahua was constructed and its influence quickly spread. The themes that define this period are elaborated below.

In the Phoenix Basin, the Late Formative period is synonymous with the Hohokam Classic period (A.D. 1150–1350). The Classic period includes two phases, the Soho and the Civano. Some archaeologists argue for a third, terminal, phase in the Phoenix Basin known as the Polvorón phase (Chenault 1996, 2000; Sires 1984). This phase is sometimes associated with a Postclassic period in which the Hohokam Classic period way of life has collapsed and the Polvorón phase represents the post-apocalyptic remnants of the Hohokam populace and culture. Other archaeologists working in the region (Henderson and Hackbarth 2000) dispute the Polvorón phase. Regardless, the Late Formative period ends with the collapse of the Hohokam cultural system.

Shifts in material culture, settlement, and social organization between the Middle and Late Formative periods are as pronounced as the previous shifts between the Early and Middle Formative periods. Architectural styles transition from the elliptical, brush-and-adobe, house-in-pit style of the Middle Formative period to rectangular adobe-walled structures. During the Soho phase (A.D. 1150–1250), architecture consists of both pithouses and above-ground structures (Doyel 1981). Post-reinforced and solid adobe-walled structures are built. The Civano phase (A.D. 1250–1350) marks an elaboration of the architectural trends evident during the Soho phase (Doyel 1991a:253). Adobe walls become more substantial and rooms are often constructed in a contiguous pattern (Doyel 1974, 1981), sometimes forming adobe-walled compounds. Production of red-on-buff pottery decreases and red ware production increases. By the Civano phase, red ware and polychrome pottery from the Tonto Basin region are being imported into the Phoenix Basin and also being locally produced at some sites. Buff ware production ends before the Civano phase. Cremation burial in ceramic urns is common during the Soho phase, but inhumation burial is also practiced (Doyel 1974). Inhumation burial predominates during the Civano phase.

Canal systems are expanded and elevated earthen platform mounds appear as a prominent architectural feature of ritual and probably social differentiation. Ballcourts continue to be used in conjunction with the platform mounds (Eighmy and McGuire 1989; Haury 1976a). Doyel (1991a) suggests that the regional ballcourt system had weakened or ceased to exist and that large platform mounds supplanted the ballcourt as the primary integrative social structure. Platform mounds are constructed at major sites and great houses, the basal floors of which were platforms, are built at Casa Grande and perhaps at Pueblo Grande. Crown (1991a) has stated that new platform mounds were not built during the Civano phase, but that adobe structures were built on top of the existing mounds and occupied by persons of elevated status. Platform mound sites occur along the canal networks at approximately 3.1-mi (5-km) intervals. Settlements without platform mounds clustered around the mound sites.

Many archaeologists view the Hohokam Classic period as the epitome of prehistoric culture in the deserts of central and southern Arizona (Gladwin et al. 1937). However, this perception is shifting and Abbott et al. (2003:4, 5) state that the Classic period was "...a time of widespread decline, not prosperity, and a precipitous slide toward the eventual abandonment of a homeland that had been occupied for

approximately fifteen hundred years" (Abbott et al. 2003:5). Several of the major villages along the Gila River, such as Snaketown, were abandoned, or only occupied on a limited basis. This is in contrast to the Salt River, where most large villages continued to be occupied (Foster et al. 1995). According to Gregory (1987), more new sites with platform mounds were established along the Salt River than along the Gila River. This differentiation between the Gila and Salt River portions of the Hohokam heartland probably reflects a shift in the population center of the Hohokam world, with the Salt River having a greater populace and perhaps greater power and influence. One of the defining themes of the Late Formative period is the change in the nature of regional interaction.

The peripheries of the Hohokam culture area also experience transitions in material culture, architectural style, mortuary custom, and ritual architecture. The factionalism of the Hohokam culture area that began in the latter part of the Middle Formative period becomes clearly expressed in the Late Formative period. In the northern and eastern portions of the Hohokam realm, there is evidence of the immigration of puebloan peoples into the regions previously dominated by the Hohokam. To the south, the Tucson Basin appears to emerge as a regional force that is allied with populations in the Safford area, the San Pedro River Valley, the Papaguería, and the Gila Bend region. The distribution of platform mounds outside the Phoenix Basin and into the Tonto Basin, the Tucson Basin, the Papaguería, the San Pedro River Valley, and the Gila Bend region is often interpreted as an indication that these areas are still closely affiliated with the Phoenix Basin populations. However, in these outlying regions, the distribution of platform mounds is not as closely linked to the canal systems or even the natural rivers and drainages, and these outlying platform mound communities may reflect the rise of other regional systems vying with the Phoenix Basin for power. In the Tucson Basin, settlements become fewer but increase in size, possibly the result of population aggregation in response to increased conflict and the need for mutual defense and safety (Doelle and Wallace 1991). Unlike the Phoenix Basin, there is a continuity between the Middle and Late Formative periods in the local painted pottery traditions. In the Safford area, this is expressed in San Carlos Red-on-brown and in the Tucson Basin, it is expressed in Tanque Verde Red-on-brown. Although there are important differences between the San Carlos and Tanque Verde red-on-browns, these two types share a unified design style. Tanque Verde Red-on-brown becomes the dominant decorated pottery at settlements in the Papaguería and the Gila Bend area.

The Late Formative period ends sometime around A.D. 1450 with the abandonment of the major Formative period settlements in the Salt and Gila River valleys, in the Tucson Basin, and in the rest of southern Arizona. Various competing theories have arisen to explain this cultural change. With regard to the Hohokam culture area to the north along the Salt and Gila rivers, soil salinization as a result of intensive irrigation with alkaline water, water-borne diseases spread through canal systems, overpopulation leading to resource depletion, social and political reconfiguration, raiding and warfare, internal strife, climatic change in the form of floods or droughts, or some combination of these, have all been proposed (e.g., Abbott 2003; Ackerly 1982; Andrews and Bostwick 1997). With regard to the other areas of southern Arizona that were not dependent on a similar level of social organization or extensive networks of irrigation canals, other factors may have been at work. These factors remain as theories and are largely speculative. Little hard evidence is available to reveal what happened at the end of the Formative period. What is clear is that when the Spanish first entered the southwestern United States less than a century later, the large Late Formative period settlements across southern Arizona were long

abandoned and the history of these prehistoric cultures had already passed into the folklore of the native peoples that the Spanish encountered.

PROTOHISTORIC PERIOD (A.D. 1450–1691)

Between the Hohokam collapse (ca. A.D. 1450) and the arrival of the Spanish, there appear to have been significant changes in the Native American cultures in the region. Very little is known about this period prior to the arrival of Father Kino in the Santa Cruz River Valley in A.D. 1691. The Spanish identified the people living along the Santa Cruz and San Pedro rivers as the "Sobaipuri." The Sobaipuris were considered distinct from those Pima living farther south in what is now Sonora and the "Gilenos" or Pima groups living along the Gila River (Bolton 1984; Doelle and Wallace 1990; Masse 1981). The Pima of the middle Gila River are argued by Doelle (1981) to have occupied a frontier or periphery of the system that was in operation at the time of contact with the Spanish, with greater complexity in places like San Xavier in the Tucson Basin. Differences between the material culture and lifeways of the Piman peoples and the Hohokam have led some researchers to question whether the Hohokam were the ancestors of the O'odham or if the latter moved into the region after the Hohokam decline (Seymour 2007; Teague 1993). For instance, Sobaipuri sites tend to be subtle when compared to the more extensive Classic period Hohokam sites, containing less substantial architecture and sparser artifact assemblages with little ground stone. A lack of painted pottery, storage features, and extensive irrigation features has also been noted at these sites (Doelle 1984; Masse 1981; c.f. Seymour 2007). This is generally taken as evidence that Sobaipuri groups existed at lower population densities and were more mobile than previous Hohokam populations.

HISTORIC PERIOD (A.D. 1691–1950)

Spanish and Mexican Period (A.D. 1691–1856)

The Historic period begins in 1691 with the establishment of the mission system in the Santa Cruz River Valley following the arrival of Jesuit missionary Eusebio Kino. Kino made his first forays into the area in 1691 (to Tumacácori) and 1692 (to San Xavier del Bac) (Bolton 1984; Wilson 1999:12, 13). After a poorly documented visit to the Casa Grande area in 1694, Kino made a second *entrada* to the Tucson area in 1697 accompanied by Captain Juan Mateo Manje and some 20 soldiers and native guides (Bolton 1984; Wilson 1999:24). Manje, unlike Kino, kept well-written journals of his travels through southern Arizona and of his interactions with the native peoples (Manje 1954). Kino established thriving missions and *visitas* along the Santa Cruz River and Altar River valleys. These include the famous village of Bac—named San Javier del Bac by Kino—as well as Busanic and Tutatamba in the Altar River Valley.

Following the death of Padre Kino in 1711, much of the mission system in the Pimería Alta fell into disrepair for the next 50 years (Bolton 1984). However, in 1757 Father Bernard Middendorf, a Jesuit, arrived in the Tucson area and again established a Spanish presence. By the early 1770s, a mission church—San Agustín—had been established by the newly arrived Franciscans at the base of Sentinel Peak near the Sobaipuri village *sTjulshon* (Dobyns 1964, 1976). In 1776, the Presidio of Tucson was established along the east bank of the Santa Cruz River opposite the newly constructed church by an

Irishman, Hugo O'Conor (Dobyns 1964). Defensive and residential structures were built in what is now downtown Tucson, and soldiers from the presidio at Tubac were moved north to Tucson to defend it against Apache raiding, which had become a serious problem in the region (Dobyns 1964). Spanish colonists and Native American farmers were attracted to the area by the farmland and water provided by the river and by the relative safety provided by the presidio (Dobyns 1976; Officer 1987).

Mexico gained independence from Spain in 1821 and Mexican settlers continued to arrive and farm the Tucson Basin. The San Agustín Mission appears to have been abandoned by 1831 (Elson and Doelle 1987). However, the inhabitants of the region continued to use the Tucson presidio for protection (Officer 1987).

American Period (1856–Present)

The Treaty of Guadalupe-Hidalgo, signed in 1848 following the conclusion of the Mexican-American War, ceded that portion of (what is now) Arizona lying north of the Gila River to the United States. In 1853, the Gadsden Purchase expanded Arizona from the Gila River south to the present-day Mexican border. Although the lands included in the Gadsden Purchase had been used for ranching in the past, Arizona's ranges were now open for ranching activities on a large scale. The increase in population in California since 1849 had resulted in a significant beef market, and Arizona became a thoroughfare for cattle driven from Texas to California. The US Army arrived in Tucson in 1856 and founded the original Fort Lowell southeast of the old Spanish Presidio in 1866. As with the presidio, Fort Lowell's main purpose was to protect settlers from ongoing Apache raiding. In 1858, the Butterfield Overland Mail Company was formed, providing stagecoach transportation across the region (Stein 1993:95). The Southern Pacific Railroad arrived in 1880, carrying with it a flood of Angloamerican settlers. The surrender of Geronimo and defeat of the Apache in 1886 brought boom times to the region. Mining and cattle ranching were the main industries of growth (Sonnichsen 1987). In 1912, Arizona became the last state in the continental United States to achieve statehood. In recent times, tourism, the health industry, the University of Arizona, and Davis-Monthan Air Force Base have fueled the growth of Tucson and the surrounding areas.

CULTURAL AND HISTORICAL BACKGROUND OF THE AVRA VALLEY

In general, the archaeology of the Avra Valley mirrors that of the Tucson Basin to the east. Significant differences arise, however, from the fact that Tucson had a major drainage (the Santa Cruz River) that may have been permanent in some areas during prehistory while the Avra Valley did not. Therefore, large agricultural settlements such as those found along the Santa Cruz River are not found in the Avra Valley, and occupation in general appears to have been on a smaller scale.

PREHISTORY OF THE AVRA VALLEY

Although evidence of a Paleoindian occupation of the Avra Valley is sparse, three Clovis projectile points are known from the area (Ayres 1970; Huckell 1982). The Avra Valley also appears to have been sparsely occupied during the Archaic period. Archaic period sites generally consist of surface lithic scatters

identified as Archaic by the presence of Archaic-style projectile points (Dart 1989; Lindeman 2000). The majority of these sites have been interpreted as limited-activity resource-procurement and processing sites. Numerous examples of Late Archaic/Early Agricultural period style projectile points have been found during the large survey projects in the valley (Dart 1987; Downum et al. 1986); however, test excavations have been limited to only two sites. These two sites were characterized by fire-cracked-rock clusters and are notable for being smaller than similar contemporaneous sites along the Santa Cruz River in the Tucson Basin. Several radiocarbon dates associated with Late Archaic period "camps" identified by the Central Arizona Project survey (Downum et al. 1986) are significantly later than the traditional A.D. 1 date usually ascribed to the boundary between the Archaic and Formative periods. These dates (A.D. 330, A.D. 580, and A.D. 710) suggest that Archaic period lifeways persisted in regions peripheral to the major river valleys far longer than is generally acknowledged.

Formative period manifestations in the Avra Valley mirror developments in the Tucson Basin during this period, but on a smaller scale. Pioneer and Colonial period sites are generally found in the northern end of the valley and include the large sites of Fastimes (AZ AA:12:38[ASM]), primarily a Tortolita and Snaketown phase site, Hawk's Nest (AZ AA:12:484[ASM]), occupied during the Cañada del Oro phase, and Water World (AZ AA:16:94[ASM]), which has a small Cañada del Oro occupation but was primarily active during the Rillito phase. Water World is also a ballcourt site. As in the Tucson Basin, sites dating from the Cañada del Oro phase and earlier show a high percentage of Hohokam Buff wares from the Gila Basin. During the Rillito phase, the percentage of buff ware falls steeply, especially at the more southern locations in the valley, and is replaced by red-on-brown pottery similar to that produced in the Tucson Basin. Sites from the Sedentary and Classic periods in the Avra Valley also follow the pattern observed in the Tucson Basin. During the Rincon phase, which makes up the entirety of the Sedentary period, the number of sites increases greatly although the sites are relatively small in size. In the Avra Valley, there is also a shift in settlement from the eastern side of the valley to the western side (Dart and Gibson 1988). During the Tanque Verde phase of the Classic period, the site location trend that began in the Rincon phase continues, with most sites being located on the west side of the valley. As in the Tucson Basin and much of the rest of southern Arizona, sites become fewer and larger. Although no platform mound sites have been identified in the Avra Valley, several platform mounds are known from the northern flanks of the Coyote Mountains at the northern end of the Altar Valley (Dart et al. 1990). Most of the sites from the northern end of the Avra Valley exhibit decorated ceramic types similar to those found in the Tucson Basin during this period. Sites from the southern end of the valley, as well as in the Altar Valley to the south, show a higher proportion of red ware ceramics, particularly Sells Red. This has led several authors (e.g., Dart 1989) to conclude that cultural influence had shifted somewhat away from the Tucson Basin toward the large Sells-phase settlements of the Papaguería to the south and west.

PROTOHISTORY OF THE AVRA VALLEY

The Protohistoric period is as poorly understood in the Avra Valley as in most of the rest of southern Arizona. Three Sobaipuri sites, marked by the presence of Whetstone plain pottery, were identified by the Tucson Aqueduct Central Arizona Project survey (Downum et al. 1986). These sites are all small limited-activity sites that yielded little detailed information and indicate only that there was an occupation in the valley during protohistoric times.

HISTORY OF THE AVRA VALLEY

During most of the Spanish, Mexican, and Arizona Territorial periods, the valley was sparsely populated. A few scattered ranches dotted the valley, ranching being the primary economic activity during these periods. Small mines such as the "Milewide Mine" began to appear in the area in the early 1900s. Beginning in the 1920s, cotton farming became the main economic activity in the northern portion of the Avra Valley. WWII brought the US Air Force to Marana, resulting in the modernization of local infrastructure. During the 1950s, large-scale irrigation and commercial cotton agriculture began in the Avra Valley. This industry marks the economy of the valley to the present day, although it has been somewhat curtailed by residential development and the acquisition of former agricultural land by the City of Tucson water utility. Cultural resources inventories in the Avra Valley have documented numerous historic sites, but few have been subjected to large-scale data recovery.

The Spanish, Mexican, and American Periods

In the late 1690s, Padre Eusebio Kino crossed the Avra Valley during his trailblazing *entradas* from the Santa Cruz River Valley to Papago settlements in the Papaguería (Bolton 1984; Manje 1954). In November 1699, Captain Manje of the famed *Compania Volante* described his journey from Bac to the vicinity of what would become Robles Junction in the Avra Valley:

> "...we said goodbye to the natives, leaving the river behind and traveling west through *gramadales* (dog-grass). After going ten leagues, we arrived at some springs and tanks of muddy rain water where we camped for the night. The horses were watered, and they grazed on good pastures" (Manje 1954:141, 142).

The forage and grasslands described by Manje in the late 1600s were the primary attraction for early Spanish and later Mexican ranchers (Officer 1987). By the late 1700s, Spanish ranches had been established along the Santa Cruz River and Sopori/Arivaca Creek drainages during a time of relative peace from Apache raiding (Officer 1987). The Altar and Avra valleys were undoubtedly grazed during the Spanish and early Mexican eras as well, but documentary evidence is elusive. The end of the Spanish system of establishing *establecimientos del paz* or "peace camps" in 1821, in which peace from Apache groups was essentially "purchased" by providing them with food, alcohol, inferior firearms, and a place to live near Spanish settlements, resulted in the resumption of Apache raiding that severely limited livestock ranching in the northern portion of the newly formed state of Sonora (Officer 1987). Following the defeat of the Pinal and Chiricahua Apaches by the US Army in the 1870s and 1880s, cattle ranching expanded in the newly formed state of Arizona. The Robles and Aguirre families were the primary ranching families in the Avra Valley during the Territorial period (1863–1912) in Arizona (Sheridan 1986).

Bernabe Robles was born in Baviacora, Sonora, in 1857. In the early 1860s, his family moved to the newly established Arizona Territory, and by the 1880s, Robles had established a saloon, grocery, and dairy in Tucson and was well on his way to acquiring a small fortune in real estate and other pursuits (Sheridan 1986:97). These other business dealings included a stage line between Tucson and the mining settlement of Quijotoa in the Papaguería and ranching interests (Sheridan 1986:97). Robles and his brother constructed a way station for their stage operation at Robles Junction in 1882 (Sheridan 1986:97).

This station is represented on the 1888 General Land Office (GLO) map of Township 15 South, Range 10 East as "Robles' House." (The old Robles ranch house is now a Sheriff substation.) In 1889, Robles permanently moved to the land he had patented south of the Roskruge Mountains, where he founded Rancho Viejo, later known as Three Points Ranch (Sheridan 1986:97). Eventually, Robles ran cattle operations in almost all the major mountain ranges and smaller valleys surrounding Tucson. At one point, it was estimated that he controlled over one million acres in southern Arizona (Sheridan 1986:97). In 1918, Robles sold out of the Robles Junction operation and enjoyed his fortune in Tucson (Sheridan 1986:97).

The Aguirre brothers, raised along the Santa Fe Trail by their pioneering father Don Pedro, would become some of the wealthiest ranchers in southern Arizona during the late 1800s and into the next century (Sheridan 1986:52). Yjinio, the youngest of the brothers, grazed cattle in the Avra Valley during the late 1890s; eventually, he would control a vast swath of land from the Aguirre Valley west of the Roskruge range to the Catalina Mountains near Redington (Sheridan 1986:52). The old Aguirre Ranch spread is located north of the APE near the Pinal Air Park.

During the early 1900s, smaller ranches continued to maintain a ranching tradition in the Avra Valley. However, by the 1930s, agriculture, specifically cotton farming, began to assume a greater role in the northern portion of the valley. The history of farming in this area is tied to the origins of industrial farming in Marana.

Irrigation Projects in Marana

During the early 1900s, groundwater wells, pumping stations, and canals were developed near the confluence of Cañada del Oro Wash and the Santa Cruz River. Significant economic development occurred in the Marana area as the need for cotton increased during World War I (Stein 1993). War materials such as tire cord and airplane fabric were made of cotton, and a record 230,000 ac (93,078 ha) of cotton were under cultivation at the peak of production during the war (Stein 1993:51). Much of the expansion was due to businessman and land speculator Edwin R. Post of Battle Creek, Michigan, one of the heirs to the Post cereal fortune (Barnes 1988; Logan 2002). Post's plan was to buy land along the Middle Santa Cruz River, develop pumping stations and canal systems, and entice experienced farmers from throughout the country to try their luck at farming cotton in Arizona (Stein 1993:111). The Post Project, as it was known, sought to develop 10 wells and more than 20 mi (32 km) of new cement-lined canals throughout the river valley, from the confluence of the Santa Cruz River and Rillito Creek to present-day Marana (Grier 1925; Stein 1993:111). Two companies were established to manage the project: Santa Cruz Valley Farms (which managed the land interests) and the Valley Farms Company (which managed the canal and pump systems). Salesmen for the Post Project were sent throughout the nation to woo farmers. With cotton selling for a record $1.00 per pound at the time, potential farmers were not hard to find, and over 14,000 ac (5,666 ha) of land were sold (Terzis et al. 1997:82). Unfortunately, the end of World War I and the subsequent drop in cotton prices devastated many Post Project farmers, causing numerous newly immigrated Arizonans to go bankrupt (Stein 1993:111). Both Santa Cruz Valley Farms and the Valley Farms Company went bankrupt in 1920 (Terzis et al. 1997:84) and the Post Project holdings were transferred to the Pacific Finance Company (Stein 1993:112).

By the mid-1920s, the Pacific Finance Company had sold its holdings to the Pima Farms Company. At this time, over 10,000 ac (4,047 ha) of land were under cultivation (Grier 1925). The Catalina Water Company was now managing the irrigation system, which had become fully operational in 1922 (Terzis et al. 1997:84). Many farmers diversified their farming activities to include dairy farming and vegetable farming (Stein 1993:112). In 1927, both companies, like their predecessors, went bankrupt. In 1929, the Pima Farms Company became known as the Cortaro Farms Company of California and the Catalina Water Company became the Cortaro Water Company. New wells were sunk near Marana, and over 10,000 ac (4,047 ha) of crops, predominantly cotton, were being cultivated (Stein 1993:113). However, the bottom once again fell out of the cotton market during the Depression years, and acreage in the Middle Santa Cruz River Valley devoted to farming diminished considerably: by 1932, only 3,000 ac (1,214 ha) were being farmed. The Cortaro Water Company went bankrupt, and in 1934, the Marana Irrigation Company was established to manage irrigation in the area. The irrigation system was improved between 1939 and 1943, and irrigated land area returned to over 14,000 ac (5,666 ha). The Cortaro Farms Company was managing 85 mi (137 km) of canals and 42 wells in 1946; that same year, the assets of the Cortaro Farms Company were absorbed by the Cortaro Water Users Association (Terzis et al. 1997:84).

The current APE is located southwest of Marana in the northern Avra Valley. Based on historical map research (see section below), the area around the APE was intensively farmed in the era after World War II (WWII). However, some wells and ranch houses do show up in the general vicinity in the 1930s, prior to the war. For example, "Maish Well" is shown north of the APE by 1932. The settlement of "Avra" east of the APE was established by the 1930s as well. Starting in the 1950s and into the 1960s, industrialized cotton agriculture spread south from Marana all the way to Three Points along Brawley Wash. Much of the agriculture prior to the arrival of the Central Arizona Project was dependent on groundwater pumping, resulting in a drastic decline in the water table. Agriculture in the Avra Valley would soon be overtaken by the need for domestic water in Tucson. In the 1970s and 1980s, the City of Tucson bought over 10,000 ac (4,047 ha) in the Avra Valley for the development of well fields (Logan 2002).

The Army in Marana during WWII

The United States joined the war effort in 1941 following the Japanese attack on Pearl Harbor. Early in the war, the country found itself embroiled in the battle for North Africa against the Germans and Italians. North Africa is a dry desert region not unlike the Sonoran Desert, and the heat, sand, and dust of Arizona were similar to the conditions being encountered in North Africa. The US Air Force decided that Arizona would be an ideal "laboratory" for testing equipment and for the training of young aviators. As a consequence, the Desert Training Programs were established (Reinhold 1982:182; Sonnichsen 1987:272; Thompson 2004). Vast tracts of vacant government land and a warm climate made Arizona appealing to the US Military, and military training bases—as well as prisoner-of-war camps—were quickly established throughout the state. By the war's end, over 17,500 pilots had been trained in Arizona (Sonnichsen 1987:272). Tucson was chosen as the location for three US Air Force training facilities; Davis-Monthan south of town, Ryan Field in the southern Avra Valley, and Marana Air Base north of Marana.

The Marana Air Base, north of the APE and now known as Pinal Air Park, was established in April 1942 as a basic training field (Reinhold 1982:198; Sonnichsen 1987:272). It was located on the old Aguirre Ranch spread south of Red Rock. By the war's end, over 10,000 pilots, primarily American but some British and Chinese, had been trained there, ranking it at the time as one of the world's largest pilot training centers (Sonnichsen 1987:272). The Marana Air Base had five satellite or "auxiliary" fields: Picacho Auxiliary No. 1, Rillito Auxiliary No. 2, Coronado Auxiliary No. 3, Avra Auxiliary No. 4, and Sahauro Auxiliary No. 5 (1945 Phoenix Sectional Chart; Hoza 2002). These auxiliary airfields were established to provide pilots with basic flight training, including instrument flying, takeoffs and landings, and basic navigation.

Even though the Marana Air Base was deactivated in September 1945, it had a lasting influence on the area in terms of economic activity and infrastructure, and added significantly to the economy of the area through the use of local subcontractors. Road, sewer, and stormwater systems were installed by the US Air Force, bringing modern amenities to the Marana area. In fact, the road between Casa Grande and Tucson was paved and improved during WWII to facilitate troop and equipment transport. Later, in the 1950s and 1960s, the placement of five Titan Missile launch pads in the Marana area further resulted in improved, wider modern roads.

SURVEY PLAN

Based on previous research, WestLand expected that cultural resources could exist in the APE. Prehistoric Native American culture sites related to the long prehistory of the region might exist. Euroamerican sites from the Historic period were also a possibility and expected to be related to historic ranching, farming, and US Air Force activity during WWII.

WestLand's survey objectives were as follows:

1. To contribute to the extant archaeological body of knowledge regarding human prehistory and history.

2. To identify and document the archaeological resources in the APE.

3. Based on prior knowledge of the area, to ascertain as precisely as possible the cultural affinity and chronological age of each archaeological resource.

4. To map the location and extent of each archaeological resource identified within the limits of the APE.

5. To ascertain whether the resources are archaeological sites according to ASM criteria.

6. To record basic descriptive and interpretive information for each archaeological resource on forms appropriately tailored to isolated artifacts, isolated features, and archaeological sites.

METHODS

This archaeological project consisted of three sequential tasks: 1) background research, 2) field survey, and 3) preparation of a final report. These tasks are described below.

TASK 1. BACKGROUND RESEARCH

Prior to fieldwork, WestLand archaeologists conducted an archaeological overview of the APE and its immediate environs. Specifically, WestLand archaeologists reviewed existing archaeological information in the site files at ASM and on the ASM online AZSITE database. A study area was defined that was larger than the APE that included the APE and a surrounding 1.6-km (1-mi) buffer. In addition to the first-hand search of ASM records, WestLand requested a database from ASM containing the AZSITE records for all known sites in the study area. This database contains all the documented information about each site. Previously recorded sites within the APE were plotted on field maps for relocation and reassessment during the field survey. Available GLO maps, land ownership records administered by the BLM, historical Pima County road maps, historical mine plats, and historical aerial photographs were also examined for information pertinent to identifying archaeological resources in the APE.

TASK 2. FIELD SURVEY

WestLand's survey methods were influenced by the nature of the expected archaeological resources and the character of the landscape. The WestLand archaeological field crew conducted a pedestrian archaeological survey within the APE. Crew members were aligned abreast at 66-ft (20-m) intervals and walked parallel transects back and forth across the APE until the entire area had been examined for archaeological resources. Topographic maps, surveying compasses, global positioning system (GPS) units, and flagging tape were used to ensure complete coverage.

The initial expectation was that much of the evidence for human use of the area would reside in archaeological artifacts, features, and sites attributable to Archaic, Formative, and Historic period land-use patterns. Thus, field methods focused on collecting basic information about the individual artifacts, features, and sites, including their age, cultural affiliation, associated material culture, and presumed function, as well as basic metric data. Survey methods were also influenced by the expectation that sites, particularly Historic period sites, are often masked or obscured by modern ongoing use. Archaeologists reviewed historical maps and aerial photographs prior to the field survey to identify Historic period features on the landscape that might still exist as archaeological sites. These potential finds were "ground-proofed" by the archaeological survey team.

Field observations were recorded on standardized forms and later entered into WestLand's Archaeological Information Management System for analysis.

ASM Site Criteria

Evidence of past human activities exists on the landscape in objects, sites, districts, buildings, and structures. The archaeological survey initially identified two types of resources: archaeological artifacts

and archaeological features. The former category consists of individual portable objects on the landscape. The latter consists of a variety of archaeological resources, from clusters of two or more objects in close proximity to one another to more substantial debris scatters and non-portable purposeful constructions, excavations, and deposits.

Every archaeological resource encountered was mapped and recorded, including individual artifacts, individual features, artifact scatters with or without features, and sometimes groupings of features. The ASM provides guidelines that identify what is minimally considered an archaeological site. An archaeological site is a special subset of archaeological features that meets at least the minimum criteria. Upon initial discovery of an archaeological artifact or feature, archaeologists would converge on that find to determine whether other associated archaeological materials were present. If the find was an individual occurrence, it was classified as an isolated occurrence and documented accordingly. Its location was mapped and its characteristics were recorded on field forms.

If multiple artifacts or features were found, the following ASM guidelines (1995) were applied to determine whether the archaeological find should be designated and recorded as an archaeological site. According to the ASM, a site is any:

1. Physical remains of past human activity that are at least 50 years old.

Additionally, sites should consist of at least one of the following:

2. 30+ artifacts of a single class (i.e., 30 sherds, 30 lithics, 30 tin cans) within an area 15 m (50 ft) in diameter, except when all pieces appear to originate from a single source (i.e., one ceramic pot, one core, one glass bottle).

3. 20+ artifacts which include at least 2 classes of artifact types (i.e., sherds, ground stone, nails, glass) within an area 15 m (50 ft) in diameter.

4. One or more archaeological features in temporal association with any number of artifacts.

5. Two or more temporally associated archaeological features without artifacts.

All resources satisfying these minimum criteria were designated as archaeological sites and recorded as specified in the ASM site recording manual (ASM 1993). Archaeological features that did not meet these criteria were designated as isolated features and recorded accordingly. Within the boundaries of archaeological sites, WestLand archaeologists used the following categories to characterize artifact density:

- **Light Density:** 0 to 3 artifacts of any class per 10 ft^2 (1 m^2)
- **Moderate Density:** 3 to 7 artifacts of any class per 10 ft^2 (1 m^2)
- **High Density:** 7 or more artifacts of any class per 10 ft^2 (1 m^2)

Site recording generated the following records: written descriptions, scaled hand-drawn maps, photographs, and electronic data collection with a Trimble Geoexplorer. A primary site datum (PSD) marked with an aluminum tag was placed at each site. UTM coordinates were electronically recorded for each PSD with sub-meter accuracy and initialized to the NAD 27 CONUS datum. Site boundaries were established by the distribution of artifacts and features. Within each archaeological site, the locations of features and diagnostic tools were mapped. For each newly discovered site, an ASM site number was obtained from the ASM Site Files Office (University of Arizona, Tucson) and an ASM site card was completed and returned to ASM for entry into their site files records and database (AZSITE).

Archaeological Site Types

Sites identified during the field survey were classified into site categories. The categories are both descriptive and functional. Descriptive categories are based on the nature of the physical remains observed. The ASM site recording manual identifies three categories of sites: artifact scatters, features with artifact scatters, and features without artifact scatters. Functional categories are based on how the site was used. With regard to historic sites, these uses are sometimes quite obvious, such as ranches, mines, roads, and utilities. With regard to prehistoric Native American sites, the functional categories depend on the age of the resource and common archaeological nomenclature for sites of various uses. The typological categories used specifically for this survey are described below in the results of the field survey.

Artifact and Feature Documentation

All non-site archaeological artifacts and isolated features were designated as isolated occurrences. By definition, an object or feature is considered archaeological when it is more than 50 years old. Many artifacts of glass, metal, and synthetic material lack diagnostic characteristics to indicate their age. Because these are abundant in areas around modern settlements and in areas frequently visited for hunting, camping, and other forms of recreation, it is impractical to map and record all glass, metal, and synthetic materials. These industrial-age artifacts were identified as isolated archaeological resources only when clear diagnostic evidence established that they were over 50 years old. The location of each isolated archaeological find was recorded with a hand-held GPS unit. To the extent possible, the isolated finds were categorized into conventional typological categories and attributed to an archaeological culture and chronological period.

Data were consistently collected, regardless of whether an artifact or feature was associated with a site or considered an isolate. Artifacts were described and classified into rudimentary typological categories based on material, form, and manner of decoration. Artifacts representative of each type were drawn or photographed. Stone artifacts were initially assigned to one of three categories: flaked stone, ground stone, or fire-affected. Flaked stone artifacts were further categorized as either debitage or tools. The lithic raw material type was recorded for all observed pieces of flaked and ground stone, if possible. Stone tools were classified to basic quasi-functional-descriptive categories such as biface, projectile point, flaked tool, pebble tool, core/tool, mano, metate, or indeterminate. Additional comments were recorded about whether the tool may have been a scraper, denticulate, handstone, mano, slab metate, basin metate,

or trough metate. Glass, metal, and other industrial-made artifacts were similarly classified. Key diagnostic traits were recorded and any diagnostic markings or embellishments were photographed, sketched, or transcribed.

Archaeological features were documented in a consistent manner whether or not they were associated with a site or occurred as isolates. Features were classified into descriptive and quasi-functional categories. They were also described and measured. Descriptions included notes on the form, composition, material, and construction technique. Most features were drawn and photographed except when vegetation or other impediments prevented archaeologists from doing so.

TASK 3. FINAL REPORT

This final report of the site files and records search and field investigation has been prepared in accordance with the reporting requirements set out in the Federal Code of Regulations (36 CFR 800.11 *et seq.*) and in conformance with the Arizona State Historic Preservation Office (SHPO) reporting standards.

RESULTS

SITE FILES SEARCH

Background research identified 26 previously completed projects ***(Table 1, Figures 4a, 4b, and 4c)*** and 23 previously recorded archaeological sites ***(Table 2, Figures 4a, 4b, and 4c)*** within 1 mi (1.6 km) of the APE. Of the 23 previously recorded sites, the boundaries of seven sites overlap the APE ***(see Table 2 [in bold])***.

Table 1. Previously completed archaeological projects within 1 mi (1.6 km) of the APE

	ASM Project No.	Project Name	Date Completed	Reference	Company
	1980-210.ASM [1]	Rancho del Sol Lindo	06/04/80	Not recorded	ASMAD
	1980-242.ASM [2]	Cultural Resources of the Proposed Tucson Electric Tortolita-South Utility Corridor and Alt. Routes	04/04/80	Wilson (1980)	Not recorded
	1983-153.ASM [3]	State Land Survey	11/02/83	Not recorded	ASMAD
1	**1985-167.ASM** [4]	**Western Area Power Administration's Saguaro to Tucson Reconductoring**	**11/1984**	**Not recorded**	**ACS**
2	**1988-85.ASM** [5]	**Avra Valley Road Survey**	**09/10/88**	**Not recorded**	**CES**
3	**1992-250.ASM** [6]	**Three Points to Marana Survey**	**Not recorded**	**Not recorded**	**SWCASCT**
4	**1995-356.ASM** [7]	**JH Madsen 1 #208-20-0720**	**Not recorded**	**Not recorded**	**ASMAD**

Table 1. Previously completed archaeological projects within 1 mi (1.6 km) of the APE

	ASM Project No.	Project Name	Date Completed	Reference	Company
	1996-239.ASM [8]	AEPC On-Call Avra Valley	04/25/96	Not recorded	SWCASCT
5	**1997-135.ASM** [9]	**Avra Valley Tie Line Survey**	**01/17/97**	**Not recorded**	**SWCASCT**
6	**1998-494.ASM** [10]	**Marana Circuit Survey**	**12/02/98**	**Not recorded**	**SWCASCT**
	1999-48.ASM [11]	Cultural Resources Inventory of the Taylor Airstrip, Marana, Arizona	02/20/99	Not recorded	DAMES
7	**2000-621.ASM** [12]	**Marana Circ. 15 & 16 Rebuild and Avra Valley Tie Line Project**	**03/14/00**	**Not recorded**	**SWCASCT**
	2001-137.ASM [13]	Anway Road Survey	04/26/01	Not recorded	TIERRAARCH
	2001-202.ASM [14]	Avra Valley and Anway	04/27/01	Not recorded	TIERRAARCH
8	**2001-293.ASM** [15]	**Silverbell and Trico Survey**	**05/23/01**	**Not recorded**	**TIERRAARCH**
	2001-295.ASM [16]	River Road, Cloud Road, Mountain Shadows Road, and Trico-Marana Road Survey	10/09/01	Not recorded	OPAC
9	**2001-582.ASM** [17]	**Qwest Marana**	**07/10/01**	**Not recorded**	**EEC**
10	**2002-345.ASM** [18]	**TRICO Avra Sub Tie Line Circuit 83 and 84 Site Avoidance Assessment**	**08/19/02**	**Hesse (2002)**	**SWCATUS**
11	**2003-43.ASM** [19]	**Avra Valley Fire District Survey**	**09/24/02**	**Not recorded**	**DESARC**
12	**2003-544.ASM** [20]	**Qwest Survey along Trico Road**	**05/03/02**	**Not recorded**	**STATRES**
	2003-1420.ASM [21]	Anway-Moore Road Survey	11/10/03	Not recorded	DESARC
13	**2004-626.ASM** [22]	**El Paso to Los Angeles Fiber Optic Cable Project: EPNG Ironwood and Farrell-Murphy Reroutes**	**12/07/00**	**Hesse (2001)**	**SWCATUS**
14	**2006-58.ASM** [23]	**Sandario Substation and Transmission Line Project**	**03/10/04**	**Bassett (2004)**	**TRANSCON**
	BLM-16-46 [24]	Cultural Resources of the Proposed Tucson Electric Tortolita-South Utility Corridor and Alt Routes	02/14/81	Not recorded	BLMPFO
	SHPO-2002-504 [25]	Cultural Resources Inventory of a 71.2-Acre Parcel on State Trust Land in the Central Avra Valley	08/16/02	Not recorded	SHPO
	SHPO-2003-0826 [26]	A Cultural Resources Assessment Survey of Approximately 1.86 Miles along Avra Valley Road	04/27/01	Not recorded	SHPO

Note: Projects located in the APE are in bold.

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Table 2. Previously identified archaeological sites within 1 mi (1.6 km) of the APE

	Site	Cultural Affiliation	Reference	Date Recorded
	AZ AA:11:2(ASM) [1]	Hohokam	Not recorded	08/25/87
1	**AZ AA:11:12(ASM) Hog Farm Ballcourt Site** [2]	**Hohokam and Euroamerican**	**Downum et al. (1993)**	**11/13/84**
	AZ AA:11:34(ASM) [3]	Hohokam	Not recorded	11/05/84
	AZ AA:11:38(ASM) [4]	Hohokam	Not recorded	12/18/86
	AZ AA:11:47(ASM) [5]	Hohokam	Not recorded	06/09/85
	AZ AA:11:54(ASM) [6]	Hohokam	Not recorded	02/11/86
	AZ AA:11:55(ASM) [7]	Hohokam	Not recorded	02/11/86
	AZ AA:11:56(ASM) [8]	Hohokam	Not recorded	02/11/86
	AZ AA:11:60(ASM) [9]	Native Archaeological Culture	Not recorded	08/29/86
	AZ AA:11:61(ASM) [10]	Native Archaeological Culture	Not recorded	08/29/86
	AZ AA:11:63(ASM) [11]	Native Archaeological Culture	Not recorded	08/29/86
2	**AZ AA:11:107(ASM)** [12]	**Native Archaeological Culture**	**Slaughter (1992b)**	**08/20/92**
3	**AZ AA:11:108(ASM)** [13]	**Native Archaeological Culture**	**Slaughter (1992b)**	**08/20/92**
4	**AZ AA:11:109(ASM)** [14]	**Euroamerican**	**Slaughter (1992b)**	**08/20/92**
	AZ AA:11:112(ASM) [15]	Hohokam	Not recorded	11/22/96
	AZ AA:11:113(ASM) [16]	Hohokam	Not recorded	11/26/96
	AZ AA:11:114(ASM) [17]	Unknown	Shumaker (1997)	01/14/97
	AZ AA:11:115(ASM) [18]	Unknown	Shumaker (1997)	01/14/97
	AZ AA:11:116(ASM) [19]	Native Archaeological Culture	Shumaker (1997)	01/14/97
5	**AZ AA:11:131(ASM)** [20]	**Euroamerican**	**Hesse (2001)**	**12/07/00**
6	**AZ AA:11:135(ASM)** [21]	**Hohokam**	**Hesse (2001)**	**12/07/00**
	AZ AA:11:136(ASM) [22]	Hohokam	**Hesse (2001)**	12/07/00
7	**AZ BB:16:48(ASM)** [23]	**Euroamerican**	**Baker and Jones (2004)**	**05/16/01**

Note: Sites located in the APE are in bold.

HISTORICAL MAPS

GLO Maps

The Homestead Act of 1862 and three subsequent related laws—the Forest Homestead Act of 1906, the Enlarged Homestead Act of 1909, and the Stock Raising Homestead Act of 1916—put in place a framework by which American citizens could obtain public land and transfer it to private ownership (Stein 1990). The "entryman" (i.e., the person who filed the land claim) was required to carry out improvements to the land as well as reside permanently on it for a set period in order to fulfill the legal requirements of the acts. These activities to "prove up" (i.e., satisfy the legal requirements for) a homestead were confirmed by inspectors from the GLO (Stein 1990), who kept records of the land transfers ("patents") and mapped the structures, roads, and features on the landscape within the homesteads throughout the western United States, including Arizona. The GLO records are now administered by the BLM and can be a significant source of information about Historic period land use.

The GLO maps that include the present APE (T11S R10E, T12S R10E, and T13S R10E) were surveyed in the 1910s and early 1920s. Features represented near the APE include the old road from Tucson to the Silverbell Mine (Silverbell Road; located outside the APE); small farm plots around Brawley Wash; criss-crossing dirt "trails"; and several ranches scattered around the northern extent of the Avra Valley. No features were represented on the GLO maps within the APE. As mentioned above, development of the area was just beginning in the 1910s and 1920s.

Other Historical Maps

In addition to the GLO maps, WestLand archaeologists inspected the following maps, which document the growth and modernization of ranching, farming, and transportation in the northern Avra Valley.

- the 1893 map of Pima County by George Roskruge
- the 1919 Pima County Highway Department Map of Pima County
- the 1932 Pima County Highway Department Map of Pima County, including Santa Cruz County
- the 1937 General Transportation Map of Pima County prepared by the Arizona State Highway Department
- the 1959 edition of the USGS 15' Silver Bell Peak quadrangle
- the 1947 General Highway Map of Pima County prepared by the Arizona State Highway Department
- the 1945 Phoenix Sectional Chart (airplane navigation map)

Findings of the Historical Map Review

The review of the historical maps cited above resulted in the identification of several Historic period sites within the APE. These are Manville Road (AZ AA:11:238[ASM]), Avra Valley Road (AZ AA:11:131[ASM]), Avra Auxiliary Airfield No. 4 (AZ AA:11:239[ASM]), the WAPA Tucson-Saguaro 115-kV line (AZ AA:11:240[ASM]), and two El Paso Natural Gas (EPNG) pipelines (AZ AA:11:237[ASM] and AZ BB:16:48[ASM]). The sites are discussed below.

FIELD SURVEY

WestLand's field survey identified five isolated occurrences ***(Table 3)***, relocated all seven of the previously recorded archaeological sites that overlap the APE, and recorded four newly discovered sites (AZ AA:11:237[ASM], AZ AA:11:238[ASM], AZ AA:11:239[ASM]), and AZ AA:11:240[ASM]) ***(Figure 5)***. The isolated occurrences consist of four ceramic sherds (three sand-tempered plain ware sherds and one cluster of three mica-tempered plain ware sherds) and one primary basalt flake.

The 11 archaeological sites were characterized into various categories for presentation and evaluation. All sites were first identified into one of three descriptive categories: artifact scatter, feature with artifact scatter, or feature (without associated artifacts). The sites were then classified into more specific categories consistent with common archaeological nomenclature. The categories used depended on the cultural affiliation and age of the archaeological sites. The four sites affiliated with Native American cultures were classified as one of two types: settlements or resource sites. Settlements are locales of permanent occupation. This category is sometimes referred to as habitation, but habitation is considered here as an activity that can also occur at locales that are not permanent settlements, such as field houses and campsites. The two settlements identified below are further characterized as a ballcourt village and a village. Resource sites are those that were used on a limited basis to procure or process native resources from the local environment. The uses can be single events or repeated seasonal uses over an unspecified interval of time. The resource sites are also given modifiers depending on whether they are inferred to be related to the procurement or processing of resources or whether they may represent temporary campsites associated with resource-procurement forays. The seven Euroamerican sites were classified into more familiar categories such as road, trash dump, gas pipeline, electrical transmission line, and military airfield.

Table 3. Isolated artifacts discovered during the field survey

Isolated Artifact	Artifact Type	Description
IO 1	Ceramic	1 small mica-tempered plain ware sherd
IO 2	Ceramic	1 small sand-tempered plain ware sherd with polished interior and exterior
IO 3	Ceramic	1 sand-tempered plain ware sherd with polished exterior
IO 4	Flaked stone	1 primary basalt flake
IO 5	Ceramic	3 mica-tempered plain ware sherds

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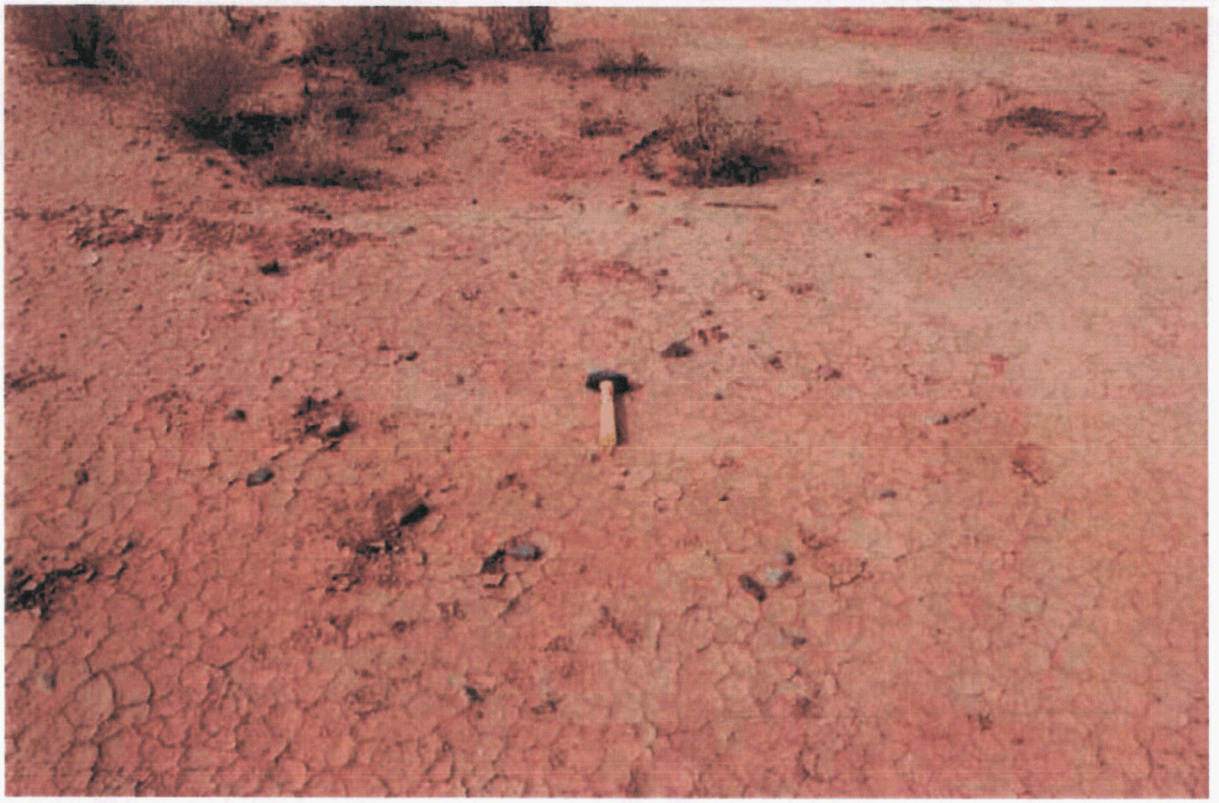

Photo 2. Close-up of possible thermal feature at Site AZ AA:11:108(ASM), with mallet for scale

Interpretation: WestLand's observations were limited to the project right-of-way, where archaeologists identified only two flaked stone artifacts. However, the materials observed by WestLand are consistent with Hesse's (2002) previous assessment of the site. Based on the presence of plain ware ceramics, AZ AA:11:108(ASM) is interpreted as a resource-processing site dating to the Formative period. The probability of intact subsurface deposits within the right-of-way is low.

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in design with those found in Features 2 and 3. Church-key-opened beer cans present in Feature 3 are also not inconsistent with a mid- to late 1950s date. The map research supports this date as well.

Features: WestLand's inventory identified three discrete trash dumps (Features 1, 2, and 3) ***(Table 4)*** within the current project right-of-way. Feature 1 was the largest dump and consisted mostly of bottle glass and metal cans ***(Photo 3)***. Fragments of lumber and concrete building materials were also present in the feature. Feature 2 consisted mostly of clear and green bottle glass, with a few scattered cans. Feature 3 was the smallest dump and consisted mostly of metal food cans. During the original recording of the site (Slaughter 1992b), only one trash mound was identified.

Table 4. Features identified at AZ AA:11:109(ASM)

Feature	Description	Dimensions (ft)	Dimensions (m)
1	Trash dump	98 × 39	30 × 12
2	Trash dump	49 × 49	15 × 15
3	Trash dump	39 × 20	12 × 6

Photo 3. Close-up of Feature 1, Site AZ AA:11:109(ASM), looking southwest

Site Condition: Within the right-of-way of the current project, the site is in good condition. Sheetwash across the modern ground surface appears to be spreading some of the artifacts within the discrete dumps,

but the overall effect of this disturbance is light. Modern use of the site by the parcel's current occupant has obscured the boundary of the site as originally recorded. Although falling outside the current project right-of-way, several pieces of large now-defunct farm equipment are located within the boundary of the site as originally recorded.

Interpretation: The artifacts at AZ AA:11:109(ASM) are consistent with those of a 1950s trash dump. The types of artifacts indicate that this trash originated from domestic activities, possibly at a nearby farm. The 1959 (surveyed in 1958) USGS 15' Silver Bell Peak topographic quadrangle shows a series of three buildings located east of the current APE. The map also shows irrigation canals leading north from a well to several large agricultural fields. Farm laborer camps dotted the Marana area during the Historic period, and the remnants of these camps can still be seen throughout the region. Thus, the trash discovered at AZ AA:11:109(ASM) is probably related to Late Historic period farming. The probability of additional subsurface deposits is considered likely.

AZ AA:11:131(ASM)—Avra Valley Road

WestLand Field Site Number: WRI 17

Cultural Affiliation: Euroamerican

Age: Historic period (A.D. 1500–1950); Late Historic (post-A.D. 1950)

Site Type: Feature, road

Site Size: 148 × 49 ft (45 × 15 m) (within APE boundary)

Elevation: 1,998 ft (608 m) amsl

National Register of Historic Places Eligibility Recommendation: Not eligible

Site Description: Avra Valley Road (Site AZ AA:11:131[ASM]) is a paved, crowned, and ditched two-lane roadway ***(Figure 10)***. The current APE crosses Avra Valley Road just west of its intersection with North Trico Road.

Site Setting: The portion of Site AZ AA:11:131(ASM) within the right-of-way is located on a flat alluvial plain in the northern portion of the APE.

Material Culture: No material culture was identified within the APE.

Features: The only feature recorded at this site is the road itself. Within the current project right-of-way, the feature possesses soft dirt shoulders that slope away from the paved surface into small drainage ditches.

Site Condition: The site is still in use as a fairly busy thoroughfare between modern settlements in Avra Valley to the west and Tucson and Interstate-10 to the east. The roadway appears to be continuously maintained and is in good condition.

Interpretation: Avra Valley Road is depicted on the 1959 USGS 15' Silver Bell Peak quadrangle, but does not appear on the 1947 USGS 15' Cortaro quadrangle or the 1947 Pima County General Highway Map, suggesting that the road was constructed between 1948 and 1959. SWCA maintained that there was no evidence, material, or documentation to indicate that Avra Valley Road was greater than 50 years old as of 2001 (Hesse 2001), and documentary research performed in conjunction with the current project supports this conclusion. However, in the intervening years between SWCA's research and the current 2009 project, Avra Valley Road has achieved an age greater than 50 years and is therefore a historic property.

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Figure 10. Map of AZ AA:11:131(ASM)

AZ AA:11:238(ASM)—Manville Road

WestLand Field Site Number: WRI 18

Cultural Affiliation: Euroamerican

Age: Constructed between 1932 and 1937

Site Type: Feature, road

Site Size: Extends from Sandario Road west to Anway Road; approximately 7 mi (11 km) long

Elevation: Approximately 1,900 ft (579 m) amsl

National Register of Historic Places Eligibility Recommendation: Not eligible

Site Description: This site is Manville Road (AZ AA:11:238[ASM]). The road was built sometime between 1932 and 1937. The run lies east/west and connects Sandario Road on the east to Anway Road on the west. It is part of a network of roads that connected historic ranches and farms in the Avra Valley.

Site Setting: The road traverses Avra Valley from Sandario Road west to Anway Road. Surrounding vegetation consists of scattered mesquites, grasses, and cultivated fields.

Material Culture: None

Features: Within the current project right-of-way, AZ AA:11:238(ASM) is a paved, crowned, and ditched two-lane roadway ***(Figure 12)***. The paved roadbed is approximately 25 ft (7.6 m) wide. The road possesses soft dirt shoulders that slope away from the paved surface into small drainage ditches.

Site Condition: The roadway is maintained and is in good condition.

Interpretation: According to historical maps, Manville Road (AZ AA:11:238[ASM]) was built sometime between 1932 and 1937. It connects Sandario and Anway roads. Manville Road is part of a network of roads that connected historic ranches and farms in the Avra Valley area. The road is maintained and has evolved over time from a "primitive road" on the 1932 Pima County map to an "improved road" on the 1947 Pima County road map to a "light-duty road" on the 1959 USGS 15' Silver Bell Peak quadrangle.

Figure 12. Map of AZ AA:11:238(ASM)

AZ BB:16:48(ASM)—El Paso Natural Gas Line No. 1103

WestLand Field Site Number: WRI 20

Cultural Affiliation: Euroamerican

Age: Constructed in 1947 (Mangan 1977)

Site Type: Feature, natural gas pipeline

Site Size: Part of a system of gas pipelines that extends from El Paso, Texas, west to California

Elevation: Approximately 1,900 ft (579 m) amsl in the APE

National Register of Historic Places Eligibility Recommendation: Exempt

Site Description: Site AZ BB:16:48(ASM) is a segment of the historic EPNG pipeline that extends from El Paso, Texas, west to California.

Site Setting: The site is located in the southern segment of the APE; however, it is buried and therefore not visible from the modern ground surface. Surrounding vegetation consists of scattered mesquites, grasses, and cultivated fields.

Material Culture: None

Features: The pipeline is buried within the current APE ***(Figure 13)***.

Site Condition: The pipeline is continuously maintained and is in good condition.

Interpretation: The EPNG company was formed in 1928 by Houston attorney Paul Kayser (Mangan 1977). In the early 1930s, EPNG expanded to southern New Mexico, southern Arizona, and northern Sonora and in 1947 expanded to California (Mangan 1977). The project spanned 700 mi (1,127 km), and numerous compressor stations were built in order to keep the high-pressure line functioning. One such compressor station is located northwest of the APE. Site AZ BB:16:48(ASM) represents a segment of the EPNG pipeline system connecting Texas to California. The pipeline traverses Avra Valley from Tucson northeast to the Tucson compressor station in Township 12 South, Range 9 East, Section 25 and thence northeast to Interstate-8. At the Tucson compressor station, another line splits off of the main line and heads northeast, eventually connecting with the mines along the Gila River east of Florence.

Figure 13. Map of AZ BB:16:48(ASM)

AZ AA:11:237(ASM)—EPNG Line No. 1103 (Branch Line)

WestLand Field Site Number: WRI 21

Cultural Affiliation: Euroamerican

Age: Constructed between 1947 and 1959 (based on the date of construction of EPNG Line No. 1103 [Mangan 1977] and the presence of the line on the 1959 Silver Bell Peak USGS 15' quadrangle)

Site Type: Feature, natural gas pipeline

Site Size: Extends from the Marana area north approximately 50 mi (80 km) to the mines along the Gila River near Winkelman and Kearny.

Elevation: Approximately 1,900 ft (579 m) amsl in the APE

National Register of Historic Places Eligibility Recommendation: Exempt

Site Description: Site AZ AA:11:237(ASM) is a branch line of EPNG Line No. 1103 (AZ BB:16:48[ASM]).

Site Setting: The recorded portion of the line is located south of Marana in the Avra Valley. Surrounding vegetation consists of scattered mesquites, grasses, and cultivated fields.

Material Culture: None

Features: The pipeline is buried within the current APE ***(Figure 14)***.

Site Condition: The pipeline is continuously maintained and is in good condition.

Interpretation: Site AZ AA:11:237(ASM) is a branch line of EPNG Line No. 1103 (AZ BB:16:48[ASM]) that splits from the main line at the Tucson compressor station (Township 12 South, Range 9 East, Section 25) and heads northeast to the Trico compressor just south of the northern extent of the APE. From there, it first heads north-northeast through the northern Tucson Basin and then back northwest through the Tortilla Mountains to the mines along the Gila River. It is visible in its current alignment on the 1959 USGS 15' Silver Bell Peak quadrangle. WestLand was unable to find the official EPNG line number for this site, but certainly copious records exist at EPNG documenting the construction of the line and the recipients of the natural gas. The site is yet another branch line of the historic EPNG lines (Nos. 1007 and 1103) that first brought this important fuel to Arizona in the 1930s and 1940s (Mangan 1977).

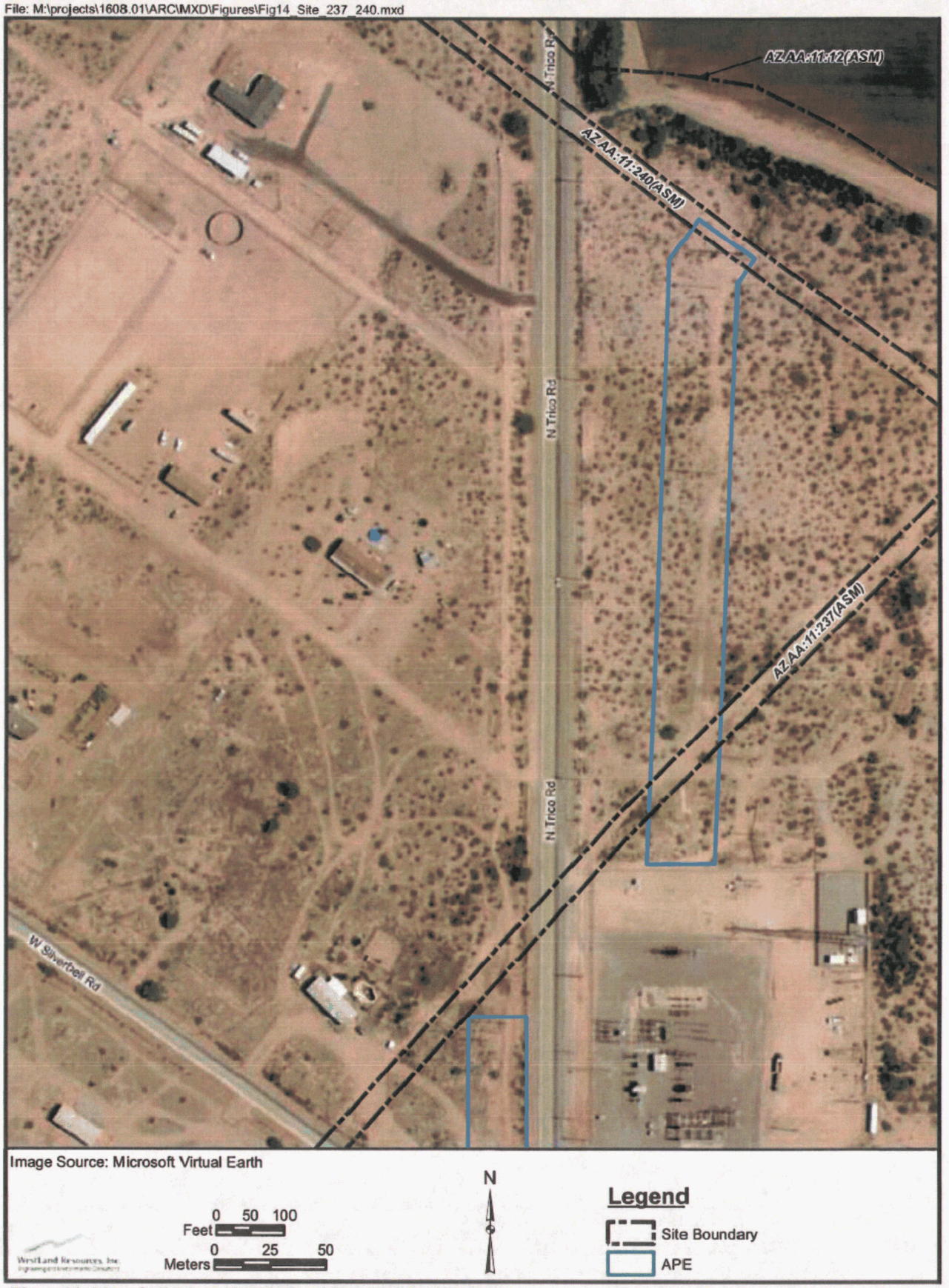


Figure 14. Map of AZ AA:11:237(ASM) and AZ AA:11:240(ASM)

AZ AA:11:239(ASM)—Avra Auxiliary Airfield No. 4

WestLand Field Site Number: WRI 19

Cultural Affiliation: Euroamerican

Age: Constructed in 1942 (Sonnichsen 1987)

Site Type: Feature, military airfield

Site Size: 3,000-ft^2 (279-m^2) landing mat; 575 ac (233 ha)

Elevation: Approximately 1,900 ft (579 m) amsl

National Register of Historic Places Eligibility Recommendation: Eligible

Site Description: Site AZ AA:11:239(ASM) is the remnants of an abandoned military airfield that was established in 1942 and functioned as a training field until the end of WWII (Reinhold 1982:198; Sonnichsen 1987:272). The airfield was dismantled in 1945 and, today, has become overgrown with vegetation and is difficult to discern. The current project passes through a portion of the airfield ***(Figure 15)***. Only the portion of the site within the APE was evaluated.

Site Setting: Site AZ AA:11:239(ASM) is located in Avra Valley along Trico Road. Surrounding vegetation consists of scattered mesquites, grasses, and cultivated fields.

Material Culture: None within the current APE.

Features: WestLand archaeologists identified six features associated with the site. These were identified from an analysis of aerial photographs and the on-the-ground survey. Feature 1 is a dirt landing mat; Feature 2 is a shallow ditch surrounding the landing mat; Feature 3 is a low berm surrounding the airfield; Feature 4 is a gravel road; Feature 5 is a clearing that appears to contain several structural foundations; and Feature 6 is a concentration of concrete fragments and window glass. Only Features 1 through 4 and 6 are located within the APE. Additional features not described here are probably present outside the APE.

Feature 1, the square landing mat, was scraped out of the desert and is differentiated from the surrounding landscape by its level surface and slightly darker color. This darker color resulted from the oil or tar sprayed onto the field in the early1940s to keep the dust down (a "macadam" surface).

Feature 2, the shallow ditch, follows the perimeter of the oil-penetrated dirt landing mat and measures approximately 30 ft (9 m) wide and 1 ft (0.3 m) deep within the APE. Its primary function appears to have been water control. The feature is thickly overgrown with vegetation.

Feature 3, a low berm, is topped by an access road and marks the outer boundary of the airfield. The berm is 30 ft (9 m) wide and 3 ft (0.9 m) tall within the APE. The primary function of this feature was probably erosion control. A 1958 aerial of the airfield (Avra Auxiliary No. 4 2009) depicts Features 1 through 3, and we assume that they are original WWII-era features.

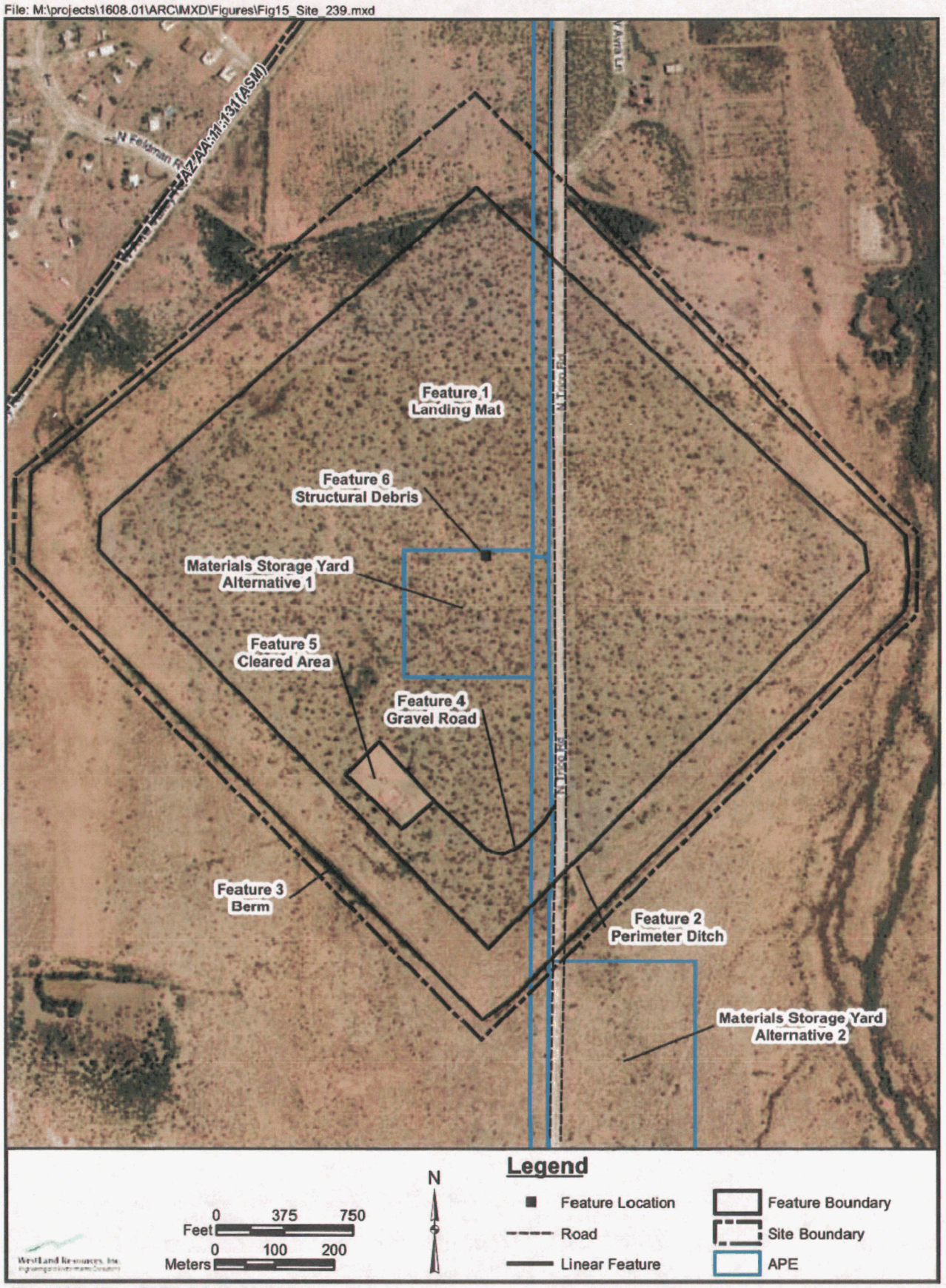


Figure 15. Map of AZ AA:11:239(ASM)

Two features—Features 4 and 5—are not visible on the 1958 aerial (and therefore likely not historic) and appear to be associated with the site during the 1960s when it was turned into a private airfield (Avra Auxiliary No. 4 2009). Feature 4 is composed of loose gravel and is 15 ft (4.6 m) wide. It runs west from Trico Road for approximately 300 ft (91 m) where it ends at Feature 5. Feature 5 was identified from the aerial photo and is barely visible from the right-of-way. One large structural foundation is visible within Feature 5 that may be the remnants of a hangar or other feature associated with the site's use in the 1960s.

Feature 6 is located near the center of the landing mat within the proposed Materials Yard Alternative 1. It consists of a 33-ft- (10-m-) diameter scatter of approximately six concrete fragments and window glass. The concrete fragments contain rebar and appear to be the remains of a structural foundation or wall. The concrete fragments measure from 1 to 2 ft (0.3 to 0.6 m) in diameter and have clearly been moved from their original location. Feature 6 could be the remains of a WWII-era structure that was removed at the end of the war in 1945 or it could be associated with modern use of the airfield.

Site Condition: A full assessment of Site AZ AA:11:239(ASM) is beyond the scope of this survey because WestLand archaeologists were confined to the right-of-way and Materials Yard Alternative 1. Many of the overall observations of the airfield are derived from what is visible on aerial photographs. The former airfield is overgrown with native vegetation. All original structures were removed at the end of WWII (Reinhold 1982:198; Sonnichsen 1987:272). Trico Road was built through the site prior to 1958 as evidenced by a 1958 aerial (Avra Auxiliary No. 4 2009). The site area within the existing SWTC transmission line right-of-way west of Trico Road was disturbed during the original construction of the line in the 1960s. Disturbances associated with the use of the site as a private airfield in the 1960s are also visible in the southwest corner of the site. Agricultural fields have disturbed the northern tip of the site. Nevertheless, the majority of the landing mat appears intact.

Interpretation: According to historical maps and documentation, Site AZ AA:11:239(ASM) is the remnants of Avra Auxiliary Airfield No. 4, which was established in 1942 and functioned as a training field until the end of WWII in 1945 at which time it was dismantled (Reinhold 1982:198; Sonnichsen 1987:272). Prior to the end of WWII, the airfield contained a control tower, a crash truck shelter, a stage house, and a latrine (Avra Auxiliary No. 4 2009). The former locations of these features are unknown, but they may have been in the center of the landing mat (Hoza 2002). The square configuration of the landing mat provided pilots with six possible directions for take-off and landing and also provided space for formation take-offs and landings (Hoza 2002:ix). After 1945, the airfield was declared surplus and sold to a private owner and Pima County in the 1950s (Avra Auxiliary No. 4 2009). It continued to function as a private airfield throughout the 1960s (Avra Auxiliary No. 4 2009). The field is now abandoned and overgrown with vegetation.

The construction of the Marana Air Base and related auxiliary airfields like Avra Auxiliary Airfield No. 4 during WWII has had an enduring influence on the economic development and infrastructure of Marana, contributing to the development of road, sewer, and stormwater systems. These were installed by the US Air Force and brought modern amenities to the Marana area. In fact, the Casa Grande-Tucson Road, Trico Road, and others were paved and improved during WWII to facilitate troop and equipment transport. Avra Auxiliary Airfield No. 4 is an important piece of WWII history in the midst of the rapidly developing Marana area.

AZ AA:11:240(ASM)—WAPA Tucson-Saguaro Transmission Line

WestLand Field Site Number: WRI 22

Cultural Affiliation: Euroamerican

Age: Constructed in 1948–1949 (ACRE 2006)

Site Type: Feature, electrical transmission line

Site Size: Extends from Tucson to the Saguaro substation

Elevation: Approximately 1,900 ft (579 m) amsl

National Register of Historic Places Eligibility Recommendation: Not eligible

Site Description: Site AZ AA:11:240(ASM) is a segment of a historic transmission line system built in the late 1940s (ACRE 2006). It is part of the electrical transmission system that supplied Tucson and, later, Cochise County with electricity.

Site Setting: Site AZ AA:11:240(ASM) is located in Avra Valley along Trico Road ***(see Figure 14)***. Surrounding vegetation consists of scattered mesquites, grasses, and cultivated fields.

Material Culture: None within the current APE

Features: The historic 115-kV transmission line generally consists of single wooden poles and wooden H-frame structures (ACRE 2006). However, within the APE, the historic wooden pole structure has been replaced with a modern metal pole.

Site Condition: The line is in good condition and still in use. It has been continuously upgraded and maintained. The original wooden H-frame structures have been replaced with modern metal poles within the APE.

Site Description: Site AZ AA:11:240(ASM) represents a segment of a historic transmission line system built in the late 1940s (ACRE 2006) by the Bureau of Reclamation. It is part of the electrical transmission system that supplied Tucson and, later, Cochise County with electricity.

EVALUATION AND RECOMMENDATIONS

This section presents 1) WestLand's recommendations as to the eligibility of the sites in the APE for inclusion in the National Register of Historic Places; 2) evaluations of the potential effects of the proposed undertaking on the cultural resources identified; and 3) proposed treatments to avoid, minimize, or resolve the adverse effects to register-eligible sites.

The National Historic Preservation Act was passed in 1966 to protect cultural resources from damage caused by the actions of federal agencies. In 1982, the state of Arizona established the State Historic Preservation Act to protect cultural resources from the activities of state agencies. Both of these legislations protect those cultural resources that are deemed to have significance in national and state history and to retain recognizable integrity of their historical qualities. Significance is defined in the following statement taken from the federal regulations (36 CFR 60.4):

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and
>
> (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (b) that are associated with the lives of persons significant in our past; or
>
> (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (d) that have yielded, or may be likely to yield, information important in prehistory and history.

The National Park Service (NPS) has written guidelines to ensure the correct application of Criterion (d) in the federal compliance process, and these guidelines are also helpful in applying Criterion (d) in the state compliance process. According to NPS guidelines, the quality of potential scientific information is linked to regionally and temporally relevant research themes (or historic contexts) that are applicable to the archaeological resources under evaluation (USDI National Park Service 1990, 1997).

The criteria for determining the significance of cultural resources in Arizona state history are identical to the national criteria with the exception that it is the "quality of significance in Arizona history" (ASM n.d.:6).

A historic context is the analytic framework within which a cultural property's importance can be understood. The dimensions of time, place, and research theme converge to create the historic contexts relevant for evaluating the significance of cultural properties in a specific area. The NPS (Hardesty and Little 2000:18; National Park Service 1996) has provided a thematic framework for history and prehistory

to reflect current scholarship and to represent the full diversity of America's past. The themes and topics of the current NPS thematic framework are:

I. **Peopling Places:** The statistical study of human population, family, and the life cycle; dynamics such as growth and decline; aggregation and dispersion; migration from outside and within; community; encounters, conflict, and colonization; abandonment; ethnicity, ethnic homelands and cultural identity; and quality of life including health, nutrition, and disease.

II. **Creating Social Institutions and Movements:** Study of the manners by which people develop groups or organizations within a society and how these are organized including identification of the groups, physical manifestations of the social structures within an individual site and across the landscape, recreational activities, social ranking at the level of the individual and groups, alliance and interaction, effect of cosmology (religion) on the organizational structures, mortuary practice, and symbolic communication.

III. **Expressing Cultural Values:** Study of educational intellectual currents; visual and performing arts; literature, mass media, architecture, landscape architecture, and urban design; and popular and traditional cultures.

IV. **Shaping the Political Landscape:** Study of the development and impact of social institutions such as governmental institutions; political ideas, cultures, and theories; military institutions and activities as well as parties, protests, and movements.

V. **Developing the American Economy:** Study of how society transfers services and materials between individuals and communities, how resources and goods are extracted, produced, distributed, and consumed among the society; transportation and communication including trends related to travel and the transference of information within a society and between societies such as the information that is being conveyed, the mechanisms for transferring the information, and the nature of the communication; workers and work culture; labor organizations and protests; exchange and trade; governmental policies and practices; and economic theory.

VI. **Expanding Science and Technology:** Study of experimentation and invention; technological applications; scientific thought and theory, and its effects on lifestyle and health.

VII. **Transforming the Environment:** Generally defined as the study of human techniques and processes of manipulating the natural environment and its resources such as water and soil control, resource management, modifications of the natural landscape, resource identification and procurement, food preservation and storage, architectural design and construction, and production of tools and implements. Also includes adverse consequences and stresses on the environment and protecting and preserving the environment.

VIII. Changing Role of the United States in the World Community: Study of international relations; commerce; expansionism and imperialism; and immigration and emigration policies.

The specific historic contexts necessary for evaluating the quality of significance of the cultural properties discovered in the current APE are created by considering the thematic framework presented above with regard to the prehistory and history of the APE presented earlier in the report.

The following discussions present WestLand's arguments as to whether the archaeological resources recorded in the APE possess the necessary qualities of significance and integrity to be considered for inclusion in the National Register of Historic Places as stated in the federal regulations (36 CFR 60.4). The management recommendations for the archaeological sites previously described are summarized in ***Table 5***. All isolated artifacts and features are considered ineligible for inclusion in the National Register of Historic Places. For this reason, the evaluations of, and recommendations for, these two categories of resources are not included in the management summary table.

NATIVE AMERICAN SETTLEMENTS: AZ AA:11:12(ASM)—HOG FARM BALLCOURT SITE—AND AZ AA:11:107(ASM)

Historic Context

Prehistoric Hohokam occupation of the Avra Valley during the Middle and Late Formative periods (A.D. 750–1450)

Eligibility

Formative period Native American settlements are locations on the landscape that were permanently occupied for some period of time. These settlements are the places where Arizona's past residents spent most of their time, and the features and artifacts left behind provide the most detailed and comprehensive evidence of these ancient peoples and their lifeways. Consequently, findings from such sites can address a variety of regionally specific research topics that relate to the NPS research themes of 1) peopling places; 2) creating social institutions and movements; 3) expressing cultural values; 4) shaping the political landscape; 5) developing the American economy; 6) expanding science and technology; and 7) transforming the environment.

AZ AA:11:12(ASM), Hog Farm Ballcourt Site: The SHPO determined AZ AA:11:12(ASM) to be eligible for inclusion in the National Register of Historic Places under Criterion (d) on 11/27/2001, 11/20/2002, and 12/08/2003. WestLand's field survey indicates that since 2003, nothing has occurred to nullify AZ AA:11:12(ASM)'s register eligibility. Despite disturbances to the portion of the site in the present APE, WestLand recommends that there is the potential for subsurface cultural deposits and features in the present APE that may be adversely affected by the present undertaking.

Table 5. Summary of management recommendations

ASM Site Number	Location	Land Status	Site Type	Age and Cultural Affiliation	Register Eligibility Recommendation	SHPO Concurrence	Recommended Treatment
AZ AA:11:12 Hog Farm Ballcourt Site	T11S, R10E, S16, 21, 22, 26, 27	Private land	Settlement (ballcourt village)	Formative Native American (Hohokam), Historic Euroamerican	Recommended eligible	Determined eligible by SHPO on 12/08/2003	Avoidance or the preparation of a monitoring and discovery plan
AZ AA:11:107	T13S, R10E, S2, 3	Private land	Settlement (village)	Archaic (?), Formative, and Historic Native American	Recommended eligible	Determined eligible by SHPO on 12/03/2002	Avoidance or the preparation of a monitoring and discovery plan
AZ AA:11:108	T13S, R10E, S2	Private land	Resource (processing)	Formative Native American	Recommended eligible	Determined eligible by SHPO on 12/03/2002	Avoidance or the preparation of a monitoring and discovery plan
AZ AA:11:109	T12S, R10E, S26, 27	Arizona state lands; private land	Trash dump	Historic: Euroamerican	Recommended eligible	No	Avoidance or the preparation of a monitoring and discovery plan
AZ AA:11:131 Avra Valley Road	T12S, R10E, S15	Private land	Road	Historic: Euroamerican	Recommended not eligible	No	None
AZ AA:11:135	T11S, R10E, S26, 27, 34, 35	Arizona state lands; private land	Resource (campsite)	Prehistoric (Formative period): Native American	Recommended eligible	No	Avoidance or the preparation of a monitoring and discovery plan
AZ AA:11:238 Manville Road	T13S, R10E, S14, 15	Pima County	Road	Historic: Euroamerican	Recommended not eligible	No	None
AZ BB:16:48 EPNG Line No. 1103	T13S, R10E, S10, 11	Private	Natural gas line	Historic: Euroamerican	Exempt from Section 106 review (ACHP 2002)	NA	None
AZ AA:11:237 EPNG Line No. 1103 (branch line)	T11S, R10E, S23, 27	Private	Natural gas line	Historic: Euroamerican	Exempt from Section 106 review (ACHP 2002)	NA	None
AZ AA:11:239 Avra Auxiliary Airfield No. 4	T12S R10E, portion of S14, 15, 22, 23	Private and BLM	Military airfield	Historic: Euroamerican	Recommended eligible	No	Avoidance or the preparation of a monitoring and discovery plan
AZ AA:11:240 WAPA Tucson-Saguaro line	T11S, R10E, S26	Private	Electrical transmission line	Historic: Euroamerican	Recommended not eligible	No	None

AZ AA:11:107(ASM): The SHPO determined AZ AA:11:107(ASM) to be eligible for inclusion in the National Register of Historic Places under Criterion (d) on 12/03/2002. WestLand's field survey indicates that nothing has occurred since 2002 to nullify AZ AA:11:107(ASM)'s register eligibility. WestLand recommends that there is the potential for subsurface cultural deposits and features in the present APE that may be adversely affected by the present undertaking.

Assessment of Effect

The SWTC undertaking involves replacing existing wooden structures with either concrete or self-weathering steel monopoles. Each pole site requires an area of approximately 50 by 50 ft (2,500 ft^2) (15 by 15 m [225 m^2]) for construction. Construction activities will focus on auguring holes that are 5 ft (1.5 m) in diameter and will vary from 10 to 12 ft (3 to 3.7 m) deep. The remainder of the area will be brushed so vehicles and equipment can access the augur location. WestLand recommends a determination of adverse effect because the current undertaking has the potential to adversely affect these register-eligible sites through ground-disturbing activities. Although construction and maintenance of the existing utilities in the APE have disturbed the archaeological deposits, additional subsurface archaeological features and deposits may still be present. Construction activities may disturb cultural features as well as alter the associations among the features and the material culture.

Recommended Treatment

WestLand recommends that SWTC avoid these sites. If avoidance is not possible, then WestLand recommends that SWTC take actions to minimize or resolve the adverse effects to the historic properties. Given the nature of the proposed construction, WestLand recommends archaeological monitoring as the most appropriate treatment. WestLand recommends that SWTC retain a qualified archaeological consultant to prepare a monitoring and discovery plan that specifies the monitoring activities and the appropriate actions to take in the event that archaeological resources are discovered during the construction activities.

RESOURCE SITES: AZ AA:11:108(ASM) AND AZ AA:11:135(ASM)

Historic Context

Prehistoric Native American settlement patterns and subsistence practices in the Avra Valley during the Formative (A.D. 1–1450) period

Eligibility

The prehistoric Native American subsistence economy always relied on the procurement, processing, and consumption of native plant and animal resources. Resource sites are an integral part of documenting and understanding prehistoric Native American subsistence and settlement strategies. The role of resource sites within the regional settlement strategies varies over time with regard to the nature of the subsistence economy and the strategies practiced. Most Formative period cultures of central and southern Arizona

implemented a subsistence economy that was focused on agriculture but still incorporated a wide variety of native plant and animal foods. The permanent settlements became the logistical focal point of the settlement strategies, and most resources were transported to the settlements for final preparation, storage, and consumption. Regardless of the hierarchical position of resource sites among the settlement strategies and subsistence adaptations of hunters, hunters-and-gatherers, and farmers, resource-procurement and processing sites are significant because they possess data and information relevant to understanding the land use strategies, targeted resources, and technologies for procuring and producing the resources. Data and information from resource sites can address a variety of regionally specific research topics that relate to the NPS research themes of 1) peopling places; 5) developing the American economy; 6) expanding science and technology; and 7) transforming the environment.

AZ AA:11:108(ASM): The SHPO determined AZ AA:11:108(ASM) to be eligible for inclusion in the National Register of Historic Places under Criterion (d) on 12/03/2002. WestLand's observations during the field survey indicate nothing has occurred to nullify the site's register eligibility since 2002. WestLand recommends that the portion of AZ AA:11:108(ASM) in the current APE has the potential to yield information relevant to the scientific understanding of Formative period resource-procurement and processing strategies and how these relate to the larger subsistence economy and settlement adaptations in the Avra Valley.

AZ AA:11:135(ASM): WestLand asserts that AZ AA:11:135(ASM) retains integrity of location, design, setting, materials, and association and is highly likely to contribute fundamental data to our understanding of the indigenous culture of the region during the Formative period. WestLand recommends the site as eligible for inclusion in the National Register of Historic Places under Criterion (d) for its potential to yield information on the prehistoric Native American culture in the Avra Valley during the Formative period (A.D. 1–1450).

Assessment of Effect

The SWTC undertaking involves replacing existing wooden structures with either concrete or self-weathering steel monopoles. Each pole site requires an area of approximately 50 by 50 ft (2,500 ft^2) (15 by 15 m [225 m^2]) for construction. Construction activities will focus on auguring holes that are 5 ft (1.5 m) in diameter and will vary from 10 to 12 ft (3 to 3.7 m) deep. The remainder of the area will be brushed so vehicles and equipment can access the augur location. Although the portion of the site within the current APE has been disturbed by utilities, intact subsurface archaeological features and deposits may still be present. The proposed undertaking may disturb cultural features as well as associations among and between the material culture. Thus, WestLand recommends a determination of adverse effect for these archaeological sites.

Recommended Treatment

WestLand recommends that SWTC avoid these sites. If avoidance is not possible, then WestLand recommends that SWTC take actions to minimize or resolve the adverse effects to the historic properties. Given the nature of the proposed construction, WestLand recommends archaeological monitoring as the most appropriate treatment. WestLand recommends that SWTC retain a qualified archaeological

consultant to prepare a monitoring and discovery plan that specifies the monitoring activities and the appropriate actions to take in the event that archaeological resources are discovered during the construction activities.

TRASH DUMP: AZ AA:11:109(ASM)

Historic Context

Rural Euroamerican lifeways in the Avra Valley during the Late Historic period (ca. 1950s)

Eligibility

Site AZ AA:11:109(ASM) has been identified as a scatter of domestic refuse dating to the 1950s. The scatter includes several more-or-less discrete waste piles. According to a context statement produced by the SHPO Advisory Committee on Historical Archaeology (Sullivan and Griffith 2004:34, 35), a waste pile cannot be considered eligible for inclusion in either the State or National Register of Historic Places if the source property or context of the feature cannot be determined. WestLand asserts that this does not apply in this case, even though the WestLand survey was not able to pinpoint the exact source of the refuse, because the inventory was restricted to the limits of the APE and the source of the refuse may exist outside the current APE. The 1959 (surveyed in 1958) USGS 15' Silver Bell Peak topographic quadrangle shows a series of three buildings and a well just west of AZ AA:11:109(ASM). This may be the source for the domestic refuse that characterizes the site. The 1959 (surveyed in 1958) USGS 15' Silver Bell Peak topographic quadrangle also shows irrigation canals leading north from the well to several large fields. These features clearly represent farm features dating to the period between 1947 and 1959 (based on the examined maps listed in the *Historical Maps* section above). GLO land records indicate that Township 12 South, Range 10 East, Section 27 was acquired by the State of Arizona in 1950; however, no private individuals ever patented the location of the farm features represented on the 1959 map. Therefore, it is possible that the land was leased to a local farmer in the 1950s by the State. The buildings may have been occupied by the lessee or may have served as farm laborer "barracks" to house people during harvest time. Farm laborer camps dotted the Marana area during the Historic period, and the remnants of these camps are present throughout the region. The trash found at AZ AA:11:109(ASM) is almost certainly domestic trash that originated at the historic buildings east of the site. Unfortunately, WestLand archaeologists were not able to investigate the former location of the buildings and irrigation infrastructure due to land access limitations, and confirmation could not be made that the trash radiates from these features. However, the trash is consistent with that of a 1950s farm.

The domestic refuse has the potential to contribute fundamental data to our understanding of rural communities in the Avra Valley and Marana during the Late Historic period. Although the materials cannot presently be linked to a specific farm dwelling, the refuse nonetheless provides the opportunity to study rural farmers' access to goods and patterns of consumption. The information available in the refuse would address regionally specific research topics that would conform to the following NPS research themes: 1) peopling places; 2) creating social institutions and movement; 3) expressing cultural values; 5) developing the American economy; and 7) transforming the environment.

AZ AA:11:109(ASM): WestLand recommends that AZ AA:11:109(ASM) is eligible for inclusion in the National Register of Historic Places under Criterion (d) for its potential to yield information about rural Euroamerican communities in the Avra Valley during the Late Historic period (ca. 1950s).

Assessment of Effect

The SWTC undertaking involves replacing existing wooden structures with either concrete or self-weathering steel monopoles. Each pole site requires an area of approximately 50 by 50 ft (2,500 ft^2) (15 by 15 m [225 m^2]) for construction. Construction activities will focus on auguring holes that are 5 ft (1.5 m) in diameter and will vary from 10 to 12 ft (3 to 3.7 m) deep. The remainder of the area will be brushed so vehicles and equipment can access the augur location. Although construction and maintenance of the existing utilities in the APE have disturbed the archaeological deposits, additional subsurface archaeological features and deposits may still be present. Construction activities may disturb cultural features as well as alter the associations among the features and the material culture. Thus, WestLand recommends a determination of adverse effect for this archaeological site.

Recommended Treatment

WestLand recommends that SWTC avoid this site. If avoidance is not possible, then WestLand recommends that SWTC take actions to minimize or resolve the adverse effects to the historic property. Given the nature of the proposed construction, WestLand recommends archaeological monitoring as the most appropriate treatment. WestLand recommends that SWTC retain a qualified archaeological consultant to prepare a monitoring and discovery plan that specifies the monitoring activities and the appropriate actions to take in the advent that archaeological resources are discovered during the construction activities.

ROADS: AZ AA:11:131(ASM) AND AZ AA:11:238(ASM)

Historic Context

Euroamerican transportation in the Avra Valley during the Late Historic (ca. 1950) period

Eligibility

Roads have played a fundamental part in shaping Arizona's history and can often yield important data relevant to our understanding of historic exchange, trade, commerce, technology, engineering, and construction. They provide information and data for addressing regionally specific research topics that are related to the NPS research themes of 1) peopling places; 6) expanding science and technology; and 7) transforming the environment. Nonetheless, roads are among the most difficult of cultural resources to identify, preserve, and protect (Stein 1994:1). Simply stated, some roads are significant and others are not. Roads became a common feature on the landscape with the increased use of horse-drawn wagons and eventually automobiles to transport people and goods across the landscape. Roads are considered in two categories. The first category includes the roads that define the structure of the transportation networks.

These roads provide transportation between villages, towns, and cities, access specific points of interest, or provide a vital link between rural communities and the resources available in the villages, towns, and cities. The second category of roads includes those that provide access to remote areas of the landscape either for recreation, to access remote ranching or mining features, or some other specific location. As a general rule, roads that establish the primary structure of the transportation networks are argued to be significant to research themes of transportation and commerce, while roads in the second category that crisscross the landscape are considered insignificant.

AZ AA:11:131(ASM)—Avra Valley Road: WestLand recommends that AZ AA:11:131(ASM) is not eligible for inclusion in the National Register of Historic Places because the road lacks integrity. Avra Valley Road is historically one of the main arteries of transportation and commerce in the Avra Valley. The construction of Avra Valley Road during the 1950s is representative of the modernization of Marana. The road lacks integrity of feeling, design, and workmanship because continued use and maintenance into the recent era have irrevocably altered the historical qualities of this road.

AZ AA:11:238(ASM)—Manville Road: WestLand recommends that AZ AA:11:238(ASM) is not eligible for inclusion in the National Register of Historic Places because the road lacks integrity. The construction of Manville Road during the 1930s is representative of the expansion of agriculture in this portion of the Avra Valley. Continued use and maintenance of the road into the recent era have irrevocably altered the road's character as a rural road in Arizona from the 1930s to the 1950s.

Effect of Proposed Undertaking

None

Recommended Treatment

None

NATURAL GAS LINES: AZ BB:16:48(ASM)—EL PASO NATURAL GAS LINE NO. 1103—AND AZ AA:11:237(ASM)—EL PASO NATURAL GAS LINE NO. 1103 (BRANCH LINE)

Historic Context

Expansion of natural gas service to Arizona and California during the Late Historic (ca. late 1940s) period

Eligibility

The construction of EPNG Line No. 1103 (AZ BB:16:48[ASM]) and the branch line (AZ AA:11:237[ASM]) are representative of the growing importance of natural gas in America for both industrial and residential uses in the post-WWII era (Mangan 1977). The creation and expansion of the natural gas infrastructure across the American landscape were important aspects of the modernization of the American landscape and expansion of the American economy. The role that the natural gas industry had on Arizona and American history could be addressed in regionally specific research topics falling under the NPS research themes of 5) developing the American economy; 6) expanding science and

technology; and 7) transforming the environment. Although natural gas pipelines are part of the larger infrastructure leading to the modernization of the American landscape, these sites have been exempted from Section 106 review (ACHP 2002).

AZ BB:16:48(ASM)—EPNG Line No. 1103: Exempt

AZ AA:11:237(ASM)—EPNG Line No. 1103 (Branch Line): Exempt

MILITARY: AZ AA:11:239(ASM)—AVRA AUXILIARY AIRFIELD NO. 4

Historic Context

The US Military in Arizona, the US Army flight training during World War II, and the modernization of the Marana area by the US Army during World War II

Eligibility

The US Military has played a key role in Arizona history since the expansion of Euroamerican settlers into the Arizona Territory. Air power played an important role in the victory of the Allies during WWII, and the training of airmen in places like Avra Auxiliary Airfield No. 4 contributed to the defeat of Germany and Japan (Thompson 2004). The significance of the airfield can also be viewed in terms of local impact. Modern utilities, sewer systems, and roads were built by the US Military in the Marana area during WWII. Jobs were also created by the placement of US airfields in the Marana area, thereby jumpstarting the modern economy of the region. Therefore, the construction and usage of Site AZ AA:11:239(ASM), Avra Auxiliary Airfield No. 4, was significant not only for its contributions to the US Air Force during WWII and our eventual defeat of the Axis powers but to the Marana area as well. Military sites on the landscape have the potential to yield information relevant to regionally specific research topics that are linked to the NPS research themes of 5) developing the American economy; 6) expanding science and technology; 7) transforming the environment; and 8) the changing role of the United States in the world community.

Abandoned WWII auxiliary military training airfields dot the landscapes of Arizona, California, and Nevada (Bischoff 2008; Thompson 2004). After the end of WWII, the majority of the auxiliary airfields were abandoned by the military and existing structures were removed from the airfields. Several abandoned auxiliary airfields in Arizona have since been recommended eligible for inclusion in the National Register of Historic Places under Criteria (a) and (d) (Thompson 2004:161).

AZ AA:11:239(ASM)—Avra Auxiliary Airfield No. 4: WestLand recommends that AZ AA:11:239 (ASM) is eligible for inclusion in the National Register of Historic Places under Criterion (a) for its association with WWII flight training in the Marana area during WWII (A.D. 1942–1945) and under Criterion (d) for the potential of subsurface deposits and features.

Assessment of Effect

The SWTC undertaking involves replacing existing wooden structures in the existing transmission line corridor with either concrete or self-weathering steel monopoles. Each pole site requires an area of approximately 50 by 50 ft (2,500 ft^2) (15 by 15 m [225 m^2]) for construction. Construction activities will focus on auguring holes that are 5 ft (1.5 m) in diameter and will vary from 10 to 12 ft (3 to 3.7 m) deep. The remainder of the area will be brushed so vehicles and equipment can access the augur location. The transmission line corridor lacks integrity and is recommended as a non-contributing element to the resource's significance. WestLand recommends, therefore, that no adverse effect will occur within the transmission line corridor. Materials Yard Alternative 1 is located within an undisturbed portion of the site. Activities associated with the materials yard will involve brushing and grading. This area also contains structural debris that may be from some of the structures associated with the airfield, but no standing structures exist (Avra Auxiliary No. 4 2009). Additional subsurface components of these features may still exist in this area, and the proposed clearing and grading activities within Materials Yard Alternative 1 would adversely affect the site. WestLand recommends a determination of adverse effect for Materials Yard Alternative 1.

Recommended Treatment

No treatment is necessary in the transmission line corridor. WestLand recommends that SWTC select Materials Yard Alternative 2 to avoid this site. If avoidance is not possible, then WestLand recommends that SWTC take actions to minimize or resolve the adverse effects to the historic property. Given the nature of the proposed construction, WestLand recommends archaeological monitoring as the most appropriate treatment. WestLand recommends that SWTC retain a qualified archaeological consultant to prepare a monitoring and discovery plan that specifies the monitoring activities and the appropriate actions to take in the advent that archaeological resources are discovered during the construction activities.

UTILITY: AZ AA:11:240(ASM)—WAPA TUCSON-SAGUARO TRANSMISSION LINE

Historic Context

Expansion of the electrical power grid in Arizona during the Late Historic (ca. 1940s) period

Eligibility

Site AZ AA:11:240(ASM) is significant because the construction of this transmission line in the 1940s is representative of the growing importance of electrical power in the United States and Arizona. It also highlights the importance of hydro-electrical power in the American Southwest. However, although the WAPA line is significant to our understanding of the expansion of electrical usage in Arizona, the site lacks integrity of design (ACRE 2006). The old H-frame structures have been replaced with modern metal poles within the APE. Transmission lines have the potential to address research topics that correspond to the NPS research themes of 5) developing the American economy; 6) expanding science and technology; 7) transforming the environment, and 8) the changing role of the United States in the world community.

AZ AA:11:240(ASM)—WAPA Tucson-Saguaro Transmission Line: WestLand recommends that AZ AA:11:240(ASM) is not eligible for inclusion in the National Register of Historic Places because it lacks integrity (ACRE 2006). Continued maintenance and upgrades have irrevocably altered the historical integrity of the transmission line.

Effect of Proposed Undertaking

None

Recommended Treatment

None

MANAGEMENT SUMMARY

The primary objective of the present study was to inventory the cultural resources present in the proposed right-of-way and to evaluate whether any of these resources were historic properties as defined by the regulations for implementing Section 106 of the National Historic Preservation Act (36 CFR 800 *et seq.*). Historic properties are those cultural resources that are either listed in the National Register of Historic Places or are considered eligible for inclusion in the National Register. The preceding sections described the findings of the archaeological studies and offered WestLand's recommendations as to whether the discovered resources were eligible or not eligible for inclusion in the National Register of Historic Places. WestLand argues that the proposed undertaking has the potential to adversely affect six register-eligible historic properties (AZ AA:11:12[ASM], AZ AA:11:107[ASM], AZ AA:11:108[ASM], AZ AA:11:109 [ASM], AZ AA:11:135[ASM], and AZ AA:11:239[ASM]) and provides the general recommendation that the planning and design of the proposed undertaking consider options to avoid affecting these register-eligible sites. However, if avoidance is not possible, WestLand recommends that SWTC take actions to minimize or resolve the adverse effects to the historic properties. The actions to consider are phased excavations, archival research, photographic documentation, cartographic documentation, or archaeological monitoring. Given the nature of the construction activities and the limited extent of the potential disturbance, WestLand recommends that archaeological monitoring of the construction activities is an appropriate treatment to minimize and resolve the adverse effects. WestLand recommends that SWTC retain a qualified archaeological consultant to prepare a monitoring and discovery plan. This plan will detail the circumstances under which monitoring will occur, the type of archaeological resources that constitute a discovery of significant resources, and the actions to take in the event of a significant archaeological discovery during the construction activities. All ground-disturbing activities have the potential to unearth human remains, and these must be treated in accordance with Arizona State Statutes. Archaeological, paleontological, or human remains discovered on Arizona State Land must be reported to the Director of the ASM as specified by A.R.S. §41-844 *et seq.* The discovery of human remains on private lands also must be reported to the Director of the ASM as specified by A.R.S. §41-865.

REFERENCES

2009 Avra Aux. No. 4. Electronic document. http://www.airfields-freeman.com/AZ/Airfields_AZ_Tuscon_N.htm#avra accessed on 6/19/09.

Abbott, David R. (ed.)
2003 *Centuries of Decline during the Hohokam Classic Period at Pueblo Grande.* University of Arizona Press, Tucson.

Abbott, David R., Alexa M. Smith, and Emiliano Gallaga
2007 Ballcourts and Ceramics: The Case for Hohokam Marketplaces in the Arizona Deserts. *American Antiquity* 72(3):461–484.

Abbott, David R., Susan L. Stinson, and Scott Van Keuren
2003 The Economic Implications of Hohokam Buff Ware Exchange during the Early Sedentary Period. *Kiva* 67:7–29.

Ackerly, Neal W.
1982 Irrigation, Water Allocation Strategies, and the Hohokam Collapse. *Kiva* 47:91–106.

Adams, Jenny L.
2003 Tortolita Phase Grinding Technology. In *Roots of Sedentism, Archaeological Excavations at Valencia Vieja, a Founding Village in the Tucson Basin of Southern Arizona,* edited by Henry D. Wallace, pp. 193–226. Anthropological Papers No. 29. Center for Desert Archaeology, Tucson.

Advisory Council on Historic Preservation (ACHP)
2002 Exemption Regarding Historic Preservation Review Process for Projects Involving Historic Natural Gas Pipelines. *Federal Register* 67(66):1, 2.

Agenbroad, Larry D.
1967 The Distribution of Fluted Points in Arizona. *The Kiva* 32:113–120.

Andrews, John P., and Todd W. Bostwick
1997 *Desert Farmers at the River's Edge: The Hohokam and Pueblo Grande.* Pueblo Grande Museum and Archaeological Park, Phoenix.

Archer, Gavin H.
2001 *Archaeological Monitoring for the Marana Circuits 15 and 16 Rebuild, Town of Marana and Pima County, Arizona.* Cultural Resource Report No. 01-21. SWCA, Tucson.

Arizona State Museum
1993 *Archaeological Site Recording Manual, Version 1.1.* Arizona State Museum, University of Arizona, Tucson.

1995 *Revised Site Definition Policy.* Arizona State Museum, University of Arizona, Tucson.

n.d. *Reporting Standards.* MS on file, Arizona State Museum, University of Arizona, Tucson. Published on the Internet http://www.statemuseum.arizona.edu/frame/index.asp?doc=/crservices/standards.pdf.

Associated Cultural Resource Experts (ACRE)
2006 *Historical Evaluation Western Area Power Administration Transmission Facilities Arizona, California, Nevada, New Mexico, Texas (Draft Report).* Associated Cultural Resource Experts, Greenwood Village.

Ayres, James E.
1970 Two Clovis Fluted Points from Southern Arizona. *The Kiva* 35:121–124.

Baker, Kathleen A., and Joshua Jones
2004 *An Archaeological Survey of Link Two Arizona Ingress/Egress Routes: Addendum 4 to an Archaeological Survey of the Arizona Portion of Link Two of the AT&T Nexgen/Core Project.* Report No. WCRM(F)222. Western Cultural Resource Management, Inc., Farmington.

Barnes, Will C.
1988 *Arizona Place Names.* University of Arizona Press, Tucson.

Barr, David M. R.
2004 *Archaeological Monitoring at Site AZ AA:11:12(ASM) for the Installation of a Telecommunications Facility at the AEPCO Marana Substation, Pima County, Arizona.* Letter Report dated October 5, 2004. SWCA, Tucson.

Bassett, Everett
2004 *Cultural Resources Inventory Report Sandario Substation and Transmission Line Project, Pima County, Arizona.* Transcon Infrastructure, Inc., Mesa.

Bernard-Shaw, Mary
1989 *Archaeological Investigations at the Redtail Site, AZ AA:12:149(ASM), in the Northern Tucson Basin.* Technical Report No. 89-8. Center for Desert Archaeology, Tucson.

Bischoff, Matt C.
2008 *The Desert Training Center/California-Arizona Maneuver Area, 1942–1944, Volume 2: Historical and Archaeological Contexts for the Arizona Desert.* Technical Series 75. Statistical Research, Inc., Tucson.

Bolton, Herbert E.
1984 *Rim of Christendom: A Biography of Eusebio Francisco Kino, Pacific Coast Pioneer.* University of Arizona Press, Tucson. Originally published by the Macmillan Company in 1936.

Breternitz, David A.
1960 *Excavation at Three Sites in the Verde Valley, Arizona.* Bulletin No. 34. Museum of Northern Arizona, Flagstaff.

Cable, John S.
1985 The Prehistoric Ceramic Assemblage from Block 24-East. In *City of Phoenix, Archaeology of the Original Townsite: Block 24-East*, edited by John S. Cable, Kathleen S. Hoffman, David E. Doyel, and Frank E. Ritz, pp. 183–210. Soil Systems Publications in Archaeology 8. Soil Systems, Inc., Phoenix.

Carlson, David, Jeanne Swarthout, and Stan Freer
1989 Lithic Technology along the All American Pipeline. In *Cultural Resources Report for the All American Pipeline Project*, pp. 647–678. New Mexico State University, Las Cruces.

Chenault, Mark L.
1996 *The Polvorón Phase and the Hohokam Collapse.* Ph.D. dissertation. University of Colorado, Boulder.

2000 In Defense of the Polvorón Phase. In *The Hohokam Village Revisited*, edited by David E. Doyel, Suzanne K. Fish, and Paul R. Fish, pp. 277–286. Southwestern and Rocky Mountain Division of the American Association for the Advancement of Science, Ft. Collins.

Clark, Jeffery J., and James M. Vint (eds.)
2004 *2000 Years of Settlement in the Tonto Basin: Overview and Synthesis of the Tonto Creek Archaeological Project.* Anthropological Papers No. 25. Center for Desert Archaeology, Tucson.

Craig, Douglas B.
2000 The Demographic Implications of Architectural Change at the Grewe Site. In *The Hohokam Village Revisited*, edited by David E. Doyel, Suzanne K. Fish, and Paul R. Fish, pp. 139–166. Southwestern and Rocky Mountain Division of the American Association for the Advancement of Science, Ft. Collins.

Crown, Patricia L.
1991a The Hohokam: Current Views of Prehistory and the Regional System. In *Chaco and Hohokam: Prehistoric Regional Systems in the American Southwest*, edited by Patricia L. Crown and W. James Judge, pp. 135–157. School of American Research Press, Santa Fe.

1991b The Role of Exchange and Interaction in Salt-Gila Basin Hohokam Prehistory. In *Exploring the Hohokam: Prehistoric Desert Peoples of the American Southwest*, edited by George J. Gumerman, pp. 383–415. University of New Mexico Press, Albuquerque.

Dart, Allen
1987 *Class III Archaeological Surveys on the Tohono O'odham Indian Reservation. Archaeological Studies of the Avra Valley, Arizona, for the Papago Water Supply Project, Vol. 1.* Anthropological Papers No. 9. Institute for American Research, Tucson.

1989 *The Gunsight Mountain Archaeological Survey: Archaeological Sites in the Northern Sierrita Mountains near the Junction of the Altar and Avra Valleys Southwest of Tucson, Arizona.* Technical Report No. 89-1. Center for Desert Archaeology, Tucson.

Dart, Allen, and William R. Gibson
1988 The Western Extent of the Tucson Basin Hohokam: Evidence from Recent Surveys in the Avra Valley. In *Recent Research on Tucson Basin Prehistory: Proceedings of the Second Tucson Basin Conference*, edited by William H. Doelle and Paul R. Fish. Anthropological Papers 10, pp. 253–276. Institute for American Research, Tucson.

Dart, Allen, James P. Holmlund, and Henry D. Wallace
1990 *Ancient Hohokam Communities in Southern Arizona: The Coyote Mountains Archaeological District in the Altar Valley.* Technical Report 90-3. Center for Desert Archaeology, Tucson.

Dean, Jeffery S.
1991 Thoughts on Hohokam Chronology. In *Exploring the Hohokam. Prehistoric Desert Peoples of the American Southwest*, edited by G. J. Gumerman, pp. 61–149. Amerind Foundation New World Studies Series No. 1. University of New Mexico Press, Albuquerque.

Deaver, William L.
1984 Pottery. In *Hohokam Habitation Sites in the Northern Santa Rita Mountains,* by Alan Ferg, Kenneth C. Rozen, William L. Deaver, Martyn D. Tagg, David A. Phillips, III, and David A. Gregory, pp. 237–420. Arizona State Museum Archaeological Series 147(2). University of Arizona, Tucson.

1989 Pottery and other Ceramic Artifacts. In *The 1979–1983 Testing at Los Morteros (AZ AA:12:57 ASM): A Large Hohokam Village Site in the Tucson Basin*, by Richard C. Lange and William L. Deaver, pp. 27–82. Archaeological Series 177. Arizona State Museum, University of Arizona, Tucson.

1990 Native American Ceramics. In *Archaeology of the Ak-Chin Indian Community West Side Farms Project: Material Culture and Human Remains*. Soil Systems Publications in Archaeology No. 9, Volume 4.

2004 A Consideration of Style in Colonial and Sedentary Period Ceramics: Rincon Styles A and B Revisited. In *Pots, Potters, and Models, Archaeological Investigations at the SRI Locus of the West Branch Site, Tucson, Arizona,* edited by Stephanie M. Whittlesey, pp. 377–436. Technical Series 80. Statistical Research, Inc., Tucson.

Deaver, William L., and Carla R. Van West
2001 *El Macayo: A Prehistoric Settlement in the Upper Santa Cruz River Valley*. Technical Series 74. Statistical Research, Inc., Tucson.

Deaver, William L., and Richard Ciolek-Torrello
1995 Early Formative Period Chronology for the Tucson Basin. *Kiva* 60(4):481–530.

Deaver, William L., and Stephanie M. Whittlesey
2004a An Exploration of Ceramic Dating at the SRI Locus. In *Pots, Potters, and Models, Archaeological Investigations at the SRI Locus of the West Branch Site, Tucson, Arizona,* edited by Stephanie M. Whittlesey, pp. 135–180. Technical Series 80. Statistical Research, Inc., Tucson.

2004b Chronology and Settlement History. In *Pots, Potters, and Models, Archaeological Investigations at the SRI Locus of the West Branch Site, Tucson, Arizona,* edited by Stephanie M. Whittlesey, pp. 59–100. Technical Series 80. Statistical Research, Inc., Tucson.

Diehl, Michael W. (ed.)
2005 *Subsistence and Resource Use Strategies of Early Agricultural Communities in Southern Arizona.* Anthropological Papers No. 34. Center for Desert Archaeology, Tucson.

DiPeso, Charles C.
1956 *The Upper Pima of San Cayetano del Tumacacori: An Archaeohistorical Reconstruction of the O'otam of Pimería Alta.* Publication No. 7. Amerind Foundation, Dragoon.

Dobyns, Henry F.
1964 *Lance Ho! The Containment of the Western Apaches by the Royal Spanish Garrison at Tucson.* Editorial Estudios Andinos, Lima, Peru.

1976 *Spanish Colonial Tucson: A Demographic History.* University of Arizona Press, Tucson.

Doelle, William H.
1981 The Gila Pima in the Seventeenth Century. In *The Protohistoric Period in the North American Southwest, A.D. 1450–1700,* edited by David R. Wilcox and W. Bruce Masse, pp. 57–70. Anthropological Research Papers 24. Arizona State University, Tempe.

1984 The Tucson Basin during the Historic Period. *The Kiva* 49:195–211.

Doelle, William H., and Henry D. Wallace
1990 The Transition to History in Pimería Alta. In *Perspectives on Southwestern Prehistory*, edited by P. E. Minnis and C. L. Redman, pp. 239–257. Westview Press, Boulder.

1991 The Changing Role of the Tucson Basin in the Hohokam Regional System. In *Exploring the Hohokam: Prehistoric Desert Peoples of the American Southwest,* edited by George J. Gumerman, pp. 279–346. University of New Mexico Press, Albuquerque.

Downum, Christian E., Adrianne G. Rankin, Jon S. Czaplicki
1986 *A Class III Archaeology Survey of the Phase B Corridor, Tucson Aqueduct, Central Arizona Project: Late Archaic, Late Pioneer, Colonial, Sedentary, and Early Classic Period Tucson Basin Hohokam, and Sobaipuri Occupation in the Avra Valley, Southern Arizona.* Prepared for the U.S. Bureau of Reclamation, Arizona Projects Office. Cultural Resource Management Division, Arizona State Museum, University of Arizona, Tucson.

1993 *Between Desert and River: Hohokam Settlement and Land Use in the Los Robles Community.* Anthropological Papers of the University of Arizona No. 57, University of Arizona Press, Tucson.

Doyel, David E.
1974 *Excavations in the Escalante Ruin Group, Southern Arizona.* Archaeological Series 37. Arizona State Museum, University of Arizona, Tucson.

1977 *Excavations in the Middle Santa Cruz River Valley, Southeastern Arizona.* Archaeology in Arizona No. 44. Arizona State Museum, University of Arizona, Tucson.

1980 Hohokam Social Organization and the Sedentary to Classic Transition. In *Current Issues in Hohokam Prehistory*, edited by David E. Doyel and Fred Plog, pp. 23–40. Anthropological Research Papers 23. Arizona State University, Tempe.

1981 *Late Hohokam Prehistory in Southern Arizona.* Contributions to Archaeology 2. Gila Press, Scottsdale.

1991a Hohokam Cultural Evolution in the Phoenix Basin. In *Exploring the Hohokam: Prehistoric Desert Dwellers of the American Southwest*, edited by George J. Gumerman, pp. 231–278, Amerind Foundation, Dragoon, and University of New Mexico Press, Albuquerque.

1991b Hohokam Exchange and Interaction. In *Chaco and Hohokam: Prehistoric Regional Systems in the American Southwest*, edited by Patricia L. Crown and W. James Judge, pp. 225–252. School of American Research Press, Santa Fe.

Doyel, David E., and Mark D. Elson
1985 *Hohokam Settlement and Economic Systems in the Central New River Drainage, Arizona.* Soil Systems Publications in Archaeology 4. Soil Systems, Inc., Phoenix.

Eighmy, Jeffrey L., and Randall H. McGuire
1989 *Archaeomagnetic Dates and the Hohokam Phase Sequence.* Technical Series 3. Archaeometric Laboratory, Colorado State University, Ft. Collins.

Elson, Mark D., and William H. Doelle
1987 *Archaeological Assessment of the Mission Road Extension: Testing at AZ BB:13:6 (ASM).* Technical Report No. 87-6. Institute for American Research, Tucson.

Faught, Michael K., and Andrea K. L. Freeman
1998 Paleoindian Complexes of the Terminal Wisconsin and Early Holocene. In *Paleoindian and Archaic Sites in Arizona.* Center for Desert Archaeology, Tucson.

Foster, Michael S., JoAnne Miller, Ruth Van Dyke, and Gary Brown
1995 *A Cultural Resource Management and Treatment Plan for Magma Copper Company's Florence In-Situ Copper Mine, Pinal County, Arizona.* Western Cultural Resource Management, Inc., Boulder.

Franklin, Hayward H.
1980 *Excavations at Second Canyon Ruin, San Pedro Valley, Arizona.* Contributions to Highway Salvage Archaeology No. 60. Arizona State Museum, University of Arizona, Tucson.

Freeman, Andrea
1999 Status of the Middle Archaic in Southern Arizona. In *Excavation in the Santa Cruz River Floodplain: The Middle Archaic Component at Los Pozos*. Anthropological Papers No. 20. Center for Desert Archaeology, Tucson.

Gladwin, Harold S.
1965 *Excavations at Snaketown: Material Culture.* University of Arizona Press, Tucson.

Gladwin, Harold S., Emil W. Haury, E. B. Sayles, and Nora Gladwin
1937 *Excavations at Snaketown: Material Culture.* Medallion Papers No. 25. Gila Pueblo, Globe.

Gregory, David A.
1987 The Morphology of Platform Mounds and the Structure of Classic Period Hohokam Sites. In *The Hohokam Village: Site Structure and Organization*, edited by David E. Doyel, pp. 183–210. American Association for the Advancement of Science, Glenwood Springs.

2001 *Excavations in the Santa Cruz River Floodplain: The Early Agricultural Period Component at Los Pozos*. Anthropological Papers No. 21. Center for Desert Archaeology, Tucson.

Grier, S. W.
1925 *Pima Farms, Cortaro, Arizona: Located in Pima County-Suburban to Tucson.* Pima Farms Company, Cortaro. On file at the Arizona Historical Society, Tucson.

Halbirt, Carl D., and T. Kathleen Henderson (eds.)
1993 *Archaic Occupation on the Santa Cruz Flats: The Tator Hills Archaeological Project.* Northland Research, Inc., Flagstaff.

Hardesty, Donald L., and Barbara J. Little
2000 *Assessing Site Significance: A Guide for Archaeologists and Historians*. Altamira Press, Lanham.

Haury, Emil W.
1950 *The Stratigraphy and Archaeology of Ventana Cave, Arizona.* University of Arizona Press, Tucson.

1976a Concluding Thoughts. In *The Hodges Ruin: A Hohokam Community in the Tucson Basin,* by Isabel T. Kelly, pp. 126–128. Anthropological Papers of the University of Arizona No. 30. University of Arizona Press, Tucson.

1976b *The Hohokam: Desert Farmers and Craftsmen.* University of Arizona Press, Tucson.

1978 Concluding Thoughts. In *The Hodges Ruin: A Hohokam Community in the Tucson Basin,* by Isabel T. Kelly, pp. 126–128. Anthropological Papers No. 30. University of Arizona Press, Tucson.

Hayden, Julian D.
1970 Of Hohokam Origins and Other Matters. *American Antiquity* 34:87–94.

Heckman, Robert A., Barbara K. Montgomery, and Stephanie M. Whittlesey
2000 *Prehistoric Painted Pottery of Southeastern Arizona.* Technical Series 77. Statistical Research, Inc., Tucson.

Heidke, James M.
1990 *Archaeological Investigations at the Lonetree Site, AZ AA:12:120(ASM), in the Northern Tucson Basin*, edited by Mary Bernard-Shaw, pp. 53–118. Technical Report 90-1. Center for Desert Archaeology, Tucson.

2003 Tortolita Phase Ceramics. In *Roots of Sedentism, Archaeological Excavations at Valencia Vieja, a Founding Village in the Tucson Basin of Southern Arizona,* edited by Henry D. Wallace, pp. 145–192. Anthropological Papers No. 29. Center for Desert Archaeology, Tucson.

2005 Early Agricultural Period Pottery from Las Capas and Los Pozos. In *Material Cultures and Lifeways of Early Agricultural Communities in Southern Arizona,* edited by R. Jane Sliva, pp. 171–206. Anthropological Papers No. 35. Center for Desert Archaeology, Tucson.

Henderson, T. Kathleen
1992 A Second Look at Ceramics: Early Ceramics, Vessel Forms, and Temporal Trends. In *Prehistoric and Historic Occupation of the Lower Verde River Valley: The State Route 87 Verde Bridge Project*, by Mark R. Hackbarth, pp. 185–204. Northland Research, Inc., Flagstaff.

2001 Chronology. In *The Grewe Archaeological Research Project, Volume 1: Project Background and Feature Descriptions,* edited by Douglas B. Craig, pp. 163–208. Anthropological Papers No. 99-1. Northland Research, Inc., Flagstaff.

Henderson, T. Kathleen, and Mark R. Hackbarth
2000 What is Going on at the Hohokam Village? A Fourteenth and Fifteenth Century Perspective. In *The Hohokam Village Revisited*, edited by David E. Doyel, Suzanne K. Fish, and Paul R. Fish, pp. 287–316. Southwestern and Rocky Mountain Division of the American Association for the Advancement of Science, Ft. Collins.

Hesse, India S.
2002 *An Archaeological Avoidance Assessment of Three Sites within the Proposed TRICO Avra Sub Tie Line, Circuit 83 and 84, Pima County, Arizona (TRICO Work Order No. 30048).* Cultural Resource Report No. 02-54. SWCA, Tucson.

Hesse, S. Jerome
2001 *Addendum C The Ironwood and Farrell-Murphey Roads Reroutes: A Cultural Resources Survey of Supplemental Reroutes to the Arizona Segment of the El Paso to Los Angeles Fiber Optic Cable Project.* Cultural Resources Report No. 00-178C. SWCA, Tucson.

Heuett, Mary Lou
1998 *An Archaeological Survey and Testing Program within a Portion of AZ AA:11:12(ASM) and the AEPCO Substation for a Proposed Communication Tower Facility and Access Road in Pima*

County, Arizona. Southwest Cultural Series No. 25. Cultural & Environmental Systems, Inc., Tucson.

Hoza, Mike

2002 *Best Place in the Country: First-person Accounts of Military Aviation in Arizona during World War Two.* E6B Publishing, Tempe.

Huckell, Bruce B.

1982 *The Distribution of Fluted Points in Arizona: A Review and an Update.* Arizona State Museum Archaeological Series No. 145. University of Arizona, Tucson.

1984 The Paleoindian and Archaic Occupation of the Tucson Basin: An Overview. *The Kiva* 49:133–145.

1987 Summary and Conclusions. In *The Corona de Tucson Project: Prehistoric Use of a Bajada Environment,* edited by Bruce B. Huckell, Martyn D. Tagg, and Lisa W. Huckell, pp. 261–296. Archaeological Series 174. Arizona State Museum, University of Arizona, Tucson.

1996 The Archaic Prehistory of the North American Southwest. *Journal of World Prehistory* 10(3):305–372.

Kelly, Isabel T.

1978 *The Hodges Ruin: A Hohokam Community in the Tucson Basin.* Anthropological Papers of the University of Arizona 30. University of Arizona, Tucson.

Lindeman, Michael W.

1995 *Archaeological Testing at the AEPCO Substation on the Hog Farm Site, AZ AA:11:12(ASM).* Letter Report No. 95-101 (DAI Project No. 94-123). Desert Archaeology, Inc., Tucson.

2000 *Cultural Resources Survey of a Small Parcel for the CAVSARP Recovery Pipeline, Avra Valley, Arizona.* Report No. 00-101. Desert Archaeology, Tucson.

2003 Plain ware and Red ware Horizon Architectural Change. In *Roots of Sedentism: Archaeological Excavations at Valencia Vieja, a Founding Village in the Tucson Basin of Southern Arizona,* edited by Henry D. Wallace, pp. 309–319. Anthropological Papers No. 29. Center for Desert Archaeology, Tucson.

Lockhart, Bill

2000 The History and Bottles of the Soft Drink Industry in El Paso, Texas, 1881-2000. New Mexico State University, Alamogordo New Mexico

2004 Owens-Illinois Glass Company. *Bottles & Extras* 15(3):24–27.

Logan, Michael F.

2002 *The Lessening Stream: An Environmental History of the Santa Cruz River.* University of Arizona Press, Tucson.

Mabry, Jonathan B.
1998 *Paleoindian and Archaic Sites in Arizona.* Center for Desert Archaeology, Tucson.

2005 Diversity in Early Southwestern Farming and Optimization Models of Transition to Agriculture. In *Subsistence and Resource Use Strategies of Early Agricultural Communities in Southern Arizona,* edited by Michael W. Diehl. Anthropological Papers No. 34. Center for Desert Archaeology, Tucson.

Mabry, Jonathan B., Deborah L. Swartz, Helga Wöcherl, Jeffery J. Clark, Gavin H. Archer, and Michael W. Lindeman
1997 *Archaeological Investigations of Early Village Sites in the Middle Santa Cruz Valley: Description of the Santa Cruz Bend, Square Hearth, Stone Pipe, and Canal Sites.* Anthropological Papers No. 18. Center for Desert Archaeology, Tucson.

Mangan, Frank
1977 *The Pipeliners.* Guynes Press, El Paso.

Manje, Juan Mateo
1954 *Unknown Arizona and Sonora 1693–1721. From the Francisco Fernandez del Castillo Version of Luz de Tierra Incognita.* Translated by Harry J. Karns and Associates. Arizona Silhouettes, Tucson.

Marmaduke, William S., and Richard J. Martynec
1993 *Shelltown and Hind Site: A Study of Two Hohokam Craftsman Communities in Southwestern Arizona,* vol. 1. Northland Research, Inc., Flagstaff.

Masse, W. Bruce
1980 Introduction to the Peppersauce Wash Project. In *The Peppersauce Wash Project: Excavations at Three Multicomponent Sites in the Lower San Pedro Valley, Arizona,* by Bruce Masse. Contributions to Highway Salvage Archaeology in Arizona 53: Appendix F. Arizona State Museum Library, University of Arizona, Tucson.

1981 A Reappraisal of the Protohistoric Sobaipuri Indians of Southeastern Arizona. In *The Protohistoric Period in the American Southwest, A.D. 1450–1700,* edited by D. R. Wilcox and W. B. Masse, pp. 28–56. Anthropological Research Papers No. 29. Arizona State University, Tempe.

Midvale, Frank
1965 Prehistoric Irrigation of the Casa Grande Ruins Area. *The Kiva* 30(3):82–86.

National Park Service
1990 *National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation.* National Park Service Interagency Resources Division, National Register Branch, Washington, D.C. (Revised 1997)

1996 *Revised Thematic Framework.* National Park Service, Washington, D.C.

1997 *National Register Bulletin 16A: Guidelines for Completing National Register of Historic Places Forms.* National Park Service Interagency Resources Division, National Register Branch, Washington, D.C.

Neily, Robert B.
1985 *The Snowflake-Redonda Project: An Intensive Archaeological Survey in the Upper Little Colorado River Area of East-Central Arizona.* Cultural Resource Management Division, Arizona State Museum, University of Arizona, Tucson.

Neuzil, Anna A.
2005 *In the Aftermath of Migration: Assessing the Social Consequences of Late 13th and 14th Century Population Movements into Southeastern Arizona.* Doctoral Dissertation. Department of Anthropology, University of Arizona, Tucson.

North, Chris D., Michael S. Foster, John M. Lindly, and Douglas R. Mitchell
2005 A Newly Discovered Clovis Point from the Phoenix Basin and an Update on Arizona Clovis Point Attributes. *Kiva* 70:293–307.

Officer, James E.
1987 *Hispanic Arizona.* University of Arizona Press, Tucson.

Reid, Jefferson, and Stephanie Whittlesey
1997 *The Archaeology of Ancient Arizona.* University of Arizona Press, Tucson.

Reinhold, Ruth M.
1982 *Sky Pioneering: Arizona in Aviation History.* University of Arizona Press, Tucson.

Ruble, Ellen C.
2003 *Avra Valley Fire District Archaeological Monitoring at the Hog Farm Site, AZ AA:11:12(ASM), Marana, Pima County, Arizona.* Project Report No. 03-122. Desert Archaeology, Tucson.

Sayles, E. B., and Ernst Antevs
1941 *The Cochise Culture.* Lancaster Press, Inc., Lancaster.

Schroeder, Albert H.
1957 The Hakataya Cultural Tradition. *American Antiquity* 23:176–178.

1960 *The Hohokam, Sinagua, and Hakataya.* Archives in Archaeology No. 5. Society for American Archaeology, Menasha, and University of Wisconsin Press, Madison.

1979 Prehistory: Hakataya. In *Handbook of North American Indians, Volume 9, The Southwest,* edited by William C. Sturtevant and Alfonso Ortiz, pp. 100–107. Smithsonian Institution, Washington.

Sellers, William B., and Richard H. Hill
1974 *Arizona Climate, 1932–1972.* University of Arizona Press, Tucson.

Seymour, Deni J.
2007 An Archaeological Perspective on the Hohokam-Pima Continuum. *Bulletin of Old Pueblo Archaeology Center No. 51.* Old Pueblo Archaeology, Tucson.

Seymour, Gregory R., Richard V. N. Ahlstrom, and David P. Doak
1997 *The Sanchez Copper Project. Volume 1: Archaeological Investigations in the Safford Valley, Graham County, Arizona.* Archaeological Report No. 94-82. SWCA Inc., Tucson.

Sheridan, Thomas E.
1986 *Los Tusconenses.* University of Arizona Press. Tucson.

Shumaker, Jon M.
1997 *A Class III Archaeological Survey of the Proposed TRICO Avra Valley Substation Tie Lines, Pima County, Arizona.* SWCA, Tucson.

Sires, Earl W. Jr.
1984 Excavations at El Polvorón (AZ U:15:59). In *Hohokam Archaeology along the Salt-Gila Aqueduct, Central Arizona Project, vol. IV(2): Prehistoric Occupation of the Queen Creek Delta,* edited by Lynn S. Teague and Patricia L. Crown, pp. 221–326. Arizona State Museum Archaeological, Series Number 150, Volume 9. University of Arizona, Tucson.

Slaughter, Mark C.
1992a Flaked Stone in Arizona. In *Making and Using Stone Artifacts: A Context for Evaluating Lithic Sites in Arizona,* by Mark C. Slaughter, Lee Fratt, Kirk Anderson, and Richard V. N. Ahlstrom, pp. 2.1–2.12. Prepared by SWCA, Tucson. Distributed by the Arizona State Historic Preservation Office, Phoenix.

1992b *Three Points, to Marana: 26 Miles of Archaeological Survey along a Transmission Right-of-Way in the Avra Valley, Pima County, Arizona.* Archaeological Report 92-66. SWCA, Tucson.

Sliva, R. Jane
2003 Valencia Vieja and Changing Perspectives on Early Ceramic and Early Pioneer Period Flaked Stone Technology. In *Roots of Sedentism, Archaeological Excavations at Valencia Vieja, a Founding Village in the Tucson Basin of Southern Arizona,* edited by Henry D. Wallace, pp. 227–252. Anthropological Papers No. 29. Center for Desert Archaeology, Tucson.

Sonnichsen, C. L.
1987 *Tucson: The Life and Times of an American City.* University of Oklahoma Press, Norman.

Stein, Pat H.
1990 *Homesteading in Arizona, 1862 to 1940: A Guide to Studying, Evaluating, and Preserving Historic Homesteads.* Arizona State Parks Historic Context. Arizona State Historic Preservation Office, Phoenix.

1993 Historical Resources of the Northern Tucson Basin. In *The Northern Tucson Basin Survey: Research Directions and Background Studies*, edited by John H. Madsen, Paul R. Fish, and Suzanne K. Fish, pp. 85–122. Archaeological Series 182. Arizona State Museum, Tucson.

1994 *Historic Trails in Arizona from Coronado to 1940.* A component of the Arizona Historic Preservation Plan. SWCA, Flagstaff.

Stevens, Michelle N., and R. Jane Sliva
2002 Empire Points: An Addition to the San Pedro Phase Lithic Assemblage. *Kiva* 67(3):297–326.

Stinson, Susan L.
2005 Early Agricultural Period Pottery from Las Capas and Los Pozos. In *Material Cultures and Lifeways of Early Agricultural Communities in Southern Arizona,* edited by R. Jane Sliva, pp. 207–216. Anthropological Papers No. 35. Center for Desert Archaeology, Tucson.

Sullivan, Michael, and Carol Griffith
2004 *Down in the Dumps: Context Statement and Guidance on Historical-Period Waste Management and Refuse Deposits.* State Historic Preservation Office Advisory Committee on Historical Archaeology.

Teague, Lynn S.
1993 Prehistory and the Traditions of the O'odham and Hopi. *Kiva* 58:435–454.

Terzis, Lee, Kevin D. Wellman, and Heidi Roberts
1997 *Interstate 10/Cortaro Road Traffic Interchange Improvement Project, Part 1: Results of Archaeological Testing.* Archeological Report No. 97-22. SWCA, Inc., Environmental Consultants, Tucson.

Thompson, Scott
2004 *Gateway to Combat: A Historic Context for Military Aviation Training on the Barry M. Goldwater Range East, Arizona, World War II and Early Cold War Eras.* Cultural Resources Studies in the Western Papagueria 1. Statistical Research, Inc., Tucson.

Toulouse, Julian Harrison
1971 *Bottle Makers & Their Marks.* Thomas Nelson, New York.

Turner, Raymond, and David Brown
1994 Tropical-Subtropical Desertlands. In *Biotic Communities: Southwestern United States and Northwestern Mexico*, edited by D. Brown, pp. 180–222. University of Utah Press, Salt Lake City.

Vokes, Arthur W.
2003 Personal Ornaments of Shell and Stone from Valencia Vieja. In *Roots of Sedentism, Archaeological Excavations at Valencia Vieja, a Founding Village in the Tucson Basin of Southern Arizona,* edited by Henry D. Wallace, pp. 253–269. Anthropological Papers No. 29. Center for Desert Archaeology, Tucson.

Wallace, Henry D.
2003 Chronometrics. In *Roots of Sedentism, Archaeological Excavations at Valencia Vieja, a Founding Village in the Tucson Basin of Southern Arizona,* edited by Henry D. Wallace, pp. 123–144. Anthropological Papers No. 29. Center for Desert Archaeology, Tucson.

Wallace, Henry D., and Douglas B. Craig
1988 A Reconsideration of the Tucson Basin Hohokam Chronology. In *Recent Research on Tucson Basin Prehistory: Proceedings of the Second Tucson Basin Conference,* edited by William H. Doelle and Paul R. Fish, pp. 9–29. Anthropological Papers No. 10. Institute for American Research, Tucson.

Wallace, Henry D., and James P. Holmlund
1986 *Petroglyphs of the Picacho Mountains, South Central Arizona.* Anthropological Papers 6. Institute for American Research, Tucson.

Wallace, Henry D., and Michael W. Lindeman
2003 Chronometrics. In *Roots of Sedentism: Archaeological Excavations at Valencia Vieja, a Founding Village in the Tucson Basin of Southern Arizona,* edited by Henry D. Wallace, pp. 123–144. Anthropological Papers No. 29. Center for Desert Archaeology, Tucson.

Whittlesey, Stephanie M.
1995 Mogollon, Hohokam, and O'Otam: Rethinking the Early Formative Period in Southern Arizona. *Kiva* 60:465–480.

1998 Early Formative Stage Ceramics and Cultural Affiliation. In *Early Farmers of the Sonoran Desert, Archaeological Investigations at the Houghton Road Site, Tucson, Arizona,* edited by Richard Ciolek-Torrello, pp. 209–228. Technical Series No. 72. Statistical Research, Inc., Tucson.

2004 Mesoamerica, the Hohokam, and the Tucson Basin. In *Pots, Potters, and Models, Archaeological Investigations at the SRI Locus of the West Branch Site, Tucson, Arizona,* edited by Stephanie M. Whittlesey, pp. 509–530. Technical Series 80. Statistical Research, Inc., Tucson.

Whittlesey, Stephanie M., and Robert A. Heckman
2000 Culture History and Research Background. In *Prehistoric Painted Pottery of Southeastern Arizona,* by Robert A. Heckman, Barbara K. Montgomery, and Stephanie M. Whittlesey, pp. 1–22. Technical Series 77. Statistical Research, Inc., Tucson.

Whittlesey, Stephanie M., R. Ciolek-Torrello, and William L. Deaver
1994 Resurrecting the O'otam: The Early Formative Period in Arizona. *Mogollon VII, the Collected Papers of the 1992 Mogollon Conference Held in Las Cruces, New Mexico,* pp. 31–42. Coas Publishing and Research, Las Cruces.

Whittlesey, Stephanie M., Richard Ciolek-Torrello, and Jeffrey H. Altschul (eds.)
1997 *Vanishing River Landscapes and Lives of the Lower Verde Valley: The Lower Verde Archaeological Project.* SRI Press, Tucson.

Wilcox, David R.
1979 The Hohokam Regional System. In *An Archaeological Test of Sites in the Gila Butte-Santan Region, South-Central Arizona,* edited by Glen Rice, D. Wilcox, K. Refferty, and J. Schoenwetter, pp. 77–116. Technical Paper No. 3, Anthropological Research Papers No. 18. Arizona State University, Tempe.

1988 The Regional Context of the Brady Wash and Picacho Area Sites. In *Synthesis and Conclusions. Hohokam Settlement along the Slopes of the Picacho Mountains, Tucson Aqueduct Project, Vol. 6,* edited by Richard Ciolek-Torrello and David R. Wilcox, pp. 220–243. Research Papers 35. Museum of Northern Arizona, Flagstaff.

1991 The Mesoamerican Ballgame in the American Southwest. In *The Mesoamerican Ballgame,* edited by Vernon L. Scarborough and David R. Wilcox, pp. 101–125. University of Arizona Press, Tucson.

Wilcox, David R., and Charles Sternberg
1983 *Hohokam Ballcourts and Their Interpretation.* Archaeological Series No. 160. Arizona State Museum, University of Arizona, Tucson.

Wilson, John P.
1980 *Cultural Resources on the Proposed Tucson Electric-Tortolita-South Utility Corridor and Alternative Routes, Pinal and Pima Counties, Arizona.* John P. Wilson Report No. 21. Las Cruces.

1999 *Peoples of the Middle Gila: A Documentary History of the Pimas and Maricopas, 1500s–1945.* Researched and written for the Gila River Indian Community, Sacaton, Arizona, 1998 (Revised 1999), Report No. 77. Las Cruces.

EXHIBIT E-2
Visual Analysis

Image 1. Existing Viewshed 1.

Image 2. Post-construction Illustration of Viewshed 1.

Image 3. Existing Viewshed 2.

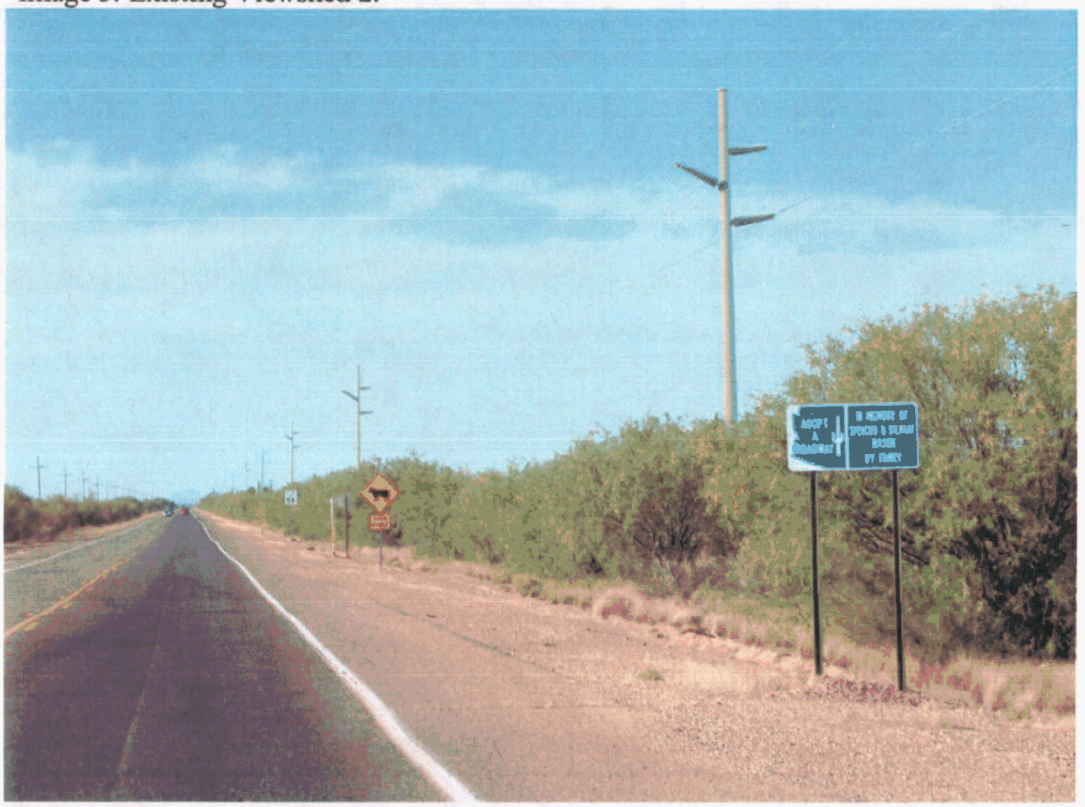


Image 4. Post-construction Illustration of Viewshed 2.

EXHIBIT F

AVAILABILITY OF THE PROJECT AREA TO THE PUBLIC FOR RECREATIONAL PURPOSES

Exhibit F
Availability of the Project Area to the Public for Recreational Purposes

The Project Area does not occur within any formally designated parks or recreation areas. The Project occurs along Trico Road and the Trico Road alignment, which includes both paved and unpaved and public and private roads. Trico Road is a Pima County public road for approximately 5.5 mi from the northern extent of the Project to El Paso Gas Road. The remaining Trico Road alignment consists of private access roads. Existing land uses on and adjacent to the Project Area include a series of dirt and paved roads; a mixture of fallow and cultivated agricultural fields; and a system of concrete and earthen irrigation canals and associated berms that are no longer in use. Another above-ground electrical distribution line, owned by Trico Energy Cooperative, Inc., parallels the existing SWTC transmission line along Trico Road. Development in the vicinity of the Project Area primarily consists of agricultural lands interspersed with low-density single-family rural residences.

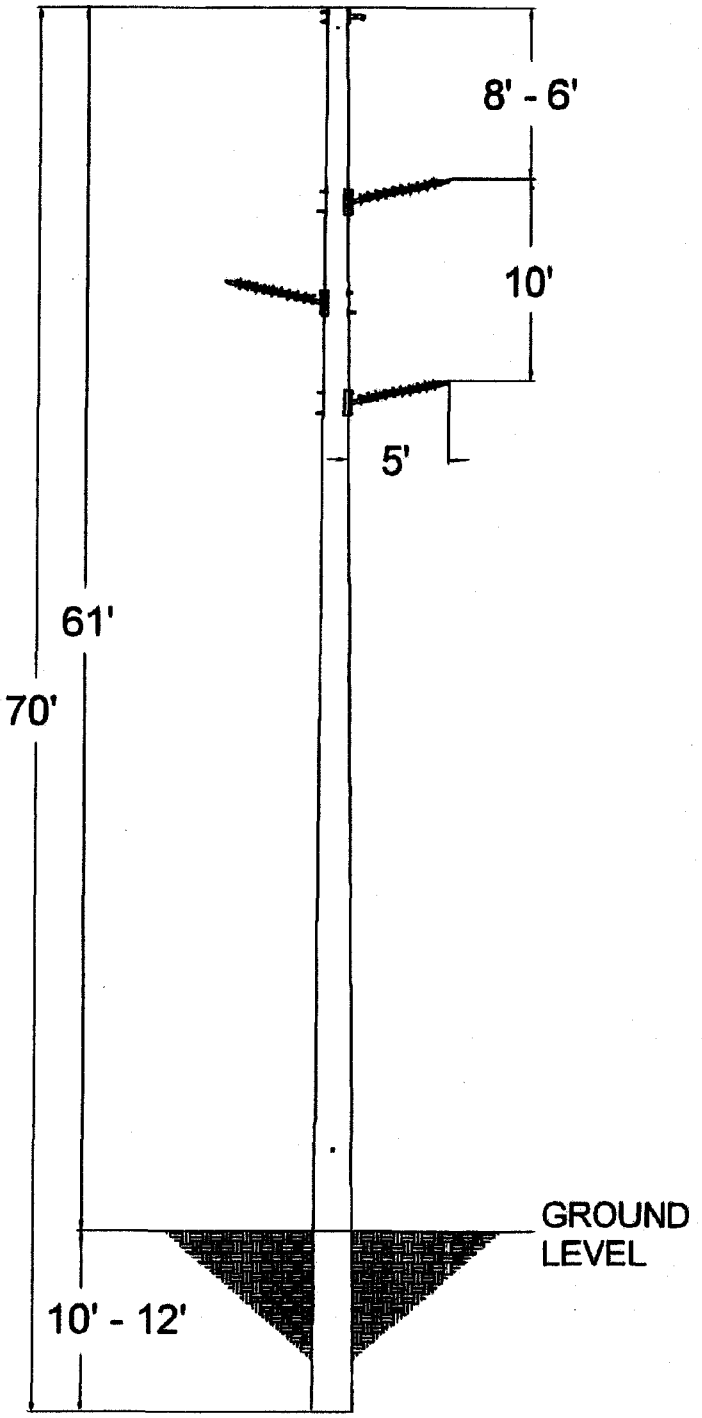
The Anza Park, a County-administered park, is located approximately 1.2 miles north of the Project Area along the east side of Trico Road. Tucson Mountain Park, another County-administered park, is located approximately 6.5 miles southeast of the Project Area. Ironwood Forest National Monument occurs approximately 2.5 to 3 mi southeast of the Project.

The Project will have no impact on the recreational opportunities offered by these amenities, and Project activities will have no effect on the accessibility of these amenities.

EXHIBIT G

DEPICTION OF TRANSMISSION LINE STRUCTURE

M:\projects\1608.01\CEC App\ExhG Single Steel Structure.mxd



Data Source: Southwest Transmission Cooperative, Inc.

Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project
CEC Application

Typical of Single Steel Structure
Exhibit G

WestLand Resources, Inc.
Engineering and Environmental Consultants

EXHIBIT H

EXISTING PLANS FOR THE PROJECT AREA

Exhibit H
Existing Plans for the Project Area

Existing plans for the Project Area are summarized in the Environmental Report (Exhibit B) and are compatible the Project. Planned uses coincide with the existing character of the Project Area, which has been previously altered by the construction of numerous roads and overhead utility lines as well as residential and commercial development. The new transmission line would follow the alignment of the existing transmission line. The new transmission structures would be 10 to 20 ft higher than the existing structures, but would reduce the number of new structures from 113 to approximately 95. The proposed new transmission structures would cause no change to the existing landscape; therefore, the Project will not conflict with existing plans for the Project Area.

EXHIBIT I

NOISE, RADIO, AND TELEVISION INTERFERENCE

Exhibit I
Noise, Radio, and Television Interference

Potential noise, radio, and television interferences that may result from the Project are evaluated in the Environmental Report (Exhibit B) and summarized below.

No noise monitoring or study was included as part of this analysis. The land uses adjacent to the Project are a mix of undeveloped land, fallow and cultivated agriculture, low-density residences, and commercial development. The noise sources represent daily activities of the general population, including motor vehicle use mainly along Trico Road, Avra Valley Road, and Manville Road.

The Project is not expected to conflict with local noise standards or ordinances, and the noise generated by the Project would likely be near the current background noise levels within the Project Area.

The use of construction equipment during the construction of the transmission line would cause temporary elevated noise levels within the Project Area. These increases in noise levels would have minor effects on local residents. Construction activities are planned for normal business hours, when increased noise levels are more tolerable, to minimize the impacts of the construction noise.

Noise associated with the transmission line operation is not expected to differ from that generated by the existing transmission line.

During maintenance activities, noise would be generated by crews conducting maintenance or repairs. These noises could be considered only a nuisance.

The transmission line will be rebuilt at the same voltage that has been in operation since 1961, so no change in radio or television interference is anticipated to result from the Project.

EXHIBIT J
SCOPING

J-1 PUBLIC OPEN HOUSE INVITATION
J-2 COMMENTS COLLECTED DURING PUBLIC OPEN HOUSE
J-3 WEBSITE PROJECT INFORMATION
J-4 TRIBAL MAILING LIST
J-5 TRIBAL SCOPING LETTER
J-6 TRIBAL COMMENTS
J-7 AGENCY MAILING LIST
J-8 AGENCY SCOPING LETTERS
J-9 AGENCY COMMENTS

EXHIBIT J

J-1 PUBLIC OPEN HOUSE INVITATION

Southwest Transmission Cooperative, Inc

WestLand Resources, Inc.
Engineering and Environmental Consultants

Please Join Us

For a Public Open House session
on the Proposed Marana to Avra Valley Transmission Line Rebuild Project

Southwest Transmission Cooperative staff members and consultants will be providing information to the public such as details regarding project location, schedules, and proposed project design. We welcome your questions, comments, and potential concerns regarding this proposed project during the public open house meeting being held on:

Tuesday, April 14, 2009 - 5:30 pm to 7:00 pm

Road Runner Elementary School Cafeteria
16651 W Calle Carmela, Marana AZ 85653

Additional information can be obtained online at www.southwesttransmission.coop
or by contacting us at (520) 586-5457

Los servicios billingües estarán disponibles

SOUTHWEST TRANSMISSION COOPERATIVE
P.O. Box 2195
Benson AZ 85602-2195

PUBLIC OPEN HOUSE MEETING
Tuesday, April 14, 2009
5:30 pm - 7:00 pm
Road Runner Elementary School Cafeteria

EXHIBIT J-2
COMMENTS COLLECTED DURING PUBLIC OPEN HOUSE

Southwest Transmission Cooperative, Inc

Marana to Avra Valley Transmission Line Rebuild Project

WestLand Resources, Inc. Engineering and Environmental Consultants

We would like your input:

We welcome your questions, comments and concerns regarding the proposed project during the public open house meeting on Tuesday, April 14, 2009 at the Roadrunner Elementary School Cafeteria at 1665 W. Calle Carmela, Marana, Arizona.

Please describe any issues or concerns that should be addressed for the proposed project.

Will my property be Requesting a right of entry. ADDRESS 13001 N. TRICO RD, MARANA AZ 85653
OWNERS JOAQUIN CCOTA & ELVIRA CHAVEZ

Heard About This Project Through:

____ Project Website ____ Postcard Mailing ____ Public Meeting ____ Newspaper ____ Other

EXHIBIT J-3
WEBSITE PROJECT INFORMATION

Southwest Transmission COOPERATIVE, INC

WestLand Resources, Inc.
Engineering and Environmental Consultants

Marana Tap to Sandario Tap Transmission Line Rebuild Project

Who is Southwest Transmission Cooperative?

Southwest Transmission Cooperative, Inc. (SWTC) is a non-profit transmission cooperative owned by six Class A members. These Class A members are non-profit distribution cooperatives that deliver power at retail to consumers in rural areas of Arizona and other parts of the Southwest. SWTC transmits power over high voltage transmission lines to members primarily from the Arizona Electric Power Cooperative Apache Generating Station, located near Cochise, Arizona.

What are we proposing to do?

SWTC proposes to rebuild an existing 115-kilovolt (kV) transmission line near the Town of Marana, Pima County, Arizona. SWTC is proposing to rebuild the existing 115 kV transmission line using an enhanced design, which will accommodate both current and future needs of the Class A Members. The transmission line upgrade will begin at the existing Western Area Power Administration Saguaro to Rattlesnake 115 kV transmission line at a point located just south of the intersection of the Trico Marana Road and North Trico Road. From this point, the upgrade will proceed to SWTC's Marana Substation. From the Marana Substation the upgrade parallels North Trico Road to the junction with SWTC's existing Sandario 115 kV line located approximately 1 mile south of Manville Road.

Why are we doing it?

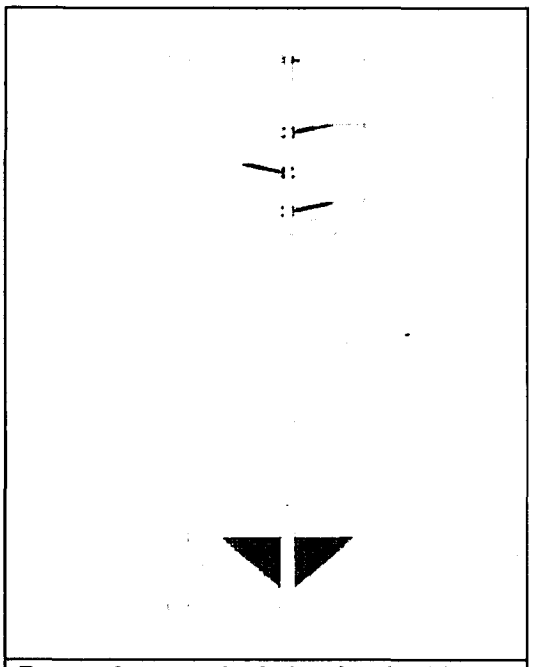
The proposed project is necessary to support existing local electric needs as well as SWTC's ability to accommodate emergency needs should failure occur elsewhere in their system.

Photograph of existing structures along North Trico Road

The existing transmission line was constructed in 1961 and to date the conductor has not received upgrading. The existing line is currently at capacity and would be unable to transmit additional loads without failure should an emergency occur elsewhere in the system. SWTC is proposing to replace the existing conductor with larger conductor rated at the same 115 kV voltage. In order to accommodate this upgrade, all of the existing structures supporting the new conductor will need to be replaced.

What it will look like?

In order to accommodate the upgraded conductor, new transmission line structures will be required to replace the existing wood structures. The proposed project would include replacing the wood structure with either concrete or self weathering steel monopoles (see example below). The new transmission structures will be between 10 and 20 feet taller than the existing wood structures, but will reduce the number of structures from the existing 113 to 95.



Proposed monopole design for the Marana Tap to Sandario Tap Transmission Line Rebuild Project

Where we are in the regulatory process?

SWTC has completed all the required regulatory documents and anticipates submitting them to the Rural Utilities Service in February. In addition to the federal process, the project will require approval by the Arizona Corporation Commission. The first step in this process is to submit an application for a Certificate of Environmental Compatibility to the Arizona Power Plant and Transmission Line Siting Committee. SWTC anticipates submitting the application for Certificate of Environmental Compatibility no later than March.

Where can more information be obtained?

SWTC environmental staff can be contacted for more information.

Kevin Barnes
Environmental Planner
Southwest Transmission Cooperative, Inc.
P.O. Box 2165
Benson, Arizona 85602
Phone: 520-586-5457
Email: kbarnes@ssw.coop

Southwest Transmission COOPERATIVE, INC

Marana to Avra Valley Transmission Line Rebuild Project Update

Since conducting a public open house in April 2009, the focus of the project has been on completing resource surveys and soliciting input from state and federal agencies. Resource surveys completed thus far include: biological evaluation, cultural resource survey, and a review of potentially jurisdictional waters. In compliance with the National Environmental Policy Act (NEPA), this information is being compiled in an Environmental Report and will be submitted to the Rural Utilities Service.

In addition to NEPA compliance, SWTC is preparing the required application for a Certificate of Environmental Compatibility (CEC). The CEC application will be submitted to the Arizona Power Plant and Transmission Line Siting Committee. It is anticipated that the application will be submitted to the Line Siting Committee in November 2010, with the formal hearing taking place in January 2011.

Southwest Transmission COOPERATIVE, INC

WestLand Resources, Inc.
Engineering and Environmental Consultants

Marana to Avra Valley Transmission Line Rebuild Project

Who is Southwest Transmission Cooperative?

Southwest Transmission Cooperative, Inc. is a non-profit transmission cooperative owned by six Class A members. These Class A members are non-profit distribution cooperatives that deliver power at retail to the rural areas of Arizona and other parts of the Southwest. Southwest Transmission Cooperative, Inc. transmits power over high voltage transmission lines to members primarily from the Arizona Electric Power Cooperative Apache Generating Station, located near Cochise, Arizona.

What are we proposing to do?

Southwest Transmission Cooperative, Inc. proposes to rebuild an existing 115-kilovolt (kV) transmission line near the Town of Marana, Pima County, Arizona. Southwest Transmission is proposing to rebuild the existing 115 kV transmission line using an enhanced design, which will accommodate both current and future needs of the Class A Members. The transmission line upgrade will begin at the existing Western Area Power Administration Saguaro to Rattlesnake 115 kV transmission line at a point located just south of the intersection of the Trico Marana Road and North Trico Road. From this point, the upgrade will proceed to Southwest Transmission's Marana Substation. From the Marana Substation the upgrade parallels North Trico Road to the junction with Southwest Transmission's existing Sandario 115 kV line located approximately 1 mile south of Manville Road.

Why are we doing it?

The proposed project is necessary to support existing local electric needs as well as Southwest Transmission's ability to accommodate emergency needs should failure occur elsewhere in their system.

Photograph of existing structures along North Trico Road

The existing transmission line was constructed in 1963 and to date the conductor has not received upgrading. The existing line is currently at capacity and would be unable to transmit additional loads without failure should an emergency occur elsewhere in the system. Southwest Transmission is proposing to replace the existing conductor with more efficient conductor rated at the same 115 kV voltage. In order to accommodate this upgrade, all of the existing structures supporting the new conductor will need to be replaced.

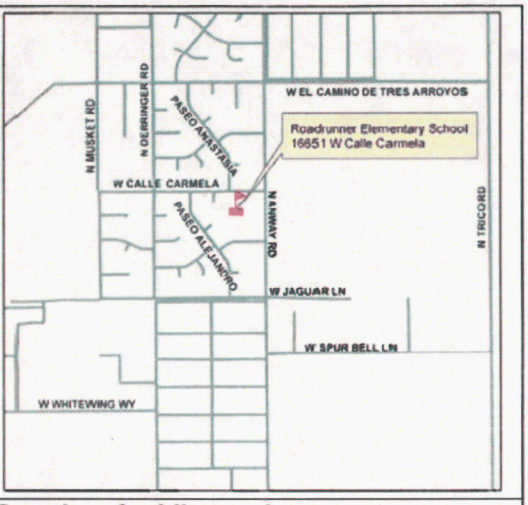
What it will look like?

In order to accommodate the upgraded conductor, new transmission line structures will be required to replace the existing wood structures. The proposed project would include replacing the wood structure with either concrete or self weathering steel monopoles (see example below). The new transmission structures will be between 10 and 20 feet taller than the existing wood structures, but will replace the old structures at a ration of one monopole for every two wood structures, reducing the total number of structures.

Proposed monopole design for the Marana to Avra Valley Transmission Line Rebuild Project

Where can more information be obtained?

Southwest Transmission will host a public open house on Tuesday, April 14, 2009 from 5:30 - 7:00 pm at the Roadrunner Elementary School Cafeteria, located at 1665 W. Calle Carmela (see map).



Location of public open house

Additionally, Southwest Transmission environmental staff can be contacted for more information or you may visit our website at www.southwesttransmission.coop.

Kevin Barnes
Environmental Planner
Southwest Transmission Cooperative, Inc.
P.O. Box 2165
Benson, Arizona 85602
Phone: 520-586-5457
Email: kbarnes@ssw.coop

R 10 E
T 11 S
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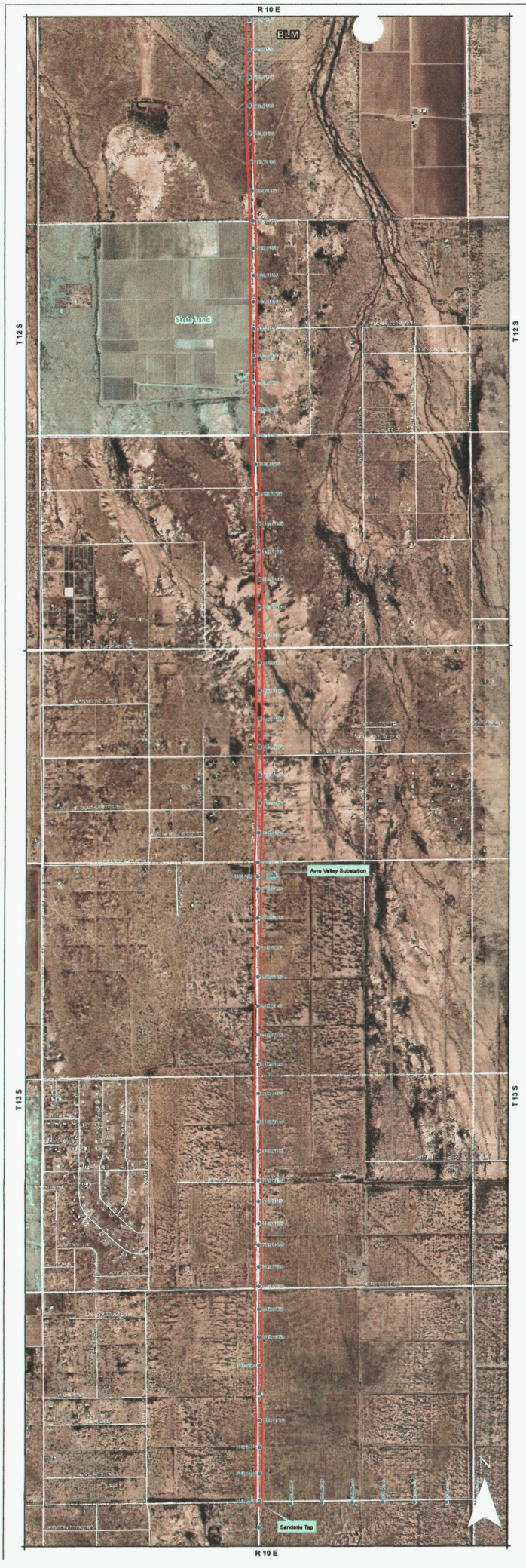
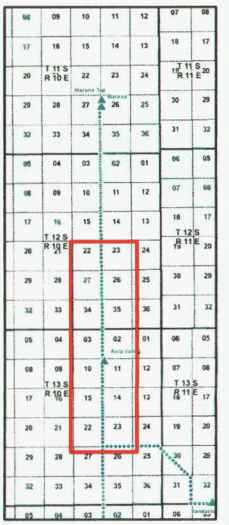
Marana Tap
Marana Substation
State Land





- SWTC Substations
- SWTC Structures
- Project Area
- Roads
- Section Lines
- Township/Range Lines

Land Ownership

- BLM
- State Trust
- Private

This document is the property of SWTC, and except as may be otherwise required by law, shall not be reproduced or disclosed to any third party without the express written consent of SWTC. Information contained herein must be maintained in a confidential manner at all times. This drawing is for illustrative purposes only and is not a survey product. SWTC and its affiliates assume no liability for damages arising from errors, omissions, or use of or reliance on this information. This drawing is distributed "as is" without warranty of any kind, expressed or implied, with respect to the reuse of the data provided herewith regardless of its format or the means of its transmission. There is no guarantee or representation to the user as to the accuracy, currency, suitability, or reliability of this data for any purpose.

Marana to Avra Valley Transmission Line Rebuild Project

Southwest Transmission
March 2009

Southwest Transmission Cooperative
1000 S Hwy 80
Benson, AZ. 85602
Telephone (520) 586-5000

N
W E
S

NAD-83 State Plane
Arizona Central Zone
Aerial Photograph: 2005 1 Foot

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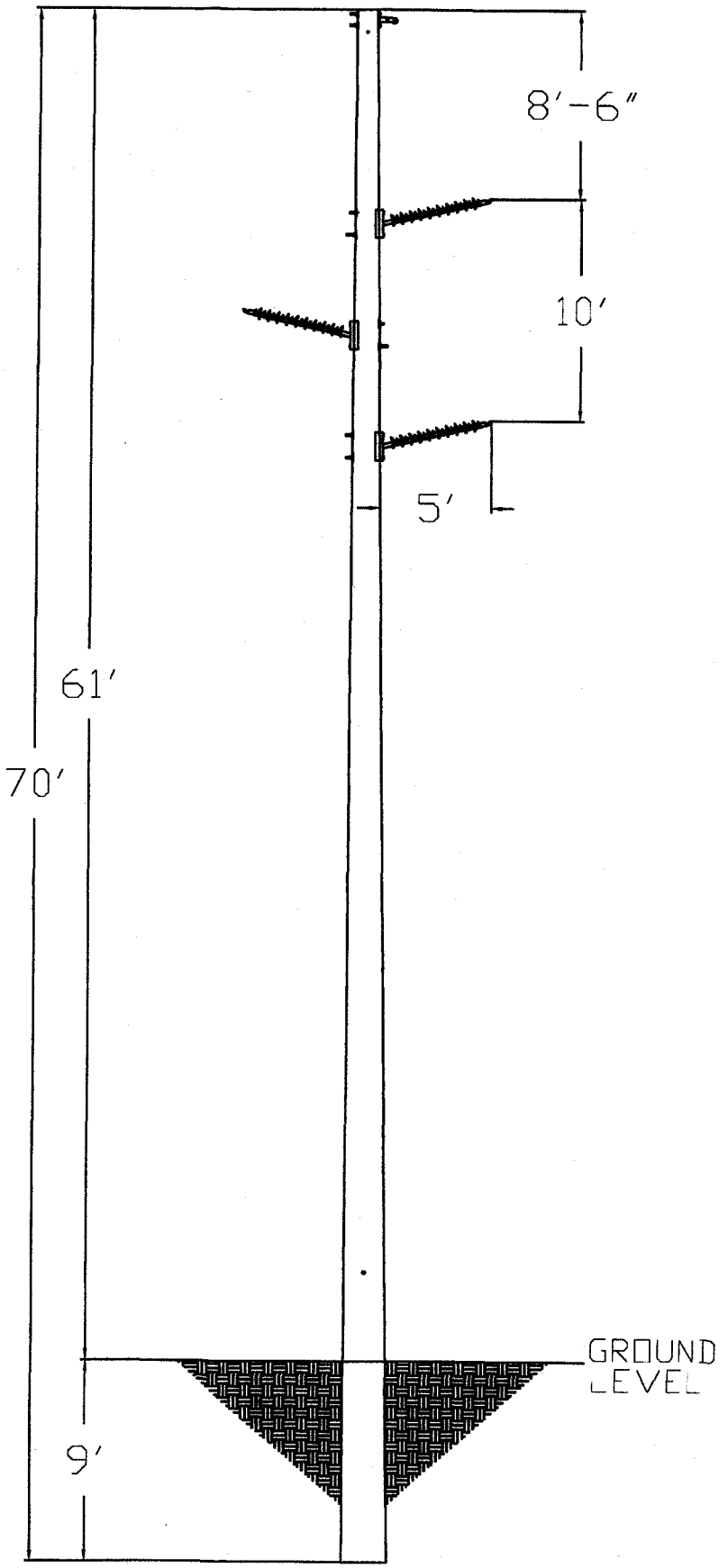
8′-6″
10′
5′
61′
70′
GROUND LEVEL
9′

EXHIBIT J-4

TRIBAL MAILING LIST

Tribal Consultation List	
Caroline Antone Ak-Chin Indian Community Cultural Resources Office 42507 W. Peters & Nall Rd. Maricopa, AZ 85239	Barnaby V. Lewis, Cultural Resources Specialist Gila River Indian Community Cultural Resources Management Program P.O. Box 2140 Sacaton, AZ 85247
Leigh Kuwanwisiwma Hopi Tribe Hopi Cultural Preservation Office P.O. Box 123 Kykotsmovi, AZ 86039	Amalia A.M. Reyes, Language and Cultural Preservation Specialist Pascua Yaqui Tribe 7474 S. Camino de Oeste Tucson, AZ 85746
Angela Garcia-Lewis, NAGPRA Coordinator Salt River Pima-Maricopa Indian Community Cultural and Environmental Services 10,005 E. Osborne Rd. Scottsdale, AZ 85256	Vernelda J. Grant, Tribal Archaeologist/Director San Carlos Apache Tribe Historic Preservation & Archaeology Department P.O. Box 0 San Carlos, AZ 85550
Peter Steere, Program Manager Tohono O'odahm Nation Cultural Affairs Department P.O. Box 837 Sells, AZ 85634	John Welch, Ph.D., Tribal Historic Preservation Officer White Mountain Apache Tribe Historic Preservation Office P.O. Box 507 Fort Apache, AZ 85926
Norman Cooeyate, Governor Zuni Pueblo P.O. Box 339 Zuni, NM 87327	

EXHIBIT J-5

TRIBAL SCOPING LETTER

SEP 23 2009

Southwest Transmission
COOPERATIVE, INC

P.O. BOX 2195 • BENSON, ARIZONA 85602 • (520) 586-5599 • southwesttransmission.org

September 22, 2009

Mr. Dennis Rankin
Environmental Protection Specialist
Engineering and Environmental Staff
Rural Utilities Service
1400 Independence Ave, SW Rm. 2244-S
Stop 1517 S. Agricultural Building
Washington, DC 20250

RE: Marana to Avra Valley Transmission Line Rebuild Project

Dear Mr. Rankin:

Southwest Transmission Cooperative, Inc. (SWTC) proposes to rebuild an existing 115-kilovolt (kV) transmission line near the Town of Marana, Pima County, Arizona. SWTC is proposing to rebuild the existing 115 kV transmission line using an enhanced design, which will accommodate both current and future needs of the Class A Members. The transmission line upgrade will begin at the existing Western Area Power Administration Saguaro to Rattlesnake 115 kV transmission line at a point located just south of the intersection of the Trico Marana Road and North Trico Road. From this point, the upgrade will proceed to SWTC's Marana Substation. From the Marana Substation the upgrade parallels North Trico Road to the junction with SWTC's existing Sandario 115 kV line located approximately 1 mile south of Manville Road (see attached maps).

The existing transmission line was constructed in 1963 and to date the conductor has not received upgrading. The existing line is currently at capacity and would be unable to transmit additional loads without failure should an emergency occur elsewhere in the system. SWTC is proposing to replace the existing conductor with more efficient conductor rated at the same 115 kV voltage. In order to accommodate this upgrade, all of the existing structures supporting the new conductor will need to be replaced.

In order to accommodate the upgraded conductor, new transmission line structures will be required to replace the existing wood structures. The proposed project would include replacing the wood structure with either concrete or self weathering steel monopoles. The new transmission structures will be between 10 and 20 feet taller than the existing wood structures, but will replace the old structures at a ration of one monopole for every two wood structures, reducing the total number of structures.

A portion of this project is identified in SWTC's 2009 – 2110 Construction Work Plan: Marana to Avra Valley 115 kV Line Upgrade CAPT.000893011 (1000.2).

The two additional portions of this upgrade: Marana Tap to Marana and Sandario to Sandario Junction have received preliminary SWTC board approval and will be included in SWTC's second amendment of the 2009 – 2010 Construction Work Plan

To facilitate the required tribal consultation under Section 106 of the Historic Properties Preservation Act, I have attached a list of tribes that have traditionally been consulted with on projects in Arizona. In addition to the list of tribes, I have attached 11 copies of the project map for your use in consulting with the tribes.

If you have any questions regarding this matter, please feel free to contact me at 520-586-5457.

Sincerely,

Kevin Barnes
Environmental Planner

Via Fed Ex (7969 6406 5259)

c/ M. Freeeark
Amanda Best, WestLand Resources, Inc.
File: Marana to Avra Rebuild Project/Correspondence w/enc.

Tribal Consultation List	
Caroline Antone Ak-Chin Indian Community Cultural Resources Office 42507 W. Peters & Nall Rd. Maricopa, AZ 85239	Barnaby V. Lewis, Cultural Resources Specialist Gila River Indian Community Cultural Resources Management Program P.O. Box 2140 Sacaton, AZ 85247
Leigh Kuwanwisiwma Hopi Tribe Hopi Cultural Preservation Office P.O. Box 123 Kykotsmovi, AZ 86039	Amalia A.M. Reyes, Language and Cultural Preservation Specialist Pascua Yaqui Tribe 7474 S. Camino de Oeste Tucson, AZ 85746
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Peter Steere, Program Manager Tohono O'odahm Nation Cultural Affairs Department P.O. Box 837 Sells, AZ 85634	John Welch, Ph.D., Tribal Historic Preservation Officer White Mountain Apache Tribe Historic Preservation Office P.O. Box 507 Fort Apache, AZ 85926
Norman Cooeyate, Governor Zuni Pueblo P.O. Box 339 Zuni, NM 87327	

EXHIBIT J-6
TRIBAL COMMENTS

Exhibit J-6
Tribal Comments

Section 106 Consultation under the National Historic Preservation Act is currently being conducted by the lead federal agency, the Rural Utilities Service ("RUS"). To date the process has not generated any comments from contacted tribes.

EXHIBIT J-7

AGENCY MAILING LIST

Southwest Transmission Cooperative
Marana Tap to Sandario Tap Transmission Line Rebuild Project
Agency Mailing List

Federal Agencies	
Marjorie Blaine, Senior Project Manager United States Army Corps of Engineers 5205 E. Comanche Street Tucson, AZ 85707	Sallie McGuire, Regulatory Office Section Chief United States Army Corps of Engineers Los Angeles District Phoenix Office 3636 N. Central Avenue, Suite 760 Phoenix, AZ 85012-1936
Dennis Rankin, Environmental Protection Specialist Rural Utilities Service Mailstop 1571, Room 2244-S, 1400 Independence Avenue SW Washington, D.C. 20250-1571	Steven L Spangle, Field Supervisor United States Fish and Wildlife Service 2321 West Royal Palm Road, Suite 103 Phoenix, AZ 85021
State Agencies	
James McGinnis, Manager Arizona Native Plant Law Arizona Department of Agriculture Plant Services Division 1688 W. Adams Phoenix, AZ 85007	Benjamin H. Grumbles, Director Arizona Department of Environmental Quality Mail code R1000T, 400 W. Congress, Suite 433 Tucson, AZ 85701
Leonard Ordway, Region 5 Supervisor Arizona Game and Fish Department 555 North Greasewood Road Tucson, AZ 85745	Laura Canaca, Project Evaluation Program Supervisor Arizona Game and Fish Department WWHB 5000 W. Carefree Highway Phoenix, AZ 85086
Ruben Ojeda, Manager Arizona State Land Department Right of Way Section 1616 W. Adams Phoenix, AZ 85007	Gordon Taylor, Manager Arizona State Land Department Planning Section 1616 W. Adams Phoenix, AZ 85007
David L. McKay, State Conservationist Natural Resources Conservation Service 230 N. First Avenue, Suite 509 Phoenix, AZ 85003-1733	JoAnne Medley, Compliance Specialist Arizona State Parks State Historic Preservation Office 1300 W. Washington Phoenix, AZ 85007
Local Jurisdictions and Government	
Gary G. Hayes, Executive Director Pima Association of Governments 177 N. Church, Suite 405 Tucson, AZ 85701	Sharon Bronson, District 3 Pima County Board of Supervisors 130 W. Congress Street, 11th Floor Tucson, AZ 85701
Arlan Colton, Planning Official Pima County Planning Division 201 N. Stone, 2nd Floor Tucson, AZ 85701	Ursula Kramer, Director Pima County Department of Environmental Quality 150 W. Congress Tucson, AZ 85701

Southwest Transmission Cooperative
Marana Tap to Sandario Tap Transmission Line Rebuild Project
Agency Mailing List

Kevin Kish, Development Services General Manager Town of Marana Marana Municipal Complex 11555 W. Civic Center Drive Marana, AZ 85653	Gilbert Davidson, Town Manager Town of Marana Marana Municipal Complex 11555 W. Civic Center Drive Marana, AZ 85653
Special Interest Groups	
Paul Green, Executive Director Audubon Society 300 E. University Blvd, #120 Tucson, AZ 85705	Marcy Olajos, Board Chair Center for Biological Diversity P.O. Box 710 Tucson, AZ 85702
Carolyn Campbell, Executive Director Coalition for Sonoran Desert Protection 738 N. 5th Ave Tucson, AZ 85705	Eva Lee Sargent, Director Southwest Program Defenders of Wildlife 110 S. Church Tucson, AZ 85701
Michael Wilson, Research Director Drylands Institute 2509 N. Campbell Ave. Tucson, AZ 85719	Melanie Emerson, Executive Director Sky Island Alliance P.O. Box 41165 Tucson, AZ 85717
Other Stakeholders	
Ron Brown, Manager of Electric Operations Trico Electric P.O. Box 930 Marana, AZ 85653	Frank Gonzales, Supervisor Distribution Design Trico Electric P.O. Box 930 Marana, AZ 85653

EXHIBIT J-8
AGENCY SCOPING LETTERS

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

RECEIVED
DEC 21 2010
ENVIRONMENTAL

Ms. Marjorie Blaine, Senior Project Manager
UNITED STATES ARMY CORPS OF ENGINEERS
5205 East Comanche Street
Davis-Monthan Air Force Base
Tucson, AZ 85707

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Ms. Blaine:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

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WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Ms. Sallie McGuire, Regulatory Office Section Chief
UNITED STATES ARMY CORPS OF ENGINEERS
Los Angeles District Phoenix Office
3636 North Central Avenue, Suite 760
Phoenix, AZ 85012-1936

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Ms. McGuire:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Mr. Steven L. Spangle, Field Supervisor
UNITED STATES FISH AND WILDLIFE SERVICE
2321 West Royal Palm Road, Suite 103
Phoenix, AZ 85021

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Mr. Spangle:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Mr. James McGinnis, Manager Arizona Native Plant Law
ARIZONA DEPARTMENT OF AGRICULTURE
Plant Services Division
1688 West Adams
Phoenix, AZ 85007

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Mr. McGinnis:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Mr. Benjamin H. Grumbles, Director
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Mail Code R1000T
400 West Congress, Suite 433
Tucson, AZ 85701

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Mr. Grumbles:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Mr. Leonard Ordway, Region 5 Supervisor
ARIZONA GAME AND FISH DEPARTMENT
555 North Greasewood Road
Tucson, AZ 85745

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Mr. Ordway:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Ms. Laura Canaca, Project Evaluation Program Supervisor
ARIZONA GAME AND FISH DEPARTMENT
WWHB
5000 West Carefree Highway
Phoenix, AZ 85086

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Ms. Canaca:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Mr. Ruben Ojeda, Manager
ARIZONA STATE LAND DEPARTMENT
Right of Way Section
1616 West Adams
Phoenix, AZ 85007

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Mr. Ojeda:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Mr. Gordon Taylor, Manager
ARIZONA STATE LAND DEPARTMENT
Planning Section
1616 West Adams
Phoenix, AZ 85007

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Mr. Taylor:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Mr. David L. McKay, State Conservationist
NATURAL RESOURCES CONSERVATION SERVICE
230 North First Avenue, Suite 509
Phoenix, AZ 85003-1733

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Mr. McKay:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Ms. JoAnne Medley, Compliance Specialist
ARIZONA STATE PARKS
State Historic Preservation Office
1300 West Washington
Phoenix, AZ 85007

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Ms. Medley:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

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WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Mr. Gary G. Hayes, Executive Director
PIMA ASSOCIATION OF GOVERNMENTS
177 North Church, Suite 405
Tucson, AZ 85701

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Mr. Hayes:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

The Honorable Sharon Bronson, District 3
PIMA COUNTY BOARD OF SUPERVISORS
130 West Congress Street, 11th Floor
Tucson, AZ 85701

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Supervisor Bronson:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Mr. Arlan Colton, Planning Official
PIMA COUNTY PLANNING DIVISION
201 North Stone, 2nd Floor
Tucson, AZ 85701

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Mr. Colton:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Ms. Ursula Kramer, Director
PIMA COUNTY DEPARTMENT OF ENVIRONMENTAL QUALITY
150 West Congress
Tucson, AZ 85701

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Ms. Kramer:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Mr. Kevin Kish, Development Services General Manager
TOWN OF MARANA
Marana Municipal Complex
11555 West Civic Center Drive
Marana, AZ 85653

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Mr. Kish:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Mr. Gilbert Davidson, Town Manager
TOWN OF MARANA
Marana Municipal Complex
11555 West Civic Center Drive
Marana, AZ 85653

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Mr. Davidson:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Mr. Paul Green, Executive Director
AUDUBON SOCIETY
300 East University Blvd, #120
Tucson, AZ 85705

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Mr. Green:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Ms. Marcy Olajos, Board Chair
CENTER FOR BIOLOGICAL DIVERSITY
P.O. Box 710
Tucson, AZ 85702

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Ms. Olajos:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Ms. Carolyn Campbell, Executive Director
COALITION FOR SONORAN DESERT PROTECTION
738 North 5th Ave
Tucson, AZ 85705

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Ms. Campbell:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Ms. Eva Lee Sargent, Director Southwest Program
DEFENDERS OF WILDLIFE
110 South Church
Tucson, AZ 85701

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Ms. Sargent:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Mr. Michael Wilson, Research Director
DRYLANDS INSTITUTE
2509 North Campbell Ave.
Tucson, AZ 85719

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Mr. Wilson:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Ms. Melanie Emerson, Executive Director
SKY ISLAND ALLIANCE
P.O. Box 41165
Tucson, AZ 85717

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Ms. Emerson:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Mr. Ron Brown, Manager of Electric Operations
TRICO ELECTRIC
P.O. Box 930
Marana, AZ 85653

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Mr. Brown:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Mr. Frank Gonzales, Supervisor Distribution Design
TRICO ELECTRIC
P.O. Box 930
Marana, AZ 85653

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Mr. Gonzales:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Mr. Orville Saling
MARANA REGIONAL AIRPORT
11555 West Civic Center Drive
Marana, Arizona 85658

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Mr. Saling:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

December 16, 2010

Mr. Jim Petty
PINAL AIRPARK
31 North Pinal Street, Building A
Florence, Arizona 85132

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01

Dear Mr. Petty:

On behalf of Southwest Transmission Cooperative, Inc. ("SWTC"), on August 14, 2009, WestLand Resources, Inc. (WestLand), sent your agency a request for comments on the proposed Marana Tap to Sandario Tap Transmission Line Rebuild Project. SWTC has completed their final and refined engineering analysis and wanted to advise your agency of the results.

You may recall that the Project is not a new transmission line, but instead is a rebuild of an existing line consisting of 113 structures which has occupied this same route for some 50 years. The final engineering analysis indicates SWTC will replace the current 113 structures with approximately 95 structures in the rebuild of this transmission line.

Although SWTC does not anticipate that this refined engineering analysis will result in additional comments from your agency, we will hold open the comment period until January 15, 2011. If your agency wishes to provide any comments, please send them to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712.

If you need additional information or have questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Brian Lindenlaub, WestLand Resources, Inc.
Dennis Rankin, RUS

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Ms. Marjorie Blaine, Senior Project Manager
UNITED STATES ARMY CORPS OF ENGINEERS
5205 East Comanche Street
Davis-Monthan Air Force Base
Tucson, AZ 85707

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Ms. Blaine:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

SWTC proposes to rebuild the existing 115-kV transmission line using an enhanced design, which will accommodate both current and future electrical needs. The transmission line upgrade will begin at the existing Western Area Power Administration's Saguaro to Rattlesnake 115-kV transmission line at a point located just south of the intersection of Trico Marana Road and North Trico Road. From this point, the upgrade will proceed to SWTC's Marana Substation. From the Marana Substation, the upgrade parallels North Trico Road to the junction with SWTC's existing Sandario 115-kV line located approximately 1 mile south of Manville Road (please see attached map).

The existing transmission line was constructed in 1963 and, to date, the conductor has not received upgrading. The existing line is currently at capacity and would be unable to transmit additional loads without failure should an emergency occur elsewhere in SWTC's system. SWTC is proposing to replace the existing conductor with a more efficient conductor rated at the same 115-kV voltage. In order to accommodate this upgrade, all the existing structures will need to be replaced to accommodate the new heavier conductor.

The proposed project would include replacing the existing wooden structures with either concrete or self-weathering steel monopoles. The new transmission structures would be between 10 to 20 feet taller than the existing wooden structures, but would replace the old structures at an approximate ratio of one monopole for every two wooden structures, reducing the total number of structures.

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

For adequate consideration, we would appreciate your input regarding questions or concerns about this project prior to September 15, 2009. Please provide your comments to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712. If you require additional information or have any questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585. Thank you in advance for your input. It is greatly appreciated.

Sincerely,
WestLand Resources, Inc.

Amanda L Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Ms. Sallie McGuire, Regulatory Office Section Chief
UNITED STATES ARMY CORPS OF ENGINEERS
Los Angeles District Phoenix Office
3636 North Central Avenue, Suite 760
Phoenix, AZ 85012-1936

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Ms. McGuire:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

SWTC proposes to rebuild the existing 115-kV transmission line using an enhanced design, which will accommodate both current and future electrical needs. The transmission line upgrade will begin at the existing Western Area Power Administration's Saguaro to Rattlesnake 115-kV transmission line at a point located just south of the intersection of Trico Marana Road and North Trico Road. From this point, the upgrade will proceed to SWTC's Marana Substation. From the Marana Substation, the upgrade parallels North Trico Road to the junction with SWTC's existing Sandario 115-kV line located approximately 1 mile south of Manville Road (please see attached map).

The existing transmission line was constructed in 1963 and, to date, the conductor has not received upgrading. The existing line is currently at capacity and would be unable to transmit additional loads without failure should an emergency occur elsewhere in SWTC's system. SWTC is proposing to replace the existing conductor with a more efficient conductor rated at the same 115-kV voltage. In order to accommodate this upgrade, all the existing structures will need to be replaced to accommodate the new heavier conductor.

The proposed project would include replacing the existing wooden structures with either concrete or self-weathering steel monopoles. The new transmission structures would be between 10 to 20 feet taller than the existing wooden structures, but would replace the old structures at an approximate ratio of one monopole for every two wooden structures, reducing the total number of structures.

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

For adequate consideration, we would appreciate your input regarding questions or concerns about this project prior to September 15, 2009. Please provide your comments to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712. If you require additional information or have any questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585. Thank you in advance for your input. It is greatly appreciated.

Sincerely,
WestLand Resources, Inc.

Amanda L Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Mr. Steven L. Spangle, Field Supervisor
UNITED STATES FISH AND WILDLIFE SERVICE
2321 West Royal Palm Road, Suite 103
Phoenix, AZ 85021

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Mr. Spangle:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

SWTC proposes to rebuild the existing 115-kV transmission line using an enhanced design, which will accommodate both current and future electrical needs. The transmission line upgrade will begin at the existing Western Area Power Administration's Saguaro to Rattlesnake 115-kV transmission line at a point located just south of the intersection of Trico Marana Road and North Trico Road. From this point, the upgrade will proceed to SWTC's Marana Substation. From the Marana Substation, the upgrade parallels North Trico Road to the junction with SWTC's existing Sandario 115-kV line located approximately 1 mile south of Manville Road (please see attached map).

The existing transmission line was constructed in 1963 and, to date, the conductor has not received upgrading. The existing line is currently at capacity and would be unable to transmit additional loads without failure should an emergency occur elsewhere in SWTC's system. SWTC is proposing to replace the existing conductor with a more efficient conductor rated at the same 115-kV voltage. In order to accommodate this upgrade, all the existing structures will need to be replaced to accommodate the new heavier conductor.

The proposed project would include replacing the existing wooden structures with either concrete or self-weathering steel monopoles. The new transmission structures would be between 10 to 20 feet taller than the existing wooden structures, but would replace the old structures at an approximate ratio of one monopole for every two wooden structures, reducing the total number of structures.

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

For adequate consideration, we would appreciate your input regarding questions or concerns about this project prior to September 15, 2009. Please provide your comments to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712. If you require additional information or have any questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585. Thank you in advance for your input. It is greatly appreciated.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Mr. James McGinnis, Manager Arizona Native Plant Law
ARIZONA DEPARTMENT OF AGRICULTURE
Plant Services Division
1688 West Adams
Phoenix, AZ 85007

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Mr. McGinnis:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

SWTC proposes to rebuild the existing 115-kV transmission line using an enhanced design, which will accommodate both current and future electrical needs. The transmission line upgrade will begin at the existing Western Area Power Administration's Saguaro to Rattlesnake 115-kV transmission line at a point located just south of the intersection of Trico Marana Road and North Trico Road. From this point, the upgrade will proceed to SWTC's Marana Substation. From the Marana Substation, the upgrade parallels North Trico Road to the junction with SWTC's existing Sandario 115-kV line located approximately 1 mile south of Manville Road (please see attached map).

The existing transmission line was constructed in 1963 and, to date, the conductor has not received upgrading. The existing line is currently at capacity and would be unable to transmit additional loads without failure should an emergency occur elsewhere in SWTC's system. SWTC is proposing to replace the existing conductor with a more efficient conductor rated at the same 115-kV voltage. In order to accommodate this upgrade, all the existing structures will need to be replaced to accommodate the new heavier conductor.

The proposed project would include replacing the existing wooden structures with either concrete or self-weathering steel monopoles. The new transmission structures would be between 10 to 20 feet taller than the existing wooden structures, but would replace the old structures at an approximate ratio of one monopole for every two wooden structures, reducing the total number of structures.

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Sincerely,
WestLand Resources, Inc.

Amanda L Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Mr. Benjamin H. Grumbles, Director
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Mail Code R1000T
400 West Congress, Suite 433
Tucson, AZ 85701

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Mr. Grumbles:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

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The existing transmission line was constructed in 1963 and, to date, the conductor has not received upgrading. The existing line is currently at capacity and would be unable to transmit additional loads without failure should an emergency occur elsewhere in SWTC's system. SWTC is proposing to replace the existing conductor with a more efficient conductor rated at the same 115-kV voltage. In order to accommodate this upgrade, all the existing structures will need to be replaced to accommodate the new heavier conductor.

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Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Mr. Leonard Ordway, Region 5 Supervisor
ARIZONA GAME AND FISH DEPARTMENT
555 North Greasewood Road
Tucson, AZ 85745

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Mr. Ordway:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

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Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Ms. Laura Canaca, Project Evaluation Program Supervisor
ARIZONA GAME AND FISH DEPARTMENT
WWHB
5000 West Carefree Highway
Phoenix, AZ 85086

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Ms. Canaca:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

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Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Mr. Ruben Ojeda, Manager
ARIZONA STATE LAND DEPARTMENT
Right of Way Section
1616 West Adams
Phoenix, AZ 85007

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Mr. Ojeda:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

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Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Mr. Gordon Taylor, Manager
ARIZONA STATE LAND DEPARTMENT
Planning Section
1616 West Adams
Phoenix, AZ 85007

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Mr. Taylor:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

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Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Mr. David L. McKay, State Conservationist
NATURAL RESOURCES CONSERVATION SERVICE
230 North First Avenue, Suite 509
Phoenix, AZ 85003-1733

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Mr. McKay:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

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WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Ms. JoAnne Medley, Compliance Specialist
ARIZONA STATE PARKS
State Historic Preservation Office
1300 West Washington
Phoenix, AZ 85007

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Ms. Medley:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

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Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Mr. Gary G. Hayes, Executive Director
PIMA ASSOCIATION OF GOVERNMENTS
177 North Church, Suite 405
Tucson, AZ 85701

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Mr. Hayes:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

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4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

For adequate consideration, we would appreciate your input regarding questions or concerns about this project prior to September 15, 2009. Please provide your comments to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712. If you require additional information or have any questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585. Thank you in advance for your input. It is greatly appreciated.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

The Honorable Sharon Bronson, District 3
PIMA COUNTY BOARD OF SUPERVISORS
130 West Congress Street, 11th Floor
Tucson, AZ 85701

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Supervisor Bronson:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

SWTC proposes to rebuild the existing 115-kV transmission line using an enhanced design, which will accommodate both current and future electrical needs. The transmission line upgrade will begin at the existing Western Area Power Administration's Saguaro to Rattlesnake 115-kV transmission line at a point located just south of the intersection of Trico Marana Road and North Trico Road. From this point, the upgrade will proceed to SWTC's Marana Substation. From the Marana Substation, the upgrade parallels North Trico Road to the junction with SWTC's existing Sandario 115-kV line located approximately 1 mile south of Manville Road (please see attached map).

The existing transmission line was constructed in 1963 and, to date, the conductor has not received upgrading. The existing line is currently at capacity and would be unable to transmit additional loads without failure should an emergency occur elsewhere in SWTC's system. SWTC is proposing to replace the existing conductor with a more efficient conductor rated at the same 115-kV voltage. In order to accommodate this upgrade, all the existing structures will need to be replaced to accommodate the new heavier conductor.

The proposed project would include replacing the existing wooden structures with either concrete or self-weathering steel monopoles. The new transmission structures would be between 10 to 20 feet taller than the existing wooden structures, but would replace the old structures at an approximate ratio of one monopole for every two wooden structures, reducing the total number of structures.

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Sincerely,
WestLand Resources, Inc.

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Mr. Arlan Colton, Planning Official
PIMA COUNTY PLANNING DIVISION
201 North Stone, 2nd Floor
Tucson, AZ 85701

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Mr. Colton:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

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The existing transmission line was constructed in 1963 and, to date, the conductor has not received upgrading. The existing line is currently at capacity and would be unable to transmit additional loads without failure should an emergency occur elsewhere in SWTC's system. SWTC is proposing to replace the existing conductor with a more efficient conductor rated at the same 115-kV voltage. In order to accommodate this upgrade, all the existing structures will need to be replaced to accommodate the new heavier conductor.

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WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Ms. Ursula Kramer, Director
PIMA COUNTY DEPARTMENT OF ENVIRONMENTAL QUALITY
150 West Congress
Tucson, AZ 85701

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Ms. Kramer:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

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The existing transmission line was constructed in 1963 and, to date, the conductor has not received upgrading. The existing line is currently at capacity and would be unable to transmit additional loads without failure should an emergency occur elsewhere in SWTC's system. SWTC is proposing to replace the existing conductor with a more efficient conductor rated at the same 115-kV voltage. In order to accommodate this upgrade, all the existing structures will need to be replaced to accommodate the new heavier conductor.

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WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Mr. Kevin Kish, Development Services General Manager
TOWN OF MARANA
Marana Municipal Complex
11555 West Civic Center Drive
Marana, AZ 85653

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Mr. Kish:

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WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Mr. Gilbert Davidson, Town Manager
TOWN OF MARANA
Marana Municipal Complex
11555 West Civic Center Drive
Marana, AZ 85653

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Mr. Davidson:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

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WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Mr. Paul Green, Executive Director
AUDUBON SOCIETY
300 East University Blvd, #120
Tucson, AZ 85705

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Mr. Green:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

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Sincerely,
WestLand Resources, Inc.

Amanda Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Ms. Marcy Olajos, Board Chair
CENTER FOR BIOLOGICAL DIVERSITY
P.O. Box 710
Tucson, AZ 85702

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Ms. Olajos:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

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WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Ms. Carolyn Campbell, Executive Director
COALITION FOR SONORAN DESERT PROTECTION
738 North 5th Ave
Tucson, AZ 85705

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Ms. Campbell:

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Amanda L. Best
Project Manager

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Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Ms. Eva Lee Sargent, Director Southwest Program
DEFENDERS OF WILDLIFE
110 South Church
Tucson, AZ 85701

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Ms. Sargent:

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Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Mr. Michael Wilson, Research Director
DRYLANDS INSTITUTE
2509 North Campbell Ave.
Tucson, AZ 85719

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Mr. Wilson:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

SWTC proposes to rebuild the existing 115-kV transmission line using an enhanced design, which will accommodate both current and future electrical needs. The transmission line upgrade will begin at the existing Western Area Power Administration's Saguaro to Rattlesnake 115-kV transmission line at a point located just south of the intersection of Trico Marana Road and North Trico Road. From this point, the upgrade will proceed to SWTC's Marana Substation. From the Marana Substation, the upgrade parallels North Trico Road to the junction with SWTC's existing Sandario 115-kV line located approximately 1 mile south of Manville Road (please see attached map).

The existing transmission line was constructed in 1963 and, to date, the conductor has not received upgrading. The existing line is currently at capacity and would be unable to transmit additional loads without failure should an emergency occur elsewhere in SWTC's system. SWTC is proposing to replace the existing conductor with a more efficient conductor rated at the same 115-kV voltage. In order to accommodate this upgrade, all the existing structures will need to be replaced to accommodate the new heavier conductor.

The proposed project would include replacing the existing wooden structures with either concrete or self-weathering steel monopoles. The new transmission structures would be between 10 to 20 feet taller than the existing wooden structures, but would replace the old structures at an approximate ratio of one monopole for every two wooden structures, reducing the total number of structures.

4001 E. Paradise Falls Drive • Tucson, AZ 85712 • 520•206•9585 Fax 520•206•9518

For adequate consideration, we would appreciate your input regarding questions or concerns about this project prior to September 15, 2009. Please provide your comments to WestLand Resources, Inc., Attn: Amanda Best, 4001 E. Paradise Falls Drive, Tucson, AZ 85712. If you require additional information or have any questions regarding this project, please contact Amanda Best, WestLand's Project Manager, at (520) 206-9585. Thank you in advance for your input. It is greatly appreciated.

Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Ms. Melanie Emerson, Executive Director
SKY ISLAND ALLIANCE
P.O. Box 41165
Tucson, AZ 85717

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Ms. Emerson:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

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Sincerely,
WestLand Resources, Inc.

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Mr. Ron Brown, Manager of Electric Operations
TRICO ELECTRIC
P.O. Box 930
Marana, AZ 85653

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Mr. Brown:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

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Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

WestLand Resources, Inc.
Engineering and Environmental Consultants

August 14, 2009

Mr. Frank Gonzales, Supervisor Distribution Design
TRICO ELECTRIC
P.O. Box 930
Marana, AZ 85653

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC., MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608.01 8330A 8330

Dear Mr. Gonzales:

On behalf of Southwest Transmission Cooperative, Inc. (SWTC), WestLand Resources, Inc. (WestLand) is hereby notifying you of the proposed Marana Tap to Sandario Tap 115-kilovolt (kV) transmission line rebuild project in Pima County, Arizona. SWTC proposes to rebuild an existing 115-kV transmission line near the town of Marana, Pima County, Arizona. The US Department of Agriculture Rural Utilities Service (RUS) is providing financial support for this project and, as the lead federal agency, is soliciting comments and initiating agency scoping in accordance with the National Environmental Policy Act (NEPA). WestLand has been contracted by SWTC to prepare an Environmental Report and examine environmental resources as part of the NEPA process. On behalf of RUS, WestLand is asking for your input regarding issues that should be examined as part of the proposed project.

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Sincerely,
WestLand Resources, Inc.

Amanda L. Best

Amanda L. Best
Project Manager

ALB:pmd

Enclosure: Overview Map

cc: Kevin Barnes, SWTC
Michelle Freeark, SWTC
Dennis Rankin, RUS
Brian Lindenlaub, WestLand

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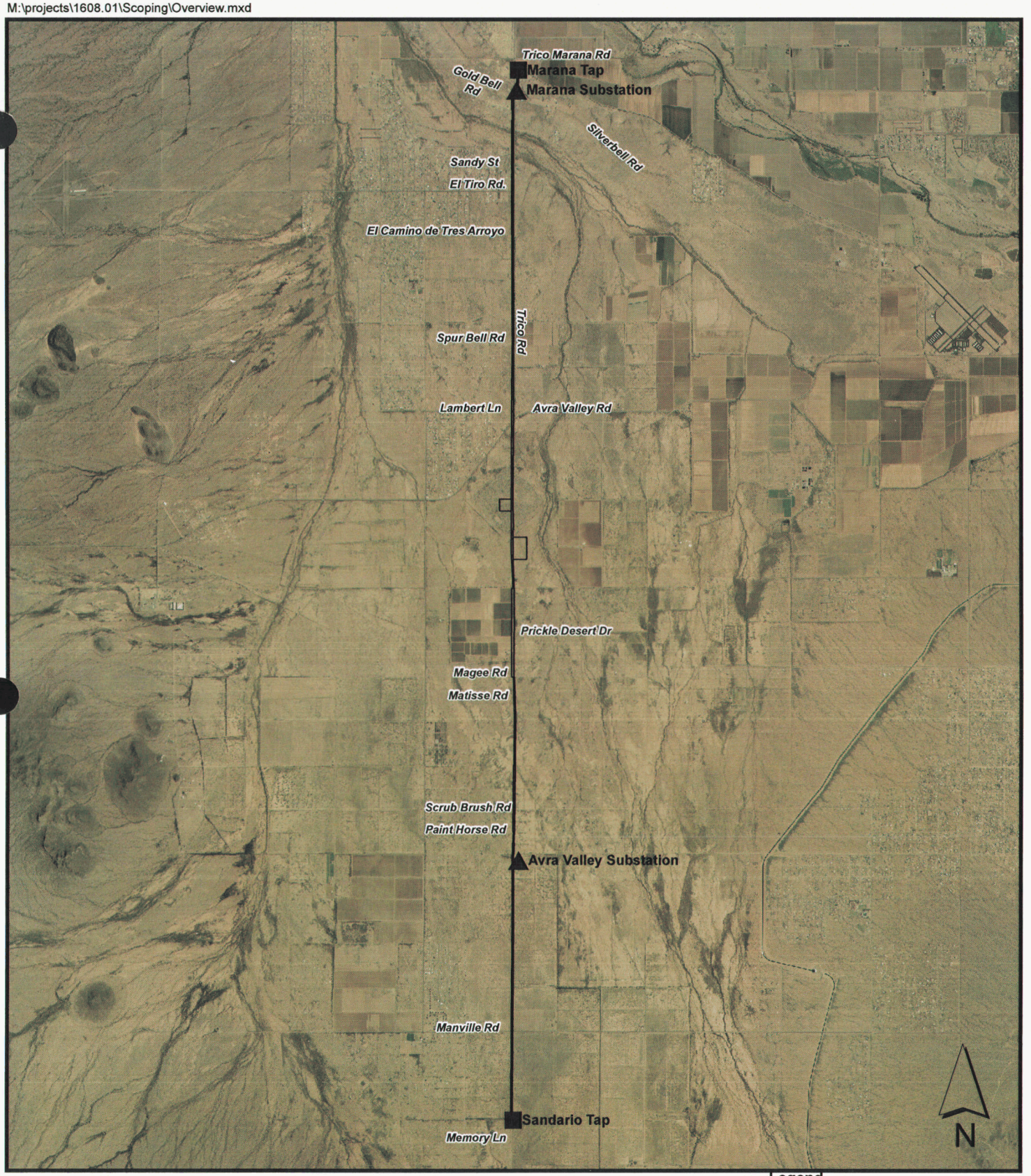

T.11S.,R.10E. Portion of Sections 26, 27, & 34,
T.12S.,R.10E. Portion of Sections 3, 10, 15, 22, 27, 34, & 35,
T.13S.,R.10E. Portion of Sections 2, 3, 10, 11, 14, 15, 22, & 23,
Pima County, Arizona,
Photo Source: National Agriculture Imagery Program, 2007

Legend

- Project Area
- Substation
- Tap

WestLand Resources, Inc.
Engineering and Environmental Consultants

0 4,000 8,000
Feet

Southwest Transmission Cooperative, Inc
Marana Tap to Sandario Tap
Rebuild Project

EXHIBIT J-9

AGENCY COMMENTS

JAN - 3 2011

Arizona State Parks

In reply, refer to SHPO-2009-1184(88613)

December 29, 2010

Amanda Best, Project Manager
WestLand Resources, Inc.
4001 East Paradise Falls Drive
Tucson, AZ 85712

Re: Southwest Transmission Cooperative, Inc., Marana Tap to Sandario Tap Transmission Line Rebuild Project, WestLand Project No. 1608.01

Dear Ms. Best:

Thank you for your Dec. 16, 2010 letter concerning finalization of the engineering analysis for the above-referenced project. This office does not intend to comment on the engineering analysis, but I am reminding you and Mr. Dennis Rankin at USDA-RD-RUS that the transmission-line rebuild project is a federal undertaking and is subject to consultation under Section 106 of the National Historic Act. Please refer to the September 3, 2009 letter sent to you and Mr. Rankin from Ms. Jo Anne Medley (enclosed) to this effect.

I am sorry to inform you that Jo Anne passed away earlier this year. I will be taking over many of her duties, including continued consultation and review of cultural resources reports that are produced from this undertaking.

I appreciate your cooperation with this office in complying with federal historic preservation requirements. If you have any additional questions or concerns, please feel free to contact me at 602/542-7142, or email me at jcogswell@azstateparks.gov.

Sincerely,

James Cogswell
Planner-Archaeologist
State Historic Preservation Office

Cc: Dennis Rankin, USDA-RD-RUS, Washington, DC

Janice K. Brewer
Governor

State Parks Board Members

Chair
Reese Woodling
Tucson

Tracey Westerhausen
Phoenix

Larry Landry
Phoenix

Walter D. Armer, Jr.
Vail

Arlan Colton
Tucson

William C. Scalzo
Phoenix

Maria Baier
State Land Commissioner

Renée E. Bahl
Executive Director

Arizona State Parks
1300 W. Washington
Phoenix, AZ 85007

Tel & TTY: 602.542.4174
AZStateParks.com

800.285.3703 from (520 & 928) area codes

General Fax: 602.542.4180

Director's Office Fax: 602.542.4188

JAN 10 2011

MARANA

TOWN OF MARANA
PUBLIC SERVICES

January 7, 2011

Westland Resources, Inc.
4001 E. Paradise Falls Drive
Tucson, Arizona 85712

ATTN: Amanda L. Best, Project Manager

RE: SOUTHWEST TRANSMISSION COOPERATIVE, INC.
MARANA TAP TO SANDARIO TAP TRANSMISSION LINE REBUILD PROJECT
WESTLAND PROJECT NO. 1608-01

Dear Ms. Best:

I would like to take this opportunity to thank you and your team for the information you sent for review on the Marana Tap to Sandario Tap Transmission Line Rebuild Project. Your willingness to work with the Town to address local concerns is appreciated.

The Town reviewed this project in reference to your letters dated August 14, 2009 and December 16, 2010. This project is located outside of the Town limits, and at this time the Town does not have any comments.

I look forward to working with your firm on future projects.

Sincerely,

Barbara F. Johnson
Public Services General Manager

cc: Gilbert Davidson, Town Manager
Kevin Kish, Development Services General Manager
Keith Brann, Town Engineer
Dorothy O'Brien, Utilities Director
Scott Leska, CIP Engineering Division Manager
Jennifer Christelman, Environmental Engineering Division Manager

JAN 24 2011

ARIZONA DEPARTMENT
OF
ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.azdeq.gov

Janice K. Brewer
Governor

Henry R. Darwin
Acting Director

January 14, 2011

Ms. Amanda Best
Project Manager
Westland Resources, Inc.
4001 E. Paradise Falls Drive
Tucson, AZ 85712

Re: Pima County: Southwest Transmission Cooperative, Inc.
Marana Tap to Sandario Tap Transmission Line Rebuild Project
Westland Project No. 1608.01

Dear Ms. Best:

The ADEQ Air Quality Division has reviewed your letter, dated December 16, 2010, regarding the Marana Tap to Sandario Tap Transmission Line Rebuild Project. The project, as described, is in the Rillito 10 micron particulate matter (PM_{10}) nonattainment area, but will likely have a de minimis impact on air quality. However, considering the prevailing winds, and to comply with applicable air pollution control requirements and minimize any adverse impacts on public health and welfare, the following information is provided for your consideration during the construction phase:

REDUCE DISTURBANCE of PARTICULATE MATTER during CONSTRUCTION

The following measures are recommended to reduce disturbance of particulate matter, including emissions caused by strong winds as well as machinery and trucks tracking soil off the construction site:

I. Site Preparation and Construction
   A. Minimize land disturbance;
   B. Suppress dust on traveled paths which are not paved through wetting, use of watering trucks, chemical dust suppressants, or other reasonable precautions to prevent dust entering ambient air;
   C. Cover trucks when hauling soil;
   D. Minimize soil track-out by washing or cleaning truck wheels before leaving construction site;
   E. Stabilize the surface of soil piles; and
   F. Create windbreaks.

II. Site Restoration
   A. Revegetate any disturbed land not used;
   B. Remove unused material; and
   C. Remove soil piles via covered trucks.

The following rules applicable to reducing dust during construction, demolition and earth moving activities are enclosed:

- ☐ Arizona Administrative Code R18-2-604 through -607
- ☐ Arizona Administrative Code R18-2-804
- ☐ Pima County Code Chapter 4

Should you have further questions, please do not hesitate to call Lhamo LeMoine at (602) 771-2373 or Dave Biddle at (602) 771-2376 of the Planning Section Staff.

Very truly yours,

Diane L. Arnst, Manager
Air Quality Planning Section

Enclosures (2)

cc: Bret Parke, EV Administrative Counsel
Lhamo LeMoine, Air Planning
File No. 251183

c. If the burning would occur at a solid waste facility in violation of 40 CFR 258.24 and the Director has not issued a variance under A.R.S. § 49-763.01.

E. Open outdoor fires of dangerous material. A fire set for the disposal of a dangerous material is allowed by the provisions of this Section, when the material is too dangerous to store and transport, and the Director has issued a permit for the fire. A permit issued under this subsection shall contain all provisions in subsection (D)(3) except for subsections (D)(3)(e) and (D)(3)(f). The Director shall permit fires for the disposal of dangerous materials only when no safe alternative method of disposal exists, and burning the materials does not result in the emission of hazardous or toxic substances either directly or as a product of combustion in amounts that will endanger health or safety.

F. Open outdoor fires of household waste. An open outdoor fire for the disposal of household waste is allowed by provisions of this Section when permitted in writing by the Director or a delegated authority. A permit issued under this subsection shall contain all provisions in subsection (D)(3) except for subsections (D)(3)(e) and (D)(3)(f). The permittee shall conduct open outdoor fires of household waste in an approved waste burner and shall either:

1. Burn household waste generated on-site on farms or ranches of 40 acres or more where no household waste collection or disposal service is available; or
2. Burn household waste generated on-site where no household waste collection and disposal service is available and where the nearest other dwelling unit is at least 500 feet away.

G. Permits issued by a delegated authority. The Director may delegate authority for the issuance of open burning permits to a county, city, town, air pollution control district, or fire district. A delegated authority may not issue a permit for its own open burning activity. The Director shall not delegate authority to issue permits to burn dangerous material under subsection (E). A county, city, town, air pollution control district, or fire district with delegated authority from the Director may assign that authority to one or more private fire protection service providers that perform fire protection services within the county, city, town, air pollution control district, or fire district. A private fire protection provider shall not directly or indirectly condition the issuance of open burning permits on the applicant being a customer. Permits issued under this subsection shall comply with the requirements in subsection (D)(3) and be in a format prescribed by the Director. Each delegated authority shall:

1. Maintain a copy of each permit issued for the previous five years available for inspection by the Director;
2. For each permit currently issued, have a means of contacting the person authorized by the permit to set an open fire if an order to extinguish open burning is issued; and
3. Annually submit to the Director by May 15 a record of daily burn activity, excluding household waste burn permits, on a form provided by the Director for the previous calendar year containing the information required in subsections (D)(3)(e) and (D)(3)(f).

H. The Director shall hold an annual public meeting for interested parties to review operations of the open outdoor fire program and discuss emission reduction techniques.

I. Nothing in this Section is intended to permit any practice that is a violation of any statute, ordinance, rule, or regulation.

Historical Note

Adopted effective May 14, 1979 (Supp. 79-1). Amended effective October 2, 1979 (Supp. 79-5). Correction, subsection (C) repealed effective October 2, 1979, not shown (Supp. 80-1). Former Section R9-3-602 renumbered without change as Section R18-2-602 (Supp. 87-3). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-602 renumbered to R18-2-802, new Section R18-2-602 renumbered from R18-2-401 effective November 15, 1993 (Supp. 93-4). Amended by final rulemaking at 10 A.A.R. 388, effective March 16, 2004 (Supp. 04-1).

R18-2-603. Repealed

Historical Note

Adopted effective May 14, 1979 (Supp. 79-1). Former Section R9-3-603 renumbered without change as Section R18-2-603 (Supp. 87-3). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-603 renumbered to R18-2-803, new Section R18-2-603 renumbered from R18-2-403 effective November 15, 1993 (Supp. 93-4). Repealed effective October 8, 1996 (Supp. 96-4).

R18-2-604. Open Areas, Dry Washes, or Riverbeds

A. No person shall cause, suffer, allow, or permit a building or its appurtenances, or a building or subdivision site, or a driveway, or a parking area, or a vacant lot or sales lot, or an urban or suburban open area to be constructed, used, altered, repaired, demolished, cleared, or leveled, or the earth to be moved or excavated, without taking reasonable precautions to limit excessive amounts of particulate matter from becoming airborne. Dust and other types of air contaminants shall be kept to a minimum by good modern practices such as using an approved dust suppressant or adhesive soil stabilizer, paving, covering, landscaping, continuous wetting, detouring, barring access, or other acceptable means.

B. No person shall cause, suffer, allow, or permit a vacant lot, or an urban or suburban open area, to be driven over or used by motor vehicles, trucks, cars, cycles, bikes, or buggies, or by animals such as horses, without taking reasonable precautions to limit excessive amounts of particulates from becoming airborne. Dust shall be kept to a minimum by using an approved dust suppressant, or adhesive soil stabilizer, or by paving, or by barring access to the property, or by other acceptable means.

C. No person shall operate a motor vehicle for recreational purposes in a dry wash, riverbed or open area in such a way as to cause or contribute to visible dust emissions which then cross property lines into a residential, recreational, institutional, educational, retail sales, hotel or business premises. For purposes of this subsection "motor vehicles" shall include, but not be limited to trucks, cars, cycles, bikes, buggies and 3-wheelers. Any person who violates the provisions of this subsection shall be subject to prosecution under A.R.S. § 49-463.

Historical Note

Adopted effective May 14, 1979 (Supp. 79-1). Former Section R9-3-604 renumbered without change as Section R18-2-604 (Supp. 87-3). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-604 renumbered to R18-2-804, new Section R18-2-604 renumbered from R18-2-404 and amended effective November 15, 1993 (Supp. 93-4).

R18-2-605. Roadways and Streets

A. No person shall cause, suffer, allow or permit the use, repair, construction or reconstruction of a roadway or alley without taking reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne. Dust and other particulates shall be kept to a minimum by employing temporary paving, dust suppressants, wetting down, detouring or by other reasonable means.

B. No person shall cause, suffer, allow or permit transportation of materials likely to give rise to airborne dust without taking reasonable precautions, such as wetting, applying dust suppressants, or covering the load, to prevent particulate matter from becoming airborne. Earth or other material that is deposited by trucking or earth moving equipment shall be removed from paved streets by the person responsible for such deposits.

Historical Note

Adopted effective May 14, 1979 (Supp. 79-1). Former Section R9-3-605 renumbered without change as Section R18-2-605 (Supp. 87-3). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-605 renumbered to R18-2-805, new Section R18-2-605 renumbered from R18-2-405 effective November 15, 1993 (Supp. 93-4).

R18-2-606. Material Handling

No person shall cause, suffer, allow or permit crushing, screening, handling, transporting or conveying of materials or other operations likely to result in significant amounts of airborne dust without taking reasonable precautions, such as the use of spray bars, wetting agents, dust suppressants, covering the load, and hoods to prevent excessive amounts of particulate matter from becoming airborne.

Historical Note

Section R18-2-606 renumbered from R18-2-406 effective November 15, 1993 (Supp. 93-4).

R18-2-607. Storage Piles

A. No person shall cause, suffer, allow, or permit organic or inorganic dust producing material to be stacked, piled, or otherwise stored without taking reasonable precautions such as chemical stabilization, wetting, or covering to prevent excessive amounts of particulate matter from becoming airborne.

B. Stacking and reclaiming machinery utilized at storage piles shall be operated at all times with a minimum fall of material and in such manner, or with the use of spray bars and wetting agents, as to prevent excessive amounts of particulate matter from becoming airborne.

Historical Note

Section R18-2-607 renumbered from R18-2-407 effective November 15, 1993 (Supp. 93-4).

R18-2-608. Mineral Tailings

No person shall cause, suffer, allow, or permit construction of mineral tailing piles without taking reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne. Reasonable precautions shall mean wetting, chemical stabilization, revegetation or such other measures as are approved by the Director.

Historical Note

Section R18-2-608 renumbered from R18-2-408, new Section R18-2-408 adopted effective November 15, 1993 (Supp. 93-4).

R18-2-609. Agricultural Practices

A person shall not cause, suffer, allow, or permit the performance of agricultural practices outside the Phoenix and Yuma planning areas, as defined in 40 CFR 81.303, which is incorporated by reference in R18-2-210, including tilling of land and application of fertilizers without taking reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne.

Historical Note

Section R18-2-609 renumbered from R18-2-409 effective November 15, 1993 (Supp. 93-4). Amended by final rulemaking at 6 A.A.R. 2009, effective May 12, 2000 (Supp. 00-2). Amended by final rulemaking at 11 A.A.R. 2210, effective July 18, 2005 (Supp. 05-2).

R18-2-610. Definitions for R18-2-611

The definitions in Article 1 of this Chapter and the following definitions apply to R18-2-611:

1. "Access restriction" means restricting or eliminating public access to noncropland with signs or physical obstruction.
2. "Aggregate cover" means gravel, concrete, recycled road base, caliche, or other similar material applied to noncropland.
3. "Artificial wind barrier" means a physical barrier to the wind.
4. "Best management practice" means a technique verified by scientific research, that on a case-by-case basis is practical, economically feasible, and effective in reducing PM_{10} emissions from a regulated agricultural activity.
5. "Chemical irrigation" means applying a fertilizer, pesticide, or other agricultural chemical to cropland through an irrigation system.
6. "Combining tractor operations" means performing two or more tillage, cultivation, planting, or harvesting operations with a single tractor or harvester pass.
7. "Commercial farm" means 10 or more contiguous acres of land used for agricultural purposes within the boundary of the Maricopa PM_{10} nonattainment area.
8. "Commercial farmer" means an individual, entity, or joint operation in general control of a commercial farm.
9. "Committee" means the Governor's Agricultural Best Management Practices Committee.
10. "Cover crop" means plants or a green manure crop grown for seasonal soil protection or soil improvement.
11. "Critical area planting" means using trees, shrubs, vines, grasses, or other vegetative cover on noncropland.
12. "Cropland" means land on a commercial farm that:
    a. Is within the time-frame of final harvest to plant emergence;
    b. Has been tilled in a prior year and is suitable for crop production, but is currently fallow; or
    c. Is a turn-row.

ARTICLE 8. EMISSIONS FROM MOBILE SOURCES (NEW AND EXISTING)

R18-2-801. Classification of Mobile Sources

A. This Article is applicable to mobile sources which either move while emitting air contaminants or are frequently moved during the course of their utilization but are not classified as motor vehicles, agricultural vehicles, or agricultural equipment used in normal farm operations.

B. Unless otherwise specified, no mobile source shall emit smoke or dust the opacity of which exceeds 40%.

Historical Note

Adopted effective February 26, 1988 (Supp. 88-1). Amended effective September 26, 1990 (Supp. 90-3). Amended effective February 3, 1993 (Supp. 93-1). Former Section R18-2-801 renumbered to Section R18-2-901, new Section R18-2-801 renumbered from R18-2-601 effective November 15, 1993 (Supp. 93-4).

R18-2-802. Off-road Machinery

A. No person shall cause, allow or permit to be emitted into the atmosphere from any off-road machinery, smoke for any period greater than 10 consecutive seconds, the opacity of which exceeds 40%. Visible emissions when starting cold equipment shall be exempt from this requirement for the first 10 minutes.

B. Off-road machinery shall include trucks, graders, scrapers, rollers, locomotives and other construction and mining machinery not normally driven on a completed public roadway.

Historical Note

Adopted effective February 26, 1988 (Supp. 88-1). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-802 renumbered to Section R18-2-902, new Section R18-2-802 renumbered from R18-2-602 effective November 15, 1993 (Supp. 93-4).

R18-2-803. Heater-planer Units

No person shall cause, allow or permit to be emitted into the atmosphere from any heater-planer operated for the purpose of reconstructing asphalt pavements smoke the opacity of which exceeds 20%. However three minutes' upset time in any one hour shall not constitute a violation of this Section.

Historical Note

Adopted effective February 26, 1988 (Supp. 88-1). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-803 renumbered to Section R18-2-903, new Section R18-2-803 renumbered from R18-2-603 effective November 15, 1993 (Supp. 93-4).

R18-2-804. Roadway and Site Cleaning Machinery

A. No person shall cause, allow or permit to be emitted into the atmosphere from any roadway and site cleaning machinery smoke or dust for any period greater than 10 consecutive seconds, the opacity of which exceeds 40%. Visible emissions when starting cold equipment shall be exempt from this requirement for the first 10 minutes.

B. In addition to complying with subsection (A), no person shall cause, allow or permit the cleaning of any site, roadway, or alley without taking reasonable precautions to prevent particulate matter from becoming airborne. Reasonable precautions may include applying dust suppressants. Earth or other material shall be removed from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, erosion by water or by other means.

Historical Note

Adopted effective February 26, 1988 (Supp. 88-1). Amended effective September 26, 1990 (Supp. 90-3). Amended effective February 3, 1993 (Supp. 93-1). Former Section R18-2-804 renumbered to Section R18-2-904, new Section R18-2-804 renumbered from R18-2-604 effective November 15, 1993 (Supp. 93-4).

R18-2-805. Asphalt or Tar Kettles

A. No person shall cause, allow or permit to be emitted into the atmosphere from any asphalt or tar kettle smoke for any period greater than 10 consecutive seconds, the opacity of which exceeds 40%.

B. In addition to complying with subsection (A), no person shall cause, allow or permit the operation of an asphalt or tar kettle without minimizing air contaminant emissions by utilizing all of the following control measures:

1. The control of temperature recommended by the asphalt or tar manufacturer;
2. The operation of the kettle with lid closed except when charging;
3. The pumping of asphalt from the kettle or the drawing of asphalt through cocks with no dipping;
4. The dipping of tar in an approved manner;
5. The maintaining of the kettle in clean, properly adjusted, and good operating condition;
6. The firing of the kettle with liquid petroleum gas or other fuels acceptable to the Director.

Historical Note

Adopted effective February 26, 1988 (Supp. 88-1). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-805 renumbered to Section R18-2-905, new Section R18-2-805 renumbered from R18-2-605 effective November 15, 1993 (Supp. 93-4).

Pima County

Development Services

Carmine DeBonis Jr.
Director

Office: 520.740.6506
fax: 520.740.6878

January 13, 2011

Westland Resources, Inc.
Attn: Amanda Best
4001 E. Paradise Falls Drive
Tucson, AZ 85712

Via Email Only

Subject: **Southwest Transmission Cooperative, Inc.**
Marana Tap to Sandario Tap Transmission Line Rebuild Project; Westland Project 1608.01

Dear Ms. Best:

We appreciate the new information on the above-referenced project pertaining to the change in the estimated number of replacement towers necessary to accomplish the rebuild project. The original estimate proposed 55-60 towers to replace 113 towers for the existing 115kV transmission line between the Marana Tap and Sandario Tap. Due to the findings from Southwest Transmission Cooperative's recently completed engineering analyses, the projected number of replacement towers has now risen to approximately 95. However, because no additional information is available to indicate site-specific locations of the proposed replacement towers, Pima County is not able to provide any comment on what our concerns may be beyond those that we provided in response to your request for scoping comments in August of 2009. When project details such as specific tower siting locations become available, I can facilitate a more in-depth County review. Until that time, our previous comments (attached) remain in effect.

Thank you.

Sincerely,

Sherry A. Ruther
Manager – Environmental and Long Range Planning Group
Pima County Development Services

cc: C. H. Huckleberry, County Administrator
Diana Durazo, Special Staff Assistant to the County Administrator

Pima County
Development Services

Carmine DeBonis Jr.
Director

Office: 520.740.6506
fax: 520.740.6878

September 14, 2009

Westland Resources, Inc.
Attn: Amanda Best
4001 E. Paradise Falls Drive
Tucson, AZ 85712

Subject: WESTLAND PROJECT 1608.01 833A 8330 SOUTHWEST TRANSMISSION COOPERATIVE, INC.

Dear Ms. Best:

Pima County has compiled the following comments regarding the proposed transmission line rebuild project. However, please note the need to adequately address cultural/archaeological resources and the potential to impact Pima County rights-of-way.

TRANSPORTATION DEPARTMENT

The Pima County Department of Transportation has reviewed the above noted review request from Southwest Transmission Cooperative (SWTC), regarding rebuilding an existing 115kV transmission line, as indicated on map submitted. This is approximately 12 miles in length near or within Trico Road alignment from south of the Trico-Marana/Trico intersection to one mile south of Manville Road.

The transmission line is located within the limits of Pima County and it is unclear whether within road right-of-way or adjacent. Any work should be coordinated with Department of Transportation. Please contact Robert Johnson or Ted Roberts, who coordinate utilities within county right-of-way.

Pima County has established and adheres to certain roadway development standards and regulations to preserve and protect natural cultural resources, to prevent and reduce air pollution and to insure safe public transportation facilities. Pima County objects to and does not support any request within public right-of-way unless there are appropriate conditions of the right-of-way application approval. The conditions of the approval should preserve and protect natural and cultural resources (plant survey and preservation plan cultural resources survey), prevent and reduce air pollution (paved roadway) and insure safe public transportation facilities (provisions for drainage and appropriate roadway design, width, horizontal and vertical alignment).

Scenic Route requirements of the Chapter 18.77.040.E5 apply for roadways designated Scenic per the Pima County Major Streets and Scenic Routes Plan (this crosses Avra Valley Road which is a scenic route). Trico Road is not a scenic route.

CULTURAL RESOURCES DEPARTMENT

The project includes rebuilding the existing 115-kV transmission line near the Town of Marana, beginning from the Western Area Power Authority (WAPA) Saguaro to Rattlesnake 115-kV transmission line, at a point just south of the intersection of Trico-Marana Road and North Trico Road. The project alignment proceeds to the SWTC Marana Substation and southward, paralleling Trico Road to the junction with SWTC's existing Sandario 115-kV line located approximately one mile south of Manville Road (near Memory Lane). The US Department of Agriculture Rural Utilities Service is funding the project, and therefore, is the lead agency in the required National Environmental Protection Act (NEPA) process. Westland submitted the project materials as part of their research in preparation for development of an environmental report for the NEPA process. The total length of the proposed alignment is approximately 12.2 miles (estimated from map), crossing portions of T11S, R10E, Sections 26, 27,

and 34; T12S, R10E, Sections3, 10, 15, 22, 27, 34, and 35; and, T13S, R10E, Sections 2, 3, 10, 11, 14, 16, 22, and 23.

A review of the Pima County records shows that the entire proposed project alignment has been surveyed for cultural resources. Previous cultural resources surveys include the Three Points to Marana Survey conducted in 1992 (1992-250.ASM), which appears to cover the entire alignment; and several other surveys covering portions of the alignment, conducted in 1998, 2000, and 2004 (1998-494.ASM, 2000-62.ASM, and 2004-626.ASM). The records review revealed that portions of five previously recorded archaeological and/or historic sites are within the project alignment, including at the north end, the important prehistoric Hohokam village site associated with the Santa Cruz River, known as the Hog Farm Ballcourt Site, AZ AA:11:12.ASM; as well as AZ AA:11:107, 108, 109, and 135 (all ASM). In addition, six recorded sites are immediately adjacent or close to the project alignment, including AZ AA:11:54, 55, 61, 63, 115, and 116 (all ASM). The project alignment crosses or parallels several major washes and their tributaries, including the Santa Cruz River, West Branch of Brawley Wash, and Blanco Wash. These drainages are archaeologically rich, with many sites associated along various reaches; which, in part, results in the designation of either high or moderate archaeological sensitivity to the alignment, as defined by the County's Sonoran Desert Conservation Plan (SDCP). Furthermore, the SDCP has identified the Hog Farm Ballcourt site as a Priority Archaeological Site within the SDCP-defined Robles Pass Priority Archaeological Site Complex.

The NEPA process will require that the transmission line project meet the requirements of Section 106, of the National Historic Preservation Act, and review by the State Historic Preservation Office (SHPO). It is recommended that the 1992 Three Points to Marana Survey be reviewed to determine whether it meets contemporary archaeological standards because SHPO will require such a review to ensure its standards are being met. If the Three Points to Marana Survey does not meet SHPO standards, it is further recommended that cultural resource survey be conducted on any land within the project area that has not yet been surveyed within the last 10 years in order to identify any significant cultural or historic resources that may be present. Additionally, if archaeological or historic sites are identified that will be impacted negatively by the proposed transmission line project (as is indicated by the Three Points to Marana Survey), a cultural resources mitigation treatment plan should be prepared and submitted for review to the appropriate agency. All work should be conducted by an archaeologist permitted by the Arizona State Museum, or a registered architect, as appropriate.

It also should be noted that when the transmission line project moves to construction, it will be subject to Arizona state laws protecting cultural resources and human remains. In the event that human remains, including human skeletal remains, cremations, and/or ceremonial objects and funerary objects are found during excavation or construction, ground-disturbing activities must cease in the immediate vicinity of the discovery. State Laws ARS 41-865 and/or ARS 41-844 require that the Arizona State Museum be notified of the discovery at (520) 621-4795 so that appropriate arrangements can be made for the repatriation and reburial of the remains by cultural groups who claim cultural or religious affinity to them. The human remains will be removed from the site by a professional archaeologist pending consultation and review by the Arizona State Museum and the concerned cultural groups.

Thank you for the opportunity to comment.

Sincerely,

Sherry A. Ruther
Manager – Environmental and Long Range Planning Group
Pima County Development Services

CC: C. H. Huckleberry, County Administrator
Diana Durazo, Special Staff Assistant to the County Administrator

Amanda Best

From: Ruben Ojeda [ROjeda@land.az.gov]
Sent: Tuesday, September 01, 2009 2:26 PM
To: Amanda Best
Cc: Cynthia Stefanovic; James Rees; Stephen Williams
Subject: Fwd: SWTC Rebuild Project (Westland Project No. 1608.01 8330A 8330)

SWTC REBUILD.pdf (410 KB)

Westland_1608.01 8330A 8330.pd...

Ruben Ojeda.vcf (292 B)

Dear Ms. Best,
I am in receipt of your letter dated August 14, 2009 requesting comments on the rebuild project for Marana Tap to Sandario Tap Transmission Line rebuild project, copy of letter attached. Staff has reviewed the request and by receipt of this email the State Land Department authorizes Westland Resources on Behalf of Southwest Transmission Cooperative (SWTC) to proceed with the Marana Tap to Sandario Tap Transmission Line rebuild project

Authorization for the rebuild project is contingent on Westland Resources fulfilling the following below recommendations:

Recommendations: SWTC should be advised to contact the ASLD's Agriculture and Grazing Lessees in S27/T12S/R10E prior to commencing this rebuild project. Also, SWTC should be informed that ALL activity on State Trust land must be strictly limited to the existing 50' wide easement.

If you have any further questions or concerns, please do not hesitate to contact me.

Sincerely,

Ruben Ojeda
ROW Section Manager
Arizona State Land Department
1616 W Adams Street
Phoenix, AZ 85007
Phone: (602) 542-2648
Facsimile: (602) 542-2720
E-mail: rojeda@land.az.gov
Website: www.land.state.az.us

>>> James Rees 8/31/2009 4:51 PM >>>
Ruben,

Westland Resources, Inc. sent you a letter dated August 14, 2009 pertaining to the planned rebuild of a SWTC 115kV overhead subtransmission line parallel to Trico Road west and southwest of Marana (See attached map). This rebuild project will cross State Trust land in the E2E2 of S27 T12S R10E only (See #14-52251).

According to the letter the replacement monopoles will be approximately 10 to 20 feet taller than the existing wooden structures, but will replace the old structures at one monopole for every two wooden structures. This power line is along an existing arterial road (i.e. Trico Road). The ASLD's current Agriculture and Grazing Lessees should not be any more affected by the rebuilt power line than they are by the existing power line. Finally, this power line does not affect any of the ASLD's 5-Year Plan parcels.

Recommendations: SWTC should be advised to contact the ASLD's Agriculture and Grazing Lessees in S27 T12S R10E prior to commencing this rebuild project. Also, SWTC should be informed that ALL activity on State Trust land must be strictly limited to the existing 50' wide easement. That having been said, I see no reason why this rebuild project shouldn't be given the green light.

Sincerely,

James

James Rees, Right-of-Way Administrator
Arizona State Land Department
602-542-2656

1608.01 SEP - 8 2009

"Managing and conserving Arizona's natural, cultural and recreational resources"

Arizona State Parks

In reply refer to SHPO-2009-1184
Survey requested

September 3, 2009

Amanda L. Best, Project Manager
WestLand Resources, Inc.
4001 East Paradise Falls Drive
Tucson, AZ 85712

RE: Southwest Transmission Cooperative, Inc., Marana TAP to Sandario TAP Transmission Line Rebuild Project No. 1608.011 83330A 8330; RD-RUS
SHPO-2009-1184 (40736)

Dear Ms. Best:

This is in response to your National Environmental Policy Act (NEPA) scoping letter regarding the above referenced federal undertaking. The proposed project meets the definition of an undertaking for Rural Development-Rural Utilities Services and thus is subject to the provisions of Section 106 of the National Historic Preservation Act and implementing regulations at 36 CFR 800.

As you know from our phone conversation today, the State Historic Preservation Office needs to review and comment on the supporting cultural resources survey report in order to assist RD-RUS in complying with federal law. We look forward to receiving that report.

By copy of this letter to Dennis Rankin, RD-RUS, we remind the agency of its responsibility under 36 CFR 800 to consult with our office.

Sincerely,

Jo Anne Medley
Compliance Specialist/Archaeologist
State Historic Preservation Office

Cc: Dennis Rankin, USDA-RD-RUS, Washington, DC

Janice K. Brewer
Governor

State Parks Board Members

Chair
Reese Woodling
Tucson

Tracey Westerhausen
Phoenix

Larry Landry
Phoenix

Walter D. Armer, Jr.
Vail

Arlan Colton
Tucson

William C. Scalzo
Phoenix

Maria Baier
State Land Commissioner

Renée E. Bahl
Executive Director

Arizona State Parks
1300 W. Washington
Phoenix, AZ 85007

Tel & TTY: 602.542.4174
AZStateParks.com

800.285.3703 from (520 & 928) area codes

General Fax: 602.542.4180

Director's Office Fax: 602.542.4188

SEP 16 2009

Pima County

Development Services

Carmine DeBonis Jr.
Director

Office: 520.740.6506
fax: 520.740.6878

September 14, 2009

Westland Resources, Inc.
Attn: Amanda Best
4001 E. Paradise Falls Drive
Tucson, AZ 85712

Subject: **WESTLAND PROJECT 1608.01 833A 8330 SOUTHWEST TRANSMISSION COOPERATIVE, INC.**

Dear Ms. Best:

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Thank you for the opportunity to comment.

Sincerely,

Sherry A. Ruther
Manager – Environmental and Long Range Planning Group
Pima County Development Services

CC: C. H. Huckleberry, County Administrator
Diana Durazo, Special Staff Assistant to the County Administrator

SEP 15 200

Janice K. Brewer
Governor

ARIZONA DEPARTMENT
OF
ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.azdeq.gov

Benjamin H. Grumbles
Director

September 10, 2009

Ms. Amanda Best
Project Manager
WestLand Resources, Inc
4001 E Paradise Falls Drive
Tucson, AZ 85712

Re: Scoping for Marana Tap to Sandario Tap 115kV transmission line Westland Project # 1608.01 8330A 8330

Dear Ms. Best:

Thank you for the opportunity to comment on issues that should be examined in the preparation of the draft Environmental Report for the proposed rebuild and replacement of a 115kV electric power transmission line near Marana, Arizona.

The Arizona Department of Environmental Quality Water Quality Division (WQD) is responsible for ensuring the delivery of safe drinking water to customers of regulated public water systems under the Safe Drinking Water Act, permits for proposed discharges to surface waters of the United States under the federal Clean Water Act, permits under the State Aquifer Protection Program (APP), and water quality certifications of certain federal licenses and permits. With the information provided, the WQD would like to make you aware of some water quality issues that may need to be addressed in the Environmental Report.

Stormwater discharges associated with construction activities (clearing, grading, or excavating) which disturb one acre or more must obtain a general permit for coverage of stormwater discharges under the Arizona Pollutant Discharge Elimination System's Construction General Permit. Permit coverage also is required for construction activities that will disturb less than one acre of land but the project is part of a larger common plan of development or sale and the entire project will ultimately disturb one or more acres. The applicant should contact Chris Henninger in the Surface Water Permits Unit in the WQD at 602.771.4508 or via e-mail at cph@azdeq.gov for more information about this process.

If project activities will occur inside the Ordinary High Water Mark of any water of the U.S., then an U.S. Army Corps of Engineers-issued CWA section 404 permit (a.k.a. dredge and fill permit) may be required. If a 404 permit (or any other federal permit) is required for the project, a state-issued CWA section 401 certification of the permit may be required to ensure that the permitted activities will not result in a violation of Arizona's surface water quality standards. For questions, please contact Bob Scalamera at 602.771.4502 or by e-mail at rs3@azdeq.gov. The CWA 401 application form can be downloaded from the agency website at: http://www.azdeq.gov/function/forms/appswater.html#dredge.

We appreciate the opportunity to review and provide comments. If you need additional information, please contact David Lelsz of my staff at 602.771.4447 or via e-mail at dl2@azdeq.gov or myself at 602.771.4416 or via e-mail at lc1@azdeq.gov.

Sincerely,

Linda C. Taunt, Deputy Director
Water Quality Division

Amanda Best

From: scott_richardson@fws.gov
Sent: Thursday, October 01, 2009 11:30 AM
To: Amanda Best
Subject: SWTC Marana Tap to Sandario Tap Transmission Line Rebuild

Hi Amanda,

I am sorting through my in box to see how far behind I am, and I found your letter requesting scoping comments for this project by Sept. 15, 2009. We obviously missed that date, but have a couple of comments to pass along if you can still use them:

- Assure that the replacement structures are compliant with the current guidelines for reducing raptor electrocution and bird strikes.
- Avoid the placement of poles in washes or other areas of enhanced natural vegetation.
- Survey pole locations and other areas of proposed ground disturbance for the presence of burrowing owls. If burrowing owls are present, implement project actions that will avoid impacts to burrowing owls.

We appreciate the opportunity to provide input on this project. Please contact me if you have any questions.

Sincerely,

Scott Richardson
U.S. Fish and Wildlife Service
Tucson Suboffice
(520) 670-6150 x 242

1 LRV8-01

OCT - 7 2009

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
TUCSON PROJECT OFFICE
5205 EAST COMANCHE STREET
TUCSON, ARIZONA 85707

October 5, 2009

REPLY TO
ATTENTION OF:
Office of the Chief
Regulatory Division

Amanda Best
WestLand Resources, Inc.
4001 E. Paradise Falls Drive
Tucson, AZ 85712

File Number: SPL-2009-00778-JWL

Dear Ms. Best:

This letter is in response to your letter dated August 14, 2009 and received by our office on August 19, 2009 referencing the Southwest Transmission Cooperative, Inc's proposal to rebuild the Marana Tap to Sandario Tap within the Town of Marana, Pima County, Arizona. This activity may require a U.S. Army Corps of Engineers permit.

A Corps of Engineers permit is required for:

a) the discharge of dredged or fill material into, including any redeposit of dredged material within, "waters of the United States" and adjacent wetlands pursuant to Section 404 of the Clean Water Act of 1972. Examples include, but are not limited to,

1. creating fills for residential or commercial development, placing bank protection, temporary or permanent stockpiling of excavated material, building road crossings, backfilling for utility line crossings and constructing outfall structures, dams, levees, groins, weirs, or other structures;

2. mechanized landclearing, grading which involves filling low areas or land leveling, ditching, channelizing and other excavation activities that would have the effect of destroying or degrading waters of the United States;

3. allowing sediment runoff or overflow from a contained land or disposal area to re-enter a water of the United States;

b) any combination of the above.

To download a permit application or for general information about the Regualtory Program please visit our website at www.spl.usace.army.mil/regulatory
If you have any questions, please contact me at (520) 584-1677 or via e-mail at Jesse.Laurie@usace.army.mil. Please refer to this letter and **SPL-2009-00778-JWL** in your reply.

Sincerely,

Jesse W. Laurie, R.G.
Project Manager
Arizona Branch, Regulatory Division

Enclosures

NOV 30 2009

THE STATE OF ARIZONA
GAME AND FISH DEPARTMENT
5000 W. CAREFREE HIGHWAY
PHOENIX, AZ 85086-5000
(602) 942-3000 • WWW.AZGFD.GOV
REGION V, 555 N. GREASEWOOD ROAD, TUCSON, AZ 85745

GOVERNOR
JANICE K. BREWER
COMMISSIONERS
CHAIRMAN, BOB HERNBRODE, TUCSON
JENNIFER L. MARTIN, PHOENIX
ROBERT R. WOODHOUSE, ROLL
NORMAN W. FREEMAN, CHINO VALLEY
JACK F. HUSTED, SPRINGERVILLE
DIRECTOR
LARRY D. VOYLES
DEPUTY DIRECTORS
GARY R. HOVATTER
ROBERT D. BROSCHEID

November 23, 2009

Mr. Kevin Barnes
WestLand Resources, Inc.
4001 E. Paradise Falls Dr.
Tucson, AZ 85717

Re: Marana Tap to Sandario Tap Transmission Line Rebuild Project, Project #1608.01 83330A 8330

Dear Mr. Barnes:

The Arizona Game and Fish Department (Department) provided comments on this project in a letter dated September 8, 2009. You asked for clarification and review on several recommendations we provided you regarding this project. The Department provides the following comments and clarifications in order that you may most effectively mitigate the effects of this project.

The September 8th letter asked that you "limit project activities during the breeding season for birds, generally May through late August, depending on species in the local area" and to "conduct avian surveys to determine bird species that may be utilizing the area and develop a plan to avoid disturbance during nesting season."

The recommendation to "limit" project activities during the breeding season is not intended as a work –stop order for all activities, but is merely a recommendation to avoid activities which are likely to disturb nesting birds. As you must comply with the Migratory Bird Treaty act as well as Arizona Revised Statutes Title 17-235, the Department recommends that you do indeed develop a plan to avoid disturbance during the nesting season, particularly nesting birds encountered during construction. The Department recommends that at minimum the plan should include a means of determining any work which may destroy a bird's nest, or cause a bird to abandon a nest, and nest surveys should be completed prior to any of said work being initiated. For example, occupied raptor nests on utility poles should be identified, and those should not be disturbed – any work that would significantly disturb those birds, or likely cause a nest failure, should occur outside the breeding period. Another example might be clearing of vegetation which may harbor bird nests; it is reasonable to expect that this work should be done outside of the breeding season. Likewise work which only temporarily disturbs nesting birds, and is not likely to cause a nest failure, is reasonable to implement during nesting season.

The September 8th letter requests that SWTC "avoid removal of deadfall/snags". This should read "avoid removal of deadfall/snags *whenever practical.*" Removal of deadfall or snags which pose a health and safety hazard, for instance, would be reasonable.

Given the absence of established survey protocol for the Tucson shovel nose snake the Department will retract our previous request for surveys. However, the Department asks that any encounter with this species by SWTC or contractors be reported to the Department and to the US Fish and Wildlife Service.

Please feel free to contact me at jwindes@azgfd.gov or 520-388-4442.

Sincerely,

John Windes
Wildlife Habitat Program Manager

cc: Laura Canaca, Project Evaluation Supervisor
Bob Lemons, Wildlife Manager
Ginger Ritter, Project Evaluation Specialist

Amanda Best

From: Kevin Barnes [kbarnes@ssw.coop]
Sent: Tuesday, November 24, 2009 6:30 AM
To: Amanda Best
Cc: Brian Lindenlaub; Michelle Freeark
Subject: FW: Marana Tap to Sandario Tap Transmission Line Rebuild Project
Attachments: SWTC 11-23-2009.pdf

Amanda-

Here are the revised recommendations from AGFD. I included my email so it can be included in the record.

Kevin

From: John Windes [mailto:JWindes@azgfd.gov]
Sent: Monday, November 23, 2009 5:34 PM
To: Kevin Barnes
Cc: Ginger Ritter; Project Evaluation Program
Subject: RE: Marana Tap to Sandario Tap Transmission Line Rebuild Project

Please find the letter attached. My apologies for the long delay.

From: Kevin Barnes [mailto:kbarnes@ssw.coop]
Sent: Monday, October 05, 2009 2:31 PM
To: John Windes
Cc: Michelle Freeark; Amanda Best
Subject: Marana Tap to Sandario Tap Transmission Line Rebuild Project

John-

Thank you again for taking the time to discuss this project with me two weeks ago, I apologize for delay in getting you the information we discussed, but I was in jury duty all week last week. This email represents Southwest Transmission Cooperative's (SWTC) response to the letter from your agency dated September 08, 2009. The Arizona Game and Fish Department (AGFD) provided the letter in response to SWTC's agency scoping process initiated in August 2009 for SWTC's Marana Tap to Sandario Tap Transmission Line Rebuild Project. The purpose of the scoping process is to invite interested parties to provide concerns or recommendations regarding the proposed project. Per our conversation, SWTC has concerns regarding three recommendations made by AGFD and would like to work cooperatively with the AGFD to resolve any potential issues.

The letter provided by AGFD recommends limiting project activities during the breeding season for birds. The letter describes the breeding season generally from May through late August, but then indicates raptor breeding occurs from February to May. If SWTC were to limit project activities according to this recommendation, construction activities would be limited to September through January. Given there are no known imperiled avian species in vicinity of the project and the habitat in the project area is comprised mostly of active and abandoned agriculture lands, the recommendation for a five month construction window seems extremely limiting. In addition to the existing habitat

conditions, the proposed project is to rebuild an existing transmission line which generally results in limited impacts to natural resources.

With respects to other avian issues, the letter also recommends conducting avian surveys to determine bird species that may be utilizing the area and recommends that SWTC develop a plan to avoid disturbance during nesting season. Although SWTC appreciates the concept of determining which avian species may be present in the area, the recommendation to conduct avian surveys is very broad and doesn't provide SWTC with sufficient information to determine the exact extent of the recommendation. SWTC is required to comply with the Migratory Bird Treaty Act (MBTA) and is therefore required to insure impacts to avian species are avoided or (if unavoidable) permitted through the U.S. Fish and Wildlife Service. Given the requirement to comply with the MBTA, SWTC would like to see the recommendation for avian surveys and the preparation of an avoidance plan be withdrawn by AGFD.

The AGFD letter recommends that deadfall/snags be avoided during construction due to the high potential for wildlife to use them for refuge. SWTC will avoid deadfalls and snags when possible, but the recommendation does not appear to recognize the potential for some deadfalls and snags to be removed.

Based on the letter, the AGFD recommends conducting species specific surveys for the Tucson shovel-nosed snake and the western burrowing owl. To SWTC's knowledge there is no established protocol for conducting Tucson shovel-nosed snake surveys, which would make it difficult for SWTC to gauge compliance with this recommendation. Additionally, the occurrence referenced in HDMS report occurred in 1979 and to SWTC's knowledge there have been no detections near the project area since that date. According to the petition for this species' listing, the current distribution of this snake is believed to be in southern Pinal County and Maricopa County (73 FR 146, 43907). Given the absence of established survey protocol, the date of the last detection in the area, and the distance of the project to the snakes' current distribution, it is unclear why AGFD is recommending surveys for this species. SWTC will conduct western burrowing owl surveys to insure no impact to individual burrowing owls occur (again in compliance with MBTA). To determine the presence/absence of this owl, SWTC will insure surveys are conducted in accordance with approved survey protocol.

SWTC appreciates the interest AGFD has shown in this project and the recommendations made to date, and we look forward to working with your agency to insure all of AGFD's concerns are adequately addressed.

Respectfully,

Kevin

Amanda Best

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SWTC appreciates the interest AGFD has shown in this project and the recommendations made to date, and we look forward to working with your agency to insure all of AGFD's concerns are adequately addressed.

Respectfully,

Kevin

THE STATE OF ARIZONA
GAME AND FISH DEPARTMENT
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SEP - 9 2009

September 8, 2009

Ms. Amanda Best
WestLand Resources, Inc.
4001 E. Paradise Falls Dr.
Tucson, AZ 85712

Re: **Marana Tap to Sandario Tap Transmission Line Rebuild Project, Project #1608.01 8330A 8330.**

Dear Ms. Best:

The Arizona Game and Fish Department (Department) has reviewed your request, dated August 14, 2009, regarding the rebuild of a 115-kV line from Marana to Sandario. The Department understands the proposed project activities would involve the replacement of old wooden structures with concrete or steel monopoles. The Department offers the following general comments, based on the information provided:

- All transmission lines must be designed to prevent or minimize risk of electrocution of raptors.
- Limit project activities during the breeding season for birds, generally May through late August, depending on species in the local area. Raptors breed in early February through May. Conduct avian surveys to determine bird species that may be utilizing the area and develop a plan to avoid disturbance during nesting season.
- Avoid removal of deadfall/snags since many wildlife species use snags for refuge.
- Survey for Tucson shovel-nosed snake and burrowing owls prior to project activities to ensure the species are not within the project area. Specific guidelines for burrowing owls can be found at http://www.azgfd.gov/hgis/guidelines.aspx.
- Coordinate plant salvage efforts with the Arizona Department of Agriculture, in accordance with the Arizona Native Plant Law. In addition, the applicable land management agencies should be consulted regarding guidelines for revegetation efforts.
- Contact the Army Corp. of Engineers for Best Management Practices and guidelines for minimizing and mitigating impacts to riparian areas.

In addition, the Department's Heritage Data Management System (HDMS) has been accessed and current records show that the special status species listed on the attachment have been documented as occurring in the project vicinity[1]. The Department appreciates Southwest

[1] The Department's HDMS data are not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity.

Transmission Cooperative Inc. and WestLand Resources' initiative to coordinate early with the Department to allow us to include measures to ensure conservation of wildlife and its habitat. The Department looks forward to continued coordination on future projects. If you have any questions regarding this letter, please contact me at (623) 236-7606. General status information, county and watershed distribution lists and abstracts for some special status species are also available on our web site at http://www.azgfd.gov/hdms.

Sincerely,

Ginger Ritter
Project Evaluation Specialist

Attachment

cc: Laura Canaca, Project Evaluation Program Supervisor
John Windes, Habitat Program Manager, Region VI

AGFD #M09-08175944

Special Status Species within 2 Miles of Marana Tap to Sandario Tap: Rebuild Project

NAME	COMMON NAME	ESA	USFS	BLM	STATE
Athene cunicularia hypugaea	Western Burrowing Owl	SC		S	
Buteo swainsoni	Swainson's Hawk			S	
Chionactis occipitalis klauberi	Tucson Shovel-nosed Snake			S	
Coccyzus americanus	Yellow-billed Cuckoo (Western U.S. DPS)	C			WSC
Mammillaria thornberi	Thornber Fishhook Cactus				SR
Myotis velifer	Cave Myotis	SC			
Phrynosoma cornutum	Texas Horned Lizard	SC			
Tumamoca macdougalii	Tumamoc Globeberry		S	S	SR

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AUG 21 2009

August 20, 2009

Ms Amanda L Best
Westland Resources, Inc.
4001 E Paradise Falls Dr
Tucson AZ 85712

Re: Southwest Transmission Cooperative, Inc. Marana Tap to Sandario Tap Transmission Line Rebuild Project
Westland Project No. 1608.01 8330A

Dear Ms. Best;

In regards to the plans listed above: Trico is aware of this project. We have no questions or comments at this time. We do have facilities in the area of the above project. If you need any additional information regarding project No. 1608.01 8330A 8330, feel free to call Paul Newton at 744-2944 ext. 1320 and he will be happy to talk with you.

Sincerely,

Melinda Dalton

Melinda Dalton
Right-of-Way Assistant