GRIGGS AND WALNUT GROUND WATER PLUME SUPERFUND SITE STATUS UPDATE

Community Meeting
Branigan Library, 200 East Picacho
September 25, 2019

ROLES AND RESPONSIBILITIES

EPA – REGULATES CLEANUPS UNDER 1980 SUPERFUND LAW

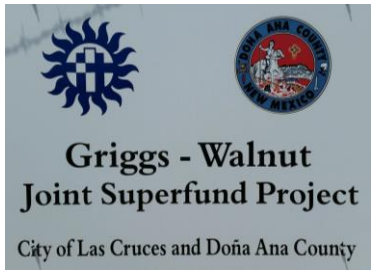
- Selects Site-Specific Remedies based on Evaluation of Contamination, Risk, and Cleanup Options

NEW MEXICO ENVIRONMENT DEPARTMENT (NMED)

- Regulates Protection of Ground Water under NM Water Quality Act

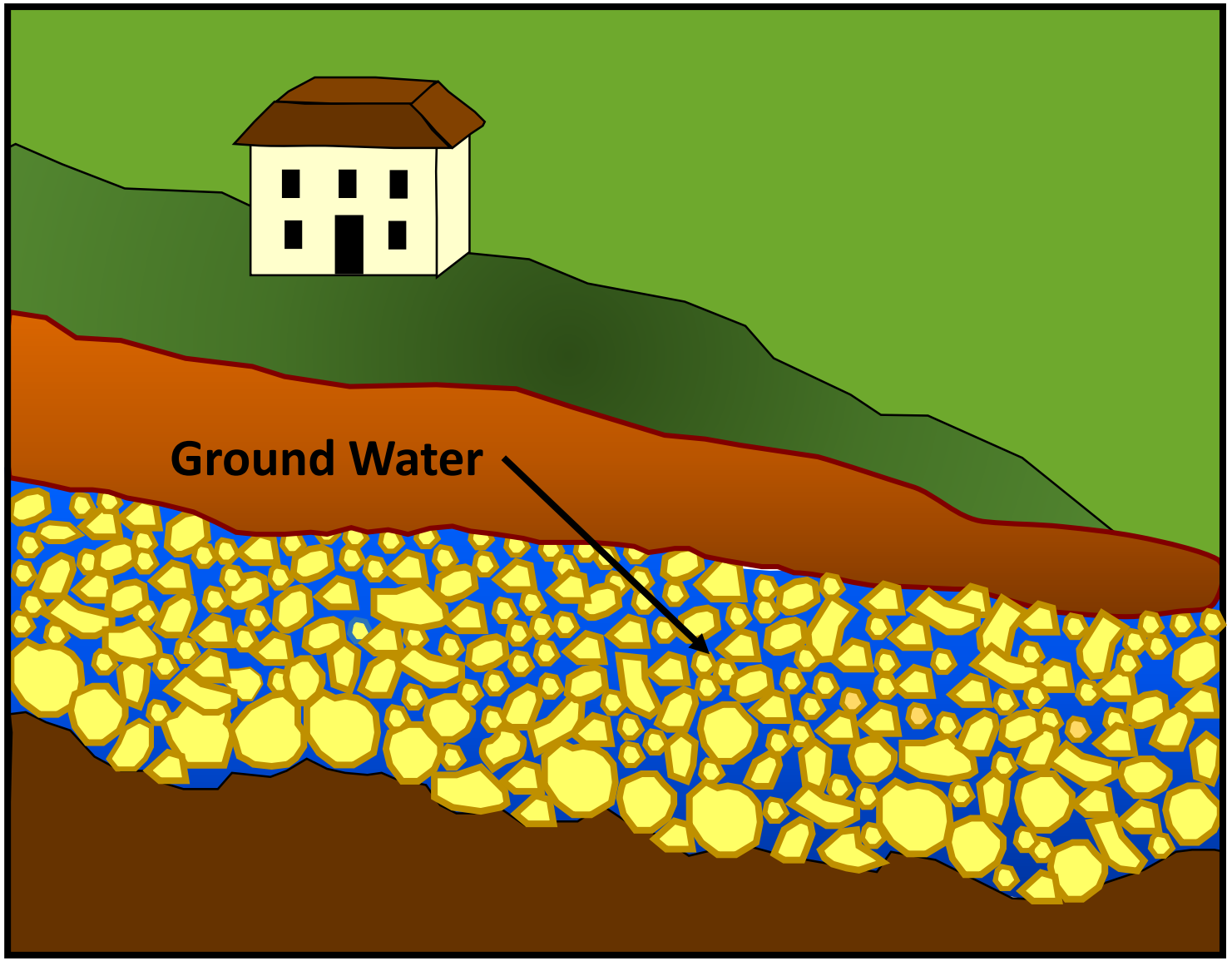
CITY OF LAS CRUCES AND DOÑA ANA COUNTY

- Identified as “Potentially Responsible Parties”
- Formed the “Joint Superfund Project” (JSP) to Implement Remedy Selected by EPA
- Currently Performing Work under EPA Administrative Order



SITE BACKGROUND CHRONOLOGY

- GROUND WATER CONTAMINATION DISCOVERED – 1993
  - Tetrachloroethylene (PCE)
- PLACED ON EPA NATIONAL PRIORITIES LIST (NPL) – 2001
- EPA COMPLETES INVESTIGATION OF PCE PLUME - 2005
- EPA SELECTS REMEDY – 2007
- REMEDY DESIGN AND CONSTRUCTION COMPLETED BY JSP – 2012
- OPERATIONAL STARTUP – 2012
- FIRST FIVE-YEAR REVIEW ON REMEDY PROTECTIVENESS – 2016

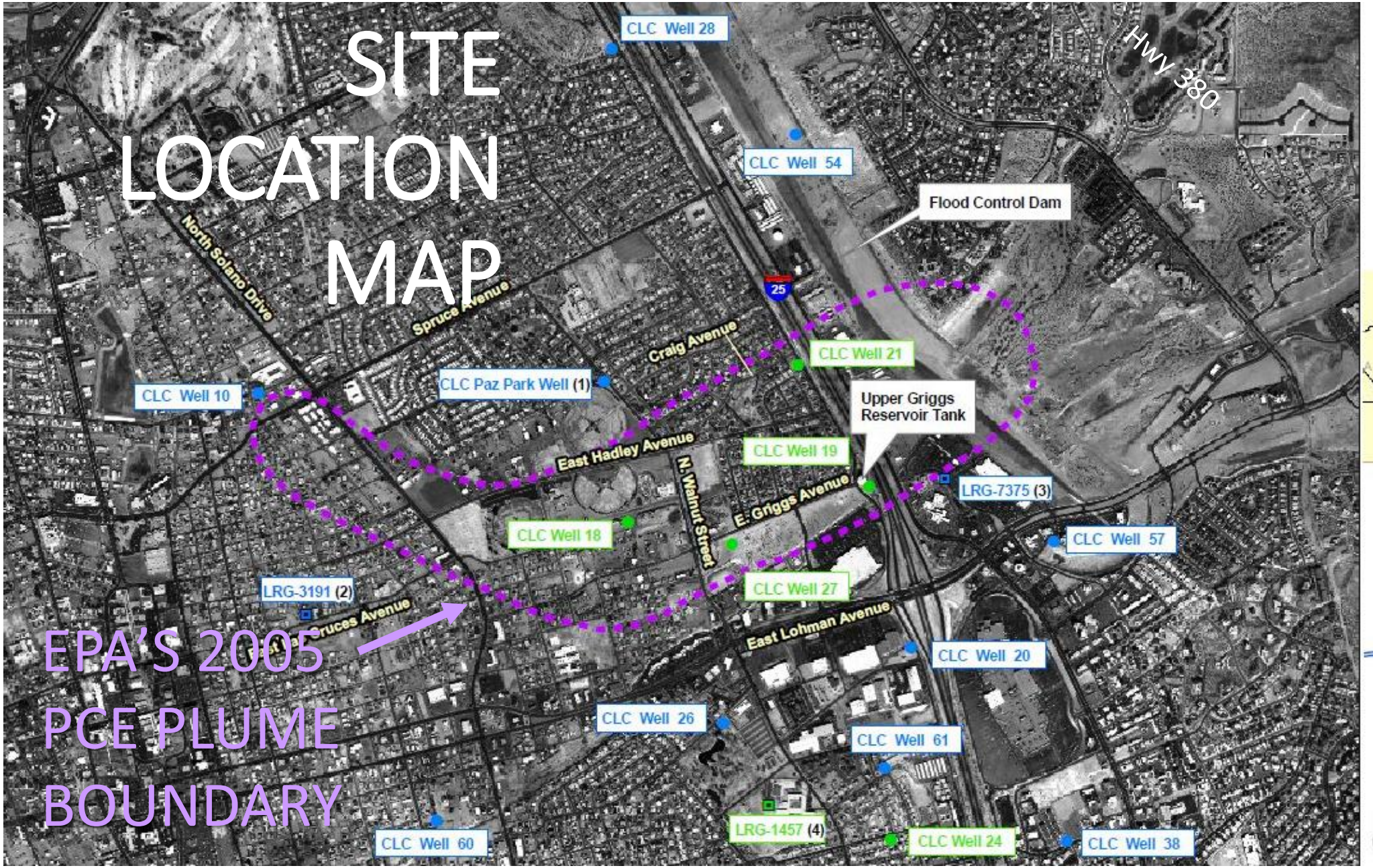


GROUND WATER

ILLUSTRATION

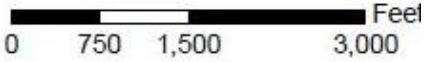
Modified from City of Las Cruces
Poster Display

SITE LOCATION MAP

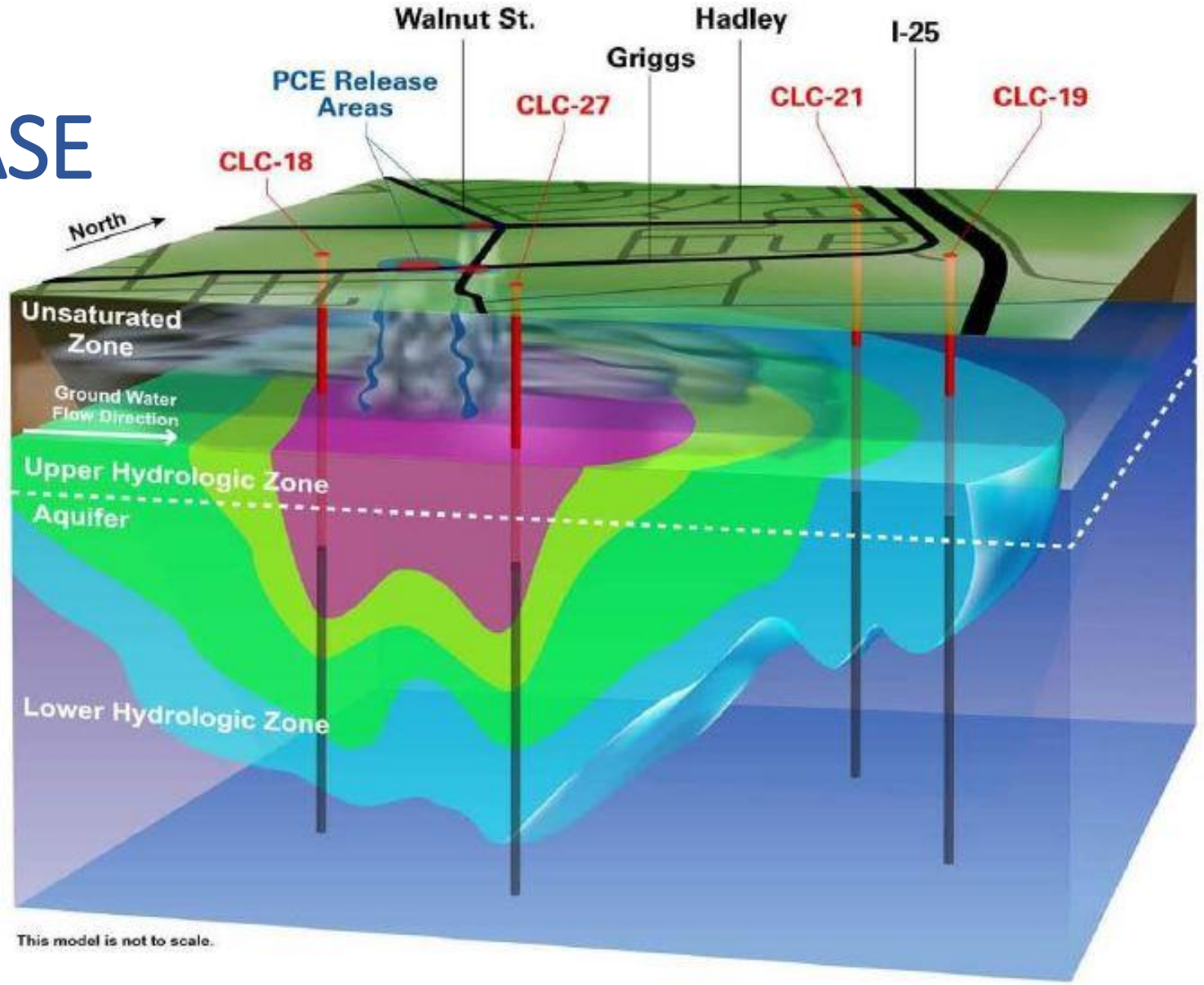


EPA'S 2005 PCE PLUME BOUNDARY

Las Cruces



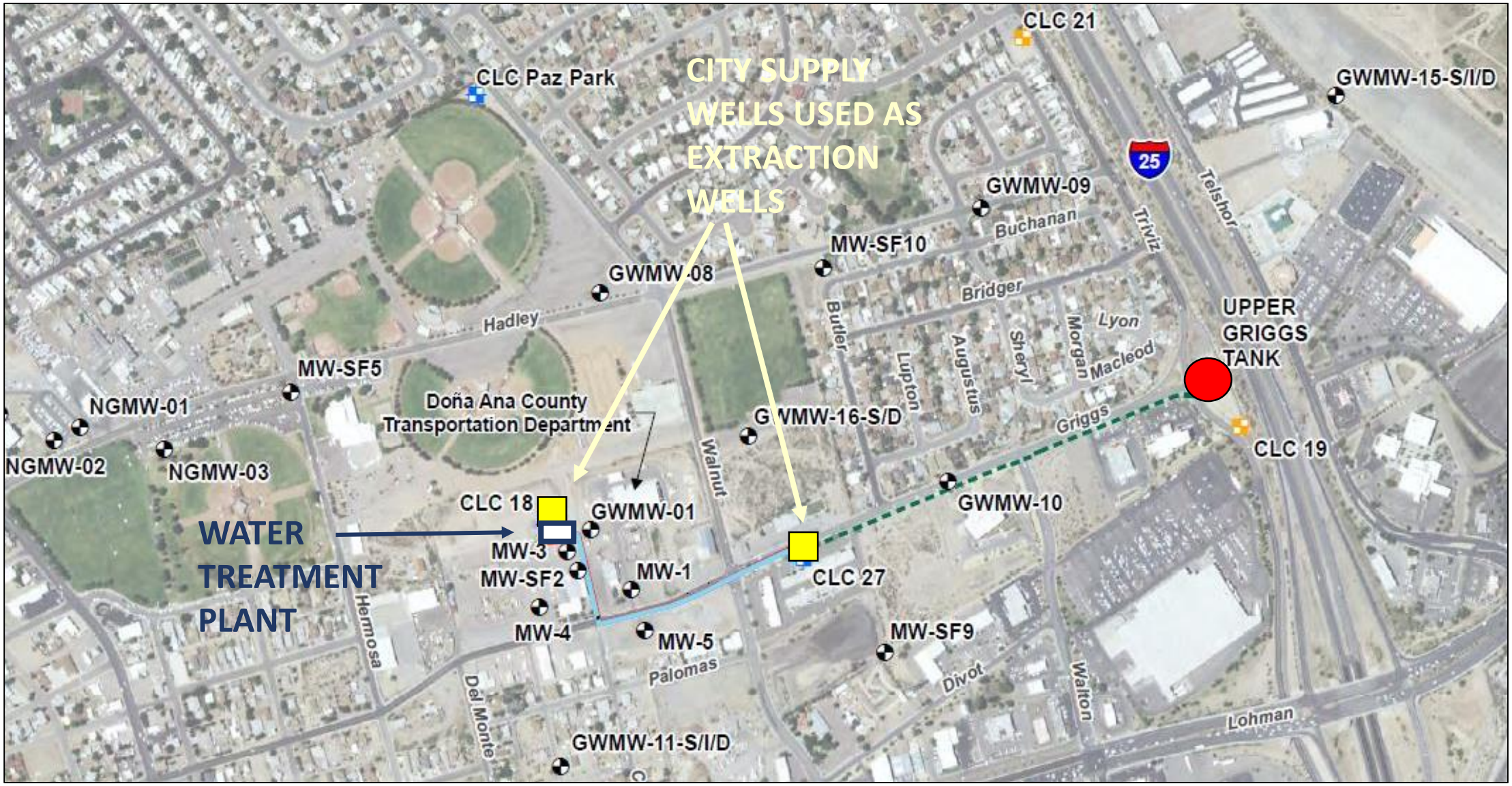
EPA 2005 CONCEPTUAL MODEL OF PCE RELEASE TO GROUND WATER



EPA SELECTED GROUND WATER REMEDY

- HYDRAULIC CONTROL OF PCE PLUME
  - Operate Existing Municipal Wells as Extraction Wells
- RESTORE GROUND WATER TO BENEFICIAL USE AS A DRINKING WATER SUPPLY SOURCE
  - By Extraction and Treatment of Ground Water
  - Treated Ground Water Available for Delivery into Public Water Supply
- INSTITUTIONAL CONTROL
  - Temporary Well Drilling Prohibition
  - Prevent Exposure

EPA SELECTED GROUND WATER REMEDY



WATER TREATMENT PLANT

STACKED-TRAY AIR STRIPPER WATER TREATMENT SYSTEM

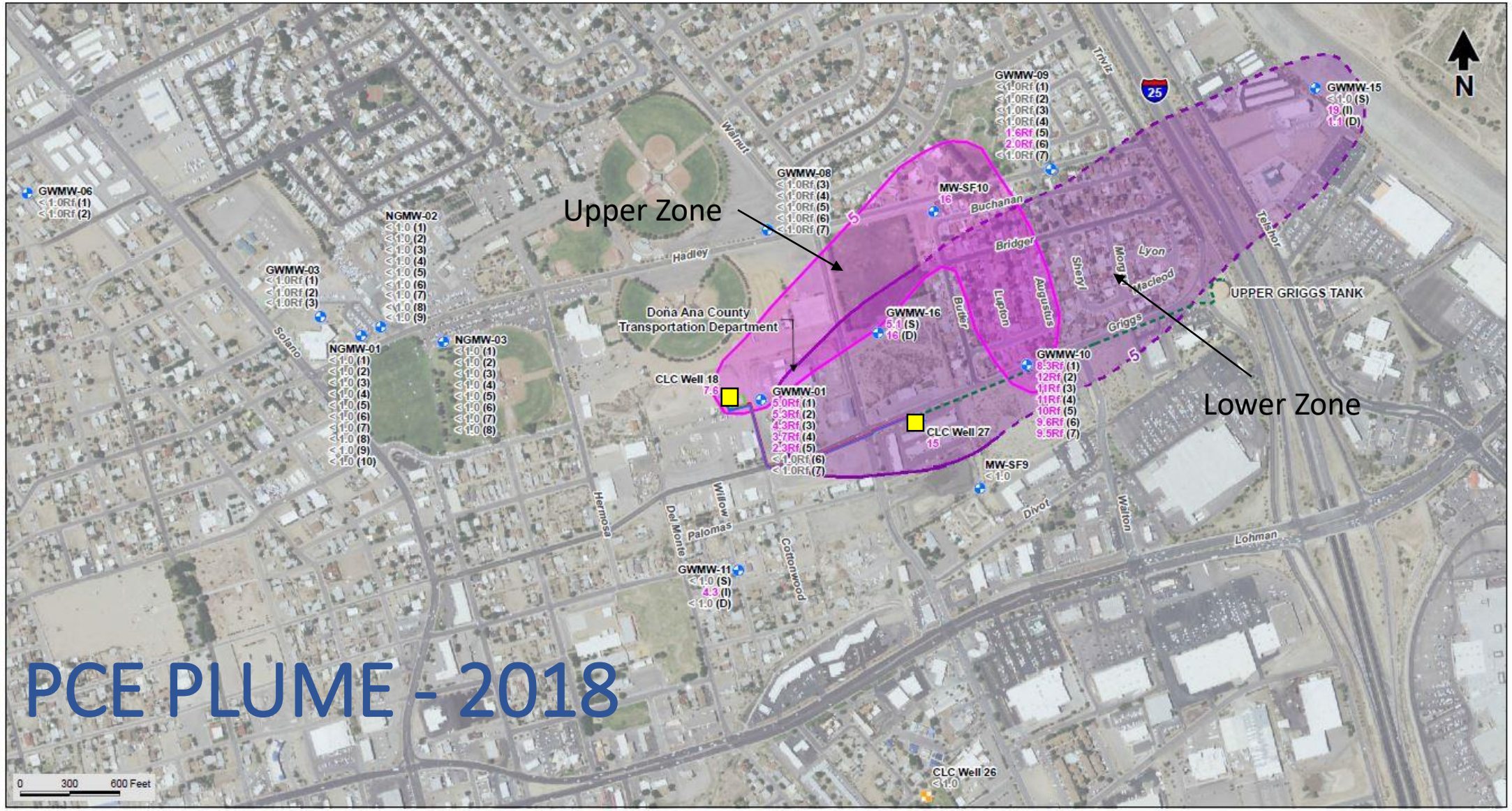
TWO 28,000 GALLON HOLDING TANKS EXTRACTED/RAW WATER AND TREATED/FINISHED WATER

ENLARGED PHOTO OF STACKED TRAYS

INSTITUTIONAL CONTROL

NM OFFICE OF STATE ENGINEER (OSE):

- Issued Temporary Well Drilling Prohibition – 2011



PCE PLUME - 2018

Explanation

- Monitor well
- Public supply well
- Inactive public supply well
- 6" raw water line
- 8" finished water line
- Treatment compound
- Existing 10" water line to reservoir
- PCE concentration contour (µg/L), upper
- PCE concentration contour (µg/L), lower (dashed where inferred)
- **CLC Pumping Well**

MW-SF10 Well designation
16 Concentration (µg/L)
< 1.0 Not detected above reporting limit
Rf Rejected, the data are unusable. FLUTe well liner lacks integrity.

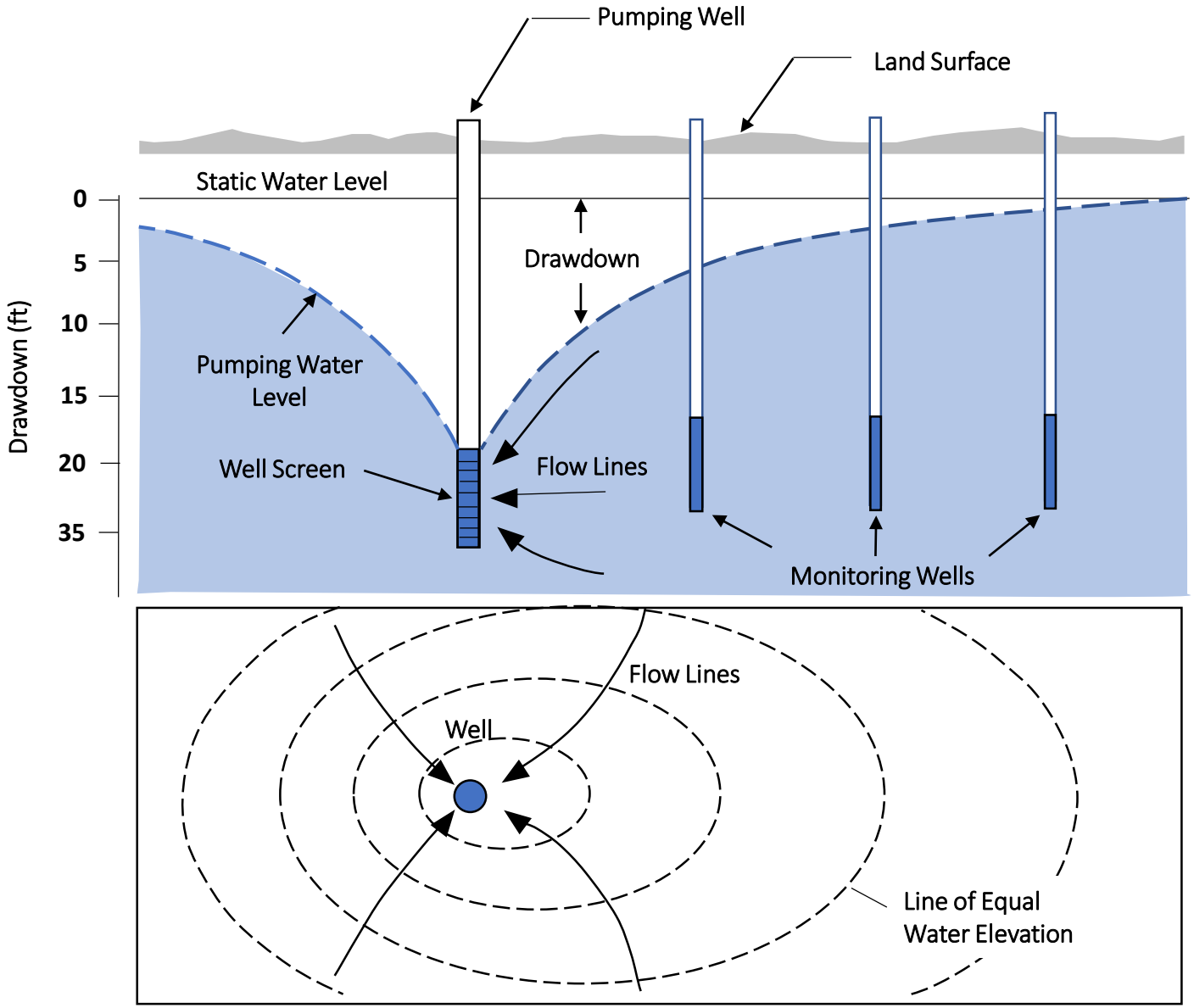
Source: 1. National Agricultural Imagery Program May 2016.
2. PCE plume provided by Shoemaker and Associates.

GRIGGS-WALNUT GROUND WATER PLUME SITE
REMEDIAL ACTION
PCE in Groundwater, December 2018

Daniel B. Stephens & Associates, Inc.
5/31/2019 JN ES13.0251

Figure 6

CONCEPTUALIZATION – HYDRAULIC CONTROL OF A PLUME



CONE OF DEPRESSION CROSS SECTIONAL VIEW

CONE OF DEPRESSION MAP VIEW

Modified from Fletcher G. Driscoll, 1987, 2nd Printing

MONITORING WELL NETWORK

WELL CLC-18
PCE LEVELS AND PUMPING VS TIME

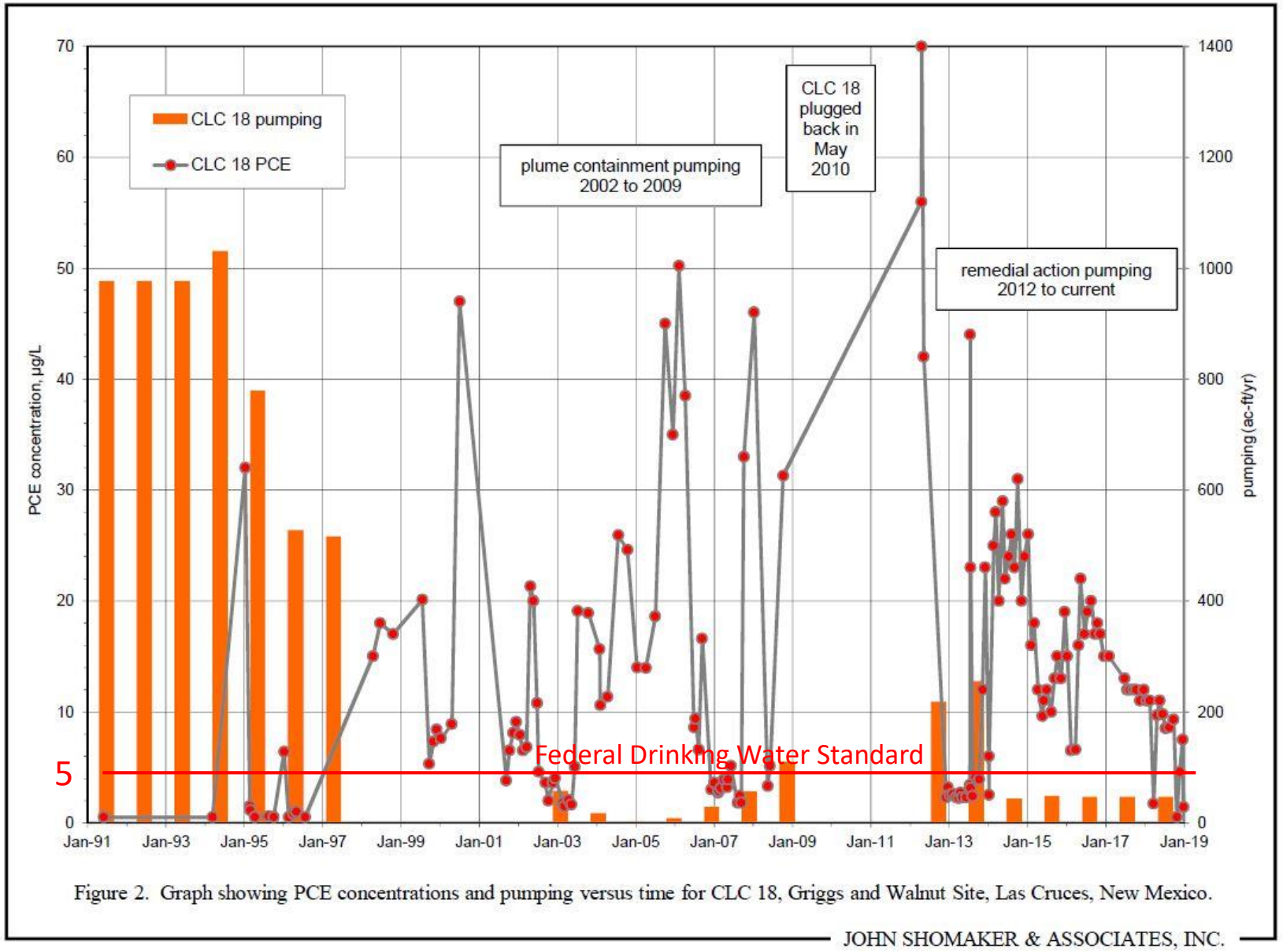


Figure 2. Graph showing PCE concentrations and pumping versus time for CLC 18, Griggs and Walnut Site, Las Cruces, New Mexico.

JOHN SHOMAKER & ASSOCIATES, INC.

WELL CLC-27
PCE LEVELS AND PUMPING VS TIME

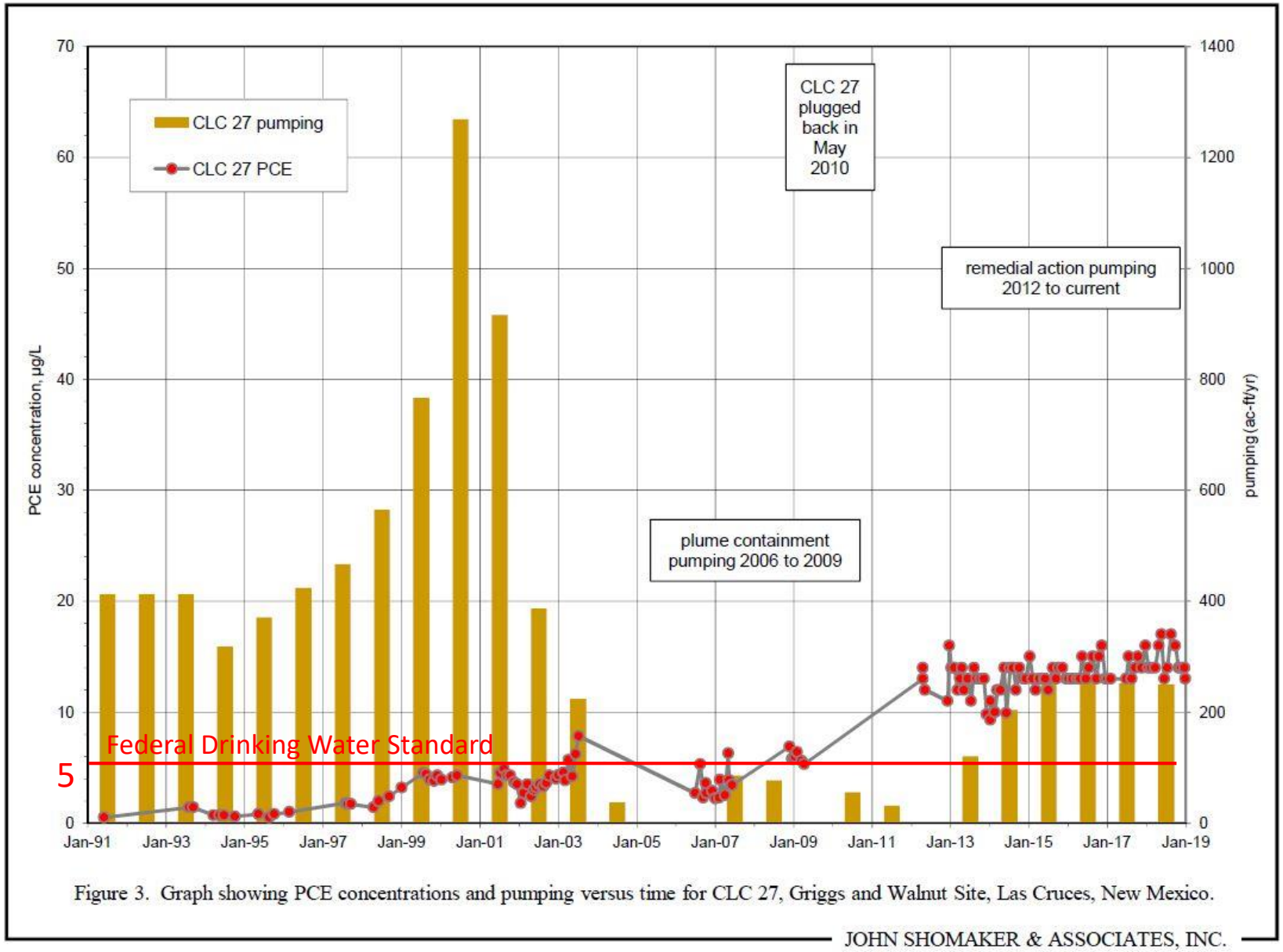
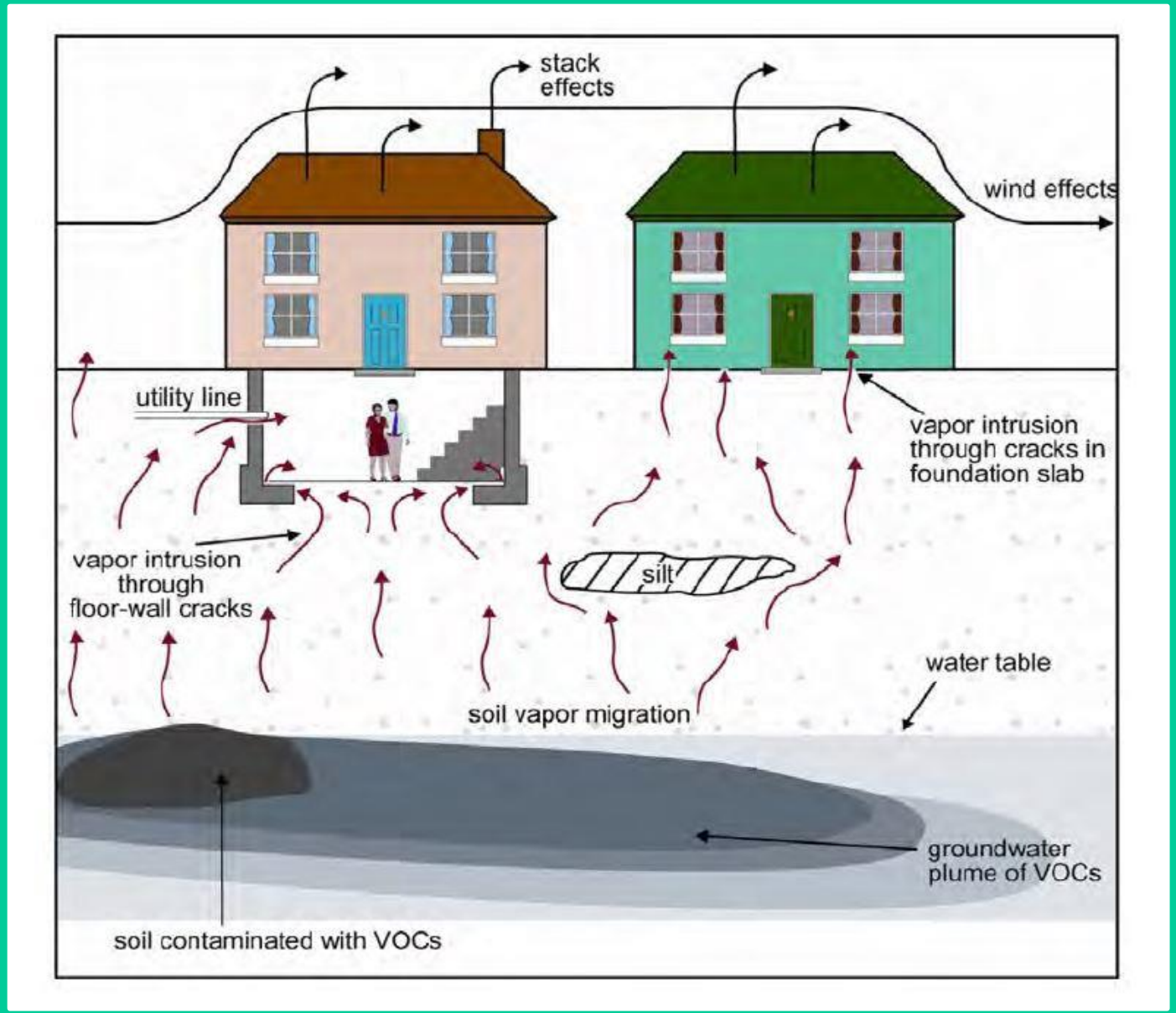


Figure 3. Graph showing PCE concentrations and pumping versus time for CLC 27, Griggs and Walnut Site, Las Cruces, New Mexico.

JOHN SHOMAKER & ASSOCIATES, INC.

2016 FIVE-YEAR REVIEW FINDINGS

- PROTECTIVENESS DETERMINATION DEFERRED
  - Indoor Air Vapor Intrusion Pathway – Warranted Investigation
  - Ground Water Pathway – No Known Human Exposure
- KEY RECOMMENDATION:
  - Assess Indoor Air Vapor Intrusion Pathway - Completed

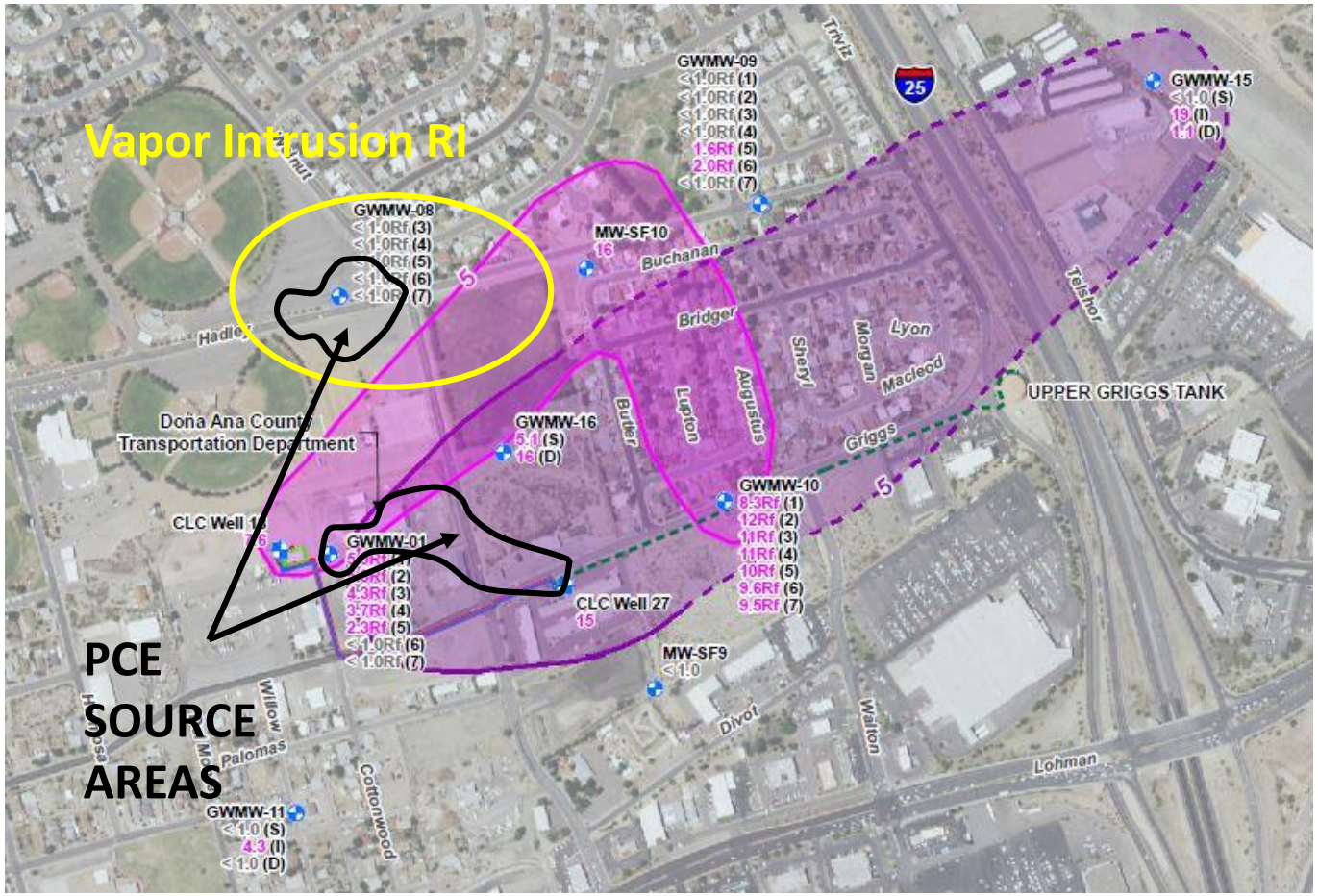


INDOOR AIR VAPOR INTRUSION

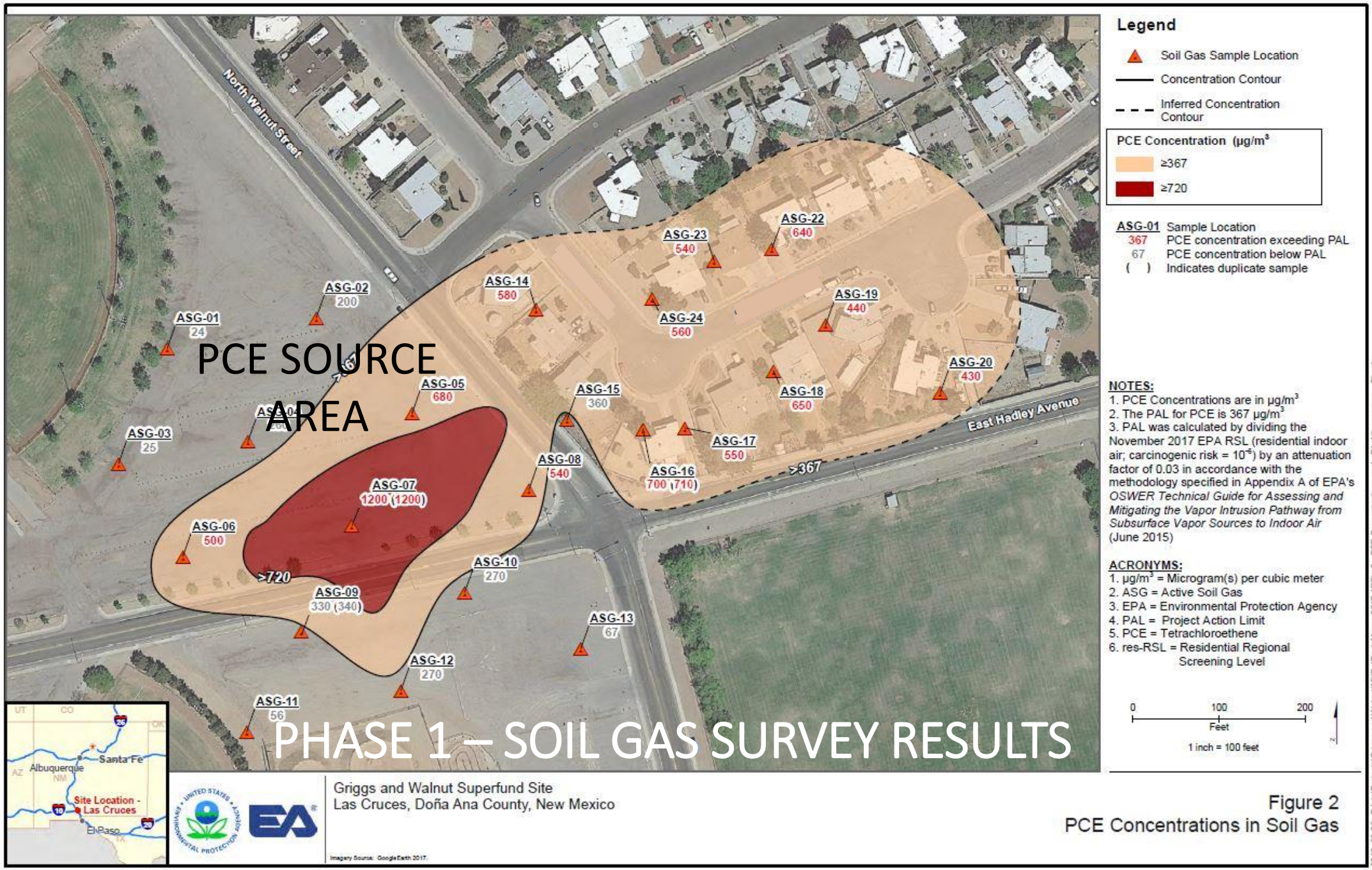
ILLUSTRATION

VOCs – Volatile Organic Compounds

EPA VAPOR INTRUSION REMEDIAL INVESTIGATION (RI)



- INITIATED IN 2017
- TARGETED PCE SOURCE AREA AND RESIDENTIAL COMMUNITY
- 2-PHASED APPROACH
  - Phase 1 – Exterior Soil Gas Survey
  - Phase 2 – Indoor Air/Sub-slab


PCE SOURCE AREA
PHASE 1 – SOIL GAS SURVEY RESULTS
North Walnut Street
East Hadley Avenue
ASG-01 24
ASG-02 200
ASG-03 25
ASG-04 (26)
ASG-05 680
ASG-06 500
ASG-07 1200 (1200)
ASG-08 540
ASG-09 330 (340)
ASG-10 270
ASG-11 56
ASG-12 270
ASG-13 67
ASG-14 580
ASG-15 360
ASG-16 700 (710)
ASG-17 550
ASG-18 650
ASG-19 440
ASG-20 430
ASG-22 640
ASG-23 540
ASG-24 560
>720
>367
Legend
Soil Gas Sample Location
Concentration Contour
Inferred Concentration Contour
PCE Concentration (µg/m³)
≥367
≥720
ASG-01 Sample Location
367 PCE concentration exceeding PAL
67 PCE concentration below PAL
( ) Indicates duplicate sample
NOTES:
1. PCE Concentrations are in µg/m³
2. The PAL for PCE is 367 µg/m³
3. PAL was calculated by dividing the November 2017 EPA RSL (residential indoor air; carcinogenic risk = 10⁻⁶) by an attenuation factor of 0.03 in accordance with the methodology specified in Appendix A of EPA's OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air (June 2015)
ACRONYMS:
1. µg/m³ = Microgram(s) per cubic meter
2. ASG = Active Soil Gas
3. EPA = Environmental Protection Agency
4. PAL = Project Action Limit
5. PCE = Tetrachloroethene
6. res-RSL = Residential Regional Screening Level
0 100 200
Feet
1 inch = 100 feet
Albuquerque
Santa Fe
Site Location - Las Cruces
El Paso
Griggs and Walnut Superfund Site
Las Cruces, Doña Ana County, New Mexico
Imagery Source: GoogleEarth 2017.
Figure 2
PCE Concentrations in Soil Gas

PHASE 2 - INDOOR AIR/SUB-SLAB AIR SAMPLE RESULTS

- FIVE HOMES SAMPLED IN 2019
- SUB-SLAB SAMPLE RESULTS
  - PCE Detected above Project Action Limit of 367 µg/L beneath Foundation Slabs
- INDOOR AIR SAMPLE RESULTS
  - PCE and TCE Detected below Health-based Screening Levels of 11.0 and 0.48 µg/m3

NO CONTAMINANTS EXCEEDED HEALTH-BASED SCREENING LEVELS IN INDOOR AIR SAMPLES!

µg/L = micrograms per liter
µg/m3 = micrograms per cubic meter

NEXT STEPS

- COMPLETE VAPOR INTRUSION REMEDIAL INVESTIGATION REPORT – FALL 2019
- PREPARE AMENDMENT TO 2016 FIVE-YEAR REVIEW REPORT - 2020
- CONTINUE TO OPERATE GROUND WATER REMEDY
- CONTINUE TO MONITOR GROUND WATER
- NEXT FIVE-YEAR REVIEW - 2021

SITE DOCUMENTS

AVAILABLE TO THE PUBLIC AT FOLLOWING REPOSITORIES:

BRANIGAN PUBLIC LIBRARY
200 EAST PICACHO, LAS CRUCES, NM 88001

NEW MEXICO ENVIRONMENT DEPARTMENT
GROUND WATER QUALITY BUREAU
HAROLD RUNNELS BUILDING
1190 ST. FRANCIS DRIVE
SANTA FE, NM 87502-6110

COMMUNITY OUTREACH

- WHAT ARE PREFERRED METHODS FOR COMMUNITY OUTREACH?
  - EPA WEBSITE
  - SOCIAL MEDIA
  - ELECTRONIC MAIL
  - NEWSPAPER NOTICES
  - COMMUNITY BULLETINS
  - COMMUNITY MEETINGS

EPA WEBSITE:

http://www.epa.gov/superfund/griggs-walnut

CONTACT INFORMATION

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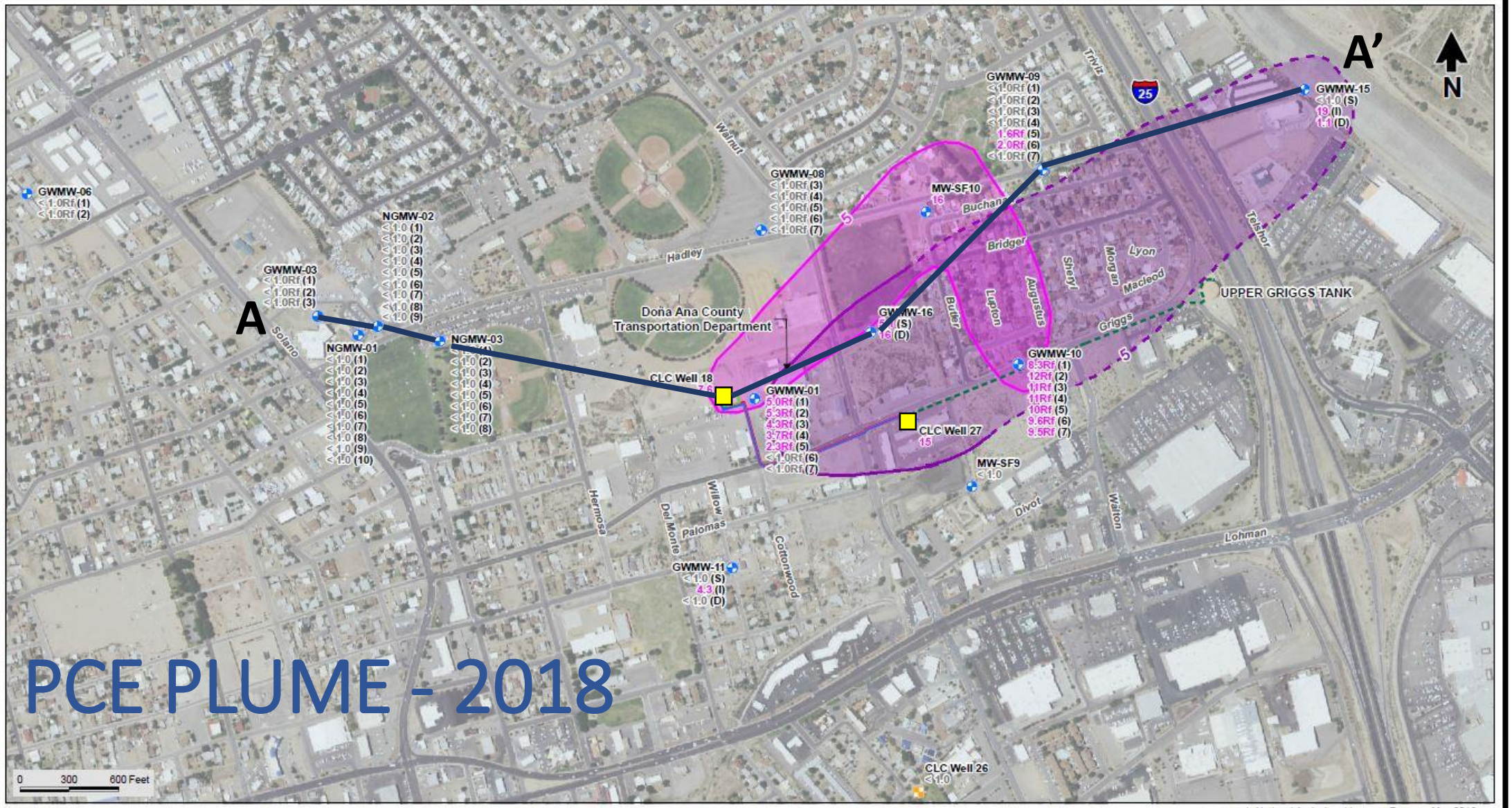
Las Cruces Utilities/Water
Tel: 575-528-3514
E-mail: awidmer@las-cruces.org

OTHER SLIDES



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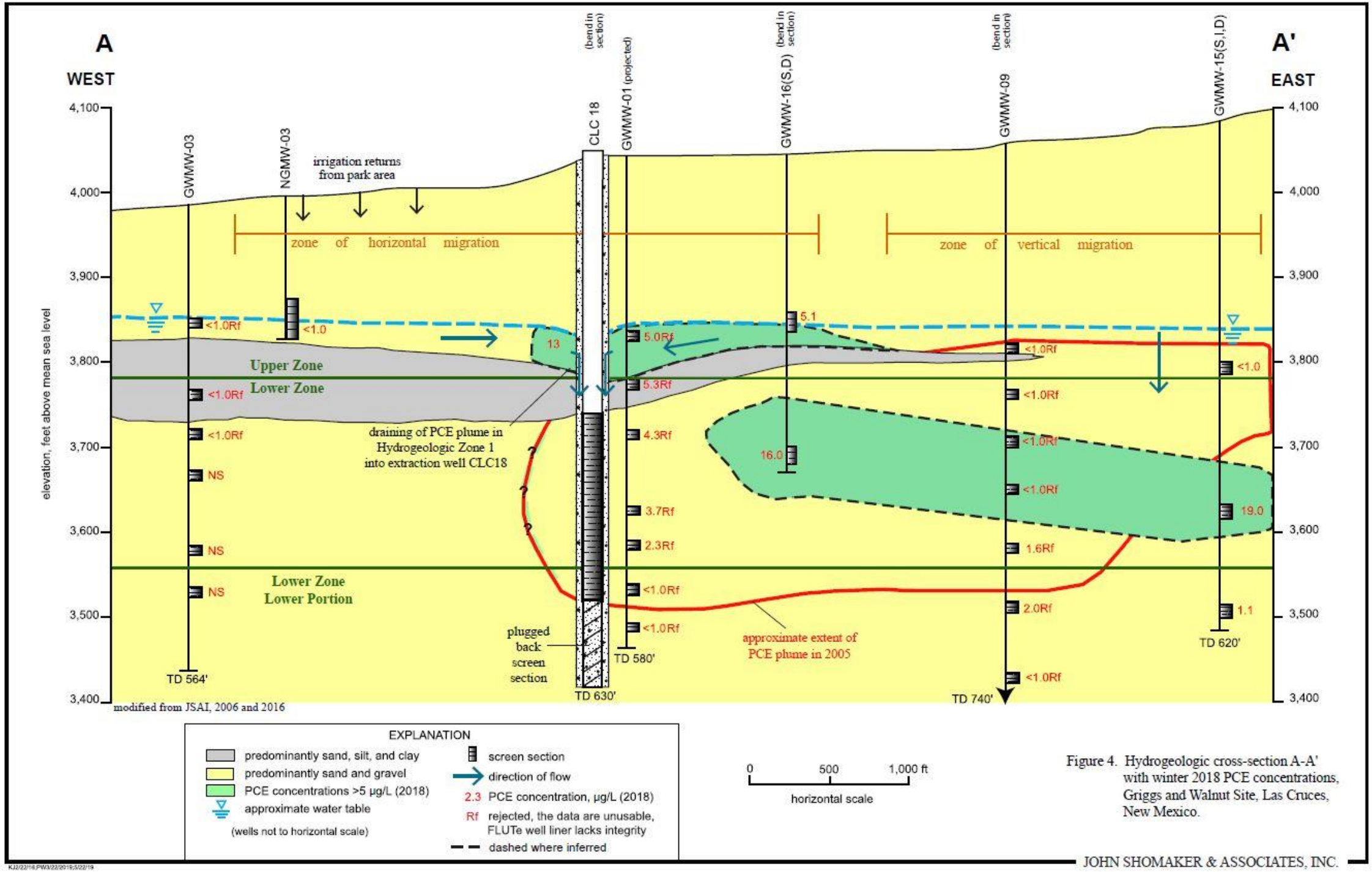

Figure 4. Hydrogeologic cross-section A-A' with winter 2018 PCE concentrations, Griggs and Walnut Site, Las Cruces, New Mexico.

WATER LEVEL ELEVATION MAP - 2018

Upper Hydrogeologic Zone

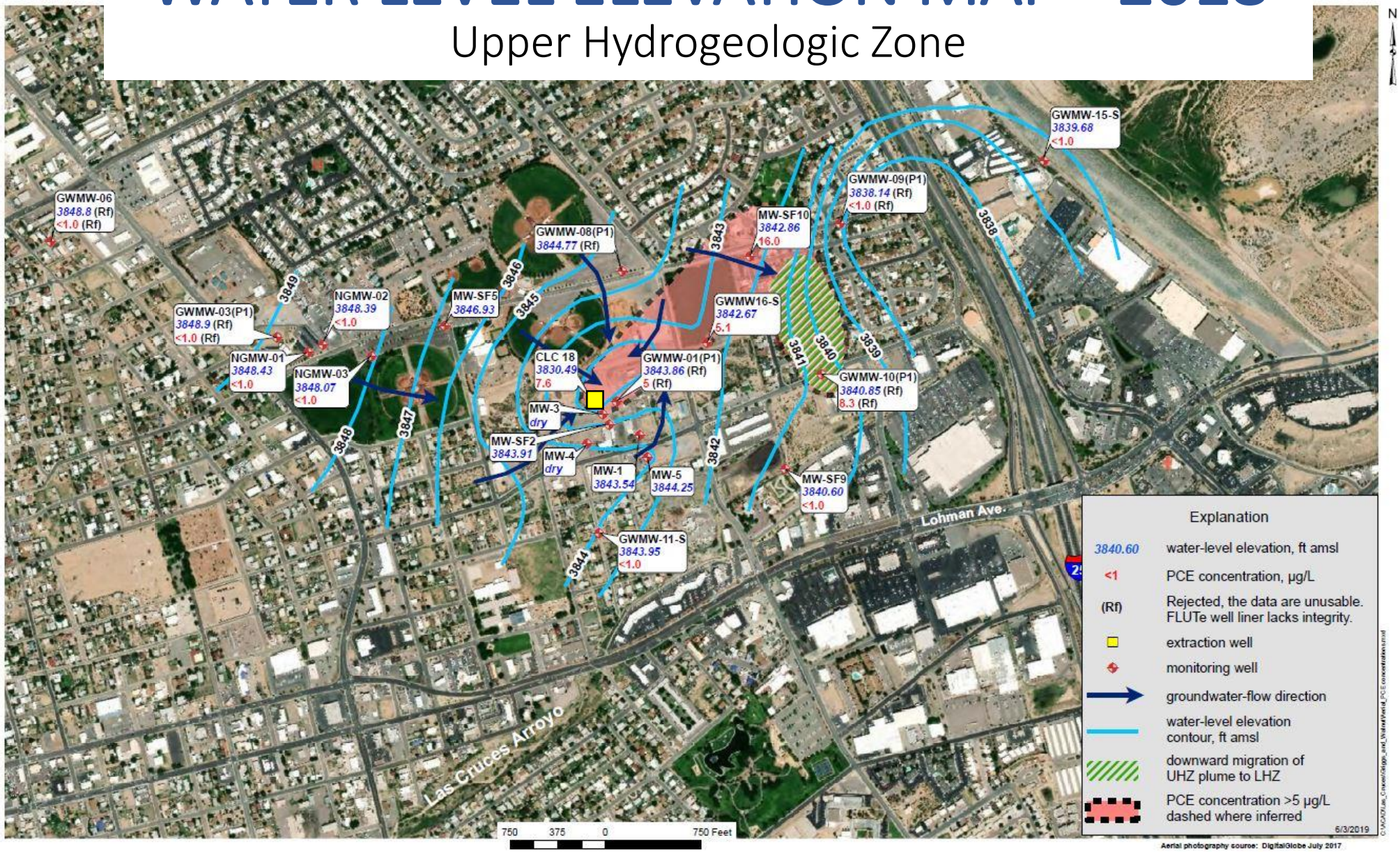

Figure 8. Aerial photograph showing December 2018 water-level elevation contours and PCE concentrations for the Upper Hydrogeologic Zone, Griggs and Walnut Site, Las Cruces, New Mexico.

WATER LEVEL ELEVATION MAP - 2018

Lower Hydrogeologic Zone

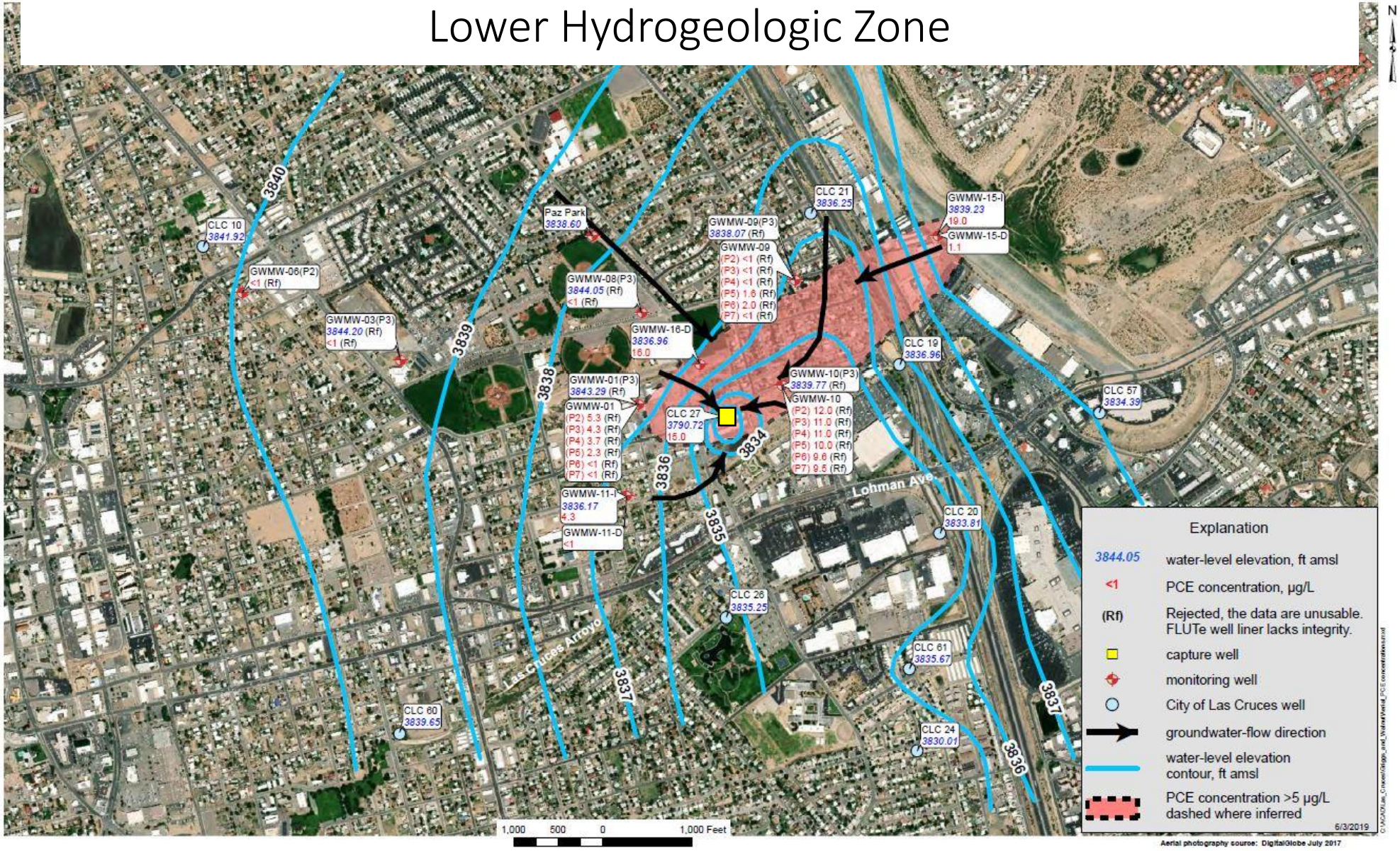

Figure 9. Aerial photograph showing December 2018 water-level elevation contours and PCE concentrations for the Lower Hydrogeologic Zone, Griggs and Walnut Site, Las Cruces, New Mexico.

SOIL GAS SURVEY

AIR SAMPLE RESULTS

- SUB-SLAB – PCE CONCENTRATIONS
  - Ranged from 150 to 920 µg/L
- INDOOR/OUTDOOR AIR - PCE CONCENTRATIONS
  - Ranged from 0.026 µg/m3 (outdoor sample) to 0.96 µg/m3 (indoor sample)
- INDOOR/OUTDOOR AIR - TCE CONCENTRATIONS
  - Ranged from 0.029 µg/m3 (outdoor sample) to 0.22 µg/m3 (indoor samples)

INDOOR AIR SCREENING LEVELS
TCE = 0.48 ug/m3
PCE = 11.0 ug/m3

HORIZONTAL DISTRIBUTION OF PCE IN GROUND WATER

EPA 2005

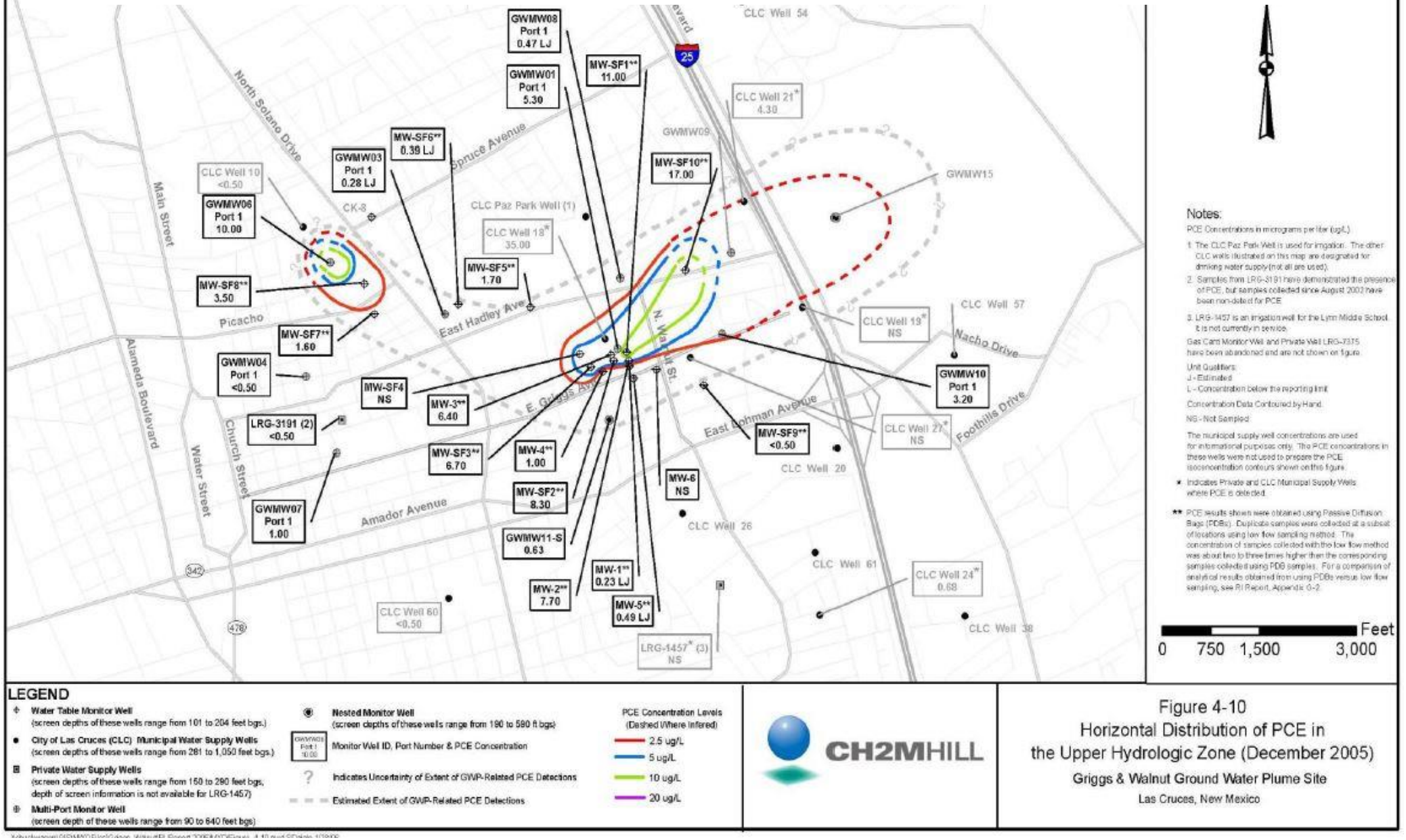

Figure 4-10
Horizontal Distribution of PCE in the Upper Hydrologic Zone (December 2005)
Griggs & Walnut Ground Water Plume Site
Las Cruces, New Mexico

HORIZONTAL DISTRIBUTION OF PCE IN SOIL GAS

EPA 2005 REMEDIAL INVESTIGATION