Attach. 8

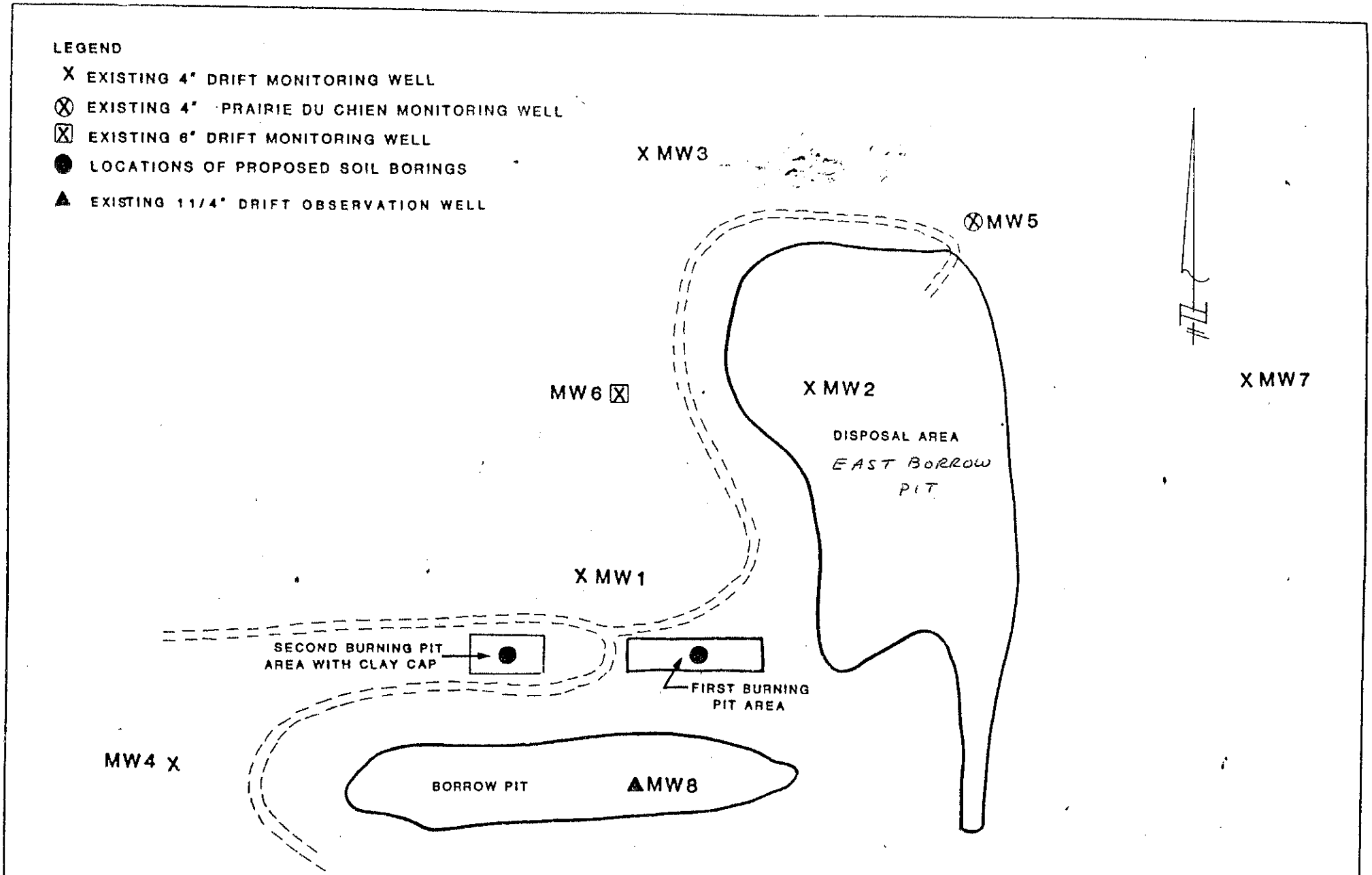

FIGURE 5
BURN PIT AND DIPOSAL SITE
ROSEMOUNT RESEARCH CENTER

SCALE 1" = 150'

SOIL EXPLORATION

UMP000469

Page 9-#120-12271

APPENDIX VI continued

Concentration of Calcium in ppm

Date	Well #1	#2	#3	#4	#5	#7
4-23-71	120	120				
4-30-71	134	124				
5-7-71	128	123				
5-14-71	130	122	59			
5-21-71	128	120				
5-28-71	131	113	41			
6-9-71	100	90	25			
7-13-71	123	100				
7-22-71	114	96				
8-5-71	136	121				
8-10-71	145	126				
8-20-71	152	134				
8-25-71			30	90		
9-14-71	91	95	24			
10-11-71	142	129	28	95	5	61
10-19-71		58	24	94	12	115
11-5-71	138	121	29	108	29	94
2-4-72	118	114	43	84	18	65
2-21-72	116	110	27	81	18	53
3-30-72	115	81	22	57	114	57
4-13-72	102	101	32	65	14	44

Concentration of Magnesium in ppm

4-23-71	33	40				
4-30-71	35	39				
5-7-71	36	40				
5-14-71	35	38	25			
5-21-71	36	38				
5-28-71	34	36	20			
6-9-71	34	37	23			
7-13-71	35	35				
7-22-71	38	38				
8-5-71	39	40				
8-10-71	35	36				
8-20-71	36	36				
8-25-71			23	33		
9-14-71	33	33	23			
10-11-71	35	36	26	32	29	31
10-19-71		34	29	31	27	31
11-5-71	35	36	26	32	32	34

APPENDIX VI continued.

Concentration of Zinc in ppm

Date	Well #1	#2	#3	#4	#5	#7
4-23-71	3.3	1.7				
4-30-71	2.2	2.8				
5-7-71	2.8	2.8				
5-14-71	11.8	2.2	0.4			
5-21-71	3.6	1.9				
5-28-71	3.6	2.6	0.2			
6-9-71	3.0	3.4	0.5			
7-13-71	2.0	1.5				
7-22-71	2.4	1.9				
8-5-71	1.9	1.6				
8-10-71	1.2	1.7				
8-20-71	3.0	2.0				
8-25-71			0.9	2.6		
9-14-71	10.2	1.8	9.2			
10-11-71	5.1	5.0	1.8	2.7	8.2	2.7
10-19-71		2.4	2.3	0.8	1.5	0.7
11-5-71	2.2	1.5	0.6	0.4	0.9	0.8
2-4-72	1.1	2.5	0.7	0.3	0.5	0.6
2-21-72	2.0	1.9	0.6	0.1	0.4	0.6
3-30-72	2.0	1.4	0.4	0.01	0.1	0.3
4-13-72	1.0	1.4	0.5	0.1	0.6	1.1

Concentration of Bicarbonate Alkalinity, mg/l

7-13-71	480	412				
7-22-71	479	413				
8-5-71	484	416				
8-10-71	480	428				
8-20-71	469	440				
8-25-71			154	389		
9-2-71	479	435			275	
9-14-71	474	445	147			
10-11-71	476	443	137	342	154	255
10-19-71		363	147	295	167	248
11-5-71	464	447	153	363	224	318
11-12-71	452	455	227	360	232	312
12-22-71	455	460	230	296	225	311
1-21-72	468	488	195	284	226	474
2-4-72	472	487	271	376	247	315
2-21-72	475	494	216	373	207	275
3-30-72	479	508	221	368	212	309
4-13-72	470	499	241	357	218	272
4-25-72	468	500	256	309	220	322
5-19-72	342	340	222	262	206	284
6- 1-72	498	396	240	322	252	334
7-3-72	464	502	240	386	230	340

APPENDIX VI continued.

Concentration of total dissolved solids in mg/l

Date	Well #1	#2	#3	#4	#5	#7
7-13-71	424	415				
7-22-71	520	470				
8-5-71	528	492				
8-10-71	587	534				
8-20-71	531	532				
8-25-71			288	520		
10-19-71		405	426	415	150	425
11-5-71	498	470	230	452	212	432

Concentration of Chlorides in mg/l

7-13--1	5.0	3.8				
7-22-71	5.1	4.6				
8-5-71	5.4	4.2				
8-10-71	7.0	6.4				
8-20-71	4.7	4.0				
8-25-71			2.4	11.4		
9-2-71	6.0	4.7			4.1	
10-11-71	7.2	4.6	2.6	11.0	2.5	20.8
11-5-71	7.1	4.2	1.0	12.7	4.1	20.8
11-12-71	6.9	4.5	1.6	13.4	3.9	21.5
12-5-71	7.1	3.7	1.8	11.3	4.6	22.5
12-22-71	6.8	4.5	0.9	12.8	2.8	22.8
1-21-72	5.9	3.3	1.4	12.3	3.1	23.8
2-4-72	7.2	2.8	1.6	11.1	3.3	23.1
2-21-72	7.6	3.0	1.4	11.4	2.5	22.7
3-30-72	7.2	4.6	0.4	10.7	3.1	22.0
4-13-72	7.9	3.7	0.7	10.7	3.7	22.4
4-26-72	9.7	5.2	1.6	12.2	2.2	22.0
5-19-72	5.5	3.0	1.7	13.8	2.9	22.6
5-30-72	9.4	4.2	2.9	14.6	4.2	22.4
6-16-72	9.2	3.0	2.0	13.2	2.7	19.2

Report of Chemical Monitoring Activities - 6-30-75
Rosemount Toxic and Hazardous Waste Disposal Site

Fay Thompson, Department of Environmental Health and Safety

In 1971 a project was begun to monitor the quality of the ground water in the vicinity of the Rosemount Toxic and Hazardous Waste Disposal Site. Seven wells were dug surrounding the disposal site. These wells were sampled periodically for pH, bicarbonate, chloride, calcium, magnesium, zinc, and total dissolved solids.

In 1972 suction lysimeters were installed in the disposal pit itself as a means of intercepting soil moisture for analysis before it reached the ground water level. From analysis of these samples it became apparent that acids and metals were unlikely to cause any ground water contamination since they tended to remain in the top few feet of soil. Because of this discovery, the analyses of well water mentioned in the previous paragraph were discontinued.

On the other hand, organic solvents were moving quite readily through the soil and were found in high concentration at the 11 foot depth. No organics were detected in the wells at this time.

Late in 1973 several more lysimeters, reaching to considerably deeper levels than previously, were installed. Analysis of samples from these lysimeters indicates that some organic material had moved to considerable depth beneath the pit. Dumping of organic solvents in the pit has been stopped and the steady decrease in organic content in the lysimeter samples bears out this fact. Samples collected all through 1974 indicate that the amount of organic solvent which might have reached the water table was very small indeed. No trace of organic material was found in Well #1 (the nearest well downstream from the pit) during this time.

The very heavy rains of spring and summer 1975 have apparently been responsible for the very small amount of organic material which has just recently been found in Well #1. The rain has probably washed the residue of the organic matter in the pit through the underlying sand to the water table. The actual concentration of solvent intercepted by the lysimeters is still quite low, but the sheer quantity of water passing through the pit is probably responsible for finally bringing a measurable concentration into the ground water. It is noteworthy that groundwater recharge has been recorded this spring, the first time in several years.

Since organic matter has been detected in the ground water, it will be necessary to maintain the monitoring activities at least until the extent of contamination is established. It would be advisable to sample Wells #1, 2, and 4 as well as whichever lysimeters are still working on a biweekly basis,at least until a prolonged dry spell reduces the infiltration of water into the area beneath the pit. At that point the monitoring activity could be cut back considerably (bimonthly or less), but should be maintained as long as any organic material is found in Well #1.

If the level of contamination in Well #1 remains very low and assuming that contamination has not spread to Well #2, it should not be necessary to begin continuous pumping to keep the organic matter from reaching other water supplies. If either of the above conditions changes, the situation will have to be reviewed.

Organics in Lysimeters and Wells, ppm as phenol

Date	5 ft. lysimeter	11 ft.	12 ft.	13 ft.*
7-19-72	7,050	6,130	600	
7-28-72	11,250	9,610	528	
8-16-72	6,940	11,350	2,360	
8-31-72	7,640	12,780	167	5

*uncontaminated control lys.

Date	35' Lys. 1	33' Lys. 2	39' Lys. 3	54' Lys. 5	Well #1
12-10-73	87				
1-19-74				700	
1-25-74			48	445	
3-8-74		40	66		5
3-11-74		80		220	5
3-13-74					5
3-15-74				296	1
3-18-74					1
3-26-74				269	1
3-30-74		91			1
4-5-74	72	82			1
4-13-74		91			1
4-20-74		84			1
4-26-74		62			1
5-3-74		56			1
5-19-74		50			1
5-24-74		42			1
5-31-74		65			1
6-11-74	6				1
6-20-74	61				1
7-8-74					1
7-24-74		21			1
8-11-74		21			1
8-18-74		11			1
9-13-74		13		39	1
9-25-74					1
10-5-74		5			1
10-17-74		11			1
11-3-74		5		32	1
11-8-74		3		9	1
11-16-74		11			1
11-22-74					1
12-8-74					1
4-20-75		32			1
4-28-75		33		70	1
5-3-75		14			1
5-10-75		1			1
5-17-75		8			1
6-6-75		6			2
6-22-75		8			4

The pH of all lysimeter and well samples is above 7 (basic) as expected for this type of soil, with the exception of lysimeter samples taken directly beneath the pit in 1972.

DLH

July 23, 1976

Office Memorandum

From: Fay Thompson, Department of Environmental Health and Safety

Subject: Observation Wells at Rosemount

Monitoring wells at the hazardous waste disposal site at Rosemount have been sampled as scheduled during the last few months. The water has been analyzed for total organics with the following results.

	Total Organics as phenol
April 2, 1976	
Well #1	< 5 ppm
Well #4	< 5 ppm
May 2, 1976	
Well #1	< 5 ppm
Well #4	< 5 ppm
July 13, 1976	
Well #1	< 5 ppm
Well #4	< 5 ppm

The sensitivity of the test is poorer than on previous samples because of an instrument malfunction.

FT:le

cc: Mr. Robert Reid

LABORATORY FORM

(BULK SAMPLES)

DATE 1-23-79

NAME OF SENDER Steve Barker

ADDRESS Rosemount Research Center

PHONE # _____

SAMPLE INFORMATION

CONSTITUENT	CONCENTRATION mg/L (1)	(2)	(3)	(4)	(5)	(6)
1. total dissolved solids (mg/L)	436	508	296	340		
2. PH	7.2	7.2	8.7	7.2		
3. total Hydrocarbons (mg/L)	<1	4	4	4		
4.						
5.						
6.						
7.						
8.						
9.						
10.						

SAMPLE IDENTIFICATION

(1) [illegible]

(2) Pump #2

(3) Pump #3

(4) Pump #4

(5) _____

(6) _____

COMMENTS: _____

Rosemount Hazardous Waste Site

April 1982

	Total organics as phenol
Well #1	< 1 ppm
Well #4	< 1 ppm

April 1983

Well #1	< 2 ppm
Well #4	< 2 ppm

Monitoring Well #1

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF ANALYTICAL SERVICES

DATE 6 26 1984

VOLATILE HYDROCARBONS IN WATER
(* DENOTES PRIORITY POLLUTANT)

SAMPLE NUMBER 53007.

DATE SAMPLED 6 15 1984
DATE ANALYZED 6 25 1984

FIELD BLANK # 53015.

U/MN DISPOSAL/EXCHANGE PROGRAM

NON-HALOGENATED (CODE 462)

	ACETONE	<	10. UG/L		TETRAHYDROFURAN	<	5. UG/L
	ETHYL ETHER	<	1.0 UG/L		METHYL ETHYL KETONE	<	5. UG/L
*	BENZENE	<	0.50 UG/L		METHYL ISOBUTYL KETONE	<	1.0 UG/L
*	TOLUENE	<	0.50 UG/L	*	ETHYLBENZENE	<	0.50 UG/L
	CUMENE	<	0.50 UG/L		O-XYLENE	<	0.50 UG/L
	M-XYLENE	<	0.50 UG/L		P-XYLENE	<	0.50 UG/L

HALOGENATED (CODE 464)

*	CHLOROMETHANE	NA			DICHLORODIFLUOROMETHANE	NA	
*	VINYL CHLORIDE	NA		*	BROMOMETHANE	NA	
*	CHLOROETHANE	NA		*	DICHLOROFLUOROMETHANE	NA	
*	METHYLENE CHLORIDE	<	1.0 UG/L	*	TRICHLOROFLUOROMETHANE	<	0.20 UG/L
	ALLYLCHLORIDE	<	0.50 UG/L	*	1,1-DICHLOROETHYLENE	<	0.20 UG/L
*	1,1-DICHLOROETHANE	<	0.20 UG/L	*	TRANS-1,2-DICHLOROETHYLENE	<	0.20 UG/L
	CIS-1,2-DICHLOROETHYLENE	<	0.20 UG/L	*	CHLOROFORM		2.90 UG/L
*	1,2-DICHLOROETHANE	<	0.20 UG/L		DIBROMOMETHANE	<	1.0 UG/L
*	1,1,1-TRICHLOROETHANE	P<	0.20 UG/L	*	CARBON TETRACHLORIDE		0.20 UG/L
*	BROMODICHLOROMETHANE	<	0.50 UG/L		DICHLOROACETONITRILE	<	0.50 UG/L
	2,3-DICHLORO-1-PROPENE	<	0.20 UG/L	*	1,2-DICHLOROPROPANE	<	0.20 UG/L
	1,1-DICHLORO-1-PROPENE	<	0.20 UG/L	*	TRANS-1,3-DICHLORO-1-PROPENE	<	0.20 UG/L
*	1,1,2-TRICHLOROETHYLENE		0.30 UG/L		1,3-DICHLOROPROPANE	<	3. UG/L
*	CHLORODIBROMOMETHANE	<	1.0 UG/L	*	1,1,2-TRICHLOROETHANE	<	0.20 UG/L
*	CIS-1,3-DICHLORO-1-PROPENE	<	0.20 UG/L		1,2-DIBROMOETHANE	<	1.0 UG/L
*	2-CHLOROETHYLVINYL ETHER	<	1.0 UG/L	*	BROMOFORM	<	1.0 UG/L
	1,1,1,2-TETRACHLOROETHANE	<	0.20 UG/L		1,2,3-TRICHLOROPROPANE	<	2. UG/L
*	1,1,2,2-TETRACHLOROETHANE	<	2. UG/L	*	1,1,2,2-TETRACHLOROETHYLENE	<	2. UG/L
	PENTACHLOROETHANE	<	2. UG/L	*	CHLOROBENZENE	<	0.50 UG/L
	1,1,2-TRICHLOROTRIFLUOROETHANE	<	0.50 UG/L	*	1,3-DICHLOROBENZENE	<	1.0 UG/L
*	1,2-DICHLOROBENZENE	<	1.0 UG/L	*	1,4-DICHLOROBENZENE	<	1.0 UG/L

P< PEAK DETECTED BELOW THE 'LESS THAN' VALUE

< 'LESS THAN'
NA 'NOT ANALYZED'

Monitoring Well #2

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF ANALYTICAL SERVICES

DATE 6 26 1984

VOLATILE HYDROCARBONS IN WATER
(* DENOTES PRIORITY POLLUTANT)

SAMPLE NUMBER 53009.

DATE SAMPLED . 6 15 1984
DATE ANALYZED 6 25 1984

FIELD BLANK # 53015.

U/MN DISPOSAL/EXCHANGE PROGRAM

NON-HALOGENATED (CODE 462)

	ACETONE	<	10. UG/L		TETRAHYDROFURAN	<	5. UG/L
	ETHYL ETHER	<	1.0 UG/L		METHYL ETHYL KETONE	<	5. UG/L
*	BENZENE	<	0.50 UG/L		METHYL ISOBUTYL KETONE	<	1.0 UG/L
*	TOLUENE	<	0.50 UG/L	*	ETHYLBENZENE	<	0.50 UG/L
	CUMENE	<	0.50 UG/L		O-XYLENE	<	0.50 UG/L
	M-XYLENE	<	0.50 UG/L		P-XYLENE	<	0.50 UG/L

HALOGENATED (CODE 464)

*	CHLOROMETHANE	NA			DICHLORODIFLUOROMETHANE	NA	
*	VINYL CHLORIDE	NA		*	BROMOMETHANE	NA	
*	CHLOROETHANE	NA		*	DICHLOROFLUOROMETHANE	NA	
*	METHYLENE CHLORIDE	<	1.0 UG/L	*	TRICHLOROFLUOROMETHANE	<	0.20 UG/L
	ALLYLCHLORIDE	<	0.50 UG/L	*	1,1-DICHLOROETHYLENE	<	0.20 UG/L
*	1,1-DICHLOROETHANE	<	0.20 UG/L	*	TRANS-1,2-DICHLOROETHYLENE	<	0.20 UG/L
	CIS-1,2-DICHLOROETHYLENE	<	0.20 UG/L	*	CHLOROFORM		2.40 UG/L
*	1,2-DICHLOROETHANE	<	0.20 UG/L		DIBROMOMETHANE	<	1.0 UG/L
*	1,1,1-TRICHLOROETHANE	P<	0.20 UG/L	*	CARBON TETRACHLORIDE		0.20 UG/L
*	BROMODICHLOROMETHANE	<	0.50 UG/L		DICHLOROACETONITRILE	<	0.50 UG/L
	2,3-DICHLORO-1-PROPENE	<	0.20 UG/L	*	1,2-DICHLOROPROPANE	<	0.20 UG/L
	1,1-DICHLORO-1-PROPENE	<	0.20 UG/L	*	TRANS-1,3-DICHLORO-1-PROPENE	<	0.20 UG/L
*	1,1,2-TRICHLOROETHYLENE		0.80 UG/L		1,3-DICHLOROPROPANE	<	3. UG/L
*	CHLORODIBROMOMETHANE	<	1.0 UG/L	*	1,1,2-TRICHLOROETHANE	<	0.20 UG/L
*	CIS-1,3-DICHLORO-1-PROPENE	<	0.20 UG/L		1,2-DIBROMOETHANE	<	1.0 UG/L
*	2-CHLOROETHYLVINYL ETHER	<	1.0 UG/L	*	BROMOFORM	<	1.0 UG/L
	1,1,1,2-TETRACHLOROETHANE	<	0.20 UG/L		1,2,3-TRICHLOROPROPANE	<	2. UG/L
*	1,1,2,2-TETRACHLOROETHANE	<	2. UG/L	*	1,1,2,2-TETRACHLOROETHYLENE	<	2. UG/L
	PENTACHLOROETHANE	<	2. UG/L	*	CHLOROBENZENE	<	0.50 UG/L
	1,1,2-TRICHLOROTRIFLUOROETHANE	<	0.50 UG/L	*	1,3-DICHLOROBENZENE	<	1.0 UG/L
*	1,2-DICHLOROBENZENE	<	1.0 UG/L	*	1,4-DICHLOROBENZENE	<	1.0 UG/L

P< PEAK DETECTED BELOW THE 'LESS THAN' VALUE

< 'LESS THAN'

NA 'NOT ANALYZED'

UMP000088

Monitoring Well #4

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF ANALYTICAL SERVICES

DATE 6 26 1984

VOLATILE HYDROCARBONS IN WATER
(* DENOTES PRIORITY POLLUTANT)

SAMPLE NUMBER 53011.

DATE SAMPLED 6 15 1984
DATE ANALYZED 6 25 1984

FIELD BLANK # 53015.

U/MN DISPOSAL/EXCHANGE PROGRAM

NON-HALOGENATED (CODE 462)

ACETONE	<	10. UG/L	TETRAHYDROFURAN	<	5. UG/L
ETHYL ETHER	<	1.0 UG/L	METHYL ETHYL KETONE	<	5. UG/L
* BENZENE	<	0.50 UG/L	METHYL ISOBUTYL KETONE	<	1.0 UG/L
* TOLUENE	<	0.50 UG/L	* ETHYLBENZENE	<	0.50 UG/L
CUMENE	<	0.50 UG/L	O-XYLENE	<	0.50 UG/L
M-XYLENE	<	0.50 UG/L	P-XYLENE	<	0.50 UG/L

HALOGENATED (CODE 464)

* CHLOROMETHANE	NA		DICHLORODIFLUOROMETHANE	NA	
* VINYL CHLORIDE	NA		* BROMOMETHANE	NA	
* CHLOROETHANE	NA		* DICHLOROFLUOROMETHANE	NA	
* METHYLENE CHLORIDE		1.5 UG/L	* TRICHLOROFLUOROMETHANE	<	0.20 UG/L
ALLYLCHLORIDE	<	0.50 UG/L	* 1,1-DICHLOROETHYLENE	<	0.20 UG/L
* 1,1-DICHLOROETHANE	<	0.20 UG/L	* TRANS-1,2-DICHLOROETHYLENE	<	0.20 UG/L
CIS-1,2-DICHLOROETHYLENE	<	0.20 UG/L	* CHLOROFORM	<	0.20 UG/L
* 1,2-DICHLOROETHANE	<	0.20 UG/L	DIBROMOMETHANE	<	1.0 UG/L
* 1,1,1-TRICHLOROETHANE	<	0.20 UG/L	* CARBON TETRACHLORIDE	<	0.20 UG/L
* BROMODICHLOROMETHANE	<	0.50 UG/L	DICHLOROACETONITRILE	<	0.50 UG/L
2,3-DICHLORO-1-PROPENE	<	0.20 UG/L	* 1,2-DICHLOROPROPANE	<	0.20 UG/L
1,1-DICHLORO-1-PROPENE	<	0.20 UG/L	* TRANS-1,3-DICHLORO-1-PROPENE	<	0.20 UG/L
* 1,1,2-TRICHLOROETHYLENE	<	0.20 UG/L	1,3-DICHLOROPROPANE	<	3. UG/L
* CHLORODIBROMOMETHANE	<	1.0 UG/L	* 1,1,2-TRICHLOROETHANE	<	0.20 UG/L
* CIS-1,3-DICHLORO-1-PROPENE	<	0.20 UG/L	1,2-DIBROMOETHANE	<	1.0 UG/L
* 2-CHLOROETHYLVINYL ETHER	<	1.0 UG/L	* BROMOFORM	<	1.0 UG/L
1,1,1,2-TETRACHLOROETHANE	<	0.20 UG/L	1,2,3-TRICHLOROPROPANE	<	2. UG/L
* 1,1,2,2-TETRACHLOROETHANE	<	2. UG/L	* 1,1,2,2-TETRACHLOROETHYLENE	<	2. UG/L
PENTACHLOROETHANE	<	2. UG/L	* CHLOROBENZENE	<	0.50 UG/L
1,1,2-TRICHLOROTRIFLUOROETHANE	<	0.50 UG/L	* 1,3-DICHLOROBENZENE	<	1.0 UG/L
* 1,2-DICHLOROBENZENE	<	1.0 UG/L	* 1,4-DICHLOROBENZENE	<	1.0 UG/L

NA 'NOT ANALYZED'

< 'LESS THAN'

Monitoring Well #5

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF ANALYTICAL SERVICES

DATE 6 27 1984

VOLATILE HYDROCARBONS IN WATER
(* DENOTES PRIORITY POLLUTANT)

SAMPLE NUMBER 53008.

DATE SAMPLED 6 15 1984
DATE ANALYZED 6 26 1984

FIELD BLANK # 53015.

U/MN DISPOSAL/EXCHANGE PROGRAM

NON-HALOGENATED (CODE 462)

	ACETONE	< 10. UG/L		TETRAHYDROFURAN	< 5. UG/L
	ETHYL ETHER	< 1.0 UG/L		METHYL ETHYL KETONE	< 5. UG/L
*	BENZENE	< 0.50 UG/L		METHYL ISOBUTYL KETONE	< 1.0 UG/L
*	TOLUENE	< 0.50 UG/L	*	ETHYLBENZENE	< 0.50 UG/L
	CUMENE	< 0.50 UG/L		O-XYLENE	< 0.50 UG/L
	M-XYLENE	< 0.50 UG/L		P-XYLENE	< 0.50 UG/L

HALOGENATED (CODE 464)

*	CHLOROMETHANE	NA		DICHLORODIFLUOROMETHANE	NA
*	VINYL CHLORIDE	NA	*	BROMOMETHANE	NA
*	CHLOROETHANE	NA	*	DICHLOROFLUOROMETHANE	NA
*	METHYLENE CHLORIDE	< 1.0 UG/L	*	TRICHLOROFLUOROMETHANE	< 0.20 UG/L
	ALLYLCHLORIDE	< 0.50 UG/L	*	1,1-DICHLOROETHYLENE	< 0.20 UG/L
*	1,1-DICHLOROETHANE	< 0.20 UG/L	*	TRANS-1,2-DICHLOROETHYLENE	< 0.20 UG/L
	CIS-1,2-DICHLOROETHYLENE	< 0.20 UG/L	*	CHLOROFORM	< 0.20 UG/L
*	1,2-DICHLOROETHANE	< 0.20 UG/L		DIBROMOMETHANE	< 1.0 UG/L
*	1,1,1-TRICHLOROETHANE	< 0.20 UG/L	*	CARBON TETRACHLORIDE	< 0.20 UG/L
*	BROMODICHLOROMETHANE	< 0.50 UG/L		DICHLOROACETONITRILE	< 0.50 UG/L
	2,3-DICHLORO-1-PROPENE	< 0.20 UG/L	*	1,2-DICHLOROPROPANE	< 0.20 UG/L
	1,1-DICHLORO-1-PROPENE	< 0.20 UG/L	*	TRANS-1,3-DICHLORO-1-PROPENE	< 0.20 UG/L
*	1,1,2-TRICHLOROETHYLENE	< 0.20 UG/L		1,3-DICHLOROPROPANE	< 3. UG/L
*	CHLORODIBROMOMETHANE	< 1.0 UG/L	*	1,1,2-TRICHLOROETHANE	< 0.20 UG/L
*	CIS-1,3-DICHLORO-1-PROPENE	< 0.20 UG/L		1,2-DIBROMOETHANE	< 1.0 UG/L
*	2-CHLOROETHYLVINYL ETHER	< 1.0 UG/L	*	BROMOFORM	< 1.0 UG/L
	1,1,1,2-TETRACHLOROETHANE	< 0.20 UG/L		1,2,3-TRICHLOROPROPANE	< 2. UG/L
*	1,1,2,2-TETRACHLOROETHANE	< 2. UG/L	*	1,1,2,2-TETRACHLOROETHYLENE	< 2. UG/L
	PENTACHLOROETHANE	< 2. UG/L	*	CHLOROBENZENE	< 0.50 UG/L
	1,1,2-TRICHLOROTRIFLUOROETHANE	< 0.50 UG/L	*	1,3-DICHLOROBENZENE	< 1.0 UG/L
*	1,2-DICHLOROBENZENE	< 1.0 UG/L	*	1,4-DICHLOROBENZENE	< 1.0 UG/L

NA 'NOT ANALYZED'

< 'LESS THAN'

Main Well #2

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF ANALYTICAL SERVICES

DATE 6 26 1984

VOLATILE HYDROCARBONS IN WATER
(* DENOTES PRIORITY POLLUTANT)

SAMPLE NUMBER 53012.

DATE SAMPLED 6 15 1984
DATE ANALYZED 6 25 1984

FIELD BLANK # 53015.

U/MN DISPOSAL/EXCHANGE PROGRAM

NON-HALOGENATED (CODE 462)

ACETONE	<	10. UG/L	TETRAHYDROFURAN	<	5. UG/L
ETHYL ETHER	<	1.0 UG/L	METHYL ETHYL KETONE	<	5. UG/L
* BENZENE	<	0.50 UG/L	METHYL ISOBUTYL KETONE	<	1.0 UG/L
* TOLUENE	<	0.50 UG/L	* ETHYLBENZENE	<	0.50 UG/L
CUMENE	<	0.50 UG/L	O-XYLENE	<	0.50 UG/L
M-XYLENE	<	0.50 UG/L	P-XYLENE	<	0.50 UG/L

HALOGENATED (CODE 464)

* CHLOROMETHANE	NA		DICHLORODIFLUOROMETHANE	NA	
* VINYL CHLORIDE	NA		* BROMOMETHANE	NA	
* CHLOROETHANE	NA		* DICHLOROFLUOROMETHANE	NA	
* METHYLENE CHLORIDE		1.6 UG/L	* TRICHLOROFLUOROMETHANE	<	0.20 UG/L
ALLYLCHLORIDE	<	0.50 UG/L	* 1,1-DICHLOROETHYLENE	<	0.20 UG/L
* 1,1-DICHLOROETHANE	<	0.20 UG/L	* TRANS-1,2-DICHLOROETHYLENE	<	0.20 UG/L
CIS-1,2-DICHLOROETHYLENE	<	0.20 UG/L	* CHLOROFORM	<	0.20 UG/L
* 1,2-DICHLOROETHANE	<	0.20 UG/L	DIBROMOMETHANE	<	1.0 UG/L
* 1,1,1-TRICHLOROETHANE	<	0.20 UG/L	* CARBON TETRACHLORIDE	<	0.20 UG/L
* BROMODICHLOROMETHANE	<	0.50 UG/L	DICHLOROACETONITRILE	<	0.50 UG/L
2,3-DICHLORO-1-PROPENE	<	0.20 UG/L	* 1,2-DICHLOROPROPANE	<	0.20 UG/L
1,1-DICHLORO-1-PROPENE	<	0.20 UG/L	* TRANS-1,3-DICHLORO-1-PROPENE	<	0.20 UG/L
* 1,1,2-TRICHLOROETHYLENE	<	0.20 UG/L	1,3-DICHLOROPROPANE	<	3. UG/L
* CHLORODIBROMOMETHANE	<	1.0 UG/L	* 1,1,2-TRICHLOROETHANE	<	0.20 UG/L
* CIS-1,3-DICHLORO-1-PROPENE	<	0.20 UG/L	1,2-DIBROMOETHANE	<	1.0 UG/L
* 2-CHLOROETHYLVINYL ETHER	<	1.0 UG/L	* BROMOFORM	<	1.0 UG/L
1,1,1,2-TETRACHLOROETHANE	<	0.20 UG/L	1,2,3-TRICHLOROPROPANE	<	2. UG/L
* 1,1,2,2-TETRACHLOROETHANE	<	2. UG/L	* 1,1,2,2-TETRACHLOROETHYLENE	<	2. UG/L
PENTACHLOROETHANE	<	2. UG/L	* CHLOROBENZENE	<	0.50 UG/L
1,1,2-TRICHLOROTRIFLUOROETHANE	<	0.50 UG/L	* 1,3-DICHLOROBENZENE	<	1.0 UG/L
* 1,2-DICHLOROBENZENE	<	1.0 UG/L	* 1,4-DICHLOROBENZENE	<	1.0 UG/L

NA 'NOT ANALYZED'

< 'LESS THAN'

UMP000091

Agricultural Engineering Well

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF ANALYTICAL SERVICES

DATE 6 27 1984

VOLATILE HYDROCARBONS IN WATER
(* DENOTES PRIORITY POLLUTANT)

SAMPLE NUMBER 53013.

DATE SAMPLED 6 15 1984
DATE ANALYZED 6 25 1984

FIELD BLANK # 53015.

U/MN DISPOSAL/EXCHANGE PROGRAM

NON-HALOGENATED (CODE 462)

ACETONE	<	10. UG/L	TETRAHYDROFURAN	<	5. UG/L
ETHYL ETHER	<	1.0 UG/L	METHYL ETHYL KETONE	<	5. UG/L
* BENZENE	<	0.50 UG/L	METHYL ISOBUTYL KETONE	<	1.0 UG/L
* TOLUENE	<	0.50 UG/L	* ETHYLBENZENE	<	0.50 UG/L
CUMENE	<	0.50 UG/L	O-XYLENE	<	0.50 UG/L
M-XYLENE	<	0.50 UG/L	P-XYLENE	<	0.50 UG/L

HALOGENATED (CODE 464)

* CHLOROMETHANE	NA		DICHLORODIFLUOROMETHANE	NA	
* VINYL CHLORIDE	NA		* BROMOMETHANE	NA	
* CHLOROETHANE	NA		* DICHLOROFLUOROMETHANE	NA	
* METHYLENE CHLORIDE		1.5 UG/L	* TRICHLOROFLUOROMETHANE	<	0.20 UG/L
ALLYLCHLORIDE	<	0.50 UG/L	* 1,1-DICHLOROETHYLENE	<	0.20 UG/L
* 1,1-DICHLOROETHANE	<	0.20 UG/L	* TRANS-1,2-DICHLOROETHYLENE	<	0.20 UG/L
CIS-1,2-DICHLOROETHYLENE	<	0.20 UG/L	* CHLOROFORM	<	0.20 UG/L
* 1,2-DICHLOROETHANE	<	0.20 UG/L	DIBROMOMETHANE	<	1.0 UG/L
* 1,1,1-TRICHLOROETHANE	<	0.20 UG/L	* CARBON TETRACHLORIDE	<	0.20 UG/L
* BROMODICHLOROMETHANE	<	0.50 UG/L	DICHLOROACETONITRILE	<	0.50 UG/L
2,3-DICHLORO-1-PROPENE	<	0.20 UG/L	* 1,2-DICHLOROPROPANE	<	0.20 UG/L
1,1-DICHLORO-1-PROPENE	<	0.20 UG/L	* TRANS-1,3-DICHLORO-1-PROPENE	<	0.20 UG/L
* 1,1,2-TRICHLOROETHYLENE	<	0.20 UG/L	1,3-DICHLOROPROPANE	<	3. UG/L
* CHLORODIBROMOMETHANE	<	1.0 UG/L	* 1,1,2-TRICHLOROETHANE	<	0.20 UG/L
* CIS-1,3-DICHLORO-1-PROPENE	<	0.20 UG/L	1,2-DIBROMOETHANE	<	1.0 UG/L
* 2-CHLOROETHYLVINYL ETHER	<	1.0 UG/L	* BROMOFORM	<	1.0 UG/L
1,1,1,2-TETRACHLOROETHANE	<	0.20 UG/L	1,2,3-TRICHLOROPROPANE	<	2. UG/L
* 1,1,2,2-TETRACHLOROETHANE	<	2. UG/L	* 1,1,2,2-TETRACHLOROETHYLENE	<	2. UG/L
PENTACHLOROETHANE	<	2. UG/L	* CHLOROBENZENE	<	0.50 UG/L
1,1,2-TRICHLOROTRIFLUOROETHANE	<	0.50 UG/L	* 1,3-DICHLOROBENZENE	<	1.0 UG/L
* 1,2-DICHLOROBENZENE	<	1.0 UG/L	* 1,4-DICHLOROBENZENE	<	1.0 UG/L

NA 'NOT ANALYZED'

< 'LESS THAN'

UMP000092

Poultry Well

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF ANALYTICAL SERVICES

DATE 6 26 1984

VOLATILE HYDROCARBONS IN WATER
(* DENOTES PRIORITY POLLUTANT)

SAMPLE NUMBER 53014.

DATE SAMPLED 6 15 1984
DATE ANALYZED 6 25 1984

FIELD BLANK # 53015.

U/MN DISPOSAL/EXCHANGE PROGRAM

NON-HALOGENATED (CODE 462)

ACETONE	<	10. UG/L	TETRAHYDROFURAN	<	5. UG/L
ETHYL ETHER	<	1.0 UG/L	METHYL ETHYL KETONE	<	5. UG/L
* BENZENE	<	0.50 UG/L	METHYL ISOBUTYL KETONE	<	1.0 UG/L
* TOLUENE	<	0.50 UG/L	* ETHYLBENZENE	<	0.50 UG/L
CUMENE	<	0.50 UG/L	O-XYLENE	<	0.50 UG/L
M-XYLENE	<	0.50 UG/L	P-XYLENE	<	0.50 UG/L

HALOGENATED (CODE 464)

* CHLOROMETHANE	NA		DICHLORODIFLUOROMETHANE	NA	
* VINYL CHLORIDE	NA		* BROMOMETHANE	NA	
* CHLOROETHANE	NA		* DICHLOROFLUOROMETHANE	NA	
* METHYLENE CHLORIDE	<	1.0 UG/L	* TRICHLOROFLUOROMETHANE	<	0.20 UG/L
ALLYLCHLORIDE	<	0.50 UG/L	* 1,1-DICHLOROETHYLENE	<	0.20 UG/L
* 1,1-DICHLOROETHANE	<	0.20 UG/L	* TRANS-1,2-DICHLOROETHYLENE	<	0.20 UG/L
CIS-1,2-DICHLOROETHYLENE	<	0.20 UG/L	* CHLOROFORM	<	0.20 UG/L
* 1,2-DICHLOROETHANE	<	0.20 UG/L	DIBROMOMETHANE	<	1.0 UG/L
* 1,1,1-TRICHLOROETHANE	<	0.20 UG/L	* CARBON TETRACHLORIDE	<	0.20 UG/L
* BROMODICHLOROMETHANE	<	0.50 UG/L	DICHLOROACETONITRILE	<	0.50 UG/L
2,3-DICHLORO-1-PROPENE	<	0.20 UG/L	* 1,2-DICHLOROPROPANE	<	0.20 UG/L
1,1-DICHLORO-1-PROPENE	<	0.20 UG/L	* TRANS-1,3-DICHLORO-1-PROPENE	<	0.20 UG/L
* 1,1,2-TRICHLOROETHYLENE	<	0.20 UG/L	1,3-DICHLOROPROPANE	<	3. UG/L
* CHLORODIBROMOMETHANE	<	1.0 UG/L	* 1,1,2-TRICHLOROETHANE	<	0.20 UG/L
* CIS-1,3-DICHLORO-1-PROPENE	<	0.20 UG/L	1,2-DIBROMOETHANE	<	1.0 UG/L
* 2-CHLOROETHYLVINYL ETHER	<	1.0 UG/L	* BROMOFORM	<	1.0 UG/L
1,1,1,2-TETRACHLOROETHANE	<	0.20 UG/L	1,2,3-TRICHLOROPROPANE	<	2. UG/L
* 1,1,2,2-TETRACHLOROETHANE	<	2. UG/L	* 1,1,2,2-TETRACHLOROETHYLENE	<	2. UG/L
PENTACHLOROETHANE	<	2. UG/L	* CHLOROBENZENE	<	0.50 UG/L
1,1,2-TRICHLOROTRIFLUOROETHANE	<	0.50 UG/L	* 1,3-DICHLOROBENZENE	<	1.0 UG/L
* 1,2-DICHLOROBENZENE	<	1.0 UG/L	* 1,4-DICHLOROBENZENE	<	1.0 UG/L

NA 'NOT ANALYZED'

< 'LESS THAN'

UMP000093

Field Blank

MINNESOTA DEPARTMENT OF HEALTH
SECTION OF ANALYTICAL SERVICES

DATE 6 26 1984

VOLATILE HYDROCARBONS IN WATER
(* DENOTES PRIORITY POLLUTANT)

SAMPLE NUMBER 53015.

DATE SAMPLED 6 15 1984
DATE ANALYZED 6 25 1984

FIELD BLANK # 53015.

U/MN DISPOSAL/EXCHANGE PROGRAM

NON-HALOGENATED (CODE 462)

ACETONE	<	10. UG/L	TETRAHYDROFURAN	<	5. UG/L
ETHYL ETHER	<	1.0 UG/L	METHYL ETHYL KETONE	<	5. UG/L
* BENZENE	<	0.50 UG/L	METHYL ISOBUTYL KETONE	<	1.0 UG/L
* TOLUENE	<	0.50 UG/L	* ETHYLBENZENE	<	0.50 UG/L
CUMENE	<	0.50 UG/L	O-XYLENE	<	0.50 UG/L
M-XYLENE	<	0.50 UG/L	P-XYLENE	<	0.50 UG/L

HALOGENATED (CODE 464)

* CHLOROMETHANE	NA		DICHLORODIFLUOROMETHANE	NA	
* VINYL CHLORIDE	NA		* BROMOMETHANE	NA	
* CHLOROETHANE	NA		* DICHLOROFLUOROMETHANE	NA	
* METHYLENE CHLORIDE		2.3 UG/L	* TRICHLOROFLUOROMETHANE	<	0.20 UG/L
ALLYLCHLORIDE	<	0.50 UG/L	* 1,1-DICHLOROETHYLENE	<	0.20 UG/L
* 1,1-DICHLOROETHANE	<	0.20 UG/L	* TRANS-1,2-DICHLOROETHYLENE	<	0.20 UG/L
CIS-1,2-DICHLOROETHYLENE	<	0.20 UG/L	* CHLOROFORM	<	0.20 UG/L
* 1,2-DICHLOROETHANE	<	0.20 UG/L	DIBROMOMETHANE	<	1.0 UG/L
* 1,1,1-TRICHLOROETHANE	<	0.20 UG/L	* CARBON TETRACHLORIDE	<	0.20 UG/L
* BROMODICHLOROMETHANE	<	0.50 UG/L	DICHLOROACETONITRILE	<	0.50 UG/L
2,3-DICHLORO-1-PROPENE	<	0.20 UG/L	* 1,2-DICHLOROPROPANE	<	0.20 UG/L
1,1-DICHLORO-1-PROPENE	<	0.20 UG/L	* TRANS-1,3-DICHLORO-1-PROPENE	<	0.20 UG/L
* 1,1,2-TRICHLOROETHYLENE	<	0.20 UG/L	1,3-DICHLOROPROPANE	<	3. UG/L
* CHLORODIBROMOMETHANE	<	1.0 UG/L	* 1,1,2-TRICHLOROETHANE	<	0.20 UG/L
* CIS-1,3-DICHLORO-1-PROPENE	<	0.20 UG/L	1,2-DIBROMOETHANE	<	1.0 UG/L
* 2-CHLOROETHYLVINYL ETHER	<	1.0 UG/L	* BROMOFORM	<	1.0 UG/L
1,1,1,2-TETRACHLOROETHANE	<	0.20 UG/L	1,2,3-TRICHLOROPROPANE	<	2. UG/L
* 1,1,2,2-TETRACHLOROETHANE	<	2. UG/L	* 1,1,2,2-TETRACHLOROETHYLENE	<	2. UG/L
PENTACHLOROETHANE	<	2. UG/L	* CHLOROBENZENE	<	0.50 UG/L
1,1,2-TRICHLOROTRIFLUOROETHANE	<	0.50 UG/L	* 1,3-DICHLOROBENZENE	<	1.0 UG/L
* 1,2-DICHLOROBENZENE	<	1.0 UG/L	* 1,4-DICHLOROBENZENE	<	1.0 UG/L

NA 'NOT ANALYZED'

< 'LESS THAN'

UNIVERSITY OF MINNESOTA
TWIN CITIES

Department of Environmental Health and Safety
Boynton Health Service, Room W-140
410 Church Street S.E.
Minneapolis, Minnesota 55455
(612) 373-3167

June 18, 1984

MEMORANDUM

TO: Dr. Clifford Wilcox, Superintendent, Agriculture Experiment Station, 1605-160th Street West, Rosemount, MN 55068

FROM: Kent A. Rees, Senior Environmental Health Specialist, Department of Environmental Health and Safety

SUBJECT: Bacteriological Water Sampling, Agriculture Experiment Station

This is to inform you of the results of bacteriological examination of water smaples taken at various locations at the experiment station on June 14, 1984. The results are listed below for your information.

Sampling Point	Coliform Bacteria/100mls
Agriculture Engineering	<1
Station Office	<1
Shop	<1
South Beef	<1
Forage Farm	<1
Plant Pathology	<1
Dairy Farm	<1
Agronomy Farm	<1
Poultry (new)	<1
Poultry (old)	<1
North Beef (new)	<1
North Beef (old)	<1

The absence of coliform indicates that the water is of satisfactory bacteriological quality for drinking purposes in accordance with the EPA National Interim Primary Drinking Water Regulations. Sampling and analyses were conducted in accordance with the 15th edition of Standards Methods for the Examination of Water and Waste Water.

KAR/dr

MRH 210 A Com.

√

Kent A Rees
4 of M
Dept. of Environmental Health and Safety
410 Church St
Mpls, Mn 55455

MINNESOTA DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

ANALYTICAL DATA

Samples Collected By Kent A Rees

Report To Mpls, Mn 55455

Field Number	Town, County, Etc.	Sampling Point and Source of Sample
a 2	Rosemount	Rosemount Research Office
b 7	"	Rosemount Station Office
c 13	Carver Co. 3	Landscape Gardens Inc.
d		
e		
f		

This line for Lab. use only. Sample Number	a 25863	b 25864	c 25865	d	e	f
Date Collected						
Time Collected						
Temperature °F						
Date Received by Lab.	10-26-77					
Coliform group organisms — M.P.N. per 100 ml. Con. ☐ Comp. ☐						
M.F.C. per 100 ml.						
al Solids						
Turbidity						
Color						
Total hardness as $CaCO_3$						
Alkalinity as $CaCO_3$						
pH value						
Iron						
Manganese						
Chloride						
Residual Chlorine						
Sulphate						
Fluoride						
Total Phosphorus						
Nitrite Nitrogen						
Nitrate Nitrogen $+NO_2N$ ✓	6.4	2.4	2.4			
Methylene Blue Active Sub. as ABS						
Calcium as $CaCO_3$						
Sodium						
Potassium						
Spec. Cond. µmhos/cm @ 25 °C						
pHs @ 50 °F						

COMPLETED
NOV 17 1977
ANALYTICAL SERVICES

* Results are in milligrams per liter except as noted.

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