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Department of Energy
Feed Material Production Center

RCRA GROUNDWATER MONITORING REPORT

Volume 2 - Round 2 Sampling

November 1986

Prepared by:

DAMES & MOORE

Pearl River, New York

For:

Westinghouse Materials Company of Ohio

Fernald, Ohio

Department of Energy
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SECTION 1

1.0 INTRODUCTION

As part of a continuing RCRA ground water monitoring compliance effort, the Second Round of quarterly ground water samples were collected from 41 monitoring and water supply wells at the Feed Materials Production Center (FMPC) in Fernald Ohio, on May 19 and 20, 1986. The FMPC is a uranium metal processing facility operated for the Department of Energy (DOE) by the Westinghouse Materials Company of Ohio (WMCO). The results of the Round 2 sampling are summarized in this report.

The First Round of quarterly ground water sampling was previously conducted in a series of three phases as described below:

- Phase 1 of Round 1 was performed on August 1, 1985. Four wells screened in the saturated portion of the glacial till were sampled as part of this work. Results of analytical testing were presented and interpreted in a Dames & Moore report dated December 19, 1986 (Reference 1).

- Phase 2 of Round 1 was completed three weeks later on August 27, 1985. Seven wells completed in the sand and gravel aquifer were sampled during this phase. Results were provided in a Dames & Moore report dated December 20, 1985 (Reference 2).

- Phase 3 of Round 1 took place in early January, 1986 and involved the sampling of 32 on-site and off-site monitoring wells. Results from this effort presented and discussed in a Dames & Moore report dated May 6, 1986 (Reference 3).

Analytical results from all phases of Round 1 sampling are included in Appendix 4 of this report. Even though changes in water quality occur over time, a comparison between the results for the three phases of Round 1 and other Rounds can be made to estimate relative changes in overall ground water quality.

Round 2 RCRA sampling was completed in May, 1986 and is the subject of this report.

Round 3 and 4 RCRA sampling were completed in late August and mid November, 1986 respectively. This is in conformance with the quarterly first year schedule requirements of 40 CFR Part 264. Samples are currently undergoing laboratory analysis.

2.0 GROUND WATER MONITORING

The ground water monitoring performed as part of this project was initiated to characterize ground water quality at the FMPC and to assist in identifying RCRA regulated hazardous and radionuclide constituents which may be present in the ground-water. A previous study by Dames & Moore (Reference 4) has indicated that uranium is present in portions of the sand and gravel aquifer at levels above background.

To assist in identifying if RCRA regulated constituents (other than uranium) have entered the ground water, a total of forty-one (41) on and off-site wells were selected for sampling. The location of each well is shown on Figure 2-1. The wells monitor two distinct water bearing units; a shallow clayey till layer and an underlying sand and gravel aquifer. The shallow till system is monitored by wells MW-12, MW-TP19, MW-TP20, MW-TP21, MW-TP22 and OS-1A. The remaining 35 wells all are completed in the sand and gravel aquifer. The sand and gravel aquifer wells are completed at various depths in order to provide information on the potential vertical movement of identified above background constituents.

2.1 Selection of Background Wells

Characterization of background water quality at RCRA related facilities usually is performed by sampling a well hydraulically upgradient of the waste disposal area. The well is typically completed in the same hydrogeologic unit as the downgradient wells. At the FMPC this procedure was followed in selecting a background well for monitoring the glacial till but not for the sand and gravel aquifer. This was because of the geology of the site.

In order to discuss the rationale for the selection of the background wells, a basic understanding of the regional geology is

required. A more detailed description of site geology may be found in Reference 4.

The sand and gravel aquifer beneath the FMPC is part of the New Haven Trough. This Trough is an east-west trending subsurface feature which has been filled with alluvially deposited sands and gravels which are covered with till. The northern boundary of the feature corresponds roughly with the northern boundary of the FMPC. North of the Trough, till is deposited directly on bedrock.

Well MW-12, used as a background well for monitoring the till, is screened in the glacial till and weathered bedrock. It is located hydraulically upgradient from the four other shallow wells and is about 500 feet north of the Plant Production Area. The water level elevations in this upgradient well are more than 20 feet higher than the on-site shallow (till) wells. Being upgradient should hydrologically isolate this well from on-site sources of waste.

The background well for the sand and gravel aquifer at the FMPC should have been placed upgradient (north) of the waste disposal area. However, the sand and gravel aquifer north of the FMPC abruptly grades into a thick sequence of glacial till overlying shale bedrock. The chemistry of ground water in this till may be quite different than that of ground water in the sand and gravel. Ground water in clays tends to have different natural concentrations of many constituents than water in sand and gravel. If a well completed in the clay was used as the background well for the sand and gravel aquifer, non-representative background concentrations may have been identified for some of the constituents being analyzed.

Since an upgradient well screened in the till might not be representative of background water quality, a nearby water supply well was selected to characterize background ground water quality. The Southwestern Ohio Water Company operates a well which is completed in

the sands and gravels of the New Haven Trough, approximately one mile east of the site. Although the well (SW-2) is believed to be in an adjacent ground water flow regime, the water from SW-2 will be more representative of the natural ground water conditions beneath the FMPC than a geographically closer well completed in the till. Hence, well SW-2 was selected for use as a background well for monitoring of the sand and gravel aquifer.

Samples of the ground water were taken on May 19 and 20, 1986 using the sampling procedures outlined in the "RCRA Sampling and Analysis Plan" (Appendix 1). The samples were then sent to Howard Labs Inc. in Dayton, Ohio for analysis according to USEPA approved protocols and procedures (Reference 5). Tests were performed for 95 specific parameters including numerous ions, metals, organic compounds and radionuclides. A list of the parameters that were analyzed is included in Appendix 1 (Table 3). The compounds that were detected in the sampled wells are included in Tables 3.1.-3.4. A copy of the Laboratory Data Sheets is provided in Appendix 2. For ease of reading, the volatile organic compounds not detected have not been included in Tables 3.1.-3.4. Appendix 3 contains a copy of the Chain of Custody form for the Round 2 samples.

Until all four rounds of sampling have been performed, trends and variability in the analytical results cannot be calculated. Statistical comparisons of the results (Student t-tests) will be performed when the four rounds of analytical data are available. However, based on the results of this first round of sampling, several preliminary observations can be made.

Water level elevations were measured at most well locations. At some well locations the depth to water could not be measured due to the well's construction. Measurements from Round 2 sampling (Table 2.1) are included in this report and a ground water contour map for the sand and gravel aquifer is shown on Figure 2-2.

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SECTION 3

3.0 WATER QUALITY

The ground water sampling data from the FMPC has been reviewed to reflect the fact that there are two hydrogeologic systems identified at the site; the shallow till and the underlying sand and gravel aquifer. There are six wells completed (screened) in the till and thirty-five wells completed in the sand and gravel. The monitoring results from the shallow (till) and deeper (sand and gravel) wells are considered separately.

3.1 Shallow (Till) Ground-Water Quality

Six wells screened in the till were sampled as part of Round 2 work. These are MW-12, MW-19TP, MW-20TP, MW-21TP, MW-22TP and OS-1a. A review of this analytical data (See Table 3.1) indicates that:

- No VOCs or pesticides/herbicides were detected in the glacial till water bearing zone. It should be noted that, due to laboratory error, TOX and pesticide/herbicide analysis are not available for well MW-19TP and MW-21TP. However, TOC analyses do not indicate the presence of these types of constituents and they have not been detected in previous sampling efforts.

- Radionuclides were not detected in wells MW-12 (upgradient), MW-20TP (southwest of production area) and OS-1a (off-site). This is consistent with data gathered in earlier sampling efforts. In MW-19TP, MW-21TP, and MW-22TP, gross alpha, gross beta and radium concentration were detected which exceeded USEPA drinking water standards. These results continue to support the Round 1 Phase 3 conclusion (Reference 3) that the presence of these constituents is an indicator that Pit 4 may be influencing the shallow ground water.

- Coliform exceeded standards in OS-1a, MW-20TP and MW-22TP. Given the location of two of these wells (in former/current cow grazing areas) and the near surface nature of this water bearing zone, high coliform levels are not unusual.

- Iron, manganese, and TDS were elevated in almost all the glacial till wells including the background well and off-site well. These concentrations are probably indicative of overall regional water quality for this water bearing zone and are not related to FMPC waste management activities.

- In well MW-19TP an elevated chloride concentration was detected. Elevated sulfate concentrations have been reported in wells MW-19TP, MW-21TP and MW-22TP. Nitrate levels were reported as elevated only in well MW-22TP. As with radionuclides, the presence of these constituents is an indication that Pit 4 may be influencing the shallow ground water.

- The concentrations of other metals (lead, hexavalent chromium, etc.) and water quality indicators (pH, conductivity, etc.) were below or within drinking water standards.

3.2 Sand and Gravel Aquifer Water Quality - Inside of Plant Production Area

Within the Plant Production Area, the sand and gravel aquifer is monitored at varying depths by 14 wells. Analytical results of ground water samples from these wells (see Table 3.2) demonstrate the following:

- No VOCs or pesticides/herbicides were detected in 12 out of the 14 wells monitored. 4.4 ppb of trichloroethene was detected in MW-4 and 4.06 ppb of 2,4-D and 0.694 ppb of 2,4,5-TP Silvex were detected in MW-8s. Both the 2,4-D and 2,4,5-TP Silvex concentrations were below EPA Primary Drinking Water Standards of 10 ppb. This is the first time that these

parameters have been detected in these wells and conclusions cannot be reached at this time as to the significance of these concentrations. These wells will continue to be monitored for these parameters.

- Radionuclides were not detected in 8 of the 14 wells monitored. In wells 10, 13d, 19d and 22s slightly elevated activities of gross beta were detected (ranging from 5.31 pCi/L to 73 pCi/L). However, no associated beta emitters were found in the rad scan and these activities are probably associated with solids, in the samples (see note 8-Table 3.2). Monitor wells 19s and 21s reported high activities of gross alpha, gross beta, and radium. As previously discussed (Reference 3), this is an indicator that Pit 4 may be influencing the sand and gravel aquifer. However, migration pathways and source identification based on these indications will be made as part of the ongoing RI/FS program.

- Coliform was detected at elevated levels in wells 1d, 4 and 8s. All three of these wells are open to the atmosphere and coliform may be present as a result of bacteria growth on the well casing and/or associated pumps and piping.

- Manganese and Phenols concentration exceeded recommended standards in 10 wells and 8 wells respectively of the 14 wells monitored in the aquifer. These parameters also were reported as exceeding SDWS in the upgradient well (SW-2) and may be reflective of regional water quality.

- TDS concentrations in MW-5 exceeded recommended standards for the first time. This well will continue to be monitored for this parameter to evaluate whether this is indicative of a trend in the data. In wells 19s, 19d, 21s and 22s (all around Pit 4) TDS continues to exceed recommended standards by very high amounts. This is another indication that Pit 4 may be influencing the sand and gravel aquifer.

- Nitrate exceeded USEPA Primary Drinking Water Standards (PDWS) in wells 19s, 21s, 22s. These data (from wells located around Pit 4) also indicate that Pit 4 is possibly leaching into the sand and gravel aquifer.

- It should be noted that nitrate, TDS and sulfate also exceeded standards in monitor well 10. This well, located some 800 feet to the east of Pit 4 is in the natural ground water flow path of potential leachate from the Pit. High concentrations of these constituents in this well (and also TDS and sulfate in Well 13d) may indicate a wider dispersion of leachate from the Pit or may be attributed to various other waste management activities of past FMPC operations. However migration pathways and source indentifications based on these indications will be made as part of the ongoing RI/FS program.

- Metals and other water quality indicators were analyzed on ground water from wells within the Production Area and were under or within USEPA Primary and Secondary Drinking Water Standards

3.3 Plant Production Wells

Although screened within the sand and gravel aquifer, and under the Production Area, the Plant Production wells (P-1, P-2 and P-3) are discussed separately because of their specialized use and importance to the FMPC.

In examining water quality data from these wells (see Table 3.3), four things are apparent:

- No radionuclides were detected. P-1 shows a very slight increase (5.76 pCi/L) over the 5 pCi/L detection limit for gross beta activity, but no beta emitters were found in the rad scan. As discussed on Section 3.2, this is probably related to solids (particulates) in the sample.

- o VOC data are not available for these wells because wells are inaccessible to bailers and VOC analysis would not be representative if pumped (i.e. aerated) water was used in the analysis. A sampling port is being constructed and may be ready for the November 1986 sampling round. Both TOC and TOX results do not indicate the potential presence of VOCs. No pesticides/herbicides were detected.

- o TDS was slightly over the SDWS in P-3. This was the first time this has occurred and the significance of this result cannot be determined at this time. This well will continue to be monitored. It should be noted that water pumped from this well is treated and filtered prior to being used as a water supply source at the FMPC.

- o Metals and the water quality indicators were below or within USEPA/PDWS standards.

3.4 Sand and Gravel Aquifer Water Quality - Outside of Plant Production Area

Outside the Plant Production Area the sand and gravel aquifer is sampled at varying depths by 14 monitoring and 4 water supply wells. Water quality data from these wells (see Table 3.4) allows the following statements to be made:

- o A VOC (1,1,1-trichloroethane) was detected in only one well (MW-15s) at a concentration of 5.1 ppb. This is the first time such a compound has been detected in this well. No conclusions regarding the significance of this compound can be made from just this one result. This well will continue to be monitored. VOC analysis was not done on the 4 water supply wells (OS-1, 15d, OS-2, and OS-3) because of the inaccessability of these wells to bailers. However, TOC and TOX data do not indicate the potential presence of VOC concentrations.

- No pesticides/herbicides were detected in any of the wells outside the Plant Production Area.

- Elevated levels of Coliform were detected in MW-9. The pump in this well, which is open to the atmosphere, was repaired just prior to sampling. Bacteria may be related to this maintenance work. Coliform also was detected in SW-2, the background well. This is the first time such a level has been reported and it may be the result of sampling error. This well will continue to be monitored.

- No radionuclides were detected in 4 of the 18 wells monitored (MW-9, MW-17d, MW-18d, MW-15d). Slightly elevated beta activities (probably related to suspended matter in the samples) were detected in 5 wells (MW-11, MW-14d, MW-16s, MW-16d, and MW-18s). No beta emitters were found in the rad scan of these samples. Gross alpha, gross beta and radium were detected in wells OS-1 and OS-2 which are known to contain above background uranium concentrations. Radium also was reported in SW-2, 15s, 20s and 20d. This is the first time radionuclides have been reported from these wells. No conclusions as to the potential significance of these findings can be made at this time. These wells will continue to be monitored and evaluated for possible radionuclide contamination.

- Manganese and Phenol concentrations exceeded Secondary and Recommended DWS in 12 out of 18 wells and 14 out of 18 wells monitored respectively. These parameters also were present in concentrations above Secondary and Recommended standards in the background well. They are probably reflective of water quality on a regional basis.

- For the first time, TDS in well 17s slightly exceeded the SDWS. No meaning can be drawn from just this one value, especially as all other parameters were within limits. This well will, however, continue to be monitored.

- Metals and the water quality indicators were within or below Drinking Water Standards for the remaining wells.

SECTION 4

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4.0 Conclusions

Based upon review of the current analytical data, the following conclusions can be made regarding groundwater quality underlying and in the vicinity of the FMPC:

(1) Widespread VOC, pesticide/herbicide and heavy metal contamination is not present in the groundwater at the FMPC. Although isolated occurrences of low concentration compounds have been detected, they are not indicative of widespread groundwater degradation.

(2) The distribution of radiological and nonradiological constituents appears to be localized around Pit 4 but may be moving outward. The RI/FS currently in progress will help decide as to the most effective way to remediate this situation.

(3) The Plant Production wells and off-site monitoring/supply wells have not been influenced by leaching from Pit 4*.

(4) Groundwater sampling must be continued on a regular basis to confirm the above conclusions. Rounds 3 and 4 RCRA sampling were completed in late August and mid November 1986 respectively. Samples currently are undergoing laboratory analysis.

* Reference 4 provides information on the occurrence of above-background concentrations of uranium in three off-site wells. Sources for the above-background concentrations also are identified.

REFERENCES

(1) Dames & Moore, 1985, Pit #4 RCRA Ground-Water Monitoring: Report to Waste Management Services Group, NLO, Inc., dated December 19, 1985.

(2) Dames & Moore 1985, Sample Results: Sand and Gravel Aquifer, RCRA Ground-Water Monitoring, Report to Health Safety and Environmental, NLO, Inc., dated December 20, 1985.

(3) Dames & Moore, 1985, Results of Round 1 Groundwater sampling, Feed Materials Production Center, Fernald, Ohio. Report dated May 6, 1986.

(4) Dames & Moore, 1985, Groundwater Study-Task C Report, Report to the Department of Energy, Feed Materials Production Center, dated July, 1985.

(5) USEPA, 1983, Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020.

LIST OF ABBREVIATIONS AND ACRONYMS

CFR	Code of Federal Regulations
D&M	Dames & Moore
DOE	U.S. Department of Energy
DWS	Drinking Water Standards
EPA	Environmental Protection Agency
FMPC	Feed Materials Production Center
MSL	Mean Sea Level
MW	Monitoring Well
NLO	National Lead of Ohio
OS	Off-site
pCi/l	Picocurie per liter
PDWS	Primary Drinking Water Standards
ppb	Parts per billion
ppm	Parts per million
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
SDWS	Secondary Drinking Water Standards
SW-2	Southwest Ohio - Collector Well No. 2
TDS	Total Dissolved Solids
TOC	Total Organic Carbon
TOX	Total Organic Halogens
TP	Test Pit
VOC	Volatile Organic Compounds
WMCO	Westinghouse Materials Company of Ohio

TABLES

Table 2.1
Round 2 Water Level Elevation

Well #	Depth to Water(ft)	Casing Elev. (MSL)	Grade (MSL)	Water Table Elev. (MSL)
P-1	N A	578.66	576.66	N A
P-2	N A	579.16	577.16	N A
P-3	N A	579.36	577.36	N A
1S	61.52	585.55	583.47	524.03
1d	61.50	585.31	583.81	523.81
3	35.72	560.86	559.30	525.14
4	31.0	556.85	556.15	525.85
5	31.84	557.09	555.53	525.25
8s	52.45	576.60	574.90	524.15
8d	53.22	576.62	574.82	523.40
9	30.92	557.23	555.31	526.31
10	64.95	588.39	586.56	523.44
11	60.67	585.78	583.64	525.11
12	31.37	639.67	N A	608.30
13s	68.09	590.37	588.71	522.28
13d	68.08	590.36	588.72	522.28
14s	12.39	535.79	533.76	523.40
14d	12.40	535.81	533.71	523.41
15s	57.21	579.65	577.80	522.44
15d	60.00	579.41	577.80	519.41
16s	18.13	542.28	540.47	524.15
16d	18.06	542.13	540.50	524.07
17s	13.00	536.19	534.43	523.19
17d	13.15	536.35	534.28	523.20
18s	48.17	573.36	571.31	525.19
18d	42.25	573.88	571.56	531.63
19s	61.00	585.38	583.26	524.38
19d	61.00	585.25	583.20	524.25
TP-19	8.73	584.96	582.98	576.23
20s	51.69	574.44	573.42	522.75
20d	51.04	574.71	573.31	523.67
TP-20	4.5	574.73	573.21	570.23
21s	61.53	586.02	594.42	524.29
TP-21	4.60	585.61	584.06	581.01
22s	63.26	587.95	587.93	524.69
TP-22	7.62	588.91	587.93	581.29
SW-2	29.33	N A	N A	N A
HK-S	59.50	581.83	581.35	522.33
DS	26.00	N A	N A	N A
AW	N A	N A	N A	N A
HK-DG	11.58	N A	N A	N A
*IT-1	57.55	579.93	577.93	522.38
*IT-2	73.80	595.58	593.22	521.78
*IT-5A	72.52	594.22	592.17	521.70
*IT-6	53.60	576.02	574.07	522.42

*Not Sampled
NA - Not Available

Table 2.2

IT Well Information

	Screen elevation (MSL)	Total Depth**(ft)	Stick up (ft)
IT-1	490-500	87.40	2.00
IT-2	491-501	102.20	2.36
IT-5A	489-499	102.70	2.05
IT-6	488-498	86.50	1.95

** With Stick Up
MSL- Mean Sea Level

3.1 Shallow (Till) Groundwater

Sampling Results (FMPC)
(All results in ppm except as noted)

	MW-12	MW-19TP	MW-20TP	MW-21TP	MW-22TP	OS-1A
Chloride	105.0	265.0	5.0	19.0	34.0	35.0
Iron	3.410	2.100	0.360	1.690	15.800	0.083
Manganese	0.050	1.380	1.020	1.920	1.280	<0.020
Phenols	<0.005	<0.005	<0.005	0.006	0.007	0.008
Sodium	210.000	56.100	3.680	11.300	174.000	32.700
Sulfate	8.0	660.0	48.0	260.0	1,100	130.0
Silver	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Arsenic	<0.005	<0.005	<0.007	<0.005	0.008	<0.005
Barium	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Calcium	22.300	310.00	120.000	146.000	458.00	141.000
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005	0.008	0.010
Chromium						
-Total	<0.005	<0.005	<0.005	<0.005	0.028	<0.005
-Hexavalent	<0.005	<0.005	<0.005	<0.005	<0.010	<0.005
Copper	<0.025	<0.025	<0.025	<0.025	<0.052	<0.025
Fluride	1.09	0.38	0.22	0.52	0.97	0.17
Mercury	0.0009	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	10.600	1.140	1.010	1.390	8.090	34.100
Mangesium	9.200	107.000	29.000	74.000	176.000	62.000
Nickel	<0.005	<0.005	<0.005	<0.005	0.023	<0.005
Nitrates	<0.02	0.07	<0.02	0.19	10.50	8.96
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Phosphorus, total	0.06	0.11	0.07	0.08	0.35	0.07

3.1 Shallow (Till) Groundwater Sampling Results (FMPC)

(All results in ppm except as noted)

	MW-12	MW-19TP	MW-20TP	MW-21TP	MW-22TP	US-1A
Selenium	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Zinc	<0.025	<0.025	<0.025	<0.025	0.48	0.051
T.D.S.	660	1,820	376	780	2,550	840
C.O.D.	<10	21	17	12	38	16
pH-lab (1) (2)	7.75	6.72	7.13	7.28	7.07	6.99
Conductivity-lab (1) (3)	1,000	2,000	598	999	2,400	1,100
T.O.C. (1)	<1	4	2	2	5	2
T.O.X. (1) (4)	<10	NA	15.5	NA	30.8	19.5
Coliform (10)	6	<2	29	6	2,600	4,200
Lindane (4)	<0.2	NA	<0.2	NA	<0.2	<0.2
Endrin (4)	<0.2	NA	<0.2	NA	<0.2	<0.2
Methoxychlor (4)	<0.2	NA	<0.2	NA	<0.2	<0.2
Toxaphene (4)	<0.5	NA	<0.5	NA	<0.5	<0.5
2,4-D (4)	<0.2	NA	<0.2	NA	<0.2	<0.2
2,4,5-TP, Silvex (4)	<0.2	NA	<0.2	NA	<0.2	<0.2
VOC's (4)	ND	ND	ND	ND	ND	ND
Gross Alpha (5)	<15	<15	<15	125	37	<15
Gross Beta (5)	5	76.77	<5	335	143	26
Radium, Total (5)	<5	5.84	<5	21.1	<5	<5
Radionuclide Scan (5) (12)	<5	<5	<5	<5	<5	<5
Uranium (13)	0.0001	0.90	0.012	3.20	5.06	0.0013

3.2 Sand and Gravel Aquifer
Groundwater Sampling Results Inside Producation Area (FMPC)
(All results in ppm except as noted)

	MW-1s	MW-1d	MW-3	MW-4	MW-5	MW-8s	MW-8d	MW-10	MW-13s	MW-13d
Chloride	18.0	27.0	24.0	21.0	16.0	21.0	13.0	82.0	27.0	69.0
Iron	1.050	6.240	0.750	0.170	2.310	1.190	3.010	0.250	3.180	7.840
Manganese	0.487	0.416	0.396	<0.005	0.546	0.217	0.362	4.160	0.183	0.338
Phenols	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	0.006	<0.005
Sodium	10.400	23.500	7.800	8.500	8.290	9.500	9.700	131.000	12.000	48.800
Sulfate	74.0	60.0	94.0	66.0	72.0	72.0	12.0	720.0	94.0	230.0
Silver	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Barium	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Calcium	76.800	98.400	83.100	84.100	110.000	83.000	96.900	377.00	121.000	205.000
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium										
-Total	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
-Hexavalent	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Fluoride	0.13	0.13	0.24	0.24	0.24	0.14	0.22	0.13	0.17	0.15
Mercury	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	2.470	1.010	2.640	2.880	2.660	2.860	1.010	21.900	2.310	4.300
Magnesium	23.500	27.100	23.300	20.300	26.500	22.900	21.000	73.000	26.300	59.000
Nickel	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.007	<0.005	<0.005
Nitrates	<0.02	0.08	<0.02	2.20	<0.02	<0.02	<0.02	160.00	0.06	<0.02
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Phosphorus, total	<0.02	0.12	0.04	<0.02	<0.02	<0.02	0.07	0.06	<0.02	<0.02

3.2 Sand and Gravel Aquifer
Groundwater Sampling Results Inside Production Area (FMPC)
(All results in ppm except as noted)

	MW-1s	MW-1d	MW-3	MW-4	MW-5	MW-8s	MW-8d	MW-10	MW-13s	MW-13d
Selenium	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Zinc	<0.025	<0.0025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
T.D.S.	456	476	416	348	560	448	332	2730	468	956
C.O.D.	<10	12	<10	<10	<10	<10	11	<10	11	144
pH-lab (1) (2)	7.32	7.36	7.40	7.47	7.30	7.40	7.47	6.88	7.24	7.07
Conductivity-lab (1) (3)	599	725	603	546	656	600	519	2,713	686	1,265
T.O.C. (1)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
T.O.X. (1) (4)	47.0	12.0	<10	11.0	<10	19	<10	23.3	<10	13.0
Coliform (10)	<2	18	<2	2,100	<2	9	<2	<2	3	<2
Lindane (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2, 4-D (4)	<0.2	<0.2	<0.2	<0.2	<0.2	4.06	<0.2	<0.2	<0.2	<0.2
2,4,5-TP, Silvex (4)	<0.2	<0.2	<0.2	<0.2	<0.2	0.694	<0.2	<0.2	<0.2	<0.2
VOC's (4)	NA	ND	NA	----	NA	ND	ND	ND	ND	ND
Gross Alpha (5)	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
Gross Beta (5)	<5	<5	<5	<5	<5	<5	<5	12.9	<5	5.31
Radium, Total (5)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Radionuclide Scan (5) (12)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Uranium (13)	0.0093	0.0001	0.0023	0.0058	0.0037	0.0006	0.0003	0.015	0.0021	0.019
Trichloroethene	----	----	----	0.0044	----	----	----	----	----	----

3.2 Sand and Gravel Aquifer
Groundwater Sampling Results Inside Production Area (FMPC)
(All results are in ppm except as noted)

	MW-19s	MW-19d	MW-21s	MW-22s
Chloride	39.0	51.0	69.0	38.0
Iron	0.085	0.060	1.130	0.064
Manganese	0.027	2.360	<0.020	<0.020
Phenols	0.008	0.009	0.014	0.007
Sodium	43.600	75.400	52.900	27.800
Sulfate	98.0	410.0	92.0	100.0
Silver	<0.030	<0.030	<0.030	<0.030
Arsenic	<0.005	<0.005	<0.005	<0.005
Barium	<0.200	<0.200	<0.200	<0.200
Calcium	143.000	248.000	175.000	122.000
Cadmium	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005
Chromium				
-Total	<0.005	<0.005	<0.005	<0.005
-Hexavalent	<0.005	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	<0.025	<0.025
Fluoride	0.14	0.09	0.19	0.68
Mercury	0.0003	<0.0002	<0.0002	<0.0002
Potassium	4.710	7.960	10.340	3.540
Magnesium	41.100	26.400	21.200	34.600
Nickel	<0.005	0.007	<0.005	0.005
Nitrates	72.00	3.70	63.90	28.70
Lead	<0.005	<0.005	<0.005	<0.005
Phosphorus, total	0.04	0.05	0.09	<0.02

3.2 Sand and Gravel Aquifer
Groundwater Sampling Results Inside Producation Area (FMPC)
(All results in ppm except as noted)

	MW-19s	MW-19d	MW-21s	MW-22s
Selenium	<0.0025	<0.0025	<0.0025	<0.0025
Zinc	<0.025	<0.025	<0.025	<0.025
T.D.S.	948	1,120	1,100	664
C.O.D.	11	<10	<10	<10
pH-lab (1) (2)	7.30	6.96	7.37	7.46
Conductivity-lab (1) (3)	1,200	1,575	1,255	933
T.O.C. (1)	<1	<1	<1	<1
T.O.X. (1) (4)	18.5	<10	22.3	21.8
Coliform (10)	<2	<2	<2	<2
Lindane (4)	<0.2	<0.2	<0.2	<0.2
Endrin (4)	<0.2	<0.2	<0.2	<0.2
Methoxychlor (4)	<0.2	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5
2, 4-D (4)	<0.2	<0.2	<0.2	<0.2
2,4,5 TP Silvex (4)	<0.2	<0.2	<0.2	<0.2
VOC's (4)	ND	ND	ND	ND
Gross Alpha (5)	15.3	<15	33	<15
Gross Beta (5)	794	12.2	930	73
Radium, Total (5)	130	<5	29	<5
Radionuclide Scan (5) (12)	<5	<5	<5	<5
Uranium (13)	0.0011	0.032	0.0018	0.0035

Table 3.3

Groundwater Sampling Results Plant Production Wells (FMPC)
(All results in ppm except as noted)

	P-1	P-2	P-3
Chloride	15.0	22.0	34.0
Iron	3.030	3.960	5.560
Manganese	0.415	0.352	0.403
Phenols	<0.005	<0.005	<0.005
Sodium	7.650	11.200	26.500
Sulfate	50.0	8.0	110.0
Siver	<0.030	<0.030	<0.030
Arsenic	<0.005	<0.005	<0.005
Barium	<0.200	<0.200	<0.200
Calcium	86.300	87.900	14.900
Cadmium	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005
Chromium			
-Total	<0.005	<0.005	<0.005
-Hexavalent	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	<0.025
Fluoride	0.15	0.20	0.02
Mercury	<0.0002	<0.0002	<0.0002
Potassium	1.610	1.190	3.730
Magnesium	21.100	22.600	32.500
Nickel	<0.005	<0.005	<0.005
Nitrate	<0.02	0.02	<0.02
Lead	<0.005	<0.005	<0.005
Phosphorus, total	0.03	0.13	0.10

Table 3.3 (Cont'd)
Groundwater Sampling Results Plant Production Wells (FMPC)
(All results in ppm except as noted)

	P-1	P-2	P-3
Selenium	<0.0025	<0.0025	<0.0025
Zinc	<0.025	<0.025	<0.025
T.D.S.	368	368	656
C.O.D	<10	<10	<10
pH-lab (1) (2)	7.43	7.60	7.57
Conductivity-lab (1) (3)	540	575	885
T.O.C. (1)	<1	<1	<1
T.O.X. (1) (4)	NA	<10	26.0
Coliform (10)	9	<2	<2
Lindane (4)	NA	<0.2	<0.2
Endrin (4)	NA	<0.2	<0.2
Methoxychlor (4)	NA	<0.2	<0.2
Toxaphene (4)	NA	<0.5	<0.5
2,4-D (4)	NA	<0.2	<0.2
2,4,5-TP, Silvex (4)	NA	<0.2	<0.2
VOC's (4)	NA	NA	NA
Gross Alpha (5)	<15	<15	<15
Gross Beta (5)	5.76	<5	<5
Radium, Total (5)	<5	<5	<5
Radionuclide Scan (5) (12)	<5	<5	<5
Uranium (13)	0.0004	0.0002	0.0002

3.4 Sand and Gravel Aquifer
Groundwater Sampling Results Outside Production Area (FMPC)
(All results are in ppm except as noted)

	MW-9	MW-11	MW-14s	MW-14d	MW-15s	MW-16s	MW-16d	MW-17s	MW-17d
Chloride	22.0	21.0	20.0	18.0	19.0	20.0	19.0	22.0	21.0
Iron	0.210	8.540	5.700	0.150	0.031	1.020	1.300	0.180	1.330
Manganese	0.061	0.169	0.143	<0.020	<0.020	0.042	0.051	0.121	0.295
Phenols	0.007	0.007	0.008	0.007	<0.005	0.005	0.009	0.009	0.008
Sodium	10.300	9.600	9.400	8.200	11.000	10.500	10.400	7.240	7.600
Sulfate	70.0	78.0	68.0	58.0	52.0	56.0	58.0	96.0	80.0
Silver	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Barium	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Calcium	79.900	99.800	89.000	78.700	69.400	92.600	91.700	139.000	92.700
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium									
-Total	<0.005	<0.005	0.014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
-Hexavalent	<0.005	<0.005	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	0.099	<0.025	<0.025	0.027	<0.025	<0.025	<0.025
Fluoride	0.18	0.22	0.29	0.18	0.42	0.21	0.16	0.17	0.11
Mercury	<0.0002	<0.0002	<0.0002	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	2.170	0.950	3.410	2.050	2.780	3.070	2.430	1.850	2.130
Magnesium	21.600	25.500	22.100	19.500	19.100	21.000	21.600	30.500	18.300
Nickel	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate	2.96	<0.02	0.10	2.80	2.60	2.28	2.92	0.13	<0.02
Lead	<0.005	<0.005	0.015	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Phosphorus, total	0.04	0.09	0.12	<0.02	0.05	<0.02	<0.02	<0.02	<0.02

3.4 Sand and Gravel Aquifer
Groundwater Sampling Results Outside Production Area (FMPC)
(All results are in ppm except as noted)

	MW-9	MW-11	MW-14s	MW-14d	MW-15s	MW-16s	MW-16d	MW-17s	MW-17d
Selenium	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Zinc	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
T.D.S.	408	476	344	316	344	408	372	620	412
C.O.D.	13	15	26	12	<10	<10	<10	<10	12
ph-lab (1) (2)	7.50	7.37	7.67	7.69	7.53	7.60	7.57	7.20	7.42
Conductivity-lab (1) (3)	540	643	518	515	534	522	529	790	546
T.O.C. (1)	<1	<1	1	1.25	<1	<1	<1	<1	<1
T.O.X. (1) (4)	11.3	22.8	25.8	26.3	30.0	<10	14.8	30.8	12.0
Coliform (10)	3,400	31	9	<2	<2	<2	6	<2	3
Lindane (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2,4,5-TP, Silvex (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
VOC's (4)	ND	ND	ND	ND	----	ND	ND	ND	ND
Gross Alpha (5)	<15	<15	<15	<15	24.9	<15	<15	<15	<15
Gross Beta (5)	<5	8.28	<5	7.74	25.16	9.67	5.26	<5	<5
Radium, Total (5)	<5	<5	<5	<5	7.14	<5	<5	<5	<5
Radionuclide Scan (5) (12)	<5	<5	<5	<5	<5	<5	<5	<5	<5
Uranium (13)	0.0011	0.0001	0.020	0.021	0.154	0.012	0.0075	0.0034	0.0008
1,1,1-Trichloroethane	---	----	----	----	0.0051	----	----	----	----

3.4 Sand and Gravel Aquifer
Groundwater Sampling Results Outside Production Area (FMPC)
(All results are in ppm except as noted) (Cont'd)

	MW-18s	MW-18d	MW-20s	MW-20d	SW-2	OS-1	HK-15d	OS-2	OS-3
Chloride	6.0	2.0	21.0	22.0	30.0	19.0	25.0	36.0	29.0
Iron	32.700	2.500	0.710	1.300	0.104	0.081	3.100	0.005	1.930
Manganese	1.250	0.120	0.070	0.205	0.131	<0.020	0.309	<0.020	0.365
Phenols	0.009	0.006	<0.005	<0.005	0.007	0.006	<0.005	0.012	0.011
Sodium	4.440	4.600	11.400	9.100	13.600	13.600	7.630	13.800	11.100
Sulfate	50.0	56.0	76.0	86.0	68.0	58.0	94.0	62.0	70.0
Silver	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Arsenic	0.035	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Barium	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Calcium	146.000	98.200	115.000	104.000	97.700	73.300	109.000	108.000	94.300
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.200	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium									
-Total	0.025	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005
-Hexavalent	0.010	<0.005	<0.005	<0.005	<0.005	<0.006	<0.005	<0.005	<0.005
Copper	0.034	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Fluoride	0.63	0.40	0.20	0.11	0.29	0.58	0.10	0.18	0.20
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	3.160	0.525	2.660	1.920	2.610	2.840	2.000	3.120	2.480
Magnesium	38.800	33.500	20.900	22.000	26.700	18.700	24.600	22.600	22.600
Nickel	0.021	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate	0.67	<0.02	5.48	0.06	3.40	2.60	0.09	5.04	0.10
Lead	0.012	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Phosphorus, total	0.26	<0.02	<0.002	<0.002	<0.02	<0.02	<0.02	0.004	0.04

3.4 Sand and Gravel Aquifer
Groundwater Sampling Results Outside Production Area (FMPC)
(All results are in ppm except as noted) (Cont'd)

	MW-18s	MW-18d	MW-20s	MW-20d	SW-2	US-1	HK-15d	US-2	US-3
Selenium	0.003	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Zinc	0.068	<0.025	<0.025	<0.025	<0.025	0.092	0.031	0.064	<0.025
T.D.S.	408	384	376	316	448	NA	452	444	340
C.O.D.	30	<10	<10	27	23	16	12	12	11
pH-lab (1) (2)	7.51	7.52	7.47	7.41	7.46	7.68	7.51	7.47	7.34
Conductivity-lab (1) (3)	550	566	568	578	637	499	612	636	618
T.O.C. (1)	4	1	<1	1	<1	<1	<1	<1	<1
T.O.X. (1) (4)	51.5	<10	28.0	15.5	<10	<10	<10	18.0	24.0
Coliform (10)	<2	<2	<2	3	100	9	<2	<2	<2
Lindane (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
2,4,5-TP, Silvex (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
VOC's (4)	ND	ND	ND	ND	ND	NA	NA	NA	NA
Gross Alpha (5)	<15	<15	<15	<15	<15	35	<15	51	<15
Gross Beta (5)	14	<5	5.7	<5	12.37	37	<5	31	<5
Radium, Total (5)	<5	<5	8	5.9	7.74	36	<5	6.57	<5
Radionuclide Scan (5) (12)	<5	<5	<5	<5	<5	<5	<5	<5	<5
Uranium (13)	0.0027	0.0017	0.0005	0.0009	0.0008	0.205	0.0001	0.282	0.035

NOTES

ND Not Detected

NA Not Analyzed

(1) Average of four tests

(2) pH results in standard units

(3) Conductivity results in umhos/cm

(4) Concentrations reported in ppb

(5) Results in pCi/l

(6) Taken from 40 CFR Part 141 National Interim Primary Drinking Water Regulations - Subpart B - Maximum Contaminant Levels, July 1, 1984.

(7) Taken from 40 CFR Part 143 National Secondary Drinking Water Regulations - Section 143.3 - Secondary Maximum contaminant Levels.

(8) High counts did not yield any individual elements using a 4096 channel analyzer. These levels are due to solids only in the samples.

(9) Standard is for Radium -226 Plus Radium -228

(10) Reported in per 100 ml

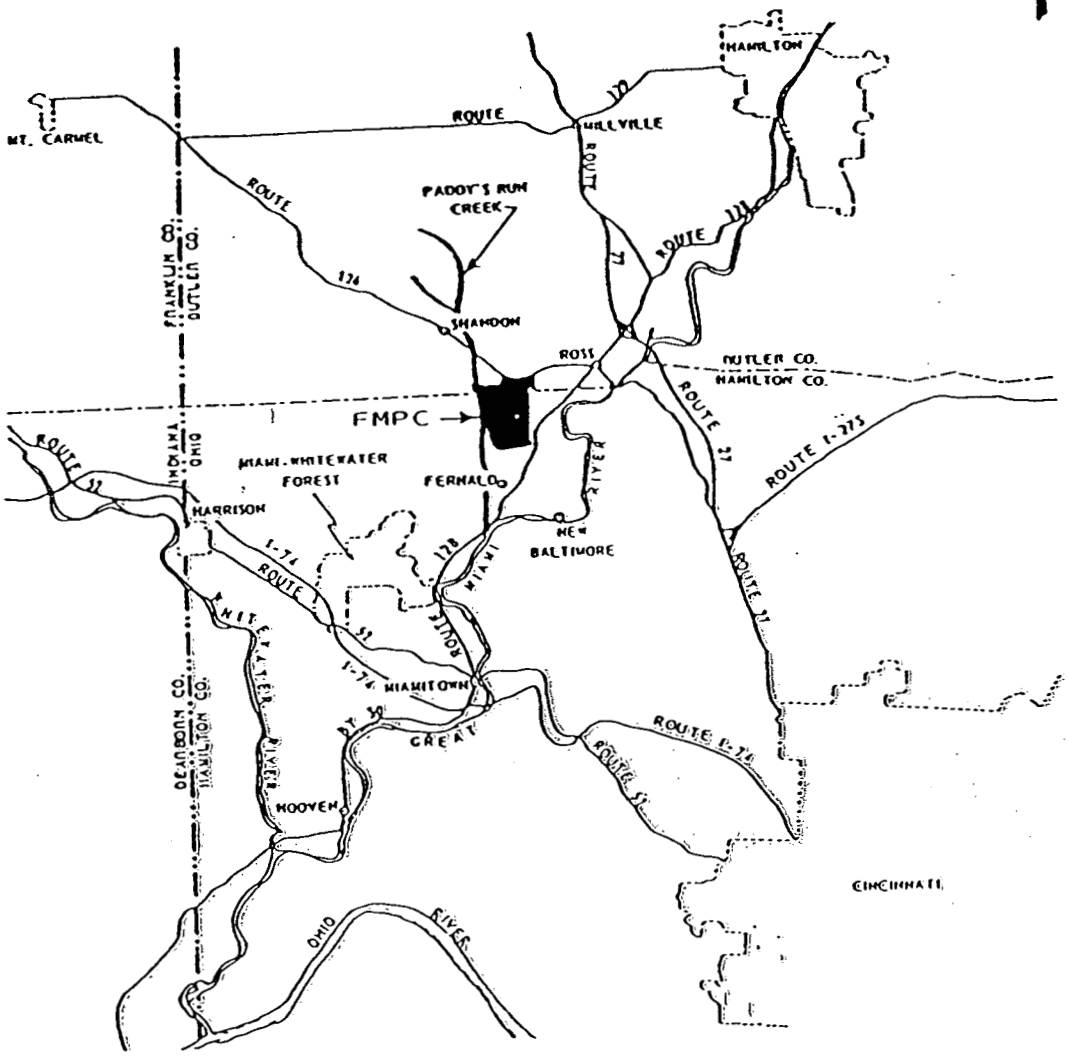
(11) Maximum Permissible Activity taken from World Health Organization, 1970 European Standards. National Primary Drinking Water Regulation for gross beta is 4 mR/year.

(12) Radionuclide Scan includes analysis for K-40, Unat, Th-228, Th-230, Th-232, Tc-99 Cs-137, Sr-90, Ru-106, Np-237, Pu-238, Pu-239, Pu-240.

(13) WMCO Split Sample - Analyzed for Uranium at the FMPC; Results in mg/l.

FIGURES

N



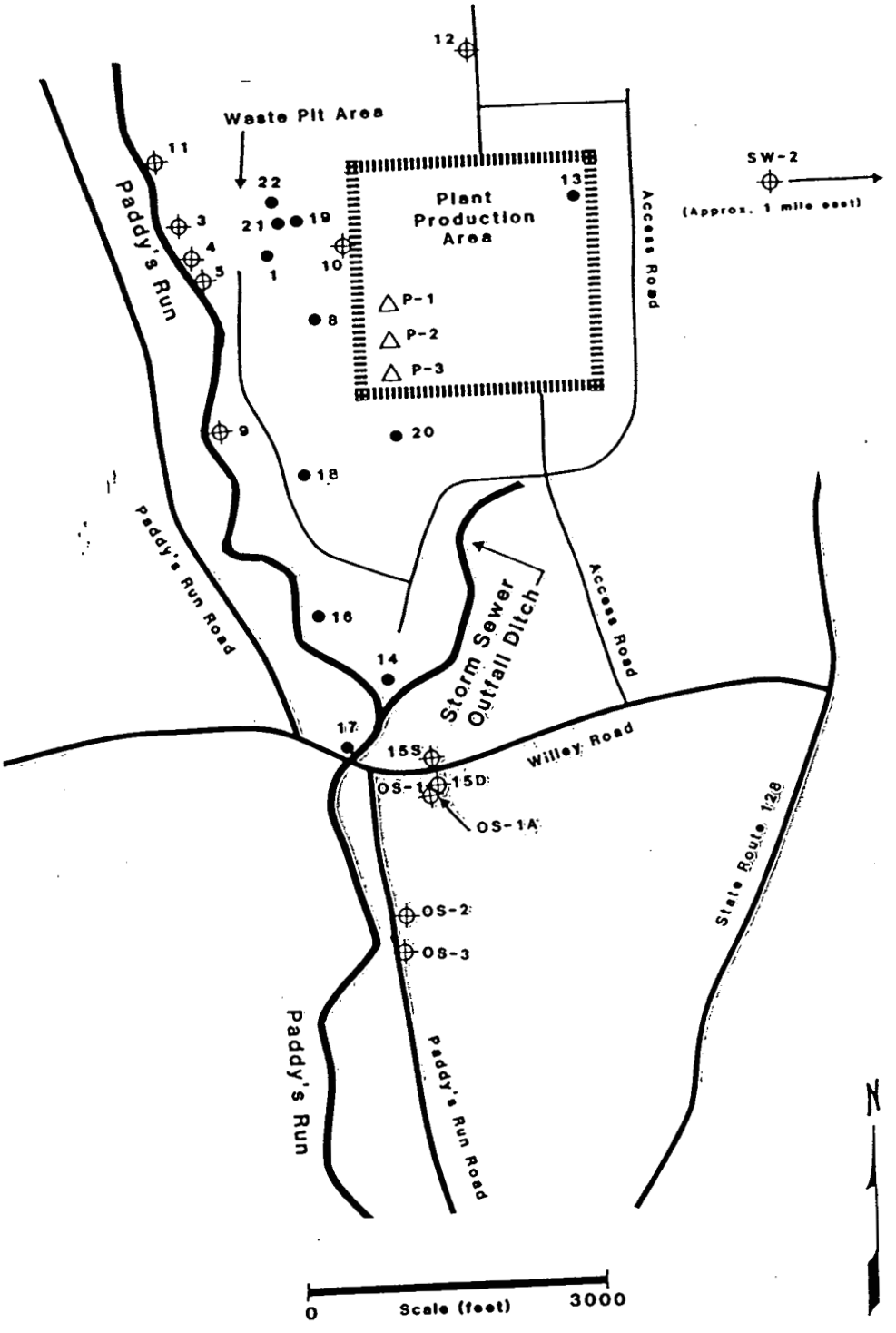
0 1 2 3 4 MILES
SCALE

33

SITE LOCATION MAP

DAMES & MOORE

FIGURE 1-1



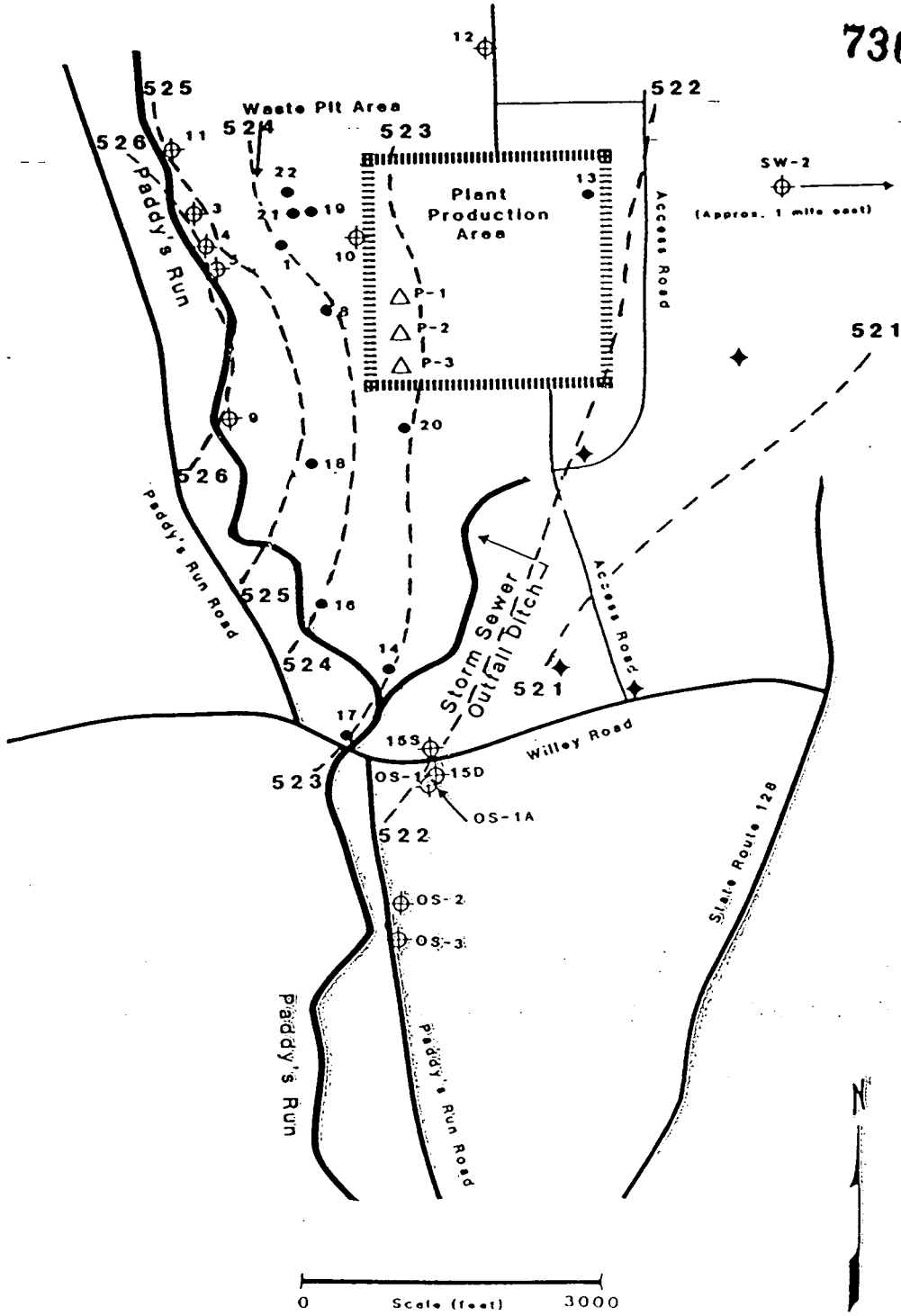
Explanation:

- Single Well Location
- Cluster Well Location
- Production Well Location

34

WELL LOCATIONS

Figure 2-1



Explanation:

- Single Well Location
- Cluster Well Location
- Production Well Location
- IT WELLS

RCRA ROUND II

WATER TABLE CONTOURS

May 20, 1986

Water Table Contour

THE WATER LEVEL CONTOURS SHOWN REPRESENT AN EVALUATION OF THE MOST PROBABLE CONDITIONS BASED UPON INTERPRETATION OF PRESENTLY AVAILABLE DATA. VARIATIONS FROM THESE CONDITIONS MAY OCCUR.

DAMES & MOORE

FIGURE 2-2

APPENDIX 1

APPENDIX

RCRA SAMPLING AND ANALYSIS PLAN

FOR

WASTE PIT #4

LOCATED AT THE

FEED MATERIALS PRODUCTION CENTER

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TABLES

1 Monitor Well Sampling Order

2 Preservation of Groundwater Samples Prior to Laboratory Analysis

3 Analytical Methods and Detection Limits for Groundwater Samples - Water Quality Indicators

4 Analytical methods and Detection Limits for Groundwater Samples - Volatiles

5 Analytical Methods and Detection Limits for Groundwater Samples - Radionuclides

FIGURES

1 Field Sampling Record

2 Chain of Custody Record

1.0 Introduction

Waste Pit #4 at the Feed Materials Production Center in Fernald, Ohio is subject to regulations of the Resource Conservation and Recovery Act (RCRA). Interim status regulations (as described in Task B.5 of the Federal Facilities Compliance Agreement (FFCA)) are addressed by this Response which presents a Sampling and Analysis Plan (SAP) prepared in conformance with 40 CFR 265.92.

The SAP presents information on:

- Groundwater sample collection from both monitoring and water supply wells.
- Sample preservation and shipment procedures.
- Analytical procedures and chain of custody controls.

The groundwater sampling program at the FMPC is a dynamic one. As such, field procedures described herein, may from time to time be modified based on weather and other conditions at the well. However, all sampling procedures utilized are designed to be consistent with USEPA/OEPA objectives and guidelines.

2.0 Scope of Plan

This document presents the Sampling and Analysis Plan required by Subpart F, Section 265.92 of the Resource Conservation and Recovery Act (RCRA).

This plan has been developed in accordance with specific regulations and guidelines. The following references have been used in its preparation:

(1) Procedures Manual for Ground Water Monitoring at Solid Wastes Disposal Facilities, 1979, U.S. EPA-530/SW-611 (reprinted 1980).

(2) Manual of Ground Water Sampling Procedures, 1981, Marion R. Scalf, et. al., NWWA/EPA Series.

(3) Standard Methods for Analysis of Water and Wastewater, 1985, 20th Edition, APHA-AWWA-WPCF.

(4) RCRA Ground Water Monitoring Enforcement Guidance, 1985, U.S. EPA.

As required by the referenced regulation, this plan for groundwater monitoring contains procedures for sample collection, sample preservation and shipment, analytical procedures and chain of custody controls.

3.0 SAMPLE COLLECTION

This section of the sampling and analysis plan presents procedures use to evacuate, sample and preserve groundwater samples collected from the FMPC monitoring well networks.

3.1 Sampling Order

In order to minimize the possibility for cross contamination, samples will be collected beginning at the well least likely to contain elevated levels of hazardous wastes or their constituents (upgradient well) and ending at the well most likely to contain elevated levels of hazardous wastes or their constituents. The sampling order for monitor well locations is indicated in Table 1. During field sampling activites, wells are grouped into on-site and off-site locations. Each sampling team then samples its series of wells in the prescribed order.

3.2 Sampling Technique

The sampling technique can be divided into three separate stages:

- o Pre-sampling measurements
- o Well evacuation
- o Sample acquisition

Figure 1 is an example of a Field Sampling Record, used during the well sampling activities. This form follows the three stages mentioned above and is completed for each well sampled.

Prior to pre-sampling measurements, the following information is recorded in permanent ink on the Field Sampling Record.

- Facility Name
- Name of sampling personnel, affiliation, date and time of sampling
- Well number, location and well diameter
- Short description of weather conditions

3.2.1 Pre-sampling measurements

Pre-sampling measurements consist of recording total depth of the well, depth to water, well diameter and other well characteristics as indicated on the Field Sampling Record.

Measurement of total well depth is made with a weighted tape, divided into feet, inches and tenths of an inch. The accuracy of the measurement is to the 0.01 ft.

The water level measurement is made with a water level indicator model 51453 made by Slope Indicator Co. (or equivalent). The accuracy of this measurement is also to the nearest 0.01 ft.

Both measurements are made from the same chisel mark on the top of the outer protective (metal) well casing.

Subtracting the depth to the water table from the total well depth, the height of the water column in the well can be calculated. Multiplying this by the well conversion factor (based on well diameter) the number of gallons of water in the well can be estimated.

3.2.2 Well Evacuation

The composition of the water within the well casing and in close proximity to the well (e.g. the gravel pack) is usually not representative of the overall ground water quality at the sampling site. This is because important geochemical conditions such as the oxidation-reduction potential may differ drastically near the well from those in the surrounding water bearing materials. For this reason it is essential that a well be pumped or bailed until the well is thoroughly flushed of standing water and contains fresh water from the aquifer.

The recommended amount of water required to be pumped or bailed from the well before sampling is dependent on many factors including the characteristics of the well, the hydrogeological nature of the aquifer, the type of evacuation equipment being used, and the parameters being sampled. The time required may range from the time needed to pump or bail one casing volume to the time needed to pump several casing volumes. At the FMPC, between 4 and 10 casing volumes of water are removed prior to sampling the well. Well water will be evacuated either by purge pumping or bailing.

Pumping

The majority of monitoring wells currently in place at the FMPC have dedicated 3.75" submersible pumps and discharge tubing installed in them. These pumps are used to purge and sample the wells. As each of these pumps are dedicated to a single well, no special cleaning at the pump or discharge tubing prior to or after sampling is required.

Purge water withdrawn from the wells within the plant production area is collected in a tank truck and eventually fed into the FMPC's wastewater

treatment system. Purge water withdrawn from outside the plant production area is discharged onto the ground surface and directed away from the casing.

For those wells that do not have a dedicated pump, a 3.5" portable submersible pump is used to purge the wells. The pump and associated tubing is cleaned after each use by pumping water with a non-phosphate detergent, tap water and then distilled water through the pump and tubing prior to its use in another well.

The pumping start time is marked on the field sampling record and the pumping rate is monitored with a flow meter or by the time needed to fill a vessel (bucket) of known volume. Based on the pumping rate, pumping time is established to remove 4 to 10 volumes of water from the well.

Bailing

There are several shallow wells in the surficial till layer which have recoveries too slow to allow for continuous pumping. In this case, wells are evacuated using a 2 foot long, 1.75 inch i.d. stainless steel bailer with a teflon check valve. If the well is bailed dry prior to removing the required volumes it is allowed to reach 80% of recovery and then immediately sampled.

New nylon weave rope is used in the manipulation of the bailer and separate lengths are dedicated to each well. The rope is bagged and disposed after use on the site.

A biodegradable, non-phosphate cleaning solution (e.g., ALCONOX) is used to clean the bailers upon completion of well evacuation. The bailer is triple rinsed with distilled water and wrapped in aluminum foil prior to reuse. Bailed water from wells within the plant production area is collected in a tanker and disposed in the FMPC's wastewater treatment system. Bailed water

from wells outside the plant production area, as well as wash and rinse water is discharged to the nearby ground surface.

3.2.3 Sample Collection

After removal of the required volumes from the well, the sample bottles are clearly labelled in permanent ink.

For collection of samples from pumps, the pump discharge tubing is placed near the bottom of the sample bottle and gradually withdrawn as the container fills. All sample bottles are filled to the top without overflowing, and the caps are firmly hand tightened to prevent leakage. Because of the relatively low turbidity of the ground water at this site, no field filtering of samples is performed.

In the case of sampling with a bailer, the water sample from the bailer is minimally handled and transferred immediately to the sample bottle.

As each full set of samples is collected from each monitoring point, they are stored in sampling kits comprised of an insulated container containing ice and appropriate shipping and handling instructions.

3.2.4 Field Blanks

As part of the ongoing QA program, samples are accompanied to the lab by field blanks. Field blanks are divided into cleaning blanks and trip blanks.

Cleaning blanks are made prior to each round of sampling, at least one each day of sampling. They consist of distilled, deionized water which is collected from the bailers after cleaning. They are analyzed and values are used to interpret the effectiveness of the cleaning procedures and bottle handling procedures.

In addition to the cleaning blanks, two types of trip blanks accompany the samples. These consist of sample bottes filled with distilled, deionized water and capped in the laboratory. One trip blank remains capped and accompanies the sample at all times until returning to the laboratory where it is opened and tested along with the other samples. The other trip blank is set aside during the sampling of the wells and left open to the atmosphere. The purpose of these trip blanks is to ensure that proper sample bottle preparation and handling techniques have been employed, and to evaluate the potential for atmospheric influences on sampling equipment.

TABLE 1

Monitoring Well Sampling Order

Sampling Order	Well Number	Location
1	12	Off North access road
2	SW-2	Southwest collector
3	P-1	West side production area
4	P-2	West side production area
5	P-3	Water treatment Plant
6	OS-1 deep	Farm house on Willey Road
7	OS-1 dug	Farm house on Willey Road
8	15s	Pasture on Willey Road
9	16d	Guard training area
10	16s	Shooting range
11	17d	Willey Road Bridge
12	17s	Willey Road Bridge
13	18d	South of production area
14	18s	South of production area
15	20d	Southwest of production area
16	20s	Southwest of production area
17	20TP	Southwest of production area
18	14d	Confluence of SSOD with Paddy's Run
19	14s	Confluence of SSOD with Paddy's Run
20	9	Paddy's Run-East bank
21	11	North of production area
22	13d	East of scrap metal site
23	13s	East of scrap metal site
24	8d	South of waste pit storage area
25	8s	South of waste pit storage area
27	3	East of pit 3 area
28	4	South of pit 3
29	5	South of pit 3
30	1d	North of K-65 tanks
31	1s	North of K-65 tanks
32	19d	East of pit 4
33	19s	East of pit 4
34	19TP	East of pit 4
35	21s	South of pit 4
36	21TP	South of pit 4
37	22s	West of pit 4
38	22TP	West of pit 4
39	OS-1	Exterior tap in yard of farm house off Willey Road
40	OS-2	East side of Paddy's Run Road
41	OS-3	East side of Paddy's Run Road

4.0 Sample Preservation and Shipment

In order that laboratory results be representative of the actual sample condition at the time of collection, it is important that proper methods be used for the preservation and transport of the samples prior to their delivery to the lab. These procedures are summarized below and are consistent with USEPA requirements as described in References 1 and 2.

4.1 Sample Containers

Proper types and materials must be utilized for the sample containers (bottles) in order to ensure that the samples, and in particular the parameters to be analyzed from that particular bottle, do not react with the container material and alter the concentration or values of the parameter. Sample bottles are supplied by the subcontracted laboratory and have been carefully selected to meet these performance objectives. A variety of materials, such as amber glass, clear glass, and polyethylene are employed as required. Where necessary, specialized sample bottles are utilized, such as for VOC measurements.

4.2 Sample Preservation

In addition to selection of proper container materials, other methods are often required in order to reduce the possibility of chemical reactions and/or precipitations occuring within the container which could alter analytical results. Those sample bottles which require chemical perservatives (e.g. acid) have the preservatives added by the laboratory prior to shipment of the bottles to the site. In addition, all sample bottles are placed in iced thermal coolers and kept as close to 4°C as possible during the period of time between collection and delivery to the lab. This refrigeration aids in the

suppression of bacterial growth in the samples. Table 2 lists various preservatives used and their applications.

TABLE 2

Preservation of Groundwater Samples Prior to Laboratory Analysis

Perservative	Action	Applicable to:
$HgCl_2$	Material Inhibitor	Nitrogen forms, Phosphorous forms
Acid (HNO_3)	Metals solvent, prevents precipitation	Metals
Acid (H_2SO_4)	Bacterial Inhibitor	Organic samples (COD, oil & grease, organic carbon)
	Salt formation with organic bases	Ammonia, amines
Alkali (NaOH)	Salt formation with volatile compounds	Cyanides, organic acids
Refrigeration	Bacterial Inhibitor	Acidity-alkalinity, organic materials, BOD, color, odor, organic Phosphorous, organic Nitrogen, carbon, etc. biological organisms (coliform, etc.)

4.3 Sample Shipment

In order to minimize the potential for loss, destruction, or tampering, all samples are delivered personally to the lab by a member of the sampling team. Sample bottles in their coolers are loaded onto a truck. The truck is kept locked with only the sampling team possessing a key. The bottles are then delivered directly to the lab and turned over to lab personnel. Chain-of-custody control is exercised throughout the sampling and sample shipment process as described in Section 6.0.

5.0 Analytical Procedures

All analyses of ground water samples in connection with RCRA groundwater sampling is conducted by Howard Labs, Inc. of Dayton, Ohio. Howard Labs is certified by both USEPA and OEPA to conduct such analyses. Analyses are conducted according to USEPA protocols and procedures as outlined below.

5.1 Constituents Being Monitored

A list of constituents that should be tested for in the FMPC groundwater was developed prior to the initiation of expanded monitoring in August, 1985 to meet RCRA requirements. This list addresses five (5) types of parameters:

- Parameters used to evaluate general water quality. These include chloride, iron, manganese, phenols, sodium and sulfate.
- Indicators of groundwater contamination. These include pH, specific conductance, total organic carbon and total organic halogen. These parameters are tested in quadruplicate as required by 40 CFR Part 264.90.

- Constituents evaluating drinking water suitability. These include 11 metals, 3 radionculides, 6 pesticides/herbicides and coliform bacteria.

- Parameters related specifically to past or current FMPC operations. This list includes 8 metals, 31 synthetic organic compounds, total dissolved solids and chemical oxygen demand (COD).

- Radionuclides related to past or current FMPC operations. Fifteen are analyzed, including isotopes of uranium, radium, thorium and plutonium.

A complete list of all parameters being tested for in the FMPC groundwater is provided on Table 3. Appendix VIII of 40 CFR 261 parameters are to be analyzed for selected RCRA wells as part of the Weston Characterization Investigation Study (CIS) for the Waste Pit Storage Area.

5.2 Analytical Methods

Chemical analysis of the samples is conducted according to methods specified in EPA-600/4-79-020, "Methods for Chemical Analysis of Water and Wastes". Radiological analyses are performed in accordance with procedures specified in EPA-600/4-80-032, Prescribed Procedures for Measurement of Radioactivity in Drinking Water." Where no EPA-approved method exists, analyses are conducted according to generally accepted standards and practices of the analytical profession under direct supervision of a chemistry Ph.D. The parameters analyzed, detection limits and the methods utilized are summarized in Tables 4, 5, and 6.

TABLE 3

PARAMETERS TO BE ANALYZED

A. For General Water Quality [1]

1. Chloride
2. Iron
3. Manganese
4. Phenols
5. Sodium
6. Sulfate

B. For Indicators of Contamination (Quadruplicate Analysis) [1]

1. pH
2. Specific Conductance
3. Total Organic Carbon (TOC)
4. Total Organ Halogen (TOX)

C. For Drinking Water Suitability [1]

1. Arsenic
2. Barium
3. Cadmium
4. Chromium - Hexavalent
   - Total
5. Fluoride
6. Lead
7. Mercury
8. Nitrate
9. Selenium
10. Silver
11. Gross Alpha
12. Gross Beta
13. Radium

TABLE 3 (Con't.)

14. Endrin
15. Lindane
16. Methoxychlor
17. Toxaphene
18. 2,4-D
19. 2,4,5-TP
20. Coliform Bacteria

D. Site Specific Parameters [2]

1. Nickel
2. Cyanide
3. Copper
4. Zinc
5. Magnesium
6. Calcium
7. Phosphorus
8. Chlorobenzene
9. Chlorodibromomethane
10. Chloroethane
11. 2-chloroethylvinyl
12. Chloroform
13. Dichlorobromomethane
14. Dichlorodifluoromethane
15. Total Dissolved Solids (TDS)
16. Total Potassium
17. Chemical Oxygen Demand (COD)
18. per Chloroethylene
19. cis 1,2 Dichloroethylene
20. Tributylphosphate
21. Acrolein
22. Acrylonotrille
23. Benzene
24. bis (chloromethyl) Ether
25. Bromoform
26. Bromodichloromethane
27. Bromomethane
28. Carbon tetrachloride
29. Chloromethane
30. 1,2 Dichlorobenzene
31. 1,3 Dichlorobenzene
32. 1,4 Dichlorobenzene

Table 3 (Con't.)

33. 1,1 Dichloroethane
34. 1,2 Dichloroethane
35. 1,1 Dichloroethylene
36. 1,2 Dichloropropane
37. 1,2 Dichloropropylene
38. Ethylbenzene
39. Methylbromide
40. Methylchloride
41. trans-1,2 Dichloroethylene
42. 1,3 Dichloropropene
43. 1,1,2,2 Tetrachloroethane
44. Tetrachloroethylene
45. Toulene
46. 1,1,1 Trichloroethane
47. 1,1,2 Trichloroethane
48. Trichloroethylene
49. Trichlorofluoromethane
50. Vinyl Chloride

E. Radionuclide [2]

1. Potassium 40
2. Total Uranium
3. Radium 226
4. Radium 228
5. Technetium 99
6. Thorium 228
7. Thorium 230
8. Thorium 232
9. Cesium 137
10. Strontium 90
11. Ruthenium 106
12. Neptunium 237
13. Plutonium 238
14. Plutonium 239
15. Plutonium 240

F. Schedule - Quarterly for one (1) years, semiannual thereafter (or as necessary according to regulations).

[1] Required for RCRA and analyzed for each sample

[2] Not required for RCRA, but also analyzed for each sample

TABLE 4

Analytical Methods and Detection Limits for Groundwater Samples
Water Quality Indicators

Parameter	Detection Limit	Analytical Method**
Chloride	1 ppm	325.3
Iron	50 ppb	236.2
Manganese	20 ppb	243.2
Phenols (total)	5 ppb	420.3
Sodium	50 ppb	273.2
Sulfate	1.0 ppb	375.2
pH	0.1 std./units	150.1
Specific Conductance	1 umho/cm	120.1
Total Organic Carbon (TOC)	1 ppb	415.1
Total Organic Halogen (TOX)	10 ppb	*
Arsenic	5 ppb	206.2
Barium	200 ppb	208.2
Cadmium	2 ppb	213.2
Chromium-Hexavalent	5 ppb	218.4
Chromium-Total	5 ppb	218.2
Fluoride	10 ppb	340.2
Lead	5 ppb	239.2
Mercury	2 ppb	245.2
Nitrate (as N)	20 ppb	352.1
Selenium	2.5 ppb	270.2
Silver	30 ppb	272.2
Gross alpha	15 pCi/l	900.0
Gross beta	5 pCi/l	900.0
Radium	5 pCi/l	900.1
Endrin	0.2 ppb	608
Lindane	0.2 ppb	608
Methoxychlor	0.2 ppb	608
Toxaphene	0.5 ppb	608
2,4-D	0.2 ppb	608
2,4,5-TP Silvex	0.2 ppb	608
Coliform Bacteria	2/100 ml	*
Nickel	5 ppb	249.2
Cyanide	5 ppb	335.3
Copper	25 ppb	220.2
Zinc	25 ppb	289.2
Magnesium	10 ppb	242.1
Calcium	50 ppb	215.1
Phosphorus	20 ppb	365.4
Total Dissolved Solids (TDS)	10 ppb	*
Total Potassium	50 ppb	258.1

* Approved analytical method not available. Analysis performed according to generally accepted analytical procedures.

** As described in References 3, 4 and 5.

TABLE 5

Analytical Methods and Detection Limits for Groundwater Samples - Volatiles

	Detection Limit	Analytical Method
Chlorobenzene	2.0 ppb	1624
Chlorodibromomethane	2.0 ppb	1624
Chloroethane	2.0 ppb	1624
2-Chloroethlvinyl Ether	2.0 ppb	1624
Chloroform	2.0 ppb	1624
Dichlorobromomethane	2.0 ppb	1624
Dichlorodifluoromethane	2.0 ppb	1624
Chemical Oxygen Demand (COD)	10 ppb	405.1
per Chloroethlyene	2.0 ppb	*
cis 1,2 Dichloroethylene	2.0 ppb	1624
Tributylphosphate	2.0 ppb	*
Acrolein	2.0 ppb	*
Acrylonitrille	2.0 ppb	*
Benzene	2.0 ppb	1624
bis (Chloromethyl)Ether	2.0 ppb	*
Bromoform	2.0 ppb	1624
Bromodichloromethane	2.0 ppb	1624
Bromomethane	2.0 ppb	1624
Carbon tetrachloride	2.0 ppb	1624
Chloromethane	2.0 ppb	1624
1,2 Dichlorobenzene	2.0 ppb	1625
1,3 Dichlorobenzene	2.0 ppb	1625
1,4 Dichlorobenzene	2.0 ppb	1625
1,1 Dichloroehtane	2.0 ppb	1624
1,2 Dichloroethane	2.0 ppb	1624
1,1 Dichloroethylene	2.0 ppb	1624
1,2 Dichloropropane	2.0 ppb	1624
1,2 Dichloropropylene	2.0 ppb	*
Ethylbenzene	2.0 ppb	1624
Methylbromide	2.0 ppb	1624
Methylchloride	2.0 ppb	1624
Trans 1,2 Dichloroethylene	2.0 ppb	1624
1,3 Dichloropropene	2.0 ppb	*
1,1,2,2 Tetrachloroethane	2.0 ppb	1624
Tetrachloroethylene	2.0 ppb	1624
1,1,1 Trichloroethane	2.0 ppb	1624
1,1,2 Trichloroethane	2.0 ppb	1624
Trichloroethylene	2.0 ppb	1624
Trichlorofluoromethane	2.0 ppb	1624
Vinyl Chloride	2.0 ppb	1624

* Approved analytical method not available. Analysis performed according to generally accepted analytical procedures.

TABLE 6

Analytical Methods and Detection Limits for Groundwater Samples - Radionuclides

Parameter	Detection Limit	Analytical Method
Cesium 137	5 pCi/l	901.0
Strontium 90	5 pCi/l	905.0
Ruthenium 106	5 pCi/l	*
Neptunium 237	5 pCi/l	*
Plutonium 239	5 pCi/l	*
Plutonium 240	5 pCi/l	*
Potassium 40	5 pCi/l	*
Radium 226	5 pCi/l	903.1
Radium 228	5 pCi/l	904.0
Technetium 99	5 pCi/l	*
Thorium 228	5 pCi/l	*
Thorium 230	5 pCi/l	*
Thorium 232	5 pCi/l	*
Uranium 233/234	5 pCi/l	*
Uranium 235	5 pCi/l	*
Uranium 238	5 pCi/l	*

* Approved analytical method not available. Analysis performed according to generally accepted analytical procedures.

5.3 QA/QC Controls

Field QA/QC control is exercised through the routine collection of three types of QA blanks. Cleaning blanks are collected by pouring distilled water into clean bailers and then into sample bottles for lab analysis. Trip blanks of two types are collected. The first involves sample bottles of distilled water, provided by the lab, which are opened at each sample collection point and then resealed and sent to the lab for analysis. This type of trip blank allows for evaluation of possible input of the parameters of interest to the sample via contact with the atmosphere. Additional trip blanks remain sealed throughout field program. They allow evaluation of sample bottle preparation and sample handling procedures in the lab.

Howard Labs, Inc. of Dayton, Ohio has been contacted to provide laboratory analytical services for this study. They maintain a complete house QA/QC program, which is summarized in Attachment 1. Howard Labs is certified by both USEPA and OEPA to perform the analyses required by RCRA.

6.0 Chain of Custody Control

A chain-of-custody control program is employed in order to provide for tracing of possession and handling of individual samples from the field collection through laboratory analysis. The various components of that program are summarized below.

6.1 Sample Labels

In order to avoid misidentification of the sample containers, each container has an adhesive label attached which indicates the sample identification number (well number), date and time of collection, and identification of the facility from which the sample was taken.

6.2 Sample Seals

As each thermal cooler is filled with sample bottles it is sealed by placing an adhesive band entirely around the cooler. This seal is then signed by the member of the collection team emplacing it. The seal is placed and signed such that opening of the cooler will result in obvious disruption of the seal.

6.3 Chain-of-Custody Records

In order to establish the documentation necessary to trace sample possession from time of collection, chain of custody information is recorded for each sample on a standard Chain-of-Custody form.

These data includes:

- o Sample I.D. number
- o Reason for sampling
- o Witnesses

- Collection Procedure
- Method of Preservation
- Name, Signature, and Affiliation of each person taking possession of sample
- Date and time of each transfer
- Purpose of each transfer
- Other pertinent remarks

An example of the Chain-of-Custody record presently in use is provided in Figure 2.

6.4 Field Sampling Records

In addition to the Chain-of-Custody forms, additonal dates regarding the circumstances of sample collection are recorded in the Field Sampling Records. These were discussed in Section 3.2.

References Cited

1. Manual of Ground Water Sampling Procedures, 1981, Marion R. Scalf, James F. McNabb, William J. Dunlap, Roger L. Cosby, John Fryberger, NWWA/EPA Series.

2. Procedures Manual for Ground Water Monitoring at Solid Waste Disposal Facilites, USEPA, 1980 #SW-611.

3. USEPA, 1983, Methods For Chemical Analysis Of Water and Wastes, Publication Number 600/4-79-020.

4. USEPA, 1980, Prescribed Procedures for Measurement of Radioactivity in Drinking Water, Publication Number 600/4-80-032.

5. Howard Laboratories, Inc., 1986, Quality Assurance/Quality Control Program, Publication Number HLI-QC.EF.

DAMES & MOORE
FIELD SAMPLING RECORD

Job _____ Date _____
Job # _____

Well # _____ Well Diameter _____
Location _____

I Water Level Measurements (From Top of Casing) in Feet.
Total Well Depth:
Depth to Water:
Height of Water Column:
Volume Conversion Factor:
Gallons in Well:

Conversion Factor
0.16 = 2" ID
0.65 = 4" ID
1.47 = 6" ID

II Well Evacuation
Pumping: Submersible
Nitrogen
Centrifugal

Bailing: Kemmerer
Bucket Bailer
: Other (Describe)

Pump On:
Pump Off:
Pumping Time:
Pumping Rate:
Gallons Removed:

Bailing Started:
Bailing Stopped:
Gallons Removed:

III Sampling
Withdrawal: Pumped (describe)
Bailed (describe)

Time: Date:
Sample I.D. #:
Trip Blank #:
No. of containers filled (primary lab):
No. of containers filled (replicate samples):
Physical appearance and odor:

Refrigerated: Date:
Time:

Field Tests (Before After Evacuation)
Temperature (°C/°F):
pH:
Spec Cond (umhos/cm):
Dissolved oxygen (mg/l):

Weather:

Comments:

FIGURE 1

Dames & Moore

30 Hourlign Avenue,
White Plains, New York 10603
(914) 761-6320
TWX: 710-560-6320

SAMPLE LOG NO.

DATE/MONTH, YEAR 736

Chain of Custody Record

REASON FOR SAMPLING

WITNESSES

COLLECTION PROCEDURE

METHOD OF PRESERVATION

REMARKS:

COLLECTED BY

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

CUSTODY TRANSFERRED TO

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

CUSTODY TRANSFERRED TO

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

CUSTODY TRANSFERRED TO

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

RECEIVED IN LABORATORY BY

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

CLOSED BY

PRINTED NAME	UNIT	MISSION NO. 63
SIGNATURE X	TIME AND DATE	

FIGURE 2

ATTACHMENT 1

HOWARD LABS QA/QC PROGRAM

HOWARD LABORATORIES. INC.
Quality Assurance/Quality Control Program

INTRODUCTION: The Quality Assurance/Quality Control Program (QA/QC) utilized by Howard Laboratories, Inc., is a comprehensive program which utilizes the same concept in each of the different departments within the lab. Each department, however, differs in their QC portion due to the different parameters analyzed in each of the different departments.

Basically, the QA program insures that the chemicals utilized for different standards are consistent and correct within strict limitations. All standards are prepared or purchased such that at least two different sources of standards are utilized to insure the precision of the standard(s) utilized in all analyses. Due to the vast number of parameters which are determined by HLI, not all standards are directly tracable to NBS standards or US EPA standards. All standards which are available from regulatory agencies are utilized within the QA program to insure precision in preparation and control of internally prepared or externally purchased standards. All standards are stored per regulatory recommendations, or where no such recommendations exist, storage has been limited to insure reliability. Further, instruments utilized in the analysis at HLI are calibrated continuously, not just on a day-to-day basis, but throughout the day and throughout the analytical run. These instruments are all state-of-the-art and are automated to reduce human error. Most instruments are controlled by computers. Calibration of these instruments includes the recommendations by the manufacturer and/or regulatory agencies.

The QC program consists of utilizing the standards described above, calibration of instruments on a multi-level calibration curve within a linear range of the instrument being utilized and comparing this response to previous calibration curves and standards. Due to the different departmental requirements, all samples and/or standards are analyzed in at least duplicate. Many are run in triplicate.

For example, the AA Department for metals determines all metals in triplicate. The MS department determines all samples in duplicate and some in quadruplicate, as required by the parameter. Each department has determined the specific acceptance criteria for each parameter. These acceptance criteria have been determined to be those recommended by regulatory agencies where applicable. Where regulatory agencies do not recommend an acceptance criteria, HLI has determined its own acceptance criteria based upon three levels of QC. These include percent recovery of spiked samples, reproducibility of replicate analyses and recovery of known standards. The following are specific QC/QA criteria:

WET CHEMISTRY -

pH	Instrument standardized three to four times daily with commercially purchased buffer standards plus HLI Stds.
Residue	Precision and accuracy data are not applicable to these tests. However, periodic replicates of samples are run for evaluation purposes.
Color	No precision or accuracy data are applicable to this test. Color standards are prepared according to Standard Methods, 15'th edition, method 204.A.
Fecal Coliform	3 dilutions per sample set are employed. Quarterly count comparisons are performed. Records are kept for incubator temperature, pH, autoclave use, and water suitability.
Bromide	One quality control sample per five samples analyzed. Acceptable limits are +/- 10% of true value.
Chloride	One quality control sample per five samples analyzed. Acceptable limits:

Conc. Range	% True Value
1 - 10 mg/L	+/- 15

10 - 50	+/- 10
50 - 125	+/- 5

Cyanides

One quality control sample per five samples analyzed. Acceptable limits:

Conc. Range	% True Value
0.005 - 0.050 mg/L	+/- 20
0.050 - 0.300	+/- 10

Fluorides

One quality control sample per five samples analyzed. Acceptable limits:

Conc. Range	% True Value
0.02 - 0.05 mg/L	+/- 20
0.05 - 2.00	+/- 10

Ammonia

One quality control sample per five samples analyzed. Acceptable limits:

Conc. Range	% True Value
0.050 - 0.250 mg/L	+/- 20
0.250 -25.000	+/- 10

TKN

One quality control sample per five samplea analyzed. Acceptable limits:

Conc. Range	% True Value
0.10 - 0.25 mg/L	+/- 20
0.25 - 25.00	+/- 10

Nitrate/ Nitrite

One quality control sample per five samples analyzed. Acceptable limits:

Conc. Range	% True Value
0.050 - 0.250 mg/L	+/- 20
0.250 -25.000	+/- 10

Phosphorus

One quality control sample per five samples analyzed. Acceptable limits:

Conc. Range	% True Value
0.050 - 0.500 mg/L	+/- 20
0.500 - 2.000	+/- 10

Sulfate

One quality control sample per five samples analyzed. Acceptable limits not established by US. EPA.

COD — One quality control sample per five samples analyzed. Acceptable limits:

Low level	+/- 20%
High level	+/- 10%

BOD — Controls, blanks and standards run with each lot. Acceptable limits:
+/- 10% of True Value

PHENOLS — One quality control sample per five samples analyzed. Acceptable limits:

Conc. Range	% True Value
0.005 - 0.050 mg/L	+/- 20%
0.050 - 0.250	+/- 10%

METALS

Three levels of quality control samples are employed over the linear working range of the parameter. One entire series is run with each lot analysis. Acceptable limits:

Furnace range	+/- 20%
Flame range	+/- 10%

One calibration check sample is performed every sixth analysis to verify calibration curve. Acceptable range:

Furnace	+/- 20%
Flame	+/- 10%

Out of limit condition requires re-standardization of instrument.

Exceptions -

Mercury - One quality control check every nine samples. Acceptable limits +/- 20% of true value. Analysis of all samples run in triplicate.

Arsenic & Selenium - Three levels of quality control are run twice per lot analysis. Acceptable results are +/- 20%. All analysis are run with spike. Acceptable limits of recovery +/- 20%

In addition to the above procedures, samples analyzed for

EP Toxicity are run by the method of additions, which entails running each sample at three levels of spike addition. The results of expected versus observed values are calculated in a linear regression analysis, and the slope of the line expressed as a percent. Acceptable limits are between the values of 80 to 120 % for all EP Toxic metals.

ORGANIC ANALYSIS

Standards are maintained in groups for purgibles, acid extractable, base/neutral, and pesticide/PCB's. These groups are subdivided into lower groups to facilitate identification and reduce costs in standard preparation.

The quality control procedures listed in the December 3, 1979 Federal register are utilized to maintain instrument specifications. These procedures utilize deuterated anthracene and purgibles not on the priority pollutant list. In addition Howard Laboratories utilizes the following procedures to further improve upon detection limits and quality control:

1. Each sample is duplicated where required
2. A standard of known value is analyzed at least every ten samples along with a blank
3. In the case of PCB's, quantitation is duplicated on a second column.
4. Acceptable limits of recovery must meet the following:

   a. Recovery of known standards:

      80% at a level 5 times the detection limit
      50% at a level 2 times the detection limit

   b. Recovery of spike values:

      80% at a level 5 times the detection limit
      50% at a level 2 times the detection limit

   NOTE: PCB analysis have more stringent requirements.

PCB ANALYSIS

a. Recovery of known standards:

1. Aqueous standards -

0.01 - 0.05	+/- 0.005
0.05 - 0.50	+/- 0.01
0.50 - 5.00	+/- 0.05
Above 5.00	+/- 0.50

2. Oil standards -

Below 1.00	as appropriate
1.0 - 10.0	+/- 0.2 to +/- 2.0
10.0 - 50.0	+/- 2.0 to +/- 5.0
50.0 -500.0	+/- 5.0 to +/- 50.0
Above 500.0	as appropriate

b. Recovery of Spike values:

1. Aqueous -

0.01 - 0.05	>50%
0.05 - 0.50	>80%
0.50 - 5.00	>80%
Below 1.0	as appropriate
1.0 - 10.0	20%
10.0 - 50.0	10 to 20%
50.0 -500.0	10%
Above 500.0	10%

Duplication of samples

Duplicate samples must be reproducible at the same dilution by the following factors:

1. Aqueous -

0.01 - 0.05	+/- 0.005 - 0.01
0.05 - 0.50	+/- 0.01 - 0.05
0.50 - 5.00	+/- 0.05 - 0.10
Above 5.00	+/- 0.10

2. Oils -

Below 1.0	as appropriate
1.0 - 10.0	+/- 0.2 to 1.0
10.0 - 50.0	+/- 1.0 to 5.0
50.0 -500.0	+/- 5.0 to 50.0
Above 500.0	+/- 50.0 for each 500.0

GCSCAN ANALYSES:

GCSCAN is a code for multiple analyses utilizing gas chromatography along with a specified methodology. That methodology may be ASTM, EPA, NIOSH, AOAC or other method widely recognized in the analytical field. The specific method is specified with the results when applicable. The same QA/QC is provided as for PCBs and when peaks cannot be identified, GC/MS is utilized. Quantitation is by GC using multiple level calibration.

GCMS ANALYSES:

GCMS is a code for multiple methods of analyses utilizing a gas chromatograph equipped with mass spectrometer detector. This method identifies compounds and quantitates the same with external or internal standards, as appropriate. Specific methods will be specified when such methods are recognized by the scientific community or regulatory agencies. Since not all procedures are specified, the use of GCMS for organic analyses will be performed by an academically trained analyst with experience in the application of GC and ability to interpret data which may not be found on NBS or other recognized spectral libraries. The operation of GCMS will be under the direct supervision of a Ph.D.

PRIORITY POLLUTANT ANALYSES:

Priority pollutants, TTO's or fractions of these compounds will be by the method described in the December 3, 1979 Federal Register. Exact specifications for all parameters will be by protocol. QA includes recovery of spiked samples, reproducibility of the same sample, duplicate standards and at least one other source of comparison standards derived from the US EPA, NBS, or other recognized source.

Base Neutral Fraction: Method 1625 (capillary column use of Method 625) will be utilized. Internal standards will include D-10 Anthracene or D-10 Phenanthrene, with other recognized internal standards to determine retention times,

insure proper spectral retrival and maintain quality control on the internal standards themselves. Quantitation will be based upon each individual parameter and not grouped or quantitated based upon area of a known amount of internal standard. The charge/mass ratio of the internal standards is not the same for the internal standards as it is for the compounds in question; therefore internal standards will be utilized to determine recovery while quantitation will be based upon known standards when recoveries have been met satisfactorily.

Acid Fraction: Method 1625 will be utilized and the same information as that utilized for Base Neutrals will be followed.

Volatile Fraction: Method 1624, utilizing cryogenic purge and trap will be utilized for the volatile parameters. The entire system is automated to reduce human error, and each sample group will be spiked to determine recovery and acceptability of the data. We have found that Method 624, which utilizes a packed column will not satisfactorily quantitate the very volatile purgibles, and for that reason, have chosen to use liquid nitrogen trap to collect the sample. This method also allows the detection of more compounds than that listed in the volatile fraction.

Pesticide/PCB Fraction: GC/ECD will be utilized to screen the Pesticide/PCB (PESTPP) fraction, utilizing US EPA Method 608. This method is more than 10 times as sensitive as the GC/MS method. If compounds are detected, GC/MS analyses are utilized to identify such compounds. Quantitation will be by GC.

Special Parameters: Although the above methods are recognized for all priority pollutant parameters, the detection limits for certain of these parameters is quite high (e.g. 2,3,7,8-Dioxin). The recommended US EPA procedure of utilizing GC for screening of this parameter will be utilized.

8000 SERIES METHODS:

SW 846 Manual covers the analyses of hazardous wastes. The methods cited in SW 846 for organic analyses have not been approved by US EPA but are only recommended at this time. This firm has spent many weeks performing such analyses and in determining recoveries of each of the parameters under the 8000 series recommended procedures. We have been unsuccessful in finding 13 of the compounds for standards. All others are available. We have further modified (added to) the methods of analyses in SW 846 to better determine certain parameters. These methods are being prepared to submit to US EPA for their information. Certain methods of preparation have been reversed in addition to normal extraction procedures. For example, base neutral/acid fraction normally requires the base fraction be extracted first, then the acid fraction. In addition to this normal method, we include the acid extraction first followed by base neutral. This allows confirmation of certain organic salts by GCMS which are not normally capable of being analyzed by GC or GC/MS.

SUMMARY:

This firm maintains all of the equipment listed for US EPA methods. This includes GC/MS, GC, HPLC and all of the special detectors required for these analyses. Further, we maintain automatic equipment which operates on a 24 hour basis, 7 days per week. Such automation and continued operation have proven to provide better data (free of human error) and better operation of equipment. We have found that startup and shutdown of equipment promotes poor operation of the equipment and causes greater problems in stability of that equipment.

Organic analyses are conducted by protocol where recommended protocol exists. Otherwise, scientifically recognized procedures are utilized for such analyses. All organic analyses are performed under the direction of a Ph.D., with many years of experience, and well over 100,000 analyses.

Data is provided on formats utilizing the largest laboratory data management system available. Such data

is stored on 9 track mag tapes and archived per US EPA requirements.

Specific questions concerning these methods and data should be directed to the Laboratory Director.

APPENDIX 2

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

08/08/86 18:13:13

LAB # 86-05-987

CLIENT WEST M O SAMPLES 4
COMPANY Westinghouse Materials Co.
FACILITY

REPORT TO Westinghouse Materials Company of Ohio
P. O. Box 398704
Cincinnati, Ohio 45239
ATTEN David Jones

WORK ID RCRA Groundwater Sampling
TAKEN 5/19 & 5/20/86
TRANS Delivered by Dames & Moore
TYPE Aqueous
P.O. #
INVOICE under separate cover

PREPARED BY HOWARD LABORATORIES, INC.
3601 South Dixie Drive
P.O. Box 369
Dayton, OH 45449
PHONE 513-294-6856

CERTIFIED BY

CONTACT D HOWARD

Enclosed are the results of specified samples submitted for analyses. If you have any questions, please advise. Use the "LAB #" for faster identification.
OHIO EPA CERTIFICATION: CHEMICAL 4074 BACTERIOLOGICAL 857

cc: Mr. Wayne Fuller
Dames & Moore
1 Blue Hill Plaza 5'th Floor
Pearl River, New York 10965

HOWARD LABS INC TEST CODES and NAMES used on this report

AG	Silver	NO3I	Nitrates
ALPHA	Gross Alpha	PB	Lead
AS	Arsenic	PHNLI	Phenols
BA	Barium	PSDWA	SDWA Pesticides
BETA	Gross Beta	PTI	Phosphorus, Total
CA	Calcium	RADIUM	Radium, Total
CD	Cadmium	RAD SC	Radionuclides Scan
CLI	Chloride	SE	Selenium
CN	Cyanide	SO4I	Sulfate
CODI	Chemical Oxygen Demand	SSTUDY	Special Study
CR	Chromium	TDSI	Total Dissolved Solids
CR6	Hexavalent Chromium	TOCOL	Total Coliform, Non Potable
CU	Copper	TOXDQ	TOX-Quad Runs-Method 450.1
F	Fluoride	VOAMSC	GC/MS SCAN TOTAL VOLATILES
FE	Iron	WCQ	RCRA TOC/COND/PH IN QUAD.
HG	Mercury	ZN	Zinc
K	Potassium		
MG	Magnesium		
MN	Manganese		
NA	Sodium		
NI	Nickel		

SAMPLE ID Well P-1 5/20/86 SAMPLE # 03 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/20/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	5.76 pCi/L	CA	86.300 mg/L
CD	<0.002 mg/L	CLI	15.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.15 mg/L	FE	3.030 mg/L	HG	<0.0002 mg/L	K	1.610 mg/L	MG	21.100 mg/L
MN	0.415 mg/L	NA	7.650 mg/L	NI	<0.005 mg/L	NO31	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	0.03 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	50.0 mg/L	TDSI	368 mg/L
ZN	<0.025 mg/L										

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HOWARD LABS INC REPORT LAB # 86-05-993

Results by Sample

SAMPLE ID Well P-1 5/20/86 FRACTION 03B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/20/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.43	7.42	7.44	7.41	7.43	0.011
CONDUCTIVITY	540	540	540	540	540	0.000
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

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HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-993

SAMPLE ID Well P-1 5/20/86 B.#72799 SAMPLE # 03 FRACTIONS: H

Date & Time Collected 05/20/86 Category

TOCOL 9 /100ml

SAMPLE ID Well P-2 5/20/86 SAMPLE # 02 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/20/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	<5 pCi/L	CA	87.900 mg/L		
CD	<0.002 mg/L	CLI	22.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L		
CU	<0.025 mg/L	F	0.20 mg/L	FE	3.960 mg/L	HG	<0.0002 mg/L	K	1.190 mg/L	MG	22.600 mg/L		
MN	0.352 mg/L	NA	11.200 mg/L	NI	<0.005 mg/L	NO3I	0.02 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L		
PTI	0.13 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	8.0 mg/L	TDSI	368 mg/L		
ZN	<0.025 mg/L												

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HOWARD LABS INC REPORT

LAB # 86-05-994

Results by Sample

SAMPLE ID Well P-2 5/20/86

FRACTION 02G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/20/86 Category

DATE EXTRACTED 08/01/86

CONCENTRATION FACTOR 1

DATE INJECTED 08/03/86

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 86-05-994

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Results by Sample

SAMPLE ID Well P-2 5/20/86 FRACTION 02G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/20/86 Category

VERIFIED BY LC

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-994

Results by Sample

SAMPLE ID Well P-2 5/20/86

FRACTION 02B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/20/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.60	7.60	7.60	7.61	7.60	0.004
CONDUCTIVITY	560	580	580	580	575	8.66
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-994

SAMPLE ID Well P-2 5/20/86 B.#72802 SAMPLE # 02 FRACTIONS: H

Date &Time Collected 05/20/86 Category

TOCOL <2
/100ml

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-996

Results by Sample

SAMPLE ID Well P-3 5/20/86

FRACTION 02G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/20/86 Category

DATE EXTRACTED 08/01/86

CONCENTRATION FACTOR 1

DATE INJECTED 08/03/86

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 86-05-996

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well P-3 5/20/86 FRACTION 02G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/20/86 Category

VERIFIED BY LC

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	26.0	26.0	26.0	26.0	26.0	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-996

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well P-3 5/20/86 FRACTION 02B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/20/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
pH	7.56	7.57	7.55	7.58	7.57	0.011
CONDUCTIVITY	880	880	890	890	885	5
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-996

SAMPLE ID Well P-3 5/20/86 B.#72810 SAMPLE # 02 FRACTIONS: H

Date & Time Collected 05/20/86 Category

TOCOL <2 /100ml

SAMPLE ID Well 1s 5/19/86 SAMPLE # 02 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	<5 pCi/L	CA	76.800 mg/L
CD	<0.002 mg/L	CLI	18.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.13 mg/L	FE	1.050 mg/L	HG	<0.0002 mg/L	K	2.470 mg/L	MG	23.500 mg/L
MN	0.487 mg/L	NA	10.400 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	0.006 mg/L
PTI	<0.02 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	74.0 mg/L	TDSI	456 mg/L
ZN	<0.025 mg/L										

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-989

Results by Sample

SAMPLE ID Well 1s 5/19/86

FRACTION 02G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 08/01/86

CONCENTRATION FACTOR 1

DATE INJECTED 08/04/86

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Lindane	<0.2	ug/L
Endrin	<0.2	ug/L
Methoxychlor	<0.2	ug/L
Toxaphene	<0.5	ug/L
2,4-D	<0.2	ug/L
2,4,5-TP Silvex	<0.2	ug/L

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-989

SAMPLE ID Well 1s 5/19/86

FRACTION 02G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	46.0	42.0	50.0	50.0	47.0	3.83

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-989

SAMPLE ID Well 1s 5/19/86

FRACTION 02B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.32	7.31	7.32	7.32	7.32	0.004
CONDUCTIVITY	595	600	600	600	599	2.17
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

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RECEIVED: 05/20/86

HOWARD LABS INC REPORT
Results by Sample

LAB # 86-05-989

SAMPLE ID Well 1s 5/19/86 B.#72782 SAMPLE # 02 FRACTIONS: H
Date & Time Collected 05/19/86 Category

TOCOL <2
/100ml

SAMPLE ID Well MW-1d 5/20 B.#72811 SAMPLE # 03 FRACTIONS: I
Date & Time Collected 05/20/86 Category

TOCOL 18 /100ml

SAMPLE ID Well MW-1d 5/20/86 SAMPLE # 03 FRACTIONS: A,B,C,D,E,F,G,H
Date & Time Collected 05/20/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	<5 pCi/L	CA	98.400 mg/L		
CD	<0.002 mg/L	CLI	27.0 mg/L	CN	<0.005 mg/L	CODI	12 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L		
CU	<0.025 mg/L	F	0.13 mg/L	FE	6.240 mg/L	HG	<0.0002 mg/L	K	1.010 mg/L	MG	27.100 mg/L		
MN	0.416 mg/L	NA	23.500 mg/L	NI	<0.005 mg/L	NO3I	0.08 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L		
PTI	0.12 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	60.0 mg/L	TDSI	476 mg/L		

RECEIVED: 05/20/86

HOWARD LABS INC REPORT
Results by Sample

LAB # 86-05-996
Continued From Above

ZN	<0.025	mg/L

HOWARD LABS INC REPORT LAB # 86-05-996

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well MW-1d 5/20/86 FRACTION 03G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/20/86 Category

DATE EXTRACTED 08/01/86 DATE INJECTED 08/03/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 86-05-996

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well MW-1d 5/20/86 FRACTION 03G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/20/86 Category

VERIFIED BY LC

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
TOX	13.0	13.0	11.0	11.0	12.0	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-996

Results by Sample

SAMPLE ID Well MW-1d 5/20/86

FRACTION Q3H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/20/86

Category

VERIFIED BY SB

DATA FILE 21207

DATE INJECTED 06/02/86

ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-996

Results by Sample

SAMPLE ID Well MW-1d 5/20/86 FRACTION 03B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/20/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.36	7.36	7.36	7.37	7.36	0.004
CONDUCTIVITY	720	720	730	730	725	5
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-996

Results by Sample

SAMPLE ID Well MW-3 5/20/86 SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/20/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	<5 pCi/L	CA	83.100 mg/L
CD	<0.002 mg/L	CLI	24.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.24 mg/L	FE	0.750 mg/L	HG	0.0005 mg/L	K	2.640 mg/L	MG	23.300 mg/L
MN	0.396 mg/L	NA	7.800 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	0.04 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	94.0 mg/L	SSTUDY	06/30/86 Date Completed
TDSI	416 mg/L	ZN	<0.025 mg/L								

HOWARD LABS INC REPORT LAB # 86-05-996

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well MW-3 5/20/86 FRACTION 01G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/20/86 Category

DATE EXTRACTED 08/01/86 DATE INJECTED 08/03/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 86-05-996

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well MW-3 5/20/86 FRACTION 01G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/20/86 Category

VERIFIED BY LC

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-996

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well MW-3 5/20/86 FRACTION Q1B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/20/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.40	7.40	7.40	7.41	7.40	0.004
CONDUCTIVITY	600	600	610	600	603	4.33
TOTAL ORGANIC CARBON	1	1	<1	<1	<1	0.08

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total OrgaNic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-996

Results by Sample

SAMPLE ID Well MW-3 5/20/86 B.#72809 SAMPLE # 01 FRACTIONS: H
Date & Time Collected 05/20/86 Category

TOCOL <2 /100ml

SAMPLE ID Well P-3 5/20/86 SAMPLE # 02 FRACTIONS: A,B,C,D,E,F,G
Date & Time Collected 05/20/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	<5 pCi/L	CA	14.900 mg/L		
CD	<0.002 mg/L	CLI	34.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L		
CU	<0.025 mg/L	F	0.22 mg/L	FE	5.560 mg/L	HG	<0.0002 mg/L	K	3.730 mg/L	MG	32.500 mg/L		
MN	0.403 mg/L	NA	26.500 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L		
PTI	0.10 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	110.0 mg/L	TDSI	656 mg/L		
ZN	<0.025 mg/L												

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-994

Results by Sample

SAMPLE ID Well MW-4 5/20/86 SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,G,H

Date & Time Collected 05/20/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	<5 pCi/L	CA	84.100 mg/L
CD	<0.002 mg/L	CLI	21.0 mg/L	CN	<0.005 mg/L	CODI	<10 mgL	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.24 mg/L	FE	0.170 mg/L	HG	<0.0002 mg/L	K	2.880 mg/L	MG	20.300 mg/L
MN	<0.020 mg/L	NA	8.500 mg/L	NI	<0.005 mg/L	NO3I	2.20 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	66.0 mg/L	SSTUDY	06/30/86 Date Completed
TDSI	348 mg/L	ZN	<0.025 mg/L								

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-994

Results by Sample

SAMPLE ID Well MW-4 5/20/86

FRACTION 01G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/20/86 Category

DATE EXTRACTED 08/01/86

CONCENTRATION FACTOR 1

DATE INJECTED 08/03/86

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-994

SAMPLE ID Well MW-4 5/20/86

FRACTION Q1G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/0/86 Category

VERIFIED BY LC

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	12.0	12.0	10.0	10.0	11.0	1.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-994

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well MW-4 5/20/86 FRACTION 01H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/20/86 Category

VERIFIED BY SB

DATA FILE 21157

DATE INJECTED 05/30/86 ANALYST DLH

COMPOUND	RESULT	UNITS
Trichloroethene	4.4	ug/L

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-994

SAMPLE ID Well MW-4 5/20/86

FRACTION 01B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/20/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
pH	7.46	7.46	7.46	7.48	7.47	0.009
CONDUCTIVITY	540	545	550	550	546	4.15
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

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RECEIVED: 05/20/86

HOWARD LABS INC REPORT
Results by Sample

LAB # 86-05-994

SAMPLE ID Well MW-4 5/20/86 B.#72801 SAMPLE # 01 FRACTIONS: I
Date & Time Collected 05/20/86 Category

TOCOL 2,100
/100ml

SAMPLE ID Well MW-5 5/20/86 SAMPLE # 04 FRACTIONS: A,B,C,D,E,F,G

Date & Time Collected 05/20/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	<5 pCi/L	CA	110.000 mg/L
CD	<0.002 mg/L	CLI	16.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.24 mg/L	FE	2.310 mg/L	HG	<0.0002 mg/L	K	2.660 mg/L	MG	26.500 mg/L
MN	0.546 mg/L	NA	8.290 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	72.0 mg/L	TDSI	560 mg/L
ZN	<0.025 mg/L										

HOWARD LABS INC REPORT

LAB # 86-05-993

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well MW-5 5/20/86

FRACTION Q4G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/20/86 Category

DATE EXTRACTED 08/01/86

CONCENTRATION FACTOR 1

DATE INJECTED 08/03/86

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-993

Results by Sample

SAMPLE ID Well MW-5 5/20/86 FRACTION Q4G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/20/86 Category

VERIFIED BY LC

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-993

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well MW-5 5/20/86 FRACTION 04B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/20/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
pH	7.29	7.29	7.30	7.30	7.30	0.005
CONDUCTIVITY	645	660	660	660	656	6.50
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-993

Results by Sample

SAMPLE ID Well MW-5 5/20/86 B.#72800 SAMPLE # 04 FRACTIONS: H

Date & Time Collected 05/20/86 Category

TOCOL <2
/100ml

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-997

Results by Sample

SAMPLE ID Well 8s 5/20/86 SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,G,H

Date & Time Collected 05/20/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	<5 pCi/L	CA	83.000 mg/L
CD	<0.002 mg/L	CLI	21.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.14 mg/L	FE	1.190 mg/L	HG	<0.0002 mg/L	K	2.860 mg/L	MG	22.900 mg/L
MN	0.217 mg/L	NA	9.500 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	72.0 mg/L	TDSI	448 mg/L
ZN	<0.025 mg/L										

HOWARD LABS INC REPORT LAB # 86-05-997

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 8s 5/20/86 FRACTION 01G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/20/86 Category

DATE EXTRACTED 08/01/86 DATE INJECTED 08/04/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	ug/L
Endrin	<0.2	ug/L
Methoxychlor	<0.2	uG/L
Toxaphene	<0.5	ug/L
2,4-D	4.06	ug/L
2,4,5-TP Silvex	0.694	ug/L

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

ECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-997

AMPLE ID Well 8s 5/20/86

FRACTION 01G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/20/86 Category

VERIFIED BY LC

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
TOX	18.0	21.0	18.0	19.0	19.0	1.22

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-997

Results by Sample

SAMPLE ID Well 8s 5/20/86

FRACTION Q1H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/20/86 Category

VERIFIED BY SB

DATA FILE 51337

DATE INJECTED 06/03/86

ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-997

SAMPLE ID Well 8s 5/20/86

FRACTION Q1B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/20/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.40	7.42	7.39	7.39	7.40	0.012
CONDUCTIVITY	600	600	600	600	600	0.000
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-997

SAMPLE ID Well 8s 5/20/86 B.#72813 SAMPLE # 01 FRACTIONS: I

Date & Time Collected 05/20/86 Category

TOCOL 9 /100ml

SAMPLE ID Well 8d 5/19/86

SAMPLE # 03 FRACTIONS: A,B,C,D,E,F,G,H

Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	<5 pCi/L	CA	96.900 mg/L
CD	<0.002 mg/L	CLI	13.0 mg/L	CN	<0.005 mg/L	CODI	11 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.22 mg/L	FE	3.010 mg/L	HG	<0.0002 mg/L	K	1.010 mg/L	MG	21.000 mg/L
MN	0.362 mg/L	NA	9.700 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	0.07 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	12.0 mg/L	TDSI	332 mg/L
ZN	<0.025 mg/L										

SAMPLE ID Well 8d 5/19/86 SAMPLE # 03 FRACTIONS: A,B,C,D,E,F,G,H

Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	<5 pCi/L	CA	96.900 mg/L
CD	<0.002 mg/L	CLI	13.0 mg/L	CN	<0.005 mg/L	CODI	11 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.22 mg/L	FE	3.010 mg/L	HG	<0.0002 mg/L	K	1.010 mg/L	MG	21.000 mg/L
MN	0.362 mg/L	NA	9.700 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	0.07 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	12.0 mg/L	TDSI	332 mg/L
ZN	<0.025 mg/L										

HOWARD LABS INC REPORT LAB # 86-05-989

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 8d 5/19/86 FRACTION 03G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 08/01/86 DATE INJECTED 08/04/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	ug/L
Endrin	<0.2	ug/L
Methoxychlor	<0.2	ug/L
Toxaphene	<0.5	ug/L
2,4-D	<0.2	ug/L
2,4,5-TP Silvex	<0.2	ug/L

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-989

SAMPLE ID Well 8d 5/19/86

FRACTION 03G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-989

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 8d 5/19/86 FRACTION 03H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/19/86 Category

DATA FILE 20717

DATE INJECTED 05/25/86 ANALYST SB

VERIFIED BY DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

HOWARD LABS INC REPORT LAB # 86-05-989

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 8d 5/19/86 FRACTION 03B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.45	7.47	7.47	7.47	7.47	0.007
CONDUCTIVITY	515	520	520	520	519	2.17
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-989

SAMPLE ID Well 8d 5/19/86 B.#72783 SAMPLE # 03 FRACTIONS: I

Date & Time Collected 05/19/86 Category

TOCOL <2
/100ml

SAMPLE ID Well 9 5/19/86 SAMPLE # 02 FRACTIONS: A, B, C, D, E, F, G, H

Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	<5 pCi/L	CA	79.900 mg/L
CD	<0.002 mg/L	CLI	22.0 mg/L	CN	<0.005 mg/L	CODI	13 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.18 mg/L	FE	0.210 mg/L	HG	<0.0002 mg/L	K	2.170 mg/L	MG	21.600 mg/L
MN	0.061 mg/L	NA	10.300 mg/L	NI	<0.005 mg/L	NO3I	2.96 mg/L	PB	<0.005 mg/L	PHNLI	0.007 mg/L
PTI	0.04 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	70.0 mg/L	TDSI	408 mg/L
ZN	<0.025 mg/L										

HOWARD LABS INC REPORT LAB # 86-05-991

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 9 5/19/86 FRACTION 02G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 08/01/86 DATE INJECTED 08/04/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-991

SAMPLE ID Well 9 5/19/86

FRACTION Q2G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	10.0	13.0	11.0	11.0	11.3	1.26

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-991

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 9 5/19/86 FRACTION Q2H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/19/86 Category

DATA FILE 20721

DATE INJECTED 05/25/86 ANALYST SB

VERIFIED BY DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

HOWARD LABS INC REPORT LAB # 86-05-991

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 9 5/19/86 FRACTION Q2B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
pH	7.50	7.50	7.50	7.50	7.50	0.000
CONDUCTIVITY	540	540	540	540	540	0.000
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-991

Results by Sample

SAMPLE ID Well 9 5/19/86 B.#72790 SAMPLE # 02 FRACTIONS: I

Date & Time Collected 05/19/86 Category

TOCOL 3,400 /100ml

SAMPLE ID Well MW-10 5/19 B.#72803 SAMPLE # 03 FRACTIONS: I

Date & Time Collected 05/19/86 Category

TOCOL <2 /100ml

SAMPLE ID Well MW-10 5/19/86 SAMPLE # 03 FRACTIONS: A,B,C,D,E,F,G,H

Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	12.9 pCi/L	CA	377.000 mg/L
CD	<0.002 mg/L	CLI	82.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.13 mg/L	FE	0.250 mg/L	HG	<0.0002 mg/L	K	21.900 mg/L	MG	73.000 mg/L
MN	4.160 mg/L	NA	131.000 mg/L	NI	0.007 mg/L	NO3I	160.00 mg/L	PB	<0.005 mg/L	PHNLI	0.008 mg/L
PTI	0.06 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	720.0 mg/L	TDSI	2,730 mg/L

RECEIVED: 05/20/86

HOWARD LABS INC REPORT
Results by Sample

LAB # 86-05-994
Continued From Above

ZN	<0.025	mg/L

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-994

SAMPLE ID Well MW-10 5/19/86

FRACTION 03G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 08/01/86

CONCENTRATION FACTOR 1

DATE INJECTED 08/03/86

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 86-05-994

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well MW-10 5/19/86 FRACTION Q3G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	24.0	26.0	23.0	20.0	23.3	2.17

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

HOWARDLABS INC REPORT LAB # 86-05-994

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well MW-10 5/19/86 FRACTION 03H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/19/86 Category

DATA FILE 51328

DATE INJECTED 06/02/86 ANALYST DLH

VERIFIED BY SB

COMPOUND	RESULT	UNITS
No volatile compounds detected		

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-994

SAMPLE ID Well MW-10 5/19/86

FRACTION 03B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
pH	6.88	6.88	6.88	6.88	6.88	0.000
CONDUCTIVITY	2,700	2,700	2,700	2,750	2713	21.65
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-991

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 11 5/19/86 SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,G,H

Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	8.28 pCi/L	CA	99.800 mg/L
CD	<0.002 mg/L	CLI	21.0 mg/L	CN	<0.005 mg/L	CODI	15 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.22 mg/L	FE	8.540 mg/L	HG	<0.0002 mg/L	K	0.950 mg/L	MG	25.500 mg/L
MN	0.169 mg/L	NA	9.600 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	0.007 mg/L
PTI	0.09 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	78.0 mg/L	TDSI	476 mg/L
ZN	<0.025 mg/L										

HOWARD LABS INC REPORT LAB # 86-05-991

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 11 5/19/86 FRACTION 01G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 08/01/86 DATE INJECTED 08/04/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 86-05-991

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 11 5/19/86 FRACTION Q1G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
TOX	20.0	22.0	26.0	23.0	22.8	2.50

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-991

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 11 5/19/86 FRACTION Q1H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/19/86 Category

DATA FILE 20720

DATE INJECTED 05/25/86 ANALYST SB

VERIFIED BY DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

HOWARD LABS INC REPORT LAB # 86-05-991

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 11 5/19/86 FRACTION 01B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.35	7.37	7.38	7.39	7.37	0.015
CONDUCTIVITY	640	640	645	645	643	2.5
TOTAL ORGANIC CARBON	<1	1	<1	<1	<1	0.15

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

ECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-991

SAMPLE ID Well 11 5/19/86 B.#72789 SAMPLE # 01 FRACTIONS: I

Date & Time Collected 05/19/86 Category

TOCOL 31 /100ml

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-995

Results by Sample

SAMPLE ID Well MW-12 5/20 B.#72808 SAMPLE # 04 FRACTIONS: I
Date & Time Collected 05/20/86 Category

TOCOL 6 /100ml

SAMPLE ID Well MW-12 5/20/86 SAMPLE # 04 FRACTIONS: A,B,C,D,E,F,G,H
Date & Time Collected 05/20/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	5 pCi/L	CA	22.300 mg/L		
CD	<0.002 mg/L	CLI	105.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L		
CU	<0.025 mg/L	F	1.09 mg/L	FE	3.410 mg/L	HG	0.0009 mg/L	K	10.600 mg/L	MG	9.200 mg/L		
MN	0.050 mg/L	NA	210.000 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L		
PTI	0.06 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	8.0 mg/L	SSTUDY	06/30/86 Date Completed		
TDSI	660 mg/L	ZN	<0.025 mg/L										

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-995

Results by Sample

SAMPLE ID Well MW-12 5/20/86 FRACTION 04G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/20/86 Category

DATE EXTRACTED 08/01/86 DATE INJECTED 08/03/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than
* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 86-05-995

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well MW-12 5/20/86 FRACTION 04G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/20/86 Category

VERIFIED BY LC

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-995

SAMPLE ID Well MW-12 5/20/86

FRACTION 04H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/20/86

Category

VERIFIED BY SB

DATA FILE 51334

DATE INJECTED 06/03/86

ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

HOWARD LABS INC REPORT LAB # 86-05-995

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well MW-12 5/20/86 FRACTION 04B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/20/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
pH	7.74	7.75	7.75	7.75	7.75	0.004
CONDUCTIVITY	1,000	1,000	1,000	1,000	1,000	0.000
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

SAMPLE ID .ell 13s 5/19/86 SAMPLE # 04 ACTIONS: A,B,C,D,E,F,G,H,I

Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	<5 pCi/L	CA	121.000 mg/L
CD	<0.002 mg/L	CLI	27.0 mg/L	CN	<0.005 mg/L	CODI	11 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.17 mg/L	FE	3.180 mg/L	HG	<0.0002 mg/L	K	2.310 mg/L	MG	26.300 mg/L
MN	0.183 mg/L	NA	12.000 mg/L	NI	<0.005 mg/L	NO3I	0.06 mg/L	PB	<0.005 mg/L	PHNLI	0.006 mg/L
PTI	<0.02 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	94.0 mg/L	TDSI	468 mg/L
ZN	<0.025 mg/L										

HOWARD LABS INC REPORT LAB # 86-05-988

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 13s 5/19/86 FRACTION 04G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 08/01/86 DATE INJECTED 08/04/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 86-05-988

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 13s 5/19/86 FRACTION Q4G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT

LAB # 86-05-988

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 13s 5/19/86

FRACTION 04I TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/19/86 Category

DATA FILE 20713

DATE INJECTED 05/25/86

ANALYST DLH

VERIFIED BY DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

HOWARD LABS INC REPORT LAB # 86-05-988

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 13s 5/19/86 FRACTION Q4B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.24	7.24	7.24	7.24	7.24	0.000
CONDUCTIVITY	680	690	690	685	686	4.79
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-988

SAMPLE ID Well 13s 5/19/86 B.#72780 SAMPLE # 04 FRACTIONS: J

Date & Time Collected 05/19/86 Category

TOCOL 3 /100ml

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-989

Results by Sample

SAMPLE ID Well 13d 5/19/86 SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,G,H,I

Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	5.31 pCi/L	CA	205.000 mg/L
CD	<0.002 mg/L	CLI	69.0 mg/L	CN	<0.005 mg/L	CODI	14 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.15 mg/L	FE	7.840 mg/L	HG	<0.0002 mg/L	K	4.300 mg/L	MG	59.000 mg/L
MN	0.338 mg/L	NA	48.800 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	230.0 mg/L	TDSI	956 mg/L
ZN	<0.025 mg/L										

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-989

SAMPLE ID Well 13d 5/19/86

FRACTION 01G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 08/01/86

CONCENTRATION FACTOR 1

DATE INJECTED 08/04/86

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Lindane	<0.2	ug/L
Endrin	<0.2	ug/L
Methoxychlor	<0.2	ug/L
Toxaphene	<0.5	ug/L
2,4-D	<0.2	ug/L
2,4,5-TP Silvex	<0.2	ug/L

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-989

SAMPLE ID Well 13d 5/19/86

FRACTION Q1G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
TOX	13.0	14.0	10.0	15.0	13.0	1.87

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-989

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 13d 5/19/86 FRACTION Q1I TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/19/86 Category

DATA FILE 20714 VERIFIED BY DLH

DATE INJECTED 05/25/86 ANALYST SB

COMPOUND	RESULT	UNITS
No volatile compounds detected		

HOWARD LABS INC REPORT LAB # 86-05-989

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 13d 5/19/86 FRACTION 01B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.06	7.07	7.07	7.08	7.07	0.007
CONDUCTIVITY	1,260	1,280	1,260	1,260	1,265	8.66
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-989

SAMPLE ID Well 13d 5/19/86 B.#72781 SAMPLE # 01 FRACTIONS: J

Date & Time Collected 05/19/86 Category

TOCOL <2 /100ml

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-993

Results by Sample

SAMPLE ID Well 14s 5/20/86 SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,G,H

Date & Time Collected 05/20/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	<5 pCi/L	CA	89.000 mg/L
CD	<0.002 mg/L	CLI	20.0 mg/L	CN	<0.005 mg/L	CODI	26 mg/L	CR	0.014 mg/L	CR6	<0.010 mg/L
CU	0.099 mg/L	F	0.29 mg/L	FE	5.700 mg/L	HG	<0.0002 mg/L	K	3.410 mg/L	MG	22.100 mg/L
MN	0.143 mg/L	NA	9.400 mg/L	NI	0.005 mg/L	NO3I	0.10 mg/L	PB	0.015 mg/L	PHNLI	0.008 mg/L
PTI	0.12 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	68.0 mg/L	TDSI	344 mg/L
ZN	0.033 mg/L										

 HOWARD LABS INC REPORT LAB # 86-05-993

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 14s 5/20/86 FRACTION 01G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/20/86 Category

DATE EXTRACTED 08/01/86 DATE INJECTED 08/03/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 86-05-993

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 14s 5/20/86 FRACTION Q1G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/20/86 Category

VERIFIED BY GAG

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
TOX	29.0	23.0	26.0	25.0	25.8	2.17

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-993

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 14s 5/20/86 FRACTION 01H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/20/86 Category

DATA FILE 51329

DATE INJECTED 06/02/86 ANALYST DLH VERIFIED BY SB

COMPOUND	RESULT	UNITS
No volatile compounds detected		

HOWARD LABS INC REPORT LAB # 86-05-993

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 14s 5/20/86 FRACTION 01B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/20/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
pH	7.66	7.67	7.67	7.67	7.67	0.004
CONDUCTIVITY	510	520	520	520	518	4.33
TOTAL ORGANIC CARBON	1	1	1	1	1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-993

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 14s 5/20/86 B.#72797 SAMPLE # 01 FRACTIONS: I

Date & Time Collected 05/20/86 Category

TOCOL 9 /100ml

SAMPLE ID Well 14d 5/20/86 SAMPLE # 02 FRACTIONS: A,B,C,D,E,F,G,H

Date & Time Collected 05/20/86 Category

AG <0.030 mg/L	ALPHA <15 pCi/L	AS <0.005 mg/L	BA <0.200 mg/L	BETA 7.74 pCi/L	CA 78.700 mg/L
CD <0.002 mg/L	CLI 18.0 mg/L	CN <0.005 mg/L	CODI 12 mg/L	CR <0.005 mg/L	CR6 <0.005 mg/L
CU <0.025 mg/L	F 0.18 mg/L	FE 0.150 mg/L	HG 0.0007 mg/L	K 2.050 mg/L	MG 19.500 mg/L
MN <0.020 mg/L	NA 8.200 mg/L	NI <0.005 mg/L	NO3I 2.80 mg/L	PB <0.005 mg/L	PHNLI 0.007 mg/L
PTI <0.02 mg/L as P	RADIUM <5 pCi/L	RAD SC <5 pCi/L	SE <0.0025 mg/L	SO4I 58.0 mg/L	TDSI 316 mg/L
ZN <0.025 mg/L					

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-993

Results by Sample

SAMPLE ID Well 14d 5/20/86 FRACTION O2G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/20/86 Category

DATE EXTRACTED 08/01/86 DATE INJECTED 08/03/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 86-05-993

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 14d 5/20/86 FRACTION 02G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/20/86 Category

VERIFIED BY LC

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
TOX	26.0	28.0	25.0	26.0	26.3	1.10

NOTES AND DEFINITIONS FOR THIS REPORT

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-993

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 14d 5/20/86 FRACTION 02H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/20/86 Category

VERIFIED BY SB

DATA FILE 21149

DATE INJECTED 06/02/86 ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-993

SAMPLE ID Well 14d 5/20/86

FRACTION 02B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/20/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
pH	7.68	7.68	7.69	7.70	7.69	0.008
CONDUCTIVITY	500	520	520	520	515	8.66
TOTAL ORGANIC CARBON	1	1	2	1	1.25	0.43

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-993

SAMPLE ID Well 14d 5/20/86 B.#72798 SAMPLE # 02 FRACTIONS: I

Date & Time Collected 05/20/86 Category

TOCOL <2 /100ml

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-996

Results by Sample

SAMPLE ID Well 15s 5/19/86 SAMPLE # 04 FRACTIONS: A,B,C,D,E,F,G,H

Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	24.9 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	25.16 pCi/L	CA	69.400 mg/L
CD	<0.002 mg/L	CLI	19.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.42 mg/L	FE	0.031 mg/L	HG	<0.0002 mg/L	K	2.780 mg/L	MG	19.100 mg/L
MN	<0.020 mg/L	NA	11.000 mg/L	NI	<0.005 mg/L	NO3I	2.60 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	0.05 mg/L as P	RADIUM	7.14 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	52.0 mg/L	TDSI	344 mg/L
ZN	<0.025 mg/L										

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-996

Results by Sample

SAMPLE ID Well 15s 5/19/86

FRACTION 04G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 08/01/86

CONCENTRATION FACTOR 1

DATE INJECTED 08/03/86

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-996

Results by Sample

SAMPLE ID Well 15s 5/19/86 FRACTION 04G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY LC

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	29.0	29.0	32.0	30.0	30.0	1.22

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-996

Results by Sample

SAMPLE ID Well 15s 5/19/86

FRACTION 04H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/19/86

Category

VERIFIED BY SB

DATA FILE 21151

DATE INJECTED 06/02/86

ANALYST DLH

COMPOUND	RESULT	UNITS
1,1,1-Trichloroethane	5.1	ug/L

HOWARD LABS INC REPORT LAB # 86-05-996

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 15s 5/19/86 FRACTION 04B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.52	7.51	7.52	7.55	7.53	0.015
CONDUCTIVITY	530	535	535	535	534	2.17
TOTAL ORGANIC CARBON	<1	<1	<1	1	<1	0.04

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-996

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 15s 5/19/86 B.#72812 SAMPLE # 04 FRACTIONS: I

Date & Time Collected 05/19/86 Category

TOCOL <2
/100ml

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-988

SAMPLE ID Well HK-15d 5/19 B.#72777 SAMPLE # 01 FRACTIONS: I
Date & Time Collected 05/19/86 Category

TOCOL <2 /100ml

SAMPLE ID Well HK-15d 5/19/86 SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,G,H
Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	<5 pCi/L	CA	109.000 mg/L
CD	<0.002 mg/L	CLI	25.0 mg/L	CN	<0.005 mg/L	CODI	12 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.10 mg/L	FE	3.100 mg/L	HG	<0.0002 mg/L	K	2.000 mg/L	MG	24.600 mg/L
MN	0.309 mg/L	NA	7.630 mg/L	NI	<0.005 mg/L	NO3I	0.09 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	94.0 mg/L	TDSI	452 mg/L
ZN	0.031 mg/L										

HOWARD LABS INC REPORT LAB # 86-05-988

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well HK-15d 5/19/86 FRACTION Q1G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 07/25/86 DATE INJECTED 07/27/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	ug/L
Endrin	<0.2	ug/L
Methoxychlor	<0.2	ug/L
Toxaphene	<0.5	ug/L
2,4-D	<0.2	ug/L
2,4,5-TP Silvex	<0.2	ug/L

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 86-05-988

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well HK-15d 5/19/86 FRACTION Q1G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-988

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well HK-15d 5/19/86 FRACTION 01B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
pH	7.50	7.50	7.51	7.51	7.51	0.005
CONDUCTIVITY	610	610	613	613	612	1.50
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-988

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 16s 5/20/86 SAMPLE # 02 FRACTIONS: A,B,C,D,E,F,G,H

Date & Time Collected 05/20/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	9.67 pCi/L	CA	92.600 mg/L
CD	<0.002 mg/L	CLI	20.0 mg/L	CN	<0.005 mg/L	COD1	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	0.027 mg/L	F	0.21 mg/L	FE	1.020 mg/L	HG	<0.0002 mg/L	K	3.070 mg/L	MG	21.000 mg/L
MN	0.042 mg/L	NA	10.500 mg/L	NI	<0.005 mg/L	NO3I	2.28 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	56.0 mg/L	TDSI	408 mg/L
ZN	<0.025 mg/L										

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-988

Results by Sample

SAMPLE ID Well 16s 5/20/86

FRACTION 02G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/20/86 Category

DATE EXTRACTED 07/25/86

CONCENTRATION FACTOR 1

DATE INJECTED 07/27/86

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Lindane	<0.2	ug/L
Endrin	<0.2	ug/L
Methoxychlor	<0.2	ug/L
Toxaphene	<0.5	ug/L
2,4-D	<0.2	ug/L
2,4,5-TP Silvex	<0.2	ug/L

NOTES AND DEFINITIONS FOR THIS REPORT

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 86-05-988

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 16s 5/20/86 FRACTION 02G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/20/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	10.0	10.0	<10	2.23

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-988

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 16s 5/20/86 FRACTION 02H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/20/86 Category

VERIFIED BY DLH

DATA FILE 20711

DATE INJECTED 05/25/86 ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

HOWARD LABS INC REPORT LAB # 86-05-988

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 16s 5/20/86 FRACTION 02B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/20/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.60	7.59	7.60	7.61	7.60	0.007
CONDUCTIVITY	520	520	523	523	522	1.50
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-988

SAMPLE ID Well 16s 5/20/86 B.#72778 SAMPLE # 02 FRACTIONS: I

Date & Time Collected 05/20/86 Category

TOCOL <2
/100ml

SAMPLE ID Well 16d 5/20/86 SAMPLE # 03 FRACTIONS: A, B, C, D, E, F, G, H

Date & Time Collected 05/20/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	5.26 pCi/L	CA	91.700 mg/L
CD	<0.002 mg/L	CLI	19.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.16 mg/L	FE	1.300 mg/L	HG	<0.0002 mg/L	K	2.430 mg/L	MG	21.600 mg/L
MN	0.051 mg/L	NA	10.400 mg/L	NI	<0.005 mg/L	NO3I	2.92 mg/L	PB	<0.005 mg/L	PHNLI	0.009 mg/L
PTI	<0.02 mg/L as P	RADIUM	<5 pCi/L	RAD SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	58.0 mg/L	TDSI	372 mg/L
ZN	<0.025 mg/L										

HOWARD LABS INC REPORT LAB # 86-05-988

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 16d 5/20/86 FRACTION 03G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/20/86 Category

DATE EXTRACTED 07/26/86 DATE INJECTED 07/27/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	ug/L
Endrin	<0.2	ug/L
Methoxychlor	<0.2	ug/L
Toxaphene	<0.5	ug/L
2,4-D	<0.2	ug/L
2,4,5-TP Silvex	<0.2	ug/L

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 86-05-988

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 16d 5/20/86 FRACTION 03G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/20/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	14.0	16.0	16.0	13.0	14.8	1.30

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-988

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 16d 5/20/86 FRACTION 03H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/20/86 Category

VERIFIED BY DLH

DATA FILE 20712

DATE INJECTED 05/25/86 ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-988

SAMPLE ID Well 16d 5/20/86

FRACTION 03B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/20/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.55	7.57	7.57	7.59	7.57	0.014
CONDUCTIVITY	525	530	530	530	529	2.17
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-988

SAMPLE ID Well 16d 5/20/86 B.#72779 SAMPLE # 03 FRACTIONS: I

Date & Time Collected 05/20/86 Category

TOCOL 6 /100ml

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-992

Results by Sample

SAMPLE ID Well 17s 5/20/86 SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,G,H

Date & Time Collected 05/20/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	<5 pCi/L	CA	139.000 mg/L
CD	<0.002 mg/L	CLI	22.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.17 mg/L	FE	0.180 mg/L	HG	<0.0002 mg/L	K	1.850 mg/L	MG	30.500 mg/L
MN	0.121 mg/L	NA	7.240 mg/L	NI	<0.005 mg/L	NO3I	0.13 mg/L	PB	<0.005 mg/L	PHNLI	0.009 mg/L
PTI	<0.02 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	96.0 mg/L	TDSI	620 mg/L
ZN	<0.025 mg/L										

HOWARD LABS INC REPORT LAB # 86-05-992

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 17s 5/20/86 FRACTION 01G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/20/86 Category

DATE EXTRACTED 08/06/86 DATE INJECTED 08/07/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-992

Results by Sample

SAMPLE ID Well 17s 5/20/86 FRACTION 01G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/20/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	29.0	32.0	32.0	30.0	30.8	1.50

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-992

Results by Sample

SAMPLE ID Well 17s 5/20/86

FRACTION 01H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/20/86

Category

VERIFIED BY SB

DATA FILE 51321

DATE INJECTED 06/02/86

ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

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RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-992

Results by Sample

SAMPLE ID Well 17s 5/20/86

FRACTION 01B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/20/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.20	7.20	7.20	7.20	7.20	0.000
CONDUCTIVITY	780	790	790	800	790	7.07
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-992

Results by Sample

SAMPLE ID Well 17s 5/20/86 B.#72793 SAMPLE # 01 FRACTIONS: I
Date & Time Collected 05/20/86 Category

TOCOL <2 /100ml

SAMPLE ID Well 17d 5/20/86 SAMPLE # 02 FRACTIONS: A,B,C,D,E,F,G,H
Date & Time Collected 05/20/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	<5 pCi/L	CA	92.700 mg/L
CD	<0.002 mg/L	CLI	21.0 mg/L	CN	<0.005 mg/L	CODI	12 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.11 mg/L	FE	1.330 mg/L	HG	<0.0002 mg/L	K	2.130 mg/L	MG	18.300 mg/L
MN	0.295 mg/L	NA	7.600 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	0.008 mg/L
PTI	<0.02 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	80.0 mg/L	TDSI	412 mg/L
ZN	<0.025 mg/L										

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-992

Results by Sample

SAMPLE ID Well 17d 5/20/86

FRACTION 02G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/20/86 Category

VERIFIED BY DLH

DATE EXTRACTED 08/06/86

CONCENTRATION FACTOR 1

DATE INJECTED 08/07/86

ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-992

Results by Sample

SAMPLE ID Well 17d 5/20/86

FRACTION 02G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/20/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	12.0	15.0	11.0	10.0	12.0	2.16

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
Total Organic Halogen reported in ug/L
S. D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-992

Results by Sample

SAMPLE ID Well 17d 5/20/86

FRACTION 02H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/20/86

Category

VERIFIED BY SB

DATA FILE 51322

DATE INJECTED 06/02/86

ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-992

Results by Sample

SAMPLE ID Well 17d 5/20/86

FRACTION 02B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/20/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.41	7.42	7.42	7.42	7.42	0.004
CONDUCTIVITY	540	545	550	550	546	4.15
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-992

Results by Sample

SAMPLE ID Well 17d 5/20/86 B.#72794 SAMPLE # 02 FRACTIONS: I

Date & Time Collected 05/20/86 Category

TOCOL 3 /100ml

HOWARD LABS INC REPORT LAB # 86-05-987

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 18s 5/19/86 SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,G,H

Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	0.035 mg/L	BA	<0.200 mg/L	BETA	14 pCi/L	CA	146.000 mg/L
CD	<0.002 mg/L	CLI	6.0 mg/L	CN	<0.005 mg/L	CODI	30 mg/L	CR	0.025 mg/L	CR6	0.010 mg/L
CU	0.034 mg/L	F	0.63 mg/L	FE	32.700 mg/L	HG	<0.0002 mg/L	K	3.160 mg/L	MG	38.800 mg/L
MN	1.250 mg/L	NA	4.440 mg/L	NI	0.021 mg/L	NO3I	0.67 mg/L	PB	0.012 mg/L	PHNLI	0.009 mg/L
PTI	0.26 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	0.003 mg/L	SO4I	50.0 mg/L	TDSI	408 mg/L
ZN	0.068 mg/L										

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-987

SAMPLE ID Well 18s 5/19/86

FRACTION 01G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 07/17/86

CONCENTRATION FACTOR 1

DATE INJECTED 07/18/86

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Lindane	<0.2	ug/L
Endrin	<0.2	ug/L
Methoxychlor	<0.2	ug/L
Toxaphene	<0.5	ug/L
2,4-D	<0.2	ug/L
2,4,5-TP Silvex	<0.2	ug/L

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-987

SAMPLE ID Well 18s 5/19/86

FRACTION 01G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
TOX	48.0	53.0	52.0	53.0	51.5	2.06

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-987

Results by Sample

SAMPLE ID Well 18s 5/19/86

FRACTION Q1H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/19/86

Category

VERIFIED BY SB

DATA FILE 20708

DATE INJECTED 05/25/86

ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-987

SAMPLE ID Well 18s 5/19/86

FRACTION 01B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.50	7.50	7.51	7.51	7.51	0.005
CONDUCTIVITY	540	555	550	550	550	3.54
TOTAL ORGANIC CARBON	4	4	4	4	4	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-987

SAMPLE ID Well 18s 5/19/86 B.#72773 SAMPLE # 01 FRACTIONS: I
Date & Time Collected 05/19/86 Category

TOCOL <2 /100ml

SAMPLE ID Well 18d 5/19/86 SAMPLE # 02 FRACTIONS: A,B,C,D,E,F,G,H
Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	<5 pCi/L	CA	98.200 mg/L
CD	<0.002 mg/L	CLI	2.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.40 mg/L	FE	2.500 mg/L	HG	<0.0002 mg/L	K	0.525 mg/L	MG	33.500 mg/L
MN	0.120 mg/L	NA	4.600 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	0.006 mg/L
PTI	<0.02 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	56.0 mg/L	TDSI	384 mg/L
ZN	<0.025 mg/L										

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-987

SAMPLE ID Well 18d 5/19/86

FRACTION 02G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 07/17/86

CONCENTRATION FACTOR 1

DATE INJECTED 07/18/86

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Lindane	<0.2	ug/L
Endrin	<0.2	ug/L
Methoxychlor	<0.2	ug/L
Toxaphene	<0.5	ug/L
2,4-D	<0.2	ug/L
2,4,5-TP Silvex	<0.2	ug/L

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-987

SAMPLE ID Well 18d 5/19/86

FRACTION 02G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
Total Organic Halogen reported in ug/L
S. D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-987

SAMPLE ID Well 18d 5/19/86

FRACTION 02H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/19/86

Category

VERIFIED BY SB

DATA FILE 20709

DATE INJECTED 05/25/86

ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-987

SAMPLE ID Well 18d 5/19/86

FRACTION 02B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.51	7.52	7.53	7.53	7.52	0.008
CONDUCTIVITY	560	566	566	570	566	3.57
TOTAL ORGANIC CARBON	1	1	1	1	1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

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RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-987

SAMPLE ID Well 18d 5/19/86 B.#72774 SAMPLE # 02 FRACTIONS: I

Date & Time Collected 05/19/86 Category

TOCOL <2 /100ml

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-995

Results by Sample

SAMPLE ID Well MW-19s 5/19 B.#72806 SAMPLE # 02 FRACTIONS: J
Date & Time Collected 05/19/86 Category

TOCOL <2 /100ml

SAMPLE ID Well MW-19s 5/19/86 SAMPLE # 02 FRACTIONS: A,B,C,D,E,F,G,H,I
Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	15.3 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	794 pCi/L	CA	143.000 mg/L
CD	<0.002 mg/L	CLI	39.0 mg/L	CN	<0.005 mg/L	CODI	11 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.14 mg/L	FE	0.085 mg/L	HG	0.0003 mg/L	K	4.710 mg/L	MG	41.100 mg/L
MN	0.027 mg/L	NA	43.600 mg/L	NI	<0.005 mg/L	NO3I	72.00 mg/L	PB	<0.005 mg/L	PHNLI	0.008 mg/L
PTI	0.04 mg/L as P	RADIUM	130 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	98.0 mg/L	TDSI	948 mg/L
ZN	<0.025 mg/L										

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-995

Results by Sample

SAMPLE ID Well MW-19s 5/19/86 FRACTION 02G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 08/01/86 DATE INJECTED 08/03/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than
* All results reported in micrograms/liter unless otherwise specified.

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-995

SAMPLE ID Well MW-19s 5/19/86

FRACTION 02G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
TOX	19.0	19.0	19.0	17.0	18.5	0.87

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-995

Results by Sample

SAMPLE ID Well MW-19s 5/19/86

FRACTION 02I TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/19/86

Category

VERIFIED BY SB

DATA FILE 21150

DATE INJECTED 05/30/86

ANALYST OLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

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RECEIVED: 05/20/86

HOWARD LABS INC REPORT
Results by Sample

LAB # 86-05-995

SAMPLE ID Well MW-19s 5/19/86

FRACTION 02B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.
Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.28	7.29	7.30	7.31	7.30	0.011
CONDUCTIVITY	1,200	1,200	1,200	1,200	1,200	0.000
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-995

Results by Sample

SAMPLE ID Well MW-19d 5/19 B.#72805 SAMPLE # 01 FRACTIONS: J
Date & Time Collected 05/19/86 Category

TOCOL <2 /100ml

SAMPLE ID Well MW-19d 5/19/86 SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,G,H,I
Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	12.2 pCi/L	CA	248.000 mg/L		
CD	<0.002 mg/L	CLI	51.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L		
CU	<0.025 mg/L	F	0.09 mg/L	FE	0.060 mg/L	HG	<0.0002 mg/L	K	7.960 mg/L	MG	26.400 mg/L		
MN	2.360 mg/L	NA	75.400 mg/L	NI	0.007 mg/L	NO3I	3.70 mg/L	PB	<0.005 mg/L	PHNLI	0.009 mg/L		
PTI	0.05 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	410.0 mg/L	TDSI	1,120 mg/L		
ZN	<0.025 mg/L												

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-995

Results by Sample

SAMPLE ID Well MW-19d 5/19/86 FRACTION 01G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 08/01/86 DATE INJECTED 08/03/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-995

Results by Sample

SAMPLE ID Well MW-19d 5/19/86 FRACTION Q1G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-995

SAMPLE ID Well MW-19d 5/19/86

FRACTION Q1I TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/19/86

Category

VERIFIED BY SB

DATA FILE 21144

DATE INJECTED 05/30/86

ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-995

SAMPLE ID Well MW-19d 5/19/86

FRACTION Q1B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
pH	6.96	6.96	6.96	6.96	6.96	0.000
CONDUCTIVITY	1,500	1,600	1,600	1,600	1,575	43.30
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = StandarD Deviation

SAMPLE ID Well TP-19 5/19 B.#72791 SAMPLE # 03 FRACTIONS: I
Date & Time Collected 05/19/86 Category

TOCOL <2 /100ml

SAMPLE ID Well TP-19 5/19/86 SAMPLE # 03 FRACTIONS: A,B,C,D,E,F,G,H
Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	76.77 pCi/L	CA	310.000 mg/L
CD	<0.002 mg/L	CLI	265.0 mg/L	CN	<0.005 mg/L	CODI	21 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.38 mg/L	FE	2.100 mg/L	HG	<0.0002 mg/L	K	1.140 mg/L	MG	107.000 mg/L
MN	1.380 mg/L	NA	56.100 mg/L	NI	<0.005 mg/L	NO3I	0.07 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	0.11 mg/L as P	RADIUM	5.84 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	660.0 mg/L	TDSI	1,820 mg/L

228

736

RECEIVED: 05/20/86

HOWARD LABS INC REPORT
Results by Sample

LAB # 86-05-991
Continued From Above

ZN	<0.025	mg/L

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-991

Results by Sample

SAMPLE ID Well TP-19 5/19/86

FRACTION 03H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/19/86

Category

VERIFIED BY DLH

DATA FILE 20722

DATE INJECTED 05/25/86

ANALYST SB

COMPOUND	RESULT	UNITS
No volatile compounds detected		

HOWARD LABS INC REPORT LAB # 86-05-991

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well TP-19 5/19/86 FRACTION 03B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	6.73	6.72	6.72	6.72	6.72	0.004
CONDUCTIVITY	2,000	2,000	2,000	2,000	2,000	0.000
TOTAL ORGANIC CARBON	4	4	4	4	4	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT

LAB # 86-05-990

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 20s 5/19/86 SAMPLE # 01 FRACTIONS: A,B,C,D,E,F,G,H

Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	5.7 pCi/L	CA	115.000 mg/L
CD	<0.002 mg/L	CLI	21.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.20 mg/L	FE	0.710 mg/L	HG	<0.0002 mg/L	K	2.660 mg/L	MG	20.900 mg/L
MN	0.070 mg/L	NA	11.400 mg/L	NI	<0.005 mg/L	NO3I	5.48 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	8 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	76.0 mg/L	TDSI	376 mg/L
ZN	<0.025 mg/L										

HOWARD LABS INC REPORT LAB # 86-05-990

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 20s 5/19/86 FRACTION 01G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 08/01/86 DATE INJECTED 08/04/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	ug/L
Endrin	<0.2	ug/L
Methoxychlor	<0.2	ug/L
Toxaphene	<0.5	ug/L
2,4-D	<0.2	ug/L
2,4,5-TP Silvex	<0.2	ug/L

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 86-05-990

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 20s 5/19/86 FRACTION 01G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	25.0	28.0	29.0	30.0	28.0	2.16

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

HOWARD LABS INC REPORT

LAB # 86-05-990

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 20s 5/19/86

FRACTION 01H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/19/86

Category

DATA FILE 20718

DATE INJECTED 05/25/86

ANALYST SB

VERIFIED BY DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-990

Results by Sample

SAMPLE ID Well 20s 5/19/86

FRACTION 01B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.46	7.46	7.47	7.47	7.47	0.005
CONDUCTIVITY	560	570	570	570	568	4.33
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT

LAB # 86-05-990

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 20s 5/19/86 B.#72785 SAMPLE # 01 FRACTIONS: I

Date & Time Collected 05/19/86 Category

TOCOL <2 /100ml

SAMPLE ID Well 20d 5/19/86 SAMPLE # 02 FRACTIONS: A,B,C,D,E,F,G,H

Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	<5 pCi/L	CA	104.000 mg/L
CD	<0.002 mg/L	CLI	22.0 mg/L	CN	<0.005 mg/L	CODI	27 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.11 mg/L	FE	1.300 mg/L	HG	<0.0002 mg/L	K	1.920 mg/L	MG	22.000 mg/L
MN	0.205 mg/L	NA	9.100 mg/L	NI	<0.005 mg/L	NO3I	0.06 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	<0.02 mg/L as P	RADIUM	5.9 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	86.0 mg/L	TDSI	316 mg/L
ZN	<0.025 mg/L										

HOWARD LABS INC REPORT LAB # 86-05-990

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 20d 5/19/86 FRACTION 02G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 08/01/86 DATE INJECTED 08/04/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	ug/L
Endrin	<0.2	ug/L
Methoxychlor	<0.2	ug/L
Toxaphene	<0.5	ug/L
2,4-D	<0.2	ug/L
2,4,5-TP Silvex	<0.2	ug/L

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 86-05-990

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 20d 5/19/86 FRACTION 02G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	19.0	15.0	15.0	13.0	15.5	2.52

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-990

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 20d 5/19/86 FRACTION 02H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/19/86 Category

VERIFIED BY DLH

DATA FILE 20719

DATE INJECTED 05/25/86 ANALYST SB

COMPOUND	RESULT	UNITS
No volatile compounds detected		

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-990

SAMPLE ID Well 20d 5/19/86

FRACTION 02B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.41	7.41	7.40	7.41	7.41	0.004
CONDUCTIVITY	570	580	580	580	578	4.33
TOTAL ORGANIC CARBON	1	1	1	1	1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-990

Results by Sample

SAMPLE ID Well 20d 5/19/86 B.#72786 SAMPLE # 02 FRACTIONS: I

Date & Time Collected 05/19/86 Category

TOCOL 3
/100ml

SAMPLE ID Well TP-20 5/19 B.#72784 SAMPLE # 04 FRACTIONS: J
Date & Time Collected 05/19/86 Category

TOCOL 29 /100ml

SAMPLE ID Well TP-20 5/19/86 SAMPLE # 04 FRACTIONS: A,B,C,D,E,F,G,H,I
Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	0.007 mg/L	BA	<0.200 mg/L	BETA	<5 pCi/L	CA	120.000 mg/L
CD	<0.002 mg/L	CLI	5.0 mg/L	CN	<0.005 mg/L	CODI	17 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.22 mg/L	FE	0.360 mg/L	HG	<0.0002 mg/L	K	1.010 mg/L	MG	29.000 mg/L
MN	1.020 mg/L	NA	3.680 mg/L	NI	<0.005 mg/L	NO3I	<0.02 mg/L	PB	<0.005 mg/L	PHNLI	<0.005 mg/L
PTI	0.07 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	48.0 mg/L	SSTUDY	06/30/86 Date Completed

TDSI	376 mg/L	ZN	<0.025 mg/L

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-989

Results by Sample

SAMPLE ID Well TP-20 5/19/86 FRACTION 04G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 08/01/86 DATE INJECTED 08/04/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	ug/L
Endrin	<0.2	ug/L
Methoxychlor	<0.2	ug/L
Toxaphene	<0.5	ug/L
2,4-D	<0.2	ug/L
2,4,5-TP Silvex	<0.2	ug/L

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than
* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 86-05-989

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well TP-20 5/19/86 FRACTION 04G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	16.0	14.0	16.0	16.0	15.5	1.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

HOWARD LABS INC REPORT

LAB # 86-05-989

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well TP-20 5/19/86

FRACTION 04I TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/19/86 Category

DATA FILE 20716

DATE INJECTED 05/25/86

ANALYST SB

VERIFIED BY DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-989

SAMPLE ID Well TP-20 5/19/86

FRACTION Q4B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.14	7.13	7.13	7.13	7.13	0.004
CONDUCTIVITY	590	600	600	600	598	4.33
TOTAL ORGANIC CARBON	2	2	2	2	2	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

SAMPLE ID Well 21s 5/19/86

SAMPLE # 03 FRACTIONS: A,B,C,D,E,F,G,H,I

Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	33 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	930 pCi/L	CA	175.000 mg/L
CD	<0.002 mg/L	CLI	69.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.19 mg/L	FE	1.130 mg/L	HG	<0.0002 mg/L	K	10.340 mg/L	MG	21.200 mg/L
MN	<0.020 mg/L	NA	52.900 mg/L	NI	<0.005 mg/L	NO3I	63.90 mg/L	PB	<0.005 mg/L	PHNLI	0.014 mg/L
PTI	0.09 mg/L as P	RADIUM	29 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	92.0 mg/L	SSTUDY	06/30/86 Date Completed
TDSI	1,100 mg/L	ZN	<0.025 mg/L								

HOWARD LABS INC REPORT LAB # 86-05-992

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 21s 5/19/86 FRACTION 03G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 08/06/86 DATE INJECTED 08/07/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-992

Results by Sample

SAMPLE ID Well 21s 5/19/86

FRACTION 03G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY GAG

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	24.0	23.0	23.0	19.0	22.3	1.92

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
Total Organic Halogen reported in ug/L
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-992

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 21s 5/19/86 FRACTION 03I TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/19/86 Category

DATA FILE 21158

DATE INJECTED 05/30/86 ANALYST DLH

VERIFIED BY SB

COMPOUND	RESULT	UNITS
No volatile compounds detected		

HOWARD LABS INC REPORT LAB # 86-05-992

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 21s 5/19/86 FRACTION 03B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.36	7.37	7.37	7.38	7.37	0.007
CONDUCTIVITY	1,240	1,260	1,260	1,260	1,255	8.66
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-992

SAMPLE ID Well 21s 5/19/86 B.#72795 SAMPLE # 03 FRACTIONS: J

Date & Time Collected 05/19/86 Category

TOCOL <2
/100ml

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-991

Results by Sample

SAMPLE ID Well TP-21 5/19 B.#72792 SAMPLE # 04 FRACTIONS: I

Date & Time Collected 05/19/86 Category

TOCOL 6 /100ml

SAMPLE ID Well TP-21 5/19/86 SAMPLE # 04 FRACTIONS: A,B,C,D,E,F,G,H

Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	125 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	335 pCi/L	CA	146.000 mg/L
CD	<0.002 mg/L	CLI	19.0 mg/L	CN	<0.005 mg/L	CODI	12 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.52 mg/L	FE	1.690 mg/L	HG	<0.0002 mg/L	K	1.390 mg/L	MG	74.000 mg/L
MN	1.920 mg/L	NA	11.300 mg/L	NI	<0.005 mg/L	NO3I	0.19 mg/L	PB	<0.005 mg/L	PHNLI	0.006 mg/L
PTI	0.08 mg/L as P	RADIUM	21.1 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	260.0 mg/L	TDSI	780 mg/L
ZN	<0.025 mg/L										

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-991

SAMPLE ID Well TP-21 5/19/86

FRACTION 04H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/19/86 Category

VERIFIED BY DLH

DATA FILE 20723

DATE INJECTED 05/25/86

ANALYST SB

COMPOUND	RESULT	UNITS
No volatile compounds detected		

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-991

SAMPLE ID Well TP-21 5/19/86

FRACTION Q4B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.35	7.25	7.25	7.26	7.28	0.042
CONDUCTIVITY	995	1,000	1,000	1,000	999	2.17
TOTAL ORGANIC CARBON	2	2	2	2	2	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

SAMPLE ID Well 22s 5/19/86 SAMPLE # 04 FRACTIONS: A,B,C,D,E,F,G,H,I

Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	73 pCi/L	CA	122.000 mg/L
CD	<0.002 mg/L	CLI	38.0 mg/L	CN	<0.005 mg/L	CODI	<10 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.68 mg/L	FE	0.064 mg/L	HG	<0.0002 mg/L	K	3.540 mg/L	MG	34.600 mg/L
MN	<0.020 mg/L	NA	27.800 mg/L	NI	<0.005 mg/L	NO3I	28.70 mg/L	PB	<0.005 mg/L	PHNLI	0.007 mg/L
PTI	<0.02 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	100.0 mg/L	SSTUDY	06/30/86 Date Completed
TDSI	664 mg/L	ZN	<0.025 mg/L								

HOWARD LABS INC REPORT

LAB # 86-05-992

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 22s 5/19/86

FRACTION 04G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 08/06/86

CONCENTRATION FACTOR 1

DATE INJECTED 08/07/86

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-992

SAMPLE ID Well 22s 5/19/86

FRACTION 04G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY GAG

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	20.0	22.0	22.0	23.0	21.8	1.09

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-992

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well 22s 5/19/86 FRACTION Q4I TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/19/86 Category

DATA FILE 51324

DATE INJECTED 06/02/86

ANALYST DLH

VERIFIED BY SB

COMPOUND	RESULT	UNITS
No volatile compounds detected		

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-992

SAMPLE ID Well 22s 5/19/86

FRACTION Q4B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.45	7.45	7.46	7.46	7.46	0.005
CONDUCTIVITY	920	930	940	940	933	8.29
TOTAL ORGANIC CARBON	<1	<1	1	<1	<1	0.15

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-992

Results by Sample

SAMPLE ID Well 22s 5/19/86 B.#72796 SAMPLE # 04 FRACTIONS: J

Date & Time Collected 05/19/86 Category

TOCOL <2
/100ml

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-994

Results by Sample

SAMPLE ID Well TP-22 5/19 B.#72804 SAMPLE # 04 FRACTIONS: I
Date & Time Collected 05/19/86 Category

TOCOL 2,600 /100ml

SAMPLE ID Well TP-22 5/19/86 SAMPLE # 04 FRACTIONS: A,B,C,D,E,F,G,H
Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	37 pCi/L	AS	0.008 mg/L	BA	<0.200 mg/L	BETA	143 pCi/L	CA	458.000 mg/L
CD	<0.002 mg/L	CLI	34.0 mg/L	CN	0.008 mg/L	CODI	38 mg/L	CR	0.028 mg/L	CR6	<0.010 mg/L
CU	0.052 mg/L	F	0.97 mg/L	FE	15.800 mg/L	HG	<0.0002 mg/L	K	8.090 mg/L	MG	176.000 mg/L
MN	1.280 mg/L	NA	174.000 mg/L	NI	0.023 mg/L	NO3I	10.50 mg/L	PB	<0.005 mg/L	PHNLI	0.007 mg/L
PTI	0.35 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	1,100 mg/L	TDSI	2,550 mg/L
ZN	0.048 mg/L										

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-994

Results by Sample

SAMPLE ID Well TP-22 5/19/86 FRACTION 04G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 08/01/86 DATE INJECTED 08/03/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 86-05-994

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well TP-22 5/19/86 FRACTION Q4G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
TOX	31.0	30.0	28.0	34.0	30.8	2.17

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-994

Results by Sample

SAMPLE ID Well TP-22 5/19/86

FRACTION Q4H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/19/86

Category

VERIFIED BY SB

DATA FILE 51329

DATE INJECTED 06/02/86

ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-994

Results by Sample

SAMPLE ID Well TP-22 5/19/86 FRACTION 04B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.06	7.07	7.07	7.07	7.07	0.004
CONDUCTIVITY	2,400	2,400	2,400	2,400	2,400	0.000
TOTAL ORGANIC CARBON	5	5	5	5	5	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

SAMPLE ID .II SW-2 5/19/86 SAMPLE # 04 ;CTIONS: A,B,C,D,E,F,G,H,I

Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	12.37 pCi/L	CA	97.700 mg/L
CD	<0.002 mg/L	CLI	30.0 mg/L	CN	<0.005 mg/L	CODI	23 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.29 mg/L	FE	0.104 mg/L	HG	<0.0002 mg/L	K	2.610 mg/L	MG	26.700 mg/L
MN	0.131 mg/L	NA	13.600 mg/L	NI	<0.005 mg/L	NO3I	3.40 mg/L	PB	<0.005 mg/L	PHNLI	0.007 mg/L
PTI	<0.02 mg/L as P	RADIUM	7.74 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	68.0 mg/L	TDSI	448 mg/L
ZN	<0.025 mg/L										

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-987

SAMPLE ID Well SW-2 5/19/86

FRACTION Q4G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 07/17/86

CONCENTRATION FACTOR 1

DATE INJECTED 07/18/86

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Lindane	<0.2	ug/L
Endrin	<0.2	ug/L
Methoxychlor	<0.2	ug/L
Toxaphene	<0.5	ug/L
2,4-D	<0.2	ug/L
2,4,5-TP Silvex	<0.2	ug/L

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 86-05-987

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well SW-2 5/19/86 FRACTION 04G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

LAB # 86-05-987

Results by Sample

SAMPLE ID Well SW-2 5/19/86

FRACTION Q4I TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/19/86 Category

VERIFIED BY DLH

DATA FILE 20710

DATE INJECTED 05/25/86

ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-987

SAMPLE ID Well SW-2 5/19/86

FRACTION 04B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.47	7.46	7.46	7.45	7.46	0.007
CONDUCTIVITY	630	640	636	640	637	4.09
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-987

Results by Sample

SAMPLE ID Well SW-2 5/19/86 B.#72776 SAMPLE # 04 FRACTIONS: J

Date & Time Collected 05/19/86 Category

TOCOL 100 /100ml

SAMPLE ID .all HK-s 5/19/86 SAMPLE # 03 CTIONS: A,B,C,D,E,F,G,H

Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	35 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	37 pCi/L	CA	73.300 mg/L
CD	<0.002 mg/L	CLI	19.0 mg/L	CN	<0.005 mg/L	CODI	16 mg/L	CR	0.006 mg/L	CR6	<0.006 mg/L
CU	<0.025 mg/L	F	0.58 mg/L	FE	0.081 mg/L	HG	<0.0002 mg/L	K	2.840 mg/L	MG	18.700 mg/L
MN	<0.020 mg/L	NA	13.600 mg/L	NI	<0.005 mg/L	NO3I	2.60 mg/L	PB	<0.005 mg/L	PHNLI	0.006 mg/L
PTI	<0.02 mg/L as P	RADIUM	36 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	58.0 mg/L	SSTUDY	06/30/86 Date Completed
TDSI	352 mg/L	ZN	0.092 mg/L								

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-987

SAMPLE ID Well HK-s 5/19/86

FRACTION 03G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 07/25/86

CONCENTRATION FACTOR 1

DATE INJECTED 07/27/86

ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Lindane	<0.2	ug/L
Endrin	<0.2	ug/L
Methoxychlor	<0.2	ug/L
Toxaphene	<0.5	ug/L
2,4-D	<0.2	ug/L
2,4,5-TP Silvex	<0.2	ug/L

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 86-05-987

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well HK-s 5/19/86 FRACTION 03G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	<10	<10	<10	<10	<10	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-987

SAMPLE ID Well HK-s 5/19/86

FRACTION 03B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
pH	7.66	7.68	7.69	7.70	7.68	0.015
CONDUCTIVITY	496	500	500	500	499	1.73
TOTAL ORGANIC CARBON	1	<1	<1	<1	<1	0.17

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

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RECEIVED: 05/20/86

HOWARD LABS INC REPORT
Results by Sample

LAB # 86-05-987

SAMPLE ID Well HK-s 5/19/86 B.#72775 SAMPLE # 03 FRACTIONS: I
Date & Time Collected 05/19/86 Category

TOCOL 9
/100ml

SAMPLE ID Well DS 5/19/86 SAMPLE # 03 FRACTIONS: A,B,C,D,E,F,G,H

Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	51 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	31 pCi/L	CA	108.000 mg/L
CD	<0.002 mg/L	CLI	36.0 mg/L	CN	<0.005 mg/L	CODI	12 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.18 mg/L	FE	0.056 mg/L	HG	<0.0002 mg/L	K	3.120 mg/L	MG	22.600 mg/L
MN	<0.020 mg/L	NA	13.800 mg/L	NI	<0.005 mg/L	NO3I	5.04 mg/L	PB	<0.005 mg/L	PHNLI	0.012 mg/L
PTI	0.04 mg/L as P	RADIUM	6.57 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	62.0 mg/L	SSTUDY	06/30/86 Date Completed
TDSI	444 mg/L	ZN	0.064 mg/L								

HOWARD LABS INC REPORT LAB # 86-05-990

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well DS 5/19/86 FRACTION 03G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 08/01/86 DATE INJECTED 08/04/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	ug/L
Endrin	<0.2	ug/L
Methoxychlor	<0.2	ug/L
Toxaphene	<0.5	ug/L
2,4-D	<0.2	ug/L
2,4,5-TP Silvex	<0.2	ug/L

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than

* All results reported in micrograms/liter unless otherwise specified.

HOWARD LABS INC REPORT LAB # 86-05-990

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well DS 5/19/86 FRACTION 03G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	21.0	14.0	18.0	19.0	18.0	2.94

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-990

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well DS 5/19/86 FRACTION 03B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
pH	7.47	7.46	7.47	7.47	7.47	0.004
CONDUCTIVITY	630	635	640	640	636	4.15
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-990

SAMPLE ID Well DS 5/19/86 B.#72787 SAMPLE # 03 FRACTIONS: I

Date & Time Collected 05/19/86 Category

TOCOL <2 /100ml

SAMPLE ID Well AW 5/19/86 SAMPLE # 04 FRACTIONS: A,B,C,D,E,F,G,H

Date & Time Collected 05/19/86 Category

AG	<0.030 mg/L	ALPHA	<15 pCi/L	AS	<0.005 mg/L	BA	<0.200 mg/L	BETA	<5 pCi/L	CA	94.300 mg/L
CD	<0.002 mg/L	CLI	29.0 mg/L	CN	0.005 mg/L	CODI	11 mg/L	CR	<0.005 mg/L	CR6	<0.005 mg/L
CU	<0.025 mg/L	F	0.20 mg/L	FE	1.930 mg/L	HG	<0.0002 mg/L	K	2.480 mg/L	MG	22.600 mg/L
MN	0.365 mg/L	NA	11.100 mg/L	NI	<0.005 mg/L	NO3I	0.10 mg/L	PB	<0.005 mg/L	PHNLI	0.011 mg/L
PTI	0.04 mg/L as P	RADIUM	<5 pCi/L	RAD_SC	<5 pCi/L	SE	<0.0025 mg/L	SO4I	70.0 mg/L	TDSI	340 mg/L
ZN	<0.025 mg/L										

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-990

SAMPLE ID Well AW 5/19/86

FRACTION 04G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/19/86 Category

DATE EXTRACTED 08/01/86
CONCENTRATION FACTOR 1

DATE INJECTED 08/04/86
ANALYST WMC

VERIFIED BY DLH

COMPOUND	RESULT	UNITS *
Lindane	<0.2	ug/L
Endrin	<0.2	ug/L
Methoxychlor	<0.2	ug/L
Toxaphene	<0.5	ug/L
2,4-D	<0.2	ug/L
2,4,5-TP Silvex	<0.2	ug/L

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than
* All results reported in micrograms/liter unless otherwise specified.

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-990

SAMPLE ID Well AW 5/19/86

FRACTION Q4G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/19/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	23.0	23.0	25.0	25.0	24.0	1.15

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than

Total Organic Halogen reported in ug/L

S. D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-990

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Well AW 5/19/86 FRACTION Q4B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/19/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
pH	7.34	7.33	7.34	7.34	7.34	0.004
CONDUCTIVITY	610	620	620	620	618	4.33
TOTAL ORGANIC CARBON	<1	<1	<1	<1	<1	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-990

SAMPLE ID Well AW 5/19/86 B.#72788 SAMPLE # 04 FRACTIONS: I

Date & Time Collected 05/19/86 Category

TOCOL <2
/100ml

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-995

SAMPLE ID Well HK-DG 5/20 B.#72807 SAMPLE # 03 FRACTIONS: I
Date & Time Collected 05/20/86 Category

TOCOL 4,200 /100ml

SAMPLE ID Well HK-DG 5/20/86 SAMPLE # 03 FRACTIONS: A,B,C,D,E,F,G,H
Date & Time Collected 05/20/86 Category

AG	<0.030	mg/L	ALPHA	<15	pCi/L	AS	<0.005	mg/L	BA	<0.200	mg/L	BETA	26 pCi/L
CA	141.000	mg/L	CD	<0.002	mg/L	CLI	35.0	mg/L	CN	0.010	mg/L	CODI	16 mg/L
CR	<0.005	mg/L	CR6	<0.005	mg/L	CU	<0.025	mg/L	F	0.17	mg/L	FE	0.083 mg/L
HG	<0.0002	mg/L	K	34.100	mg/L	MG	62.000	mg/L	MN	<0.020	mg/L	NA	32.700 mg/L
NI	<0.005	mg/L	NO3I	8.96	mg/L	PB	<0.005	mg/L	PHNLI	0.008	mg/L	PTI	0.07 mg/L as P
RADIUM	<5	pCi/L	RAD_SC	<5	pCi/L	SE	<0.0025	mg/L	SO4I	130.0	mg/L	TDSI	840 mg/L
ZN	0.051	mg/L											

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-995

Results by Sample

SAMPLE ID Well HK-DG 5/20/86 FRACTION 03G TEST CODE PSDWA NAME SDWA Pesticides

Date & Time Collected 05/20/86 Category

DATE EXTRACTED 08/01/86 DATE INJECTED 08/03/86 VERIFIED BY DLH

CONCENTRATION FACTOR 1 ANALYST WMC

COMPOUND	RESULT	UNITS *
Lindane	<0.2	
Endrin	<0.2	
Methoxychlor	<0.2	
Toxaphene	<0.5	
2,4-D	<0.2	
2,4,5-TP Silvex	<0.2	

NOTES AND DEFINITIONS FOR THIS REPORT.

<=Less Than
* All results reported in micrograms/liter unless otherwise specified.

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-995

Results by Sample

SAMPLE ID Well HK-DG 5/20/86 FRACTION 03G TEST CODE TOXDQ NAME TOX-Quad Runs-Method 450.1

Date & Time Collected 05/20/86 Category

VERIFIED BY EVM

RCRA GROUND WATER INDICATOR PARAMETER

TOTAL ORGANIC HALOGEN BY DOHRMANN DX-20 ANALYZER

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S. D.
TOX	18.0	18.0	21.0	21.0	19.5	1.50

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
Total Organic Halogen reported in ug/L
S. D. = Standard Deviation

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-995

Results by Sample

SAMPLE ID Well HK-DG 5/20/86

FRACTION 03H TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected 05/20/86 Category

VERIFIED BY SB

DATA FILE 21147

DATE INJECTED 05/30/86

ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-995

Results by Sample

SAMPLE ID Well HK-DG 5/20/86 FRACTION 03B TEST CODE WCQ NAME RCRA TOC/COND/PH IN QUAD.

Date & Time Collected 05/20/86 Category

VERIFIED BY LGL

RCRA WET CHEMICAL GROUND WATER INDICATOR PARAMETERS

PARAMETER	RUN 1	RUN 2	RUN 3	RUN 4	AVG	S.D.
pH	6.99	6.99	6.99	7.00	6.99	0.004
CONDUCTIVITY	1,100	1,100	1,100	1,100	1,100	0.000
TOTAL ORGANIC CARBON	2	2	2	2	2	0.00

NOTES AND DEFINITIONS FOR THIS REPORT.

< = Less Than
pH reported in S.U.
Conductivity reported in umhos/cm
Total Organic Carbon reported in mg/L
NA = Not Analyzed
S.D. = Standard Deviation

HOWARD LABS INC REPORT LAB # 86-05-997

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID Blanks

FRACTION 02A TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected not specified Category

VERIFIED BY SB

DATA FILE 51338

DATE INJECTED 06/03/86

ANALYST DLH

COMPOUND	RESULT	UNITS
No volatile compounds detected		

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-997

Results by Sample

SAMPLE ID QC Sample #1 - Demand SAMPLE # 03 FRACTIONS: A

Date & Time Collected not specified Category

CODI 173 mg/L

RECEIVED: 05/20/86

HOWARD LABS INC REPORT LAB # 86-05-997

Results by Sample

SAMPLE ID QC Sample #2-Volatile Purg FRACTION 04A TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected not specified Category

VERIFIED BY SB

DATA FILE 51340

DATE INJECTED 06/03/86

ANALYST DLH

COMPOUND	RESULT	UNITS
Chloroform	44.2	ug/L
1,2-Dichloroethane	22.0	ug/L
1,1,1-Trichloroethane	12.4	ug/L
Carbon Tetrachloride	9.9	ug/L
Bromodichloromethane	8.4	ug/L
1,1,2-Trichloroethane	10.1	ug/L
Dibromochloromethane	11.3	ug/L
Tetrachloroethene	6.6	ug/L
Bromoform	10.8	ug/L

RECEIVED: 05/20/86

HOWARD LABS INC REPORT

Results by Sample

LAB # 86-05-997

SAMPLE ID QC Sample #3 Purgeables FRACTION 05A TEST CODE VOAMSC NAME GC/MS SCAN TOTAL VOLATILES

Date & Time Collected not specified Category

VERIFIED BY SB

DATA FILE 51341

DATE INJECTED 06/03/86

ANALYST DLH

COMPOUND	RESULT	UNITS
1,1-Dichloroethane	4.5	ug/L
Chloroform	12.2	ug/L
1,1,1-Trichloroethane	4.4	ug/L
Bromodichloromethane	5.1	ug/L
Trans-1,3-Dichloropropene	6.7	ug/L
Cis-1,2-Dichloropropene	9.9	ug/L
Tetrachloroethene	4.4	ug/L
Bromoform	11.3	ug/L

HOWARD LABS INC REPORT LAB # 86-05-997

RECEIVED: 05/20/86

Results by Sample

SAMPLE ID QC Sample #4 - Minerals SAMPLE # 06 FRACTIONS: A,B

Date & Time Collected not specified Category

CA	5.200 mg/L	CLI	12.0 mg/L	COND	90 umhos/cm	F	0.38 mg/L	K	2.050 mg/L	MG	1.800 mg/L
NA	8.000 mg/L	SO4I	5.5 mg/L	TDSI	44 mg/L						

APPENDIX 3

Dames & Moore

1 Blue Hill Plaza
Pearl River, New York 10965
(914) 735-1200

SAMPLE I.D. NO. See Below

DAY, MONTH, YEAR 5-20-86

Chain of Custody Record

736

REASON FOR SAMPLING: RCRA Ground-Water Monitoring

WITNESSES: D&M: John Brod, Larry Keefe, Aki Maki; D&M: Wayne Euler, Bob Slaurelt, Joe Gordon; WMCO - Dave Jones

COLLECTION PROCEDURE: Bailing after purge pumping (Page 1 of 4)

METHOD OF PRESERVATION: Iced to 4°C

REMARKS:

18S						3		-		-		10
18D						3		-		-		10
HK-S		-				-	-					7 to no VOA
SW-2		-				3		-				~~12~~ 10
HK-15D		-				-	-					7 to no VOA
16S						3		-		-		13 bad VOA, 10
16D						3		-		-		10
3S		-				3						~~10~~ 10
13D		-				2						1 broke VOA, 8
5						-						
8d						3						

COLLECTED BY

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
VARIOUS D-M Employees		For transport to Lab
SIGNATURE X See Field Record Sheets	TIME AND DATE See Records	

CUSTODY TRANSFERRED TO

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
Larry Keefe	D&M	Return to Harvard Lab.
SIGNATURE X [signature]	TIME AND DATE 5/20/86 9:00p	

CUSTODY TRANSFERRED TO

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
Mary Ellen Courtney	Harvard Labs	Testing
SIGNATURE X Mary Ellen Courtney	TIME AND DATE 5/20/86 5:30p.m	

CUSTODY TRANSFERRED TO

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

RECEIVED IN LABORATORY BY

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

LOGGED IN BY

PRINTED NAME	UNIT	ACCESSION NO.
SIGNATURE X	TIME AND DATE	

91-14-12 (1/78)

Pearl River, New York 10965
(914) 735-1200

SAMPLE I.D. NO.

DAY, MONTH, YEAR

Chain of Custody Record

736

REASON FOR SAMPLING

R

WITNESSES

COLLECTION PROCEDURE

(PAGE 2 OF 4)

METHOD OF PRESERVATION

REMARKS:

	HNO3	H2SO4	NaOH	HNO3	H2SO4	PLASTIC	COLI FORM	VOA	ZGA	AMBER	IGUC	PLASTIC	LINE NO TSS	JGA		REMARKS
TP-20	1	1	1	1	1		3					1		1		
20S	1	1	1	1	1		3	1				1				10
20D	1	1	1	1	1		3	1				1				10
D3	1		1	1	1					1		1		1		
AW	1		1	1	1					1		1		1		
11	1	1	1	1	1		3	1				1				
9	1	1	1	1	1		3	1				1				
TP19	1	1	1	1	1		3			1		1				10
TP21	1	1	1	1	1		3			1		1				10
17S	1	1	1	1	1		3	1				1				10
17D	1	1	1	1	1		3	1				1				10

COLLECTED BY

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

CUSTODY TRANSFERRED TO

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

CUSTODY TRANSFERRED TO

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

CUSTODY TRANSFERRED TO

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

RECEIVED IN LABORATORY BY

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

LOGGED IN BY

PRINTED NAME	UNIT	ACCESSION NO.
SIGNATURE X	TIME AND DATE	

91-14-12 (1/78)

Daniel B. Moore
1 Blue Hill Plaza
Pearl River, New York 10965
(914) 735-1200

SAMPLE I.D. NO.

DAY, MONTH, YEAR

Chain of Custody Record

736

REASON FOR SAMPLING

WITNESSES

COLLECTION PROCEDURE

(PAGE 3 OF 4)

METHOD OF PRESERVATION

REMARKS:

	HNO3 + Cl2	H2SO4	NaOH	HNO3	COLIFORM	VOA	2 Gal	1 Gal	1 Gal	1 Gal	1 Gal		REMARKS
215	1		1	1	1	3	1		1	1			10
225	1		1	1	1	3	1		1	1			10
TRIP BLANK						2							2
145	1	1	1	1	1	3	1		1				10
14	1	1	1	1	1	3	1		1				10
D-1	1	1	1	1	1	–		1	1				NO VOA 7
MW-5	1	1	1	1	1	–	1		1				NO VOA 7
MW-4	1	1	1	1	1	3	1		1				10
P2	1	1	1	1	1	–	1		1				NO VOA
PH/QC Blank													6 AMPULES
MW-10	1	1	1	1	1	2	1		1				

COLLECTED BY

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

CUSTODY TRANSFERRED TO

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

CUSTODY TRANSFERRED TO

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

CUSTODY TRANSFERRED TO

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

RECEIVED IN LABORATORY BY

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE	TIME AND DATE	

	UNIT	ACCESSION NO.
	TIME AND DATE	

Dames & Moore

1 Blue Hill Plaza
Pearl River, New York 10965
(914) 735-1200

SAMPLE I.D. NO.

DAY, MONTH, YEAR

Chain of Custody Record

736

REASON FOR SAMPLING

WITNESSES

COLLECTION PROCEDURE

(PAGE 4 of 4)

METHOD OF PRESERVATION

REMARKS:

	HNO3 + ICE	H2SO4 + ICE	NaOH	HNO3	H2SO4	NaOH + ZnAc	VOA	2GAL	1GAL	1GAL	1L	1L	1 GAL		REMARKS
TP-22	1	1	1	1	1		3	-			1				
MW-19d	1		1	1	1		3	1			1	1			10
MW-19s	1		1	1	1		3	1			1	1			10
HX-DG	1	1	1	1	1		3	1			1				10
MW-12	1	1	1	1	1		3	1			1				10
MW-3	1	1	1	1	1		-	1			1				NO VOA 7
P-3	1	1	1	1	1		-	1			1				NO VOA 7
MW-1D	1	1	1	1	1		3	1			1				10
15S	1	1	1	1	1		3	1			1				10
8S	1	1	1	1	1		3	1			1				10

COLLECTED BY

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

CUSTODY TRANSFERRED TO

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

CUSTODY TRANSFERRED TO

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

CUSTODY TRANSFERRED TO

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

RECEIVED IN LABORATORY BY

PRINTED NAME	UNIT	PURPOSE OF TRANSFER
SIGNATURE X	TIME AND DATE	

LOGGED IN BY

PRINTED NAME	UNIT	ACCESSION NO.
SIGNATURE X	TIME AND DATE	

71-14-17 (1/78)

APPENDIX 4

Results of Phase 1-Round 1 Sampling

Table 3-1

GROUND-WATER SAMPLING RESULTS - FMPC - Pit #4
(All results in ppm except as noted)

	MW-12	MW-TP19	MW-TP21	MW-TP22	Standards: Primary(6)	Standards: Secondary (7)	Standards: Recommended (12)
Chloride	109	459	58	118	--	250	--
Iron	18.1	4.57	58.4	2.26	--	0.3	--
Manganese	0.216	2.75	3.77	2.01	--	0.05	--
Phenols	0.019	0.049	<0.005	<0.005	--	--	0.001
Sodium	268.0	34.6	40.5	19.3	--	--	--
Sulfate	72	575	30	850	--	250	--
Silver	<0.030	<0.030	<0.030	<0.030	0.05	--	--
Arsenic	<0.0025	0.008	0.03	0.006	0.05	--	--
Barium	<0.200	0.308	0.863	0.363	1.0	--	--
Calcium	53	372	415	154	--	--	--
Cadmium	<0.002	<0.002	<0.002	<0.002	0.010	--	--
Cyanide	<0.005	<0.005	<0.005	<0.005	--	--	0.05
Chromium							
- Total	0.055	0.049	0.08	<0.005	0.05	--	--
- Hexavalent	<0.01	<0.01	<0.01	<0.01	--	--	--
Copper	<0.025	<0.025	0.074	<0.025	--	1.0	--
Fluoride	2.00	0.33	0.52	1.80	1.4-2.4	--	--
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	0.002	--	--
Potassium	NA	NA	NA	NA	--	--	--
Magnesium	12.3	12.8	18.3	7.8	--	--	--
Nickel	0.06	0.026	0.137	0.015	--	--	--
Nitrates	<0.02	<0.02	<0.02	0.06	10.0	--	--
Lead	0.320	<0.005	0.012	<0.005	0.05	--	--
Phosphorus, total	0.26	0.14	0.21	1.15	--	--	--
Selenium	<0.0025	<0.0025	<0.0025	<0.0025	0.01	--	--
Zinc	0.081	0.029	0.240	<0.025	--	5.0	--
T.D.S.	660	2540	936	2240	--	500	--
C.O.D.	17.0	12.0	14.	44.	--	--	--
pH-lab (1)(2)	7.48	6.63	6.99	6.75	--	6.5-8.5	--
Conductivity-lab (1)(3)	880	2350	1000	1950	--	--	--
T.O.C.(1)	<1.00	4.00	4.00	6.5	--	--	--
T.O.X.(1)(4)	<10.00	80.25	<10.00	<10.00	--	--	--

Results of Phase 1-Round 1 Sampling

Table 3-1 (Cont'd)

	MW-12	MW-TP19	MW-TP21	MW-TP22	Standards Primary (6)	Restricted (9)	Unrestricted (9)
Gross Beta (5)	30	94	250 (8)	1340 (8)	30	--	--
Gross Alpha (5)	<10	43	230 (8)	1370 (8)	15	--	--
Potassium 40 (5)	<10	<10	15	75	--	90,000	3000
Uranium Natural(5)	<10	<10	<10	<50	--	20,000	600
Radium-226 (5)	<10	<10	<10	<50	5 (10)	400	30
Radium-228 (5)	<5	<5	12	75	5 (10)	600	30
Technicium-99 (5)	<5	<5	<5	<5	--	10,000,000	300,000
Thorium-228 (5)	<5	<5	<5	<5	--	200,000	7000
Thorium-230 (5)	<5	<5	<5	<5	--	50,000	2000
Thorium-232 (5)	<5	<5	<5	88	--	50,000	2000
Cesium-137 (5)	<5	22	48	115	--	400,000	20000
Strontium-90 (5)	<5	<5	14	28	8	10,000	300
Ruthenium-106 (5)	<10	<10	15	80	--	400,000	10000
Neptunium-237 (5)	<10	<10	14	50	--	90,000	3000
Plutonium-238 (5)	<10	<10	<40	<100	--	100,000	5000
Plutonium-239 (5)	<10	<10	<40	<100	--	100,000	5000
Plutonium-240 (5)	<10	<10	<40	<100	--	100,000	5000
Coliform, Total (11)	<20	<20	<20	<20	1	--	--
Lindane (4)	<0.2	<0.2	<0.2	<0.2	4	--	--
Endrin (4)	<0.2	<0.2	<0.2	<0.2	0.2	--	--
Methoxychlor(4)	<0.2	<0.2	<0.2	<0.2	100	--	--
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	5	--	--
2,4-D (4)	<0.4	<0.4	<0.4	<0.4	10	--	--
2,4,5-TP, Silvex (4)	<0.2	<0.2	<0.2	<0.2	10	--	--
Benzene (4)	14.8	ND	ND	ND	--	--	--
Xylenes (4)	11.8	ND	ND	ND	--	--	--
1,1 Dichloro-ethane (4)	ND	3.4	ND	ND	--	--	--
Methylene chloride (4)	ND	Trace	ND	ND	--	--	--

NOTES

ND Not detected

NA Not Analyzed due to laboratory error

(1) Average of four tests

(2) pH results in standard units

(3) Conductivity results in umhos/cm

(4) Concentrations reported in ppb

(5) Results in pCi/l

(6) Taken from 40 CFR Part 141 National Interim Primary Drinking Water Regulations -Subpart B - Maximum Contaminant Levels, July 1, 1984.

(7) Taken from 40 CFR Part 143 National Secondary Drinking Water Regulations -Section 143.3 - Secondary Maximum Contaminant Levels.

(8) High counts did not yield any individual elements using a 4096 channel analyzer. These levels are due to solids only in the samples

(9) Taken from DOE Order 5480.1A: Limit for Release to Restricted and Unrestricted Areas.

(10) Standard is for Radium -226 Plus Radium -228.

(11) Reported in per 100 ml.

(12) Taken from World Health Organization, European Standards, 1970.

Results of Phase 1-Round 2 Sampling

Table 3-1

GROUND-WATER SAMPLING RESULTS - FMPC - Sand and Gravel Aquifer
(All results in ppm except as noted)

	SW-1	MW-1d	MW-10	Standards: Primary (6)	Standards: Secondary (7)	Standards: Recommended (8)
Chloride	30	25	76	---	250	---
Iron	<0.05	61.8	18.9	---	0.3	---
Manganese	0.125	0.649	5.5	---	0.05	---
Phenols	<0.005	0.015	<0.005	---	---	0.001
Sodium	15	29.7	162	---	---	---
Sulfate	60	40	470	---	250	---
Silver	<0.03	<0.03	<0.03	0.05	---	---
Arsenic	<0.005	<0.005	<0.005	0.05	---	---
Barium	<0.2	<0.2	<0.2	1.0	---	---
Calcium	94.4	80.7	1,232	---	---	---
Cadmium	<0.002	<0.002	0.003	0.010	---	---
Cyanide	<0.005	<0.005	0.005	---	---	0.05
Chromium						
- Total	<0.005	0.019	0.014	0.05	---	---
- Hexavalent	<0.005	0.01	0.01	---	---	---
Copper	<0.025	0.146	<0.025	---	1.0	---
Fluoride	0.15	0.12	0.05	1.4-2.4	---	---
Mercury	<0.0002	<0.0002	<0.0002	0.002	---	---
Potassium	2.4	1.5	20.2	---	---	---
Magnesium	27.2	24.2	90	---	---	---
Nickel	<0.005	0.012	0.039	---	---	---
Nitrates	2.05	<0.02	155.6	10.0	---	---
Lead	<0.005	0.029	<0.005	0.05	---	---
Phosphorus, total	<0.02	0.45	0.05	---	---	---

Results of Phase 1-Round 2 Sampling
Table 3-1 (Cont'd)

GROUND-WATER SAMPLING RESULTS - FMPC - Sand and Gravel Aquifer
(All results in ppm except as noted)

	SW-1	MW-1d	MW-10	Standards: Primary (6)	Standards: Secondary (7)	Standards: Recommended (8)
Selenium	<0.0025	<0.0025	<0.0025	0.01	---	---
Zinc	0.025	0.141	0.055	---	5.0	---
T.D.S.	504	444	2,540	---	500	---
C.O.D.	<10	84	20	---	---	---
pH-lab (1)(2)	7.78	7.26	7.1	---	6.5-8.5	---
Conductivity-lab (1)(3)	520	400	2,400	---	---	---
T.O.C.(1)	2.	5	4	---	---	---
T.O.X.(1)(4)	NA	NA	NA	---	---	---

Results of Phase 1-Round 2 Sampling

Table 3-1 (Cont'd)

	SW-1	MW-1d	MW-10	Standards: Primary (6)	Standards: Restricted (9)	Standards: Unrestricted (9)
Gross Beta (5)	<5	<10	<10	30 (12)	---	---
Gross Alpha (5)	<10	12	10	15	---	---
Potassium 40 (5)	<10	<10	<10	---	90,000	3000
Uranium Natural (5)	<10	<10	<10	---	20,000	600
Radium-226 (5)	<10	<10	<10	5 (10)	400	30
Radium-228 (5)	<5	<5	<5	5 (10)	800	30
Technicium-99 (5)	<5	<5	<5	---	10,000,000	300,000
Thorium-228 (5)	<5	<5	<5	---	200,000	7000
Thorium-230 (5)	<5	<5	<5	---	50,000	2000
Thorium-232 (5)	<5	<5	<5	---	50,000	2000
Cesium-137 (5)	<5	<5	12	---	400,000	20,000
Strontium-90 (5)	<5	<5	<5	8	10,000	300
Ruthenium-106 (5)	<10	<10	<10	---	400,000	10,000
Neptunium-237 (5)	<10	<10	<10	---	90,000	3000
Plutonium-238 (5)	<10	<10	<10	---	100,000	5000
Plutonium-239 (5)	<10	<10	<10	---	100,000	5000
Plutonium-240 (5)	<10	<10	<10	---	100,000	5000
Coliform, Total (10)	18	190,000	140,000	1	---	---
Lindane (4)	NA	NA	NA	4	---	---
Endrin (4)	NA	NA	NA	0.2	---	---
Methoxychlor (4)	NA	NA	NA	100	---	---
Toxaphene (4	NA	NA	NA	5	---	---
2,4-D (4)	NA	NA	NA	10	---	---
2,4,5-TP, Silvex (4)	NA	NA	NA	10	---	---

Results of Phase 1-Round 2 Sampling

Table 3-1 (Cont'd)

	MW-14d	MW-14s	MW-18s	MW-19s	Standards Primary (6)	Secondary (7)	Recommended (8)
Chloride	15	19	7	49	---	250	---
Iron	0.123	37.2	18.3	5.33	---	0.3	---
Manganese	<0.02	0.451	0.818	0.318	---	0.05	---
Phenols	<0.005	0.015	<0.005	0.006	---	---	0.001
Sodium	12.7	10.4	8.6	180	---	---	---
Sulfate	70	70	50	130	---	250	---
Silver	<0.03	<0.03	<0.03	<0.03	0.05	---	---
Arsenic	<0.005	<0.025	<0.01	<0.005	0.05	---	---
Barium	<0.2	<0.2	<0.2	<0.2	1.0	---	---
Calcium	89	241	165	361	---	---	---
Cadmium	<0.002	0.005	0.003	0.002	0.010	---	---
Cyanide	<0.005	<0.005	<0.005	0.013	---	---	0.05
Chromium							
- Total	<0.005	0.159	0.147	0.133	0.05	---	---
- Hexavalent	<0.005	0.03	0.01	<0.01	---	---	---
Copper	<0.025	0.289	0.179	0.109	---	1.0	---
Fluoride	0.13	1.1	0.7	1.06	1.4-2.4	---	---
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	0.002	---	---
Potassium	1.9	5	5.22	5.7	---	---	---
Magnesium	19	44.3	50	93	---	---	---
Nickel	0.01	0.027	0.022	0.008	---	---	---
Nitrates	1.2	0.89	0.72	25.04	10.0	---	---
Lead	0.011	0.1	0.047	0.072	0.05	---	---
Phosphorus, total	0.06	1.04	0.44	0.13	---	---	---
Selenium	<0.0025	<0.0025	<0.0025	<0.0025	0.01	---	---
Zinc	<0.025	0.166	0.109	0.281	---	5.0	---
T.D.S.	352	436	396	888	---	500	---
C.O.D.	10	32	52	18	---	---	---

Results of Phase 1-Round 2 Sampling

Table 3-1 (Cont'd)

	MW-14d	MW-14s	MW-18s	MW-19s	Standards Primary (6)	Secondary (7)	Recommended (8)
pH-lab (1)(2)	6.97	8.1	7.1	7.06	---	6.5-8.5	---
Conductivity-lab (1)(3)	400	420	480	1,000	---	---	---
T.O.C. (1)	4.5	4	3.25	3	---	---	---
T.O.X. (1)(4)	NA	NA	NA	NA	---	---	---

Results of Phase 1-Round 2 Sampling

Table 3-1 (Cont'd)

	MW-14d	MW-14s	MW-18s	MW-19s	Standards Primary (6)	Restricted (9)	Unrestricted (9)
Gross Beta (5)	<5	46	44	1,250	30 (12)	---	---
Gross Alpha (5)	<10	47	21	36	15	---	---
Potassium 40 (5)	<10	<10	<10	40	---	90,000	3000
Uranium Natural (5)	<10	<10	<10	<10	---	20,000	600
Radium-226 (5)	<10	<10	<10	<10	5 (10)	400	30
Radium-228 (5)	<5	<5	<5	70	5 (10)	800	30
Technicium-99 (5)	<5	<5	<5	<5	---	10,000,000	300,000
Thorium-228 (5)	<5	<5	<5	<5	---	200,000	7000
Thorium-230 (5)	<5	<5	<5	<5	---	50,000	2000
Thorium-232 (5)	<5	<5	<5	80	---	50,000	2000
Cesium-137 (5)	<5	12	12	110	---	400,000	20,000
Strontium-90 (5)	<5	<5	<5	24	8	10,000	300
Ruthenium-106 (5)	<10	<10	<10	75	---	400,000	10,000
Neptunium-237 (5)	<10	<10	<10	<10	---	90,000	3000
Plutonium-238 (5)	<10	<10	<10	<100	---	100,000	5000
Plutonium-239 (5)	<10	<10	<10	<100	---	100,000	5000
Plutonium-240 (5)	<10	<10	<10	<100	---	100,000	5000
Coliform, Total (10)	110	2,200	3,500	197	1	---	---
Lindane (4)	NA	NA	NA	NA	4	---	---
Endrin (4)	NA	NA	NA	NA	0.2	---	---
Methoxychlor (4)	NA	NA	NA	NA	100	---	---
Toxaphene (4)	NA	NA	NA	NA	5	---	---
2,4-D (4)	NA	NA	NA	NA	10	---	---
2,4,5-TP, Silvex (4)	NA	NA	NA	NA	10	---	---
1,1,1 Trichloro-ethane	ND	ND	ND	8.6	---	---	---

NOTES

ND Not Detected
NA Not Analyzed (See page 3-4 for explanation)
(1) Average of four tests
(2) pH results in standard units
(3) Conductivity results in umhos<cm
(4) Concentrations reported in ppb
(5) Results in pCi/l
(6) Taken from 40 CFR Part 141 National Interim Primary Drinking Water Regulations - Support B - Maximum Contaminant Levels, July 1, 1984.
(7) Taken from 40 CFR Part 143 National Secondary Drinking Water Regulations - Section 143.3 - Secondary Maximum Contaminant Levels.
(8) High counts did not yield any individual elements using a 4096 channel analyzer. These levels are due to solids only in the samples.
(9) Taken from DOE Order 5480.1A: Limit for Release to Restricted and Unrestricted Areas
(10) Standard is for Radium -226 Plus Radium -228.
(11) Reported in per 100 ml
(12) Maximum Permissible Activity taken from World Health Organization, 1970 European Standards. National Primary Drinking Water Regulation for gross beta is 4 mR/year.

RESULTS OF PHASE 3 ROUND 1
Table 3.1

GROUND WATER SAMPLING RESULTS - FMPC
(All results in ppm except as noted)

	1S	3	4	5	8S	Standards: Primary (6)	Standards: Secondary (7)	Standards: Recommended (8)
Chloride	18	22	32	17	19	---	250	---
Iron	0.628	0.638	0.218	1.82	1.6	---	0.3	---
Manganese	0.511	0.426	<0.02	0.532	0.257	---	0.05	---
Phenols	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	0.001
Sodium	10	9.5	12.6	12.8	9.5	---	---	---
Sulfate	74	88	54.0	82	78	---	250	---
Silver	<0.03	<0.03	<0.03	<0.03	<0.03	0.05	---	---
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	0.05	---	---
Barium	<0.2	<0.2	<0.2	<0.2	<0.2	1.0	---	---
Calcium	108	102	101	115	104	---	---	---
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	0.010	---	---
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	0.05
Chromium								
- Total	<0.005	<0.005	<0.005	<0.005	<0.005	0.05	---	---
- Hexavalent	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	---
Copper	<0.025	<0.025	<0.025	<0.025	<0.025	---	1.0	---
Fluoride	0.41	0.25	0.29	0.24	0.14	1.4-2.4	---	---
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002	---	---
Potassium	2.26	2.40	2.79	2.21	2.34	---	---	---
Magnesium	23.9	23.3	22.2	25.5	22.5	---	---	---
Nickel	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	---
Nitrates	0.04	<0.02	1.43	0.09	<0.02	10.0	---	---
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	0.05	---	---
Phosphorus, total	<0.04	<0.04	<0.04	<0.04	<0.04	---	---	---

RESULTS OF PHASE 3 ROUND 1
Table 3.1 (Cont'd)

GROUND WATER SAMPLING RESULTS - FMPC
(All results in ppm except as noted)

	1S	3	4	5	8S	Standards: Primary (6)	Secondary (7)	Recommended (8)
Selenium	<0.005	<0.005	<0.005	<0.005	<0.005	0.01	---	---
Zinc	<0.025	<0.025	<0.025	<0.025	<0.025	---	5.0	---
T.D.S.	415	369	369	396	381	---	500	---
C.O.D.	<10	<10	<10	<10	<10	---	---	---
pH-lab (1) (2)	7.20	7.32	7.36	7.36	7.34	---	6.5-8.5	---
Conductivity-lab (1) (3)	600	590	580	620	588	---	---	---
T.O.C. (1)	1	1	1	<1	<1	---	---	---
T.O.X. (1) (4)	28.5	11.8	<10	<10	<10	---	---	---
Coliform (10)	<2	<2	380	17	36	1	---	---
Lindane (4)	<0.1	<0.1	<0.1	<0.1	<0.1	4	---	---
Endrin (4)	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	---	---
Methoxychlor (4)	<0.1	<0.1	<0.1	<0.1	<0.1	100	---	---
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	<0.5	5	---	---
2,4-D (4)	<0.4	<0.4	<0.4	<0.4	<0.4	10	---	---
2,4,5-TP, Silvex (4)	<0.2	<0.2	<0.2	<0.2	<0.2	10	---	---
VOC's (4)	NA	NA	ND	NA	ND	---	---	---
Gross Alpha (5)	<15.0	<15.0	<15.0	<15.0	<15.0	15	---	---
Gross Beta (5)	15	17	17	12	7	30 (11)	---	---
Radium, Total (5)	<5.0	<5.0	<5.0	<5.0	<5.0	5 (9)	---	---
Radionuclide Scan (5) (12)	<5.0	<5.0	<5.0	<5.0	<5.0	---	---	---

RESULTS OF PHASE 3 ROUND 1
Table 3.1 (Cont'd)

GROUND WATER SAMPLING RESULTS - FMPC
(All results in ppm except as noted)

	8D	9	10	11	12 (8/1/85)	12 (1/8/86)	13S	13D	15S	16S	16D
Chloride	13	22	76	21	109	105	25	61	23	19	20
Iron	2.62	0.072	18.9	2.93	18.1	30.8	2.71	6.93	0.078	<0.05	0.123
Manganese	0.365	0.071	5.5	0.193	0.216	0.592	0.205	0.349	<0.020	0.025	<0.02
Phenols	<0.005	0.007	<0.005	<0.007	0.019	0.021	<0.005	0.012	0.007	0.009	0.009
Sodium	11.9	11.0	162	12.9	268.0	224	14.7	49	11.9	15.6	11.1
Sulfate	10	76	470	88	72	64	92	300	49	50	60
Silver	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.0025	0.006	<0.005	<0.005	<0.005	<0.005	<0.005
Barium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	94.7	96.6	1,232	123	53	72.1	137	163	71.9	88.5	81.8
Cadmium	<0.002	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium											
- Total	<0.005	<0.005	0.014	<0.005	0.055	0.058	<0.005	<0.005	<0.005	<0.005	<0.005
- Hexavalent	<0.005	<0.005	0.01	<0.005	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	<0.025	<0.025	<0.025	0.055	<0.025	<0.025	<0.025	<0.025	<0.025
Fluoride	0.24	0.21	0.05	0.21	2.00	1.21	0.23	0.31	0.43	0.22	0.16
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	1.04	2.02	20.2	0.984	NA	12.8	2.05	5.11	2.37	2.17	1.85
Magnesium	21.1	22.1	90	28.3	12.3	18.3	28.6	44	19.5	23.4	20.7
Nickel	<0.005	<0.005	0.039	<0.005	0.06	0.048	<0.005	<0.0005	<0.0005	<0.0005	<0.0005
Nitrates	<0.02	3.52	155.6	<0.01	<0.02	<0.02	<0.02	<0.02	3.3	2.52	2.36
Lead	<0.005	<0.005	<0.005	<0.005	0.320	0.04	<0.005	<0.005	<0.005	<0.005	<0.005
Phosphorus, total	<0.04	<0.04	0.05	<0.04	0.26	0.14	<0.04	<0.04	0.12	<0.04	<0.04

RESULTS OF PHASE 3 ROUND 1
Table 3.1 (Cont'd)

GROUND-WATER SAMPLING RESULTS - FMPC
(All results in ppm except as noted)

	8D	9	10	11	12 (8/1/85)	12 (1/8/86)	13S	13D	15S	16S	16D
Selenium	<0.005	<0.005	<0.0025	<0.005	<0.0025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	<0.025	<0.025	0.056	<0.025	0.081	0.135	<0.025	<0.025	<0.025	<0.025	<0.025
T.D.S.	288	377	2,540	423	660	580	300	956	376	364	356
C.O.D.	<10	<10	20	<10	17.0	<10	<10	13	17	11	21
pH-lab (1) (2)	7.40	7.46	7.1	7.42	7.48	7.79	7.15	6.97	7.54	7.50	7.54
Conductivity-lab (1) (3)	530	540	2,400	650	880	998	695	1,250	498	560	520
T.O.C. (1)	<1	<1	4	1	<1.00	<1	<1	1	<1	1	<1
T.O.X. (1) (4)	<10	<10	NA	<10	<10.00	64	44.7	79	21.8	16.9	28.5
Coliform (10)	<4	24	140,000	<4	<20	<4	<4	<2	<2	<2	<2
Lindane (4)	<0.1	<0.1	NA	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin (4)	<0.1	<0.1	NA	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor (4)	<0.1	<0.1	NA	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toxaphene (4)	<0.5	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D (4)	<0.4	<0.4	NA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
2,4,5-TP, Silvex (4)	<0.2	<0.2	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
VOC's (4)	ND	ND	ND	ND	---	ND	ND	ND	ND	ND	ND
Benzene (4)	ND	ND	ND	ND	14.8	ND	ND	ND	ND	ND	ND
Xylene (4)	ND	ND	ND	ND	11.8	ND	ND	ND	ND	ND	ND
Gross Alpha (5)	<15.0	<15.0	<15.0	<15.0	---	18	<15.0	<15.0	<15.0	<15.0	<15.0
Gross Beta (5)	12	11	---	9	---	78	15	<5.0	<5.0	<5.0	<5.0
Radium, Total (5)	<5.0	<5.0	---	<5.0	---	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Radionuclide Scan (5) (12)	<5.0	<5.0	---	<5.0	---	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

RESULTS OF PHASE 3 ROUND 1
Table 3.1 (Cont'd)

GROUND-WATER SAMPLING RESULTS - FMPC
(All results in ppm except as noted)

	17S	17D	18D	19D	20S	20D	TP-20	21S	22S	OS-1A
Chloride	24	19	4	57	21	20	3	37	62	34
Iron	0.101	1.29	8.94	<0.05	0.102	1.12	5.43	0.262	0.379	0.338
Manganese	0.234	0.36	0.104	3.73	0.043	0.235	1.04	0.052	0.061	0.054
Phenols	0.006	0.011	0.006	0.011	0.006	<0.005	0.007	0.015	0.006	0.012
Sodium	8.75	10.2	4.59	86.8	11.6	14.1	4.1	28.3	31.8	33.1
Sulfate	150	72	62	440	78	80	48	84	98	102
Silver	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	<0.005	<0.005	<0.005
Barium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	148	106	102	240	96.6	99	108	148	137	143
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium										
- Total	<0.005	<0.005	<0.005	<0.005	0.017	<0.005	<0.005	<0.005	<0.005	<0.005
- Hexavalent	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Fluoride	0.3	0.12	0.44	0.08	0.15	0.11	0.47	0.21	0.71	0.24
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	1.94	1.9	0.556	8.73	2.46	1.69	1.22	9.35	3.95	32.4
Magnesium	32.1	19.5	35.3	35.5	21.1	23.1	31.7	18	40.3	47
Nickel	<0.005	<0.005	<0.005	<0.009	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrates	0.15	<0.02	<0.02	0.46	5.67	<0.02	<0.02	39.3	42	7.99
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Phosphorus, total	<0.04	<0.04	0.11	<0.04	<0.04	<0.04	0.44	<0.04	<0.04	0.38

RESULTS OF PHASE 3 ROUND 1
Table 3.1 (Cont'd)

GROUND-WATER SAMPLING RESULTS - FMPC
(All results in ppm except as noted)

	17S	17D	18D	19D	20S	20D	TP-20	21S	22S	OS-1A
Selenium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.07
T.D.S.	612	612	388	424	436	420	324	712	712	600
C.O.D.	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
pH-lab (1) (2)	7.13	7.31	7.30	6.83	7.50	7.41	7.05	7.33	7.30	7.15
Conductivity-lab (1) (3)	810	553	575	1,600	545	560	570	908	980	1,010
T.O.C. (1)	<1	<1	<1	1	<1	<1	3	1	2	2.5
T.O.X. (1) (4)	<10	<10	<10	<10	36.5	18.9	25.5	<10	29	23.3
Coliform (10)	<2	<2	<4	<4	<2	<2	10	<2	<2	2
Lindane (4)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin (4)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor (4)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D (4)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
2,4,5-TP, Silvex (4)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
VOC's (4)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1 Trichloroethane (4)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Gross Alpha (5)	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0
Gross Beta (5)	<5.0	<5.0	<5.0	<15.0	9	<5.0	77	400	78	<5.0
Radium, Total (5)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Radionuclide Scan (5) (12)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

RESULTS OF PHASE 3 ROUND 1
Table 3.1 (Cont'd)

GROUND-WATER SAMPLING RESULTS - FMPC
(All results in ppm except as noted)

	OS1	15D	OS3	OS2	SW2 (8/27/85)	SW2 (1/8/86)	P1	P2	P3	TP19	TP21	TP22
Chloride	19	28	26	29	30	35	36	20	12	459	58	118
Iron	0.05	2.61	1.25	<0.05	<0.05	<0.05	5.31	2.78	2.51	4.57	58.4	2.26
Manganese	<0.02	0.349	0.373	<0.02	0.125	0.154	0.425	0.358	0.418	2.75	3.77	2.01
Phenols	0.008	0.014	0.02	0.011	<0.005	0.009	0.008	0.012	0.018	0.049	<0.005	<0.005
Sodium	11.2	6.8	10.5	11	15	17.4	26.6	11.5	11.0	34.6	40.5	19.3
Sulfate	54	86	58	18	60	96	16	50	42	575	30	850
Silver	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	0.03	0.006
Barium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.308	0.863	0.363
Calcium	67.8	106	85.7	90.6	94.4	93.2	116	84.5	85.3	372	415	154
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium												
- Total	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.049	0.08	<0.005
- Hexavalent	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01
Copper	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.074	<0.025
Fluoride	0.46	0.13	0.24	0.22	0.15	0.2	0.18	0.19	0.14	0.33	0.52	1.80
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Potassium	2.36	1.75	2.2	2.88	2.4	2.35	3.4	1.22	1.62	NA	NA	NA
Magnesium	18.9	27.2	22	24.3	27.2	28.9	33.9	23.6	22.2	12.8	18.3	7.8
Nickel	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.026	0.137	0.015
Nitrates	2.55	<0.02	<0.02	3.64	2.06	2.89	<0.02	<0.02	<0.02	<0.02	<0.02	0.06
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.012	<0.005
Phosphorus, total	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.12	0.12	0.06	0.14	0.21	1.15

RESULTS OF PHASE 3 ROUND 1
Table 3.1 (Cont'd)

GROUND-WATER SAMPLING RESULTS - FMPC
(All results in ppm except as noted)

	OS-1	15-D	OS-2	OS-3	SW-2 (8/27/85)	SW-2 (1/8/86)	P-1	P-2	P-3	TP19	TP-21	TP-22
Selenium	<0.005	<0.005	<0.005	<0.005	<0.0025	<0.005	<0.005	<0.005	<0.005	<0.0025	<0.0025	<0.0025
Zinc	0.109	<0.071	<0.025	0.037	0.025	<0.025	<0.025	<0.025	<0.025	0.029	0.240	<0.025
T.D.S.	304	408	308	376	504	468	420	240	240	2540	936	2240
C.O.D.	<10	<10	<10	<10	<10	<10	<10	<10	10	12.0	14	44
pH-lab (1) (2)	7.48	7.35	7.62	7.39	7.78	7.36	7.45	7.50	7.36	6.63	6.99	6.75
Conductivity-lab (1) (3)	491	638	575	610	520	660	835	555	533	2350	1000	1950
T.O.C. (1)	<1	<1	<1	<1	2	<1	<1	<1	<1	4.00	4.00	6.5
T.O.X. (1) (4)	32	40.8	43.3	49.3	NA	61.5	12.8	10	12.4	80.25	<10.00	<10.00
Coliform	<2	<2	<2	40	18	<2	<2	<2	<2	<20	<20	<20
Lindane (4)	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2
Endrin (4)	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2
Methoxychlor	<0.1	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2
Toxaphene (4)	<0.5	<0.5	<0.5	<0.5	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D (4) (9)	<0.4	<0.4	<0.4	<0.4	NA	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
2,4,5-TP, Silvex (4) (9)	<0.2	<0.2	<0.2	<0.2	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
VOC's	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1 Dichlorethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.4	ND	ND
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	Trace	ND	ND
Gross Alpha	<15.0	<15.0	20	<15.0	---	<15.0	<15.0	<15.0	<15.0	---	---	---
Gross Beta	28	<5.0	42	<5.0	---	<5.0	<5.0	<5.0	<5.0	---	---	---
Radium, Total	<5.0	<5.0	<5.0	<5.0	---	<5.0	<5.0	<5.0	<5.0	---	---	---
Radionuclide Scan (5) (12)	<5.0	<5.0	<5.0	<5.0	---	<5.0	<5.0	<5.0	<5.0	---	---	---