Teeter Environmental Services, Inc.

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October 30, 2001

Mr. Earl Coleman
1243 Maple Court
Hornell, New York 14843

Re: Results of Subsurface Investigation
Former Diamond Cleaners
717 Lake Street,
706-710 Benjamin Street
Elmira, New York 14902

Dear Mr. Coleman:

As requested, Teeter Environmental Services, Inc. (TES) performed a subsurface investigation at the above-referenced adjacent sites on October 9 and 10, 2001. The objective of the investigation was to characterize the environmental condition of the soil and groundwater with regard to prior site usage as a dry cleaning facility. Potential contaminants of concern were chlorinated and non-chlorinated solvents used in the dry cleaning process. In addition, an underground storage tank (UST) presumably used to contain gasoline was decommissioned. The following report summarizes the methods and results of the investigation.

I. SCOPE OF WORK

The following tasks were performed:

- Performed 15 soil borings to depths ranging from 14 to 20 feet below ground surface using a Geoprobe® direct-push soil sampling rig.
- Obtained soil samples at continuous four (4) foot intervals, observed each for evidence of solvent and petroleum impact, characterized lithologically, screened for volatile organic compounds (VOC's) using an organic vapor meter (OVM), and containerized for potential laboratory analysis.
- Submitted five (5) selected soil samples from separate borings for laboratory analysis for volatile aromatic and aliphatic hydrocarbons using EPA Method 8021.
- Obtained groundwater samples from six (6) selected borings and submitted for laboratory analysis for volatile aromatic and aliphatic hydrocarbons using EPA Method 8021.
- Prepared the following report of the findings.

II. METHODS OF INVESTIGATION

A. Soil Sampling and Analysis

Matrix Environmental Technologies Inc., Orchard Park, New York was contracted to performed the soil borings using a Geoprobe® direct-push soil probing rig. Soil samples were obtained by advancing a two (2) inch diameter steel drive point attached to steel drive rods into the subsurface with a diesel-powered percussion hammer. At the desired depth, the point was retracted leaving a two (2) inch diameter open borehole. A two-inch diameter, 48-inch long hollow steel sampling tube with an acetate liner was then attached to the drive rods, set to the bottom of the borehole, and driven the length of the tube. After retrieving the soil core, the drive point was reinserted into the boring and advanced to the next desired sample depth.

All soil samples were observed for solvent and petroleum impact by TES and characterized lithologically. The samples were placed in airtight containers to allow vapors to accumulate in the headspace. The headspace was then screened for VOC's, expressed in parts per million (ppm), using a ThermoEnvironmental Model 580B organic vapor meter (OVM). Samples from five (5) borings were submitted to Eastern Laboratory Services Ltd. (ELS) (PADEP ID #08380), South Waverly, PA and analyzed using EPA Method 8021. Target compounds include chlorinated compounds commonly associated with dry cleaning solvents such tetrachloroethene (PCE) and trichloroethene (TCE) and several volatile compounds found in petroleum products. Three (3) samples exhibiting elevated OVM readings were submitted for analysis. Two (2) additional samples from the groundwater interface were submitted for analysis. Sample locations were based on targeting features such as the former UST, vent pipes, etc. and to ensure site coverage.

Refer to Appendix A for a site map with soil boring locations.

B. Groundwater Sampling and Analysis

Groundwater samples were obtained from selected borings using a screen point sampling system. After securing soil samples from a boring, the 42-inch long, one-inch ID stainless-steel screen enclosed in a 1½-inch steel sheath with an expendable steel drive point was advanced to the bottom of the boring. Extension rods were inserted through the drive rods until contact with the drive point was made. While holding down on the extension rods, the drive rods and sheath were slowly retracted four feet exposing the well screen and allowing groundwater to enter. A peristaltic pump was used to extract groundwater samples through a 3/8-inch polyethylene tubing inserted through the drive rods down to the screen. The samples were placed in 40 milliliter zero headspace glass vials preserved with hydrochloric acid and submitted to ELS for analysis for volatile aromatic and aliphatic hydrocarbons using EPA Method 8021. Samples were obtained from throughout both sites to ensure representative coverage.

Refer to Appendix A for a site map with groundwater sampling locations.

III. RESULTS

A. General Hydrogeology

Surficial geology at the site generally consists of dark brown sand, silt, and gravel associated with a glacial outwash depositional environment. Groundwater was encountered approximately 12 feet below ground surface. Although the installation of monitoring wells was not included in the scope of work, it is assumed direction of groundwater flow is to the southeast toward the Chemung River as indicated on regional hydrogeological mapping by the USGS. Bedrock was not encountered during the investigation and must be greater than 20 feet below ground surface in the vicinity.

Refer to Appendix B for subsurface logs containing lithologic characterization for each sample interval.

B. Soil Quality

Petroleum odors and elevated OVM readings (>10 ppm) were noted in the samples from the saturated zone in SB2. An OVM reading of 27 ppm was detected in one sample from SB3. The sample also had an apparent solvent odor. Solvents odors and elevated OVM readings were also evident in samples from the saturated zone in SB6.

Refer to Table 1 for a summary of sampling intervals, OVM readings, and observations.

Soil samples from SB2, SB3, SB6, SB10, and SB14 were submitted for laboratory analysis. Of greatest significance was the sample from SB6 in which several target non-chlorianated compounds were detected at concentrations exceeding the NYSDEC soil cleanup objective. SB6 is near the former UST excavation. Xylenes were detected at a total concentration exceeding the cleanup objective in the sample from SB2. Methylene chloride was detected in some samples, but is a common laboratory contaminant and is rarely found in the subsurface at most sites. Tetrachloroethene (PCE), used commonly in the dry cleaning industry, was detected in three samples at concentrations less than the cleanup objective.

Refer to Table 2 for a summary of the analytical results and Appendix C for a copy of the complete laboratory report.

C. Groundwater Quality

Groundwater samples from SB1, SB4, SB6, SB8, SB11, and SB13 were submitted for laboratory analysis. Several non-chlorinated compounds were detected in the groundwater samples from SB4 and SB6 at concentrations slightly exceeding the groundwater standards. Of greater significance is that PCE, trichloroethene (TCE), and cis-1,2-dichloroethene (cDCE) were detected in every sample at concentrations exceeding the groundwater standards.

Table 1

Field Data

October 9-10, 2001

Boring ID	Sampling Interval (feet)	OVM Reading (ppm)	Observations
SB1	0-4	1	No observed impact
	4-8	0	No observed impact
	8-12	0	No observed impact
	12-16	0	No observed impact
	16-20	1	No observed impact
SB2	0-4	0	No observed impact
	4-8	1	No observed impact
	8-12	**45**	**Moderate petroleum odor**
	12-16	**118**	**Slight petroleum odor**
SB3	0-4	8	No observed impact
	4-8	1	No observed impact
	8-12	**27**	**Solvent odor**
	12-16	5	No observed impact
SB4	0-4	7	No observed impact
	4-8	6	No observed impact
	8-12	3	No observed impact
	12-16	7	No observed impact
SB5	0-4	1	No observed impact
	4-8	1	No observed impact
	8-12	0	No observed impact
	12-16	**11**	No observed impact
SB6	2-6	4	No observed impact
	6-10	2	No observed impact
	10-14	**48**	**Solvent odor**
	14-18	3	**Solvent odor**
SB7	2-6	2	No observed impact
	6-10	0	No observed impact
	10-14	**10**	No observed impact
SB8	0-4	0	No observed impact
	4-8	0	No observed impact
	8-12	0	No observed impact
	12-16	0	No observed impact
SB9	0-4	0	No observed impact
	4-8	0	No observed impact
	8-12	0	No observed impact
	12-16	0	No observed impact
SB10	2-6	0	No observed impact
	6-10	0	No observed impact
	10-14	0	No observed impact
SB11	2-6	0	No observed impact
	6-10	0	No observed impact
	10-14	0	No observed impact

Table 1 (cont'd)

Field Data

October 9-10, 2001

SB12	0-4	0	No observed impact
	4-8	0	No observed impact
	8-12	0	No observed impact
	12-16	0	No observed impact
SB13	0-4	2	No observed impact
	4-8	0	No observed impact
	8-12	0	No observed impact
	12-16	2	No observed impact
SB14	0-4	2	No observed impact
	4-8	0	No observed impact
	8-12	0	No observed impact
	12-16	2	No observed impact
SB15	0-4	0	No observed impact
	4-8	0	No observed impact
	8-12	0	No observed impact
	12-16	0	No observed impact

Table 2

Laboratory Analytical Summary – Soil
Volatile Aromatic and Aliphatic Hydrocarbons by EPA Method 8021 (µg/kg)

October 9-10, 2001

Compound	SB2 12'-16'	SB3 8'-12'	SB6 10'-14'	SB10 10'-14'	SB14 12'-16'	NYSDEC TAGM Value
Chlorinated Hydrocarbons						
Methylene Chloride*	**269**	ND<2.8	ND<119	5.6	5.0	100
Tetrachloroethene	ND<234	15.2	556	ND<2.9	74.7	1,400
Non-Chlorinated Hydrocarbons						
n-Butylbenzene	2,940	ND<2.8	**102,000**	3.4	3.0	10,000
sec-Butylbenzene	1,580	3.1	**42,200**	ND<2.9	ND<2.8	10,000
Isopropylbenzene	969	ND<2.8	**14,600**	ND<2.9	ND<2.8	5,000
4-Isopropyltoluene	346	ND<2.8	**11,200**	ND<2.9	ND<2.8	10,000
n-Propylbenzene	ND<234	ND<2.8	**63,600**	ND<2.9	ND<2.8	10,000
Styrene	ND<234	ND<2.8	ND<119	3.8	3.6	---
Toluene	ND<234	ND<2.8	ND<119	2.9	ND<2.8	1,500
1,2,4-Trimethylbenzene	2,200	3.7	**61,400**	4.8	ND<2.8	10,000
1,3,5-Trimethylbenzene	1,380	ND<2.8	**19,200**	ND<2.9	ND<2.8	3,310
Xylenes	**1,638**	ND<2.8	**27,980**	6.2	ND<2.8	1,200
MTBE	ND<468	ND<5.6	ND<238	6.2	ND<2.8	120
Naphthalene	ND<234	ND<2.8	821	ND<2.9	ND<2.8	13,000

Note: Only those compounds detected in one or more samples included

ND – Not detected

* Likely laboratory contaminant

Vinyl chloride was detected at concentrations exceeding the groundwater standards in three of the samples. TCE, cDCE, and vinyl chloride are breakdown products of PCE. Although TCE may have been used as a dry cleaning agent, its concentration relative to the PCE (an order of magnitude less) suggests that PCE was the primary solvent used at the site and degraded partially to TCE.

Refer to Table 3 for a summary of the analytical results and Appendix C for a copy of the complete analytical report.

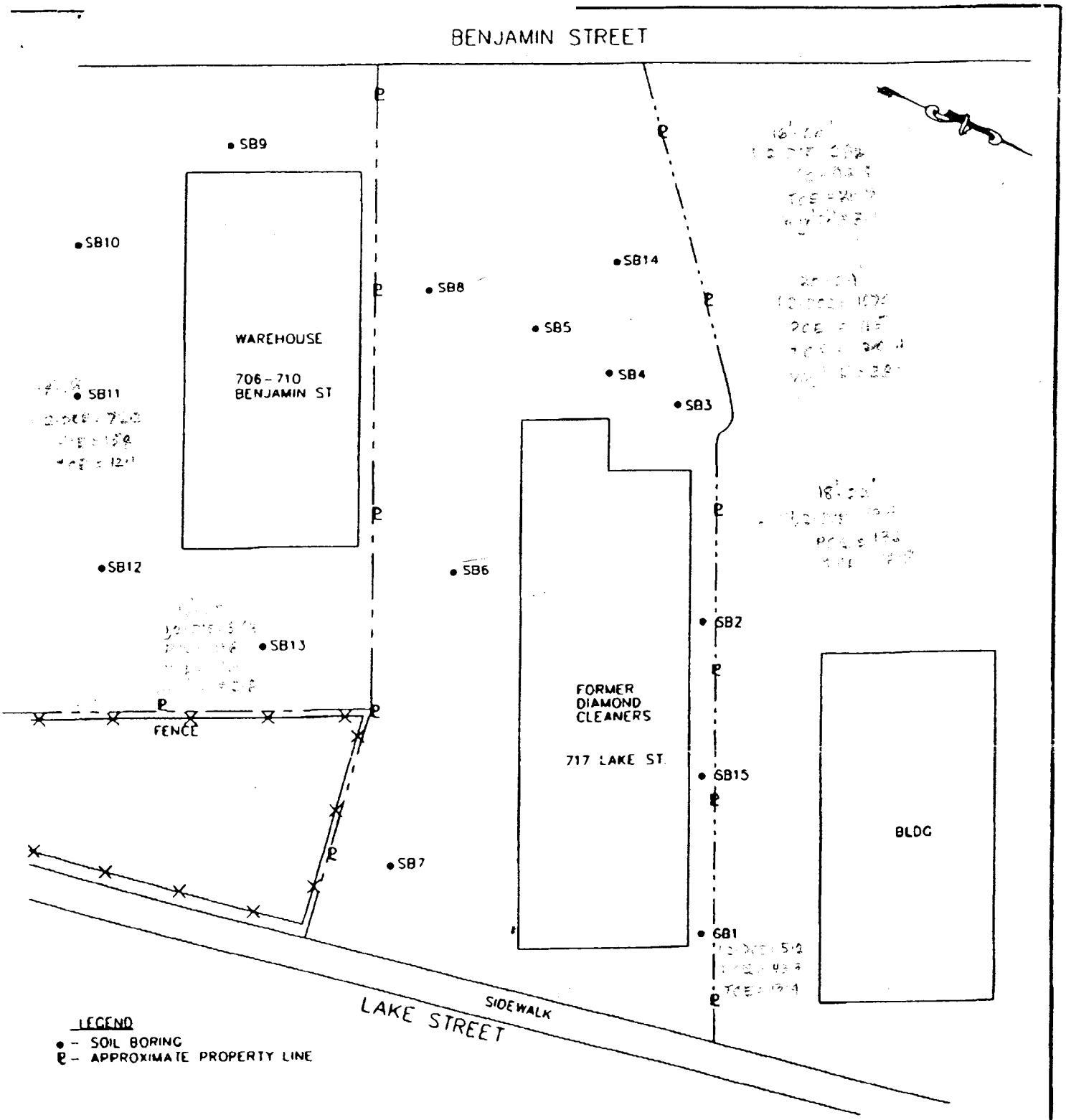
Table 3

Laboratory Analytical Summary – Groundwater
Volatile Aromatic and Aliphatic Hydrocarbons by EPA Method 8021 (µg/l)

October 9-10, 2001

Compound	SB1 20'-24'	SB4 20'-24'	SB6 18'-22'	SB8 16'-20'	SB11 14'-18'	SB13 16'-20'	NYSDEC GW Standard
Chlorinated Hydrocarbons							
s-1,2-Dichloroethene	**5.2**	**1,070**	**19.9**	**282**	**72.2**	**57.3**	5
is-1,2-Dichloroethene	ND<0.5	ND<2.5	ND<1.0	2.5	ND<0.5	ND<0.5	5
Methylene Chloride*	ND<0.5	2.5	ND<1.0	ND<0.5	ND<0.5	ND<0.5	5
Tetrachloroethene	**43.3**	**115**	**136**	**98.5**	**158**	**116**	5
Trichloroethene	**13.4**	**20.4**	**12.8**	**20.7**	**12.1**	**16.0**	5
Vinyl Chloride	ND<0.5	**280**	1.5	**3.1**	ND<0.5	**2.6**	2
Non-Chlorinated Hydrocarbons							
Benzene	0.7	ND<2.5	ND<1.0	ND<0.5	0.6	0.5	1
n-Butylbenzene	ND<0.5	ND<2.5	**16.4**	4.8	0.7	0.5	5
sec-Butylbenzene	ND<0.5	**6.5**	**7.7**	2.6	ND<0.5	ND<0.5	5
Ethylbenzene	ND<0.5	**7.7**	**6.7**	ND<0.5	ND<0.5	ND<0.5	5
Isopropylbenzene	ND<0.5	4.9	3.3	0.7	ND<0.5	ND<0.5	5
4-Isopropyltoluene	ND<0.5	**7.0**	4.9	ND<0.5	ND<0.5	ND<0.5	5
n-Propylbenzene	ND<0.5	ND<2.5	ND<1.0	ND<0.5	ND<0.5	ND<0.5	5
Styrene	ND<0.5	5.3	ND<1.0	ND<0.5	ND<0.5	ND<0.5	—
Toluene	1.1	2.6	ND<1.0	0.6	1.0	0.7	5
,4-Trimethylbenzene	0.8	**5.2**	**25.7**	**9.5**	0.8	0.7	5
,5-Trimethylbenzene	ND<0.5	ND<2.5	**7.1**	2.7	ND<0.5	ND<0.5	5
Xylenes	0.9	**11.8**	4.0	1.7	1.3	0.5	5
MTBE	1.4	ND<5.0	2.0	ND<1.0	ND<1.0	ND<1.0	10
Naphthalene	ND<0.5	ND<2.5	ND<1.0	ND<0.5	1.6	ND<0.5	10

Only those compounds detected in one or more samples included
Not detected
ly laboratory contaminant



SCALE 1" = 35'	0 — 35	
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CHECKED BY	C. Treese	
APPROVED BY	C. Treese	
REVISED	S. Marchetti	1/17/01
PROJECT NUMBER: 01-017		

DIAMOND CLEANERS
717 LAKE STREET
ELMIRA, NEW YORK
prepared for
TES, INC.
SAYRE, PENNSYLVANIA

SITE MAP

MATRIX
Environmental Technologies