TRACE CHEMICAL ELEMENT CONTENT OF NATURAL SOILS

Element	Common Range (ppm)	Average (ppm)	Element	Common Range (ppm)	Average (ppm)
Aluminum	10,000-300,000	71,000	Lithium	5-200	20
Antimony	2-10	-	Magnesium	600-6,000	5,000
Arsenic	1-50	5	Manganese	20-3,000	600
Barium	100-3,000	430	Mercury	0.01-0.3	.03
Beryllium	0.1-40	6	Molybdenum	0.2-5	2
Boron	2-100	10	Nickel	5-500	40
Bromine	1-10	5	Radium	8×10^{-5}	
Cadmium	0.01-0.7	.06	Rubidium	50-500	10
Cesium	0.3-25	6	Selenium	0.1-2	.3
Chlorine	20-900	100	Silver	0.01-5	.05
Chromium	1-1,000	100	Strontium	50-1,000	200
Cobalt	1-40	8	Tin	2-200	10
Copper	2-100	30	Tungsten		1
Fluorine	10-4,000	200	Uranium	0.9-9	1
Gallium	0.4-300	30	Vanadium	20-500	100
Gold		1	Yttrium	25-250	50
Iodi[illegible]	0.1-40	5	Zinc	10-300	50
La[illegible]num	1-5,000	30	Zirconium	60-2,000	300
Lead	2-200	10			

REF: USEPA Office of Solid Waste and Emergency Response, HAZARDOUS WASTE LAND TREATMENT, SW-874 (April, 1983) Page 271, Table 6.46.

SELECTED CHEMICAL ELEMENTS-CONCENTRATIONS IN EARTH'S CRUST[1]

Element	Percent By Weight	Element	Percent By[illegible]
Aluminum	8.8%	Phosphorous	0.12%
Arsenic	0.00005%-(500 ppb)	Potassium	2.59%
Barium	0.05%	Selenium	about 90 ppb
Bismuth	approx. 0.00002% (200 ppb)	Silicon	27.6%
Boron	approx. 0.001%	Sodium	2.83%
Cadmium	0.1 to 0.2 ppm	Sulfur	0.05%
Calcium	3.64%	Tin	0.0006% (6 ppm)
Chromium	Reported 100-300 ppm	Titanium	0.63%
Cobalt	0.001-0.002%	Tungsten	1.5 ppm
Copper	70 ppm	Uranium	0.00005%(500 ppb)
Fluorine	0.065%	Vanadium	0.01%
Indium	0.00001%(100 ppb)	Zinc	0.02%
Iron	about 5%	Zirconium	0.023%
Lead	0.002% (20 ppm)		
Lithium	0.005% (50 ppm)		
Magnesium	2.1%		
Manganese	0.085%		
Mercury	0.5 ppm		
Molybdenym	1-1.5 ppm		
Nickel	0.018% (180 ppm)		

NOTE: (1) To 16 Km depth

US EPA RECORDS CENTER REGION 5
508930
934213

REF: MERCK INDEX, 10th Edition (1983).

Table 5 (Continued)

Site (SAROAD Code)	Address (UTM Grid Coordinates)	Supporting Agency	Sampling Height (Feet)	Equipment
St. Louis City, Missouri (Cont'd.)				
St. Louis (4280 010)	4408 Donovan (731500) (4266800) Zone 15	St. Louis City Division of Air Pollution Control	35	High Volume Sampler
St. Louis (4280 012)	Forest Park (735490) (4280000) Zone 15	St. Louis City Division of Air Pollution Control	50	High Volume Sampler
St. Louis (4280 015)	1400 Shawnut Place (736650) (4283360) Zone 15	St. Louis City Division of Air Pollution Control	38	High Volume Sampler
St. Louis (4280 025)	3500 S. Grand (740110) (4275070) Zone 15	St. Louis City Division of Air Pollution Control	35	High Volume Sampler
St. Louis (4280 032)	Grand & Laclede (740930) (4279650) Zone 15	St. Louis City Division of Air Pollution Control	45	High Volume Sampler
St. Louis (4280 061)	Shreve & I-70 (740660) (4285030) Zone 15	St. Louis City Division of Air Pollution Control	13	High Volume Sampler SO_2 (Continuous)
St. Louis (4280 062)	River Des Peres & Sulfur Avenue (736275) (4277982) Zone 15	St. Louis City Division of Air Pollution Control	13	High Volume Sampler SO_2 (Continuous)
St. Louis (4280 063)	Chain of Rocks Water Dept. (744410) (4292740) Zone 15	St. Louis City Division of Air Pollution Control	13	High Volume Sampler SO_2 (Continuous)
St. Louis (4280 064)	208 S. 12th St. (743880) (4278760)	St. Louis City Division of Air Pollution Control	73	SO_2 (Continuous)
St. Louis (4280 072)	1122 Clark	Division of Air Pollution Control City Dept. of Public Safety		High Volume Sampler SO_2 (Bubbler)

Figure 2 Location of Monitors Used in Study

Note: Not shown is the Dunklin High School Monitor located 34 miles south-southeast of downtown St. Louis

The IEPA's ambient air monitoring Quality Assurance Program ensures that the output of any series of ambient measurements is valid air quality data. This ongoing program was developed to minimize all sources of variation inherent in the analytical and technical functions of air monitoring.

The Quality Assurance Program is separated into assessment, standardization, deficiency analyses, reports and records, and corrective action. Inspections of sampling locations, laboratories, and maintenance support facilities are conducted and the results compared with developed standards to determine the reliability of the particular operation. Any deficiencies that might affect the validity of data are corrected.

The IEPA Quality Assurance Program officially began in 1976 (Reference 25); however, the same validity and reliability checks of ambient air quality data were made in 1975. In fact, those procedures used in 1975 became the foundation of the formalized Quality Assurance Program.

Missouri air quality data have been verified back through 1974. Much of this work was undertaken by the city and county agencies, as well as the MDNR. Currently, MDNR is developing a formal air monitoring quality assurance program. The procedures outlined by this quality assurance program are basically the same as those used for the verification of the 1975 air quality data.

The 1975 TSP and SO_2 air quality in the St. Louis AQMA is summarized in Tables 6 and 7, respectively, and the annual mean TSP and SO_2 ambient air quality from 1970 through 1975 is summarized in Tables 8 and 9, respectively. Table 8 shows most monitoring sites recorded a substantial decrease in TSP ambient air quality levels during the period 1970 through 1975.

Table 6

SUMMARY OF 1975 TSP AMBIENT AIR QUALITY DATA FOR THE ST. LOUIS AQMA ($\mu g/m^3$)†

Station	Address	Number of Samples: Total	Number of Samples: >150 $\mu g/m^3$	Number of Samples: >260 $\mu g/m^3$	Highest Samples: 1st	Highest Samples: 2nd	Highest Samples: 3rd	Highest Samples: 4th	Annual Statistics: Geometric Mean	Annual Statistics: Standard Geometric Deviation
Madison County, Illinois										
Alton	103 E 3rd Street	59	2	0	216	154	141	140	78	1.56
Alton	1616 Joesting	59	0	0	147	145	140	139	67	1.69
Edwardsville	132 N. Kansas	60	0	0	111	101	100	96	54	1.45
Granite City	2000 Edison Avenue	56	4	0	199	177	168	158	96	1.49
Granite City	23rd & Madison	53	12	1	306	241	210	192	105	1.59
Granite City	2301 E. 23rd	56	1	0	189	129	127	125	68	1.52
Granite City	2001 E. 20th	59	33	3	353	307	271	246	158	1.42
Granite City	15th & Madison	61	28	2	326	312	236	224	138	1.49
Granite City	Roosevelt & Rock Rd.	54	13	1	274	231	222	219	97	1.72
Wood River	54 N. Walcott	61	5	0	222	209	191	179	81	1.63
St. Clair County, Illinois										
Belleville	101 S. Illinois	58	0	0	135	119	113	109	63	1.47
East St. Louis	Cahokia State Park	60	18	4	330	275	271	269	103	1.85
Jefferson County, Missouri										
Jefferson County	Dunklin High School	26	1	0	183	127	125	110	78*	1.4*
St. Louis County, Missouri										
Afton	5962 S. Lindbergh	17	0	0	149	103	82	72	50*	1.7*
Bellefontaine Neighbors	805 Chambers Rd.	42	1	0	185	143	142	137	66*	1.5*
Bellefontaine Neighbors	Rte. 67 & I-270	47	1	0	152	117	113	107	54*	1.5*
Berkeley	8811 Harold Drive	44	0	0	141	131	105	91	58*	1.4*
Clayton	801 S. Brentwood Blvd.	47	0	0	145	109	94	93	58*	1.4*
Lemay	9101 S. Broadway	48	1	0	154	145	131	125	64*	1.6*
Lemay	8900 S. Broadway	48	12	2	300	271	226	202	103	1.6
St. Ann	10267 St. Charles Rock Rd.	55	1	0	174	150	148	118	59	1.5
St. Louis County	Old Jamestown & Sinks Rd. Intersection	48	0	0	144	113	72	69	38*	1.5*
St. Louis City, Missouri										
St. Louis	18th & Market	34	4	0	199	195	160	157	81*	1.5*
St. Louis	14th & Market	94	3	0	164	163	155	150	81	1.4
St. Louis	8227 S. Broadway	98	28	5	743	568	371	323	106	1.8
St. Louis	4408 Donovan	49	0	0	117	112	106	97	63	1.4
St. Louis	Forest Park	54	1	1	302	130	118	111	61	1.5
St. Louis	1400 Shawnut Pl.	56	1	1	296	150	139	135	74	1.5
St. Louis	3500 S. Grand	57	2	1	467	154	138	123	71	1.5
St. Louis	Grand & Laclede	56	0	0	144	117	115	111	63	1.4
St. Louis	Shreve & I-70	58	9	0	204	181	168	167	105	1.4
St. Louis	River Des Peres & Sulfur Ave.	48	3	0	178	172	153	139	90	1.4
St. Louis	Chain of Rocks Water Dept.	50	1	0	207	150	148	143	78*	1.5*
St. Louis	1122 Clark	17	1	0	154	128	125	120	87*	1.4*

*Less than three quarters data capture for the year or a given season.

†Late revisions to 1975 data are presented in the appendix.

Table 7

SUMMARY OF 1975 SO_2 AMBIENT AIR QUALITY DATA FOR THE ST. LOUIS AQMA† (Parts Per Million)

Station	Address	No. of Samples		No. of 3-Hour Averages	No. of 24-Hour Averages	Highest Samples (ppm)				Annual Statistic	
						3-Hour Avg.		24-Hour Avg.			
		1-Hour	24-Hour	>0.5 ppm	>0.14 ppm	1st	2nd	1st	2nd	Arith-metic Mean	Geometric Standard Deviation
Madison County, Illinois											
Alton	1616 Joesting	7,191	-	0	0	0.400	0.333	0.139	0.125	0.022	2.48
Granite City	2301 Adams	7,728	-	0	0	0.162	0.142	0.081	0.067	0.020	2.58
Wood River	54 N. Walcott	7,192	-	1	6	0.539	0.440	0.188	0.182	0.032	2.95
St. Clair County, Illinois											
East St. Louis	Cahokia State Park	7,050	-	0	0	0.161	0.124	0.067	0.066	0.014	2.30
East St. Louis	650 Missouri	7,688	-	0	0	0.257	0.231	0.122	0.106	0.028	2.68
Jefferson County, Missouri											
Jefferson County	Dunklin High School	5,831	4,619	3	4	0.759	0.759	0.232	0.160	0.009*	N/A
St. Louis County, Missouri											
Afton	5962 S. Lindbergh	865	752	0	0	0.103	0.103	0.069	0.036	N/A*	N/A
Bellefontaine Neighbors	Rte. 67 & I-270	5,485	4,940	0	0	0.313	0.205	0.077	0.006	0.019*	N/A
Clayton	55 Hunter Ave.	5,476	5,006	0	1	0.306	0.303	0.224	0.076	0.016*	N/A
St. Ann	10267 St. Charles Rock Rd.	5,472	5,067	0	0	0.140	0.123	0.090	0.069	0.012*	N/A
St. Louis	8227 S. Broadway	5,989	-	0	9	0.394	0.375	0.305	0.253	0.042*	N/A
St. Louis	Shreve & I-70	8,050	-	0	1	0.267	0.247	0.169	0.087	0.026	N/A
St. Louis	River Des Peres & Sulfur Ave.	4,435	-	0	0	0.153	0.150	0.126	0.112	0.029*	N/A
St. Louis	Chain of Rocks Water Dept.	7,977	-	0	0	0.210	0.160	0.061	0.059	0.021	N/A
St. Louis	208 S. 12th St.	7,668	-	0	0	0.206	0.194	0.070	0.067	0.023	N/A
St. Louis	1122 Clark	-	-	-	0	-	-	0.051	0.035	N/A*	N/A
St. Louis County	305 Weidman Rd.	4,784	-	0	0	0.127	0.100	0.055	0.051	0.013*	N/A

N/A - Not Available

*Less than three quarters data capture for the year or a given season.

†Late revisions to 1975 data are presented in the appendix.

Table 8

SUMMARY OF TSP ANNUAL MEAN CONCENTRATIONS IN THE ST. LOUIS AQMA FOR THE PERIOD 1970-1975

Site	Address	Annual Geometric Mean ($\mu g/m^3$) 1970	1971	1972	1973	1974	1975†
Madison County, Illinois							
Alton	103 E. 3rd St.	86	80	88	69	69	78
Alton	1616 Joesting	-	-	-	-	N/A*	67
Edwardsville	132 N. Kansas	86	78	69	54	53	54
Granite City	2000 Edison	194	179	163	143	N/A*	96
Granite City	23rd & Madison	128	127	124	110	93	105
Granite City	2301 E. 23rd	69	123	89	88	86	68
Granite City	2001 E. 20th	150	174	205	202	158	138
Granite City	15th & Madison	143	174	200	161	N/A*	138
Granite City	Roosevelt & Rock Rd.	-	-	116	82	86	97
Wood River	54 N. Walcott	115	101	94	79	72	81
St. Clair County, Illinois							
Belleville	101 S. Illinois	90	84	81	63	73	63
East St. Louis	Cahokia State Park	-	124	108	101	111	103
Jefferson County, Missouri							
Jefferson County	Dunklin High School	-	-	-	N/A*	N/A*	78*
St. Louis County, Missouri							
Afton	5962 S. Lindbergh	-	69**	91**	72	78**	50*
Bellefontaine Neighbors	805 Chambers Rd.	-	84**	82**	71	79	66*
Bellefontaine Neighbors	Rte. 67 & I-270	-	71**	56	43	51	54*
Berkeley	8811 Harold Drive	-	74**	66	52	64	58*
Clayton	801 S. Brentwood Blvd.	-	77**	68	60**	64	58*
Lemay	9101 S. Broadway	74	77**	73	65	68	64*
Lemay	8900 S. Broadway	126	122	109**	100	129	103
St. Ann	10267 St. Charles Rock Rd.	-	66**	68	58	66	59
St. Louis County	Old Jamestown & Sinks Rd.	60	59**	50	40	41	38*
St. Louis City, Missouri							
St. Louis	18th & Market	N/A*	88	93	92	N/A*	81*
St. Louis	14th & Market	109	N/A*	91	86	79	81
St. Louis	8227 S. Broadway	120	136	112	116	126	106
St. Louis	4408 Donovan	-	-	75	59	61	63
St. Louis	Forest Park	73	82	64	59	59	61
St. Louis	1400 Shawnut Pl.	-	-	79	80	69	74
St. Louis	3500 S. Grand	127	74	72	83	80	71
St. Louis	Grand & Laclede	N/A*	-	77	71	70	63
St. Louis	Shreve & I-70	-	115	111	104	111	105
St. Louis	River Des Peres & Sulfur Ave.	-	-	-	96	93	90
St. Louis	Chain of Rocks Water Dept.	-	-	82	69	69	78*
St. Louis	1122 Clark	-	-	-	-	-	87*

- Site not in operation during year shown.

N/A - Not Available

*Less than three quarters data capture for the year or a given season.

**Amount of data capture unknown.

†Late revisions to 1975 data are presented in the appendix.

Table 9

SUMMARY OF SO_2 ANNUAL MEAN CONCENTRATIONS IN THE ST. LOUIS AQMA FOR THE PERIOD 1970-1975

Site	Address	Annual Mean (Parts Per Million) 1970	1971	1972	1973	1974	1975†
Madison County, Illinois							
Alton	1616 Joesting	-	-	-	-	0.024	0.022
Granite City	2301 Adams	-	-	-	-	N/A	0.020
Wood River	54 N. Walcott	0.017	0.018	0.028	N/A*	0.032	0.032
St. Clair County, Illinois							
East St. Louis	Cahokia State Park	-	-	0.037	N/A*	N/A*	0.014
East St. Louis	650 Missouri	-	-	-	-	-	0.028
Jefferson County, Missouri							
Jefferson County	Dunklin High School	-	-	-	N/A*	N/A*	0.009*
St. Louis County, Missouri							
Afton	5962 S. Lindbergh	-	N/A*	N/A*	0.020	0.032**	N/A*
Bellefontaine Neighbors	Rte. 67 & I-270	-	N/A*	N/A*	0.020	0.022**	0.019*
Clayton	55 Hunter Ave.	-	N/A*	N/A*	0.018	0.019**	0.016*
St. Ann	10267 St. Charles Rock Rd.	-	N/A*	N/A*	0.018	0.020	0.012*
St. Louis County	305 Weidman Rd.	-	N/A*	N/A*	0.014	0.020**	0.013*
St. Louis City, Missouri							
St. Louis	8227 S. Broadway	-	-	N/A*	0.043	0.058*	0.042*
St. Louis	Shreve & I-70	-	-	N/A*	0.021	0.025	0.026
St. Louis	River Des Peres & Sulfur Ave.	-	-	-	0.018	0.032	0.029*
St. Louis	Chain of Rocks Water Dept.	-	-	-	0.021	0.027	0.021
St. Louis	208 S. 12th St.	-	-	N/A*	N/A*	0.024	0.023
St. Louis	1122 Clark	-	-	-	-	-	N/A*

N/A - Not Available

- Site not in operation during year shown.

*Less than three quarters data capture for the year or a given season.

**Amount of data capture unknown.

†Late revisions to 1975 data are presented in the appendix.

VI THE ANALYSIS

A. METHODS

1. General

The objectives of the St. Louis AQMA study required that the regional air quality analysis address (1) the nature of the long-term (annual) and short-term (24- and 3-hour) regional TSP and SO_2 air quality attainment problems that existed in the base year, 1975; (2) the adequacy of existing control strategies to solve the TSP and SO_2 ambient air quality attainment problems; and (3) the ability of existing control strategies to attain and maintain NAAQS.

NAAQS for TSP and SO_2 exist for both 24-hour and annual time periods (Tables 10 and 11), and there is a 3-hour SO_2 NAAQS (Table 10). Analytical techniques capable of providing information for each time scale were used. These techniques were air pollution simulation modeling, statistical analyses, and the evaluation of other pertinent data. Since no practicable, finite number of ambient samplers can completely document regional air quality, it is necessary to use analytical tools such as simulation modeling in conjunction with air quality, meteorological, and emissions data to yield a more complete understanding of regional air quality levels. The following sections address the analytical methods used in the St. Louis AQMA analysis.

2. The Annual Air Quality Assessment

A computerized atmospheric simulation model was used to define annual air quality in the St. Louis AQMA. The model consists of a mathematical description of the transport and dispersion of air contaminants, plus mechanisms for manipulating the necessary input/output data.

The simulation model selected for the St. Louis annual analysis was a modified version of the Climatological Dispersion Model, CDM (References 26 and 27). The basis for this analytical tool and subsequent modifications made by various users is discussed in References 28 through 30.

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Table 10

NATIONAL AND ILLINOIS AMBIENT AIR QUALITY STANDARDS FOR TSP AND SO_2

TSP

Time of Average	Primary Standard	Secondary Standard
Annual Geometric Mean	75 $\mu g/m^3$	60 $\mu g/m^3$
24-Hour*	260 $\mu g/m^3$	150 $\mu g/m^3$

SO_2

Time of Average	Primary Standard	Secondary Standard
Annual Arithmetic Mean	0.03 ppm (80 $\mu g/m^3$)	None
24-Hour*	0.14 ppm (365 $\mu g/m^3$)	None
3-Hour*	None	0.5 ppm (1300 $\mu g/m^3$)

*Not to be exceeded more than once per year.

Table 11

MISSOURI AMBIENT AIR QUALITY STANDARDS
FOR TSP AND SO_2

TSP

Time of Average	Primary Standard	Secondary Standard
Annual Geometric Mean	75 $\mu g/m^3$	60 $\mu g/m^3$
3-Month*	200 $\mu g/m^3$	None
24-Hour*	260 $\mu g/m^3$	150 $\mu g/m^3$

SO_2

Time of Average	Primary Standard	Secondary Standard
Annual Arithmetic Mean	0.03 ppm (80 $\mu g/m^3$)	0.02 ppm (50 $\mu g/m^3$)
24-Hour*	0.14 ppm (365 $\mu g/m^3$)	0.10 ppm (260 $\mu g/m^3$)
3-Hour*	None	0.5 ppm (1300 $\mu g/m^3$)
1-Hour*	0.26 ppm (940 $\mu g/m^3$)	None

*Not to be exceeded more than once per year.

The base year annual average emissions for the St. Louis AQMA and meteorological data were input to CDM to yield a regional mapping of annual average TSP and SO_2 concentrations. Concentrations were calculated at 200 receptor points located throughout the St. Louis AQMA. The receptor grid for CDM consisted of the following four components (see Reference 5):

1) A 50 km x 50 km grid centered on the city of St. Louis with a grid spacing of 6.25 km.

2) A grid with a 10 km spacing in all other areas except Franklin County, Missouri.

3) A grid with a 20 km spacing in Franklin County, Missouri.

4) Receptor locations consistent with monitor locations to produce a variable density grid with a minimum spacing of about 0.7 km and, thus, provide additional information, particularly in the industrialized areas of the AQMA.

The model results were compared to observed air quality levels to determine necessary adjustments to the model output concentrations. This calibration process produced an equation that was applied to the model results when the model was used to predict air quality levels.

The model calibration element (i.e., the comparison of calculated versus observed air quality levels to obtain a calibration factor) is an essential step in the air quality simulation process. This element accounts for differences in calculated and observed air quality levels that may arise because of (1) an imperfect description of the emissions and meteorological situation in the region; (2) an incomplete knowledge of the magnitude of the long range transport of SO_2 and TSP; and (3) the imprecision of the mathematical model in describing the SO_2 and TSP transport process for certain types of emission sources.

The model calibration process involves the identification of systematic errors and the development of a "calibration factor", and it consists of a series of analytical steps

that include: (1) comparing calculated concentrations with observed values; (2) determining the cause(s) of any discrepancies; (3) correcting and improving data bases, if possible; (4) modifying the model (if necessary and practicable); and (5) developing a statistical relationship between the observed and calculated concentrations that can be applied to all calculated values throughout the region. The statistical relationship is developed by fitting the plot of observed versus calculated values with an appropriate curve. The equation describing the curve is used to "correct" the calculated concentrations and thereby improve agreement with measured (observed) data. When a limited number of observed values are available for use in determining the appropriate "corrective" equation, a straight-line relationship is normally assumed since: (1) the ideal observed versus calculated concentration relationship would be a straight line with a slope of unity and (2) the choice of a specific nonlinear relationship becomes more arbitrary as the number of observations decreases.

The form of the "corrective" straight-line relationship is $y = mx + b$ where y is the "adjusted" concentration and x is the model output concentration. Under ideal situations, the slope of this line, m, is equal to one. The intercept, b, can be considered the background concentration being transported into the study region (i.e., the St. Louis AQMA) from without.

In all, there were 30 TSP and 15 SO_2 ambient air monitoring sites in the St. Louis AQMA used in the model calibration of the computed annual concentrations. Optimally, these monitors should be located in areas that reflect all types of land use (e.g., agricultural, residential, commercial, industrial, etc.). Most of the monitors used in this study were located in the urban area of St. Louis, many of them being source-orientated. Rural areas were poorly represented. Thus, the validation expression obtained by using data from these monitors is only properly applied in the urban area. However, since the urban St. Louis area experiences the maximum concentrations, the resulting "calibrated" concentrations are most appropriately represented by the model in the area of greatest concern.

Once the base year annual air quality was calculated and the model calibrated, a second regional annual air quality determination was made with all sources at or below compliance emission rates. Finally, annual regional air quality was projected for 1985 and 1995.

The computer model, CDM, used to determine annual air quality, provides arithmetic mean concentrations. However, the annual TSP NAAQS is a geometric mean concentration. Therefore, it was necessary to convert the model TSP results from arithmetic averages to geometric averages. This required the selection of a characteristic standard geometric deviation (SGD). These conversions made use of the minimum observed SGD of 1.40, which was the SGD recorded at several Missouri monitors. The minimum observed SGD was used because it results in the highest (and therefore most conservative, from a pollution control standpoint) estimates of calculated air quality.

3. The Short-Term Air Quality Assessment

Three different techniques were used in the investigation of the short-term (3- and 24-hour) air quality. These included computer modeling, a nonmodeling analysis of monitor data, and a statistical analysis of monitor data. The most beneficial analysis technique was an evaluation of air quality and meteorological data for selected days to develop an understanding of the nature and probable causes (i.e., major contributors) of regional air quality on these days. The days chosen were the six highest and six lowest concentration days at each monitor for each pollutant. Secondly, a statistical analysis (Reference 31) was used to estimate the maximum and second highest 24-hour TSP concentrations that occurred in 1975, and to determine the annual average concentration, which must be achieved to attain the 24-hour primary standard. Finally, a computerized air quality model designed to determine regional air quality for periods of 1 to 24 hours was used.

The computer model used in the short-term analyses was ERT's Multi-Point Source Diffusion Model, MPSDM (Reference 5). This model is based on the well known Gaussian diffusion equation and plume rise formulas given by Briggs. Through application of the appropriate atmospheric diffusion equations, the model determines the magnitude and spatial distribution of 3- (SO_2 only) and 24-hour concentrations. A comparison of MPSDM with USEPA models as recommended by the Workbook for the Comparison of Air Quality Models (Reference 32) is presented in Reference 5.

The 1975 base year analysis using MPSDM consisted of two phases. A general receptor grid of 128 receptors was used in Phase I to identify those areas where standard violations

are likely to occur (i.e., "hot spots"). The distribution of receptors in Phase I is given below.

1) A 50 km x 50 km staggered grid centered on the city of St. Louis with a grid spacing of 8.8 km.

2) A staggered grid with a 14.1 km spacing in all other areas except Franklin County, Missouri.

3) A grid with a 20 km spacing in Franklin County, Missouri.

4) Receptor locations consistent with monitor locations to produce a variable density grid and, thus, provide additional information, particularly in the industrialized areas of the AQMA.

Based on the results generated in Phase I, a new, denser grid was developed for Phase II of the base year analysis to investigate the "hot spots" in greater detail. This grid was facility-specific for those facilities identified in Phase I as being the most significant contributors to potential problems. Minimum grid spacing used was 0.5 km. A similar facility-specific grid was used for compliance and projection year analyses. Further details concerning the grids used are presented in Reference 5.

A complete description of the short-term analyses and the meteorological and air quality data used is included in Reference 2.

B. RESULTS

1. The Annual Air Quality Analysis

a. General

The annual analysis techniques used in the St. Louis AQMA study were consistent with those prescribed in the USEPA Guideline Series. Ground-level TSP and SO_2 calibrated concentrations were computed for 200 simulated receptors located throughout the St. Louis AQMA.

The initial step in the annual air quality analysis was the calibration of CDM. This was accomplished by establishing a linear relationship between the predicted and observed pollutant concentrations. Good correlations were obtained at all SO_2 monitors except two. Concentrations at the monitor at 8227 S. Broadway (near N.L. Titanium) were significantly underpredicted by the model while concentrations at the monitor at 208 S. 12th Street in downtown St. Louis were significantly overpredicted. Discussions with Region VII USEPA led to the conclusion that a considerable amount of fugitive SO_2 emissions from N.L. Titanium had not been included in the emissions inventory. To resolve this situation, an additional point source for fugitive SO_2 from N.L. Titanium (see Reference 4) was added to the inventory. This additional source increased emissions from N.L. Titanium by 50 percent. The other situation, an overpredicted monitor in downtown St. Louis, was due to area sources rather than point sources. Examination of the RAPS area source inventory revealed that SO_2 emissions from stationary residential and commercial sources in downtown St. Louis were too high. Earlier versions of the RAPS inventory did not have these high SO_2 emissions from stationary residential and commercial sources. Discussions with the USEPA at Research Triangle Park, North Carolina did not resolve the question of why these emissions had been increased. Therefore, on the basis of the known information, an earlier version of the RAPS SO_2 area source inventory that had lower and more realistic emissions in the downtown area was used. This change along with the change discussed above resulted in a significantly better correlation between predicted and observed annual SO_2 values. The correlation coefficient increased from 0.82 (r^2 = 0.67) to 0.90 (r^2 = 0.82). Table 12 and Figure 3 give details of the final SO_2 calibration.

TSP is typically more difficult to model than SO_2 (Reference 33). This is particularly true of those areas that have a significant amount of fugitive dust (wind erosion, unpaved roads, land tilling, re-entrainment). In the St. Louis AQMA, area sources represent 93 percent of TSP emissions and fugitive dust represents over 90 percent of TSP area source emissions (thus, 84 percent of total TSP emissions). The initial calibration run of CDM did not show a correlation between predicted and observed TSP values. A detailed examination of area sources near the monitors indicated that re-entrainment emissions from freeways in the St. Louis area were overestimated in the area source inventory, a problem also experienced by the IEPA in other AQMA studies. It was decided that the line source portion of the freeway re-entrainment emissions should be removed

Table 12

SO_2 MODEL CALIBRATION

Receptor	1975 Monitored Concentrations ($\mu g/m^3$)	Concentrations Predicted by CDM X ($\mu g/m^3$)	Best Line Fit* Y=0.91X + 3.64
Madison County, Illinois			
1616 Joesting	58	74	71
2301 Adams	52	52	51
54 Walcott	84	98	93
St. Clair County, Missouri			
Cahokia State Park	37	37	37
650 Missouri	73	76	73
Jefferson County, Missouri			
Dunklin High School	23	22	24
St. Louis County, Missouri			
Rte. 67 and I-270	49	41	41
55 Hunter	42	53	52
10267 St. Charles Rock Rd.	32	37	37
305 Weidman Rd.	34	39	39
St. Louis City, Missouri			
8227 S. Broadway	109	101	96
Shreve and I-70	67	58	56
River Des Peres and Sulfur Ave.	75	68	66
Chain of Rocks Water Dept.	55	39	39
208 S. 12th Street	61	70	67

*See discussion of "corrective" equation on p. 46.

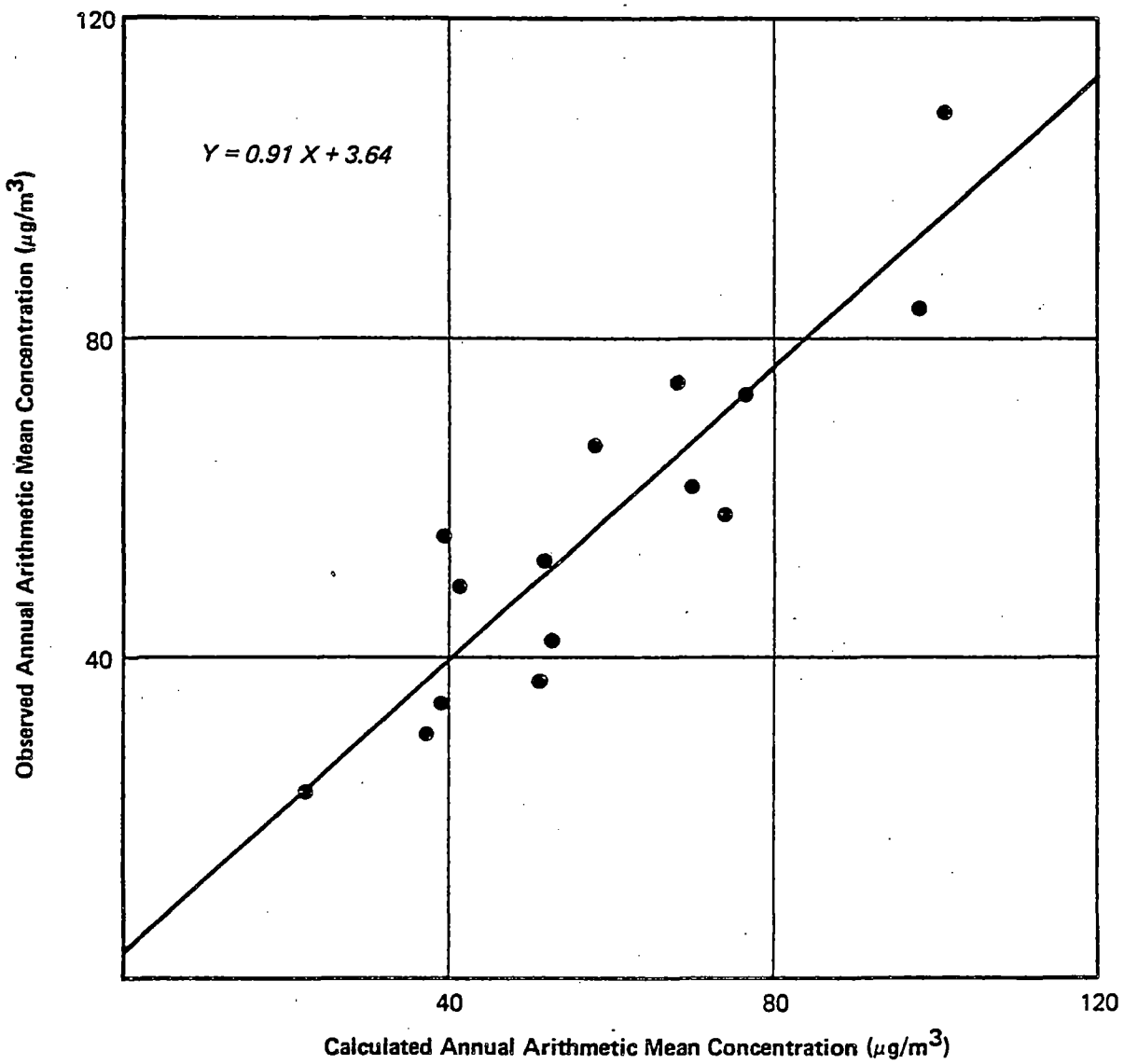

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Figure 3 SO_2 CDM Calibration

from the area source inventory. This was done for St. Charles and St. Louis Counties in Missouri for which detailed transportation data were available and where the problem was most severe. This resulted in a significant improvement in the calibration correlation ($r^2 = 0.23$). However, this correlation was still considered unacceptable.

An aspect that had not been considered up to this point was the physical removal of TSP, particularly fugitive dust, due to dry deposition and gravitational settling. The importance of taking the physical removal of TSP into account when modeling fugitive dust is discussed in Reference 33. Following a technique outlined in Reference 33, an average half-life of about 40 minutes was determined for the St. Louis AQMA. That is, it takes 40 minutes before the ambient concentration of average size fugitive dust particles (assumed to be 15 μm) is reduced by one-half due to physical removal mechanisms. Using this approach, a further improvement in the calibration correlation was obtained. The correlation coefficient of the final TSP calibration run was 0.61 ($r^2 = 0.37$), which is typical for TSP modeling in similar situations (Reference 33). Table 13 and Figure 4 give details of the final TSP calibration.

Although point and area source contributions of SO_2 and TSP from counties adjoining the St. Louis AQMA were not directly considered in this study, the calibration equations indicate average background estimates for SO_2 and TSP of about 4 and 41 $\mu g/m^3$, respectively. These values represent estimates of the impact of the counties surrounding the St. Louis AQMA on the air quality of the study area. The high TSP background found in this study is in agreement with values given in Volume 12 of Guidelines for Air Quality Maintenance Planning and Analysis (Reference 34).

b. Detailed Annual SO_2 Analysis

(1) 1975 Annual Analysis (SO_2)

As shown in Figures 5 and 6, the CDM predicted three separate areas showing violations of the SO_2 NAAQS. The largest spatial extent of SO_2 violations was located near Wood River, Illinois. About 96 percent of the predicted Wood River maximum SO_2 concentration of 93 $\mu g/m^3$ was the result of point sources within the AQMA. The remaining

Table 13

TSP MODEL CALIBRATION

Receptor	1975 Monitored Concentrations ($\mu g/m^3$)	Concentrations Predicted by CDM X ($\mu g/m^3$)	Best Line Fit Y = 0.90X + 43.04 (Y = 0.85X + 40.67)
Madison County, Illinois			
103 E. 3rd Street	86* (78)**	33*	73* (69)**
1616 Joesting	77 (67)	43	82 (77)
132 N. Kansas	58 (54)	34	74 (70)
2000 Edison Ave.	100 (96)	61	98 (93)
23rd and Madison	116 (105)	56	93 (88)
2301 E. 23rd	74 (68)	55	93 (88)
2001 E. 20th	168 (158)	89	123 (116)
15th and Madison	149 (138)	61	98 (93)
Roosevelt and Rock Rd.	112 (97)	43	82 (77)
54 N. Walcott	91 (81)	32	72 (68)
St. Clair County, Illinois			
101 S. Illinois	68 (63)	49	87 (82)
St. Louis County, Missouri			
805 Chambers Rd.	73 (66)	30	73 (68)
Rte. 67 and I-270	60 (54)	31	70 (66)
8811 Harold Drive	62 (58)	32	72 (68)
801 S. Brentwood	62 (58)	54	92 (87)
9101 S. Broadway	71 (64)	66	102 (96)
8900 S. Broadway	116 (103)	106	138 (131)
10267 St. Charles Rock Rd.	65 (59)	30	70 (66)
Old Jamestown	43 (38)	19	60 (57)

APPENDIX C

TABULATED DATA

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CENTRAL DISTRICT OFFICE
DATA SUMMARY

SURVEY SOUTHEAST CHICAGO
WATER DATA _____ SEDIMENT DATA X

SAMPLE NUMBER 83CC05		S01	S02	S03	D01	D02	S04	S05	S06	R01
Total Aluminum	ug/g	5,200	14,000	14,000	10,000	11,000	7,100	10,000	7,500	20.
• Arsenic	"	1.8	1.9	6.3	5.8	6.3	<0.2	2.4	4.2	<0.2
• Barium	"	78.	230.	190.	210.	190.	120.	55.	100.	3.
• Boron	"	20.	63.	72.	51.	49.	39.	21.	31.	<8.
• Cadmium	"	0.26	0.84	0.59	1.20	1.1	0.50	<0.20	0.55	<0.20
• Chromium	"	17.	160.	110.	61.	58.	120.	22.	47.	0.8
• Chromium hex	"									
• Cobalt	"	5.	10.	10.	8.	9.	5.	12.	8.0	<0.6
• Copper	"	27.	71.	52.	56.	67.	25.	47.	110.	<0.6
• Iron	"	14,000	45,000	50,000	39,000	39,000	22,000	19,000	49,000	11.
• Lead	"	71.	250.	350.	810.	940.	74.	98.	100.	<7.
• Manganese	"	220.	3500.	1800.	1100.	1100.	2200.	390.	1500.	<0.5
• Mercury	"	<0.1	0.1	0.1	0.3	0.2	<0.1	<0.1	0.2	<0.1
• Nickel	"	14.	28.	32.	24.	31.	15.	29.	22.	<2.
• Selenium	"									
• Silver	"	<0.30	0.32	<0.30	<0.30	0.64	<0.30	<0.30	<0.30	<0.30
• Tin	"	4.	20.	13.	10.	19.	9.9	4.2	11.	<4.
• Vanadium	"	14.	83.	41.	32.	32.	35.	22.	18.	<0.5
• Zinc	"	110.	310.	430.	390.	510.	160.	94.	490.	<4.
• Antimony	"									
• Thallium	"									
• Beryllium	"	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
• Calcium	mg/g	11.	74.	60.	70.	66.	78.	50.	78.	<0.1
• Magnesium	"	3.	19.	19.	20.	20.	23.	24.	31.	0.01
Total Sodium	"	0.4	1.3	1.2	1.1	1.1	1.2	0.41	1.3	<0.1
• Molybdenum	ug/g	1.9	6.2	7.0	5.0	5.6	5.0	4.7	5.0	<1.0
• Titanium	"									
" Lithium	"	8.	26.	26.	23.	26.	16.	29	20	

CENTRAL DISTRICT OFFICE
DATA SUMMARY

SURVEY SOUTHEAST CHICAGO
WATER DATA ____ SEDIMENT DATA X

SAMPLE NUMBER 83CC05	S01	S02	S03	D01	D02	S04	S05	S06	R01
Total Strontium µg/g	48.	110.	85.	90.	91.	130.	42.	120.	<1.
" Yttrium "	4.	11.	9.2	7.	7.9	7.6	8.0	7.0	<0.5
" Potassium mg/g	0.7	2.4	2.4	1.7	2.5	0.7	2.8	1.2	<0.1
Percent Solids									
	67.8	72.2	71.0	59.6	61.6	72.2	69.4	54.5	

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ORGANICS ANALYSIS

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SURVEY SOUTHEAST CHICAGO
WATER DATA ____ SEDIMENT DATA X

SAMPLE NUMBER 83CC05	S01	S02	S03	D01	D02	S04	S05	S06	R01
VOLATILES µg/kg									
Chloroethane	<16	<12	480	480	560	<9.4	<27	<14	<1.5
1,1-dichloroethane	<5.6	<4.0	38	180	1200	<3.1	<9.1	<4.6	<.5
Methylene Chloride	23	<4.0	12	<6.9	<6.0	5.6	18	<4.6	11
Acetone	<840	<610	17,000	2300	82,000	7500	33,000	<680	<75
1,1,1-trichloroethane	<5.6	<4.0	<7.5	<6.9	900	<3.1	<9.1	<4.6	<.4
Toluene	<5.6	<4.0	<.5	<4.6	9.0	<3.1	<9.1	<6.9	<5.6

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DATA SUMMARY

SURVEY SOUTH EAST CHICAGO
WATER DATA ____ SEDIMENT DATA X

ORGANICS ANALYSIS mg/kg

SAMPLE NUMBER 83CC05	S01	S02	S03	D01	D02	S04	S05	S06	R01
ACID-BASE NEUTRAL									
Phenanthrene	1.1	3.5	15.0	6.7	7.5	6.4	1.5	1.0	
Fluoranthene	1.6	10.0	31.0	21.0	16.0	8.9	3.9	4.1	
Pyrene	1.4	10.0	27.0	19.0	15.0	7.1	3.6	3.6	
Chrysene	1.5	34.0	78.0	21.0	38.0	26.0	3.4	13.0	
Benzo(a) anthracene	2.6	12.0	24.0	49.0	39.0	5.0	8.1	2.2	
Bis(2-ethylhexyl) phthalate	10.0	12.0	4.8	9.2	5.9	1.7	57.0	3.1	
di-n-octyl phthalate	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.1	
benzo(b)fluoranthene / benzo(k)fluoranthene	6.0	15.0	85.0	66.0	29.0	21.0	7.1	6.9	
Acenaphthylene	<.5	<.5	<.5	0.9	<.5	<.5	<.5	<.5	
Fluorene	<.5	<.5	2.3	1.1	<.5	<.5	<.5	<.5	
Anthracene	<.5	1.4	4.5	2.2	5.9	2.2	0.5	0.5	
Benzo(a) pyrene	<1.5	18.0	84.0	65.0	18.0	21.0	7.9	7.3	
Indeno(1,2,3-cd) pyrene	<2.5	32.0	46.0	43.0	15.0	8.2	1.6	1.7	
Dibenzo(ah)anthracene	<2.5	5.8	7.2	7.1	<2.5	1.6	<2.5	1.1	
Benzo(ghi) perylene	<2.5	15.0	21.0	21.0	6.3	3.8	19.0	<2.5	
Naphthalene	<.5	<.5	2.3	<1.5	1.0	<1.5	<.5	<.5	
Di-n-butyl phthalate	<.5	<0.5	<.5	<0.5	.5	.5	2.5	2.3	
Butyl benzyl phthalate	<2.0	<2.0	<2.0	<2.0	2.0	<2.0	<2.0	<2.0	
Acenaphthene	<.5	<.5	0.7	<.5	<.5	<.5	<.5	<.5	
4-methylphenol	<1.5	<1.5	<.5	<.5	<.5	<.5	<.5	5.1	

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DATA SUMMARY

SURVEY SOUTHEAST CHICAGO
WATER DATA ____ SEDIMENT DATA X

SAMPLE NUMBER 83CC05		S07	S08	S09	S10	S11	S12	S13	S14	S15	S20	S21	S22
Total Aluminum	ug/g	5600	10,000	8800	14,000	18,000	5,900	17,000	4,500	5400	4,500	2,700	15,000
• Arsenic	"	17.	31.	11.	8.3	2.9	26.	20.	1.3	2.9	5.0	4.4	9.8
• Barium	"	90.	120.	60.	59.	120.	400.	160.	32.	32.	36.	420.	140.
• Boron	"	<80.	24.	20.	20.	18.	17.	18.	9.	17.	9.	<80.	41.
• Cadmium	"	<2.	1.2	0.67	<0.20	<0.20	14.	1.8	<0.20	<0.20	<0.20	20.	<0.20
• Chromium	"	170.	52.	82.	36.	30.	210.	72.	14.	19.	10.	120.	26.
• Chromium(6)	"												
• Cobalt	"	<6.	10.	10.	13.	13.	8.5	12.	3.3	6.6	5.	10.	11.
• Copper	"	21.	47.	61.	30.	30.	250.	79.	8.	16.	9.	120.	49.
• Iron	"	35,000	29,000	34,000	24,000	21,000	34,000	31,000	9,000	13,000	10,000	200,000	24,000
• Lead	"	77.	140.	120.	28.	30.	750.	420.	27.	36.	26.	4400.	180.
• Manganese	"	5700.	1300.	2900.	680.	230.	330.	320.	370.	560.	140.	6400.	540.
• Mercury	"	<0.1	0.2	<0.1	0.2	<0.1	28.	2.0	<0.1	<0.1	<0.1	<0.1	2.3
• Nickel	"	24.	30.	33.	30.	31.	73.	36.	6.	15.	7.	36.	27.
• Selenium	"												
• Silver	"	<3.0	0.49	0.41	<0.30	<0.30	7.4	0.65	<0.30	<0.30	<0.30	6.6	<0.30
• Tin	"	<40.	4.9	9.4	<4.0	<4.0	68.	8.3	<4.0	<4.0	<4.0	<40.	4.0
• Vanadium	"	71.	25.	33.	26.	30.	25.	29.	15.	18.	14.	53.	28.
• Zinc	"	210.	410.	360.	95.	110.	1800.	660.	53.	54.	56.	12000.	160.
• Antimony	"												
• Thallium	"												
• Beryllium	"	<1.0	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<0.10
• Calcium	mg/g	160.	77.	49.	47.	12.	33.	9.2	26.	57.	23.	27.	65.
• Magnesium	"	30.	15.	15	15.	6.5	11.	6.1	13.	15.	12	3.2	31.
Total Sodium	"	<1.0	0.27	0.26	0.22	0.23	0.39	0.15	0.21	0.19	0.18	1.1	0.43
• Molybdenum	ug/g	<10.	4.8	5.6	3.9	2.3	8.7	2.6	1.3	6.4	1.9	16.	5.1
• Titanium	"												
" Lithium	"	42.	28.	26.	38.	29.	11.	29.	9.	17.	9.	15.	32.

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DATA SUMMARY

SURVEY SOUTHEAST CHICAGO
WATER DATA ____ SEDIMENT DATA X

SAMPLE NUMBER 83CC05	S07	S08	S09	S10	S11	S12	S13	S14	S15	S16	S21	S22
tal Strontium µg/g	150.	87	49.	51.	41.	66.	31.	29.	38.	20.	25	96.
Yttrium µg/g	7.1	7.5	6.5	8.9	9.5	5.2	10.	4.6	6.9	4.6	< 5.0	9.7
Potassium mg/g	< 1.0	1.8	1.9	3.6	2.6	0.5	2.6	0.3	1.1	< 0.1	< 1.0	2.9
PERCENT SOLIDS	78.9	62.8	80.0	78.6	38.8	32.4	47.5	67.9	84.4	67.2	82.0	74.8

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mg/kg

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DATA SUMMARY

SURVEY SOUTHEAST CHICAGO
WATER DATA ____ SEDIMENT DATA X

SAMPLE NUMBER B3CC05	S07	S08	S09	S10	S11	S12	S13	S14	S15	S20	S21	S22				
PCB's																
1242	<0.7	<0.5	<0.5	<0.1	<0.5	<2	<0.1	<1.0	<0.5	<0.2	8.0	<1.0				
1254	<0.2	<0.2	<0.5	<0.1	<0.2	3.3	<0.1	<0.5	<0.2	<0.2	3.0	<.5				
PESTICIDES																
PP'-DDT	<0.1	0.1	0.3	<0.1	<0.1	<0.5	0.1	<0.5	<0.2	0.6	<0.5	<0.2				
Dieldrin	<0.1	<0.1	0.1	<0.1	<0.1	<0.5	0.1	<0.5	<0.2	<0.2	<0.5	<0.2				
PP'-DDD	<0.1	<0.1	0.3	<0.1	<0.1	<0.5	0.1	<0.5	<0.2	0.4	<0.5	<0.2				

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DATA SUMMARY

SURVEY SOUTH EAST CHICAGO
WATER DATA ____ SEDIMENT DATA x

ORGANICS ANALYSIS mg/kg

SAMPLE NUMBER 83CC05	S07	S08	S09	S10	S11	S12	S13	S14	S15	S20	S21	S22
ACID-BASE NEUTRAL												
Phenanthrene	.5	.9	<.5	<.5	<.5	25	<.5	.7	3.3	<.5	67	75
Pyrene	.5	1.0	.5	<.5	<.5	38	.6	<.5	1.7	<.5	15	14
Fluoranthene	<.5	.9	<.5	<.5	<.5	24	<.5	.5	2.6	<.5	27	27
Bis (2-ethylhexyl) phthalate	<1.0	<1.0	<1.0	1.7	<1.0	7.6	<1.0	<1.0	2.3	2.5	2.7	<1.0
Naphthalene	<.5	<.5	<.5	<.5	<.5	9.7	<.5	<.5	<.5	<.5	52	93
2-methylnaphthalene	<.5	<.5	<.5	<.5	<.5	7.6	<.5	<.5	<.5	<.5	16	24
Acenaphthene	<.5	<.5	<.5	<.5	<.5	8.3	<.5	<.5	<.5	<.5	<.5	<.5
Fluorene	<.5	<.5	<.5	<.5	<.5	8.9	<.5	<.5	<.5	<.5	18	23
Anthracene	<.5	<.5	<.5	<.5	<.5	18	<.5	<.5	.9	<.5	19	22
Chrysene	<1.0	<1.0	<1.0	<1.0	<1.0	11	<1.0	<1.0	<1.0	<1.0	4.9	4.6
benzo(a)anthracene	<1.0	<1.0	<1.0	<1.0	<1.0	7.1	<1.0	<1.0	<1.0	<1.0	3.6	2.6
benzo(b)fluoranthene	<1.0	<1.0	<1.0	<1.0	<1.0	6.5	<1.0	<1.0	<1.0	<1.0	3.6	3.5
benzo(k)fluoranthene	<1.0	<1.0	<1.0	<1.0	<1.0	6.5	<1.0	<1.0	<1.0	<1.0	3.6	3.5
benzo(a)pyrene	<1.5	<1.5	<1.5	<1.5	<1.5	7.4	<1.5	<1.5	<1.5	<1.5	3.1	2.9
diethyl phthalate	<.5	<.5	<.5	<.5	<.5	<.5	.7	.8	<.5	<.5	<.5	<.5
dibenzofuran	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	21	1.6
4,6-dinitro-2-methylphenol	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	28	41
di-n-butyl phthalate	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	2.4	<.5

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To: → Francis Brunet → For SE Chicago insp. report (was left off by mistake).

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CENTRAL DISTRICT OFFICE
DATA SUMMARY

SURVEY SOUTHEAST CHICAGO
WATER DATA ____ SEDIMENT DATA x

SAMPLE NUMBER 83CC05		S07	S08	S09	S10	S11	S12	S13	S14	S15	S20	S21	S22				
Total Aluminum	ug/g	5,600	10,000	8,800	14,000	18,000	5,900	17,000	4,500	5,400	4,500	2,700	15,000				
• Arsenic	"	17.	31.	11.	8.3	2.9	26.	20.	1.3	2.9	5.0	4.4	9.8				
• Barium	"	90.	120.	60.	59.	120.	400.	160.	32.	32.	36.	420.	140.				
• Boron	"	<80.	24.	20.	20.	18.	17.	18.	9.	17.	9.	<80.	41.				
• Cadmium	"	<2.	1.2	0.67	<0.20	<0.20	14.	1.8	<0.20	<0.20	<0.20	20.	<0.20				
• Chromium	"	170.	52.	82.	36.	30.	210.	72.	14.	19.	10.	120.	26.				
• Chromium hex	"																
• Cobalt	"	<6.	10.	10.	13.	13.	8.5	12.	3.3	6.6	5.	10.	11.				
• Copper	"	21.	47.	61.	30.	30.	250.	79.	8.	16.	9.	120.	49.				
• Iron	"	35,000	29,000	34,000	24,000	21,000	34,000	31,000	9,000	13,000	10,000	200,000	124,000				
• Lead	"	77.	140.	120.	28.	30.	750.	420.	27.	36.	26.	4400.	1800.				
• Manganese	"	5700.	1300.	2900.	680.	230.	330.	320.	370.	560.	140.	6400.	540.				
• Mercury	"	<0.1	0.2	<0.1	0.2	<0.1	2.8.	2.0	<0.1	<0.1	<0.1	<0.1	2.3				
• Nickel	"	24.	30.	33.	30.	31.	73.	36.	6.	15.	7.	36.	27.				
• Selenium	"																
• Silver	"	<3.0	0.49	0.41	<0.30	<0.30	7.4	0.65	<0.30	<0.30	<0.30	6.6	<0.30				
• Tin	"	<40.	4.9	9.4	<4.0	<4.0	68.	8.3	<4.0	<4.0	<4.0	<40.	4.0				
• Vanadium	"	71.	25.	33.	26.	30.	25.	29.	15.	18.	14.	53.	28.				
• Zinc	"	210.	410.	360.	95.	110.	1800.	660.	53.	54.	56.	12000.	160.				
• Antimony	"																
• Thallium	"																
• Beryllium	"	<1.0	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<0.10				
• Calcium	mg/g	160.	77.	49.	47.	12.	33.	9.2	26.	57.	23.	27.	65.				
• Magnesium	"	30.	15.	15	15.	6.5	11.	6.1	13.	15.	12	3.2	31.				
Total Sodium	"	<1.0	0.27	0.26	0.22	0.23	0.39	0.15	0.21	0.19	0.18	1.1	0.43				
• Molybdenum	ug/g	<10.	4.8	5.6	3.9	2.3	8.7	2.6	1.3	6.4	1.9	16.	5.1				
• Titanium	"																
" Lithium	"	42.	28.	26.	38.	29.	11.	29.	9.	17.	9.	15.	32.				

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CENTRAL DISTRICT OFFICE
DATA SUMMARY

SURVEY Southeast Chicago
WATER DATA X SEDIMENT DATA

SAMPLE NUMBER 83CC05		6-6-83 S17	S16	D03	D04	R02				SAMPLE NUMBER 83CB05	6-29-83 S01	R02			WATER QUALITY STANDARDS ug/l		
Total Aluminum	ug/l	<80.0	<80.0	<80.0	125.0	<80.0					434.	<80.0					
" Arsenic	"	<2.0	4.1	3.9	3.7	<2.0					6.3	<2.0			1,000		
" Barium	"	66.5	143.	123.0	130.	<5.0					74.9	<5.00			5000		
" Boron	"	1020.0	1430.0	1490.0	1290.0	<80.0					633.	<80.0			1,000		
" Cadmium	"	<2.00	<2.00	<2.00	<2.00	<2.00					<2.00	<2.00			50		
" Chromium	"	<8.00	8.4	<8.00	10.5	<8.00					39.1	<8.00					
" Chromium hex	"																
" Cobalt	"	<6.00	<6.00	<6.00	<6.00	<6.00					14.6	<6.00					
" Copper	"	<6.00	<6.00	<6.00	<6.00	<6.00					25.4	<6.00			20		
" Iron	"	1230.	1230.	1130.	2110.	<80.0					5880.	<80.0			1,000		
" Lead	"	<70.0	<70.0	<70.0	<70.0	<70.0					<70.0	<70.0			100		
" Managnese	"	156.	615.	535.	557.	<5.					1400.	<5.00			1,000		
" Mecury	"	<0.1	<0.1	0.1	0.1	<0.1					0.2	<0.1			015		
" Nickel	"	<15.0	<15.0	28.4	31.7	<15.0					50.9	<15.0			1,000		
" Selenium	"																
" Silver	"	<3.00	<3.00	<3.00	<3.00	<3.00					<3.00	<3.00			5		
" Tin	"	<40.0	<40.0	<40.0	<40.0	<40.0					<40.0	<40.0					
" Vandium	"	<5.0	<5.00	<5.00	<5.00	<5.00					<5.00	<5.00					
" Zinc	"	<40.0	<40.0	<40.0	<40.0	<40.0					140.	<40.0			1,000		
" Antimony	"																
" Thallium	"																
" Beryllium	"	<1.00	<1.00	<1.00	<1.00	<1.00					<1.00	<1.00					
" Calcium	mg/l	126.	156.	134.	137.	<0.5					105.	<0.500					
" Magnesium	"	78.3	77.2	66.6	67.5	<0.1					24.1	<0.100					
Total Sodium	mg/l	225.	368.	284.	286.	<1.					32.5	<1.00					
" Molybdenum	ug/l	<10.0	16.7	14.2	20.6	<10.0					101.	<10.0					
" Titanium	"	<30.0	<30.0	<30.0	<30.0	<30.0					<30.0	<30.0					
" Lithium	"	100.	116.	100.	102.	<10.					62.2	<10.0					

Attachment 2

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DATA SUMMARY

SURVEY SOUTHEAST CHICAGO
WATER DATA X SEDIMENT DATA

SAMPLE NUMBER	6-6-83								SAMPLE NUMBER	6-29-83							
83CC05	S17	S16	D03	D04	R02				83CB05	S01	R02						
Total Strontium µg/L	723.	753.	649.	664.	< 10.					379	< 10.0						
Yttrium	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00					< 5.00	< 5.00						
Potassium mg/L	32.0	65.9	57.9	58.9	< 1.0												
Water Temp. °C	23.7	23.7	24	22.2						27							
pH Field	7.4	7.6	7.8	7.6						6.9							

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SURVEY SOUTHEAST CHICAGO
WATER DATA X SEDIMENT DATA

ORGANICS ANALYSIS PPB

SAMPLE NUMBER			6-6-83						SAMPLE NUMBER		6-29-83					
83CC05	S17	S16	D03	D04	R02				83CB05	S01	S02					
VOLATILES																
Methylene Chloride	<.5	<.5	<.5	<.5	1.4					6.3	6.1					
1,2-dichloroethane	<.4	1.0	1.1	1.2	<.4					16	<.5					
Chlorobenzene	<.5	3.5	3.4	3.9	<.5					<.4	<.4					
1,1-dichloroethene	.5	<.5	<.5	<.5	<.5					<.5	<.5					
Chloroform	<.5	<.5	<.5	<.5	<.5					30	<.5					
Carbon tetrachloride	<.4	<.4	<.4	<.4	<.4					.7	<.5					
ACID-BASE NEUTRAL																
Aniline	<.5	<.5	<.5	<.4	<.5					30	<.5					
Phenol	<.5	<.5	<.5	<.5	<.5					8.7	<.5					
4-methylphenol	<.5	<.5	<.5	<.5	<.5					73	<.5					
Isophorone	<.5	<.5	<.5	<.5	<.5					40	<.5					
diethyl phthalate	<.5	<.5	<.5	<.5	<.5					22 *	13.0 *					
di-n-butyl phthalate	<2.5	<1.5	<1.5	<1.5	<1.5					2.9 *	<.5					
bis (2-ethylhexyl) phthalate	<1.0	<1.0	<1.0	<1.0	<1.0					60	<1.0					

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* - Also present in the lab blank at or near this concentration.

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Attachment 3

Central Regional Laboratory
U.S. Environmental Protection Agency
536 South Clark
Chicago, Illinois 60605 312/353-8370

Organics Analysis Data Sheet

Study S. E. Chicago Study Number: CDO- 3088

Lab Sample I.D. No: 83-CC05517 Activity Code: B10500

	PP#	CAS#	Compound	Concentration (ug/l)
1.		62-53-3	aniline	.5U
2.	(18B)	111-44-4	bis(2-chloroethyl) ether	.5U
3.	(65A)	108-95-2	phenol	.5U
4.	(24A)	95-57-8	2-chlorophenol	.5U
5.	(26B)	541-73-1	1,3-dichlorobenzene	.5U
6.	(27B)	106-46-7	1,4-dichlorobenzene	.5U
7.	(25B)	95-50-1	1,2-dichlorobenzene	.5U
8.		100-51-6	benzyl alcohol	.5U
9.	(42B)	118-60-1	bis(2-chloroisopropyl) ether	.5U
10.		95-48-7	2-methylphenol	.5U
11.	(12B)	67-72-1	hexachloroethane	1.0U
12.	(63B)	621-64-7	N-nitrosodipropylamine	.5U
13.	(56B)	98-95-3	nitrobenzene	.5U
14.		108-39-4	4-methylphenol	.5U
15.	(54B)	78-59-1	isophorone	.5U
16.	(57A)	88-75-5	2-nitrophenol	3.0U
17.	(34A)	105-67-9	2,4-dimethylphenol	.5U
18.	(43B)	111-91-1	bis(2-chloroethoxy) methane	.5U
19.	(31A)	120-83-2	2,4-dichlorophenol	.5U
20.	(8B)	120-82-1	1,2,4-trichlorobenzene	.5U
21.	(55B)	91-20-3	naphthalene	.5U
22.		106-47-8	4-chloroaniline	.5U
23.	(52B)	87-68-3	hexachlorobutadiene	1.0U
24.		65-85-0	benzoic acid	3.0U
25.		91-57-6	2-methylnaphthalene	.5U
26.	(22A)	59-50-7	p-chloro-m-cresol	.5U
27.	(53B)	77-47-4	hexachlorocyclopentadiene	1.5U
28.		95-95-4	2,4,5-trichlorophenol	1.0U
29.	(21A)	88-06-2	2,4,6-trichlorophenol	1.0U
30.	(20B)	91-58-7	2-chloronaphthalene	.5U
31.	(77B)	208-96-8	acenaphthylene	.5U
32.	(71B)	131-11-3	dimethyl phthalate	.5U

CODES:
- U - Compound was analyzed for, but not detected. The value is the minimum detection limit for the sample analyzed.
- SC - Suspected contaminant
- J - Estimated Value
- N.A. - This compound was not analyzed for using an external standard automatic quantification program. However, manual peak identification indicates that the compound is not present above the minimum detection limit of the method.

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Sample # 83-CC05517

	PP#	CAS#	Compound	Concentration (ug/l)
33.	(36B)	606-20-2	2,6-dinitrotoluene	1.5U
34.	(1B)	83-32-9	acenaphthene	.5U
35.		99-09-2	3-nitroaniline	1.5U
36.		132-64-9	dibenzofuran	.5U
37.	(59A)	51-28-5	2,4-dinitrophenol	10.0U
38.	(35B)	121-14-2	2,4-dinitrotoluene	1.5U
39.	(80B)	86-73-7	fluorene	.5U
40.	(58A)	100-02-7	4-nitrophenol	3.0U
41.	(40B)	7005-72-3	4-chlorophenyl phenyl ether	.5U
42.	(70B)	84-66-2	diethyl phthalate	.5U
43.	(60A)	534-52-1	4,6-dinitro-2-methylphenol	6.0U
44.	(37B)	122-66-7	1,2-diphenylhydrazine (azobenzene)	.5U
45.	(62B)	86-30-6	N-nitrosodiphenylamine (diphenylamine)	.5U
46.		100-01-6	4-nitroaniline	4.0U
47.	(41B)	101-55-3	4-bromophenyl phenyl ether	1.5U
48.	(9B)	118-74-1	hexachlorobenzene	1.0U
49.	(64A)	87-86-5	pentachlorophenol	4.0U
50.	(81B)	85-01-8	phenanthrene	.5U
51.	(78B)	120-12-7	anthracene	.5U
52.	(68B)	84-74-2	di-n-butyl phthalate	2.5U
53.	(39B)	206-44-0	fluoranthene	.5U
54.	(84B)	129-00-0	pyrene	.5U
55.	(67B)	85-68-7	butyl benzyl phthalate	2.0U
56.	(76B)	218-01-9	chrysene	1.0U
57.	(72B),	56-55-3	benzo(a)anthracene	1.0U
58.	(66B)	117-81-7	bis(2-ethylhexyl) phthalate	1.0U
59.	(69B)	117-84-0	di-n-octyl phthalate	1.0U
60.	(74B)	205-99-2	benzo(b)fluoranthene	1.0U
61.	(75B)	207-08-9	benzo(k)fluoranthene	1.0U
62.	(73B)	50-32-8	benzo(a)pyrene	1.5U
63.	(83B)	193-39-5	indeno(1,2,3-cd)pyrene	2.5U
64.	(82B)	53-70-3	dibenzo(a,h)anthracene	2.5U
65.	(79B)	191-24-2	benzo(ghi)perylene	2.5U
66.	(5B)	92-87-5	benzidine	
67.	(28B)	91-94-1	3,3'-dichlorobenzidine	
68.		88-74-4	2-nitroaniline	

CODES:
- U - Compound was analyzed for, but not detected. The value is the minimum detection limit for the sample analyzed.
- SC - Suspected contaminant
- J - Estimated Value
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U.S. ENVIRONMENTAL PROTECTION AGENCY
536 SOUTH CLARK ST.
CHICAGO, ILLINOIS 60605 312/353-8370

B/N/A ORGANIC ANALYSIS SHEET

Study Name: S. E. Chicago Study Number: CDO-3088

Lab Sample I.D. No.: 83-CC05S17 Activity Number: B10500

	TENTATIVELY IDENTIFIED COMPOUNDS	ESTIMATED CONCENTRATION (ug/l)	
1.	Ethane, 1,1'Oxybis(2-methoxy) (Scan 100)	15	
2.	Unknown #165	22	
3.	Cyclohexanol, 4-Chloro-trans (scan 172)	560	SC
4.	Unknown (scan 197)	8.5	SC
5.	Phosphoric Acid, Triethyl ester (scan 278)	45	
6.	Cyclohexane, 1,2-Dichloro-trans (scan 209)	28	SC
7.	Unknown (scan 458)	150	
8.	Unknown (SCan 555)	77	
9.			
10.			
11.			
12.			
13.			
14.			
15.			

CODES:
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- J - Estimated Value
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U.S. Environmental Protection Agency
536 South Clark
Chicago, Illinois 60605 312/353-8370

VOLATILES ANALYSIS SHEET

Study Name: S.E. Chicago Dumps Study Number: CDO-3088

Lab Sample I.D. No: 83CC05$17 Activity Number: B10500

	PP#	CAS#	VOLATILES	Concentration PPB
1.	(45V)	74-87-3	chloromethane	4.4U
2.	(46V)	74-83-9	bromomethane	.7U
3.	(88V)	75-01-4	vinyl chloride	1.7U
4.	(16V)	75-00-3	chloroethane	1.5U
5.	(44V)	75-09-2	methylene chloride	.5U
6.	(2V)	107-02-8	acrolein	26U
7.		67-64-1	acetone	75U
8.	(3V)	107-13-1	acrylonitrile	21U
9.		75-15-0	carbondisulfide	.4U
10.	(29V)	75-35-4	1,1-dichloroethene	.5
11.	(13V)	75-34-3	1,1-dichloroethane	.5U
12.	(30V)	156-60-5	trans-1,2-dichloroethene	.4U
13.	(23V)	67-66-3	chloroform	.5U
14.		78-93-3	2-butanone	45U
15.	(10V)	107-06-2	1,2-dichloroethane	.4U
16.	(11V)	71-55-6	1,1,1-trichloroethane	.5U
17.	(6V)	56-23-5	carbon tetrachloride	.4U
18.		108-05-4	vinyl acetate	1.9U
19.	(48V)	75-27-4	bromodichloromethane	.5U
20.	(32V)	78-87-5	1,2-dichloropropane	.4U
21.	(33V)	10061-02-6	trans-1,3-dichloropropene	.5U
22.	(87V)	79-01-6	trichloroethene	.4U
23.	(4V)	71-43-2	benzene	.5U
24.	(51V)	124-48-1	chlorodibromomethane	.4U
25.	(14V)	79-00-5	1,1,2-trichloroethane	.5U
26.		10061-01-05	cis-1,3-dichloropropene	.5U

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CODES:
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- SC - Suspected contaminant
- J - Estimated Value
- N.A. - This compound was not analyzed for using an external standard automatic quantification program. However, manual peak identification indicates that the compound is not present above the minimum detection limit of the method.

	PP#	CAS#	VOLATILES	Concentration PPB
27.	(19V)	110-75-8	2-chloroethylvinyl ether	.5U
28.	(47V)	75-25-2	bromoform	.4U
29.		108-10-1	4-methyl-2-pentanone	
30.		519-78-6	2-hexanone	57U
31.	(85V)	127-18-4	tetrachloroethene	.5U
32.	(15V)	79-34-5	1,1,2,2-tetrachloroethane	.4U
33.	(86V)	108-88-3	toluene	.5U
34.	(7V)	108-90-7	chlorobenzene	.5U
35.	(38V)	100-41-4	ethylbenzene	.5U
36.		100-42-5	styrene	.4U
37.			m-xylene	.5U
38.		95-47-6	o-xylene, p-xylene	.5U

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VOLATILES ANALYSIS SHEET

Study Name: S.E. Chicago Dumps Study Number: CDO-3088

Lab Sample I.D. No.: 83CC05S17 Activity Number: B10500

	TENTATIVELY IDENTIFIED COMPOUNDS	ESTIMATED CONCENTRATION (PPB)
1.	Tetrahydrofuran	3.3
2.	Ethane, 1, 2 - diethoxy -	2.4
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U.S. Environmental Protection Agency
536 South Clark
Chicago, Illinois 60605 312/353-8370

Organics Analysis Data Sheet

Study S. E. Chicago Study Number: CDO-3088

Lab Sample I.D. No: 83-CC05S16 Activity Code: B10500

	PP#	CAS#	Compound	Concentration (ug/l)
1.		62-53-3	aniline	.5U
2.	(18B)	111-44-4	bis(2-chloroethyl) ether	.5U
3.	(65A)	108-95-2	phenol	.5U
4.	(24A)	95-57-8	2-chlorophenol	.5U
5.	(26B)	541-73-1	1,3-dichlorobenzene	.5U
6.	(27B)	106-46-7	1,4-dichlorobenzene	.5U
7.	(25B)	95-50-1	1,2-dichlorobenzene	.5U
8.		100-51-6	benzyl alcohol	.5U
9.	(42B)	118-60-1	bis(2-chloroisopropyl) ether	.5U
10.		95-48-7	2-methylphenol	.5U
11.	(12B)	67-72-1	hexachloroethane	1.0U
12.	(63B)	621-64-7	N-nitrosodipropylamine	.5U
13.	(56B)	98-95-3	nitrobenzene	.5U
14.		108-39-4	4-methylphenol	.5U
15.	(54B)	78-59-1	isophorone	.5U
16.	(57A)	88-75-5	2-nitrophenol	3.0U
17.	(34A)	105-67-9	2,4-dimethylphenol	.5U
18.	(43B)	111-91-1	bis(2-chloroethoxy) methane	.5U
19.	(31A)	120-83-2	2,4-dichlorophenol	.5U
20.	(8B)	120-82-1	1,2,4-trichlorobenzene	.5U
21.	(55B)	91-20-3	naphthalene	.5U
22.		106-47-8	4-chloroaniline	.5U
23.	(52B)	87-68-3	hexachlorobutadiene	1.0U
24.		65-85-0	benzoic acid	3.0U
25.		91-57-6	2-methylnaphthalene	.5U
26.	(22A)	59-50-7	p-chloro-m-cresol	.5U
27.	(53B)	77-47-4	hexachlorocyclopentadiene	1.5U
28.		95-95-4	2,4,5-trichlorophenol	1.0U
29.	(21A)	88-06-2	2,4,6-trichlorophenol	1.0U
30.	(20B)	91-58-7	2-chloronaphthalene	.5U
31.	(77B)	208-96-8	acenaphthylene	.5U
32.	(71B)	131-11-3	dimethyl phthalate	.5U

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	PP#	CAS#	Compound	Concentration (ug/l)
33.	(36B)	606-20-2	2,6-dinitrotoluene	1.5U
34.	(1B)	83-32-9	acenaphthene	.5U
35.		99-09-2	3-nitroaniline	1.5U
36.		132-64-9	dibenzofuran	.5U
37.	(59A)	51-28-5	2,4-dinitrophenol	10.0U
38.	(35B)	121-14-2	2,4-dinitrotoluene	1.5U
39.	(80B)	86-73-7	fluorene	.5U
40.	(58A)	100-02-7	4-nitrophenol	3.0U
41.	(40B)	7005-72-3	4-chlorophenyl phenyl ether	.5U
42.	(70B)	84-66-2	diethyl phthalate	.5U
43.	(60A)	534-52-1	4,6-dinitro-2-methylphenol	6.0U
44.	(37B)	122-66-7	1,2-diphenylhydrazine (azobenzene)	.5U
45.	(62B)	86-30-6	N-nitrosodiphenylamine (diphenylamine)	.5U
46.		100-01-6	4-nitroaniline	4.0U
47.	(41B)	101-55-3	4-bromophenyl phenyl ether	1.5U
48.	(9B)	118-74-1	hexachlorobenzene	1.0U
49.	(64A)	87-86-5	pentachlorophenol	4.0U
50.	(81B)	85-01-8	phenanthrene	.5U
51.	(78B)	120-12-7	anthracene	.5U
52.	(68B)	84-74-2	di-n-butyl phthalate	1.5U
53.	(39B)	206-44-0	fluoranthene	.5U
54.	(84B)	129-00-0	pyrene	.5U
55.	(67B)	85-68-7	butyl benzyl phthalate	2.0U
56.	(76B)	218-01-9	chrysene	1.0U
57.	(72B),	56-55-3	benzo(a)anthracene	1.0U
58.	(66B)	117-81-7	bis(2-ethylhexyl) phthalate	1.0U
59.	(69B)	117-84-0	di-n-octyl phthalate	1.0U
60.	(74B)	205-99-2	benzo(b)fluoranthene	1.0U
61.	(75B)	207-08-9	benzo(k)fluoranthene	1.0U
62.	(73B)	50-32-8	benzo(a)pyrene	1.5U
63.	(83B)	193-39-5	indeno(1,2,3-cd)pyrene	2.5U
64.	(82B)	53-70-3	dibenzo(a,h)anthracene	2.5U
65.	(79B)	191-24-2	benzo(ghi)perylene	2.5U
66.	(5B)	92-87-5	benzidine	
67.	(28B)	91-94-1	3,3'-dichlorobenzidine	
68.		88-74-4	2-nitroaniline	

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B/N/A ORGANIC ANALYSIS SHEET

Study Name: S. E. Chicago Study Number: CDO- 3088

Lab Sample I.D. No.: 83-CC05S16 Activity Number: B10500

	TENTATIVELY IDENTIFIED COMPOUNDS	ESTIMATED CONCENTRATION (ug/l)	
1.	Cyclohexane, 3-Chloro- (Scan 61)	0.9	SC
2.	Cyclohexanol, 4-Chloro, Trans (scan 173)	57.0	SC
3.	Cyclohexanone, 2-Chloro-(scan 197)	1.1	SC
4.	Cyclohexane, 1,2-Dichloro-trans-(scan 209)	2.0	SC
5.	Phosphoric Acid, Triethyl ester (scan 279)	1.9	
6.	Unknown (scan 557)	25.0	
7.	Benzene Sulfonamide, N, N, 4-trimethyl (scan 757)	2.5	
8.	Hydrocarbons (4)	8.9	
9.	Unknown (scan 83)	3.6	SC
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VOLATILES ANALYSIS SHEET

Study Name: S.E. Chicago Dumps Study Number: CDO-3088

Lab Sample I.D. No: 83CC05S16 Activity Number: B10500

	PP#	CAS#	VOLATILES	Concentration PPB
1.	(45V)	74-87-3	chloromethane	4.4U
2.	(46V)	74-83-9	bromomethane	.7U
3.	(88V)	75-01-4	vinyl chloride	1.7U
4.	(16V)	75-00-3	chloroethane	1.5U
5.	(44V)	75-09-2	methylene chloride	.5U
6.	(2V)	107-02-8	acrolein	26U
7.		67-64-1	acetone	75U
8.	(3V)	107-13-1	acrylonitrile	21U
9.		75-15-0	carbondisulfide	.4U
10.	(29V)	75-35-4	1,1-dichloroethene	.5U
11.	(13V)	75-34-3	1,1-dichloroethane	.5U
12.	(30V)	156-60-5	trans-1,2-dichloroethene	.4U
13.	(23V)	67-66-3	chloroform	.5U
14.		78-93-3	2-butanone	45U
15.	(10V)	107-06-2	1,2-dichloroethane	1.0
16.	(11V)	71-55-6	1,1,1-trichloroethane	.5U
17.	(6V)	56-23-5	carbon tetrachloride	.4U
18.		108-05-4	vinyl acetate	1.9U
19.	(48V)	75-27-4	bromodichloromethane	.5U
20.	(32V)	78-87-5	1,2-dichloropropane	.4U
21.	(33V)	10061-02-6	trans-1,3-dichloropropene	.5U
22.	(87V)	79-01-6	trichloroethene	.4U
23.	(4V)	71-43-2	benzene	.5U
24.	(51V)	124-48-1	chlorodibromomethane	.4U
25.	(14V)	79-00-5	1,1,2-trichloroethane	.5U
26.		10061-01-05	cis-1,3-dichloropropene	.5U

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	PP#	CAS#	VOLATILES	Concentration PPB
27.	(19V)	110-75-8	2-chloroethylvinyl ether	.5U
28.	(47V)	75-25-2	bromoform	.4U
29.		108-10-1	4-methyl-2-pentanone	57U
30.		519-78-6	2-hexanone	
31.	(85V)	127-18-4	tetrachloroethene	.5U
32.	(15V)	79-34-5	1,1,2,2-tetrachloroethane	.4U
33.	(86V)	108-88-3	toluene	.5U
34.	(7V)	108-90-7	chlorobenzene	3.5
35.	(38V)	100-41-4	ethylbenzene	.5U
36.		100-42-5	styrene	.4U
37.			m-xylene	.5U
38.		95-47-6	o-xylene, p-xylene	.5U

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VOLATILES ANALYSIS SHEET

Study Name: S.E. Chicago Dumps Study Number: CDO-3088

Lab Sample I.D. No.: 83CC05$16 Activity Number: B10500

	TENTATIVELY IDENTIFIED COMPOUNDS	ESTIMATED CONCENTRATION (PPB)
1.	Tetrahydrofuran	14
2.	Ethane, 1,2-diethoxy -	1.5
3.	1,3,6 - Trioxocane	.9
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Chicago, Illinois 60605 312/353-8370

Organics Analysis Data Sheet

Study S. E. Chicago Study Number: CDO- 3088

Lab Sample I.D. No: 83-CC05D03 Activity Code: B10500

	PP#	CAS#	Compound	Concentration (UG/L)
1.		62-53-3	aniline	.5U
2.	(18B)	111-44-4	bis(2-chloroethyl) ether	.5U
3.	(65A)	108-95-2	phenol	.5U
4.	(24A)	95-57-8	2-chlorophenol	.5U
5.	(26B)	541-73-1	1,3-dichlorobenzene	.5U
6.	(27B)	106-46-7	1,4-dichlorobenzene	.5U
7.	(25B)	95-50-1	1,2-dichlorobenzene	.5U
8.		100-51-6	benzyl alcohol	.5U
9.	(42B)	118-60-1	bis(2-chloroisopropyl) ether	.5U
10.		95-48-7	2-methylphenol	.5U
11.	(12B)	67-72-1	hexachloroethane	1.0U
12.	(63B)	621-64-7	N-nitrosodipropylamine	.5U
13.	(56B)	98-95-3	nitrobenzene	.5U
14.		108-39-4	4-methylphenol	.5U
15.	(54B)	78-59-1	isophorone	.5U
16.	(57A)	88-75-5	2-nitrophenol	3.0U
17.	(34A)	105-67-9	2,4-dimethylphenol	.5U
18.	(43B)	111-91-1	bis(2-chloroethoxy) methane	.5U
19.	(31A)	120-83-2	2,4-dichlorophenol	.5U
20.	(8B)	120-82-1	1,2,4-trichlorobenzene	.5U
21.	(55B)	91-20-3	naphthalene	.5U
22.		106-47-8	4-chloroaniline	.5U
23.	(52B)	87-68-3	hexachlorobutadiene	1.0U
24.		65-85-0	benzoic acid	3.0U
25.		91-57-6	2-methylnaphthalene	.5U
26.	(22A)	59-50-7	p-chloro-m-cresol	.5U
27.	(53B)	77-47-4	hexachlorocyclopentadiene	1.5U
28.		95-95-4	2,4,5-trichlorophenol	1.0U
29.	(21A)	88-06-2	2,4,6-trichlorophenol	1.0U
30.	(20B)	91-58-7	2-chloronaphthalene	.5U
31.	(77B)	208-96-8	acenaphthylene	.5U
32.	(71B)	131-11-3	dimethyl phthalate	.5U

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SAMPLE # 83-CC05D03

	PP#	CAS#	Compound	Concentration (UG/L)
33.	(36B)	606-20-2	2,6-dinitrotoluene	1.5U
34.	(1B)	83-32-9	acenaphthene	.5U
35.		99-09-2	3-nitroaniline	1.5U
36.		132-64-9	dibenzofuran	.5U
37.	(59A)	51-28-5	2,4-dinitrophenol	10.0U
38.	(35B)	121-14-2	2,4-dinitrotoluene	1.5U
39.	(80B)	86-73-7	fluorene	.5U
40.	(58A)	100-02-7	4-nitrophenol	3.0U
41.	(40B)	7005-72-3	4-chlorophenyl phenyl ether	.5U
42.	(70B)	84-66-2	diethyl phthalate	.5U
43.	(60A)	534-52-1	4,6-dinitro-2-methylphenol	6.0U
44.	(37B)	122-66-7	1,2-diphenylhydrazine (azobenzene)	.5U
45.	(62B)	86-30-6	N-nitrosodiphenylamine (diphenylamine)	.5U
46.		100-01-6	4-nitroaniline	4.0U
47.	(41B)	101-55-3	4-bromophenyl phenyl ether	1.5U
48.	(9B)	118-74-1	hexachlorobenzene	1.0U
49.	(64A)	87-86-5	pentachlorophenol	4.0U
50.	(81B)	85-01-8	phenanthrene	.5U
51.	(78B)	120-12-7	anthracene	.5U
52.	(68B)	84-74-2	di-n-butyl phthalate	1.5U
53.	(39B)	206-44-0	fluoranthene	.5U
54.	(84B)	129-00-0	pyrene	.5U
55.	(67B)	85-68-7	butyl benzyl phthalate	2.0U
56.	(76B)	218-01-9	chrysene	1.0U
57.	(72B)	56-55-3	benzo(a)anthracene	1.0U
58.	(66B)	117-81-7	bis(2-ethylhexyl) phthalate	1.0U
59.	(69B)	117-84-0	di-n-octyl phthalate	1.0U
60.	(74B)	205-99-2	benzo(b)fluoranthene	1.0U
61.	(75B)	207-08-9	benzo(k)fluoranthene	1.0U
62.	(73B)	50-32-8	benzo(a)pyrene	1.5U
63.	(83B)	193-39-5	indeno(1,2,3-cd)pyrene	2.5U
64.	(82B)	53-70-3	dibenzo(a,h)anthracene	2.5U
65.	(79B)	191-24-2	benzo(ghi)perylene	2.5U
66.	(5B)	92-87-5	benzidine	
67.	(28B)	91-94-1	3,3'-dichlorobenzidine	
68.		88-74-4	2-nitroaniline	

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536 SOUTH CLARK ST.
CHICAGO, ILLINOIS 60605 312/353-8370

B/N/A ORGANIC ANALYSIS SHEET

Study Name: S. E. Chicago Study Number: CDO-3088

Lab Sample I.D. No.: 83-CC05D03 Activity Number: B10500

	TENTATIVELY IDENTIFIED COMPOUNDS	ESTIMATED CONCENTRATION (ug/l)	
1.	Cyclohexanol, 4-Chloro-, trans (scan 170)	15.0	SC
2.	Cyclohexane, 1,3-Dichloro, Cis (scan 208)	0.8	Sc
3.	Phosphoric Acid, Triethyl Ester (SCan 279)	8.8	
4.	Unknown (Scan 289)	1.7	
5.	Unknown (Scan 423)	2.0	
6.	Unknown (SCan 440)	6.3	
7.	Benzene, Cyclohexyl	10.0	SC
8.	Unknown (Scan 557)	6.0	
9.	Unknown (scan 568)	6.0	
10.	Benzene Sulfonamide, N, N,-4-trimethyl- (757)	1.8	
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536 South Clark
Chicago, Illinois 60605 312/353-8370

VOLATILES ANALYSIS SHEET

Study Name: S.E. Chicago Dumps Study Number: CDO-3088

Lab Sample I.D. No: 83CC05D03 Activity Number: BIO500

	PP#	CAS#	VOLATILES	Concentration PPB
1.	(45V)	74-87-3	chloromethane	4.4U
2.	(46V)	74-83-9	bromomethane	.7U
3.	(88V)	75-01-4	vinyl chloride	1.7U
4.	(16V)	75-00-3	chloroethane	1.5U
5.	(44V)	75-09-2	methylene chloride	.5U
6.	(2V)	107-02-8	acrolein	26U
7.		67-64-1	acetone	75U
8.	(3V)	107-13-1	acrylonitrile	21U
9.		75-15-0	carbondisulfide	.4U
10.	(29V)	75-35-4	1,1-dichloroethene	.5U
11.	(13V)	75-34-3	1,1-dichloroethane	.5U
12.	(30V)	156-60-5	trans-1,2-dichloroethene	.4U
13.	(23V)	67-66-3	chloroform	.5U
14.		78-93-3	2-butanone	45U
15.	(10V)	107-06-2	1,2-dichloroethane	1.1
16.	(11V)	71-55-6	1,1,1-trichloroethane	.5U
17.	(6V)	56-23-5	carbon tetrachloride	.4U
18.		108-05-4	vinyl acetate	1.9U
19.	(48V)	75-27-4	bromodichloromethane	.5U
20.	(32V)	78-87-5	1,2-dichloropropane	.4U
21.	(33V)	10061-02-6	trans-1,3-dichloropropene	.5U
22.	(87V)	79-01-6	trichloroethene	.4U
23.	(4V)	71-43-2	benzene	.5U
24.	(51V)	124-48-1	chlorodibromomethane	.4U
25.	(14V)	79-00-5	1,1,2-trichloroethane	.5U
26.		10061-01-05	cis-1,3-dichloropropene	.5U

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	PP#	CAS#	VOLATILES	Concentration PPB
27.	(19V)	110-75-8	2-chloroethylvinyl ether	.5U
28.	(47V)	75-25-2	bromoform	.4U
29.		108-10-1	4-methyl-2-pentanone	
30.		519-78-6	2-hexanone	57U
31.	(85V)	127-18-4	tetrachloroethene	.5U
32.	(15V)	79-34-5	1,1,2,2-tetrachloroethane	.4U
33.	(86V)	108-88-3	toluene	.5U
34.	(7V)	108-90-7	chlorobenzene	3.4
35.	(38V)	100-41-4	ethylbenzene	.5U
36.		100-42-5	styrene	.4U
37.			m-xylene	.5U
38.		95-47-6	o-xylene, p-xylene	.5U

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VOLATILES ANALYSIS SHEET

Study Name: S.E. Chicago Dumps Study Number: CDO-3088

Lab Sample I.D. No.: 83CC05D03 Activity Number: B10500

	TENTATIVELY IDENTIFIED COMPOUNDS	ESTIMATED CONCENTRATION (PPB)
1.	Tetrahydrofuran	13
2.	Ethane, 1,2-diethoxy -	1.4
3.	1,3,6-Trioxocane	.7
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Organics Analysis Data Sheet

Study S. E. Chicago Study Number: CDO- 3088

Lab Sample I.D. No: 83-CC05D04 Activity Code: B10500

	PP#	CAS#	Compound	Concentration (ug/l)
1.		62-53-3	aniline	.5U
2.	(18B)	111-44-4	bis(2-chloroethyl) ether	.5U
3.	(65A)	108-95-2	phenol	.5U
4.	(24A)	95-57-8	2-chlorophenol	.5U
5.	(26B)	541-73-1	1,3-dichlorobenzene	.5U
6.	(27B)	106-46-7	1,4-dichlorobenzene	.5U
7.	(25B)	95-50-1	1,2-dichlorobenzene	.5U
8.		100-51-6	benzyl alcohol	.5U
9.	(42B)	118-60-1	bis(2-chloroisopropyl) ether	.5U
10.		95-48-7	2-methylphenol	.5U
11.	(12B)	67-72-1	hexachloroethane	1.0U
12.	(63B)	621-64-7	N-nitrosodipropylamine	.5U
13.	(56B)	98-95-3	nitrobenzene	.5U
14.		108-39-4	4-methylphenol	.5U
15.	(54B)	78-59-1	isophorone	.5U
16.	(57A)	88-75-5	2-nitrophenol	3.0U
17.	(34A)	105-67-9	2,4-dimethylphenol	.5U
18.	(43B)	111-91-1	bis(2-chloroethoxy) methane	.5U
19.	(31A)	120-83-2	2,4-dichlorophenol	.5U
20.	(8B)	120-82-1	1,2,4-trichlorobenzene	.5U
21.	(55B)	91-20-3	naphthalene	.5U
22.		106-47-8	4-chloroaniline	.5U
23.	(52B)	87-68-3	hexachlorobutadiene	1.0U
24.		65-85-0	benzoic acid	3.0U
25.		91-57-6	2-methylnaphthalene	.5U
26.	(22A)	59-50-7	p-chloro-m-cresol	.5U
27.	(53B)	77-47-4	hexachlorocyclopentadiene	1.5U
28.		95-95-4	2,4,5-trichlorophenol	1.0U
29.	(21A)	88-06-2	2,4,6-trichlorophenol	1.0U
30.	(20B)	91-58-7	2-chloronaphthalene	.5U
31.	(77B)	208-96-8	acenaphthylene	.5U
32.	(71B)	131-11-3	dimethyl phthalate	.5U

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	PP#	CAS#	Compound	Concentration (ug/l)
33.	(36B)	606-20-2	2,6-dinitrotoluene	1.5U
34.	(1B)	83-32-9	acenaphthene	.5U
35.		99-09-2	3-nitroaniline	1.5U
36.		132-64-9	dibenzofuran	.5U
37.	(59A)	51-28-5	2,4-dinitrophenol	10.0U
38.	(35B)	121-14-2	2,4-dinitrotoluene	1.5U
39.	(80B)	86-73-7	fluorene	.5U
40.	(58A)	100-02-7	4-nitrophenol	3.0U
41.	(40B)	7005-72-3	4-chlorophenyl phenyl ether	.5U
42.	(70B)	84-66-2	diethyl phthalate	.5U
43.	(60A)	534-52-1	4,6-dinitro-2-methylphenol	6.0U
44.	(37B)	122-66-7	1,2-diphenylhydrazine (azobenzene)	.5U
45.	(62B)	86-30-6	N-nitrosodiphenylamine (diphenylamine)	.5U
46.		100-01-6	4-nitroaniline	4.0U
47.	(41B)	101-55-3	4-bromophenyl phenyl ether	1.5U
48.	(9B)	118-74-1	hexachlorobenzene	1.0U
49.	(64A)	87-86-5	pentachlorophenol	4.0U
50.	(81B)	85-01-8	phenanthrene	.5U
51.	(78B)	120-12-7	anthracene	.5U
52.	(68B)	84-74-2	di-n-butyl phthalate	1.5U
53.	(39B)	206-44-0	fluoranthene	.5U
54.	(84B)	129-00-0	pyrene	.5U
55.	(67B)	85-68-7	butyl benzyl phthalate	2.0U
56.	(76B)	218-01-9	chrysene	1.0U
57.	(72B),	56-55-3	benzo(a)anthracene	1.0U
58.	(66B)	117-81-7	bis(2-ethylhexyl) phthalate	1.0U
59.	(69B)	117-84-0	di-n-octyl phthalate	1.0U
60.	(74B)	205-99-2	benzo(b)fluoranthene	1.0U
61.	(75B)	207-08-9	benzo(k)fluoranthene	1.0U
62.	(73B)	50-32-8	benzo(a)pyrene	1.5U
63.	(83B)	193-39-5	indeno(1,2,3-cd)pyrene	2.5U
64.	(82B)	53-70-3	dibenzo(a,h)anthracene	2.5U
65.	(79B)	191-24-2	benzo(ghi)perylene	2.5U
66.	(5B)	92-87-5	benzidine	
67.	(28B)	91-94-1	3,3'-dichlorobenzidine	
68.		88-74-4	2-nitroaniline	

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B/N/A ORGANIC ANALYSIS SHEET

Study Name: S. E. Chicago Study Number: CDO-3088

Lab Sample I.D. No.: 83-CC05D04 Activity Number: B10500

	TENTATIVELY IDENTIFIED COMPOUNDS	ESTIMATED CONCENTRATION (ug/l)	
1.	Cyclohexanol, 2- Chloro-trans- (scan 171)	18.0	SC
2.	Cyclohexane, 1,2-Dichloro-Trans (scan 209)	1.0	SC
3.	Phosphoric Acid, Triethyl ester (scan 280)	13.6	
4.	Ethane, 1,2-Bis (2-Chloroethoxy) (scan 423)	25.0	
5.	Unknown (scan 558)	35.0	
6.	Benzene Sulfonamide, N,N-4-trimethyl- (scan 758)	4.9	
7.	Hydrocarbons	33.0	
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VOLATILES ANALYSIS SHEET

Study Name: S.E. Chicago Dumps Study Number: CDO-3088

Lab Sample I.D. No: 83CCD5004 Activity Number: B10500

	PP#	CAS#	VOLATILES	Concentration PPB
1.	(45V)	74-87-3	chloromethane	4.4U
2.	(46V)	74-83-9	bromomethane	.7U
3.	(88V)	75-01-4	vinyl chloride	1.7U
4.	(16V)	75-00-3	chloroethane	1.5U
5.	(44V)	75-09-2	methylene chloride	.5U
6.	(2V)	107-02-8	acrolein	26U
7.		67-64-1	acetone	75U
8.	(3V)	107-13-1	acrylonitrile	21U
9.		75-15-0	carbondisulfide	.4U
10.	(29V)	75-35-4	1,1-dichloroethene	.5U
11.	(13V)	75-34-3	1,1-dichloroethane	.5U
12.	(30V)	156-60-5	trans-1,2-dichloroethene	.4U
13.	(23V)	67-66-3	chloroform	.5U
14.		78-93-3	2-butanone	45U
15.	(10V)	107-06-2	1,2-dichloroethane	1.2
16.	(11V)	71-55-6	1,1,1-trichloroethane	.5U
17.	(6V)	56-23-5	carbon tetrachloride	.4U
18.		108-05-4	vinyl acetate	1.9U
19.	(48V)	75-27-4	bromodichloromethane	.5U
20.	(32V)	78-87-5	1,2-dichloropropane	.4U
21.	(33V)	10061-02-6	trans-1,3-dichloropropene	.5U
22.	(87V)	79-01-6	trichloroethene	.4U
23.	(4V)	71-43-2	benzene	.5U
24.	(51V)	124-48-1	chlorodibromomethane	.4U
25.	(14V)	79-00-5	1,1,2-trichloroethane	.5U
26.		10061-01-05	cis-1,3-dichloropropene	.5U

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	PP#	CAS#	VOLATILES	Concentration PPB
27.	(19V)	110-75-8	2-chloroethylvinyl ether	.5U
28.	(47V)	75-25-2	bromoform	.4U
29.		108-10-1	4-methyl-2-pentanone	
30.		519-78-6	2-hexanone	57U
31.	(85V)	127-18-4	tetrachloroethene	.5U
32.	(15V)	79-34-5	1,1,2,2-tetrachloroethane	.4U
33.	(86V)	108-88-3	toluene	.5U
34.	(7V)	108-90-7	chlorobenzene	3.9
35.	(38V)	100-41-4	ethylbenzene	.5U
36.		100-42-5	styrene	.4U
37.			m-xylene	.5U
38.		95-47-6	o-xylene, p-xylene	.5U

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VOLATILES ANALYSIS SHEET

Study Name: S.E. Chicago Dumps Study Number: CDO-3088

Lab Sample I.D. No.: 83CC05D04 Activity Number: B10900

	TENTATIVELY IDENTIFIED COMPOUNDS	ESTIMATED CONCENTRATION (PPB)
1.	Tetrahydrofuran	14
2.	Ethane, 1,2-diethoxy	1.5
3.	1,3,6 - Trioxocane	.8
4.	Alkylbenzene	1.3
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Organics Analysis Data Sheet

Study S. E. Chicago Study Number: CDO- 3088

Lab Sample I.D. No: 83-CC05R02 Activity Code: B10500

	PP#	CAS#	Compound	Concentration (ug/l)
1.		62-53-3	aniline	.5U
2.	(18B)	111-44-4	bis(2-chloroethyl) ether	.5U
3.	(65A)	108-95-2	phenol	.5U
4.	(24A)	95-57-8	2-chlorophenol	.5U
5.	(26B)	541-73-1	1,3-dichlorobenzene	.5U
6.	(27B)	106-46-7	1,4-dichlorobenzene	.5U
7.	(25B)	95-50-1	1,2-dichlorobenzene	.5U
8.		100-51-6	benzyl alcohol	.5U
9.	(42B)	118-60-1	bis(2-chloroisopropyl) ether	.5U
10.		95-48-7	2-methylphenol	.5U
11.	(12B)	67-72-1	hexachloroethane	1.0U
12.	(63B)	621-64-7	N-nitrosodipropylamine	.5U
13.	(56B)	98-95-3	nitrobenzene	.5U
14.		108-39-4	4-methylphenol	.5U
15.	(54B)	78-59-1	isophorone	.5U
16.	(57A)	88-75-5	2-nitrophenol	3.0U
17.	(34A)	105-67-9	2,4-dimethylphenol	.5U
18.	(43B)	111-91-1	bis(2-chloroethoxy) methane	.5U
19.	(31A)	120-83-2	2,4-dichlorophenol	.5U
20.	(8B)	120-82-1	1,2,4-trichlorobenzene	.5U
21.	(55B)	91-20-3	naphthalene	.5U
22.		106-47-8	4-chloroaniline	.5U
23.	(52B)	87-68-3	hexachlorobutadiene	1.0U
24.		65-85-0	benzoic acid	3.0U
25.		91-57-6	2-methylnaphthalene	.5U
26.	(22A)	59-50-7	p-chloro-m-cresol	.5U
27.	(53B)	77-47-4	hexachlorocyclopentadiene	1.5U
28.		95-95-4	2,4,5-trichlorophenol	1.0U
29.	(21A)	88-06-2	2,4,6-trichlorophenol	1.0U
30.	(20B)	91-58-7	2-chloronaphthalene	.5U
31.	(77B)	208-96-8	acenaphthylene	.5U
32.	(71B)	131-11-3	dimethyl phthalate	.5U

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	PP#	CAS#	Compound	Concentration ( )
33.	(36B)	606-20-2	2,6-dinitrotoluene	1.5U
34.	(1B)	83-32-9	acenaphthene	.5U
35.		99-09-2	3-nitroaniline	1.5U
36.		132-64-9	dibenzofuran	.5U
37.	(59A)	51-28-5	2,4-dinitrophenol	10.0U
38.	(35B)	121-14-2	2,4-dinitrotoluene	1.5U
39.	(80B)	86-73-7	fluorene	.5U
40.	(58A)	100-02-7	4-nitrophenol	3.0U
41.	(40B)	7005-72-3	4-chlorophenyl phenyl ether	.5U
42.	(70B)	84-66-2	diethyl phthalate	.5U
43.	(60A)	534-52-1	4,6-dinitro-2-methylphenol	6.0U
44.	(37B)	122-66-7	1,2-diphenylhydrazine (azobenzene)	.5U
45.	(62B)	86-30-6	N-nitrosodiphenylamine (diphenylamine)	.5U
46.		100-01-6	4-nitroaniline	4.0U
47.	(41B)	101-55-3	4-bromophenyl phenyl ether	1.5U
48.	(9B)	118-74-1	hexachlorobenzene	1.0U
49.	(64A)	87-86-5	pentachlorophenol	4.0U
50.	(81B)	85-01-8	phenanthrene	.5U
51.	(78B)	120-12-7	anthracene	.5U
52.	(68B)	84-74-2	di-n-butyl phthalate	1.5U
53.	(39B)	206-44-0	fluoranthene	.5U
54.	(84B)	129-00-0	pyrene	.5U
55.	(67B)	85-68-7	butyl benzyl phthalate	2.0U
56.	(76B)	218-01-9	chrysene	1.0U
57.	(72B),	56-55-3	benzo(a)anthracene	1.0U
58.	(66B)	117-81-7	bis(2-ethylhexyl) phthalate	1.0U
59.	(69B)	117-84-0	di-n-octyl phthalate	1.0U
60.	(74B)	205-99-2	benzo(b)fluoranthene	1.0U
61.	(75B)	207-08-9	benzo(k)fluoranthene	1.0U
62.	(73B)	50-32-8	benzo(a)pyrene	1.5U
63.	(83B)	193-39-5	indeno(1,2,3-cd)pyrene	2.5U
64.	(82B)	53-70-3	dibenzo(a,h)anthracene	2.5U
65.	(79B)	191-24-2	benzo(ghi)perylene	2.5U
66.	(5B)	92-87-5	benzidine	
67.	(28B)	91-94-1	3,3'-dichlorobenzidine	
68.		88-74-4	2-nitroaniline	

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B/N/A ORGANIC ANALYSIS SHEET

Study Name: S. E. Chicago Study Number: CDO- 3088

Lab Sample I.D. No.: 83-CC05R02 Activity Number: B10500

	TENTATIVELY IDENTIFIED COMPOUNDS	ESTIMATED CONCENTRATION (ug/l)	
1.	Cyclohexanone, 2-Hydroxy (scan 141)	3.1	SC
2.	Cyclohexanol, 2-Chloro- trans- (scan 174)	210.0	SC
3.	Cyclohexane, 1,3-Dichloro-cis- (scan 200)	2.8	SC
4.	Unknown (scan 434)	1.8	SC
5.	Benzene, Cyclohexyl - (scan 460)	12.0	SC
6.			
7.	Note: Source of these may be methylene		
8.	chloride used to rinse sample jars (Burdick +		
9.	Jackson) CRL lab blanks + standards did not		
10.	contain these compounds.		
11.	MAKuehl 8/19/83		
12.			
13.			
14.			
15.			

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Central Regional Laboratory
U.S. Environmental Protection Agency
536 South Clark
Chicago, Illinois 60605 312/353-8370

VOLATILES ANALYSIS SHEET

Study Name: S.E. Chicago Dumps Study Number: CDO - 3088

Lab Sample I.D. No: 83CC05R02 Activity Number: B10500

	PP#	CAS#	VOLATILES	Concentration PPB
1.	(45V)	74-87-3	chloromethane	4.4U
2.	(46V)	74-83-9	bromomethane	.7U
3.	(88V)	75-01-4	vinyl chloride	1.7U
4.	(16V)	75-00-3	chloroethane	1.5U
5.	(44V)	75-09-2	methylene chloride	1.4
6.	(2V)	107-02-8	acrolein	26U
7.		67-64-1	acetone	75U
8.	(3V)	107-13-1	acrylonitrile	21U
9.		75-15-0	carbondisulfide	.4U
10.	(29V)	75-35-4	1,1-dichloroethene	.5U
11.	(13V)	75-34-3	1,1-dichloroethane	.5U
12.	(30V)	156-60-5	trans-1,2-dichloroethene	.4U
13.	(23V)	67-66-3	chloroform	.5U
14.		78-93-3	2-butanone	45U
15.	(10V)	107-06-2	1,2-dichloroethane	.4U
16.	(11V)	71-55-6	1,1,1-trichloroethane	.5U
17.	(6V)	56-23-5	carbon tetrachloride	.4U
18.		108-05-4	vinyl acetate	1.9U
19.	(48V)	75-27-4	bromodichloromethane	.5U
20.	(32V)	78-87-5	1,2-dichloropropane	.4U
21.	(33V)	10061-02-6	trans-1,3-dichloropropene	.5U
22.	(87V)	79-01-6	trichloroethene	.4U
23.	(4V)	71-43-2	benzene	.5U
24.	(51V)	124-48-1	chlorodibromomethane	.4U
25.	(14V)	79-00-5	1,1,2-trichloroethane	.5U
26.		10061-01-05	cis-1,3-dichloropropene	.5U

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Study # CDO-3088
Sample # 83CC05R02

	PP#	CAS#	VOLATILES	Concentration PPB
27.	(19V)	110-75-8	2-chloroethylvinyl ether	.5U
28.	(47V)	75-25-2	bromoform	.4U
29.		108-10-1	4-methyl-2-pentanone	
30.		519-78-6	2-hexanone	57U
31.	(85V)	127-18-4	tetrachloroethene	.5U
32.	(15V)	79-34-5	1,1,2,2-tetrachloroethane	.4U
33.	(86V)	108-88-3	toluene	.5U
34.	(7V)	108-90-7	chlorobenzene	.5U
35.	(38V)	100-41-4	ethylbenzene	.5U
36.		100-42-5	styrene	.4U
37.			m-xylene	.5U
38.		95-47-6	o-xylene, p-xylene	.5U

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Chicago, Illinois 60605 312/353-8370

Organics Analysis Data Sheet

Study Paxton Study Number: EDO-3123

Lab Sample I 05S01 Activity Code: B10500

	PP#	CAS#	Compound	Concentration (ug/L)
1.		62-53-3	aniline	30
2.	(18B)	111-44-4	bis(2-chloroethyl) ether	1.5U
3.	(65A)	108-95-2	phenol	8.7
4.	(24A)	95-57-8	2-chlorophenol	.5U
5.	(26B)	541-73-1	1,3-dichlorobenzene	.5U
6.	(27B)	106-46-7	1,4-dichlorobenzene	.5U
7.	(25B)	95-50-1	1,2-dichlorobenzene	.5U
8.		100-51-6	benzyl alcohol	.5U
9.	(42B)	118-60-1	bis(2-chloroisopropyl) ether	9.2U
10.		95-48-7	2-methylphenol	100U
11.	(12B)	67-72-1	hexachloroethane	1.0U
12.	(63B)	621-64-7	N-nitrosodipropylamine	.5U
13.	(56B)	98-95-3	nitrobenzene	5.0U
14.		108-39-4	4-methylphenol	73
15.	(54B)	78-59-1	isophorone	40
16.	(57A)	88-75-5	2-nitrophenol	140U
17.	(34A)	105-67-9	2,4-dimethylphenol	.5U
18.	(43B)	111-91-1	bis(2-chloroethoxy) methane	.5U
19.	(31A)	120-83-2	2,4-dichlorophenol	.5U
20.	(8B)	120-82-1	1,2,4-trichlorobenzene	.5U
21.	(55B)	91-20-3	naphthalene	.5U
22.		106-47-8	4-chloroaniline	.5U
23.	(52B)	87-68-3	hexachlorobutadiene	1.0U
24.		65-85-0	benzoic acid	130U
25.		91-57-6	2-methylnaphthalene	.5U
26.	(22A)	59-50-7	p-chloro-m-cresol	.5U
27.	(53B)	77-47-4	hexachlorocyclopentadiene	1.5U
28.		95-95-4	2,4,5-trichlorophenol	1.0U
29.	(21A)	88-06-2	2,4,6-trichlorophenol	1.0U
30.	(20B)	91-58-7	2-chloronaphthalene	.5U
31.	(77B)	208-96-8	acenaphthylene	.5U
32.	(71B)	131-11-3	dimethyl phthalate	.5U

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	PP#	CAS#	Compound	Concentration (ug/L)
33.	(36B)	606-20-2	2,6-dinitrotoluene	1.5U
34.	(1B)	83-32-9	acenaphthene	.5U
35.		99-09-2	3-nitroaniline	20U
36.		132-64-9	dibenzofuran	.5U
37.	(59A)	51-28-5	2,4-dinitrophenol	10.0U
38.	(35B)	121-14-2	2,4-dinitrotoluene	1.5U
39.	(80B)	86-73-7	fluorene	.5U
40.	(58A)	100-02-7	4-nitrophenol	3.0U
41.	(40B)	7005-72-3	4-chlorophenyl phenyl ether	.5U
42.	(70B)	84-66-2	diethyl phthalate	22*
43.	(60A)	534-52-1	4,6-dinitro-2-methylphenol	6.0U
44.	(37B)	122-66-7	1,2-diphenylhydrazine (azobenzene)	.5U
45.	(62B)	86-30-6	N-nitrosodiphenylamine (diphenylamine)	.5U
46.		100-01-6	4-nitroaniline	4.0U
47.	(41B)	101-55-3	4-bromophenyl phenyl ether	1.5U
48.	(9B)	118-74-1	hexachlorobenzene	1.0U
49.	(64A)	87-86-5	pentachlorophenol	4.0U
50.	(81B)	85-01-8	phenanthrene	.5U
51.	(78B)	120-12-7	anthracene	.5U
52.	(68B)	84-74-2	di-n-butyl phthalate	2.9*
53.	(39B)	206-44-0	fluoranthene	.5U
54.	(84B)	129-00-0	pyrene	.5U
55.	(67B)	85-68-7	butyl benzyl phthalate	2.0U
56.	(76B)	218-01-9	chrysene	1.0U
57.	(72B)	56-55-3	benzo(a)anthracene	1.0U
58.	(66B)	117-81-7	bis(2-ethylhexyl) phthalate	60
59.	(69B)	117-84-0	di-n-octyl phthalate	1.0U
60.	(74B)	205-99-2	benzo(b)fluoranthene	1.0U
61.	(75B)	207-08-9	benzo(k)fluoranthene	1.0U
62.	(73B)	50-32-8	benzo(a)pyrene	1.5U
63.	(83B)	193-39-5	indeno(1,2,3-cd)pyrene	2.5U
64.	(82B)	53-70-3	dibenzo(a,h)anthracene	2.5U
65.	(79B)	191-24-2	benzo(ghi)perylene	2.5U
66.	(5B)	92-87-5	benzidine	
67.	(28B)	91-94-1	3,3'-dichlorobenzidine	
68.		88-74-4	2-nitroaniline	

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* Also present in the lab blank at this concentration.
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CHICAGO, ILLINOIS 60605 312/353-8370

BASE/NEUTRAL/ACIDIC ANALYSIS SHEET

Study Name Paxton Landfill Study Number EDO 3123

Lab Sample I.D. No: 83-CB05S01 Activity Number: B10500

	TENTATIVELY IDENTIFIED COMPOUNDS	ESTIMATED CONCENTRATION (PPB)
1.	Butanoic Acid-2-Methyl	120
2.	Ethanol,2-Butoxy-	190
3.	Urea, Tetramethyl	140
4.	1,2,4-Cyclopentanetrione, 3-Ethyl-	41
5.	Dimethyl Phenol	32
6.	2-Cyclohexen-1-One,3,5,5-Trimethyl-	100
7.	Ethanol, 1-(2-Butoxyethoxy)-	290
8.	3-Hexyne-2,5-Diol,2,5-Dimethyl-	100
9.	Benzeneacetic Acid	100
10.	2-Propanol,1-(2-(2-Methoxy-1-Methylethoxy)-1-Methyl	160
11.	Unknown (Scan 567)	8700
12.	Unknown (Scan 719)	27
13.	Methanone, Diphenyl-	33
14.	Hydrocarbons	340

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VOLATILES ANALYSIS SHEET

Study Name: Paxton Land Fill Study Number: CDO-3123

Lab Sample I.D. No: 83CB05$01 Activity Number: B10500

	PP#	CAS#	VOLATILES	Concentration (PPB)
1.	(45V)	74-87-3	chloromethane	4.4U
2.	(46V)	74-83-9	bromomethane	.7U
3.	(88V)	75-01-4	vinyl chloride	1.7U
4.	(16V)	75-00-3	chlorpethane	1.5U
5.	(44V)	75-09-2	methylene chloride	6.3
6.	(2V)	107-02-8	acrolein	26U
7.		67-64-1	acetone	75U
8.	(3V)	107-13-1	acrylonitrile	21U
9.		75-15-0	carbondisulfide	.4U
10.	(29V)	75-35-4	1,1-dichloroethene	.5U
11.	(13V)	75-34-3	1,1-dichloroethane	.4U
12.	(30V)	156-60-5	trans-1,2-dichloroethene	.5U
13.	(23V)	67-66-3	chloroform	30
14.		78-93-3	2-butanone	45U
15.	(10V)	107-06-2	1,2-dichloroethane	16
16.	(11V)	71-55-6	1,1,1-trichloroethane	.4U
17.	(6V)	56-23-5	carbon tetrachloride	.7
18.		108-05-4	vinyl acetate	2.0U
19.	(48V)	75-27-4	bromodichloromethane	.5U
20.	(32V)	78-87-5	1,2-dichloropropane	.4U
21.	(33V)	10061-02-6	trans-1,3-dichloropropene	.5U
22.	(87V)	79-01-6	trichloroethene	.5U
23.	(4V)	71-43-2	benzene	.5U
24.	(51V)	124-48-1	chlorodibromomethane	.5U
25.	(14V)	79-00-5	1,1,2-trichloroethane	.4U
26.		10061-01-05	cis-1,3-dichloropropene	.5U

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	PP#	CAS#	VOLATILES	Concentration PPB
27.	(19V)	110-75-8	2-chloroethylvinyl ether	.5U
28.	(47V)	75-25-2	bromoform	.5U
29.		108-10-1	4-methyl-2-pentanone	.57U
30.		519-78-6	2-hexanone	
31.	(85V)	127-18-4	tetrachloroethene	.5U
32.	(15V)	79-34-5	1,1,2,2-tetrachloroethane	.5U
33.	(86V)	108-88-3	toluene	.5U
34.	(7V)	108-90-7	chlorobenzene	.4U
35.	(38V)	100-41-4	ethylbenzene	.5U
36.		100-42-5	styrene	.4U
37.			m-xylene	.5U
38.		95-47-6	o-xylene, p-xylene	.5U

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CHICAGO, ILLINOIS 60605 312/353-8370

VOLATILES ANALYSIS SHEET

Study Name Paxton Land Fill Study Number CDO-3123

Lab Sample I.D. No: 83CB05$01 Activity Number: B10500

	TENTATIVELY IDENTIFIED COMPOUNDS	ESTIMATED CONCENTRATION (PPB)
1.	Methane, dichloroflouro-	19
2.	Methane, trichloroflouro-	161
3.		
4.		
5.		

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Organics Analysis Data Sheet

Study Paxton Study Number: EDO 3123

Lab Sample I.D. No: 83-CB05R02 Activity Code: B10500

	PP#	CAS#	Compound	Concentration (ug/L)
1.		62-53-3	aniline	.5U
2.	(18B)	111-44-4	bis(2-chloroethyl) ether	.5U
3.	(65A)	108-95-2	phenol	.5U
4.	(24A)	95-57-8	2-chlorophenol	.5U
5.	(26B)	541-73-1	1,3-dichlorobenzene	.5U
6.	(27B)	106-46-7	1,4-dichlorobenzene	.5U
7.	(25B)	95-50-1	1,2-dichlorobenzene	.5U
8.		100-51-6	benzyl alcohol	.5U
9.	(42B)	118-60-1	bis(2-chloroisopropyl) ether	.5U
10.		95-48-7	2-methylphenol	.5U
11.	(12B)	67-72-1	hexachloroethane	1.0U
12.	(63B)	621-64-7	N-nitrosodipropylamine	.5U
13.	(56B)	98-95-3	nitrobenzene	.5U
14.		108-39-4	4-methylphenol	.5U
15.	(54B)	78-59-1	isophorone	.5U
16.	(57A)	88-75-5	2-nitrophenol	3.0U
17.	(34A)	105-67-9	2,4-dimethylphenol	.5U
18.	(43B)	111-91-1	bis(2-chloroethoxy) methane	.5U
19.	(31A)	120-83-2	2,4-dichlorophenol	.5U
20.	(8B)	120-82-1	1,2,4-trichlorobenzene	.5U
21.	(55B)	91-20-3	naphthalene	.5U
22.		106-47-8	4-chloroaniline	.5U
23.	(52B)	87-68-3	hexachlorobutadiene	1.0U
24.		65-85-0	benzoic acid	3.0U
25.		91-57-6	2-methylnaphthalene	.5U
26.	(22A)	59-50-7	p-chloro-m-cresol	.5U
27.	(53B)	77-47-4	hexachlorocyclopentadiene	1.5U
28.		95-95-4	2,4,5-trichlorophenol	1.0U
29.	(21A)	88-06-2	2,4,6-trichlorophenol	1.0U
30.	(20B)	91-58-7	2-chloronaphthalene	.5U
31.	(77B)	208-96-8	acenaphthylene	.5U
32.	(71B)	131-11-3	dimethyl phthalate	.5U

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	PP#	CAS#	Compound	Concentration (ug/l)
33.	(36B)	606-20-2	2,6-dinitrotoluene	1.5 U
34.	(1B)	83-32-9	acenaphthene	.5 U
35.		99-09-2	3-nitroaniline	1.5 U
36.		132-64-9	dibenzofuran	.5 U
37.	(59A)	51-28-5	2,4-dinitrophenol	10.0 U
38.	(35B)	121-14-2	2,4-dinitrotoluene	1.5 U
39.	(80B)	86-73-7	fluorene	.5 U
40.	(58A)	100-02-7	4-nitrophenol	3.0 U
41.	(40B)	7005-72-3	4-chlorophenyl phenyl ether	.5 U
42.	(70B)	84-66-2	diethyl phthalate	13.0 *
43.	(60A)	534-52-1	4,6-dinitro-2-methylphenol	6.0 U
44.	(37B)	122-66-7	1,2-diphenylhydrazine (azobenzene)	.5 U
45.	(62B)	86-30-6	N-nitrosodiphenylamine (diphenylamine)	.5 U
46.		100-01-6	4-nitroaniline	4.0 U
47.	(41B)	101-55-3	4-bromophenyl phenyl ether	1.5 U
48.	(9B)	118-74-1	hexachlorobenzene	1.0 U
49.	(64A)	87-86-5	pentachlorophenol	4.0 U
50.	(81B)	85-01-8	phenanthrene	.5 U
51.	(78B)	120-12-7	anthracene	.5 U
52.	(68B)	84-74-2	di-n-butyl phthalate	.5 U
53.	(39B)	206-44-0	fluoranthene	.5 U
54.	(84B)	129-00-0	pyrene	.5 U
55.	(67B)	85-68-7	butyl benzyl phthalate	2.0 U
56.	(76B)	218-01-9	chrysene	1.0 U
57.	(72B)	56-55-3	benzo(a)anthracene	1.0 U
58.	(66B)	117-81-7	bis(2-ethylhexyl) phthalate	1.0 U
59.	(69B)	117-84-0	di-n-octyl phthalate	1.0 U
60.	(74B)	205-99-2	benzo(b)fluoranthene	1.0 U
61.	(75B)	207-08-9	benzo(k)fluoranthene	1.0 U
62.	(73B)	50-32-8	benzo(a)pyrene	1.5 U
63.	(83B)	193-39-5	indeno(1,2,3-cd)pyrene	2.5 U
64.	(82B)	53-70-3	dibenzo(a,h)anthracene	2.5 U
65.	(79B)	191-24-2	benzo(ghi)perylene	2.5 U
66.	(5B)	92-87-5	benzidine	
67.	(28B)	91-94-1	3,3'-dichlorobenzidine	
68.		88-74-4	2-nitroaniline	

*Also present in the laboratory blank at or near this concentration.

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CODES:
- B - Compound was analyzed for, but not detected. The value is the minimum detection limit for the sample analyzed.
- SC - Suspected contaminant
- J - Estimated Value
- N.A. - This compound was not analyzed for using an external standard automatic quantification program. However, manual peak identification indicates that the compound is not present above the minimum detection limit of the method.

m/e 188 @ 40 ppb with area counts :9000

CENTRAL REGIONAL LABORATORY
U.S. ENVIRONMENTAL PROTECTION AGENCY
536 SOUTH CLARK ST.
CHICAGO, ILLINOIS 60605

312/353-8370

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NOV 17 1983
Environmental Protection
State of Illinois

B/N/A ORGANIC ANALYSIS SHEET

Study Name: Paxton Study Number: FDO-3123

Lab Sample I.D. No.: 83-CB05R02 Activity Number: B10500

TENTATIVELY IDENTIFIED COMPOUNDS	ESTIMATED CONCENTRATION (ug/l)
1. Hydrocarbons (7 components)	35
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	
15.	

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CODES:
- U - Compound was analyzed for, but not detected. The value is the minimum detection limit for the sample analyzed.
- SC - Suspected contaminant
- J - Estimated Value
- N.A. - This compound was not analyzed for using an external standard automatic quantification program. However, manual peak identification indicates that the compound is not present above the minimum detection limit of the method.

Central Regional Laboratory
U.S. Environmental Protection Agency
536 South Clark
Chicago, Illinois 60605 312/353-8370

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VOLATILES ANALYSIS SHEET

Study Name: Paxton Land Fill Study Number: CDO-3123

Lab Sample I.D. No: 83CB05R02 Activity Number: B10500

	PP#	CAS#	VOLATILES	Concentration (PPB)
1.	(45V)	74-87-3	chloromethane	4.4U
2.	(46V)	74-83-9	bromomethane	.7U
3.	(88V)	75-01-4	vinyl chloride	1.7U
4.	(16V)	75-00-3	chloroethane	1.5U
5.	(44V)	75-09-2	methylene chloride	6.1
6.	(2V)	107-02-8	acrolein	26U
7.		67-64-1	acetone	75U
8.	(3V)	107-13-1	acrylonitrile	21U
9.		75-15-0	carbondisulfide	.4U
10.	(29V)	75-35-4	1,1-dichloroethene	.5U
11.	(13V)	75-34-3	1,1-dichloroethane	.4U
12.	(30V)	156-60-5	trans-1,2-dichloroethene	.5U
13.	(23V)	67-66-3	chloroform	.5U
14.		78-93-3	2-butanone	45U
15.	(10V)	107-06-2	1,2-dichloroethane	.5U
16.	(11V)	71-55-6	1,1,1-trichloroethane	.4U
17.	(6V)	56-23-5	carbon tetrachloride	.5U
18.		108-05-4	vinyl acetate	2.0U
19.	(48V)	75-27-4	bromodichloromethane	.5U
20.	(32V)	78-87-5	1,2-dichloropropane	.4U
21.	(33V)	10061-02-6	trans-1,3-dichloropropene	.5U
22.	(87V)	79-01-6	trichloroethene	.5U
23.	(4V)	71-43-2	benzene	.5U
24.	(51V)	124-48-1	chlorodibromomethane	.5U
25.	(14V)	79-00-5	1,1,2-trichloroethane	.4U
26.		10061-01-05	cis-1,3-dichloropropene	.5U

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CODES:
- U - Compound was analyzed for, but not detected. The value is the minimum detection limit for the sample analyzed.
- SC - Suspected contaminant
- J - Estimated Value
- N.A. - This compound was not analyzed for using an external standard automatic quantification program. However, manual peak identification indicates that the compound is not present above the minimum detection limit of the method.

	PP#	CAS#	VOLATILES	Concentration PPB
27.	(19V)	110-75-8	2-chloroethylvinyl ether	.5U
28.	(47V)	75-25-2	bromoform	.5U
29.		108-10-1	4-methyl-2-pentanone	57U
30.		519-78-6	2-hexanone	
31.	(85V)	127-18-4	tetrachloroethene	.5U
32.	(15V)	79-34-5	1,1,2,2-tetrachloroethane	.5U
33.	(86V)	108-88-3	toluene	.5U
34.	(7V)	108-90-7	chlorobenzene	.4U
35.	(38V)	100-41-4	ethylbenzene	.5U
36.		100-42-5	styrene	.4U
37.			m-xylene	.5U
38.		95-47-6	o-xylene, p-xylene	.5U

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CODES:
- U - Compound was analyzed for, but not detected. The value is the minimum detection limit for the sample analyzed.
- SC - Suspected contaminant
- J - Estimated Value
- N.A. - This compound was not analyzed for using an external standard automatic quantification program. However, manual peak identification indicates that the compound is not present above the minimum detection limit of the method.

B 10500

1

ENVIRONMENTAL PROTECTION AGENCY
FOR THE TEAM: TOXIC SUBSTANCES

UN/UNANLM CDO SAMPLING DATE 6/6/83 LAB ARRIVAL DATE 6/7/83 DUE DATE 6/30/83

UEN B224 UNIQUE NUMBER 3088 STUDY So. EAST CHGO PRIORITY N CONTRACTOR N

	SAMPLE DESCRIPTION	ACID-BASE NEUTRAL CPDS. PRIORITY POLLUTANTS UG/L 10X9561	ACID-BASE NEUTRAL CPDS. ORGANIC SCAN UG/L (water) TOX9571	ACID-BASE NEUTRAL CPDS. PRIORITY POLLUTANTS MG/KG TOX95631	ACID-BASE NEUTRAL CPDS. ORGANIC SCAN MG/KG (sediment) TOX95731
05					
3	5-4141		✓		
4	5-4156		✓		
	5-4136		✓		
7	5-4146		✓		
2	5-4151		✓		

JC 8/18/83
8/18/83
MAC 8/18/83 QCOK
Transmitted by MAP 8/19/83

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ENVIRONMENTAL PROTECTION AGENCY
FOR THE TEAM: TOXIC SUBSTANCES

Routine Turnaround

BZ 26

TEN/BRANCH CDO SSCDO SAMPLING DATE 6-29-83 LAB ARRIVAL DATE 6-29-83 DUE DATE ~~Sep~~ 7/30/83

NUMBER B10500 DATASET NUMBER 3123 STUDY PAXTON LANDFILL AREA PRIORITY N CONTRACTOR N

LOG ER	SAMPLE DESCRIPTION	WATER ~~SEDIMENTS OIL AND AIR~~ ORGANIC SCAN UG/L UG/G UG/M3 TOX755760	WATER SEDIMENTS OIL AND AIR ACIDS UG/L UG/G UG/M3 TOX7520060	WATER SEDIMENTS OIL AND AIR B/N UG/L UG/G UG/M3 TOX7520160	WATER ~~SEDIMENTS OIL AND AIR~~ VOLATILES VOA UG/L UG/G UG/M3 TOX7520260	
SSol	S-4205	✓				
Rov	S-4210	✓				BLANK
SSol	S-4203				✓	
Sol	S-4204				✓	DUPLICATE
Rov	S-4208				✓	BLANK
Rov	S-4209				✓	BLANK DUPLICATE
		GF 8/23/83				
		MKY 8/31/83				
		MWG 9/8/83				
		Transmitted by MAP 9/8/83				

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STATE OF ILLINOIS

S Remington

ENVIRONMENTAL PROTECTION AGENCY
FOR THE TEAM: TOXIC SUBSTANCES

Routine Turnaround

DS

...ION/BRANCH CDO SSCDO SAMPLING DATE 6-29-83 LAB ARRIVAL DATE 6-29-83 DUE DATE ~~7/20~~ 7/20/83

NUMBER BIO500 DATASET NUMBER 3123 STUDY PAXTON LANDFILL AREA PRIORITY N CONTRACTOR N

LOG BER	SAMPLE DESCRIPTION	WATER ~~SEDIMENTS OIL AND AIR~~ ORGANIC SCAN UG/L UG/G UG/M3 TOX755760	WATER SEDIMENTS OIL AND AIR ACIDS UG/L UG/G UG/M3 TOX7520060	WATER SEDIMENTS OIL AND AIR B/N UG/L UG/G UG/M3 TOX7520160	WATER ~~SEDIMENTS OIL AND AIR~~ VOLATILES VOA UG/L UG/G UG/M3 TOX7520260	
5501	S-4205	✓				
5R02	S-4210	✓				BLANK
5501	S-4203				✓	
5501	S-4204				✓	DUPLICATE
R02	S-4208				✓	BLANK
R02	S-4209				✓	BLANK DUPLICATE
					~~SD~~ 7/8/83	
					yF 7/11/83	
					~~mky~~ 7/11/83	
					LDK 7/14/83 QC passed	
					~~Transmitted by~~	
					MAP 7/14/83	

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STATE OF ILLINOIS
NOV 21 1983

S Bernetto

6/30/83 CMB

JM 29 June 83

ACTIVITY #B10500

ENVIRONMENTAL PROTECTION AGENCY
FOR THE TEAM: METALS

(1)

DIVISION/BRANCH CDO SAMPLING DATE 6/6/83 LAB ARRIVAL DATE 6/7/83 DUE DATE 6/30/83

DU NUMBER B224 DATASET NUMBER 3088 STUDY SO. EAST CHGO. PRIORITY N CONTRACTOR N

CRL LOG NUMBER	SAMPLE DESCRIPTION	TOTAL METALS IN WATER* TOTAL ICAP	TOTAL METALS IN WATER* AS	TOTAL METALS IN WATER* SB	TOTAL METALS IN WATER* SE	TOTAL METALS IN WATER* TL
CC05		UG/L (water)	UG/L (water)	UG/L	UG/L	UG/L
		MET11311	MET11361	MET113201	MET113211	MET113221
D03	5-4145	✓	✓ 3.9			
D04	5-4179	✓	✓ 3.7			
516	5-4140	✓	✓ 4.1			
517	5-4150	✓	✓ <2.0			
R02	5-4155	✓	✓ <2.0			
			6/13/83			
			MAK 6/30/83			
			Transmitted by MAP 6/30/83			

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NUMBER OF SAMPLE(S) TO BE REPORTED : 5
RECNM= 14

RECEIVED Compliance Assurance Section NOV 17 1983 Environmental Protection Agency State of Illinois

JVM 29 Jun 83

Transmitted by MAP 6/30/83

DL1:[001,054]RN3SSA.BRN 29-JUN-83 14:07:50 PAGE 1

DATA SET : CDC3088

ELEMENT		CC05R02		CC05D03		CC05D04		CC05D16
AG	µg/L	< 3.00	<	3.00	<	3.00	<	3.00
AL		< 80.0	<	80.0		125.	<	80.0
B		< 80.		1490.		1290.		1430.
BA		< 5.		123.		130.		143.
BE		< 1.00	<	1.00	<	1.00	<	1.00
CD		< 2.00	<	2.00	<	2.00	<	2.00
CO		< 6.00	<	6.00	<	6.00	<	6.00
CR		< 8.00	<	8.00		10.5		8.4
CU		< 6.00	<	6.00	<	6.00	<	6.00
FE		< 80.		1130.		2110.		1230.
LI		< 10.		100.		102.		116.
MN		< 5.		535.		557.		615.
MO		< 10.0		14.2		20.6		16.7
NI		< 15.0		25.4		31.7	<	15.0
PB		< 70.0	<	70.0	<	70.0	<	70.0
SN		< 40.0	<	40.0	<	40.0	<	40.0
SR		< 10.		649.		664.		753.
TI		< 30.0	<	30.0	<	30.0	<	30.0
V		< 5.00	<	5.00	<	5.00	<	5.00
Y		< 5.00	<	5.00	<	5.00	<	5.00
ZN		< 40.0	<	40.0	<	40.0	<	40.0
CA	mg/L	< 0.5		134.		137.		156.
K		< 1.0		57.9		58.9		65.9
MG		< 0.1		66.6		67.5		77.2
NA		< 1.		264.		286.		368.

MAR 6/30/83

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DATA SET : CB03088

ELEMENT		CC058L7
AL	µg/L	< 3.00
AS		< 80.0
B		1020.
BA		66.5
BE		< 1.00
CD		< 2.00
CO		< 1.00
CR		< 8.00
CU		< 6.00
FE		1230.
HG		100.
MN		102.
MO		< 10.0
NI		< 10.0
PB		70.0
SB		< 40.0
SE		723.
TL		< 30.0
V		< 5.00
Y		< 5.00
ZN		< 40.0
CA	mg/L	126.
K		32.0
MG		78.3
NA		225.

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STATE OF ILLINOIS

B 10500

(2)

ENVIRONMENTAL PROTECTION AGENCY
FOR THE TEAM: TOXIC SUBSTANCES

VISION/BRANCH CDO SAMPLING DATE 6/6/83 LAB ARRIVAL DATE 6/7/83 DUE DATE 6/30/83

NUMBER B224 DATASET NUMBER 3088 STUDY SO. EAST CHGO PRIORITY N CONTRACTOR N

LOG NUMBER	SAMPLE DESCRIPTION	VOLATILE ORGANIC ANALYSES PRIORITY POLLUTANTS UG/L TOX10561	VOLATILE ORGANIC ANALYSES ORGANIC SCAN UG/L (water) TOX10571	VOLATILE ORGANIC ANALYSES PRIORITY POLLUTANTS MG/KG TOX105631	VOLATILE ORGANIC ANALYSES ORGANIC SCAN MG/KG (sediment) TOX105731
3CC05					
D03	5-4142/4143		✓		
D04	5-4157/4158		✓		
S16	5-4137/4138		✓		
S17	5-4147/4148		✓		
R02	5-4152/4153		✓		
			6/29/83		
			6/29/83		
			QC pass		
			6/30/83		
			Transmitted by MAP 6/30/83		

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1.3

1/20/0 JAS

Kentric Turnaround

15224

ENVIRONMENTAL PROTECTION AGENCY
FOR THE TEAM: MINERALS-NUTRIENTS

DIVISION/BRANCH CDO SAMPLING DATE 6 29 83 LAB ARRIVAL DATE 6 29 83 DUE DATE 7/20/83

DU NUMBER B10500 DATASET NUMBER 3123 STUDY PAXTON LANDFILL ABER DRUM SITE PRIORITY N CONTRACTOR N

CRL LOG NUMBER	SAMPLE DESCRIPTION	WATER* SILICA MG SIO2/L MIN904314	WATER* FLUORIDE DISTILLED (INDUSTRIAL MG F/L MIN9022615	WATER* FLUORIDE UNDISTILLED (OTHER) MG F/L MIN9022715	WATER* CR+6 UG CR+6/L MIN904616	WATER* MERCURY UG HG/L MIN904717
B05501	5-4202					✓ 0.2
R02	5-4207					✓ K0.1 REAGENT BLANK
						7/19/83 AJ
						MAK 7/21/83
					Transmitted	by MAP
						7/21/83

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6/8/83 m

ENVIRONMENTAL PROTECTION AGENCY
FOR THE TEAM: MINERALS-NUTRIENTS

(2)

DIVISION/BRANCH CDO SAMPLING DATE 6/6/83 LAB ARRIVAL DATE 6/7/83 DUE DATE 6/28/83

DU NUMBER B224 DATASET NUMBER 3082 STUDY SO. EAST CHGO PRIORITY N CONTRACTOR N

RL LOG NUMBER	SAMPLE DESCRIPTION	WATER* SILICA MG SIO2/L MIN904314	WATER* FLUORIDE DISTILLED (INDUSTRIAL MG F/L MIN9022615	WATER* FLUORIDE UNDISTILLED (OTHER) MG F/L MIN9022715	WATER* CR+6 UG CR+6/L MIN904616	WATER* MERCURY UG HG/L (W MIN904717
CC05						
03	5-4144					0.1
D04	5-4177					0.1
S16	5-4139					K0.1
S17	5-4149					K0.1
R02	5-4151					K0.1
						6/9/83 AS
						MAK 6/10/83
					Transmitted	by MAP
						6/10/83

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8/110 UV

ENVIRONMENTAL PROTECTION AGENCY
FOR THE TEAM: METALS

(1)

DIVISION/BRANCH CDO SAMPLING DATE 6-29-83 LAB ARRIVAL DATE 6-29-83 DUE DATE ~~SEP~~ 7/20/83

DU NUMBER B10500 DATASET NUMBER 3/23 STUDY PAXTON LANDFILL DRUM SITE AREA PRIORITY N CONTRACTOR N

CRL LOG NUMBER	SAMPLE DESCRIPTION	TOTAL METALS IN WATER* TOTAL ICAP UG/L MET11311	TOTAL METALS IN WATER* AS UG/L MET11361	TOTAL METALS IN WATER* SB UG/L MET113201	TOTAL METALS IN WATER* SE UG/L MET113211	TOTAL METALS IN WATER* TL UG/L MET113221
83C805-						
S01	S-4201	✓	✓ 6.3			DRUM AREA
R02	S-4206	✓	✓ <2.0			REAGENT BLA
			SK 7/18/83			
			MAR 8/2/83			

Transmitted by MAP 8/2/83

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State of Illinois

8/1/83 CMG

MAK 8/2/83

Jun 29 July 83

Transmitted by MAP 8/2/83

DL1:[001,054]RUN387.BRN 29-JUL-83 15:10:39 PAGE 1

DATA SET : CD03123

ELEMENT		CB05S01		CB05R02
AG	µg/L <	3.00	<	3.00
AL		434.	<	80.0
B		633.	<	80.0
BA		74.9	<	5.00
BE	<	1.00	<	1.00
CD	<	2.00	<	2.00
CO		14.6	<	6.00
CR		39.1	<	8.00
CU		25.4	<	6.00
FE		5880.	<	80.0
LI		62.2	<	10.0
MN		1400.	<	5.00
MO		101.	<	10.0
NI		50.9	<	15.0
PB	<	70.0	<	70.0
SN	<	40.0	<	40.0
SR		379.	<	10.0
TI	<	30.0	<	30.0
V	<	5.00	<	5.00
Y	<	5.00	<	5.00
ZN		140.	<	40.0
CA	mg/L	105.	<	0.500
MG		24.1	<	0.100
NA		32.5	<	1.00

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STATE OF ILLINOIS

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF LAND POLLUTION CONTROL
CHAIN OF CUSTODY

I certify that the samples listed below were collected in my presence and that each sample bottle was sealed intact by me and that I wrote my initials and the date on the seal of each bottle.

Site Inventory No. 0316000025 County Cook

Federal I.D. No. 000810432 Interlake Property (Facility Name)

SAMPLING TEAM

Sample No.	Initials	Consisting of the Indicated No. of Bottles	Date Collected	Time Sealed
G105	TJM	6	7-19-89	1:20 AM/PM
G107	TJM	6	7-18-89	1:30 AM/PM
G101	TJM	6	7-19-89	2:15 AM/PM
G106	TJM	6	7-19-89	6:25 AM/PM
X101	TJM	3	7-19-89	3:15 AM/PM
X108	TJM	3	7-19-89	3:15 AM/PM
X102	TJM	3	7-19-89	3:15 AM/PM
X103	TJM	3	7-19-89	3:15 AM/PM
X104	TJM	3	7-19-89	3:15 AM/PM
X105	TJM	3	7-19-89	3:15 AM/PM

Sealer's Signature Timothy J. Murphy Date 7-20-89 Time 2:00 AM/PM

Sampler(s) Gregory W. [illegible] Timothy J. Murphy John Morgan (T.J.

CARRIERS

I certify I received the above samples, with each seal on each bottle intact and the sealer's initials written on each sample seal.

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time
		AM/PM			AM/PM
		AM/PM			AM/PM
		AM/PM			AM/PM
		AM/PM			AM/PM
		AM/PM			AM/PM
		AM/PM			AM/PM
		AM/PM			AM/PM

LAB CUSTODIAN

I certify I received the above samples with each seal on each bottle intact, and the sealer's initials written on each sample seal. After recording these samples in the official record book, these same samples will be in the custody of competent laboratory personnel at all times or locked in a secured area.

Signature Sally Gepton Date 7-19-84 7-20-89 Time 7:30 6:30 A.M. P.M.

Lab Location Springfield (City)

IL 532-1147
LPC 141 9/83

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF LAND POLLUTION CONTROL
CHAIN OF CUSTODY

I certify that the samples listed below were collected in my presence and that each sample bottle was sealed intact by me and that I wrote my initials and the date on the seal of each bottle.

Site Inventory No. L0316000025 County Cook

Federal I.D. No. ILD000810432 Interlake Property (Facility Name)

SAMPLING TEAM

Sample No.	Initials	Consisting of the Indicated No. of Bottles	Date Collected	Time Sealed
X106	TJM	3	7-19-89	3:15 AM/PM
X107	TJM	3	7-19-89	3:15 AM/PM
G104	TJM	6	7-20-89	2:00 AM/PM
G103	TJM	6	7-20-89	2:00 AM/PM
G102	TJM	6	7-19-89	2:00 AM/PM
				AM/PM
				AM/PM
				AM/PM
				AM/PM
				AM/PM

Sealer's Signature Timothy J. Murphy Date 7-20-89 Time 2:00 AM/PM

Sampler(s) Gregory W. D[illegible] Timothy J. Murphy John Morgan (TJM)

CARRIERS

I certify I received the above samples, with each seal on each bottle intact and the sealer's initials written on each sample seal.

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time
		AM/PM			AM/PM
		AM/PM			AM/PM
		AM/PM			AM/PM
		AM/PM			AM/PM
		AM/PM			AM/PM
		AM/PM			AM/PM
		AM/PM			AM/PM

LAB CUSTODIAN

I certify I received the above samples with each seal on each bottle intact, and the sealer's initials written on each sample seal. After recording these samples in the official record book, these same samples will be in the custody of competent laboratory personnel at all times or locked in a secured area.

Signature Sally Leyton Date 7-19-89 7-20-89 Time 7:30 6:30 A.M./P.M.

Lab Location Springfield (City)

IL 532-1147
LPC 141 9/83

120-011

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

X106

Lab Name: ILLINOIS EPA CHAMPAIGN LAB Contract: INTERLAKE PROPERTY COOK CO. #0316000024

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 14

Matrix (soil/water): _____ Lab Sample ID: B910185

Level (low/med): _____ Date Received: 07/20/89

% Solids: 65.1

Concentration Units (ug/L or mg/kg dry weight): _____

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	4900			P	
7440-36-0	Antimony	0.43	U	S	F	R
7440-38-2	Arsenic	2.7		S	F	
7440-39-3	Barium	75			P	
7440-41-7	Beryllium	0.4	B		P	
7440-43-9	Cadmium	0.7	B		P	J
7440-70-2	Calcium	66000			P	
7440-47-3	Chromium	21			P	
7440-48-4	Cobalt	3.8	B		P	J
7440-50-8	Copper	13			P	
7439-89-6	Iron	14000			P	
7439-92-1	Lead	40			P	
7439-95-4	Magnesium	30000			P	
7439-96-5	Manganese	1800		N,*	P	J
7439-97-6	Mercury	0.26			AV	
7440-02-0	Nickel	9.6			P	J
7440-09-7	Potassium	860	B		P	J
7782-49-2	Selenium	0.27	U	W,S	F	
7440-22-4	Silver	0.47	U		P	J
7440-23-5	Sodium	580	B		P	
7440-28-0	Thallium	0.20	U	S	F	
7440-62-2	Vanadium	28			P	
7440-66-6	Zinc	77			P	
	Cyanide	0.67	U		AS	

Color Before: Brown Clarity Before: Opaque Texture: _____

Color After: Colorless Clarity After: Clear Artifacts: _____

Comments:

Appendix Table 1. Big Marsh Water Sampling Results 1990-1991 (continued)
(Values are mg/l)

Element	SW-1 7/90	SW-1 8/90	SW-1 10/90	SW-1 12/90	SW-1 3/91	SW-1 4/91	SW-1 5/91	SW-2 7/90	SW-2 8/90	SW-2 10/91
Acetone	.010	BDL	BDL	BDL	BDL	.007	BDL	BDL	BDL	.018
Ammonia (Unionized)	.095	.307[1]	.053[1]	.197[1]	.449[1]	.233[1]	.317	.125	.423	.046
Arsenic	BDL	BDL	.003	BDL	BDL	BDL	BDL	BDL	BDL	.003
Barium	.098	.087	.120	.100	.100	.130	.110	.086	.110	.090
Benzene	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Beryllium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	-	BDL
Boron	1.400[1]	1.200[1]	1.300[1]	.780	.870	1.000	.940	1.400[1]	1.300[1]	1.200[1]
Cadmium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chromium (Total)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chromium (VI)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Copper	BDL	BDL	BDL	BDL	BDL	.010	BDL	BDL	BDL	BDL
Cyanide	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Dissolved Oxygen	-	-	-	-	5.100[1]	5.200[1]	13.500	-	-	-
Hardness	-	-	-	-	369.000	408.000	358.000	-	-	-
Iron (Dissolved)	BDL	.250	BDL	.040	BDL	.055	BDL	.051	BDL	.044
Iron (Total)	1.600	2.300	1.200	1.700	.860	-	1.300	1.500	1.500	1.700
Lead	BDL	.020	.019	.014	.005	1.300[1]	.008	BDL	.015	.024
Manganese	.240	.180	.190	.130	.150	.170	.160	.220	.190	.250
Mercury	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Oil & Grease	BDL	16.000	BDL	BDL	BDL	BDL	BDL	BDL	29.000	BDL
Temp (C)	18.100	24.500	12.500	2.000	6.200	12.500	21.700	16.700	24.500	11.100
Titanium	.010	.016	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Vanadium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	.010	BDL
Zinc	.020	.030	.016	.020	.015	BDL	.063	.024	.018	.020
pH	8.510	8.580	8.160	8.290	8.340	8.140	8.790	8.550	8.920	8.370

[1] Value exceeds IEPA General Use Water Quality Standards, Title 35: Subtitle C Section 302

BDL Value falls below detection limit.

Appendix Table 1. Big Marsh Surface Water Sampling Results 1990-1991 (continued)
(Values are mg/l)

Element	SW-2 3/91	SW-2 4/91	SW-2 5/91	SW-3 7/90	SW-3 8/90	SW-3 10/90	SW-3 12/90	SW-3 3/91	SW-3 4/91	SW-3 5/91
Acetone	.018	.015	BDL	BDL	BDL	BDL	BDL	BDL	.015	BDL
Ammonia (Unionized)	.497[1]	.670[1]	.231	.003	.006	.018	.025	.017	.037	.029
Arsenic	BDL	BDL	.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Barium	.086	.120	.097	BDL	BDL	BDL	.058	.057	.064	.054
Benzene	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Beryllium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Boron	.780	1.000	.930	.450	.420	.420	.380	.370	.390	.350
Cadmium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chromium (Total)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chromium (VI)	BDL	BDL	BDL	BDL	.039[1]	BDL	BDL	BDL	BDL	BDL
Copper	BDL	.005	BDL	BDL	BDL	BDL	BDL	BDL	.007	BDL
Cyanide	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Dissolved Oxygen	-	5.800[1]	-	-	-	-	-	8.500	4.400[1]	10.000
Hardness	357.000	423.000	362.000	-	-	-	-	365.000	400.000	357.000
Iron (Dissolved)	.043	.038	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Iron (Total)	1.300	-	.770	.170	.140	.340	.490	.250	-	.110
Lead	.006	.006	.010	BDL	.003	.008	.004	BDL	.004	BDL
Manganese	.140	.160	.140	.460	.140	.120	.025	.076	.085	.032
Mercury	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Oil & Grease	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Temp (C)	7.800	13.600	15.600	19.900	22.900	14.300	3.600	5.400	12.300	17.100
Titanium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Vanadium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Zinc	.010	BDL	BDL	BDL	BDL	.018	BDL	BDL	BDL	BDL
pH	8.440	8.540	8.440	7.180	7.610	8.030	8.410	8.260	8.240	8.080

[1] Value exceeds IEPA General Use Water Quality Standards, Title 35: Subtitle C Section 302

BDL Value falls below detection limit.

Appendix Table 1: Big Marsh Surface Water Sampling Results 1990-1991 (continued)
(Values are mg/l)

Element	SW-4 7/90	SW-4 8/90	SW-4 10/90	SW-5 7/90	SW-6 7/90	SW-6 8/90	SW-6 10/90	SW-6 12/90	SW-6 3/91
Acetone	.018	.017	.031	BDL	BDL	BDL	.036	BDL	.016
Ammonia (Unionized)	4.609[1]	3.623[1]	7.478[1]	1.599[1]	.002	.011	.036	.006	.046[1]
Arsenic	BDL	BDL	.002	BDL	BDL	BDL	BDL	BDL	BDL
Barium	.150	.120	.150	.110	BDL	.051	BDL	BDL	BDL
Benzene	.002	.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Beryllium	.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Boron	2.700[1]	2.000[1]	3.600[1]	2.300[1]	.350	.340	.350	.230	.220
Cadmium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chromium (Total)	.035	.023	.070	BDL	BDL	BDL	BDL	BDL	BDL
Chromium (VI)	BDL	BDL	BDL	BDL	BDL	.710[1]	BDL	BDL	BDL
Copper	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Cyanide	.016[1]	.021[1]	.034[1]	BDL	BDL	.028[1]	.017[1]	BDL	BDL
Dissolved Oxygen	-	-	-	-	-	-	-	-	8.700
Hardness	-	-	-	-	-	-	-	-	455.000
Iron (Dissolved)	1.100[1]	.740	.930	.600	BDL	BDL	BDL	BDL	BDL
Iron (Total)	1.500	1.200	1.100	1.100	.280	.530	.920	1.200	.400
Lead	BDL	.013	.029	BDL	BDL	.004	.009	.009	.006
Manganese	.290	.310	.054	.230	.021	.110	.087	.046	.064
Mercury	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Oil & Grease	BDL	BDL	6.000	BDL	BDL	BDL	BDL	BDL	BDL
Temp (C)	17.700	21.700	12.900	22.300	17.200	24.800	10.000	2.100	6.400
Titanium	.028	.033	.084	.024	BDL	BDL	BDL	.027	BDL
Vanadium	.017	.012	.027	.013	BDL	BDL	BDL	BDL	BDL
Zinc	.020	.020	.030	.059	.018	BDL	.025	.046	.022
pH	8.100	8.130	8.380	7.970	7.220	7.620	8.010	7.910	8.250

[1] Value exceeds IEPA General Use Water Quality Standards, Title 35: Subtitle C Section 302.
BDL Value falls below detection limit.

Appendix Table 1: Big Marsh Surface Water Sampling Results 1990-1991 (continued)
(Values are mg/l)

Element	SW-6 4/91	SW-6 5/91	SW-7 8/90	SW-7 10/90	SW-8 8/90	SW-8 10/90	SW-8 12/90	SW-8 3/91	SW-8 4/91	SW-8 5/91
Acetone	.032	BDL	.029	BDL	.033	.025	BDL	.073	.023	BDL
Ammonia (Unionized)	.017	.058	.008	.006	.879	.400[1]	2.027[1]	2.562[1]	1.044[1]	.942
Arsenic	BDL	BDL	BDL	BDL	BDL	.004	BDL	BDL	BDL	.003
Barium	BDL	BDL	.071	.054	BDL	.059	BDL	BDL	BDL	BDL
Benzene	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Beryllium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Boron	.310	.300	.440	.370	.660	.710	.540	.290	.460	.470
Cadmium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chromium (Total)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chromium (VI)	BDL	BDL	BDL	BDL	BDL	.038[1]	BDL	BDL	BDL	BDL
Copper	.010	BDL	BDL	BDL	BDL	BDL	BDL	BDL	.007	BDL
Cyanide	BDL	BDL	BDL	.023	BDL	BDL	BDL	BDL	BDL	BDL
Dissolved Oxygen	3.600[1]	13.100	-	-	-	-	-	7.800	4.100[1]	10.300
Hardness	538.000	422.000	-	-	-	-	-	151.000	159.000	150.000
Iron (Dissolved)	.100	BDL	BDL	.044	BDL	BDL	.030	BDL	.064	BDL
Iron (Total)	-	.890	1.800	.980	.720	1.000	.630	.380	-	.430
Lead	.009	.006	.002	.021	.018	.033	.012	.009	.010	.020
Manganese	.110	.051	.370	.240	.095	.160	.053	.025	.052	.054
Mercury	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Oil & Grease	BDL	BDL	BDL	BDL	38.000	BDL	BDL	BDL	BDL	BDL
Temp (C)	8.600	22.700	25.000	11.700	21.600	11.000	1.800	5.900	9.100	19.800
Titanium	.027	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Vanadium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Zinc	.024	BDL	BDL	.011	BDL	.015	.015	BDL	BDL	BDL
pH	8.170	8.410	7.370	7.570	10.040[1]	9.160[1]	9.890[1]	11.680[1]	10.010[1]	10.160[1]

[1] Value exceeds IEPA General Use Water Quality Standards, Title 35: Subtitle C Section 302

BDL Value falls below detection limit.

rent Manning
irector
ohn W. Comerio
eputy Director
ruce F. Clay
ssistant Director

Illinois Department of Conservation
life and land together

LINCOLN TOWER PLAZA • 524 SOUTH SECOND STREET • SPRINGFIELD 62701-1787
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[redacted]

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ENDANGERED SPECIES CONSULTATION
AGENCY ACTION REPORT

Date Submitted: 2-19-93

PROJCODE: 31F12-13-14
Date Due: 3/24/93

For Office Use Only

Agency Name: B&V Waste Science & Technology Corp.
Contact Person: John J Noyes Phone: (312) 683-7829
Agency Address: 101 North Wacker Suite 1100
Chicago IL 60606

DESCRIBE PRECISE LOCATION OF PROPOSED ACTION

County(ies): See Attached Topo's
City/Town:
Township/Range/Section:
U.S.G.S. Quad Map Name(s):
Brief Description of the Proposed Action: Please indicate all endangered & threatened species within 4 miles of the site indicated and within ½ mile of the frontages of all water bodies highlighted

Please enclose a map delineating the location of the proposed action.

FOR NATURAL HERITAGE USE ONLY

QUADCODE(S): _____ _____ _____ _____

Are there threatened/endangered species or natural areas located within the vicinity of the project? [Yes | No]

The consultation process is terminated? [Yes | No]
If 'No', complete the enclosed Detailed Agency Action Report to continue the consultation process.

Evaluation Approved by:

_____ _____
Deanna Glosser, Ph.D. Date
Endangered & Threatened Species Program Manager

Appendix Table 1: Big Marsh Surface Water Sampling Results 1990-1991 (continued)
(Values are mg/l)

Element	SW-9 8/90	SW-9 10/90	SW-9 12/90	SW-9 3/91	SW-9 4/91	SW-9 5/91	SW-10 8/90	SW-10 10/90	SW-10 12/90	SW-10 3/91
Acetone	BDL	.027	BDL	.022	.011	BDL	BDL	BDL	.047	.019
Ammonia (Unionized)	.424	.167[1]	.240[1]	.943[1]	.680[2]	.322	.129	.055	.090[1]	.397[1]
Arsenic	BDL	BDL	BDL	BDL	BDL	BDL	BDL	.004	BDL	BDL
Barium	.085	.110	.093	.073	.099	.087	.120	.110	.100	.096
Benzene	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Beryllium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Boron	1.100[1]	1.200[1]	.810	.980	1.000	.960	1.200[1]	1.300[1]	.830	.760
Cadmium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chromium (Total)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chromium (VI)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Copper	BDL	BDL	BDL	BDL	.010	BDL	BDL	BDL	BDL	BDL
Cyanide	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Dissolved Oxygen	-	-	-	8.300	4.200[1]	14.300	-	-	-	-
Hardness	-	-	-	382.000	381.000	340.000	-	-	-	351.000
Iron (Dissolved)	BDL	BDL	.035	.071	BDL	BDL	.053	.055	BDL	.055
Iron (Total)	1.500	1.500	1.600	.850	-	.720	2.200	3.600	2.200	1.500
Lead	.018	.024	.016	.008	.010	.012	.069	.042	.017	.006
Manganese	.140	.180	.120	.110	.120	.120	.200	.280	.160	.140
Mercury	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Oil & Grease	BDL	BDL	BDL	BDL	BDL	9.000	50.000	BDL	BDL	BDL
Temp (C)	25.000	10.800	2.400	6.300	10.700	22.700	24.200	11.700	1.300	5.600
Titanium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Vanadium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Zinc	BDL	.024	.034	.018	BDL	BDL	.021	.044	.020	.013
pH	9.170[1]	8.690	8.420	8.810	8.650	8.810	8.370	8.350	8.120	8.360

[1] Value exceeds IEPA General Use Water Quality Standards, Title 35: Subtitle C Section 302

Appendix Table 1. Big Marsh Surface Water Sampling Results 1990-1991 (continued)
(Values are mg/l)

Element	SW-10 4/91	SW-10 5/91	SW-11 12/90	SW-11 3/91	SW-11 4/91	SW-11 5/91	SW-12 12/90	SW-12 3/91	SW-12 4/91	SW-12 5/91
Acetone	.007	BDL	.010	.018	.010	BDL	BDL	.021	.009	BDL
Ammonia (Unionized)	.338	.250	.242[1]	.406[1]	.144	2.870[1]	.164[1]	.173[1]	.140[1]	.333[1]
Arsenic	BDL	BDL	BDL	BDL	BDL	.005	.002	BDL	BDL	BDL
Barium	.140	.110	.093	.092	.060	.120	.140	.078	.100	.092
Benzene	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Beryllium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Boron	1.000	.930	1.100[1]	1.000	.740	1.500[1]	.850	.740	.980	.960
Cadmium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chromium (Total)	BDL	BDL	.022	BDL	.002	BDL	BDL	BDL	BDL	BDL
Chromium (VI)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Copper	.007	BDL	.024	BDL	.020	.021	BDL	BDL	.007	BDL
Cyanide	BDL	BDL	.013[1]	BDL	.023[1]	.022[1]	3.000[1]	.051[1]	.033[1]	.100[1]
Dissolved Oxygen	5.000[1]	14.200	-	3.500[1]	4.000[1]	5.200[1]	-	7.600	3.100[1]	8.800
Hardness	417.000	352.000	-	438.000	354.000	418.000	-	391.000	428.000	370.000
Iron (Dissolved)	.040	BDL	.320	.340	.400	.690	.069	.130	.180	BDL
Iron (Total)	-	1.100	1.000	2.100	-	2.000	4.400	2.600	-	1.100
Lead	.008	.009	.009	.017	.010	.031	.028	.009	.007	.014
Manganese	.170	.160	.180	.210	.220	.220	.270	.230	.210	.190
Mercury	BDL	BDL	BDL	BDL	BDL	BDL	0.00058[1]	BDL	BDL	BDL
Oil & Grease	BDL	BDL	60.000	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Temp (C)	13.200	21.400	2.800	5.600	12.900	24.200	2.700	6.300	8.900	21.300
Titanium	BDL	BDL	BDL	.020	BDL	.033	.140	.018	BDL	BDL
Vanadium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Zinc	BDL	BDL	.034	.059	.024	.049	.047	.021	BDL	BDL
pH	8.260	8.670	8.030	8.000	7.900	8.120	8.240	8.070	8.000	8.180

[1] Value exceeds IEPA General Use Water Quality Standards, Title 35: Subtitle C Section 302

BDL Value falls below detection limit.

Table 8. Constituents of coal-tars (average % by weight of dry tars)[a]

Component	Source of tars					
	Coke-oven			Vertical retort, UK	Low-temperature gasifier, UK	Lurgi gasifier, UK
	UK	FRG	USA			
Acenaphthene	0.96	0.3	1.05	0.66	0.19	0.57
Anthracene	1.00	1.8	0.75	0.26	0.06	0.32
Benzene	0.25	0.4	0.12	0.22	0.01	0.02
Carbazole	1.33	1.5	0.60	0.89	1.29	0.22
o-Cresol	0.32	0.2	0.25	1.33	1.48	1.14
m-Cresol	0.45	0.4	0.45	1.01	0.98	1.83
p-Cresol	0.27	0.2	0.27	0.86	0.87	1.51
Diphenylene oxide	1.50	1.4	-	0.68	0.19	0.57
Ethylbenzene	0.02	-	0.02	0.03	0.02	0.04
Fluorene	0.88	2.0	0.64	0.51	0.13	0.62
High-boiling tar acids	0.91	-	0.83	8.09	12.89	11.95
Medium-soft pitch	59.8	54.4	63.5	43.7	26.0	33.1
α-Methylnaphthalene	0.72	0.5	0.65	0.54	0.23	0.63
β-Methylnaphthalene	1.32	1.5	1.23	0.68	0.19	1.05
Naphtha	1.18	-	0.97	3.21	3.63	3.02
Naphthalene	8.94	10.0	8.80	3.18	0.65	2.01
Phenanthrene	6.30	5.7	2.66	1.75	1.60	0.28
Phenol	0.57	0.5	0.61	0.99	1.44	0.97
Styrene	0.04	-	0.02	0.04	0.01	0.01
Tar bases	1.77	0.73	2.08	2.09	2.09	2.50
Toluene	0.22	0.3	0.25	0.22	0.12	0.05
o-Xylene	0.04	-	0.04	0.06	0.05	0.05
m-Xylene	0.11	0.2	0.07	0.13	0.10	0.07
p-Xylene	0.04	-	0.03	0.05	0.04	0.03
Xylenols	0.48	-	0.36	3.08	6.36	5.55

[a]From McNeil (1983)

Concentrations of PACs, including polynuclear aromatic amines, were determined for tars produced in the Stoic fixed-bed gasifier at the University of Minnesota, USA (see Table 9) (Griest & Clark, 1982).

Tar from a liquid condensate produced by underground coal gasification was fractionated into neutral, acidic and basic fractions, and compounds or types of compounds from the basic fraction were identified. Substituted pyridines accounted for about 47% of the total basic fraction, anilines for 13% and quinolines for 9% (Huffstetler & Rickert, 1977).

Laboratory studies of coal distillation have demonstrated the effect of temperature, residence time at temperature, pressure, coal type, coal-particle heating rate, and the gaseous environment on the quantities, chemical distribution and properties of tars distilled under some simulated process conditions. After their distillation, the survival or cracking of the tars is dependent in large part on the nature of the gas flows in the specific process (Fillo *et al.*, 1983).

White Copy – Ill. Dept. of Publ.. .ealth
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUE) AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 6 in. Depth 450 ft.
   Curb material _____. Buried Slab: Yes____ No____
   b. Driven _____. Drive Pipe Diam. ____in. Depth ____ft.
   c. Drilled x. Finished in Drift _____. In Rock X.
   Tubular ____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building + 10 Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank 50 Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes x No ____
4. Date well completed May 3, 1985
5. Permanent Pump Installed? Yes X Date 5-20-85 No ____
   Manufacturer Red Jacket Type Sub Location in well
   Capacity 20 gpm. Depth of Setting 189 Ft.
6. Well Top Sealed? Yes X No ____ Type Midwest
7. Pitless Adapter Installed? Yes x No ____
   Manufacturer Baker Model Number _____
   How attached to casing? compression gasketed & bolts
8. Well Disinfected? Yes x No ____
9. Pump and Equipment Disinfected? Yes x No ____
10. Pressure Tank Size 220 gal. Type captive air
    Location _____
11. Water Sample Submitted? Yes ____ No ____

REMARKS: Permit #26966

GEOLOGICAL AND WATER SURVEYS WELL RECORD

Exemption 6 - Non Responsive [redacted] Well No. 1
Chicago, Il
Driller Wendell E. Wehling License No. 102-2
11. Permit No. 117422 Date 4-25-85
12. Water from limestone Formation 13. County Cook
at depth ____ to ____ ft.
14. Screen: Diam. ____ in.
Length: ____ ft. Slot _____
40'N 140'E SW NW SE NW
15. Casing and Liner Pipe

Exemption 6 - Non Responsive [redacted]

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
6"	galv. steel	1.1	91

SHOW LOCATION IN

Exemption 6 - Non Responsive [redacted]

16. Size Hole below casing: 5-7/8 in.
17. Static level ____ ft. below casing top which is _____ ft. above ground level. Pumping level ____ ft. when pumping at ____ gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Drift	90	90
Lime	360	450

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Wendell E. Wehling DATE May 22, 1985

IDPH 4.065
1/74 – KNB-1

T37N, R15E, SECT. 31

(36941—50M—2-67)27-o 2

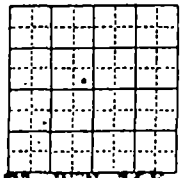
ILLINOIS GEOLOGICAL SURVEY, URBANA

	Thickness	Top	Bottom
GEOLOGICAL TOPS:			
Racine formation		67	351
Joliet formation		351	397
Romeo member		351	364
Markgraf member		364	397
Kankakee formation		397	422
Edgewood formation		422	496
Brainard formation - Mag top, 88'		496	518
Ft. Atkinson formation		518	560
Scales formation		560	678
Wise Lake formation - Sal. top -99'		678	756
Dunleith formation		756	866
Guttenberg formation		866	870
Machusa formation		870	900
Grand Detour formation		900	940
Mifflin formation		940	947
Pecatonica formation		974	1003
Ancell group - St. Peter top, -419'		1003	1054
Total depth			1054

Bore Hole Record: 3-¼" - 78-100 2-7/8" 100-1054'
Casing: 4½" 0-78'
Detailed report filed including interpretation report on geophysical logs and stratigraphic summary
Caliper log filed Nuclear log filed
3- Dimensional Velocity log filed
Density log filed

*Near intersection of Brainard and 134th St., Chicago

COMPANY	Chicago Sanitary District
FARM	Deep Tunnel Test Hole NO. DH-13
DATE DRILLED	March 2, 1968 COUNTY NO. 892
AUTHORITY	Birdwell Div.
ELEVATION	584' G. L. - Company
LOCATION	SE SE NW*
COUNTY	COOK



31-37N-15E

Test Well No. 1

City Chicago (Wolf Lake) County Cook

Section 32.4h1 Twp. No. 37N Range 15E

Location (in feet from section corner) 550'S, 1750'E, NW cor (location confidential)

Owner U.S. Army Nike Site C-44 Authority

Contractor Address

Date drilled 1956 Elev. above sea level top of well 584'

Depth 114 ft.

Log fine sand 0-20', gray clay 20-80', gray limestone 80-114'

Abandoned & capped

Were drill cuttings saved Where filed

Size hole If reduced, where and how much

Casing record 8" 0-83'

Distance to water when not pumping 25' Distance to water is 68'

feet after pumping at 20 G. P. M. for 3 3/4 hours.

Reference point for above measurements top of casing, at LSD

Type of pump Pomona Turbine Distance to cylinder 90' x 4"

Length of cylinder 5" 7-stage Length of suction pipe below cylinder

Length stroke Speed

Hours used per day Type of power

Rating of motor Rating of pump in G. P. M.

Can following be measured: (1) Static water level

(2) Pumping level (3) Discharge

(4) Influence on other wells

Temperature of water Was water sample collected

Date 11-23-56 Effect of water on meters, hot water

coils, etc.

Date of Analysis Analysis No.

Recorder /s/ Robert T. Sasman

Date May 7, 1962

2807-22617 12

Well No. 1

City Chicago (Wolf Lake) County Cook

Exemption 6 - Non Responsive

Exemption 6 - Non Responsive

Location (in feet from section corner) IFC Area - East Corridor Bldg.

Owner U.S. Army Nike Site C-44 Authority

Contractor J.P. Miller Artesian Well Co. Address

Date drilled March 1958 Elev. above sea level top of well 584'

Depth 22 ft.

Log fine sand 0-20', clay 20-22'

#32 Red Flint gravel pack 10-22'

Were drill cuttings saved Where filed

Size hole 20" 0-22' If reduced, where and how much

Casing record 8" 0-16', 8" Johnson stainless steel, .012" slot screen 16-22', concrete plug at bottom

Distance to water when not pumping 3.5' Distance to water is 16.0'

feet after pumping at 18 G. P. M. for 8 1/2 hours.

Reference point for above measurements top of casing, at LSD

Type of pump Clayton Mark Jet #150-5-30 Distance to cylinder

Length of cylinder Length of suction pipe below cylinder

Length stroke Speed

Hours used per day Type of power

Rating of motor 1/2 HP Rating of pump in ~~G.P.M.~~, 600 GPH

Can following be measured: (1) Static water level

(2) Pumping level (3) Discharge

(4) Influence on other wells

Temperature of water 46°F Was water sample collected

Date 3-18-58 Effect of water on meters, hot water coils, etc.

Date of Analysis Analysis No.

Recorder /s/ Robert T. Sasman

Date May 7, 1962

2807-22617 12

Well No. 2

City Chicago (Wolf Lake) County Cook

Exemption 6 - Non Responsive

Location (in feet from section corne Exemption 6 - Non Responsive

Owner U.S. Army Nike Site C-44 Authority

Contractor J.P.Miller Artesian Well Co. Address

Date drilled March 1958 Elev. above sea level top of well 584'

Depth 22 ft.

Log fine sand 0-20', clay 20-22'

#32 Red Flint gravel pack 10-22'

Were drill cuttings saved Where filed

Size hole 20" 0-22' If reduced, where and how much

Casing record 20" 0-17', 8" 0-16', 8" Johnson stainless steel .012" slot screen 16-22' concrete plug at bottom

Distance to water when not pumping 3.5' Distance to water is 16.0'

feet after pumping at 5 G. P. M. for 9 hours.

Reference point for above measurements top of casing, at LSD

Type of pump Deming Turbine #1975-30 Distance to cylinder

Length of cylinder Length of suction pipe below cylinder

Length stroke Speed

Hours used per day Type of power

Rating of motor Rating of pump in ~~G.P.M.~~ 150 GPH

Can following be measured: (1) Static water level

(2) Pumping level (3) Discharge

(4) Influence on other wells

Temperature of water 46°F Was water sample collected

Date 3-22-58 Effect of water on meters, hot water coils, etc.

Date of Analysis Analysis No.

Recorder /s/ Robert T. Sasman

2807-22617 12

Date May 7, 1962

COOK

Exemption 6 - Non Responsive

[redacted]

WELL LOGS IN 3 MILE RADIUS OF SITE REF#12

LOG OF WATER WELL

Property owner State of Illinois (Wolf Lake) Well No. 1

Drilled by KRAMER BROS. Year 1948

Formations passed through	Thickness	Depth of Bottom
Fill	8	8
~~Sand~~	~~12~~	~~20~~
Hard clay with gravel	10	30
Soft squeeze clay	30	60
~~Hard gravely clay~~	~~10~~	~~70~~
Broken rock, clay, sand, CO_2 Gas	7	77
~~Brown lime--dry hole~~	~~3~~	~~80~~
Grey lime--dry hole	5	85
Brown & grey lime, much CO_2 Gas	5	90
Hard brown lime	5	95
Hard grey lime	20	115
~~Hard grey-brown lime~~	~~15~~	~~130~~
Hard grey lime	50	180
Grey-brown lime	30	210

[Continue on back if necessary]

Finished in Limestone at 210 to ft.

Cased with 4 inch Galv. Wrought Pipe from 0 to 77 ft.

and inch from to ft.

Size hole below casing 4 inch. Static level from surf. 42 ft.

Tested capacity 5 gal. per min. Temperature °F.

Water lowered to 110 ft. in. in hrs. 20 min.

Length of test 4 hrs. min. Screen

Slot Diam. Length Bottom set at ft.

[Show location in Section Plat]

Township name Elev.

Exemption 6 - Non Responsive

[redacted]

Exemption 6 - Non Responsive

[redacted]

Signed Claude Kramer Chicago, Ill. County Cook

Copy for Illinois State Geological Survey Index: