

**Cooper and Commerce Water Quality Assurance Revolving Fund (WQARF) Site  
Community Advisory Board (CAB) Meeting**

**Thursday, October 27, 2011 at 6 p.m.  
McQueen Park Activity Center  
510 N. Horne St., Gilbert, Arizona**

**FINAL MINUTES**

OU #12-020

CAB members present: Deanna Gnadl and Pacer Udall

CAB Members absent: Bobbi Buchli, Nyanganya (Joe) Maniga, Mike Evans, and Bruce Friedrich

ADEQ Staff in attendance: Scott Goodwin, Project Manager; and Felicia Calderon, Community Involvement Coordinator

Members of the public present: Patricia Jordan, Town of Gilbert; Clinton Roland, Town of Gilbert; and Pat Petteruti, Town of Gilbert resident

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The following matters were discussed, considered, or decided at the meeting:

**1. Welcome and introductions**

Ms. Calderon greeted all attendees and announced that since no quorum was present among CAB members that CAB business would not be conducted. After introductions the meeting was turned over to the Co-chair, Mr. Udall.

**2. Acceptance and/or changes to June 23, 2011 Minutes**

This agenda item was tabled for the next CAB meeting, due to a lack of a quorum.

**3. CAB business to include: discussion and vote regarding CAB presentation to the Environmental and Energy Conservation Board (Felicia Calderon, Community Involvement Coordinator); CAB membership discussion and vote (Felicia Calderon, CIC); and discussion and vote on CAB engagement approaches with State Legislature -CAB Co-chair**

This agenda item was tabled for the next CAB meeting, due to a lack of a quorum.

**4. Discussion of current status and activities at the Cooper and Commerce WQARF Site to include: contaminant recovery results; groundwater sampling results from the 2nd and 3rd**

**quarters of 2011; review of groundwater concentrations; and soil gas data collected during the installation of monitor wells MW-108 and MW-109 - Scott Goodwin, Project Manager**

Mr. Goodwin initiated his presentation to the CAB with a discussion on current and future activities for the Cooper and Commerce Site.

**See presentation below**

Mr. Goodwin clarified the recovery curve for the “pounds of tetrachloroethene (PCE)” listed as being removed in his presentation, by the soil vapor extraction (SVE) system for Mr. Udall. Mr. Udall and Mr. Goodwin discussed the new southwest directional flow of the groundwater at the Site. Mr. Udall inquired when the monitoring wells (MW) 109 and 108 were installed. Mr. Goodwin replied that these two wells were installed in 2007.

Mr. Goodwin discussed PCE concentrations with Ms. Petteruti in the new well located on Encinas Street, MW-113. The well is near her residence and the initial sample indicated a PCE concentration of 1.6 parts per billion (ppb.). Mr. Goodwin added that the regulatory standard for PCE was 5 ppb. Mr. Goodwin explained sampling points that out-lined the current plume boundaries with the CAB and Ms. Petteruti. Ms. Calderon noticed that some slides of Mr. Goodwin’s PowerPoint were omitted in the handouts and stated she would email the CAB and attendees who provided their emails a complete copy of Mr. Goodwin’s presentation. Ms. Petteruti inquired if the Town of Gilbert’s recharge facility’s volume was still the same. Mr. Goodwin responded in the positive and stated that the volume was at about 800,000 gallons a day and had been at that level for several years now. Mr. Goodwin added that remediation on the source area would decrease the contamination levels detected around the Site. Ms. Petteruti asked about funding for the Site. Mr. Goodwin responded that funds were currently available to operate the treatment systems, but that it would not be known until the 2nd half of the year, if funding would be available to install any new wells.

Ms. Jordan inquired if Mr. Goodwin felt that the groundwater plume boundaries have been defined. Mr. Goodwin responded that he would like to see a consistent concentration decrease in MW G10, before he would say the source area is under control, which should yield decreasing concentrations on the perimeter of the plume. Mr. Goodwin added that another extraction well to the southwest of the source area may be required, depending on the future sampling results of MW G10.

Mr. Goodwin and Ms. Petteruti discussed a few scenarios of increased water flow volumes, by the Town of Gilbert to the recharge facility and what effects it would have on the contamination at the Site.

**5. Call to the Public-None**

**6. Future Meeting and Agenda Discussion**

The next CAB meeting will be held at the McQueen Park Activity Center, 510 N. Horne St., Gilbert, Arizona, on Thursday, March 22, 2012 beginning at 6 p.m. Agenda items for the next meeting to include contaminant recovery results from remediation systems, future site activities and tabled CAB action items.

## **7. Adjournment**

Ms. Calderon adjourned the meeting.



# Cooper and Commerce Water Quality Assurance Revolving Fund (WQARF) Site

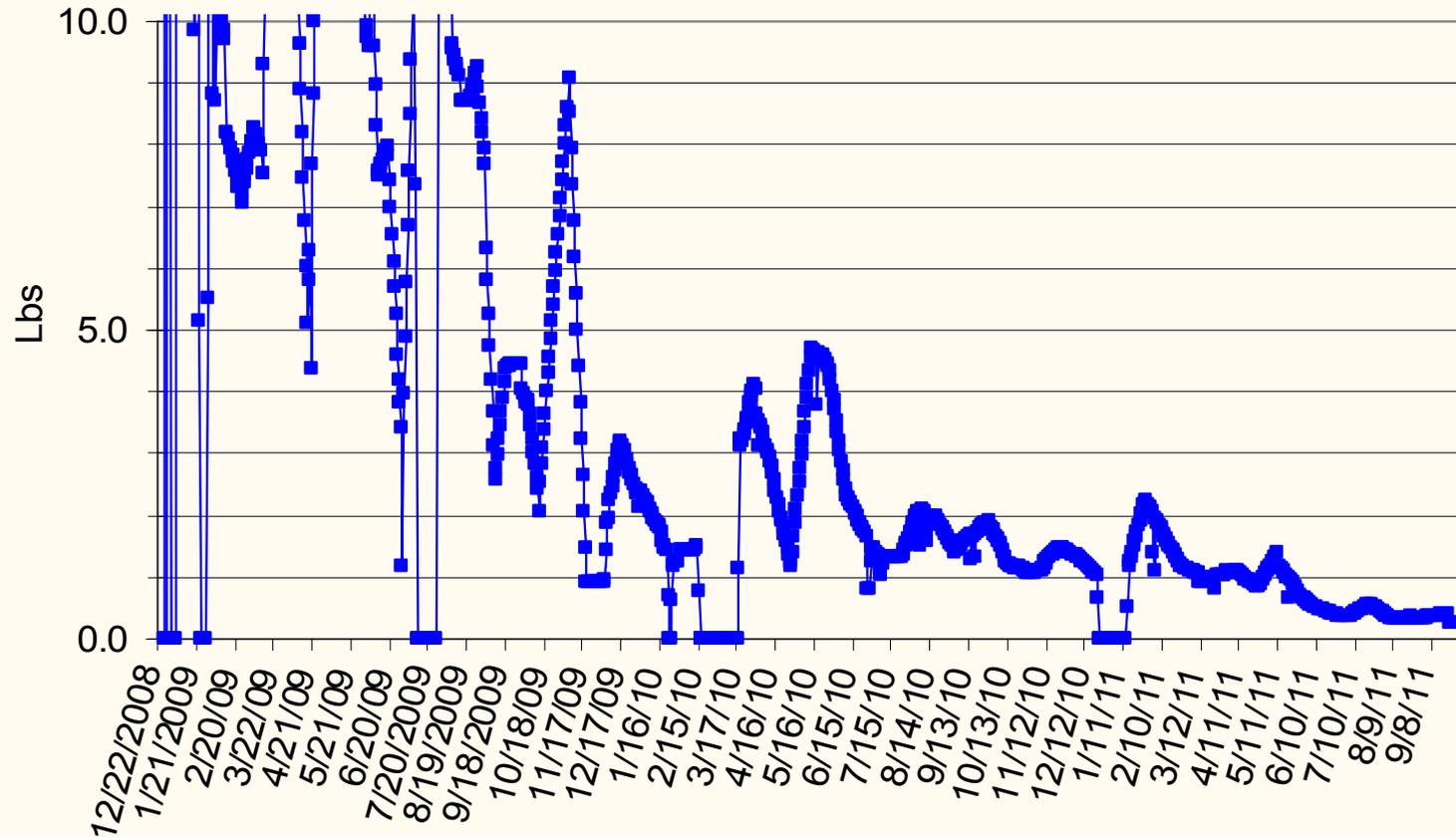
## CAB Meeting

### October 27, 2011

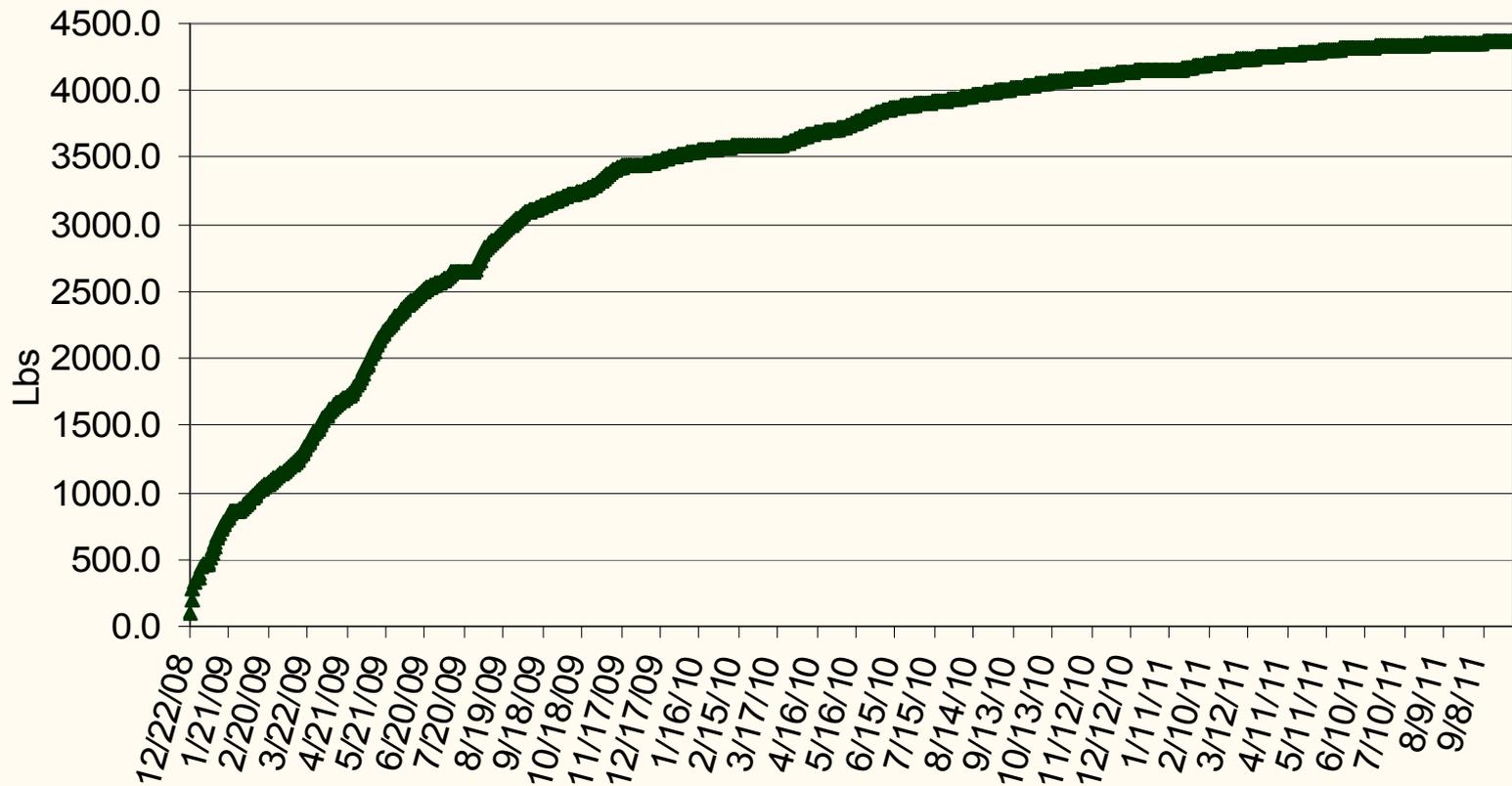
## Soil vapor extraction/ air sparge system

- The soil vapor extraction (SVE) system continues to operate normally at the site.
- After mechanical repairs, the air sparge component of the system has been operating since August 2011.
- During the second and third quarters of 2011, the system removed an average of 0.6 pounds of tetrachloroethene (PCE) per day. Including the third quarter of 2011, the system has removed approximately 4,368 pounds of PCE or approximately 323 gallons since operations began in December 2008.

**Figure 3**  
**Cooper and Commerce AS/SVE System**  
**Daily PCE/TCE Recovery (lbs/day)**



**Figure 4**  
**Cooper and Commerce AS/SVE System**  
**Cumulative PCE/TCE Recovery (lbs)**



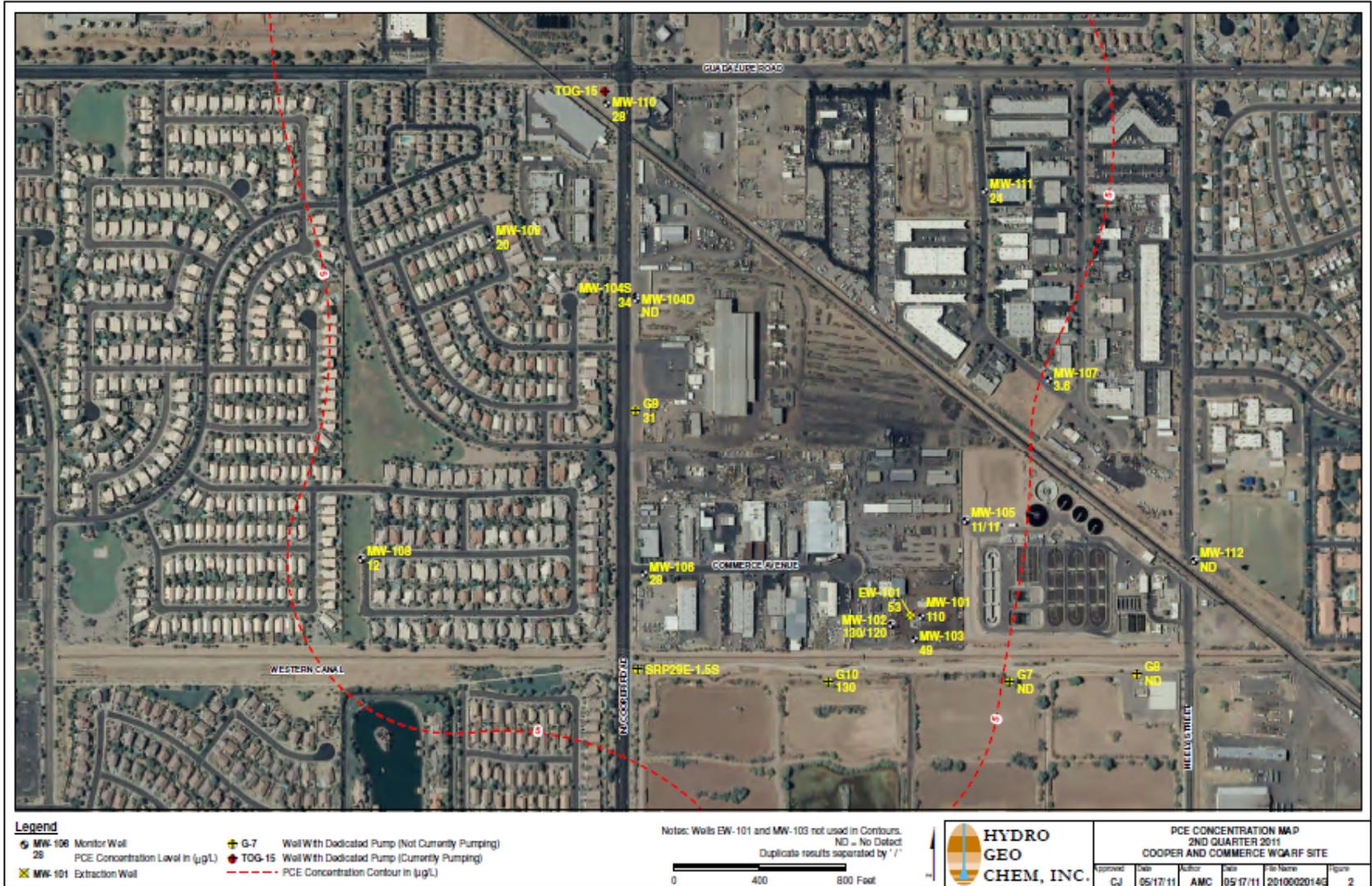
## Pump and treat system

- The pump and treatment system at the site became operational August 2, 2010 and after start-up testing commenced continuous operations on August 25, 2010.
- During the second and third quarters of 2011, the system operated at a rate of approximately 108 gallons per minute (gpm) and pumped and treated 23,413,692 gallons during the quarters. PCE influent concentrations from the extraction well averaged 51 parts per billion (ppb) over the quarters. The Aquifer Water Quality Standard (AWQS) for PCE is 5 ppb.
- Based on these numbers, the pump and treat system recovered approximately 9.7 pounds of PCE during the second and third quarters of 2011. Since operations began, the pump and treat system has recovered approximately 29 pounds of PCE. The system was shut down from June 24, 2011 to July 23, 2011 for a carbon change-out.

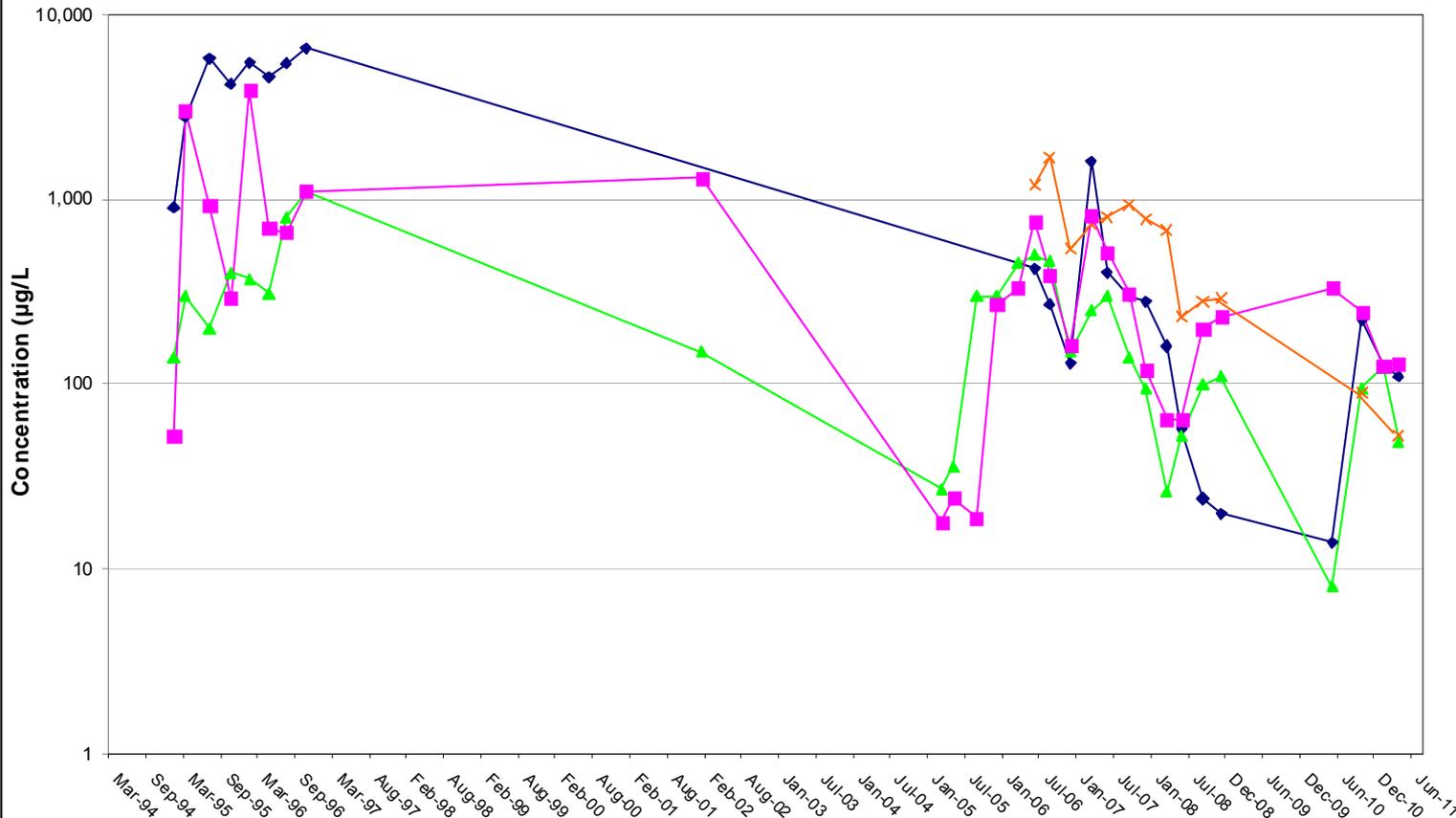
- During April 2011, ADEQ conducted a round of groundwater sampling from the entire monitoring well network.
- With the exception of MW-103, PCE concentration in the on-site wells generally remained stable compared to 1<sup>st</sup> quarter 2011 concentrations. On-site PCE concentrations average 96 ppb.
- PCE concentrations in well G-10 also remained stable compared to the 4<sup>th</sup> quarter of 2010 and the 1<sup>st</sup> quarter of 2011. Compared to wells sampled in both the 4<sup>th</sup> quarter of 2010 and the 1<sup>st</sup> quarter of 2011, PCE concentrations in most other wells also remained stable.
- Two new wells on the north side of the plume were first sampled in July 2011. MW -113 located on Encinas Street had an initial concentration of PCE at 1.6 ppb. MW-114 located on Scott Street had an initial PCE concentration of 9.5 ppb. Minor amounts of toluene were detected in both wells at concentrations of approximately 1.4 ppb. The AWQS for Toluene is 1,000 ppb.



# 1st Quarter 20110 Groundwater Sampling



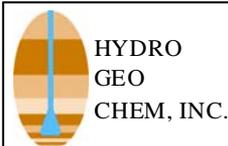
# 2nd Quarter 2011 Groundwater Sampling



**EXPLANATION**

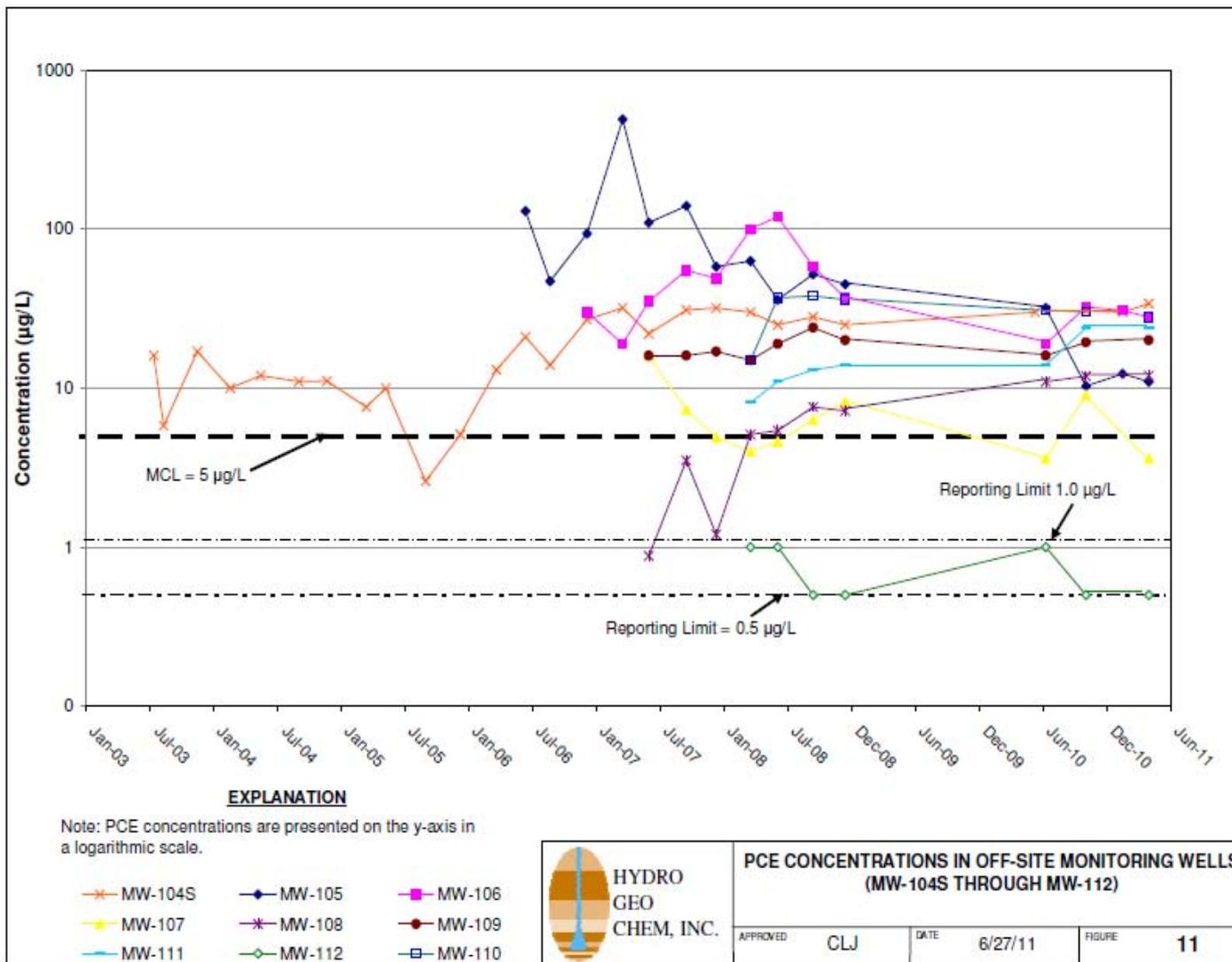
Note: Due to range of PCE concentrations detailed, y-axis is in a logarithmic scale.

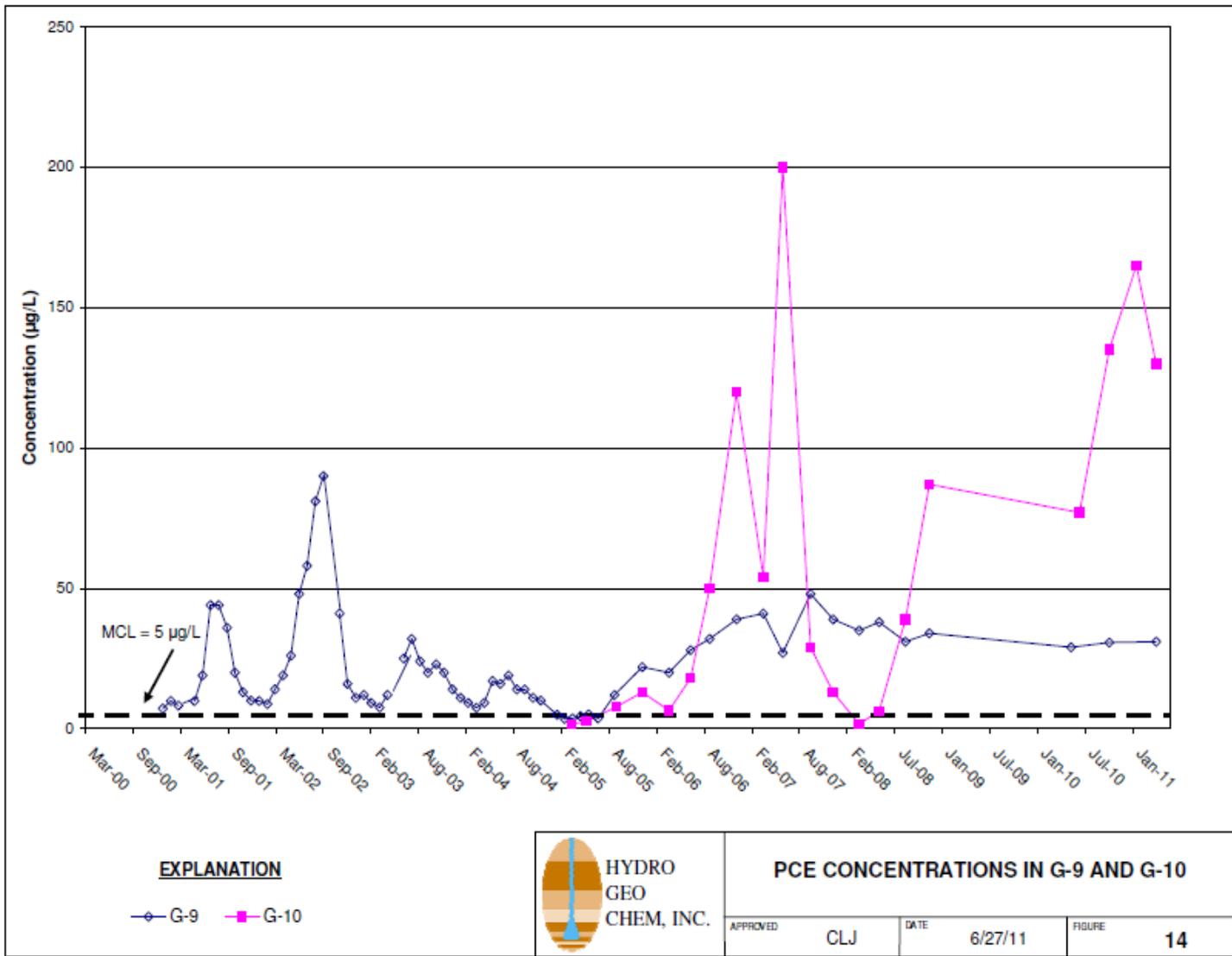
- ◆ MW-101
- ▲ MW-103
- ✕ EW-101
- MW-102



**PCE CONCENTRATIONS IN ON-SITE MONITORING WELLS  
MW-101 THROUGH MW-103 and EW-101**

APPROVED	CLJ	DATE	6/27/11	FIGURE	10
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## Review of soil gas data collected during the installation of MW-108 and MW-109

- Soil gas samples were collected from a depth of 10 feet during the installation of MW-108 and MW-109 in May 2007. Concentrations of PCE in the groundwater measured at the time of installation were 16 ppb in MW-109 and 0.88 ppb in MW-108.
- PCE or any chlorinated volatile organic compounds, were not detected in either soil gas sample at concentrations above the method reporting limit of 1.4 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) in MW-108 and 4.5  $\mu\text{g}/\text{m}^3$  in MW-109.
- Arizona currently does not have action or guidance levels regarding the vapor intrusion pathway. In an effort to evaluate the results with regards to protection of human health, the estimated PCE concentration levels were compared to EPA's Office of Solid Waste and Emergency Response (OSWER) Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils, (Subsurface Vapor Intrusion Guidance) November 2002, EPA530-D-02-004. Table 2c of this document provides target deep soil gas concentrations corresponding to a target indoor air concentrations associated with an increased cancer risk of  $1 \times 10^{-6}$ . (Deep soil gas is defined as soil gas samples taken at depths greater than approximately 5 feet below the foundation level). PCE concentrations in the soil gas samples are below the target deep soil gas concentrations of 81  $\mu\text{g}/\text{m}^3$ .

## Review of soil gas data collected during the installation of MW-108 and MW-109

- Another method can also be used to evaluate the incremental risk from vapor intrusion. In September 1998, the U.S. EPA developed a series of models for estimating indoor air concentrations and associated health risks from subsurface vapor intrusion into buildings. These models were based on the analytical solutions of Johnson and Ettinger, 1991 for contaminant partitioning and subsurface vapor transport into buildings. A user's guide for these models was published by the U.S. EPA in 2004.
- Entering the method reporting limits for PCE into the Johnson and Ettinger model spreadsheet indicates the incremental risk due to vapor intrusion of PCE into a residential dwelling would range between  $2.3$  and  $7.3 \times 10^{-9}$ . This incremental risk is well below ADEQ's acceptable cumulative excess cancer risk from  $1 \times 10^{-6}$  to  $1 \times 10^{-4}$  as stated in the soil remediation rule, R18-7-206(D).
- Benzene and toluene were detected in both soil gas samples collected at 10 feet. Benzene concentrations in MW-108 and MW-109 were  $3.9 \mu\text{g}/\text{m}^3$  and  $4.7 \mu\text{g}/\text{m}^3$ , respectively. Toluene concentrations in MW-108 and MW-109 were  $5.6 \mu\text{g}/\text{m}^3$  and  $18 \mu\text{g}/\text{m}^3$ , respectively.



## Review of soil gas data collected during the installation of MW-108 and MW-109

- Entering the concentrations for benzene into the Johnson and Ettinger model spreadsheet indicates the incremental risk due to vapor intrusion of benzene into a residential dwelling would range between  $9.9 \times 10^{-9}$  to  $1.2 \times 10^{-8}$ . Worst case cumulative risk from PCE and benzene would be approximately  $1.9 \times 10^{-8}$ . This cumulative risk is also well below ADEQ's acceptable cumulative excess cancer risk from  $1 \times 10^{-6}$  to  $1 \times 10^{-4}$ . Additional risks from toluene are negligible.
- Groundwater elevation have risen approximately 19 feet since the installation of MW-108 and MW-109. Current depth to water is 99.38 feet. EPA's OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils, indicates vapor concentrations should be screened when depth to water is less than 100 feet.
- Second quarter 2011 PCE concentrations in the groundwater were 20 ppb in MW-109 and 12 ppb in MW-108 indicating the initial risk estimation conducted on the MW-109 data would still be applicable to the area near both wells.

# Johnson and Ettinger Model of soil gas data collected during the installation of MW-109

DATA ENTRY SHEET

SG-SCREEN  
Version 3.1; 02/04

Reset to  
Defaults

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., $C_s$ ( $\mu\text{g}/\text{m}^3$ )	OR	ENTER Soil gas conc., $C_s$ (ppmv)	Chemical
127184	4.50E+00			Tetrachloroethylene

MORE  
↓

ENTER Depth below grade to bottom of enclosed space floor, $L_d$ (15 or 200 cm)	ENTER Soil gas sampling depth below grade, $L_s$ (cm)	ENTER Average soil temperature, $T_s$ (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, $k_v$ ( $\text{cm}^2$ )
15	300	20	SIC		

MORE  
↓

ENTER Vadose zone SCS soil type  Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, $\rho_d^*$ ( $\text{g}/\text{cm}^3$ )	ENTER Vadose zone soil total porosity, $n^v$ (unitless)	ENTER Vadose zone soil water-filled porosity, $\theta_w^v$ ( $\text{cm}^3/\text{cm}^3$ )	ENTER Average vapor flow rate into bldg, (Leave blank to calculate) $Q_{\text{gas}}$ (L/m)
SIC	1.38	0.481	0.216	5

MORE  
↓

ENTER Averaging time for carcinogens, $AT_c$ (yrs)	ENTER Averaging time for noncarcinogens, $AT_{nc}$ (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END



# Johnson and Ettinger Model of soil gas data collected during the installation of MW-109

## RESULTS SHEET

### INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
7.3E-09	4.8E-06

### MESSAGE SUMMARY BELOW:

END

Questions?

# Contact Information

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Remedial Projects Section

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