

Capture Zone Analysis of the Subunit A Extraction Well Systems, Phoenix-Goodyear Airport North Goodyear, Arizona

CAG Meeting

Western Ave./Phoenix-Goodyear Airport

February 7, 2013

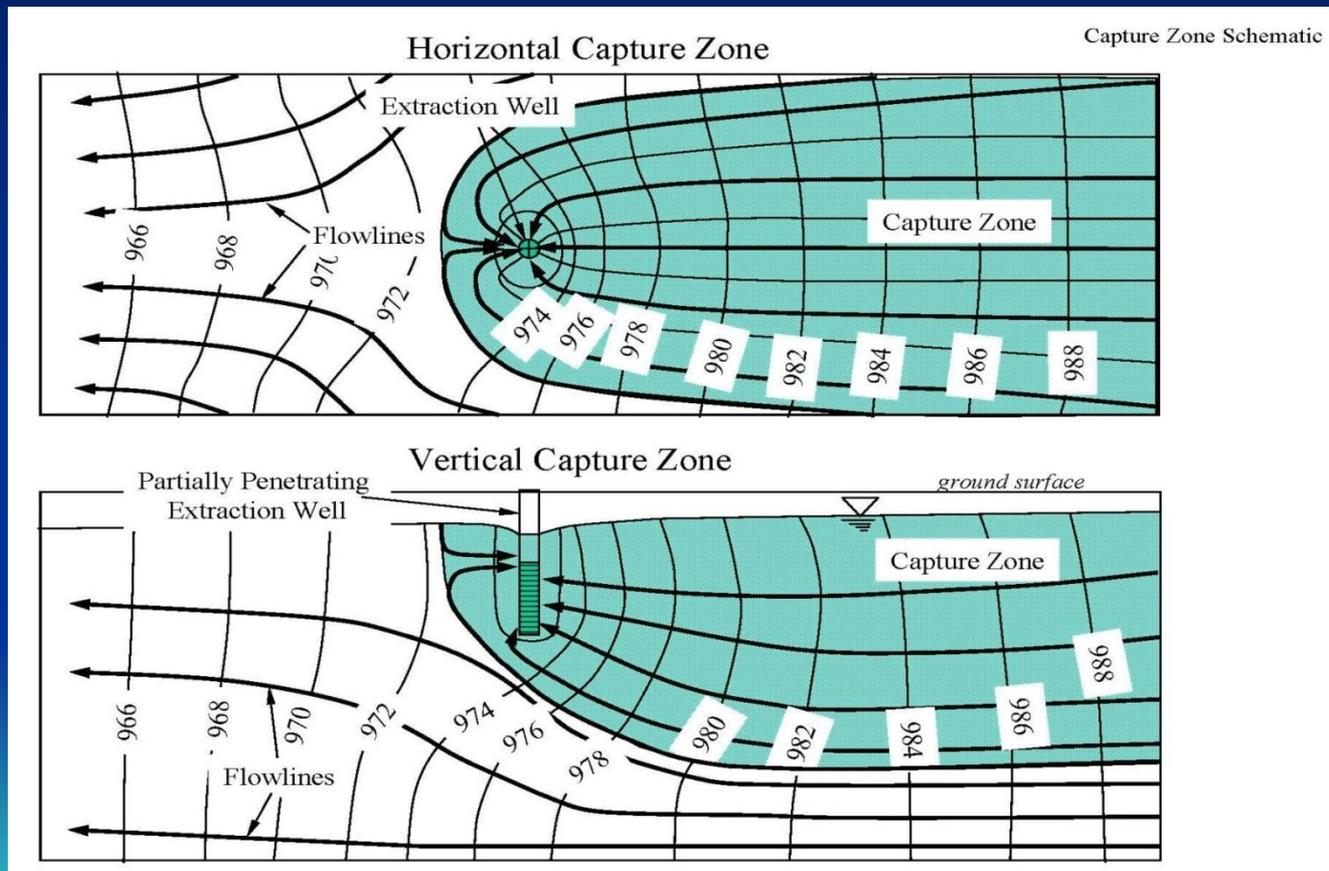


Presentation Outline

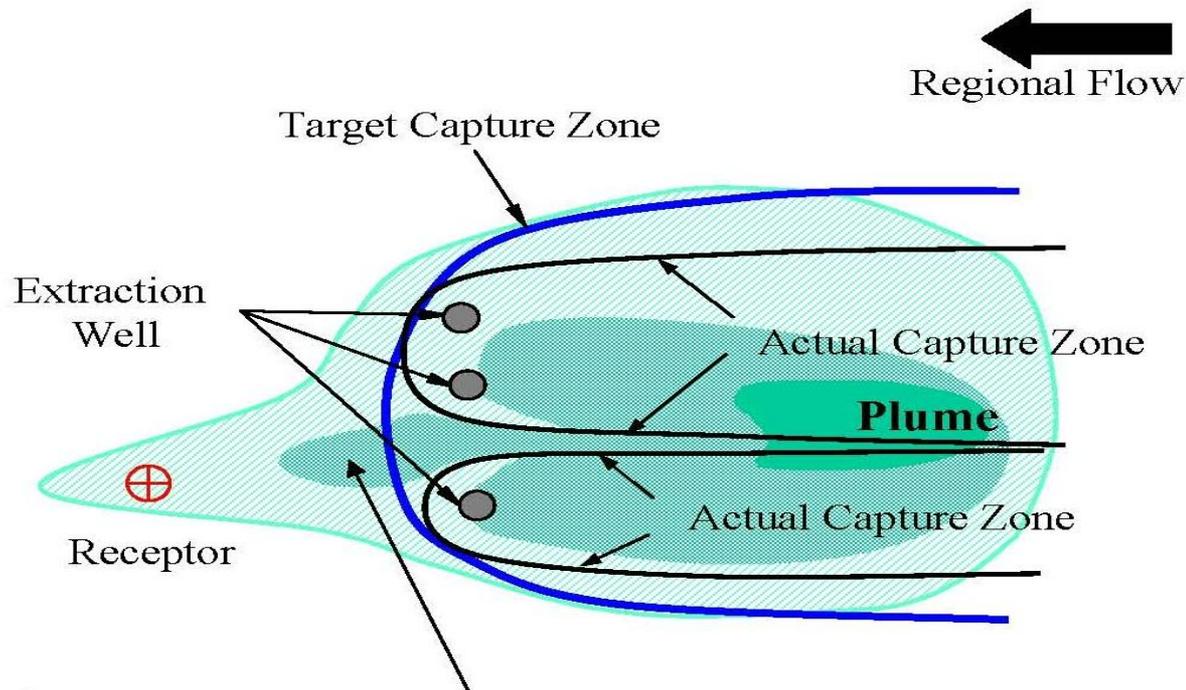
- Basics of the Capture Zone Analysis
- Introduction to the PGAN Subunit A Capture Zone Analysis
- Findings and Recommendations

What is a “Capture Zone”?

- “Capture Zone” refers to the three-dimensional region of groundwater extracted by one or more wells



“Capture Zone Analysis” is the Way We Determine How Much Groundwater is Being Captured



Escaped plume due to the gap between the capture zones

Why Perform a Capture Zone Analysis?

- “Capture” is one of the main goals of almost every Pump & Treat system.
 - Control the leading edge of the plume
 - Control source areas
- Interpreting capture is one way to see if we have control of a groundwater plume.

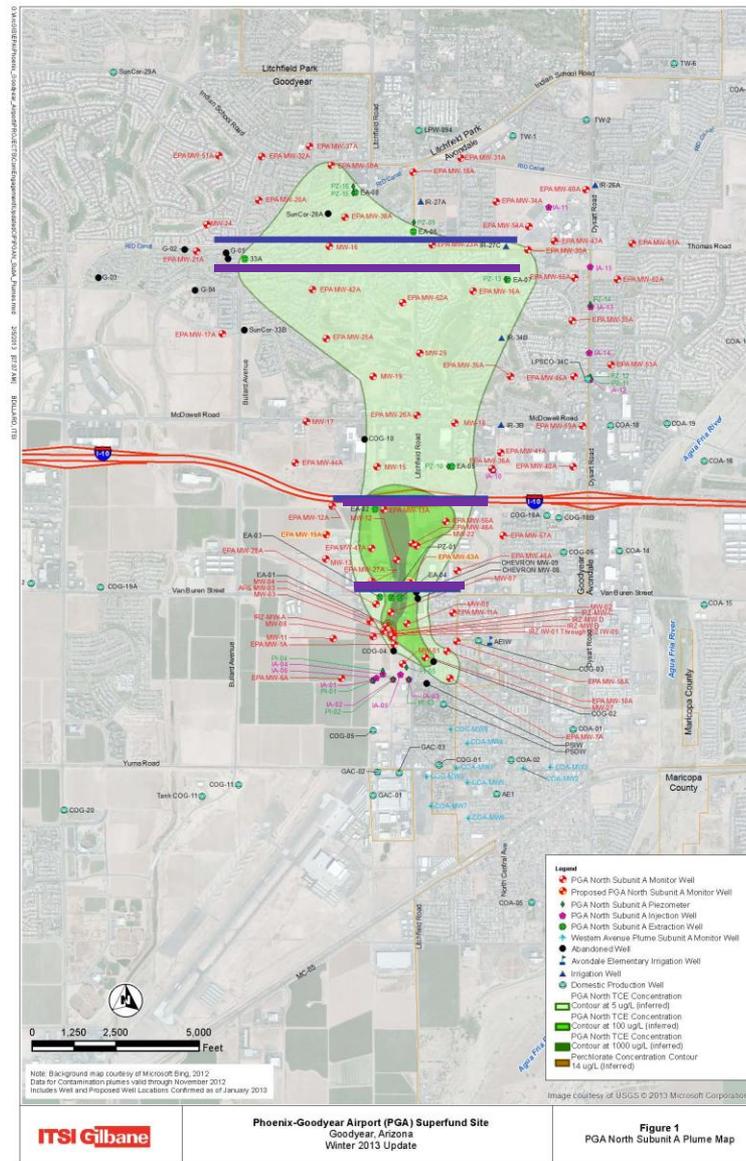
PGAN Subunit A Capture Zone Analysis

- This analysis follows EPA Guidance and uses six lines evidence.
 - Review all site data, groundwater models, and remediation objectives
 - Construct groundwater contour maps (February and August 2012)
 - Construct groundwater flow vector maps (February and August 2012)
 - Calculate capture zones using pumping rates
 - Perform analysis with the groundwater flow model
 - Look at concentrations & trends at key monitoring wells

PGAN Subunit A Capture Zone Analysis

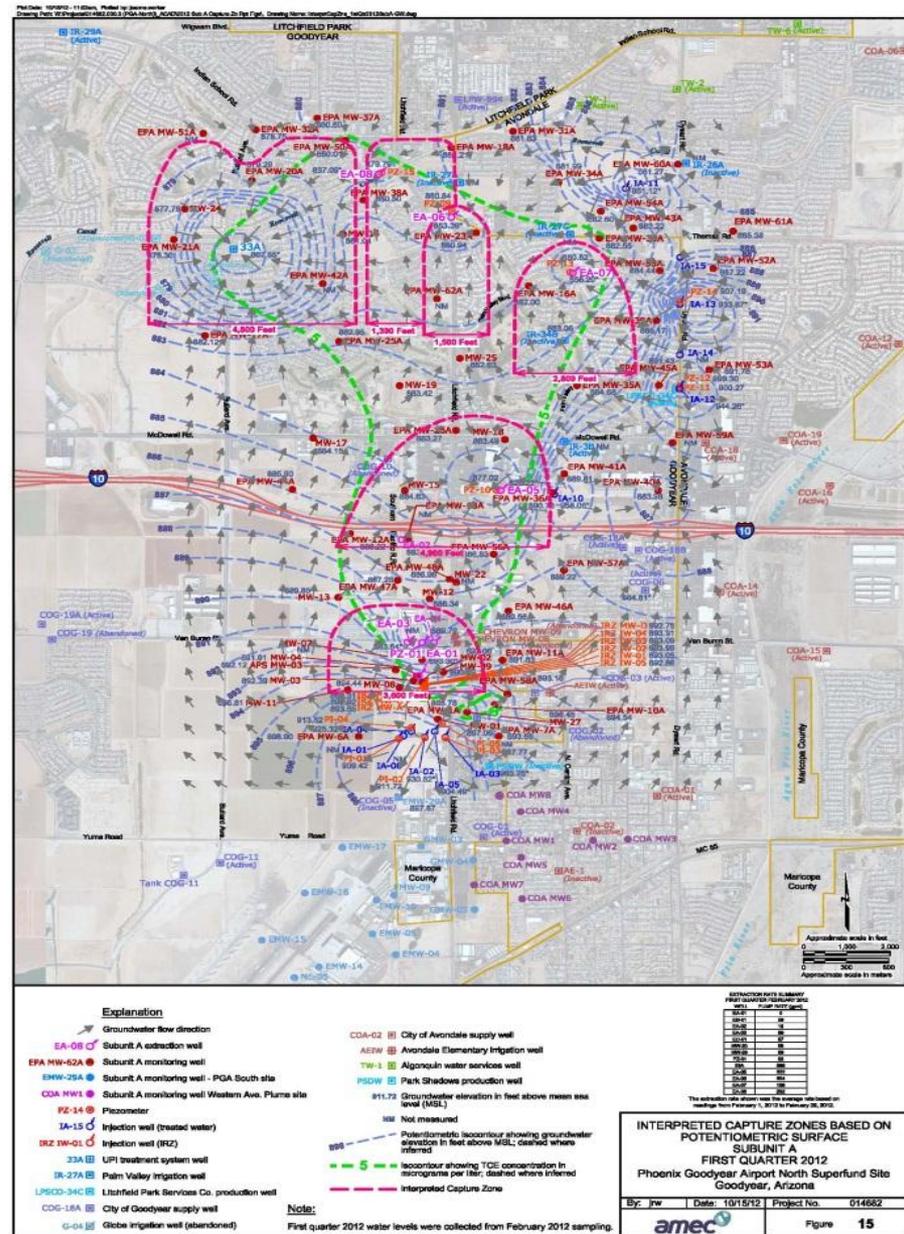
- We looked at three East-West lines:
 - Van Buren Street Transect (EA-01, EA-03, PZ-01)
 - Interstate 10 (I-10) Transect (EA-02, EA-05)
 - Northern Transect (33A, EA-08, EA-06, EA-07)

PGAN Subunit A Target Capture Zone (with three transects)



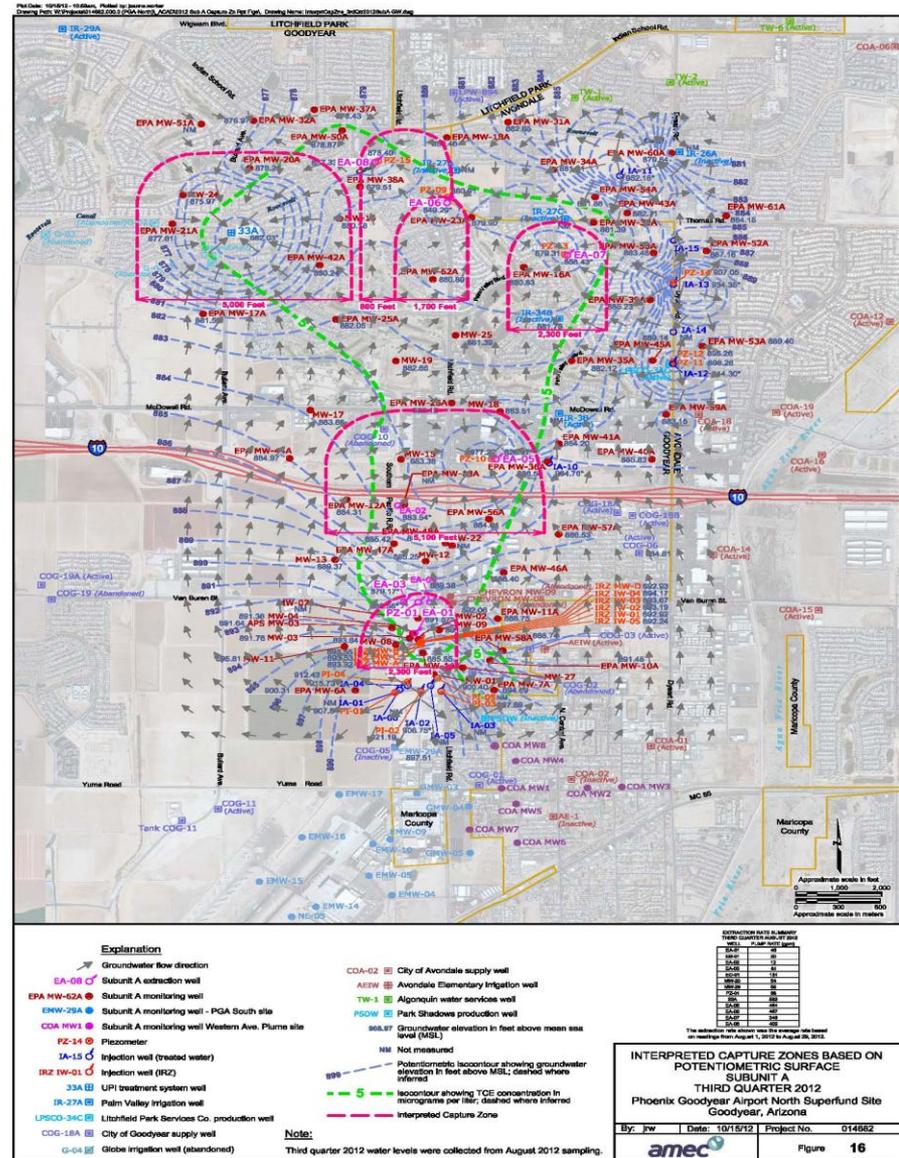
Prepared by: U.S. EPA REGION 9 &
ITSI Gilbane (DCN 07163.0005.0384)

PGAN Subunit A Capture Zones (Feb. 2012)



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PGAN Subunit A Capture Zones (August 2012)



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Major Findings of PGAN Subunit A Capture Zone Analysis

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ADEQ, EPA and Crane Team agree

- ✓ A small gap in capture exists between extraction wells EA-08 and 33A in northwest portion of Subunit A TCE plume.
- ✓ A small gap in capture exists between EA-06 and EA-07 was identified in the northeast area, based on the field data (potentiometric surface maps and flow vector analysis).
- ✓ There may not be complete capture in the vicinity of irrigation well IR-3B.
- ✓ A small gap of capture exists between extraction wells EA-02 and EA-05 based on particle tracking.

Question Remaining

- ✓ There appears to be incomplete capture at the Van Buren Street hydraulic barrier, especially eastern Subunit A TCE plume boundary (near the intersection of Van Buren Street and Litchfield Road).

Recommendations and Actions

- Evaluate combinations of injection/extraction wells in the NW area to improve hydraulic containment.
- Install additional monitoring wells that will define the plume boundary and improve performance monitoring for the extraction wells.
- Increase pumping rate at EA-02 to help plume capture near I-10.

Recommendations and Actions

- Install new extraction well EA-09 to enhance the plume capture south of I-10.
- Evaluate a replacement well for EA-04 or put in a new extraction well to enhance capture at Van Buren Street.

Questions?

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