CHICAGO SPECTRO SERVICE LABORATORY, INC.
Spectrographic and Chemical Analysts
Metallurgists
4848 S. KEDZIE AVE. • CHICAGO, ILL. 60632
AREA CODE 312 - 523-7038

lab is certified according to Mr. Brown

IND 980679 054

ANALYSIS REPORT FOR:

Brown, Inc.
4482 W. Dunes Highway
Michigan City, Indiana 46360

Attn: Barry Brown

PURCHASE ORDER NO.

DATE 5/23/79

Report Number: 8352

QUALITATIVE SPECTROCHEMICAL ANALYSIS AND CONCENTRATIONAL ESTIMATES OF DETECTED CONSTITUENTS

Sample Number: FLYASH FROM NIPSCO STATION

Silicon	5 - 50%	
Iron, Aluminum	3 - 30	each
Calcium	1 - 10	
Potassium, Magnesium	0.5 - 5	each
Titanium	0.3 - 3	
Zinc, Strontium	0.05 - .5	each
Boron, Sodium	0.03 - .3	each
Lead, Manganese, Barium	0.01 - .1	each
Chromium, Vanadium, Copper	0.005 - .05	each
Tungsten*, Zirconium	0.003 - .03	each
Nickel	0.002 - .02	
Germanium	0.001 - .01	
Beryllium, Cobalt*	0.0005 - .005	each
Molybdenum	0.0003 - .003	
Moisture	13.71	

NOTE: ANALYSIS IS BASED ON THE DRIED SAMPLE.

*SAMPLE WAS MORTARED IN A TUNGSTEN CARBIDE MILL.

CHICAGO SPECTRO SERVICE LABORATORY, INC.

BY

3B ~~Smith~~ JR Baker
this is what Nelson of P.U. was talking about at 9/9/76 mtg
208

BROWN INC.

Contractors-Excavating and Grading Equipment Rentals

4482 WEST DUNES HIGHWAY
MICHIGAN CITY, INDIANA 46360
TELEPHONE (219) 872-8618

September 7, 1976

Mr. Oral Hert
Indiana Stream Pollution Board
1330 West Michigan Street
Indianapolis, Indiana 46206

Gentlemen:

We have a request from Midwest Steel in Porter County to tender on removal of sludge from their collection lagoons again this year. We have rendered this service for several years now with no known problems.

Your Mr. Richard Cleaton is aware of our operation. He has suggested we advise your office of the proposed plan in order that everyone can be properly informed and make suggestions so as no violations cause damage to private or public property.

Your co-operation will be greatly appreciated.

The proposed sites for waste are:

1. Landfill on U.S. 20 and S.R. 520 (Porter County, Pine Twp.)
2. Farm land on 500E just south of 194 - Porter County, Pine Twp., owned by Leonard Brown.

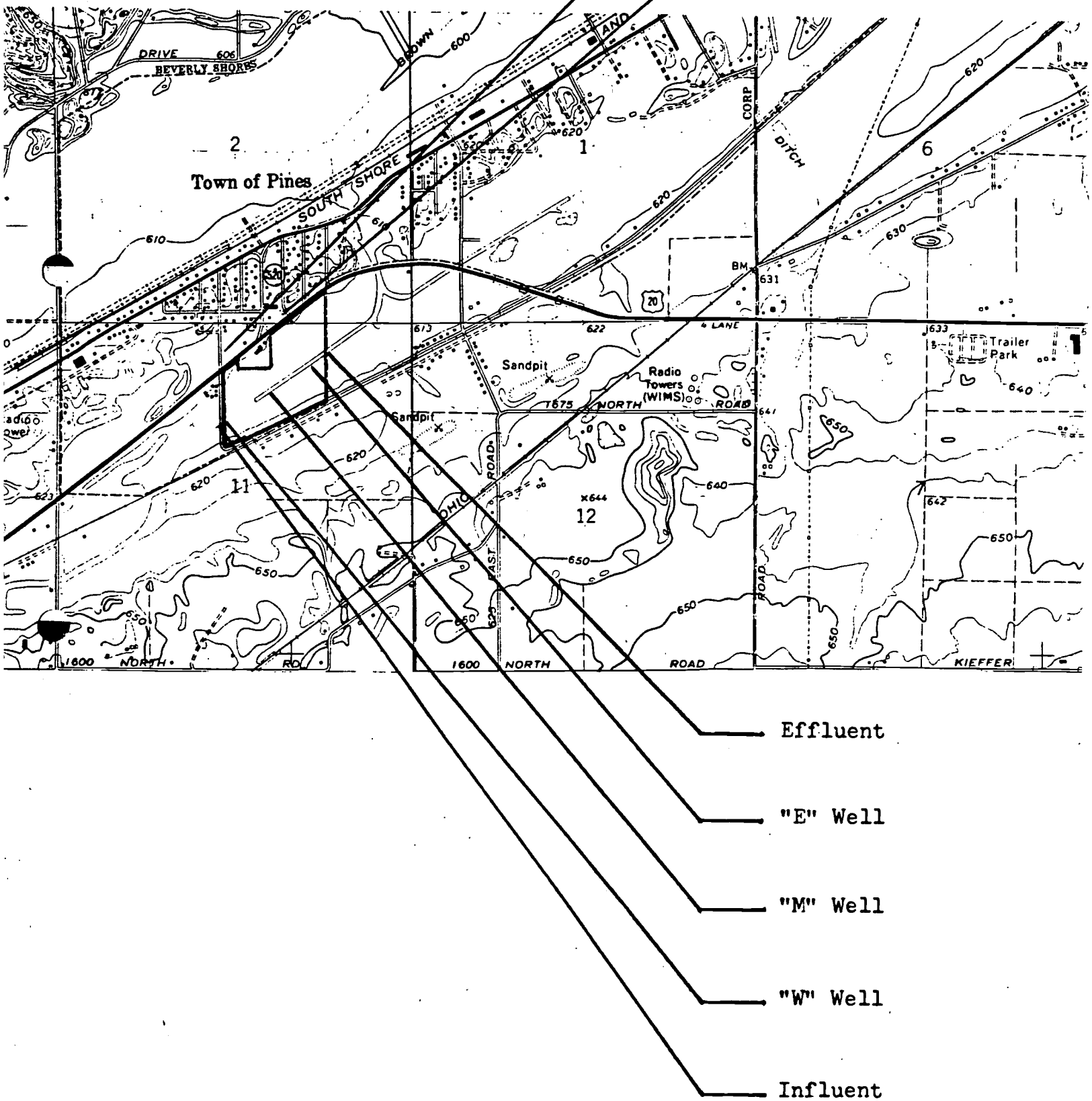
Purdue University has done extensive testing of this sludge and we have used it over farm land for several years with no known disadvantages. Our crop yield has improved because this sludge helps hold moisture and allows the clay soil to become mellow.

Yours truly,

BROWN INC.

Leonard J. Brown
President

LJB:mf


USGS Well #215
USGS Well #307
Town of Pines
SOUTH SHORE
DRIVE
BEVERLY SHORES
BROWN
LAND
CORP
DITCH
Sandpit
Sandpit
Radio Towers (WIMS)
Trailer Park
4 LANE
NORTH
ROAD
OHIO
EAST
1600 NORTH ROAD
KIEFFER
BM 631
Effluent
"E" Well
"M" Well
"W" Well
Influent

NORTHERN LABORATORIES, INC.

ENVIRONMENTAL TESTING SERVICES
AIR & WATER POLLUTION-SOLID WASTES SAMPLING - ANALYSIS - CONSULTING

Telephone (219) 464-2389

158 Napoleon
Valparaiso, Indiana 46383

LABORATORY REPORT

CLIENT ....Brown, Inc.... DATE ....February 15, 1984....

ATTENTION ....Mr. Barry Brown.... PHONE ....762-3178....

ADDRESS ....720 West U.S. 20, Michigan City, IN 46360....

DATE OF COLLECTION ....January 25, 1984 (0077)....

PARAMETER	RESULTS		
	E Well	M Well	W Well
Boron	10.3 mg/L	0.50 mg/L	0.47 mg/L
Chloride	122 mg/L	97 mg/L	49 mg/L
pH	7.0	7.2	7.7
Sulfate	480 mg/L	2.3 mg/L	12.5 mg/L
Total Dissolved Solids	1,260 mg/L	446 mg/L	572 mg/L
Arsenic	0.006 mg/L	0.013 mg/L	0.061 mg/L
Manganese	0.21 mg/L	0.09 mg/L	5.44 mg/L
Sodium	74.5 mg/L	77.5 mg/L	52.8 mg/L
Nitrate	0.03 mg/L	0.03 mg/L	0.12 mg/L

jmw

Approved By William C. Prester
Manager of Technical Services

NORTHERN LABORATORIES, INC.

ENVIRONMENTAL TESTING SERVICES
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LABORATORY REPORT

CLIENT ..... Brown, Inc. ..... DATE ..... February 15, 1984

ATTENTION ..... Mr. Barry Brown ..... PHONE 762-3178

ADDRESS ..... 720 West U.S. 20, Michigan City, IN 46360

DATE OF COLLECTION ..... January 25, 1984 (0078) .....

PARAMETER	RESULTS	
	USGS Well #307	USGS Well #215
Boron	0.91 mg/L	0.20 mg/L
Chloride	290 mg/L	11 mg/L
pH	6.9	7.3
Sulfate	156 mg/L	19.5 mg/L
Total Dissolved Solids	890 mg/L	186 mg/L
Arsenic	<0.0025 mg/L	<0.0025 mg/L
Manganese	0.63 mg/L	0.07 mg/L
Sodium	139 mg/L	10.6 mg/L
Nitrate	0.29 mg/L	0.46 mg/L

jmw

Approved By William C. Preston
Manager of Technical Services

UNITED ATES ENVIRONMENTAL PROTECTIL AGENCY

DATE March 11, 1982

SUBJECT: Sampling Inspection of Brown's Flyash Disposal Site in Pines, Indiana

FROM:

Ron Lillich, Environmental Scientist
IL/IN Field Investigation Section

TO:

Edward DiDomenico, Chief, Engineering Section
Water Quality Branch

THRU: John Connell, Chief
IL/IN Field Investigation Section

THRU: David M. Wagner, Chief
Central District Office

On November 20, 1981, Ron Lillich and William Simes of the Central District Office conducted a sampling investigation at a flyash disposal site in Pines, Indiana. The site is operated by Brown, Inc. The writer of this report had previously conducted an inspection of this site on August 6, 1980. A copy of the August 6th inspection report has been attached in Appendix A. The background information contained in this report was obtained either from Barry Brown of Brown, Inc. or from George Oliver of the Indiana State Board of Health (ISBH).

Brown, Inc. is on contract with the Northern Indiana Public Service Company (NIPSCO) in Michigan City, Indiana to remove the flyash accumulated in their settling ponds. The flyash is hauled by truck to Brown's disposal site in Pines. This removal operation occurs twice per year in the late spring and fall. Approximately 40,000 cubic yards of flyash are disposed of at the site during one of these removal periods. Some of the flyash does come from NIPSCO's Bailly Generating Station; however, the bulk of the flyash originates from Michigan City. According to Barry Brown, the Bailly Generating Station is planning to go to a dry flyash which will not be disposed of at Brown's site.

The site has been used for flyash disposal for approximately 10-15 years. The ISBH granted interim authority for Brown, Inc. to dispose of the flyash at the site through November 1, 1981 until a disposal permit for the site could be granted by the state. The state then granted an extension to Brown, Inc. to dispose of the flyash until December 15, 1981. The last flyash that was disposed of at the site by Brown, Inc. was December 10, 1981.

A draft proposal for a permit for the site was submitted by Brown, Inc. to the ISBH on December 15, 1981. The proposal includes five soil borings collected on the site and groundwater and surface water data. This proposal is currently under review by the ISBH. According to George Oliver, the permit for the site may include the same design criteria used for an approved sanitary landfill. The design criteria may include excavation of the sand

down to the clay layer, tying in all four sides of the site into this clay layer, and the installation of groundwater monitoring wells.

Environmental samples were collected at the site by the United States Geological Survey (USGS) in 1978. Elevated levels of arsenic, boron, iron, and manganese were found in one of the samples. Since the disposal site is located in a wetland area, the Corps of Engineers in 1979 evaluated the site for the possible need of a permit under Section 404 of the Clean Water Act. The Corps of Engineers determined that the site was not under their jurisdiction and did not require a 404 permit because the flow of Brown's ditch was less than 5 cfs. This operation may have also been considered the disposal of a waste material and not the filling of a wetland for the creation of land.

The soils making up the site are of two types: Ho-Houghton muck, drained and Ad-Adrian muck, drained. These are both poorly drained soils which are frequently ponded with surface runoff from adjacent higher lying areas. These soils have a seasonal high water table that are above or near the surface for part of the year. Attached to this report in Appendix B is a copy of a United States Department of Agriculture (USDA) soil map for Porter County showning the location of the site and a description of the soils making up the site.

Groundwater flow in the area is generally to the north, toward Lake Michigan. The majority of the people in Pines use private wells as their source of water supply. There are four Indiana Department of Natural Resources (IDNR) groundwater monitoring wells in the area of the disposal site. One of the four wells, #215, is located directly across U.S. Highway 20, approximately 200 feet north. These four wells have been routinely monitored for 16 parameters by the Department of Conservation. Attached to this report in Appendix C is a map showing the location of the four wells and the sampling results for a seven month period in 1980. Also attached in the same appendix are the data results from sampling done by Brown, Inc. on December 15, 1981. Their sampling included two private wells near the disposal site and upstream/downstream surface water samples on Brown's ditch. The information contained in Appendix C was supplied by George Oliver. It should be noted that the upstream/downsteam water samples on Brown's Ditch that Brown, Inc. had analyzed are not the same samples that the USEPA investigators split with Brown, Inc. on November 20, 1981. The split samples are still being held by Brown, Inc.

Brown's Ditch is directly adjacent to the disposal site (see a topographic map of the area in Appendix D and a site sketch in Appendix E). Brown's Ditch enters the Indiana Dunes National Lakeshore approximately 3/4 mile downstream (north) of the site. Brown's Ditch then flows northeast and empties into Kintzele Ditch which then flows north and into Lake Michigan.

The disposal site does not have any liner system under it. Earthen dikes have been constructed to contain the flyash (see photographs in Appendix F). When we inspected the site there was a break in one of the dikes which allowed direct runoff from the flyash to flow into Brown's Ditch. There had been heavy rain previous to our investigation and a light rain was falling when we inspected the site. There was ponded water within the

lower lying diked areas and the flyash mounds appeared to be eroding down into this area. Some of the disposal site can be easily seen from U.S. Highway 20. The site appeared visually unpleasant from the road because of the eroding flyash mounds and the dead trees contained within the dike.

The following two samples were collected from the site:

82CL07S02 (ME 8642) - This was a surface water sample collected upstream of the site from Brown's Ditch. The sample was a grab sample collected with a bucket and poured into a one liter polyethylene bottle for metals analysis, a 360 ml. polyethylene bottle for mercury analysis, and a one liter polyethylene bottle for cyanide analysis. Proper preservatives were used in all three bottles.

82CL07S01 (ME 8641) - This was a surface water sample collected downstream of the site from Brown's Ditch. The same sampling method, containers, and preservatives were used as in S01.

Both of these samples were split with Barry Brown of Brown, Inc.

It appears that the site is leaching certain inorganic constituents into Brown's Ditch based upon the data results received on the two samples (see the data results in Appendix G). The followng summarizes the upstream vs. downstream sample results for certain inorganic parameters where there was a difference in concentrations:

Aluminum (4,700 ppb vs. 6,100), Barium (50 ppb vs. 60), Iron (5,040 ppb vs. 6,520), Lead (40 ppb vs. 80), Manganese (130 ppb vs 150), Zinc (30 ppb vs. 70), Vanadium (10 ppb vs. 20), Calcium (17,800 ppb vs. 18,300), Magnesium (7,700 ppb vs. 7,800), Sodium (5,100 ppb vs. 6,400), and Arsenic (<10 ppb vs. 20). The remainder of the inorganic parameters were either the same or both were below the detection limits.

Attached in Appendix H is a copy of the State of Indiana Water Quality Standards for rearing or imprinting areas for salmonid fishes and the State's nondegradation policy for certain surface waters. Note that the State's nondegradation policy appears to apply to all waters of the Dunes National Lakeshore. Also note that Kintzele Ditch is designated as a rearing or imprinting area for salmonid fishes and therefore more stringent water quality standards apply to this water.

It is the writer's opinion that a more extensive sampling survey be conducted at the site to determine what the extent of contamination is further downstream of the site on Brown's Ditch and if groundwater is being contaminated by the site. This could include progressive sampling downstream of the site in Brown's Ditch and the sampling of certain monitoring and private wells in the area. Ideally, the sampling should occur during two or more different time periods. Once when active filling is going on at the site or directly thereafter and once in between two filling periods.

cc: Pete Olsen, Enforcement
George Oliver, ISBH

Chemical Waste Management, Inc.
Process Development Laboratory
P.O. Box 214 · Calumet City, Illinois 60409 · 312/891-1500

Analytical Laboratory Report

Client: Midwest Steel Project No. 2573
Highway 12
Address: Portage, Indiana 46368 P.O. No. _____

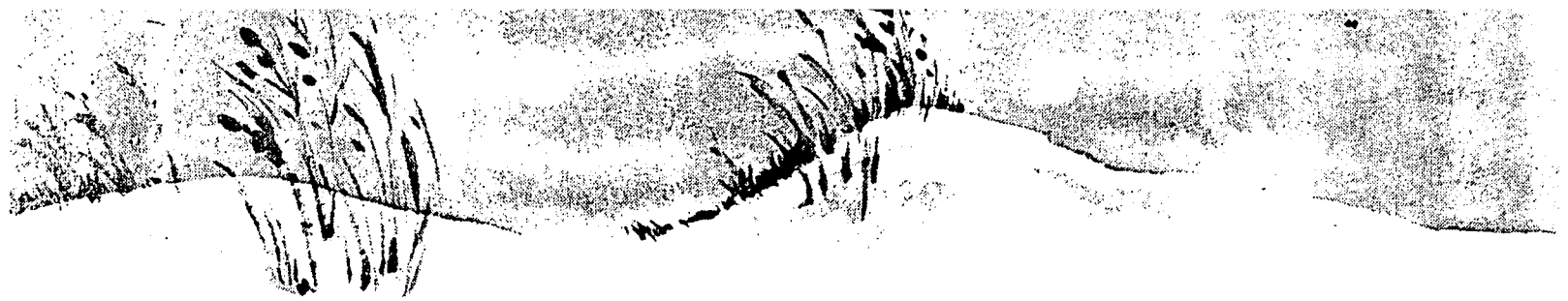
Sample Information: Metal Sludge from Water Treatment Plant

Date Sampled: _____ Date Received: 1/08/79

Test · ✓ as required	As Received (Shake)	Filtrate	Solids from sample	Leachate from solids
Sp. Gr.				
pH				
Acidity, % as				
Alkalinity, % as				
COD, mg/l				
BOD, mg/l				
Total solids, @ 105C	84.292%			
Suspended solids				
Flash point, F	200			
Heating value, BTU/lb				
Ash, on ignition				
"Acid scrub", gNaOH/g				
Arsenic, ~~ppb~~ ppm	16.6			
Barium, as Ba, mg/l				
Cadmium, as Cd, mg/l	11.8			
Chromium, Total, as Cr, mg/l	3,380.0			
Chromium, hexavalent, as Cr, mg/l				
Copper, as Cu, mg/l	474.0			
Iron, as Fe, mg/l				
Lead, as Pb, mg/l	11.4			
Mercury, ppb, as Hg				
Nickel, as Ni, mg/l	1,880.0			
Selenium, as Se, mg/l				
Silver, as Ag, mg/l				
Zinc, as Zn, mg/l	13.4			
Chlorides, as Cl, mg/l				
Cyanides, as Cn, mg/l				
Phenols, mg/l				
Sulfides, mg/l				
Fluorides, mg/l				

William Karpas
Analyst William Karpas
Lab Technician

January 17, 1979
Date Completed



Save the Dunes Council

ORGANIZED IN 1952

P.O. BOX 114 • BEVERLY SHORES, INDIANA 46301 • TELEPHONE 219/879-3937 OR 926-2224

May 11, 1984

Mr. Stephen Gentry
Special Projects Branch
Division of Land Pollution Control
Indiana State Board of Health
1330 West Michigan
P.O. Box 1964
Indianapolis, IN 46206-1964

Dear Mr. Gentry:

Thank you for explaining the status of the ERRIS program to me last week.

Enclosed is some information on the two landfills in Pine Township, Porter County.

1, 2 -- Map of wells tested around the Brown landfill (which is within the town of Pines) and the Pines landfill (closed since around 1977 and located in Pine Township); test results. These are from the Groundwater Strategy Study in Lake and Porter Counties.

3 -- Northern Laboratories Inc. report on surface water and ground water tests of the Brown landfill. The surface water tests are dated March 28, 1983 and July 5, 1983. The ground water tests are dated August 24, 1983 and October 18, 1983. I got the October 18 results from someone in the town of Beverly Shores, who had made some notes at the bottom of the test report.

4 -- Letter from the state's files, dated July 2, 1980, which indicated problems with one private well. The test locations and results were not attached to the letter.

It would be very helpful if you could evaluate these sites soon as part of your ERRIS work. As you can see from the map, there are a number of private residences that depend entirely upon ground water. As the 1980 letter points out, there were problems in at least one private well some time ago. At that time, the Brown landfill was accepting at least fly ash and was operating without a state permit. As I told you over the phone, the Groundwater Strategy STudy noted that the highest levels of COD recorded in the two county survey was well PI-131 with a value of 77 mg/l. It also recommended tests for specific organics and volatiles on wells PI-130 and PI-131.

I appreciate very much the information on testing procedures that you gave me, and the suggestions for locating qualified testing laboratories. I know this information will be helpful to our ad hoc water quality committee in designing a monitoring program around the Porter County landfills that we believe are major problems.

I will call you later this week, to find out your schedule for an on-site evaluation of the two landfills in Pine Township, Porter County.

Sincerely,

Charlotte J. Read

Charlotte J. Read
Executive Director

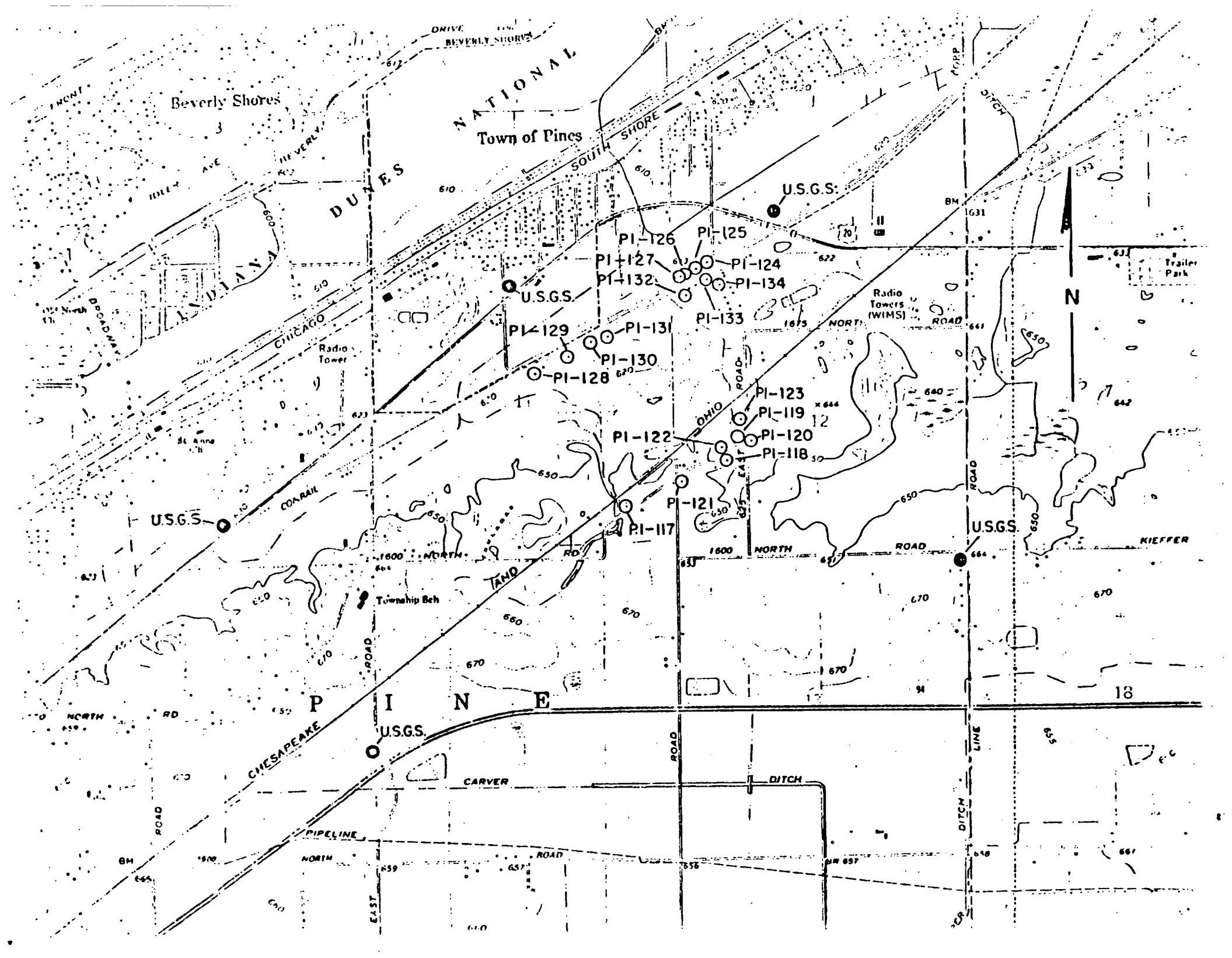

Beverly Shores
Town of Pines
DUNES
NATIONAL
SOUTH SHORE
CHICAGO
INDIANA
U.S.G.S.
U.S.G.S.
U.S.G.S.
U.S.G.S.
U.S.G.S.
PI-126
PI-125
PI-127
PI-124
PI-132
PI-134
PI-133
PI-129
PI-131
PI-130
PI-128
PI-123
PI-119
PI-120
PI-122
PI-118
PI-121
PI-117
Radio Towers (WIMS)
Radio Tower
Township Bch
CONRAIL
CHESAPEAKE
PIPELINE
CARVER
DITCH
OHIO
ROAD
NORTH
EAST
1600
1675
KIEFFER
Trailer Park
P I N E
N
12
18

TABLE 9
PORTER COUNTY GROUNDWATER SURVEY RESULTS (mg/l)

Well Designation Pines	Turbidity	pH	$CaCo_3$ Hard.	MO	Fe	Mn	Ca	Mg	Na	K	Cl	SO_4	PO_4	Ba	Cd	Cr TOT.	Pb	TOC	N Nitrate	COD
PI - 117 Michigan City	1	8.0	< 2	392	.56	<.02	< 2	< 2	190	.1	8	70	.12	< .030	< .002	< .020	.010	1.3		7
PI - 118 Michigan City	4	6.1	96	34	.89	.06	26	8	4.9	1.9	6	69	< .09	.030	< .002	.010	< .010	3.0		12
PI - 119 Michigan City	.5	7.3	64	210	.46	<.02	18	5	90	1.6	29	< 5	.18	.030	< .002	.010	.010	3.0		6
PI - 120 Michigan City	.5	7.6	138	272	.54	<.02	29	16	97	4.4	68	< 5	< .09	.160	< .002	.030	< .010	< 1.0		< 5
PI - 121 Michigan City	.4	7.5	120	268	.09	<.02	19	17	120	2.7	99	< 5	.33	.170	< .002	.020	.010	1.6		7
PI - 122 Michigan City	15	7.2	178	124	4.1	.19	45	16	4.2	1.2	11	55	.15	.030	< .002	< .010	< .010	4.0		16
PI - 123 Michigan City	.4	7.5	86	208	.41	<.02	19	9	73	1.8	25	< 5	.12	.030	< .002	.020	< .010	1.0		6
PI - 124 Michigan City	.2	6.8	180	152	.21	.03	42	18	57	12	54	76	<.09	.100	< .002	.010	< .010	6.0		17
PI - 125 Michigan City	.6	6.8	144	106	.05	.02	35	14	6.2	11	8	61	<.09	.090	< .002	< .010	< .010	2.6		10
PI - 126 Michigan City	5	6.6	164	120	1.5	<.02	38	17	9.1	5.8	11	56	<.09	.060	< .002	< .010	< .010	2.6		9
PI - 127 Michigan City	.5	6.8	208	140	.3	.02	56	17	9.1	3.7	21	62	< .09	.060	<002	.010	< .010	4.2		15
PI - 128 Michigan City	.5	7.9	148	152	.15	.02	33	16	21	.9	15	27	<.09	< .030	< .002	.010	< .010	1.6		7
PI - 129 Michigan City	1	7.8	180	180	.9	.15	43	17	23	1.1	17	38	<.09	.050	< .002	< .010	<.010	3.0		10
PI - 130 Michigan City	10	6.8	316	308	7.2	.55	83	26	13	4.7	17	25	.18	.120	< .002	< .010	.020	14.5		40
PI - 131 Michigan City			328		5.2	.42	86	27	6.8	1.1			.15	.080	< .002	<010	< .010	13.1		37
PI - 132 Michigan City			172		6.9	.13	44	15	11	3.3			<.09	.080	< .002	.020	.010	4.0		10
PI - 133 Michigan City	10	7.0	204	160	3.3	.14	50	19	25	6.8	39	55	<.09	.060	< .002	.020	.010	5.7		18
PI - 134 Michigan City	10	6.9	208	180	3.9	.32	57	16	23	8.8	31	54	< .09	.060	< .002	.020	.010	6.4		18

NORTHERN LABORATORIES, INC.

ENVIRONMENTAL TESTING SERVICES
AIR & WATER POLLUTION-SOLID WASTES SAMPLING - ANALYSIS - CONSULTING

Telephone (219) 464-2389

158 Napoleon
Valparaiso, Indiana 46383

LABORATORY REPORT

CLIENT .....Brown, Inc..... DATE ...March 28, 1983.....

ATTENTION .....Mr. Barry Brown..... PHONE .....762-3178.....

ADDRESS ..720 West U.S. 20, Michigan City, IN 46360

DATE OF COLLECTION .....March 2, 1983 (0184)...

YARD 520

Parameter	Results	
	Influent	Effluent
pH	7.8	7.6
Arsenic	<0.01 mg/L	<0.01 mg/L
Boron	0.24 mg/L	0.43 mg/L
Calcium	21.4 mg/L	22.6 mg/L
Flouride	0.15 mg/L	0.13 mg/L
Iron	0.83 mg/L	1.40 mg/L
Cadmium	<0.02 mg/L	<0.02 mg/L
Potassium	1.62 mg/L	1.66 mg/L
Magnesium	17.0 mg/L	16.8 mg/L
Manganese	0.08 mg/L	0.11 mg/L
Sulphate	39.0 mg/L	39.0 mg/L
Strontium	0.678 mg/L	0.706 mg/L
Chloride	22.4 mg/L	25.4 mg/L
Total Dissolved Solids	216.0 mg/L	264.0 mg/L

Approved By William C. Austin

afh

Manager of Technical Services

NORTHERN LABORATORIES, INC.

ENVIRONMENTAL TESTING SERVICES
AIR & WATER POLLUTION-SOLID WASTES SAMPLING - ANALYSIS - CONSULTING

Telephone (219) 464-2389

158 Napoleon
Valparaiso, Indiana 46383

LABORATORY REPORT

CLIENT ..... Brown Incorporated

DATE ..... July 5, 1983

ATTENTION ..... Mr. Barry Brown

PHONE 872-8618

ADDRESS ..... 720 W. U.S. 20, Michigan City, IN 46360

DATE OF COLLECTION ..... June 13, 1983 (0601)

Brown Ditch at Yard 520
6-20-83

Parameter	Results	
	INFLUENT	EFFLUENT
Boron	0.15 mg/L	0.54 mg/L
Chloride	26 mg/L	30 mg/L
pH	7.9	7.8
Sulfate	29 mg/L	47 mg/L
Total Disolved Solids	270 mg/L	300 mg/L
Arsenic	<0.003 mg/L	<0.003 mg/L
Manganese	0.16 mg/L	0.23 mg/L
Sodium	20.4 mg/L	24.5 mg/L
Nitrate	0.38 mg/L	0.11 mg/L

jae

Approved By William C. Preston

Manager of Technical Services

ORTHERN LABORATORIES, INC.

NVIRONMENTAL TESTING SERVICES
IR & WATER POLLUTION-SOLID WASTES

SAMPLING - ANALYSIS - CONSULTING

elephone (219) 464-2389

158 Napoleon
Valparaiso, Indiana 46383

LABORATORY REPORT

CLIENT ....Brown, Incorporated.....

ATTENTION ....Mr. Barry Brown.....

ADDRESS ....720 W. U.S. 20, Michigan City, IN 46360

DATE OF COLLECTION ....July 26, 1983 (0840).....

DATE ....August 24, 1983....

PHONE .....872-8618....

Parameter	Results		
	E Well	W Well	M Well
Boron	7.3 mg/L	0.48 mg/L	0.35 mg/L
Chloride	84 mg/L	52 mg/L	42 mg/L
pH	6.8	7.4	7.2
Sulfate	300 mg/L	6 mg/L	8 mg/L
Total Dissolved Solids	886 mg/L	476 mg/L	528 mg/L
Arsenic	<0.003 mg/L	<0.003 mg/L	<0.003 mg/L
Manganese	0.20 mg/L	3.86 mg/L	0.24 mg/L
Sodium	51.0 mg/L	51.0 mg/L	35.5 mg/L
Nitrate	0.07 mg/L	0.04 mg/L	0.05 mg/L

jmw

Approved By William C. Porter

Manager of Technical Services

BROWN GFS - PORTER CO.

SAMPLE DATE - OCTOBER 18, 1983

	INFLUENT	EFFLUENT	EAST WELL	MIDDLE WELL	WEST WELL	USGS 215	USGS ?
BORON	0.26 ppm	0.97 ppm	8.4 ppm	0.48 ppm	0.42 ppm	0.08 ppm	0.92 ppm
CHLORIDES	36	45	120	92	49	17	(265)
pH	7.9	7.7	7.2	7.6	7.8	7.7	7.8
SULFATE	24.8	52.8	(332)	31	<1	14.4	132
TDS	356	410				218	(910)
ARSENIC	0.04	0.048	0.026	0.023	0.023	<0.014	(0.053)
MANGANESE	(0.09)	(0.16)	(0.14)	(0.09)	(0.08)	(0.10)	(10.3)
SODIUM	25.6	30.4	82.4	69.7	53.8	15.9	69.6
NITRATE	0.10	0.14	0.04	0.03	0.03	0.59	0.32

IRON

Mg/SO4

PCB

CROME #6 *

Selenium

Zinc

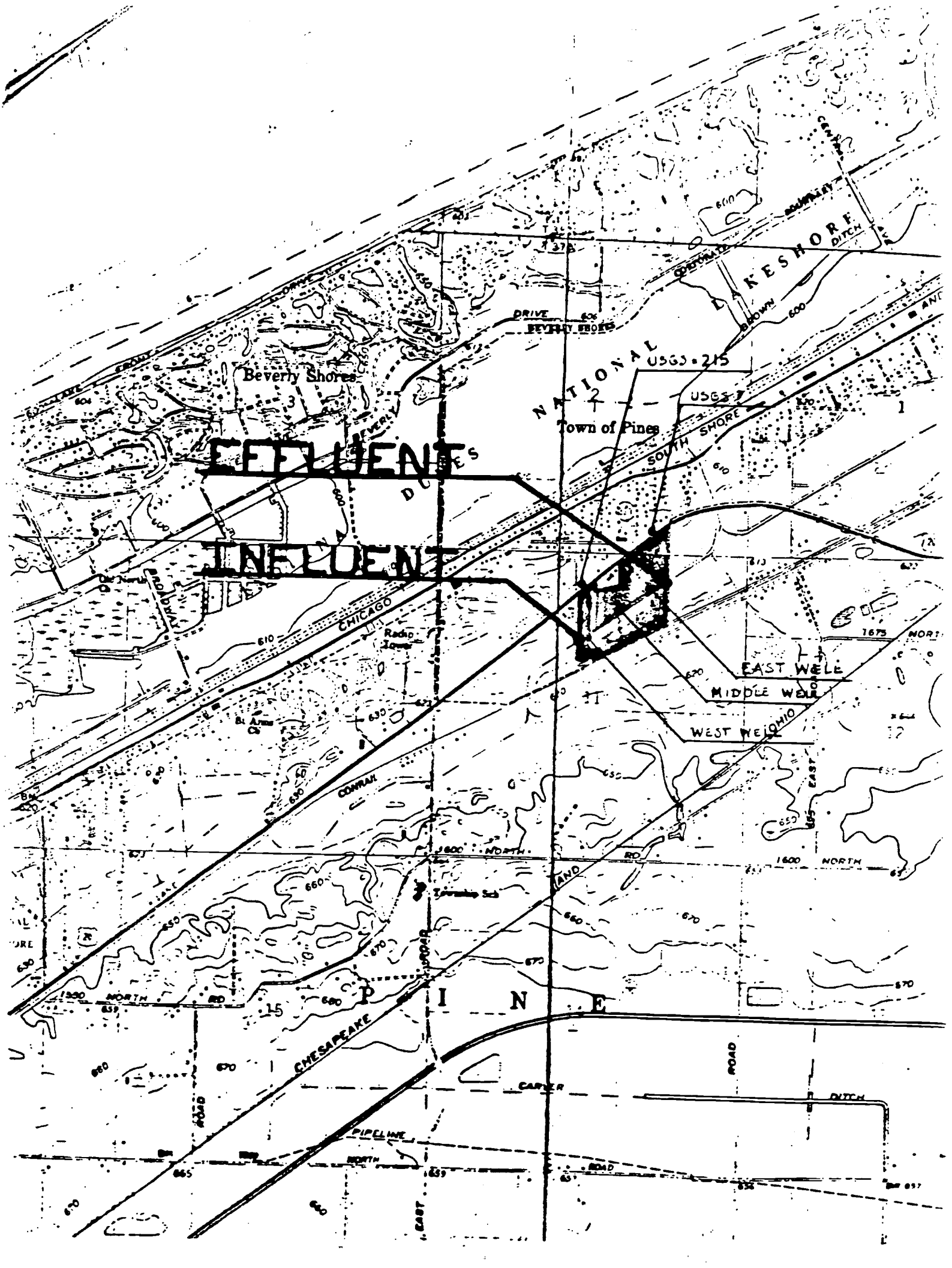
Lead

cadmium

cyanide - *

Palmer & Nyby

How deep were wells
what's happening up stream
Blaelte ditch d downstream
what is flow pattern in area.
Hydrologist


EFFLUENT
INFLUENT
Beverly Shores
Town of Pines
NATIONAL
LAKESHORE
USGS • 215
USGS
SOUTH SHORE
DRIVE
BEVERLY SHORES
CHICAGO
BROADWAY
CONRAIL
EAST WELL
MIDDLE WELL
WEST WELL
1600 NORTH
1600 NORTH
PINE
CHESAPEAKE
PIPELINE
CARTER
ROAD
DITCH
EAST
ROAD

July 2, 1980

Mr. Clement Janowski
1531 Maine Street
Michigan City (Pines), IN 46360

Dear Mr. Janowski:

Re: Water Quality Sampling
City of Pines, Indiana

This letter is in response to your request for water quality analyses for several selected shallow residential wells. On May 22, 1980, Mr. George Oliver and Ms. Karyl Schmidt of this office toured the Town with you as you pointed out various sites where disposal of flyash and slag material has occurred and is currently taking place.

Three wells were sampled and their results are enclosed. Of the three wells from which we took samples, the Loweski well water showed elevated levels. Mr. Oliver will take another sample from the Loweski well on which a more detailed analysis will be performed. Since flyash disposal has been widespread throughout the Town, pinpointing the specific contaminant source may be difficult. However, the Brown site is upgradient of the Loweski well and may have contributed to their well impairment.

If you have any questions or additional information, please contact Mr. George Oliver of this Section at AC 317/633-0176.

Very truly yours,

[redacted], Chief
Solid Waste Management Section
Division of Sanitary Engineering
AC 317/633-0176

Enclosure
cc: Porter County Health Department
Mr. Clarence Rollason

-/-/80 MISC 12BB