



Application for Approval of Municipal Setting Designation

**APPLICANT INFORMATION**

Applicant's Name: Baker Hughes, Inc.

Individual  Private Entity  Public Entity  Non-Profit Entity  Other \_\_\_\_\_

Address: 2929 Allen Parkway, Suite 2100 Houston TX 77019  
(Street) (City) (State) (Zip)

Phone No.: 713-439-8329 Fax No.: 713-439-8383

Email: \_\_\_\_\_

*Contact Information*

Name of Contact: Chris Clodfelter, P.G.

Title: Remediation Programs Lead

Address: 2929 Allen Parkway, Suite 2100 Houston TX 77019  
(Street) (City) (State) (Zip)

Phone No.: 713-439-8329 Fax No.: 713-439-8383

Email: Christopher.Clodfelter@bakerhughes.com

**SITE INFORMATION**

Site Name: Central City Industrial Park

Site Size: approximately 77 acres (65 acres within Designated Property)

Site Address: 5425 Polk Street Houston, Texas 77023  
(Street) (City) (State) (Zip)

(List all owners – additional sheet is attached, if needed)

Owner: Pelec Central City, LTD

Owner Address: 5425 Polk St Houston TX 77023  
(Street) (City) (State) (Zip)

Name of Contact: John Pogue

Title: \_\_\_\_\_

Organization: Pelec Development, LTD

Phone No.: 713-921-7410 Fax No.: \_\_\_\_\_

Email: \_\_\_\_\_



## **EXECUTIVE SUMMARY**

This application is for a municipal setting designation (MSD) for a property on the northwestern corner at the intersection of Polk Street and Hughes Street in southeast Houston. The subject property, known as Central City Industrial Park, consists of three tracts totaling approximately 77 acres which are used for commercial/industrial purposes; however the north parcel (approximately 12 acres identified as Tract 1 in the property deed) and the south parcel (approximately 1 acre identified as Tract 2 in the property deed), both of which are utilized as parking areas, will not be included within the designated property. The designated property, identified as Tract 2 in the property deed, is approximately 65 acres. The designated property is owned by Pelec Central City, LTD. (Pelec), which operates the facility as an industrial park, leasing the facilities to various entities. Baker Hughes, Inc. sold the property to Pelec in 2006 and retained environmental monitoring and remediation obligations associated with past operations as part of the terms of sale and is therefore the entity pursuing the municipal setting designation for the site.

According to the designated property Deed, the property has been developed as an industrial facility since approximately 1910. The area surrounding the designated property is currently of mixed commercial/industrial and residential use. The area was industrially developed in the early 1900s. The City of Houston provides drinking water to the designated property and the surrounding properties within one-half mile.

Site environmental investigations have reported constituents of concern (COCs) in groundwater beneath the designated property, which include volatile organic compounds and metals. These COCs are present in concentrations which exceed the Protective Concentration Levels (PCLs).

The designated groundwater consists of the uppermost groundwater-bearing unit, which is present at approximately 10 to 20 feet below ground surface. Based on the relatively low site COC concentration levels reported over several years of monitoring, contaminant plumes within the groundwater appear to be stable.

The concentrations of COCs in the designated groundwater do not exceed the TRRP residential non-ingestion PCLs in any monitoring wells. It is believed that this will remain the case based on historic monitoring data. It is believed that concentrations of COCs in the designated groundwater will continue to be below the TRRP non-ingestion PCLs. Contaminants of concern from sources on the designated property have likely migrated onto the property in the southeast corner of the complex owned by the State of Texas. However, concentrations do not exceed a non-ingestion protective concentration level on property beyond the boundary of the designated property.

The plumes of contamination within the designated groundwater appear to be stable. This statement is based upon historic and recent monitoring data which indicate relatively stable concentrations within monitoring wells. Additionally, there are no known ongoing sources of groundwater contamination in existence within the designated property.

No public water wells are considered to be at risk from contamination associated with the designated property. According to records obtained from the Houston-Galveston Subsidence District and the TCEQ there are approximately 732 registered/permitted wells within a five mile radius of the designated property. Of these, public records indicate that there are 78 active retail public utility (RPU) wells. Records indicate that within a one-half mile radius there are 17 registered/permitted wells. Of these, none are listed as RPU wells.

The municipalities of the City of Jacinto City and the City of Galena Park are located within five miles of the designated property. There are no municipalities, other than the City of Houston, located within one-half mile of the property.

## Appendix B

### (Cross Reference with TCEQ's #1, 2, and 4)

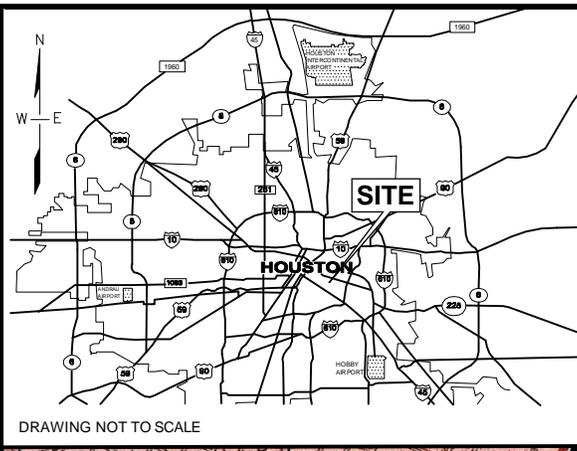
*A site map showing:*

- a. The location of the designated property.*
- b. The topography of the designated property as indicated on publicly available sources, which must note the watershed and whether the designated property is located in the floodplain or floodway, as those terms are defined in Chapter 19 of the Code.*
- c. The detected area of groundwater contamination.*
- d. the location of all soil sampling locations and all groundwater monitoring wells.*
- e. Groundwater gradients, to the extent known, and direction of groundwater flow.*
- f. The ingestion protective concentration level exceedence zone for each contaminant of concern, the extent known.*

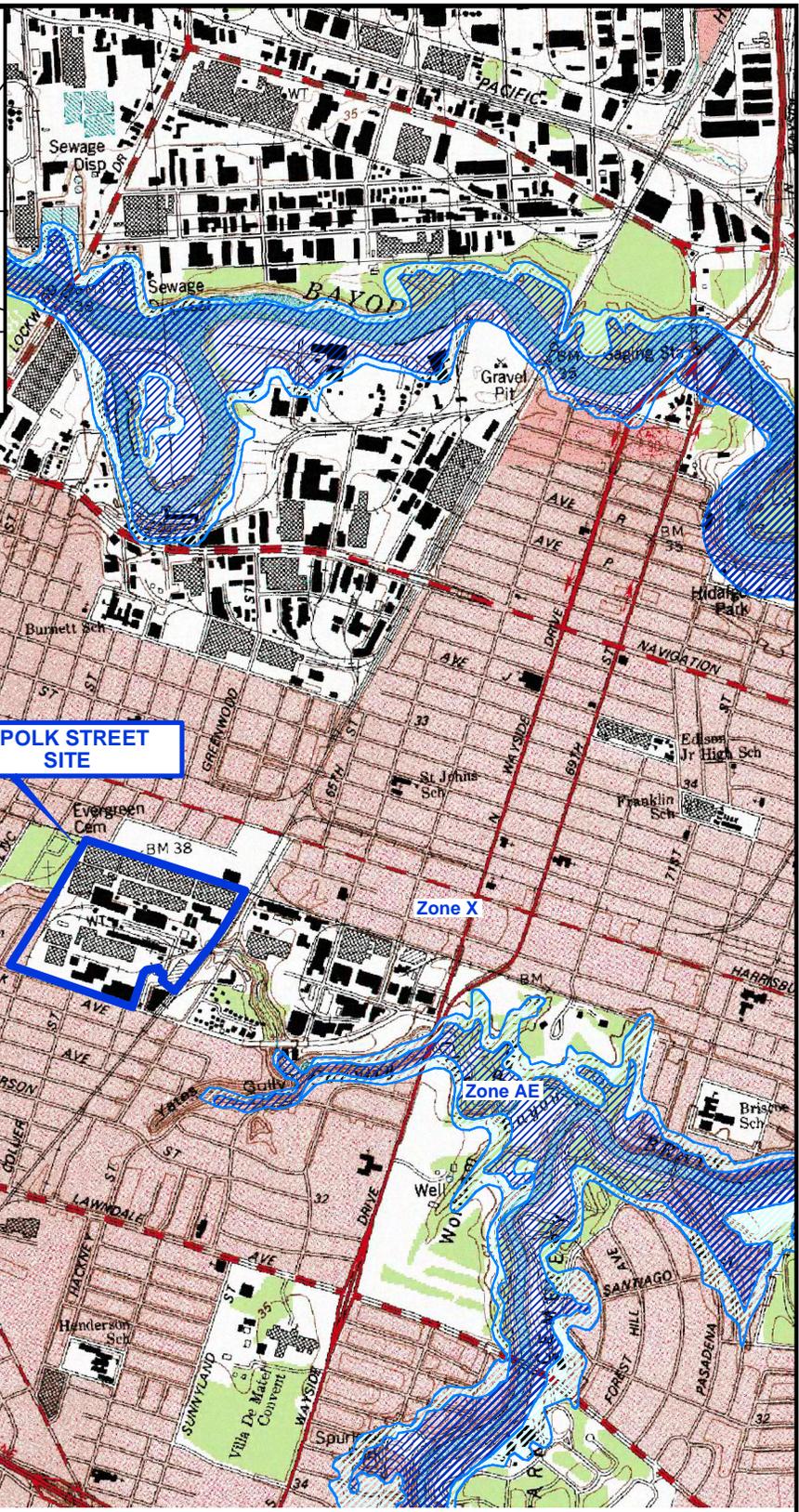
The attached figures include:

- Figure 1 Site Location Map
- Figure 2 Sample Location Map
- Figure 3 Combined Groundwater Contamination Map for all COCs - 2010
- Figure 4 Groundwater Gradient Map - 2010
- Figure 5 Groundwater PCLE Zone Map – Arsenic - 2010
- Figure 6 Groundwater PCLE Zone Map – Lead - 2010
- Figure 7 Groundwater PCLE Zone Map – Benzene - 2010
- Figure 8 Groundwater PCLE Zone Map – 1,1-Dichloroethene - 2010
- Figure 9 Groundwater PCLE Zone Map – cis-1,2-Dichloroethene - 2010
- Figure 10 Groundwater PCLE Zone Map – Tetrachloroethene - 2010
- Figure 11 Groundwater PCLE Zone Map – Trichloroethene - 2010
- Figure 12 Groundwater PCLE Zone Map – Vinyl Chloride – 2010
- Figure 13 Combined Groundwater Contamination Map for all COCs - 2011
- Figure 14 Groundwater Gradient Map - 2011
- Figure 15 Groundwater PCLE Zone Map – Arsenic - 2011
- Figure 16 Groundwater PCLE Zone Map – Benzene - 2011
- Figure 17 Groundwater PCLE Zone Map – 1,1-Dichloroethene - 2011
- Figure 18 Groundwater PCLE Zone Map – cis-1,2-Dichloroethene - 2011
- Figure 19 Groundwater PCLE Zone Map – Tetrachloroethene - 2011
- Figure 20 Groundwater PCLE Zone Map – Trichloroethene - 2011
- Figure 21 Groundwater PCLE Zone Map – Vinyl Chloride - 2011

File: K:\ELM\25008225.Baker Hughes Incorporated\05\Dwgs\Acad\2010 MSD Application\Fig 1 - Site Location Map.dwg User: Susan\_Forrest Plotted: Jun 12, 2012 3:17pm

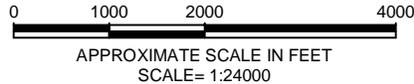


DRAWING NOT TO SCALE



Site is located in "Zone X". Areas determined to be outside the 0.2% annual chance floodplain. FEMA Flood Insurance Rate Map, 48201CO880L, revised June 18, 2007.

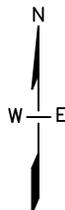
Site is located in the water shed of the Buffalo Bayou - San Jacinto Sub-basin of the San Jacinto River Basin.



Source:

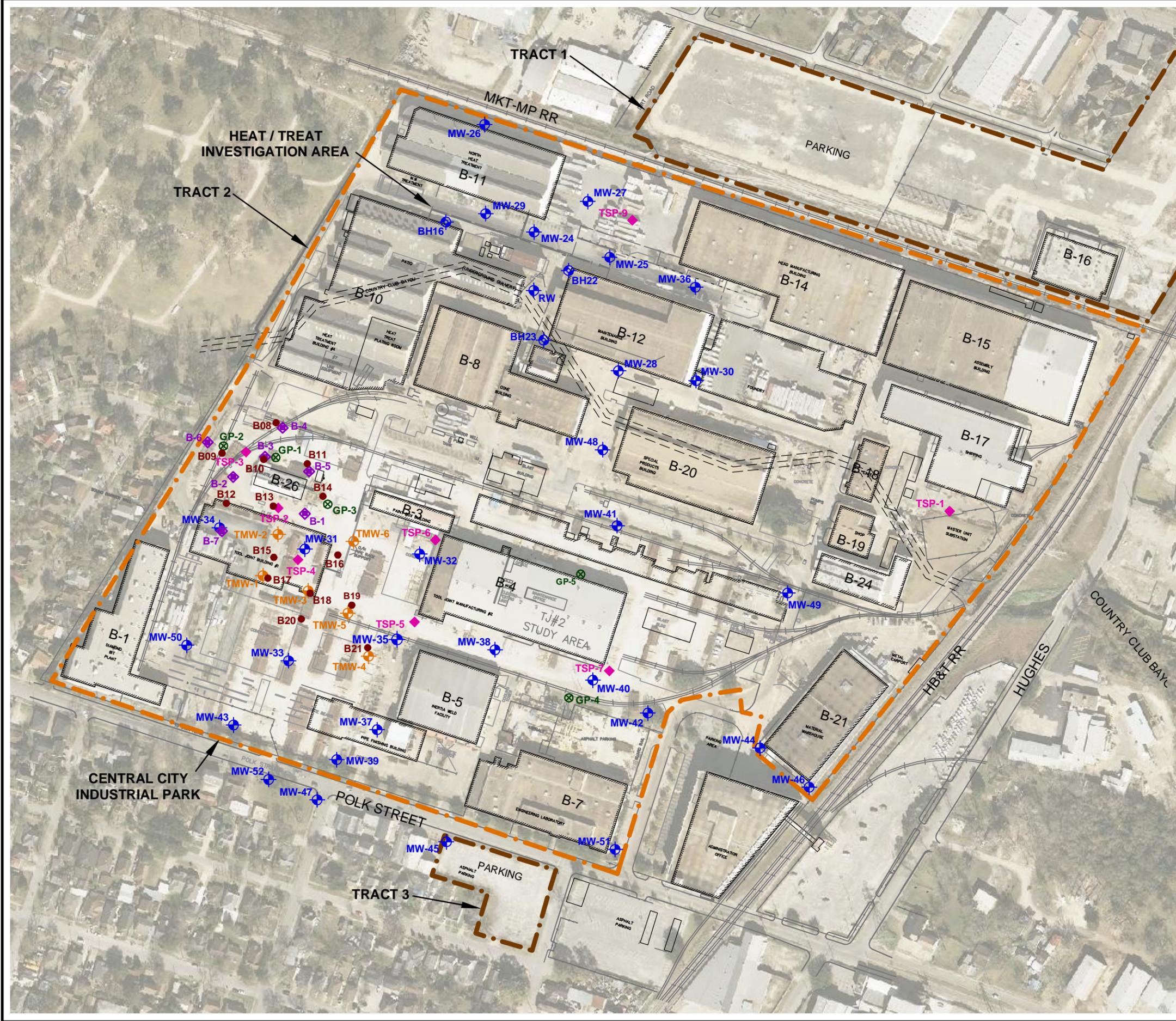
USGS 7.5 Minute-Series Topographic Quadrangle Map for Settegast and Park Place (Photo-revised 1982),

Floodplain data from Houston-Galveston Area Council (HGAC).



 10550 RICHMOND AVE., SUITE 155 HOUSTON, TEXAS 77042 PH: (713) 914-6699 FAX: (713) 789-8404			Title: <h3>Site Location Map</h3>	
			Project: MSD Application 5425 Polk Street Houston, Texas	
Scale: AS SHOWN			Client: BAKER HUGHES OILFIELD OPERATIONS, INC	
Drawn by: KPL / SJF		Date: 9-13-10		
Chk'd by: KL		Date: 9-13-10		
Project No.: 25008225		File Name: Site Location Map.dwg		Appendix: <b>B</b> Figure: <b>1</b>

File: K:\ELM\25008225\Baker Hughes Incorporated\05\Drawings\Acad\2010 MSD Application\Fig 2 - Sample Location Map.dwg User: Susan\_Forrest Plotted: Jun 12, 2012 - 3:19pm



**LEGEND**

- DESIGNATED PROPERTY BOUNDARY (TRACT 2)
- ADDITIONAL PELEC-OWNED PROPERTY (NOT INCLUDED IN DESIGNATED PROPERTY)
- B-5 BUILDING ASSOCIATED WITH CENTRAL CITY INDUSTRIAL PARK
- MW MONITOR WELL
- TMW TEMPORARY MONITOR WELL (URS 2006)
- TSP TEMPORARY MONITOR WELL / SOIL SAMPLE (Terracon 2006)
- SOIL SAMPLE LOCATION (Grant Prideco Phase II Report 2003)
- SOIL BORING LOCATION (URS 2006)
- SOIL BORING LOCATION (URS 2009)

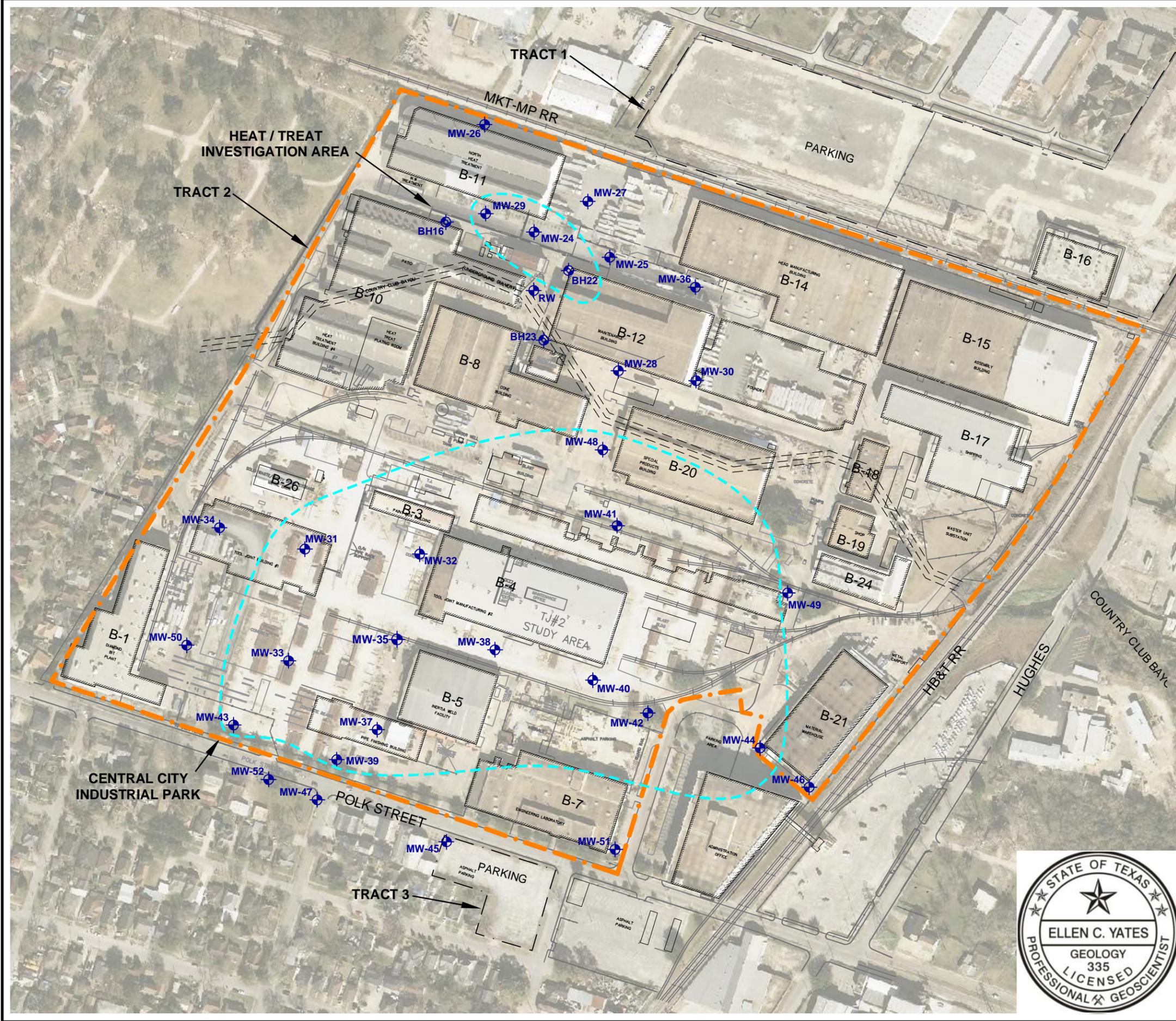
Note: Monitor Well locations are approximate.



Source:  
 HGAC Digital Orthophoto 2008.  
 NAD83, Texas State Plane, South Central Zone, Feet  
 Line drawing represents facility structures during early 1990's.

<p>10550 RICHMOND AVE., SUITE 155          HOUSTON, TEXAS 77042          PH: (713) 914-6639          FAX: (713) 789-8404</p>		Title: <b>Sample Location Map</b>	
		Project: MSD Application 5425 Polk Street Houston, Texas	
Scale: AS SHOWN		Client: BAKER HUGHES OILFIELD OPERATIONS, INC	
Drawn by: KPL / SJF	Date: 9-20-10	Project No.:	File Name:
Chk'd by: KL	Date: 9-20-10	25008225	Sample Location Map.dwg
		Appendix:	<b>B</b>
		Figure:	<b>2</b>

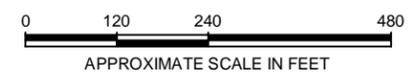
File: K:\ELM\25008225\Baker Hughes Incorporated\05\Drawings\Acad\2010 MSD Application\Fig 3 - Combined GW - All COCs - 2010.dwg Layout: Layout1 User: Susan\_Forrest Plotted: Jun 12, 2012 - 3:20pm



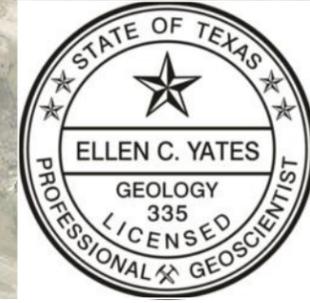
**LEGEND**

- DESIGNATED PROPERTY BOUNDARY (TRACT 2)
- BUILDING ASSOCIATED WITH CENTRAL CITY INDUSTRIAL PARK
- MONITOR WELL
- PROTECTIVE CONCENTRATION LEVEL EXCEEDANCE ZONE ( ALL COCs )

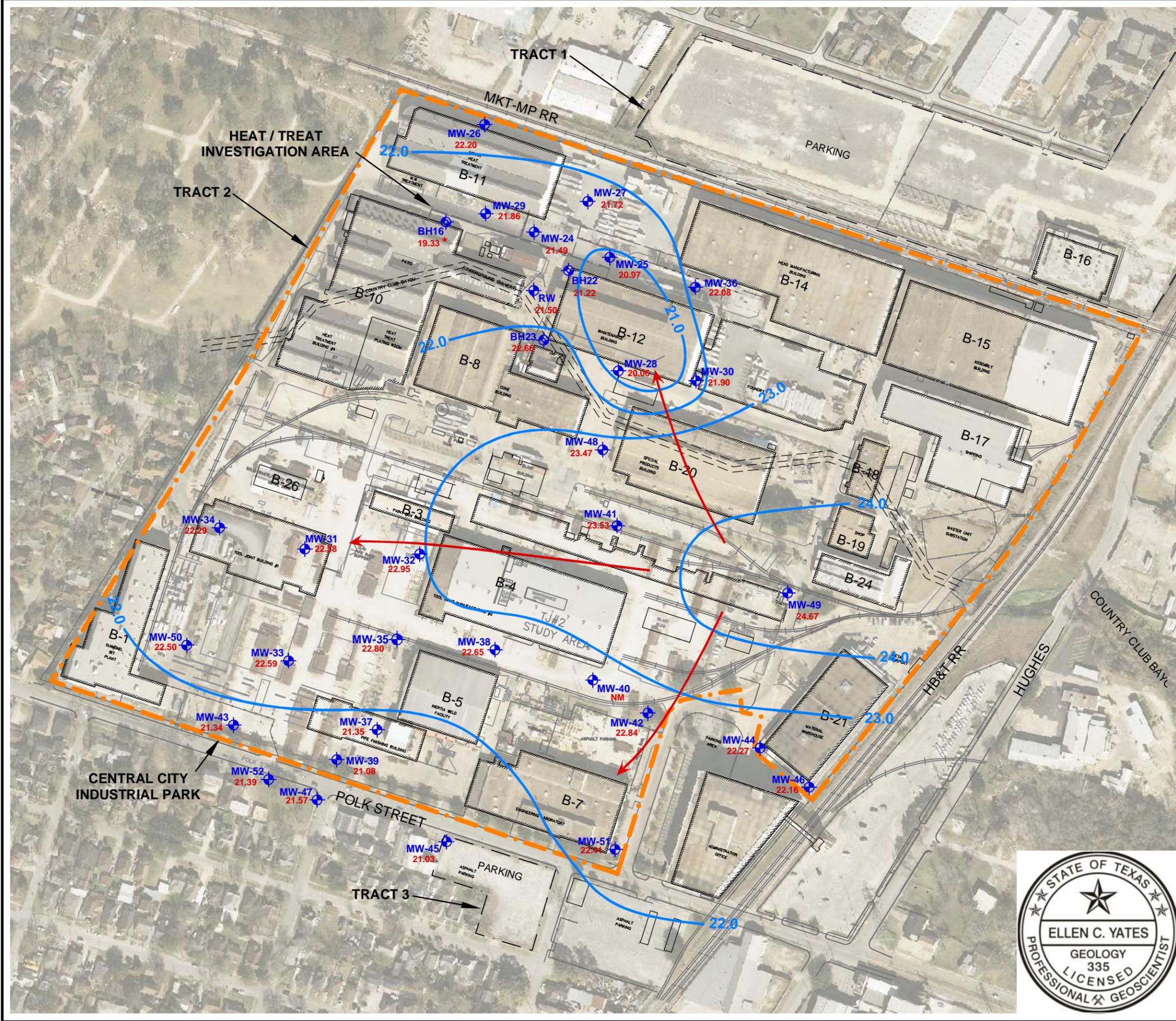
Note: Monitor Well locations are approximate.



Source:  
 HGAC Digital Orthophoto 2008.  
 NAD83, Texas State Plane, South Central Zone, Feet  
 Line drawing represents facility structures during early 1990's.



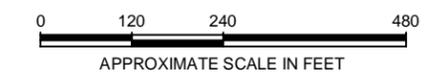
 10550 RICHMOND AVE., SUITE 155 HOUSTON, TEXAS 77042 PH: (713) 914-6639 FAX: (713) 789-8404		Title: <b>Combined Groundwater Contamination Map for All COCs - 2010</b>	
		Project: MSD Application 5425 Polk Street Houston, Texas	
Scale: AS SHOWN		Client: BAKER HUGHES OILFIELD OPERATIONS, INC	
Drawn by: KPL / SJF	Date: 8-11-11	Project No.: 25008225	File Name: Combined GW All COCs-2010.dwg
Chk'd by: KL	Date: 8-11-11	Appendix: <b>B</b>	Figure: <b>3</b>



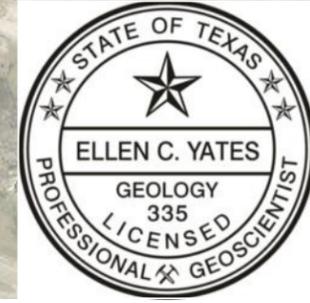
**LEGEND**

- DESIGNATED PROPERTY BOUNDARY (TRACT 2)
- BUILDING ASSOCIATED WITH CENTRAL CITY INDUSTRIAL PARK
- MONITOR WELL
- GROUNDWATER CONTOUR (1.0 Ft. Interval)
- GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATION, FEET
- NOT MEASURED
- ELEVATION NOT USED IN CONTOURING THIS EVENT

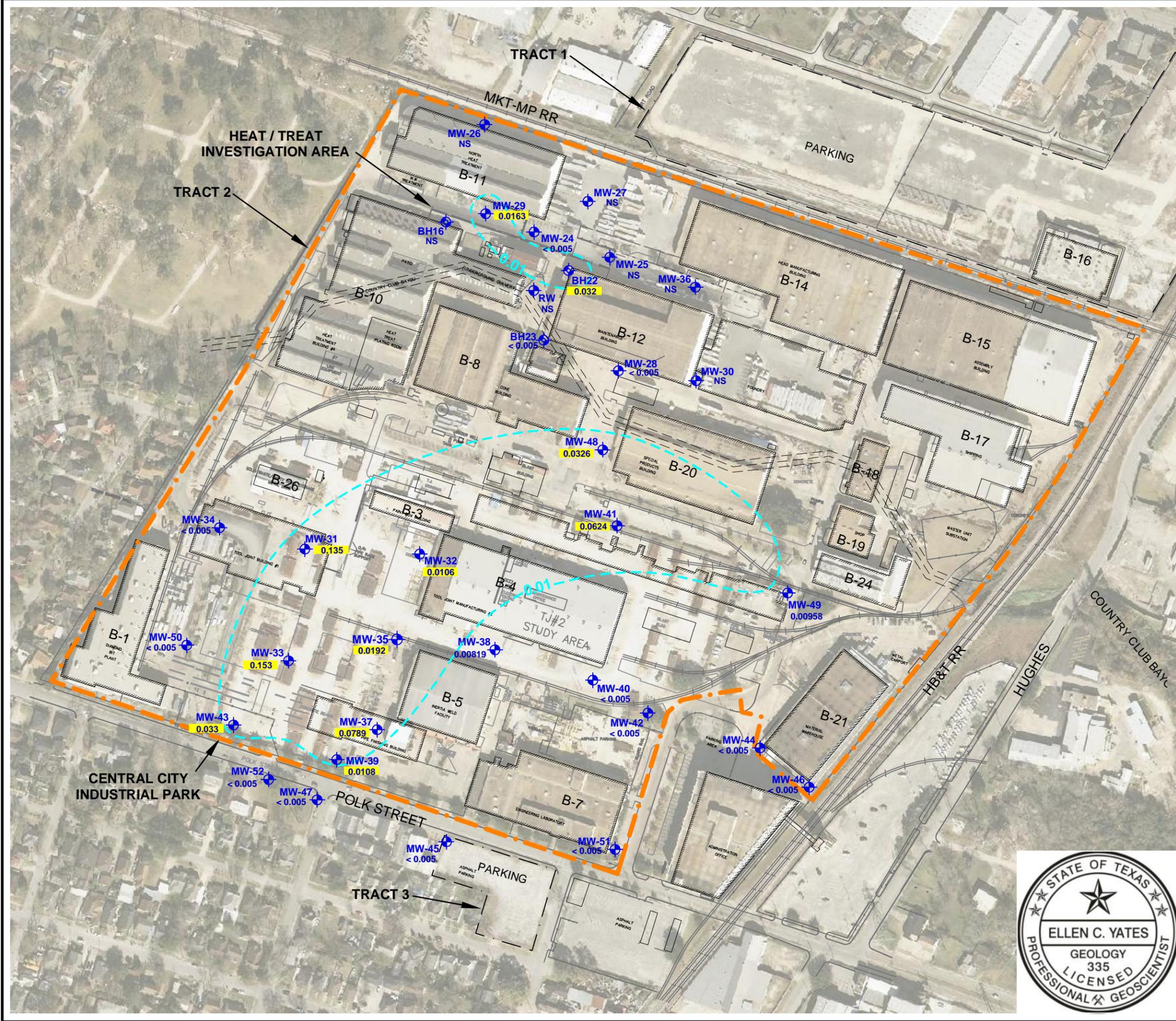
Note: Monitor Well locations are approximate.



Source:  
 HGAC Digital Orthophoto 2008.  
 NAD83, Texas State Plane, South Central Zone, Feet  
 Line drawing represents facility structures during early 1990's.



<p>10550 RICHMOND AVE., SUITE 155                  HOUSTON, TEXAS 77042                  PH: (713) 914-6699                  FAX: (713) 789-8404</p>		Title: <b>Groundwater Gradient Map                  June 2010</b>	
		Project: MSD Application 5425 Polk Street Houston, Texas	
Scale: AS SHOWN		Client: BAKER HUGHES OILFIELD OPERATIONS, INC	
Drawn by: KPL / SJF	Date: 9-20-10	Project No.: 25008225	File Name: GW Gradient Map Jun 2010.dwg
Chk'd by: KL	Date: 9-20-10	Appendix: <b>B</b>	Figure: <b>4</b>

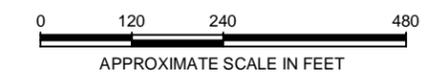


**LEGEND**

- DESIGNATED PROPERTY BOUNDARY (TRACT 2)
- B-5 BUILDING ASSOCIATED WITH CENTRAL CITY INDUSTRIAL PARK
- MONITOR WELL
- APPROXIMATE PROTECTIVE CONCENTRATION LEVEL EXCEEDANCE ZONE ( ARSENIC )

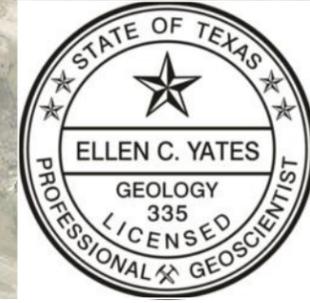
**NOTES:**

1. WELL LOCATIONS ARE APPROXIMATE.
2. ALL VALUES ARE REPORTED IN MILLIGRAMS PER LITER (mg/L).
3. PCL = 0.01 mg/L (Residential <sup>GW</sup>ing).
4. VALUES HIGHLIGHTED IN **YELLOW** EXCEED THE PCL.
5. NS = NOT SAMPLED.

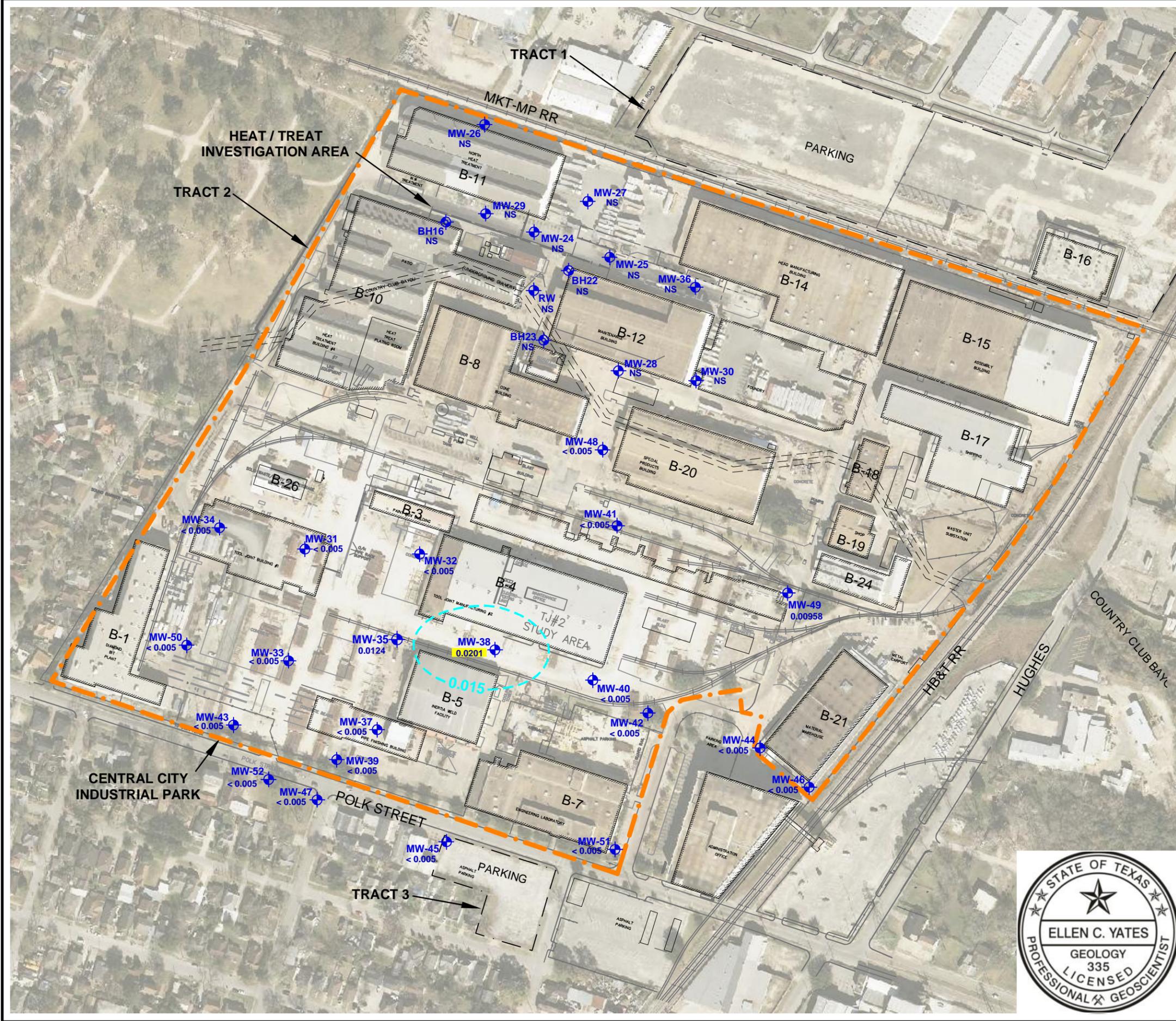


**Source:**

HGAC Digital Orthophoto 2008.  
 NAD83, Texas State Plane, South Central Zone, Feet  
 Line drawing represents facility structures during early 1990's.



<p>10550 RICHMOND AVE., SUITE 155                  HOUSTON, TEXAS 77042                  PH: (713) 914-6699                  FAX: (713) 789-8404</p>		Title: <b>Groundwater PCLE Zone for Arsenic June 2010</b>	
		Project: MSD Application 5425 Polk Street Houston, Texas	
Scale: AS SHOWN		Client: BAKER HUGHES OILFIELD OPERATIONS, INC	
Drawn by: KPL / SJF	Date: 8-11-11	Project No.: 25008225	File Name: GW PCLE Zone Arsenic-June2010.dwg
Chk'd by: KL	Date: 8-11-11	Appendix: <b>B</b>	Figure: <b>5</b>



**LEGEND**

- DESIGNATED PROPERTY BOUNDARY (TRACT 2)
- B-5 BUILDING ASSOCIATED WITH CENTRAL CITY INDUSTRIAL PARK
- MW MONITOR WELL
- APPROXIMATE PROTECTIVE CONCENTRATION LEVEL EXCEEDANCE ZONE ( LEAD )

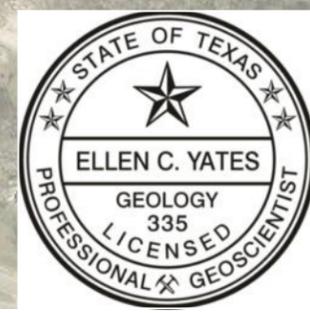
**NOTES:**

1. WELL LOCATIONS ARE APPROXIMATE.
2. ALL VALUES ARE REPORTED IN MILLIGRAMS PER LITER (mg/L).
3. PCL = 0.015 mg/L (Residential <sup>GW</sup>GW Ing).
4. VALUES HIGHLIGHTED IN **YELLOW** EXCEED THE PCL.
5. NS = NOT SAMPLED.

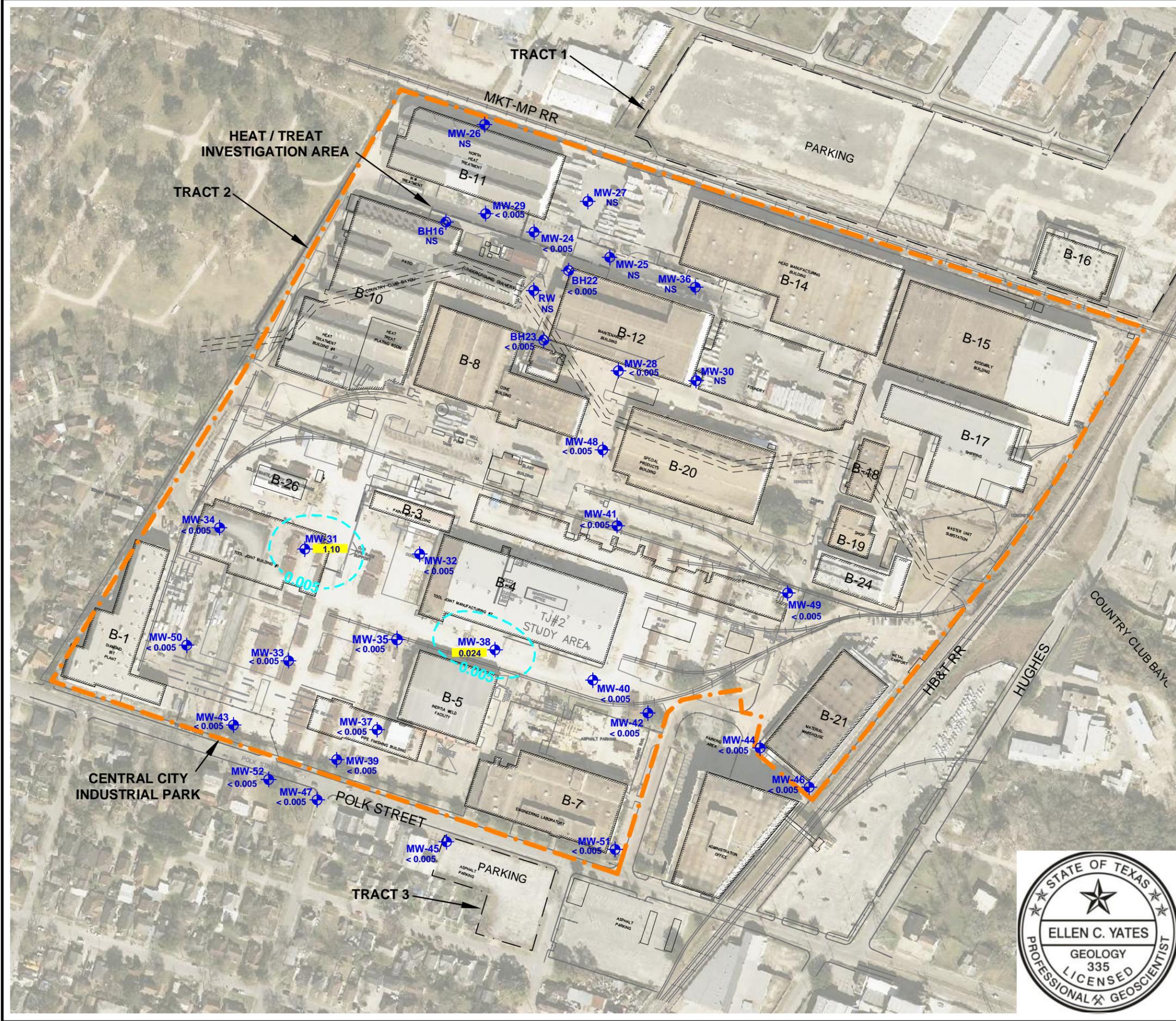


**Source:**

HGAC Digital Orthophoto 2008.  
 NAD83, Texas State Plane, South Central Zone, Feet  
 Line drawing represents facility structures during early 1990's.



Title: <b>Groundwater PCLE Zone for Lead June 2010</b>	
Project: MSD Application 5425 Polk Street Houston, Texas	
Client: BAKER HUGHES OILFIELD OPERATIONS, INC	
Scale: AS SHOWN	Drawn by: KPL / SJF Date: 9-20-10 Chk'd by: KL Date: 9-20-10
Project No.: 25008225	File Name: GW PCLE Zone Lead-June2010.dwg Appendix: <b>B</b> Figure: <b>6</b>



**LEGEND**

- DSEIGNATED PROPERTY BOUNDARY (TRACT 2)
- B-5 BUILDING ASSOCIATED WITH CENTRAL CITY INDUSTRIAL PARK
- MW MONITOR WELL
- APPROXIMATE PROTECTIVE CONCENTRATION LEVEL EXCEEDANCE ZONE ( BENZENE )

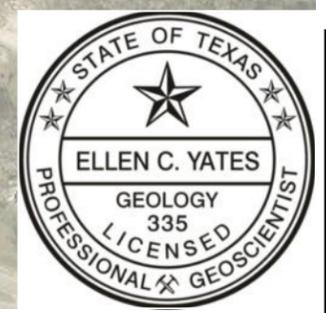
**NOTES:**

1. WELL LOCATIONS ARE APPROXIMATE.
2. ALL VALUES ARE REPORTED IN MILLIGRAMS PER LITER (mg/L).
3. PCL = 0.005 mg/L (Residential <sup>GW</sup>ing).
4. VALUES HIGHLIGHTED IN **YELLOW** EXCEED THE PCL.
5. NS = NOT SAMPLED.

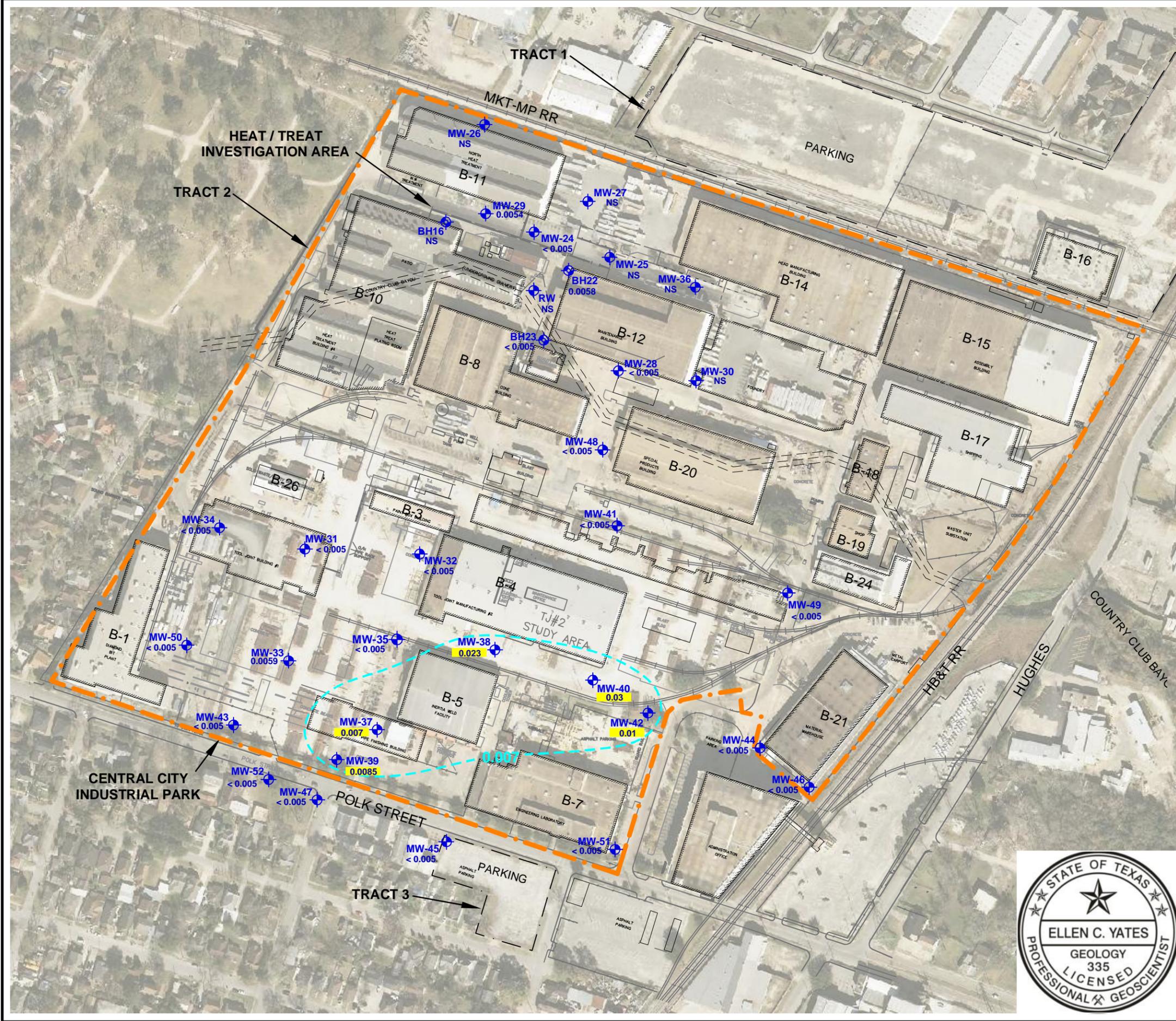


**Source:**

HGAC Digital Orthophoto 2008.  
 NAD83, Texas State Plane, South Central Zone, Feet  
 Line drawing represents facility structures during early 1990's.



 10550 RICHMOND AVE., SUITE 155 HOUSTON, TEXAS 77042 PH: (713) 914-6699 FAX: (713) 789-8404		Title: <b>Groundwater PCLE Zone for Benzene June 2010</b>	
		Project: MSD Application 5425 Polk Street Houston, Texas	
Scale: AS SHOWN		Client: BAKER HUGHES OILFIELD OPERATIONS, INC	
Drawn by: KPL / SJF	Date: 8-11-11	Project No.: 25008225	File Name: GW PCLE Zone Benzene-June2010.dwg
Chk'd by: KL	Date: 8-11-11	Appendix: <b>B</b>	Figure: <b>7</b>



**LEGEND**

- DESIGNATED PROPERTY BOUNDARY (TRACT 2)
- B-5 BUILDING ASSOCIATED WITH CENTRAL CITY INDUSTRIAL PARK
- MW MONITOR WELL
- APPROXIMATE PROTECTIVE CONCENTRATION LEVEL EXCEEDANCE ZONE (1,1-DCE)

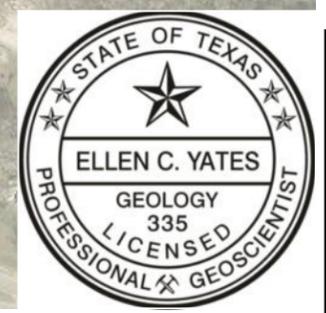
**NOTES:**

1. WELL LOCATIONS ARE APPROXIMATE.
2. ALL VALUES ARE REPORTED IN MILLIGRAMS PER LITER (mg/L).
3. PCL = 0.007 mg/L (Residential <sup>GW</sup>GW Ing).
4. VALUES HIGHLIGHTED IN **YELLOW** EXCEED THE PCL.
5. NS = NOT SAMPLED.

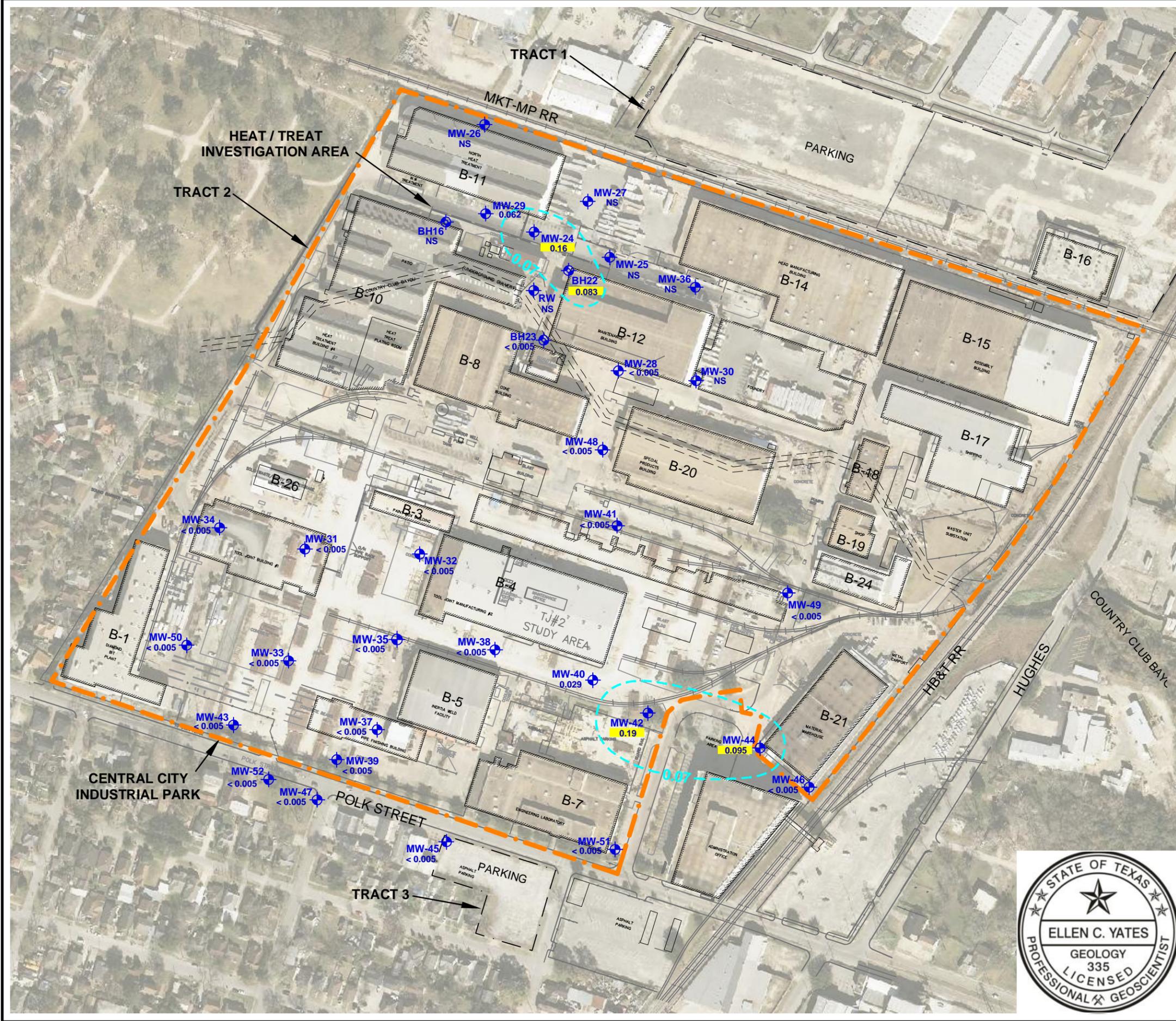


**Source:**

HGAC Digital Orthophoto 2008.  
NAD83, Texas State Plane, South Central Zone, Feet  
Line drawing represents facility structures during early 1990's.



<p>10550 RICHMOND AVE., SUITE 155 HOUSTON, TEXAS 77042 PH: (713) 914-6699 FAX: (713) 789-8404</p>		<p>Title: <b>Groundwater PCLE Zone for 1,1-Dichloroethene June 2010</b></p>	
		<p>Project: MSD Application 5425 Polk Street Houston, Texas</p>	
<p>Scale: AS SHOWN</p>		<p>Client: BAKER HUGHES OILFIELD OPERATIONS, INC</p>	
<p>Drawn by: KPL / SJF</p>	<p>Date: 8-11-11</p>	<p>Project No.: 25008225</p>	<p>File Name: GW PCLE Zone 1-1-DCE-June2010.dwg</p>
<p>Chk'd by: KL</p>	<p>Date: 8-11-11</p>	<p>Appendix: <b>B</b></p>	<p>Figure: <b>8</b></p>



**LEGEND**

- - - DESIGNATED PROPERTY BOUNDARY (TRACT 2)
- B-5 BUILDING ASSOCIATED WITH CENTRAL CITY INDUSTRIAL PARK
- MW MONITOR WELL
- - - APPROXIMATE PROTECTIVE CONCENTRATION LEVEL EXCEEDANCE ZONE ( cis-1,2-DCE )

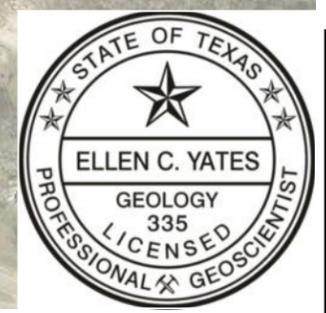
**NOTES:**

1. WELL LOCATIONS ARE APPROXIMATE.
2. ALL VALUES ARE REPORTED IN MILLIGRAMS PER LITER (mg/L).
3. PCL = 0.07 mg/L (Residential <sup>GW</sup>Ing).
4. VALUES HIGHLIGHTED IN **YELLOW** EXCEED THE PCL.
5. NS = NOT SAMPLED.



**Source:**

HGAC Digital Orthophoto 2008.  
 NAD83, Texas State Plane, South Central Zone, Feet  
 Line drawing represents facility structures during early 1990's.



**Title: Groundwater PCLE Zone for cis-1,2-Dichloroethene June 2010**

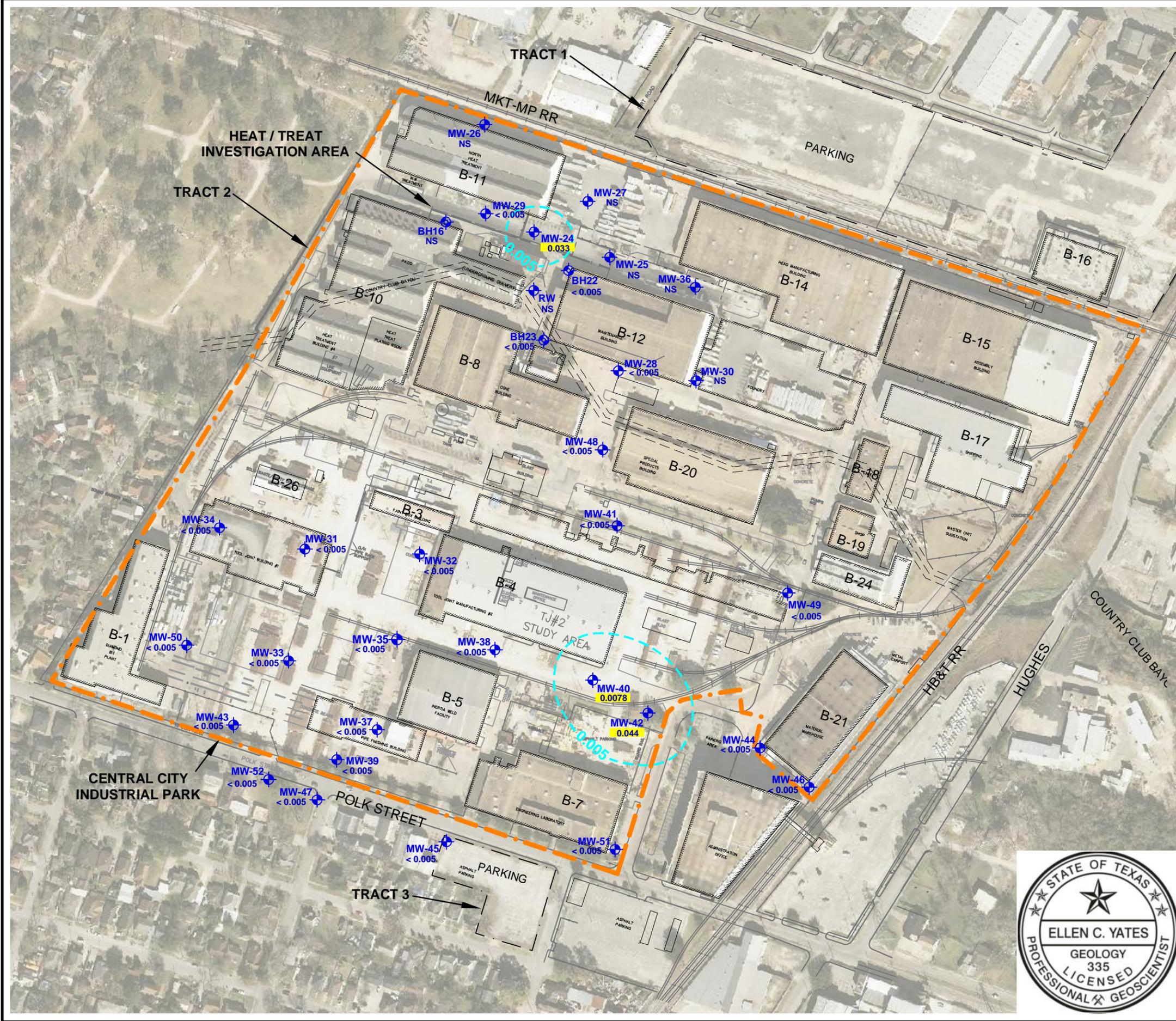
**Project:** MSD Application  
 5425 Polk Street  
 Houston, Texas

**Client:** BAKER HUGHES OILFIELD OPERATIONS, INC

Scale: AS SHOWN	Drawn by: KPL / SJF	Date: 9-20-10
	Chk'd by: KL	Date: 9-20-10

Project No.: 25008225	File Name: GW PCLE Zone cis-1-2-DCE-June2010.dwg	Appendix: <b>B</b>
	Figure: <b>9</b>	

File: K:\ELM\25008225\Baker Hughes Incorporated\05\Drawings\Acad\2010 MSD Application\Fig 10 - GW PCLE Zone - PCE - June2010.dwg User: Susan\_Forget Plotted: Jun 12, 2012 - 3:34pm



**LEGEND**

- DESIGNATED PROPERTY BOUNDARY (TRACT 2)
- B-5 BUILDING ASSOCIATED WITH CENTRAL CITY INDUSTRIAL PARK
- MW MONITOR WELL
- APPROXIMATE PROTECTIVE CONCENTRATION LEVEL EXCEEDANCE ZONE (PCE)

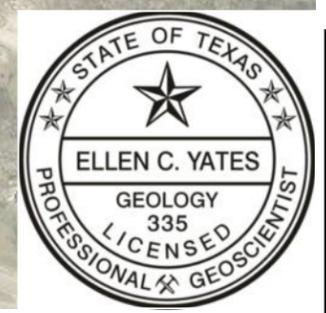
**NOTES:**

1. WELL LOCATIONS ARE APPROXIMATE.
2. ALL VALUES ARE REPORTED IN MILLIGRAMS PER LITER (mg/L).
3. PCL = 0.005 mg/L (Residential <sup>GW</sup>ing).
4. VALUES HIGHLIGHTED IN **YELLOW** EXCEED THE PCL.
5. NS = NOT SAMPLED.



**Source:**

HGAC Digital Orthophoto 2008.  
 NAD83, Texas State Plane, South Central Zone, Feet  
 Line drawing represents facility structures during early 1990's.



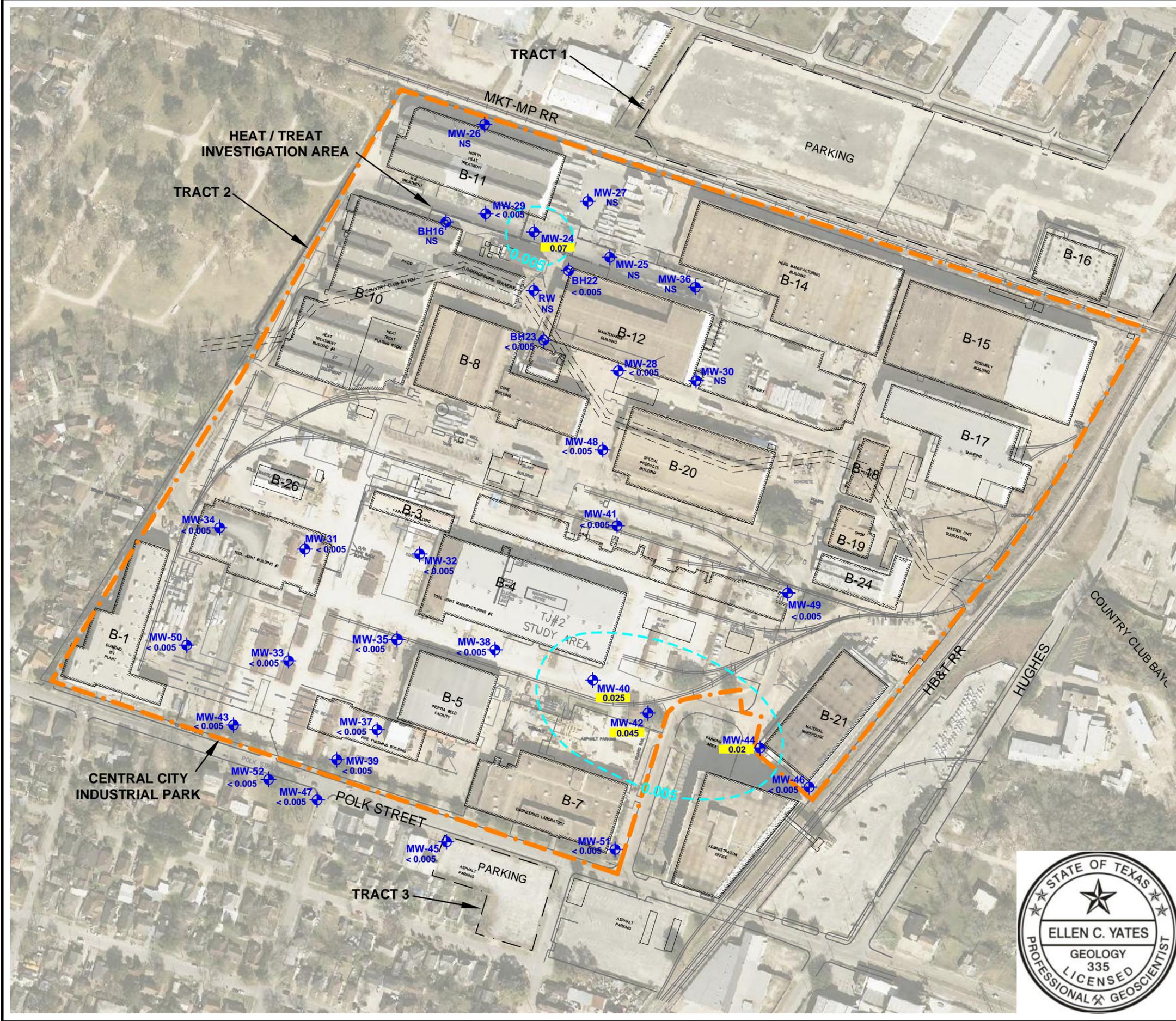
**Title: Groundwater PCLE Zone for Tetrachloroethene June 2010**

Project: MSD Application  
 5425 Polk Street  
 Houston, Texas

Client: BAKER HUGHES OILFIELD OPERATIONS, INC

Scale: AS SHOWN	Drawn by: KPL / SJF	Date: 9-20-10
	Chk'd by: KL	Date: 9-20-10

Project No.: 25008225	File Name: GW PCLE Zone PCE-June2010.dwg	Appendix: <b>B</b>
		Figure: <b>10</b>



**LEGEND**

- DESIGNATED PROPERTY BOUNDARY (TRACT 2)
- B-5 BUILDING ASSOCIATED WITH CENTRAL CITY INDUSTRIAL PARK
- MW MONITOR WELL
- APPROXIMATE PROTECTIVE CONCENTRATION LEVEL EXCEEDANCE ZONE (TCE)

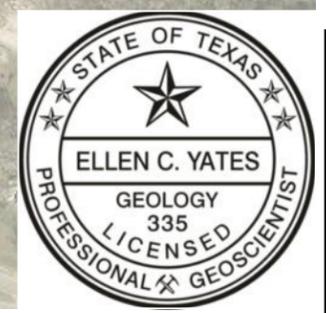
**NOTES:**

1. WELL LOCATIONS ARE APPROXIMATE.
2. ALL VALUES ARE REPORTED IN MILLIGRAMS PER LITER (mg/L).
3. PCL = 0.005 mg/L (Residential <sup>GW</sup>ing).
4. VALUES HIGHLIGHTED IN **YELLOW** EXCEED THE PCL.
5. NS = NOT SAMPLED.



**Source:**

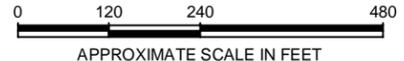
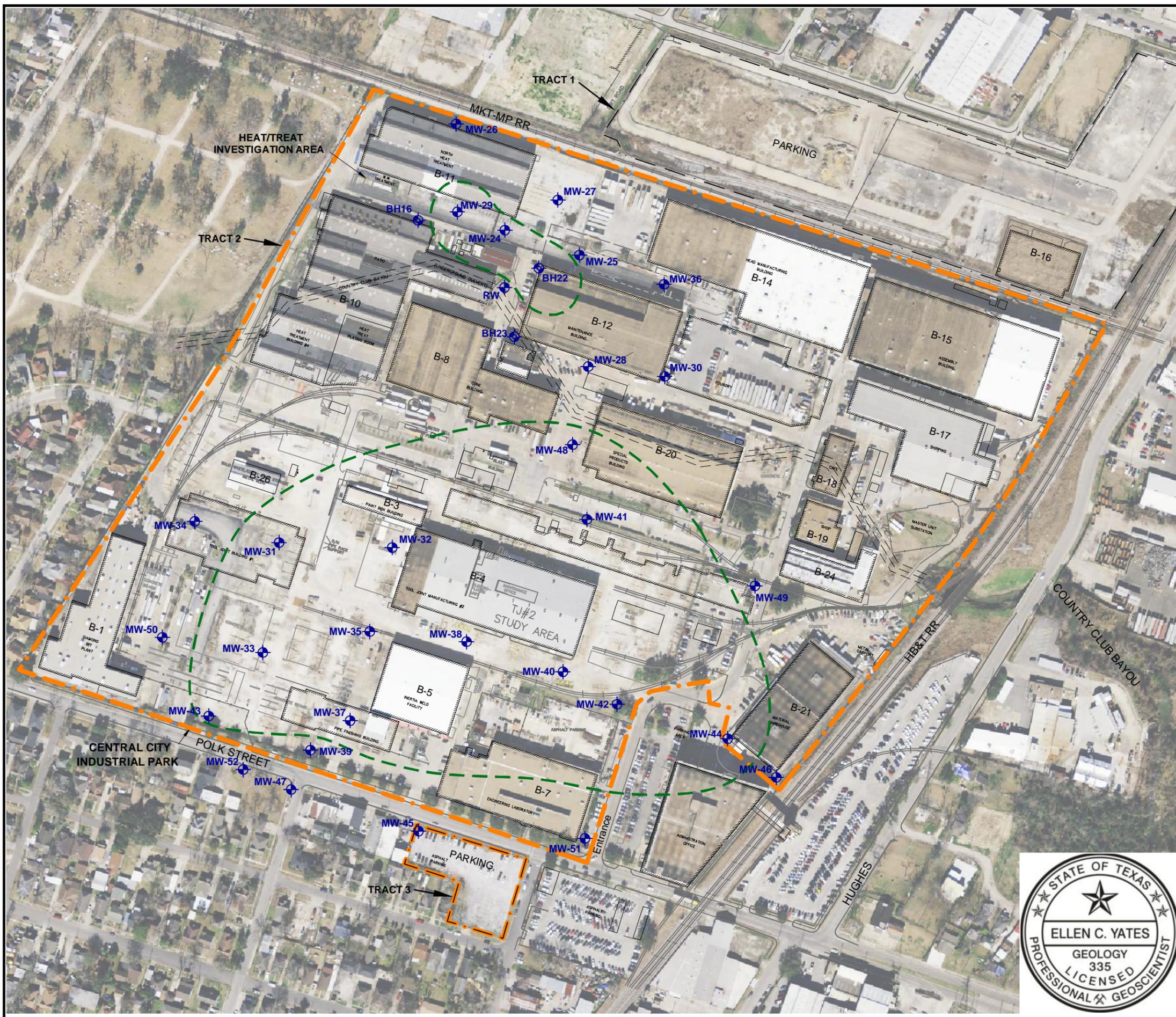
HGAC Digital Orthophoto 2008.  
 NAD83, Texas State Plane, South Central Zone, Feet  
 Line drawing represents facility structures during early 1990's.



10550 RICHMOND AVE., SUITE 155 HOUSTON, TEXAS 77042 PH: (713) 914-6639 FAX: (713) 789-8404		<b>Title: Groundwater PCLE Zone for Trichloroethene June 2010</b>	
		Project: MSD Application 5425 Polk Street Houston, Texas	
Scale: AS SHOWN		Client: BAKER HUGHES OILFIELD OPERATIONS, INC	
Drawn by: KPL / SJF	Date: 9-20-10	Project No.: 25008225	File Name: GW PCLE Zone TCE-June2010.dwg
Chk'd by: KL	Date: 9-20-10	Appendix: <b>B</b>	Figure: <b>11</b>



File: K:\ELM\25008225.Baker Hughes Incorporated\05\Drawings\Acad\2011 MSD Up-Date\Fig 13 - Combined GW - All COCs - 2011.dwg Layout: Layout1 User: Susan\_F Forrest Plotted: Jun 07, 2012 - 10:11am

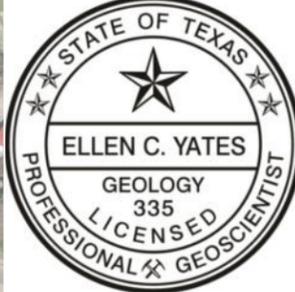


**LEGEND**

- PROPERTY BOUNDARY
- B-5 BUILDING ASSOCIATED WITH CENTRAL CITY INDUSTRIAL PARK
- MW MONITOR WELL
- PROTECTIVE CONCENTRATION LEVEL EXCEEDANCE ZONE (ALL COCs)

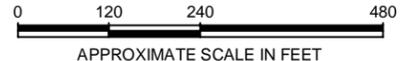
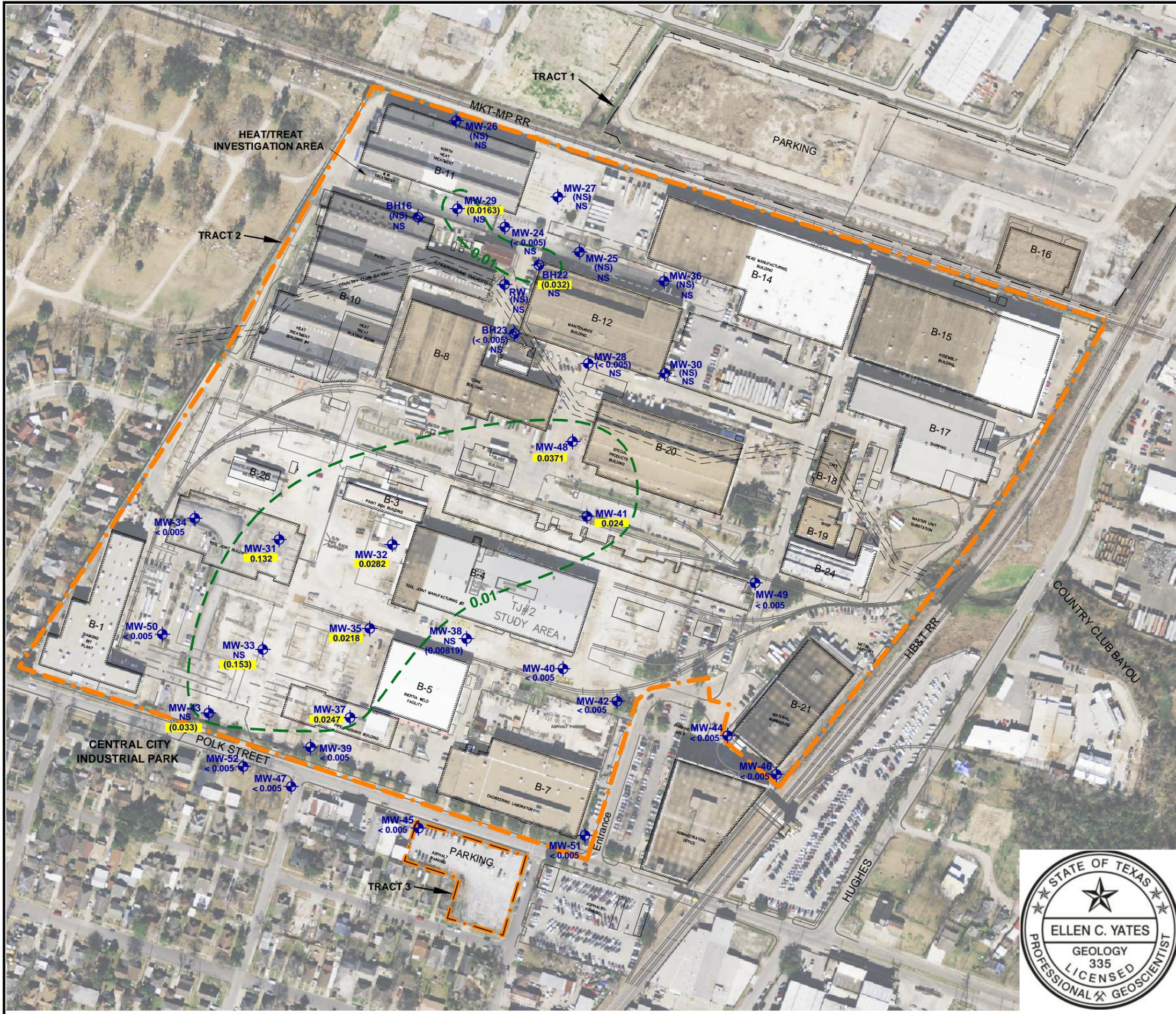
**NOTES:**  
 1. WELL LOCATIONS ARE APPROXIMATE.

Source:  
 2010 HGAC Digital Ortho Photo Imagery  
 NAD83, Texas State Plane, South Central Zone, Feet  
 Line drawing represents facility structures during early 1990's.



Title: <b>Combined Groundwater Contamination Map for All COCs - 2011</b>		
Project: MSD Application 5425 Polk Street Houston, Texas		
Client: BAKER HUGHES OILFIELD OPERATIONS, INC		
Scale: AS SHOWN	Drawn by: SJF	Date: 8-11-11
Checked by: KL	Date: 8-11-11	Project No.: 25008225
File Name: Combined GW All COCs-2011.dwg	Appendix: <b>B</b>	Figure: <b>13</b>





**LEGEND**

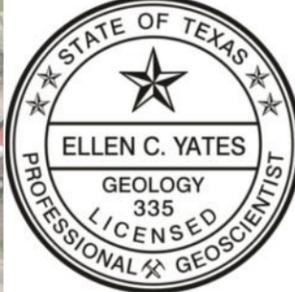
- - - PROPERTY BOUNDARY
- B-5 BUILDING ASSOCIATED WITH CENTRAL CITY INDUSTRIAL PARK
- MW MONITOR WELL
- - - APPROXIMATE EXTENT OF PCL EXCEEDANCE

**NOTES:**

1. WELL LOCATIONS ARE APPROXIMATE.
2. ALL VALUES ARE REPORTED IN MILLIGRAMS PER LITER (mg/L).
3. VALUES HIGHLIGHTED IN **YELLOW** EXCEEDED THE PCL FOR THIS SAMPLING EVENT.
4. PCL = 0.01 mg/L (Residential <sup>GW</sup>GW<sub>ing</sub>).
5. VALUES IN PARENTHESIS ARE FROM LAST YEAR'S 2010 SAMPLING EVENT.
6. "NS" INDICATES NOT SAMPLED.
7. MONITOR WELL MW-38 HAS BEEN DESTROYED.
8. MONITOR WELLS MW-33 AND MW-43 WERE NOT ACCESSIBLE.

Source:

2010 HGAC Digital Ortho Photo Imagery  
 NAD83, Texas State Plane, South Central Zone, Feet  
 Line drawing represents facility structures during early 1990's.



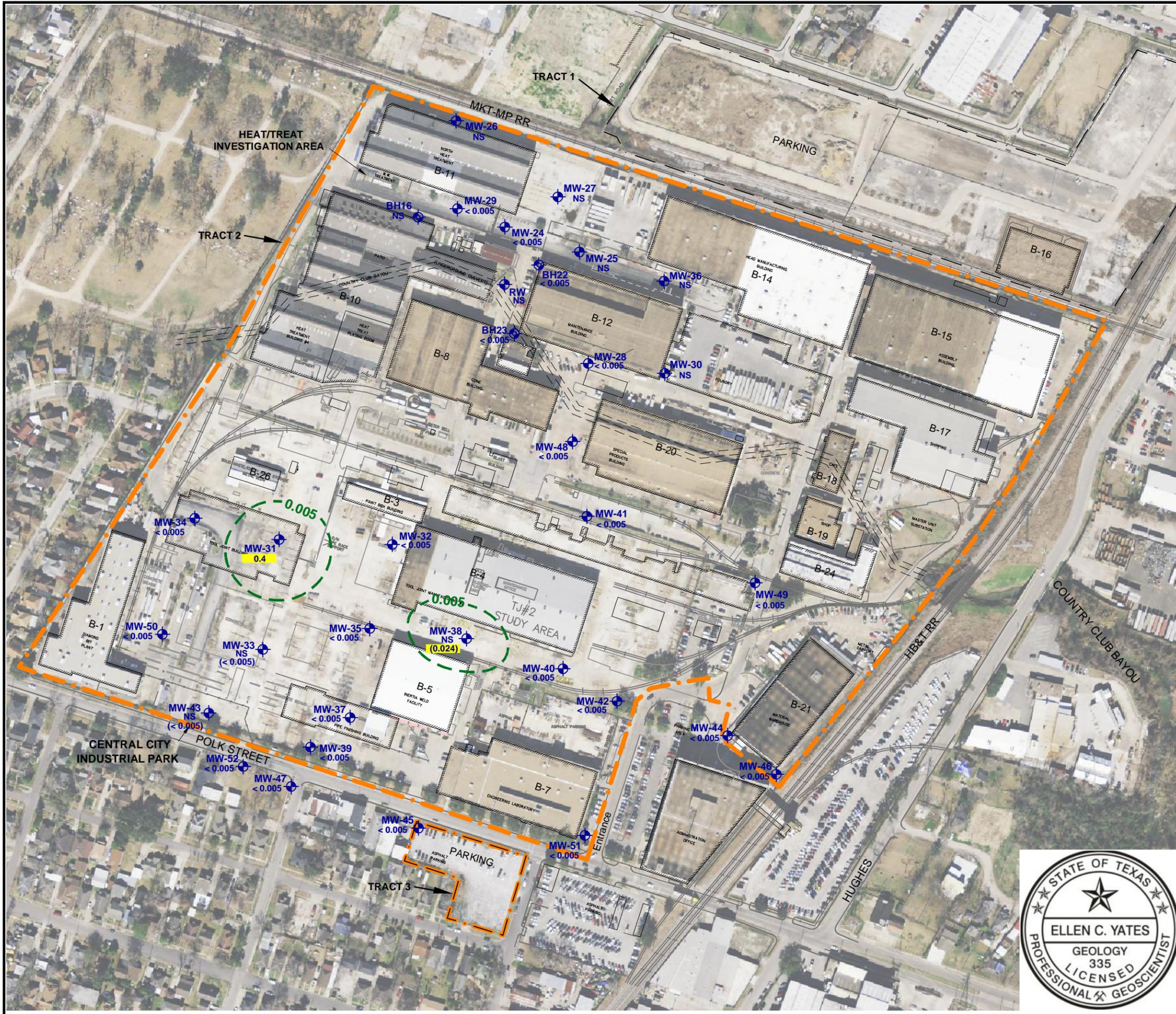
Title: **Groundwater PCLE Zone for Arsenic June 2011**

Project: MSD Application  
 5425 Polk Street  
 Houston, Texas

Client: BAKER HUGHES OILFIELD OPERATIONS, INC

Scale: AS SHOWN	Drawn by: SJF	Date: 8-11-11
	Chk'd by: KL	Date: 8-11-11

Project No.: 25008225	File Name: GW PCLE Zone-Arsenic-Jun 2010.dwg	Appendix: <b>B</b>
		Figure: <b>15</b>



**LEGEND**

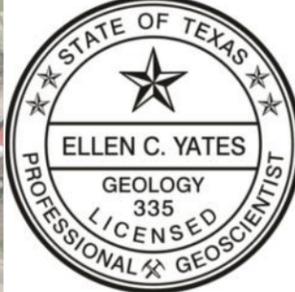
- - - PROPERTY BOUNDARY
- B-5 BUILDING ASSOCIATED WITH CENTRAL CITY INDUSTRIAL PARK
- MW MONITOR WELL
- - - APPROXIMATE EXTENT OF PCL EXCEEDANCE

**NOTES:**

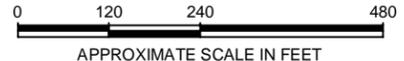
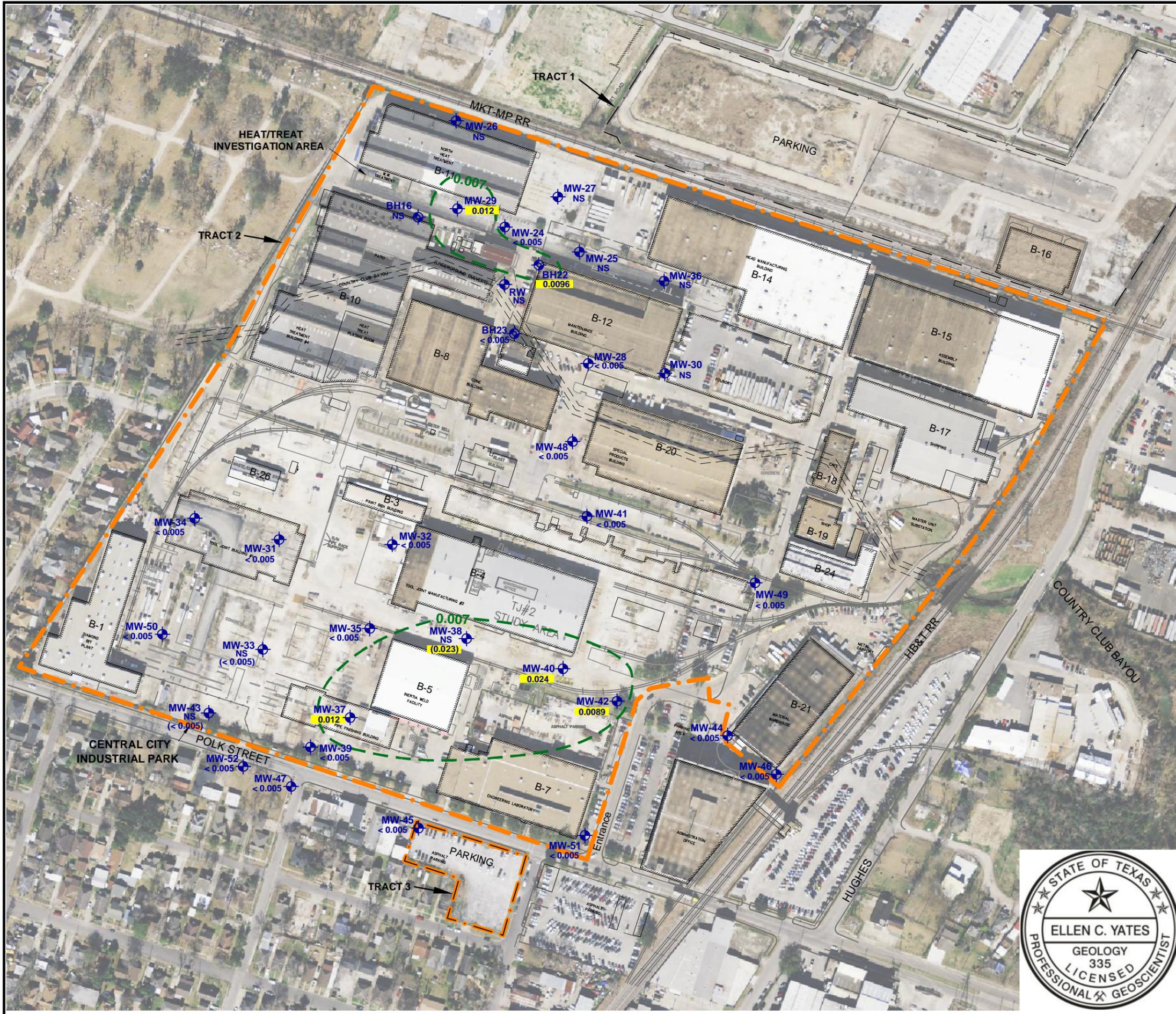
1. WELL LOCATIONS ARE APPROXIMATE.
2. ALL VALUES ARE REPORTED IN MILLIGRAMS PER LITER (mg/L).
3. VALUES HIGHLIGHTED IN **YELLOW** EXCEEDED THE PCL FOR THIS SAMPLING EVENT.
4. PCL = 0.005 mg/L (Residential <sup>GW</sup>Ing).
5. VALUES IN PARENTHESIS ARE FROM LAST YEAR'S 2010 SAMPLING EVENT.
6. "NS" INDICATES NOT SAMPLED.
7. MONITOR WELL MW-38 HAS BEEN DESTROYED.
8. MONITOR WELLS MW-33 AND MW-43 WERE NOT ACCESSIBLE.

Source:

2010 HGAC Digital Ortho Photo Imagery  
 NAD83, Texas State Plane, South Central Zone, Feet  
 Line drawing represents facility structures during early 1990's.



Title: <b>Groundwater PCLE Zone for Benzene June 2011</b>		
Project: MSD Application 5425 Polk Street Houston, Texas		
Client: BAKER HUGHES OILFIELD OPERATIONS, INC		
Scale: AS SHOWN	Drawn by: SJF	Date: 8-11-11
Chk'd by: KL	Date: 8-11-11	Project No.: 25008225
File Name: GW PCLE Zone- Benzene-Jun 2010.dwg	Appendix: <b>B</b>	Figure: <b>16</b>



**LEGEND**

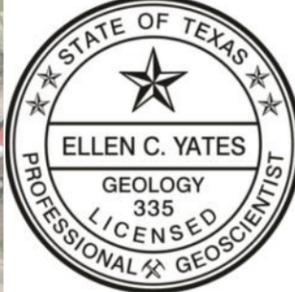
- PROPERTY BOUNDARY
- B-5 BUILDING ASSOCIATED WITH CENTRAL CITY INDUSTRIAL PARK
- MW MONITOR WELL
- APPROXIMATE EXTENT OF PCL EXCEEDANCE

**NOTES:**

1. WELL LOCATIONS ARE APPROXIMATE.
2. ALL VALUES ARE REPORTED IN MILLIGRAMS PER LITER (mg/L).
3. VALUES HIGHLIGHTED IN **YELLOW** EXCEEDED THE PCL FOR THIS SAMPLING EVENT.
4. PCL = 0.007 mg/L (Residential <sup>GW</sup>ing).
5. VALUES IN PARENTHESIS ARE FROM LAST YEAR'S 2010 SAMPLING EVENT.
6. "NS" INDICATES NOT SAMPLED.
7. MONITOR WELL MW-38 HAS BEEN DESTROYED.
8. MONITOR WELLS MW-33 AND MW-43 WERE NOT ACCESSIBLE.

**Source:**

2010 HGAC Digital Ortho Photo Imagery  
 NAD83, Texas State Plane, South Central Zone, Feet  
 Line drawing represents facility structures during early 1990's.



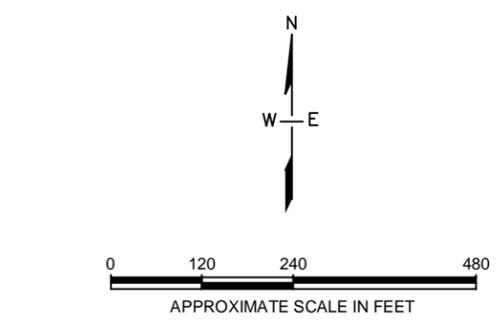
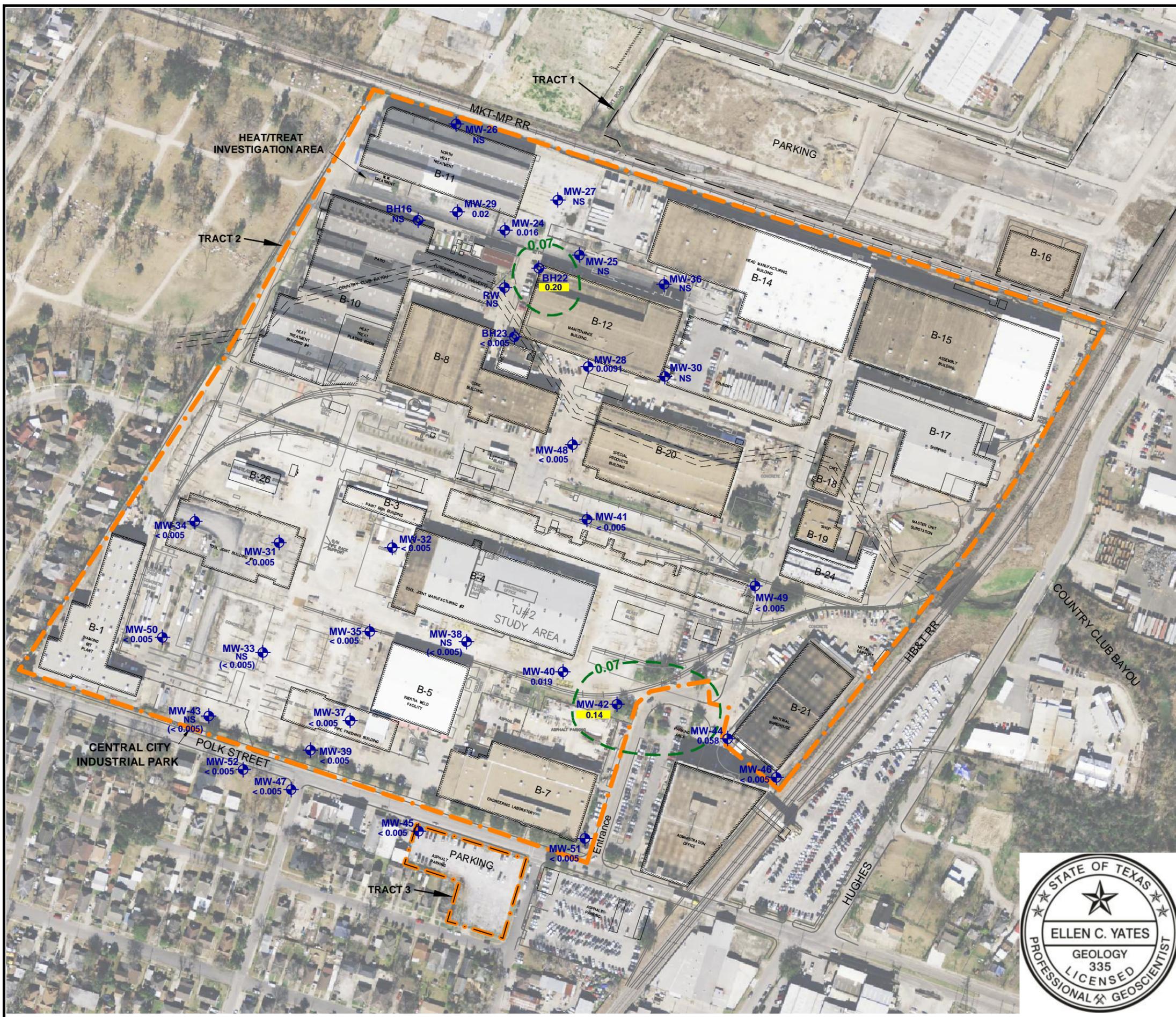
Title: **Groundwater PCLE Zone for 1,1-Dichloroethene June 2011**

Project: MSD Application  
 5425 Polk Street  
 Houston, Texas

Client: BAKER HUGHES OILFIELD OPERATIONS, INC

Scale: AS SHOWN	Drawn by: SJF	Date: 8-11-11
	Chk'd by: KL	Date: 8-11-11

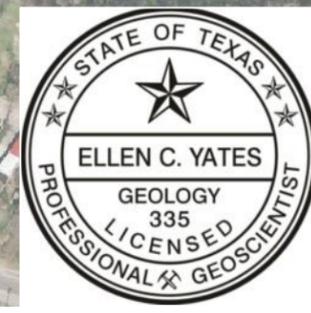
Project No.: 25008225	File Name: GW PCLE Zone-1-1-DCE-Jun 2010.dwg	Appendix: <b>B</b>
		Figure: <b>17</b>



- LEGEND**
- - - PROPERTY BOUNDARY
  - B-5 BUILDING ASSOCIATED WITH CENTRAL CITY INDUSTRIAL PARK
  - MW MONITOR WELL
  - - - APPROXIMATE EXTENT OF PCL EXCEEDANCE

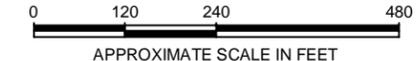
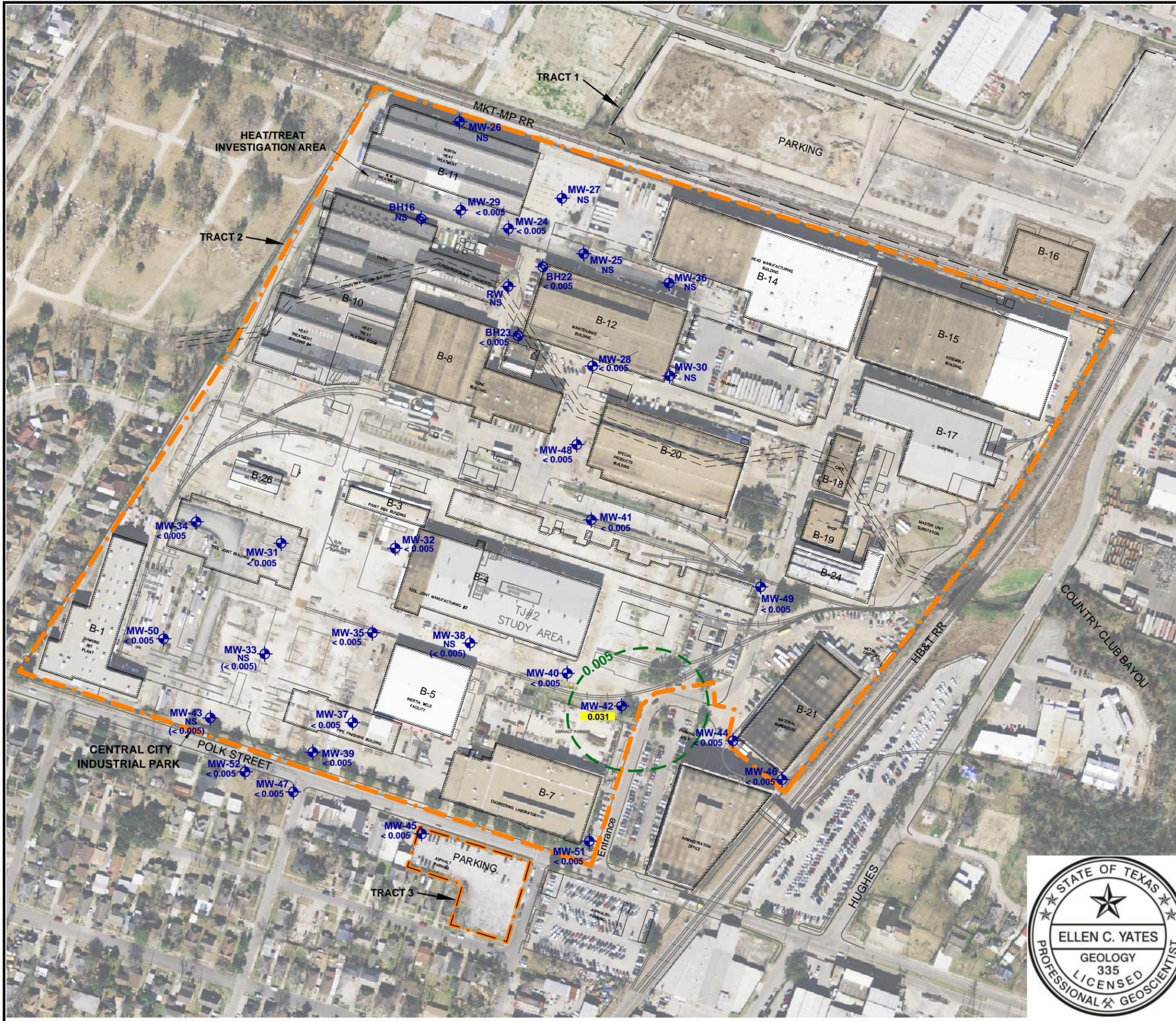
- NOTES:**
1. WELL LOCATIONS ARE APPROXIMATE.
  2. ALL VALUES ARE REPORTED IN MILLIGRAMS PER LITER (mg/L).
  3. VALUES HIGHLIGHTED IN **YELLOW** EXCEEDED THE PCL FOR THIS SAMPLING EVENT.
  4. PCL = 0.07 mg/L (Residential  $GW_{ing}$ ).
  5. VALUES IN PARENTHESIS ARE FROM LAST YEAR'S 2010 SAMPLING EVENT.
  6. "NS" INDICATES NOT SAMPLED.
  7. MONITOR WELL MW-38 HAS BEEN DESTROYED.
  8. MONITOR WELLS MW-33 AND MW-43 WERE NOT ACCESSIBLE.

Source:  
 2010 HGAC Digital Ortho Photo Imagery  
 NAD83, Texas State Plane, South Central Zone, Feet  
 Line drawing represents facility structures during early 1990's.



10550 RICHMOND AVE., SUITE 155 HOUSTON, TEXAS 77042 PH: (713) 914-6699 FAX: (713) 789-8404		Title: <b>Groundwater PCLE Zone for cis-1,2-Dichloroethene June 2011</b>		
		Project: MSD Application 5425 Polk Street Houston, Texas		
Client: BAKER HUGHES OILFIELD OPERATIONS, INC		Scale: AS SHOWN	Drawn by: SJF	Date: 8-11-11
Project No.: 25008225	File Name: GW PCLE Zone-cis-1-2-DCE-Jun 2010.dwg	Chk'd by: KL	Date: 8-11-11	Appendix: <b>B</b> Figure: <b>18</b>

File: K:\ELM\25008225.Baker Hughes Incorporated\05\Drawings\Acad\2011 MSD Up-Date\Fig 19 - GW PCLE Zone - PCE - Jun 2011.dwg Layout: Layout1 User: Susan\_Forrest Plotted: Jun 07, 2012 - 10:51am



**LEGEND**

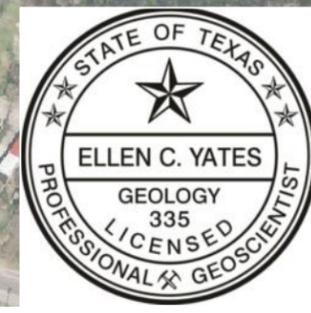
- - - PROPERTY BOUNDARY
- B-5 BUILDING ASSOCIATED WITH CENTRAL CITY INDUSTRIAL PARK
- MW MONITOR WELL
- - - APPROXIMATE EXTENT OF PCL EXCEEDANCE

**NOTES:**

1. WELL LOCATIONS ARE APPROXIMATE.
2. ALL VALUES ARE REPORTED IN MILLIGRAMS PER LITER (mg/L).
3. VALUES HIGHLIGHTED IN **YELLOW** EXCEEDED THE PCL FOR THIS SAMPLING EVENT.
4. PCL = 0.005 mg/L (Residential <sup>GW</sup>ing).
5. VALUES IN PARENTHESES ARE FROM LAST YEAR'S 2010 SAMPLING EVENT.
6. "NS" INDICATES NOT SAMPLED.
7. MONITOR WELL MW-38 HAS BEEN DESTROYED.
8. MONITOR WELLS MW-33 AND MW-43 WERE NOT ACCESSIBLE.

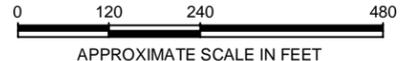
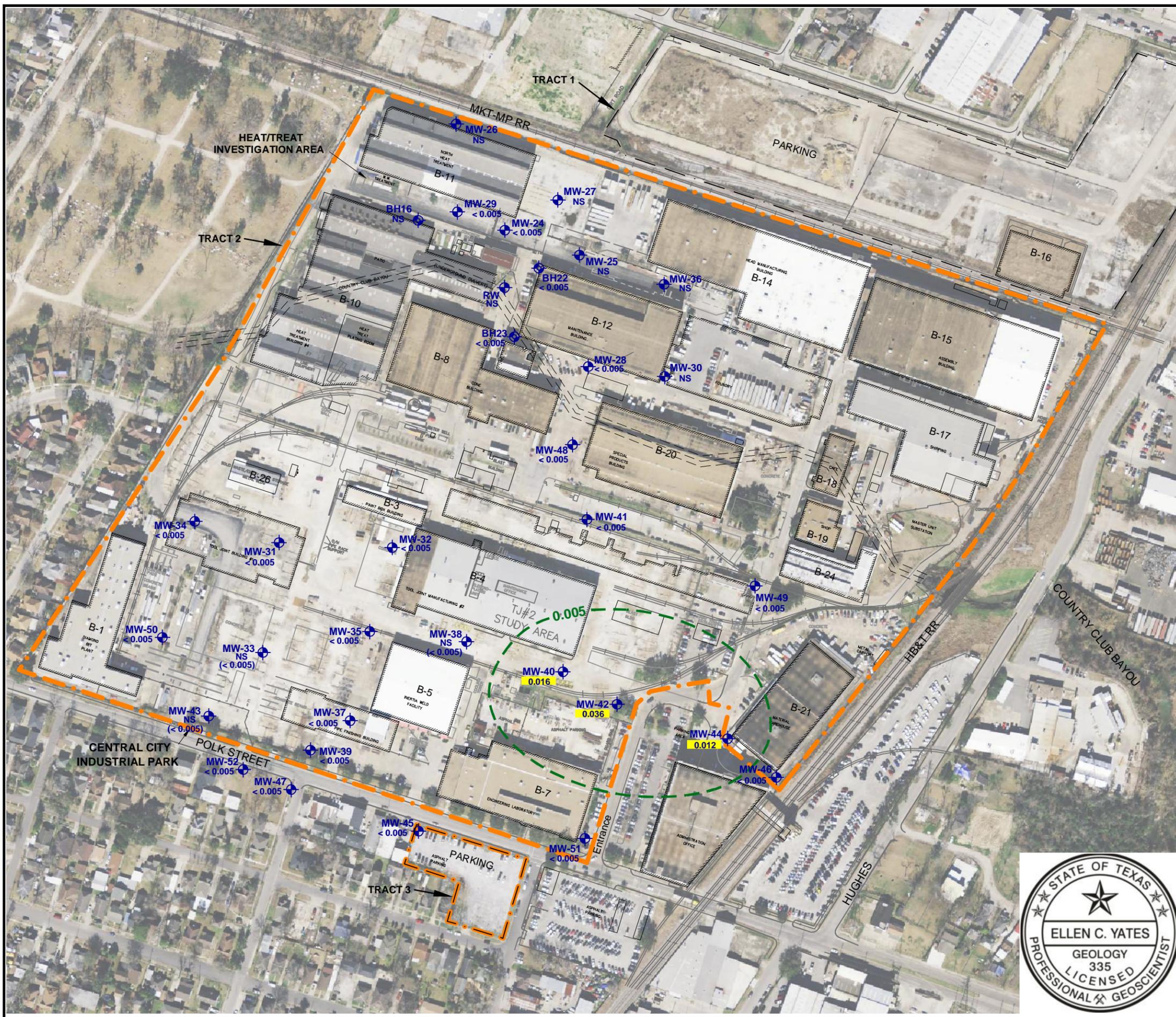
Source:

2010 HGAC Digital Ortho Photo Imagery  
 NAD83, Texas State Plane, South Central Zone, Feet  
 Line drawing represents facility structures during early 1990's.



Title: <b>Groundwater PCLE Zone for Tetrachloroethene June 2011</b>		
Project: MSD Application 5425 Polk Street Houston, Texas		
Client: BAKER HUGHES OILFIELD OPERATIONS, INC		
Scale: AS SHOWN	Drawn by: SJF	Date: 8-9-11
Chk'd by: KL	Date: 8-9-11	Project No.: 25008225
File Name: GW PCLE Zone-PCE-Jun 2010.dwg	Appendix: <b>B</b>	Figure: <b>19</b>

File: K:\ELM\25008225.Baker Hughes Incorporated\05\Drawings\Acad\2011 MSD Up-Date\Fig 20 - GW PCLE Zone - TCE - Jun 2011.dwg Layout: Layout1 User: Susan\_Forrest Plotted: Jun 07, 2012 - 10:52am



**LEGEND**

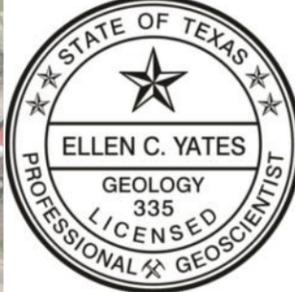
- PROPERTY BOUNDARY
- B-5 BUILDING ASSOCIATED WITH CENTRAL CITY INDUSTRIAL PARK
- MONITOR WELL
- APPROXIMATE EXTENT OF PCL EXCEEDANCE

**NOTES:**

1. WELL LOCATIONS ARE APPROXIMATE.
2. ALL VALUES ARE REPORTED IN MILLIGRAMS PER LITER (mg/L).
3. VALUES HIGHLIGHTED IN **YELLOW** EXCEEDED THE PCL FOR THIS SAMPLING EVENT.
4. PCL = 0.005 mg/L (Residential <sup>GW</sup>Ing).
5. VALUES IN PARENTHESIS ARE FROM LAST YEAR'S 2010 SAMPLING EVENT.
6. "NS" INDICATES NOT SAMPLED.
7. MONITOR WELL MW-38 HAS BEEN DESTROYED.
8. MONITOR WELLS MW-33 AND MW-43 WERE NOT ACCESSIBLE.

Source:

2010 HGAC Digital Ortho Photo Imagery  
 NAD83, Texas State Plane, South Central Zone, Feet  
 Line drawing represents facility structures during early 1990's.



Title: **Groundwater PCLE Zone for Trichloroethene June 2011**

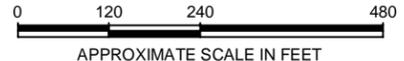
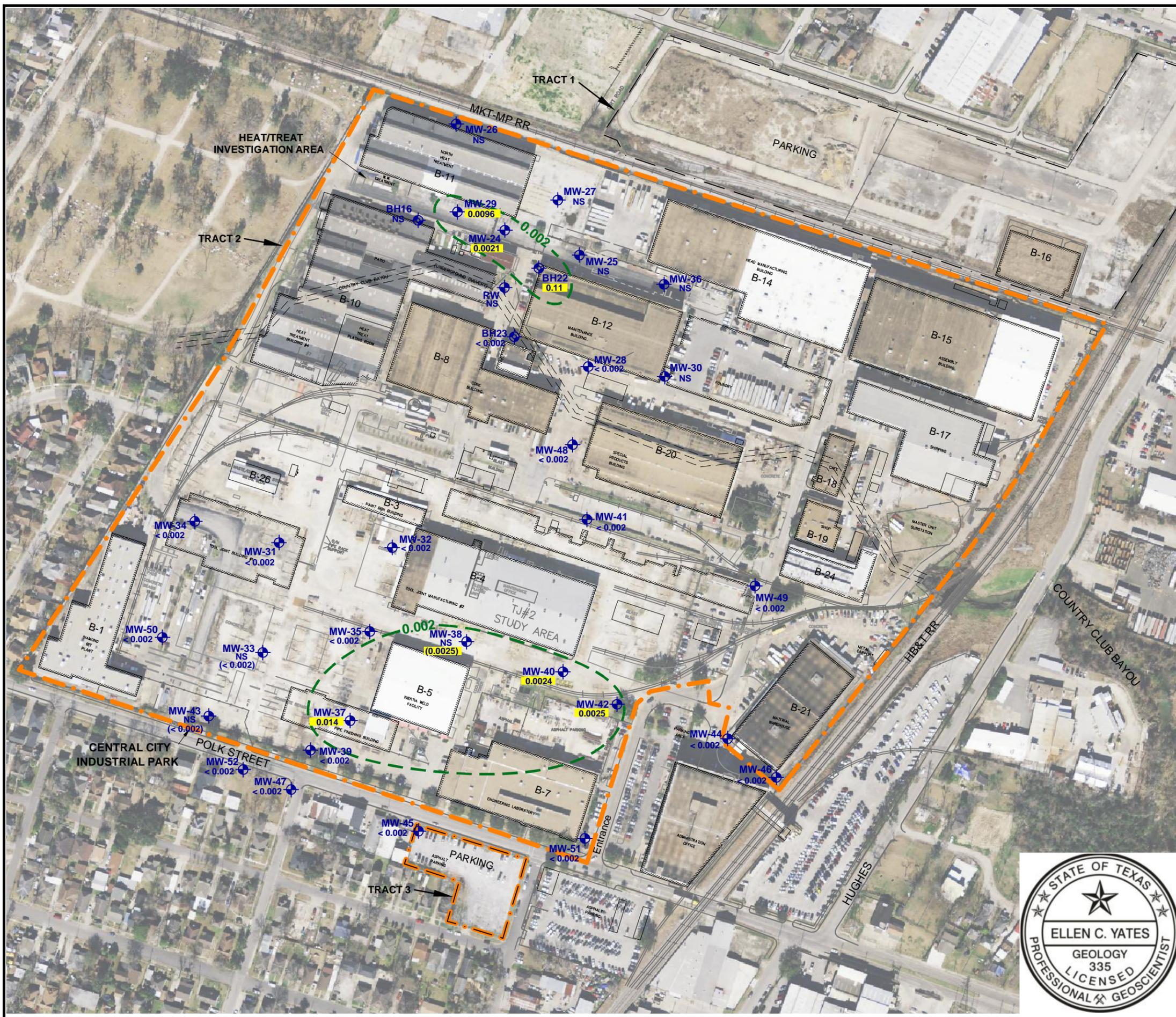
Project: MSD Application  
 5425 Polk Street  
 Houston, Texas

Client: BAKER HUGHES OILFIELD OPERATIONS, INC

Scale: AS SHOWN	Drawn by: SJF	Date: 8-9-11
	Chk'd by: KL	Date: 8-9-11

Project No.: 25008225	File Name: GW PCLE Zone-TCE-Jun 2010.dwg	Appendix: <b>B</b>
		Figure: <b>20</b>

File: K:\ELM\25008225.Baker Hughes Incorporated\05\Dwgs\Acad\2011 MSD Up-Date\Fig 21 - GW PCLE Zone - VC - Jun 2011.dwg Layout: Layout1 User: Susan\_F Forrest Plotted: Jun 07, 2012 - 10:54am



**LEGEND**

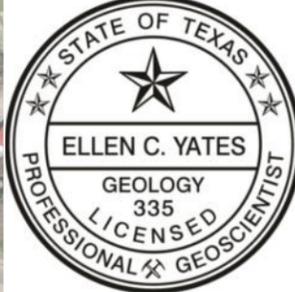
- - - PROPERTY BOUNDARY
- B-5 BUILDING ASSOCIATED WITH CENTRAL CITY INDUSTRIAL PARK
- MW MONITOR WELL
- - - APPROXIMATE EXTENT OF PCL EXCEEDANCE

**NOTES:**

1. WELL LOCATIONS ARE APPROXIMATE.
2. ALL VALUES ARE REPORTED IN MILLIGRAMS PER LITER (mg/L).
3. VALUES HIGHLIGHTED IN **YELLOW** EXCEEDED THE PCL FOR THIS SAMPLING EVENT.
4. PCL = 0.002 mg/L (Residential <sup>GW</sup>ing).
5. VALUES IN PARENTHESES ARE FROM LAST YEAR'S 2010 SAMPLING EVENT.
6. "NS" INDICATES NOT SAMPLED.
7. MONITOR WELL MW-38 HAS BEEN DESTROYED.
8. MONITOR WELLS MW-33 AND MW-43 WERE NOT ACCESSIBLE.

Source:

2010 HGAC Digital Ortho Photo Imagery  
 NAD83, Texas State Plane, South Central Zone, Feet  
 Line drawing represents facility structures during early 1990's.



Title: **Groundwater PCLE Zone for Vinyl Chloride June 2011**

Project: MSD Application  
 5425 Polk Street  
 Houston, Texas

Client: BAKER HUGHES OILFIELD OPERATIONS, INC

Scale: AS SHOWN	Drawn by: SJF	Date: 8-9-11
	Chk'd by: KL	Date: 8-9-11

Project No.: 25008225	File Name: GW PCLE Zone-VC-Jun 2010.dwg	Appendix: <b>B</b>
		Figure: <b>21</b>

## Appendix C

*A description of the current use, and, to the extent known, the anticipated uses, of the designated property and properties within 500 feet of the boundary of the designated property.*

The designated property is located in southeast Houston on the northwestern corner at the intersection of Polk Street and Hughes Street, approximately three miles southeast of downtown Houston and two miles south of the Houston Ship Channel (**Appendix B – Figure 1**). The designated property consists of one tract of approximately 65 acres (i.e., Tract 2), used for commercial/industrial purposes. The designated property is owned by Pelec Central City LTD., which operates the facility as an industrial park, leasing parcels to various entities. Two adjacent tracts (Tracts 1 and 3), utilized as parking areas located to the north and south of the designated property, are also owned by Pelec, but are not included within the designated property (**Appendix B – Figure 2**).

The anticipated future use of the property will remain commercial/industrial. The area surrounding the designated property is currently mixed commercial/industrial and residential. The area was industrially developed in the early 1900's.

Properties located within 500 feet to the north of the designated property include commercial and light industrial/warehouse facilities. Development includes commercial properties (a shopping strip center, an auto sales shop, auto repair services, a pawn shop, a beauty salon), industrial properties (including warehouses, machine shops), and individual residential dwellings.

The properties located with 500 feet to the east of the designated property include mixed industrial, commercial, and residential use. A railroad is located adjacent to the east property boundary. Industrial development includes a metal recycling facility and other warehouse/manufacturing sites. Residential development includes a large multi-building apartment complex and several individual residences.

The properties located with 500 feet to the south of the designated property consist primarily of individual family dwellings and a few commercial and light industrial buildings.

The properties located with 500 feet to the west of the designated property include Evergreen Cemetery and individual residential dwellings.

## Appendix D

### (Cross Reference with TCEQ's #5)

*For each contaminant of concern within the ingestion protective concentration level exceedence zone, to the extent known, provide the following:*

- a. A description of the ingestion protective concentration level exceedence zone and the non-ingestion protective concentration level exceedence zone, including a specification of the horizontal area and the minimum and maximum depth below ground surface.*
- b. The level of contamination, the ingestion protective concentration level, and the non-ingestion protective concentration level, all expressed ad mg/L units.*
- c. Its basic geochemical properties (e.g., whether the contaminant of concern migrates with groundwater, floats or is soluble in water).*

Contaminants of concern within the ingestion protective concentration level (PCL) exceedence zone include arsenic, lead, benzene, 1,1-dichloroethene, cis-1,2-dichloroethene, tetrachloroethene, trichloroethene, and vinyl chloride. The designated groundwater (uppermost groundwater-bearing unit) is generally present between approximately 10 feet and 20 feet below ground surface on the designated property. Maps depicting the combined groundwater contamination PCLE zones for the years 2010 and 2011, **Figures 3 and 13** respectively, are presented in **Appendix B**.

#### Arsenic

The ingestion PCL for arsenic is 0.01 mg/L. The TCEQ has not established a non-ingestion PCL for arsenic in groundwater. The ingestion PCLE zone for arsenic is present in two locations on the designated property, a larger zone in the southern portion and a small zone in the northwest portion of the property. As illustrated in **Appendix B – Figure 5**, the southern arsenic PCLE zone is approximately 500 feet wide, 1,400 feet long, and 10 feet thick (existing approximately from 12 feet to 22 feet below ground surface). The northern arsenic PLCE zone is approximately 100 feet wide, 350 feet long, and 10 feet thick (existing approximately from 12 feet to 22 feet below ground surface). A non-ingestion PCLE zone does not exist.

The highest concentration of arsenic detected during the June 2010 sampling event was 0.153 mg/L in MW-33, exceeding the ingestion PCL. During the 2011 sampling event, monitor well MW-33 was inaccessible due to heavy equipment being stored on top of the well by the current tenant. All other arsenic exceedences were below the 2010 maximum detected concentration of 0.153 mg/L. The 2011 arsenic PCLE zone is illustrated on **Appendix B – Figure 15**.

No specific source for the arsenic PCLE zone has been identified. Arsenic is not known to have been associated with past activities at the site. Arsenic is a naturally occurring metal and concentrations in groundwater above the 0.01 mg/L PCL are not uncommon. Scientific literature ("Arsenic in Groundwater in the United States: Occurrence and Geochemistry", Ground Water Vol. 38 No. 4, USGS, Alan H. Welch, D.B Westjohn, Dennis R Helsel and Richard B. Wanty) suggests that desorption of arsenic from naturally occurring iron oxide

present in aquifer materials can be promoted by the introduction of a competing adsorbent such as volatile organic compounds (VOCs). Therefore, the arsenic present in groundwater at the site may be the result of mobilization of naturally occurring arsenic. This effect is expected to lessen over time as the VOCs degrade.

Arsenic is insoluble and has limited mobility. The molecular weight of arsenic is 74.9g/mole.

## Lead

The ingestion PCL for lead is 0.015 mg/L. The TCEQ has not established a non-ingestion PCL for lead. The ingestion PCLE zone for lead is centered on monitor well MW-38. As shown on **Appendix B – Figure 6**, the lead PCLE zone is approximately 200 feet wide, 320 feet wide, and 10 feet thick (existing approximately from 12 feet to 22 feet below ground surface). A non-ingestion PCLE zone does not exist.

During the 2010 sampling event, lead was detected in monitor well MW-38 at a concentration of 0.0201 mg/L, slightly exceeding the ingestion PCL of 0.015 mg/L. Monitor well MW-38 was destroyed prior to the 2011 sampling event. Lead is not one of the primary COCs at the site and there were no detections above the detection level during the 2011 sampling event.

Lead is insoluble and has limited mobility. The molecular weight of lead is 207 g/mole.

## Benzene

The ingestion PCL for benzene is 0.005 mg/L. The non-ingestion PCL for benzene is 23 mg/L. As illustrated on **Appendix B – Figure 7**, two small benzene PCLE zones are shown, each of which are approximately 170 feet wide, 200 feet long, and 10 feet thick (existing approximately from 12 feet to 22 feet below ground surface).

The highest concentration of benzene detected during the June 2010 sampling event was 1.10 mg/L in monitor well MW-31. This value exceeds the ingestion PCL but not the non-ingestion PCL.

The sole benzene detection during the 2011 sampling event in monitor well MW-31, 0.4 mg/L, was below the 2010 maximum concentration of 1.10 mg/L observed in that same well. The 2011 benzene PCLE zone is illustrated in **Appendix B – Figure 16**.

Benzene is an aromatic hydrocarbon with an aqueous solubility of 1770 mg/L and is highly mobile. Benzene has a molecular weight of 78.1 g/mole.

## 1,1-Dichloroethene

The ingestion PCL for 1,1-dichloroethene (1,1-DCE) is 0.007 mg/L. The non-ingestion PCL for 1,1-DCE is 220 mg/L. As shown in **Appendix B – Figure 8**, the 1,1-DCE PCLE zone is approximately 300 feet wide, 850 feet long, and 10 feet thick (existing approximately from 12 feet to 22 feet below ground surface).

The highest concentration of 1,1-DCE detected during the June 2010 sampling event was 0.03 mg/L in monitor well MW-40, exceeding the ingestion PCL. This concentration is below the non-ingestion PCL.

The 2011 1,1-DCE concentrations were below the 2010 maximum concentration of 0.03 mg/L. The 1,1-DCE PCLE zone is illustrated in **Appendix B – Figure 17**.

1,1-DCE is a chlorinated solvent with an aqueous solubility limit of approximately 2400 mg/L and is moderately mobile. In its pure phase, 1,1-DCE is a dense non-aqueous phase liquid (DNAPL) which is heavier than water. The molecular weight of 1,1-DCE is 96.9 g/mole.

### cis-1,2-Dichloroethene

The ingestion PCL for cis-1,2-dichloroethene (cis-1,2-DCE) is 0.07 mg/L. The non-ingestion PCL for cis-1,2-DCE is 160 mg/L. As illustrated in **Appendix B – Figure 9**, there are two cis-1,2-DCE PCLE zones located on the designated property, one in the northwestern portion and one in the southeastern portion of the property. The northern PCLE zone is approximately 140 feet wide, 300 feet long, and 10 feet thick (existing approximately from 12 feet to 22 feet below ground surface). The southern PCLE zone is approximately 210 feet wide, 460 feet long, and 10 feet thick (existing approximately from 12 feet to 22 feet below ground surface).

The highest concentration of cis-1,2-DCE detected during the June 2010 sampling event was 0.19 mg/L reported in monitor well MW-42, exceeding the ingestion PCL but not the non-ingestion PCL.

The maximum cis-1,2-DCE concentration reported during the 2011 sampling event was in monitor well BH22 in the northern PCLE zone. The concentration was 0.2 mg/L, only slightly higher than the maximum concentration of 0.19 mg/L reported in the southern plume during 2010. The cis-1,2-DCE PCLE zone is shown in **Appendix B – Figure 18**.

The constituent cis-1,2-DCE is a chlorinated solvent with an aqueous solubility limit of approximately 4330 mg/L and is moderately mobile. In its pure phase, cis-1,2-DCE is a DNAPL which is heavier than water. The molecular weight of cis-1,2-DCE is 96.9 g/mole.

### Tetrachloroethene

The ingestion PCL for tetrachloroethene (PCE) is 0.005 mg/L. The non-ingestion PCL for PCE is 64 mg/L. As shown in **Appendix B – Figure 10**, there are two PCE PCLE zones on the designated property located in the northwestern and southeastern portions of the property. The northern PCLE zone is centered on monitor well MW-24 and is approximately 160 feet in width and length and 10 feet thick (existing approximately from 12 feet to 22 feet below ground surface). The southern PCE PCLE zone is approximately 280 feet wide, 370 feet long, and 10 feet thick (existing approximately from 12 feet to 22 feet below ground surface).

The highest concentration of PCE detected during the June 2010 sampling event is 0.044 mg/L in monitor well MW-42, exceeding the ingestion PCL but not the non-ingestion PCL. This value continues to be the maximum concentration following the 2011 sampling event. The 2011 PCE PCLE zone is illustrated in **Appendix B – Figure 19**.

PCE is a chlorinated solvent with an aqueous solubility limit of approximately 200 mg/L and is moderately mobile. In its pure phase, PCE is a DNAPL which is heavier than water. PCE has a molecular weight of 166 g/mole.

### Trichloroethene

The ingestion PCL for trichloroethene (TCE) is 0.005 mg/L. The non-ingestion PCL for TCE is 15 mg/L. As illustrated in **Appendix B – Figure 11**, there are two TCE PCLE zones on the designated property, one located in the northwestern portion and one located in the southeastern portion. The northern PCLE zone is centered on MW-24 and is approximately 160 feet in width and length and 10 feet thick (existing approximately from 12 feet to 22 feet below ground surface). The southern PCLE zone is approximately 340 feet wide, 620 feet long, and 10 feet thick (existing approximately from 12 feet to 22 feet below ground surface).

The highest concentration of TCE detected during the June 2010 sampling event is 0.07 mg/L in monitor well MW-24, exceeding the ingestion PCL but not the non-ingestion PCL. This value continues to be the maximum concentration following the 2011 sampling event. The 2011 TCE PCLE zone is illustrated in **Appendix B – Figure 20**.

TCE is a chlorinated solvent with an aqueous solubility limit of approximately 1,100 mg/L and is moderately mobile. In its pure phase, TCE is a DNAPL which is heavier than water. The molecular weight of TCE is 131 g/mole.

### Vinyl Chloride

The ingestion PCL for vinyl chloride is 0.002 mg/L. The non-ingestion PCL for vinyl chloride is 0.49 mg/L. As shown in **Appendix B – Figure 12**, there are two vinyl chloride PCLE zones on the designated property, one in the northwestern portion and one in the south central portion of the property. The northern PCLE zone is approximately 160 feet wide, 350 feet long, and 10 feet thick (existing approximately from 12 feet to 22 feet below ground surface). The southern PCLE zone is approximately 460 feet wide, 920 feet long, and 10 feet thick (existing approximately from 12 feet to 22 feet below ground surface).

The highest concentration of vinyl chloride detected during the June 2010 sampling event is 0.081 mg/L in monitor well MW-29, exceeding the ingestion PCL but not the non-ingestion PCL. The highest concentration of vinyl chloride detected during the June 2011 sampling event is 0.11 mg/L in monitor well BH22, exceeding the ingestion PCL but not the non-ingestion PCL. The 2011 vinyl chloride PCLE zone is illustrated in **Appendix B – Figure 21**.

Vinyl chloride is a chlorinated solvent with an aqueous solubility limit of approximately 2,760 mg/L and is moderately mobile. The molecular weight of vinyl chloride is 62.5 g/mole.

## Appendix E

### (Cross Reference with TCEQ's #5)

*For each contaminant of concern within the designated groundwater, to the extent known, provide the following:*

- a. A description of the ingestion protective concentration level exceedence zone and the non-ingestion protective concentration level exceedence zone, including a specification of the horizontal area and the minimum and maximum depth below ground surface.*
- b. The level of contamination, the ingestion protective concentration level, and the non-ingestion protective concentration level, all expressed ad mg/L units.*
- c. Its basic geochemical properties (e.g., whether the contaminant of concern migrates with groundwater, floats or is soluble in water).*

The constituents of concern within the designated groundwater are consistent with the contaminants discussed in Appendix D.

## Appendix F

### (Cross Reference with TCEQ's #5)

*A table displaying the following information for each contaminant of concern, to the extent known:*

- a. The maximum concentration level for soil and groundwater, the ingestion protective concentration level, and the non-ingestion protective concentration level, all expressed as mg/L units.*
- b. The critical protective concentration level without the municipal setting designation, highlighting any exceedences.*

This MSD, when approved, will eliminate the groundwater ingestion pathway ( $^{GW}GW_{Ing}$ ) in the designated groundwater (uppermost groundwater-bearing unit). The attached table presents the maximum concentration level of each COC in the designated groundwater. The  $^{GW}GW_{Ing}$  PCL exceedences without the MSD are highlighted in yellow. The maximum concentrations shown are based on the two most recent data sets (2010 and 2011) in order to represent the current conditions at the site.

Soil impacts were addressed in the *Affected Property Assessment Report (APAR)* submitted to the TCEQ in February 2009 and the *Response to Comments and APAR Addendum* submitted in September 2009. The only soil COC exceeding PCLs was lead in a small area adjacent to the north side of Building B-26. Lead in surface soil exceeded the  $^{Tot}Soil_{Comb}$  PCL at three sample locations in this area but did not exceed the soil-to-groundwater PCL. None of the VOCs being addressed in the MSD exceeded PCLs in soil.

Appendix F – Table 1

Maximum Concentration Level in Groundwater 2010 - 2011  
MSD Application  
5425 Polk Street MSD

Contaminants of Concern	Without MSD	With MSD	Sample ID	Sample Date	Concentration (mg/L)
	<sup>GW</sup> GW <sub>Ing</sub> (mg/L)	<sup>Air</sup> GW <sub>Inh-V</sub> (mg/L)			
<b>Metals</b>					
Arsenic	0.01	NA	MW-33	6/23/2010	0.153
Lead	0.015	NA	MW-38	6/24/2010	0.0201
<b>VOCs</b>					
Benzene	0.005	23	MW-31	6/23/2010	1.1
1,1-Dichloroethene	0.007	220	MW-40	7/12/2010	0.03
cis-1,2-Dichloroethene	0.07	160	BH22	6/16/2011	0.2
Tetrachloroethene	0.005	64	MW-44	6/23/2010	0.044
Trichloroethene	0.005	15	MW-24	6/22/2010	0.07
Vinyl Chloride	0.002	0.49	BH22	6/16/2011	0.11
Acetone	22	1,000,000	BH23	6/16/2011	0.025
1,1-Dichloroethane	4.9	5600	BH22	6/16/2011	0.033
Isopropylbenzene (Cumene)	2.4	570	MW-31	6/17/2011	0.077
n-Propylbenzene	0.98	780	MW-31	6/17/2011	0.1
MTBE	0.24	520	MW-51	6/15/2011	0.059
Napthalene	0.49	41	MW-31	6/17/2011	0.074
n-Butylbenzene	0.98	NA	MW-31	6/17/2011	0.014
sec-Butylbenzene	0.98	NA	MW-31	6/17/2011	0.0092
Toluene	1	8,200	MW-31	6/17/2011	0.037
1,1,1,-Trichloroethane	0.2	5,100	MW-29	6/22/2010	0.0099
Trichlorofluoromethane	7.3	NA	MW-42	6/24/2010	0.0085
m- and p-Xylene	10	1,200	MW-31	6/23/2010	0.043

Notes:

[1] Values highlighted in yellow indicate those exceeding the critical PCL (Tier 1 Residential <sup>GW</sup>GW<sub>Ing</sub>) without an MSD.

[2] Tier 1 Groundwater PCL Table revised May 2011

[3] NA – Not applicable

## Appendix G

*A statement as to whether the plume of contamination is stable, expanding, or contracting, with the basis for that statement. If this information is not known, a statement of why the information is not known should be attached.*

The plumes of contamination within the designated groundwater appear to be stable. This statement is based upon historic and recent monitoring data which indicate relatively stable concentrations within monitoring wells. The north plume has been monitored for over five years and the southern plume has been monitored for five years. Additionally, there are no known ongoing sources of groundwater contamination in existence within the designated property.