

2011 REPTILE SURVEYS OF THE FAR WEST PARCEL AND VICINITY

RESOLUTION COPPER MINING

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EXECUTIVE SUMMARY

Resolution Copper Mining, LLC (RCM) is currently in the pre-feasibility phase of the development of a copper mine located near Superior, Pinal County, Arizona. In order to assist RCM in obtaining the necessary environmental permits, WestLand Resources, Inc. (WestLand) was retained by RCM to conduct surveys of the reptile community at the Far West parcel and along portions of State Route 79 (SR 79) and US 60 located near Florence Junction (the Study Area). The purpose of this study was to provide information on the occurrence of selected reptile species with the emphasis on four species that are of special interest to Tonto National Forest and the US Fish & Wildlife Service: Tucson shovel-nosed snake [*Chionactis occipitalis klauberi*], Maricopa leaf-nosed snake (*Phyllorhynchus browni lucidus*), Sonoran desert tortoise (*Gopherus agassizii*), and reticulate Gila monster (*Heloderma suspectum suspectum*). The Tucson shovel-nosed snake and the Sonoran desert tortoise are candidates for federal listing and decisions regarding their status will be made in 2014 and 2015, respectively.

Reptile surveys at Far West and road-kill surveys of highways in the vicinity of Far West identified a total of 10 reptile species, including the Tucson shovel-nosed snake and Sonoran desert tortoise. One road-killed Tucson shovel-nosed snake was collected on SR 79, 5.2 mi (8.4 km) southwest of the Far West Parcel, but no individuals of this species were captured during drift fence surveys within the parcel itself. Sonoran desert tortoises and signs of activity were found throughout habitats in the eastern portion of the parcel. Neither of the remaining two reptile species of special interest, Maricopa leaf-nosed snake and reticulate Gila monster, were observed during surveys in 2011.

1. INTRODUCTION

Resolution Copper Mining, LLC (RCM) is currently in the pre-feasibility phase of the development of a copper mine located near Superior, Pinal County, Arizona. In order to assist RCM in obtaining the necessary environmental permits, WestLand Resources, Inc. (WestLand) has been conducting baseline biological studies in areas where project activities might be located. WestLand was retained by RCM to conduct surveys to determine the occurrence and abundance of selected reptile species on and in the general vicinity of the Far West parcel (**Figure 1**).

The Far West parcel is situated south of US 60 and east of SR 79 near Florence Junction in Pinal County, Arizona (**Figure 1**). This approximately 7,000-acre (2,833-hectare) parcel of Arizona State Trust land and private land slopes downhill from east to west. The highest elevation in Far West is 2,966 ft (904 m) at a ridge near its eastern boundary, and the lowest elevation is 1,950 ft (594 m) near the western boundary of the parcel. Boulder-strewn hills in the east give way to fluvial sands and gravels to the west, and the area is dissected by numerous dry desert washes. This parcel occurs within the Arizona Upland Subdivision of Sonoran Desertscrub (Brown 1994). Saguaro (*Carnegiea gigantea*) and fishhook barrel cactus (*Ferocactus wislizenii*) are common on the eastern, hilly portion of the parcel. Desert ironwood (*Olneya tesota*) and palo verde (*Parkinsonia* spp.) occur along washes, and creosote (*Larrea tridentata*) dominates upland flats on the western portion of the parcel.

The purpose of this study was to provide information on the occurrence and abundance of selected reptile species with emphasis on four species: Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*), Maricopa leaf-nosed snake (*Phyllorhynchus browni lucidus*), Sonoran desert tortoise (*Gopherus agassizii*), and reticulate Gila monster (*Heloderma suspectum suspectum*). These four species have special status with at least one federal or state agency, and the Tucson shovel-nosed snake and the Sonoran desert tortoise are candidates for listing as threatened or endangered under the Endangered Species Act (ESA). The Center for Biological Diversity (CBD) petitioned to list the Tucson shovel-nosed snake under the ESA on December 15, 2004 (CBD 2004). In a 12-month finding issued on March 31, 2010, the US Fish and Wildlife Service (USFWS) announced that listing this subspecies was warranted but precluded by higher priority actions and added this snake to the candidate species list (USFWS 2010a). WildEarth Guardians (WG) and Western Watersheds Project (WWP) petitioned to list the Sonoran desert tortoise under the ESA on October 9, 2008 (WG and WWP 2008). The USFWS issued a 12-month finding on this petition on December 14, 2010, which likewise determined that listing was warranted but precluded by higher priority actions and thus added this tortoise to the candidate species list (USFWS 2010b). Neither the Maricopa leaf-nosed snake nor the reticulate Gila monster have been petitioned for listing under the ESA, though both are considered to be sensitive species by Tonto National Forest (TNF 2011).

A settlement agreement between the USFWS and WildEarth Guardians filed in the United States District Court for the District Of Columbia (Case 1:10-mc-00377-EGS Document 31 Filed 05/10/11) outlined a timetable for resolving listing decisions on 251 species. The Tucson shovel-nosed snake and the Sonoran desert tortoise are two of 24 species in Arizona affected by the settlement agreement. In accordance with the requirements of the settlement agreement, the USFWS must publish proposed rules to list for the

Tucson shovel-nosed snake and the Sonoran desert tortoise or withdraw them from the candidate list by 2014 and 2015, respectively.

The goal of this report is to summarize the results of drift fence reptile trapping, road surveys conducted along nearby highways, and transects conducted on the Far West parcel for Sonoran desert tortoise.

2. METHODS

The Study Area for the reptile study includes selected sites on the Far West parcel and roads near the parcel (**Figure 2**). Drift fence surveys were conducted in creosote flats in the western quadrant of the parcel. Surveys for Sonoran desert tortoise were conducted along washes and some upland areas in the eastern half of the parcel where the habitat appears to be most suitable. Finally, road surveys for road-killed snakes were conducted along a 5-mi (8-km) segment of US 60 2.5 mi (4 km) west and 2.5 mi (4 km) east of Florence Junction and a 9.5 mi (15.3 km) segment of SR 79 extending south from Florence Junction. The following paragraphs describe the methods for each of these surveys.

Tucson shovel-nosed snakes and Maricopa leaf-nosed snakes were surveyed by placing drift fences at four sites at Far West (**Figure 3**). These sites were located in areas with sandy soils and relatively flat terrain, which are preferred by these snake species (USFWS 2010c, Brennan and Holycross 2006). At each site, a 30-in (76-cm) by 100 ft (30 m) silt fence with wire supports was erected in the shape of a V, with the lower 6-8 inches (15-20 cm) buried in sand (**Appendix A, Photo 1**). A bucket was buried at the apex of each fence so that any reptile that encountered the fence would follow the fence line and fall into the bucket (**Appendix A, Photo 7**). Wire mesh funnel traps were placed at intervals along the fence and at each end. These funnel traps allow animals to enter from either end but prevent them from exiting (**Appendix A, Photo 12**). The wire mesh traps were covered with boards to shade them from the sun and prevent harm to any animals caught in the traps.

Drift fence surveys were conducted on 12 nights between April and June 2011. Buckets and funnel traps were opened near sunset and checked early the following morning. Any animals captured were identified, photographed, and released unharmed with minimal handling. Other reptiles observed near the drift fence arrays were also recorded. Traps were covered during the day to prevent daytime captures, which might be harmful to captured animals.

Road surveys were conducted for nocturnal and crepuscular reptiles killed by vehicles during the night. These surveys took place near dawn on nine days between April and June 2011. During each survey, a 5-mi (8-km) segment of US 60 northwest of the Far West Parcel and a 9.5-mi (15.3-km) segment of SR 79 west of the Far West Parcel (**Figure 4**) was driven as slowly and safely as possible and scanned for road-killed reptiles. All road-killed reptiles were identified and photographed.

Surveys for Sonoran desert tortoise were conducted along nine transects during five days in July 2011. These transects were generally located along washes in the eastern, hilly portion of the Far West parcel (**Figure 5**). Some transects also spanned upland areas away from washes. Transects were walked and scanned for signs of Sonoran desert tortoises including: live tortoises, scat, tracks, burrows, and skeletal remains. Burrows were scored as either “active” or “suitable”. Active burrows were considered to be

those with live tortoises, skeletal remains, scat, or tracks inside the burrow (**Appendix A, Photos 25, 29**). Suitable burrows were those that could harbor tortoises based on their size, depth, and accessibility, but which had not been utilized recently. All evidence of tortoise activity was photographed and recorded on data sheets.

3. RESULTS AND DISCUSSION

Reptile surveys conducted at Far West detected a total of 10 species of reptiles within the Study Area, including two reptile taxa of special interest: Tucson shovel-nosed snake and Sonoran desert tortoise (**Table 1**). The following paragraphs present the results of the drift fence, road, and walking transect surveys in detail.

During drift fence surveys, four reptile species were captured and one additional reptile species, the western diamond-backed rattlesnake (*Crotalus atrox*), was observed near a drift fence site (**Table 2, Figure 3**). The most commonly captured reptile was the common side-blotched lizard (*Uta stansburiana*; **Appendix A, Photo 4**), representing 45 percent of all captures. Tiger whiptails (*Aspidoscelis tigris*; **Appendix A, Photo 9**) and western patch-nosed snakes (*Salvadora hexalepis*; **Appendix A, Photo 3**) accounted for 27 and 18 percent of all observations, respectively. One western banded gecko (*Coleonyx variegatus*; **Appendix A, Photo 6**) was also captured. No Tucson shovel-nosed snakes were captured during drift fence surveys.

Table 1. Reptile species observed by survey type for the Far West Study Area.

Drift fence surveys	Road-kill surveys	Walking transect surveys
Common side-blotched lizard <i>Uta stansburiana</i>	Tucson shovel-nosed snake <i>Chionactis occipitalis klauberi</i>	Sonoran desert tortoise <i>Gopherus agassizii</i>
Tiger whiptail <i>Aspidoscelis tigris</i>	Glossy snake <i>Arizona elegans</i>	
Western banded gecko <i>Coleonyx variegatus</i>	Coachwhip <i>Masticophis flagellum</i>	
Western patch-nosed snake <i>Salvadora hexalepis</i>	Long-nosed snake <i>Rhinocheilus lecontei</i>	
Western diamond-backed rattlesnake <i>Crotalus atrox</i>	Western diamond-backed rattlesnake <i>Crotalus atrox</i>	

Table 2. Reptiles captured in drift fence traps or observed at the Far West parcel in 2011.

Drift Fence Number	Date	Number of Captures	Species
1	4/19/11	None	--
	4/20/11	1	Western patch-nosed snake (<i>Salvadora hexalepis</i>)
	4/21/11	1	Common side-blotched lizard (<i>Uta stansburiana</i>)
	4/22/11	1	Common side-blotched lizard (<i>Uta stansburiana</i>)
	4/25/11	None	--
	4/26/11	None	--
	4/27/11	1	Common side-blotched lizard (<i>Uta stansburiana</i>)
	5/12/11	None	--
	5/13/11	None	--
	6/01/11	None	--
	6/02/11	None	--
	6/03/11	1	Tiger whiptail (<i>Aspidoscelis tigris</i>)
2	4/19/11	None	--
	4/20/11	None	--
	4/21/11	None	--
	4/22/11	1	Western banded gecko (<i>Coleonyx variegatus</i>)
	4/25/11	None	--
	4/26/11	1	Western patch-nosed snake (<i>Salvadora hexalepis</i>)
	4/27/11	None	--
	5/12/11	None	--
	5/13/11	None	--
	6/01/11	None	--
	6/02/11	1	Common side-blotched lizard (<i>Uta stansburiana</i>)
	6/03/11	None	--
3	4/22/11	1	Tiger whiptail (<i>Aspidoscelis tigris</i>)
	4/25/11	Observed	Western diamond-backed rattlesnake (<i>Crotalus atrox</i>)
	4/26/11	None	--
	4/27/11	None	--
	5/12/11	None	--
	5/13/11	None	--
	6/01/11	None	--
	6/02/11	None	--
	6/03/11	None	--
4	4/22/11	None	--
	4/25/11	None	--
	4/26/11	None	--
	4/27/11	None	--
	5/12/11	None	--
	5/13/11	None	--
	6/01/11	1	Common side-blotched lizard (<i>Uta stansburiana</i>)
	6/02/11	1	Tiger whiptail (<i>Aspidoscelis tigris</i>)
	6/03/11	None	--
TOTAL		11	4 species captured and 1 species observed in area

Five reptile species killed by vehicles were observed along sections of US 60 and SR 79. A Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*; **Appendix A, Photo 13**) was found approximately 5.2 mi (8.4 km) southwest of the Far West parcel (**Table 3, Figure 4**). The other observed reptiles were the western diamond-backed rattlesnake (**Appendix A, Photo 17**), the coachwhip (*Masticophis flagellum*; **Appendix A, Photo 14**), and the glossy snake (*Arizona elegans*; **Appendix A, Photo 16**). One long-nosed snake (*Rhinocheilus lecontei*) was also found. Another snake was unidentifiable due to decomposition (**Appendix A, Photo 18**).

Nine live Sonoran desert tortoises, two skeletal remains, 11 active burrows with various levels of sign, and 12 suitable burrows were observed during walking transect surveys (**Table 4, Figure 5**). Evidence of tortoise activity was observed throughout the area surveyed, though most live tortoises were only detected in the northeast portion of the Far West parcel. One live tortoise was observed outside of the northeast quadrant of the parcel. Both of the skeletal remains observed belonged to larger individual tortoises (**Appendix A, Photos 20, 24**). One tortoise appeared to have been killed by a mountain lion (*Puma concolor*), based on the distance between canine marks on the carapace (**Appendix A, Photo 20**).

Table 3. Reptiles detected during road surveys near the Far West parcel in 2011.

Transect	Date	Number	Species
US 60	4/19/11	None	--
	4/20/11	1	Western diamond-backed rattlesnake (<i>Crotalus atrox</i>)
	4/21/11	None	--
	4/22/11	1	large snake, unidentified due to decomposition
	5/12/11	None	--
	5/13/11	None	--
	6/01/11	None	--
	6/02/11	None	--
	6/03/11	None	--
SR 79	4/19/11	1	Tucson shovel-nosed snake (<i>Chionactis occipitalis klauberi</i>)
		2	Coachwhip (<i>Masticophis flagellum</i>)
		2	Western diamond-backed rattlesnake (<i>Crotalus atrox</i>)
	4/20/11	1	Long nosed-snake (<i>Rhinocheilus lecontei</i>)
		1	Coachwhip (<i>Masticophis flagellum</i>)
		2	Western diamond-backed rattlesnake (<i>Crotalus atrox</i>)
	4/21/11	None	--
	4/22/11	1	Coachwhip (<i>Masticophis flagellum</i>)
		2	Glossy snake (<i>Arizona elegans</i>)
	5/12/11	None	--
	5/13/11	1	Glossy snake (<i>Arizona elegans</i>)
		1	Western diamond-backed rattlesnake (<i>Crotalus atrox</i>)
	6/01/11	None	--
	6/02/11	None	--
	6/03/11	None	--
	TOTAL	16	6 species observed

No Tucson shovel-nosed snakes were observed during drift fence surveys within the parcel. The Sonoran desert tortoise, however, appears to be present throughout suitable habitats in the eastern half of the parcel. Neither of the remaining two reptile taxa of special interest, Maricopa leaf-nosed snake and reticulate Gila monster, were observed during any reptile surveys in 2011.

Table 4. Tortoise transect results from surveys conducted at the Far West parcel in 2011.

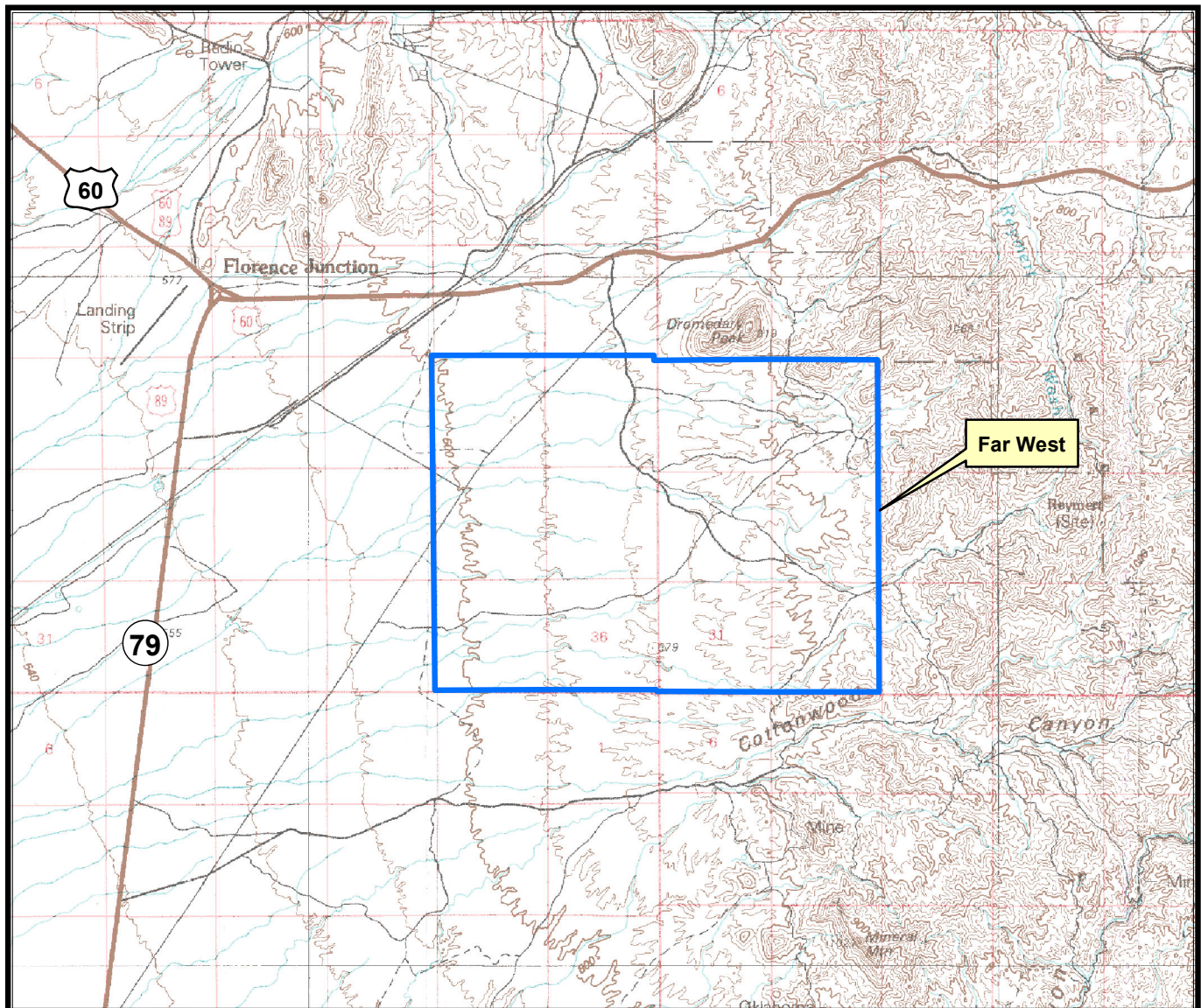
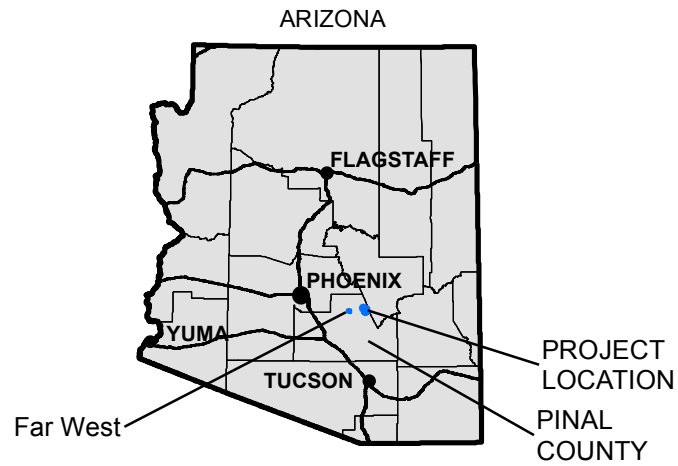
Transect	Date	Live Tortoise	Scat	Tracks	Suitable Burrow	Active Burrow	Skeletal Remains	Notes
1	7/18/11	-	-	-	-	-	-	-
2	7/19/11	5	2	-	-	-	1	Live tortoises: four small and one medium. Skeletal remains: large male tortoise killed by a mountain lion (<i>Puma concolor</i>).
3	7/20/11	3	1	3	7	5	1	Live tortoises: two small and one large. Active burrow: tracks, scat, and carapace imprint inside burrow. Skeletal remains: large tortoise.
4	7/20/11	-	-	1	1	1	-	Active burrow: fresh tracks and carapace imprint.
5	7/21/11	-	-	-	-	-	-	-
6	7/21/11	-	-	1	2	1	-	Suitable burrow: no signs of recent activity. Active burrow: fresh tracks and carapace imprint.
7	7/21/11	-	-	-	-	1	-	Active burrow: fresh tracks inside.
8	7/21/11	1	-	-	2	1	-	Live tortoise: large tortoise in burrow. Suitable burrow: marked by other researchers.
9	7/22/11	-	1	2	-	2	-	Active burrow: scat in caliche cave. Fresh tracks and carapace imprints.
TOTAL		9	4	7	12	11	2	

4. REFERENCES

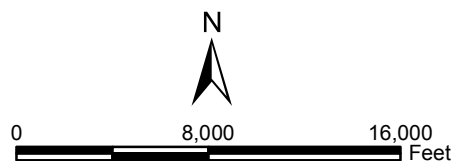
- Brennan, T. C., and A. T. Holycross. 2006. *A Field Guide to Amphibians and Reptiles in Arizona*. Arizona Game and Fish Department. Phoenix, AZ
- Brown, D. E. (Ed.) 1994. *Biotic Communities: Southwestern United States and Northwestern Mexico*. University of Utah Press. Salt Lake City, Utah.
- Center for Biological Diversity (CBD). 2004. Petition to list the Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*) as an endangered species. Accessed online January 2012 at: http://www.biologicaldiversity.org/species/reptiles/Tucson_shovel-nosed_snake/pdfs/petition.pdf
- Tonto National Forest (TNF). 2011. Tonto National Forest Sensitive Species List. USDA Forest Service, Tonto National Forest. Phoenix, Arizona.
- U.S. Fish & Wildlife Service (USFWS). 2010a. Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition to List the Tucson Shovel-Nosed Snake (*Chionactis occipitalis klauberi*) as Threatened or Endangered with Critical Habitat. Federal Register 75: 16050-16065.
- _____. 2010b. Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition to List the Sonoran Population of the Desert Tortoise as Endangered or Threatened. Federal Register 75: 78094-78146.
- _____. 2010c. Tucson Shovel-nosed Snake (*Chionactis occipitalis klauberi*). Available at internet site: <http://www.fws.gov/southwest/es/arizona/Documents/Redbook/Tucson%20Shovel-nosed%20Snake%20RB.pdf>. Accessed 3 January 2012.
- WildEarth Guardians and Western Watersheds Project (WG and WWP). 2008. Petition to list the Sonoran desert tortoise (*Gopherus agassizii*) under the U.S. Endangered Species Act. Accessed online January 2012 at: <http://www.westernwatersheds.org/species/desert-tortoise/sonoran/sonoran-tortoise-petition.pdf>



FIGURES

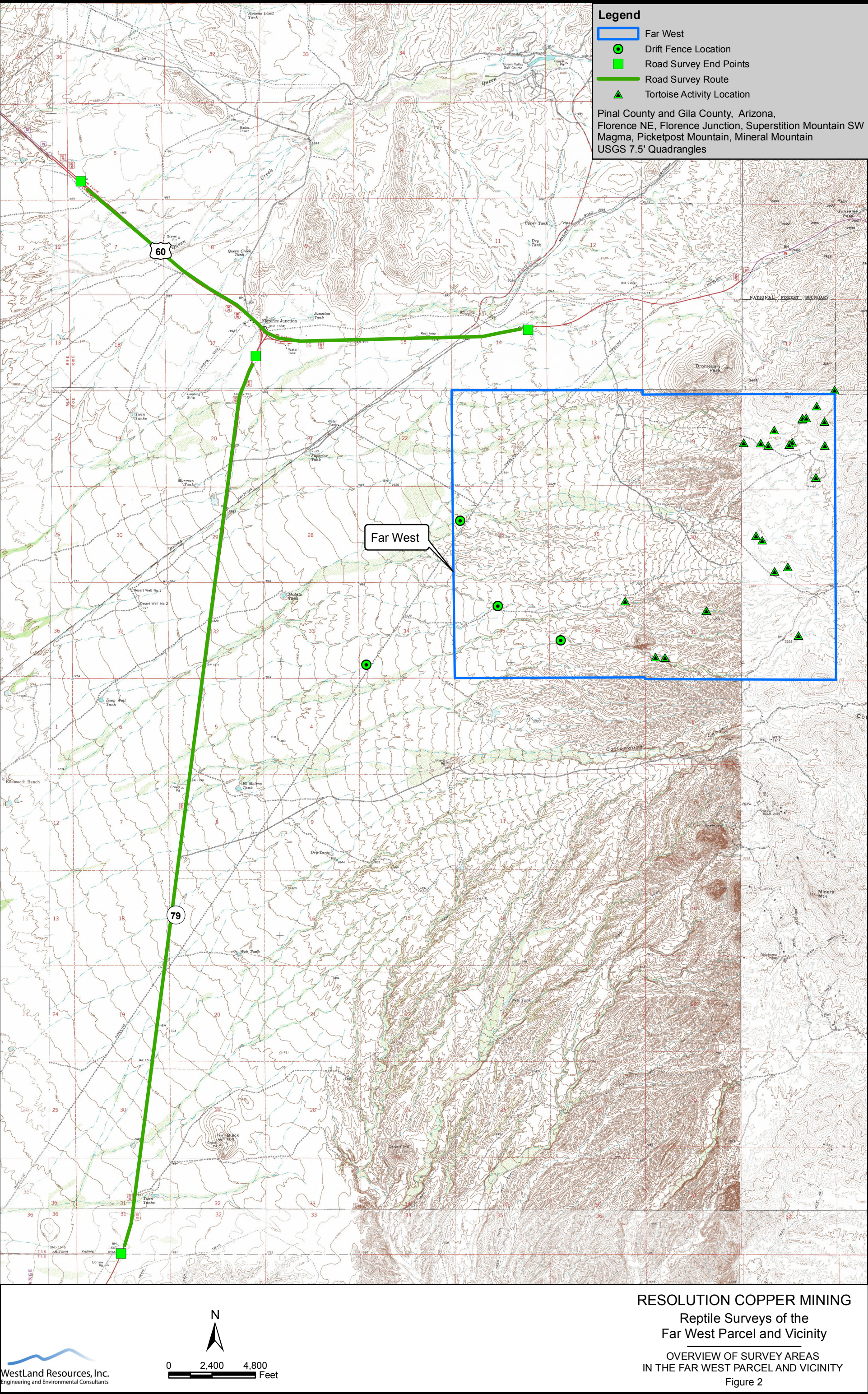


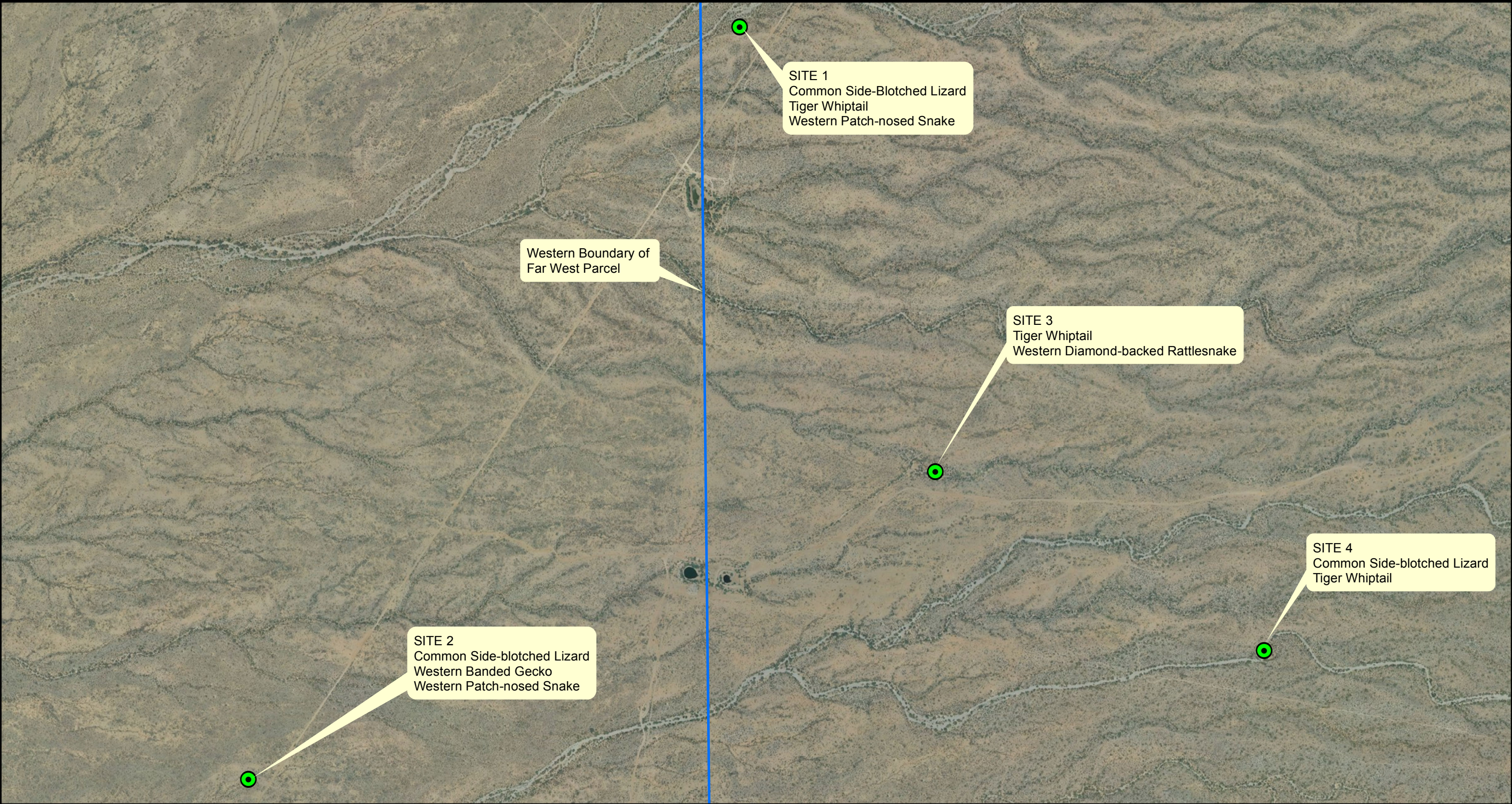
Pinal County, Arizona,
 Florence Junction, Superstition Mountain SW
 Florence NE, Magma, Florence SE, Florence
 USGS 7.5' Quadrangles



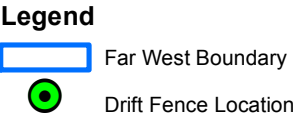
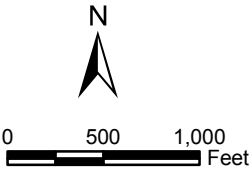
RESOLUTION COPPER MINING

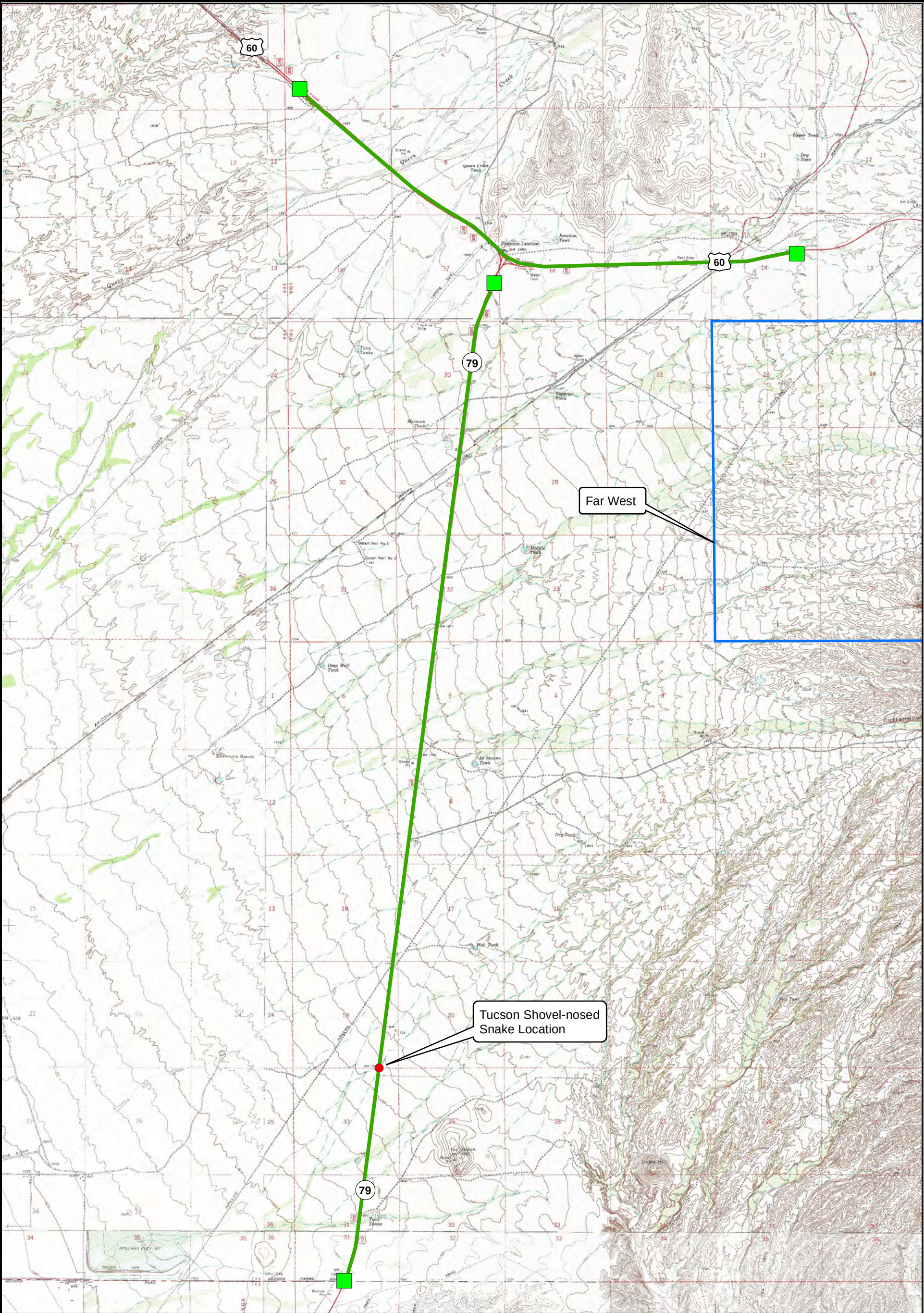
Reptile Surveys of the
 Far West Parcel and Vicinity



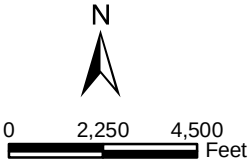


T.02S., R.10E. Portion of Sections 25, 26, 27, 28, 33, 34, 35, & 36
Pinal County and Gila County, Arizona,
Photo Source: Aerials Express 2009





Pinal County and Gila County, Arizona,
Florence Junction, Superstition Mountain SW
Florence NE, Magma, Florence SE, Florence
USGS 7.5' Quadrangles



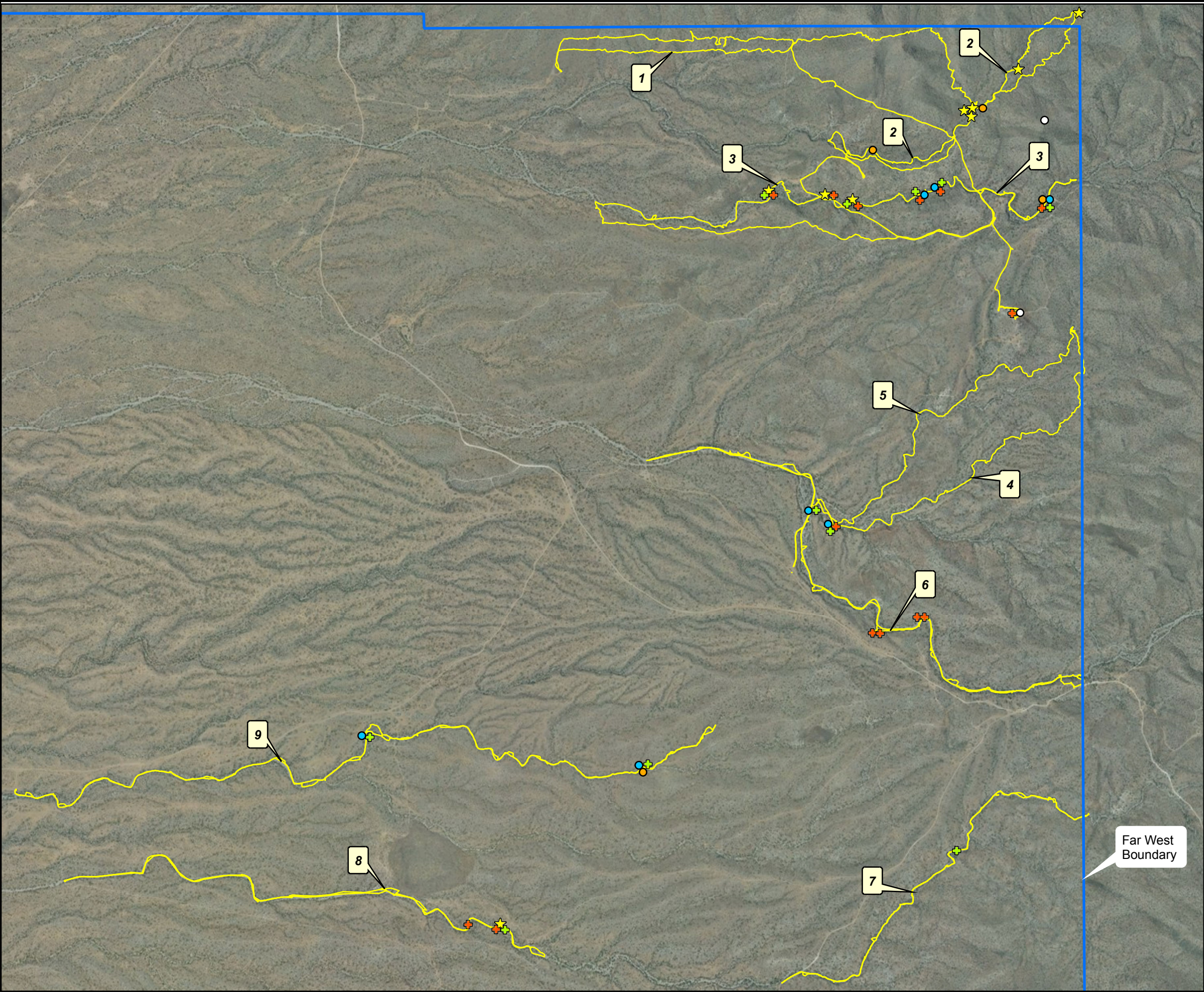
Legend

- Far West Boundary
- Road Survey End Points
- Tucson Shovel-nosed Snake
- Road Survey Route

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Reptile Surveys of the
Far West Parcel and Vicinity

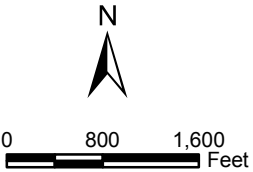
LOCATION OF ROAD-KILLED
TUCSON SHOVEL-NOSED SNAKE
Figure 4

T.02S.,R.10E. Portion of Sections 24, 25, & 36,
T.02S.,R.11E. Portion of Sections 17, 19, 20, 21, 29, 30, 31, 32, & 33
Pinal County and Gila County, Arizona,
Photo Source: Aerials Express 2009



Legend

- Far West Boundary
- Tortoise Findings
 - Live Tortoise
 - Active Burrow
 - Suitable Burrow
 - Scat
 - Skeletal Remains
 - Tracks
- Tortoise Transects
- Transect No.



WestLand Resources, Inc.
Engineering and Environmental Consultants

RESOLUTION COPPER MINING
Reptile Surveys of the
Far West Parcel and Vicinity

TORTOISE TRANSECT SURVEY LOCATIONS
Figure 5

APPENDIX A

**Representative
photographs of
reptile surveys**



Photo 1.
Drift fence site 1.
This photo shows the V-shape of the drift fence array



Photo 2.
Drift fence site 1.
Note the boards shading the wire mesh traps along the drift fence



Photo 3.
Drift fence site 1
Western patch-nosed snake (*Salvadora hexalepis*) captured in an orange bucket trap



Photo 4.
Drift fence site 1
Common side-blotched lizard (*Uta stansburiana*)



Photo 5.
Drift fence site 2
This photo details the Arizona Upland
Desertscrub vegetation present at the drift fence
sites



Photo 6.
Drift fence site 2
Western banded gecko (*Coleonyx variegatus*)



Photo 7.
Drift fence site 3
Note the orange bucket trap placed at the apex
of the drift fence array



Photo 8.
Drift fence site 3
Drift fence arrays were constructed in sandy
soils, as this photo illustrates



Photo 9.
Drift fence site 3
Tiger whiptail (*Aspidoscelis tigris*)



Photo 10.
Drift fence site 4
In contrast to the other drift fence sites, large, shady trees were more abundant at site 4



Photo 11.
Drift fence site 4
Another view of the relatively dense vegetation at site 4



Photo 12.
Drift fence site 4
Tiger whiptail (*Aspidoscelis tigris*) captured in funnel trap



Photo 13.
SR 79
Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*)



Photo 14.
SR 79
Coachwhip (*Masticophis flagellum*)



Photo 15.
SR 79
Western diamond-backed rattlesnake (*Crotalus atrox*)



Photo 16.
SR 79
Glossy snake (*Arizona elegans*)



Photo 17.
US 60
Western diamond-backed rattlesnake (*Crotalus atrox*)

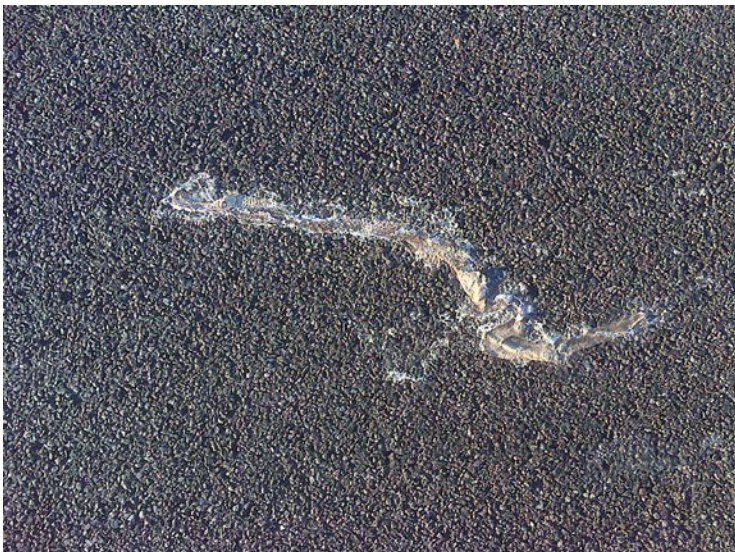


Photo 18.
US 60
Large snake, unidentified due to decomposition



Photo 19.
Transect 2.
A small Sonoran desert tortoise (*Gopherus agassizii*) found in a caliche ledge off a wash



Photo 20.
Transect 2.
A large skeletal remain of a male Sonoran desert tortoise. The spacing of canine marks on the carapace suggests that it was killed by a mountain lion (*Puma concolor*)



Photo 21.
Transect 2.
A small Sonoran desert tortoise found in shade of caliche cave



Photo 22.
Transect 3.
A small Sonoran desert tortoise entering a burrow



Photo 23.
Transect 3.
A large Sonoran desert tortoise under a ledge



Photo 24.
Transect 3.
A large skeleton of Sonoran desert tortoise



Photo 25.
Transect 4.
Active burrow with fresh tracks and imprint of
plastron



Photo 26.
Transect 6.
Active burrow with fresh tracks and imprint of
plastron



Photo 27.
Transect 7.
Active burrow with fresh tracks inside



Photo 28.
Transect 8.
A large Sonoran desert tortoise in burrow



Photo 29.
Transect 9.
Active burrow with fresh tracks and imprint of
plastron