Oro Valley Village Center

Southwest Corner of Oracle Road and Tangerine Road Oro Valley, AZ

Environmentally Sensitive Lands Ordinance Amendment

Prepared For:
Town West
555 E. River Road, Suite 201
Tucson, Arizona 85704

Prepared By:
The WLB Group, Inc.
Robert G. Longaker III, PLA, AICP
Director of Planning
4444 East Broadway Boulevard
Tucson, Arizona 85711
(520) 881-7480

WLB Job No. 185050-WT-03
July 5, 2020

A. Introduction

This application is to request a map amendment to the Environmentally Sensitive Lands Ordinance (ESLO) for the Oro Valley Village Center project (formerly known as Oro Valley Marketplace). This application is being submitted in conjunction with a proposed amendment to the Rancho Vistoso Planned Area Development (PAD) and a revised Conceptual Site Plan (CSP).

This ESLO map amendment is specific to an approximately 4-acre man-made drainage area in the northeastern portion of the site that is currently designated under ESLO as a Critical Resource Area (CRA). This request is to amend the ESLO map designation for this area from CRA to Resource Management Area 3 (RMA 3) since the subject property is located within the Tier 1 Growth Area identified on the General Plan Land Use Map.

Recon Environmental, Inc. was hired to evaluate this area and their report can be found at the rear if this report. The following is an excerpt from the Recon report and summarizes their findings:

Assessment Results

Prior to 2008, the study area did not contain a wash or associated significant vegetation. As previously mentioned, as part of development of the retail project, the study area was graded, developed into a stormwater channel, and revegetated with native species. The native vegetation established well and the study area now meets the criteria for xeroriparian habitat based on total vegetation volume as listed in Table 1, as well as other riparian function indicators. The study area includes a wash/drainage channel having banks and beds through which water flows periodically.

In addition, the study area meets the criteria for minor wildlife linkage based on the evidence of wildlife use through the drainage area, including use of culverts under minor and major roadways to the north and south. The study area wildlife linkage connects open space and CRA areas north of Tangerine Road with open space areas south of the Village Center and to Big Wash, a designated Major Wildlife Linkage under the ESL. There are other wildlife linkages located approximately 0.5 mile to the east and west of the study area; however, the study area provides an important link for wildlife that may be isolated within the open space between Oracle Road on the east and development along Innovation Park Road to the west.

Based on the findings that the study area meets the criteria for riparian and minor wildlife linkage, the entire study area meets the criteria for the designation as CRA.

B. Background Information and Justification for ESLO Map Amendment from CRA to RMA 3

This 4-acre area was originally established based on an open space area designation in the original Rancho Vistoso Planned Area Development. Historically the area did contain a wash or associated significant natural vegetation. The vegetation that exists in this area today was

man-made and installed in 2008 as part of the landscape improvements during the development of the Oro Valley Marketplace. Part of the development of the retail project included a commitment to restore the native vegetation in certain areas, including this area. The type and density of vegetation planted at that time has resulted in growth and maturation of the plants such that it met xeroriparian density criteria of CRA at the time of the creation of the Environmentally Sensitive Lands Ordinance. The Town of Oro Valley designated the study area as a Critical Resource Area after the Environmentally Sensitive Lands Ordinance was established in 2011.

Please refer to *Exhibits A and B* which show aerial photographs from 2006 and 2018 and demonstrate how the site looked prior to development and how it looks in a more recent condition.

The area subject to this amendment was also created to collect on-site stormwater, as well as to convey stormwater from north of Tangerine Road through the development and into Big Wash and the riparian mitigation area southwest of the project.

Also, per Town of Oro Valley ESLO mapping, the subject area is not identified as part of the Major Wildlife Linkage Category.

C. Reasons for Requested ESLO Amendment

This ESLO amendment to RMA 3 (subject property is located within the Tier 1 Growth Area identified on the General Plan Land Use Map) is requested in order to allow the proposed redevelopment of this area. The CRA designation does not permit the uses that are proposed by the redevelopment strategy for property.

The following information provides more detail on the proposed redevelopment strategy for this area.

1. <u>New Property Vision.</u> This project proposes a redevelopment of an approximately 7-acre central open space area (approximately 4 acres of which are designated as CRA). This central open space will be redeveloped and contain active and passive recreational amenities.

   The central open space area is a key component of the proposed redevelopment of the overall property as a lifestyle center. The facilities and amenities will be available for use by not only future residents of the project, but also the general public.

2. <u>Functional Change of the Area.</u> The existing function of the subject area is for use as open space and to move stormwater through the area, as described earlier in this narrative. There are also walking paths on the perimeter of the area. The CRA designation and its associated requirement that 95% of the area be retained as Environmentally Sensitive Open Space (ESOS) is consistent with this current function.

The proposed function is not only as described in Item 1 above, but this area will continue to provide open space and stormwater conveyance. This area will continue to convey stormwater entering the site from north of Tangerine Road as well as stormwater generated on the site. The stormwater will be conveyed either via an open channel or via a storm drain that will be constructed beneath the central and southern portions of the entertainment district area. The storm drain option would allow for the greatest opportunity to utilize as much of the central open space area as possible for the proposed amenities. The drainage in the northern portion of the central open space area will remain open and will retain existing vegetation.

EXHIBITS

The WLB Group WLB

EXHIBIT A: 2006 AERIAL PHOTOGRAPH

11.11.2021
WLB No. 185050-WT-03
NTS

Q:\185050\WT-03 - Town West\01 Planning\01 ESL Amendment\Exhibit A.dwg Plotted: Nov. 11, 2021

The WLB Group WLB

EXHIBIT B: 2018 AERIAL PHOTOGRAPH

11.11.2021
WLB No. 185050-WT-03
NTS

Q:\185050\WT-03 - Town West\01 Planning\01 ESL Amendment\Exhibit B.dwg Plotted: Nov. 11, 2021

RECON REPORT

RECON

An Employee-Owned Company

May 4, 2020

Mr. Bryan Eubank
Vice President of Operations
Town West Realty
555 East River Road, Ste. 201
Tucson, AZ 85704

Reference: Oro Valley Village Center (formerly known as the Oro Valley Marketplace) – Environmentally Sensitive Lands Critical Resource Area Site Assessment (RECON Number 9666)

Dear Mr. Eubank:

Per your request, RECON Environmental, Inc. (RECON) with assistance from Wilder Landscape Architects evaluated an approximately 4-acre man-made drainage area (study area) within the Oro Valley Village Center development located at Oracle Road and Tangerine Road in Oro Valley, Arizona. The corridor is currently mapped as a Critical Resource Area (CRA) per the Town of Oro Valley's Environmentally Sensitive Lands (ESL) Zoning Code Section 27.10 D.3.b (Figure 1; all figures referenced in this report are included in Attachment 1).

General Site Conditions

The Oro Valley Village Center and study area are located in the southeastern portion of the Rancho Vistoso Planned Area Development Zone. Prior to 2008 and based on a review of historical aerial photographs, the study area did not previously contain a wash or associated significant natural vegetation. Part of the development of the retail project included a commitment to restore the native vegetation in certain areas, including the study area. The study area was graded in 2008 and developed to collect on-site stormwater, as well as stormwater from north of Tangerine Road, to be directed through the development and into Big Wash and the mitigation area south of the Oro Valley Village Center. The study area location was originally established based on an open space area designation in the original Rancho Vistoso Planned Area Development. The study area was contour graded and vegetated with native species based on Town of Oro Valley guidelines. Since 2008, the vegetation established well and vegetation densities meet xeroriparian volumes. The Town of Oro Valley designated the study area as a Critical Resource Area after the Environmentally Sensitive Lands Ordinance was established in 2011.

Within the Oro Valley Village Center, the study area is currently located between developed and paved areas to the east and west, Tangerine Road to the north, and the internal Village Center access road to the south (see Figure 1). The study area is bisected by two access roads connecting the Village Center businesses. There is a large concrete drainage feature (concrete culverts, terraced concrete channels, and rock rip-rap channels) in the northern portion of the study area (Figure 2).

Big Wash, designated as a Major Wildlife Linkage under the ESL, is located south of the Village Center access road. An area zoned as Open Space and four areas designated as Critical Resource Areas are located north of the study area and north of Tangerine Road (see Figure 1).

Elevation of the study area ranges from 2,660 to 2,680 feet. Drainage within the study area is from north to south, starting at the culverts under Tangerine Road, through the drainage feature and terraces located in the northern portion of the study area (see Figure 2). Drainage continues through the central portion of the study area, consisting of a single channel that is braided in the northern and central sections and more incised in the

southern section. The drainage continues into culverts at the southern section, running underneath the Village Center access road to an open space area and eventually into Big Wash (see Figure 1).

Vegetation in the Study Area

Native Species

The study area is within the Arizona Upland Subdivision of the Sonoran Desertscrub biotic community. The study area was completely graded in 2008 during the construction of the Oro Valley Village Center, which was developed prior to the ESL code. The study area was mapped as Xeroriparian B habitat prior to the development and was mitigated off-site (west of the Village Center access road). The wash that flowed through the study area (flow from the north through a concrete drainage structure under Tangerine Road to Big Wash to the south) was narrowed and revegetated as open space as part of the development plan. The current drainage width varies from 100 to 150 feet through the study area.

Planting (container plants and seeding) of the study area occurred in the second half of 2008 and irrigation was used to establish the plant material. It is assumed that the landscape is no longer irrigated (typically planted areas are irrigated for no more than five years). Prevalent tree species include whitethorn acacia (*Vachellia constricta*), velvet mesquite (*Prosopis velutina*), and blue paloverde (*Parkinsonia florida*). Desert willow (*Chilopsis linearis*), foothill paloverde (*Parkinsonia microphylla*), and catclaw acacia (*Senegalia greggii*) are present in smaller numbers.

The dominant shrubs and sub-shrubs that are established in the study area include cheesebush (*Ambrosia salsola*), fourwing saltbush (*Atriplex canescens*), desert broom (*Baccharis sarothroides*), burroweed (*Isocoma tenuisecta*), and brittlebush (*Encelia farinosa*). Species present in smaller numbers include triangle leaf bursage (*Ambrosia deltoidea*), canyon bursage (*Ambrosia ambrosioides*), turpentine bush (*Ericameria laricifolia*), wolfberry (*Lycium sp.*), and paperflower (*Psilostrophe cooperi*). Forbs include desert senna (*Senna covesii*), globemallow (*Sphaeralcea ambigua*), shaggyfruit pepperweed (*Lepidium lasiocarpum*), and climbing milkweed (*Funastrum cynanchoides*).

The dominant cactus found in the study area was chainfruit cholla (*Cylindropuntia fulgida*). Staghorn cholla (*Cylindropuntia versicolor*), barrel cacti (*Ferocactus wislizenii*), soap tree yucca (*Yucca elata*) and prickly pear (*Opuntia engelmannii*) are all infrequent, and seldom located within the transects.

Invasive Species

Common invasive species noted within the study area include London rocket (*Sisymbrium irio*), red brome (*Bromus madritensis*), and Mediterranean grass (*Schismus barbatus*). An invasive new to the Tucson area, stinknet (*Oncosiphon piluliferum*), was seen in small quantities in two areas within the study area and manually removed.

Wildlife Found within the Study Area

The study area was assessed for use as a minor wildlife linkage by searching for signs of wildlife travel through the drainage. Tracts, scat, and evidence of foraging were noted. Species identified using the area include javelina (*Tayassu tajacu*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), desert cottontail (*Sylvilagus audubonii*), desert woodrat (*Neotoma lepida*), also known as pack rats, round-tail ground squirrel (*Xerospermophilus tereticaudus*), Harris's antelope squirrel (*Ammospermophilus harrisii*), kangaroo rats (*Dipodomys* spp.), and desert mice (*Perognathus* spp.).

A variety of bird species were also found within the study area, including Gambel's quail (*Callipepla gambelii*), white winged dove (*Zenaida asiatica*), mourning dove (*Zenaida macroura*), Lucy's warbler (*Vermivora luciae*), phainopepla (*Phainopepla nitens*), common raven (*Corvus corax*), cactus wren (*Campylorhynchus brunneicapillus*), northern cardinal (*Carninalis cardinalis*), house sparrow (*Passer domesticus*), hummingbirds (likely costa's or Anna's [*Calypte* spp.]), verdin (*Auriparus flaviceps*), curve-billed

thrasher (*Toxostoma curvirostre*), black-tailed gnatcatcher (*Polioptila melanura*), rufous-crowned sparrow (*Aimophila ruficeps*), black-throated sparrow (*Amphispizabilineata*), Abert's towhee (*Pipilo aberti*), vermillion flycatcher (*Pyrocephalus rubinus*), and lesser goldfinch (*Carduelis psaltria*).

Wildlife habitat features within the study area include diverse and dense native vegetation used for nesting, foraging, and roosting. Javelina bed-down areas were found under several dense stands of acacia and desert broom. Areas where several boulders where placed as part of the landscape design showed evidence of use by desert woodrats and desert mice. Although no reptiles (snakes and lizards) where observed during the site visit due to the temperature range, habitat for these species occurs throughout the study area and a variety of snakes and lizards are likely to occur.

Wildlife tracks (primarily coyote and javelina) where found throughout the study area. In addition, wildlife tracks where found outside and within culverts located at the north end, central portion, and south end of the study area. Wildlife tracks were also found within the culvert leading to the study area that passes under Tangerine Road as well as at the exit of the culvert located at the southern end of the study area leading to Big Wash.

Methods

RECON senior biologist[1] Susy Morales, with assistance from Jennifer Patton (registered landscape architect) and Ben Wilder (landscape designer/GIS specialist), conducted a site visit and transects on March 28, 2020. At the time of the visit, trees were not yet leafed out. Vegetation volume measurements would have been higher had trees been fully leafed out.

The study area CRA and the extent to which it meets the ESL riparian area criteria as identified in *Town of Oro Valley Zoning Code Addendum G: ESL Resource Science Specifications and Definitions* were evaluated. Specifically, Appendix G, paragraph A defines xeroriparian areas by the presence of both intermittent/ ephemeral drainage features and representative vegetation volume of 0.500 cubic meter per square meter (cm^3/m^2) or greater. Paragraphs D and E also indicate that upland "islands" between braided channels are included as part of the riparian area only if they are less than 200 feet wide, and that mapped riparian areas that contribute drainage connectivity, sediment and nutrient transport, etc. may include areas without representative vegetation volume. In summary, the identification of xeroriparian areas as defined in Appendix G is based on the full site context and riparian function rather than the presence of any single feature or indicator.

Nine transects were conducted to measure Total Vegetation Volume (TVV) within the study area (Figure 3). Per the direction of Appendix G, Paragraph H, the Pima County Regional Flood Control District (PCRFCD) Technical Procedure 116: Quantitative Methods for Regulated Riparian Habitat Boundary Modifications and On-Site Vegetation Surveys was used to determine vegetation volume. The TVV data sheets are presented in Attachment 2. Representative photographs were taken looking downstream and upstream along each transect and at other key viewpoints. Site photographs are included in Attachment 3. Within the nine transects, belt transect sampling as specified in Appendix J, Paragraph 3 (as well as the PCRFCD Technical Procedure 116) was also conducted. Using this method, vegetation is sampled by points at 0.5-meter intervals along the transect to determine density and diversity.

Results

Vegetation within the study area includes riparian facultative species (i.e., more abundant in but not restricted to riparian areas) such as whitethorn acacia, mesquite, and blue paloverde. The results of the TVV transects, presented in Table 1, show that the total vegetation volume within the nine transects are well above the minimum 0.500 m^3/m^2 threshold for xeroriparian, with a total average vegetative volume measure of 1.48 m^3/m^2–three times the minimum 0.500 m^3/m^2 threshold for xeroriparian. Additionally, the presence

[1]Qualified Habitat Restoration Specialists per Town of Oro Valley Code Chapter 31.

of distinct channels, sediment deposits, and vegetation debris were noted to indicate hydrologic flow and connectivity, and nutrient/sediment transport.

Table 1
Total Vegetation Volume,
Oro Valley Village Center Study Area

Transect Number	Total Vegetation Volume (m^3/m^2)
1	1.404
2	1.892
3	1.420
4	1.140
5	1.188
6	2.528
7	0.772
8	1.236
9	1.736
Total Mean	**1.480**

For the belt transects, an average vegetation density for the sample area was extrapolated to an acre-density of vegetated area, as shown in Table 2. The study area was found to have a diversity of shrub species, with several in high density, such as cheesebush, fourwing saltbush, desert broom, and brittlebush. Trees with the highest density include whitethorn acacia, blue paloverde, and mesquite.

Table 2
Vegetation Density, Oro Valley Village Center Study Area

Plant Species		Transect #										
Botanical Name	Common Name	1	2	3	4	5	6	7	8	9	Total Density	Average Density
Trees												
Parkinsonia florida	blue paloverde			1				3	2		6	54.0
Parkinsonia microphylla	foothill paloverde								2		2	18.0
Prosopis velutina	mesquite		2	1	1	1		1	3	2	11	98.9
Senegalia greggii	cactclaw acacia									1	1	9.0
Vachellia constricta	whitethorn acacia	4	10	1	3	1	6	1	13	3	42	377.7
Shrubs / Sub-shrubs												
Ambrosia deltoidea	triangle leaf bursage		2					2			4	36.0
Ambrosia salsola	cheesebush		17	1	3		2	11			34	305.8
Atriplex canescens	fourwing saltbush		4	2	7		2	6		23	44	395.7
Baccharis sarothroides	desert broom	13	7	1	1	8	11		9	14	64	575.6
Encelia farinosa	brittlebush	1	1		22		2	14	4	7	51	458.6
Isocoma tenuisecta	burroweed					1		3	3		7	63.0
Lycium sp.	wolfberry species									8	8	71.9
Psilostrophe cooperi	paperflower									1	1	9.0
Senna covesii	desert senna			1							1	9.0
Cacti												
Cylindropuntia fulgida	chainfruit cholla			1				1		1	3	27.0
Cylindropuntia versicolor	staghorn cholla			1							1	9.0
Opuntia engelmannii	prickly pear							1			1	9.0

Site Assessment Results

Zoning Code

As detailed in the ESL Zoning Code D.3.b, the CRA open space category includes the following environmentally sensitive resources:

a) Riparian areas and minor wildlife linkages
b) Major rock outcrops and boulders
c) Distinctive habitat resource

Riparian areas occur in association with a spring, cienega, lake, water course, river, stream, creek, wash, arroyo, or other body of water, either surface or sub-surface, or any channel having banks and beds through which water flows, at least periodically.

Minor wildlife linkages are composed of upland areas and degraded riparian areas. Degraded areas include hardened drainage ways and constricting drainage structures. These minor links are important in maintaining connectivity within the open space system identified in the ESL.

Assessment Results

Prior to 2008, the study area did not contain a wash or associated significant vegetation. As previously mentioned, as part of development of the retail project, the study area was graded, developed into a stormwater channel, and revegetated with native species. The native vegetation established well and the study area now meets the criteria for xeroriparian habitat based on total vegetation volume as listed in Table 1, as well as other riparian function indicators. The study area includes a wash/drainage channel having banks and beds through which water flows periodically.

In addition, the study area meets the criteria for minor wildlife linkage based on the evidence of wildlife use through the drainage area, including use of culverts under minor and major roadways to the north and south. The study area wildlife linkage connects open space and CRA areas north of Tangerine Road with open space areas south of the Village Center and to Big Wash, a designated Major Wildlife Linkage under the ESL. There are other wildlife linkages located approximately 0.5 mile to the east and west of the study area; however, the study area provides an important link for wildlife that may be isolated within the open space between Oracle Road on the east and development along Innovation Park Road to the west.

Based on the findings that the study area meets the criteria for riparian and minor wildlife linkage, the entire study area meets the criteria for the designation as CRA.

Thank you again for the opportunity to conduct this CRA site assessment. Please contact us if you have any questions or need any additional information.

Sincerely,

Susana M. Morales

Susy Morales
Senior Wildlife Biologist/Environmental Planner

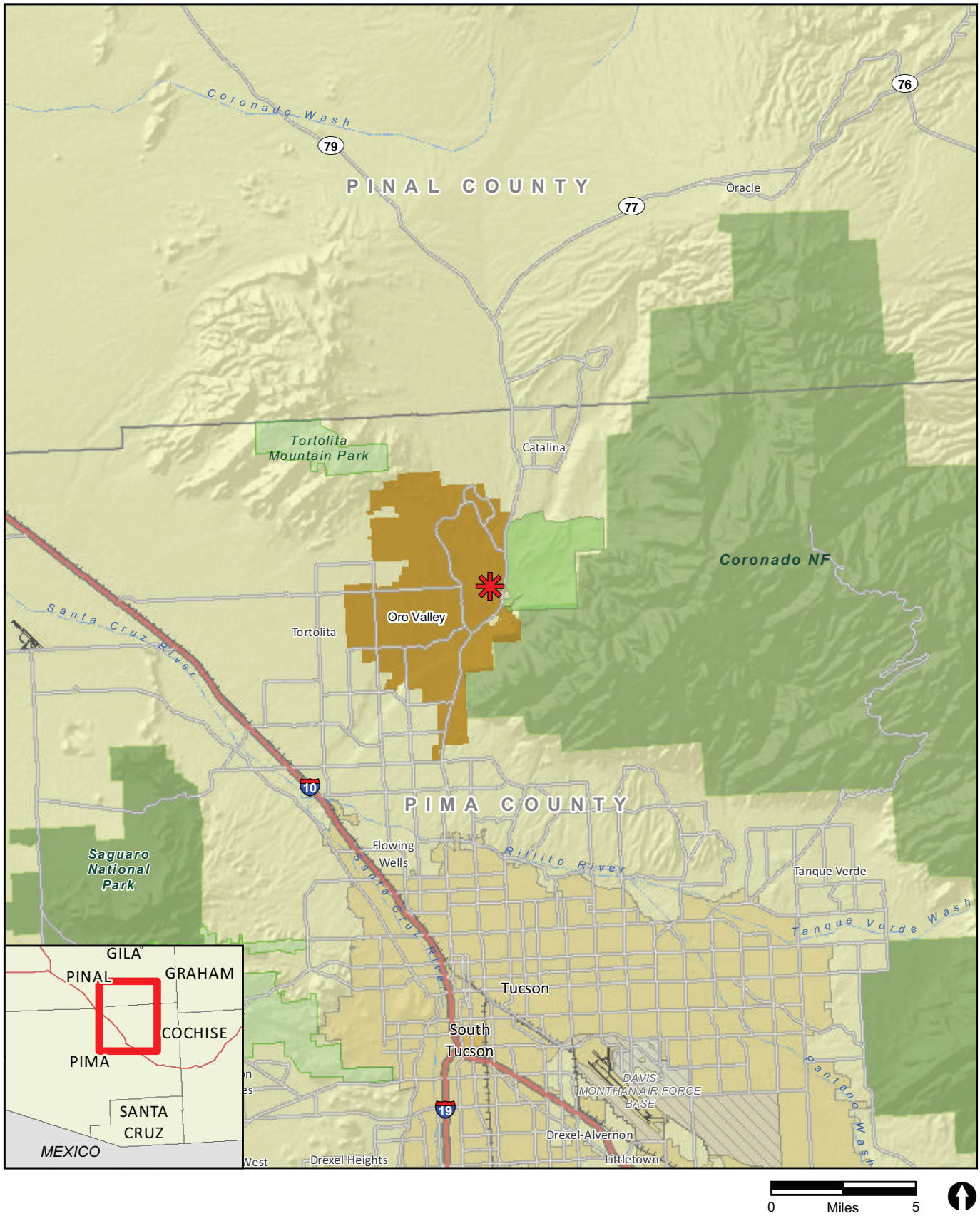
SMM:jg

Attachments

ATTACHMENTS

ATTACHMENT 1

Figures



Project Location

FIGURE 1
Study Area Regional Location

RECON

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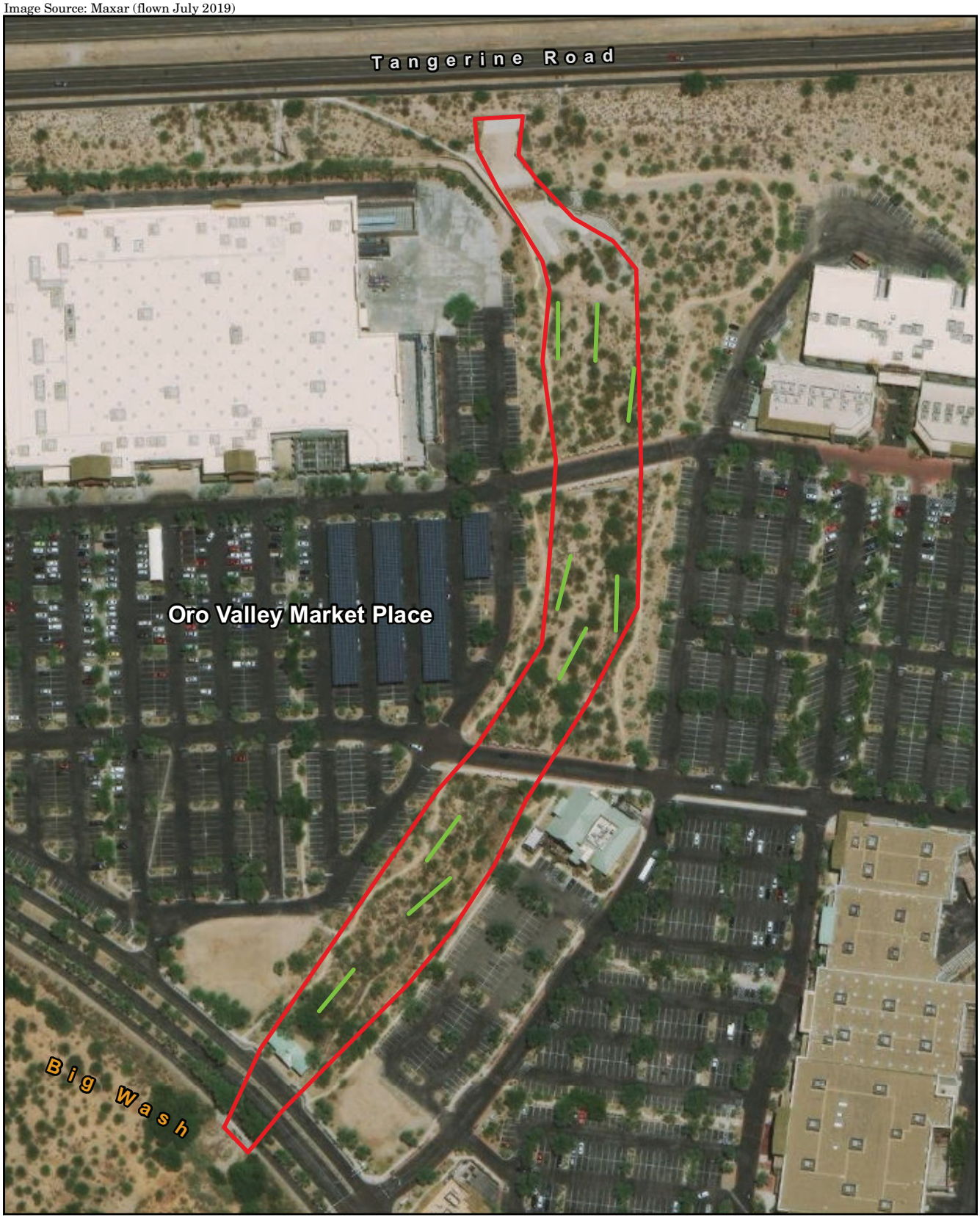
Image Source: Maxar (flown July 2019)

RECON

M:\JOBS5\9666\common_gis\fig2_aerial.mxd 4/7/2020 ccn

FIGURE 2
Study Area

Image Source: Maxar (flown July 2019)



Study Area

Transect Locations

RECON

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FIGURE 3

Study Area Transects

ATTACHMENT 2

TVV Data Sheets

VEGETATION VOLUME DATA SHEET

Location: Northern Center Island
Oro Valley Marketplace
Oro Valley, AZ

Transect No. 1

Date: March 26, 2020

Personnel: Susy Morales, RECON
Jennifer Patton, Wilder
Ben Wilder, Wilder

	Horizontal Transect Samples (# of cubic decimeters containing vegetation within each vertical meter)																							
Vertical cubic meters	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	9	10	5	9	2	1	0	9	6	0	0	0	9	1	0	0	2	0	5	3	2	2	5	5	4
2	7	9	4	8	5	1	6	10	9	1	4	8	4	8	3	1	5	4	5	8	0	1	6	6	3
3		1		5			6	10	7	1	4	10	10	10	8	1	10	10	7	9	2			1	4
4								2				1	4	4	2	1	1	4	1						
5																									
6																									
7																									
8																									
9																									
10																									
Total	16	20	9	22	7	2	12	31	22	2	8	19	27	23	13	3	18	18	18	20	4	3	11	12	11

TVV = 1.404

Photos : 1, 2

VEGETATION VOLUME DATA SHEET

Location: Northern East Bank
Oro Valley Marketplace
Oro Valley, AZ

Transect No. 2

Date: March 26, 2020

Personnel: Susy Morales, RECON
Jennifer Patton, Wilder
Ben Wilder, Wilder

	Horizontal Transect Samples (# of cubic decimeters containing vegetation within each vertical meter)																							
Vertical cubic meters	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	5	8	9	8	10	6	4	8	9	5	8	2	5	8	8	7	6	8	0	8	10	7	4	3	10
2	4	6	6	9	2	6	9	7	8	5	0	1	6	8	6	3	6	7	2	4	3	10	8	4	5
3		4		5	5	5	8	6	10	8	2	4	5	3		2	8	8	4			3	7	9	5
4				1	4	4	3	6	7	4	2	3	1					2					9	8	3
5																								4	
6																									
7																									
8																									
9																									
10																									
Total	9	18	15	23	21	21	24	27	34	22	12	10	17	19	14	12	20	25	6	12	13	20	28	28	23

TVV = 1.892

Photos : 3, 4

VEGETATION VOLUME DATA SHEET

Location: Northern West Bank
Oro Valley Marketplace
Oro Valley, AZ

Transect No. 3

Date: March 26, 2020

Personnel: Susy Morales, RECON
Jennifer Patton, Wilder
Ben Wilder, Wilder

	Horizontal Transect Samples (# of cubic decimeters containing vegetation within each vertical meter)																							
Vertical cubic meters	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	0	1	8	1	2	0	1	0	1	3	5	7	0	0	1	5	0	1		10	6	3	3	5	1
2	2	6	7	8	4	2	4	0	4	6	8	9	3	5	5	6	7	3		8	3	7	10	10	9
3	6	4	10	5	4	3	6	3	1	5	3	8	6	7	10	10	5			2	6	4	5	4	2
4	4	3			1	2	2	5				3		4	5	3						1			
5	3																								
6																									
7																									
8																									
9																									
10																									
Total	15	14	25	14	11	7	13	8	6	14	16	27	9	16	21	24	12	4	0	20	15	15	18	19	12

TVV = 1.420

Photos : 5, 6

VEGETATION VOLUME DATA SHEET

Location: Central West Bank
Oro Valley Marketplace
Oro Valley, AZ

Transect No. 4

Date: March 26, 2020

Personnel: Susy Morales, RECON
Jennifer Patton, Wilder
Ben Wilder, Wilder

	Horizontal Transect Samples (# of cubic decimeters containing vegetation within each vertical meter)																							
Vertical cubic meters	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	9	4		7	4	2	1	3	3	3	5	4	4	3	1		0	0	1	2	4	8	10	10	4
2				4	3				8	10	7	2	3	0			3	7	2	6	7	4	6	8	6
3									1	6	1	2		0				1	6	6	5	1	4	8	9
4														5				1	2	1	5	3	8	10	5
5																					2	2	7	4	2
6																									
7																									
8																									
9																									
10																									
Total	9	4	0	11	7	2	1	3	12	19	13	8	7	8	1	0	3	9	11	15	23	18	35	40	26

TVV = 1.14

Photos : 7, 8

VEGETATION VOLUME DATA SHEET

Location: Central Center Island
Oro Valley Marketplace
Oro Valley, AZ

Transect No. 5

Date: March 26, 2020

Personnel: Susy Morales, RECON
Jennifer Patton, Wilder
Ben Wilder, Wilder

	Horizontal Transect Samples (# of cubic decimeters containing vegetation within each vertical meter)																							
Vertical cubic meters	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	8	4			7	2	2	0	1	0	0	1	2	5	4	3	6	10	6	6	8				2
2	2					2	7	6	5	3	4	6	7	6	4	2	4	5	9	5	3				1
3	2						8	6	9	7	7	6	10	6	5	1	4	9	10	7	2				
4							1				3	7	5	2	2			10	8	2					
5																									
6																									
7																									
8																									
9																									
10																									
Total	12	4	0	0	7	4	18	12	15	10	14	20	24	19	15	6	14	34	33	20	13	0	0	0	3

TVV = 1.188

Photos : 9, 10

VEGETATION VOLUME DATA SHEET

Location: Central West Bank
Oro Valley Marketplace
Oro Valley, AZ

Transect No. 6

Date: March 26, 2020

Personnel: Susy Morales, RECON
Jennifer Patton, Wilder
Ben Wilder, Wilder

	Horizontal Transect Samples (# of cubic decimeters containing vegetation within each vertical meter)																								
Vertical cubic meters	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	5	5	2	2	8	4	7	4	0	3	6	8	1	0	2	0	0	2	8	9	5	0	7	7	3
2	7	7	7	8	9	7	7	8	7	6	5	7	6	6	8	8	6	5	7	5	5	3	10	8	4
3	10	8	6	10	7	6	10	10	5	5	8	8	8	10	7	10	9	6	7	8	7	8	10	9	7
4	2	2	3	5		1	10	10	5	7	9	10	5	8		5		8	3	5	4	6	5	4	8
5							5	2	3	6	10	1		2				2		4		5	4		
6																									
7																									
8																									
9																									
10																									
Total	24	22	18	25	24	18	39	34	20	27	38	34	20	26	17	23	15	23	25	31	21	22	36	28	22

TVV = 2.528

Photos : 11, 12

VEGETATION VOLUME DATA SHEET

Location: Southern West Bank
Oro Valley Marketplace
Oro Valley, AZ

Transect No. 7

Date: March 26, 2020

Personnel: Susy Morales, RECON
Jennifer Patton, Wilder
Ben Wilder, Wilder

	Horizontal Transect Samples (# of cubic decimeters containing vegetation within each vertical meter)																								
Vertical cubic meters	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	9		8	6	9	6	3	0	3	1	10	5	10	9	9		6	3	8	10	5		1	1	3
2	2					5	8	7	2		2		2		2		2		3	4					
3						10	10	5																	
4						1	3																		
5																									
6																									
7																									
8																									
9																									
10																									
Total	11	0	8	6	9	22	24	12	5	1	12	5	12	9	11	0	8	3	11	14	5	0	1	1	3

TVV = 0.772

Photos : 13, 14

VEGETATION VOLUME DATA SHEET

Location: Southern Center Island
Oro Valley Marketplace
Oro Valley, AZ

Transect No. 8

Date: March 26, 2020

Personnel: Susy Morales, RECON
Jennifer Patton, Wilder
Ben Wilder, Wilder

	Horizontal Transect Samples (# of cubic decimeters containing vegetation within each vertical meter)																								
Vertical cubic meters	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	1	3	3		2	2	2	3	3	0	0	0	4	6	7	4	4		2	3	4	2	3	3	6
2	5	2	2			1	0	3	8	0	0	2	8	9	4	4	4		7	7	6	5	7	9	7
3	4		4			2	2	3	10	4	2	0	5	9	8	7			4	6	2	3	5	6	10
4						3	9	6	0	7	3			5											3
5								5	2	3															
6																									
7																									
8																									
9																									
10																									
Total	10	5	9	0	2	8	13	20	23	14	5	2	17	29	19	15	8	0	13	16	12	10	15	18	26

TVV = 1.236

Photos : 15, 16

VEGETATION VOLUME DATA SHEET

Location: Southern Southwest Bank
Oro Valley Marketplace
Oro Valley, AZ

Transect No. 9

Date: March 26, 2020

Personnel: Susy Morales, RECON
Jennifer Patton, Wilder
Ben Wilder, Wilder

	Horizontal Transect Samples (# of cubic decimeters containing vegetation within each vertical meter)																							
Vertical cubic meters	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	8	2	1	1	9	6	0	1	8	5	2	7	1	4	5	6	7	2	0	6	0	10	5	4	7
2	5	6	5	0	4	5	2	2	4	4	1	0			1	6	8	1	2	0	3	9	0	0	4
3	7	9		2		7	3			6	2	6			8	7	6	2	3	3	3	5	4	1	0
4	8	8										3			7	10	4	7	3	6	7	6	3	5	0
5	2															8	5	2	7	0	7	3	3	2	0
6																		5	4	6	8	4	3	6	5
7																					3	3		5	
8																								3	
9																									
10																									
Total	30	25	6	3	13	18	5	3	12	15	5	16	1	4	21	37	30	19	19	21	31	40	18	26	16

TVV = 1.736

Photos : 17, 18

ATTACHMENT 3

Site Photographs

PHOTOGRAPH 1
Transect 1, Facing South

PHOTOGRAPH 2
Transect 1, Facing North

PHOTOGRAPH 3
Transect 2, Facing South

PHOTOGRAPH 4
Transect 2, Facing North

PHOTOGRAPH 5
Transect 3, Facing South

PHOTOGRAPH 6
Transect 3, Facing North

PHOTOGRAPH 7
Transect 4, Facing South

PHOTOGRAPH 8
Transect 4, Facing North

PHOTOGRAPH 9
Transect 5, Facing South

PHOTOGRAPH 10
Transect 5, Facing North

PHOTOGRAPH 11
Transect 6, Facing South

PHOTOGRAPH 12
Transect 6, Facing North

PHOTOGRAPH 13
Transect 7, Facing South

PHOTOGRAPH 14
Transect 7, Facing North

PHOTOGRAPH 15
Transect 8, Facing South

PHOTOGRAPH 16
Transect 8, Facing North

PHOTOGRAPH 17
Transect 9, Facing South

PHOTOGRAPH 18
Transect 9, Facing North

PHOTOGRAPH 19
Southern Culvert over Marketplace Access Road that Leads to Open Space and Big Wash

PHOTOGRAPH 20
Javelina Tracks at Southern Culvert to Open Space and Big Wash

PHOTOGRAPH 21
Javelina Tracks Inside Southern Culvert to Open Space and Big Wash

PHOTOGRAPH 22
Southern Culvert Facing North from Mitigation Area Towards Study Area

PHOTOGRAPH 23
Northern Terraced Drainage Feature, South of Tangerine Road

PHOTOGRAPH 24
Drainage Area from Open Space to North of Tangerine Road Connecting to Marketplace and Study Area. Javelina Tracks Found in Sandy Bottom and at Culvert Entrances.