MEETING MINUTES

RPU #13-237

Phoenix-Goodyear Airport (PGA) Area/Western Avenue Plume
Community Advisory Group (CAG) Meeting

Thursday, August 2, 2012 at 6:00 p.m. to 8:30 p.m.
Goodyear City Hall, Room 117
190 N. Litchfield Rd., Goodyear, AZ 85338

FINAL MINUTES

CAG Members in Attendance:
Diane Krone
Lisa Amos
Jeff Raible-Co-chair
David Ellis
Karl Havlicek - Alternate
Frank Scott – Co-chair

ADEQ Staff in Attendance:
Delfina Olivarez, Western Avenue Project Manager
Travis Barnum, Project Manager
Nicole Coronado, Project Manager
Tina LePage, Remedial Projects Section Manager
Andre Chiaradia, Project Manager

Facilitator:
Marty Rozelle

EPA Staff in Attendance:
Glen Bruck

Others in Attendance:
Mary Moore; Brian Waggle; Michael Long; Shaun Rachau; Tom Suriano, Clear Creek Association; Mario Saldamando; Nadine Johnson, Environmental Community Outreach (ECO) Association; Scott Zachary; Chris Legg; Ailiang Gu, ITSI Gilbane; Ron Cirril; Nimisha Patel; Joe Husband, Phoenix-Goodyear Airport; Julie Riemanschneider, COP; Jeff Littell; Jerry Postema, City of Goodyear Public Works; Harry Brenton, Matrix New World Engineering; Stephanie Lyn Koehne, AMEC Geomatrix Inc; Jeff Sussman, Goodyear Tire & Rubber Company; Jim Creedon, Crane Company for City of Litchfield Park; Randy McElroy, ECO/TA, Sandra Rode, City of Goodyear

CAG Business

Welcome and Introductions – Ms. Marty Roselle, started the meeting and introductions were made by CAG Members and audience. Mr. Chiaradia announced that the new Community Involvement Coordinator for Western Avenue will be Wendy Flood.

Acceptance and/or changes to minutes of May 3, 2012 - Mr. Raible moved to accept the May 3, 2012 minutes; unanimous approval with a change to the typo on page 2.

Technical Meeting Recap – Mr. Jeff Raible, CAG Co-chair, asked about minutes of Technical Meeting of July 14th. Dr. Rozelle stated that Technical Meeting Minutes were on the table.

Co-Chair Jeff Raible also reported to the CAG the concerns regarding EPA participation and engagement with the CAG expressed during the Technical Meeting of July 14th had been relayed to the EPA Project Manager, Ms. Catherine Brown, by ADEQ. The concern expressed at the meeting was that EPA was not as engaged as they had been previously; the CAG had questions regarding EPA's priorities regarding PGA and asked how PGA priorities and progress compared to other EPA superfund sites. Subsequently, Ms. Brown had responded to the CAG by e-mail and would provide the answers to the CAG. Mr. Raible indicated that he believed EPA had responded to the issue appropriately and looked forward to the additional information and working with EPA.

A CAG member wanted to put a discussion on the agenda for the November meeting with regard to the continued use of the facilitator.

CAG Co-chairs brought up the open law meeting law and shared their training through current council training and membership.

Technical Assistance Grant (TAG) Report – Mr. Randy McElroy and Ms. Nadine Johnson, Environmental Community Outreach Association (ECO) made a report on ECO activities that included solidifying their partnership with Estrella Mountain College and the production of the first article in July. The TAG continues to coordinate with other organizations that are doing outreach work and intends to produce an article every other month. TAG outreach efforts were noted in the West Valley View articles. The TAG has started work on the annual event with EPA that is planned for October 17th, as well as other fall events. More information will follow once more details are defined.

PGA-South Site: Jeff Sussman of Goodyear Tire & Rubber Company

PGA South gave a quarterly update on groundwater monitoring and updates on current and future activities.

See slide presentation attached

Update of PGA-North Site: Stephanie Lyn Koehne AMEC Geomatrix, Inc., Project Manager and Harry Brenton Project Hydrogeologist, MatrixNeworld, Inc.
PGA North gave a quarterly update on groundwater monitoring and updates on current and future activities; including an estimated 5-year work plan/strategy for the site.

See updated slide presentation attached

A CAG member asked questions regarding the movement of the plume in the northeast portion of the site. There were additional questions about what part of the plume would not be pumped by the municipal production wells, the depth that production wells were screened compared to the plume and if any attempts had been made to prevent the plume potentially contaminating potable water wells in that area.

AMEC representatives responded that the production wells to the northeast are Avondale wells, such as drinking well COA-18. Most of the water supply for these wells comes from Subunit C and the Middle Alluvial Unit. The groundwater mound created by the injection wells caused the water on the west side of the mound to flow west and on the east side of the mound to flow east. The injection is designed to keep the plume away from the production wells, the extraction wells and injection wells installed in the area are containing the plume and protecting the potable water supply wells.

CAG members asked about the selection process for the pipeline for EA-08 and if AMEC had begun treating that well. AMEC responded that the well was operating and the treated water was being discharged to the RID canal however, the plan is to put some injection wells in the area to the northwest of EA-08.

A CAG member asked if this plume contamination is not a concern to the potable water in the northwest area because of the elevation, as opposed to the potable water wells and the direction it is going, will it contaminate groundwater to the northwest when it comes into contact with it and if not why was it an issue. An EPA representative responded that it is considered an issue because groundwater in the area of the plume contains VOCs above the MCL and it requires treatment or containment. The CAG member further clarified that there are currently no potable water wells to the northwest of the plume and as long as the plume is moving to the northwest instead of northeast the potable water well system is protected. Another CAG member agreed and indicated that the reason most of the potable wells are located to the northeast is that water quality is better in that area than in the northwest.

AMEC stated that containment is important because groundwater in the area of the plume contains VOCs above the MCL and requires treatment and/or containment. AMEC is moving forward with putting remedies in place that continue to shrink the plume, as they are doing in the Northeast area. In the last 3 years, AMEC has installed 5 new injection wells and an extraction well to contain and ultimately shrink that area of the plume. The next area reviewed was MW-51-A. AMEC was immediately tasked to install a treatment system and contain that section of the plume. To that end, they installed EA-08 for immediate treatment and continue with their long term plan to contain the plume on the northwestern side, similar to the northeastern side. In May 2012, AMEC submitted a work plan to take the water from extraction well EA-08 down to the 33-A treatment due to the large capacity of that treatment facility and install injection wells along the northwest border. A key element to determining the best location for the injection wells was getting MW-51A installed.

AMEC further stated that they were asked look at areas that were not fully contained and start focusing on how AMEC is going to move forward with putting remedies in place and continue to shrink the plume as is being done in the Northeast area.

AMEC indicated that they looked at different areas where capture was not complete and in the last 3 years have installed 5 new injection wells and an extraction well to contain that side of the plume and ultimately shrink it. Additionally, starting late last year work was initiated in the area south of I-10 to increase pumping rates at extraction well MW-29 and EA-02 by constructing separate pipelines to these wells and that the work is still on-going.

A CAG member asked about the piping from EA-02 and MW-29. AMEC indicated that the piping construction is ongoing and that currently the piping from EA-02 is in place. AMEC also stated that they were working on an access agreement with the railroad for piping from Fillmore to Van Buren as that section needs to be completed. A CAG member asked if AMEC was participating in the acquisition of the agreement and they stated yes.

AMEC has also been working on additional characterization in Subunit C, south of I-10. Five subunit C wells have been installed over the last 6 months, south of I-10 in order to refine and define where the sub unit C contamination is located. That data will be put into the groundwater flow model to determine the best location for extraction and injection wells in the future.

A CAG member asked for confirmation that the plume movement was due to gravity and if it was moving to the northwest. AMEC indicated that yes the plume movement was due to groundwater transport and gravity was the driving force.

An audience member asked why the copies of the slide presentation provided at the meeting were different than the slide presentation. AMEC staff explained that the presentation had been updated since it was submitted and going forward, it would ensure that last minute updates would be mentioned at the beginning of their presentation and updated copies would be made available for distribution.

The same audience member commented on the timing of the Source Area Focused Feasibility Study and suggested that the CAG monitor the timing of the submission of the document so that the CAG could get an opportunity to review and submit comments within the required timeframes.

ADEQ Report on Western Avenue (WA) WQARF site: Delfina Olivarez, ADEQ Project Manager

Western Avenue gave a quarterly update on groundwater monitoring and the Feasibility Study Work Plan.

See slide presentation attached

The CAG members asked questions regarding the fluctuations in PCE concentrations at City of Goodyear well COG-1. The ADEQ Project Manager and WQARF Unit Manager discussed theories regarding the fluctuations in concentrations of PCE at City of Goodyear well COG-1 and indicated that additional investigations are planned to better understand the periodic fluctuations and stressed that concentrations have remained below the MCL.

An audience member asked about the comment period for the Feasibility Study Work Plan. The ADEQ Project Manager and WQARF Unit Manager explained that there is no formal comment period for the Work Plan.

Land Between the Sites Study: Dr. Ailiang Gu of ITSI, EPA's Consultant Presenter

See slide presentation attached

A CAG member asked about the PCE source. The ITSI stated that it does not come from PGA North. However, there is not enough evidence to determine if the PCE is from Western Avenue. He also stated that there was not enough evidence to determine the source. There was also a discussion regarding the conclusion that Well COG-5 is a conduit well. The EPA representative reaffirmed that COG-5 is a conduit well. However, there is no TCE in Subunit A groundwater in the area of COG-5 so there is currently no TCE leaking through COG-5.

After the presentation the CAG wanted to take time to review all the presented data and then have a question and answer period at the next CAG meeting.

Future Meeting and Agenda Items Discussion

The next CAG meeting will be held on Thursday, November 8th beginning at 6:00 p.m. at the Goodyear City Hall. Suggested agenda items include: Open meeting law, a review of the CAG charter, role of the facilitator, future technical meeting dates, Western Avenue Feasibility Work Plan, predictive model update for PGA South, timing issue to public for alternative selection process, and EPA's open house date.

Adjournment

Phoenix Goodyear Airport-South Project Site Status Report

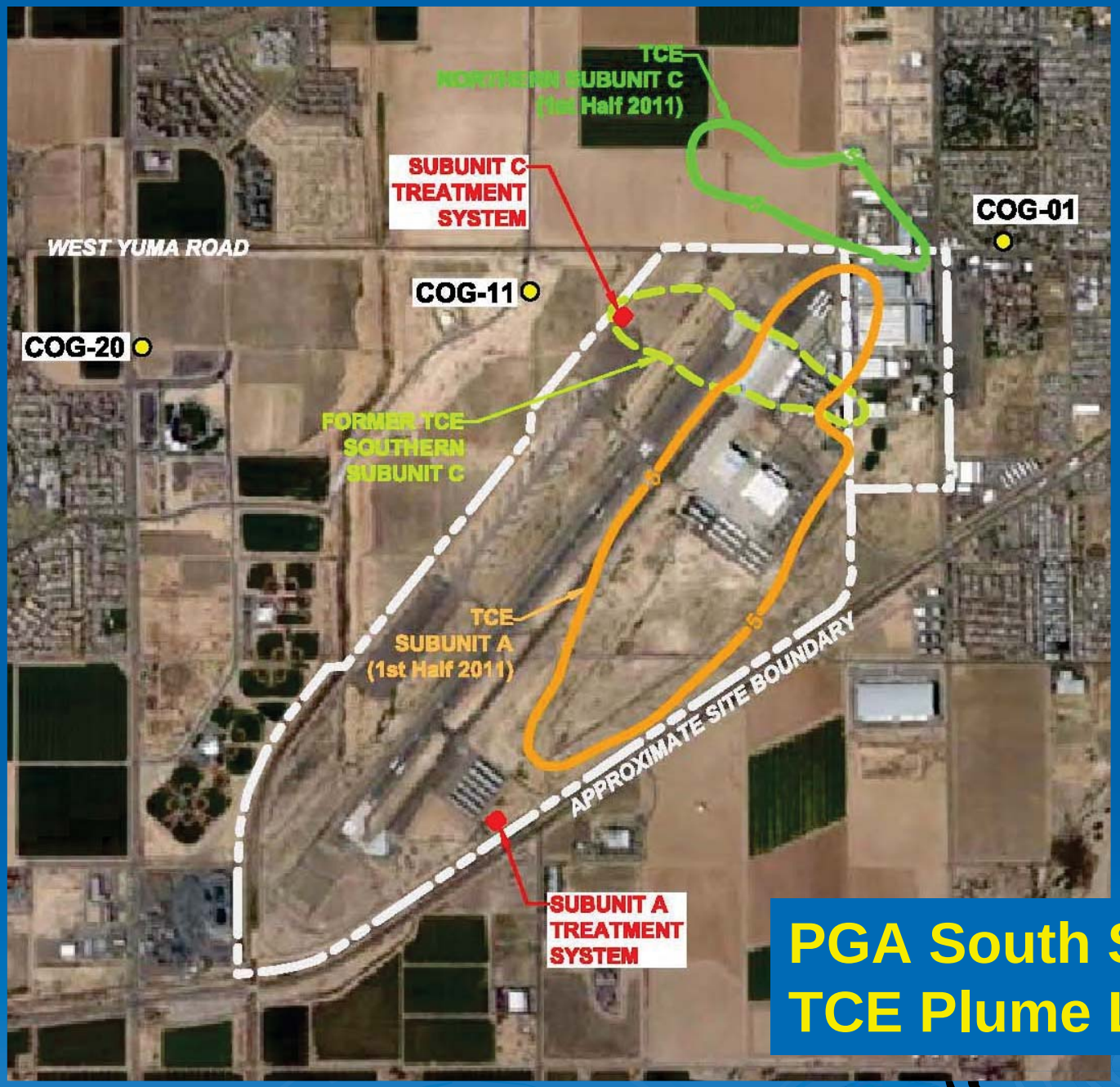
Community Advisory Group Meeting

August 2, 2012

Jeffery Sussman
Remediation Manager
The Goodyear Tire & Rubber Company

Agenda

- PGA South Site – Plume Locations
- Update Status of Ongoing Cleanup
- Review Current Activities
- Upcoming Activities



PGA South Site
TCE Plume Locations

GOODYEAR

TRC

Current Plume Details

Subunit A Plume

- 12 Extraction Wells (7 actively pumping)
- 39 Wells Monitored Currently
- 377 Gallon Per Minute (GPM) Extraction Rate

Southern Subunit C Plume

- 3 Extraction Wells (no current groundwater extraction)
- 16 Wells Monitored Currently
- 0 GPM Extraction Rate

Northern Subunit C Plume

- 1 Extraction Well
- 14 Wells Monitored Currently
- 216 GPM Extraction Rate

GOODYEAR

TRC

PGA South
Review of Current Activities

- Status of PGAS Clean-Up
- Monitoring of Southern Subunit C TCE Plume
- Monitoring of Northern Subunit C TCE Plume
- GAC–04 Well Abandonment

GOODYEAR

TRC

Status of Ongoing Cleanup

Subunit A Aquifer

- Peak TCE concentrations in monitoring wells have declined from 2,600 µg/L in 1990 to 240 µg/L in May 2012
- Treatment System Uptime during 2nd Quarter of 2012 was 92.5%

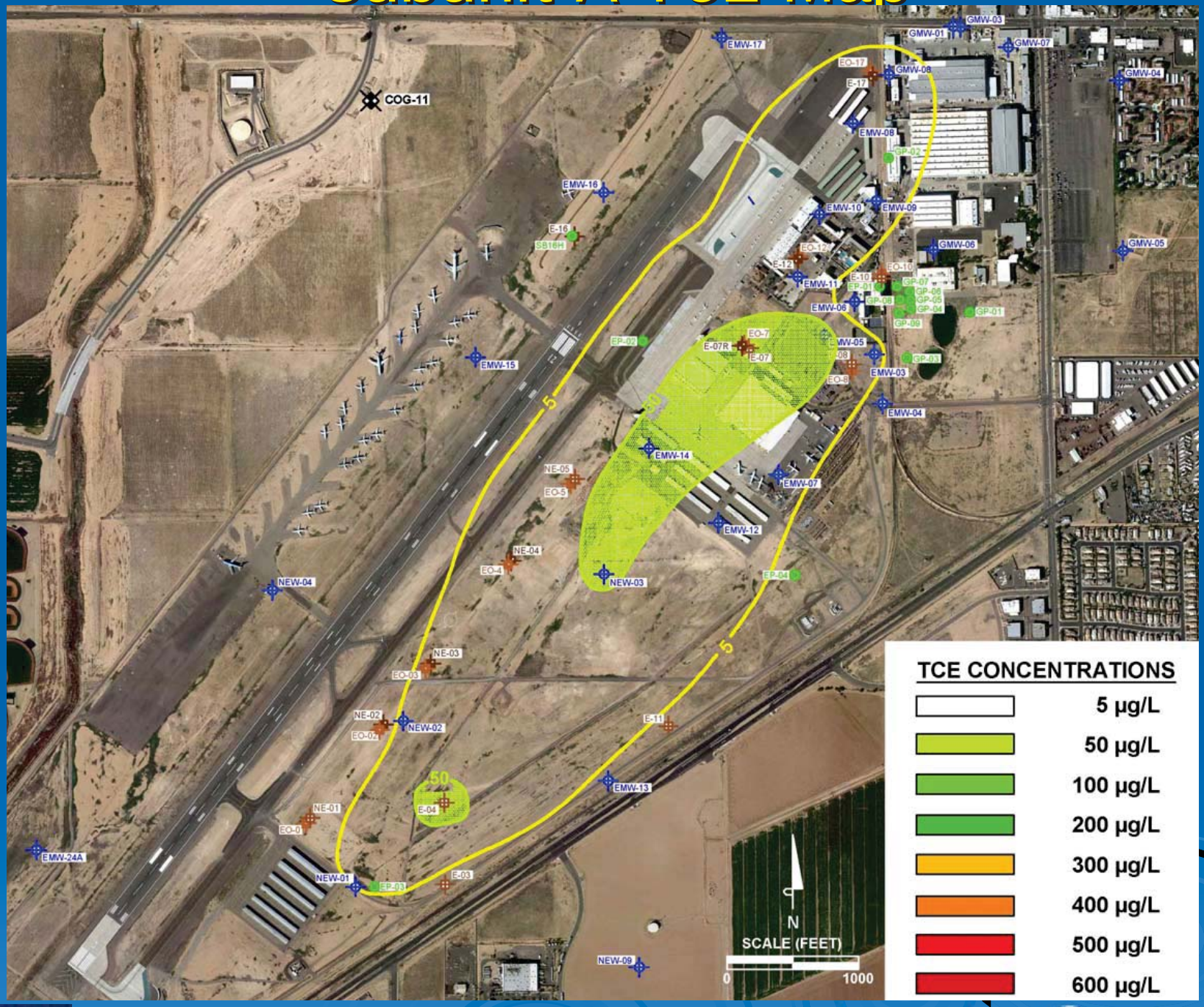
Subunit C Aquifer

- Peak TCE concentrations in Northern Subunit C monitoring wells have declined from 180 µg/L in 1990 to 91 µg/L in May 2012
- Treatment System Uptime during 2nd Quarter of 2012 was 99.9 %

GOODYEAR

TRC

Subunit A TCE Map



GOODYEAR

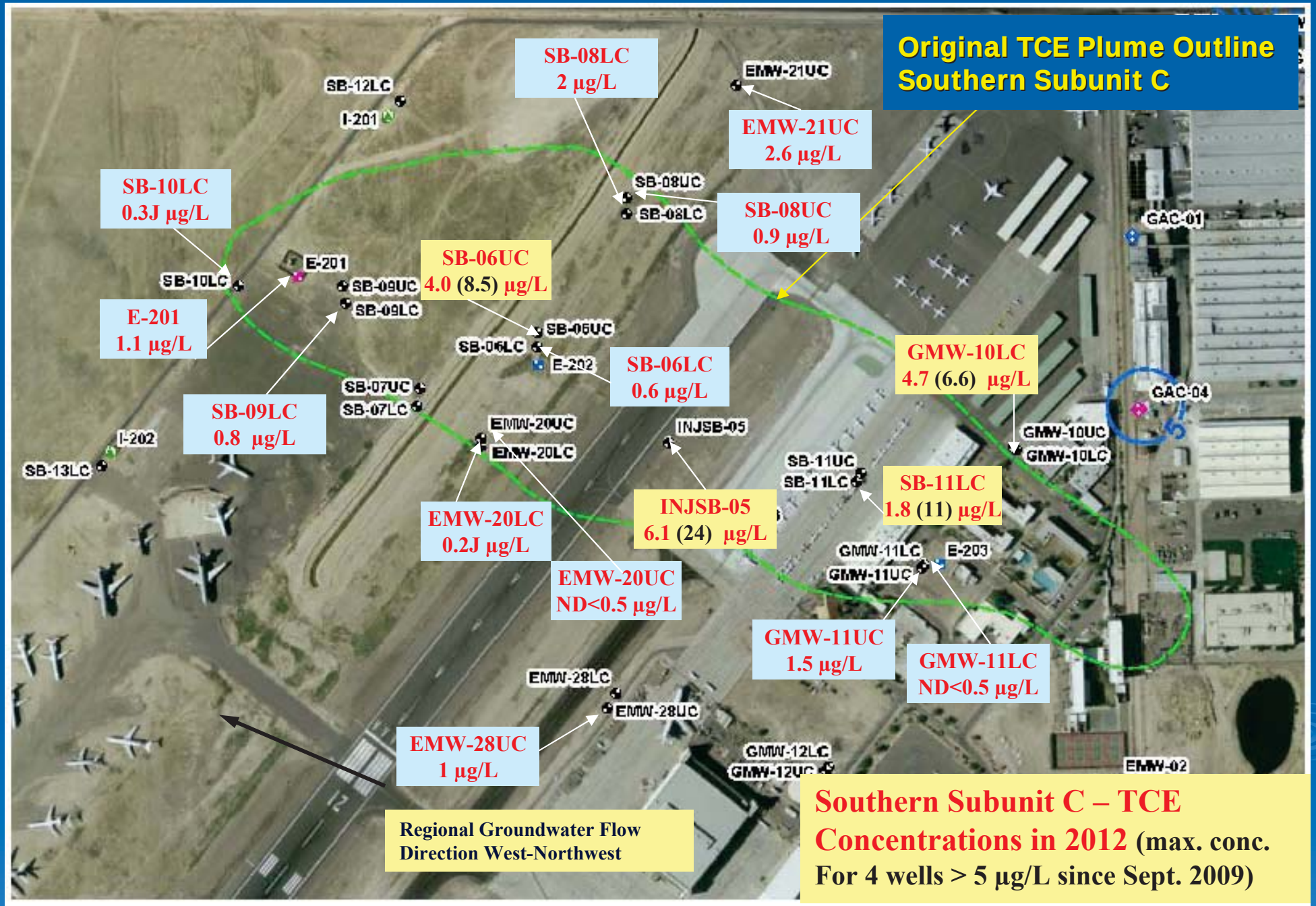
TRC

Southern Subunit C Monitoring Update

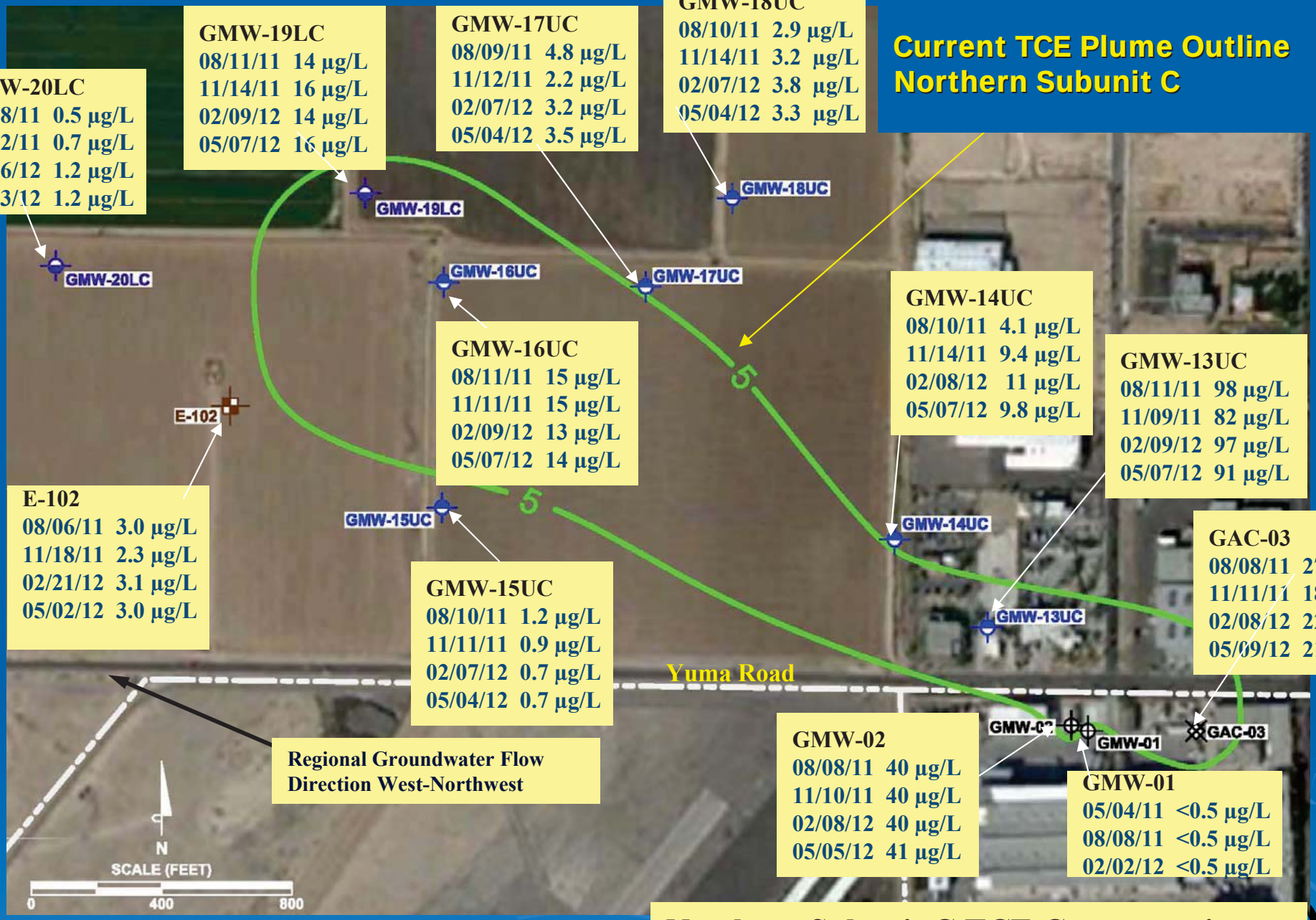
- Extraction well E-201 shut off over 2.5 years ago in September 2009; quarterly monitoring began to evaluate potential rebound in TCE concentrations
- During that time, Subunit C TCE concentrations remain below 5 µg/l with a few exceptions
  - GMW-10LC
  - INJSB-05
  - SB-06UC
  - SB-11LC
- Expanded Southern Subunit C monitoring initiated during the November 2011 monitoring event

GOODYEAR

TRC



Southern Subunit C – TCE Concentrations in 2012 (max. conc. For 4 wells > 5 µg/L since Sept. 2009)



Northern Subunit C TCE Concentrations (Last 4 quarters)

GOODYEAR

TRC

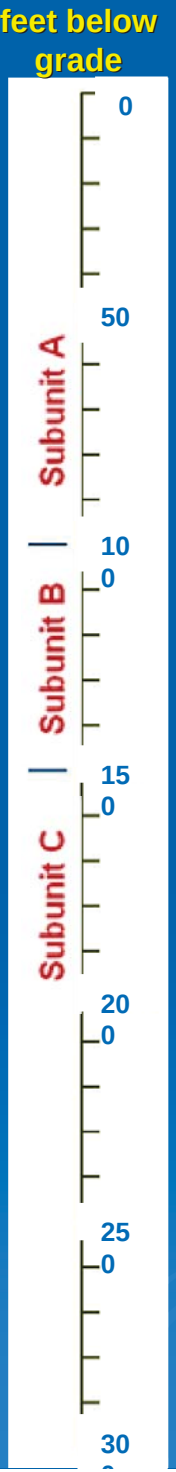
GAC-04 Abandonment Update

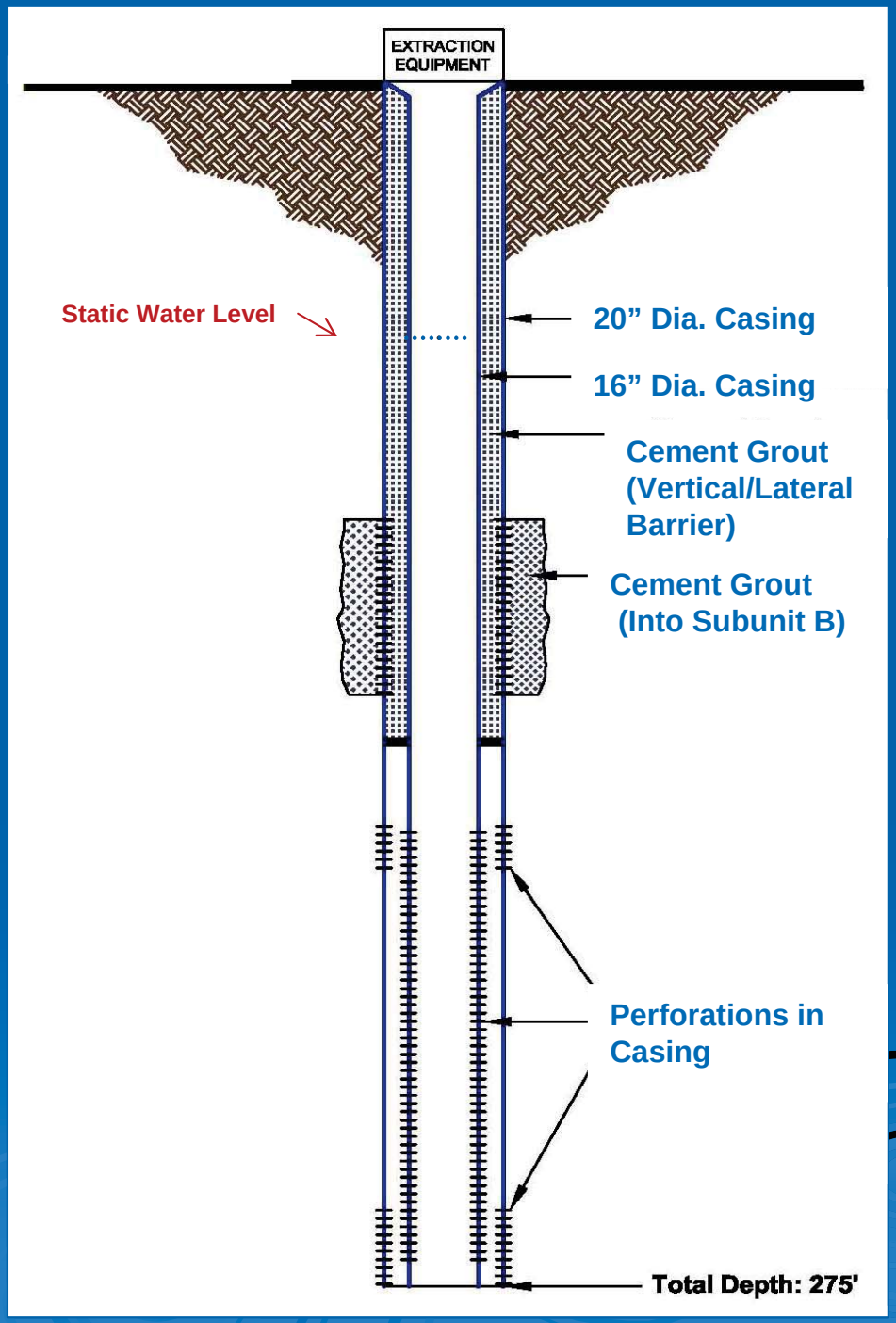
- GTRC believes GAC-04 is a conduit well
- Abandonment preparation began the week of July 23rd with removal of well infrastructure and frequent sampling of GAC-04 for TCE
- Well abandonment to commence the week of July 30th
- Monitoring in the vicinity of GAC-04 will continue with sampling of GMW-21UC, GMW-22UC and GMW-23UC

GOODYEAR

GTRC

GAC-04 Well Construction Diagram





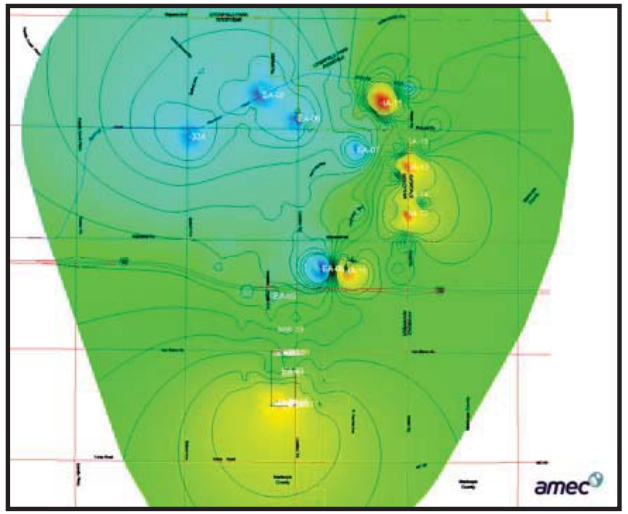
Ongoing/Upcoming Activities

- Quarterly Groundwater Monitoring Events
  - Third Quarter event began August 1, 2012
  - Fourth Quarter event scheduled to begin November 1, 2012
- Installation of additional Subunit A monitoring wells planned for Fall 2012
- Working with USEPA / ADEQ on Open Five Year Review Items

GOODYEAR

TRC

CAG Meeting



Quarterly Technical Meeting
PGA-North Superfund Site
August 2, 2012

Stephanie Koehne, MBA, Project Manager
AMEC Geomatrix

Harry Brenton, RG, Principal Geologist
Matrix New World Engineering

MATRIXNEWORLD
Enabling Progress

PGA-N Overview

•A significant amount of testing continues to be performed to define the Subunit A and Subunit C TCE plumes.

•All soil and groundwater remediation systems are fully operational – *including new EA-08 system in NW Area*

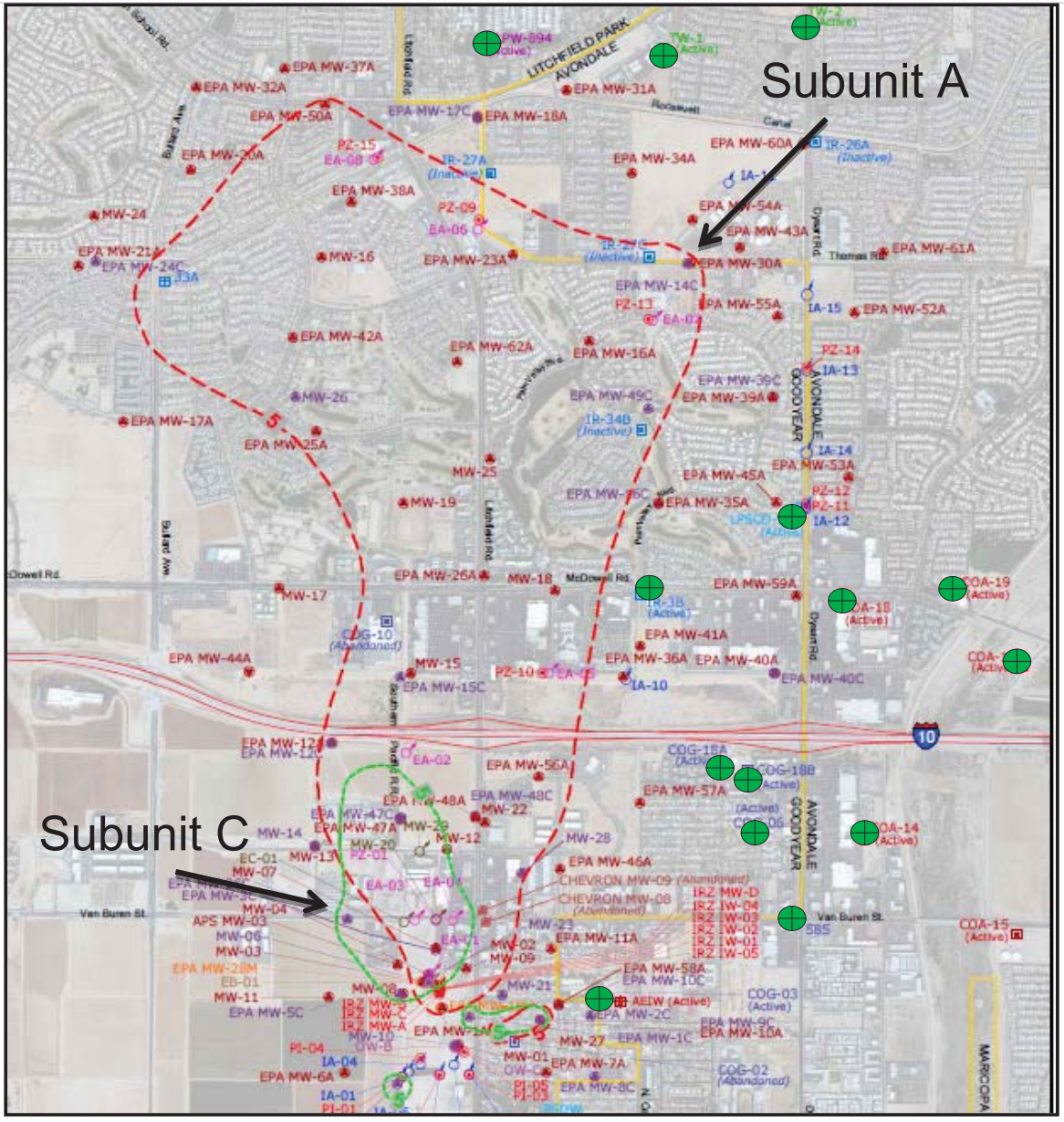
•Expanded Treatment Systems north of I-10 have contained the Subunit A TCE plume. Area Water Supply wells are being protected and

•Crane Co. is working with the EPA towards a more “Regional Remediation Program” to control the plume.

MATRIXNEWORLD
Enabling Progress

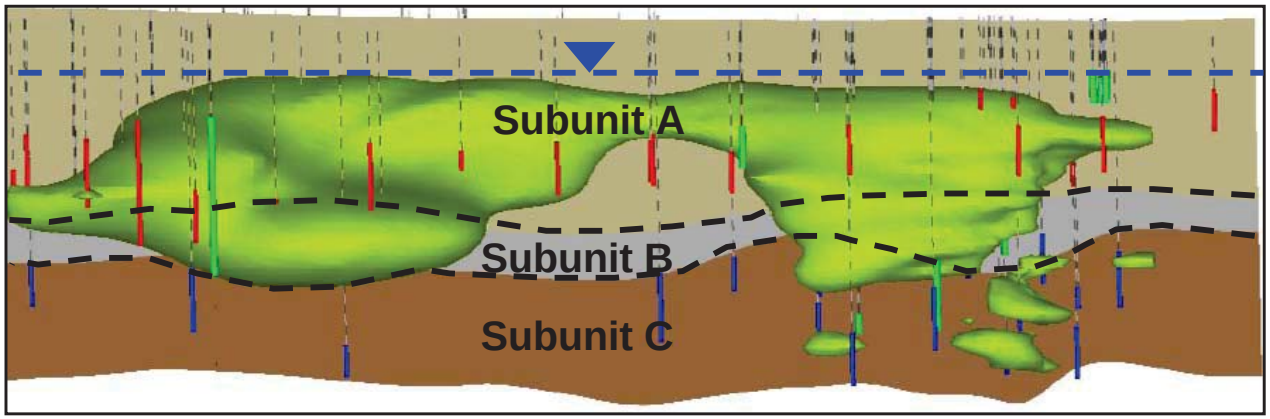
Quarterly Groundwater monitoring Activities

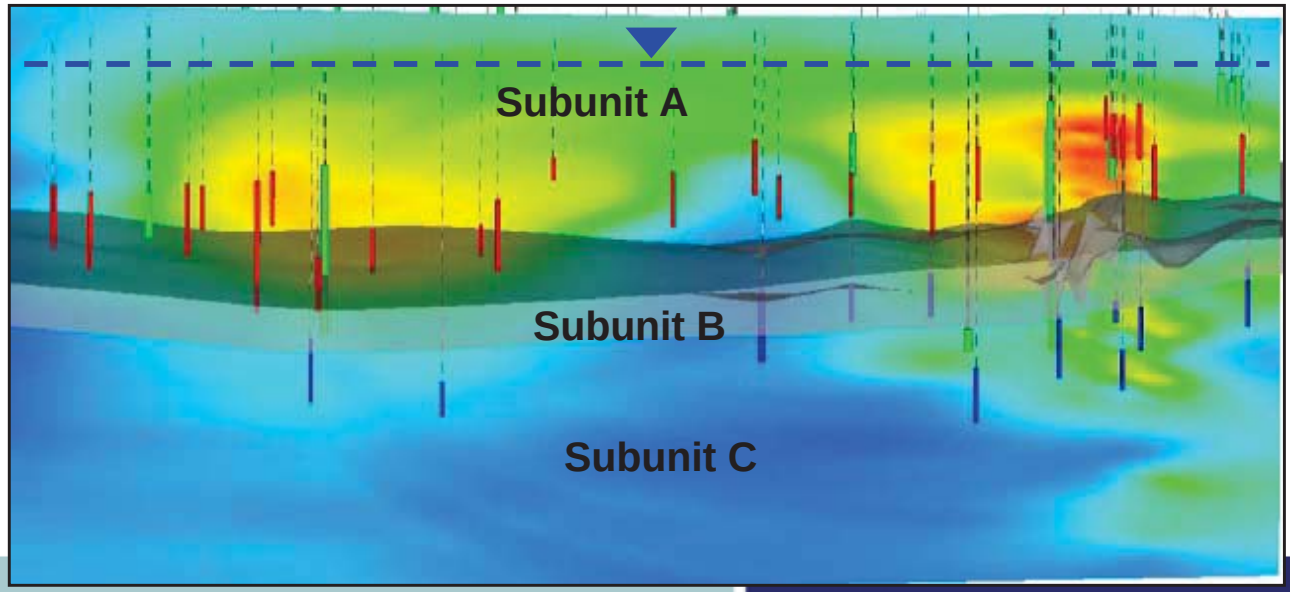
- May 2012 Subunit A and Subunit C TCE Plumes



Extent of TCE Contaminant Distribution- Subunit A and Subunit C

- Contamination profile from depth specific samples Lithology from 100+ wells
- Hydropunch Samples
  - 10 to 20 ft intervals
- Subunit A - Majority TCE mass
- Subunit C – TCE Mass limited to South of I-10
- Highest TCE concentrations remain near source area





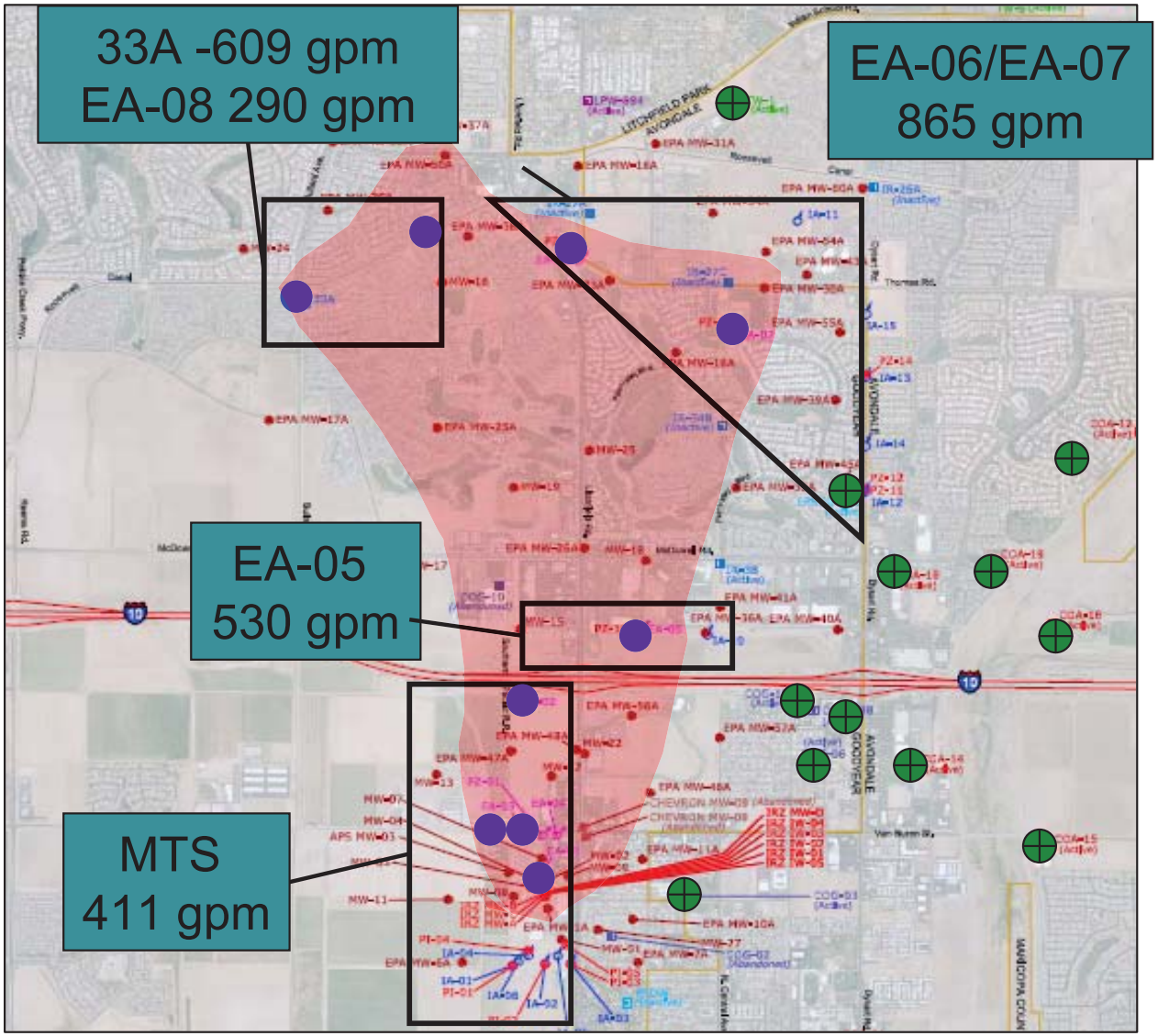
REGIONAL GROUNDWATER TREATMENT SYSTEMS UPDATE

Groundwater Treatment Systems

- MTS – On-Site
- 33A/EA-08 – Northwest Area
- EA-06/EA-07 –Northeast Area
- EA-05 – Central Area-S of I-10

System Totals

- Combined Flow – ~2,700 GPM
- Total TCE Mass Removed – 54,500 lbs



MATRIXNEWORLD
Enabling Progress

EXPANDED GROUNDWATER TREATMENT SYSTEMS

MATRIXNEWORLD
Enabling Progress

amec

Expanded Northeast System Details

EA-06 GTS Totals (Thru May 2011)

- EA-06- 506 GPM;
- EA-07 – 359 GPM
- Flow rate into 3 injection wells – 865 GPM

EA-08 GTS Totals (Thru May 2012)

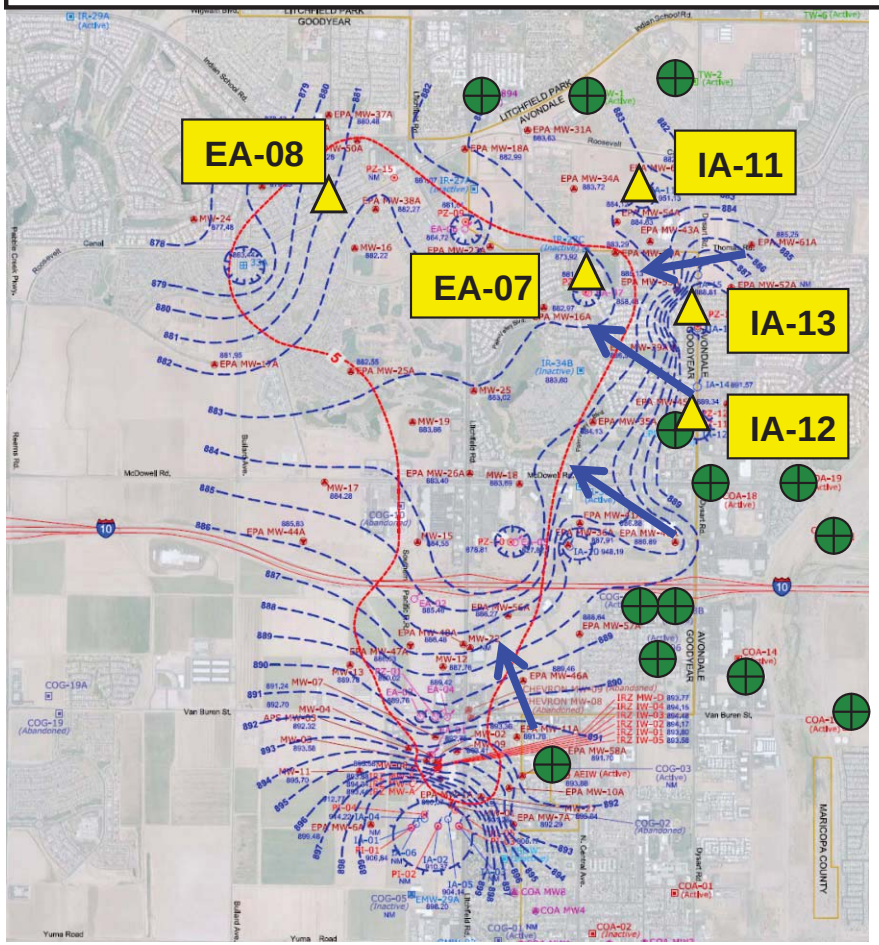
EA08- 400 GPM

Temporary discharge to RID Canal

Results

- Effective NE Hydraulic barrier - 3 INJ Wells
- Drinking Water Supply wells are protected
- Summer 2011 and 2012 pumping has not reversed flow
- Northern TCE Plume has been reduced and is stable

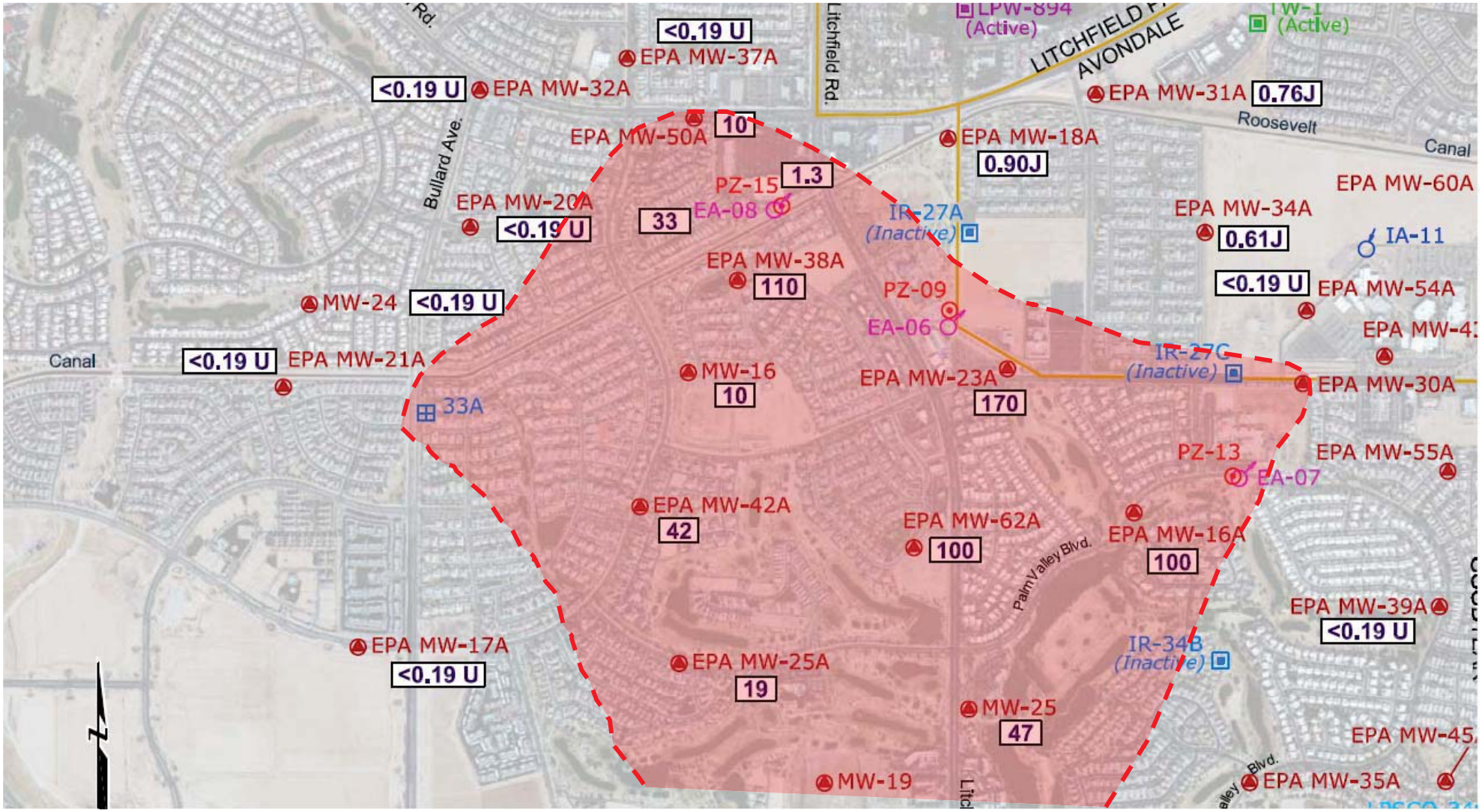
= Groundwater Flow Direction
= Drinking Water Supply Well
= NE System Expansion Well



MATRIXNEWORLD
Enabling Progress

Subunit A TCE Distribution North of I-10- May 2012

amec

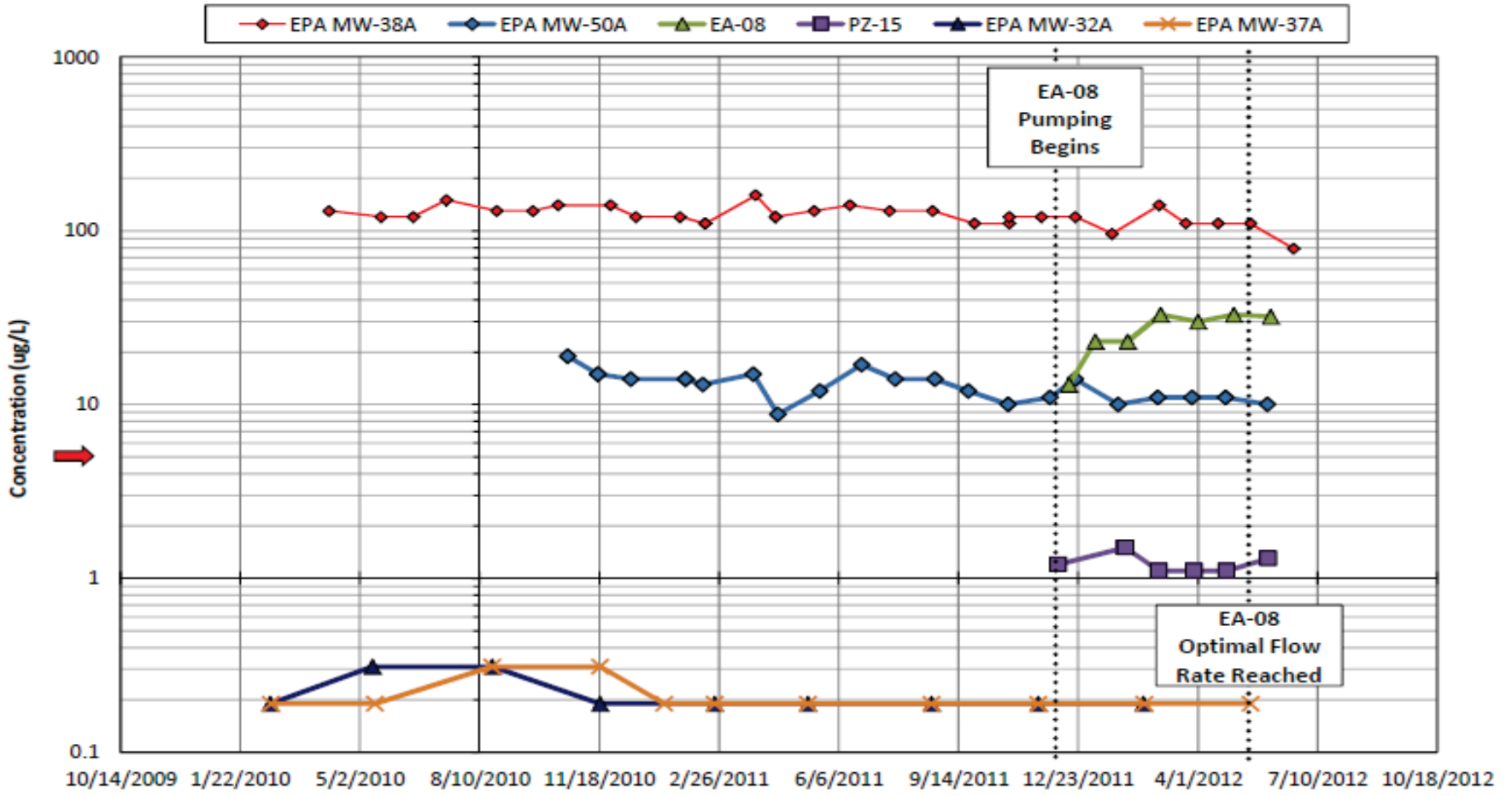


MATRIXNEWORLD
Enabling Progress

Subunit ATCE Trends NW Area Monitor Wells Near EA-08

amec

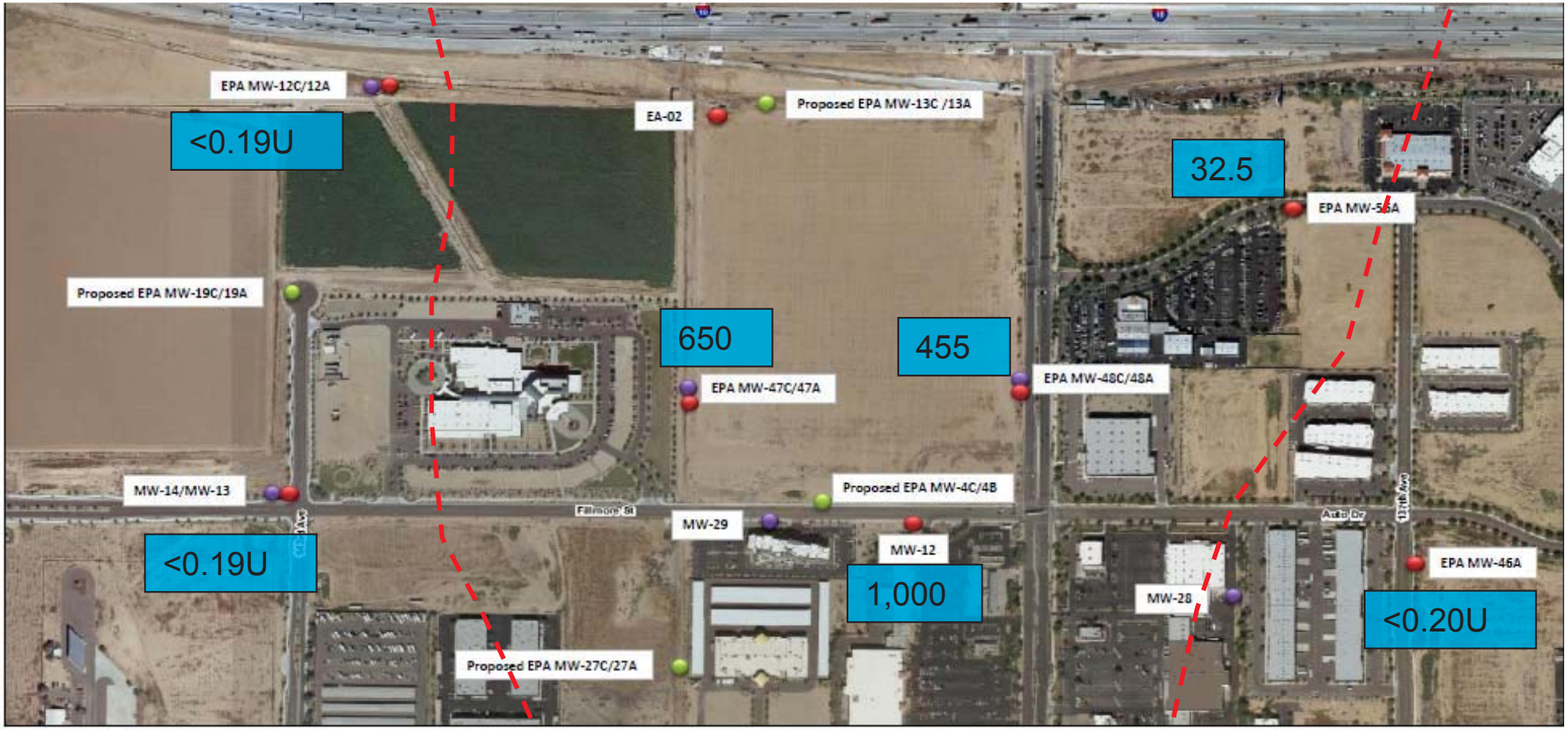
Figure 9: TCE Concentration Trends
EA-08 Hydraulic Analysis
Phoenix-Goodyear Airport-North Superfund Site
Goodyear Arizona



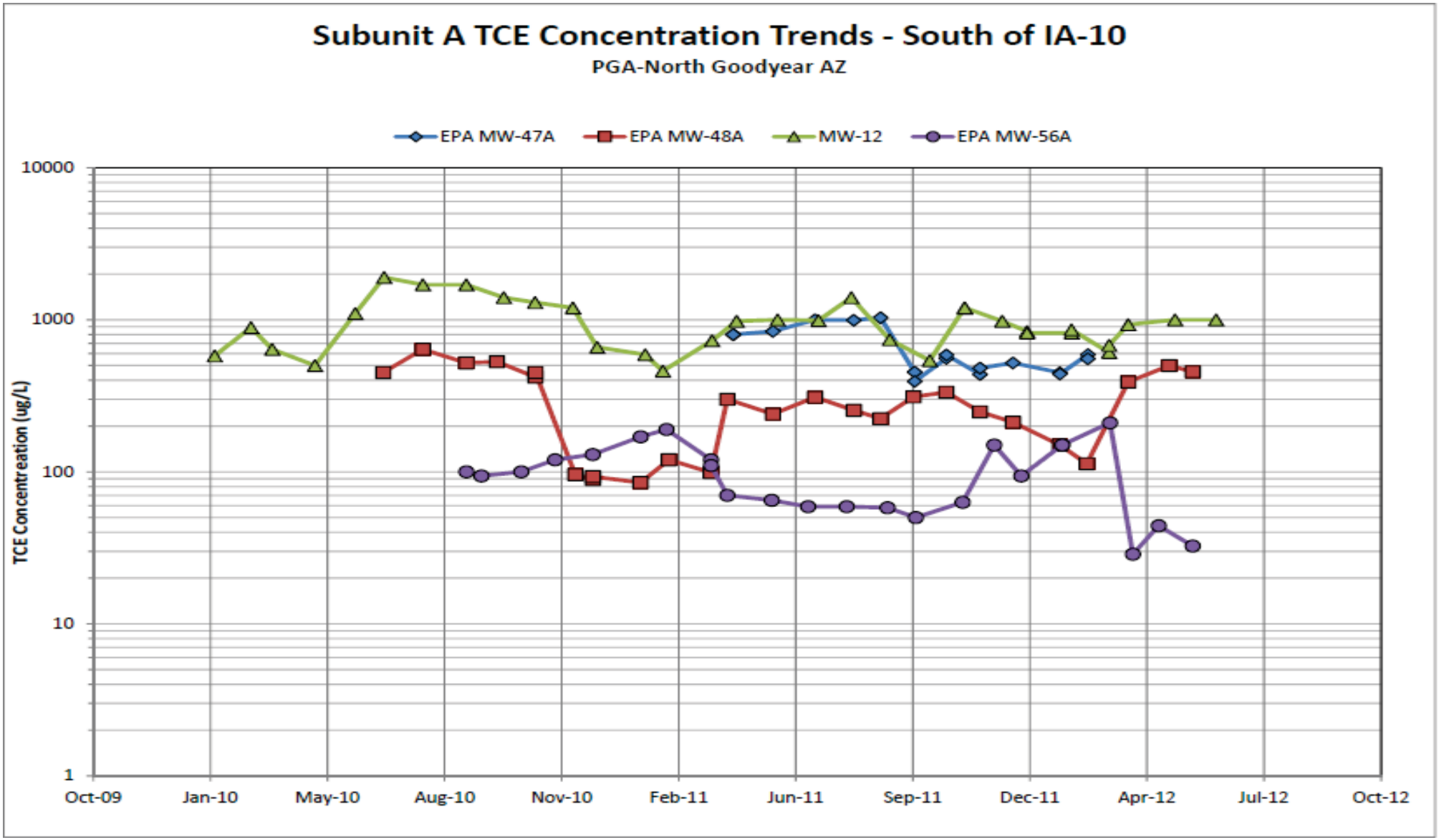
µg/L: micrograms per liter

Federal Maximum Contaminant Level (5 ug/L)

Subunit A TCE Distribution - South of I-10 (May 2012) and Proposed Monitor Well Pairs



Subunit A TCE Concentration Trends- South of I-10

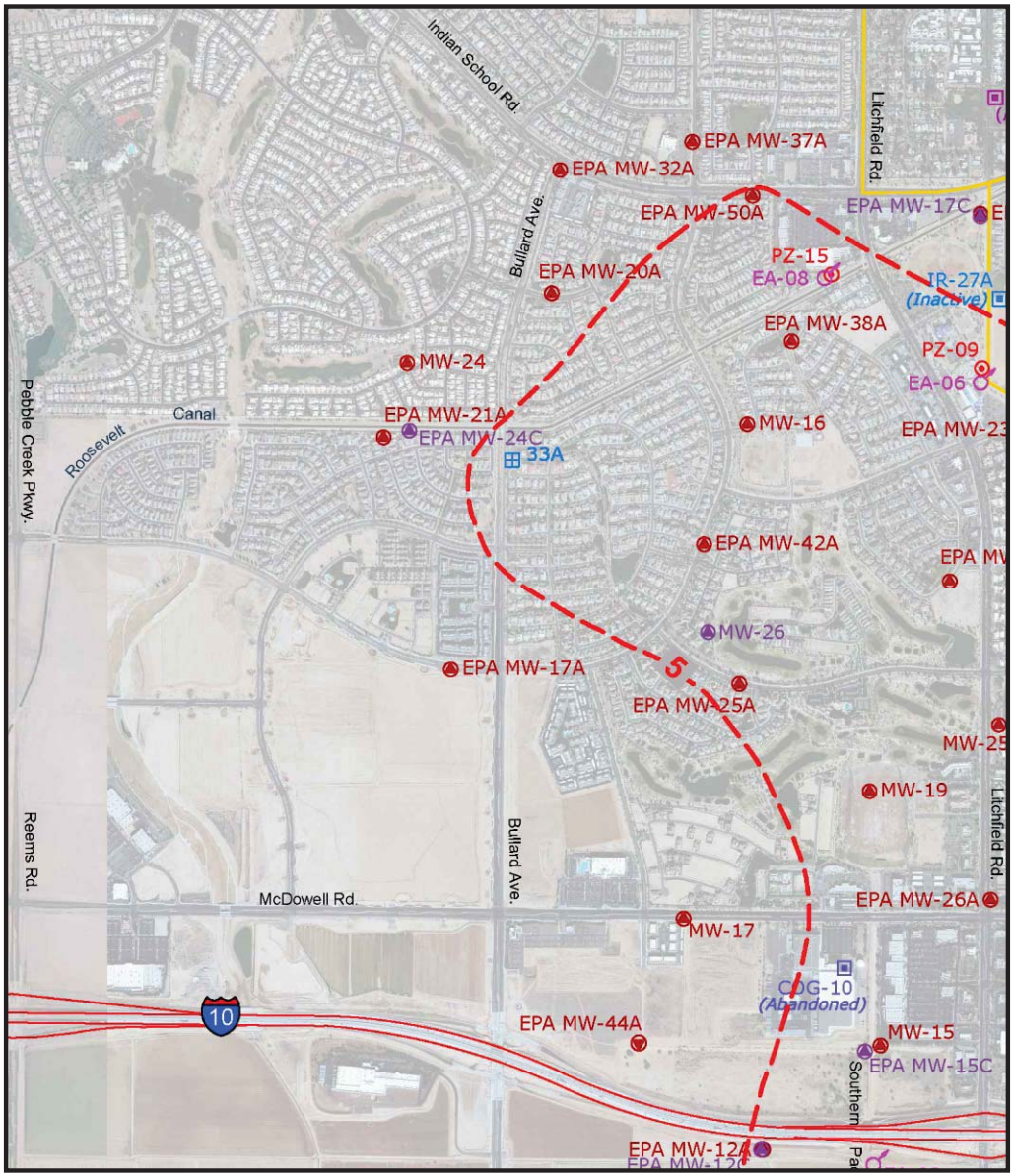


MATRIXNEWORLD
Enabling Progress

5-Year Plan Build Out
Northwest Area

amec

- EA-08/33A Pipeline
  - Piping extension from EA-08 to 33A GTS
  - Relocation of EA-08 GTS
  - Work Plan submitted May 11, 2012
  - Work anticipated to begin 4th Qtr 2012
- Northwest Injection
  - Installation of injection well(s) and integration into 33A GTS
  - Work anticipated for 2013

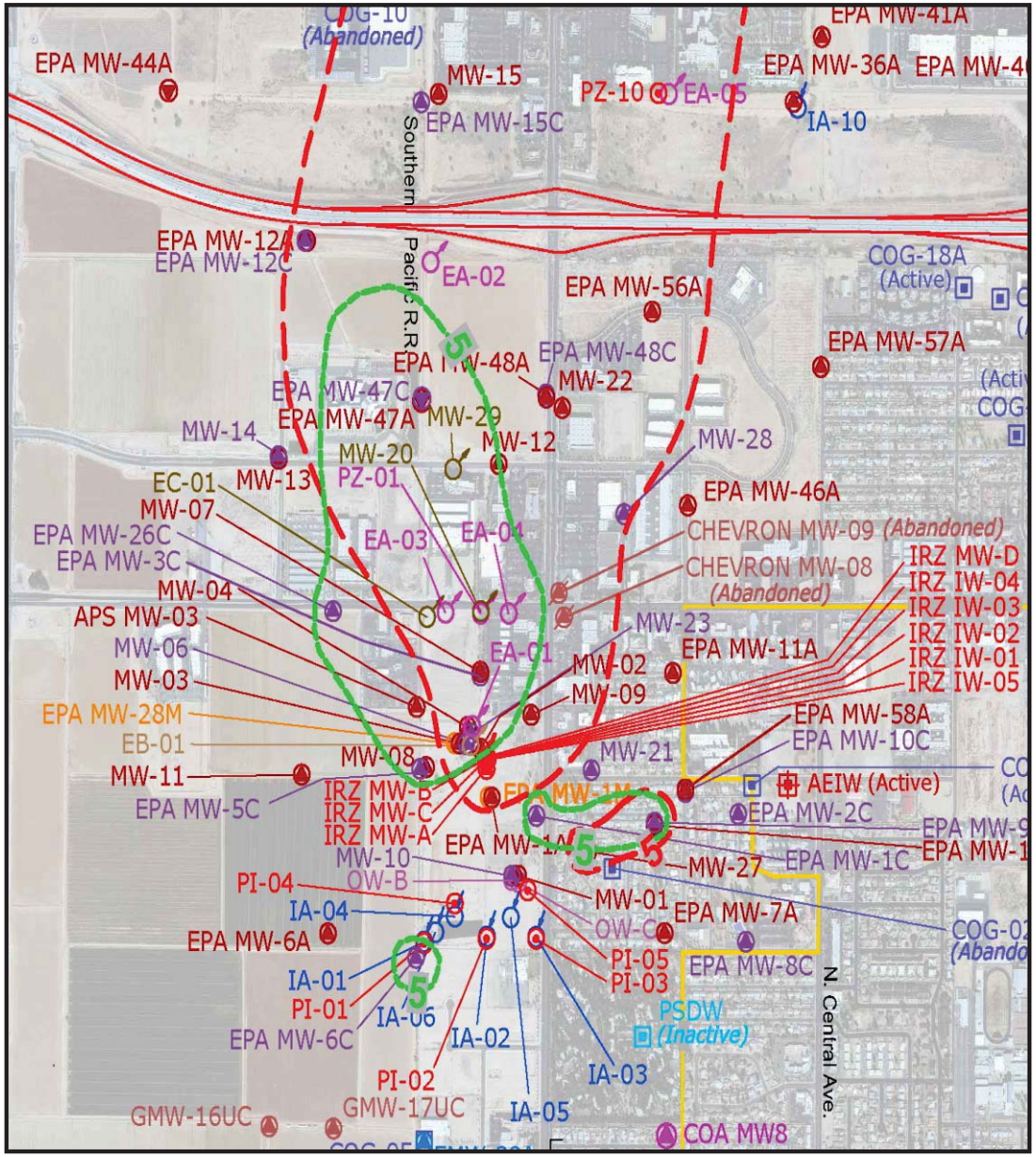


MATRIXNEWORLD
Enabling Progress

5-Year Plan Build Out
Extraction near UPI Site

amec

- **Extraction Wells MW-29 and EA-02**
  - New piping
  - MTS modifications
  - Work currently in progress
- **Extraction Well EA-09**
  - New Subunit A extraction well, piping, and system upgrades
  - Work Plan submitted June 26, 2012
  - Work anticipated to begin 4th Qtr 2012
- **Subunit C Extraction**
  - Two new Subunit C extraction wells, piping, and Subunit C specific GTS
  - Work anticipated for 2013/2014
- **Source Area Remediation**
- Final FS submitted in Fall 2012
- Work anticipated 2013/2014



QUESTIONS?

MATRIXNEWORLD
Enabling Progress

ADEQ Arizona Department of Environmental Quality

Western Avenue WQARF Site

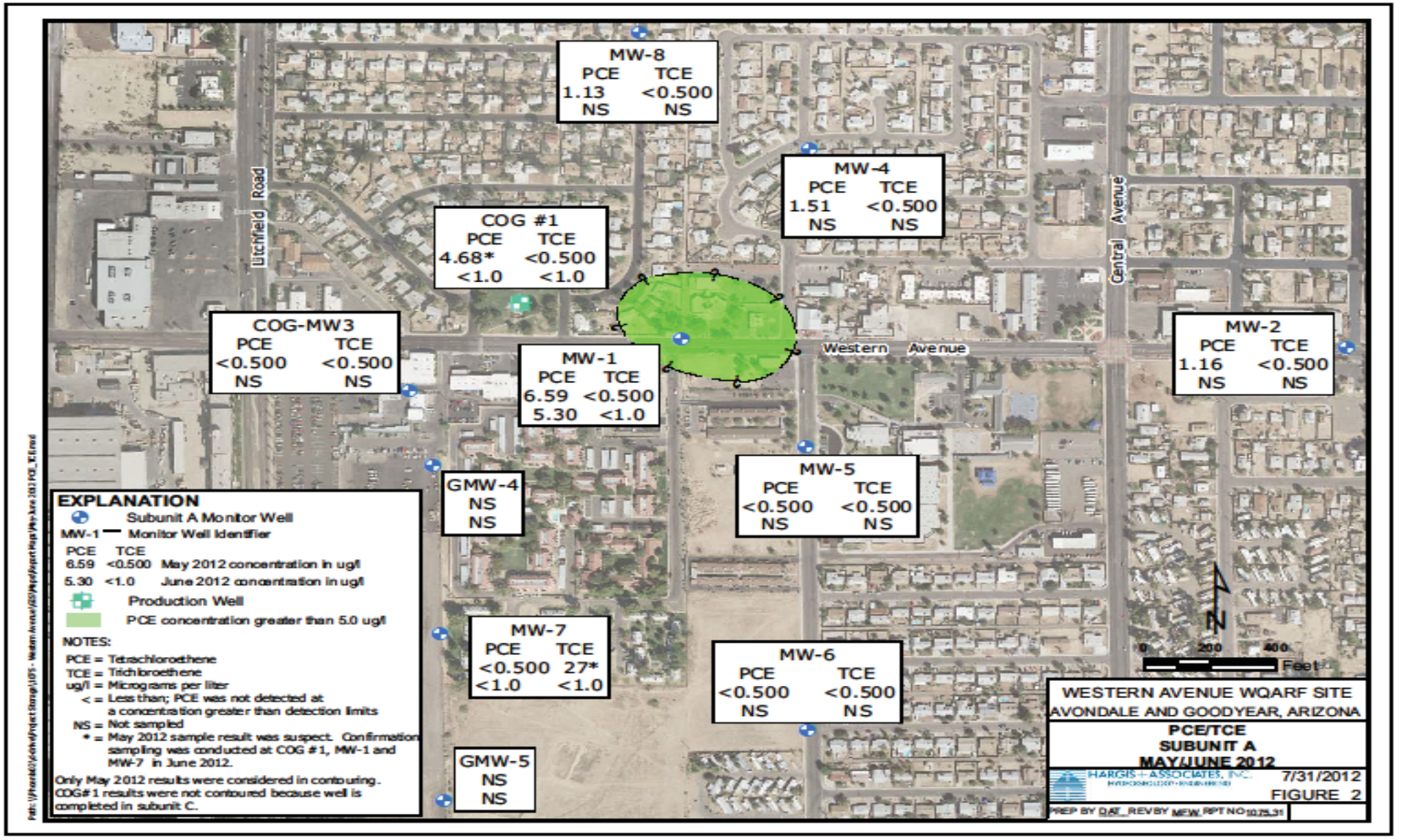
Western Avenue WQARF Site

Update on Site Activities

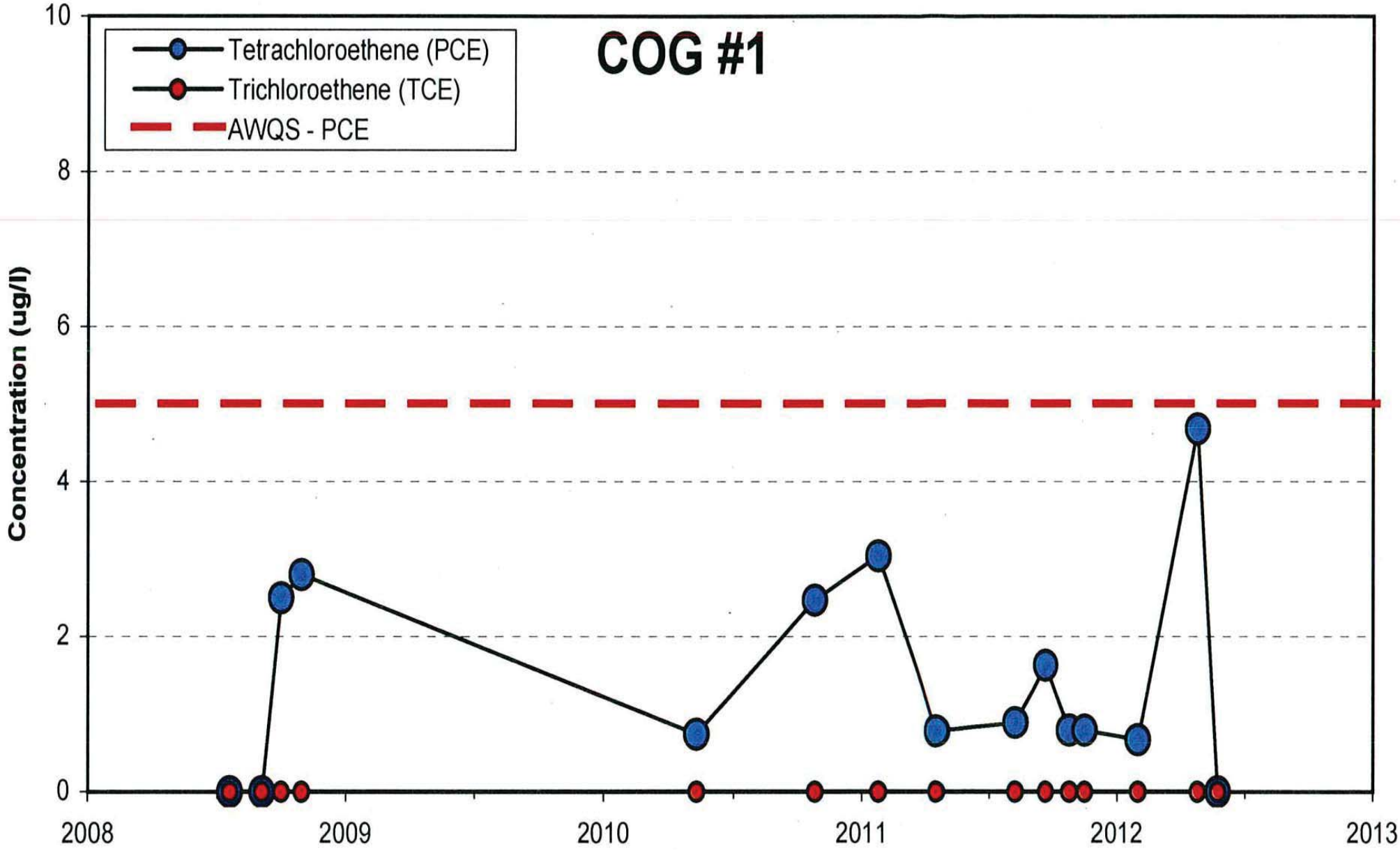
- **Groundwater Quality results from samples collected from the Western Avenue Monitoring Wells**
- **Groundwater Quality results from samples collected from COG #1**
- **Upcoming Activities**

Western Avenue WQARF Site

ADEQ Arizona Department of Environmental Quality

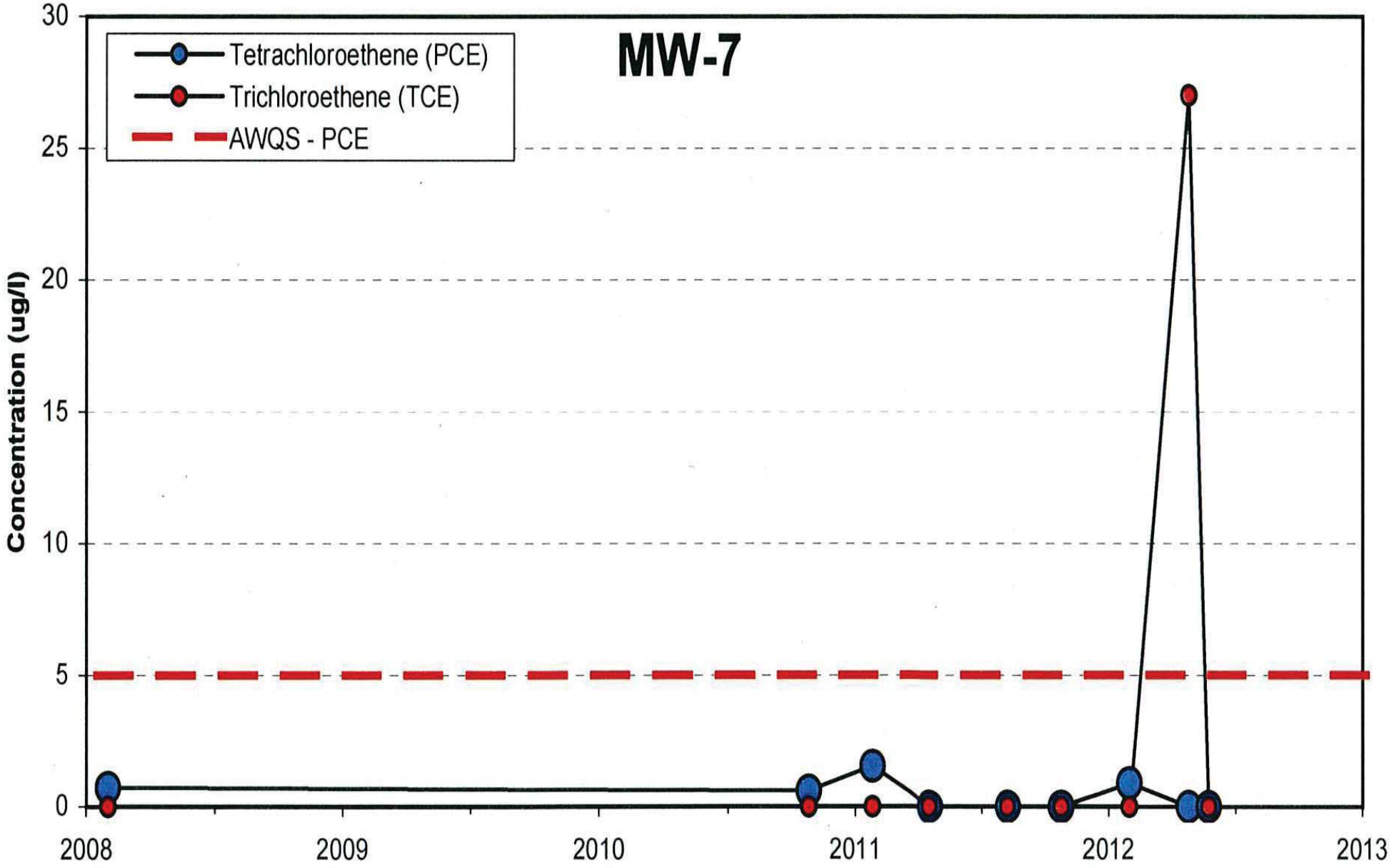


ADEQ
Arizona Department of Environmental Quality

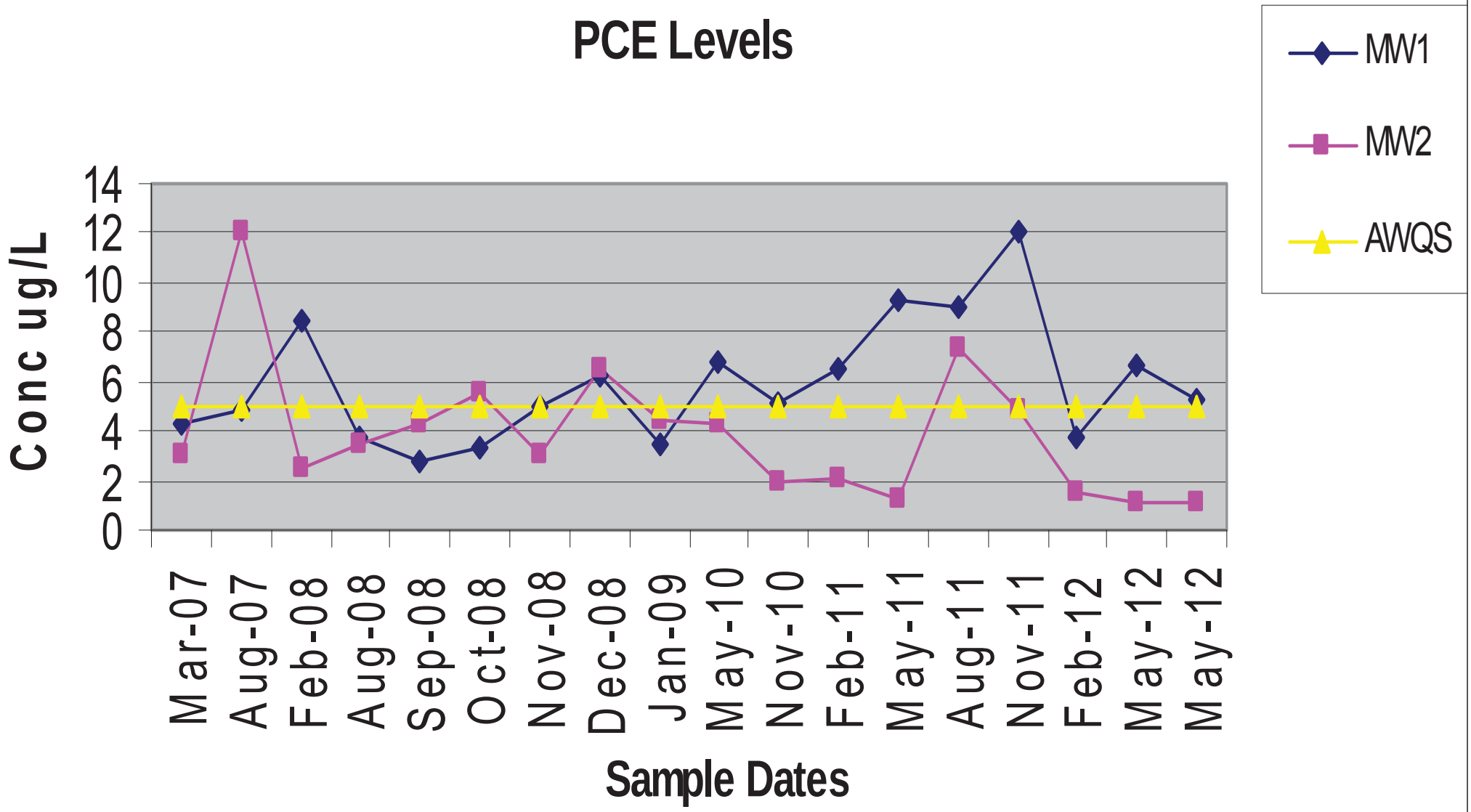


ADEQ Arizona Department of Environmental Quality

Western Avenue WQARF Site

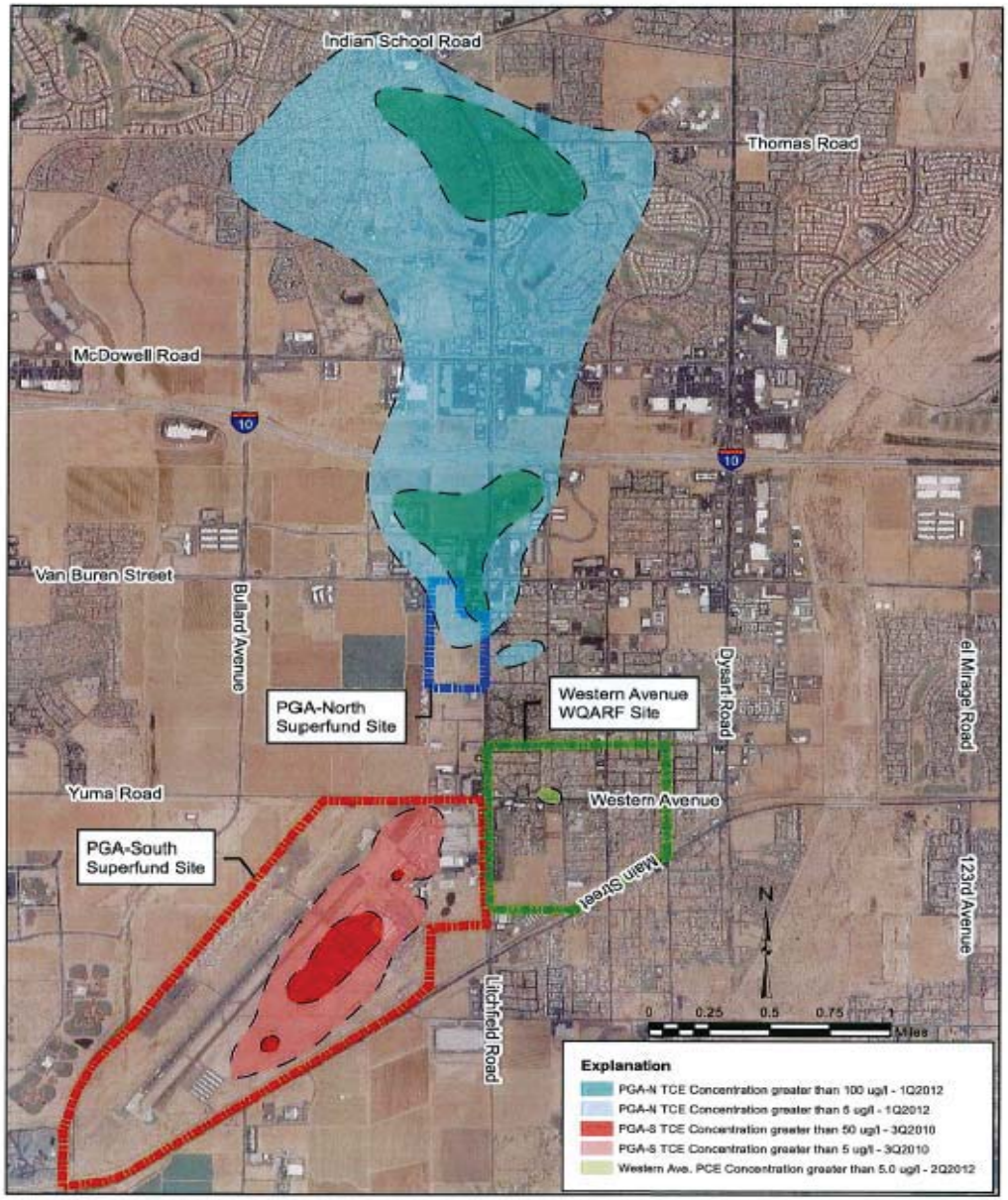


Western Avenue WQARF Site



ADEQ Arizona Department of Environmental Quality

Western Avenue & PGA Plumes



PHOENIX-GOODYEAR AIRPORT (PGA) AREA SITES SUBUNIT A PLUMES

Upcoming Activities at Western Avenue

- **Next quarterly monitoring event, including water quality sampling and water level gauging of the 8 Western Avenue Wells and COG-1 will be August 9, 2012.**

- **Final Feasibility Study Work Plan should be submitted to ADEQ around the end of September.**

Questions

Thank You,

Delfina Olivarez

Western Avenue Project Manager 602-771-4710, dco@azdeq.gov; Wendy Flood Western Avenue Community Involvement Coordinator 602-771-4410, wv1@azdeq.gov

Area Between the Sites Investigation (PGAN, PGAS, and Western Avenue Sites)

Phoenix-Goodyear Airport Superfund Site and Western Avenue PCE WQARF Site

CAG Meeting

August 2, 2012

United States Environmental Protection Agency

ITSI Gilbane

Why This Investigation?

2010: The second PGA Five-year Review identified several issues at both the PGAN and PGAS sites:

- The separate evaluation of the PGAN and PGAS data may not be providing a complete picture of possible threats to the City of Goodyear wells.
- At PGAN, PGAS, and the Western Avenue WQARF site, groundwater sampling and water-level measurement events are not conducted on a coordinated schedule. There is also a question about whether the water-level data between the PGAN, PGAS, and the Western Avenue WQARF site are comparable.
- At the PGAS site, the northern TCE plume in Subunit C is not fully defined. There is a question about the potential commingled Subunit C plumes in the area between the PGAN and PGAS sites.

Subunit A groundwater monitoring wells installed in the last several years in the southeastern area of the PGAN site (near COG-03) had PCE concentrations above the MCL (though the current concentrations are below the MCL), however, the sources of PCE are not known.

How?

To address the comparability of water level data from PGAN, PGAS, and the Western Avenue site:

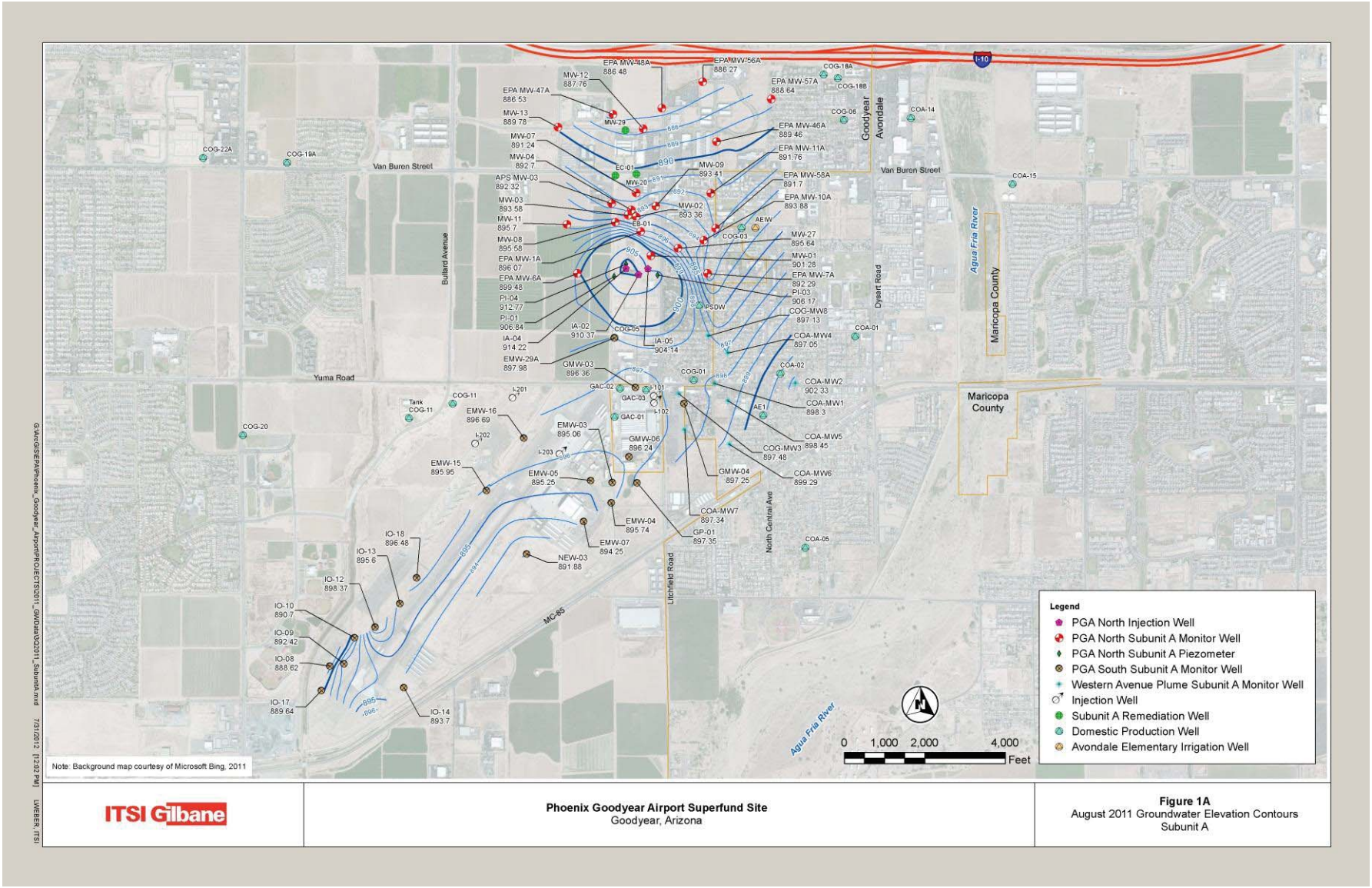
- Water levels from the three sites have been gauged at the same time twice a year (February and August) since February 2011.
- PGAN wells were surveyed to a new horizontal (NAD83) and vertical datum (NGVD88) in 2009. Western Avenue wells and PGAS wells were resurveyed to the same horizontal and vertical datum as PGAN wells in 2011 and 2012, respectively.

How?

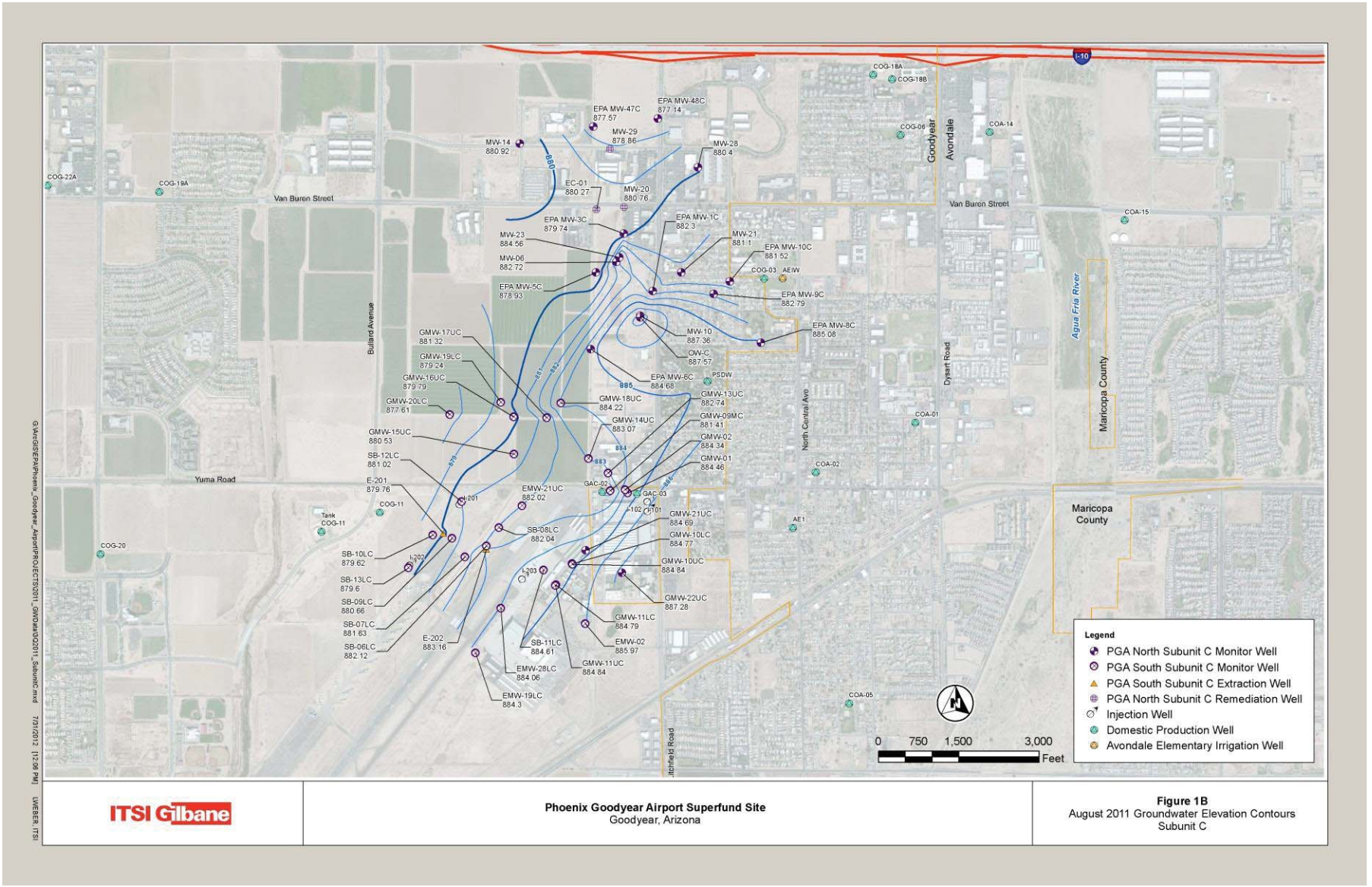
To address whether Subunit C TCE plumes between the PGAN and PGAS sites are comingled, and to identify the potential source(s) of PCE in Subunit A in the southeastern part of the PGAN site, multiple lines of evidence have been explored:

- Water-level contour maps (for four quarters: August 2011, November 2011, February 2012, and May 2012)
- Geochemical analysis
- Environmental isotopic analysis
- Historical contaminant concentrations

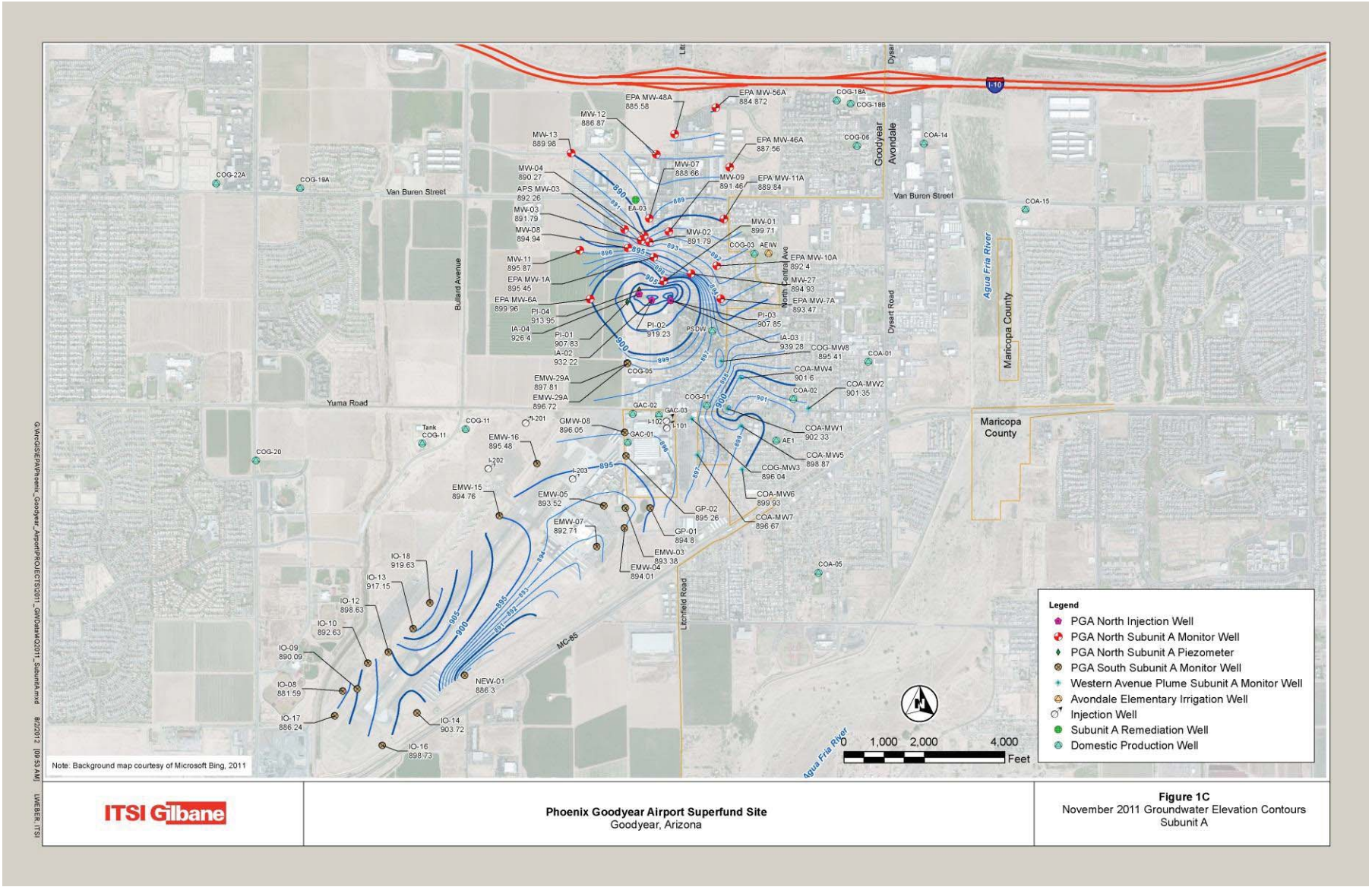
Subunit A GW Contour Map (August 2011)



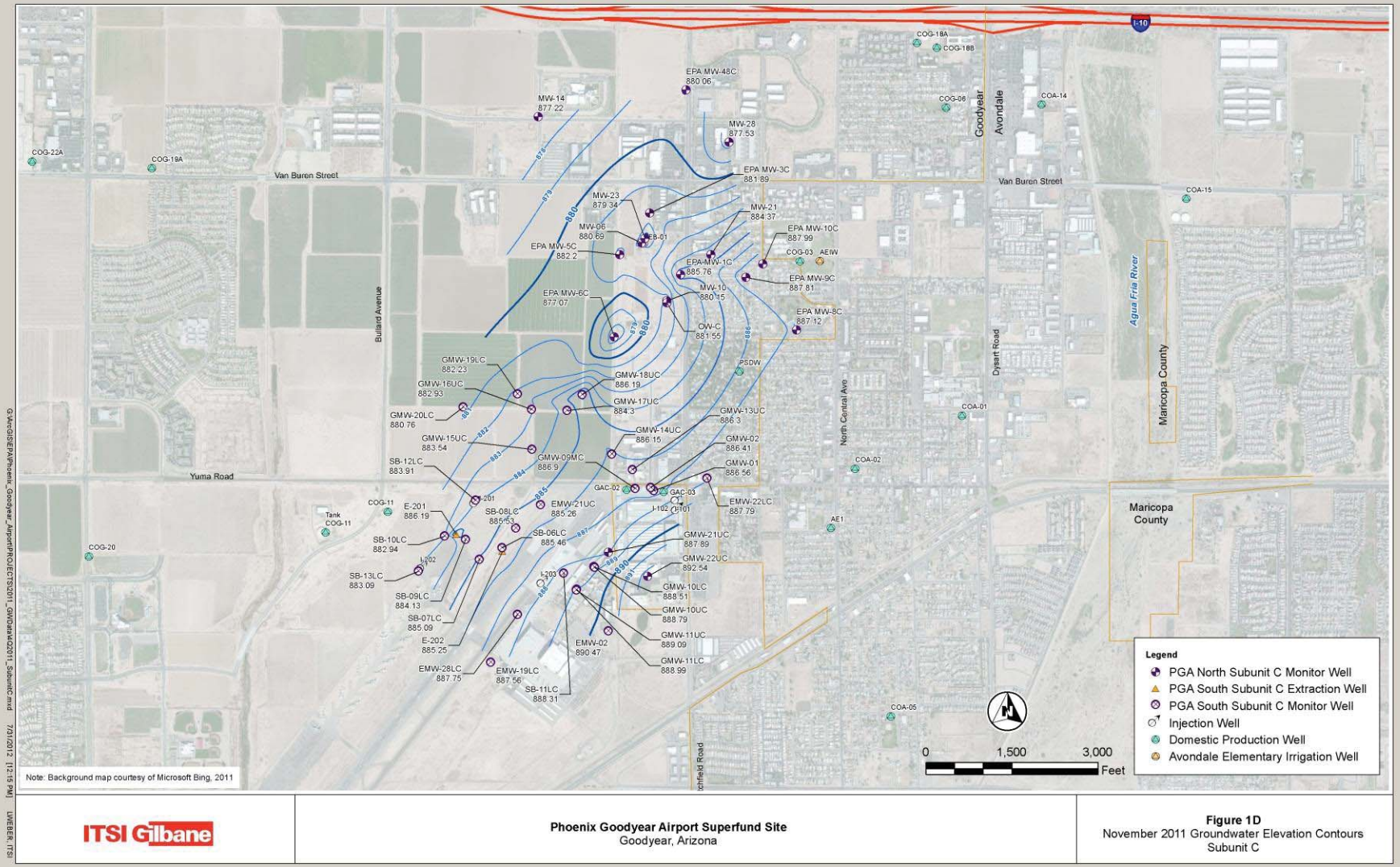
Subunit C GW Contour Map (August 2011)



Subunit A GW Contours Map (November 2011)



Subunit C GW Contour Map (November 2011)

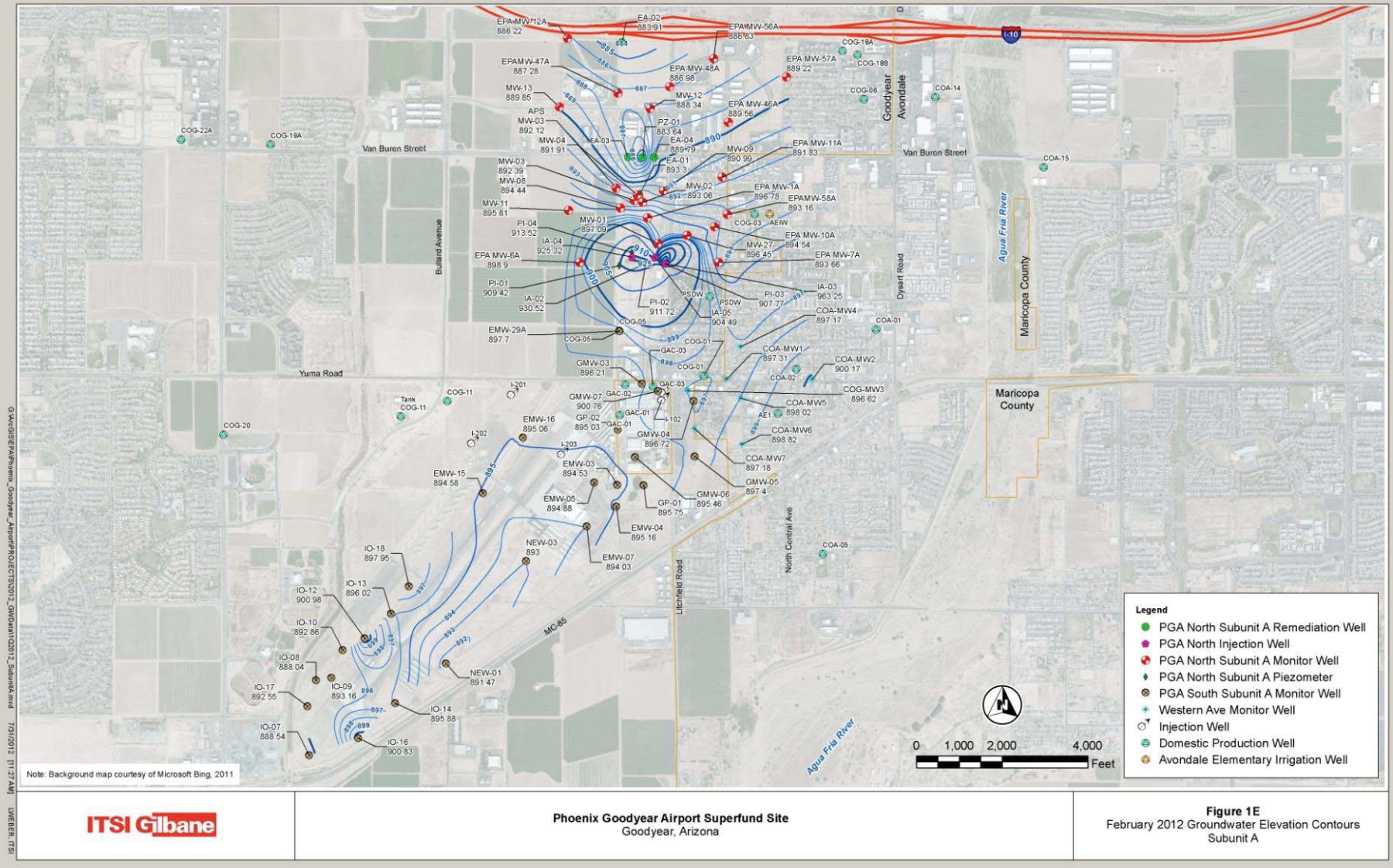


ITSI Gilbane

Phoenix Goodyear Airport Superfund Site
Goodyear, Arizona

Figure 1D
November 2011 Groundwater Elevation Contours
Subunit C

Subunit A GW Contour Map (February 2012)



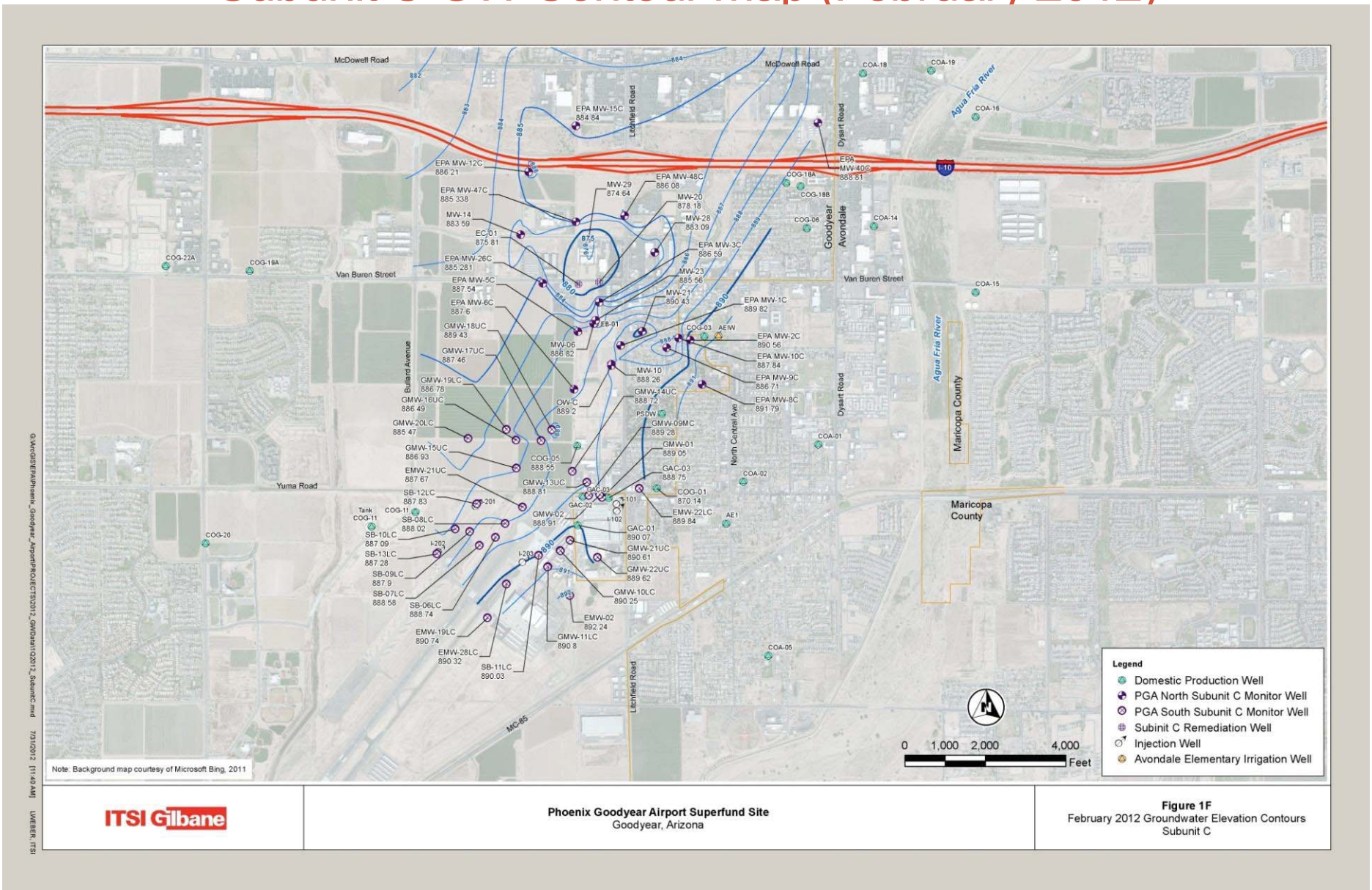
ITSI Gilbane

Phoenix Goodyear Airport Superfund Site
Goodyear, Arizona

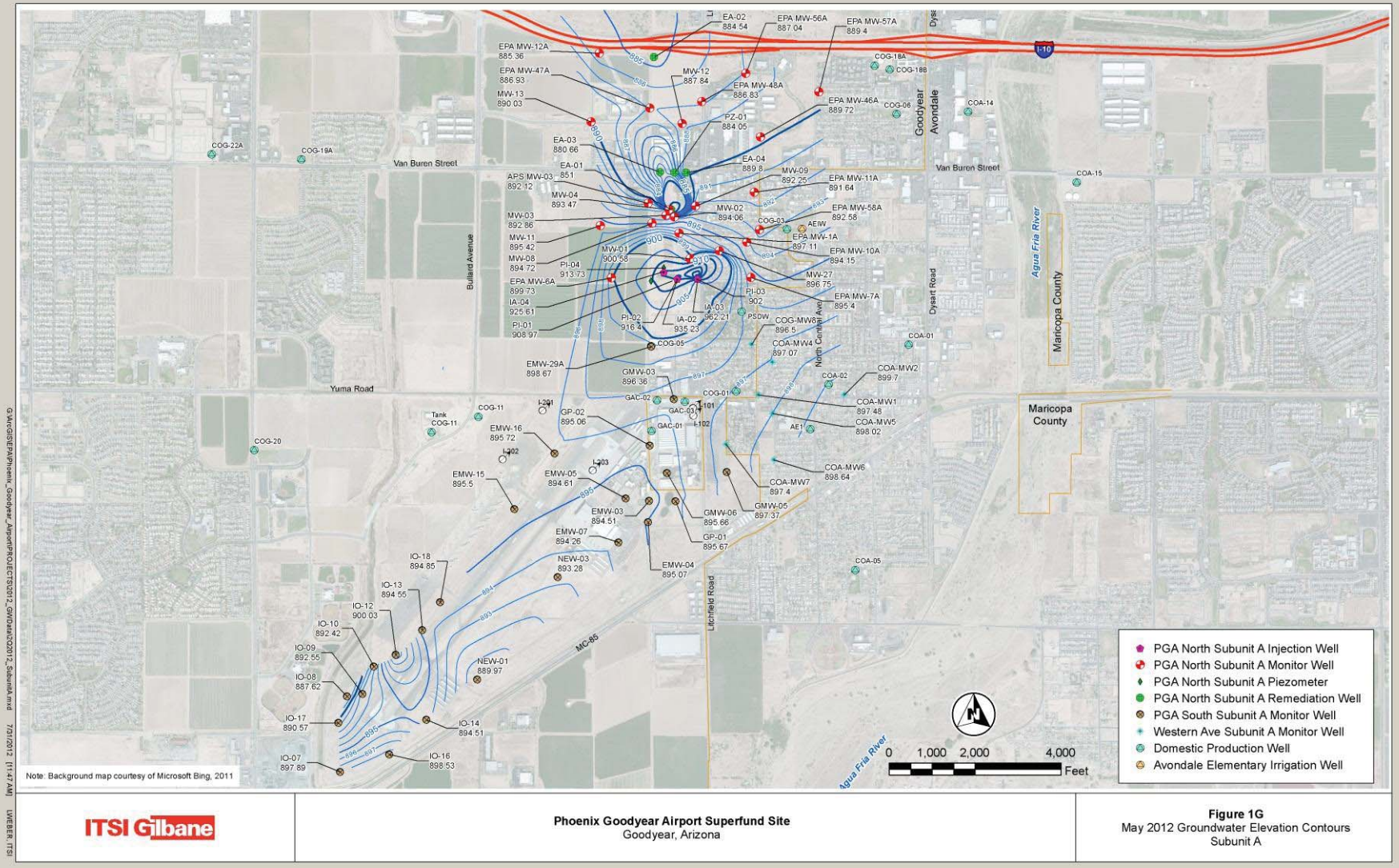
Figure 1E
February 2012 Groundwater Elevation Contours
Subunit A

G:\Arc\GIS\EPA\Phoenix_Goodyear_Airport\PROJECTS\2012_GW\Data\1Q2012_SubunitA.mxd 7/31/2012 [11:27 AM] LKEBER, ITSI

Subunit C GW Contour Map (February 2012)



Subunit A GW Contour Map (May 2012)

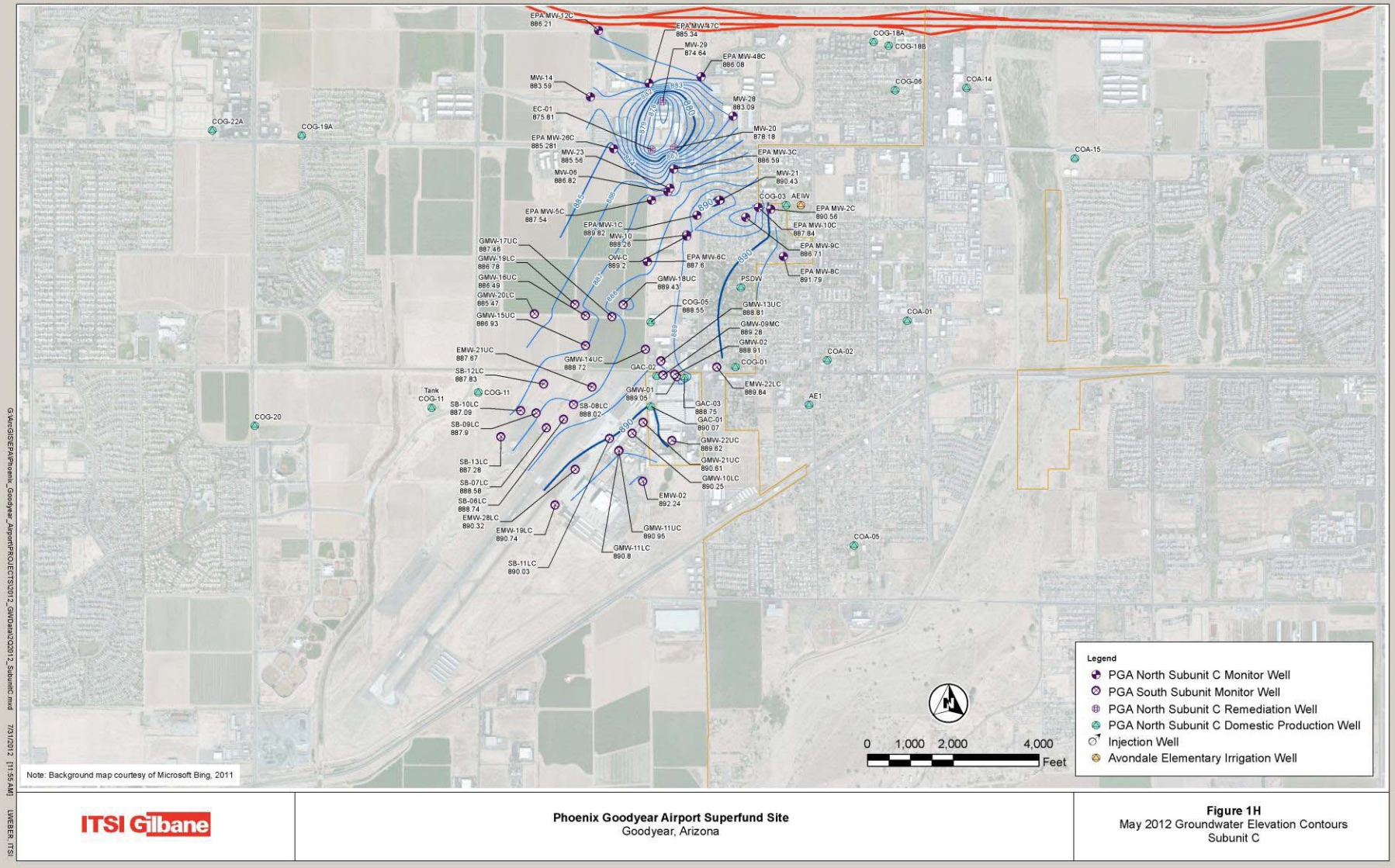


ITSI Gilbane

Phoenix Goodyear Airport Superfund Site
Goodyear, Arizona

Figure 1G
May 2012 Groundwater Elevation Contours
Subunit A

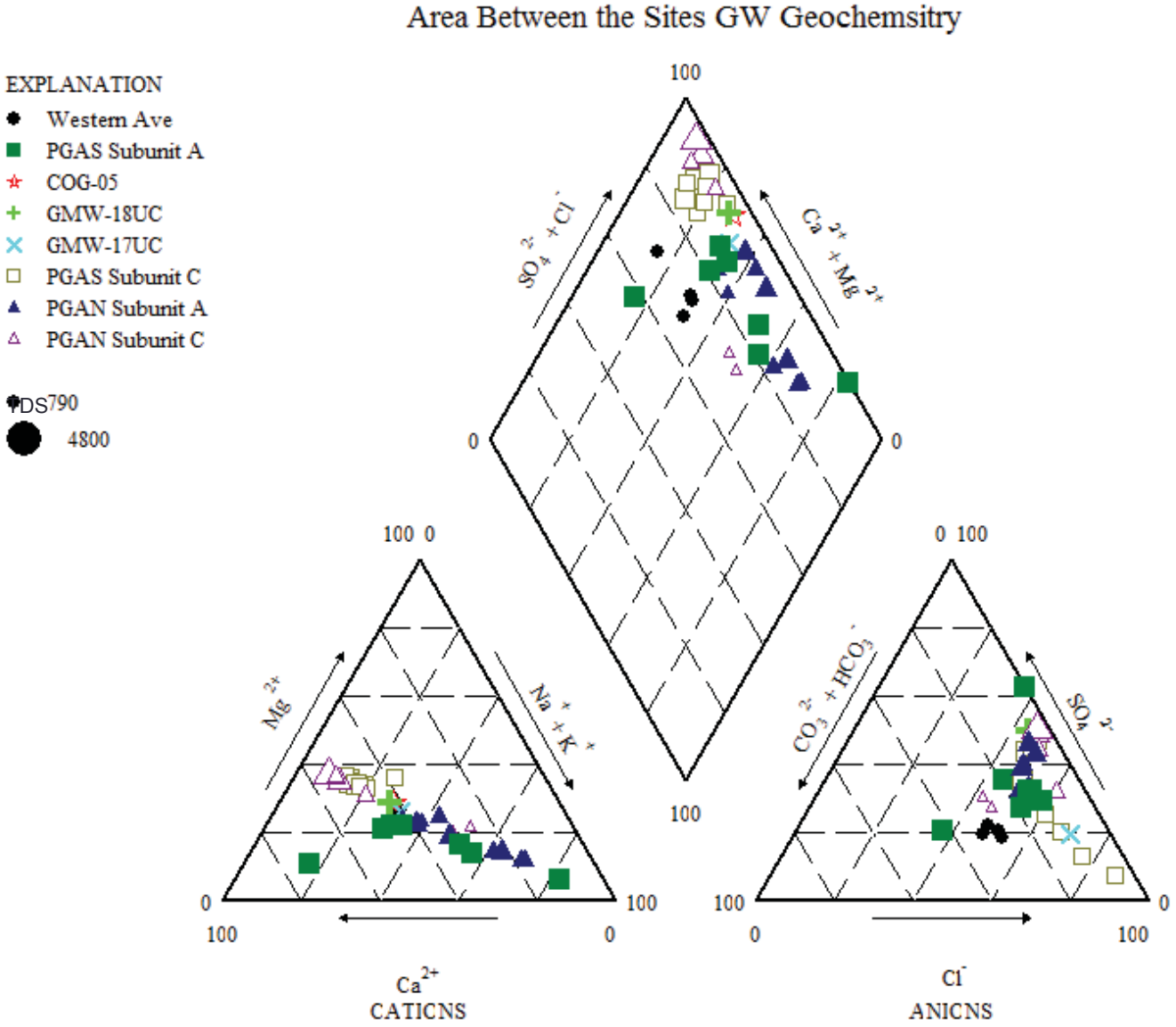
Subunit C GW Contour Map (May 2012)



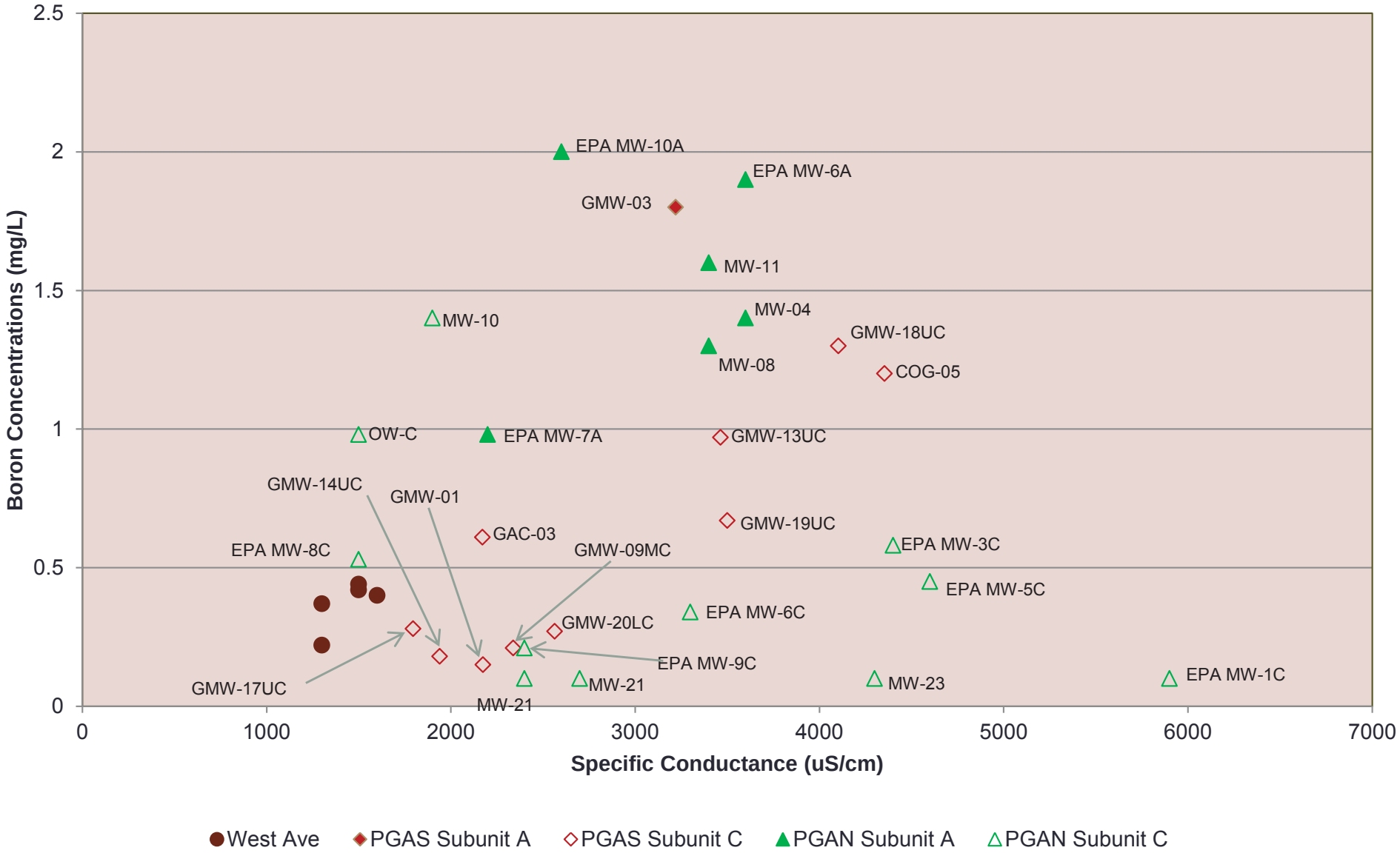
What can we tell from the water level contours maps?

- In the Area between the Sites, Subunit A groundwater flows from the Western Avenue site (1) mostly west to the PGAS site and (2) toward the PGAN site. A portion of the injection water from the MTS injection well field flows south to the PGAS site; and eventually captured by the PGAS remediation extraction wells.
- In this area, Subunit C groundwater generally flows to the northwest. PGAN well EPA MW-6C and PGAS wells COG-05 and GMW-18UC are located cross-gradient.

GW Geochemical Analysis Results



Boron vs. Specific Conductance



Isotope Nomenclature

$$\text{Delta } (\delta) \text{ value} = \frac{(\text{Ratio}_{\text{sample}} - \text{Ratio}_{\text{standard}})}{\text{Ratio}_{\text{standard}}} \times 1000$$

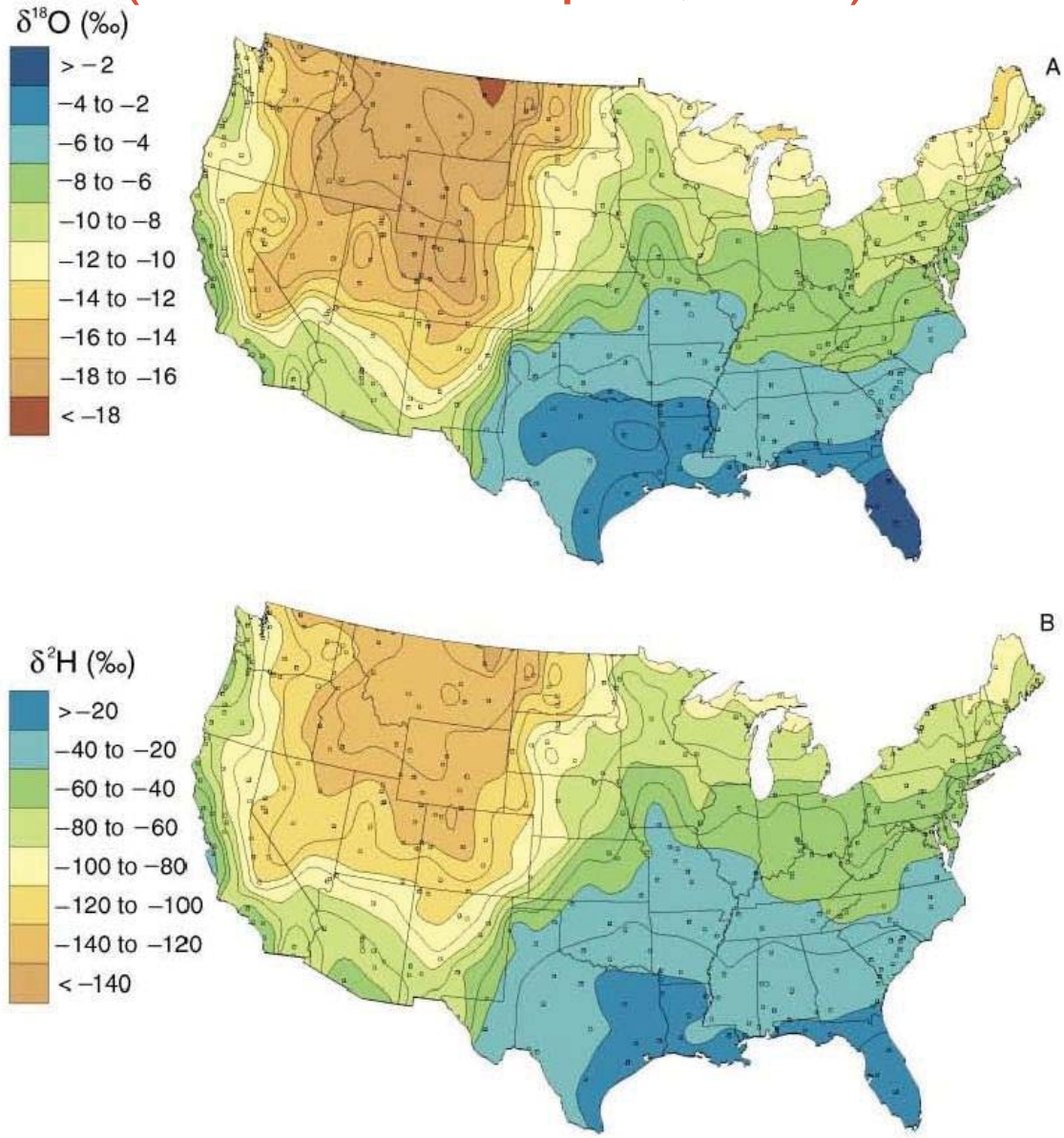
Where Ratio is the ratio of 2 isotopes of an element (such as $^{18}O/^{16}O$ for oxygen, $^{2}H/^{1}H$ for hydrogen) for a sample or a standard.

A $\delta^{18}O$ = +10 ‰ means there are 10 parts per thousand (or per mil) more ^{18}O in the sample than in the standard.

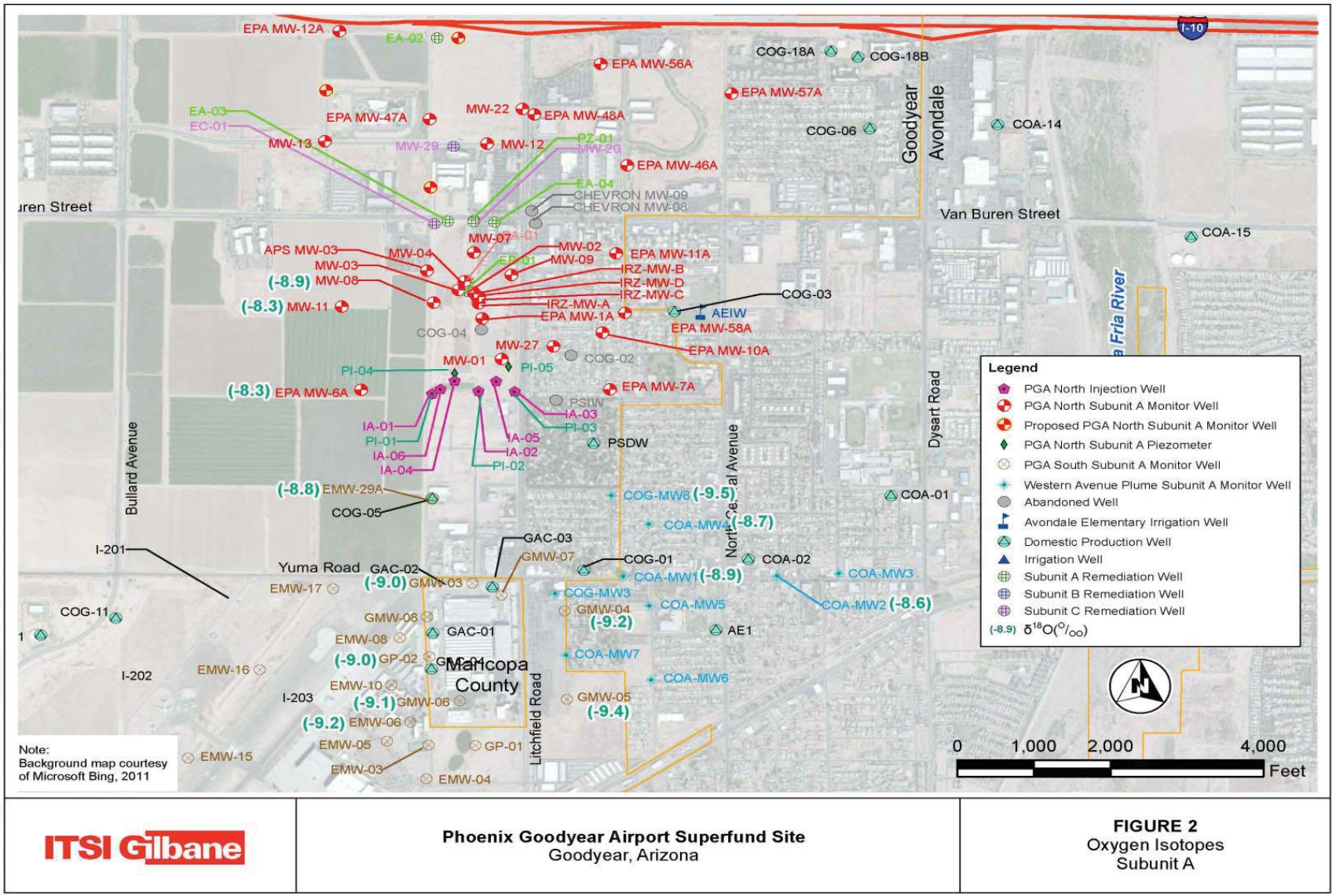
A $\delta^{18}O$ = -10 ‰ means there are 10 parts per thousand (or per mil) less ^{18}O in the sample than in the standard.

VSMOW (Vienna Standard Mean Ocean Water) for oxygen and hydrogen isotopes

O and H Isotopes in Surface Water, USA (Kendall and Coplen, 2001)



$\delta^{18}O$ in GW in Subunit A



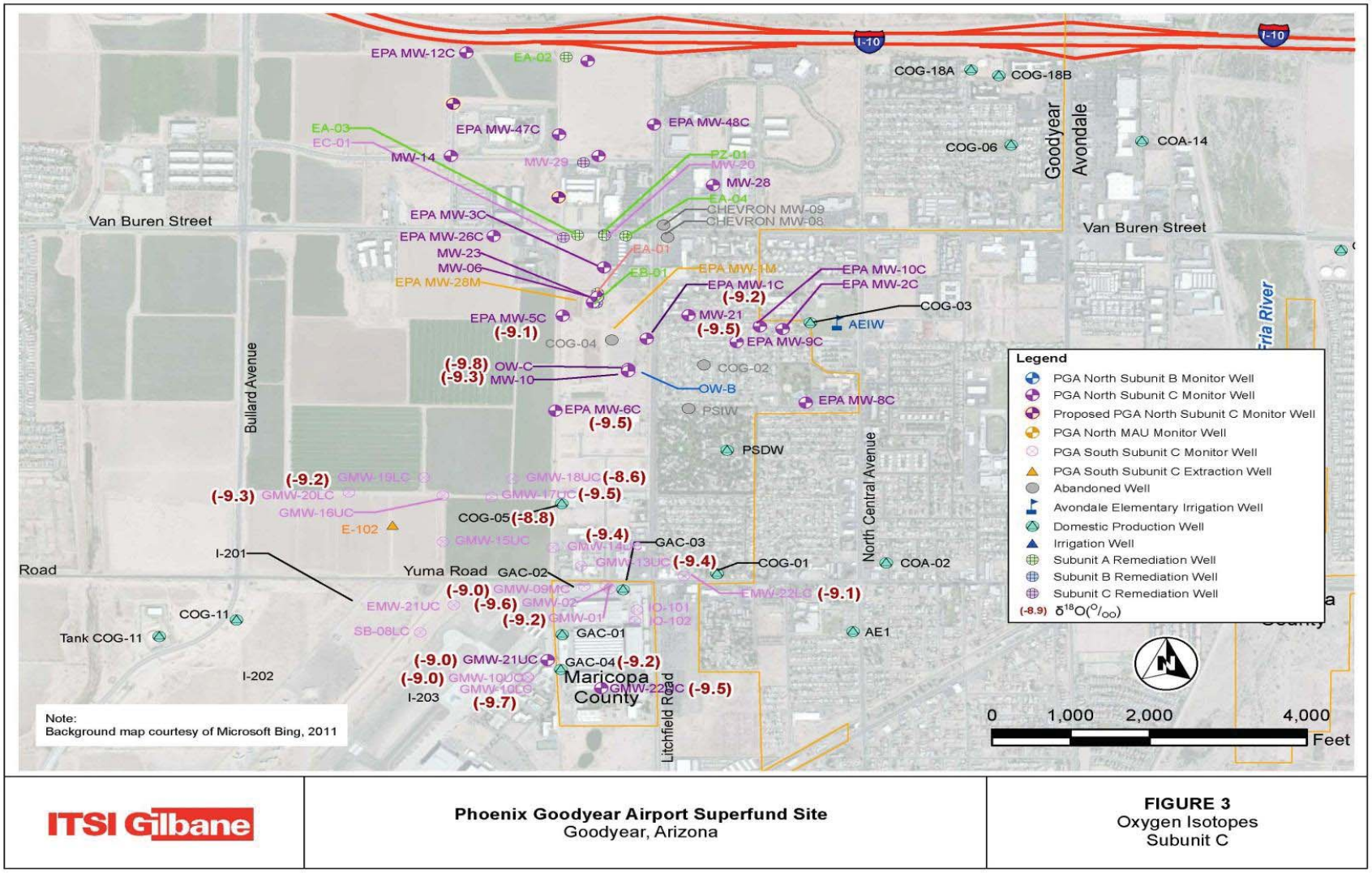
G:\ArcGIS\EPA\Phoenix_Goodyear_Airport\PROJECTS\2011_GW\Data\Subunit_A_Isotope.mxd 7/24/2012 [11:37 AM] KCHOLAK: ITSI

ITSI Gilbane

Phoenix Goodyear Airport Superfund Site
Goodyear, Arizona

FIGURE 2
Oxygen Isotopes
Subunit A

$\delta^{18}O$ in GW in Subunit C

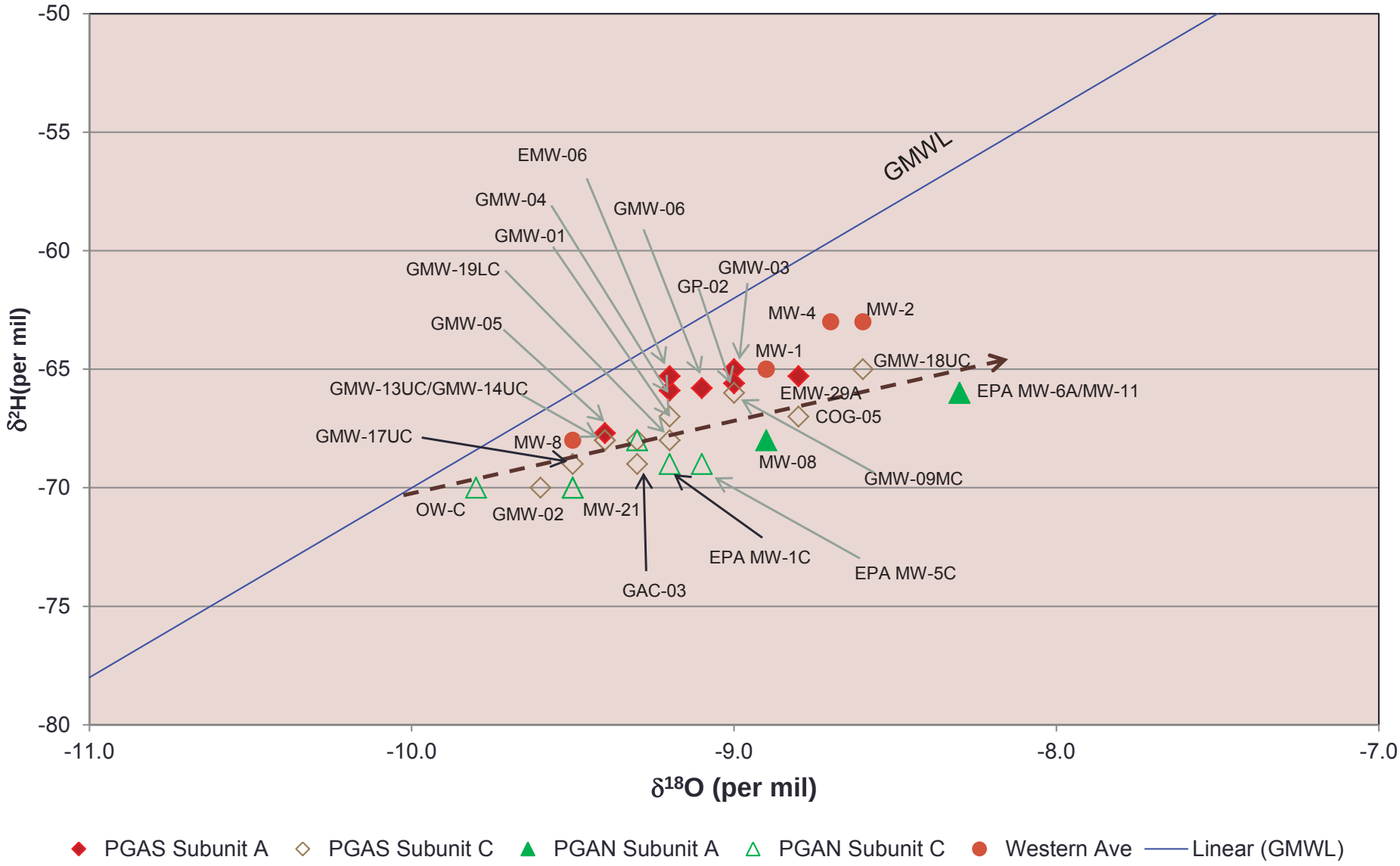


ITSI Gilbane

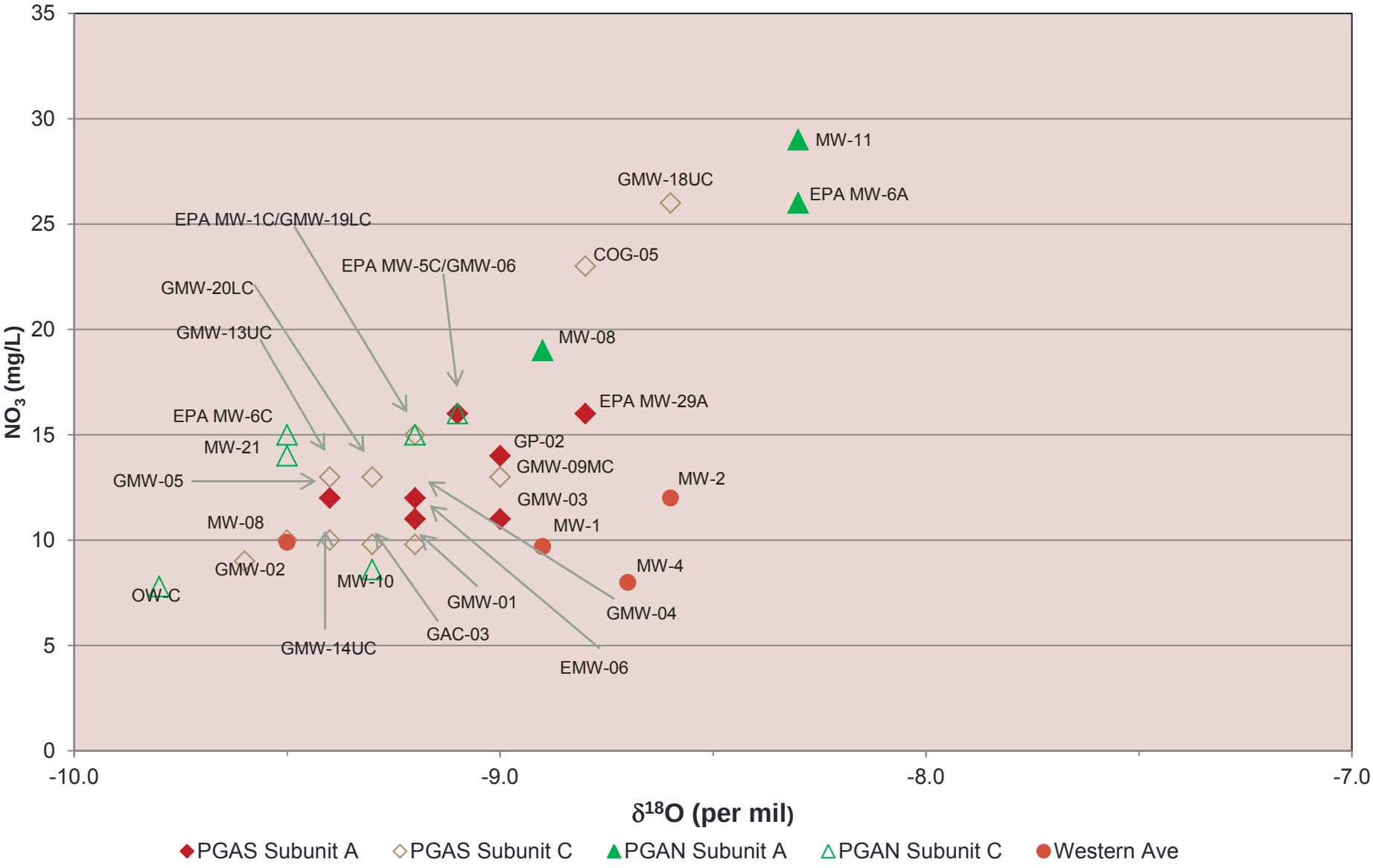
Phoenix Goodyear Airport Superfund Site
Goodyear, Arizona

FIGURE 3
Oxygen Isotopes
Subunit C

δ^2H vs. $\delta^{18}O$ in GW in the Area between the Sites



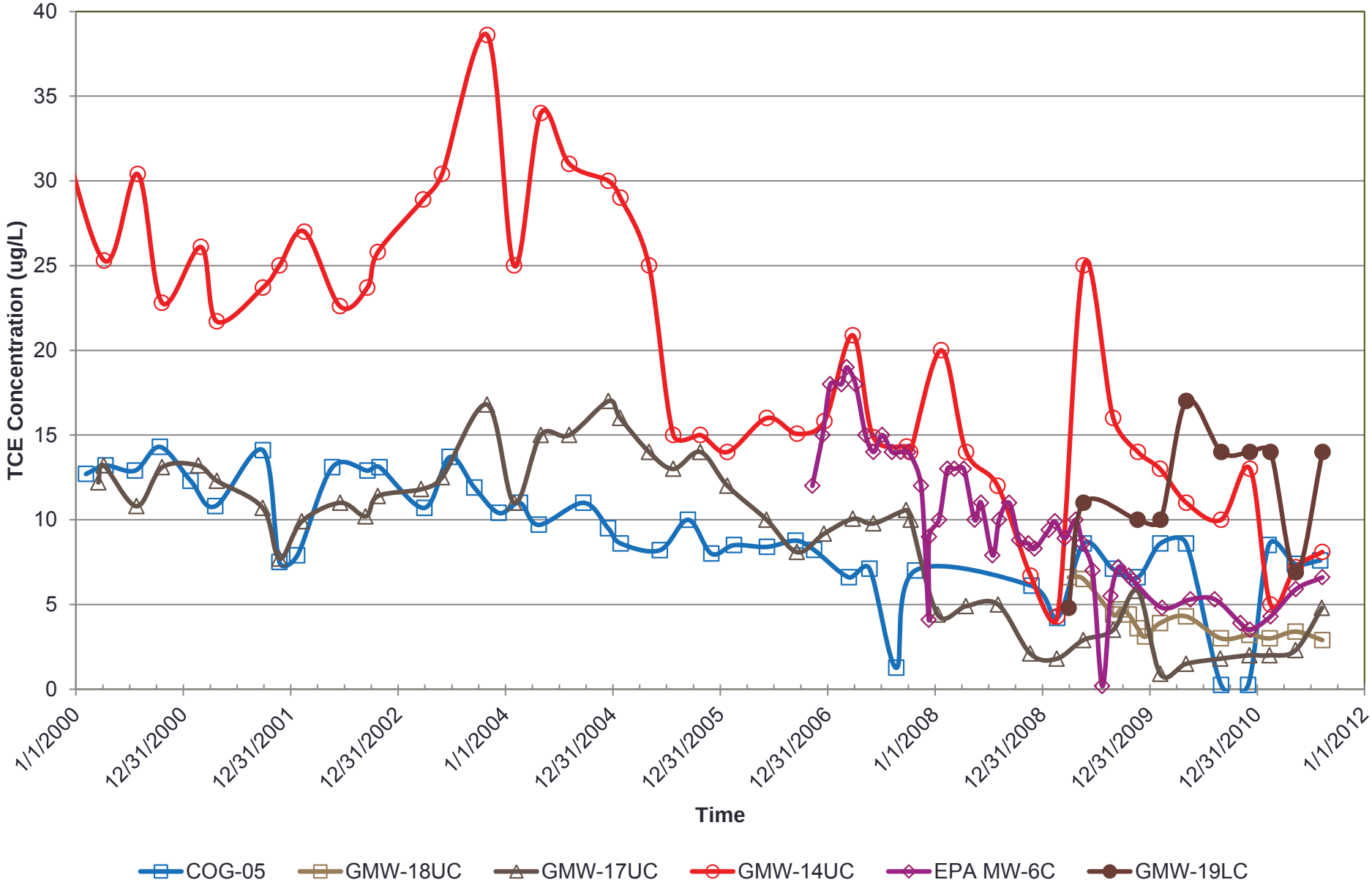
Nitrate vs. $\delta^{18}O$ in GW



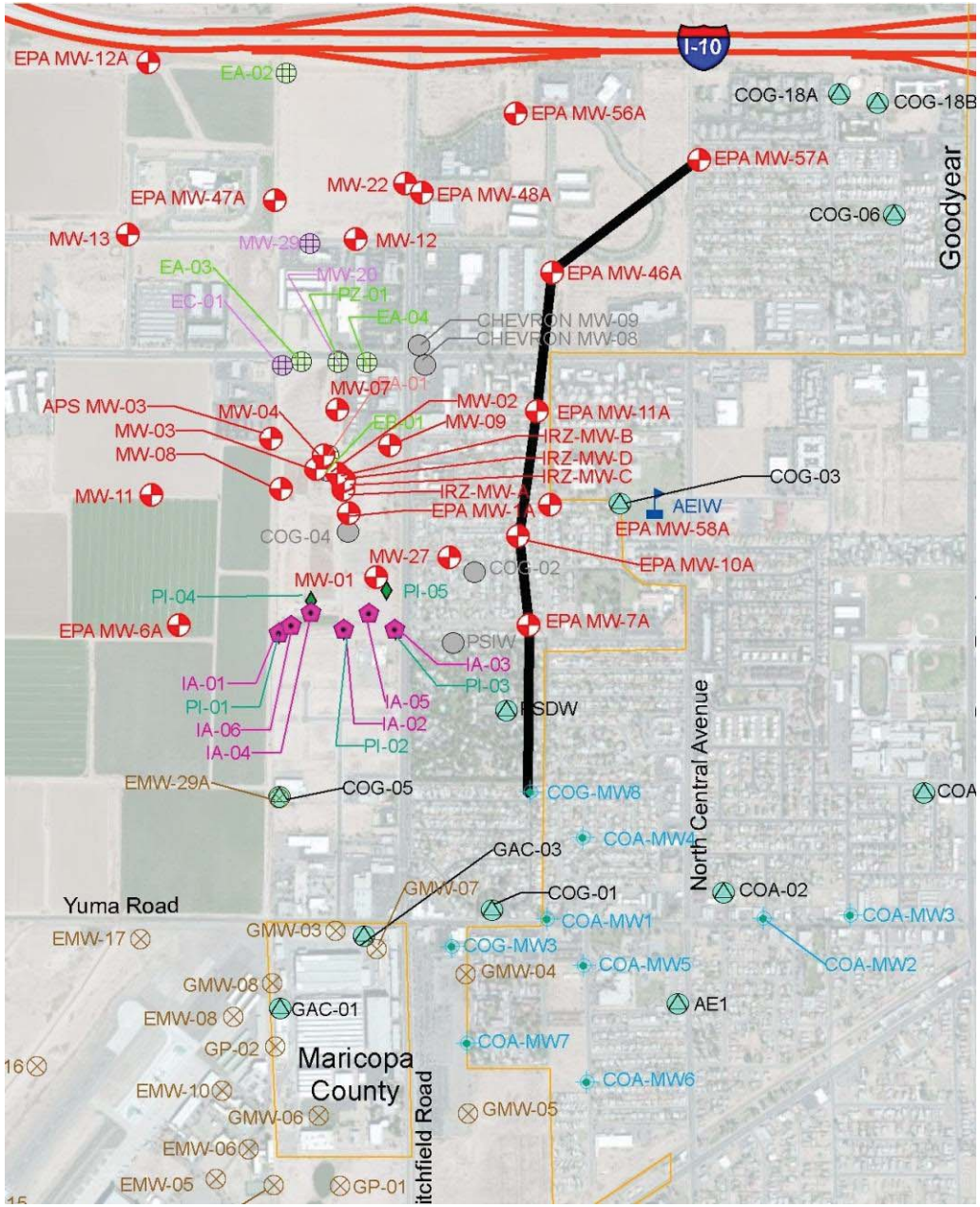
Contaminant Concentration Data (August 2011)
(Values in ug/L)

Wells	Total Cr	Cr (VI)	Perchlorate	TCE
EPA MW-5C	14	<5	8.3	19
EPA MW-6C	19	9.3	2.6	6.6
GMW-09MC	3.2J	<10	4.6	<0.5
COG-05	NS	NS	2.1J	7.6
GMW-13UC	570	580	<4	98
GMW-14UC	19	<10	3.8 J	8.1
GMW-15UC	15	<10		1.2
GMW-18UC	13	NA	0.96 J	2.9
GMW-19LC	50	NA	1.3 J	14
GMW-20UC	<5	10	<4	0.5

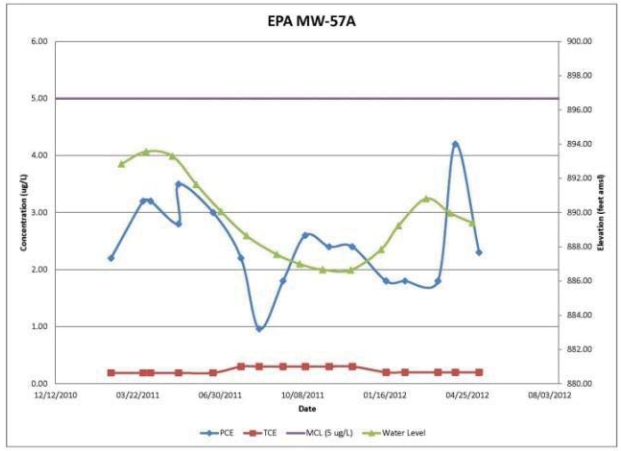
Historical TCE Concentrations in Subunit C wells

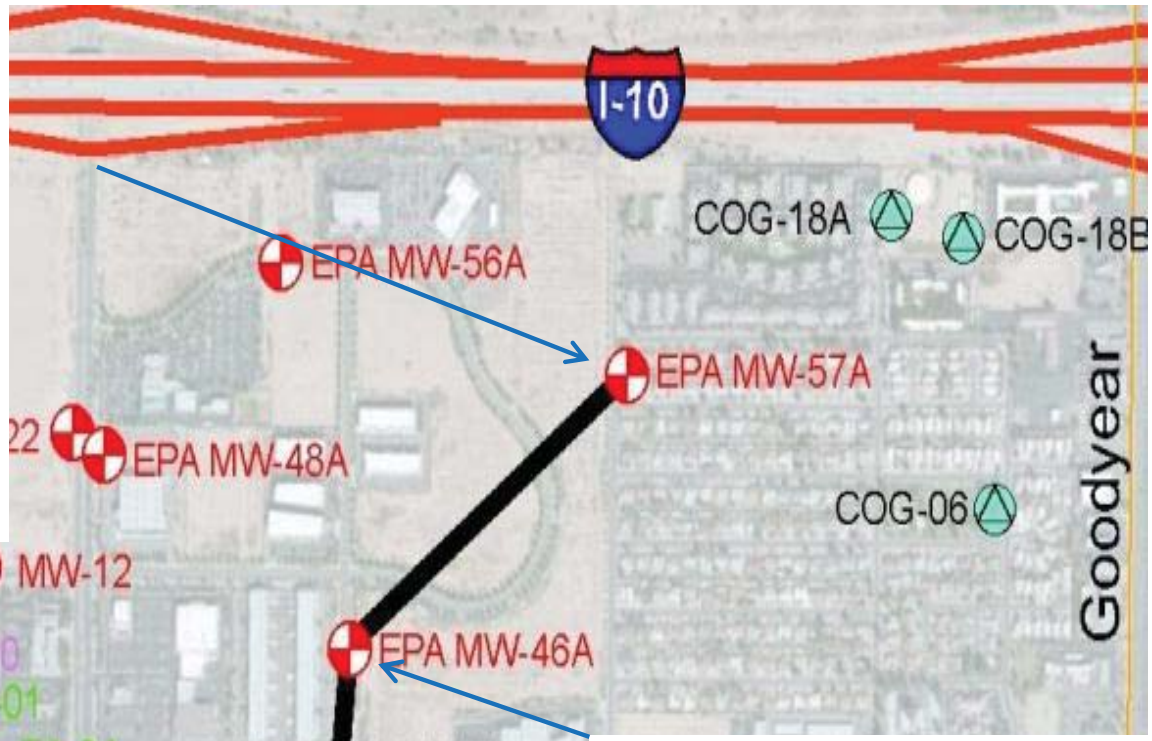


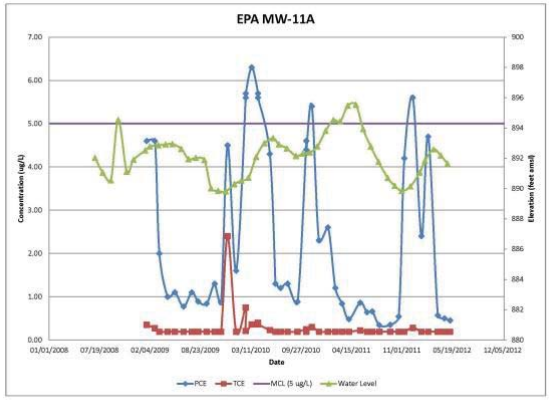
PCE, TCE and WLs in southeast PGAN area Subunit A monitoring wells

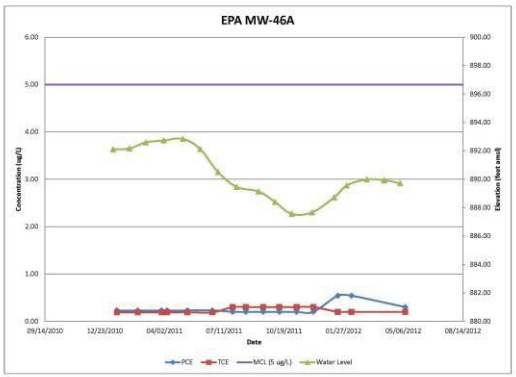


PCE, TCE and WLs in southeast PGAN area Subunit A monitoring wells

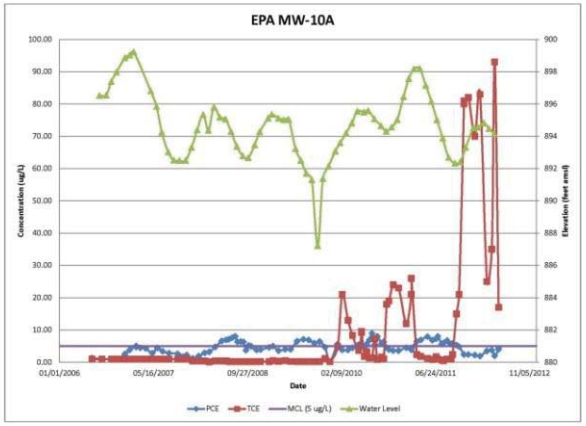


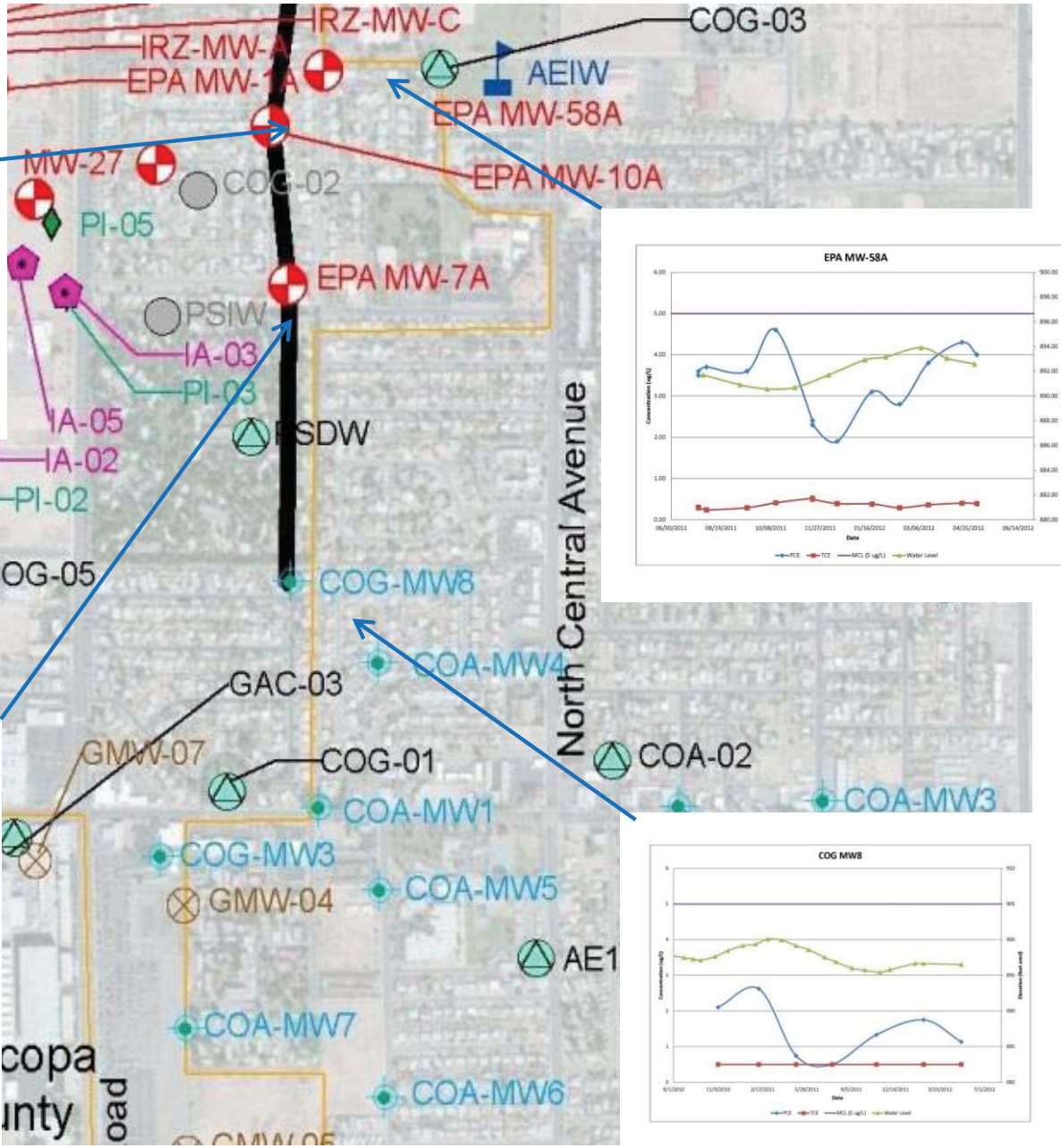


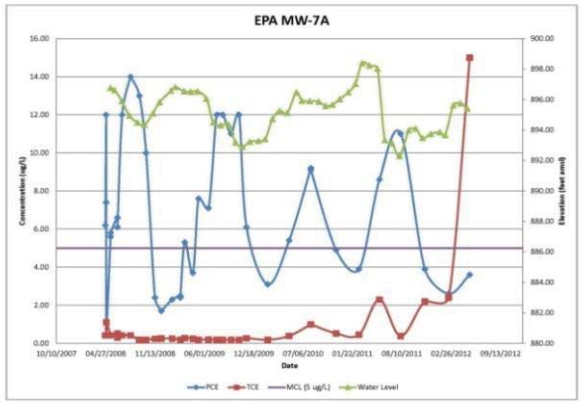




PCE, TCE and WLs in southeast PGAN area Subunit A monitoring wells







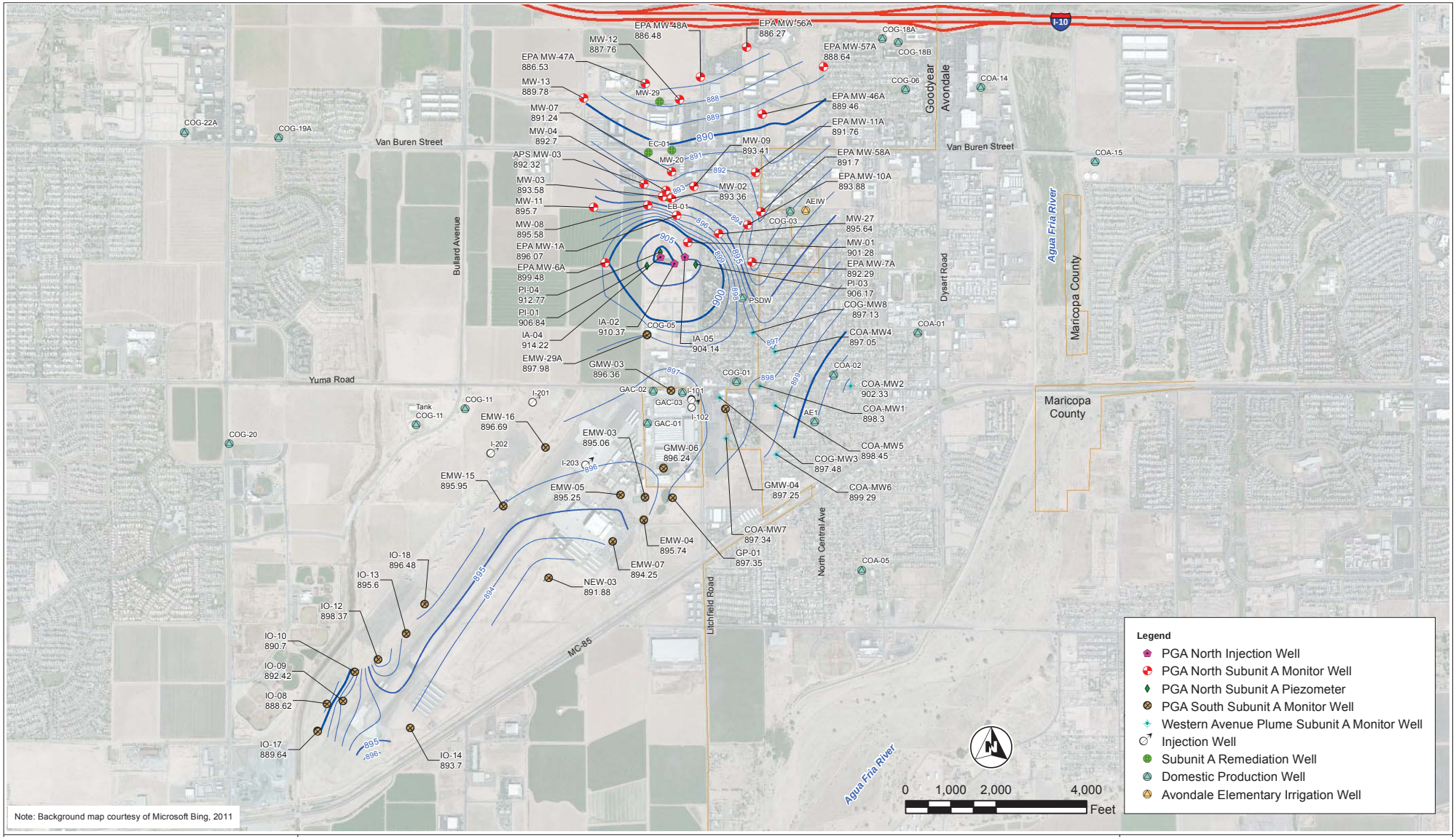
Conclusions

- In the Area between the Sites, Subunit A groundwater flows from Western Avenue site (1) mostly to the west to the PGAS site and (2) to the PGAN site. Some of the injection water from the MTS injection well field flows south to the PGAS site.
- In Subunit C, groundwater generally flows to the northwest. PGAN well EPA MW-6C and PGAS wells COG-05 and GMW-18UC appear to be located cross-gradient from one another.
- Geochemical and isotopic evidence suggest that COG-05 might act as a conduit well, allowing groundwater to migrate from Subunit A to Subunit C (and therefore impacting the groundwater chemistry in Subunit C in the vicinity). There is no contamination in Subunit A, so COG-05 will not act as a conduit well for contaminant.

Conclusions

- Groundwater contour maps, along with geochemical and isotopic evidence, suggest that the PGAN and PGAS Subunit C TCE plumes are not commingled in this area.
- PCE and TCE are present in selected Subunit A wells in southeast portion of PGAN Site, however, concentration trending graphs indicate that in these wells PCE have different origins from TCE. TCE is from PGAN site, while PCE is not. There is not enough information to connect PCE in these wells to Western Avenue WQARF Site. Most recent monitoring results also show that PCE concentrations in these wells are below the MCL (5 ppb), these low levels of PCE concentrations will not likely put COG-03 (screened in Subunit C and MAU) at risk.

Questions?

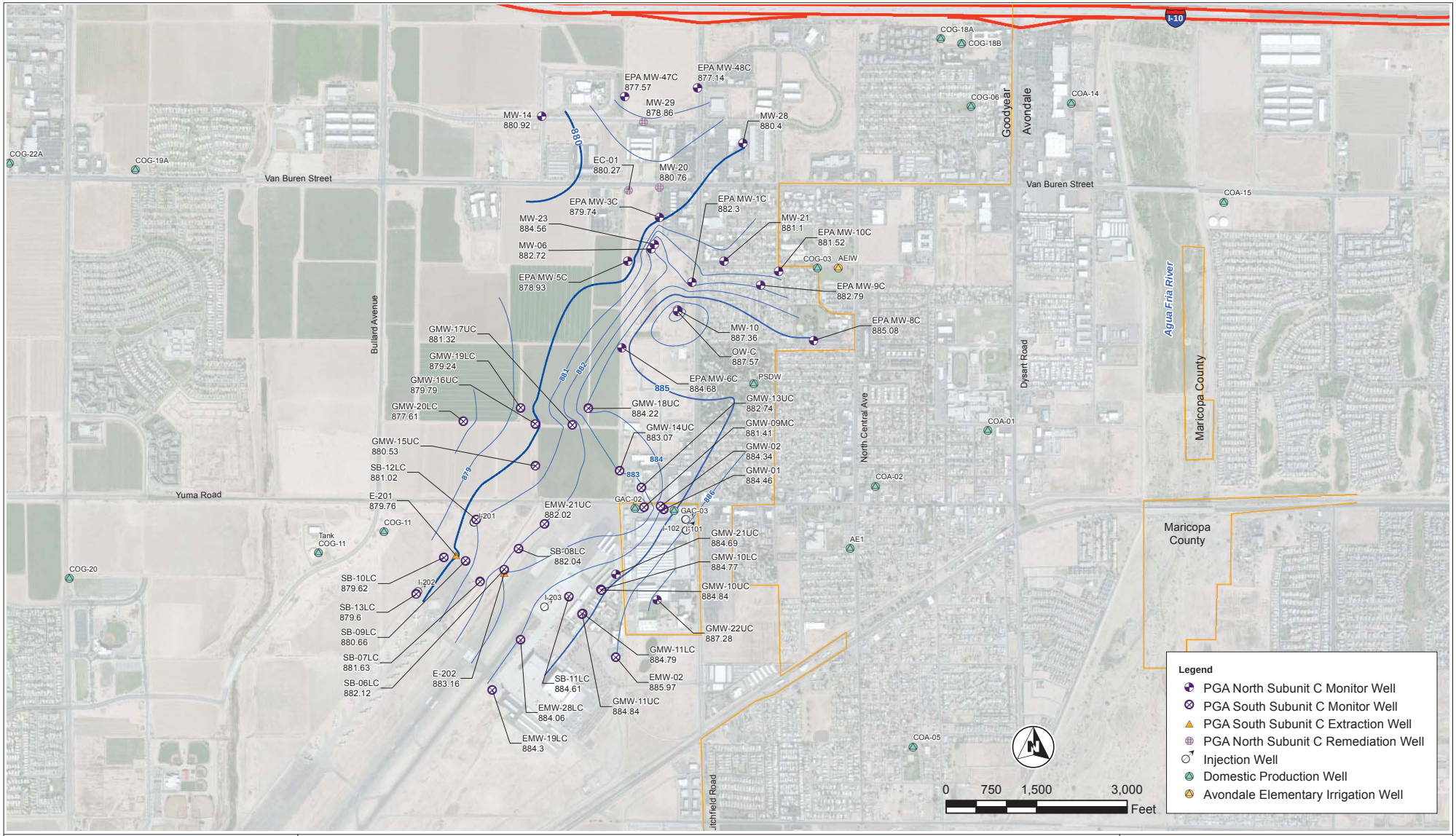


ITSI Gilbane

Phoenix Goodyear Airport Superfund Site
Goodyear, Arizona

Figure 1A
August 2011 Groundwater Elevation Contours
Subunit A

G:\ArcGIS\EPA\Phoenix_Goodyear_Airport\PROJECTS\2011_GWData\3Q2011_SubunitA.mxd 7/31/2012 [14:11 PM] LWEBER, ITSI

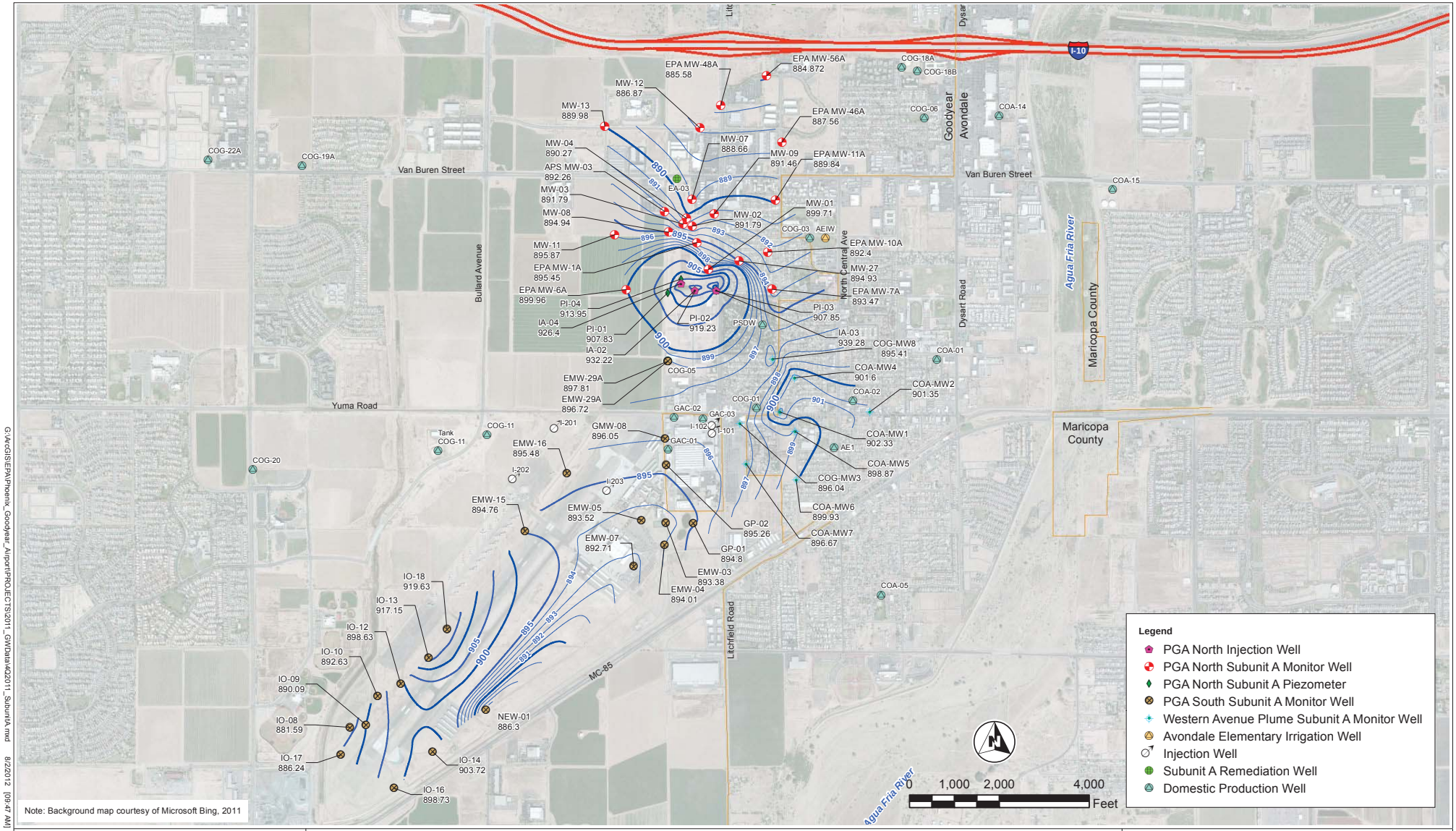


G:\ArcGIS\EPA\Phoenix_Goodyear_Airport\PROJECTS\2011_GWData\082011_SubunitC.mxd 7/31/2012 [14:13 PM] LWEBER, ITSI

ITSI Gilbane

Phoenix Goodyear Airport Superfund Site
Goodyear, Arizona

Figure 1B
August 2011 Groundwater Elevation Contours
Subunit C

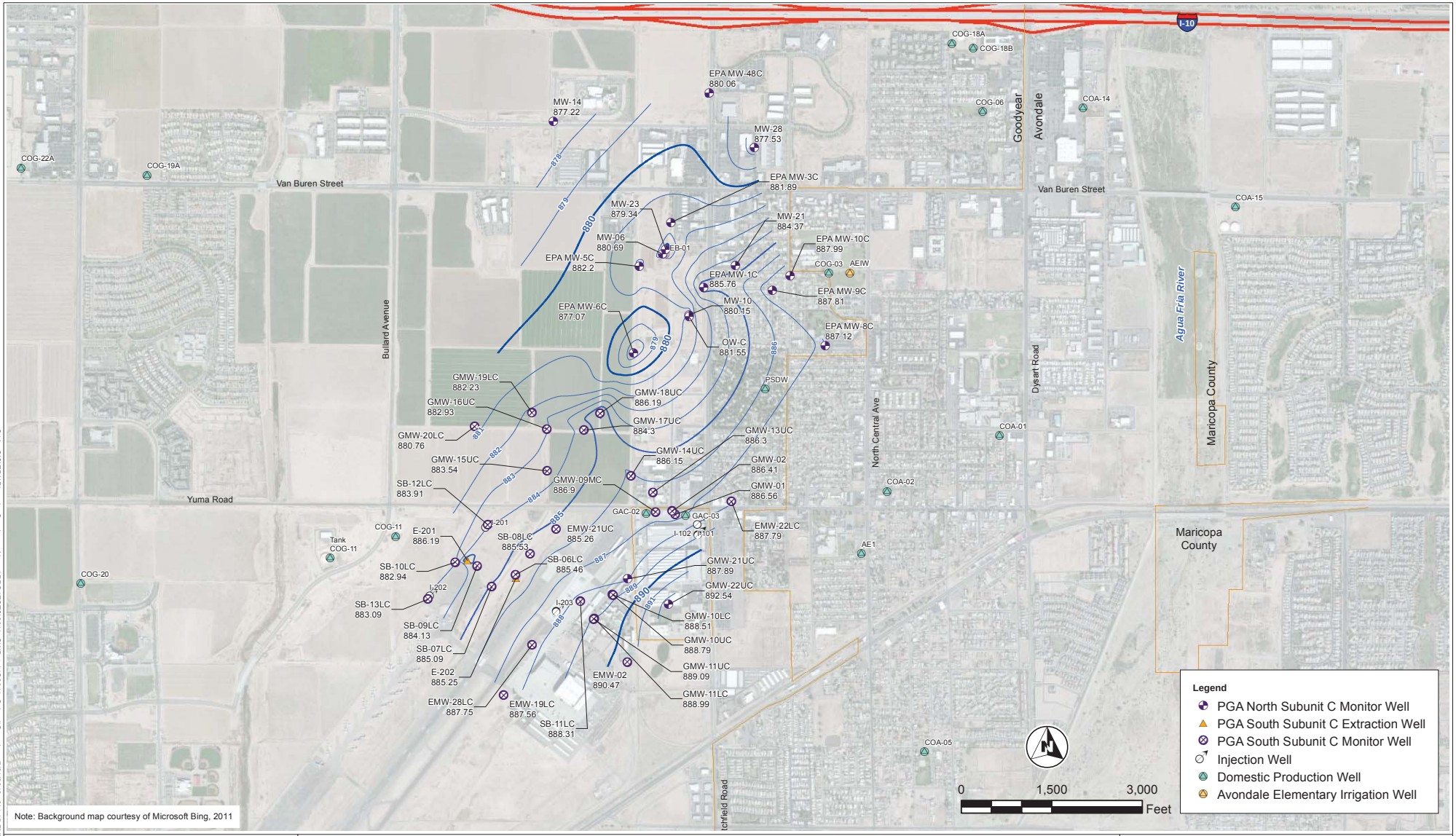


G:\ArcGIS\EPA\Phoenix_Goodyear_Airport\PROJECTS\2011_GWData\4Q2011_SubunitA.mxd 8/2/2012 [09:47 AM] LWEBER, ITSI

ITSI Gilbane

Phoenix Goodyear Airport Superfund Site
Goodyear, Arizona

Figure 1C
November 2011 Groundwater Elevation Contours
Subunit A

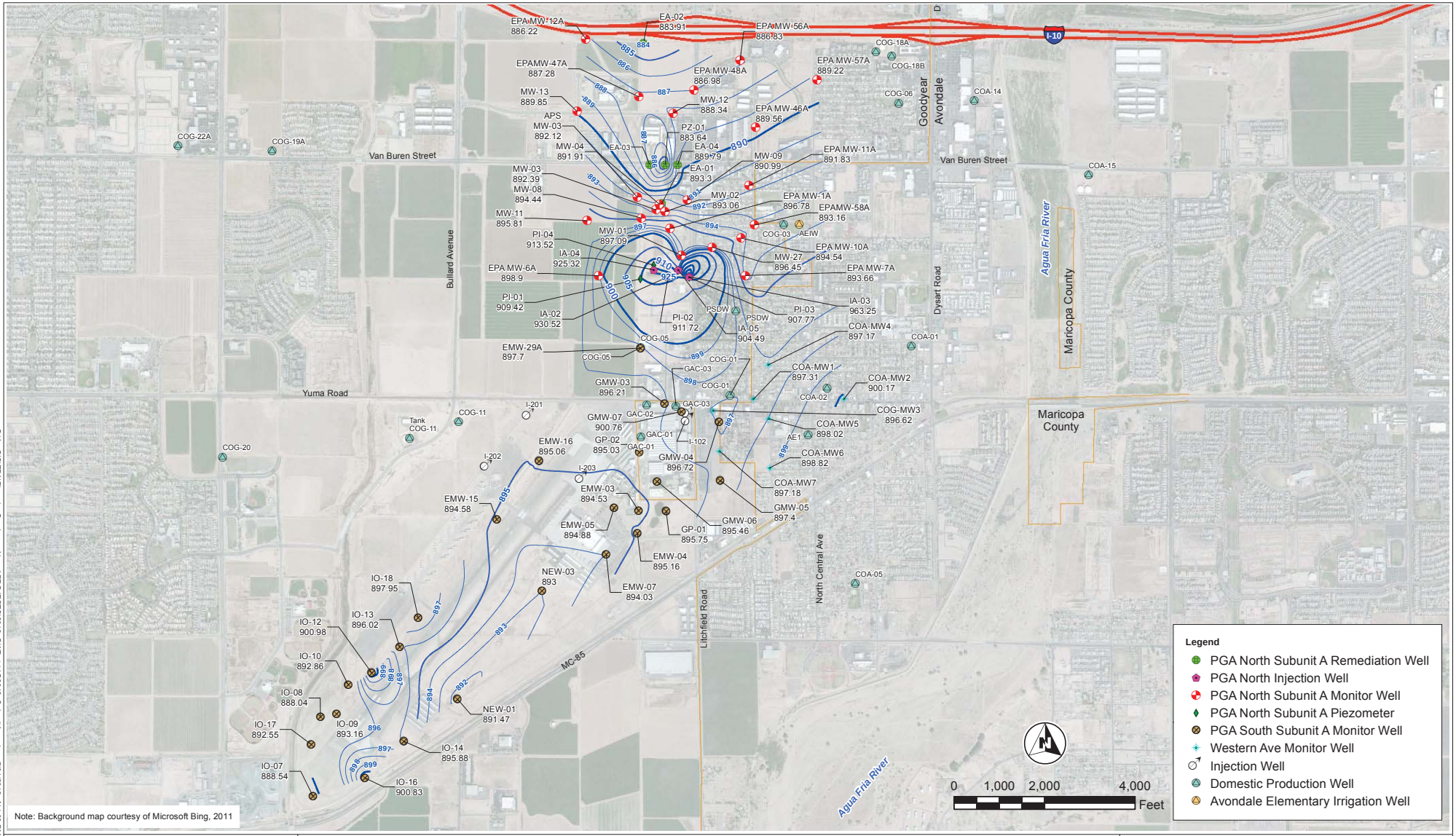


G:\Arc\GIS\EPA\Phoenix_Goodyear_Airport\PROJECTS\2011_GWData\4Q2011_SubunitC.mxd 7/31/2012 [14:15 PM] LWEBER, ITSI

ITSI Gilbane

Phoenix Goodyear Airport Superfund Site
Goodyear, Arizona

Figure 1D
November 2011 Groundwater Elevation Contours
Subunit C

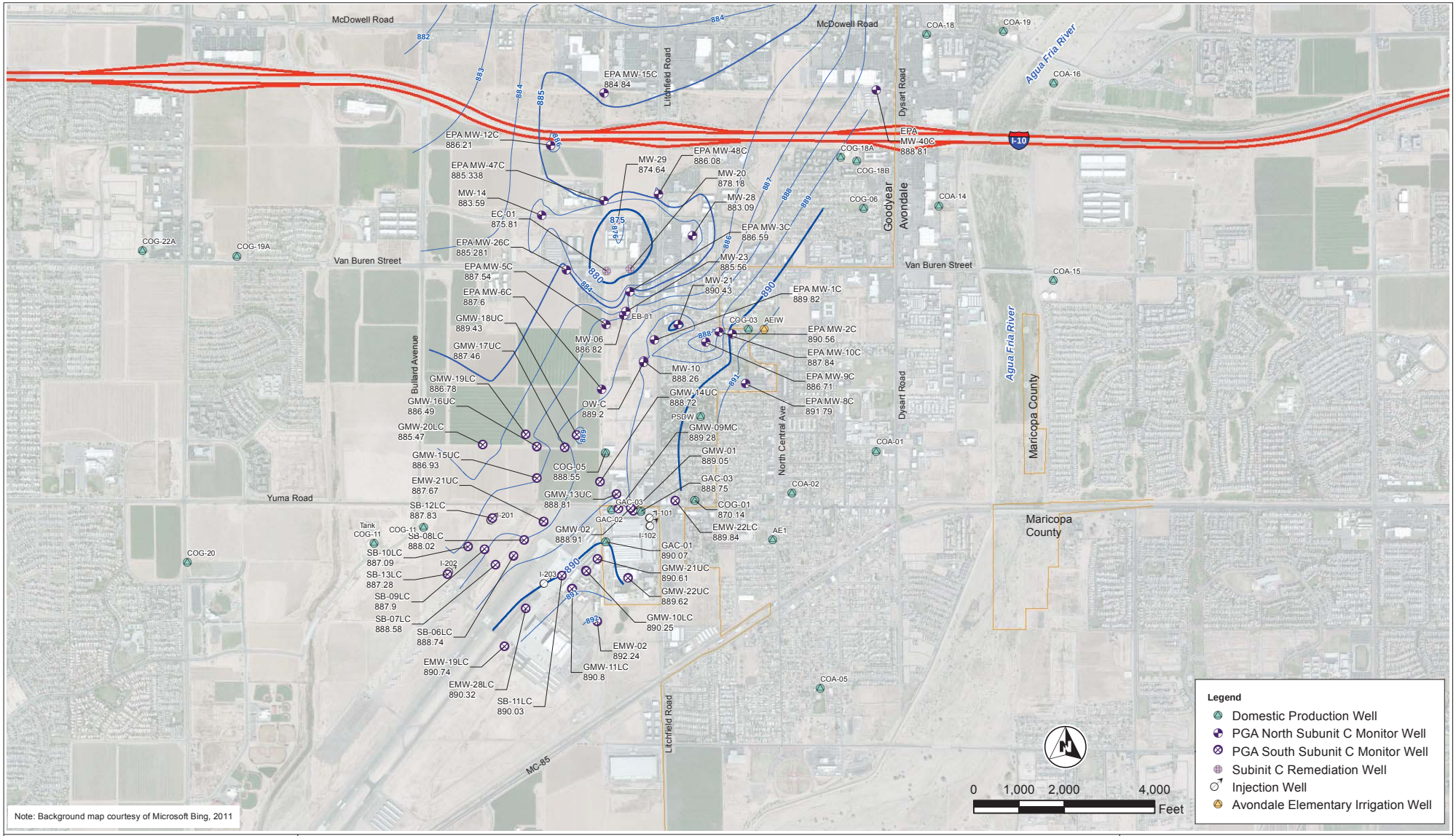


ITSI Gilbane

Phoenix Goodyear Airport Superfund Site
Goodyear, Arizona

Figure 1E
February 2012 Groundwater Elevation Contours
Subunit A

G:\ArcGIS\EPA\Phoenix_Goodyear_Airport\PROJECTS\2012_GWDatat\102012_SubunitA.mxd 7/31/2012 [14:08 PM] LWEBER, ITSI



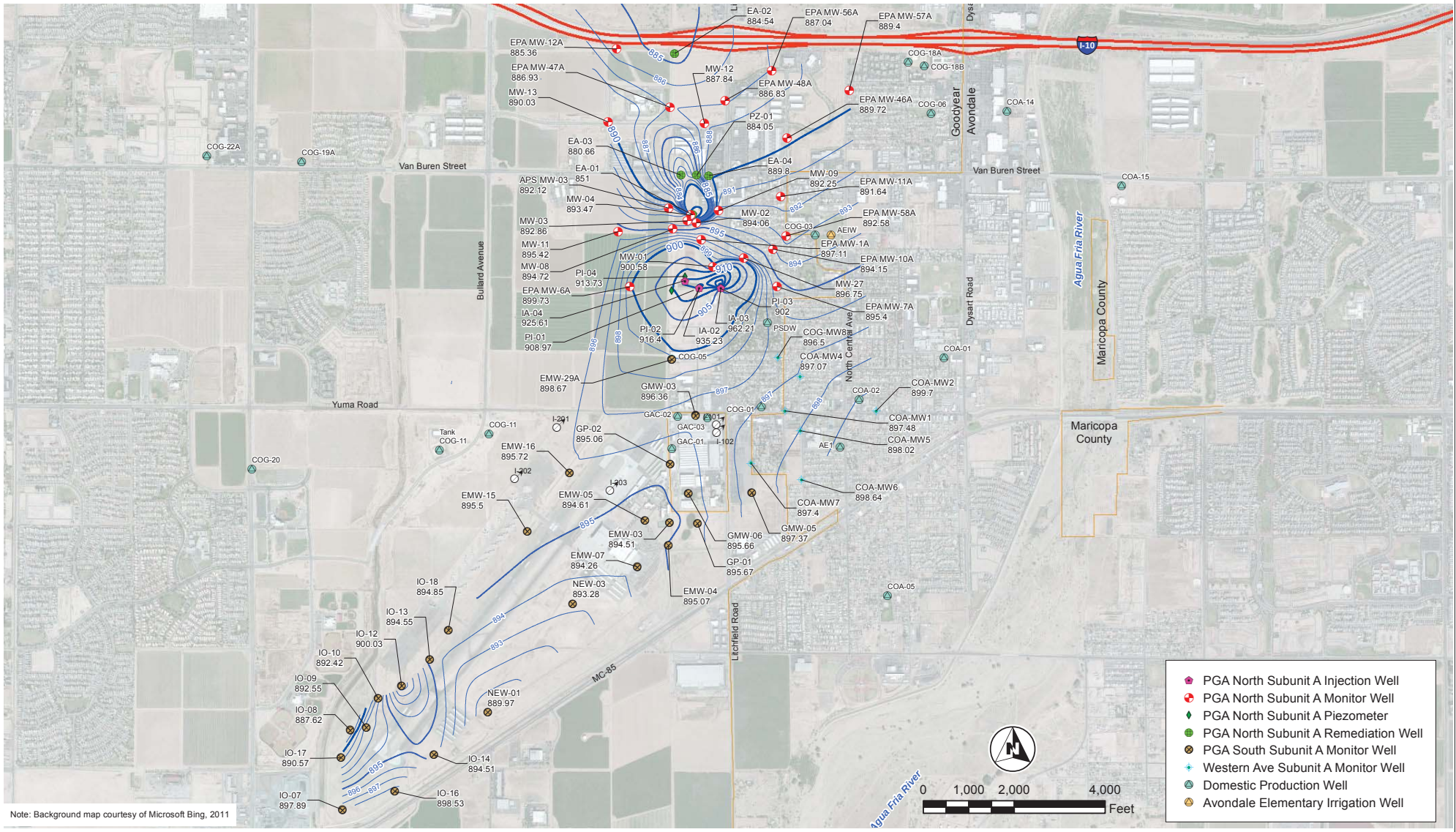
Note: Background map courtesy of Microsoft Bing, 2011

ITSI Gilbane

Phoenix Goodyear Airport Superfund Site
Goodyear, Arizona

Figure 1F
February 2012 Groundwater Elevation Contours
Subunit C

G:\ArcGIS\EPA\Phoenix_Goodyear_Airport\PROJECTS\2012_GWData\1Q2012_SubunitC.mxd 7/31/2012 [14:17 PM] LWEBER, ITSI



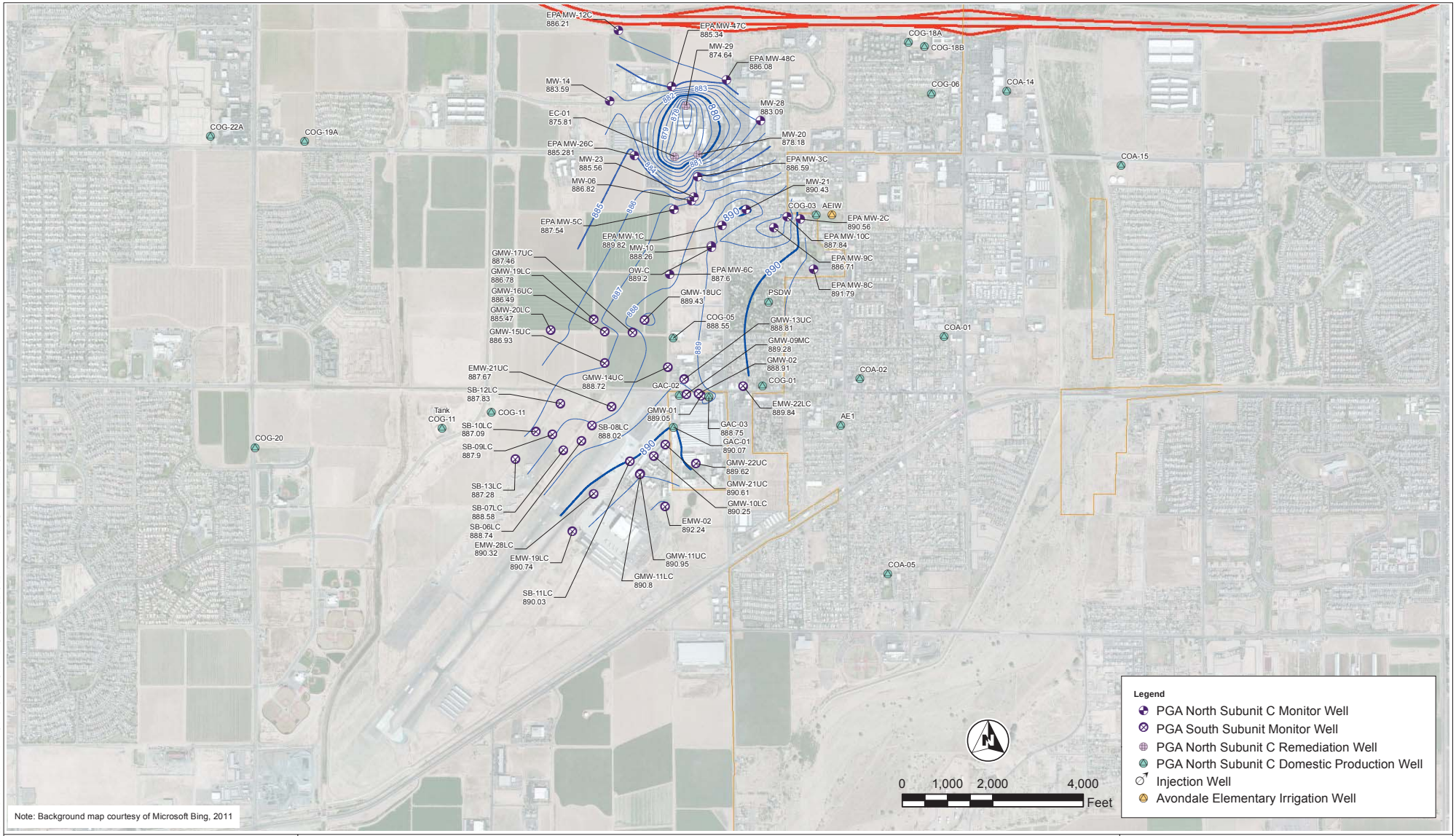
Note: Background map courtesy of Microsoft Bing, 2011

G:\ArcGIS\EPA\Phoenix_Goodyear_Airport\PROJECTS\2012_GWData\20120712_SubunitA.mxd 7/31/2012 [4:20 PM] LWEBER_ITSI

ITSI Gilbane

Phoenix Goodyear Airport Superfund Site
Goodyear, Arizona

Figure 1G
May 2012 Groundwater Elevation Contours
Subunit A



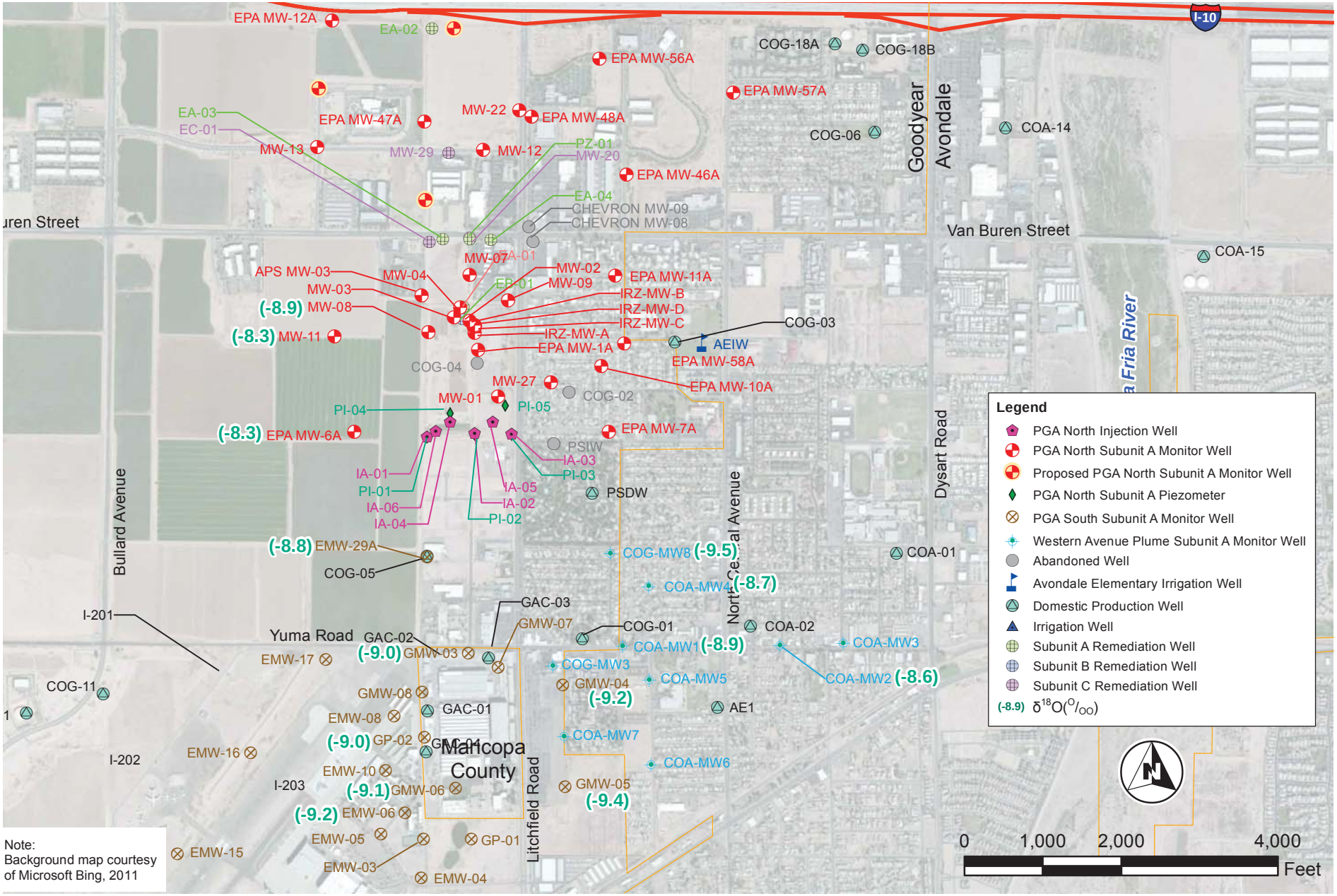
Note: Background map courtesy of Microsoft Bing, 2011

ITSI Gilbane

Phoenix Goodyear Airport Superfund Site
Goodyear, Arizona

Figure 1H
May 2012 Groundwater Elevation Contours
Subunit C

G:\ArcGIS\EPA\Phoenix_Goodyear_Airport\PROJECTS\2012_GWDataIn2Q2012_SubunitC.mxd 7/31/2012 [14:19 PM] LWEBER, ITSI

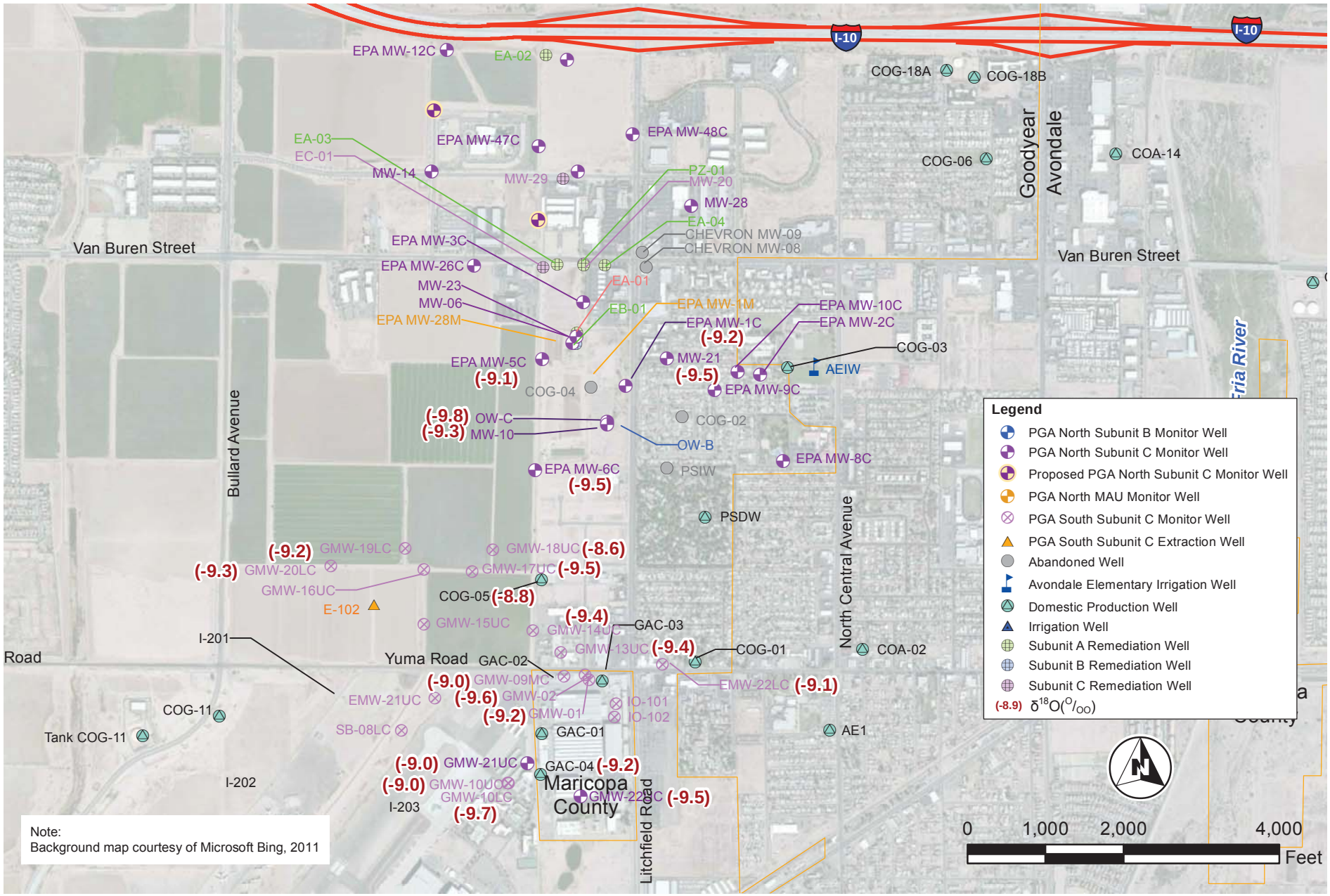


ITSI Gilbane

Phoenix Goodyear Airport Superfund Site
Goodyear, Arizona

FIGURE 2
Oxygen Isotopes
Subunit A

G:\ArcGIS\EPA\Phoenix_Goodyear_Airport\PROJECTS\2011_GWData\Subunit_A_Isotope.mxd 7/24/2012 [11:37 AM] KCHOLAK, ITSI



ITSI Gilbane

Phoenix Goodyear Airport Superfund Site
Goodyear, Arizona

FIGURE 3
Oxygen Isotopes
Subunit C

G:\ArcGIS\EPA\Phoenix_Goodyear_Airport\PROJECTS\2011_GWData\Subunit_C_Isotope.mxd 7/24/2012 [11:36 AM] KCHOLAK, ITSI