Public Works
Service Center

Grauvogel & Associates

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CITY OF SOUTH BEND
DIV. OF ENGINEERING

December 17, 2001

Southeast Berrien County Landfill Authority
1540 Mayflower Road
Niles, MI 49120

Attention: Mr. Bruce Knapp, PE
Subject: 730 United Drive (Building 69) – South Side Contaminated Soil Contaminated Soil -

Dear Bruce:
This letter summarizes the results of seven additional soil samples taken in the southeast corner of the 730 United Drive site on October 30, 2001 to determine the disposal status of soils excavated from this area. The TCLP lead results have been previously presented in out November 15 letter. Included with this letter are the summary tables and attached are the laboratory reports for the TCLP volatiles and semi-volatiles, plus total analysis for volatiles and TPH.

These additional samples were collected to investigate the extent of the high leachable lead soils encountered in our August 3 sampling that we discussed by telephone. Also a fuel oil odor was encountered while excavating in this portion of the site and we wanted to determine the level of contamination.

As summarized in Tables 1 and 2 and Figure 2 the soil in this area is free of leachable lead above the EPA limit. It is also free of TCLP volatiles and semi-volatiles. It does contain some fuel oil or diesel fuel shown from the TPH results. It seems clear from the test results that this additional soil in the southeastern area of the site has been more heavily impacted by fuel oil spillage than those further to the west and slightly north. Using the same statistical analysis as was applied to the leachable lead results, the mean TPH concentration and upper 95% confidence limit for the combined waste are:

$\mathbf{n} = 14$ $\mathbf{X} = 250.7$ mg/KG $\mathbf{UCL}_{0.95} = 444.8$ mg/KG

So there is a 95% certainty that the average TPH for the combined soil is less than 445 mg/KG. As this soil is excavated and aerated these TPH contaminant concentrations can be expected to decrease. Please direct further comments and questions to my attention on this matter

Sincerely,
Grauvogel & Associates

Lawrence W. Grauvogel PE, CIH, CSP

Attachments: EIS Lab Reports, Figure 2 - Soil Sample Locations
cc: C. Littrell/South Bend Engineer, S. Rozanski/KHA

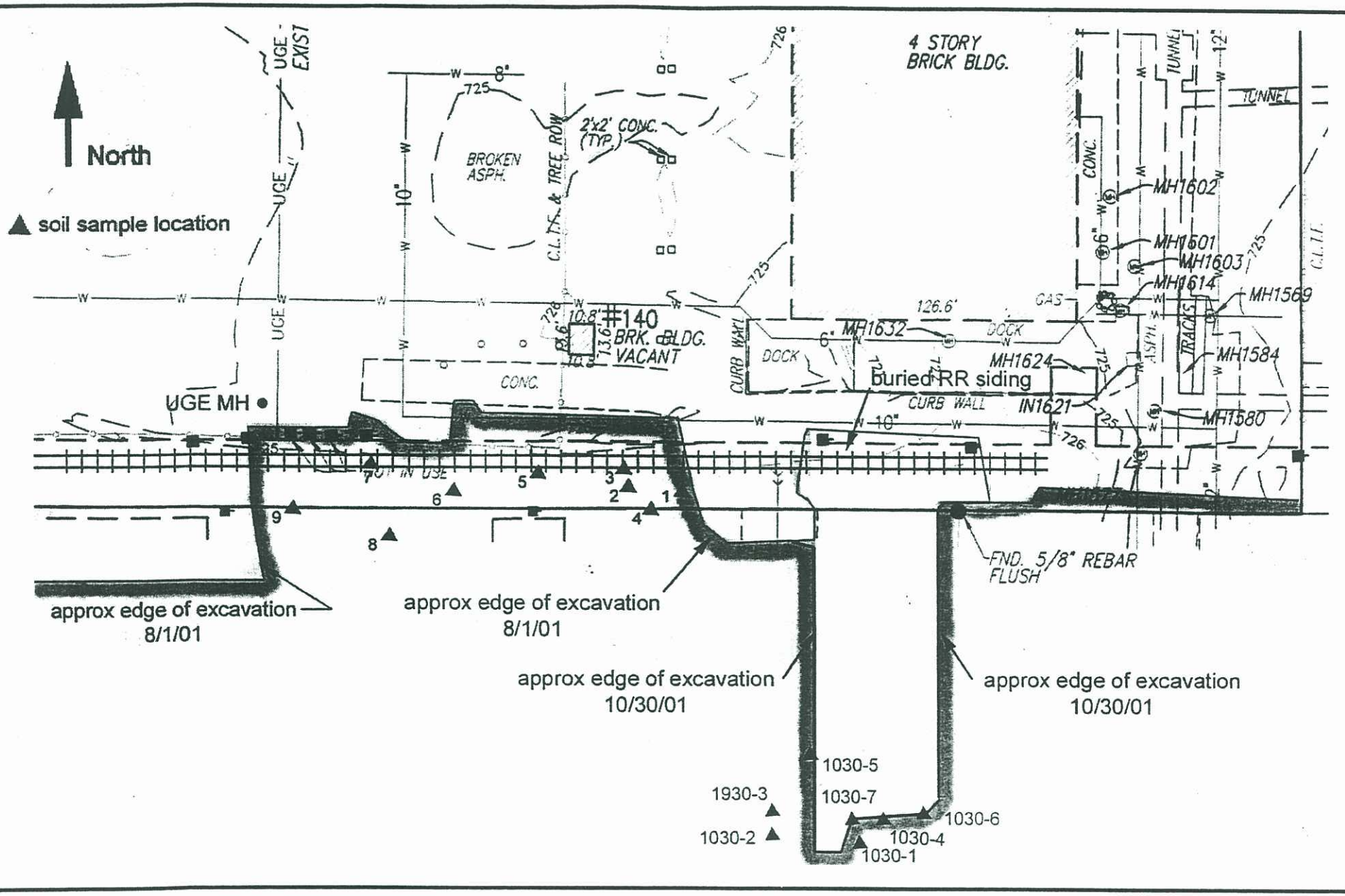
Table 1: EPA Regulated Soil Constituents Results
TCLP Analyses
Additional 730 United Drive Soil - South Site

	Soil Borings - 10/30/01							EPA
Analyte	**1030-1**	**1030-2**	**1030-3**	**1030-4**	**1030-5**	**1030-6**	**1030-7**	**Limit**
METALS (mg/L)								
arsenic	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**5**
barium	0.47	0.35	0.27	0.46	0.92	0.50	0.37	**100**
cadmium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**1**
chromium	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	**5**
lead	<0.05	<0.05	0.29	0.56	0.13	<0.05	<0.05	**5**
mercury	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	**0.2**
selenium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**1**
silver	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	**5**
VOLATILES (mg/L)								
benzene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**0.5**
carbon tetrachloride	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**0.5**
chlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**100**
chloroform	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**6**
1,4-dichlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**7.5**
1,2-dichloroethane	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**0.5**
1,1-dichloroethylene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**0.7**
methyl ethyl ketone	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	**200**
tetrachloroethylene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**0.7**
trichloroethylene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**0.5**
vinyl chloride	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	**0.2**
SEMI-VOLATILES (mg/L)								
o,m,p-cresols	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**200**
2,4-dinitrotoluene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**0.13**
hexachlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**0.13**
hexachlorobutadiene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**0.5**
hexachloroethane	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**3.0**
nitrobenzene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**2**
pentachlorophenol	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**100**
pyridine	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	**5**
2,4,5-trichlorophenol	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**400**
2,4,6-trichlorophenol	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**200**

Table 2: Additional Soil Constituents Results
Total Analyses
Additional 730 United Drive Soil - South Site

	Soil Borings - 10/30/01						
Analyte	**1030-1**	**1030-2**	**1030-3**	**1030-4**	**1030-5**	**1030-6**	**1030-7**
VOLATILES (mg/KG)							
benzene	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
n-butylbenzene[1]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
carbon tetrachloride	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
chlorobenzene	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
chloroform	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,4-dichlorobenzene	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,2-dichloroethane	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,1-dichloroethylene	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
isopropyltoluene	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
methyl ethyl ketone	<1	<1	<1	<1	<1	<1	<1
naphthalene[1]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
tetrachloroethylene	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
toluene[1]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
TPH*	**160**	**1,320**	**1,140**	**3,970**	<20	**990**	**850**
trichloroethylene	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,2,4-trimethylbenzene[1]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,3,5-trimethylbenzene[1]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
o,m,p-xylenes[1]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
vinyl chloride	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
48 other compounds[1]	nd	nd	nd	nd	nd	nd	nd

[1] compounds not included in the EPA TCLP analysis
*- total petroleum hydrocarbons



Grauvogel & Associates 17660 Fall Creek Drive Granger, Indiana 46530	Drawn: AMG	Scale: none	Date: 12/18/01	Project: 2032

Additional Suspected Contaminated Soil
730 United Drive (Building 69) - October, 2001
South Bend, Indiana

Figure
2

SB40138869

Public Works
Service Center

Grauvogel & Associates

MEMORANDUM

DATE: December 20, 2001

FROM: Larry Grauvogel
TO: Carl Littrell, Scott Rozanski
SUBJECT: 730 United Drive - Railroad Ties

My sources tell me that Prairie View and Earthmovers landfills will both take railroad ties provided the EPA TCLP analysis is acceptable. They are worried about leaching organics from the creosote in the ties. I submitted the sample to the lab today, so we should be good to haul in about 2- ½ weeks assuming the tests are acceptable, which I anticipate.

Grauvogel & Associates

Lawrence W. Grauvogel PE, CIH, CSP

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MEMORANDUM

DATE: December 20, 2001

FROM: Larry Grauvogel
TO: Carl Littrell, Scott Rozanski
SUBJECT: 730 United Drive - New Soil with Hydrocarbon Odor

I have the following thoughts from my visit to the site on Tuesday in response to new soils on the southwest edge of the site:

1. These soils are probably like the ones from the southwest corner. The highest TPH result was about 4,000 mg/KG. Diluted into the other soil on-site the level should be about 450 mg/KG. Clean soil is at or less than 100 mg/KG. So this hydrocarbon soil can be used on-site as fill as long as it isn't used for topsoil. It really shouldn't be taken off-site by LaFree because it is technically contaminated.

2. Talking with the LaFree operator it seemed that the odor dissipates quickly after the soil is first excavated, hauled and dumped. We could have LaFree stockpile it on site, test it and then release it to them for landfilling at their site. I wouldn't recommend we let LaFree haul this soil with an odor off site until we have tested it. It will probably be like the Fairview soil - the tests will show that it is clean and can be disposed of anywhere. We were bound by the expectations of the Health Department to take the Fairview soil to a landfill because of the events. But if we test this new material before it leaves and find it is clean LaFree can dispose of it more cheaply, even including the lab cost. The problem will probably be space on-site to hold it while the tests are run. We can save lab costs and speed up the lab time by just running the compounds we know could be a problem based on the previous work - leachable lead and total TPH.

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