

H. TRANSPORTATION

1. Configuration of Proposed Ingress/Egress and Its Rationale

The vehicular ingress/egress points for the proposed commercial development were located in general conformance with the conceptual framework plan associated with Comprehensive Plan amendment Case No. Co7-13-04 for this site. Two (2) access points are proposed on Thornydale Road and one (1) access point is proposed on Cortaro Farms Road. Final design of these driveway locations will occur at the time of the future Site Development Package filing in coordination with PCDOT review and approval.

2. Associated Off-Site Roadway Improvements and Completion Schedule

As mentioned previously, the segment of Thornydale Road north of Cortaro Farms Road is an approved Regional Transit Authority (RTA) bond project, the construction timetable for which has not yet been jointly determined by the RTA and Pima County DOT. Under this approved bond project, Thornydale Road will be fully reconstructed into a four-lane divided urban arterial, complete with curbs, sidewalks, landscaped medians, and dual bike lanes.

3. Change in ADT and Level of Service (LOS) for Public Streets

The trip-generation calculations for this Site Analysis were made using the accepted Institute of Transportation Engineers (ITE), trip generation rates for a commercial shopping center is as follows:

- Shopping Center (Code 820): 42.94 Trips per Every 1,000 SF GFA

Based upon the above, and in consideration of the Preliminary Development Plan (PDP) indicating approximately 102,000 SF GFA, the anticipated total trip generation for the project at full build-out is as follows:

$$102,000 \text{ GFA} @ 42.94 \text{ trips per every } 1,000 \text{ SF} = 4,380 \text{ Trips}$$

ITE parameters also indicate that, with shopping centers, upwards of 34% of total trips associated with the use may fall into the pass-by category, i.e. motorists who are on their way to or from somewhere else and enter/exit the shopping center on their way to/from their other destination. With this circumstance in mind, the resultant range of trips generated directly by the project could be, theoretically, as low as 2,890 trips per day.

All things considered, it is most appropriate to state that the total trips generated by the proposed shopping center, at full build-out, will be in the range of 2,890 to 4,380 trips per day.

Based upon the project layout, its location at the intersection of the most important north-south and east-west transportation corridors, respectively, in the surrounding area, it is a practical and reasonable rough assumption that the total trips generated will be effectively split between Thornydale Road and Cortaro Farms Road. With this in mind, the range of 1,445 to 2,190 additional trips per day could be apportioned to Thornydale Road and Cortaro Farms Road, respectively.

With the expected increase in ADT resulting from this project at full build-out, there is the clear potential for impacts upon the intersection Level of Service (LOS) at the Cortaro Farms Road/Thornydale Road intersection. That being said, this impact is potentially mitigated and further complicated by the fact that the aforementioned Thornydale Road RTA street improvement project will bring significant capacity improvements to this same major intersection.

In consideration of all of the above, it is prudent to prepare a detailed Traffic Impact Study (TIS) at the actual time of future site development, at which time the specific anchor stores, supporting junior anchors, etc. will be known commodities in the equation and the final site layout for the project will be more definitively known.

4. Mitigation of Impacts on Local Streets

All of the project's generated trips will be directed onto the adjacent arterial streets. There will be no impacts upon nearby local streets.

5. Proposed Bicycle & Pedestrian Pathways

There are no existing sidewalks or bicycle lanes on Cortaro Farms Road or Thornydale Road along the frontage of the proposed 8.2-acre rezoning site. Sidewalks and bike lanes are included in the full arterial cross-section improvements proposed for Thornydale Road (north of Cortaro Farms Road) in the aforementioned RTA bond project.

6. Proposed On-Site Rights-of-Way

No new public street rights-of-way will be required on-site for the proposed commercial development. Site vehicular improvements will be confined to driveways, service drives, parking areas, and parking area access lanes (PAAL's).

7. Conformance with Pima County Concurrency Requirements

As is clear from all of the above, the surrounding major arterials are presently in a dynamic state, wherein four-lane, divided arterial improvements to Cortaro Farms Road were just recently completed, and wherein the segment of Thornydale Road north of Cortaro Farms Road is already earmarked as a four-lane RTA bond project commencing in 2018. Furthermore, additional four-lane improvements to Cortaro Farms Road west of Thornydale Road (extending to Camino de Oeste) are already at the 60% design stage.

With all of the above in consideration, Pima County DOT considers the proposed rezoning a secondary concurrency concern. While Thornydale Road is presently over-capacity, its impending four-lane improvements will increase its capacity to 34,000 ADT and allow it to absorb the anticipated traffic from the proposed rezoning site and commercial development.

Given these dynamics, the issue of concurrency can only be definitively addressed at the time of future/actual site development in conjunction with a detailed Traffic Impact Study (TIS), to be prepared by the developer, once the specific anchor stores, junior anchors, and retail tenants for the shopping center have been identified.

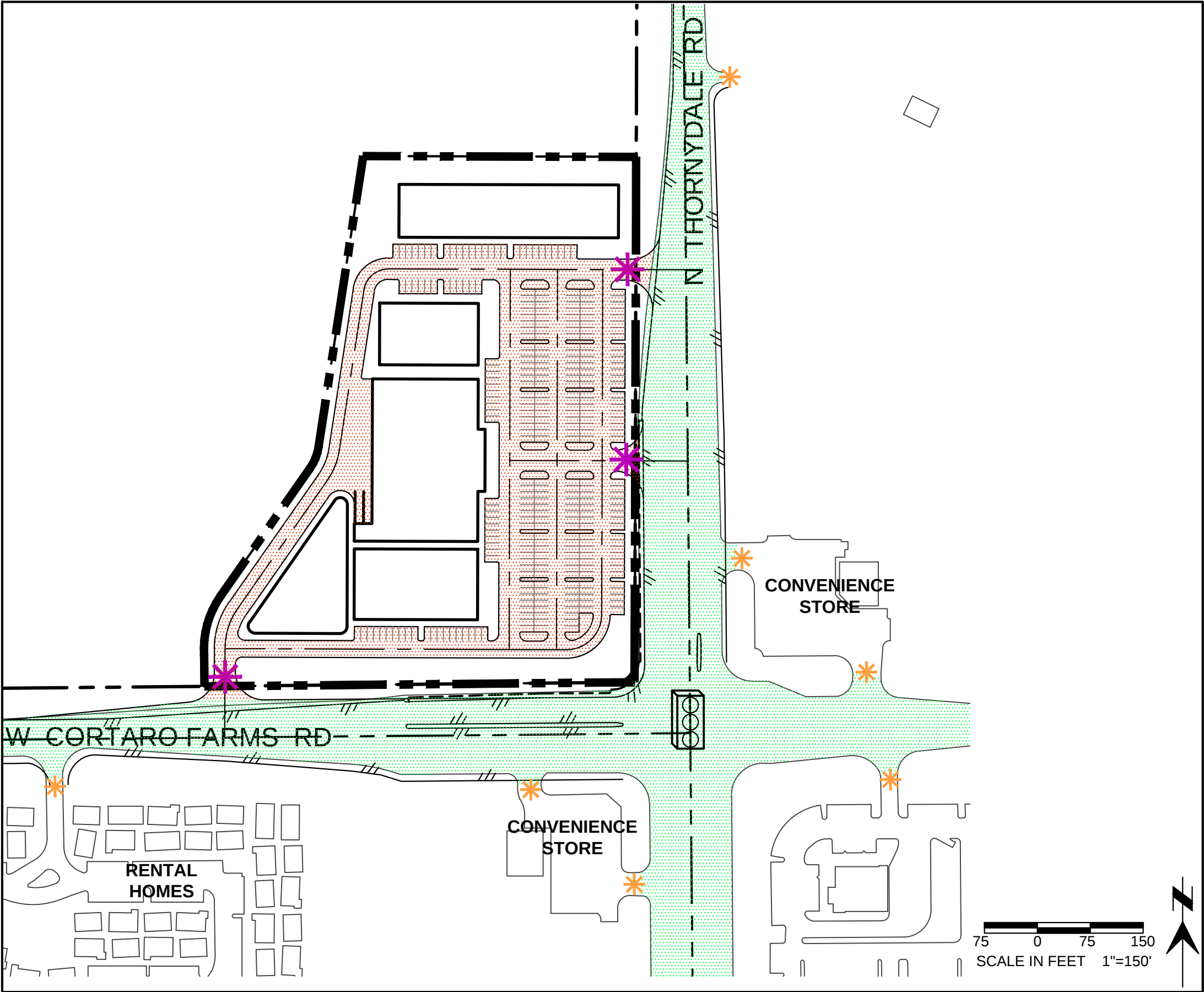
8. Applicability & Timing of Traffic Impact Study (TIS)

Given the overall anticipated trip generation resulting from this project, a full Traffic Impact Study (TIS) is clearly required of the developer. As stated above, it is prudent to have the developer prepare the TIS at the actual time of future site development, when the specific anchor stores, supporting junior anchors, etc. will be known commodities in the equation and when the final site layout for the project is more definitively known.

9. Alternative Modes & Reduction in Auto Dependency

Due to a general lack of demand, the Thornydale Road corridor is currently served only by a single Sun Tran Route (No. 412), this being a Sun *Shuttle* service and not a full-size Sun Tran bus. This Shuttle has a designated stops at Hardy Road, Cortaro Farms Road, and Magee Road. Continued urbanization, residential densification, and commercial intensification within the corridor, the latter of which is proposed with this rezoning request, will have a positive effect toward generating the kind of sustainable ridership demand that will foster and support expanded transit services.

Exhibit to Follow



LEGEND

- PDP Boundary & Limit of Rezoning Parcel
- Public Street R.O.W. Line
- Existing Curb or Edge of Pavement
- Existing Public Street Paving Improvements
- Existing Private Driveway Location
- Existing Public Street Intersection
- Signalized Intersection
- New Entry Point for Proposed Shopping Center
- 24" wide (Minimum) private driveways, service drives, PAAL's and parking areas.

Jim Portner, Agent for Owner
PROJECTS INTERNATIONAL, INC.
 10836 E. ARMADA LANE
 TUCSON, ARIZONA 85749
 520 850-0917

PROJECTS INTERNATIONAL, Inc.
 STRATEGIC GUIDANCE
 ENTITLEMENT PROCESSES
 LOCAL ADVICE & COUNSEL

GRS
 LANDSCAPE ARCHITECTS, LLC

Red Point Development, Inc.
 NWC CORTARO & THORNYDALE ROADS
 (Ownership Entity: Pacific International Properties, LLP)
 REZONING: SR to CB-1

EXHIBIT II-H.1,5
 TRANSPORTATION
 PAGE 73

I. ON-SITE WASTEWATER TREATMENT & DISPOSAL

1. Soil Evaluations

Not applicable; no on-site wastewater treatment is proposed with this project.

2. Rationale for Non-Connection to Public System

Not applicable; no on-site wastewater treatment is proposed with this project.

3. Reserve Disposal Areas

Not applicable; no on-site wastewater treatment is proposed with this project.

J. SEWERS

1. Capacity Response Letter

Capacity Response Letter No. 2015-128 (Type I), from the Pima County Regional Wastewater Reclamation Department (PCRWRD) is attached as Exhibit II-J.1

2. Method of Sewer Service and Point of Connection to Public System

The development will most likely connect to the existing 21" public sewer located parallel to the site's entire east boundary, on the east side of Thornydale Road. See Exhibit II-I.2

3. Sewers Located in Non-Paved Areas

All proposed onsite sewers will be public and all will be located beneath pavement or beneath surfaces stabilized per RWRD standards.

4. Constraints to Providing Gravity Service

There are no constraints to providing gravity service on this project.



REGIONAL WASTEWATER RECLAMATION DEPARTMENT
201 NORTH STONE AVENUE
TUCSON, ARIZONA 85701-1207

JACKSON JENKINS
DIRECTOR

PH: (520) 724-6500
FAX: (520) 724-9635

June 22, 2015

Ben Zismann
EPS Group, Inc.
8710 N Thornydale Road, Suite 140
Tucson, Arizona 85742

Sewerage Capacity Investigation No. 2015-128 Type I

**RE: Cortaro Farms & Thornydale Rezoning, Parcels 22533032D, 22533032A
Estimated Flow 8,908 gpd (ADWF).**

Greetings:

The above referenced project is tributary to the Tres Rios Water Reclamation Facility via the Cañada Del Oro Interceptor.

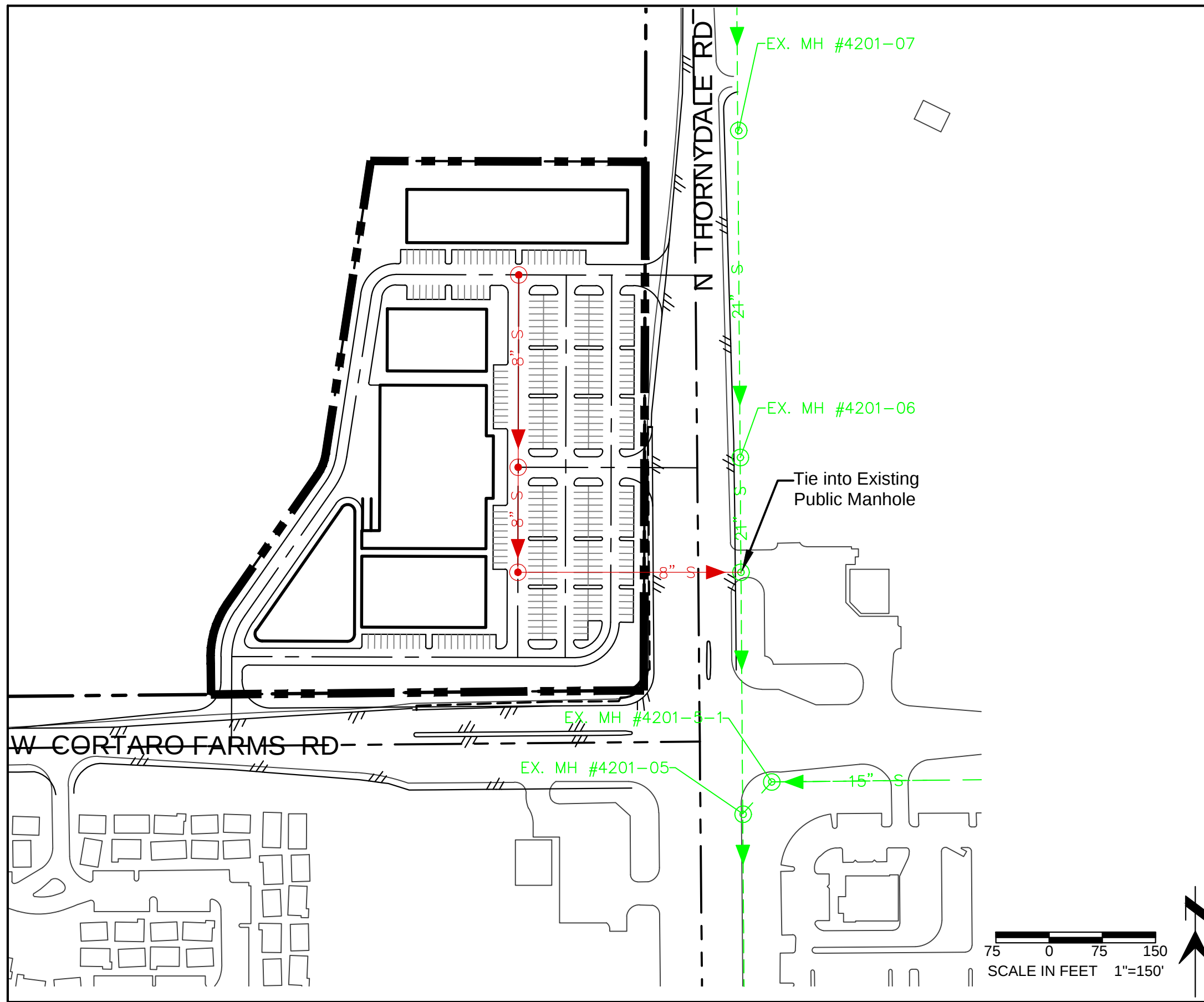
Capacity is currently available for this project in the public sewer G-87-140, downstream from manhole 4877-01.

This letter is not a reservation or commitment of treatment or conveyance capacity for this project. It is an analysis of the system as of this date and valid for one year. Allocation of capacity is made by the Type III Capacity Response.

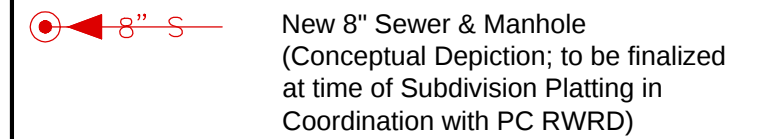
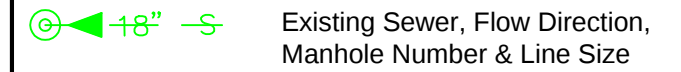
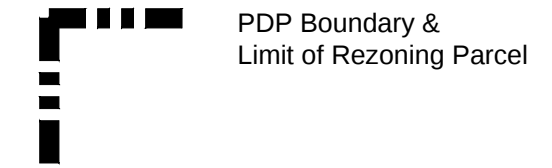
If further information is needed, please feel free to contact us at (520) 724-6642.

Reviewed by: Kurt Stemm, CEA

**Exhibit II-J.1
Type I Capacity Response Letter**



LEGEND



Jim Portner, Agent for Owner
PROJECTS INTERNATIONAL, INC.
10836 E. ARMADA LANE
TUCSON, ARIZONA 85749
520 850-0917



Red Point Development, Inc.
NWC CORTARO & THORNYDALE ROADS
(Ownership Entity: Pacific International Properties, LLP)
REZONING: SR to CB-1

EXHIBIT II-J.2
SEWERS

PAGE 76

K. WATER

The following information is provided in accordance with Attachment A of the Site Analysis checklist:

1. Water Context Map

Please refer to Exhibit II-K.1a. The property lies wholly within the obligated service area of the Metropolitan Domestic Water Improvement District.

2. The Subject Property's Existing and Historic Water Use

The site is currently vacant with no structures. As such, there is no existing water use on this property and there has, historically, been none.

3. The Subject Property's Proposed Water Use

Proposed land use:

- A neighborhood shopping center; approximately 102,000 SF of gross floor area (GFA)

Potable water will be used to provide for domestic and fire flow service. The project will incorporate passive rainwater harvesting techniques. However, it is probable that potable water will be used to initially establish landscaping. The project does not propose the use of any outdoor swimming pools or water features.

4. Description of Water Supply Options & Proposed Method of Delivery

A. The rezoning site is within the established Metropolitan Water District Service Area:

(1) Metropolitan Water District has legal and physical access to a potable water supply. The subject property, as stated above, is within their current defined obligated service area and will be served by same. The District's *Annual Water Level Monitoring Report* has been provided in Appendix B and includes pertinent data on well locations and water levels in the vicinity of the project.

(2) Metropolitan Water's will-serve letter (Exhibit II-K.4a) states that this municipal provider will provide potable water service on demand from the developer.

(3) Water service for the project will be provided off of the existing water mains within Thornydale Road.

B. Not applicable; service will be provided by Metropolitan Water District, a municipal water provider.

5. Water Demand Projections

A. The proposed shopping is projected, at full build-out, to contain approximately 102,000 SF of gross floor area (GFA). This GFA will be comprised of a single anchor store, along with supporting junior anchors, retail services and shop space. Based on typical usage for the particular uses proposed, the annual base water demand for the overall project, which has a rezoning area of 8.2 acres and will be zoned CB-1, is calculated to be approximately 5.20 AC-FT.

This demand calculation is based on the ADWR, Tucson AMA Assured Water Supply Calculator Table, which is provided in Appendix B.

B. With respect to Pima County's adopted *Table B – Water Conservation Measures*, the developer is willing at this time to commit to achieving three (3.0) outdoor points and twelve (12.0) indoor points, for a total of 15.0 points. The developer is also committed to working further with Metropolitan Water, throughout the rezoning, subdivision platting, and permitting processes, in order to further define the specialized conservation measures employed.

See Appendix B for the particulars of *Table B – Water Conservation Measures* and for a copy of our *Project Demand Table*.

6. Proximity to Renewable and Potable Water Supplies

This project will be served by Metropolitan Water, which has established and fully-committed renewable and potable water supplies and facilities sufficient to meet its Service Area obligations.

7-11. Groundwater-Dependent Ecosystems, Etc.

Items 7 thru 11 are not required for the following reasons: 1) water service for this project will be provided by a municipal water provider (Metropolitan Water); 2) no new wells will be drilled on the property or within ¼ mile of it; and 3) there will be no increase in pumping of existing wells within ¼ mile to serve this development.

12. Drawdown Analysis

As this project will be served by Metropolitan Water and the estimated baseline water demand is less than 50 acre-ft/year, a detailed drawdown analysis will not be required with this Site Analysis.



July 14, 2015

Larry Kreis
Red Point Development, Inc.
8710 N. Thornydale Road, Suite 120
Tucson, AZ 85742

**Re: ±35.72 Acres and ±19.23 Acres at the NWC of Thornydale and Cortaro Roads
(PN 225-33-032A and PN 225-32-032D)
CAP15-04**

Dear Mr. Kreis,

The above property lies within the legal boundary of the Metropolitan Domestic Water Improvement District (MDWID) obligated service area. Water service is potable and will be supplied upon demand.

Any onsite or offsite requirements deemed necessary to provide the domestic and fire flow water supply will be determined at the time of improvement plan submittal or whenever application for water service is received, and will be the financial responsibility of the owner or those developing the property. Pipe sizing and system augmentation, if necessary, will be based on calculated demand for both domestic and fire flows as needed to adequately supply this area.

If an improvement plan has not been submitted within 2 years after the date of this letter, a reevaluation and reissuance of this will-serve letter will be necessary.

Please let me know if you have any questions or concerns at 575-8100.

Sincerely,

A handwritten signature in blue ink, appearing to read "Timothy Dinkel", is written over the word "Sincerely,".

Timothy Dinkel
Development Supervisor

TD/td

c: Project File / Charlie A. Maish, District Engineer
Signature File

Metropolitan Domestic Water Improvement District
P.O. Box 36870 Tucson, Arizona 85740
(520) 575-8100 • www.metrowater.com • (520) 575-8454 fax

Exhibit II-K.1a (Page 1 of 2)
**Metropolitan Domestic Water Improvement District Will-Serve Letter &
District Context Map**



Exhibit II-K.1a (Page 2 of 2)
Metropolitan Domestic Water Improvement District Will-Serve Letter &
District Context Map

L. SCHOOLS

1. Access to Internal or Abutting Schools.

No public schools are located within or adjacent to the subject property.

2. Capacity Analysis by Marana Unified School District.

A capacity analysis is not required for this rezoning, since it is a commercial shopping center and will therefore generate no new students.

Nonetheless, the Marana Unified School District No. 6 has been consulted with respect to all of the concurrent rezoning applications on which Red Point Development is presently proceeding. MUSD has considered the impacts and anticipated number of students that will be generated by all of these projects and has concluded that it has sufficient capacity to accommodate the anticipated growth in student population. See Exhibit II-L.1 (MUSD Capacity Letter).

3. Communication with MUSD Regarding Mitigation of Impacts.

As stated above, MUSD has indicated it possesses the capacity to absorb the anticipated number of students being generated by all of the simultaneous rezoning currently being processed by Red Point Development. No special mitigation measures are warranted.

Exhibit to Follow

GOVERNING BOARD

Dan Post, President
John Lewandowski, Vice President
Tom Carlson, Member
Suzanne Hopkins, Member
Maribel Lopez, Member



ADMINISTRATION

Doug Wilson, Ed.D., Superintendent
Carolyn Dumler, Ed.D., Assistant Superintendent
Pamela Beine, Assistant Superintendent
Dan Contorno, Chief Financial Officer
Brett Kramer, Ph.D., Executive Director

June 23, 2015

Mr. Jim Portner
PROJECTS INTERNATIONAL, INC.
10836 E. Armada Lane
Tucson, AZ 85749

RE: REZONING OF FOUR PROPERTIES WITHIN MARANA UNIFIED SCHOOL DISTRICT NO. 6

Dear Mr. Portner

Thank you for informing us of the four properties on which Red Point Development, Inc. is proceeding with rezoning applications to Pima County.

We recall that the same four sites were the subject of Comprehensive Plan amendment applications in 2013. At that time, we indicated that MUSD had no opposition to the four requests and that the District had sufficient capacity to accommodate the proposed development. We now understand that, as part of preparing your rezoning materials, you have further developed the concept designs for these four properties, which can now be more particularly summarized as follows:

SEC Linda Vista @ Thornydale Road (former Comp Plan Case No. Co7-13-03): Proposed use is thirty-six (36) single-family, detached residences.

NWC Cortaro Farms Road @ Thornydale Road (former Comp Plan Case No. Co7-13-04): Proposed use is a commercial shopping center (no residences of any kind).

NWC Magee Road @ Thornydale Road (former Comp Plan Case No. Co7-13-05): Proposed uses are: 1) twenty-eight (28) single-family, detached residences; and 2) approximately thirty-six (36) multi-family units (apartments).

Hardy Road east of Thornydale Road (former Comp Plan Case No. Co7-13-06): Proposed use is eighty-four (84) single-family, detached residences.

After considering the above numbers and the anticipated students that will result from these developments, please be advised that the Marana Unified School District has the capacity to accommodate the future students at the District schools serving the area. We are pleased at the potential growth in our student population and wish you the best of luck with your projects.

Sincerely,
MARANA UNIFIED SCHOOL DISTRICT NO. 6



Daniel J. Contorno, MBA
Chief Financial Officer

cc: Russell Federico

Inspiring students to learn today and lead tomorrow.

11279 W. Grier Road • Marana, Arizona 85653 • (520) 682-3243 • www.maranausd.org

Exhibit II-L.1
Marana Unified School District No. 6 Capacity Letter

M. RECREATION & TRAILS

1. On-Site Recreation Elements

Not applicable. This is a proposed commercial development.

2. Ownership & Maintenance of Recreation Elements & Natural Areas

Not applicable. This is a proposed commercial development.

3. Proposed Public Trails In or Adjacent to the Development

As stated in the Section I (Site Analysis Inventory), the Cortaro Farms Road Path #009 lies directly adjacent to the proposed rezoning site.

N. CULTURAL RESOURCES: ARCHAEOLOGICAL/HISTORIC SITES

1. Mitigation Measures for Already Identified/Known Resources

As indicated in Section I-I (Inventory) of this Site Analysis, a records search was conducted for the site in 2014 by SWCA Environmental Consultants. No cultural resources or sites have been documented on the property. Given the dated nature of past surveys on the property, SWCA has recommended that an updated survey, using current procedures and protocols acceptable by the Arizona State Office of Historic Preservation (SHPO) be completed prior to ultimate development. This updated survey will be done at the time of the future Site Development Package so as to eliminate any question as to the validity of the non-findings of past surveys.

2. Measures Employed if Archaeological Survey is Recommended

The survey standards and protocols used will be those acceptable to SHPO at the time of the survey's completion.

3. Submittal Timing, etc. of Mitigation Plan

Not applicable. The SWCA recommendation for a future survey does not stem from any findings or data that anticipates the presence of cultural resources on the subject property. An updated survey is recommended only to meet current survey methods and protocols.

a. Outline of Resource Assessment Program

Not applicable for the same reasons stated directly above.

- b. Effective Preservation Plan or Data Recovery

Not applicable for the same reasons stated directly above.

- c. Schedule of Mitigation Plan Implementation

Not applicable for the same reasons stated directly above.

O. ENVIRONMENTAL QUALITY

1. Dust Control During Construction

During construction, a Stormwater Pollution Prevention Plan (SWPPP), along with a Notice of Intent (NOI), will be prepared in accordance with Arizona Department of Environmental Quality (ADEQ) regulatory permit requirements. The SWPPP and NOI will discuss, among other items, the proposed dust-control and erosion-control measures that must be undertaken and suitably performed by the project's contractor as stipulations of the grading permit.

2. Department of Environmental Quality (DEQ) Issues

- a. Applicable Air Quality Standards if Class I, II or III Facility

The site will not be developed as a Class I, II or III Facility. The project is a single-family residential subdivision.

- b. Particulars under CB-2 Commercial Development

Not applicable; this project will be developed under the CB-1 (Commercial) Zoning District. Nonetheless, please note the following:

- 1. Maximum Quantities of Hazardous Materials

There will be no hazardous materials generated by the project.

- 2. Maximum Quantities of Hazardous Wastes

There will be no hazardous waste generated by the project or regulated under Arizona Administrative Code Title 18.

- 3. Reporting Requirements Per EPCRA

Given the above, the Community Right-To-Know Act (EPCRA) does not apply to this project.

P. AGREEMENTS

1. Specific Agreements with Neighboring Property Owners

No specific or formal agreements are in place with the neighboring property owners at the time of this Site Analysis submittal. No separate agreements or memorialized understandings resulted from the neighborhood interactions that occurred during the previously approved Comprehensive Plan Amendment application (Co7-13-04) governing the property, other than the several conditions of approval that were attached to the Amendment to address pertinent neighbor concerns. In the event that future neighborhood interactions result in new issues or agreements, Pima County will be duly appraised as to their nature and content.

Bibliography

Pima County Department of Transportation, Traffic Engineering Division website for current traffic counts; <http://dot.pima.gov/trafeng/trafcnt/adt.htm>.

Pima County Major Streets & Scenic Routes Plan. *Pima County Ordinance No. 1995-42, as amended. Case No. Co14-79.* Web address: <http://gis.pima.gov/maps/majscenic/mssr.pdf>

Institute of Transportation Engineers (ITE). 2008. *Trip Generation, 8th Edition: An ITE Informational Report.*

The Smart Growth Network website, *Smart Growth Principles*,
<http://www.smargrowth.org/engine/index.php/principles>

APPENDICES

Appendix A:

**Arizona Game & Fish Department
Report**

Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

Red Point Cortaro

Project Description:

New commercial project with associated infrastructure.

Project Type:

Development Outside Municipalities (Rural Development), Commercial/industrial (mall) and associated infrastructure, New construction

Contact Person:

Linda Weaver

Organization:

GRS Landscape Architects, LLC

On Behalf Of:

None Selected

Project ID:

HGIS-01512

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. 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. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments 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. HDMS data contains information about species occurrences that have actually been reported to the Department. 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. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

Locations Accuracy Disclaimer:

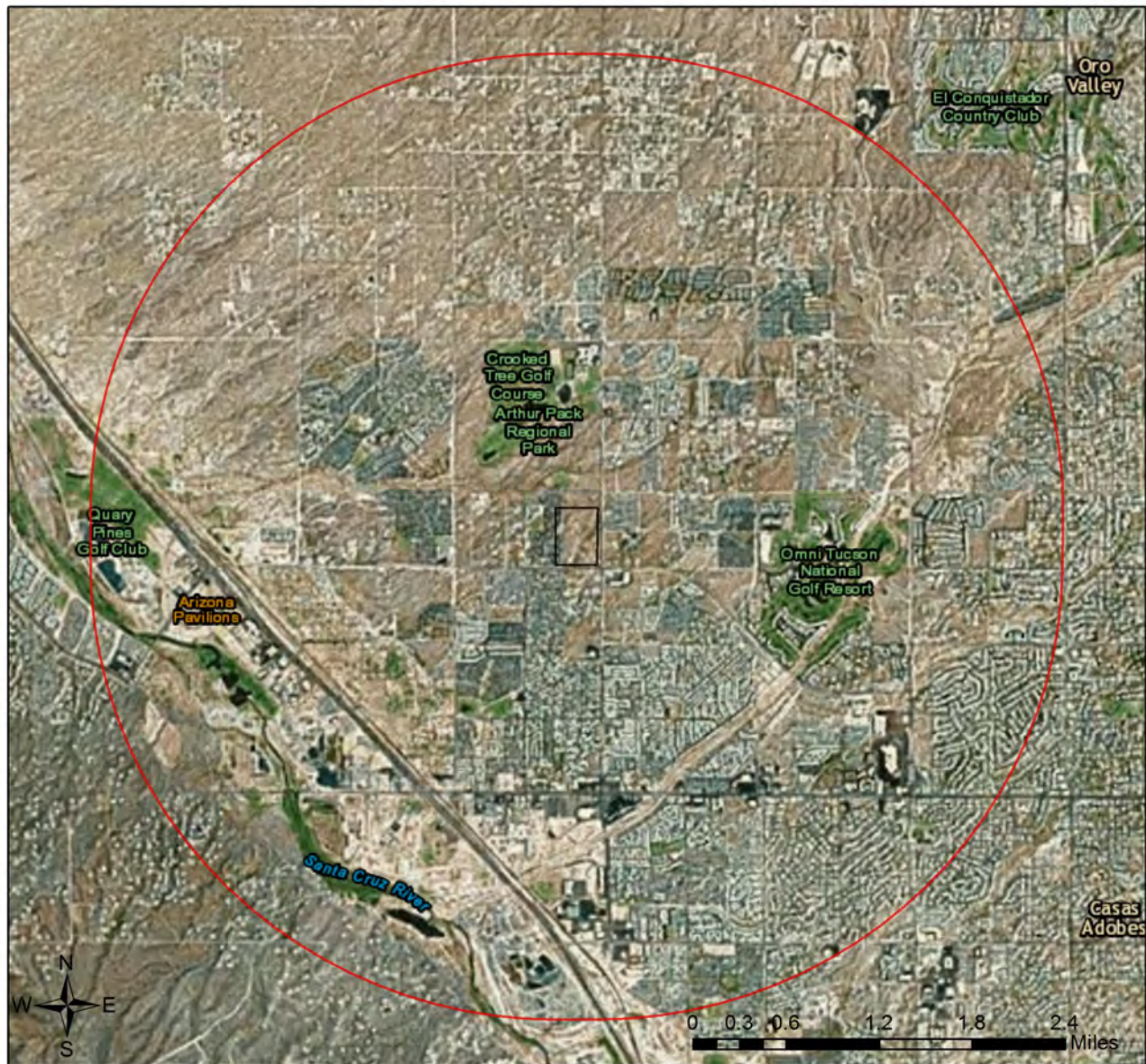
Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. 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).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
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. Further coordination with the Department requires the submittal of this Environmental Review Report 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). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send 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
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Red Point Cortaro

Aerial Image Basemap With Locator Map



-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 65.20

Lat/Long (DD): 32.3618 / -111.0492

County(s): Pima

AGFD Region(s): Tucson

Township/Range(s): T12S, R13E

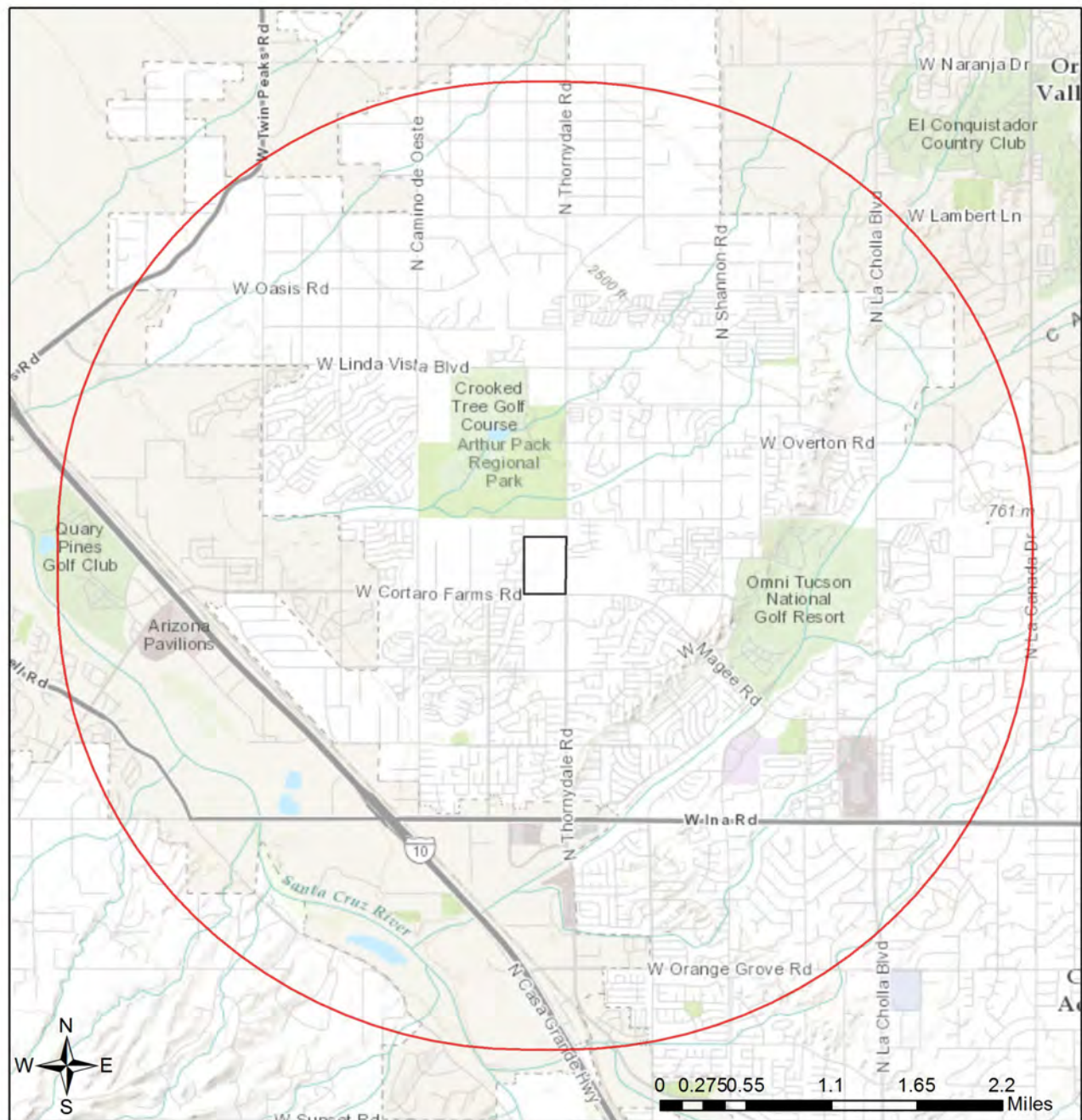
USGS Quad(s): JAYNES

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),



Red Point Cortaro

Web Map As Submitted By User



- Project Boundary
- Buffered Project Boundary

Project Size (acres): 65.20

Lat/Long (DD): 32.3618 / -111.0492

County(s): Pima

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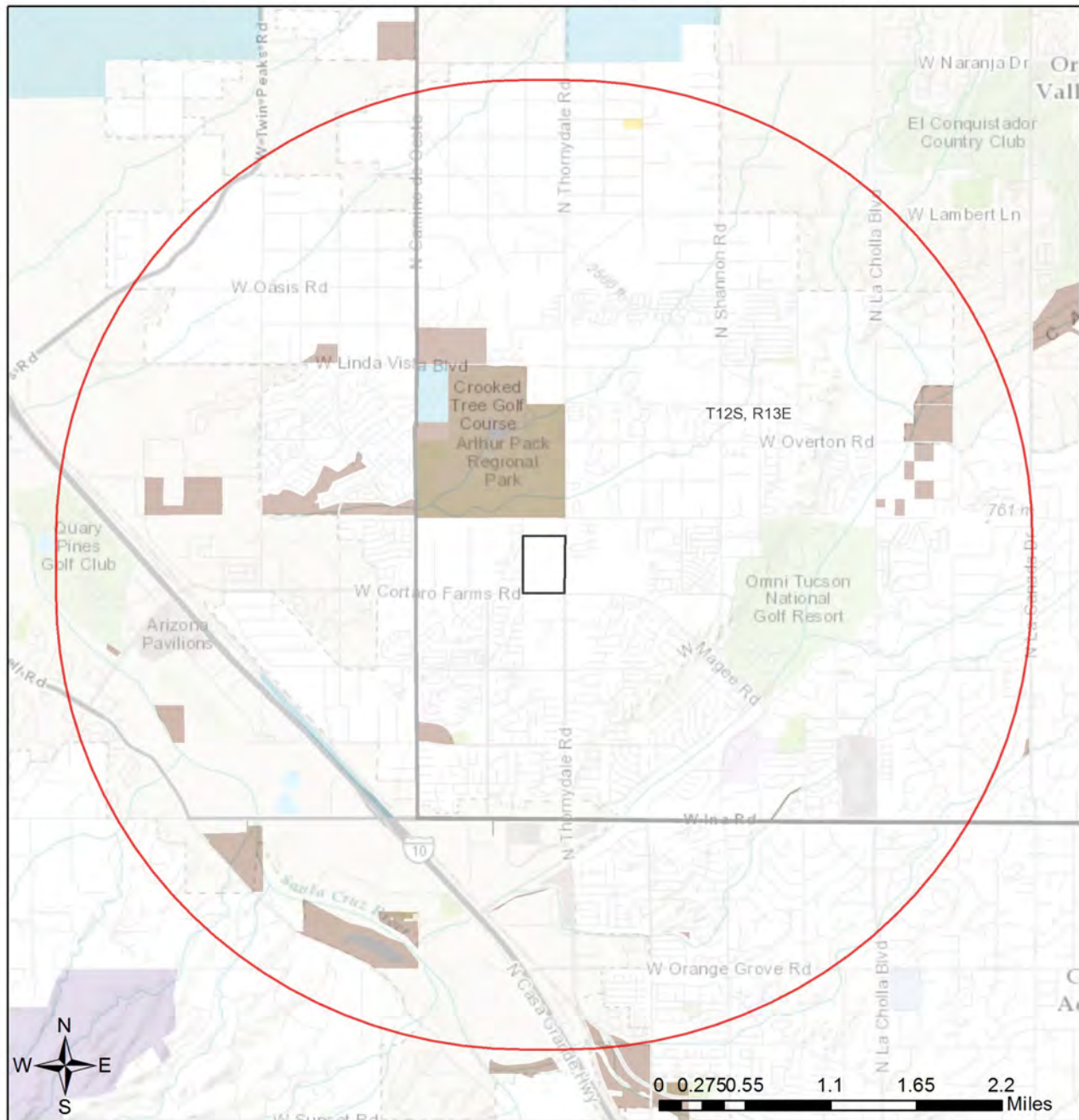
Township/Range(s): T12S, R13E

USGS Quad(s): JAYNES

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Red Point Cortaro

Topo Basemap With Township/Ranges and Land Ownership



- | | |
|---------------------------|--------------------------|
| Project Boundary | Mixed/Other |
| Buffered Project Boundary | National Park/Mon. |
| Township/Ranges | Private |
| AZ Game and Fish Dept. | State and Regional Parks |
| BLM | State Trust |
| BOR | US Forest Service |
| Indian Res. | Wildlife Area/Refuge |
| Military | |

Project Size (acres): 65.20

Lat/Long (DD): 32.3618 / -111.0492

County(s): Pima

AGFD Region(s): Tucson

Township/Range(s): T12S, R13E

USGS Quad(s): JAYNES

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 3 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Antilocapra americana sonoriensis	10J area for Sonoran Pronghorn	LE,XN				
Bat Colony						
Canis lupus baileyi	10J area Zone 2 for Mexican gray wolf	LE,XN				
Dendrocygna bicolor	Fulvous Whistling-Duck	SC				
Glaucidium brasilianum cactorum	Cactus Ferruginous Pygmy-owl	SC	S	S		1B
Leptonycteris curasoae yerbabuenae	Lesser Long-nosed Bat	LE				1A
Myotis velifer	Cave Myotis	SC		S		1B
Tumamoca macdougallii	Tumamoc Globeberry		S	S	SR	

Note: Status code definitions can be found at http://www.azgfd.gov/w_c/edits/hdms_status_definitions.shtml.

**Species of Greatest Conservation Need
Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Aix sponsa	Wood Duck					1B
Amazilia violiceps	Violet-crowned Hummingbird		S			1B
Ammospermophilus harrisi	Harris' Antelope Squirrel					1B
Anaxyrus retiformis	Sonoran Green Toad			S		1B
Anthus spragueii	Sprague's Pipit	C*				1A
Antrostomus ridgwayi	Buff-collared Nightjar		S			1B
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Aspidoscelis stictogramma	Giant Spotted Whiptail	SC	S			1B
Athene cunicularia hypugaea	Western Burrowing Owl	SC	S	S		1B
Botaurus lentiginosus	American Bittern					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Chilomeniscus stramineus	Variable Sandsnake					1B
Chionactis occipitalis klauberi	Tucson Shovel-nosed Snake	SC				1A
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Colaptes chrysoides	Gilded Flicker			S		1B
Coluber bilineatus	Sonoran Whipsnake					1B
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S	S		1B
Crotalus tigris	Tiger Rattlesnake					1B
Cynanthus latirostris	Broad-billed Hummingbird		S			1B
Cyprinodon macularius	Desert Pupfish	LE				1A
Dipodomys spectabilis	Banner-tailed Kangaroo Rat			S		1B
Euderma maculatum	Spotted Bat	SC	S	S		1B
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A

**Species of Greatest Conservation Need
Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Glaucidium brasilianum cactorum	Cactus Ferruginous Pygmy-owl	SC	S	S		1B
Gopherus morafkai	Sonoran Desert Tortoise	C*	S			1A
Haliaeetus leucocephalus	Bald Eagle	SC, BGA	S	S		1A
Heloderma suspectum	Gila Monster					1A
Incilius alvarius	Sonoran Desert Toad					1B
Kinosternon sonoriense sonoriense	Desert Mud Turtle			S		1B
Lasiurus blossevillii	Western Red Bat		S			1B
Lasiurus xanthinus	Western Yellow Bat		S			1B
Leopardus pardalis	Ocelot	LE				1A
Leptonycteris curasoae yerbabuenae	Lesser Long-nosed Bat	LE				1A
Lepus alleni	Antelope Jackrabbit					1B
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Macrotus californicus	California Leaf-nosed Bat	SC		S		1B
Melanerpes uropygialis	Gila Woodpecker					1B
Meleagris gallopavo mexicana	Gould's Turkey		S			1B
Melospiza lincolni	Lincoln's Sparrow					1B
Melospiza aberti	Abert's Towhee		S			1B
Micruroides euryxanthus	Sonoran Coralsnake					1B
Myotis occultus	Arizona Myotis	SC		S		1B
Myotis velifer	Cave Myotis	SC		S		1B
Myotis yumanensis	Yuma Myotis	SC				1B
Nyctinomops femorosaccus	Pocketed Free-tailed Bat					1B
Panthera onca	Jaguar	LE				1A
Passerculus sandwichensis	Savannah Sparrow					1B
Perognathus amplus	Arizona Pocket Mouse					1B
Perognathus longimembris	Little Pocket Mouse					1B
Peucaea botterii arizonae	Arizona Botteri's Sparrow			S		1B
Peucaea carpalis	Rufous-winged Sparrow					1B
Phrynosoma solare	Regal Horned Lizard					1B
Phyllorhynchus browni	Saddled Leaf-nosed Snake					1B
Poeciliopsis occidentalis occidentalis	Gila Topminnow	LE				1A
Progne subis hesperia	Desert Purple Martin			S		1B
Setophaga petechia	Yellow Warbler					1B
Sonorella papagorum	Black Mountain Talussnail					1B
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Terrapene ornata	Ornate Box Turtle					1A

**Species of Greatest Conservation Need
Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Troglodytes pacificus	Pacific Wren					1B
Vireo bellii arizonae	Arizona Bell's Vireo					1B
Vulpes macrotis	Kit Fox					1B

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Callipepla gambelii	Gambel's Quail					
Odocoileus hemionus	Mule Deer					
Pecari tajacu	Javelina					
Puma concolor	Mountain Lion					
Zenaida asiatica	White-winged Dove					

Project Type: Development Outside Municipalities (Rural Development), Commercial/industrial (mall) and associated infrastructure, New construction

Project Type Recommendations:

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, cantered, or cut to ensure that light reaches only areas needing illumination.

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 leaving the site. 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, <https://agriculture.az.gov/>. 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

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Trenches should be covered or back-filled as soon as possible. Incorporate escape ramps in ditches or fencing along the perimeter to deter small mammals and herptefuna (snakes, lizards, tortoise) from entering ditches.

Communities can actively support the sustainability and mobility of wildlife by incorporating wildlife planning into their regional/comprehensive plans, their regional transportation plans, and their open space/conservation land system programs. An effective approach to wildlife planning begins with the identification of the wildlife resources in need of protection, an assessment of important habitat blocks and connective corridors, and the incorporation of these critical wildlife components into the community plans and programs. Community planners should identify open spaces and habitat blocks that can be maintained in their area, and the necessary connections between those blocks to be preserved or protected. Community planners should also work with State and local transportation planning entities, and planners from other communities, to foster coordination and cooperation in developing compatible development plans to ensure wildlife habitat connectivity. The Department's guidelines for incorporating wildlife considerations into community planning and developments can be found on the home page of this application at <http://www.azgfd.gov/hgis/guidelines.aspx>.

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (<http://www.azwater.gov/azdwr/default.aspx>).

Based on the project type entered, coordination with U.S. Army Corps of Engineers may be required (<http://www.usace.army.mil/>).

Based on the project type entered, coordination with County Flood Control district(s) may be required.

Development plans should provide for open natural space for wildlife movement, while also minimizing the potential for wildlife-human interactions through design features. Please contact Project Evaluation Program for more information on living with urban wildlife.

The Department requests further coordination to provide project/species specific recommendations, please contact Project Evaluation Program directly. PEP@azgfd.gov

Project Location and/or Species Recommendations:

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. Please contact:

Arizona Department of Agriculture
1688 W Adams St.
Phoenix, AZ 85007
Phone: 602.542.4373

<https://agriculture.az.gov/environmental-services/np1>

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. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at <http://www.fws.gov/southwest/es/arizona/> or:

Phoenix Main Office

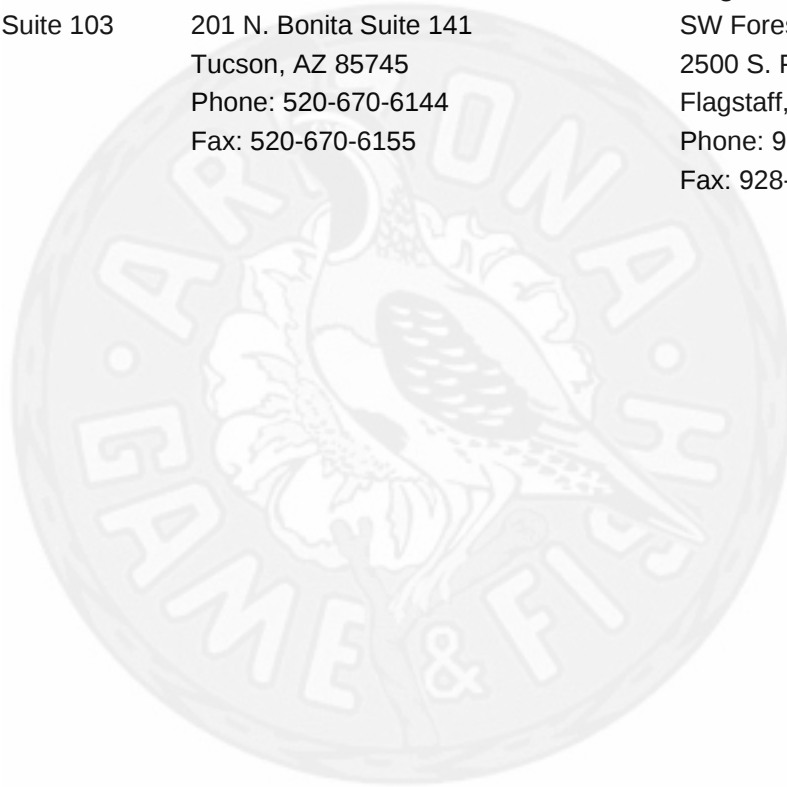
2321 W. Royal Palm Rd, Suite 103
Phoenix, AZ 85021
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office

201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office

SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121



Appendix B:

Project Demand Calculator

Arizona Department of Water Resources (ADWR)

Table B – Water Conservation Measures (Pima County Form)

Annual Water Level Monitoring Report

Metropolitan Domestic Water Improvement District

October 4, 2015		PROJECT DEMAND CALCULATOR			
Name of Proposed Project:		Cortaro Farms Road Rezoning			
INSTRUCTIONS: This spreadsheet is designed to help you calculate the water demand for your proposed development for purposes of applying for a Certificate of Assured Water Supply, Water Adequacy Report or Analysis of Assured (or Adequate) Water Supply. Please enter information into the blue boxes as applicable. If you need help with this form, please contact the Office of Assured and Adequate Water Supply at (602) 771-8599.					
NOTE: This sheet, when completed, does not constitute approval of the demand estimate for your proposed development. It is intended for general estimation purposes only. The final, official demand estimates will be determined by the Department upon review of your complete application.					
Enter the AMA the subdivision is located in*:		TUC		* Enter PHX for Phoenix, TUC for Tucson, PIN for Pinal, PRE for Prescott or SCR for Santa Cruz.	
If you are not sure if you are located inside or outside of an AMA, contact the Office of Assured and Adequate Water Supply at (602) 771-8599.					
Enter the COUNTY the subdivision is located in:		PIMA		* Enter either APACHE, COCHISE, COCONINO, GILA, GRAHAM, GREENLEE, LA PAZ, MARICOPA, MOHAVE, NAVAJO, PIMA, PINAL, SANTA CRUZ, YAVAPAI, or YUMA.	
Residential Usage*					
Category	PPHU	GPCD or per house/day	Demand/HU/YR (af/yr)	No. HU (Lots)	Residential Demand/Yr (af/yr)
Single Family (int)		57.00	0.00		0.00
Multi-Family (int)		57.00	0.00		0.00
Single Family Landscape (ext)	1.00	118.00	0.13	0.00	0.00
Multi-Family Landscape (ext)	0.00	21.00	0.00	0.00	0.00
Single family Demand/HU/YR			0.13		
Multifamily Demand/HU/YR			0.00		
	Square Feet	Acres	Demand Factor (af/yr)	No. HU (Lots)	Large Lot Adjustment Demand/Yr (af/yr)
Average Lot Size (sq. ft)**	0.00	0.00			
TMP Model Lot Size (sq. ft)	7,500 - 10,000	0.17 - 0.23			
Large Lot Adjustment	0.00	0.00			
1/2 low water use	0.00	0.00	1.50	0.00	0.00
1/2 turf	0.00	0.00	4.60	0.00	0.00
**NOTE: If the subdivision contains several groupings of lot sizes, the large lot adjustment needs to be calculated for each grouping of large lot sizes. If CC&Rs with landscaping restrictions for the residential lots will be adopted, a modified large lot adjustment can be calculated based on the specific landscaping restrictions. Contact the Office of Assured and Adequate Water Supply for assistance in calculating the large lot adjustment for subdivisions with several groupings of large lot sizes or if CC&Rs limiting landscaping within the residential lots will be adopted.					
Total Residential Demand					0.00
Non-Residential Usage***					
For each category please enter either square feet or acres of land for that type of non-residential use within your subdivision.					
Category	Square Feet	Acres	Demand Factor (af/ac)	Non-Residential Demand (af/yr)	
Common Area1		2.25	1.50 low water use	3.38	
Common Area2		0.00	4.60 turf	0.00	
Right of Way		0.00	1.50 low water use	0.00	
Golf Course		0.00	AMA Turf Program - contact AMA	0.00	
Commercial use	102000.00	0.00	2.25 all acres	0.00	
Public Pool (length x width = square feet)		0.00	Based on closest AMA pool	0.00	
Parks1		0.00	1.50 low water use	0.00	
Parks2		0.00	4.60 turf	0.00	
Retention/Detention Basins		0.90	1.50 low water use	1.35	
Retention/Detention Basins		0.00	4.60 turf	0.00	
School Landscape1		0.00	1.50 low water use	0.00	
School Landscape2		0.00	4.60 turf	0.00	
	Number of students				
Elementary school interior use	0.00		25 GPCD interior demand	0.00	
Middle/High School interior use	0.00		43 GPCD interior demand	0.00	
***NOTE: If your application is for a change of ownership from a previously issued Certificate of Assured Water Supply, and is for only a portion of the original Certificate, contact the Office of Assured and Adequate Water Supply to pro-rate non-residential area acreage.					
Total Non-Residential Demand					4.73
Distribution Losses					
	Residential	Non-Residential	Total	Loss Factor %	Distribution Losses (af/yr)
Demand af/yr	0.00	4.73	4.73	10.00	0.47
Construction					
	No. of Lots	Demand (gals/lot)	100 yr demand (af)	Construction Demand (af/yr)	
	0.00	10000.00	0.42	0.00	
Total Demand Per Year					
Residential Usage af/yr	0.00	Non-Residential Usage	Lost & Unaccounted for	Construction	Total Non-Res
		4.73	0.47	0.00	5.20
Residential Usage GPCD					Total Demand GPCD
#DIV/0!					#DIV/0!
Annual Build Out Demand					
5.20					

Table B - Water Conservation Measures

Indoor and Outdoor Options

(15-point Minimum; Must include at least one Outdoor Conservation Measure)

		Possible Points	Points Achieved
Indoor Options			
I-1	Install grey water plumbing lines, labeled and stubbed out to exterior of residence	1	1
I-2	Install a "central-core" plumbing system with all water-using fixture fittings ≤5 ft. from HW heater	1	
I-3	Install a manifold "home run" structured plumbing system; with fixtures ≤ 10 ft. of circulation loop & branch lines ≤ 1/2" in diameter	2	
I-4	Install a manual or motion activated on-demand hot water circulation pumping system	2	1/2
I-5	Install a point-of-use tankless hot water heater that uses only cold water supply or solar-assisted preheating for any fixture > 20 pipe run feet from water heater	3	
I-6	Install lavatory faucets that meet the proposed EPA's WaterSense™ criteria or have a maximum flow rate of 1.5 gpm @ 80 psi of pressure	3	3
I-7	Install showerheads that meet the proposed EPA's WaterSense™ criteria or have a maximum flow rate of 1.5 gpm @ 80 psi of pressure	3	3
I-8	Install toilets that meet the EPA's WaterSense™ rating (1.28 gpf) OR	3	3
I-9	Install dual flush toilets with 1.6 gpf/1.8 gpf or less water use	3	
I-10	Install a washing machine with a water factor of 6.0 or less	2	
I-11	Install composting toilet(s), 2 pfs/fixture; no maximum	2	
I-12	Install a refrigerator with an in-door filtered water system	0.5	
I-13	Install excess flow check valves or excess water shutoff connectors at fixtures	3	
I-14	No garbage disposal	1	
Outdoor Options			
O-1	Install a rainwater harvesting system capable of retaining and storing 50% or more of the average annual available rainfall on the catchment surface. (min. Catchment Area = 500 ft.)	6	
O-2	Install a rainwater harvesting system capable of retaining and storing 25% or more of the average annual available rainfall on the catchment surface. (min. Catchment Area = 500 ft.)	4	
O-3	Install a rainwater harvesting system capable of retaining and storing 10% or more of the average annual available rainfall on the catchment surface. (min. Catchment Area = 500 ft.)	2	
O-4	Install a gutter and downspout system or canals that tie to storm water infiltration trenches, bioswales, or rain gardens	2	
O-5	Install grey water plumbing lines, labeled and stubbed out to exterior of residence, but with connection to an onsite landscaping drip irrigation system	2	
O-6	No swimming pool	2	
O-7	No decorative water features or mister systems that use potable water.	1	1
O-8	Impervious driveway & walkway surfaces shall be <5% of total site area (≤ 5 acres); OR 1% of the site area (over 5 acres)	2	
O-9	Construct no impervious surfaces outside the building footprint	2	
O-10	Install a vegetative roof system (min 50% of roof area) to reduce impervious surfaces	3	
O-11	Install drought-tolerant, non-irrigated landscaping design by a licensed landscape professional	3	
O-12	Install drought-tolerant, non-irrigated landscaping design by a licensed landscape professional. Plant species limited to native plants only.	4	
O-13	Irrigation system designed and installed by an EPA WaterSense™ certified professional	1	
O-14	Provide recharge/retention plan for rainwater	1	1
O-15	Install a high efficiency irrigation system that uses:		
	a. "Smart Controllers" (w/ moisture sensor and rain delay controllers) & high efficiency nozzles;	0.5	
	b. Check valves in heads and heads matched to the beds distinct watering needs;	0.5	
	c. Separate sprinkler zones for beds, with plants grouped based on watering needs (hydrozoning);	0.5	
	d. A timer/controller that irrigates during the hours of 1- pm-8am to minimize evaporation;	0.5	0.5
	e. Drip irrigation for all planting beds;	0.5	0.5

TOTAL POINTS: 15.0

**Metropolitan Domestic Water Improvement District
Board of Directors Meeting**

March 9, 2015

Annual Water Level Monitoring Report

Synopsis

The Board of Directors is requested to review with staff the water level information obtained from the recently completed annual water level monitoring effort. This report gives an important review of the aquifers and wells that provide water to District customers.

Background

The District began the annual groundwater level monitoring program in 1993. The initial purpose was to track the annual declines in the Metro Main service area at its 36 wells to help with the design of pump replacements. The monitoring program now includes 57 wells, both active and inactive, within five of the District's service areas to meet operational and regulatory requirements.

After Metro Main received its 100-Year Designation of Assured Water Supply (DAWS) from the Arizona Department of Water Resources (ADWR) in 1996, ADWR required Metro to measure and report annual groundwater levels from within the service area. Metro also uses the water level change information to determine if its CAP recovery wells in Metro Main are in compliance with ADWR's decline limit of 4 feet per year averaged over a five year period for each of our four wellfield areas. Annual water level measurements at Metro Hub wells were added to the monitoring program in 1999 when Metro Hub was purchased. Metro West was added in 2006 when it received its DAWS. Water levels for Metro Southwest Diablo Village were added in 2011, and Metro Southwest E&T were added in 2012. Water levels for Metro Southwest-Lazy B are not taken due to the small size of the well that does not allow access for water measurements.

Water Sustainability staff manually measures each of the 57 wells that are part of the annual monitoring program. To improve efficiencies and gather additional data throughout the year, water level monitoring systems (water level transducer and continuous data logger) have been installed at eight locations in Metro Main and one in Metro Hub. Figure 1 depicts the locations of the eight automated monitoring locations in Metro Main, and Figure 2 shows the same for Metro Hub.

Groundwater Levels

Metro Main

Depth to water in the south half of Metro Main in the Western CDO Wash and Rillito Creek Wellfields ranged from 163 feet to 332 feet below land surface (Table 1). Groundwater level changes varied at the wells from a 9 foot rise to a decline of 6.6 feet since last year. The variation in water level change is a function of the amount of pumpage at Metro Main wells and the amount of recharge over the past year. The average well field change was a 1.0 foot decline. The water level hydrographs for the La Colina and Las Palmas East Wells show water levels continue to decline (Figure 3).

Depth to water in the north half of the service area in the Catalina Foothills and Eastern CDO Wash Wellfields varied from 274 feet to 448 feet (Table 1). The northern portion also experienced a wide range of water level changes from a rise of 2.4 feet to a decline of 10.5 feet. The average change was a decrease of 2.8 feet. Water levels at Tucson National North Well have remained fairly stable, but show the influence of nearby Metro wells when they are operating (Figure 4). However, water levels to the north at Stiller Well continue to have a steady decline as shown in Figure 5.

The 5-year change table shows that Metro's four wellfield areas met ADWR's less than 4 foot decline criteria for recovery well use (Table 2).

For the entire service area, groundwater levels over the last ten years have declined on the average 2.0 feet per year (Table 3). Well productivity has continued to decline as the water table drops. This information highlights the importance of the District pursuing its CAP Water Recharge, Recovery & Delivery System by utilizing a renewable supply and reducing groundwater pumping and the associated costs with a depleting groundwater supply.

Metro Hub

Depth to water at the five active and three inactive Hub wells ranged from 49 feet to 94 feet below land surface (Table 4). The average groundwater level change at the six Hub wells was an increase of 0.7 feet within the service area since last year. Groundwater level changes ranged from a decline of 4.9 feet to a rise of 8.3 feet.

Table 5 shows that Metro Hub had an average rise of 0.9 foot per year over five years. For the entire service area, groundwater levels over the last ten years have risen on the average 0.4 feet per year (Table 6). The aquifer appears sensitive to natural recharge and pumpage as demonstrated by annual rises and declines.

Metro West

Depth to water at the two Metro West wells varied from 208 feet to 214 feet below land surface. The groundwater level changes at the two wells varied from an increase of 0.6 feet to an increase

of 1.3 feet since last year. The average was a one foot rise. Metro West had an average decline of 0.2 foot per year over five years. A ten year change calculation is not possible for comparison because annual measurements only began in 2006. Water Sustainability staff schedules the annual measurement at these two wells with the required monthly water level monitoring at the Avra Valley Recharge Project, since the two facilities are in proximity.

Metro Southwest

Depth to water at the two Diablo wells varied from 463 feet to 504 feet below land surface. The average water level change from the last year was a rise of 6.3 feet. These increases are assumed to reflect the rising water levels from the nearby City of Tucson's Southern Avra Valley Recharge and Recovery Project. A transducer and an automated recorder are waiting to be installed in this service area because of its remoteness.

Depth to groundwater beneath the E&T service area is comparable to that in the Hub service area. Water levels varied from 68 to 75 feet below land surface. The average water level change from the last year was a rise of 1.8 feet.

Avra Valley Recharge Project

Depth to water is measured monthly at the Avra Valley Recharge Project monitor well (AVMW-01) (Figure 6). The winter measurement was 190 feet below land surface. The change from last year was an increase of 0.8 feet. Water levels at this site constantly fluctuate and are influenced by monthly recharge volumes at the site, the adjacent Lower Santa Cruz Recharge Project owned by the Central Arizona Water Conservation District, and nearby irrigation well pumpage. Since the operation of the Avra Valley Recharge Project began in 1997, groundwater levels have increased 5 feet per year.

Future Monitoring Efforts

Since groundwater is currently the only source of drinking water that the District serves its customers, it is imperative that we continue to monitor the state of the aquifer. Staff will continue to manually measure groundwater levels annually at each well. Additional measurements are collected via transducers that log continual water-level measurements at select wells throughout the year, which provides further information about the aquifer. Transducers measure pressure of water within a well and the data loggers convert pressure to groundwater levels in feet below land surface. The data loggers continually record the water level measurements so that Water Sustainability staff only needs to visit those well sites three times a year to download the data and monitor the charge of the data logger battery rather than doing monthly manual measurements.

The Water Sustainability staff would like to expand the use of transducers. A transducer is awaiting installation at Metro Southwest Diablo Village. Likewise, in the Hub service area, the transducer from the HEX-2 test well will be redeployed to inactive Hub Well No. 1 this fiscal year now that Hub Well No. 1A is active. Staff is proposing a transducer installation in Metro

E&T for next fiscal year. To save money, several existing transducers are being repurposed. The new active wells of Old Magee Trail, Riverside Crossing, and Hub No. 1A have been outfitted with pressure transducers to display continuously both static and pumping water levels.

The inactive Rasmussen well is situated in Metro Main's Western CDO Wash Wellfield. The Rasmussen well is in a strategic location to monitor groundwater levels in this very productive wellfield. Unfortunately, a stuck and collapsed section of column pipe within the well prevents water level measurements. Water Sustainability staff will propose for the next fiscal year to have a driller open the blockage in the Rasmussen well to resume water level measurements and install a pressure transducer and data logger. In a subsequent fiscal year, the self-powered transducer that was in the once-inactive Riverside Crossing Well will be redeployed at the inactive Estes Well to monitor the Rillito Creek Wellfield.

Summary

The Board of Directors is requested to discuss with staff this water level monitoring update. Long-term water level trends continue to show the importance of the District working with the other Northwest Water Providers and Tucson Water to treat and directly deliver its CAP allocation. No motion is required for this agenda item.

Respectfully submitted,

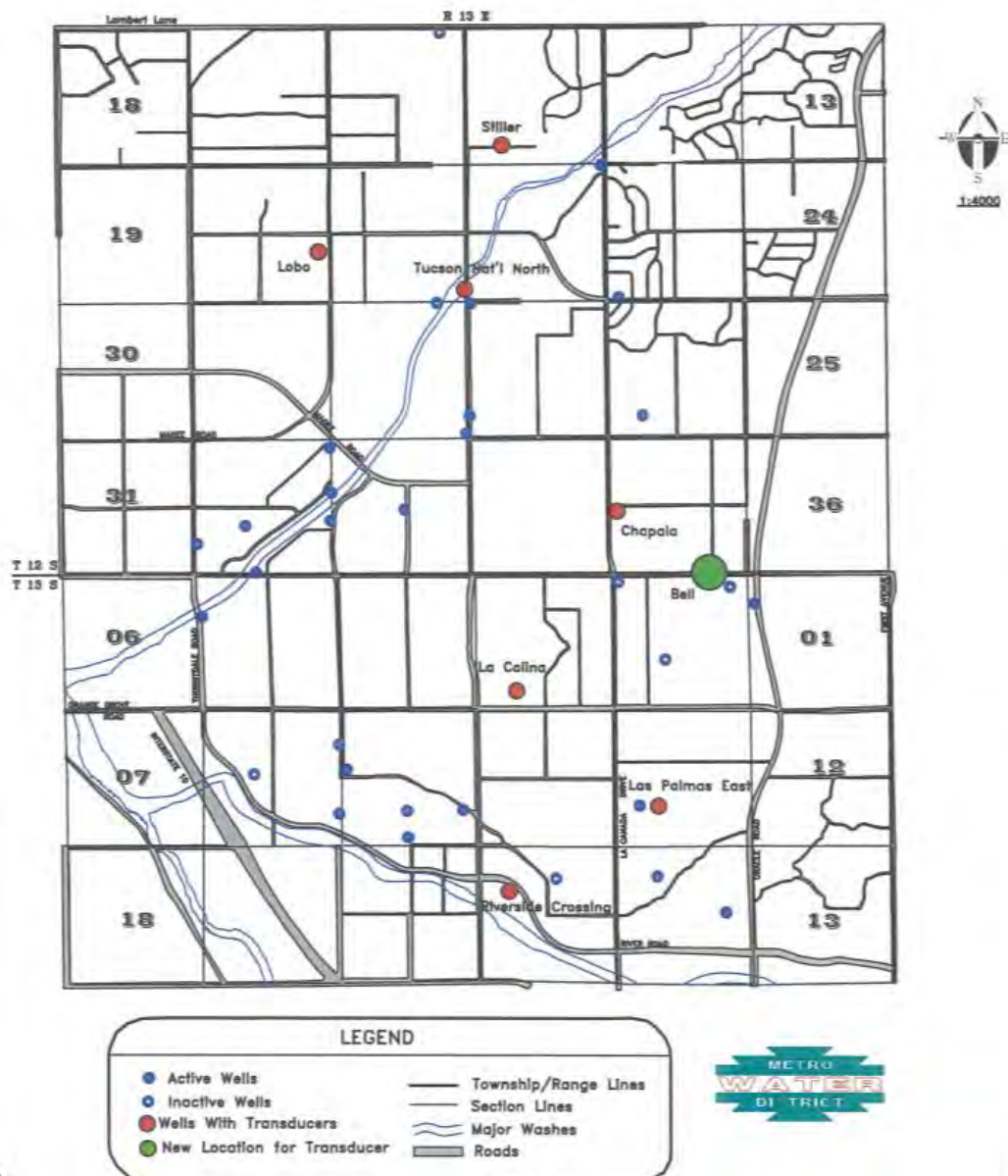
Warren Tenney
Assistant General Manager

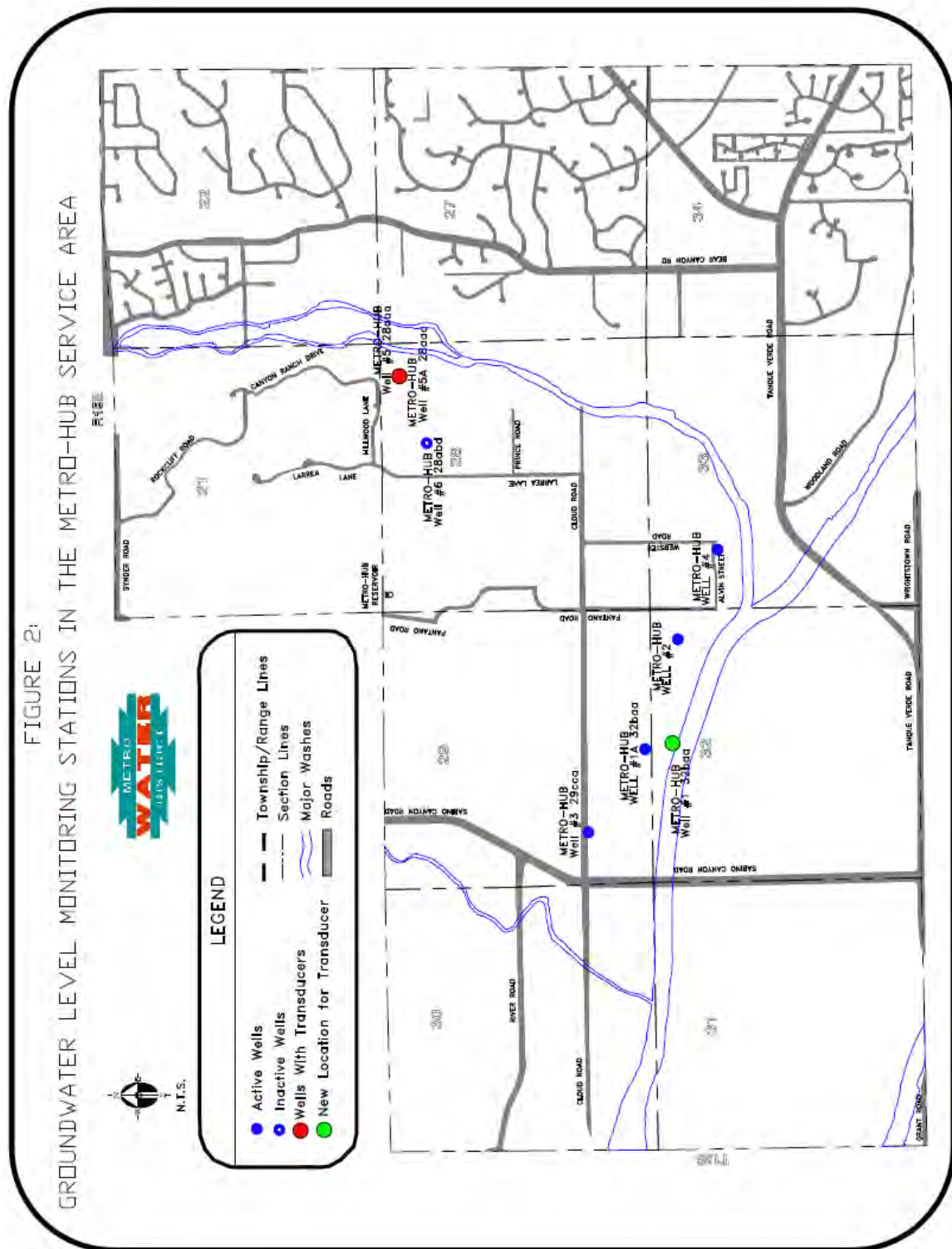
I concur with staff's recommendation.

Respectfully submitted,

Joseph Olsen, P.E.
General Manager

Figure 1
Continuous Groundwater
Monitoring Stations
Metro Main





**Figure 3: Average Water Level Hydrographs
Metro-Main Service Area**

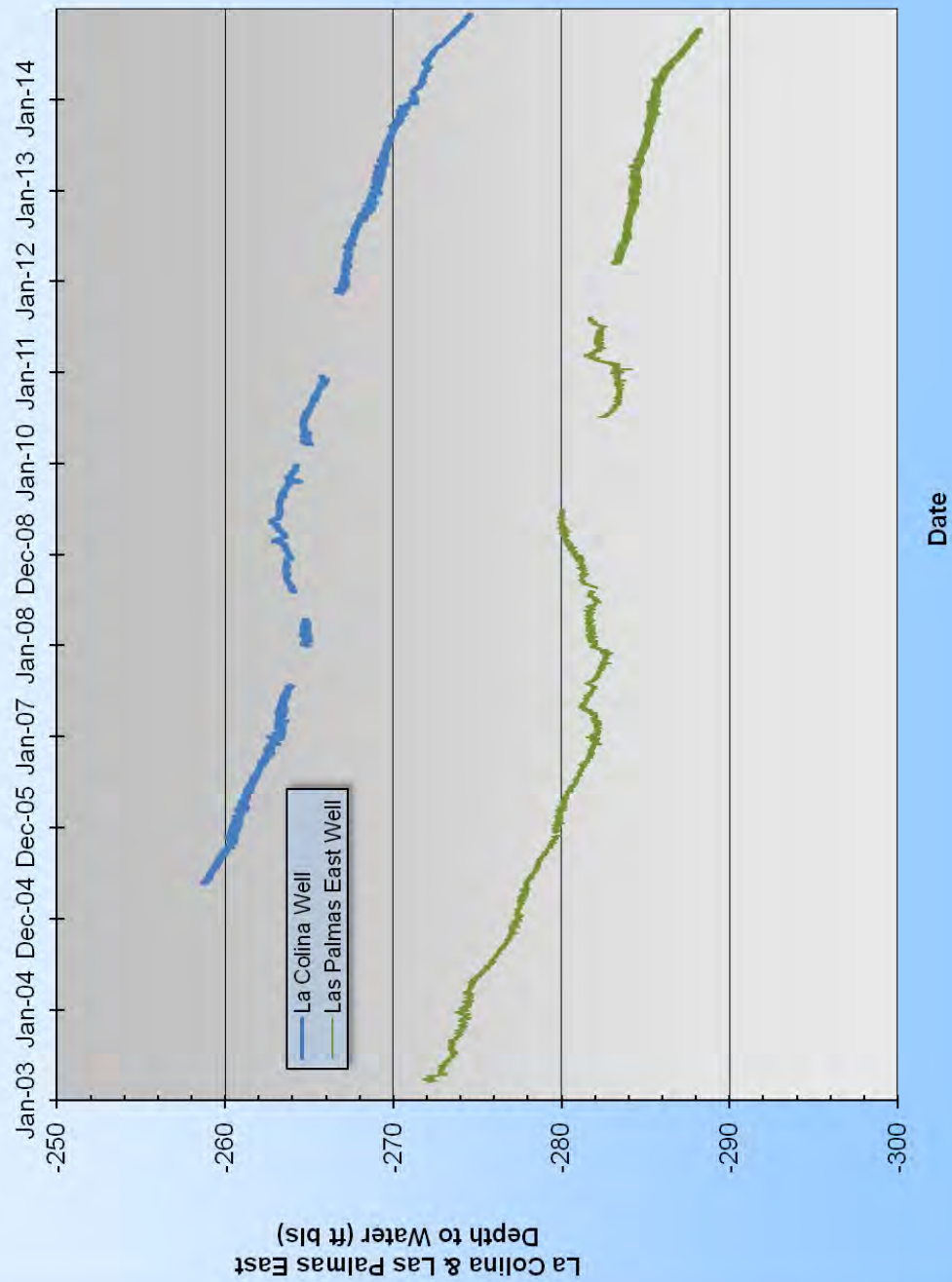


Figure 4:
Tucson National North Average Water Level Hydrograph
12-13-21 DDD



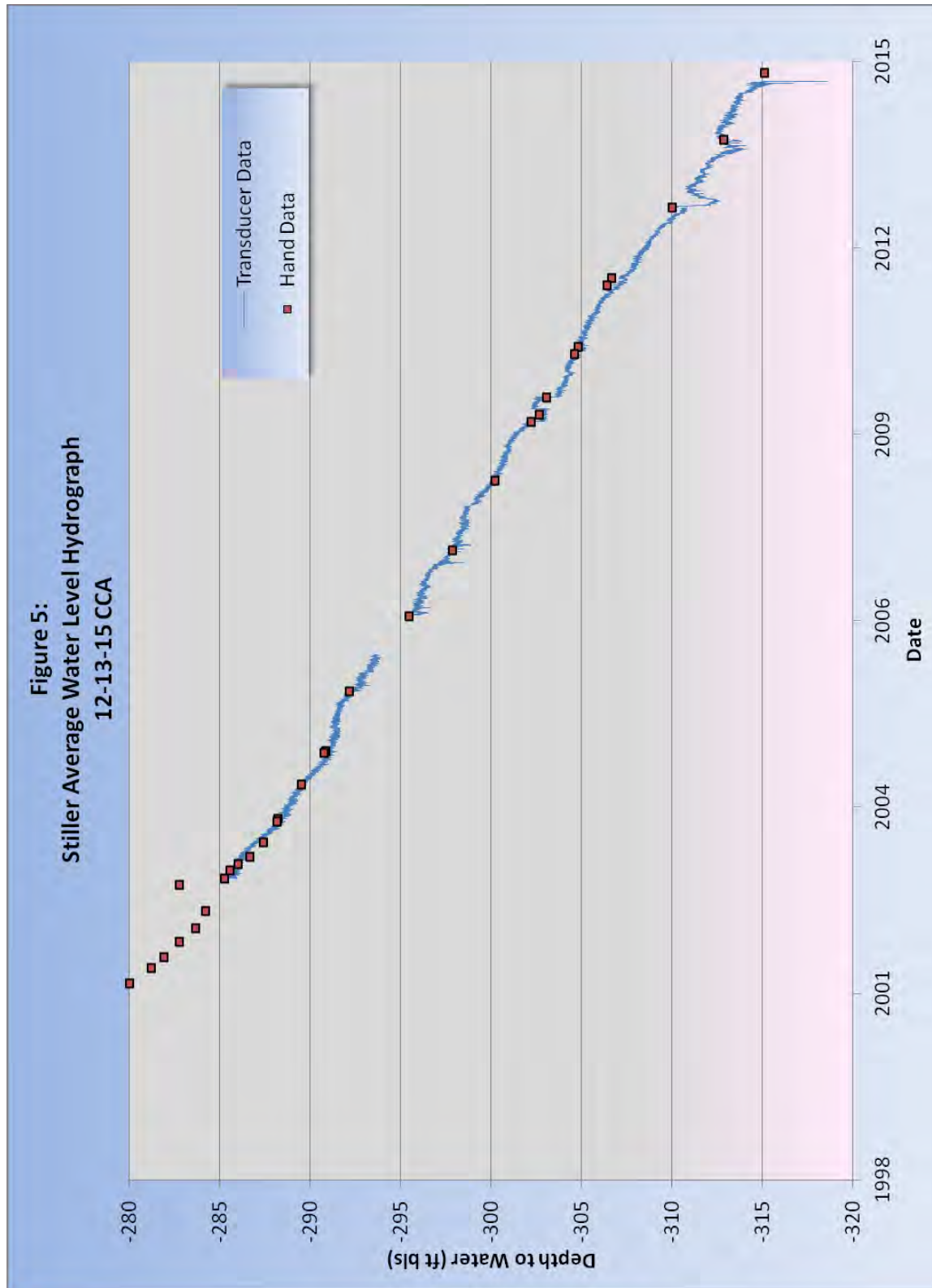


Figure 6: Avra Valley Recharge Project
Depth to Water at AVMW-1

