URS

March 27, 2007

Mr. Eric Yunker
Superfund Project Manager
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street (SFD-7-3)
San Francisco, California 94105

06.a4

Re: RAC IX Contract No. 68-W-98-225
Cooper Drum RD WA No. 247-RDRD-091N
Remedial Design Technical Memorandum for Field Sampling Results
Addendum No. 1 Groundwater Monitoring Report August 2006

Dear Mr. Yunker:

URS Corporation (URS) has prepared this Addendum to the July 2006 Remedial Design Technical Memorandum for Field Sampling Results (RDTM) (URS, 2006) to document the results of a site-wide groundwater sampling event conducted at the Cooper Drum Company Superfund Site (Site) located in South Gate, Los Angeles County, California (Figure 1). The groundwater sampling event was performed by URS on behalf of the United States Environmental Protection Agency (EPA) in August 2006, as part of the ongoing monitoring of the groundwater contaminants of concern (COCs) during the Remedial Design (RD). The following pages present a brief background, a description of the monitoring activities and results, and conclusions and recommendations.

BACKGROUND

Site investigation activities performed to fill data gaps prior to completing the RD were initiated in May 2003. Activity results, which included soil sampling, soil gas sampling, monitor well installation and monitored natural attenuation (MNA) sampling, were presented in the July 2006 RDTM. Other activities performed during the RD included an enhanced reductive dechlorination (HRC) field pilot study (from December 2003 to April 2005) and a field pilot study using in situ chemical oxidation (ISCO) with ozone and hydrogen peroxide. The ISCO field pilot study was initiated in July 2005 and completed in June 2006. Both field pilot studies were performed in the general vicinity of the main groundwater source area in the former Hard Wash Area (HWA) (see Figure 2). The HRC field pilot study located within the site source area and the ISCO pilot study was approximately 140 feet downgradient of the HRC test. Both pilot studies were performed within the 100 parts per billion trichloroethene (TCE) isopleth. Both pilot studies were also successful in reducing the site groundwater COCs. The ISCO technology was selected for inclusion into the site groundwater remedy since it was successful in decreasing concentrations of all the groundwater COCs, including 1,4-dioxane and 1,1-dichloroethane (DCA). Figure 3 presents the TCE isopleth map from the previous site sampling event in 2004. Figure 4 is a close-up of the Figure 3, showing the location of the HWA (source area) and the two field pilot studies.

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MONITOR WELL SAMPLING

Within an approximately 48-hour period beginning around noon on August 28 and ending on August 30, 2006, all groundwater monitor wells at the site were sampled and gauged. This included a total of 31 monitor wells and two shallow soil vapor extraction (SVE) wells completed in the perched water beneath the site.

The monitoring protocol employed standard low-flow groundwater sampling techniques with a flow through cell (as specified in the Cooper Drum RD Sampling and Analysis Plan [SAP], URS, 2003).

The monitor wells were sampled by URS personnel with the assistance of a field technician from Blaine Tech Services. During purging water quality parameters including dissolved oxygen, oxidation-reduction potential, temperature, conductivity, turbidity, pH and ferrous iron were monitored and recorded in the field. Groundwater samples were also collected and submitted for analysis of volatile organic compounds (VOCs); 1,4-dioxane; and MNA parameters including alkalinity, chloride, ethane, ethene, methane, nitrate, sulfate, sulfide, total organic carbon and cations. Field parameters measured during well purging and sampling, including water levels prior to and during purging, were recorded on the field data sheets, presented in Attachment A. Groundwater samples were shipped by Federal Express to the EPA Region 9 Laboratory in Richmond, California, within 24 hours of collection. Samples analyzed for VOCs and cations were sent by Federal Express to independent laboratories. The VOCs samples were shipped to Mitkem Corporation in Warwick Rhode Island and the cations were shipped to Liberty Analytical in Cary North Carolina. All samples were transported in a cooler packed with ice, under chain-of-custody protocol.

GROUNDWATER SAMPLING RESULTS

Groundwater elevation contours from the August 2006 sampling event are present on Figure 5. This contour map represents horizontal groundwater flow directions in the shallow (Gaspur) aquifer, which is the impacted aquifer beneath the site requiring groundwater remediation. Water level data shown on the figure also includes data from two wells with the screen interval completed across the perched zone and the shallow aquifer (MW-5 and MW-14) and four wells (MW-16, MW-18, MW-26, and MW-32) completed with in the deeper Exposition Aquifer. Data from these wells were not used in constructing the contours shown on Figure 5. A detailed description of the site lithology, including horizontal and vertical gradients can be found in the RDTM.

VOC and 1,4-dioxane analytical data for the August 2006 sampling event are presented in Table 1. This table also includes historical data from previous sampling events and the two field pilot studies.

Estimated lateral VOC distributions, including TCE; cis-1,2-DCE; vinyl chloride; and 1,4-dioxane are presented on Figures 6 through 9, respectively. The July RDTM presents a detailed discussion of Site COC distribution in the groundwater.

Analytical Data Validation

Tier 3 data validation was performed on 20% of the analytical data presented in this addendum. The electronic data tables provided by the laboratory and the data validation reports are available at the Records Center at the EPA Region 9 in San Francisco. The data validation reports were reviewed and indicate (1) all field and laboratory QC samples were collected as required and (2) the laboratory quality assurance (QA) management and data qualification appear thorough and acceptable for decision making purposes.

CONCLUSIONS AND RECOMMENDATIONS

Based on results of the Augusts 2006 groundwater sampling event the following conclusions are made:

- The groundwater flow direction inferred from water-level data shown on Figure 5 is consistent with previous groundwater flow directions in the shallow aquifer, which shows a generally southern flow direction in eastern portion of the site along Rayo Avenue.
- Reduction in COC concentrations is evident at the site as a result of the two pilot studies. The VOC and 1,4 dioxane distributions shown on Figures 6 through 9 are generally consistent with prior COC distribution observed at the site and presented in the RDTM. However, comparisons of the August 2006 TCE distribution (Figure 5) with the July/Nov 2004 (Figure 2) indicates the 100 micro-grams per liter (µg/L) contour is significantly reduced in both the upgradient and downgradient areas. A similar reduction is also evident for cis-1,2-DCE (see Figure 18 of RD Tech Memo).
- The August 2006 VOC data and MNA parameters indicate MNA may still be a viable option for the site after active remediation is completed. For example in plume, downgradient wells MW-15 (82 to 15 µg/L) and MW-25 (44 to 20 µg/L) have shown higher ratios of cis-1,2-DCE to TCE during this sampling event indicating contaminant breakdown. This condition was previously only observed at on-site wells EW-2 and MW-2.

It is recommended that another site wide groundwater sampling event be performed within the next 8 to 12 months. If similar reductions in site COCs are observed then a MNA analysis should be performed.

If you have any questions or comments regarding this report, please call me at (916) 679-2049.

Sincerely,

URS Corporation

Don Gruber
Task Manager

Attachments:	Table 1	VOC and 1,4-Dioxane Analytical Data
	Figure 1	Site Location Map
	Figure 2	Site Layout and Source Areas
	Figure 3	TCE Concentrations July/November 2004
	Figure 4	HRC and ISCO Field Pilot Test Location
	Figure 5	Groundwater Elevation Contours
	Figure 6	TCE Isopleth Map August 2006
	Figure 7	cis-1,2-DCE Isopleth Map August 2006
	Figure 8	Vinyl Chloride Isopleth Map August 2006
	Figure 9	1,4-Dioxane Isopleth Map August 2006
	Attachment A	Monitor Well Sampling Field Data Sheets

cc. Ms. Lori Parnass, DTSC
Site Repository, South Gate, Ca
Chron File
Project File

Tables

TABLE 1

Cooper Drum Company Superfund Site
VOCs and 1,4-Dioxane Analytical Data

Location	Date	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	VC	1,1-DCA	1,2-DCA	Benzene	1,2-DCPA	1,4-Dioxane	Other VOCs detected
MW-1	Nov-98	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	0.4J	<1.0	<1.0	–	
	Oct-00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	–	2-Hexanone (1J), methylene chloride (0.3J)
	Apr-03	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.2J	<0.5	<0.5	<0.5	–	Chloroform (0.8)
	Jan-04	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.3	<0.5	<0.5	–	Toluene (0.25J), xylenes (0.18J)
	Nov-04	<0.5	0.27J	<0.5	<0.5	<0.5	<0.5	<0.5	2.8	<0.5	<0.5	1.7	None
	Aug-06	<0.5	0.39J	<0.5	<0.5	<0.5	<0.5	<0.5	2.6	<0.5	<0.5	1.7	None
MW-2	Sep-91	–	207	ND	ND	–	–	–	–	–	–	–	
	Jun-92	–	510	346	7	–	–	–	–	–	–	–	
	Oct-96	<1.0	480	660	19	23	8	100	45	–	–	–	
	Oct-98	<10	640	1100	46	46	14	220	97	27	44	–	1,2,3-Trichloropropane (45), chlorobenzene (5.5)
	Nov-98	<1.0	780	1200	32	34	12	190	82	27	42	–	1,2,3-trichloropropane (31), chlorobenzene (6), toluene (2)
	Mar-99	<1.0	800	800	10	19	5	52	20	7	12	–	1,2,3-Trichloropropane (13), chlorobenzene (2)
	Oct-00	0.5	290	730	15	47	9	72	30	7	14	–	Acetone (9), chlorobenzene (6), ethylbenzene (6), toluene (2)
	May-03	<25*	230	790	29	46	<25*	65	<25*	<25*	<25*	–	Bromoform (56)
	Dec-03	<1.0	240	810	13	52	17	75	14	5.1	5.6	–	Toluene (1.6), chlorobenzene (5.6)
	Feb-04	<0.5	220	770	12	48	15	73	19	5.8	6.3	–	Methylcyclohexane (0.63), toluene (1.6), chlorobenzene (6.2)
	Apr-04	<0.5	290	990	10	50	10	86	19	6	6.6	69	Toluene (0.9), chlorobenzene (4.0)
	Jul-04	<2.5	220D	730D	15	46	11	64	<2.5	6.1	5.8	NA	Toluene (1.8J), chlorobenzene (5.4)
	Nov-04	<0.5	270D	790D	19	46JD	23	75D	23	8.2	7.7J	NA	Toluene (0.93), chlorobenzene (4.1), methylcyclohexane (0.66J)
	Apr-05	<0.5	140D(220E)	640D(840E)	11	33JD(38E)	5.8J	61D(61E)	16J	6.2J	5.0J	67	Toluene (0.83J), chlorobenzene (2.6J), methylene chloride (2.6J)
	Nov-05	<0.5	370	900	23	46	21	130	32	16	12	100	Toluene (1.9), chlorobenzene (3.7J)
	Mar-06	<0.5	250D	640D	14	31	15	85	20	10	<5.0	75	
	Aug-06	<0.5	69D	510D	7.9	26	30	64D	22	6.1	5	79	Toluene (0.83) Chlorobenzene (2.5)
MW-3	Nov-98	<1.0	9	2	<1.0	<1.0	<0.5	<1.0	<0.5	<1.0	<1.0	–	Toluene (0.5J)
	Oct-00	<0.5	5	2	<0.5	0.3J	<0.5	<0.5	<0.5	<0.5	<0.5	–	Toluene (0.4)
	Apr-03	<0.5	4	2	<0.5	0.3J	<0.5	<0.5	<0.5	<0.5	<0.5	–	None
	Jan-04	<0.5	4.2	2.8	<0.5	0.29J	<0.5	<0.5	<0.5	<0.5	<0.5	–	Toluene (0.24J), xylenes (0.27J)

TABLE 1

(Continued)

Location	Date	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	VC	1,1-DCA	1,2-DCA	Benzene	1,2-DCPA	1,4-Dioxane	Other VOCs detected
	Jul-04	<0.5	3.3	2.3	<0.5	0.27J	<0.5	<0.5	<0.5	<0.5	<0.5	0.8J	None
	Mar-06	<0.5	3	2.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5J	None
	Aug-06	<0.5	2.8	3.2	<0.5	0.35J	<0.5	<0.5	<0.5	<0.5	<0.5	<0.9	None
MW-4	Nov-98	<1.0	8	14	2	0.9J	0.9	1	0.5	<1.0	<1.0	–	
	Oct-00	<0.5	6	15	2	1	1	4	1	<0.5	0.3J	–	2-Butanone(1), 2-hexanone (3J). toluene (0.5J)
	Apr-03	<1.0	12	38	7	2	2	8	3	<1.0	<1.0	–	None
	Jan-04	<0.5	6.8	23	2.6	0.93	0.86	3.7	1.3	0.23J	<0.5	–	Toluene (0.19J)
	Nov-04	<0.5	15	30D	6.8	3	5	8.4	<0.5	0.42J	<0.5	12	None
	Aug-06	<0.5	11	24D	3.7	2	1.3	8.8	2.8	<0.5	0.67	15	None
MW-5	Jun-92	-	684	90	11	–	–	–	–	–	–	–	
	Oct-96	23	570	440	43	10	7	280	29	–	–	–	
	Oct-98	57	590	580	54	16	14	340	38	13	14	–	1,1,2-Trichlorethane (3.1), 1,2,3-trichloropropane (18), chlorobenzene (37), ethylbenzene (1.3), total xylenes (7.1)
	Nov-98	44	570	670	45	14	11	330	39	13	17	–	1,1,2-Trichloroethane (3), 1,2,3-trichloropropane (20), chloro-benzene (34), ethylbenzene (1), toluene (2), total xylenes (6)
	Mar-99	42	300	300	20	10	9	200	28	11	18	–	1,1,2-Trichloroethane (2), 1,2,3-trichloropropane (20), acetone (5), chlorobenzene (51), ethylbenzene (1), toluene (0.8), total xylenes (3)
	Oct-00	21	60	100	9	3	3	47	12	3	9	–	1,1,2-Trichloroethane (1), 2-hexanone (59), 4-methyl-2-pentanone (1), chlorobenzene (17), toluene (0.5)
	May-03	10	88	200J	6J	3J	3J	78	9J	<10*	<10*	–	Methylene chloride (4), chlorobenzene (9), bromoform (20)
	Dec-03	13	110	270	7	4.4	3.5	110	8.1	1.5	8.3	–	Acetone (2.2), 1,1,2-trichloroethane (0.7), chlorobenzene (7.2), 1,2,3-trichloropropane (8)
	Feb-04	13	91	210	5.9	4.1	1.9	90	8.2	1.3	7.6	–	1,1,2-Trichloroethane (0.93), chlorobenzene (4.6)
	Apr-04	9.8	88	220	<0.5J	3.3	<0.5	86	7.1	<0.5	7	230	1,1,2-Trichloroethane (0.87), chlorobenzene (4.3)

TABLE 1

(Continued)

Location	Date	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	VC	1,1-DCA	1,2-DCA	Benzene	1,2-DCPA	1,4-Dioxane	Other VOCs detected
	Jul-04	12	83D	170D	6	4.1	1.6	86	5.8	1.2	6.7	NA	1,1,2-Trichloroethane (0.72), chlorobenzene (3.6)
	Nov-04	16	100D	220D	8	6	4.1	92D	8.2	1.8	9.3J	NA	1,1,2-Trichloroethane (0.77), chlorobenzene (5.2)
	Apr-05	18	170D(170E)	(360E)	7.6	5	2	170D(130E)	7.1	<0.5	10	170	Toluene (0.31J), chlorobenzene (4.6), 1,1,2-trichloroethane (0.81)methylene chloride (0.90J)
	Nov-05	23	160	270	11	6.1	8.6	150	6.7	2.9	10	190	Chloroethene (0.2J), toluene (0.5J), 1,1,2-trichloroethane (0.7), 1,3-dichloropropane (0.2), chloro-benzene (6.3), 1,2,3-trichloro-propane (11.0), MTBE (1.0)
	Aug-06	7.7	84D	110D	7.8	3.5	1.5	73D	3.5	0.87	4.8	260	1,1,2-Trichloroethane (0.75), chlorobenzene (1.8)
MW-8	Nov-98	<10	150	140	<10	5J	<10	<10	<10	<10		-	Methylene chloride (15J)
	Oct-00	<0.5	58	81	0.5J	4	<0.5	<0.5	<0.5	<0.5	<0.5	-	Methylene chloride (0.4J)
	Jan-04	<0.5	33D	86D	0.51	3.2	<0.5	<0.5	<0.5	<0.5	<0.5	NA	Toluene (0.17J)
	Aug-06	<0.5	7	61D	0.71	2.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.9	None
MW-10	Nov-98	<1	1	4	<1	<1	<1	<1	<1	<1	<1	–	None
	Oct-00	<0.5	1	4	0.4J	<0.5	<0.5	<0.5	<0.5	<0.5		–	None
	May-03	<0.5	26D	9	0.8	0.4J	0.2J	0.4J	0.2J	<0.5	<0.5	–	None
		(<0.5)	25	8	(0.9J)	(0.3J)	(<0.5)	(0.4J)	(<0.5)	(<0.5)	(<0.5)		
	Jan-04	<0.5	20D	12	0.98	0.6	<0.5	0.55	<0.5	<0.5	<0.5	–	Toluene (0.17J, 0.17J)
		(<0.5)	(20D)	14	1.1	0.63	(<0.5)	0.57	(<0.5)	(<0.5)	(<0.5)		
	Nov-04	<0.5	23D	20	1.3	1	0.79	0.58	<0.5	<0.5	<0.5	4.7 (2.8)	None
		(<0.5)	(25D)	19	1.2	0.96	0.81	0.61	(<0.5)	(<0.5)	(<0.5)		
	Aug-06	<0.5	54D	60D	2.8	2.9	<0.5	3.8	<0.5	<0.5	<0.5	23	None
MW-12	Nov-98	<2	38	22	2	1J	<2	<2	<2	<2	<2	–	Methylene chloride (4J)
	Oct-00	<3	31	21	<3	<3	<3	<3	<3	<3	<3	–	None
	May-03	0.34J	25D	30D	3.6	1.4	<0.5	5.2	<0.5	<0.5	<0.5	–	None
	Jan-04	<0.5	37D	43D	8.8	2.7	0.75	11	<0.5	0.29J	<0.5	–	Toluene (0.34J), xylenes (0.45J)
	Aug-06	<0.5	64D	96D	11	3.1	<0.5	17	1	<0.5	<0.5	95	None
MW-14	Nov-98	<1	2	0.6J	<1	<1	<1	<1	<1	<1	<1	–	None
	Oct-00	<0.5	6	51	<0.5	1	<0.5	2	<0.5	<0.5	<0.5	–	Methylene Chloride (0.4J), toluene (0.7)
	Aug-06	<0.5	0.37J	0.36J	0.23J	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	None

TABLE 1

(Continued)

Location	Date	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	VC	1,1-DCA	1,2-DCA	Benzene	1,2-DCPA	1,4-Dioxane	Other VOCs detected
MW-15	Dec-00	1	590	150	10	7	2.2	22	4.1	1	2	–	1,2,3-Trichloroprane (24), chlorobenzene (1), toluene (0.8)
	Feb-01	2	700	170	10	6	2	20	3.7	1	2	–	1,2,3-Trichloroprane (18), chlorobenzene (2)
	May-03	<10*	250	98	9J	3J	<10*	10J	11	<10*	<10*	–	Methylene chloride (19J), bromoform (29J)
	Jan-04	0.30J	360D	160D	6.7	6.5	1.2	14	14	0.85	4.1	–	4-Methyl-2-pentanone (0.27J), chlorobenzene (0.56), xylenes (0.24J)
	Jul-04	<0.5	87D	70D	3.9	3.5	1.1	7.3	3.9	0.43J	1.3	54	None
	Aug-06	<0.5	17	82D	1.1	2.3	<0.5	1.6	2.5	0.36J	<0.5	12	Methylcyclohexane (0.71)
MW-16	Dec-00	<1	<1	<1	<1	<1	<0.5	<1	<0.5	<1	<1	–	
	Feb-01	<1	<1	<1	<1	<1	<0.5	<1	<0.5	<1	<1	–	
	Apr-03	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.2J	<0.5	<0.5	–	None
	Jan-04	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	–	None
	Nov-04	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	None
	Aug-06	<0.5	<0.5	0.25J	<0.5	<0.5	<0.5	<0.5	0.58	<0.5	<0.5	<1.0	
MW-17	Dec-00	<1	3	0.5J	<1	<1	<0.5	0.3J	<1	<1	<1	–	Toluene (0.7)
	Feb-01	<1	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	–	None
	Apr-03	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.2J	<0.5	<0.5	–	None
	Jan-04	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	–	Toluene (0.53), xylenes (0.53)
	Nov-04	<0.5	0.58	0.52	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	None
	Aug-06	<0.5	1.7	2.1	0.34J	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7J	None
MW-18	Dec-00	<1	<1	0.6J	<1	<1	<0.5	<1	0.4J	<1	<1	–	None
	Feb-01	<1	<1	0.5J	<1	<1	<0.5	<1	).3J	<1	<1	–	None
	Apr-03	<0.5	0.2J	0.8J	<0.5	<0.5	<0.5	<0.5	0.2J	<0.5	<0.5	–	None
	Jan-04	<0.5	0.24J	0.72	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	None
	Aug-06	<0.5	0.57	0.96	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.9	cis-1,3-Dichloropropene (0.24J)
MW-19	Dec-00	<1	6700	45	18	9	1.2	31	12	1	<1	–	1,1,2-Trichlorethane (0.7J), acetone (5J)
	Feb-01	<1	5700	33	16	8	1	29	9.7	1	<1	–	1,1,2-Trichlorethane (0.6J)
	May-03	<50*	1,000	<50*	<50*	<50*	<50*	<50*	39J	<50*	<50*	–	Bromoform (93J)
	Jan-04	<0.5	450D	11	2.8J	1.5	0.19J	3	34D	<0.5	<0.5	–	Chloromethane (0.59BJ), cyclohexane (1.8)
	Jul-04	<0.5	99D	4.5	1.6J	0.65	0.25J	0.77	33D	<0.5	<0.5	17	Cyclohexane (2.7) carbon disulfide (0.19J)
	Aug-06	<0.5	94D	13	1.1	1.6	<0.5	0.96	23	<0.5	<0.5	3.7	Cyclohexane (3.0)

TABLE 1

(Continued)

Location	Date	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	VC	1,1-DCA	1,2-DCA	Benzene	1,2-DCPA	1,4-Dioxane	Other VOCs detected
MW-20	Feb-03	5.6	300	110	7.6	5.4	<5.0	32	6.4	–	–	–	
	May-03	<13	520	140	<13	<13	<13	41	<13	<13*	<13*	–	Bromoform (20)
	4-Dec-03	5.2	570	150	16	7.8	3.6	44	7.6	1.1	4.2	–	Chlorobenzene (5.4), 1,2,3-trichloropropane (3.8)
	Feb-04	4.1	490	140	14	7.3	2.8	39	7.8	0.97	4.1	–	1,1,2-Trichloroethane (0.94), chlorobenzene (4.5)
	Apr-04	5.1	670	180	15	8.9	<0.5	48	8	<0.5	4.9	120	1,1,2-Trichloroethane (0.67), chlorobenzene (5.5)
	Jul-04	4	470D	140D	16	7.6	3	45	7.3	1.1	4.3	NA	Chlorobenzene (3.7)
	Nov-04	5.1	770D	200E	24	11	8.3	58D	12	1.2	5.9J	NA	Chlorobenzene (4.8), methylcyclohexane (0.46J)
	Apr-05	2.4	120D(570E)	45D(150E)	7.2	4.6	1.9	13D(34E)	7.9	0.68	3.7	180	Toluene (0.20J), chlorobenzene (2.8), acetone (2.2J), methylene chloride (1.70B)
	12-Jul-05	3.2	520D	200D	18	8.2	4.7	54D	10	0.85	4.4	140	
	28-Jul-05	1.2	210D	98D	3.8	3.5	0.69	22	8.4	0.45J	3.00	150	
	16-Aug-05	2.7	230	81	11	5.5	2.3	30	11	0.5	4.30	160	1,1,2-Trichloroethane (0.40), chlorobenzene (2.3), 1,2,3-trichloropropane (4.4)
	07-Sep-05	2	160	60	6.3	2.6	1.1	24	6.8	0.3	2.6	140	Dibromomethane (1.7), 1,1,2-trichloroethane (0.3), chlorobenzene (1.4), 1,2,3-trichloropropane (3.5), bromoform (19)
	29-Sep-05	1.7	150	50	5.5	2.7	0.8	21	6.3	0.3	2.6	120	Dibromomethane (2.4), 1,1,2-trichloroethane (0.2J), chloro-benzene (1.5), 1,2,3-trichloropropane (3.4), bromoform (20)
	26-Oct-05	2.4	220	71	6.5	3	1	34	6.5	0.4	3.6	120	Dibromomethane (2.9), 1,1,2-trichloroethane (0.4J), chloro-benzene (1.8), 1,2,3-trichloropropane (3.9), bromoform (18J), isobutane (1.8)
	Nov-05	1.1	130	39	5.4	1.8	0.7	22	3.7	0.3	1.8	98	Dibromomethane (2.0), chloro-benzene (0.9), 1,2,3-trichloro-propane (1.8), bromoform (23)

TABLE 1

(Continued)

Location	Date	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	VC	1,1-DCA	1,2-DCA	Benzene	1,2-DCPA	1,4-Dioxane	Other VOCs detected
	18-Jan-06	2.8	240	64	10	4.2	1	34	6.7	0.5	3.5	110	Dibromomethane (2.8), chloro-benzene (1.7), 1,2,3-trichloro-propane (1.1), bromoform (27), chlorodibromomethane (0.3)
	1-Mar-06	0.75	110D	31D	2	1	0.62	16	2.7	<0.5	<0.5	79	Chlorobenzene (0.59), bromoform (46D)
	5-Jun-06	1.8	340	77	15	6	3.1	34	6.3	0.6	3.6	160	1,1,2-trichloroetane (0.3J), chlorobenzene (1.7), bromoform (0.9), 1,2,3-trichloropropane (2.8)
	28-Aug-06	0.99	140D	26	5	2	<0.5	14	3.9	0.40J	2	71	Chlorobenzene (1.0) bromoform (5.7)
MW20B	Jul-05	<0.5	0.3J	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	–	
	Jul-05	<0.5	16	13	<0.5	1.1	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	
	Aug-05	<0.5	19	17	0.2J	1.4	<0.5	0.3J	<0.5	<0.5	<0.5	0.6	1,2,4-Trichlorobenzene (0.2J), naphthalene (0.5J), 1,2,3-trichlorobenzene (0.5J)
	Sep-05	<0.5	18	13	0.2J	1	<0.5	0.4J	<0.5	<0.5	<0.5	0.5	
	Sep-05	<0.5	6.2	8.4	<0.5	0.6	<0.5	0.2J	<0.5	<0.5	<0.5	<1.0	
	Oct-05	<0.5	6	6.9	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	
	Nov-05	<0.5	6.1	14	0.2J	1	0.2J	0.4J	<0.5	<0.5	<0.5	0.8J	
	Jan-06	<0.5	10	17	0.4	1.2	0.3	0.7	0.2	<0.5	<0.5	1.8	Dibromomethane (0.2)
	Mar-06	<0.5	6.3	16	<0.5	0.87	<0.5	0.8	<0.5	<0.5	<0.5	2.2	Chloromethane (0.73)
	Jun-06		11	19	0.4J	1.4	0.4J	0.6				1.9	Carbon disulfide (0.3J)
	Aug-06	<0.5	17	27D	0.68	2	<0.5	1.7	<0.5	<0.5	<0.5	3.7	None
MW-21	3-Dec-03	2.3	870	370	25	14	5.2	61	17	2.7	9.7	–	Chlorobenzene (3.8), 1,2,3-trichloropropane (7.9)
	25-Feb-04	2.2	680	330	27	16J	4.9	51	17	2.6	9.3	–	Acetone (12), methyl acetate (4.7), toluene (0.32), chlorobenzene (3.8)
	24-Apr-04	3	980	490	50J	20	5	80	20	<0.5	11	280	Chlorobenzene (4.9)
	21-Jul-04	2.8	640D	340D	29	15	5.8	69	17	2.6	8.3	NA	Chlorobenzene (4.2)
	Nov-04	2.1	720D	430D	24	11	64D	59D	21	3	8.2J	NA	Toluene (0.25J), chlorobenzene (3.9), carbon disulfide (1.1), cyclo-hexane (0.21J), methylcyclohexane (0.52)
	Apr-05	0.43J	180D(450E)	120D(300E)	13J	11	20	18D(32E)	5.8D(10)	1.5	3.3	170	Toluene (0.17J), chlorobenzene (1.6), carbon disulfide (0.29J), methylene chloride (0.94B)
	Nov-05	<0.5	220	120	28	12	18	35	6	1.6	2.6	240	Chlorobenzene (1.0)

TABLE 1

(Continued)

Location	Date	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	VC	1,1-DCA	1,2-DCA	Benzene	1,2-DCPA	1,4-Dioxane	Other VOCs detected
	Mar-06	<0.5	390D	280D	19	17	23	50	12	2.7	<0.5	360	
	Aug-06	<0.5	260D	260D	20	19	30D	55D	16	3.5	5.5	280	Chlorobenzene (2.9)
MW-22	Jan-04	<0.5	7.2	2.9	<0.5	0.21J	<0.5	<0.5	<0.5	1.8	<0.5		None
	Nov-04	<0.5	9.6	9.7	<0.5	0.53	0.56	0.38J	<0.5	3.7	<0.5	1.1	None
	Aug-06	<0.5	3.2	6.3	<0.5	<0.24J	<0.5	1.2	<0.5	4.1	<0.5	0.9	None
MW-23	Jan-04	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		None
	Nov-04	<0.5	<0.5	0.69	<0.5	<0.5	<0.5	0.21J	<0.5	<0.5	<0.5	2.7	None
	Aug-06	<0.5	<0.5	0.95	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.9	Methyl tert-butyl ether (1.1)
MW-24	Jan-04	<0.5	3.1	1.6	<0.5	<0.5	<0.5	<0.5	1.6	<0.5	<0.5		Chloromethane (0.28J)
	Nov-04	<0.5	3.1	2.3	<0.5	<0.5	<0.5	<0.5	2.3	<0.5	<0.5	<1.0	None
	Aug-06	<0.5	2.1	1.3	<0.5	<0.5	<0.5	<0.5	2.8	<0.5	<0.5	<1.0	None
MW-25	Jan-04	0.33J (0.37J)	50D(50D)	40D (37D)	1.7 (2.3J)	2.9 (3.9)	0.75 (0.98)	4.7J (6.2)	3.3 (5.5J)	0.35J (0.47J)	<0.5 (1.1)		Chlorobenzene (0.48J, 0.55)
	Jul-04	<0.5	62D	64D	1.2	3.3	0.7	2.2	3	0.36J	0.83	9.6	Chlorobenzene (0.22J)
	Aug-06	<0.5	20	44D	0.79	2.3	<0.5	1.1	2.5	0.32J	<0.5	4.3	None
MW-26	Jan-04	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		None
	Nov-04	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	None
	Aug-06	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.9	None
MW-27	Jan-04	<0.5	4.9	2.4	<0.5	0.17J	<0.5	<0.5	1.8	<0.5	<0.5		None
	Jul-04	<0.5	3.4	2.3	<0.5	0.20J	<0.5	<0.5	1.7	<0.5	<0.5	0.5J	None
	Aug-06	<0.5	1.4	0.87	<0.5	<0.5	<0.5	<0.5	0.72	<0.5	<0.5	<1.0	None
MW-28	Jan-04	<0.5	11	10	<0.5	0.48J	<0.5	<0.5	1.8J	<0.5	<0.5		None
	Nov-04	<0.5	18	21	<0.5	1.1	0.73	<0.5	2.4	<0.5	<0.5	<1.0	None
	Aug-06	<0.5	13	15	0.44J	0.77	<0.5	0.74	1.4	<0.5	<0.5	5	None
MW-29	Jan-04	<0.5	16	4.7	<0.5	0.63	<0.5	<0.5	1.5	<0.5	<0.5		None
	Nov-04	<0.5	21	5.7	0.38J	0.96	0.38J	<0.5	<0.5	<0.5	<0.5	2.2	None
	Aug-06	0.21J	59D	45D	2.3	2.4	0.84	7.9	3.9	0.33J	<0.5	NA	Chlorobenzene (0.27J)
MW-30	Jan-04	<0.5	110D	5.1	0.43J	0.84	<0.5	<0.5	2.7	<0.5	<0.5		None
	Jul-04	<0.5	110D	6.1	0.77	1.4	0.20J	0.42J	3.7	<0.5	<0.5	8.5	Cyclohexane (0.69)
	Aug-06	<0.5	180D	9.4	1.1	1.5	<0.5	1.5	5.3	<0.5	<0.5	8.1	Cyclohexane (0.87)e
MW-31	Jan-04	<0.5	79D	22D	1.4	2	<0.5	<0.5	8	0.42J	<0.5		Cyclohexane (2.9), methylcyclo-hexane (1.8)
	Jul-04	<0.5	63D	17	1.3	1.6	0.26J	0.36J	5.5	0.31J	<0.5	17	Cyclohexane (2.0), methylcyclohexane (0.65)
	Aug-06	<0.5	11	4.4	0.49J	<0.5	<0.5	0.49J	<0.5	<0.5	<0.5	2.6	Cyclohexane (0.85), methylcyclohexane (0.86)

TABLE 1

(Continued)

Location	Date	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	VC	1,1-DCA	1,2-DCA	Benzene	1,2-DCPA	1,4-Dioxane	Other VOCs detected
MW-32	Jan-04	<0.5	1.3	0.17J	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		2-Butanone (0.47J), toluene (0.21J)
		(<0.5)	(<0.5)	(<0.5)	(<0.5)	(<0.5)	(<0.5)	(<0.5)	(<0.5)	(<0.5)	(<0.5)		None
	Nov-04	<0.5	0.46J	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	None
	Aug-06	<0.5	0.24J	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.9	None
MW-33A	Jul-05	<0.5	2.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	540	Chloromethane (1.1)
	Jul-05	5.6	940D	190D	29E	12	4.6	50D	8.1	2.5	4.9	630	
	Aug-05	4.6	1200	190	27	15	7.2	49	7.3	2.2	3.9	470	Chlorobenzene (5.1), 1,2,3-trichloropropane (2.4)
	Sep-05	4.9	1200	210	33	11	5.5	52	6.1	2	3.3	500	Toluene (0.2), 1,1,2-trichloroethane (0.30), chlorobenzene (5.0), 1,2,3-trichloropropane (2.1)
	Sep-05	1.6	990	100	9.9	4.3	1.6	19	4.2	0.9	1.9	350	Bromoform (0.30J), chlorobenzene (2.3), 1,2,3-trichloropropane (1.4)
	Oct-05	2.9	450	100	16	6	2.4	26	4.4	1.2	2.7	440	Bromoform (5.4J), chlorobenzene (3.5), 1,2,3-trichloropropane (1.9), dibromomethane (0.6), 1,1,2-trichloroethane (0.2), 3 TICs
	Nov-05	4.4	680	140	20	7.8	3.2	42	5	1	3.4	300	Bromoform (9.8), chlorobenzene (3.3), 1,2,3-trichloropropane (2.5), dibromomethane (1.7), 1,1,2-trichloroethane (0.3)
	Jan-06	1.6	670	74	10	3.7	0.9	18	3.2	0.7	1.4	270	Bromoform (27), chlorobenzene (1.7), 1,2,3-trichloropropane (1.1), dibromomethane (2.8)
	Mar-06	<2.5	280D	33	4.2	<2.5	<2.5	10	<2.5	<2.5	<2.5	170	Bromoform (19)
	Apr-06	0.60	160	25	2.3	1.1	0.3	9.4	1.7	0.3	0.9	140	Bromoform (26), chlorobenzene (0.9), 1,2,3-trichloropropane (0.8), dibromomethane (2.3)
	Apr-06	1.1	260	29	5.0	1.9	0.7	12	1.9	0.3	1.0	120	Bromoform (29), chlorobenzene (1.3), 1,2,3-trichloropropane (0.8), dibromomethane (2.6)
	May-06	0.4	120	14	1.7	0.7	0.2	5.3	0.8	<0.5	0.4	220	Bromoform (24), chlorobenzene (0.5), 1,2,3-trichloropropane (0.4), dibromomethane (1.6)
	Jun-06	1.6	180	62	3.5	2.1	0.6	22.0	2.3	0.3	2.4	99	Bromoform (3.3), chlorobenzene (1.2), 1,2,3-trichloropropane (2.1), dibromomethane (0.7)
	Aug-06	<0.5	130D	41D	2.9	1.6	<0.5	21	<0.5	0.33J	1.5	74	Chlorobenzene (1.1), bromoform (2.1)

TABLE 1

(Continued)

Location	Date	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	VC	1,1-DCA	1,2-DCA	Benzene	1,2-DCPA	1,4-Dioxane	Other VOCs detected
MW-33B	Jul-05	<0.5	39D	41D	1.1	0.5JB	1.9B	1.3	<0.5	<0.5	<0.5	1.4	
	Jul-05	<0.5	26D	30D	<0.5	2.5	<0.5	1.9	<0.5	0.15J	<0.5	2.1	
	Aug-05	<0.5	30	36	2.3	3.8	0.6	2.9	0.5	<0.5	<0.5	2.5	
	Sep-05	<0.5	38	42	2.4	3.3	0.6	2.40	<0.5	<0.5	<0.5	2.0	
	Sep-05	<0.5	34	32	1.5	2.7	<0.5	1.7	<0.5	<0.5	<0.5	<1.0	Pentene (1.1J)
	Oct-05	<0.5	35	28	1	2.1	0.2J	1.2	0.3	<0.5	<0.5	0.6	1,2,3-Trichloropropane (0.2J), 2 TICs
	Nov-05	<0.5	34	28	1.3	2.9	0.3	1.3	0.3	<0.5	<0.5	0.6J	
	Jan-06	<0.5	41	28	1.5	3.1	0.3	1.4	0.4	<0.5	<0.5	0.7	
	Mar-06	<0.5	26D	25D	0.97	1.9	<0.5	1.2	<0.5	<0.5	<0.5	0.8	
	Apr-06	<0.5	30.0	26.0	0.9	1.9	0.3	1.2	<0.5	0.3J	<0.5	0.8	
	May-06	<0.5	24.0	24.0	1.0	1.9	0.2J	1.1	<0.5	<0.5	<0.5	0.8	
	Jun-06	<0.5	25.0	28.0	0.9	2.1	0.2	1.0	0.2J	<0.5	<0.5	1.0	
	Aug-06	<0.5	21	27D	0.95	1.7	<0.5	1.4	<0.5	<0.5	<0.5	0.7 j	None
EW-1	Mar-99	<1.0	190	14	1	0.8J	<0.5	1	0.5	<1.0	<1.0	–	1,2,3-Trichloropropane (4), toluene (0.6), total xylenes (1.1)
	Aug-99	8	310	100	21	4	2.7	50	6.3	2	4	–	1,2,3-Trichloropropane (5), acetone (8), chlorobenzene (5)
	Oct-00	5	310	100	20	5	3	45	5	1	3	–	2-Hexanone (12), chlorobenzene (7), toluene (0.5)
	May-03	<13	380	170J	19	7J	3J	46	3J	<13*	<13*	–	Bromoform (24)
	Dec-03	1	480	230	41	9.8	4.1	70	3.7	1.1	1.9	–	Chlorobenzene (2.6), 1,2,3-trichloropropane (0.8)
	Feb-04	1	450	210	39	9J	3.4	65	5.2	1.3	2.5	–	Chlorobenzene (2.5)
	Apr-04	1.7	790	290	<40UJ	10	<0.5R	83	5.5	1.9	<0.5	550	Chlorobenzene (4.1)
	Jul-04	1.9J	600d	230D	39	9.3	3.7	68	5.8	1.7J	3.2	NA	Chlorobenzene (3.7)
	Nov-04	2.9	830D	250E	53E	13	9.7	75E	7.8	2.1	4.2J	NA	Chlorobenzene (5.9)
	Apr-05	1.4	760D(750E)	240D(230E)	34E	7.8	2.5	60D(43E)	4.3	1.2	2.4	410	Toluene (0.19J), chlorobenzene (3.9), methylene chloride (0.94B)
	Jul-05	0.62	660D	310D	40D	13JD	4.3J	74D	5.6	1.5	2.8	750	
	Jul-05	0.82	530D	190D	43E	11	3.8	35D	4.4	1.3	2.6	860	
	Aug-05	2.3	560	150	27	11	5.1	38	5.0	1.2	2.9	590	Chlorobenzene (4.4), 1,2,3-trichloropropane (1.2)
	Sep-05	3.0	470	140	30	8.6	4.0	53	4.9	1.1	3.0	530	Chlorobenzene (3.9), 1,2,3-trichloropropane (1.4)
	Sep-05	1.1	200	55	8.2	3.0	1.1	22	3.1	0.5	1.8	340	Chlorobenzene (1.9), 1,2,3-trichloropropane (1.0)

TABLE 1

(Continued)

Location	Date	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	VC	1,1-DCA	1,2-DCA	Benzene	1,2-DCPA	1,4-Dioxane	Other VOCs detected
	Oct-05	0.6	190	45	6.1	2	0.6	25	2.5	0.3	1.6	450	Chlorobenzene (1.1), 1,2,3-trichloropropane (1.1)
	Nov-05	0.5	140	38	5.7	3.2	0.7	21	1.6	0.2	1.1	250	Chlorobenzene (0.6), 1,2,3-trichloropropane (0.4J)
	Jan-06	1.9	250	59	12	4.1	1.1	30	3.9	0.7	2.5	420	Chlorobenzene (2.5), 1,2,3-trichloropropane (1.2)
	Mar-06	1.3	210D	53D	6.6	2.6	0.72	27D	3.1	0.52	1.9	420	Chlorobenzene (2.1)
	Apr-06	1.3 (1.3)	210 (220)	40 (41)	5.8 (5.8)	2.1 (2.0)	0.8 (0.7)	23 (23)	3.1 (3.0)	0.4 (0.4)	1.9 (1.9)	420 (370)	Chlorobenzene (1.8, [1.8]), 1,2,3-trichloropropane (1.4, [1.4]) bromoform (0.2J, [0.2J])
	Apr-06	1.2	170.0	41.0	5.9	2.2	0.7	25.0	2.7	0.4	1.8	390.0	Chlorobenzene (1.6), 1,2,3-trichloropropane (1.4) bromoform (0.2J)
	May-06	1.3	200.0	48.0	7.6	2.5	1.0	23.0	3.0	0.5	1.9	410.0	Chlorobenzene (1.8), 1,2,3-trichloropropane (1.5) bromoform (0.7)
	Jun-06	<0.5	65	44	3.7	5.5	0.5	6.2	0.6	0.2	0.5	47	1,2,3-Trichloropropane (0.6)
	Aug-06	<0.5	120D	61D	6.8	2.3	0.31J	38D	3.4	0.46J	2.2	250	Chlorobenzene (0.53)
EW-2	Dec-00	<1.0	150	170	9	10	1.7	20	5.4	2	3	–	1,2,3-Trichloropropane (6), chlorobenzene (2)
	Mar-01	0.6J	130	110	10J	12	2.4	20	<0.5	2	4	–	1,2,3-Trichloropropane (8), chlorobenzene (1)
	May-03	<50	86	1300J	46J	39J	12J	260	46J	20	<50*	–	bromoform (87)
	Dec-03	<1.0	16	1200	72	55	13	320	36	15	11	–	Toluene (2.4), chlorobenzene (9), 1,2,3-trichloropropane (5.4)
	Feb-04	<5.0	140	1000	56	44	12	230	39	14	13	–	Acetone (11), methyl acetate (4.4), cyclohexane (0.56), 4-methyl-2-pentanone (3.2), toluene (2.7), chlorobenzene (10)
	Apr-04	<0.5	270	1200	54E	63J	84J	280	48E	20	15	710 (700)	Cyclohexane (0.67), toluene (3.6), chlorobenzene (10), xylenes (0.62)
	Jul-04	<2.0	130D	390D	27	51	460D	250D	39	14	11	NA	Toluene (2.8), chlorobenzene (6.5), xylenes (1.0J)
	Nov-04	<0.5	130D	210D	34E	72JD	1100D	240D	41E	20	15J	700 (610)	Toluene (3.5, 3.6), chlorobenzene (7.5, 7.3), xylenes (1.2, 1.2), ethyl benzene (<0.5, 0.26J), methylene chloride (0.90J, 0.88B)

TABLE 1

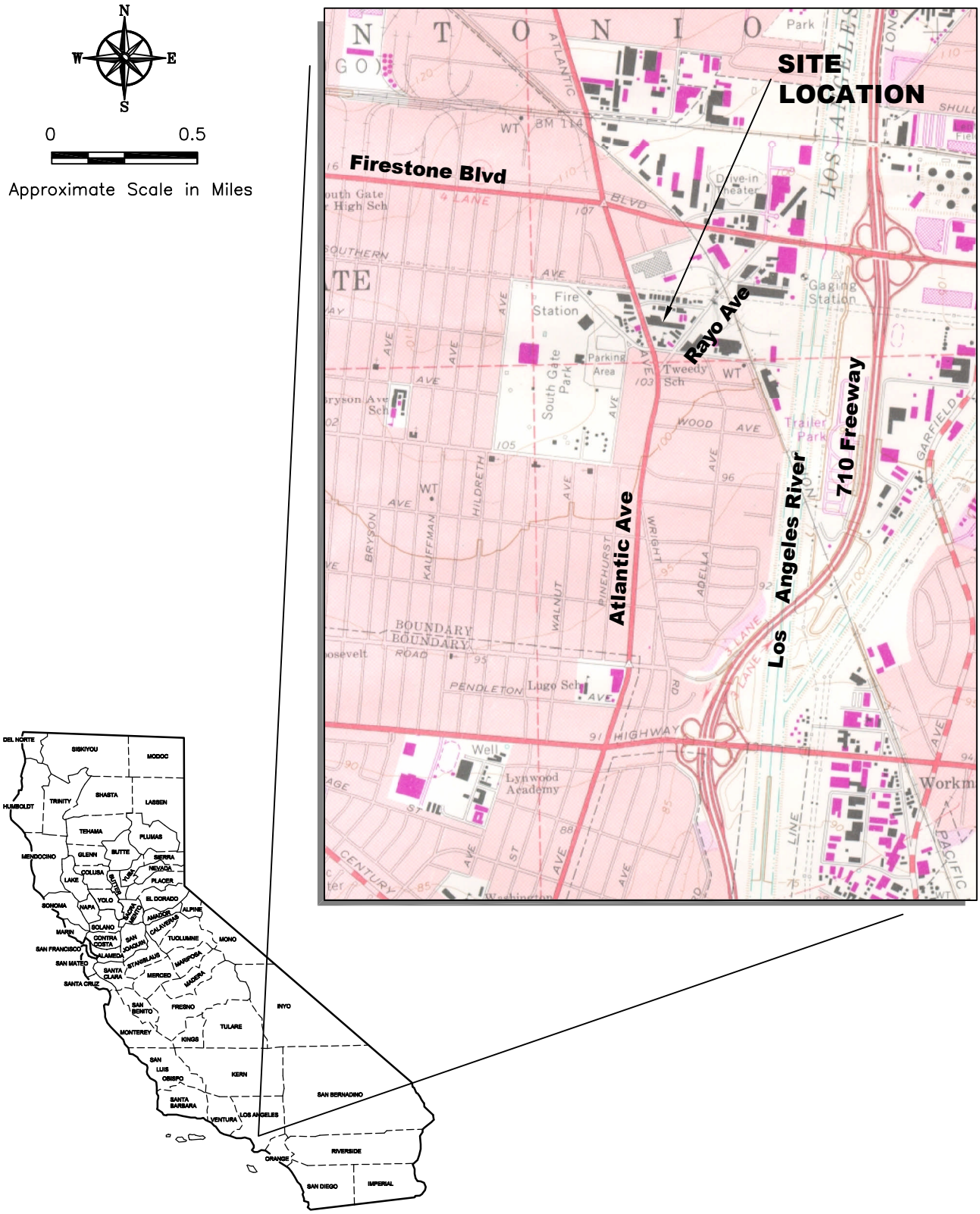
(Continued)

Location	Date	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	VC	1,1-DCA	1,2-DCA	Benzene	1,2-DCPA	1,4-Dioxane	Other VOCs detected
	Apr-05	<0.5	59D(81E)	94D(140E)	12	48D(66E)	310D(360E)	220D(260E)	24	20	12	530 (560)	Toluene (3.3, 3.1), chlorobenzene (9.3, 7.3), xylenes (0.85, 0.72), ethyl benzene (0.26J, 0.20J), methylene chloride (0.90J, 0.88B)
	Nov-05	<0.5	190	120	25	59	430	250	22	16	11	510	Toluene (2.0), chlorobenzene (4.5), xylenes (0.2), 1,2,3-trichloropropane (0.3)
	Mar-06	<0.5	42D	20	4.1	42D	190D	200D	16	12	11	550	Toluene (1.6), chlorobenzene (3.7)
	Aug-06	<0.5	30D	46D	5.4	40D	110D	200D	21	13	9.1	430	Methyl tert-butly ether (1.1), Toluene (2.4), Chlorobenzene (6.8)
SVE-1	Dec-00	10	230	490	9	16	15	110	21	12	29		1,2,3-Trichloropropane (6), chlorobenzene (87), ethylbenzene (32) xylenes (99), toluene (70), see Lab sheet for additional VOCs
	Dec-03	2.5	70	1,100	69	18	140	230	8.2	16	15		Chlorobenzene (32), ethylbenzene (76) xylenes (162), toluene (310), see Lab sheet for additional VOCs
	Jul-04	1.7J	47	370D	7	26	33	81	5.4	6.8	8.5	120	Chlorobenzene (29), ethylbenzene (12) xylenes (33), toluene (51), see Lab sheet for additional VOCs
	Aug-06	5.4	44E	780D	5.8	51D	67D	200D	28	16	20	320	See Lab sheet for additional VOCs
SVE-2	Apr-04	50D	29D	5.9	<0.5	0.55	1.1	76D	<0.5	0.93	<0.5	NA	Acetone (51), 1,1,1-TCA (0.76), see Lab sheet for additional VOCs
	Aug-06	48D	69D	21	1.7	0.86	0.85	59D	<0.5	0.81	<0.5	35	See Lab sheet for additional VOCs

D = Detection associated with sample dilution.
E = Concentration exceeds upper level of instrument calibration range.
J = Estimated value. Value below detection limit
B = Analyte found in associated method blank as well as in sample.
NA = Compound not analyzed.

Duplicate value for 1,4-dioxane from EW-2 shown in parenthesis
Estimated and Dilution values shown for April 2005 sampling round.
HRC Field Pilot Test began third week of December 2003 and have impacted results at wells MW-2, MW-21 and EW-2
ISCO Field Pilot Test initiated on July 19, 2005 and terminated on July 5, 2006. Results at wells MW-20, MW-20B, MW 33-A, MW-33B, and EW-1 have been impacted.

Figures



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Cooper Drum Superfund Site
South Gate, CA

Figure 1
Site Location Map

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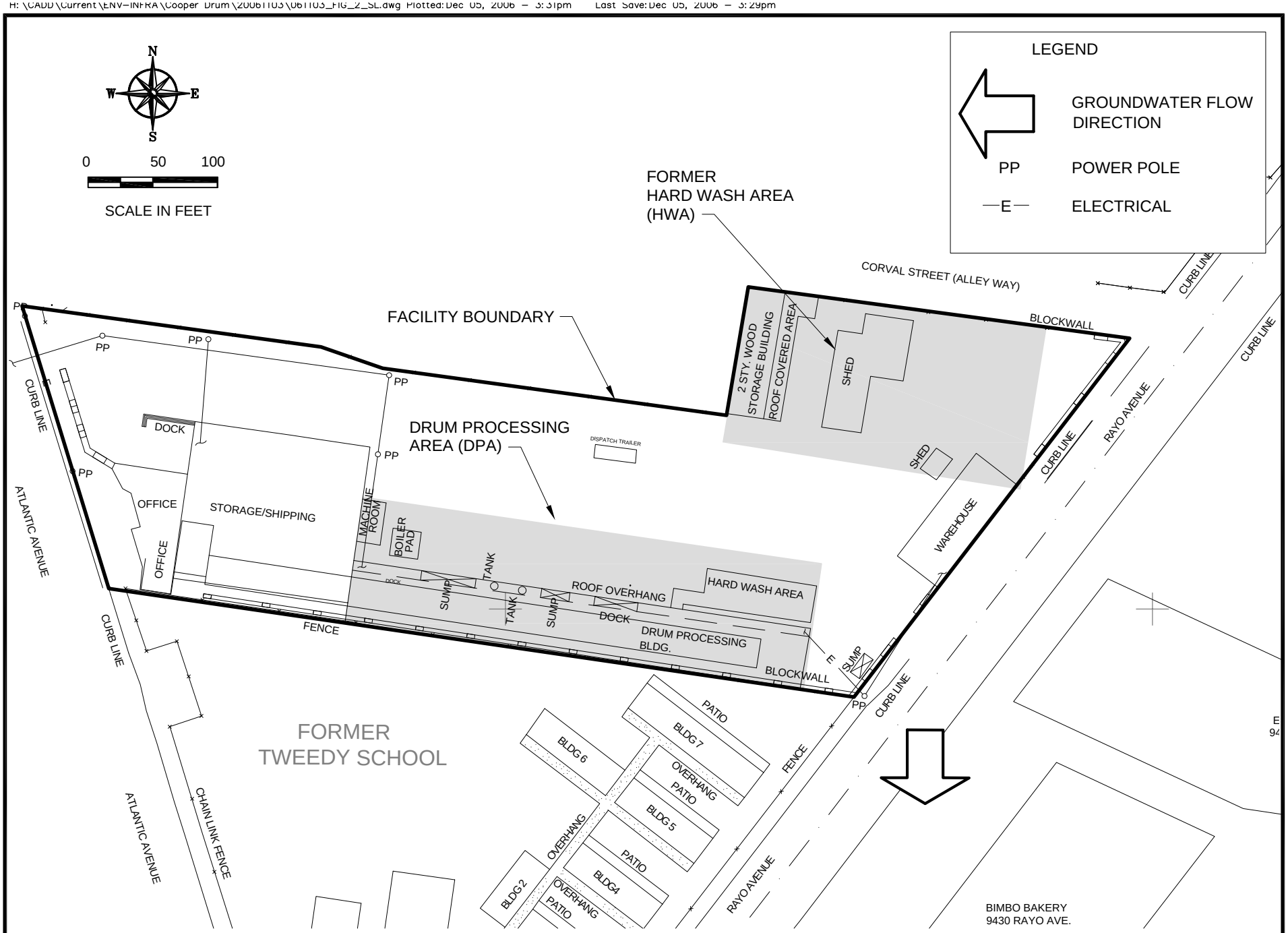

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Figure 2
Site Layout and Source Areas

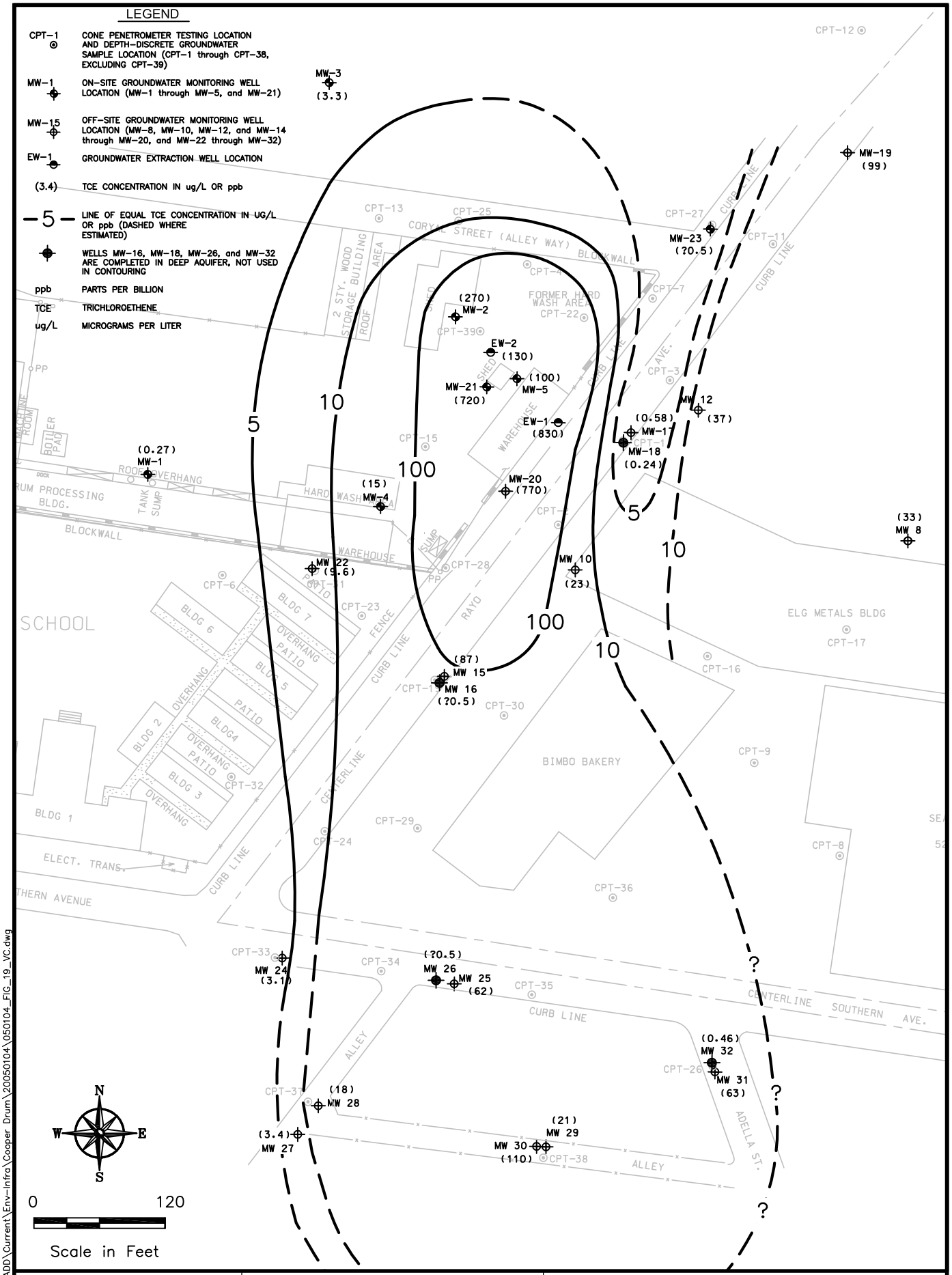

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Figure 3
Site Contaminant Plume and TCE Concentrations, July/November 2004

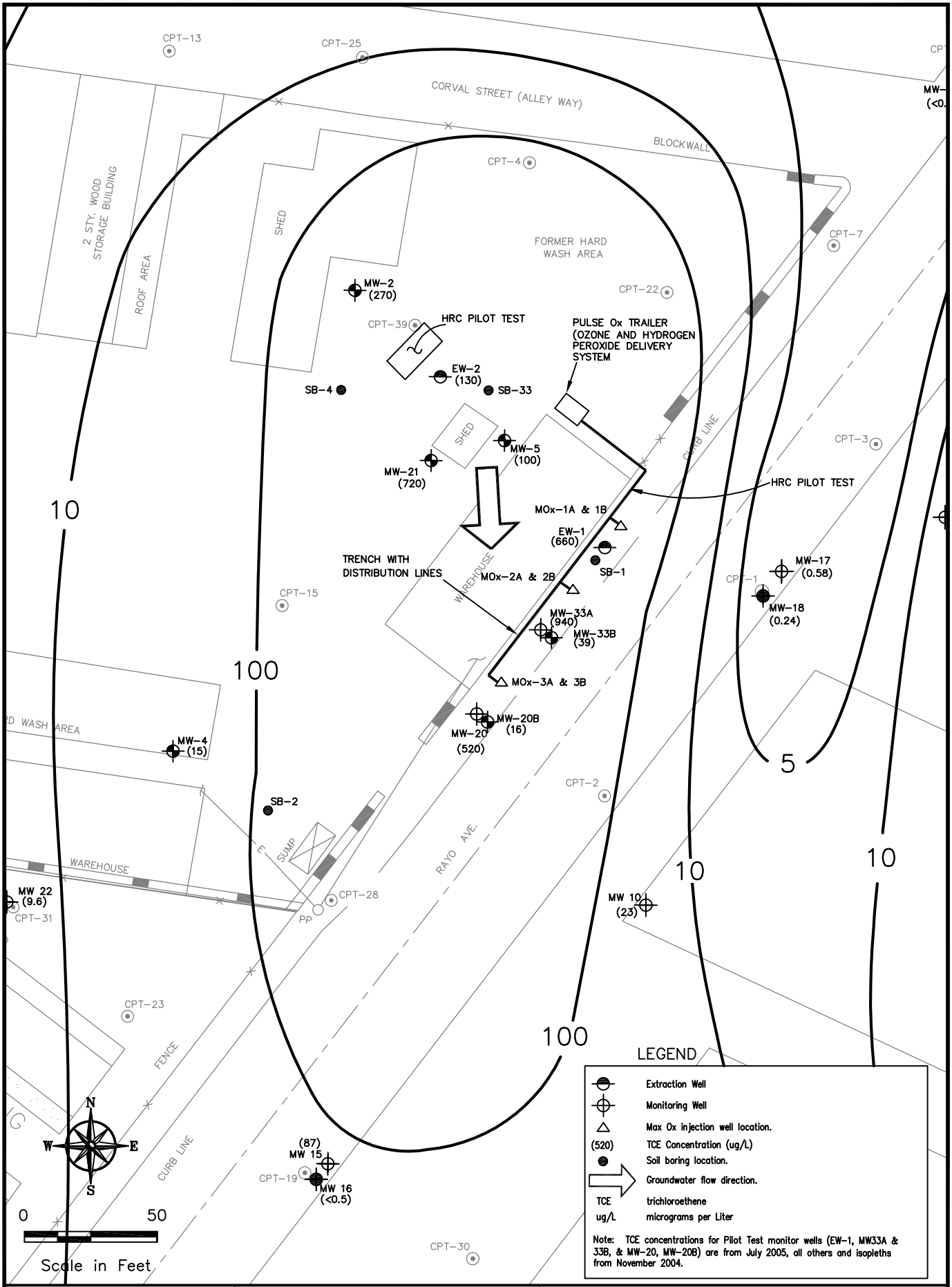

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Figure 4
HRC and ISCO
Field Pilot Test Layout

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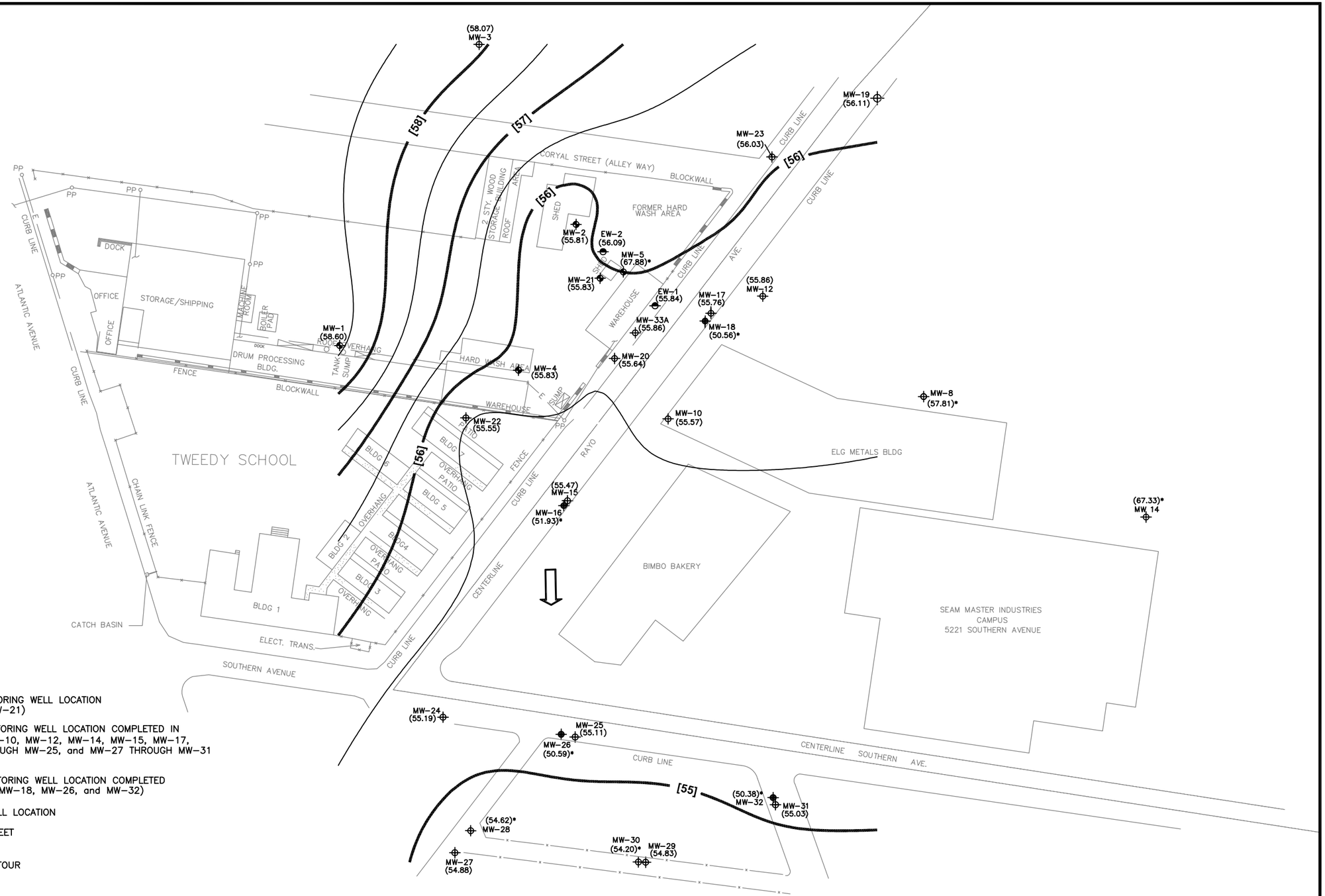
PLOT BY: RTAYLOR - Mar 27, 2007 - 1:08:33pm



LEGEND

- ON-SITE GROUNDWATER MONITORING WELL LOCATION (MW-1 through MW-5, and MW-21)
- OFF-SITE GROUNDWATER MONITORING WELL LOCATION COMPLETED IN SHALLOW AQUIFER (MW-8, MW-10, MW-12, MW-14, MW-15, MW-17, MW-19, MW-20, MW-22 THROUGH MW-25, and MW-27 THROUGH MW-31 AND MW-33A)
- OFF-SITE GROUNDWATER MONITORING WELL LOCATION COMPLETED IN DEEPER AQUIFER (MW-16, MW-18, MW-26, and MW-32)
- GROUNDWATER EXTRACTION WELL LOCATION
- (55.47) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- — [55] — GROUNDWATER ELEVATION CONTOUR
- NM NOT MEASURED
- * NOT USED IN CONTOURING
- GROUNDWATER FLOW DIRECTION

N W E S

120 60 0 120 240

SCALE IN FEET

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FIGURE 5
Groundwater Elevations
AUGUST, 2006

PLOT BY: RTAYLOR - Mar 27, 2007 - 1:28:31pm
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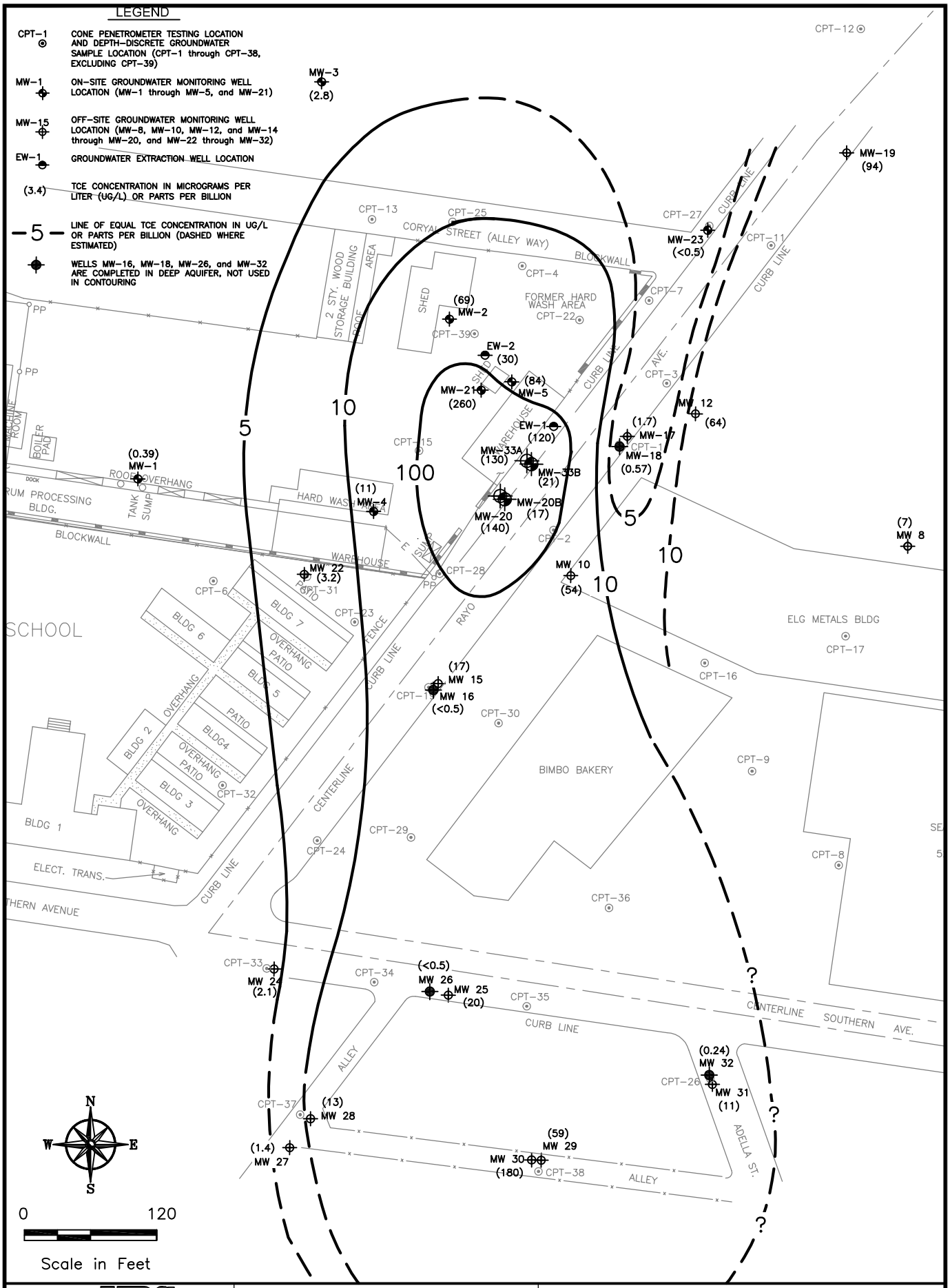

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FIGURE 6
Trichloroethene Isopleth Map
August 2006

PLOT BY: RTAYLOR - Mar 27, 2007 - 1:29:22pm
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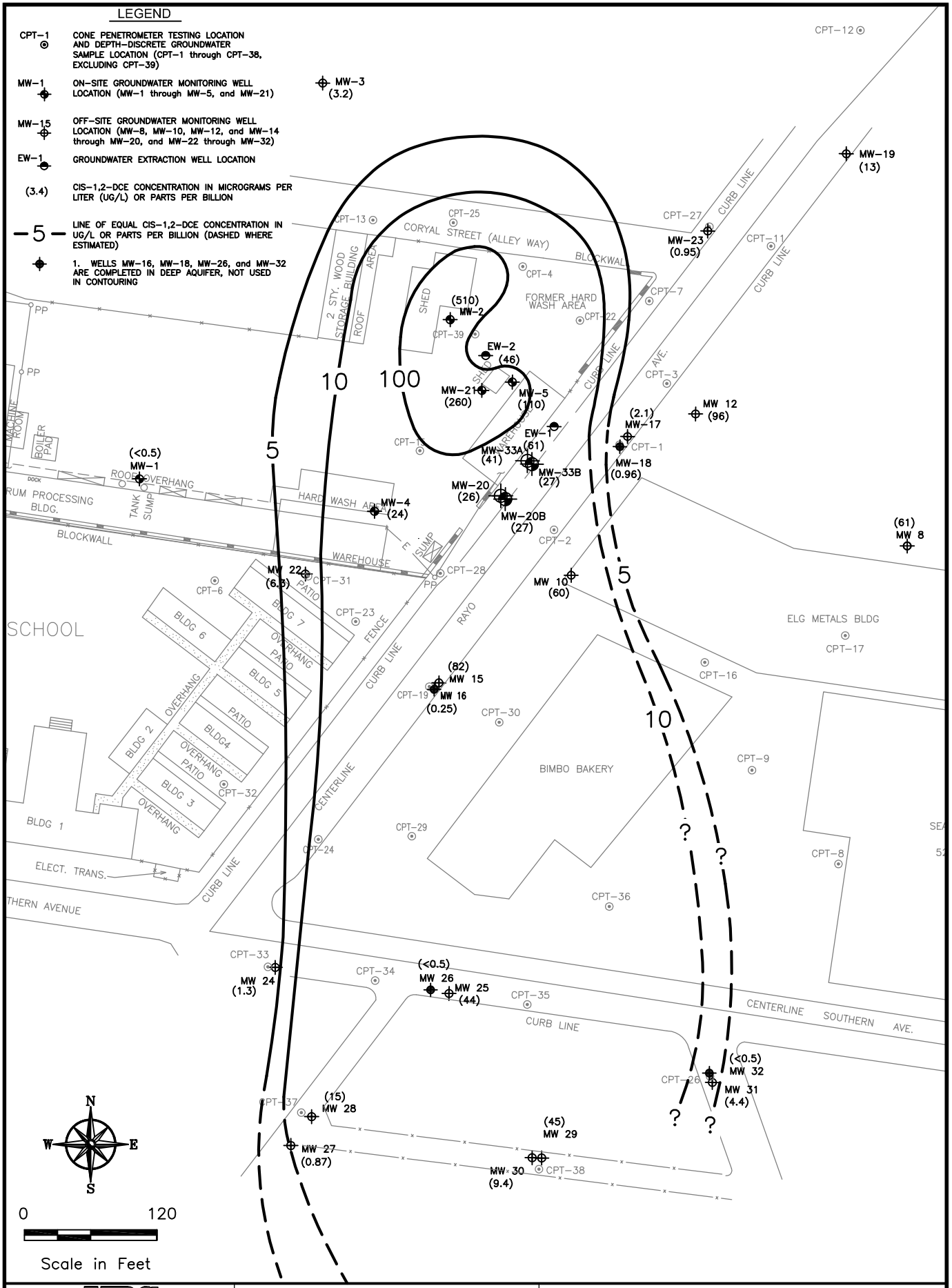

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FIGURE 7
cis-1,2-Dichloroethene Isopleth Map
August 2006

PLOT BY: RTAYLOR - Mar 27, 2007 - 1:30:56pm
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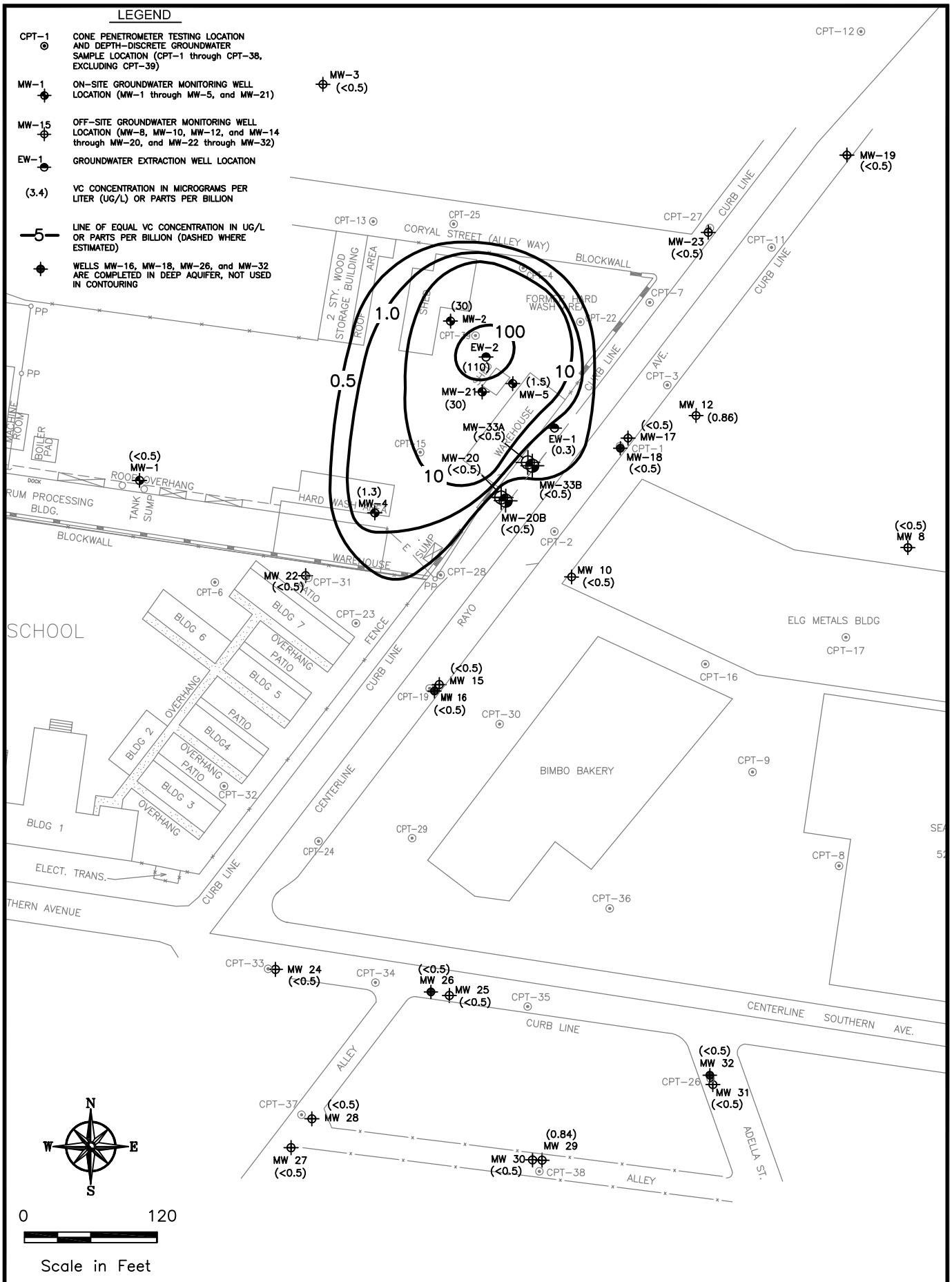

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FIGURE 8
Vinyl Chloride Isopleth Map
August 2006

PLOT BY: RTAYLOR - Mar 27, 2007 - 1:32:38pm
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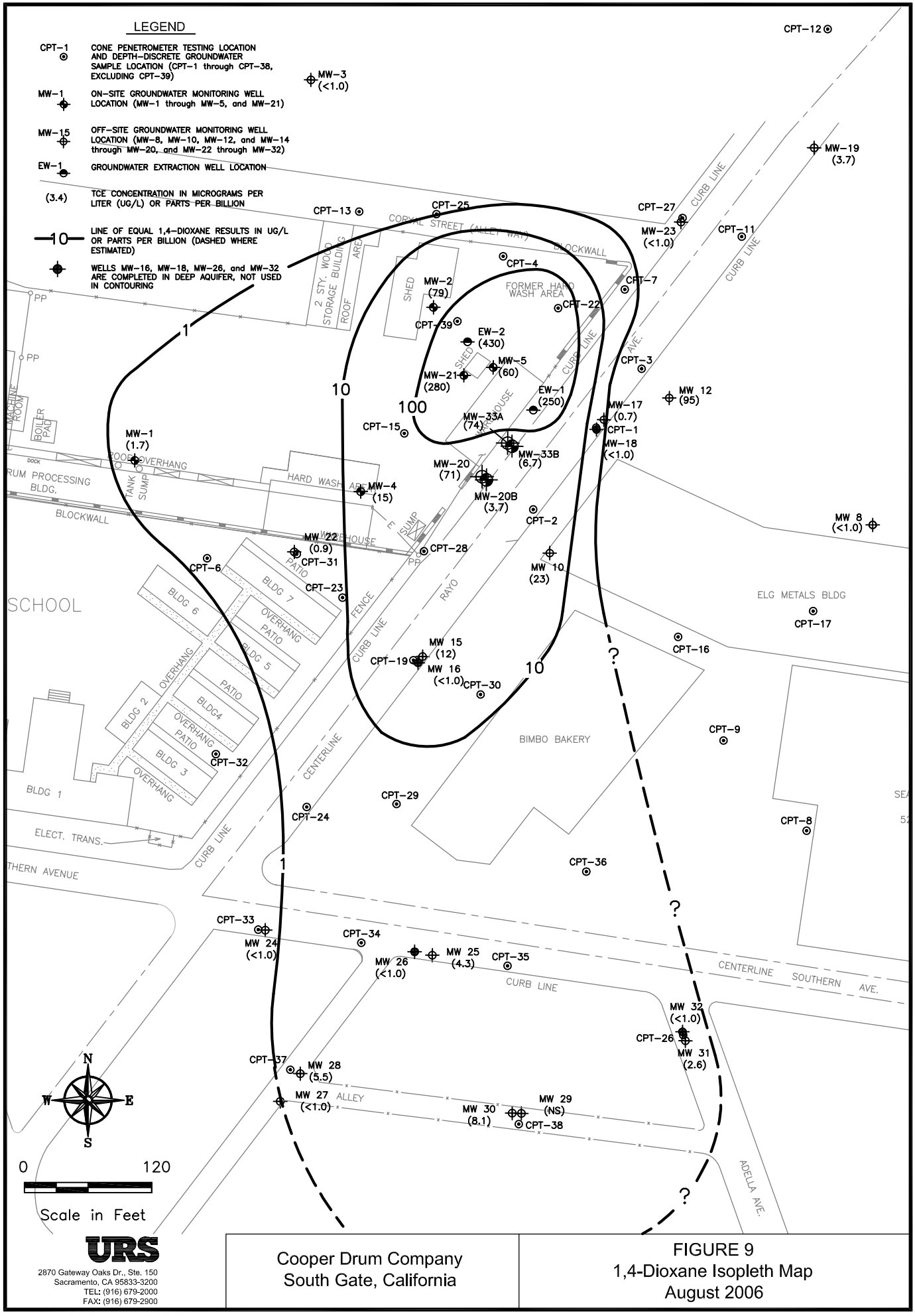

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FIGURE 9
1,4-Dioxane Isopleth Map
August 2006

PLOT BY: RTAYLOR - Mar 27, 2007 - 1:33:11pm
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ATTACHMENT A

Monitor Well Sampling Field Data Sheets

MONITOR WELL NO: MW-1

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-1

Sample No(s):

Sampling Date: 8/29/06

Sampling Method: Direct from dedicated tubing

Sampling Time: 1100

Job No:

Sampler(s): SL/DG

Reviewer(s): Date: 8-29-06

Weather: Sunny

Ambient Temp. (F): 81°

WATER ELEVATION DATA

Method of Measurement: Depth Sounder (Y) N

Other:

Screened interval: 52-84

1) Well Casing Elevation (WCE) ____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 44.23 ft (from casing top as marked)

3) Well Depth (WD): 82.52 (from casing top as marked)

4) Height of Water Column (H) ____ ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) ____ gals (CV x H = VW)

Number of Casing Volumes to Purge (NC) ____ gals

Total Volume of Water to Purge (TV) ____ gals (VW x NC = TC)

Purge Method: 2" Grundfos submersible pump

Purge Date: 8-29-06

Was Well Pumped Dry? Y (N)

Fe^2 (mg/L): 0.6

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate (L/min)	Observations Phys. App.
1046	Start Purge									
1049	22.15	3737	7.16	9	-66.7	0.28	45.34	tw @ 0.9	@ 0.3	
1052	22.02	3742	7.16	7	-72.9	0.30	45.42	@ 1.8		
1055	22.09	3740	7.16	7	-77.5	0.39	45.50	@ 2.7		
1058	22.21	3751	7.17	7	-77.4	0.45	45.56	@ 3.6		
1101	22.37	3754	7.17	7	-75.4	0.44	45.63	@ 4.5		
1104	22.43	3756	7.16	7	-74.9	0.41	45.69	@ 5.4		

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump @ 65'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-2

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-2

Sample No(s):

Sampling Date: 8-28-06

Sampling Method: Direct from dedicated tubing

Sampling Time: 1200

Job No:

Sampler(s): SL/DG

Reviewer(s): Date: 8-28-06

Weather: Sunny

Ambient Temp. (F): 88°

WATER ELEVATION DATA

Method of Measurement: Depth Sounder (Y) N

Other:

Screened interval: 50-82'

1) Well Casing Elevation (WCE) ____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 48.78 ft (from casing top as marked)

3) Well Depth (WD): 81.74 (from casing top as marked)

4) Height of Water Column (H) 32.96 ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Purge Method: 2" Grundfos submersible pump

Single Casing Volume of Water in Well (VW) ____ gals (CV x H = VW)

Purge Date: 8-28-06

Number of Casing Volumes to Purge (NC) ____ gals

Was Well Pumped Dry? Y (N)

Total Volume of Water to Purge (TV) ____ gals (VW x NC = TC)

Fe^2 (mg/L): 7.0

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate (L/min)	Observations Phys. App.
1111	Start	Purge								
1114	23.62	9049	7.08	17	-138.5	0.47	48.88	0.3	0.1	
1117	22.84	9131	7.09	28	-149.6	0.33	48.88	0.6		
1120	22.37	9108	7.10	20	-148.8	0.46	48.88	0.9		
1123	22.72	9094	7.10	21	-148.4	0.41	48.88	1.2		
1126	22.99	9094	7.10	19	-147.6	0.41	48.88	1.5		
1129	23.05	9092	7.10	18	-145.1	0.42	48.88	1.8		

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Sampled @ 65'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-3

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-3

Sample No(s):

Sampling Date: 8/28/06

Sampling Method: Direct from dedicated tubing

Sampling Time: 1530

Job No:

Sampler(s): SL/DG

Reviewer(s): Date: 8-28-06

Weather: Sunny

Ambient Temp. (F): 91°

WATER ELEVATION DATA

Method of Measurement: Depth Sounder (Y) N

Other:

Screened interval: 52-73.5

1) Well Casing Elevation (WCE) _____ ft
(from casing top as marked)

2) Depth to Water Surface (DTW) 45.91 ft
(from casing top as marked)

3) Well Depth (WD): 71.89
(from casing top as marked)

4) Height of Water Column (H) 25.98 ft
(from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Purge Method: 2" Grundfos submersible pump

Single Casing Volume of Water in Well (VW) _____ gals
(CV x H = VW)

Number of Casing Volumes to Purge (NC) _____ gals

Total Volume of Water to Purge (TV) _____ gals
(VW x NC = TC)

Purge Date: 8-28-06

Was Well Pumped Dry? Y (N)

Fe^2 (mg/L): 0.0

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate (L/min)	Observations Phys. App.
1504	Start Purge									
1507	23.73	1324	7.43	18	-183.7	0.27	47.28	AW 0.9	0.3	
1510	24.74	1332	7.42	15	-191.4	0.27	47.33	1.8	↓	
1513	25.25	1336	7.42	16	-184.9	0.26	47.40	2.7		
1516	25.43	1337	7.42	15	-187.2	0.27	47.45	3.6		

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks pump @ 65'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-4

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-4

Sample No(s):

Sampling Date: 8/29/06

Sampling Method: Direct from dedicated tubing

Sampling Time: 12:00

50-

Job No:

Sampler(s): SL/DG

Reviewer(s): Date: 8-29-06

Weather: Sunny

Ambient Temp. (F): 86°

WATER ELEVATION DATA

Method of Measurement: Depth Sounder (Y) N

Other:

Screened interval: 50-82

1) Well Casing Elevation (WCE) ~~47.08~~ tw ft
(from casing top as marked)

2) Depth to Water Surface (DTW) 47.08 ft
(from casing top as marked)

3) Well Depth (WD): 81.98
(from casing top as marked)

4) Height of Water Column (H) 34.90 ft
(from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) gals
(CV x H = VW)

Number of Casing Volumes to Purge (NC) gals

Total Volume of Water to Purge (TV) gals
(VW x NC = TC)

Purge Method: 2" Grundfos submersible pump

Purge Date: 8-29-06

Was Well Pumped Dry? Y (N)

Fe^2 (mg/L): 2.5

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate (L/min)	Observations Phys. App.
1147	start Purge									
1150	22.30	13470	7.05	7	-76.7	0.34	47.81	tw 1.5	0.5	w/ Cond w/
1153	21.97	13464	7.08	6	-87.5	0.34	47.86	3.0		Ultrameter
1156	22.47	13440	7.09	6	-93.9	0.48	47.90	4.5		
1159	22.92	13468	7.12	6	-93.2	0.47	47.86	6.0		
1202	22.98	13500	7.16	6	-104.9	0.29	47.87	7.5		
1205	23.17	13496	7.19	6	-110.2	0.29	47.84	9.0		
1208	23.31	13507	7.20	6	-113.4	0.27	47.86	10.5		

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks pump @ 65'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-5

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-5

Sample No(s):

Sampling Date: 8/29/06

Sampling Method: Direct from dedicated tubing

Sampling Time: 1000

Job No:

Sampler(s): SL/DG

Reviewer(s): Date: 8-29-06

Weather: Hazey

Ambient Temp. (F): 80°

WATER ELEVATION DATA

Method of Measurement: Depth Sounder (Y) N

Other:

Screened interval: 30-75

1) Well Casing Elevation (WCE) ____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 35.54 ft (from casing top as marked)

3) Well Depth (WD): 74.68 (from casing top as marked)

4) Height of Water Column (H) 39.14 ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Purge Method: 2" Grundfos submersible pump

Single Casing Volume of Water in Well (VW) ____ gals (CV x H = VW)

Purge Date: 8-29-06

Number of Casing Volumes to Purge (NC) ____ gals

Was Well Pumped Dry? Y (N)

Total Volume of Water to Purge (TV) ____ gals (VW x NC = TC)

Fe^2 (mg/L): 0.0

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate (L/min)	Observations Phys. App.
0953	Start	Purge								
0956	21.52	3382	7.33	8	-17.1	2.00	35.93	tw 18	0.6	
0959	21.97	3380	7.34	7	-9.2	2.08	35.82	36	↓	
1002	22.21	3384	7.34	6	-5.9	2.22	35.76	54	↓	
1005	22.50	3387	7.34	6	-3.0	2.25	35.71	72	↓	

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump @ 65'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-8

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-8

Sample No(s):

Sampling Date: 8-30-06

Sampling Method: Direct from dedicated tubing

Sampling Time: 0800

Job No:

Sampler(s): SL/DG

Reviewer(s): Date: 8-30-06

Weather: Overcast

Ambient Temp. (F): 70°

WATER ELEVATION DATA

Method of Measurement: Depth Sounder (Y) N

Other:

Screened interval: 41-74.5

1) Well Casing Elevation (WCE) ____ ft (from casing top as marked)

2) Depth to Water Surface (DTW 45.40 ft (from casing top as marked)

3) Well Depth (WD): 68.94 (from casing top as marked)

4) Height of Water Column (H) 23.54 ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Purge Method: 2" Grundfos submersible pump

Single Casing Volume of Water in Well (VW) ____ gals (CV x H = VW)

Number of Casing Volumes to Purge (NC) ____ gals

Total Volume of Water to Purge (TV) ____ gals (VW x NC = TC)

Purge Date: 8-30-06

Was Well Pumped Dry? Y (N)

Fe^2 (mg/L): 0.0

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate (L/min)	Observations Phys. App.
0749	Start	Purge								
0752	21.66	2075	7.25	120	176.0	1.14	45.51	tw ~1.5	~0.5	
0755	21.85	2071	7.24	79	150.9	1.11	45.41	~3.0		
0758	22.33	2071	7.24	104	128.3	1.03	45.41	~4.5		
0801	22.74	2073	7.24	72	112.7	1.04	45.41	~6.0		
0804	23.18	2074	7.24	69	97.5	1.18	45.41	~7.5		
0807	23.42	2072	7.25	53	85.4	0.97	45.47	~9.0		
0810	23.56	2071	7.25	36	~75.0	0.89	45.54	~10.5		
0813	23.72	2069	7.26	28	69.1	0.82	45.61	~12.0		
0816	23.78	2070	7.26	31	68.3	0.76	45.67	~13.5		

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks pump @ ~~70~~ 65'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-10

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-10

Sample No(s):

Sampling Date: 8/30/06

Sampling Method: Direct from dedicated tubing

Sampling Time:

Job No:

Sampler(s): SL/DG

Reviewer(s): Date: 8-30-06

Weather: Hazey

Ambient Temp. (F): 80°

WATER ELEVATION DATA

Method of Measurement: Depth Sounder (Y) N

Other:

Screened interval: 45-74.5

1) Well Casing Elevation (WCE) _____ ft
(from casing top as marked)

2) Depth to Water Surface (DTW) 48.26 ft
(from casing top as marked)

3) Well Depth (WD): 73.87
(from casing top as marked)

4) Height of Water Column (H) 25.61 ft
(from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) _____ gals
(CV x H = VW)

Number of Casing Volumes to Purge (NC) _____ gals

Total Volume of Water to Purge (TV) _____ gals
(VW x NC = TC)

Purge Method: 2" Grundfos submersible pump

Purge Date: 8-30-06

Was Well Pumped Dry? Y (N)

Fe^2 (mg/L): 2.0

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate (L/min)	Observations Phys. App.
0953	Start Purge									
0956	22.17	5581	7.32	160	-65.0	0.35	48.36	1.5	0.5	
0959	22.16	6551	7.28	117	-84.4	0.35	48.34	3.0	↓	
1002	22.55	6654	7.27	115	-89.6	0.35	48.33	4.5	↓	
1005	22.96	6642	7.27	87	-85.3	0.33	48.32	6.0	↓	
1008	23.21	6632	7.26	62	-91.3	0.40	48.31	7.5	↓	
1011	23.52	6587	7.26	43	-98.1	0.37	48.29	9.0	↓	
1014	23.72	6559	7.26	31	-99.4	0.29	48.29	10.5	↓	
1017	23.79	6541	7.26	29	-100.4	0.25	48.29	12.0	↓	
1020	23.82	6554	7.26	26	-99.9	0.23	48.29	13.5	↓	
1023	23.84	6550	7.26	21	-102.8	0.22	48.29	15.0	↓	

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks pump @ 70'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-12

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-12

Sample No(s):

Sampling Date: 8-30-06

Sampling Method: ~~Direct from dedicated tubing~~ Bailed.

Sampling Time: 11:00

Job No:

Sampler(s): SL/DG

Reviewer(s): Date: 8-30-06

Weather: Sunny

Ambient Temp. (F): 86°

WATER ELEVATION DATA

Method of Measurement: Depth Sounder (Y) N

Other:

Screened interval: 42-62

1) Well Casing Elevation (WCE) _____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 48.39 ft (from casing top as marked)

3) Well Depth (WD): 60.92 (from casing top as marked)

4) Height of Water Column (H) 12.53 ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) 8.1 gals (CV x H = VW)

Number of Casing Volumes to Purge (NC) 2 ~~gals~~

Total Volume of Water to Purge (TV) 16.25 gals (VW x NC = TC)

Purge Method: ~~2" Grundfos submersible pump~~ Disp. Bailer

Purge Date: 8-30-06

Was Well Pumped Dry? Y (N)

Fe^2 (mg/L):

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate (L/min)	Observations Phys. App.

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Well not accessible - Bailed 2+ casing volumes and sampled from bailer bottom

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO MW-14

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-14

Sample No(s): 1

Sampling Date: 8-30-06

Sampling Method: Direct from dedicated tubing

Sampling Time:

Job No:

Sampler(s): SL/DG

Reviewer(s): Date: 8-30-06

Weather: Overcast

Ambient Temp. (F): 72°

WATER ELEVATION DATA

Method of Measurement: Depth Sounder Y N

Other:

Screened interval: 30-60'

1) Well Casing Elevation (WCE) ft
(from casing top as marked)

2) Depth to Water Surface (DTW 34.89 ft
(from casing top as marked)

3) Well Depth (WD): 57.76
(from casing top as marked)

4) Height of Water Column (H) 22.87 ft
(from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Purge Method: 2" Grundfos submersible pump

Single Casing Volume of Water in Well (VW) gals
(CV x H = VW)

Purge Date: 8-30-06

Number of Casing Volumes to Purge (NC) gals

Was Well Pumped Dry? Y N

Total Volume of Water to Purge (TV) gals
(VW x NC = TC)

Fe^2 (mg/L): 0.0

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate (L/min)	Observations Phys. App.
0856	Start	Purge								
0859	20.69	927	7.04	4	42.1	1.71	37.08	1.8	0.6	
0902	21.40	926	7.04	3	40.0	1.36	37.34	3.6		
0905	21.81	927	7.05	4	38.9	1.23	37.63	5.4		
0908	22.04	929	7.05	3	35.8	1.16	37.81	7.2		
0911	22.23	930	7.05	3	33.0	1.15	37.91	9.0		
0914	22.45	929	7.05	3	32.9	1.18	38.02	10.8		

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks pump @ ~~88~~ 55'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-15

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-15

Sample No(s):

Sampling Date: 8/29/06

Sampling Method: Direct from dedicated tubing

Sampling Time:

Job No:

Sampler(s): SL/DG

Reviewer(s): Date:

Weather: overcast

Ambient Temp. (F): 74°F

WATER ELEVATION DATA

Method of Measurement: Depth Sounder Y N

Other:

Screened interval:

1) Well Casing Elevation (WCE) ____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 47.30 ft (from casing top as marked)

3) Well Depth (WD): 85.15 (from casing top as marked)

4) Height of Water Column (H) 37.85 ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) ____ gals (CV x H = VW)

Number of Casing Volumes to Purge (NC) ____ gals

Total Volume of Water to Purge (TV) ____ gals (VW x NC = TC)

Purge Method: 2" Grundfos submersible pump

Purge Date: 8/29/06

Was Well Pumped Dry? Y (N)

Fe^2 (mg/L): 3.1 mg/L

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate ~~(L/min)~~ mL	Observations Phys. App.
0753	21.41	5063	7.3	74	-139.2	2.05	47.30	3	1000	
0756	21.98	5386	7.3	36	-170.4	1.68	47.32	6	"	
0759	22.52	5447	7.3	15	-196.5	1.62	"	9	"	
0802	22.69	5450	7.3	14	-211.7	1.59	47.33	12	"	
0805	22.79	5452	7.3	11	-208.7	1.65	"	15	"	
0808	22.84	5452	7.3	11	-220.9	0.93	"	18	"	
0811	22.88	5454	7.3	10	-218.5	0.92	"	21	"	
0814	22.90	5456	7.3	10	-230.6	0.89	"	24	"	

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump Set at 80'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-16

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-16

Sample No(s):

Sampling Date: 8/29/06

Sampling Method: Direct from dedicated tubing

Sampling Time:

Job No:

Sampler(s): SL/DG

Reviewer(s): Date:

Weather: Sunny

Ambient Temp. (F): 85°F

WATER ELEVATION DATA

Method of Measurement: Depth Sounder Y N

Other:

Screened interval:

1) Well Casing Elevation (WCE) _____ ft
(from casing top as marked)

2) Depth to Water Surface (DTW) 50.82 ft
(from casing top as marked)

3) Well Depth (WD): 127.97
(from casing top as marked)

4) Height of Water Column (H) 77.15 ft
(from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) _____ gals
(CV x H = VW)

Number of Casing Volumes to Purge (NC) _____ gals

Total Volume of Water to Purge (TV) _____ gals
(VW x NC = TC)

Purge Method: 2" Grundfos submersible pump

Purge Date: 8/29/06

Was Well Pumped Dry? Y N

Fe^2 (mg/L): 0.2 mg/L

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate ~~mL/min~~ (L/min)	Observations Phys. App.
0905	21.34	2366	7.6	>1000	-246.5	0.51	50.88	3	1000	
0908	21.43	2376	7.5	113	-259.4	0.45	"	6	"	
0911	21.86	2435	7.5	26	-266.3	0.41	"	9	"	
0914	22.18	2557	7.5	10	-280.0	0.43	"	12	"	
0917	22.34	2609	7.5	6	-284.8	0.43	50.90	15	"	
0920	22.40	2638	7.5	4	-291.0	0.46	"	18	"	

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump set at 123'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-17

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-17

Sample No(s): 8/29/06

Sampling Date:

Sampling Method: Direct from dedicated tubing

Sampling Time:

Job No:

Sampler(s): SL/DG

Reviewer(s): Date:

Weather: Sunny

Ambient Temp. (F): 86°F

WATER ELEVATION DATA

Method of Measurement: Depth Sounder Y N

Other:

Screened interval:

1) Well Casing Elevation (WCE) ft
(from casing top as marked)

2) Depth to Water Surface (DTW 47.60 ft
(from casing top as marked)

3) Well Depth (WD): 78.83
(from casing top as marked)

4) Height of Water Column (H) 31.23 ft
(from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) gals
(CV x H = VW)

Number of Casing Volumes to Purge (NC) gals

Total Volume of Water to Purge (TV) gals
(VW x NC = TC)

Purge Method: 2" Grundfos submersible pump

Purge Date: 8/29/06

Was Well Pumped Dry? Y N

Fe^2 (mg/L): 4.2 mg/L

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate mL ~~(L/min)~~	Observations Phys. App.
1017	21.58	11175	7.4	126	-228.6	0.60	47.66	3	1000	
1020	22.07	11351	7.4	14	-252.7	0.50	"	6	"	
1023	22.65	11276	7.3	6	-265.3	0.60	"	9	"	
1026	22.94	11033	7.3	5	-278.0	0.66	47.65	12	"	
1029	23.03	10910	7.3	5	-284.9	0.65	"	15	"	
1032	23.10	10829	7.4	4	-289.5	0.63	"	18	"	
1035	23.14	10782	7.4	4	-298.3	0.65	"	21	"	
1038	23.25	10748	7.4	4	-309.9	0.68	"	24	"	

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump set at 74'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-18

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-18

Sample No(s):

Sampling Date: 8/30/06

Sampling Method: Direct from dedicated tubing

Sampling Time: 12:30

Job No:

Sampler(s): SL/DG

Reviewer(s): Date: 8-30-06

Weather: Sunny

Ambient Temp. (F): 88°

WATER ELEVATION DATA

Method of Measurement: Depth Sounder (Y) N

Other:

Screened interval: 118-128

1) Well Casing Elevation (WCE) ____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 52.86 ft (from casing top as marked)

3) Well Depth (WD): 127.84 (from casing top as marked)

4) Height of Water Column (H) 74.98 ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Purge Method: 2" Grundfos submersible pump

Single Casing Volume of Water in Well (VW) ____ gals (CV x H = VW)

Number of Casing Volumes to Purge (NC) ____ gals

Total Volume of Water to Purge (TV) ____ gals (VW x NC = TC)

Purge Date: 8-30-06

Was Well Pumped Dry? Y (N)

Fe^2 (mg/L): 0.6

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate (L/min)	Observations Phys. App.
1243	Start Purge									
1246	22.62	3646	8.69	907	-192.8	0.23	52.87	1.5	0.5	
1249	22.59	3968	7.54	439	-159.3	0.23	52.86	3.0		
1252	22.60	4140	7.36	162	-150.7	0.23	52.86	4.5		
1255	22.78	4255	7.27	109	-146.4	0.25	52.86	6.0		
1258	22.92	4312	7.25	70	-149.5	0.23	52.86	7.5		
1301	22.93	4338	7.24	51	-152.3	0.22	52.86	9.0		
1304	23.19	4353	7.24	38	-144.5	0.22	52.86	10.5		
1307	23.24	4380	7.23	30	-151.0	0.23	52.86	12.0		

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump @ 123

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-19

Monitor Well Sampling Data

Project: Cooper Drum
Location No: MW-19
Sample No(s):
Sampling Date: 8/28/06
Sampling Method: Direct from dedicated tubing
Sampling Time: 1615

Job No:
Sampler(s): SL/DG
Reviewer(s): Date: 8-28-06
Weather: Sunny
Ambient Temp. (F): 89°

WATER ELEVATION DATA
Method of Measurement: Depth Sounder Y N
Other:
Screened interval: 67-77
1) Well Casing Elevation (WCE) ____ ft
(from casing top as marked)
2) Depth to Water Surface (DTW) 47.94 ft
(from casing top as marked)
3) Well Depth (WD): 77.51
(from casing top as marked)
4) Height of Water Column (H) 29.57 ft
(from casing top as marked)

Product Obs: Y N
Depth to Product:
Method of Measurement: Interface Probe Y N
Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) ____ gals
(CV x H = VW)
Number of Casing Volumes to Purge (NC) ____ gals
Total Volume of Water to Purge (TV) ____ gals
(VW x NC = TC)

Purge Method: 2" Grundfos submersible pump
Purge Date: 8-28-06
Was Well Pumped Dry? Y N
Fe^2 (mg/L): 3.5

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate (L/min)	Observations Phys. App.
1554	Start Purge									
1557	22.89	5866	7.11	58	-131.8	0.29	47.97	1.8	.96	
1600	22.63	5873	7.11	52	-139.5	0.26	47.99	3.6		
1603	23.11	5812	7.10	36	-145.0	0.22	47.98	5.4		
1606	23.44	5757	7.09	28	-148.1	0.22	48.01	7.2		
1609	23.52	5716	7.09	21	-148.4	0.22	48.03	9.0		
1612	23.70	5691	7.08	23	-149.9	0.22	48.01	10.8		

INSTRUCTIONS AND COMMENTS
Purging/Sampling Remarks Pump @ 72

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-20

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-20

Sample No(s):

Sampling Date: 8/28/06

Sampling Method: Direct from dedicated tubing

Sampling Time:

Job No:

Sampler(s): SL/DG

Reviewer(s): Date:

Weather: Sunny

Ambient Temp. (F): 85°F

WATER ELEVATION DATA

Method of Measurement: Depth Sounder (Y) N

Other:

Screened interval:

1) Well Casing Elevation (WCE) ____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 47.20 ft (from casing top as marked)

3) Well Depth (WD): 68.65 (from casing top as marked)

4) Height of Water Column (H) 21.45 ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
(4)	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Purge Method: 2" Grundfos submersible pump

Single Casing Volume of Water in Well (VW) ____ gals (CV x H = VW)

Purge Date: 8/28/06

Number of Casing Volumes to Purge (NC) ____ gals

Was Well Pumped Dry? Y N

Total Volume of Water to Purge (TV) ____ gals (VW x NC = TC)

Fe^2 (mg/L): 0.0 mg/L

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate mL ~~(L/min)~~	Observations Phys. App.
1126	22.95	5308	7.8	249	-267.8	1.29	47.25	3	1000mL	
1129	23.62	5318	7.8	212	-275.2	1.07	47.27	6	"	
1132	24.05	5319	7.8	198	-281.5	0.96	47.24	9	"	
1135	24.24	5326	7.8	198	-286.4	0.91	"	12	"	
1138	24.48	5333	7.7	173	-285.4	1.05	"	15	"	
1141	24.55	5332	7.7	157	-286.2	1.07	"	18	"	
1144	24.69	5338	7.8	145	-292.4	1.02	"	21	"	
1147	24.68	5343	7.8	130	-291.6	1.00	"	24	"	

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump Set at 56'?

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-20B

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-20B

Sample No(s):

Sampling Date: 8/28/06

Sampling Method: Direct from dedicated tubing

Sampling Time:

Job No:

Sampler(s): SL/DG

Reviewer(s): Date:

Weather: Sunny

Ambient Temp. (F): 94°F

WATER ELEVATION DATA

Method of Measurement: Depth Sounder (Y) N

Other:

Screened interval:

1) Well Casing Elevation (WCE) ____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 46.80 ft (from casing top as marked)

3) Well Depth (WD): 89.93 (from casing top as marked)

4) Height of Water Column (H) 43.13 ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
(2)	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) ____ gals (CV x H = VW)

Number of Casing Volumes to Purge (NC) ____ gals

Total Volume of Water to Purge (TV) ____ gals (VW x NC = TC)

Purge Method: 2" Grundfos submersible pump

Purge Date: 8/28/06

Was Well Pumped Dry? Y (N)

Fe^2 (mg/L): 2.2 mg/L

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate mL ~~(L/min)~~	Observations Phys. App.
1240	22.71	8402	8.2	>1000	-336.5	0.50	46.85	3	1000	ODOR
1243	22.80	8471	8.3	566	-354.2	0.38	"	6	"	
1246	23.26	8488	8.3	243	-363.3	0.42	"	9	"	
1249	23.38	8491	8.4	150	-370.0	0.58	"	12	"	
1252	23.30	8495	8.3	91	-374.4	0.62	"	15	"	
1255	23.27	8502	8.3	61	-374.6	0.60	"	18	"	
1258	23.14	8512	8.4	36	-381.6	0.60	"	21	"	

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump set at 85'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-21

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-21

Sample No(s):

Sampling Date: 8/29/06

Sampling Method: Direct from dedicated tubing

Sampling Time: 0915

Job No:

Sampler(s): SL/DG

Reviewer(s): Date: 8-29-06

Weather: Hazey

Ambient Temp. (F): 76°

WATER ELEVATION DATA

Method of Measurement: Depth Sounder (Y) N

Other:

Screened interval: 55-75

1) Well Casing Elevation (WCE) ____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 47.80 ft (from casing top as marked)

3) Well Depth (WD): 74.79 (from casing top as marked)

4) Height of Water Column (H) 26.99 ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) ____ gals (CV x H = VW)

Number of Casing Volumes to Purge (NC) ____ gals

Total Volume of Water to Purge (TV) ____ gals (VW x NC = TC)

Purge Method: 2" Grundfos submersible pump

Purge Date: 8-29-06

Was Well Pumped Dry? Y (N)

Fe^2 (mg/L): 2.2

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate (L/min)	Observations Phys. App.
0855	start	Purge								
0858	21.27	7882	6.96	12	-178.9	0.47	48.11	1.8	0.6	
0901	21.67	7969	6.95	9	-156.4	0.51	48.05	3.6		
0904	22.47	7931	6.93	9	-146.8	0.32	47.98	5.4		
0907	22.59	7886	6.92	10	-142.8	0.26	47.96	7.2		
0910	22.73	7824	6.91	11	-140.0	0.23	47.99	9.0		
0913	22.80	7750	6.90	11	-137.8	0.20	48.04	10.8		
0916	22.81	7699	6.90	11	-136.7	0.20	48.01	12.6		
0919	22.85	7709	6.90	11	-137.0	0.19	48.04	14.4		

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump @ 63', MW-21 DUP (taken @ well) ID. MW-6 @ 0920

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-22

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-22

Sample No(s):

Sampling Date: 8/29/06

Sampling Method: Direct from dedicated tubing

Sampling Time: 0800

Job No:

Sampler(s): SL/DG

Reviewer(s): Date: 8-29-06

Weather: Overcast

Ambient Temp. (F): 74°

WATER ELEVATION DATA

Method of Measurement: Depth Sounder (Y) N

Other:

Screened interval: 63-73

1) Well Casing Elevation (WCE) ____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 47.84 ft (from casing top as marked)

3) Well Depth (WD): 73.38 (from casing top as marked)

4) Height of Water Column (H) 25.54 ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) ____ gals (CV x H = VW)

Number of Casing Volumes to Purge (NC) ____ gals

Total Volume of Water to Purge (TV) ____ gals (VW x NC = TC)

Purge Method: 2" Grundfos submersible pump

Purge Date: 8-29-06

Was Well Pumped Dry? Y (N)

Fe^2 (mg/L): 2.8

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate (L/min)	Observations Phys. App.
0759	Start Purge									
0802	21.43	6831	7.14	126	-95.8	0.32	47.91	tw 0.195	0.065	
0805	21.77	6819	7.15	62	-105.3	0.33	47.96	0.390		
0808	22.56	6813	7.15	37	-110.4	0.53	47.93	0.585		
0811	22.78	6811	7.15	25	-114.9	0.51	47.91	0.780		
0814	22.99	6805	7.15	26	-116.9	0.35	47.92	0.975		
0817	23.16	6793	7.15	17	-115.0	0.29	47.91	1.170		
0820	23.29	6778	7.15	15	-113.6	0.27	47.91	1.365		
0823	23.33	6776	7.15	14	-112.2	0.27	47.91	1.560		

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump @ 68'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-23

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-23

Sample No(s):

Sampling Date: 8/30/06

Sampling Method: Direct from dedicated tubing

Sampling Time:

Job No:

Sampler(s): SL/DG

Reviewer(s): Date:

Weather: cloudy

Ambient Temp. (F): 80°F

WATER ELEVATION DATA

Method of Measurement: Depth Sounder (Y) N

Other:

Screened interval:

1) Well Casing Elevation (WCE) ft
(from casing top as marked)

2) Depth to Water Surface (DTW) 48.12 ft
(from casing top as marked)

3) Well Depth (WD): 79.60
(from casing top as marked)

4) Height of Water Column (H) 31.48 ft
(from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) gals
(CV x H = VW)

Number of Casing Volumes to Purge (NC) gals

Total Volume of Water to Purge (TV) gals
(VW x NC = TC)

Purge Method: 2" Grundfos submersible pump

Purge Date: 8/30/06

Was Well Pumped Dry? Y N

Fe^2 (mg/L): 5.2 mg/L

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate mL ~~(L/min)~~	Observations Phys. App.
0746	21.13	10459	7.2	126	-191.0	0.62	48.12	3	1000	
0749	21.79	10473	7.2	45	-223.1	0.55	"	6	"	
0752	22.37	10458	7.2	36	-237.7	0.67	"	9	"	
0755	22.55	10435	7.2	30	-252.8	0.81	"	12	"	
0758	22.63	10414	7.2	28	-260.2	0.79	"	15	"	
0801	22.69	10409	7.2	27	-268.9	0.78	"	18	"	
0804	22.74	10399	7.2	28	-276.9	0.74	"	21	"	
0807	22.79	10396	7.2	24	-282.2	0.73	"	24	"	

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump Set at 75'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-24

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-24

Sample No(s):

Sampling Date: 8/29/06

Sampling Method: Direct from dedicated tubing

Sampling Time: 1300

Job No:

Sampler(s): SL/DG

Reviewer(s): Date: 8-29-06

Weather: Sunny

Ambient Temp. (F): 90°

WATER ELEVATION DATA

Method of Measurement: Depth Sounder (Y) N

Other:

Screened interval: 70-85

1) Well Casing Elevation (WCE) _____ ft
(from casing top as marked)

2) Depth to Water Surface (DTW) 46.80 ft
(from casing top as marked)

3) Well Depth (WD): 85.24
(from casing top as marked)

4) Height of Water Column (H) _____ ft
(from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) _____ gals
(CV x H = VW)

Number of Casing Volumes to Purge (NC) _____ gals

Total Volume of Water to Purge (TV) _____ gals
(VW x NC = TC)

Purge Method: 2" Grundfos submersible pump

Purge Date: 8-29-06

Was Well Pumped Dry? Y (N)

Fe^2 (mg/L): 3.0

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate (L/min)	Observations Phys. App.
1238	Start	Purge								
1241	24.20	4056	7.11	9	-123.1	0.35	46.84	1.5	0.5	
1244	23.62	4094	7.10	6	-136.3	0.30	46.83	3.0	↓	
1247	23.91	4078	7.10	6	-135.8	0.29	46.84	4.5		
1250	23.93	4077	7.10	6	-134.8	0.30	46.83	6.0		

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks pump @ 80'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-25

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-25

Sample No(s):

Sampling Date: 8/29/06

Sampling Method: Direct from dedicated tubing

Sampling Time:

Job No:

Sampler(s): SL/DG

Reviewer(s): Date:

Weather: Sunny

Ambient Temp. (F): 96°F

WATER ELEVATION DATA

Method of Measurement: Depth Sounder Y N

Other:

Screened interval:

1) Well Casing Elevation (WCE) ft
(from casing top as marked)

2) Depth to Water Surface (DTW 46.68 ft
(from casing top as marked)

3) Well Depth (WD): 88.80
(from casing top as marked)

4) Height of Water Column (H) 42.12 ft
(from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) gals
(CV x H = VW)

Number of Casing Volumes to Purge (NC) gals

Total Volume of Water to Purge (TV) gals
(VW x NC = TC)

Purge Method: 2" Grundfos submersible pump

Purge Date: 8/29/06

Was Well Pumped Dry? Y N

Fe^2 (mg/L): 3.8 mg/L

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate ~~(L/min)~~ ML	Observations Phys. App.
1235	23.20	5207	7.6	78	-247.6	0.66	46.77	3	1000	
1238	22.67	5239	7.6	80	-283.4	0.45	"	6	"	
1241	23.26	5262	7.7	63	-304.2	0.41	46.73	9	"	
1244	23.37	5262	7.7	52	-316.6	0.51	"	12	"	
1247	23.44	5263	7.7	51	-325.2	0.54	"	15	"	
1250	23.44	5263	7.7	40	-333.4	0.53	"	18	"	
1253	23.52	5260	7.7	40	-336.7	0.49	"	21	"	

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump Set at 85'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-26

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-26

Sample No(s):

Sampling Date: 8/29/06

Sampling Method: Direct from dedicated tubing

Sampling Time:

Job No:

Sampler(s): SL/DG

Reviewer(s): Date:

Weather: Sunny

Ambient Temp. (F): 80°F

WATER ELEVATION DATA

Method of Measurement: Depth Sounder Y N

Other:

Screened interval:

1) Well Casing Elevation (WCE) ft
(from casing top as marked)

2) Depth to Water Surface (DTW) 51.35 ft
(from casing top as marked)

3) Well Depth (WD): 131.91
(from casing top as marked)

4) Height of Water Column (H) 80.56 ft
(from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) gals
(CV x H = VW)

Number of Casing Volumes to Purge (NC) gals

Total Volume of Water to Purge (TV) gals
(VW x NC = TC)

Purge Method: 2" Grundfos submersible pump

Purge Date: 8/29/06

Was Well Pumped Dry? Y (N)

Fe^2 (mg/L): 0.2 mg/L

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate mL ~~(L/min)~~	Observations Phys. App.
1128	22.28	2102	7.8	50	-287.0	0.57	51.40	3	1000	
1131	22.36	2113	7.8	21	-312.8	0.40	51.48	6	"	
1134	22.57	2198	7.8	12	-328.8	0.36	"	9	"	
1137	22.64	2215	7.9	10	-338.6	0.34	51.50	12	"	
1140	22.64	2223	7.9	9	-343.5	0.34	51.50	15	"	
1143	22.70	2222	7.9	10	-347.8	0.36	"	18	"	
1146	22.70	2222	7.9	10	-354.6	0.36	"	21	"	

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump set at 127'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-27

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-27

Sample No(s): /

Sampling Date: ~~MW-27~~ 8/29/06

Sampling Method: Direct from dedicated tubing

Sampling Time: ~~1500~~ 1530

Job No:

Sampler(s): SL/DG

Reviewer(s): Date: 8-29-06

Weather: Sunny

Ambient Temp. (F): 95°

WATER ELEVATION DATA

Method of Measurement: Depth Sounder (Y) N

Other:

Screened interval: 75-90

1) Well Casing Elevation (WCE) ____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 46.74 ft (from casing top as marked)

3) Well Depth (WD): 90.13 (from casing top as marked)

4) Height of Water Column (H) 43.39 ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Purge Method: 2" Grundfos submersible pump

Single Casing Volume of Water in Well (VW) ____ gals (CV x H = VW)

Purge Date: 8-29-06

Number of Casing Volumes to Purge (NC) ____ gals

Was Well Pumped Dry? Y (N)

Total Volume of Water to Purge (TV) ____ gals (VW x NC = TC)

Fe^2 (mg/L): 3.0

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate (L/min)	Observations Phys. App.
1428	Start Purge									
1431	23.81	4660	7.02	9	-102.8	0.26	46.74	~~Qm~~ 1.5	~~Qm~~ 0.5	
1434	22.86	4701	7.04	6	-111.9	0.30	46.74	~~Qm~~ 3.0	↓	
1437	22.89	4692	7.04	6	-112.7	0.28	46.74	~~Qm~~ 4.5		
1440	23.10	4691	7.04	6	-117.8	0.30	46.74	~~Qm~~ 6.0		

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks pump @ 85'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-28

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-28

Sample No(s):

Sampling Date: 8/29/06

Sampling Method: Direct from dedicated tubing

Sampling Time: 1300

Job No:

Sampler(s): SL/DG

Reviewer(s): Date: 8-29-06

Weather: Sunny

Ambient Temp. (F): 93°

WATER ELEVATION DATA

Method of Measurement: Depth Sounder Y N

Other:

Screened interval: 104-114

1) Well Casing Elevation (WCE) ____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 46.91 ft (from casing top as marked)

3) Well Depth (WD): 114.04 (from casing top as marked)

4) Height of Water Column (H) 67.13 ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) ____ gals (CV x H = VW)

Number of Casing Volumes to Purge (NC) ____ gals

Total Volume of Water to Purge (TV) ____ gals (VW x NC = TC)

Purge Method: 2" Grundfos submersible pump

Purge Date: 8-29-06

Was Well Pumped Dry? Y (N)

Fe^2 (mg/L): 1.8

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate (L/min)	Observations Phys. App.
1344	Start	Purge		792						
1347	23.79	5184	7.00		-116.8	0.31	47.08	1.5	0.5	
1350	23.04	4091	7.05	68	-129.9	0.30	47.01	3.0		
1353	23.50	4729	7.03	26	-130.8	0.20	47.00	4.5		
1356	23.52	4841	7.04	19	-132.4	0.23	46.96	6.0		
1359	23.49	5176	7.03	14	-133.9	0.19	46.94	7.5		
1402	23.55	5179	7.04	14	-134.4	0.21	46.91	9.0		
1405	23.51	5074	7.04	12	-136.7	0.20	46.91	10.5		

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks pump at 109'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-29

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-29

Sample No(s): _____

Sampling Date: 8/30/06

Sampling Method: Direct from dedicated tubing

Sampling Time: _____

Job No: _____

Sampler(s): SL/DG

Reviewer(s): _____ Date: _____

Weather: Sunny

Ambient Temp. (F): 90°F

WATER ELEVATION DATA

Method of Measurement: Depth Sounder (Y) N

Other: _____

Screened interval:

1) Well Casing Elevation (WCE) _____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 46.30 ft (from casing top as marked)

3) Well Depth (WD): 89.90 (from casing top as marked)

4) Height of Water Column (H) 43.60 ft (from casing top as marked)

Product Obs: Y N

Depth to Product: _____

Method of Measurement: Interface Probe Y N

Other: _____

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
(4)	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) _____ gals (CV x H = VW)

Number of Casing Volumes to Purge (NC) _____ gals

Total Volume of Water to Purge (TV) _____ gals (VW x NC = TC)

Purge Method: 2" Grundfos submersible pump

Purge Date: 8/30/06

Was Well Pumped Dry? Y (N)

Fe^2 (mg/L): 5.1 mg/L

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate ~~(L/min)~~	Observations Phys. App.
1020	21.72	6984	7.3	>1000	-208.3	0.41	46.36	3	1000	
1023	22.35	6950	7.2	540	-236.0	0.45	46.33	6	"	
1026	22.71	6948	7.3	412	-260.0	0.51	46.33	9	"	
1029	22.76	6940	7.3	352	-265.4	0.49	"	12	"	
1032	22.81	6954	7.3	277	-276.8	0.47	"	15	"	
1035	22.83	69.80	7.3	224	-282.6	0.44	"	18	"	
1038	22.90	7003	7.3	166	-288.7	0.45	"	21	"	
1041	22.96	7019	7.3	145	-291.1	0.45	"	24	"	

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump set at 85'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: mw-30

Monitor Well Sampling Data

Project: Cooper Drum

Location No: mw-30

Sample No(s):

Sampling Date: 8/30/06

Sampling Method: Direct from dedicated tubing

Sampling Time:

Job No:

Sampler(s): SL/DG

Reviewer(s): Date:

Weather: cloudy

Ambient Temp. (F): 85°F

WATER ELEVATION DATA

Method of Measurement: Depth Sounder (Y) N

Other:

Screened interval:

1) Well Casing Elevation (WCE) ____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 46.88 ft (from casing top as marked)

3) Well Depth (WD): 114.30 (from casing top as marked)

4) Height of Water Column (H) 67.42 ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) ____ gals (CV x H = VW)

Number of Casing Volumes to Purge (NC) ____ gals

Total Volume of Water to Purge (TV) ____ gals (VW x NC = TC)

Purge Method: 2" Grundfos submersible pump

Purge Date: 8/30/06

Was Well Pumped Dry? Y (N)

Fe^2 (mg/L): 2.9 mg/L

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate mL/min (~~L/min~~)	Observations Phys. App.
0903	21.68	5500	7.5	35	-237.9	0.66	47.40	3	1000	
0906	21.46	6370	7.3	283	-231.6	0.46	"	6	"	
0909	21.74	6440	7.3	78	-248.0	0.48	"	9	"	
0912	21.12	6464	7.3	49	-255.6	0.56	"	12	"	
0915	22.31	6477	7.3	39	-264.7	0.56	"	15	"	
0918	22.42	6483	7.3	32	-272.0	0.54	"	18	"	
0921	22.48	6485	7.3	25	-278.7	0.50	"	21	"	
0924	22.51	6486	7.3	23	-284.0	0.49	"	24	"	
0927	22.56	6489	7.3	14	-290.2	0.48	"	27	"	

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump Set at 110'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-31

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-31

Sample No(s):

Sampling Date:

Sampling Method: Direct from dedicated tubing

Sampling Time:

Job No:

Sampler(s): SL/DG

Reviewer(s): Date:

Weather: sunny

Ambient Temp. (F): 96°F

WATER ELEVATION DATA

Method of Measurement: Depth Sounder Y N

Other:

Screened interval:

1) Well Casing Elevation (WCE) ____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 46.28 ft (from casing top as marked)

3) Well Depth (WD): 91.25 (from casing top as marked)

4) Height of Water Column (H) 44.97 ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) ____ gals (CV x H = VW)

Number of Casing Volumes to Purge (NC) ____ gals

Total Volume of Water to Purge (TV) ____ gals (VW x NC = TC)

Purge Method: 2" Grundfos submersible pump

Purge Date: 8/29/06

Was Well Pumped Dry? Y (N)

Fe^2 (mg/L): 4.1 mg/L

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate ~~(L/min)~~	Observations Phys. App.
1322	23.35	6080	7.6	814	-234.5	0.49	46.30	3	1000	
1325	23.18	6340	7.6	177	-282.1	0.42	"	6	"	
1328	23.64	6357	7.6	92	-303.8	0.45	"	9	"	
1331	23.74	6351	7.6	65	-313.1	0.48	"	12	"	
1334	23.76	6340	7.6	55	-321.9	0.47	"	15	"	
1337	23.78	6323	7.6	49	-322.4	0.45	"	18	"	
1340	23.85	6315	7.6	43	-330.6	0.45	"	21	"	

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump Set at 85'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-32

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-32

Sample No(s):

Sampling Date: 8/29/06

Sampling Method: Direct from dedicated tubing

Sampling Time:

Job No:

Sampler(s): SL/DG

Reviewer(s): Date:

Weather: Sunny

Ambient Temp. (F): 96°F

WATER ELEVATION DATA

Method of Measurement: Depth Sounder Y N

Other:

Screened interval:

1) Well Casing Elevation (WCE) ____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 50.90 ft (from casing top as marked)

3) Well Depth (WD): 132.90 (from casing top as marked)

4) Height of Water Column (H) 82.00 ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Purge Method: 2" Grundfos submersible pump

Single Casing Volume of Water in Well (VW) ____ gals (CV x H = VW)

Number of Casing Volumes to Purge (NC) ____ gals

Total Volume of Water to Purge (TV) ____ gals (VW x NC = TC)

Purge Date: 8/29/06

Was Well Pumped Dry? Y (N)

Fe^2 (mg/L): 0.3 mg/L

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate ~~mL/(L/min)~~	Observations Phys. App.
1407	24.61	3795	7.8	23	-266.0	0.70	50.90	3	1000	
1410	22.95	4225	7.8	442	-291.4	0.48	"	6	"	
1413	22.96	4350	7.8	921	-316.6	0.40	"	9	"	
1416	22.99	4407	7.8	272	-336.0	0.36	"	12	"	
1419	23.05	4418	7.8	73	-343.5	0.38	"	15	"	
1422	23.00	4425	7.8	50	-353.0	0.40	"	18	"	
1425	22.98	4430	7.8	32	-356.3	0.39	"	21	"	

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump Set at 129'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-33A

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-33A

Sample No(s):

Sampling Date: 8/28/06

Sampling Method: Direct from dedicated tubing

Sampling Time:

Job No:

Sampler(s): SL/DG

Reviewer(s): Date:

Weather: Sunny

Ambient Temp. (F): 95°F

WATER ELEVATION DATA

Method of Measurement: Depth Sounder Y N

Other:

Screened interval:

1) Well Casing Elevation (WCE) ____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 47.20 ft (from casing top as marked)

3) Well Depth (WD): 60.90 (from casing top as marked)

4) Height of Water Column (H) 13.70 ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) ____ gals (CV x H = VW)

Number of Casing Volumes to Purge (NC) ____ gals

Total Volume of Water to Purge (TV) ____ gals (VW x NC = TC)

Purge Method: 2" Grundfos submersible pump

Purge Date: 8/28/06

Was Well Pumped Dry? Y N

Fe^2 (mg/L): 0.0 mg/L

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate ~~(L/min)~~	Observations Phys. App.
1356	23.90	5252	8.2	>1000	-315.6	0.85	48.25	3	1000	
1359	24.07	5243	8.3	>1000	-331.0	0.62	48.19	6	"	
1402	24.26	5256	8.3	711	-332.6	0.61	48.23	9	"	
1405	24.09	5238	8.3	363	-347.4	0.51	48.25	12	"	
1408	23.82	5221	8.3	260	-351.0	0.54	48.30	15	"	
1411	23.76	5208	8.3	206	-359.1	0.52	48.28	18	"	
1414	23.83	5206	8.3	138	-361.3	0.48	48.30	21	"	
1417	24.00	5200	8.3	103	-364.8	0.46	48.30	24	"	
1420	24.03	5200	8.3	101	-374.0	0.43	"	27	"	

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump Set at 60'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: MW-33B

Monitor Well Sampling Data

Project: Cooper Drum

Location No: MW-33B

Sample No(s):

Sampling Date: 8/28/06

Sampling Method: Direct from dedicated tubing

Sampling Time:

Job No:

Sampler(s): SL/DG

Reviewer(s): Date:

Weather: Sunny

Ambient Temp. (F): 95°F

WATER ELEVATION DATA

Method of Measurement: Depth Sounder Y N

Other:

Screened interval:

1) Well Casing Elevation (WCE) ____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 47.03 ft (from casing top as marked)

3) Well Depth (WD): 90.10 (from casing top as marked)

4) Height of Water Column (H) 43.07 ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) ____ gals (CV x H = VW)

Number of Casing Volumes to Purge (NC) ____ gals

Total Volume of Water to Purge (TV) ____ gals (VW x NC = TC)

Purge Method: ~~2" Grundfos submersible pump~~ watterra pump

Purge Date: 8/28/06

Was Well Pumped Dry? Y N

Fe^2 (mg/L): 1.9 mg/L

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate ~~(L/min)~~	Observations Phys. App.
1449	24.27	7854	7.9	38	-260.0	2.02	47.06	3	1000	
1452	23.84	7873	8.0	15	-285.1	1.29	"	6	"	
1455	23.73	7883	8.1	15	-302.0	1.01	"	9	"	
1458	23.66	7904	8.1	12	-311.0	0.89	"	12	"	
1501	23.84	8025	8.0	14	-313.5	0.92	"	15	"	
1504	23.66	8095	8.1	16	-316.1	0.93	"	18	"	
1507	23.66	8149	8.1	15	-317.3	0.88	"	21	"	
1510	23.55	8206	8.1	11	-320.1	0.85	"	24	"	
1513	23.45	8233	8.1	10	-323.4	0.80	"	27	"	

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump Set at 85'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: EW-1 63'

Monitor Well Sampling Data

Project: Cooper Drum

Location No: EW-1

Sample No(s):

Sampling Date: 8/28/06

Sampling Method: Direct from dedicated tubing

Sampling Time:

Job No:

Sampler(s): SL/DG

Reviewer(s): Date:

Weather: sunny

Ambient Temp. (F): 92°F

WATER ELEVATION DATA

Method of Measurement: Depth Sounder Y N

Other:

Screened interval:

1) Well Casing Elevation (WCE) ____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 47.40 ft (from casing top as marked)

3) Well Depth (WD): 90.15 (from casing top as marked)

4) Height of Water Column (H) 42.75 ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) ____ gals (CV x H = VW)

Number of Casing Volumes to Purge (NC) ____ gals

Total Volume of Water to Purge (TV) ____ gals (VW x NC = TC)

Purge Method: 2" Grundfos submersible pump

Purge Date: 8/28/06

Was Well Pumped Dry? Y N

Fe^2 (mg/L): 0.0 mg/L

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate mL/min ~~(L/min)~~	Observations Phys. App.
1547	24.30	4715	8.1	3	-271.4	1.82	47.40	3	1000	
1550	23.52	4659	8.2	2	-284.4	1.59	"	6	"	
1553	23.79	4661	8.2	2	-290.2	1.51	"	9	"	
1556	23.67	4656	8.3	2	-286.1	1.46	"	12	"	
1559	23.50	4657	8.3	2	-286.5	1.45	47.45	15	"	
1602	23.39	4652	8.3	2	-292.7	1.37	47.46	18	"	
1605	23.26	4657	8.3	1	-291.8	1.26	47.48	21	"	
1608	23.16	4656	8.4	1	-292.3	1.18	"	24	"	
1611	23.11	4657	8.4	1	-295.4	1.16	"	27	"	

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump Set at 63'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: EW-2

Monitor Well Sampling Data

Project: Cooper Drum

Location No: EW-2

Sample No(s):

Sampling Date: 8/28/06

Sampling Method: Direct from dedicated tubing

Sampling Time: 1330

Job No:

Sampler(s): SL/DG

Reviewer(s): Date: 8-28-06

Weather: Sunny

Ambient Temp. (F): 90°

WATER ELEVATION DATA

Method of Measurement: Depth Sounder (Y) N

Other:

Screened interval: 38.5 to 78.5

1) Well Casing Elevation (WCE) _____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 47.56 ft (from casing top as marked)

3) Well Depth (WD): 82.77 (from casing top as marked)

4) Height of Water Column (H) 35.21 ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Purge Method: 2" Grundfos submersible pump

Single Casing Volume of Water in Well (VW) _____ gals (CV x H = VW)

Purge Date: 8-28-06

Number of Casing Volumes to Purge (NC) _____ gals

Was Well Pumped Dry? Y (N)

Total Volume of Water to Purge (TV) _____ gals (VW x NC = TC)

Fe^2 (mg/L): 0.0

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate (L/min)	Observations Phys. App.
1345	Start Purge							tw		
1348	25.01	5289	7.16	3	-259.4	0.22	48.03	105	0.35	Odor
1351	26.40	5322	7.15	2	-265.4	0.16	48.04	210	↓	↓
1354	26.43	5338	7.15	1	-268.0	0.11	48.02	315		
1357	26.62	5321	7.15	1	-271.9	0.10	48.03	420		
1400	26.60	5330	7.15	1	-274.9	0.10	48.03	525	↓	↓

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Pump @ 65'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: SVE-1

Monitor Well Sampling Data

Project: Cooper Drum

Location No: SVE-1

Sample No(s):

Sampling Date: 8/28/06

Sampling Method: Direct from dedicated tubing

Sampling Time: 1230

Job No:

Sampler(s): SL/DG

Reviewer(s): Date: 8-28-06

Weather: Sunny

Ambient Temp. (F): 89°

WATER ELEVATION DATA

Method of Measurement: Depth Sounder (Y) N

Other:

Screened interval: 8-43'

1) Well Casing Elevation (WCE) ____ ft (from casing top as marked)

2) Depth to Water Surface (DTW) 35.92 ft (from casing top as marked)

3) Well Depth (WD): 43.28 (from casing top as marked)

4) Height of Water Column (H) 7.36 ft (from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

WELL PURGE AND SAMPLING DATA

Purge Method: 2" Grundfos submersible pump

Single Casing Volume of Water in Well (VW) ____ gals (CV x H = VW)

Purge Date: 8-28-06

Number of Casing Volumes to Purge (NC) ____ gals

Was Well Pumped Dry? Y (N)

Total Volume of Water to Purge (TV) ____ gals (VW x NC = TC)

Fe^2 (mg/L): 0.0

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate (L/min)	Observations Phys. App.
1240	Start Purge									
1243	22.98	4386	7.36	60	-258.6	0.35	36.28	1.05	0.35	Odor
1246	23.01	4332	7.37	96	-273.7	0.27	36.26	2.10		
1249	23.27	4302	7.37	142	-278.4	0.22	36.26	3.15		
1252	23.62	4303	7.37	147	-287.7	0.14	36.28	4.20		
1255	24.00	4297	7.36	97	-303.0	0.11	36.28	5.25		
1258	24.46	4263	7.35	63	-299.1	0.10	36.28	6.30		
1301	24.77	4262	7.34	51	-295.8	0.10	36.28	7.35		

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks pump at 41'

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re

MONITOR WELL NO: ~~MW-7~~ SVE-2

Monitor Well Sampling Data

Project: **Cooper Drum**

Location No: SVE-2

Sample No(s): ~~[illegible]~~

Sampling Date: 8-30-06

Sampling Method: **Direct from dedicated tubing**

Sampling Time:

Job No: **18600047.07030**

Sampler(s): **SL/DG**

Reviewer(s): Date:

Weather:

Ambient Temp. (F):

WATER ELEVATION DATA

Method of Measurement: Depth Sounder Y N

Other:

Screened interval: 8-48

1) Well Casing Elevation (WCE) ft
(from casing top as marked)

2) Depth to Water Surface (DTW 38.02 ft
(from casing top as marked)

3) Well Depth (WD): 51.34
(from casing top as marked)

4) Height of Water Column (H) 13.32 ft
(from casing top as marked)

Product Obs: Y N

Depth to Product:

Method of Measurement: Interface Probe Y N

Other:

Well Diameter (in)	Casing Volume (CV)/ft (gals)
2	0.163
4	0.652
6	1.468
D	CV = (23.49) x [(D/24)^2]

CV = 3.14 [(D/2)/12 in.ft]^{2}h (7.48 gal/cu. Ft.)

51.34
38.02
13.32

WELL PURGE AND SAMPLING DATA

Single Casing Volume of Water in Well (VW) 8.7 gals
(CV x H = VW)

Number of Casing Volumes to Purge (NC) 3 gals

Total Volume of Water to Purge (TV) 26.1 gals
(VW x NC = TC)

Purge Method: ~~2" Grundfos submersible pump~~ Bailed.

Purge Date:

Was Well Pumped Dry? Y N

Fe^2 (mg/L):

Time	Temp (C)	Cond (umhos)	pH	Turbidity (NTU)	ORP (mV)	D.O. (mg/L)	Water Level (ft. bgs)	Removed (L)	Flow Rate (L/min)	Observations Phys. App.

INSTRUCTIONS AND COMMENTS

Purging/Sampling Remarks Well was purged & sample with a bailer (3")

Note: A complete list of containers and analyses used can be found in the associated sample log. The final row of readings should list the time sampling was completed and an estimate of the total valume of water removed. Water measurements should be re