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WELDON SPRING SITE REMEDIAL ACTION PROJECT
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U.S. Department of Energy
Weldon Spring Site
Remedial Action Project
ATTN: Mr. Stephen H. McCracken
Project Manager
7295 Highway 94 South
St. Charles, MO 63304

SUBJECT: Contract No. DE-AC05-86OR21548
RESULTS OF SAMPLING ACTIVITIES FOR TCE IN GROUNDWATER AT THE WELDON SPRING CHEMICAL PLANT

Dear Mr. McCracken:

During workplace monitoring at the CSS Pilot Plant in September 1995, hexane was detected in the headspace of sludge tanks at a concentration of 200 ppm. To determine whether potential hexane contamination of sludge in the raffinate pits might have migrated into groundwater, two monitoring wells near the raffinate pits, MW-2038 and MW-3025 (Figure 1), were sampled in April of 1996 for volatile organic compounds (VOCs). Hexane was not detected, but trichloroethylene (TCE) was measured at 766 ug/l in monitoring well MW-2038 and at 11 ug/l in MW-3025. Additionally, 1,2-Dichloroethene was detected in MW-2038 at 22.7 ug/l.

In the summer and fall of 1996, several thousand drums and other debris were removed from the southeastern corner of Raffinate Pit 4. Oil residues were found in approximately 200 of these drums and these residues were pumped to five Integra tanks. As part of our Waste Management requirements, an oil sample was collected from each tank and analyzed for volatiles by the Toxicity Characteristic Leaching Procedure (TCLP). The results of this sampling showed that high levels of TCE (2,200, 3,400, 4,000, 29,000 and 280,000 ug/kg) were present in the oil samples. The total volume of oil in the five tanks is approximately 1,400 gallons.

As a result of these findings, groundwater, soils, and sludge data from sampling events prior to 1996 were reviewed to determine whether volatiles had been previously detected. In 1987, 30 groundwater wells were sampled for VOCs (Table 1 and Figure 1). Four wells showed low concentrations of TCE ranging from 1.9 to 4.3 ug/l.

Each detection was an estimated value below the detection limit. From 1988 to 1990, volatiles were also sampled for in nine newly installed wells(Table 1). TCE was detected in only one well (MW-2030) at 7 ug/l.

TCE was detected in only a few soil samples and in one sludge sample. Of 277 soil samples analyzed for TCE prior to 1995, TCE was detected in seven samples(Table 2). These samples were taken from two locations at an area between Raffinate Pit 3 and Building 301 (Figure 2). Detected TCE in these samples ranged from 5 ug/kg to 4800 ug/kg. Only one sample exceeded 350 ug/kg. Between 1988 and 1990, 101 raffinate pit sludge samples were analyzed for TCE. Of these samples, 26 were from Pit 1, 24 were from Pit 2, 28 were from Pit 3, and 23 were from Pit 4. TCE was detected in one sample from Pit 3 at 23 ug/kg (Table 3). In the Remedial Investigation/Feasibility Study process for the Chemical Plant Operable Unit, TCE (and volatiles in general) was deemed not to be a contaminant of concern due to the infrequency of detection and its low concentrations when detected.

A teleconference was held in June of 1996 between the PMC and Argonne National Laboratory (ANL) to review the implications of the April 1996 groundwater sampling, and to consider further actions for groundwater sampling. It was decided that additional sampling should be conducted to define the extent of volatiles (specifically, TCE and 1,2-Dichloroethene) in groundwater. In June and August of 1996, groundwater monitoring for volatiles was initiated at seven wells in the proximity of the known TCE contamination. These wells surround the raffinate pit area and Frog Pond area. TCE was detected in three wells; 15 ug/l in GW-3025; 48 ug/l in MW-3024; and 9000 ug/l in GW-2038. 1,2-Dichloroethene was reported at 5 ug/l in MW-2032 and 39 ug/l in MW-2038 (Table 4).

Three springs were sampled for volatiles in August and October of 1996. These were Burgermeister Spring (6301, in August) and two springs (5303 and 5304 in October) in the Southeast Drainage (Table 4). These springs were chosen because they represent the only springs where WSSRAP contaminants have been consistently detected. No volatiles were detected in any of these springs.

A site-wide sampling for volatiles in monitoring wells at the chemical plant area was conducted in September and October of 1996. Forty-five monitoring wells were sampled (Table 4). TCE was detected in six wells, with a high concentration of 1050 ug/l in MW-2038. Two of the six detections were estimated values well below the detection limit. 1,2-Dichloroethene was detected in five wells, with a high of 25 ug/l in MW-2037. Three of these detections were estimated values below the detection limit. In general, detections of volatiles were limited to an area south and southeast of Raffinate Pits 3 and 4.

Information from the 1996 groundwater sampling for volatiles was presented to the EPA and MDNR at a Groundwater Operable Unit Remedial Investigation/Baseline Risk Assessment comment review meeting held October 24 and 25, 1996. The EPA requested that the DOE try to identify the TCE source and extent as part of the groundwater operable unit activities.

A meeting was held October 30, 1996, among the PMC, DOE, and ANL to discuss the activities necessary to determine the source and extent of volatiles, primarily TCE, in groundwater. Several sampling activities were planned, including additional groundwater monitoring and sludge and soil sampling.

Monthly groundwater monitoring of seven wells at the chemical plant area (MW-2013, 2032, 2037, 2038, 3024, 3025, and 4001) began in November 1996 (November results are in Table 4). The monthly sampling of these wells and Springs 6301, 5303, and 5304 will continue throughout 1997. Five more wells will be added to the monthly monitoring beginning in February (MW-4004, 4005, 4007, MWS-4 and 21). Sampling of MWS-4 and MWS-21 will require access permission from the Army.

In November and December of 1996, additional sampling was conducted on soils and sludges from the raffinate pit area. An opportunity was available to sample sludges from Raffinate Pit 3 as part of the collection of sludge samples for biodenitrification bench testing. This sampling was completed in November 1996. Sludges were collected from six locations in Raffinate Pit 3, and from three depth intervals at each location; 0 to 5 ft.; 5 to 10 ft; and 10 to 15 ft. A photoionization detector (PID) was used to scan the sludge samples to qualitatively detect any volatiles in the samples. Results of the sludge sampling are shown in Table 5. TCE was detected in only one sample, at an estimated value of 12 ug/kg (below the detection limit of 62 ug/kg).

Soil characterization sampling in Raffinate Pits 3 and 4 was planned as part of the Engineering Soil Sampling Plan for Characterization of the Weldon Spring Raffinate Pits (DOE/OR/21548-653, October 1996). An addendum to this plan was prepared in November 1996, to include VOC analyses of samples from Pits 3 and 4. Samples will be taken from the first foot of soil below the sludge, and PID scans will be conducted on all deeper soil samples collected. Any samples that indicate VOCs via PID readings will also be analyzed for VOCs. This plan and addendum also includes three borings just south of the Pit 3 berm.

Four of the 22 scheduled Pit 4 borings have already been sampled. PID scans of the deeper soil samples from these borings did not show detectable VOC readings; therefore, the samples were not analyzed for volatiles. The results from the first intervals that were sent off for laboratory analyses are not back yet. Two of these borings were in the area of the drum removals, although not through the stained soil.

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The three borings south of Raffinate Pit 3 were completed in December 1996. Neither TCE nor 1,2-Dichloroethene were detected in any of these soil samples (Table 6). Their locations are shown on Figure 3.

Based upon the chemical behavior of TCE, the low concentrations found in the groundwater near the raffinate pits, the TCE detected in drum oils, and the infrequent detection of TCE in soil and sludges of the raffinate pit area, we believe that the source of TCE that contaminated groundwater was the waste drums in Raffinate Pit 4. Since the drums have already been removed from the pit, the primary source has been remediated. Any contamination remaining in the sludges and soils is scheduled for removal as part of raffinate pit remediation. Expedited additional sampling of soils in the Raffinate Pit 4 drum area, an area that currently has a heavy oil stain, is expected to be completed by the end of March 1997. This sampling will focus on determining whether any significant area of volatiles contaminated soil exists. We feel that except to the southwest, the nature and extent of TCE contamination in groundwater has been defined. Current sampling plans will close any data gaps to the southwest. The source of the TCE has been identified as a migration of TCE contaminated oil leaking from drums in Raffinate Pit 4. It is our intention to continue monitoring groundwater in the vicinity of the raffinate pits and at Springs 6301, 5303, and 5304 until the end of the year. Any future monitoring will depend upon the results of the groundwater operable unit RI/FS/BRA. Although not expected, it is understood that a discovery of a significant area of TCE contaminated soil would require that additional handling and disposal options be examined.

If you have any questions, please contact Julie Reitinger at ext. 3522.

Sincerely,

James R. Powers
Project Director

JRP/jmr/kmp

Enclosure: as stated

cc: Pamela Thompson

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Table 1: Summary of TCE Groundwater Sample Analyses Prior to 1996

MONITORING LOCATION	DATE SAMPLED	TCE (ug/l)
MW-2001	1987	ND
MW-2002	1987	ND
MW-2003	1987	ND
MW-2004	1987	ND
MW-2005	1987	ND
MW-2006	1987	ND
MW-2007	1987	ND
MW-2008	1987	ND
MW-2009	1987	ND
MW-2010	1987	ND
MW-2011	1987	ND
MW-2012	1987	ND
MW-2013	1987	(1.90)
MW-2014	1987	ND
MW-2015	1987	ND
MW-2016	1987	ND
MW-2017	1987	ND
MW-2018	1987	ND
MW-2020	1987	ND
MW-2030	1989	7.00
MW-2031	1989	ND
MW-2032	1989	ND
MW-2033	1989	ND
MW-2034	1989	ND
MW-3002	1987	ND
MW-3003	1987	ND
MW-3007	1987	(4.30)
MW-3008	1987 1990	ND ND
MW-3009	1987	(2.20)
MW-3010	1987	ND
MW-3013	1987	ND
MW-3022	1989	ND
MW-3023	1989	ND
MW-4001	1987	(2.70)

MONITORING LOCATION	DATE SAMPLED	TCE (ug/l)
MW-4003	1987	ND
MW-4006	1987	ND
MW-4012	1988	ND
MW-4019	1987	ND
MW-4020	1990	ND

Parentheses indicate estimated value below quantification limit.

Detection limits 5 ug/l (1987) to 10 ug/l (1989).

Table 2 : Summary of Pre-1995 Soil TCE Analyses

Sample ID	Date Sampled	TCE Value	Detection Limit	Units	Northing Location	Easting Location
SO-287218-01	11-Nov-87	ND	5	UG/KG	1042121.062	756184.219
SO-287218-02	11-Nov-87	ND	5	UG/KG	1042121.062	756184.219
SO-287218-03	11-Nov-87	ND	5	UG/KG	1042121.062	756184.219
SO-287218-04	11-Nov-87	ND	5	UG/KG	1042121.062	756184.219
SO-288005-01	23-Aug-88	ND	5	UG/KG	1042368.816	753648.463
SO-288005-02	23-Aug-88	ND	5	UG/KG	1042368.816	753648.463
SO-288007-01	24-Aug-88	ND	5	UG/KG	1042284.220	753489.287
SO-288007-02	24-Aug-88	ND	5	UG/KG	1042284.220	753489.287
SO-288008-01	24-Aug-88	ND	5	UG/KG	1042160.252	753592.856
SO-288008-02	24-Aug-88	ND	5	UG/KG	1042160.252	753592.856
SO-288009-01	24-Aug-88	ND	5	UG/KG	1042202.787	753956.538
SO-288009-02	24-Aug-88	ND	5	UG/KG	1042202.787	753956.538
SO-288010-01	24-Aug-88	ND	5	UG/KG	1042350.684	753218.423
SO-288010-02	24-Aug-88	ND	5	UG/KG	1042350.684	753218.423
SO-288013-01	25-Aug-88	ND	5	UG/KG	1041359.732	753729.368
SO-288017-01	26-Aug-88	ND	5	UG/KG	1041989.321	754352.634
SO-288017-02	26-Aug-88	ND	5	UG/KG	1041989.321	754352.634
SO-288018-01	26-Aug-88	ND	5	UG/KG	1041569.507	754183.180
SO-288019-01	26-Aug-88	ND	5	UG/KG	1041602.818	753826.297
SO-288019-02	26-Aug-88	ND	5	UG/KG	1041602.818	753826.297
SO-288019-03	26-Aug-88	ND	5	UG/KG	1041602.818	753826.297
SO-288021-01	26-Aug-88	ND	5	UG/KG	1041804.476	754253.017
SO-288021-02	26-Aug-88	ND	5	UG/KG	1041804.476	754253.017
SO-288023-01	26-Aug-88	ND	5	UG/KG	1041531.663	753958.329
SO-288023-02	26-Aug-88	ND	5	UG/KG	1041531.663	753958.329
SO-288023-03	26-Aug-88	ND	5	UG/KG	1041531.663	753958.329
SO-288024-01	26-Aug-88	ND	5	UG/KG	1041312.927	753942.675
SO-288024-02	26-Aug-88	ND	5	UG/KG	1041312.927	753942.675
SO-288024-03	26-Aug-88	ND	5	UG/KG	1041312.927	753942.675
SO-288024-04	26-Aug-88	ND	5	UG/KG	1041312.927	753942.675
SO-288025-01	26-Aug-88	ND	5	UG/KG	1041501.145	754078.186
SO-288025-02	26-Aug-88	ND	5	UG/KG	1041501.145	754078.186
SO-288025-03	26-Aug-88	ND	5	UG/KG	1041501.145	754078.186
SO-288026-01	26-Aug-88	ND	5	UG/KG	1041463.249	754000.970

Sample ID	Date Sampled	TCE Value	Detection Limit	Units	Northing Location	Easting Location
SO-288026-02	26-Aug-88	ND	5	UG/KG	1041463.249	754000.970
SO-288026-03	26-Aug-88	ND	5	UG/KG	1041463.249	754000.970
SO-288028-01	26-Aug-88	ND	5	UG/KG	1041702.962	754062.006
SO-288028-02	26-Aug-88	ND	5	UG/KG	1041702.962	754062.006
SO-288028-03	26-Aug-88	ND	5	UG/KG	1041702.962	754062.006
SO-288029-01	26-Aug-88	ND	5	UG/KG	1041493.081	753903.461
SO-288029-02	26-Aug-88	ND	5	UG/KG	1041493.081	753903.461
SO-288029-03	26-Aug-88	ND	5	UG/KG	1041493.081	753903.461
SO-288030-01	29-Aug-88	ND	5	UG/KG	1041847.011	754616.699
SO-288031-01	29-Aug-88	ND	5	UG/KG	1042111.655	755031.928
SO-288032-01	29-Aug-88	ND	5	UG/KG	1041904.462	754931.626
SO-288034-01	29-Aug-88	ND	5	UG/KG	1042116.082	754960.484
SO-288034-02	29-Aug-88	ND	5	UG/KG	1042116.082	754960.484
SO-288034-03	29-Aug-88	ND	5	UG/KG	1042116.082	754960.484
SO-288035-01	29-Aug-88	ND	5	UG/KG	1042114.554	754499.636
SO-288035-02	29-Aug-88	ND	5	UG/KG	1042114.554	754499.636
SO-288036-01	29-Aug-88	ND	5	UG/KG	1041961.280	755121.268
SO-288036-02	29-Aug-88	ND	5	UG/KG	1041961.280	755121.268
SO-288036-03	29-Aug-88	ND	5	UG/KG	1041961.280	755121.268
SO-288037-01	29-Aug-88	ND	5	UG/KG	1042054.045	755159.902
SO-288037-02	29-Aug-88	ND	5	UG/KG	1042054.045	755159.902
SO-288037-03	29-Aug-88	ND	5	UG/KG	1042054.045	755159.902
SO-288038-01	29-Aug-88	ND	5	UG/KG	1041626.958	754498.107
SO-288039-01	29-Aug-88	ND	5	UG/KG	1042070.226	755361.719
SO-288039-02	29-Aug-88	ND	5	UG/KG	1042070.226	755361.719
SO-288039-03	29-Aug-88	ND	5	UG/KG	1042070.226	755361.719
SO-288040-01	29-Aug-88	ND	5	UG/KG	1042061.477	755209.341
SO-288040-02	29-Aug-88	ND	5	UG/KG	1042061.477	755209.341
SO-288040-03	29-Aug-88	ND	5	UG/KG	1042061.477	755209.341
SO-288041-01	30-Aug-88	ND	5	UG/KG	1042402.020	755483.737
SO-288042-01	30-Aug-88	ND	5	UG/KG	1042899.104	755467.662
SO-288042-02	30-Aug-88	ND	5	UG/KG	1042899.104	755467.662
SO-288043-01	30-Aug-88	ND	5	UG/KG	1042479.895	755497.310
SO-288043-02	30-Aug-88	ND	5	UG/KG	1042479.895	755497.310
SO-288044-01	30-Aug-88	ND	5	UG/KG	1042187.238	754828.451

Sample ID	Date Sampled	TCE Value	Detection Limit	Units	Northing Location	Easting Location
SO-288044-02	30-Aug-88	ND	5	UG/KG	1042187.238	754828.451
SO-288045-01	30-Aug-88	ND	5	UG/KG	1043443.203	754647.745
SO-288045-02	30-Aug-88	ND	5	UG/KG	1043443.203	754647.745
SO-288045-02	15-Sep-88	ND	5	UG/KG	0.000	0.000
SO-288045-03	15-Sep-88	ND	5	UG/KG	1043443.203	754647.745
SO-288046-01	30-Aug-88	ND	5	UG/KG	1042626.237	755320.608
SO-288046-02	30-Aug-88	ND	5	UG/KG	1042626.237	755320.608
SO-288047-01	30-Aug-88	ND	5	UG/KG	1042416.304	755309.697
SO-288047-02	30-Aug-88	ND	5	UG/KG	1042416.304	755309.697
SO-288047-03	30-Aug-88	ND	5	UG/KG	1042416.304	755309.697
SO-288048-01	30-Aug-88	ND	5	UG/KG	1042167.735	755391.552
SO-288049-02	30-Aug-88	ND	5	UG/KG	1042186.077	755231.057
SO-288049-03	30-Aug-88	ND	5	UG/KG	1042186.077	755231.057
SO-288049-04	30-Aug-88	ND	5	UG/KG	1042186.077	755231.057
SO-288049-05	30-Aug-88	ND	5	UG/KG	1042186.077	755231.057
SO-288052-01	31-Aug-88	ND	5	UG/KG	1042854.988	755739.211
SO-288052-02	31-Aug-88	ND	5	UG/KG	1042854.988	755739.211
SO-288054-01	31-Aug-88	ND	5	UG/KG	1042671.407	755890.165
SO-288054-02	31-Aug-88	ND	5	UG/KG	1042671.407	755890.165
SO-288057-01	31-Aug-88	ND	5	UG/KG	1043146.829	755851.056
SO-288057-02	31-Aug-88	ND	5	UG/KG	1043146.829	755851.056
SO-288059-01	31-Aug-88	ND	5	UG/KG	1043059.492	755781.271
SO-288059-02	31-Aug-88	ND	5	UG/KG	1043059.492	755781.271
SO-288059-03	31-Aug-88	ND	5	UG/KG	1043059.492	755781.271
SO-288065-01	01-Sep-88	ND	5	UG/KG	1043620.880	755856.644
SO-288066-01	01-Sep-88	ND	5	UG/KG	1043400.826	755738.051
SO-288066-02	01-Sep-88	ND	5	UG/KG	1043400.826	755738.051
SO-288067-01	01-Sep-88	ND	5	UG/KG	1043107.904	755807.362
SO-288067-02	01-Sep-88	ND	5	UG/KG	1043107.904	755807.362
SO-288067-03	01-Sep-88	ND	5	UG/KG	1043107.904	755807.362
SO-288070-01	01-Sep-88	ND	5	UG/KG	1043072.326	755873.378
SO-288070-02	01-Sep-88	ND	5	UG/KG	1043072.326	755873.378
SO-288070-03	01-Sep-88	ND	5	UG/KG	1043072.326	755873.378
SO-288072-01	02-Sep-88	ND	5	UG/KG	1043638.010	755297.945
SO-288072-02	02-Sep-88	ND	5	UG/KG	1043638.010	755297.945

Sample ID	Date Sampled	TCE Value	Detection Limit	Units	Northing Location	Easting Location
SO-288072-03	02-Sep-88	ND	5	UG/KG	1043638.010	755297.945
SO-288078-01	07-Sep-88	ND	5	UG/KG	1043519.551	755148.914
SO-288078-02	07-Sep-88	ND	5	UG/KG	1043519.551	755148.914
SO-288078-03	07-Sep-88	ND	5	UG/KG	1043519.551	755148.914
SO-288079-01	07-Sep-88	ND	5	UG/KG	1043360.347	755307.326
SO-288079-02	07-Sep-88	ND	5	UG/KG	1043360.347	755307.326
SO-288079-03	07-Sep-88	ND	5	UG/KG	1043360.347	755307.326
SO-288080-01	07-Sep-88	ND	5	UG/KG	1043580.559	754983.017
SO-288083-01	07-Sep-88	ND	5	UG/KG	1043858.064	755416.536
SO-288083-02	07-Sep-88	ND	5	UG/KG	1043858.064	755416.536
SO-288087-01	07-Sep-88	ND	5	UG/KG	1044084.970	755311.649
SO-288089-01	08-Sep-88	ND	5	UG/KG	1043136.288	755027.554
SO-288092-01	08-Sep-88	ND	5	UG/KG	1042966.992	755004.469
SO-288092-02	08-Sep-88	ND	5	UG/KG	1042966.992	755004.469
SO-288092-03	08-Sep-88	ND	5	UG/KG	1042966.992	755004.469
SO-288095-01	08-Sep-88	ND	5	UG/KG	1043798.979	753987.585
SO-288096-01	08-Sep-88	ND	5	UG/KG	1043057.069	754984.862
SO-288096-02	08-Sep-88	ND	5	UG/KG	1043057.069	754984.862
SO-288096-03	09-Sep-88	ND	5	UG/KG	1043057.069	754984.862
SO-288099-01	09-Sep-88	ND	5	UG/KG	1043406.361	755411.634
SO-288100-01	09-Sep-88	ND	5	UG/KG	1043401.617	755420.437
SO-288101-01	09-Sep-88	ND	5	UG/KG	1042969.048	754937.425
SO-288101-02	09-Sep-88	ND	5	UG/KG	1042969.048	754937.425
SO-288101-03	09-Sep-88	ND	5	UG/KG	1042969.048	754937.425
SO-288102-01	09-Sep-88	ND	5	UG/KG	1043515.413	755356.819
SO-288102-02	09-Sep-88	ND	5	UG/KG	1043515.413	755356.819
SO-288102-03	09-Sep-88	ND	5	UG/KG	1043515.413	755356.819
SO-288103-01	09-Sep-88	ND	5	UG/KG	1043151.836	755104.086
SO-288103-02	09-Sep-88	ND	5	UG/KG	1043151.836	755104.086
SO-288104-01	09-Sep-88	ND	5	UG/KG	1043213.451	755137.291
SO-288104-02	09-Sep-88	ND	5	UG/KG	1043213.451	755137.291
SO-288106-01	12-Sep-88	ND	5	UG/KG	1043228.209	755531.438
SO-288106-02	12-Sep-88	ND	5	UG/KG	1043228.209	755531.438
SO-288107-01	12-Sep-88	ND	5	UG/KG	1043298.626	755569.388
SO-288107-02	12-Sep-88	ND	5	UG/KG	1043298.626	755569.388

Sample ID	Date Sampled	TCE Value	Detection Limit	Units	Northing Location	Easting Location
SO-288107-03	12-Sep-88	ND	5	UG/KG	1043298.626	755569.388
SO-288108-01	12-Sep-88	ND	5	UG/KG	1043243.758	755607.969
SO-288108-02	12-Sep-88	ND	5	UG/KG	1043243.758	755607.969
SO-288108-03	12-Sep-88	ND	5	UG/KG	1043243.758	755607.969
SO-288109-01	12-Sep-88	ND	5	UG/KG	1043140.583	755325.194
SO-288109-02	12-Sep-88	ND	5	UG/KG	1043140.583	755325.194
SO-288109-03	12-Sep-88	ND	5	UG/KG	1043140.583	755325.194
SO-288110-01	12-Sep-88	ND	5	UG/KG	1043197.165	755230.742
SO-288111-01	12-Sep-88	ND	5	UG/KG	1043254.722	755250.402
SO-288112-01	12-Sep-88	ND	5	UG/KG	1043213.399	755284.926
SO-288112-02	12-Sep-88	ND	5	UG/KG	1043213.399	755284.926
SO-288116-01	13-Sep-88	ND	5	UG/KG	1043053.880	755380.694
SO-288117-01	13-Sep-88	ND	5	UG/KG	1042738.346	755239.043
SO-288117-02	13-Sep-88	ND	5	UG/KG	1042738.346	755239.043
SO-288118-02	12-Sep-88	ND	5	UG/KG	1043139.608	755211.082
SO-288118-03	12-Sep-88	ND	5	UG/KG	1043139.608	755211.082
SO-288122-01	13-Sep-88	ND	5	UG/KG	1042863.422	754880.500
SO-288123-01	14-Sep-88	ND	5	UG/KG	1042832.377	754579.804
SO-288124-01	14-Sep-88	ND	5	UG/KG	1042474.757	754716.475
SO-288124-02	14-Sep-88	ND	5	UG/KG	1042474.757	754716.475
SO-288125-01	14-Sep-88	ND	5	UG/KG	1042348.838	754591.822
SO-288125-02	14-Sep-88	ND	5	UG/KG	1042348.838	754591.822
SO-288126-01	14-Sep-88	ND	5	UG/KG	1042595.194	755019.912
SO-288127-01	14-Sep-88	4800.0	5	UG/KG	1042436.860	754639.259
SO-288127-02	13-Sep-88	320.00	5	UG/KG	1042436.860	754639.259
SO-288127-03	13-Sep-88	30.00	5	UG/KG	1042436.860	754639.259
SO-288128-01	14-Sep-88	ND	5	UG/KG	1042637.360	754520.139
SO-288128-02	14-Sep-88	ND	5	UG/KG	1042637.360	754520.139
SO-288129-01	14-Sep-88	ND	5	UG/KG	1042414.407	754933.840
SO-288130-01	14-Sep-88	ND	5	UG/KG	1043359.241	754613.854
SO-288131-01	14-Sep-88	ND	5	UG/KG	1042652.856	754744.304
SO-288131-02	14-Sep-88	ND	5	UG/KG	0.000	0.000
SO-288131-03	14-Sep-88	ND	5	UG/KG	1042652.856	754744.304
SO-288132-01	14-Sep-88	ND	5	UG/KG	1042478.446	754815.011
SO-288132-02	14-Sep-88	ND	5	UG/KG	1042478.446	754815.011

Sample ID	Date Sampled	TCE Value	Detection Limit	Units	Northing Location	Easting Location
SO-288132-03	14-Sep-88	ND	5	UG/KG	1042478.446	754815.011
SO-288134-01	15-Sep-88	ND	5	UG/KG	1043337.789	754000.286
SO-288134-02	15-Sep-88	ND	5	UG/KG	1043337.789	754000.286
SO-288135-01	15-Sep-88	ND	5	UG/KG	1043613.556	753615.048
SO-288135-02	15-Sep-88	ND	5	UG/KG	1043613.556	753615.048
SO-288136-01	15-Sep-88	ND	5	UG/KG	1043462.496	753726.734
SO-288137-01	15-Sep-88	ND	5	UG/KG	1043843.782	753693.688
SO-288137-02	15-Sep-88	ND	5	UG/KG	1043843.782	753693.688
SO-288138-01	15-Sep-88	ND	5	UG/KG	1043415.059	753814.756
SO-288139-01	15-Sep-88	ND	5	UG/KG	1043157.583	754187.135
SO-288139-02	15-Sep-88	ND	5	UG/KG	1043157.583	754187.135
SO-288139-03	15-Sep-88	ND	5	UG/KG	1043157.583	754187.135
SO-288141-01	15-Sep-88	ND	5	UG/KG	1043100.606	754440.394
SO-288141-02	15-Sep-88	ND	5	UG/KG	1043100.606	754440.394
SO-288145-01	16-Sep-88	ND	5	UG/KG	1043826.757	753957.119
SO-288145-02	16-Sep-88	ND	5	UG/KG	1043826.757	753957.119
SO-288148-01	16-Sep-88	ND	5	UG/KG	1043082.684	755316.708
SO-288157-01	20-Sep-88	ND	5	UG/KG	1044058.512	753548.162
SO-288157-02	20-Sep-88	ND	5	UG/KG	1044058.512	753548.162
SO-288159-01	20-Sep-88	ND	5	UG/KG	1043424.125	753081.331
SO-288160-01	20-Sep-88	ND	5	UG/KG	1043132.916	753094.772
SO-288161-01	20-Sep-88	ND	5	UG/KG	1044314.116	753674.555
SO-288161-02	20-Sep-88	ND	5	UG/KG	1044314.116	753674.555
SO-288163-01	20-Sep-88	ND	5	UG/KG	1043521.582	753258.798
SO-288169-01	21-Sep-88	ND	5	UG/KG	1043619.458	754152.084
SO-288170-01	21-Sep-88	ND	5	UG/KG	1043875.194	754857.837
SO-288171-01	21-Sep-88	ND	5	UG/KG	1044095.247	754976.430
SO-288172-01	22-Sep-88	ND	5	UG/KG	1044000.850	753823.770
SO-288172-02	22-Sep-88	ND	5	UG/KG	1044000.850	753823.770
SO-288172-03	22-Sep-88	ND	5	UG/KG	1044000.850	753823.770
SO-288174-01	22-Sep-88	ND	5	UG/KG	1044349.563	753977.623
SO-288174-02	22-Sep-88	ND	5	UG/KG	1044349.563	753977.623
SO-288177-01	23-Sep-88	ND	5	UG/KG	1042351.738	754059.529
SO-288177-02	23-Sep-88	ND	5	UG/KG	1042351.738	754059.529
SO-288178-01	23-Sep-88	ND	5	UG/KG	1042581.279	754160.516

Sample ID	Date Sampled	TCE Value	Detection Limit	Units	Northing Location	Easting Location
SO-288178-02	23-Sep-88	ND	5	UG/KG	1042581.279	754160.516
SO-288184-01	23-Sep-88	ND	5	UG/KG	1044861.562	753912.793
SO-288185-01	23-Sep-88	ND	5	UG/KG	1042774.927	754264.878
SO-288185-02	23-Sep-88	ND	5	UG/KG	1042774.927	754264.878
SO-288185-03	23-Sep-88	ND	5	UG/KG	1042774.927	754264.878
SO-288186-01	23-Sep-88	ND	5	UG/KG	1043561.796	754427.691
SO-288187-01	23-Sep-88	ND	5	UG/KG	1044345.872	754827.531
SO-288189-01	26-Sep-88	ND	5	UG/KG	1044609.462	754401.654
SO-288191-01	26-Sep-88	ND	5	UG/KG	1044806.800	753656.108
SO-288191-02	26-Sep-88	ND	5	UG/KG	1044806.800	753656.108
SO-288198-01	27-Sep-88	ND	5	UG/KG	1042424.736	756347.876
SO-288199-01	27-Sep-88	ND	5	UG/KG	1044113.169	754100.115
SO-288200-01	27-Sep-88	ND	5	UG/KG	1044569.616	754096.215
SO-288200-02	27-Sep-88	ND	5	UG/KG	1044569.616	754096.215
SO-288201-01	27-Sep-88	ND	5	UG/KG	1042143.067	756196.078
SO-288202-01	27-Sep-88	ND	5	UG/KG	1042389.054	755760.715
SO-288203-01	27-Sep-88	ND	5	UG/KG	1044586.746	753537.516
SO-288203-02	27-Sep-88	ND	5	UG/KG	1044586.746	753537.516
SO-288205-01	28-Sep-88	ND	5	UG/KG	1042932.678	756269.500
SO-288205-02	28-Sep-88	ND	5	UG/KG	1042932.678	756269.500
SO-288206-01	28-Sep-88	ND	5	UG/KG	1042632.035	756152.912
SO-288207-01	28-Sep-88	ND	5	UG/KG	1043163.642	756178.159
SO-288207-02	28-Sep-88	ND	5	UG/KG	1043163.642	756178.159
SO-288221-01	30-Sep-88	ND	5	UG/KG	1043875.985	754540.222
SO-288221-02	30-Sep-88	ND	5	UG/KG	1043875.985	754540.222
SO-288226-01	03-Oct-88	ND	5	UG/KG	1044847.121	754529.735
SO-288227-01	03-Oct-88	ND	5	UG/KG	1044667.387	755284.769
SO-288229-01	03-Oct-88	ND	5	UG/KG	1044332.432	754536.322
SO-288229-02	03-Oct-88	ND	5	UG/KG	1044332.432	754536.322
SO-288232-01	03-Oct-88	ND	5	UG/KG	1044112.378	754417.730
SO-288233-01	04-Oct-88	ND	5	UG/KG	1044904.571	754844.662
SO-288234-01	04-Oct-88	ND	5	UG/KG	1044349.033	755453.959
SO-288236-01	04-Oct-88	ND	5	UG/KG	1044609.936	754969.841
SO-288237-01	04-Oct-88	ND	5	UG/KG	1043383.695	756296.750
SO-288238-01	04-Oct-88	ND	5	UG/KG	1044111.850	755894.067

Sample ID	Date Sampled	TCE Value	Detection Limit	Units	Northing Location	Easting Location
SO-288239-01	04-Oct-88	ND	5	UG/KG	1043561.847	756176.947
SO-288240-01	05-Oct-88	63.00	5	UG/KG	1042583.334	755041.917
SO-288240-02	05-Oct-88	250.00	5	UG/KG	1042583.334	755041.917
SO-288240-03	05-Oct-88	29.00	5	UG/KG	1042583.334	755041.917
SO-288241-01	05-Oct-88	5.00	5	UG/KG	1042164.836	755923.844
SO-290005-01	23-Jul-90	ND	6.00	UG/KG	1042479.895	755497.310
SO-290006-01	23-Jul-90	ND	5.00	UG/KG	1043228.209	755531.438
SO-290006-02	23-Jul-90	ND	5.00	UG/KG	1043228.209	755531.438
SO-290007-01	23-Jul-90	ND	30	UG/KG	1043243.758	755607.969
SO-290007-02	23-Jul-90	ND	31	UG/KG	1043243.758	755607.969
SO-290009-01	23-Jul-90	ND	6.00	UG/KG	1041961.280	755121.268
SO-290010-01	23-Jul-90	ND	6.00	UG/KG	1042061.477	755209.341
SO-290012-01	25-Jul-90	ND	5.00	UG/KG	1042969.048	754937.425
SO-290013-01	24-Jul-90	ND	7.00	UG/KG	1043213.451	755137.291
SO-290014-01	25-Jul-90	ND	14.0	UG/KG	1041463.249	754000.970
SO-290015-01	24-Jul-90	ND	6.00	UG/KG	1043139.608	755211.082
SO-290015-02	24-Jul-90	ND	7.00	UG/KG	1043139.608	755211.082
SO-488167-01	20-Sep-88	ND	5	UG/KG	1042880.342	753015.446
SO-488168-01	20-Sep-88	ND	5	UG/KG	1042762.541	752917.885
SO-488168-02	20-Sep-88	ND	5	UG/KG	1042762.541	752917.885
SO-194016-02	25-Oct-94	ND	12.0	UG/KG	1003919.130	731921
SO-194024-02	14-Jul-94	ND	13	UG/KG	1028155.440	748612
SO-194031-01	29-Jul-94	ND	13.0	UG/KG	1028222.690	747042
SO-194033-01	25-Jul-94	ND	12.0	UG/KG	1028187.630	747630
SO-194034-02	27-Jul-94	ND	13	UG/KG	1028209.190	747848
SO-194035-03	26-Jul-94	ND	66.0	UG/KG	1028165.810	748014
SO-194037-01	20-Jul-94	ND	15	UG/KG	1028384.690	748444.380
SO-194037-02	20-Jul-94	ND	13	UG/KG	1028384.690	748444.380
SO-194037-03	20-Jul-94	ND	13	UG/KG	1028384.690	748444.380
SO-194037-04	20-Jul-94	ND	13	UG/KG	1028384.690	748444.380
SO-194038-02	21-Jul-94	ND	13.0	UG/KG	1028402.190	748293.560
SO-194038-04	21-Jul-94	ND	14.0	UG/KG	1028402.190	748293.560
SO-194041	19-Jul-94	ND	11	UG/KG	1028665.130	748783.440

TABLE 3: Summary of Raffinate Pit Sludge TCE Pre-1996 Analyses

Sample ID *	Raffinate Pit	Date Sampled	TCE Value	Detection Limit	Units
SD-3304-0608-V	3	27-Jul-88	ND	5	UG/KG
SD-3305-0204-V	3	27-Jul-88	ND	5	UG/KG
SD-3305-0810-V	3	27-Jul-88	ND	5	UG/KG
SD-3306-0204-V	3	28-Jul-88	ND	5	UG/KG
SD-3303-0002-V	3	29-Jul-88	ND	5	UG/KG
SD-3303-0608-V	3	29-Jul-88	ND	5	UG/KG
SD-3309-0002-AB	3	02-Aug-88	ND	5	UG/KG
SD-3309-0406-V	3	02-Aug-88	ND	5	UG/KG
SD-3307-0204-V	3	03-Aug-88	ND	5	UG/KG
SD-3307-0608-V	3	03-Aug-88	ND	5	UG/KG
SD-3308-0002-V	3	03-Aug-88	ND	5	UG/KG
SD-3308-0406-V	3	03-Aug-88	ND	5	UG/KG
SD-3309-0810-V	3	03-Aug-88	ND	5	UG/KG
SD-3312-0002-V	3	04-Aug-88	ND	5	UG/KG
SD-3312-0810-V	3	04-Aug-88	ND	5	UG/KG
SD-3313-0204-V	3	04-Aug-88	ND	5	UG/KG
SD-3411-0002-V	4	16-Aug-88	ND	5	UG/KG
SD-3413-0002-V	4	16-Aug-88	ND	5	UG/KG
SD-3405-0002-V	4	17-Aug-88	ND	5	UG/KG
SD-3415-0002-V	4	17-Aug-88	ND	5	UG/KG
SD-3407-0002-V	4	18-Aug-88	ND	5	UG/KG
SD-3416-0002-V	4	18-Aug-88	ND	5	UG/KG
SD-3406-0002-V	4	24-Aug-88	ND	5	UG/KG
SD-3406-0204-V	4	24-Aug-88	ND	5	UG/KG
SD-3408-0002-V	4	25-Aug-88	ND	5	UG/KG
SD-3409-0002-V	4	25-Aug-88	ND	5	UG/KG
SD-3403-0002-V	4	26-Aug-88	ND	5	UG/KG
SD-3404-0002-V	4	26-Aug-88	ND	5	UG/KG
SD-3410-0002-V	4	26-Aug-88	ND	5	UG/KG
SD-3410-0204-V	4	26-Aug-88	ND	5	UG/KG
SD-3412-0002-V	4	26-Aug-88	ND	5	UG/KG
SD-3414-0002-V	4	26-Aug-88	ND	5	UG/KG
SD-3417-0002-V	4	26-Aug-88	ND	5	UG/KG
SD-3101-0002-V	1	12-Sep-88	ND	5	UG/KG
SD-3101-0204-V	1	12-Sep-88	ND	5	UG/KG

Sample ID *	Raffinate Pit	Date Sampled	TCE Value	Detection Limit	Units
SD-3101-0406-V	1	12-Sep-88	ND	5	UG/KG
SD-3101-0608-V	1	12-Sep-88	ND	5	UG/KG
SD-3101-0810-V	1	12-Sep-88	ND	5	UG/KG
SD-3102-0204-V	1	12-Sep-88	ND	5	UG/KG
SD-3102-0406-V	1	12-Sep-88	ND	5	UG/KG
SD-3102-0608-V	1	12-Sep-88	ND	5	UG/KG
SD-3102-0810-V	1	12-Sep-88	ND	5	UG/KG
SD-3104-0002-V	1	13-Sep-88	ND	5	UG/KG
SD-3104-0204-V	1	13-Sep-88	ND	5	UG/KG
SD-3104-0406-V	1	13-Sep-88	ND	5	UG/KG
SD-3104-0608-V	1	13-Sep-88	ND	5	UG/KG
SD-3104-0810-V	1	13-Sep-88	ND	5	UG/KG
SD-3102-0002-V	1	14-Sep-88	ND	5	UG/KG
SD-3103-0002-V	1	14-Sep-88	ND	5	UG/KG
SD-3103-0204-V	1	14-Sep-88	ND	5	UG/KG
SD-3103-0406-V	1	14-Sep-88	ND	5	UG/KG
SD-3103-0608-V	1	14-Sep-88	ND	5	UG/KG
SD-3103-0810-V	1	14-Sep-88	ND	5	UG/KG
SD-3201-0002-V	2	15-Sep-88	ND	5	UG/KG
SD-3201-0204-V	2	15-Sep-88	ND	5	UG/KG
SD-3201-0406-V	2	15-Sep-88	ND	5	UG/KG
SD-3201-0608-V	2	15-Sep-88	ND	5	UG/KG
SD-3201-0810-V	2	15-Sep-88	ND	5	UG/KG
SD-3204-0002-V	2	15-Sep-88	ND	5	UG/KG
SD-3204-0204-V	2	15-Sep-88	ND	5	UG/KG
SD-3204-0406-V	2	15-Sep-88	ND	5	UG/KG
SD-3203-0002-V	2	21-Sep-88	ND	5	UG/KG
SD-3203-0204-V	2	21-Sep-88	ND	5	UG/KG
SD-3203-0406-V	2	21-Sep-88	ND	5	UG/KG
SD-3203-0608-V	2	21-Sep-88	ND	5	UG/KG
SD-3203-0810-V	2	21-Sep-88	ND	5	UG/KG
SD-3202-0002-V	2	22-Sep-88	ND	5	UG/KG
SD-3202-0204-V	2	22-Sep-88	ND	5	UG/KG
SD-3202-0406-V	2	22-Sep-88	ND	5	UG/KG
SD-3202-0608-V	2	22-Sep-88	ND	5	UG/KG

Sample ID *	Raffinate Pit	Date Sampled	TCE Value	Detection Limit	Units
SD-3202-0810-V	2	22-Sep-88	ND	5	UG/KG
SD-3301-0004-V	3	04-Jan-89	ND	5	UG/KG
SD-3301-0812-V	3	04-Jan-89	ND	5	UG/KG
SD-3302-0408-V	3	09-Jan-89	ND	5	UG/KG
SD-3302-0812-V	3	09-Jan-89	ND	5	UG/KG
SD-3101-071790	1	17-Jul-90	ND	19.0	UG/KG
SD-3102-071790	1	17-Jul-90	ND	12.0	UG/KG
SD-3103-071790	1	17-Jul-90	ND	10.0	UG/KG
SD-3201-071890	2	18-Jul-90	ND	19.0	UG/KG
SD-3202-071890	2	18-Jul-90	ND	17.0	UG/KG
SD-3203-071890	2	18-Jul-90	ND	19.0	UG/KG
SD-3401-071890	4	18-Jul-90	ND	23.0	UG/KG
SD-3402-071890	4	18-Jul-90	ND	31.0	UG/KG
SD-3403-071890	4	18-Jul-90	ND	23.0	UG/KG
SD-3301-071990	3	19-Jul-90	ND	57	UG/KG
SD-3302-071990	3	19-Jul-90	ND	69	UG/KG
SD-3303-071990	3	19-Jul-90	ND	100	UG/KG
SD-3304-071990	3	19-Jul-90	ND	51	UG/KG
SD-3305-071990	3	19-Jul-90	ND	89	UG/KG
SD-3306-071990	3	19-Jul-90	ND	81.0	UG/KG
SD-3307-071990	3	19-Jul-90	ND	83.0	UG/KG
SD-3308-071990	3	19-Jul-90	23.0	110	UG/KG
SD-3101-0990	1	24-Sep-90	ND	16.0	UG/KG
SD-3102-0990	1	24-Sep-90	ND	10.0	UG/KG
SD-3103-0990	1	24-Sep-90	ND	11.0	UG/KG
SD-3201-0990	2	24-Sep-90	ND	21.0	UG/KG
SD-3202-0990	2	24-Sep-90	ND	16.0	UG/KG
SD-3203-0990	2	24-Sep-90	ND	20.0	UG/KG
SD-3401-0990	4	24-Sep-90	ND	9.00	UG/KG
SD-3402-0990	4	24-Sep-90	ND	23.0	UG/KG
SD-3403-0990	4	24-Sep-90	ND	14.0	UG/KG

* Sludge ID's: Second numerical character is Raf. Pit number and the third and fourth numerical characters are location numbers.

Table 4: Concentrations of Trichloroethene (TCE) and 1,2-Dichloroethene (1,2-DCE) in Groundwater Wells at the Chemical Plant Area.

MONITORING	April 1996		June 196		August 1996		Sept/Oct 1996		November 1996	
	1,2-DCE	TCE	1,2-DCE	TCE	1,2-DCE	TCE	1,2-DCE	TCE	1,2-DCE	TCE
GW- 2001							ND	ND		
GW- 2002							ND	ND		
GW- 2003							ND	ND		
GW- 2005							ND	ND		
GW- 2006							ND	ND		
GW- 2010							ND	ND		
GW- 2012							ND	ND		
GW- 2013							16	(1)	16	(2)
GW- 2014							ND	ND		
GW- 2018							ND	ND		
GW- 2019							ND	ND		
GW- 2021							ND	ND		
GW- 2023							ND	ND		
GW- 2026							ND	ND		
GW- 2027							ND	ND		
GW- 2032					(5)	ND	(3)	ND	ND	ND
GW- 2033							ND	ND		
GW- 2034							ND	ND		
GW- 2035							ND	ND		
GW- 2036							ND	ND		
GW- 2037							25	810	(2)	1100
GW- 2038	22.7	766	39	9000			(14.0)	1050	(3)	1000

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MONITORING	April 1996		June 196		August 1996		Sept/Oct 1996		November 1996	
	1,2-DCE	TCE	1,2-DCE	TCE	1,2-DCE	TCE	1,2-DCE	TCE	1,2-DCE	TCE
GW- 2039							ND	ND		
GW- 2040							ND	ND		
GW- 2041							ND	ND		
GW- 2044							ND	ND		
GW- 3003							ND	ND		
GW- 3006							ND	ND		
GW- 3013							ND	ND		
GW- 3018			ND	ND			abandoned 10/96 due to soil removal.			
GW- 3023							ND	ND		
GW- 3024					ND	48	(0.97)	59.8		
GW- 3025	ND	11.0	ND	15			ND	29		
GW- 3026							ND	ND		
GW- 3027			ND	ND			ND	ND		
GW- 4001							ND	(2.9)	ND	(4)
GW- 4002							ND	ND		
GW- 4006			ND	ND						
GW- 4011							ND	ND		
GW- 4013							ND	ND		
GW- 4016							ND	ND		
GW- 4018							ND	ND		
GW- 4019							ND	ND		
GW- 4021							ND	ND		
GW- 4023							ND	ND		
GW- 4024							ND	ND		

q:\envdoc\julie\sampling.tce

MONITORING	April 1996		June 196		August 1996		Sept/Oct 1996		November 1996	
	1,2-DCE	TCE	1,2-DCE	TCE	1,2-DCE	TCE	1,2-DCE	TCE	1,2-DCE	TCE
GW- 4025							ND	ND		
SP-5303							ND	ND		
SP-5304							ND	ND		
SP-6301					ND	ND				

Detection limits ranged from 5 ug/l to 10 ug/l.

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Table 5: Concentrations of 1,2-Dichloroethene (DCE) and Trichloroethene (TCE) in Sludge Samples Collected from Raffinate Pit 3, November, 1996.

LOCATION	DEPTH	DCE (ug/kg)	TCE (ug/kg)
3001	0 - 5 ft	ND	ND
3001	5 - 10 ft	ND	ND
3001	10 - 15 ft	ND	ND
3002	0 - 5 ft	ND	ND
3002	5 - 10 ft	ND	(12)
3002	10 - 15 ft	ND	ND
3003	0 - 5 ft	ND	ND
3003	5 - 10 ft	ND	ND
3003	10 - 15 ft	ND	ND
3004	0 - 5 ft	ND	ND
3004	5 - 10 ft	ND	ND
3004	10 - 15 ft	ND	ND
3005	0 - 5 ft	ND	ND
3005	5 - 10 ft	ND	ND
3005	10 - 15 ft	ND	ND
3006	0 - 5 ft	ND	ND
3006	5 - 10 ft	ND	ND
3006	10 - 15 ft	ND	ND

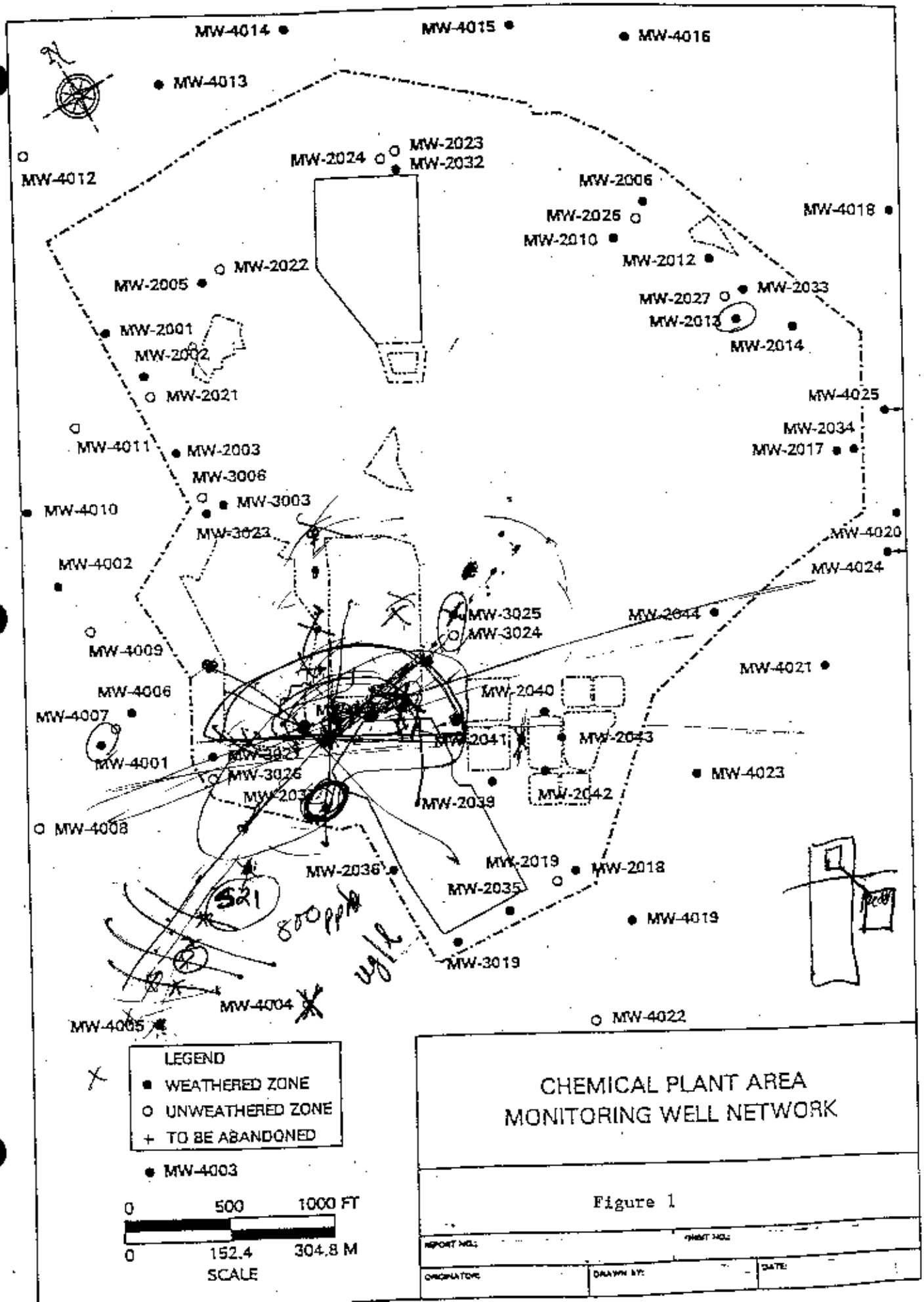
Detection Limits range from 30 ug/kg to 62 ug/kg.

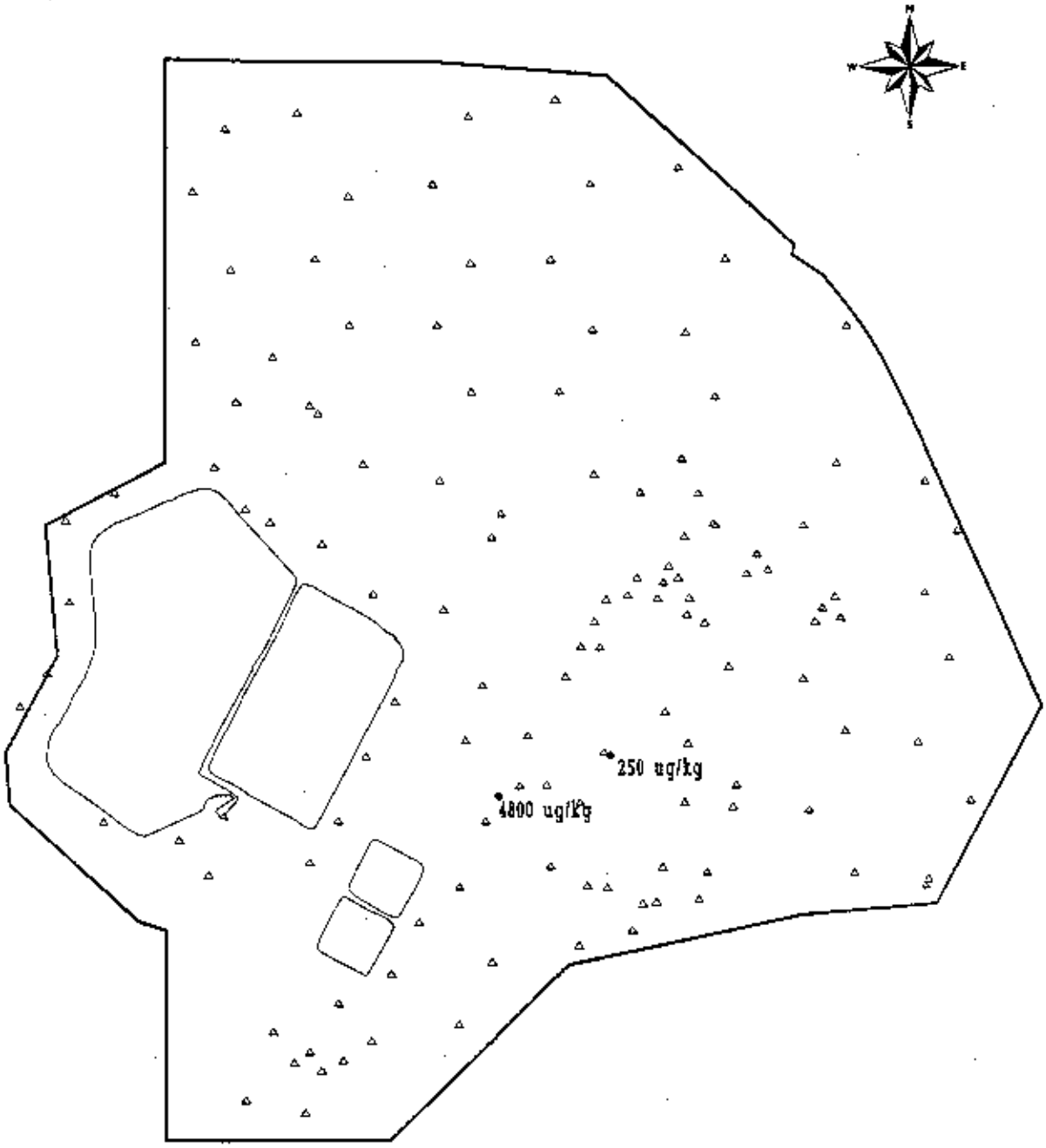
Table 6 : Summary of Soil TCE and 1,2-DCE Analyses during 1996

Sample ID	Date Sampled	TCE Value	Detection Limit	Units
SO-296008	19-Sep-96	ND	16	UG/KG
SO-396311-05	02-Dec-96	ND	13	UG/KG
SO-396311-13	02-Dec-96	ND	14	UG/KG
SO-396311-17	02-Dec-96	ND	12	UG/KG
SO-396311-22	02-Dec-96	ND	12	UG/KG
SO-396311-27	03-Dec-96	ND	12	UG/KG
SO-396311-36	03-Dec-96	ND	12	UG/KG
SO-396312-04	03-Dec-96	ND	12	UG/KG
SO-396312-12	03-Dec-96	ND	12	UG/KG
SO-396312-17	03-Dec-96	ND	12	UG/KG
SO-396312-22	03-Dec-96	ND	12	UG/KG
SO-396312-30	04-Dec-96	ND	12	UG/KG
SO-396312-35	04-Dec-96	ND	12	UG/KG
SO-396321-05	05-Dec-96	ND	12	UG/KG
SO-396321-11	05-Dec-96	ND	13	UG/KG
SO-396321-15	05-Dec-96	ND	13	UG/KG
SO-396321-20	06-Dec-96	ND	13	UG/KG
SO-396321-30	06-Dec-96	ND	12	UG/KG
SO-396321-35	06-Dec-96	ND	12	UG/KG
SO-396321-40	06-Dec-96	ND	12	UG/KG
SO-396410-02	23-Nov-96	ND	13	UG/KG

Note: Sample ID: Numerical characters four through six are locations and last two numerical characters are depth codes.

q:\envdoc\julie\sampling.tce


MW-4014
MW-4015
MW-4016
MW-4013
MW-4012
MW-2024
MW-2023
MW-2032
MW-2006
MW-2026
MW-4018
MW-2010
MW-2012
MW-2022
MW-2005
MW-2027
MW-2033
MW-2013
MW-2014
MW-2001
MW-2002
MW-2021
MW-4025
MW-2034
MW-2017
MW-4011
MW-2003
MW-3006
MW-3003
MW-4010
MW-3023
MW-4020
MW-4024
MW-4002
MW-3025
MW-3024
MW-2044
MW-4009
MW-4021
MW-4006
MW-2040
MW-4007
MW-2041
MW-2043
MW-4001
MW-3026
MW-4023
MW-2042
MW-2039
MW-4008
MW-2036
MW-2019
MW-2018
MW-2035
MW-4019
MW-3019
MW-4004
MW-4005
MW-4022
MW-4003
LEGEND
WEATHERED ZONE
UNWEATHERED ZONE
TO BE ABANDONED
0
500
1000 FT
0
152.4
304.8 M
SCALE
CHEMICAL PLANT AREA
MONITORING WELL NETWORK
Figure 1
REPORT NO.:
SHEET NO.:
ORIGINATOR:
DRAWN BY:
DATE:



Concentration > ND

Concentration <= ND

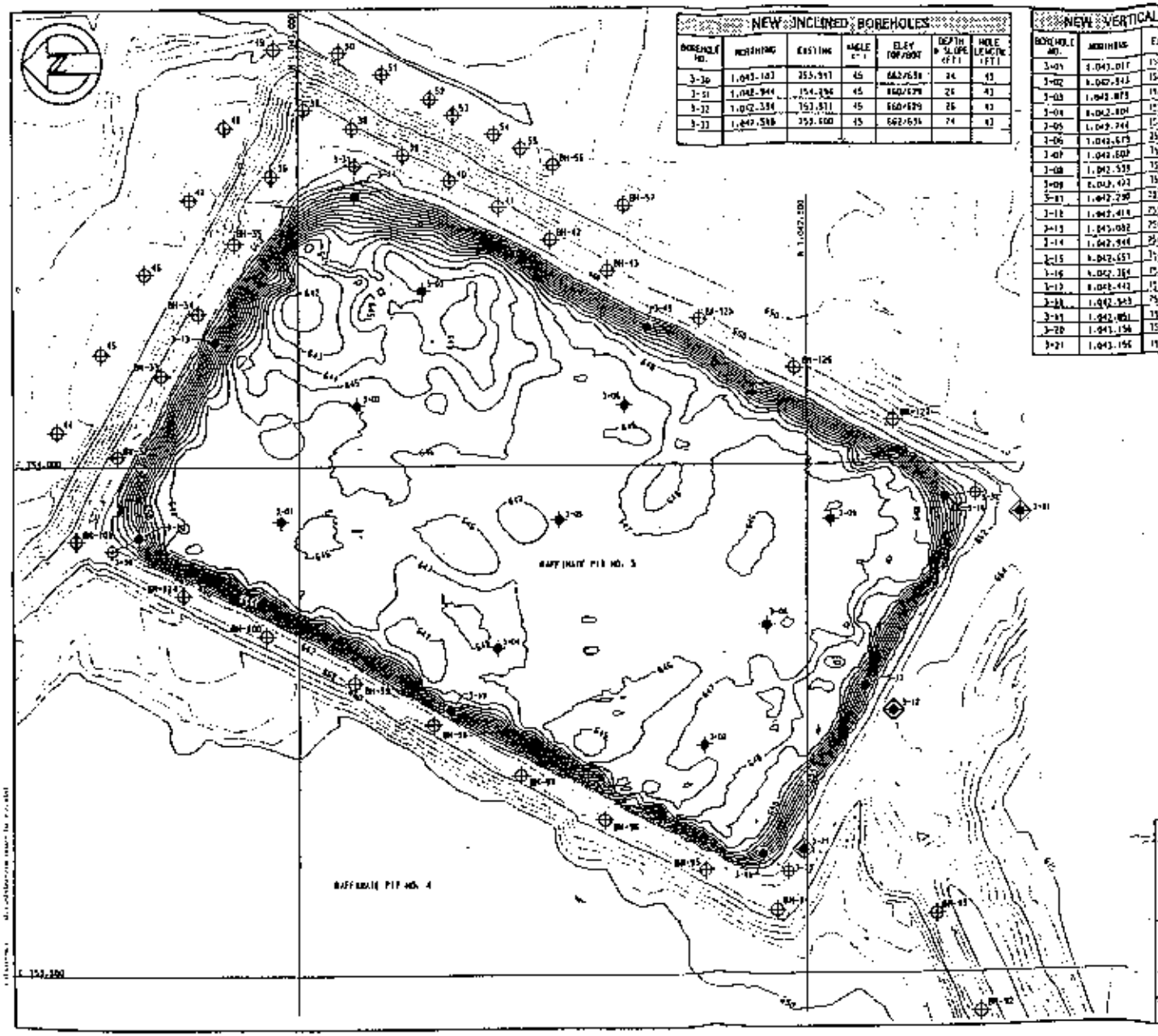
100 50 0 100 200 METERS

100 150 0 300 600 FEET

WELDON SPRING CHEMICAL PLANT SAMPLING LOCATIONS FOR TRICHLOROETHENE

Figure: 2

REPORT NO.: DOE/OR/21548----		EXHIBIT NO.: A/CP/---/----	
ORIGINATOR: MET	DRAWN BY: WSSRAP GIS	DATE: 01/97	



NEW INCLINED BOREHOLES

BOREHOLE NO.	NORTHING	EASTING	ANGLE (°)	ELEV TOP/BOT	DEPTH ALONG SLOPE (FT)	HOLE LENGTH (FT)
3-30	1,043.103	753.917	45	662/638	24	43
3-31	1,042.944	754.296	45	660/629	26	43
3-32	1,042.334	753.811	45	660/629	26	43
3-33	1,042.518	753.600	45	662/636	24	43

NEW VERTICAL BOREHOLES

BOREHOLE NO.	NORTHING	EASTING	ELEV	DEPTH (FT)
3-01	1,043.017	753.945	646	35
3-02	1,042.943	754.060	646	35
3-03	1,042.875	754.173	644	34
3-04	1,042.804	753.821	648	38
3-05	1,042.744	753.937	647	37
3-06	1,042.675	754.059	647	35
3-07	1,042.607	753.723	647	37
3-08	1,042.535	753.482	647	37
3-09	1,042.473	753.916	647	35
3-11	1,042.290	753.357	647	40
3-12	1,042.414	753.251	662	40
3-13	1,042.082	754.022	655	8
3-14	1,042.944	754.264	655	8
3-15	1,042.651	754.196	655	8
3-16	1,042.384	753.963	655	8
3-17	1,042.443	753.782	655	8
3-18	1,042.543	753.637	655	8
3-19	1,042.651	753.368	655	8
3-20	1,043.156	753.930	655	8
3-21	1,043.156	753.930	662	40

EARLIER BOREHOLES

BOREHOLE NO.	NORTHING	EASTING	ELEV	DEPTH (FT)
BH-30*	1,043,137.5	754,090.8	653.9	23
BH-13	1,043,133.8	754,049.2	663.3	28
BH-30*	1,042,098.6	754,121.0	663.8	32
BH-35*	1,043,062.9	754,216.3	662.3	31
36	1,042,076.0	754,285.0	663.2	30
37*	1,042,954.0	754,250.0	663.2	29
38	1,042,946.8	754,330.5	663.8	28.2
39*	1,042,857.0	754,304.2	662.3	29
40	1,042,851.3	754,219.4	662.5	31
41	1,042,803.4	754,455.3	662.3	25.8
BH-42	1,042,252.2	754,271.1	663.3	17
BH-43	1,042,695.2	754,851.3	663.5	14
44	1,043,238.8	754,635.3	645.8	5
45	1,043,890.3	754,310.3	646.8	7
46	1,043,849.4	754,189.1	645.4	7
47	1,043,105.2	754,261.4	645.8	6
48	1,043,015.0	754,338.0	644.9	7
49	1,043,023.6	754,409.2	646.3	7
50	1,042,960.0	754,402.0	643.7	7
51	1,042,919.7	754,383.3	643.0	7
52	1,042,870.2	754,358.4	643.8	7
53	1,042,847.6	754,342.5	642.9	5
54*	1,042,807.5	754,324.0	642.2	7
55	1,042,761.2	754,310.5	642.3	7
BH-56	1,042,749.2	754,394.5	643.3	13
BH-57	1,042,679.6	754,254.2	645.0	18
BH-58	1,042,578.6	753,481.3	645.2	15
BH-59	1,042,592.4	753,556.8	665.8	12
BH-94	1,042,523.0	753,587.3	662.5	16
BH-95	1,042,601.3	753,600.5	663.1	30.5
BH-96	1,042,699.2	753,651.3	663.5	22
BH-97	1,042,787.0	753,695.1	663.6	26
BH-98	1,042,864.2	753,744.9	663.6	27
BH-99	1,042,945.5	753,784.3	663.6	22
BH-100	1,043,038.6	753,833.0	663.7	18
BH-101	1,043,016.6	753,926.7	663.3	25
BH-124	1,043,118.7	753,817.8	663.9	17
BH-125*	1,042,602.1	754,315.6	663.6	19
BH-126	1,043,512.2	754,045.3	663.8	19
BH-127	1,043,414.0	754,045.5	663.6	14

* EARLIER SAMPLING INDICATED CONTAMINANTS EXCEEDING CLEANUP STANDARDS

LEGEND

- BH-32 EARLIER BOREHOLE AND NO.
- 3-00 NEW VERTICAL BOREHOLE AND NO.
- 3-30 NEW INCLINED BOREHOLE AND NO.
- 3-17 SAMPLE FOR VOC ONLY

0 50 100 200 300 FT

RAFFINATE PIT 3 SAMPLE LOCATIONS

FIGURE 3

DRAWING NO.: DOE/OR/2148-653	CONTROL NO.: B/RP/003/1096	
DRAFTED BY: REJ	REVIEWED BY: KSR	DATE: 11/27/96