ADEQ Arizona Department of Environmental Quality

MEETING MINUTES

Park-Euclid and 7th Street and Arizona Avenue
Water Quality Assurance Revolving Fund (WQARF) Sites
Community Advisory Board (CAB) Meeting

Monday, September 29, 2014
5:30 pm to 7:30 pm
Joel D. Valdez Main Library
101 N. Stone Ave., Catalina Room, 2nd Floor
Tucson, Arizona

MINUTES

CAB Members Present: Mark Verghougstraete, Keith Bagwell, Jacky Turchick, Menachem Turchick, Richard Byrd, Jonathan Salvatierra, Harrison Smith

CAB Members Absent: Bill Richards, Freya Eddy, Steven Turner, David Jonathas, Diana Lett

ADEQ Staff Present: Caroline Oppleman, Community Involvement Coordinator (CIC); Gretchen Wagenseller, Project Manager; Matt Narter, Hydrologist, Hazel Cox, Hydrologist

Members of Public Present: Molly Collins (Tucson Water), Michelle Ferman (GS Analysis), Ted Warmbrand (BSANA), Jeff Prevatt and Chuck Wesselhoff (Pima County), Janet Workman and Bob Boudra (URS Corporation), Don Moore (Mission Linen/ERS), Joe Drazek (Q&B), Tony Mancuso (Mission Linen), Mark Kerr (City of Tucson, Ward 5)

1. Call to order/introductions

Mark Verghougstraete called the meeting to order at 5:37 pm and initiated introductions. Caroline Oppleman shared with the CAB that Diana Lett informed her that she was unable to attend the meeting at the last minute and offered to resign from the CAB if her absence prevented a quorum. Jacky Turchick motioned to accept Ms. Lett's resignation, provided she is given an opportunity to reapply for CAB consideration at the next CAB meeting, which was seconded by Harrison Smith. All were in favor and none opposed.

2. Acceptance and/or changes to May 20, 2014 minutes

Jacky Turchick motioned to accept the May 20, 2014 minutes, which was seconded by Richard Byrd. There was no discussion; all were in favor, none were opposed and the minutes were accepted with no changes.

3. CAB member training – ADEQ presentation/distribute CAB binders

Ms. Oppleman reviewed the CAB member training presentation and provided CAB binders to new CAB members in attendance.

4. Discussion/vote – CAB charter

Ms. Oppleman explained that the CAB charter was updated to reflect new the online information repository, ADEQ records center information and how to arrange for document review accommodations. Mr. Smith motioned to accept the charter with the proposed changes, which was seconded by Ms. Turchick. All were in favor, none were opposed, there was no discussion, and the charter was accepted.

5. Community involvement plan (CIP) status update – ADEQ-led discussion

Ms. Oppleman shared that ADEQ:

- has been working to update the CIP and present it in a new format that provides a clear roadmap of community involvement activities; and
- plans to provide the CAB with an advance copy of the CIP to review before the next CAB meeting so that it may be added to the agenda for the next meeting, adopted and put in place.

6. 7th Street and Arizona Avenue record of decision progress update and planned activities for fiscal year 2015 – ADEQ-led discussion

Ms. Wagenseller shared the following:

- Reviewed the WQARF process chart.
- Explained that the feasibility study (FS) was presented at the last CAB meeting and last spring, the proposed remedial action plan (PRAP) went out for public comment.
- ADEQ currently is reviewing record of decision (ROD), whereby ADEQ specifies the final remedy that will be executed.
- Work this fiscal year will include hiring a new contractor to work on this site.
- ADEQ has started a new contracting procedure called best value and the new contractor selected is Hargis + Assoc. They will work on the ROD, final remedy implementation, and to fill in data gaps.
- HydroGeoChem, the contractor who worked on the site for a long time is close to executing the access agreement with the City of Tucson (COT) for needed replacement wells.
- Reviewed the map that shows locations of well installation in the COT rights of way.

Ms. Turchick inquired as to how far away from the original wells the new wells will be installed. Ms. Wagenseller responded and indicated that ADEQ will provide a map to Ms. Turchick that shows the locations of the abandoned and replacement wells as well as provide the rationale for the well locations.

It was discussed that the COT access agreement has taken close to a year to execute so far. Richard Byrd shared information with the CAB about the COT process to review and approve access related to the replacement wells.

7. Park-Euclid feasibility study progress and future activities – URS Corporation presentation on behalf of Park-Euclid Group

Bob Boudra and Janet Workman of URS, consultants to Park-Euclid Group, presented the following information:

- Reviewed the latest results from the long term monitoring program. Shared that based on data not changing quickly, the monitoring program changed from quarterly/semi-annual to semi-annual/annual and showed the respective wells on the map.
- Soil vapor in the vadose zone coming off the perched aquifer is less than it used to be; the multi-phase extraction system did a pretty good job of lowering concentrations in the upper vadose zone, especially the tetratchloroethene (PCE). Five feet below ground surface is the least contaminated; much of the remaining vapor is coming off the perched aquifer about 90 feet below surface and the PCE vapors in the upper vadose zone are mostly contained within the 299 and 301 S. Park property boundaries .
- Petroleum product is present in the perched aquifer from offsite sources; much of the dry cleaning solvents historically spilled at site migrated downward, so PCE and other volatile organic compound (VOCs) dissolved in the floating diesel. The PCE has degraded into other compounds – the majority being cis-1,2-dichloroethene, which is less toxic than PCE. This likely occurred by natural biodegradation.
- Regarding PCE in the perched aquifer, as with the petroleum product, most of the PCE has degraded into other compounds. The contamination extends beyond the source facility boundary to the northwest.
- Groundwater flow in the regional aquifer is toward University of Arizona wells.
- Looking at PCE concentrations in the regional aquifer over time from the early 2000's to present, nearly all (not all) areas are showing a downward trend in concentration.
- The perched aquifer multi-phase extraction (MPE) system was part of an early response action (ERA) designed to remove a combination of water, diesel fuel and soil vapor from the vadose zone and perched aquifer. The system stopped operating in April 2014 so that the data and technology could be evaluated in the FS. Because of biodegradation, the system now must pull out breakdown products of PCE, which are more difficult to treat. A brief overview of how the MPE system works was provided.
- The FS work plan proposed to conduct a soil vapor extraction (SVE) test in the lower vadose zone, and the test was performed in early 2014. Based on the test results, the Park-Euclid Group recommended performing an ERA to start extracting vapors now before the FS is complete. ADEQ approved the SVE ERA and the process to install the system is beginning. Site neighbors may have noticed a sign on the fence regarding the air permit renewal process, which now will allow for operation of the SVE or MPE.
- An alternative that was considered to help protect the regional aquifer 200 feet below ground was adding bacteria to the perched aquifer to help promote further degradation of VOCs in the perched aquifer and accelerate cleanup of the source area. Unfortunately, this test was unsuccessful. The bioaugmentation laboratory test conducted as part of the FS did not achieve the desired degradation, so the follow up field test that was planned was not needed. However, the laboratory is interested in the tests and plans to continue work on their own.
- Two (2) new monitoring wells were installed in the regional aquifer to better define the downgradient portion of plume (it was noted that the perched aquifer was not present at

either of these locations). The wells were sampled and tested and the test results were shared.

- The FS work plan also proposed to develop a groundwater model of the regional aquifer to predict the future groundwater behavior related to various remedial scenarios. The model was explained and the model simulation over time from the 1970s to present was demonstrated. The model will be used to predict how contamination in the regional aquifer can be addressed moving forward.
- The FS work plan also proposed a vapor intrusion (VI) risk assessment which involved installing shallow vapor probes five (5) feet below ground surface and monitoring these along with existing vapor well nests at the site to look at the potential for VI into the buildings at, and surrounding, the site. In addition to the risk that exists to drinking water in the regional zone, another potential pathway for contamination to reach receptors is through intrusion of VOC vapors in the upper vadose zone into overlying buildings where people live or work. This VI work is being performed to close data gaps the remedial investigation did not fully address. Conservative screening levels were used and the VI risk assessment report has been completed and submitted to ADEQ for review.
- Now that the pilot testing and VI investigation are complete, work will focus on evaluating cleanup alternatives.
- Previously identified remedial objectives (ROs) for soil and groundwater, which the FS is focused on achieving, were reviewed. Followed by a description of the FS process, i.e., remedial strategies and measures are considered to come up with remedial alternatives that will obtain the ROs. A reference remedy and two alternative remedies (one more and one less aggressive) will be compared to verify that they meet the requirements of the ROs and a recommended remedy will be proposed.

Ms. Turchick stated she recalled a request had been made for the cleanup to meet residential standards. Ms. Workman explained that if an area is cleaned up to industrial standards, then ADEQ can put a declaration of environmental use restriction (DEUR) in place. A DUER, which remains in effect and is monitored by ADEQ until the property owner demonstrates that the release of the DEUR is appropriate, ensures that current and future property owners are aware of contamination on a site and take appropriate actions to prevent unacceptable exposure to the contamination. Once a DEUR is in place, the property owner is responsible for maintaining the terms of the DEUR.

URS representatives continued:

- The target to submit the draft final FS report for public comment is the end of April 2015. The target for submittal of the final FS report is late June 2015.
- The final design is in process for the ERA SVE system for the lower vadose zone. The system would operate for about nine (9) months and then be monitored to see if there is a rebound in concentrations. The system may be proposed as part of the final remedy for the lower vadose zone.

ADEQ and CAB members then discussed the length of time that can be expected to go from the FS to the PRAP. It was shared that the Park-Euclid Group's work will continue through the FS and that the scheduled and next steps beyond that are undetermined.

Ms. Turchick shared that she has noticed the CAB has not received timely information about public comment opportunities said that CAB members need to know when those opportunities occur with enough lead time to provide them the chance to obtain input from their community.

Ms. Oppleman provided an overview of community involvement activities and explained that each site has its own schedule. She shared that the FS report is forthcoming and that we are following the process and want the community to weigh in regarding the proposed cleanup, the next opportunity for the public to weigh in.

Ms. Wagenseller indicated that she will provide the bioaugmentation report to Mr. Verhougstraete when it becomes available.

8. Call to the public

No comments.

9. Future meeting/agenda – discussion

Tentative meeting date set for Monday, January 12, 2015 at the same venue. Agenda topics to include:

- CAB membership (annual co-chair nominations, new members (Diana Lett application) and/or terminations) [Discussion/Vote]
- CAB charter update (per membership/co-chair changes) [Discussion/Vote]
- Community Involvement Plan (CIP) [Discussion/Vote]
- 7th Street and Arizona Avenue status update (ADEQ)
- Park-Euclid (URS presentations):
    - VI risk assessment
    - FS progress update

Keith Bagwell motioned to adjourn and Menachem Turchick seconded, all were in favor, none were opposed. Meeting adjourned at 7:39.

This meeting was recorded on a digital device as a record of the proceedings. To listen to recording, or for additional information about the content of this meeting, contact: ADEQ: Caroline Oppleman at 602-771-6890.

The Community Advisory Board (CAB) and Arizona Open Meeting Law (OML)

A CAB is....

A board of concerned citizens from the community selected to review, discuss, and provide input on the clean-up of contaminated sites.

What is a CAB?

Well, its NOT this!

What does a CAB do?

Advise the Arizona Department of Environmental Quality (ADEQ), the public and other interested parties about the issues and concerns of the community related to the cleanup of a Water Quality Assurance Revolving Fund (WQARF) site.

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- ☑ Share information with community members through neighborhood meetings, newsletters or other methods.

- ☑ Represent not only your own views or those of the CAB, but also those of the community members you represent.

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Keys to a Successful CAB

- ☑ Gains support and cooperation from all parts of the community.
- ☑ Listens to all viewpoints.
- ☑ Works openly and honestly with ADEQ to benefit the goals of the site and the community.

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What else do we do?

- ☑ Serve as liaisons between ADEQ and the public.

- ☑ Set goals for developing issues related to the site.

- ☑ Advise ADEQ of the communities' concerns regarding remedial actions at the site.

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Arizona Open Meeting Law (OML)

CABs fall under OML jurisdiction and must follow the requirements of the OML as entities created by state law.

Why do we have an OML?

- ☑ To protect the public.
- ☑ To protect public officials.
- ☑ Maintain integrity of government.
- ☑ Inform the public.
- ☑ Build trust between government and the public.

"It is the public policy of this state that meetings of public bodies be conducted openly and that notices and agendas be provided for such meetings which contain such information as is reasonably necessary to inform the public of the matters to be discussed or decided." A.R.S. § 38-431.09.

Two core concepts

"All meetings of any public body shall be public meetings and all persons so desiring shall be permitted to attend and listen to the deliberations and proceedings." A.R.S § 38-431.01(A).

What constitutes a meeting?

- ☑ Having a quorum (majority).
- ☑ Discussing, proposing or taking legal action, including deliberations.

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Please remember…A gathering of a quorum can take several forms:

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Want additional info?

For CAB statutes in their entirety visit:

http://www.azleg.state.az.us/ArizonaRevisedStatutes.asp?Title=49

For OML statutes in their entirety visit:

http://www.azleg.gov/ombudsman/meetings.asp

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CAB members cannot use e-mail, faxes or phones among a quorum to discuss business, deliberate on board business, take legal action, or propose legal action.

Business discussions must happen at a Public Meeting.

ADEQ Arizona Department of Environmental Quality

For further questions contact:

Caroline Oppleman

ADEQ

Community Involvement Coordinator

(602) 771-6890

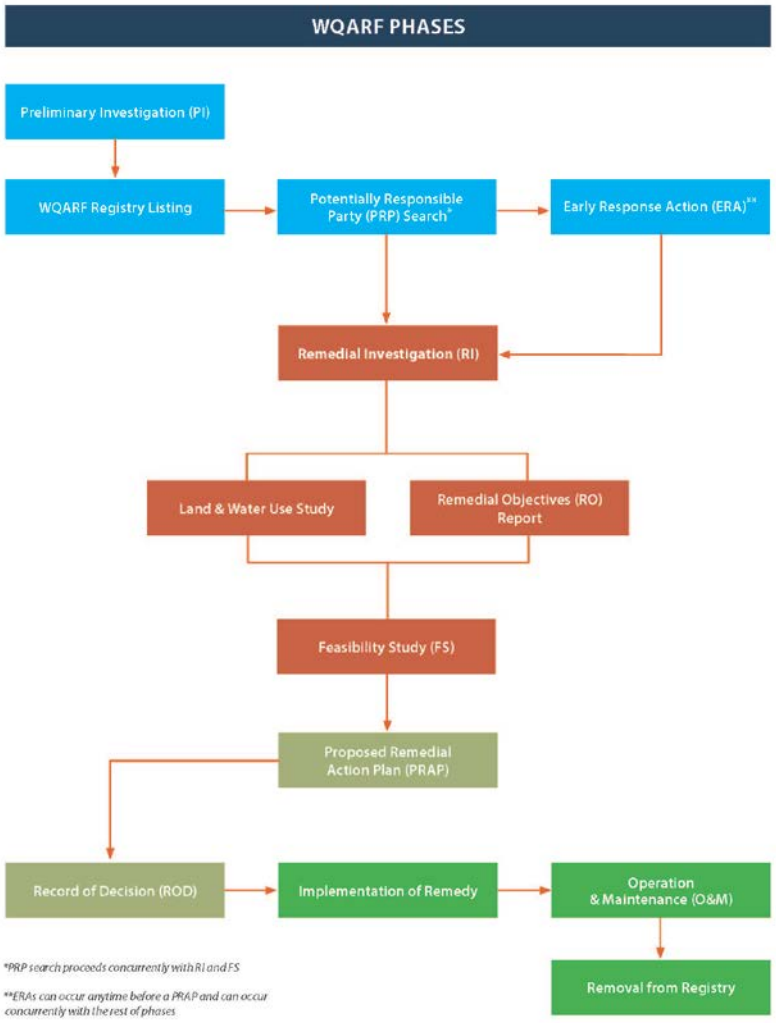
co2@azdeq.gov

Park-Euclid-
7th Street and Arizona Avenue WQARF Site
Community Advisory Board Meeting
September 29, 2014

7th Street and Arizona Avenue--Record of Decision
Progress and Planned FY2015 Activities

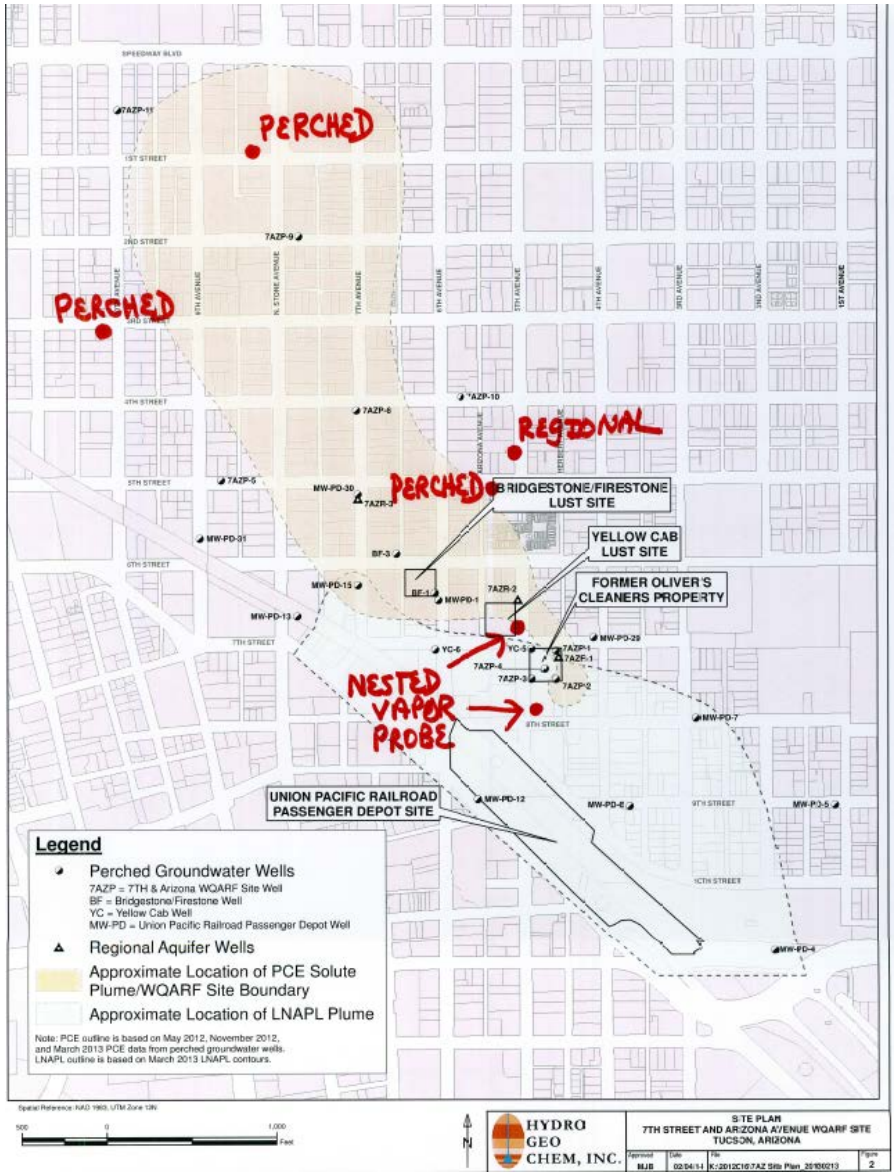
ADEQ
Arizona Department
of Environmental Quality

7th Street and Arizona Avenue—WQARF Process Overview



- Record of Decision (ROD) is not yet finalized.
- New site contractor (Hargis + Associates, Inc.) should be on-board by end of October.
- More shallow soil-gas data will be needed before remedial design can begin.

7th Street and Arizona Avenue—
Status of Record of Decision and FY2015 Planned Activities



Replacement of Wells Abandoned due to Road Construction

- City of Tucson 8th Street Drainage Project required abandonment of 6 groundwater monitor wells used by ADEQ at this site.
- City agreed to install replacement wells. This work will be done this fall.
- Also, this fall ADEQ is installing another well at property to the south of the former Oliver's Cleaners property.

Status Update and Feasibility Study
Park – Euclid RP Group

Community Advisory Board Meeting
September 29, 2014

URS

WQARF Site Activities

- Long Term Monitoring Program
- Perched Aquifer Early Response Action (MPE)
- Feasibility Study and Associated Activities
  - Lower Vadose Zone SVE Pilot Testing
  - Perched Aquifer Bioaugmentation Pilot Testing
  - Regional Monitoring Well Installation and Sampling
  - Groundwater Modeling
  - Vapor Intrusion Risk Assessment
  - Feasibility Study Process
- Lower Vadose Zone Early Response Action

URS

Long Term Monitoring Update

- Changes to the monitoring program
- Bi-Annual Event in April 2014
  - Results documented in Annual Monitoring Report dated July 28, 2014
  - Soil Vapor (upper and lower vadose zone)
  - Petroleum Product (Perched)
  - Water-Level and Product Thickness Measurements (Perched and Regional)
  - Groundwater Sampling (Perched and Regional)
- Results

URS

Perched Aquifer Early Response Action

- Operated from August 2011 through April 2014
- Most contaminant mass now c-1,2-DCE
- Operation discontinued April 2014 pending completion of feasibility study
- MPE mass removal

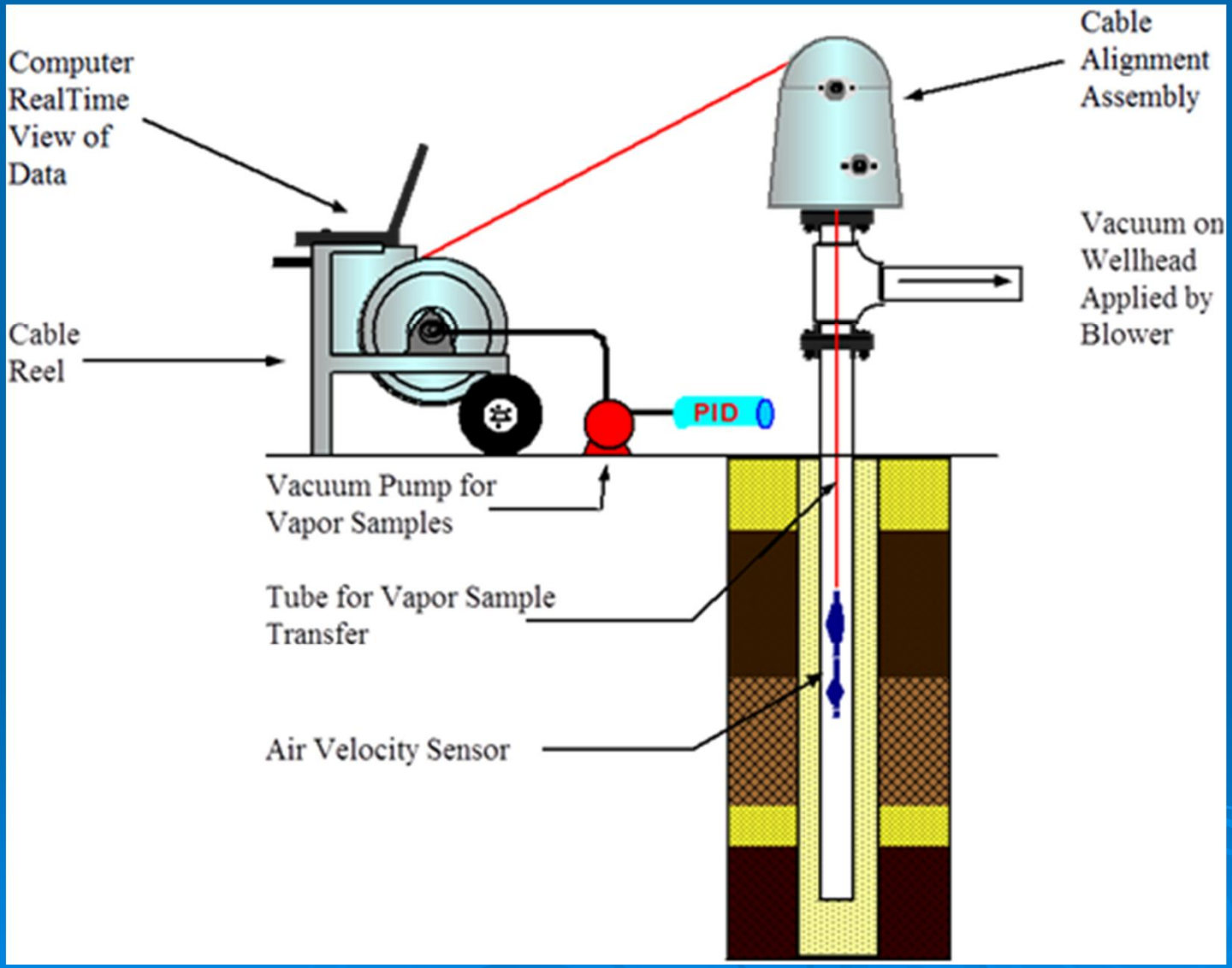
	Pilot Phase	Since Re-Start
Mass of CVOCs Removed - Vapor (pounds)	~1,400	~1,940
Mass of CVOCs Removed - Dissolved in Water (pounds)	0.44	1.22
Mass of CVOCs Removed - Dissolved in Diesel (pounds)	1.0	49.3
Volume of Diesel Product Removed (gallons)	~ 750	~ 6,500
Water Discharged to Sewer (gallons)	~ 38,900	~71,600

Lower Vadose Zone SVE Pilot Testing

- Described in the Feasibility Study Work Plan
- Performed in late January 2014
- Documented in Technical Memo dated June 2, 2014
- Evaluate Soil Vapor Extraction (SVE) for potential remediation of the Lower Vadose Zone
  - Baseline sampling and analysis
  - PneuLog concentration profiling of PER-14A and VEL-3 prior to and after the extraction test
  - Soil vapor extraction test
  - SVE modeling to estimate VOC contaminant mass in the Lower Vadose Zone
- Included recommendation for early response action

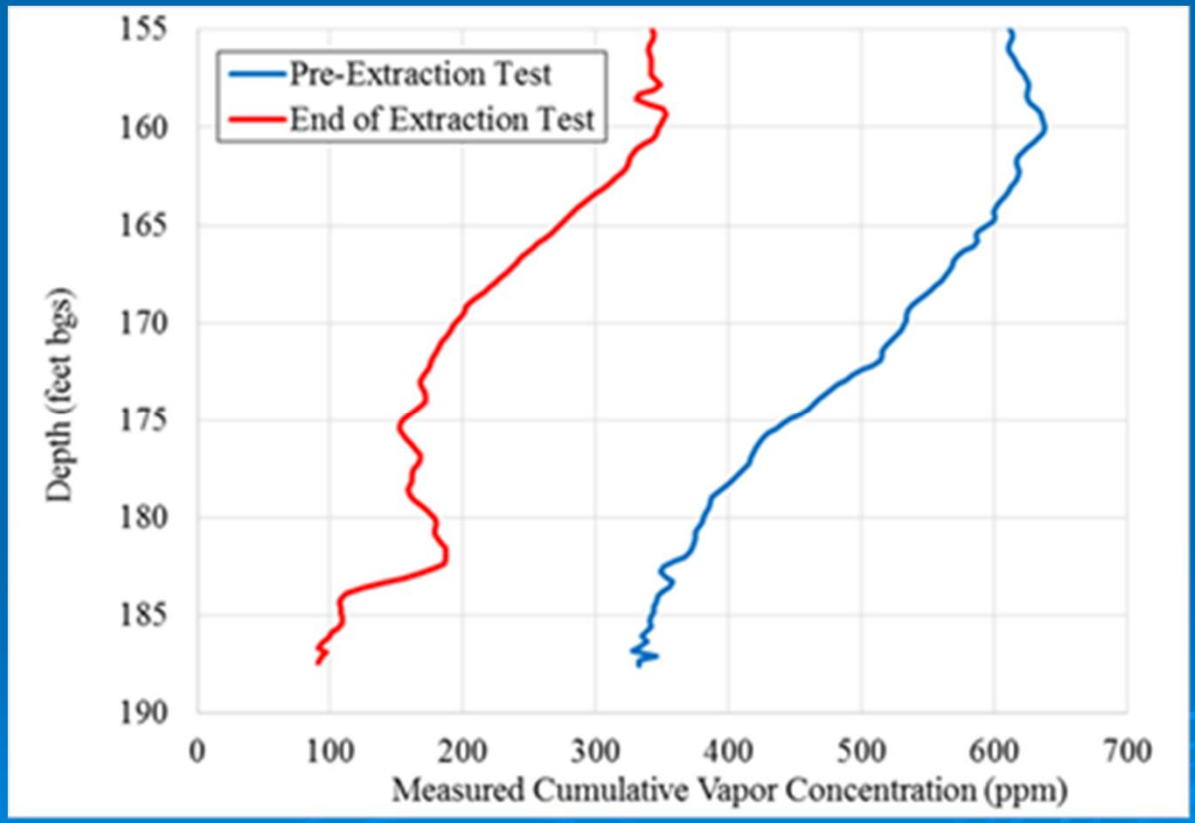
URS

Praxis Pneulog® Assembly



URS

Pre- and Post-Pilot Test Concentration Profile



URS

Perched Aquifer Bioaugmentation Pilot Testing

- Described in work plan dated December 6, 2013
- Evaluate whether DHC is present at the site
- Evaluate the potential for completing the degradation of VOCs by adding cultured DHC
- Included laboratory scale testing of bioaugmentation
- Depending of the results of laboratory test, included contingency for field scale testing
- Samples for laboratory test collected on January 22, 2014

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Perched Aquifer Bioaugmentation Pilot Testing (continued)

- Laboratory study performed from January 31 through July 15, 2014
- Technical Memo dated September 18, 2014
- Cultured DHC accelerated partial anaerobic degradation of VOCs
- Total ethenes did not decrease indicating that complete degradation of VOCs was not achieved.
- Testing was concluded on July 15 and the decision was made not to proceed with field testing.

URS

Regional Monitoring Well Installation and Sampling

- Described in work plan dated June 10, 2014
- Two new monitoring wells to enhance definition of downgradient VOC plume in Regional Aquifer
- Installed between July 28 and August 4, 2014
- Perched Aquifer not encountered in either boring
- Screened from approximately 200 to 290 feet below ground surface
- Initial samples collected from three depths in each well (220, 250, 280)
- Results consistent with previous interpretation

URS

Regional Aquifer Groundwater Modeling

- Proposed modeling described in the Feasibility Study work plan
- Model design modified from numerical model developed for ADEQ by GeoTrans in 2008
- The model was calibrated to existing conditions with focus on estimating hydraulic conductivity distribution in the plume area
- Calibration was performed using four steady state time periods and two transient pumping test data sets

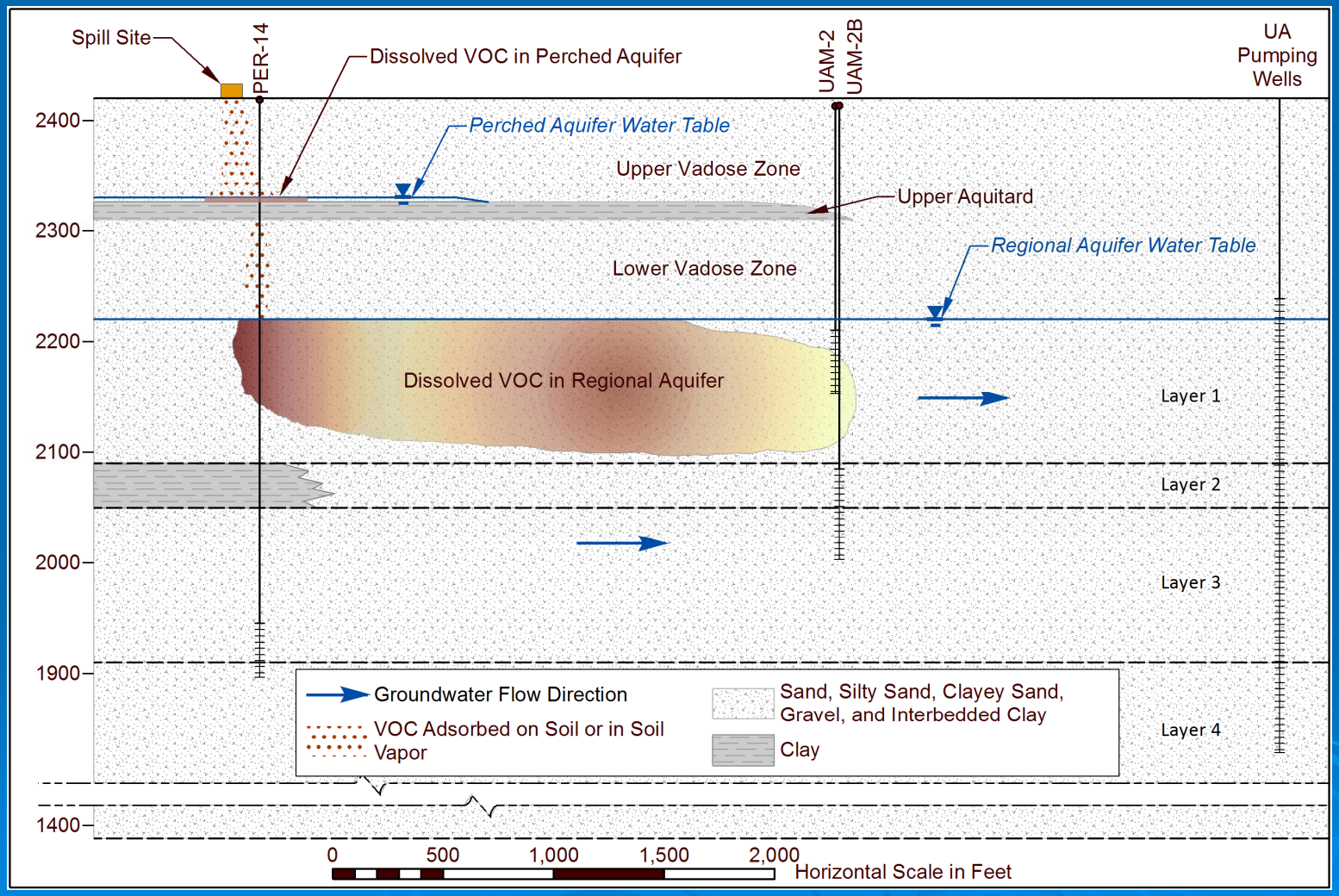
URS

Regional Aquifer Groundwater Modeling (continued)

- Calibrated both horizontal and vertical gradients and improved estimation of hydraulic conductivity distribution
- Reasonably simulated history matching process of Regional Aquifer plume migration
- Currently incorporating 2014 data including new Regional Aquifer wells to improve calibration
- Will use final calibrated model to simulate various remedial alternatives in the Feasibility Study

URS

Conceptual Site Model



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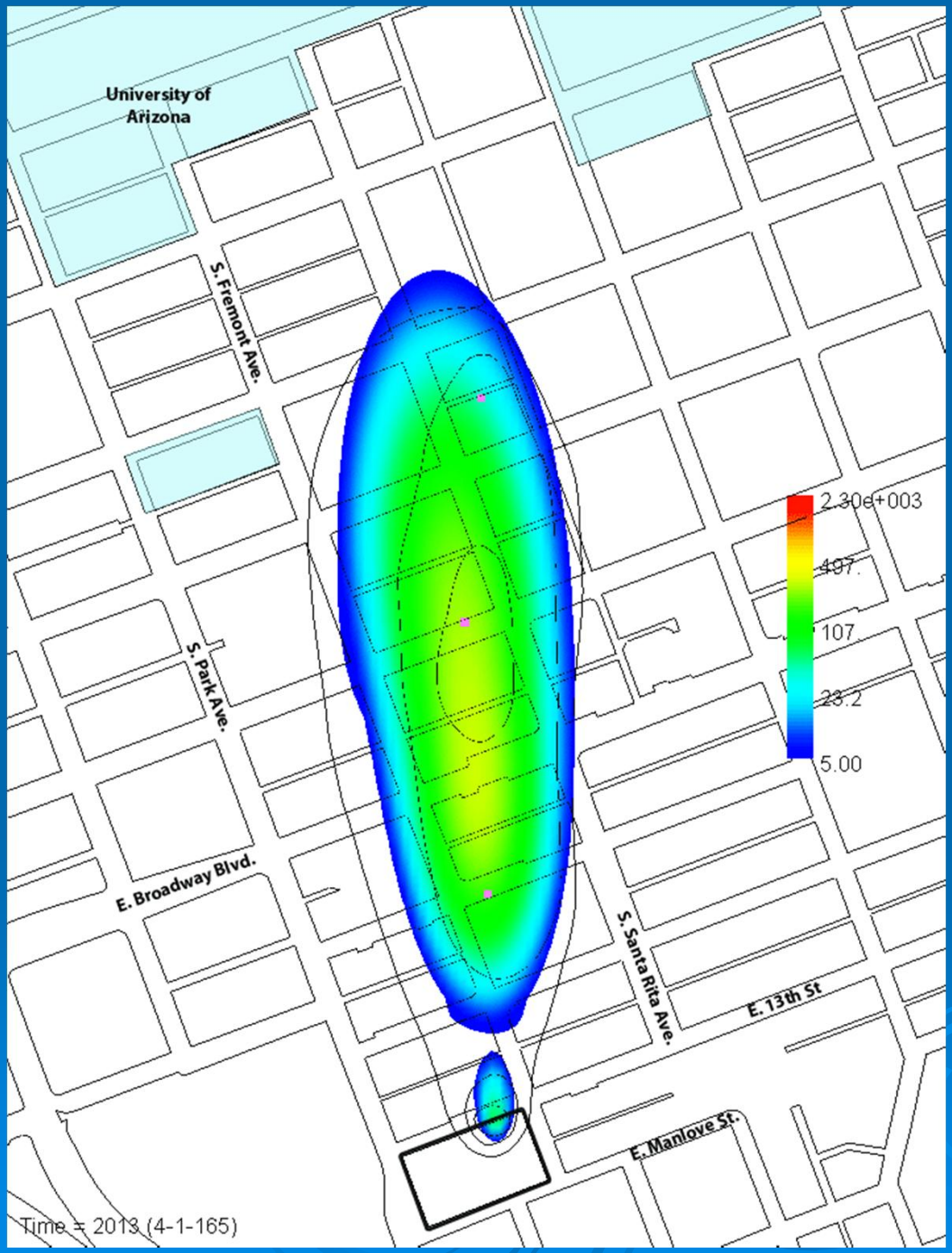
University of Arizona
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S. Park Ave.
E. Broadway Blvd.
S. Santa Rita Ave.
E. 13th St
E. Manlove St.
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107
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5.00
Time = 2013 (4-1-165)

URS

Vapor Intrusion Risk Assessment

- Described in the Feasibility Study Work Plan
- Installation and sampling of five new vapor probes and sampling of seven existing vapor wells (5 feet below ground surface)
- Included initial screening of attenuated soil gas concentrations (April and June, 2014) against USEPA Regional Screening Levels
- Based on conservative screening, PCE and TCE were selected for further evaluation using USEPA's Johnson and Ettinger model
- Maximum detected concentrations (VW-07) modeled using site-specific and default values
- Results compared to residential RSLs
- Draft Risk Assessment Technical Memo prepared and submitted to ADEQ for review

URS

Remedial Objectives (RO)

- *To restore soil conditions to the remediation standards for non-residential use specified in A.A.C. R18-7-203 (specifically background remediation standards prescribed in R18-7-204, predetermined remediation standards prescribed by R18-7-205, or site-specific remediation standards prescribed by R18-7-206 that are applicable to the hazardous substances identified (tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE) and trans-1,2-dichloroethene (trans-1,2-DCE), and vinyl chloride).*
- *To protect for the use of the groundwater supply by the University of Arizona (UA) near the Park-Euclid WQARF site from contamination from the site. This action is needed for the present time and for as long as the UA wells are used for potable purposes, the resource remains available, and their use is threatened as a result of contamination from the Park-Euclid WQARF site. This action is also needed to protect potential future use of the groundwater supply for the City of Tucson, which is not expected within the next five to ten years.*

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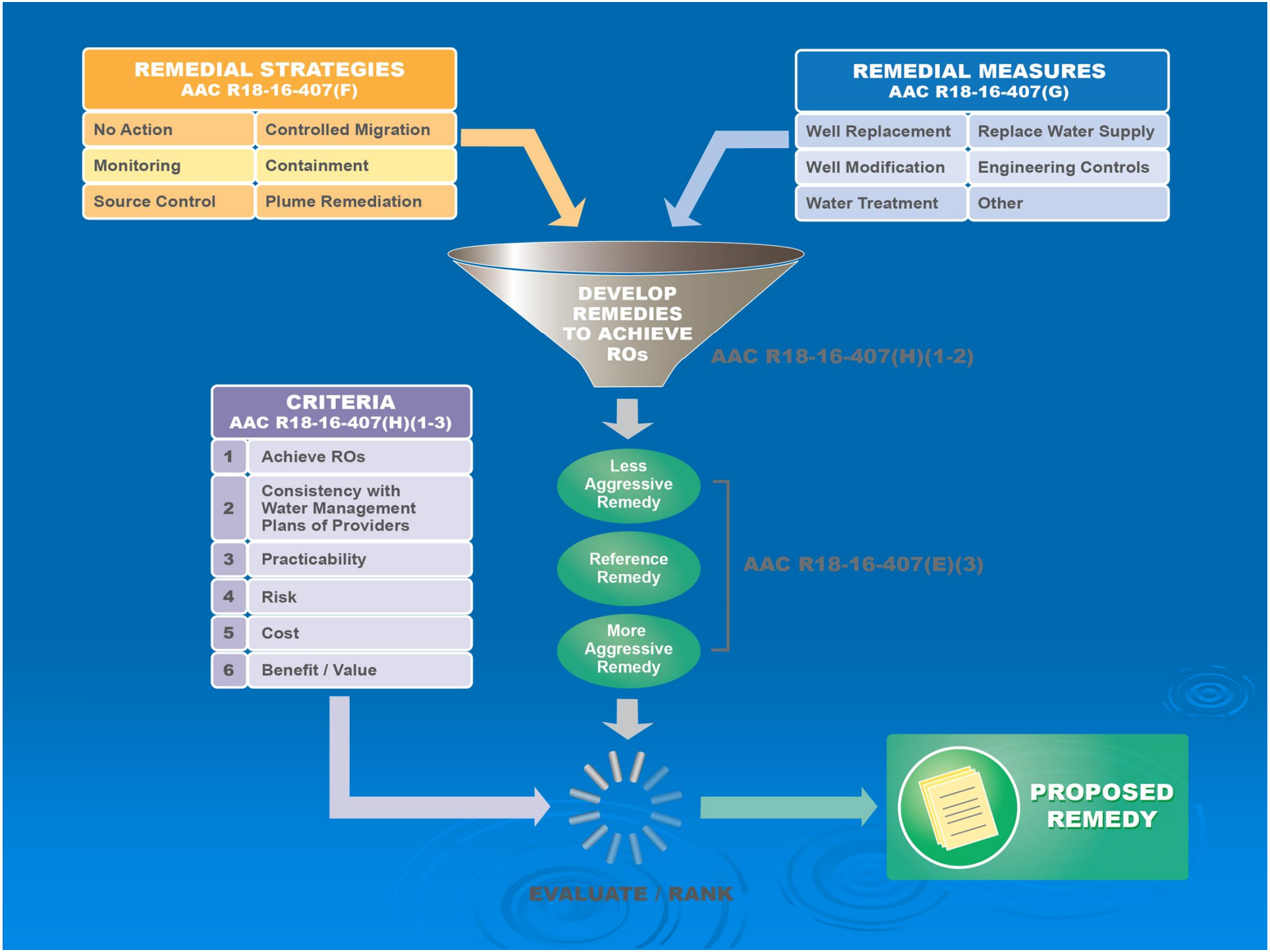
Feasibility Study Requirements

- Consideration of remedial strategies and measures to develop potential remedial alternatives to achieve the remedial objectives
- Development of a reference remedy and two alternative remedies capable of meeting the remedial objectives.
- Each remedy may contain multiple components to address the various hydrogeologic units.
- One alternative remedy will be more aggressive and one alternative less aggressive than the reference remedy.
- Perform comparative analysis of the reference and alternative remedies based on stated criteria.
- A Feasibility Study Report will be prepared that will present the Proposed Remedy.

URS


REMEDIAL STRATEGIES
AAC R18-16-407(F)
No Action
Controlled Migration
Monitoring
Containment
Source Control
Plume Remediation
REMEDIAL MEASURES
AAC R18-16-407(G)
Well Replacement
Replace Water Supply
Well Modification
Engineering Controls
Water Treatment
Other
DEVELOP REMEDIES TO ACHIEVE ROs
AAC R18-16-407(H)(1-2)
CRITERIA
AAC R18-16-407(H)(1-3)
1 Achieve ROs
2 Consistency with Water Management Plans of Providers
3 Practicability
4 Risk
5 Cost
6 Benefit / Value
Less Aggressive Remedy
Reference Remedy
More Aggressive Remedy
AAC R18-16-407(E)(3)
EVALUATE / RANK
PROPOSED REMEDY

Proposed FS Schedule

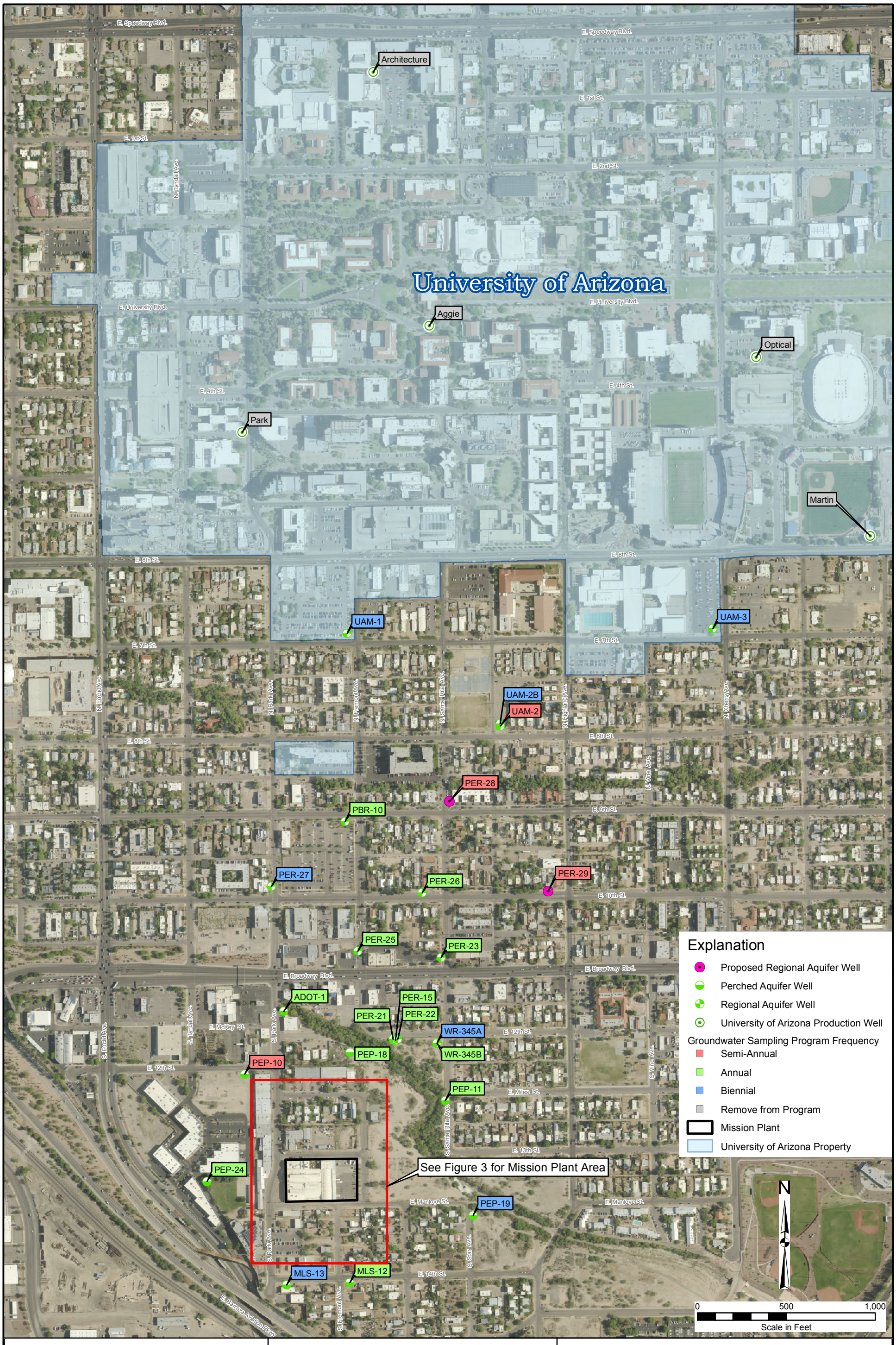
- Develop and Evaluate Alternatives (September – December 2014)
- Develop Remedies and Cost Estimates (December 2014 – January 2015)
- Feasibility Study Report Preparation (January – February 2014)
- ADEQ Review of Draft FS Report (February – March 2015)
- Finalize FS Report (March – April, 2015)
- Submit Feasibility Report (April 2015)

URS

Lower Vadose Zone Early Response Action

- Address LVZ contamination identified in pilot test that may be an immediate threat to regional groundwater
- Described in work plan dated June 4, 2014
- ERA final design currently underway
- Will extract vapors from existing wells PER-14A and VEL-3
- Vapors to be treated using carbon/zeolite filters from MPE system
- Expected to operate for nine months
- Rebound testing following system shutdown
- May be a component of the recommended alternative for the LVZ and Regional Aquifer in the FS

URS



Notes:

Aerial Imagery Source: Orthophoto provided by Pima Association of Governments, Pima County, Arizona, 2010

URS

Project Name: Park-Euclid WQARF Site

Job No: 22241866

Date: June 2014

WELL LOCATIONS AND SAMPLING PROGRAM
PARK-EUCLID WQARF SITE
301 SOUTH PARK AVENUE
TUCSON, ARIZONA

Park_Euclid/Semi_Annual2014April/maps/Fig2_Wells.mxd

Figure 2

Aerial Photography Source: Pima County, Arizona GIS 2010

URS

Project Name: Park-Euclid WQARF Site

Job No: 22241866

Date: June 2014

PLANT AREA WELL LOCATIONS
AND SAMPLING PROGRAM
PARK-EUCLID WQARF SITE
301 SOUTH PARK AVENUE
TUCSON, ARIZONA

Park_Euclid/Semi_Annual2014April/maps/Fig3_Plant_Wells.mxd

Figure 3

Note:

Aerial Imagery Source: Orthophoto provided by Pima Association of Governments, Pima County, Arizona, 2010

URS

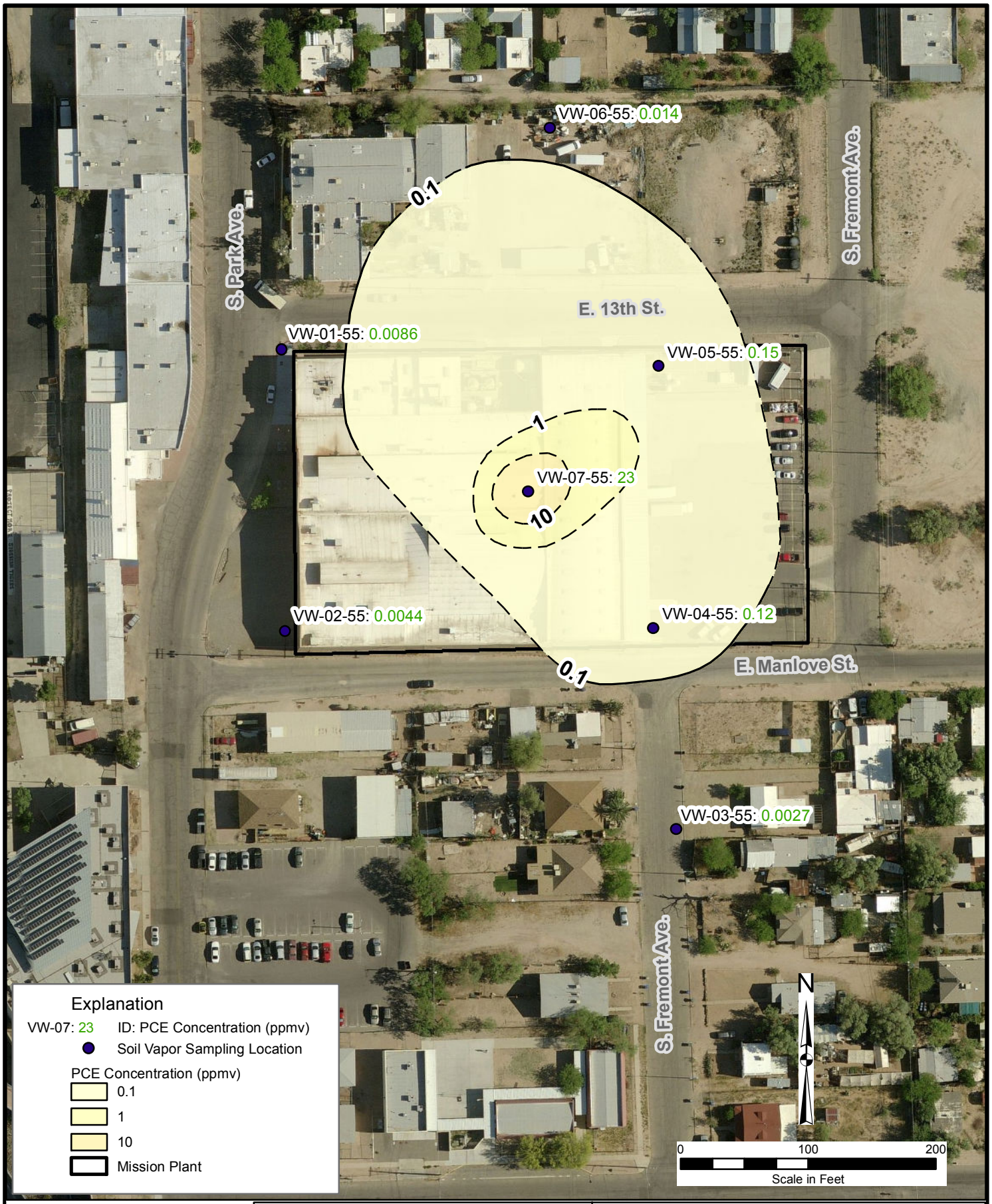
Project Name: Park-Euclid WQARF Site

Job No: 22241866 | Date: June 2014

PCE DISTRIBUTION IN SOIL GAS AT 5 FEET BGS
APRIL 2014
PARK-EUCLID WQARF SITE
TUCSON, ARIZONA

P-E/Semi_Annual_2014Apr/maps/Fig6_SV_PCE_5ft_Apr2014.mxd

Figure 6



Note:

Aerial Imagery Source: Orthophoto provided by Pima Association of Governments, Pima County, Arizona, 2010

URS

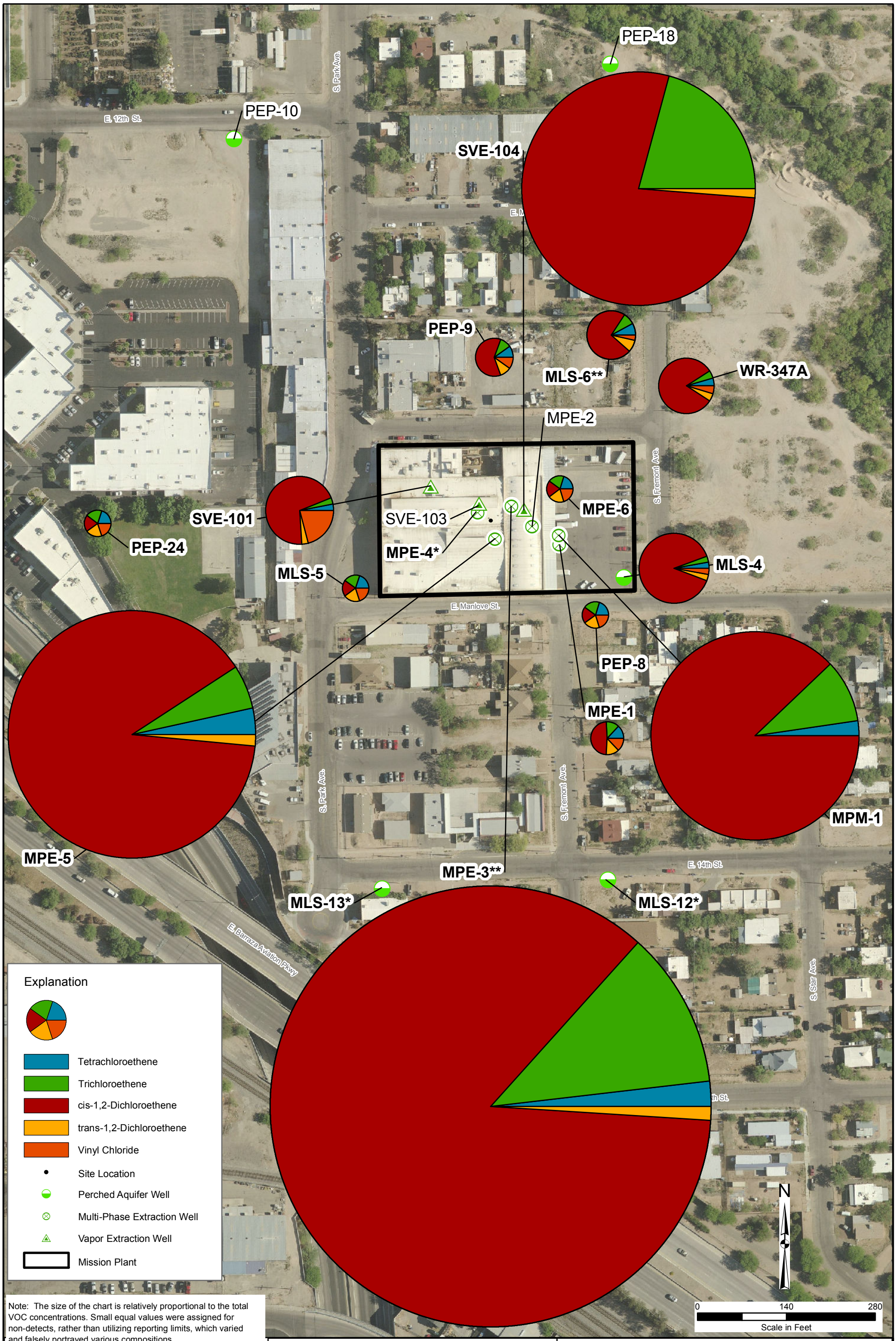
Project Name: Park-Euclid WQARF Site

Job No: 22241866 | Date: June 2014

PCE DISTRIBUTION IN SOIL GAS AT 55 FEET BGS
APRIL 2014
PARK-EUCLID WQARF SITE
TUCSON, ARIZONA

P-E/Semi_Annual_2014Apr/maps/Fig8_SV_PCE_55ft_Apr2014.mxd

Figure 8



Note: The size of the chart is relatively proportional to the total VOC concentrations. Small equal values were assigned for non-detects, rather than utilizing reporting limits, which varied and falsely portrayed various compositions.
* A product sample could not be collected from MPE-4. Product samples are no longer collected from wells MLS-12 and MLS-13.
** A product sample was inadvertently not collected at MLS-6 and MPE-3 in April 2014. Product samples for these two locations were collected in June 2014.
Aerial Imagery Source: Orthophoto provided by Pima Association of Governments, Pima County, Arizona, 2010

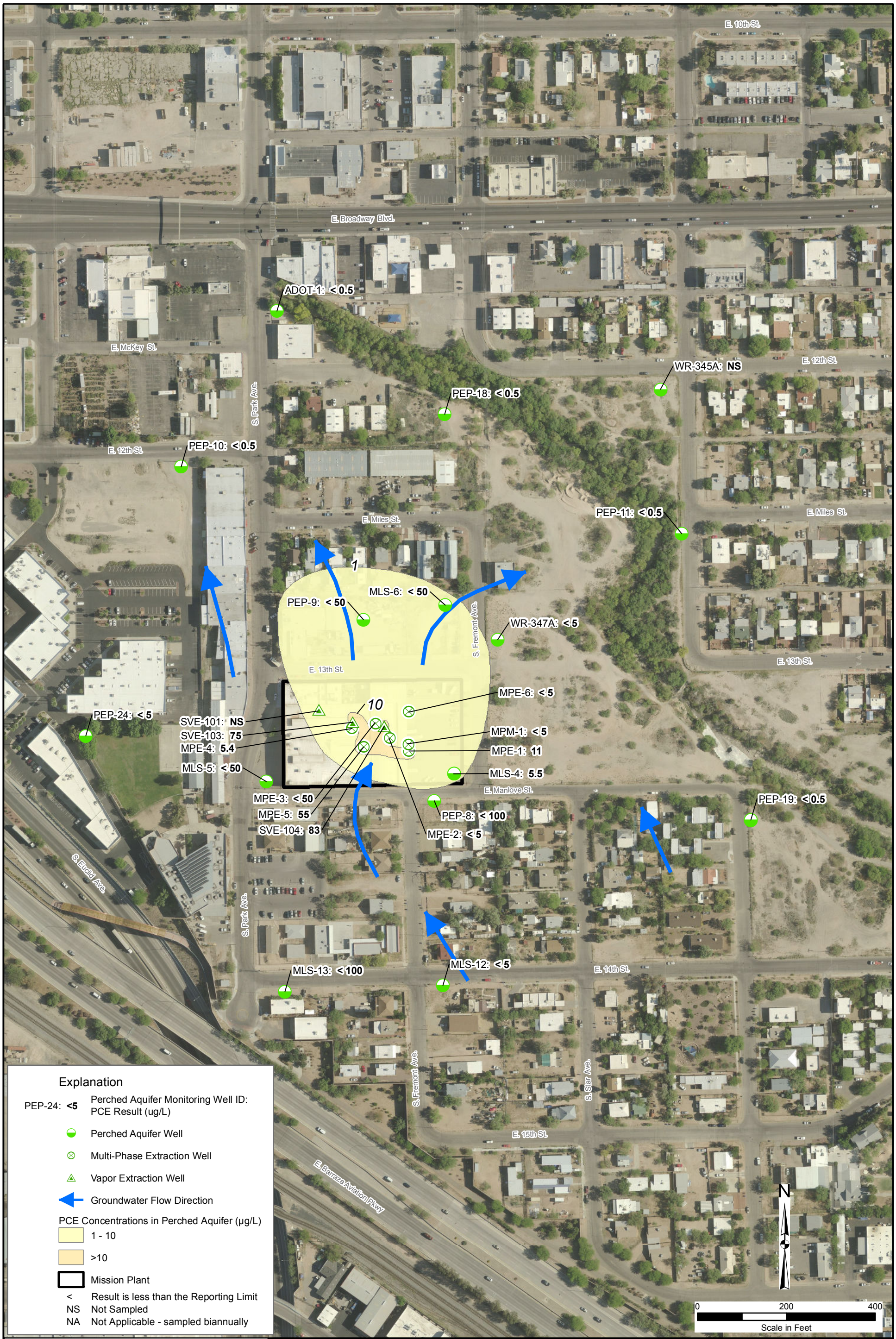
URS

Project Name: Park-Euclid WQARF Site

Job No: 22241866 | Date: June 2014

PCE AND DEGRADATION COMPONENTS IN PRODUCT
APRIL 2014
PARK-EUCLID WQARF SITE
TUCSON, ARIZONA

SemiAnnual_2014Apr/maps/Fig11_PD_PA_pie_charts_AprJune2014.mxd **Figure 11**



Note:

Aerial Imagery Source: Orthophoto provided by Pima Association of Governments, Pima County, Arizona, 2010

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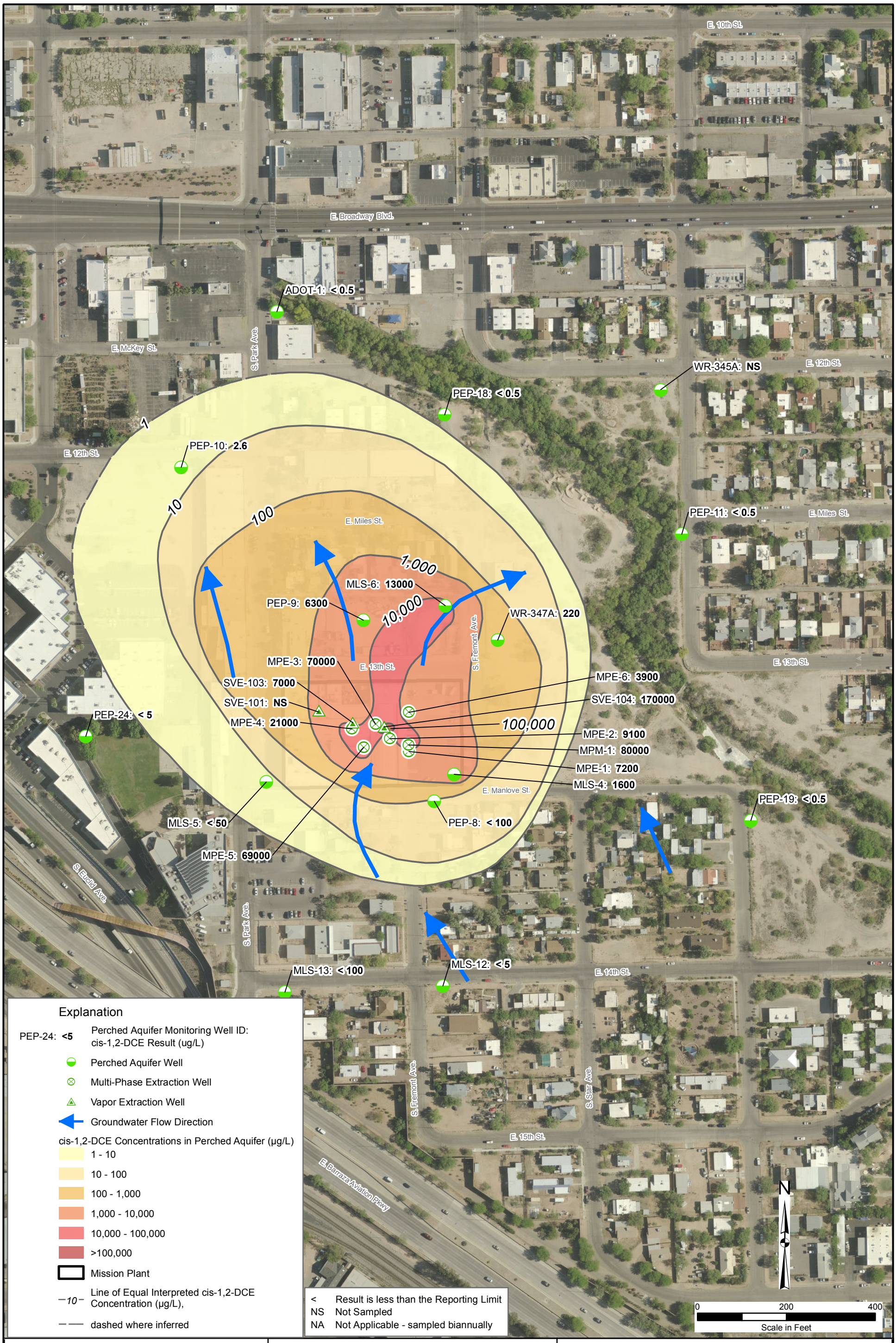
Project Name: Park-Euclid WQARF Site

Job No: 22241866 | Date: June 2014

PCE DISTRIBUTION IN PERCHED GROUNDWATER, APRIL 2014
PARK-EUCLID WQARF SITE
TUCSON, ARIZONA

P-E/Semi_Annual_2014Apr/maps/Fig12_PA_PCE_Apr2014.mxd

Figure 12



Note:
The cDCE detection at MLS-12 is believed to be anomalous as it is located upgradient and has historically not detected PCE and its degradation products. Therefore, it was not used in the interpretaton of the cDCE distribution for August 2013.
Aerial Imagery Source: Orthophoto provided by Pima Association of Governments, Pima County, Arizona, 2010

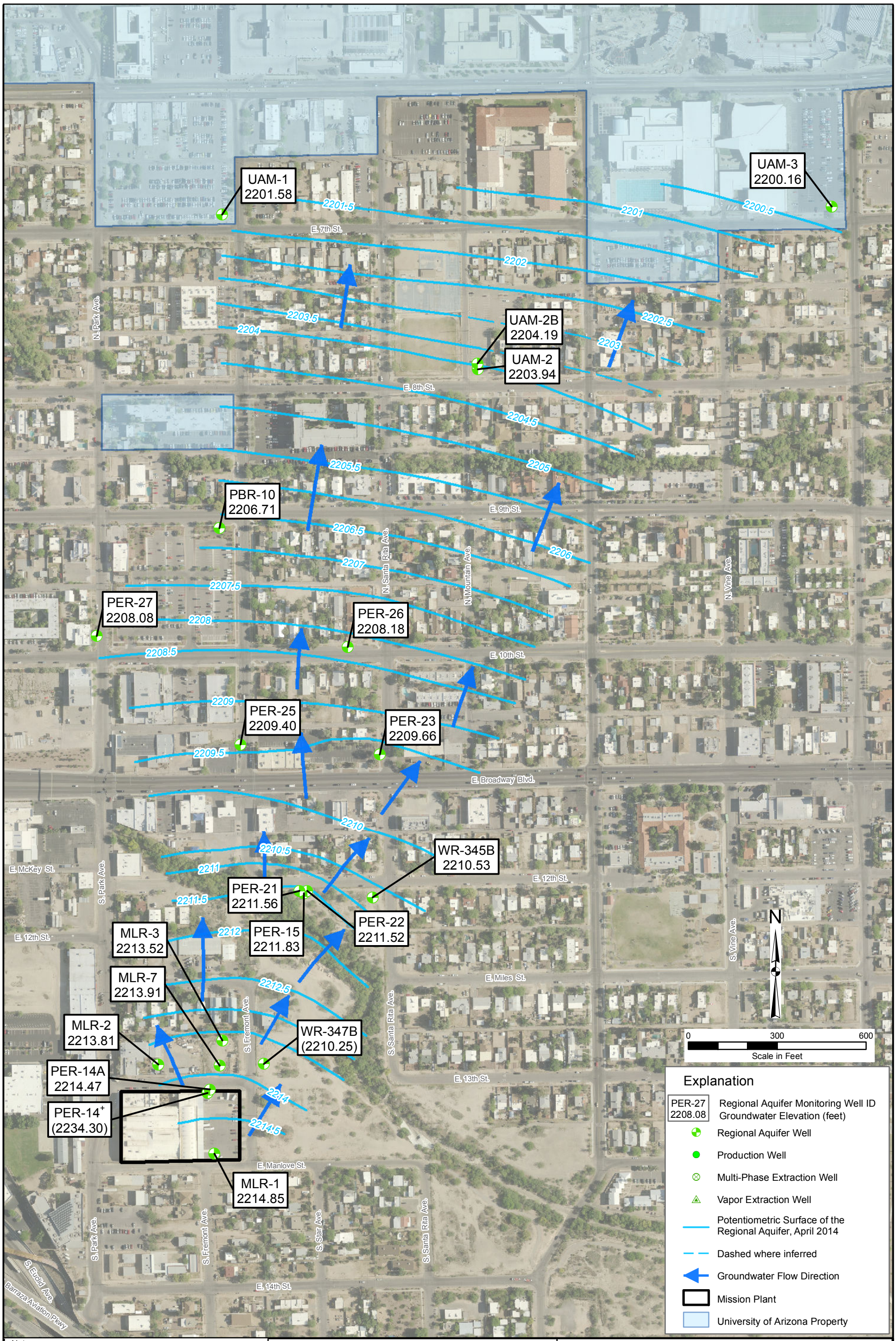
URS

Project Name: Park-Euclid WQARF Site

Job No: 22241866 | Date: June 2014

cis-1,2-DCE DISTRIBUTION IN PERCHED GROUNDWATER
APRIL 2014
PARK-EUCLID WQARF SITE
TUCSON, ARIZONA

P-E/Semi_Annual_2014Apr/maps/Fig14_PA_cis12DCE_Apr2014.mxd **Figure 14**



Note:
( ) Data point omitted in developing the potentiometric surface as it is anomalous with nearby wells.
+ PER-14 is screened in a deeper zone than surrounding wells.

Aerial Imagery Source: Orthophoto provided by Pima Association of Governments, Pima County, Arizona, 2010

URS

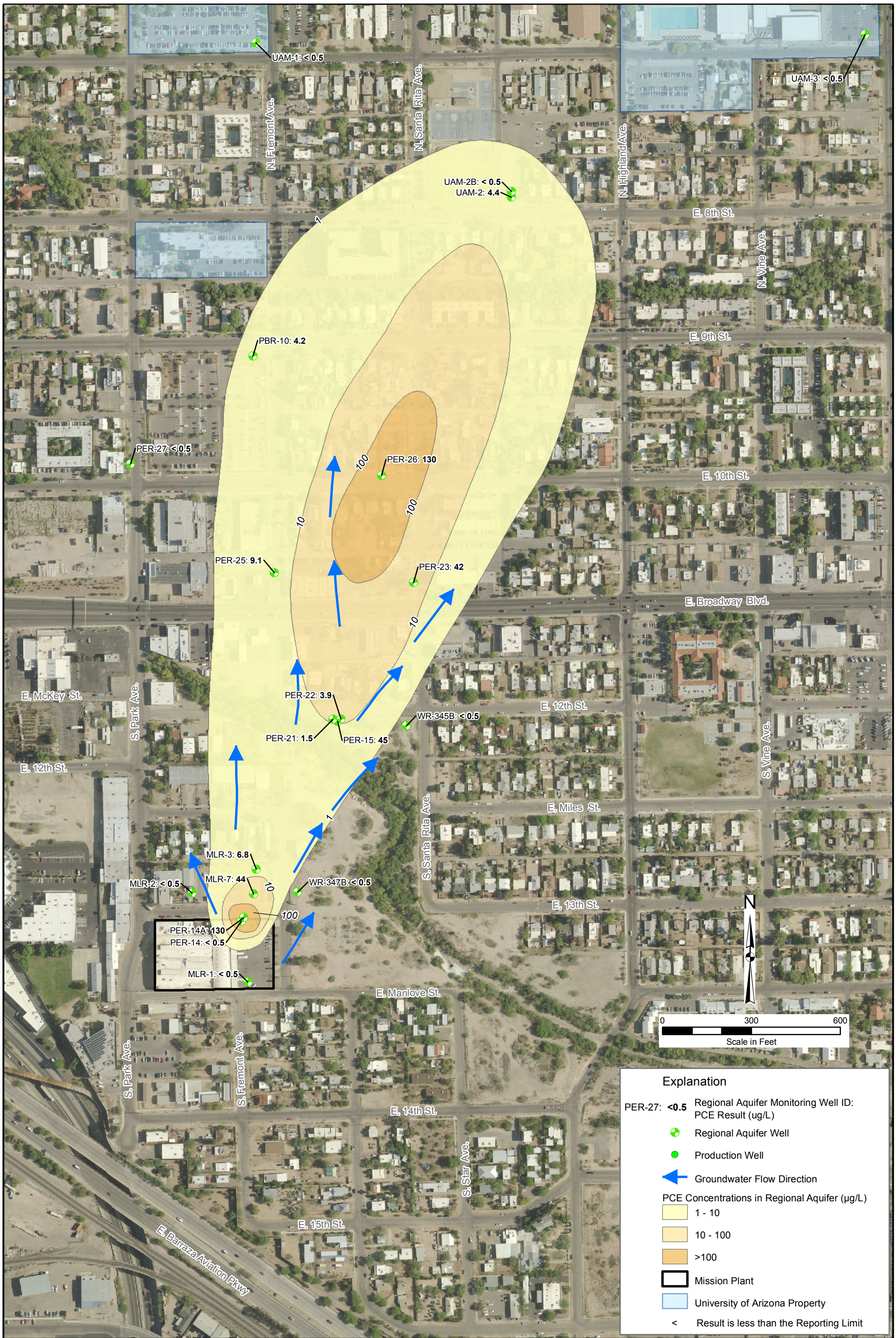
Project Name: Park-Euclid WQARF Site

Job No: 22241866 | Date: June 2014

REGIONAL AQUIFER POTENTIOMETRIC MAP
APRIL 2014
PARK-EUCLID WQARF SITE
TUCSON, ARIZONA

Semi_Annual_2014Apr/maps/Fig5_RA_pot_Apr2014.mxd

Figure 5



Note:

Aerial Imagery Source: Orthophoto provided by Pima Association of Governments, Pima County, Arizona, 2010

URS

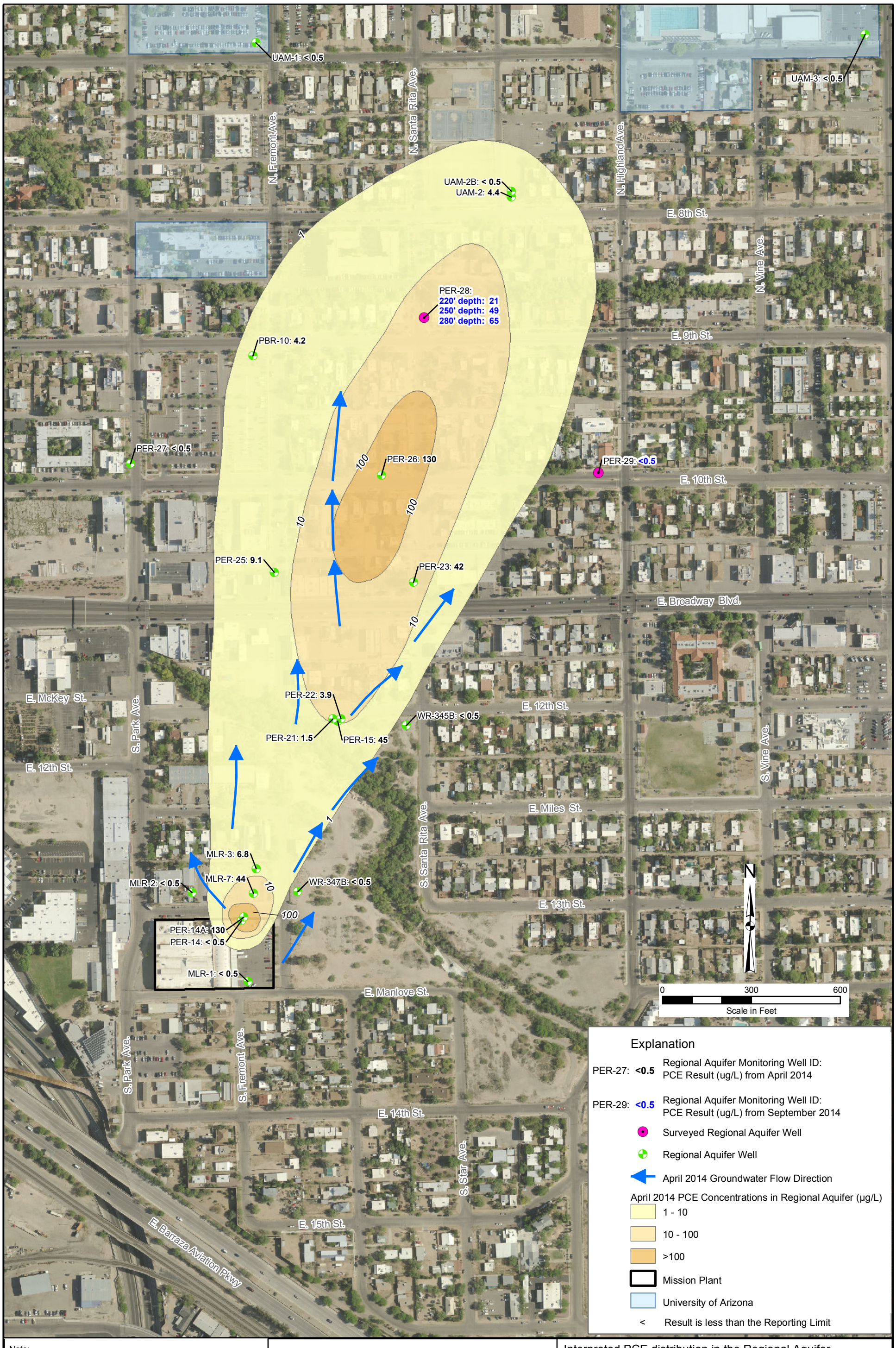
Project Name: Park-Euclid WQARF Site

Job No: 22241866 | Date: June 2014

PCE DISTRIBUTION IN REGIONAL GROUNDWATER, APRIL 2014
PARK-EUCLID WQARF SITE
TUCSON, ARIZONA

P-E/Semi_Annual_2014Apr/maps/Fig16_RA_PCE_Apr2014.mxd

Figure 16



Note:

Aerial Imagery Source: Orthophoto provided by Pima Association of Governments, Pima County, Arizona, 2010

URS

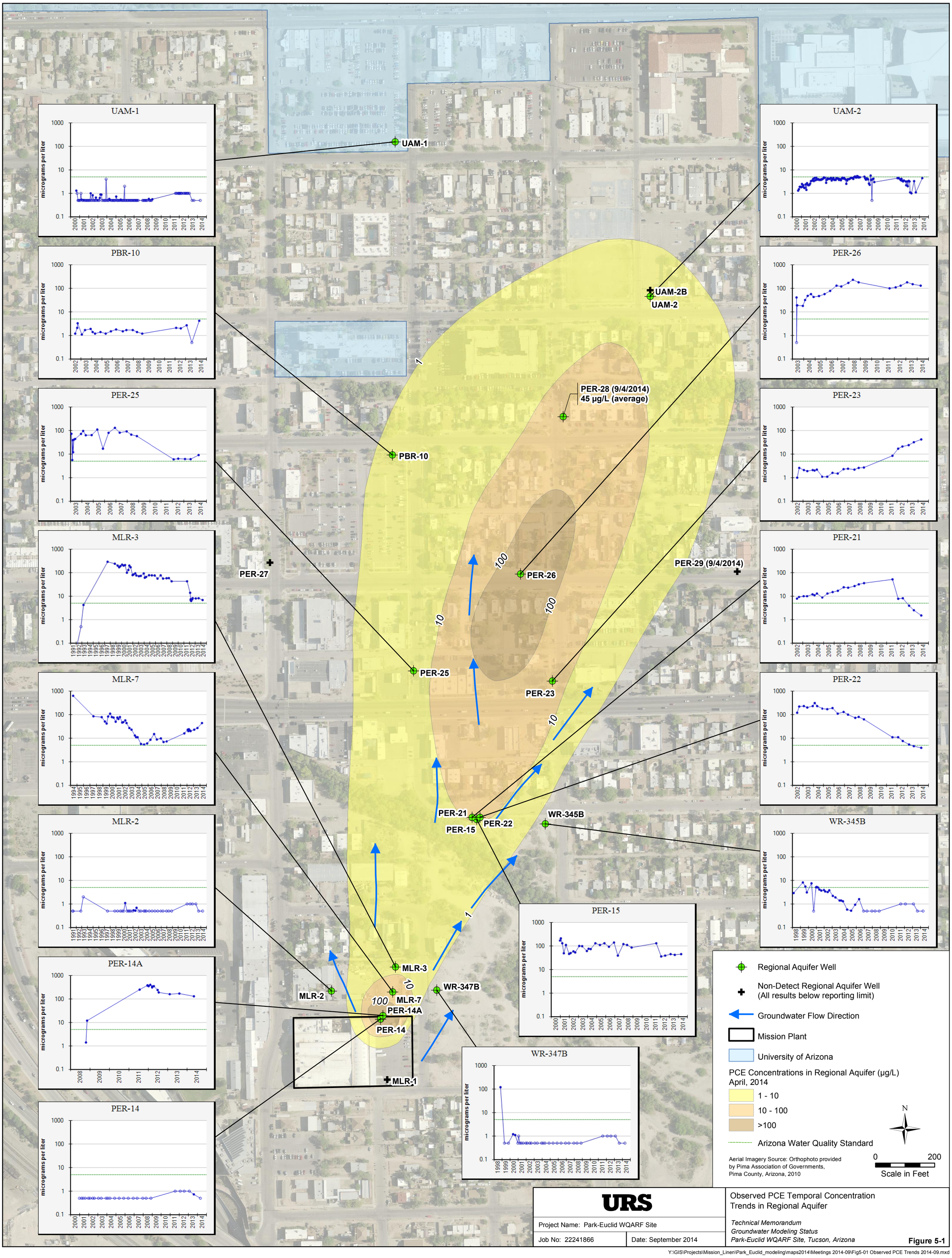
Project Name: Park-Euclid WQARF Site

Job No: 22241866

Date: September 2014

Interpreted PCE distribution in the Regional Aquifer
April and September, 2014
Park – Euclid WQARF Site
Tucson, Arizona

P-E/Projects14/June2014_Sampling/MtgFig_RA_PCE_Apr2014surv_locs.mxd


UAM-1
UAM-2B
UAM-2
PBR-10
PER-28 (9/4/2014)
45 µg/L (average)
PER-27
PER-26
PER-29 (9/4/2014)
PER-25
PER-23
PER-21
PER-22
PER-15
WR-345B
MLR-3
WR-347B
MLR-2
MLR-7
PER-14A
PER-14
MLR-1
100
10
1
UAM-1
UAM-2
PBR-10
PER-26
PER-25
PER-23
PER-21
PER-22
PER-15
WR-345B
MLR-3
WR-347B
MLR-2
MLR-7
PER-14A
PER-14
micrograms per liter
Regional Aquifer Well
Non-Detect Regional Aquifer Well
(All results below reporting limit)
Groundwater Flow Direction
Mission Plant
University of Arizona
PCE Concentrations in Regional Aquifer (µg/L)
April, 2014
1 - 10
10 - 100
>100
Arizona Water Quality Standard
N
Aerial Imagery Source: Orthophoto provided by Pima Association of Governments, Pima County, Arizona, 2010
0
200
Scale in Feet
URS
Project Name: Park-Euclid WQARF Site
Job No: 22241866
Date: September 2014
Observed PCE Temporal Concentration Trends in Regional Aquifer
Technical Memorandum
Groundwater Modeling Status
Park-Euclid WQARF Site, Tucson, Arizona
Figure 5-1
Y:\GIS\Projects\Mission_Linen\Park_Euclid_modeling\maps2014\Meetings 2014-09\Fig5-01 Observed PCE Trends 2014-09.mxd