FINAL

Results of Additional Investigation Activities to Complete the RI Delineation

Former Unocal Chemical Distribution Facility
2100 East 37th Street North
Wichita, Kansas 67219

Prepared for
Chevron Environmental Management Company (EMC)
6001 Bollinger Canyon Road
San Ramon, California 94583

November 2, 2007

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ENVIRONMENTAL REMEDIATION

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Austin, Texas 78729
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Project Number: 41008451

URS

November 2, 2007

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BUREAU OF
ENVIRONMENTAL REMEDIATION

Mr. Christopher C. Carey
Post-Remediation Unit/Remedial Section
Bureau of Environmental Remediation
Kansas Department of Health and Environment
1000 SW Jackson Street, Suite 410
Topeka, KS 66612-1367

RE: Results of Additional Investigation Activities to Complete the RI Delineation
Former Unocal Chemical Distribution Facility
2100 East 37th Street North
Wichita, Kansas 67219

Dear Mr. Carey:

This letter is intended to document the results of the additional investigation activities (performed in December 2006, July 2007, and October 2007) for the former Union Oil Company of California (Unocal) Chemical Distribution Facility in Wichita, Kansas, and the surrounding properties. URS has prepared this letter on behalf of the Chevron Environmental Management Company (Chevron EMC).

The objective of the investigation was to complete the delineation of the historical groundwater plumelets described in the Remedial Investigation (RI) Report based on the comments received from the Kansas Department of Health and Environment (KDHE) (July 10, 2007). This investigation focused on collecting groundwater grab samples from properties adjacent to the former Unocal site, including the Unified School District (USD), Hillmann Painting (formerly Pinsker), and Coleman Company (Coleman) properties.

Based on the letter submitted to KDHE on August 31, 2007, the scope of the investigation was to:

1) On the USD property, collect groundwater grab samples surrounding MW-5 to delineate the extent of groundwater contamination related to Historical Plumelet D;

2) On the Pinsker property, collect groundwater grab samples at selected locations on the property, including the collection of a sample from monitoring well USD-13, to determine if groundwater contamination detected in PMW-5 and PMW-6 is related to groundwater contamination in Historical Plumelet F;

3) On the Coleman property, collect groundwater grab and vertical delineation samples along and south of Transect 2 to delineate the extent of groundwater contamination related to Historical Plumelet F; and

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4) Also on the Coleman property, collect groundwater grab samples along Transect 1 to "re-baseline" the groundwater condition in the area south of TW-3.

Figure 1 shows the groundwater sampling locations for all three events. A total of 29 groundwater grab samples were collected. Owing to the lack of groundwater in the area between Unocal and the former Pinsker site, groundwater samples could not be collected within 24 hours at the locations indicated on the figure. Soil borings were performed during the second and third events to evaluate the presence of groundwater and determine the depth to shale on the properties adjacent to Unocal. Table 1 lists the field-generated information for each location, including the depth to water, depth to shale and total depth at each location. The soil boring logs are presented in Attachment A.

The 29 groundwater grab samples were analyzed by Lancaster Laboratories, the same fixed-base laboratory that is used for the most recent annual events and for the pilot test performance monitoring. All of the groundwater grab samples were analyzed for volatile organic compunds (VOCs) by U.S. Environmental Protection Agency (EPA) Method SW8260B.

The results for the groundwater grab samples are presented in Tables 2 through 4. The data validation report and laboratory sampling and analysis report are included as Attachment B and C, respectively. The field notes for this event are included as Attachment D.

This memorandum presents no conclusions regarding the data presented above. The revised RI will present any diagrams, trends, and conclusions regarding these data and observations.

If you have any questions or comments, please feel free to contact me at 512-419-6180.

Respectively Submitted,

Derek R. Peacock
URS Corporation

cc: Mr. Michael P. Mailloux, Chevron EMC
File

Table 1 - Sample Location Information

Property	Location	Sample ID	Soil Boring Log	Depth to Water	Depth to Shale	Total Depth	PVC Screen Length	PVC Riser	Comment
December 2006 Field Event									
Coleman	GP-01	GP-01	N	25.3	NL	29	discrete sampler		
Coleman	GP-02	GP-02	N	16.7	NL	29.5	discrete sampler		
Coleman	GP-03	GP-03	N	19.8	NL	29.5	discrete sampler		
Coleman	GP-04	GP-04	N	7.3	NL	31	discrete sampler		
Coleman	GP-05	GP-05	N	7.3	NL	30	discrete sampler		
Coleman	GP-06	GP-06	N	9.35	NL	26	discrete sampler		
Coleman	GP-07	GP-07	N	16.6	NL	26	discrete sampler		
Coleman	GP-08	GP-08	N	14	NL	18	discrete sampler		
July 2007 Field Event									
Coleman	GP-09	GP-09	N	7.7	NL	30.5	discrete sampler		
Coleman	GP-10	GP-10	N	8	NL	34.5	discrete sampler		
Coleman	GP-11	GP-11	N	7.75	NL	22	discrete sampler		
Coleman	GP-12	GP-12	Y	8.25	NL	22	10	12	
Coleman	GP-13	no sample collected	N	dry	NL	21	10	11	dry hole - sat for 24 hrs
Coleman	GP-14	GP-14	N	16.65	NL	25	10	15	
Coleman	GP-15	no sample collected	N	dry	NL	25	10	15	dry hole - sat for 24 hrs
Coleman	GP-16	GP-16	N	24	NL	25	10	15	
Coleman	GP-17	no sample collected	N	dry	NL	25	10	15	dry hole - sat for 24 hrs
Coleman	GP-18	GP-18	N	24	NL	25	10	15	
Coleman	GP-19	no sample collected	Y	dry	23.9	--	--	--	dry hole based on lithology
Coleman	GP-20	GP-20	Y	NR	30	30	15	15	

NL - Not logged.
Hash marks indicate that a groundwater sample was not attempted.

Table 1 - Sample Location Information (Continued)

Property	Location	Sample ID	Soil Boring Log	Depth to Water	Depth to Shale	Total Depth	PVC Screen Length	PVC Riser	Comment
October 2007 Field Event									
Coleman	GP-12	GP-12B	N	12.5	NL	35	5	30	
Coleman	GP-16	GP-16A	Y	12.7	33	25	discrete sampler		
		GP-16B		13.3		35	5	30	
Coleman	GP-18	GP-18A	Y	21.1	NL	25	10	15	
Coleman	GP-21	GP-21	Y	10.5	13	20	10	10	
Coleman	GP-22	GP-22	Y	8.85	14.5	15	5	10	
Coleman	GP-23	GP-23	Y	12.6	14.5	15	5	10	
USD	GP-24	no sample collected	Y	dry	10	15	open hole		dry hole - sat for 24 hrs
USD	GP-25	no sample collected	Y	dry	14.7	15	open hole		dry hole - sat for 24 hrs
USD	GP-26	no sample collected	Y	dry	24	15	10	5	dry hole - sat for 24 hrs
		GP-26B		9		30	10	20	
USD	GP-27	GP-27A	Y	10.65	24.5	15	10	5	
		GP-27B		12.5		25	10	15	
Unocal	GP-28	GP-28	Y	10.4	18.5	20	5	15	
Hillman	GP-29	no sample collected	Y	dry	10	15	open hole		dry hole - sat for 24 hrs
Hillman	GP-30	no sample collected	Y	dry	9.5	10	open hole		dry hole - sat for 24 hrs
Hillman	GP-31	no sample collected	Y	dry	9.5	10	open hole		dry hole - sat for 24 hrs
Hillman	GP-32	GP-32	Y	18	22.5	25	5	20	
Hillman	GP-33	GP-33	Y	18	24.5	25	10	15	
Hillman	GP-34	no sample collected	Y	dry	14.5	15	5	10	dry hole based on lithology

NL - Not logged.
Hash marks indicate that a groundwater sample was not attempted.

Table 2 - Analytical Results for the Groundwater Grabs Taken in December 2006

	Sample Location ID	GP-1	GP-2	GP-3	GP-4	GP-5	GP-6	GP-7	GP-8
	Screen Depth	25-29 ft bgs	25.5-29.5 ft bgs	25.5-29.5 ft bgs	27-31 ft bgs	26-30 ft bgs	22-26 ft bgs	22-26 ft bgs	14-18 ft bgs
Analyte	Residential KDHE Screening Value	Result	Result	Result	Result	Result	Result	Result	Result
Method 8260B									
1,1,1-Trichloroethane	200	ND (0.1)	ND (0.1) UJL	ND (0.1)	**0.6 JL**	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1)
1,1,2-Trichloroethane	5	ND (0.1)	ND (0.1) UJL	ND (0.1)	**0.6 JL**	**0.2 JL**	**0.2 JL**	ND (0.1) UJL	ND (0.1)
1,1-Dichloroethane	340	**0.4 J**	**56 JL**	**0.6**	**19 JL**	**4.1 JL**	**9.5 JL**	**3.2 JL**	**2.9**
1,1-Dichloroethene	7	ND (0.1)	**0.2 JL**	ND (0.1)	**1.4 JL**	**0.5 JL**	**3.1 JL**	**0.7 JL**	**0.5 J**
1,2,4-Trimethylbenzene	5	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1)
1,2-Dichloroethane	5	ND (0.1)	ND (0.1) UJL	ND (0.1)	**0.6 JL**	**0.3 JL**	**0.4 JL**	**0.2 JL**	**0.1 J**
1,3,5-Trimethylbenzene	5	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1)
2-Butanone (MEK)	820	ND (1.0)	ND (1.0) UJL	ND (1.0)	ND (1.0) UJL	**4.9 JL**	ND (1.0) UJL	ND (1.0) UJL	ND (1.0)
4-Methyl-2-Pentanone (MIBK)	70	**2.4 J**	ND (1.0) UJL	ND (1.0)	ND (1.0) UJL	ND (1.0) UJL	ND (1.0) UJL	ND (1.0) UJL	ND (1.0)
Acetone (2-Propanone)	260	**6.5**	**7.7 JL**	**4.8 J**	**8.0 JL**	**25 JL**	ND (3.0) UJL	ND (3.0) UJL	ND (3.0)
Benzene	5	ND (0.1)	**13 JL**	**0.1 J**	**0.3 JL**	**0.2 JL**	ND (0.1) UJL	ND (0.1) UJL	ND (0.1)
Carbon Disulfide	9	**0.3 J**	**0.2 JL**	**0.5**	**0.3 JL**	**0.2 JL**	ND (0.1) UJL	**0.1 JL**	ND (0.1)
Carbon Tetrachloride	5	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1)
Chlorobenzene	100	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1)
Chloroethane (Ethyl Chloride)	48	**0.2 J**	**17 JL**	**0.2 J**	ND (0.1) UJL	**0.1 JL**	ND (0.1) UJL	ND (0.1) UJL	ND (0.1)
Chloroform	80	ND (0.1)	ND (0.1) UJL	ND (0.1)	**0.1 JL**	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1)
cis-1,2-Dichloroethene	70	**0.4 J**	**19 JL**	**1.1**	**180 JL**	**10 JL**	**17 JL**	**6.8 JL**	**6.3**
Ethylbenzene	700	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1)
Isopropylbenzene (Cumene)	224	ND (0.1)	**1.2 JL**	ND (0.1)	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1)
Methyl Tertiary Butyl Ether (MTBE)	20	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1)
Methylene Chloride (Dichloromethane)	5	ND (0.2)	ND (0.2) UJL	ND (0.2)	ND (0.2) UJL	ND (0.2) UJL	ND (0.2) UJL	ND (0.2) UJL	ND (0.2)
Naphthalene	3	**0.4 J**	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1)
n-Butylbenzene	21	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1)
Styrene	100	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1)
Tetrachloroethene	5	ND (0.1)	ND (0.1) UJL	ND (0.1)	**120 JL**	**8.5 JL**	**40 JL**	**19 JL**	**17**
Toluene	1000	**0.2 J**	**0.3 JL**	**0.3 J**	**0.4 JL**	**0.5 JL**	**0.2 JL**	**0.1 JL**	**0.1 J**
trans-1,2-Dichloroethene	100	ND (0.1)	**0.6 JL**	ND (0.1)	**2.9 JL**	ND (0.1) UJL	ND (0.1) UJL	**0.2 JL**	**0.4 J**
Trichloroethene	5	ND (0.1)	**0.3 JL**	**0.1 J**	**63 JL**	**2.9 JL**	**13 JL**	**5.0 JL**	**7.1**
Trichlorofluoromethane	767	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1)
Vinyl Acetate	149	ND (2)	ND (2) UJL	ND (2)	ND (2) UJL	ND (2) UJL	ND (2) UJL	ND (2) UJL	ND (2)
Vinyl Chloride	2	**0.4 J**	**22 JL**	**0.6**	**1.3 JL**	ND (0.1) UJL	**0.1 JL**	ND (0.1) UJL	ND (0.1)
Xylene (Total)	10000	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1) UJL	ND (0.1)

All results are reported in μg/L.
The detection limit is presented in ( ).
Bold and shaded results are greater than the screening value.

Table 3 - Analytical Results for the Transect 1 and 2 Groundwater Grabs Taken in July 2007

	Sample Location ID	GP-9	GP-10	GP-11	GP-12	GP-14	GP-16	GP-18	GP-20
	Screen Depth	26.5-30.5 ft bgs	30.5-34.5 ft bgs	18-22 bgs	12-22 ft bgs	15-25 ft bgs	15-25 ft bgs	15-25 ft bgs	15-30 ft bgs
Analyte	**Residential KDHE Screening Value**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
			Method 8260B						
1,1,1-Trichloroethane	200	ND (0.1)	ND (0.1)	**0.2 J**	**3.3**	**0.4 JL**	ND (0.1)	ND (0.1) UJL	ND (0.1)
1,1,2-Trichloroethane	5	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.5)	**0.1 JL**	**0.5**	ND (0.1) UJL	ND (0.1)
1,1-Dichloroethane	340	**8.6**	**0.2 J**	**1.2**	**1.0 J**	**8.7 JL**	**0.8**	ND (0.1) UJL	**0.2 J**
1,1-Dichloroethene	7	**0.2 J**	ND (0.1)	**0.6**	**4.0**	**2.3 JL**	**0.4 J**	ND (0.1) UJL	ND (0.1)
1,2,4-Trimethylbenzene	5	**0.2 J**	ND (0.1)	ND (0.1)	ND (0.5)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1)
1,2-Dichlorobenzene	600	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1)
1,2-Dichloroethane	5	**0.1 J**	ND (0.1)	ND (0.1)	ND (0.5)	**0.2 JL**	**0.1 J**	ND (0.1) UJL	ND (0.1)
1,3,5-Trimethylbenzene	5	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.5)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1)
2-Butanone (MEK)	820	**3.5 J**	**5.1**	**3.5 J**	ND (5.0)	**1.3 JL**	**1.7 J**	**1.9 JL**	ND (1.0)
4-Methyl-2-Pentanone (MIBK)	70	ND (1.0)	ND (1.0)	ND (1.0)	ND (5.0)	ND (1.0) UJL	ND (1.0)	ND (1.0) UJL	ND (1.0)
Acetone (2-Propanone)	260	**19 JH**	**24 JH**	**5.4 JH**	ND (15)	**19 JL**	**7.3 JH**	**9.9 JL**	**12**
Benzene	5	**0.4 J**	**0.2 J**	**0.3 J**	ND (0.5)	**0.3 JL**	**0.2 J**	**0.2 JL**	**0.1 J**
Bromoform	80	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1)
Carbon Disulfide	9	**0.2 B**	**0.1 B**	ND (0.1)	ND (0.5)	ND (0.1) UJL	ND (0.1)	**0.2 B**	ND (0.1)
Carbon Tetrachloride	5	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.5)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1)
Chlorobenzene	100	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.5)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1)
Chloroethane (Ethyl Chloride)	48	**0.6**	**0.6**	ND (0.1)	ND (0.5)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1)
Chloroform	80	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.5)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1)
cis-1,2-Dichloroethene	70	**24**	**0.8**	**21**	**210**	**160 JL**	**3.1**	ND (0.1) UJL	**5.7**
Ethylbenzene	700	**0.1 J**	**0.2 J**	**0.1 J**	ND (0.5)	**0.1 JL**	ND (0.1)	**0.2 JL**	**0.1 J**
Isopropylbenzene (Cumene)	224	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.5)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1)
Methyl Tertiary Butyl Ether (MTBE)	20	ND (0.1)	ND (0.1)	**0.5**	ND (0.5)	**0.1 JL**	ND (0.1)	ND (0.1) UJL	ND (0.1)
Methylene Chloride (Dichloromethane)	5	ND (0.2)	**0.3 J**	ND (0.2)	**2.1 J**	ND (0.2) UJL	ND (0.1)	ND (0.1) UJL	ND (0.2)
Naphthalene	3	**0.6**	**0.5 J**	**0.2 J**	ND (0.5)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	**0.2 J**
n-Butylbenzene	21	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.5)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1)
Styrene	100	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.5)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1)
Tetrachloroethene	5	ND (0.1)	ND (0.1)	**20**	**420**	**24 JL**	**100**	**3.4 JL**	ND (0.1)
Toluene	1000	**1.3**	**1.3**	**0.7**	**0.8 J**	**1.1 JL**	**0.3**	**0.7 JL**	**0.9**
trans-1,2-Dichloroethene	100	**0.2 JH**	ND (0.1)	**0.4 JH**	**3.2 JH**	**2.0 JL**	ND (0.1)	ND (0.1) UJL	ND (0.1)
Trichloroethene	5	**0.5 J**	ND (0.1)	**12**	**210**	**37 JL**	**7.5**	**0.3 JL**	**0.7**
Trichlorofluoromethane	767	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.5)	ND (0.1) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1)
Vinyl Acetate	149	ND (0.2)	ND (0.2)	ND (0.2)	ND (1.0)	ND (0.2) UJL	ND (0.2)	ND (0.1) UJL	ND (0.2)
Vinyl Chloride	2	**14**	**0.5**	**6.5**	**3.8**	**26 JL**	**3.9**	ND (0.1) UJL	ND (0.1)
Xylene (Total)	10000	**0.6**	**0.4 J**	**0.4 J**	ND (0.5)	**0.5 JL**	**0.2**	**0.7 JL**	**0.4 J**

All results are reported in µg/L.
The detection limit is presented in ( ).
Bold and shaded results are greater than the screening value.

Table 4 - Analytical Results for the Groundwater Grabs Taken in October 2007

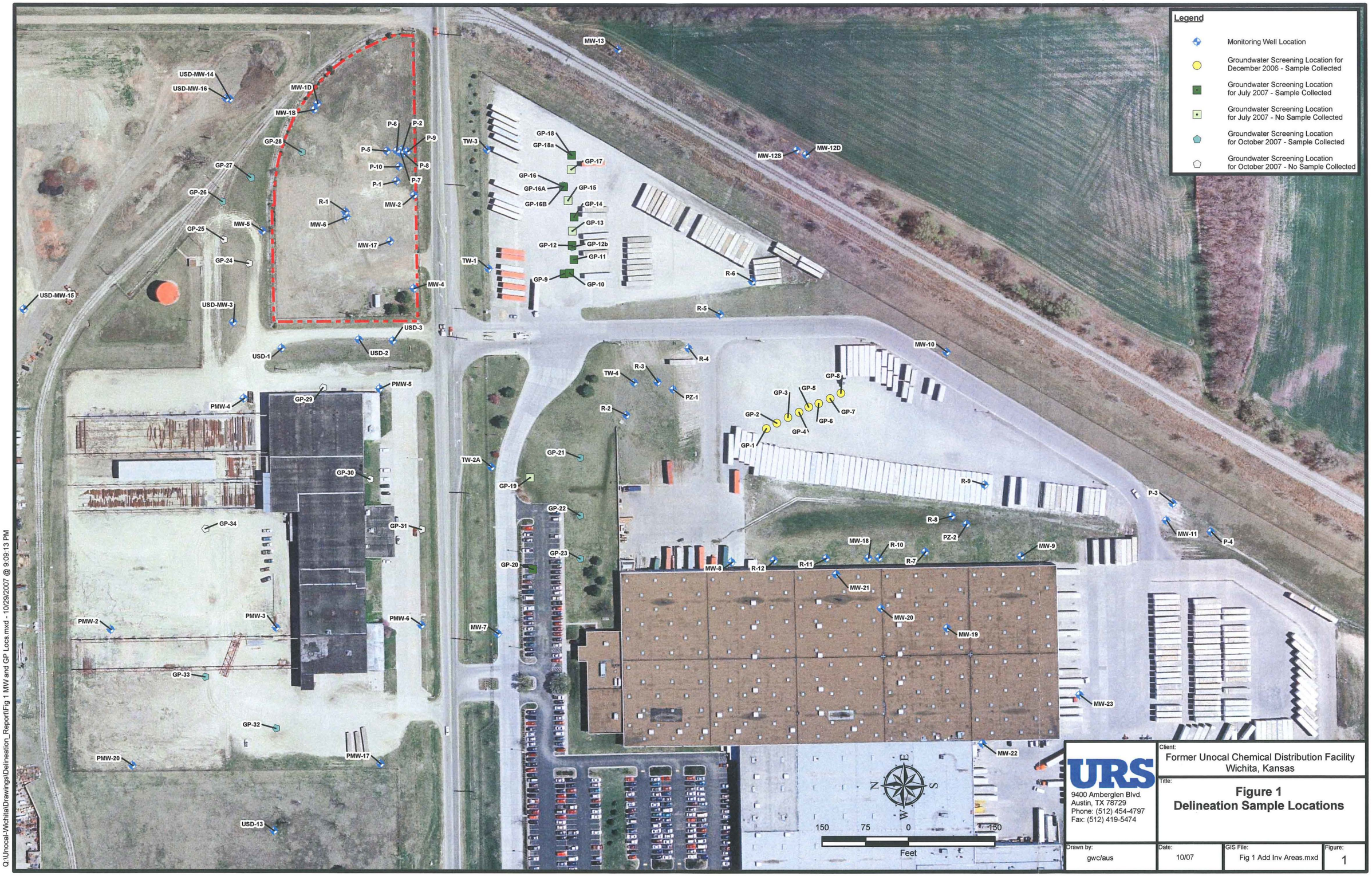
	Sample Location ID	GP-12B	GP-16A	GP-16B	GP-18A	GP-21	GP-22	GP-23	GP-26B
	Screen Depth	30-35 ft bgs	21-25 ft bgs	30-35 ft bgs	15-25 ft bgs	10-20 ft bgs	10-15 ft bgs	10-15 ft bgs	20-30 ft bgs
Analyte	Residential KDHE Screening Value	Result	Result	Result	Result	Result	Result	Result	Result
Method 8260B									
1,1,1-Trichloroethane	200	ND (0.1)	ND (0.5) UJL	ND (0.5)	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL
1,1,2-Trichloroethane	5	ND (0.1)	ND (0.5) UJL	ND (0.5)	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL
1,1-Dichloroethane	340	**13**	**2.2 JL**	**1.7**	ND (0.1)	ND (0.1) UJL	**0.2**	**0.2**	ND (0.1) UJL
1,1-Dichloroethene	7	ND (0.1)	**0.8 JL**	**0.6**	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL
1,2,4-Trimethylbenzene	5	ND (0.1)	ND (0.5) UJL	ND (0.5)	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL
1,2-Dichlorobenzene	600	ND (0.1)	ND (0.5) UJL	ND (0.5)	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL
1,2-Dichloroethane	5	**1**	ND (0.5) UJL	ND (0.5)	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL
1,3,5-Trimethylbenzene	5	ND (0.1)	ND (0.5) UJL	ND (0.5)	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL
2-Butanone	820	**3.8**	ND (5.0) UJL	ND (5.0)	**16**	ND (1.0) UJL	ND (1.0)	ND (1.0)	ND (1.0) UJL
4-Methyl-2-Pentanone	70	ND (1.0)	ND (5.0) UJL	ND (5.0)	ND (1.0)	ND (1.0) UJL	ND (1.0)	ND (1.0)	ND (1.0) UJL
Acetone	260	**8.6**	ND (15.) UJL	ND (15.)	**50**	ND (3.0) UJL	ND (3.0)	**7.8**	**4.9 JL**
Benzene	5	**6.8**	ND (0.5) UJL	ND (0.5)	**0.8**	ND (0.1) UJL	ND (0.1)	**0.1**	ND (0.1) UJL
Bromoform	80	ND (0.1)	ND (0.5) UJL	ND (0.5)	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL
Carbon Disulfide	9	**0.2**	ND (0.5) UJL	ND (0.5)	ND (0.1)	**0.1 JL**	ND (0.1)	ND (0.1)	**0.2 JL**
Carbon Tetrachloride	5	ND (0.1)	ND (0.5) UJL	ND (0.5)	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL
Chlorobenzene	100	ND (0.1)	ND (0.5) UJL	ND (0.5)	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL
Chloroethane	48	**5.1**	ND (0.5) UJL	ND (0.5)	**0.1**	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL
Chloroform	80	ND (0.1)	ND (0.5) UJL	ND (0.5)	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL
cis-1,2-Dichloroethene	70	**22**	**7.0 JL**	**5.7**	ND (0.1)	**1.4 JL**	**6.8**	**5.1**	**0.4 JL**
Ethylbenzene	700	**0.4**	ND (0.5) UJL	ND (0.5)	**0.1**	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL
Isopropylbenzene	224	**3.0**	ND (0.5) UJL	ND (0.5)	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL
Methyl Tertiary Butyl Ether	20	**0.3**	ND (0.5) UJL	ND (0.5)	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL
Methylene Chloride	5	**0.2**	ND (1.0) UJL	ND (1.0)	ND (0.2)	ND (0.2) UJL	ND (0.2)	ND (0.2)	ND (0.2) UJL
Naphthalene	3	ND (0.1)	ND (0.5) UJL	ND (0.5)	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL
n-Butylbenzene	21	**0.2**	ND (0.5) UJL	ND (0.5)	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL
Styrene	100	ND (0.1) UJL	ND (0.5) UJL	ND (0.5) UJL	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL
Tetrachloroethene	5	ND (0.1)	**320 JL**	**190**	**1.9**	**0.2 JL**	**0.4**	**0.2**	ND (0.1) UJL
Toluene	1000	**0.2**	ND (0.5) UJL	ND (0.5)	**3.1**	ND (0.1) UJL	ND (0.1)	**0.2**	**0.1 JL**
trans-1,2-Dichloroethene	100	**0.3**	ND (0.5) UJL	ND (0.5)	ND (0.1)	ND (0.1) UJL	**0.1**	**0.1**	ND (0.1) UJL
Trichloroethene	5	**0.2**	**12 JL**	**9.8**	**0.1**	**3.3 JL**	**1.6**	**1.9**	**0.4 JL**
Trichlorofluoromethane	767	ND (0.1)	ND (0.5) UJL	ND (0.5)	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL
Vinyl Acetate	149	ND (0.2)	ND (1.0) UJL	ND (1.0)	ND (0.2)	ND (0.2) UJL	ND (0.2)	ND (0.2)	ND (0.2) UJL
Vinyl Chloride	2	**24**	**12 JL**	**8.7**	ND (0.1)	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL
Xylene (Total)	10,000	**0.2**	ND (0.5) UJL	ND (0.5)	**0.4**	ND (0.1) UJL	ND (0.1)	ND (0.1)	ND (0.1) UJL

All results are reported in μg/L.
The detection limit is presented in ( ).
Bold and shaded results are greater than the screening value.

Table 4 - Analytical Results for the Groundwater Grabs Taken in October 2007 (Continued)

	Sample Location ID	GP-27A	GP-27B	GP-28	GP-32	GP-33	USD-13
	Screen Depth	5-15 ft bgs	15-25 ft bgs	15-20 ft bgs	20-25 ft bgs	15-25 ft bgs	NA
Analyte	Residential KDHE Screening Value	Result	Result	Result	Result	Result	Result
Method 8260B							
1,1,1-Trichloroethane	200	ND (1.0)	ND (1.0)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
1,1,2-Trichloroethane	5	ND (1.0)	ND (1.0)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
1,1-Dichloroethane	340	ND (1.0)	ND (1.0)	ND (0.1)	**2.1**	ND (0.1)	**0.2**
1,1-Dichloroethene	7	ND (1.0)	ND (1.0)	ND (0.1)	**0.2**	ND (0.1)	ND (0.1)
1,2,4-Trimethylbenzene	5	**5.7**	**8.7**	ND (0.1)	ND (0.1)	**0.5**	ND (0.1)
1,2-Dichlorobenzene	600	ND (1.0)	ND (1.0)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
1,2-Dichloroethane	5	ND (1.0)	ND (1.0)	**0.1**	**0.3**	ND (0.1)	ND (0.1)
1,3,5-Trimethylbenzene	5	**3.0**	**5.0**	ND (0.1)	ND (0.1)	**0.2**	ND (0.1)
2-Butanone	820	**45**	**52**	ND (1.0)	**1.0**	ND (1.0)	ND (1.0)
4-Methyl-2-Pentanone	70	ND (10.)	ND (10.)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Acetone	260	**78 J**	**67 J**	ND (3.0)	**4.5**	**7.0**	ND (3.0)
Benzene	5	**2.1**	**1.8**	ND (0.1)	**0.2**	ND (0.1)	ND (0.1)
Bromoform	80	ND (1.0)	ND (1.0)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Carbon Disulfide	9	ND (1.0)	ND (1.0)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Carbon Tetrachloride	5	ND (1.0)	ND (1.0)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Chlorobenzene	100	ND (1.0)	ND (1.0)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Chloroethane	48	**2.2**	**1.4**	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Chloroform	80	ND (1.0)	ND (1.0)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
cis-1,2-Dichloroethene	70	ND (1.0)	ND (1.0)	ND (0.1)	**110**	**1.4**	**13**
Ethylbenzene	700	**51**	**54**	ND (0.1)	ND (0.1)	**0.2**	ND (0.1)
Isopropylbenzene	224	**29**	**31**	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Methyl Tertiary Butyl Ether	20	**1.5**	**1.6**	**1.8**	ND (0.1)	ND (0.1)	ND (0.1)
Methylene Chloride	5	ND (2.0)	ND (2.0)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Naphthalene	3	**18**	**19**	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
n-Butylbenzene	21	**16**	**18**	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Styrene	100	ND (1.0)	ND (1.0)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1) UJL
Tetrachloroethene	5	ND (1.0)	ND (1.0)	ND (0.1)	**1.0**	ND (0.1)	**0.6**
Toluene	1000	**1.2**	**1.1**	ND (0.1)	**0.2**	**0.3**	ND (0.1)
trans-1,2-Dichloroethene	100	ND (1.0)	ND (1.0)	ND (0.1)	**0.3**	ND (0.1)	ND (0.1)
Trichloroethene	5	ND (1.0)	ND (1.0)	ND (0.1)	**9.4**	ND (0.1)	**3.4**
Trichlorofluoromethane	767	ND (1.0)	ND (1.0)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Vinyl Acetate	149	ND (2.0)	ND (2.0)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Vinyl Chloride	2	ND (1.0)	ND (1.0)	ND (0.1)	**0.2**	ND (0.1)	ND (0.1)
Xylene (Total)	10,000	**2.8**	**3.5**	ND (0.1)	**0.1**	**1.0**	ND (0.1)

All results are reported in μg/L.
The detection limit is presented in ( ).
Bold and shaded results are greater than the screening value.



URS
9400 Amberglen Blvd.
Austin, TX 78729
Phone: (512) 454-4797
Fax: (512) 419-5474

Client: Former Unocal Chemical Distribution Facility
Wichita, Kansas

Title: **Figure 1**
Delineation Sample Locations

Drawn by:	Date:	GIS File:	Figure:
gwc/aus	10/07	Fig 1 Add Inv Areas.mxd	1

Q:\Unocal-Wichita\Drawings\Delineation_Report\Fig 1 MW and GP Locs.mxd - 10/29/2007 @ 9:09:13 PM

Attachment D

Field Notes

Location Wichita, KS Date 12/12/06

Project / Client 4100 8222.07

URS (LB) Geo (ZD)

Purpose: Injection JOB

Personnel: John P. O'Neal, Anna Kunkel, Heather Tittiung, Derek Peacock, PSA Bill Aaron Butler, Sean Corson Robert Tieman Mike Mailloux

Equipment Geoprobe -

OIL/Water Interface

Weather CIR / COOL UPPER 30's

645 Arrive @ Site

710 Conduct H&S Meeting

800 Filling out JSAs Vehicle Inspection Forms

900 Mike Mailloux URS on site

915 Gauge Wells & Mark out Locations

1000 Prep for Injection Points

1015 Filing up Buckets with CAP18

Begin Injections START

AREA 1 East Side

1045 Begin Injections SE CORNER AREA 1

Depth to 30 ft BGS Begin Injection of CAP 18 - Line is leaking - Must go to Auto Store for ORing

1130 Repair ORing in Valve for Line

1215 End Drilling

John P. O'Neal

Location Wichita, KS Date 12/12/06

Project / Client 41008222.07

URS (4) PSI (4) Chevron 1

1135 Heather Tittiung off site
~~NOTE~~ Equipment used
Geoprobe RIG - 54 DT Geoprobe
GS-1000 for CAP 18 Pump
(GS - 2000 for HRC Pump)
1230 On Going Injections In Zone 1
East → west ZIG Zag A1- ...
1330 Mark location for Supplemental
GW Sampling with Derek Peacock
Derek Peacock will contact KATY Georing
(Coleman) and Inform of Supplemental
GW Sampling Activities
1630 End injecting Mat (CAP)
1715 Leave the site

JPO 12/12/06

John P. O'Neal

Location Wichita, KS Date 12/13/06

Project / Client 41008222.07

URS (2) PSA (3)

Purpose: Injection JOB
Personnel: John P. O'Neal, Anna Kunkel
(URS) Aaron Butler, Sean Corson & Robert Tieman
Equipment - Geoprobe 54 DT Geoprobe, OIC/Wire
Interface
Weather: 42 - cool Mid 40s
700 arrive @ site
740 Conduct H&S Meet
800 Resume Probing @ AREA 1 location
1100 Remain Drums of CAP Delivered
1130 Quick Break for Lunch time
1200 Resume Probing @ AREA 1
1330 Robert (PSA) calls - Informs
URS that CAP 18 Material look
different (White) Anna Kunkel
and John O'Neal (URS) go over
to look @ material. ~~decide~~
~~not to~~ JPO 12/13/06 Anna calls
Dan Bryant (DBI) Dan States
water probably accumulated in
mixture (cap 18). Gives white appearance
Anna & John Decide not to use
this Drum mixture. Move CAP 18
Storage / transfer area - Drums

John P. O'Neal

Location Wichita, KS Date 12/13/06

Project / Client 41008222.07

URS(2) PSA(3)

were placed in different location close to injection points -

1445 Resume Geoprobing / Injection activities.

1630 End Geoprobe Activities

1645 Cleaning up area

1715 End of Day

JPO 12/13/06

John P. O'Neal

Location Wichita, KS Date 12/14/06

Project / Client 41008222.07

URS(2) PSA(3)

Purpose: Injection JOB

Personnel: John P. O'Neal & Anna Kunkel CUT

Aaron Butler, Robert Tieman & Sean Corson (PSA)

Equipment: S4DT Geoprobe, OIL/Water Interface, los 1,000 & 2,000 Pump

Weather: PC Mid-high 50s

715 Meet @ site

730 HES Meeting (Tailgate)

800 Continue Geoprobing & Inezone A

NP Gauge Area 2 & 3 Wells

Well ID	TOC DTW	GS DTW	TD
MW-9	10.32	10.75	32.68
PZ-2	7.02	7.50	24.38
R-8	5.61	6.50	—
R-7	9.86	10.52	—
R-10	10.51	10.50	—
R-11	9.90	9.30	-
R-12	8.18	7.82	20.72
MW-18	9.82	10.01	[illegible]
R-4	7.68	8.95	

JPO 12/14/06

HRC injection scheme -

Zone 2 & 3 - same injection scheme

1 gal/ft for 1st 5 ft

.5 gal/ft until 8 ft bgs

At 1/2 flow LOAD

STEET ACC

John P. O'NEAL

Location Wichita, KS Date 12/14/06

Project / Client 41008222.07

URS(2) PSA (3)

*Zones 2 & 3 Inject 8' to Apox 22.0 ft BGS

1355 Probing In Zones 2 & 3

1410 Some Trouble with the GS 2000 I

1600 Figure will need to add 4-6 Rechill @ Shallow Points in Area 1

1730 End Geo Probing

1800 Leave the site

JPO 12/14/06

John P. O'Neal

Location Wichita, KS Date 12/15/06

Project / Client 41008222.07

URS(2) PSA (3)

Purpose: Injection JOB

Personnel: John Forward + Anna Kunkle (URS)
Aaron Butler, Robert Tiemann, Sean Corson (PSA)

Equipment: 54 DP Geo Probe, Oil/water interface, GS 1,000 & 2,000 Pump

Weather PC - High 60s

700 Mob to site

715 Arrive @ site

730 HES Meeting

845 Resume Probing Area 2 & 3

1100 Get Sample Containers Lunch

1230 Resume Drilling Area D yellow line

Want to see depth to shale

Dtg & 24.0 ft BGS

1750 Leave the site

JPO 12/15/06

John P. O'Neal

Location Wichita, KS Date 12/16/08

Project / Client 41008222.07

URS (1) PSA (3)

Purpose: Injection Job

Personnel: John P. O'Neal (URS) Marion Butler, Robert Tieman, Sean Corson (PSA)

Equipment SCDP GeoProbe, 2000 GS Pump

Weather PC / Cool

700 Mob. to site

715 Arrive @ site

720 Begin JHA 12/16/08 HES Meeting

755 Begin Geo Probing

1530 Double Checked with Drillers On Amount of Product used in each hole

1700 Hydraulic Line to Hammer Breaker

1710 Talk to Anna Kuckel URS

1730 PSA will bring new Probe to job Will Arrive before work Sun AM

1800 Talk to Mark Hancock UPDATE on job

1845 Leave the site

COMPLETED 14 Holes

JPO 12/16/08

John P O'Neal

Location Wichita, KS Date 12/16/08

Project / Client 41008222.07

URS (1) PSA (3)

Purpose: Injection Job

Personnel: John P. O'Neal (URS) Aaron Butler, Robert Tieman, Sean Corson (PSA)

Equipment: New GeoProbe, 1000 GS Pump

Weather: Cloudy / Cool mid 40s

700 Mob. to site

735 arrive @ site

790 PSA on site - Unable to get New Probe in Kansas City

810 HES Meeting

1000 on Probe A-27 - CMP is not Injecting - @ 12-14 gallons comming out of hole

1030 Contact Anna Kuckel - Instructs to get as much CMP In as possible @ 12-14 gals out of 28 total

1040 Talk Hancock returns phone call states that we need to get as much as possible - But not speed great deal of time waiting

1115 Injecting Proper Amount of Activ

1530 Begin Re injections 90 from 15 & 13 to TD Approx 23-24 Feet Below Ground Surface

John P O'Neal

Location Wichita, KS Date 12/17/06

Project / Client 41008222.07

URS (1) PSA (3)

1800 End Drilling
1805 Cleaning up area -
Steam Cleaning Road
1845 Cleaning up area & Equipment
Talk to Anna Kunkel (URS)
1) Talk about Drum Delivery
2) Injection Ration (D)
3) If agequate depth on Slope (A)
1900 Leave Site - End of Day

JPO 12/17/06

John P. O'Neal

Location Wichita, KS Date 12/18/06

Project / Client 4100 8222.07

URS (2) PSA (3)

Purpose: Injection Job
Personnel: John P. O'Neal (URS) Aaron Butler, Robert Tieman & Sean Corson (PSA)
Equipment: 54 DT Geoprobe. GS 2000 Pump
Weather PC / cool Mid 40s
700 Mob to site
715 Arrive @ site / Contact Steve Irwin (DSI) about Drum Pickup - other info discussed (Packaged)
730 PSA onsite
740 Conduct H&S meeting
800 Mob to Home Depot get strapping for Drums PSA setting up in zone C
830 Talk to Mr Frost (Coleman) OK to use concrete for borings in Road - will look @ Road to see if continued cleaning Road
900 Begin Probing
1100 Count Amount Est vs Amount Injected Approx 129 Bucket Estimated Approx 109 Buckets Used.
* Notify Austin office Anna Kunkel of Shortage *
Driller states holes will not except more HRC - using max amount

John P. O'Neal

Location Wichita, KS Date 12/18/06

Project / Client 41008222.07

URS (1) PSA (3)

C-22

Of Material for Each hole

* Anna will Inform Derek Peacock of this

Anna Kunkel Instructs to Continue with 1st 5 feet 1 gallon per foot 1/2 gallon per foot to in Zone D area Sections

* Anna Informs Derek Peacock of Extra HRC - Derek STATES OK - Use as much HRC in hole as Possible

Aware of Problem

1645 Cleaning up area

1700 Demob. from Site

John P. O'Neal

Location Wichita, KS Date 12/17/06

Project / Client 41008222.07

URS (1) PSA (3)

Purpose: Injection JOB

Personnel: John P. O'Neal (URS) Aaron Butler, Robert Tieman & Sean Corson (PSA)

Equipment: new geoprobe, 2000 GS Pump

Weather - Cloudy / cool mid 40s

700 Mob to Site

715 Arrive @ Site, PSA on Site

730 Conduct H&S Meeting

800 Resume Geoprobing

* D-8, D-9, & D-10 Adjusted Due to Utilities - moved less than 2 feet

1600 End

1650 Pick up Drums

1800 Leave the Site

JPO 12/17/06

John P. O'Neal

Location Wichita, KS Date 12/20/06

Project / Client 41008222.07

URS (1) PSA (3)

Purpose: Injection / Grab Groundwater

Personnel: John P. O'Neal (URS) Anson Butler, Robert Tieman, Sean Corson (PSA)

Equipment GeoProbe 5400, sample supplies

Weather Rain / cool, low 50's

700 Mob to site

730 Pick up supplies

740 Arrive @ site

750 PSA Onsite

800 Prep for GW sampling

		Drillers Cleaning up DTW	TD
900	Sample GP-1, 6	25.30	29.00
955	Sample GP-2 had to bail	16.7	29.50
1050	Sample GP-3 B	19.80	29.50
1135	Sample GP-4 B	7.30	31.00
1210	Sample GP-5 B	~~5.10~~ 17.30	30.00
1235	Sample GP-6 B	9.35	26.00
1310	Sample GP-7 B	16.60	26.00
1330	Sample GP-8 14-18 slack	14.0	28.00

1400 Cleaning up area

1500 meet w/ Kat of Georing & Mr. Trust Inspect area

1545 Talk w/ Anna Kinkel (URS) Coordinate pick up of HRC pallet @ Coleman

John P. O'Neal

Location Wichita, KS

Project / Client 41008222.07

URS (1) PSA (3)

1600 Mob to ship GW samples

1630 Ship GW samples with FEDEX

1700 Arrive @ Hotel - Do Paperwork

JPO 12/20/06

John P. O'Neal

Location Wichita, KS Date 12/20/06

Project / Client 41008222.07

URS(1) PSA(3)

Purpose: Measure / Ship Coleman

Personnel: John P. O'Neal (URS)

Equipment. —

Weather PC Cloudy / cool

730 Arrive @ site - check with Return Dept - Coleman will ship (HRC 00)

830 Talk to Guy Callihan (URS-Austin) on Directions for GPS

900 GPS locations in zone A, B, C & D

1100 Make site maps

1200 Call FED EX samples have not made it to CAB -> Instruct U. Imp. Package - FEDEX will prioritize

1230 Let Anna Kunkel know of problems

WAIT ON TRUCK to Pick up HRC

1300 FEDEX Picks up

1330 Demob from site.

JPO 12/20/06

John P. O'Neal

Location Date

Project / Client

Location Wichita, KS Date 7/23/07

Project / Client 41008451.04

URS(2), PSA(2), COL(1)

Purpose: Groundwater Grab Sampler

Personnel: Anna Kunkel & John O'Neal (URS)
Robert, Aaron (PSI)

Equipment: Geoprobe, PID, Sampling supplies

Weather: Cloudy / warm mid 80s

800 Load Equipment

900 MOB to site

1130 Arrive in Wichita

1200 Meet with Anna Kunkel

1300 PSI meets @ site

1310 Heather arrives on-site
Conducted site walk

1345 Heather, Aaron (PSA), and Morgan (Columbia) leave site for LPS training.

1400 Set up on GP-9

1410 Conducted H&S mtg

1425 Pushed to 18' but no water was observed → push to 25'
No water observed @ 25'
Push to shale
Driller observed shale @ 30' and kept pushing to 35'

John P. O'Neal

Location Wichita, KS Date 7/23/07

Project / Client 41008451.04

URS(2), PSA (2), COLU (1)

GP-9

Pulled up to 30' and screened from 26'-30' bgs
No water observed → left rods in the ground

1515 Set up on GP-10
Pushed to 35'
Shale @~30'
Left screen at ~~30'-26'~~ ~~31'-35'~~ 31'-35'

1545 Set up on GP-11
Pushed to 22'
Left screen at 22'-18'
No shale encountered

1610 Set up on GP-12

Will CORE Boring - Check litho for water

Depth	Description
0-1.0	Gravel - Fill Material
1.0-5.0	Silty Clay, some fine grain
Brw	Sand, Stiff, Med Plastic, Dry
5.0-10.0	Silty Clay, Tr. fine grain
Grn/Brw	Sand, Stiff, Med Plasticity, Dry some fe & silt nodules
10.0-15.0	Same as above - high plast.
@ 11-12.	Increase in Clay, Stiff, high plastic

John P. O'Neal

Location Wichita, KS Date 7/23/07

Project / Client URS(2) 4100 845 1.02

URS(2), PSA(2), COL(1)

GP-12 Con't

Depth	Description
15-20	CLAY, Some Silt, Trace F.G. Sand
Gray/Brw	Stiff, High Plasticity
	Increase in Silt from 19-20
	Slst. Increase in moist.
20-25	CLAY, Some Silt, Trace F.G. Sand
Gray/Brw	Wet @ 21.5 / Collapses @ 22.0
	No odor, Increase in silt 24-25.0 ft
	TD 25.0
	NOTE Wet @ 22.0
	Well Screened 12-22.0 ft BGS
1700	GP-13
	Screen 21-11
1720	GP-14
	Screen 25-15
1740	GP-15
	Screen 25-15
1750	GP-16
	Screen 25-15
1820	GP-17
	Screen 25-15
1830	GP-18
	Screen 25-15

John P. O'Neal

Location Wichita, KS Date 7/23/07

Project / Client 4100 845 1.02

URS(2), PSA(2), COL(2)

1810 GP-09

Flushed screen down 0.5' to make flush w/ ground

$\boxed{\text{Screen} = 26.5' - 30.5'}$

1910 GP-10

Pulled screen up 0.5' to make flush w/ ground

$\boxed{\text{Screen} = 30.5' - 34.5'}$

1915 Leave the S.R

No 7/23/07

John P. O'Neal

Location Wichita, KS Date 7/24/07

Project / Client 41008451.04

URS (2), PSA (2), Col. (1)

Purpose: MIP Investigation

Personnel: Anna Kenkel & John O'Neill (URS)

Robert Arrow (PSA), Morgan Columbus

Equip: PID, GeoProbe, MIP Equip

Weather PC 1110T

700 Arrive @ site

730 Mark locations for MIP Investigation

750 H&S Meeting (Weather Timing - URS)

800 Anna with MIP, Set up on MIP-01

John cal. PID

John collect GW samples on East Transect

830 MIP Investigation: MIP-01

PID spike @ 13 ft & 20 ft

Refusal @ 20 ft (assume shale)

Packed up MIP-01

855 Set up on MIP-02

905 Started pushing probe

930 Spike @ 12-14 ft & 18-19 ft

Refusal @ 20 ft (assume shale)

Packed up MIP-02

940 Set up on MIP-03

950 Started pushing probe

John P. O'Neill

Location Wichita, KS Date 7/24/07

Project / Client 41008450.04

URS (2), PSA (2) Col. (2)

1030 Refusal @ 32'

~~to Packed up~~

1040 Packed up MIP-03

1045 Setup on MIP-04 slightly modified location and moved ~10' to the east to avoid overhead power lines.

1055 Started push probe

1115 Refusal at 25'

1120 Pack up MIP-04

1125 Set up on MIP-05, moved ~10ft east to clear overhead powerlines

JPO 7/24/07

MP-03 Hotter

Spikes @ 22-25, 30-31, 31-32

Refusal at 32'

MP-04 Cleaner

Spikes @ 15-19, 19-21, 21-25

Refusal @ 25

1200 MIP-05 Cleanest so far

Small spike 18-21

Refusal @ 29'

1230 Break for lunch

1330 Back on site

John P. O'Neill

Location Wichita, KS Date 7/24/07

Project / Client 41008451.04

URS(2), PSA(2), COL(1)

1345 Set up on MIP-06

~~File Name~~

3PS locations gathered for MIP-01 thru MIP-09

MIP-03A is correct (don't use MIP-03)

1430 MIP-06

Refusal @ 46'

1455 Set up on MIP-07

Refusal @ 42'

1600 Due to the high conc. of Chlorinated solvents encountered rig had to be cleaned out.

1645 Drillers moved to Coleman site

Columbia packed up

1700 Drillers pulled GW Grab screens from transect 1.

1745 PSA left site.

7/24/07

John P. O'Neal

Location Wichita, KS Date 7/24/07

Project / Client 41008451.04

URS(2), PSA(2), COL(1)

GRoundwater GrABS E-T

1000 Collect GP-9

1035 Collect GP-10

1045 Collect GP-11

Collect ~~Blind~~ JPO 7/24/07 DUP SAMPLE GP-1100

1100 Collect GP-12

1545 Collect GP-14

Collect MS/MSD for GP-14

1600 Collect GP-18

ONLY enough water to fill two viles

1630 Collect GP-16

1615 DTW In Borings GP-9-18

GP-9	7.72	GP-15	Dry 2 in. water according to [illegible]
GP-10	APP. 8.0	GP-16	24.0
GP-11	APP. 7.75	GP-17	Dry No water in Bailer
GP-12	APP. 8.25	GP-18	24.0
GP-13	Dry No water in Bailer		
GP-14	16.65		

NOTE 17 & 18 WERE RUN OVER

1700 Pack Samples

1700 MOB TO FEDEX (Airport)

1900 End of DAY

JPO 7/24/07

John P. O'Neal

Location Wichita, KS Date 7/25/07

Project / Client 41008451.04

URS(2), PSA(2), COI(1)

PURPOSE: Collect Groundwater Samples
PERSONNEL: Anna Kunkel & John P. O'Neal (CRS), MORGAN (Columbia) ROBERT ARRON (PSA)
EQUIPMENT: PID, PERS PUMP, SAMPLE Containers & Equipment

645 Arrive on site
700 Pick up supplies & coolers
830 Arrive on site
845 Will NEED to Collect FATTY Acids FOR: R-4, R-5, R-6, R-11, R-12 & MW-18
VER Duck Peacock -
1000 GP-19 -

Depth	Descrip
0-5	0-3.5 SILTY CLAY, Tr. F.G. SAND,
60/60	V. Stiff, MED Plasticity,
Brw	0-1.5 Rootlets, some white Nodule, Dry, Moist
	3.5-5.0 FE Staining, Low Plasticity
5-10	5.0-7.25 SANDY CLAY, F.-MED
60/60	grain size, Med Stiff, MED Plasticity
RD Brw	8.25-8.50 SAND lense F.G.-M.G.-size Poor Sorting, Loose, ~~Dry~~ Slg. moist
gray green	8.5-10.0 CLAY, Some Silt, Tr. F.G.

John P. O'Neal

Location Wichita, KS Date 7/25/07

Project / Client 41008451.04

URS(2), PSA(2), COI(1)

~~FATTY Acid SAMPLE~~

1010 ~~R-4~~ JPO 7/24/07

Med Stiff-Stiff, high Plasticity
Increase of F.G.-M.G. SAND & SILT
@ 9.5 Slg moist.

10-15 SILTY CLAY, Some F.G. SAND,
60/60 Stiff, Non Plastic, Dry
13.5-15.0 CLAY, Tr. Silt & F.G. SAND
V. Stiff, Low Plasticity, Dry
15-20 CLAY, Trace silt & F.G. SAND,
60/60 V. Stiff, MED Plastic, @ 21-21.5
& 24.-24.75 Increase in silt & F.G. SAND, Dry, no odor
20-24
SAME as above Stiff, MED Low Plastic (organics)
@ 27.0 Black Staining increase in silt & F.G. SAND
@ 23.90 Rock (Limestone) HARD
T.D. 24.0 FEET
* Boring IS Dry

JPO 7/25/07

John P. O'Neal

Location Wichita, KS Date 7/25/07

Project / Client 41008451.04

URS(2), PSA(2), COL(1)

FATTY ACID SAMPLING

R-4	1010
R-5	1130
R-6	1200
MW-18	1530
R-11	1600
R-12	1610

JDO 7/25/07

John P. Olivere

Location Wichita, KS Date 7/25/07

Project / Client 41008451.04

URS(2), PSA(2), COL(1)

1330

GP-20 (Screen 15 - RISER RISER 15 FEET)

Depth	Description
0-5 8in-50	0-8in ASPL SILTY CLAY, Tr. Fine grain SAND
VW 60/60	Soft-MED Stiff, MED Plasticity
	Some white nodules - Dry
5-10 5-7.0	SILTY CLAY, Same as above
60/60	Stiff, Some Gray Mottle, some
	yellowish ORG Mottle
	@ 7.0-10 Silty Clay, increase in F.G. Sand
	med stiff, Low Plasticity Dry
	Increase in Clay @ 9.25
10-15	CLAY, Some Silt, Trace F.G.
	Sand, MED Stiff to Stiff to v. Stiff
	Low-MED Plasticity, (Grayish yellow)
	Dry
15-20	CLAY, Some Silt, Trace F.G.
	Sand, MED Stiff, MED Plastic (Grayish
	yellow) Calcite MICA Rock @ 19.0 Slg moist @ 17-18
20-25	SILTY CLAY AS above
	Moist @ 21.5 - MED Stiff to Stiff,
	Low Plast.
25-30	SAME as above
	Wet 25-30 Increase in Fine grain
	Sand

John P. Olivere

Location Wichita, KS Date 7/26/07

Project / Client 41008451.04

URS(2), PSA(2), Columbia(1)

Purpose: MIP / GW Sampling

Personnel: Anna Kunkel & John P. O'Neal Cur

JPO 7/26/07 ~~EQ~~ Aaron & Robert Tiemann (PSA), Morgan (Columbia)

Equipment: PID, GeoProbe, MIP, Sampling Supplies / Equip

Weather - Clear / Hot Mid 90's

700 Arrive @ Site

715 H&S Meeting / Discuss Days activities

730 Pick up Supplies

0745 Checked water levels at MIP gw locations

MIP-10 screen = 16'-20'

1.0 - 1.25 ft water

MIP-14 screen = 12'-16'

~2.0 ft water

MIP-12 screen = 11-15'

15.75 - 11.4 = ~4 ft water

800 Installing MIP Borings

1000 DTW GP-20 T.D. BGS

JPO 7/26/07

1025 P-5 DTW 8.18 TD 16.39

(from TOC) John P. O'Neal

Location Wichita, KS Date 7/26/07

Project / Client 41008451.04

URS(2), PSA(2), Col(1)

Top of casing = ~~[illegible]~~ 0.65'

above surface

P-2 DTW = 6.74 TD = 22.80

(from TOC)

Top of casing = -0.35'

below surface

1410 Collect GW Sample GP-20

MS/MSD Collected

1420 Collect EB072607 JPO 7/26/07

Collect GP-20 EB

1450 Sample MIP 12

1520 Sample MIP 10

1600 Sample MIP 14

1645 Sample ~~MW-02~~ P

Collect Dup Sample ~~MW~~ P-0200

.60 - 6.74 = 16.06 x .16 = 2.56 x 3 = 7.70

Air, Turbid, No Odor

1700 Grout GP-20

1730 Leave the Site

JPO 7/26/07

John P. O'Neal

Location Wichita, KS Date 7/26/07

Project / Client 41008451.04

URS(3), PSA(2), Col(1)

Purpose: MIP/GW Sampling

Personnel: Anna Kunkel & John P. O'Neal (WRS) (PSA)
Aaron Seale & Robert Tiemann, Morgan (Columbia)

Equipment: PID, GeoProbe, MIP.
Sampling Equipment & Containers

Weather - Partly Cloudy - 1 lot mid 80s

700 Arrive @ Site
715 Safety Meeting
730 Discuss Days activities
800 Pick up supplies
900 GPS Some Locations
930 PSA continued to do MIP inv.
1005 Water level at MIP-15
Screen = 11-15 ft
DTW = 10 ft TD = 14.8 ft
Water level at ~~MIP~~ P-05A
Screen = 22-26 ft
DTW = 7.25 TD = 25.5
Water level at P-05B
Screen = 28-32 ft
DTW = 24.85 TD = 31.75
1025 Sample MIP-15
1045 Sample ~~MIP~~ P-05A
Collect Dup - P0500A

John P. O'Neal

Location Wichita, KS Date 7/26/07

Project / Client 41008451.04

URS(2), PSA(2), Col(1)

1100 P-05B Sampled
1130 Work on COCs
1215 Break for Lunch
1330 MIP Borings
1430 Give Anna Kunkel Samples for FEDEX Delivery
1650 Demob from Site - mob to Rex

DO 7/26/07

John P. O'Neal

IF FOUND PLEASE RETURN TO:

NAME _____

COMPANY _____

STREET _____

CITY _____ STATE ____ ZIP ____

PHONE ____ _____

Reorder part # 101650
Phone # 800-241-6401

JOB BOOK

FROM BEN MEADOWS COMPANY

PROJECT NAME Unical Wichita KS

PROJECT NUMBER Pilot Test Smplg

CREW John Mettauer/Kim High

DATE Oct/01 BOOK # 01 OF ____

WEATHER _____

FIELD BOOK
16 PAGE
8 LEAVES
50% RAG

UNICAL WIT.

10/2/07

John Mettauer, Anna Kunkel
Held Saifty Meeting, Marked
Location for New Drilling,
United Rental Picked up Mower.

Equipment
Horiba U-22, Water Level, Parstalic
Pump.
Sampling for: VOC, CO_2, Volatile Head
Space Hydrocarbin, Fatty Acid, Total
& Disolved Iron

Field Paramiters with Horiba U-22

Weather Over Cast High mid 80°
Rain

UNICAL WIT 10/2/07

Mob Equip

1030 Set upon R-2
DTW: 3.35'

TIME	DTW	PH	COND	TURB	DO	TEMP	ORP	FR
1045	3.50	7.01	3.64	354	2.32	19.30	32	200
1050	3.75	6.99	3.60	350	1.57	19.19	18	200
1055	3.80	6.99	3.57	376	1.35	19.07	15	200
1100	3.90	6.99	3.55	537	1.28	19.03	14	200
1105	4.00	7.00	3.52	468	1.19	19.03	14	200
1110	4.01	7.00	3.51	598	1.14	19.11	14	200
1115	4.01	7.00	3.53	357	1.15	19.14	14	200
1120	4.05	7.00	3.48	399	1.11	19.05	15	200
1125	4.10	7.00	3.45	722.0	1.09	18.90	16	200
1130	4.10	7.00	3.48	768	1.07	18.95	14	200
1135	4.10	7.00	3.47	898	1.07	19.02	14	200
1140	4.10	7.00	3.47	787	1.05	19.06	14	200

1145 Sampled R-2
FE: 0.0
Sample ID R-2 / R-2 DUP.
VOC, CO_2, VHSH, Fatty Acid, Total
& Disolved Iron

Unical W.T

1330 10/2/07

TW-4 Set up Note: Well Cover Bolts Broken

DTW: 3.45.

Time	DTW	PH	Cond	Turb	DO	Temp.	ORP	Fe
1340	3.90	6.34	1.69	416	2.24	20.0	-161	220
1345	3.95	6.43	1.63	161	1.65	19.90	-167	220
1350	4.00	6.46	1.60	357	1.38	19.91	-184	220
1355	4.05	6.45	1.58	384	1.27	19.88	-197	220
1400	4.05	6.46	1.57	473	1.18	19.81	-207	220
1405	4.03	6.47	1.57	503	1.14	19.87	-216	220
1410	4.04	6.47	1.55	606	1.12	19.87	-221	220
1415	4.05	6.45	1.54	340	1.07	19.67	-227	220
1420	4.06	6.48	1.53	481	1.06	19.82	-230	220
1425	4.08	6.48	1.53	550	1.03	19.94	-233	220
1430	4.10	6.48	1.54	559	1.03	19.79	-235	220
1435	4.10	6.49	1.53	751	1.01	19.84	-237	220
1440	4.10	6.49	1.54	568	1.01	19.88	-237	220

1445 Sampled TW-4

FE: 3.0

10/2/07

1500 Set up on R-3

DTW: 4.00

Time	DTW	PH	Cond	Turb	DO	Temp.	ORP	Fe
1510	4.80	6.48	2.18	164	1.91	22.6	-179	250
1515	4.90	6.52	2.20	97.6	1.48	22.0	-184	230
1520	5.00	6.54	2.20	288.0	1.17	21.74	-192	230
1525	5.10	6.54	2.20	265.0	1.09	21.82	-193	230
1530	5.15	6.54	2.20	269	1.03	21.88	-194	250
1535	5.15	6.54	2.19	265	.99	21.79	-195	230
1540	5.20	6.54	2.19	204	.98	21.79	-195	230
1545	5.33	6.53	2.18	300	.92	21.75	-199	230
1550	5.40	6.54	2.19	418	.91	21.78	-195	230
1555	5.50	6.54	2.19	320	.90	21.64	-199	230
1600	5.60	6.54	2.19	152	.89	21.65	-199	230
1605	5.65	6.54	2.19	282	.89	21.65	-199	230

1610 Sampled R-3

1700 Departed Site

UNICAL WIT

10/3/07

0700 ARRIVED ON SITE
0730 HELD H&S MEETING
CAL HORIBA U-22
0740 SET UP ON R-4
DTW 4.75

Time	DTW	PH	Cond	Turb	DO	Temp	ORP	FR
800	4.85	6.72	1.50	-5	2.19	19.38	-177	165
805	4.90	6.72	1.49	-5	2.06	19.41	-184	
810	4.95	6.72	1.48	494	1.45	19.49	-184	
815	4.95	6.78	1.48	422	1.29	19.59	-183	165
820	4.95	6.77	1.48	509	1.19	19.67	-183	165
825	4.95	6.78	1.48	510	1.19	19.61	-183	165
830	4.95	6.77	1.47	494	1.14	19.75	-182	165
835	4.95	6.77	1.47	528	1.12	19.81	-181	165
840	4.95	6.77	1.46	548	1.11	19.87	-181	165
845	4.95	6.76	1.47	568	1.08	19.88	-180	165
850	4.95	6.76	1.46	603	1.07	19.96	-179	165
855	4.95	6.75	1.46	607	1.07	20.02	-179	165

900 SAMPLED R-4
FE: 4.0

10/3/07

0930 SET UP ON MW-R-5
DTW 8.15

Time	DTW	PH	Cond	Turb	DO	Temp	ORP	FR
0940	8.20	6.69	1.40	310	1.55	19.48	08	200
0945	8.20	6.69	1.35	192	1.40	19.50	0.9	200
0950	8.25	6.69	1.39	297	1.33	19.44	0.8	200
0955	8.25	6.70	1.38	337	1.24	19.55	0.0	200
1000	8.25	6.70	1.38	352	1.21	19.67	0.0	200
1005	8.25	6.70	1.39	245	1.17	19.62	-20	200
1010	8.25	6.70	1.38	296	1.15	19.54	-28	200
1015	8.25	6.71	1.38	154	1.13	19.64	-34	200
1020	8.25	6.70	1.38	295	1.09	19.72	-38	200
1025	8.25	6.70	1.38	183	1.09	19.70	-41	200
1030	8.25	6.70	1.38	366	1.06	19.53	-46	200
1035	8.25	6.70	1.38	313	1.05	19.60	-45	200
1040	8.25	6.70	1.37	209	1.04	19.56	-45	200

1045 SAMPLED R-5
FE: 0.0

UNICAL WICHITA

10/3/07

1230 SET UP ON ~~MW~~ R-6
DTW: 15.00

TIME	DTW	PH	COND	TURB	DO	TEMP	ORP	FR
1300	15.00	6.56	1.38	215	1.85	18.49	123	200
1305	15.00	6.60	1.38	113	1.44	18.43	114	200
1310	15.00	6.64	1.37	90.1	1.33	18.39	109	200
1315	15.00	6.65	1.37	94.0	1.25	18.38	106	200
1320	15.00	6.66	1.37	96.0	1.25	18.46	103	200
1325	15.05	6.67	1.37	94.2	1.21	18.42	101	200
1330	15.05	6.68	1.37	93.2	1.15	18.65	98	200
1335	15.05	6.68	1.37	102	1.17	18.47	97	200
1340	15.05	6.69	1.37	79.7	1.15	18.52	95	200
1345	15.05	6.69	1.36	90.1	1.14	18.92	93	200
1350	15.05	6.68	1.36	102.0	1.12	19.06	92	200
1355	15.05	6.69	1.37	102.0	1.13	18.83	92	200

1400 SAMPLED R-6 / R-6 DUP.
FE: 0.0

JCA REVIEW
AND OBSERVATION DONE.

1415 SET UP ON R-~~12~~ ~~11~~ 12
DTW. 6.26

TIME	DTW	PH	COND	TURB	DO	TEMP	ORP	FR
1420	6.40	6.69	3.56	187	1.32	20.35	-53	200
1425	6.42	6.69	3.55	117	1.27	20.35	-53	200
1430	6.44	6.69	3.55	143	1.22	20.40	-55	200
1435	6.45	6.69	3.54	113	1.14	20.32	-56	200
1440	6.45	6.69	3.54	122	1.14	20.31	-56	200
1445	6.45	6.69	3.53	152	1.10	20.33	-58	200
1450	6.45	6.69	3.53	168	1.08	20.41	-58	200
1455	6.45	6.69	3.52	139	1.08	20.31	-60	200
1500	6.45	6.70	3.52	126	1.07	20.36	-58	200
1505	6.45	6.70	3.51	79	1.07	20.32	-58	200
1510	6.46	6.69	3.50	82	1.06	20.30	-59	200
1515	6.46	6.69	3.51	78.1	1.05	20.32	-59	200

1520 SAMPLED R-~~12~~ ~~11~~ 12
FE: 2.0

KIM HIGH ARRIVED ON SITE TO TAKE OVER FOR ANNA

UNICAL WICHITA

10/3/07

1600 Set up on RW-11

DTW 7.90

Time	DTW	PH	Cond	Turb	DO	Temp	ORP	FR
1610	8.30	6.56	1.76	169	1.75	20.09	-87	200
1615	8.52	6.57	1.75	92.3	1.30	19.96	-89	200
1620	8.72	6.58	1.75	90.6	1.29	19.92	-91	200
1625	8.80	6.57	1.74	90.3	1.19	19.92	-91	200
1630	8.88	6.58	1.73	89.3	1.14	19.92	-92	200
1635	8.90	6.59	1.72	77.2	1.12	19.92	-92	200
1640	8.90	6.59	1.71	85.1	1.08	20.02	-92	200
1645	8.90	6.60	1.71	77.9	1.07	19.93	-93	200
1650	8.90	6.60	1.71	78.4	1.05	19.98	-93	200
1655	8.90	6.61	1.69	46.2	1.03	19.87	-93	200
1700	8.90	6.61	1.70	53.8	1.04	19.95	-93	200
1705	8.90	6.61	1.69	48.4	1.02	19.94	-93	200

1710 Sampled

FE: 3.5

Samples Shipped off to 2 Labs

10/3/07

1720 Set up on MW-18

1715 DTW 7.50

Time	DTW	PH	Cond	Turb	DO	Temp	ORP	FR
1730	7.80	6.30	1.72	224	2.03	19.57	-148	180
1735	7.82	6.26	1.66	302	1.43	19.48	-197	180
1740	7.85	6.25	1.62	240	1.20	19.28	-242	180
1745	7.79	.28	1.55	190	1.02	19.37	-271	180
1750	7.80	6.28	1.55	182	.99	19.37	-270	180
1755	7.80	6.28	1.55	175	.99	17.90	-268	180
1800	6	.28	1.55	161.0	.98	19.39	-265	180
1805	7.80	6.28	1.55	131.0	.97	19.37	-263	180
1810	7.80	6.26	1.54	127.0	.95	19.36	-260	180
1815	7.82	6.25	1.54	118.0	.95	19.41	-258	180
1820	7.82	6.25	1.55	217	.93	19.40	-256	180
1825	7.84	6.25	1.55	181	.93	19.38	-256	180

1830 Sample MW-18

FE: 4.0

1900 Departed Site

UNICAL W1

10/4/07

0730 ARRIVED ON SITE
HELD H&S MEETING
Slip trip fall traffic in side
Bldg.
CAL Auriba U-22 TO 4.00 PH
Load Equipment to Kim High
To Sample R-10 MW. 20, 21

Stoped @ QT for ICE, Gas, Coffee
Weather Clear Light Breeze from
S.E. No Clouds. High to 85

UNICAL WITCH

10/4/07

0745 SET UP ON R-10

DTW: 8.41

TIME	DTW	PH	COND	TURB	DO	TEMP	ORP	FR
0800	8.65	6.69	1.42	344	2.04	19.37	-35	180
0805	8.65	6.73	1.41	297	1.79	19.37	-44	180
0810	8.65	6.74	1.41	281	1.77	19.36	-44	180
0815	8.65	6.75	1.41	302	1.72	19.36	-45	180
0820	8.65	6.79	1.40	400	1.53	19.35	-48	180
0825	8.65	6.80	1.40	301	1.49	19.34	-48	180
0830	8.65	6.81	1.39	314	1.40	19.42	-47	180
0835	8.65	6.82	1.39	332	1.39	19.38	-47	180
0840	8.65	6.82	1.39	379	1.39	19.39	-46	180
0845	8.65	6.83	1.39	223	1.33	19.40	-45	180
0850	8.65	6.83	1.39	253	1.31	19.41	-45	180
0855	8.65	6.82	1.39	327	1.31	19.42	-45	180

0900 Sampled R-10
FE: 0.0

UNICAL WICHTIA

10/4/07

0930 SET UP ON MW-21

DTW - 9.02

TIME	DTW.	PH	COND	TURB	DO	TEMP	ORP	FR
0940	9.30	6.65	1.26	230	2.83	20.71	93	220
0945	9.40	6.66	1.23	258	1.88	20.68	84	220
0950	9.42	6.66	1.23	452	1.65	20.67	78	220
0955	9.50	6.67	1.23	456	1.52	20.65	77	220
1000	9.50	6.68	1.24	372	1.45	20.67	79	220
1005	9.50	6.68	1.24	377	1.39	20.67	79	220
1015	9.50	6.68	1.25	448	1.34	20.63	67	220
1020	9.50	6.68	1.26	323	1.29	20.63	56	220
1025	9.50	6.67	1.27	309	1.27	20.62	55	220
1030	9.50	6.67	1.27	398	1.23	20.55	56	220
1035	9.50	6.67	1.27	388	1.22	20.56	57	220

1040 SAMPLED MW-21

FE: 0.0

SAMPLED INSIDE COLMAN

NOTE: WELL HEAD BOLTS BROKEN OFF

UNICAL WICHTIA

10/4/07

0950 SET UP ON MW-20

DTW: 10.00'

TIME	DTW	PH	COND	TURB	DO	TEMP	ORP	FR
1100	10.15	6.82	1.38	106	4.06	23.05	130	180
1105	10.15	6.81	1.38	149	3.04	22.92	130	180
1110	10.15	6.81	1.37	177	2.73	22.81	129	180
1115	10.15	6.82	1.37	224	2.55	22.77	130	180
1120	10.15	6.82	1.37	229	2.49	22.69	131	180
1125	10.15	6.82	1.37	248	2.42	22.63	133	180
1130	10.15	6.82	1.37	266	2.39	22.61	134	180
1135	10.15	6.82	1.37	257	2.37	22.59	135	180
1140	10.15	6.81	1.36	341	2.31	22.57	136	180
1145	10.15	6.81	1.36	336	2.25	22.49	137	180
1150	10.15	6.81	1.36	386	2.17	22.47	137	180
1155	10.15	6.80	1.36	347	2.15	22.47	137	180

1200 SAMPLED MW-20

IF FOUND PLEASE RETURN TO:

NAME _____

COMPANY _____

STREET _____

CITY _____ STATE ____ ZIP ____

PHONE ____ _____

Reorder part # 101650
Phone # 800-241-6401

JOB BOOK

FROM BEN MEADOWS COMPANY

PROJECT NAME Unical Wichita

PROJECT NUMBER Delineation Smpl

CREW Kim High / John Nettauer

DATE Oct/08 BOOK # 02 OF ____

WEATHER _____

FIELD BOOK
16 PAGE
8 LEAVES
50% RAG

CURVE FORMULAS

$T = R \tan \frac{1}{2} I$

$T = \frac{50 \tan \frac{1}{2} I}{\text{Sin. } \frac{1}{2} D}$

$\text{Sin. } \frac{1}{2} D = \frac{50}{R}$

$\text{Sin. } \frac{1}{2} D = \frac{50 \tan \frac{1}{2} I}{T}$

$R = T \cot. \frac{1}{2} I$

$R = \frac{50}{\text{Sin. } \frac{1}{2} D}$

$E = R \text{ ex. sec } \frac{1}{2} I$

$E = T \tan \frac{1}{4} I$

$\text{Chord def.} = \frac{\text{chord}^2}{R}$

$\text{No. chords} = \frac{I}{D}$

$\text{Tan. def.} = \frac{1}{2} \text{ chord def.}$

The square of any distance, divided by twice the radius, will equal the distance from tangent to curve, very nearly.

To find angle for a given distance and deflection.

Rule 1. Multiply the given distance by .01745 (def. for 1° for 1 ft.) and divide given deflection by the product.

Rule 2. Multiply given deflection by 57.3, and divide the product by the given distance.

To find deflection for a given angle and distance. Multiply the angle by .01745, and the product by the distance.

GENERAL DATA

Right Angle Triangles. Square the altitude, divide by twice the base. Add quotient to base for hypotenuse.

Given Base 100, Alt. $10.10^2 \div 200 = .5$. $100 + .5 = 100.5$ hyp.

Given Hyp. 100, Alt. $25.25^2 \div 200 = 3.125$; $100 - 3.125 = 96.875 =$ Base.

Error in first example, .002; in last, .045.

To find Tons of Rail in one mile of track: multiply weight per yard by 11, and divide by 7.

Leveling. The correction for curvature and refraction, in feet and decimals of feet is equal to $0.574 d^2$, where d is the distance in miles. The correction for curvature alone is closely, $\frac{2}{3} d^2$. The combined correction is negative.

Probable Error. If d_1, d_2, d_3, etc. are the discrepancies of various results from the mean, and if Σd^2 = the sum of the squares of these differences and n = the number of observations, then the probable error of the mean $= \pm 0.6745 \sqrt{\frac{\Sigma d^2}{n(n-1)}}$

MINUTES IN DECIMALS OF A DEGREE

1′	.0167	11′	.1833	21′	.3500	31′	.5167	41′	.6833	51′	.8500
2	.0333	12	.2000	22	.3667	32	.5333	42	.7000	52	.8667
3	.0500	13	.2167	23	.3833	33	.5500	43	.7167	53	.8833
4	.0667	14	.2333	24	.4000	34	.5667	44	.7333	54	.9000
5	.0833	15	.2500	25	.4167	35	.5833	45	.7500	55	.9167
6	.1000	16	.2667	26	.4333	36	.6000	46	.7667	56	.9333
7	.1167	17	.2833	27	.4500	37	.6167	47	.7833	57	.9500
8	.1333	18	.3000	28	.4667	38	.6333	48	.8000	58	.9667
9	.1500	19	.3167	29	.4833	39	.6500	49	.8167	59	.9833
10	.1667	20	.3333	30	.5000	40	.6667	50	.8333	60	1.0000

INCHES IN DECIMALS OF A FOOT

1-16	3-32	⅛	3-16	¼	5-16	⅜	½	⅝	¾	⅞
.0052	.0078	.0104	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729

1	2	3	4	5	6	7	8	9	10	11
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

10-8-07

Delineation Sampling - Unocal

WKS Personel: Kim High, John Mettauer

0930 Onsite - Temp = 60-70 F
Breezy, Clear

1115 Chris Carey (KDHE) onsite
PSA onsite
Conduct H+S Briefing, Review
JSAs

1150 Set up on GP-16 (a) + (b)
Start GP-16
wett zone ~25' bgs

[1240 Anna Kurkell onsite]
Set 5' screen 30-35' bgs for grab sample
Offset ~1 to 2 feet, ~~set 10' screen (15-25)~~
Leave drop out screen 20-25'

1315 Anna conducts more H+S
Emphasis on hand safety
Set up on GP-18a
TD = 25', 15-25' screen
1" PVC

1345 Set up on GP-12

1355 Start GP-12(b)

1415 Stop work for vehicle traffic
Hit water @ ~25' bgs
Total depth 35' bgs
Set 5' screen 30-35' bgs

10-8-07

1435 Check WL at GP-16
shallow GP-16a WL = 12.7' bgs
deep GP-16b WL = 13.3' bgs
WL at GP-18b = DRY.
1510 Set up on GP-21 (deep only)
1535 Total depth @ 20' bgs
weathered shale at 13' bgs
Ground water at ~ 10.5' bgs
Screen 10-20' bgs (Temp)
* John Mettauer to Collect grab Samples at GP-16.
1620 Waiting for wrecker to pull probe out. - Sunk in soft soil.
WL at GP-21 = 14.1' bgs
WL at GP-12b = 12.5' bgs
* Left msg for Catherine Loering w/ Coleman regarding situation.
1600 Sampled GP-16A
1610 " GP-16B
1630 " GP-12B
1725 " GP-21
1725 " GP-21 DUP
1720 PSA Pulled pipe + plugged GP 16A, 16B, 12B w/ bentonite chip.
1815 URS Offsite

10-9-07

0700 URS and PSA Onsite
Meet with Mike Golden
Sign in on USD property
Conduct Tailgate Safety
Weather: 55F (AM) to 80F (PM)
Clear, mild.
0745 Set up at GP-24 (USD property)
* JM to sample USD-13 well w/ Golden.
GP-24 Total depth @ 15'
encountered weathered shale ~ 10' DRY all the way.
Left hole open, no pipe in hole.
0810 Start GP-25 (USD property)
0820 Refusal at 15'
Weathered shale at ~ 14.7'
Dry hole.
0830 Set up on GP-26 (USD) (Si 17)
Hit water at ~7' bgs and ~17' bgs (Sand)
Total depth at 30'
Hole producing large amounts of water
Screen 20-30' bgs GP-26 (b)
0930 Offset ~1' and probe GP-26 (a)

Cont. 10-9-07

Probe hoing 3'/4 no soil sampling
drop pipe in hole
Screen 5-15' bgs.
0900 Sampled USD-13 for VOC
USD-13 DUP
USD-13 MS/MSD
* Shared Samples w/ Golder
0940 Set up on GP-27 (USD)
Moist and Strong odor (13')
PID = 658 ppm. (13')
>1000 (20')
1000 Stop work for H+S -
elevated PID + odor.
Evaluate PPE.
1015 Total depth @ 25' bgs
Weathered Shale. (black)
Set PVC 15-25' Screen (GP-27B)
Offset 1' w 5-15' Screen (GP-27A)
~~* GP-26~~ KH
* lots of water.
1040 Spoke w/ Sandi (Hillman) to
request starting today on
locations. She did not see
a problem w/ that.
1050 Set up on GP-28 (Chevron/Unocal)

Cont. 10-9-07

1120 Total depth @ 20'
Encountered weathered shale
at 18.5' bgs.
Groundwater at ~15' (Silt)
Set 5' Screen (15-20')
1250 Setup at GP-29 (East Side Hillman)
1310 Total Depth @ 15' DRY
10-15' Stuck in Sample.
heave hole open.
Shale at 10' bgs
1340 Set up on GP-30 (Hillman N.) 10"
* 1345 Spoke w/ Harold Frost (Coleman)
Mr. Frost will fix ruts. Easier
for him to take care of it than
for us to call in someone.
1400 Confirm location on grass
w/ David Ryan (Hillman) -
No known utilities.
* Move location GP-31 from
Concrete to Grass. (North side Hillman)
1410 Start GP-31
1420 Total depth 10' - DRY
Shale at 9.5 (weathered)
heave hole open
1500 Met w/ Harold Frost (Coleman)

Cont. 10-9-07

Harold Cleared GP-22 + 23
of site utilities.
1500 Set up on GP-22
1525 Total depth at 15' (Shale)
Set 5' screen 1" PVC
10-15' Screen
Shale at 14.5'
Water at ~ 8' bgs (sand)
1535 Set up at GP-23
1600 Total depth @ 15' DRY
Set 5' Screen (10-15')
1630 PSA Offsite
1730 Relinquish Samples - FedEx.

Delineation Sampling. 10-10-07

0700 ARS Onsite (JM, KH)
JM to meet holder for GW Samples.
Weather: Clear 55-85°F
breezy, mild
0730 PSA Onsite
0740 Contact Tailgate HHS.
0800 Set up at GP-32 (Hillman North)
Groundwater ~13'
Shale at 22.5' weathered
Sand at ~ 17'. (SP Sand at 20)
0830 TD at 25'
Set 5' screen 19-24'
0840 Set up on GP-33 (Hillman)
0905 TD = 30', Set ~~15-25~~ Screen (KH)
Shale at 24.5'
Water at ~~17' bgs~~ 15' bgs (KH)
0930 Start GP-34 (Hillman)
0950 TD = 15' DRY
Shale at 14.5'
Very soft clay 5-11' MOIST
5' Screen (10-15')
1010 Plugged GP-32 Bentonite HT
" GP31 DRY
" GP30 DRY

Cont. 10-10-07

Plugged GP-27 Bentonite HP
↳ DRY.
GP-24 DRY
GP-25 DRY
GP-26 A/B
GP-27 A/B
GP-28 HP
GP-18a
GP-21, 22, 23
GP-33

1050 Provided feedback from LPO - Soil boring install.
1100 PSA Offsite - O
1200 Plugged GP-34 DRY
1230 Relinquish Samples Fedex
JM to take drum inventory.

IF FOUND PLEASE RETURN TO:

NAME _____

COMPANY _____

STREET _____

CITY _____ STATE ____ ZIP ____

PHONE ____ _____

Reorder part # 101650
Phone # 800-241-6401

JOB BOOK

FROM BEN MEADOWS COMPANY

PROJECT NAME Unified Wichita

PROJECT NUMBER Delineation Study

CREW John Mettauer / Kim Hyle

DATE 10/9/07 BOOK # ____ OF ____

WEATHER _____

FIELD BOOK
16 PAGE
8 LEAVES
50% RAG

CURVE FORMULAS

$T = R \tan \frac{1}{2} I$

$T = \frac{50 \tan \frac{1}{2} I}{\text{Sin. } \frac{1}{2} D}$

$\text{Sin. } \frac{1}{2} D = \frac{50}{R}$

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$\text{No. chords} = \frac{I}{D}$

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To find angle for a given distance and deflection.

Rule 1. Multiply the given distance by .01745 (def. for 1° for 1 ft.) and divide given deflection by the product.

Rule 2. Multiply given deflection by 57.3, and divide the product by the given distance.

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Right Angle Triangles. Square the altitude, divide by twice the base. Add quotient to base for hypotenuse.

Given Base 100, Alt. $10.10^2 \div 200 = .5$. $100 + .5 = 100.5$ hyp.

Given Hyp. 100, Alt. $25.25^2 \div 200 = 3.125$; $100 - 3.125 = 96.875 =$ Base.

Error in first example, .002; in last, .045.

To find Tons of Rail in one mile of track: multiply weight per yard by 11, and divide by 7.

Leveling. The correction for curvature and refraction, in feet and decimals of feet is equal to $0.574\,d^2$, where d is the distance in miles. The correction for curvature alone is closely, $\frac{2}{3}d^2$. The combined correction is negative.

Probable Error. If d_1, d_2, d_3, etc. are the discrepancies of various results from the mean, and if Σd^2 = the sum of the squares of these differences and n = the number of observations, then the probable error of the mean =

$$\pm 0.6745 \sqrt{\frac{\Sigma d^2}{n(n-1)}}$$

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9	.1500	19	.3167	29	.4833	39	.6500	49	.8167	59	.9833
10	.1667	20	.3333	30	.5000	40	.6667	50	.8333	60	1.0000

INCHES IN DECIMALS OF A FOOT

1-16	3-32	⅛	3-16	¼	5-16	⅜	½	⅝	¾	⅞
.0052	.0078	.0104	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729

1	2	3	4	5	6	7	8	9	10	11
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

10/9/07

0700 Arrived on site
Held Safety Meeting
0750 went to 1150 for bridge meet
with Mike Gas at West
Golden

10/9/07

0800 Set up on USD-13
DTW: 9.10 Note: No well cover

Time	DTW	pH	Cond	Turb	DO	Temp	ORP	FR
0815	9.10	6.85	2.70	50	2.15	17.75	4	200
0820	9.10	6.85	2.36	405	1.68	18.14	18	200
0825	9.10	6.90	2.36	412	1.65	18.18	20	200
830	9.10	6.90	2.34	362	1.62	18.29	27	200
0835	9.10	6.92	2.27	226	1.54	18.44	39	200
0840	9.10	6.92	2.26	148	1.46	18.59	55	200
0845	9.10	6.92	2.26	133	1.43	18.67	59	200
0850	9.10	6.92	2.24	112	1.39	18.73	63	200
0855	9.10	6.92	2.25	86.2	1.37	18.78	62	200
0900	9.10	6.91	2.25	82.2	1.38	18.78	59	200

0900 Sampled USD-13, USD-13DUP
Split Sample USD-13 MSD/MS
with Golder FR: 0.0

1015 GP 26A DTW: DRY
TD: 15.0'

1020 GP 26B DTW: 9.00
TD: 30.00'
1030 Start Purging very silty
1045 Sampled GP-26B-VOC
GP-26B-DUP split sample Golder

10/9/07

1100 GP-27A DTW 10.65

GP-27B DTW 12.50
1115 Start Purge GP-27A
1130 Sampled GP-27A
1135 Start Purging GP-27B 1 1/2 GL
1140 Sampled GP-27B

1300 Set up on GP-28
DTW: 10.40
1305 Start Purging 1 1/2 GL
1315 Sampled GP-28, GP-28 MS/MSD

1330 DTW-23.50 TD 24.00 GP18A

1540 Set up on GP-22
DTW: 8.85
1600 Sample GP-22 GP-22DUP
Purged 1 1/2 GL
1630 GP-18A 24.40

10/10/07

0710 GP-24 open hole No PVC
DTW 8.85 TD 9.10

GP-25 open hole No PVC
DTW: 12.20 TD 12.70

0730 GP-26A Dry No water
GPS Location

Location	Lat. N	Lon. W
GP 28	37.752876 N	97.309196 W
GP 30 Dry	37.752590 N	97.319150 W
GP 31 Dry	37.752335 N	97.317478 W
GP 29	37.752724 N	97.310600 W
GP 24	37.753120 N	97.309860 W
GP 25	37.753258 N	97.309700 W
GP 26	37.753242 N	97.309540 W
GP 27	37.753113 N	97.309341 W
GP 18	37.754575 N	97.309258 W
GP 16	37.751583 N	97.309471 W
GP 12	37.751572 N	97.308996 W
GP 21	37.751633 N	97.311050 W
GP 22	37.751648 N	97.311409 W
GP 23	37.751640 N	97.311653 W

GP-23 DTW 12.60 TD 15.00
GP 18 DTW - 21.10 T

0830 GP-23 DTW 12.60 TD 15
Sampled GP-23
0845 Set up on GP-18
DTW: 21.16 TD 24.00
0900 Sampled GP-18

0910 GP 32
37.753025 N 97.312744 W
DTW: 18.85 TD 23.30
0930 Sampled GP-32
0940 GP-33
97.753338 N 97.312416 W
TD 23.5 DTW 18.20
1000 Sampled GP-33

DRUMS INV.

Soil	1	Full
"	1	Empty
Purge water	5 1/2	0 Lb Drum
This Sampling	1	Spent
Empty Steel	Fluid	Drums 4
Empty Poly	Fluid	Drum 1