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TRACKING CHECKLIST FOR CLEANUP UNDER  
15A NCAC 2L .0106 (k), (l) OR (m)

k \_\_\_\_\_ l  m \_\_\_\_\_

Incident #: 10077

Site Name: ARA / Smith's

County: Guilford Regional Office: W/S

(Enter dates in the following blanks and send a copy of sheet to Fay Sweat in PCB after each addition)

Date received in <sup>PCB</sup> Regional Office: 7 / 26 / 95

Date package determined unacceptable due to no response:  / /

OR

Date package sent to Director: 10 / 14 / 96

OR

Date package sent to PCB for final review (if applicable):  / /

Date PCB sent to Director:  / /

Date Final Action letter sent to RP: 10 / 25 / 94

Final Action: Approved  Yes: \_\_\_\_\_ No

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JUL 21 1995

DIVISION OF ENVIRONMENTAL MANAGEMENT  
CERTIFICATION FOR THE SUBMITTAL OF A CORRECTIVE ACTION PLAN  
UNDER 15A NCAC 2L.0106(1)

Responsible Party: Lindley Property Trust, M. Cope, Livingstone, Trustee  
Address: P.O. Box 35681  
City: Greensboro, State: NC, Zip Code: 27425-5681

Site Name: Gate City Truck Repair  
Address: 6301 Burnt Poplar Rd.  
City: Greensboro, Co.: Guilford Zip Code: 28150

Groundwater Section Incident Number: 10077

I, G. VanNess Burbach, a Professional Engineer/Licensed Geologist (circle one) for Pyramid Environmental, Inc. do hereby certify that the information indicated below is enclosed as part of the required Corrective Action Plan (CAP) and that to the best of my knowledge the data, site assessments, engineering plans and other associated materials are correct and accurate.  
(Each item must be initialed by hand by the certifying licensed professional)

1. GVB A listing of the names and addresses of those individuals required to be notified to meet the notification requirements of 15A NCAC 2L .0114(b) are enclosed. Copies of letters and certified mail receipts are also enclosed.
2. GVB A Professional Engineer or Licensed Geologist has prepared, reviewed, and certified all applicable parts of the CAP in accordance with 15A NCAC 2L .0103(e).
3. GVB A site assessment is attached or on file with the appropriate Regional Office which provides the information required by 15A NCAC 2L .0106(g).
4. GVB A description of the proposed corrective action and supporting justification is enclosed.
5. GVB A schedule for the implementation of the CAP is enclosed.
6. GVB A monitoring plan is enclosed which has the capacity to evaluate the effectiveness of the remedial activity and the movement of the contaminant plume, and which meets the requirements of 15A NCAC 2L .0110 and .0106(1).
7. GVB The activity which resulted in the contamination incident is not permitted by the State as defined in 15A NCAC 2L.0106(e).

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POLLUTION CONTROL BRANCH

(OVER)

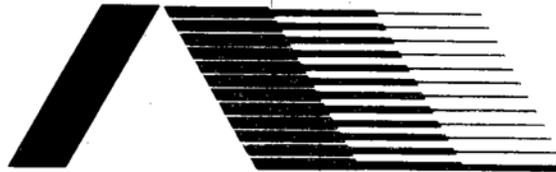
In addition, the undersigned also certifies that to the best of my knowledge and professional judgement and in accordance with the requirements of 15A NCAC 2L.0106(1), the following determinations have been made and are documented in the CAP:

8. GJB all free product has been removed to the extent practicable in accordance with 15A NCAC 2L .0106(f). (See guidance document).
9. GJB all sources of contamination have been removed or controlled in accordance with 15A NCAC .0106(f) and (1). (See guidance document).
10. GJB the contaminant has the capacity to degrade and attenuate under the site-specific conditions.
11. GJB the time and direction of contaminant travel can be predicted with reasonable certainty.
12. GJB the migration of the contaminant will not result in any violation of the standards specified in 15A NCAC 2L .0202 at any existing or foreseeable receptor.
13. GJB the contaminants have not and will not migrate onto adjacent properties, or adjacent properties are served by public water supplies which cannot be influenced by contaminants migrating off-site, or adjacent landowners have consented in writing to a request allowing the contaminant upon their property.
14. GJB all necessary access agreements needed to monitor groundwater quality have been or can be obtained.

(Please Affix Seal and Signature)



Note: Any modifications made to this form may result in the return of your submittal.



# Pyramid Environmental, Inc.

July 19, 1995

Ms. Sherry Knight  
DEHNR-DEM-Groundwater Section  
585 Waughtown Street  
Winston-Salem, NC 27107

REF: CAP for Gate City Truck Repair.

Dear Ms. Knight:

Enclosed is a copy of our Corrective Action Plan (CAP) for the Gate City Truck Repair Site at 6301 Burnt Poplar Road in Greensboro, North Carolina. If you have any questions or comments, please call us.

Respectfully,

G. Van Ness Burbach, PG  
Pyramid Environmental, Inc.

encl.

CC: Mr. Martin Cope Livingston, III, Trustee  
Lindley Property Trust

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JUL 26 1995

POLLUTION CONTROL BRANCH

## **CORRECTIVE ACTION PLAN**

**GATE CITY TRUCK REPAIR  
6301 BURNT POPLAR ROAD  
GREENSBORO, NORTH CAROLINA**

**Facility ID: 0-010064**

**July 12, 1995**

**Prepared for: Lindley Property Trust  
Greensboro, North Carolina**

**Prepared by: G. VanNess Burbach, PG  
License # 1349**

**Reviewed by: Douglas A. Canavello, PG  
License # 1066**

**PYRAMID ENVIRONMENTAL, INC.  
2706 PINEDALE ROAD  
GREENSBORO, NC 27408  
(910) 282-9030**

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# CORRECTIVE ACTION PLAN

## Gate City Truck Repair Greensboro, North Carolina

### EXECUTIVE SUMMARY:

On January 25-26, 1993, three underground storage tanks (USTs) were removed from the Gate City Truck Repair property, located at 6301 Burnt Poplar Road in Greensboro, North Carolina. The USTs consisted of one 10,000 gallon diesel UST, one 500 gallon gasoline UST and one 500 gallon waste-oil UST. Soil samples taken at the time of the UST removals, as well as subsequent soil and groundwater investigations, have shown that petroleum hydrocarbon compounds exist in the site soils and groundwater at concentrations above regulatory levels.

A Comprehensive Site Assessment (CSA) dated March 8, 1994 was submitted by Shield Environmental, Inc. for the site, and Addenda to the CSA were submitted in a report dated August 29, 1994 by Triangle Environmental, Inc., and in a report dated June 19, 1995 by Pyramid Environmental, Inc.. Pyramid Environmental proposes a Corrective Action Plan (CAP) for the site which involves excavation and off-site disposal of petroleum-contaminated soil and natural (passive) remediation of the groundwater for the site.

The soil investigations have delimited the areal extent<sub>2</sub> of the affected soil TPH above 10 ppm by Method 5030 to be approximately 150-200 ft<sup>2</sup>, and the areal extent<sub>2</sub> of soil with TPH greater than 40 ppm by Method 3550 to be approximately 450-500 ft<sup>2</sup>. The total amount of soil to be excavated is approximately 5600 ft<sup>3</sup>, or 207 yd<sup>3</sup>.

The subject property is located in a highly industrial area which is serviced by municipal water, and there are no identified or foreseeable receptors within 5 years migration distance down-gradient of the contaminant plume. Section 5 of this report provides the detailed information required to demonstrate that the site meets all of the requirements of NCAC Title 15, subchapter 2L, section .0106, paragraph 1 for approval of natural remediation for the site. Section 5.3 presents the results of computer modeling which demonstrates that the plume will not migrate off the subject property in less than 27-30 years, and that it can be expected to have been reduced to below detectable levels in that time.

## **1.0 INTRODUCTION**

### **1.1 Site Description:**

Gate City Truck Repair, located at 6301 Burnt Poplar Road in the City of Greensboro, in Guilford County, North Carolina (Figure 1), is owned by the Lindley Property Trust of Greensboro, North Carolina. The site has been used as a truck repair garage since the 1970's. The NC-DEHNR Petroleum Underground Storage Tank Program facility ID for the site is 0-010064.

On January 25-26, 1993, three underground storage tanks (USTs) were removed from the Gate City Truck Repair property (Figure 2). The USTs consisted of one 10,000 gallon diesel UST, one 500 gallon gasoline UST and one 500 gallon waste-oil UST. Analysis of soil samples taken at the time of the UST removals, as well as subsequent soil and groundwater investigations, have shown that petroleum hydrocarbon compounds exist in the site soils and groundwater at concentrations above regulatory levels.

### **1.2 Purpose of CAP**

The purpose of this Corrective Action Plan (CAP) is the remediation of petroleum hydrocarbon-containing soil and groundwater on the subject property. The hydrocarbons are the result of a release from the diesel and/or gasoline underground storage tanks (USTs) removed from the property in 1993.

Analysis of soil samples from the property show total petroleum hydrocarbon (TPH) concentrations as high as 46 ppm (parts per million) by EPA Method 5030 and 240 ppm by Method 3550. These concentrations are above the final clean-up levels according to DEHNR guidelines<sup>1</sup>.

Samples of groundwater from several monitoring wells on and near the property showed concentrations of BTEX (benzene, toluene, ethylbenzene, and xylenes) as high as 4636 ppb (parts per billion) by EPA method 602, as well as low levels of several other hydrocarbon compounds. The hydrocarbon plume extends over an area of approximately 16,000 ft<sup>2</sup>.

### **1.3 Remedial Actions to Date**

The USTs, believed to be the source of the released petroleum, have been removed from the property, thus eliminating the possibility of any further release from that source. Approximately 253 tons of excavated soil was initially stockpiled on site, then transported to an approved disposal facility for remediation. Additional testing indicated that TPH concentrations above DEHNR regulatory limits still remained in the soil on the site after excavation. No free product has been observed either during excavation of the USTs or in any of the wells.

## 1.4 Previous Reports

The results of the Underground Storage Tank Closure Assessment were presented in a report by Shield Environmental Associates, Inc. dated March 16, 1993. A Comprehensive Site Assessment (CSA) dated March 8, 1994 was submitted by Shield Environmental, Inc. for the site. An Addendum to the CSA, including the results from a new up-gradient well (MW-7) and the results of some aquifer characterization tests, was submitted in a report dated August 29, 1994 by Triangle Environmental, Inc.. Pyramid Environmental submitted an Addendum to the CSA dated June 19, 1995 which summarized the primary results of both the Shield CSA and the Triangle Addendum and presented results of further soil sampling. The Pyramid Addendum completed the requirements for the CSA and recommended development of the present CAP.

## 2.0 OBJECTIVES OF CAP

### 2.1 Goals

The goal for this CAP is to protect the public health and safety by assuring that all known or foreseeable pathways for human exposure are protected. The goals of the proposed soil remediation program are to remove soil with concentrations of total petroleum hydrocarbons (TPH) above regulatory levels so that there will be no continuing source for contamination of the groundwater, and to insure that all potential pathways for human exposure are protected. Since there is groundwater less than 5' below the zone of contaminated soil, the final clean-up levels for the site soil are the same as the state action levels (10 ppm by Method 5030 and 40 ppm by Method 3550)<sup>1</sup>.

The goal of the proposed groundwater remediation plan is to monitor the migration and degradation of the contaminant plume to protect all known and foreseeable receptors and to insure that all potential pathways for human exposure are protected. The target clean-up values for the soil and groundwater are summarized in Table 1.

**TABLE 1: Target Clean-up Values**

Method	Maximum TPH in soil	Target Clean-up
5030	46 ppm	10 ppm
3550	240 ppm	40 ppm
Methods	Maximum BTEX & Other Compounds in Groundwater	Target Clean-up
601, 602, 625, 3030C	BTEX = 4636 ppb Other - see Table 3.	BDL or 2L criteria for termination

TPH = Total Petroleum Hydrocarbons.

BTEX = Benzene, Toluene, Ethylbenzene, & Xylenes.

ppm = parts per million.

ppb = parts per billion.

## **2.2 Target Start-Up and Completion Dates**

The target for initiation of soil remediation by excavation is mid-July, 1995. The process of excavation and transport of contaminated soils to a state-approved disposal facility should require only 1-2 days. Confirmatory soil sampling will be performed coincident with the excavation. Analysis of the soil samples and a report of the results will require approximately one month.

Installation of any new or replacement monitoring wells will begin shortly after completion of the soil excavation. The monitoring wells will be sampled quarterly until such time as the target clean-up values for the groundwater are reached or the state approves reduction or cessation of the monitoring program.

## **3.0 EXPOSURE ASSESSMENT**

### **3.1 Summary of Analytical Data to Date**

#### **Soil Contamination:**

The soil samples from beneath the waste-oil UST (C1N & C1S) were analyzed for total petroleum hydrocarbons (TPH) using EPA Method 9071. The results (180 & 190 ppm, respectively) were below the state action level of 250 ppm for TPH by Method 9071.

The soil samples from the gasoline and diesel UST pits (A1S & B1N, respectively) and from the stockpile (Comp-1 & Comp-2) were analyzed for TPH by EPA Methods 5030 and 3550. Soil samples from soil borings B-1, B-2, B-3, B-4, B-6, B-7, B-8, and B-9, as well as the 5' samples from wells MW-4, MW-5, and MW-6 were also analyzed for TPH analysis using EPA Methods 5030 and 3550. The results for several of these samples were above the state action levels of 10 ppm by Method 5030 and/or 40 ppm by Method 3550. The highest levels remaining in the ground are 240 ppm by Method 3550 and 46 ppm by Method 5030. These results are summarized in Table 2 and Figure 3.

#### **Groundwater Contamination:**

Analysis of groundwater samples from seven monitoring wells and eight geoprobe borings by EPA Methods 601, 602, 625, and 3030C indicate concentrations of total BTEX components (benzene, toluene, ethylbenzene, and xylenes) as high as 4636 parts per billion (ppb) (Tables 3 & 4). Detectable concentrations of MTBE (240 ppb), IPE (300 ppb), 1,2-dibromoethane (7.9 ppb), bromodichloromethane (1.5 ppb), chloroform (38 ppb), bis-2eh-phthalate (43 ppb), Phenol (12 ppb), and lead (16 ppb) were also found in the groundwater. The sample from the vertical-extent well, VEW-1, which was screened from 51 to 61' below the ground surface (43-53' below the water table), contained only 6.4 ppb total BTEX and 0.88 ppb chloroform.

The piezometric surface as defined by groundwater levels in the monitoring wells, and the interpreted groundwater flow direction are shown in Figure 4. A conservative interpretation of the present extent of the contaminant plume as defined by total BTEX concentration is shown in Figure 5. The areal extent of the hydrocarbon plume is approximately 16,000 ft<sup>2</sup>, and the direction of groundwater flow is to the west-southwest.

### **3.2 Characteristics of Contaminants**

The chemical constituents found by the groundwater analyses are consistent with the suspected releases of gasoline and/or diesel-fuel on the site. The primary constituents are the BTEX compounds (benzene, toluene, ethylbenzene, and xylenes). The highest concentration of BTEX was in well MW-2 at 4636 parts-per-billion (ppb).

Studies by the American Petroleum Institute and others indicate the components most likely to concentrate and migrate into the groundwater are the BTEX compounds (benzene, toluene, ethylbenzene, and xylenes), and MTBE. The transport and fate of the identified contaminants include the processes of volatilization, absorption and bacterial degradation. Benzene has been determined to have a relatively high mobility and low absorption potential, and therefore would be expected to move into the groundwater most easily. Benzene is biologically degradable, as are most or all of the other primary contaminants, and significant biodegradation can be expected both within the unsaturated and saturated zones of migration.

### **3.3 Pathways for Human Exposure**

Normally, the primary route for human exposure to contaminated groundwater is through ingestion from water supply wells. The site and all adjoining properties are supplied with municipal water, and all private properties within 1500' of the site have access to the municipal water system (Figure 6). There are no water supply wells within at least 1500' of the site in the down-gradient direction (west).

There are two water supply wells located 700-900' south of the site (Figure 6); however, these properties have access to municipal water. Since these wells are not located down-gradient of the site, and since the potential for migration of the plume to these wells is very small (see Sections 5.3-5.5), it is the opinion of Pyramid Environmental that they do not represent potential receptors. There is one water supply well located approximately 2000' east of the site where there is no access to municipal water; however, given the distance and the up-gradient position, this well is also not a potential receptor.

The nearest surface water is an intermittent creek approximately 700' west of the site (Figure 6). This creek is not used as a water source for any residential, commercial, industrial, or agricultural purpose. There are no public water intakes within at least 1500' of the site.

Another common route of exposure is through inhalation due to movement of benzene vapors into soil gas and subsequent migration into indoor air environments. There are no residential structures in the area, and none of the commercial structures on the site have basements. There are some underground electrical and sewer lines on the site near the area of contaminated soil which could provide a path for soil vapors to migrate; however, it is unlikely that these could provide a route for human exposure. The potential for significant human exposure on this site by any normal or foreseeable route is very small.

### **3.4 Potential Effects of Residual Contamination**

Since there is very little potential for human exposure at this site, and since potential for migration of contaminants to the nearest receptor is minimal (see sections 5.3-5.5), the harmful effects of potential residual contamination is expected to be insignificant.

### **3.5 Potential Receptors at Greatest Risk**

The site and all adjoining properties are supplied with municipal water, and all private properties within 1500' of the site have access to the municipal water system (Figure 6). There are no water supply wells within at least 1500' of the site in the down-gradient direction (west). There are two water supply wells located 700-900' south of the site, and one water supply well located approximately 2000' east of the site. It is the opinion of Pyramid Environmental that these wells do not represent potential receptors (see Section 3.3). The nearest surface water is an intermittent creek approximately 700' west of the site. There are no public water intakes within 1500' of the site.

The estimated groundwater flow rate is approximately  $1.3 \times 10^{-7}$  cm/sec (0.135 ft/yr) toward the west-southwest. Modeling of potential plume migration indicates that the plume will not migrate of the subject property in less than 27-30 years (see Section 5.3).

### **3.6 Soil Properties and Groundwater Conductivities**

On May 9, 1994 wells MW-1, MW-2, MW-3, MW-4, and MW-6 were re-surveyed and water levels measured to define a piezometric surface. The calculation of relative groundwater elevations is summarized in Table 5. The relative groundwater levels are plotted and contoured to show the interpreted piezometric surface in Figure 4. These data indicate a piezometric gradient of approximately  $1.0^\circ$  ( $dh/dl=0.017$ ) toward the west-southwest. These results are consistent with the results determined by both Shield Environmental, and Triangle Environmental.

On June 16, 1994, Triangle Environmental conducted a rising head test on Monitoring Well MW-1. The results indicated a hydraulic conductivity of  $2.6 \times 10^{-6}$  cm/sec. They calculated the seepage velocity, assuming an effective porosity of 40%, to be  $1.3 \times 10^{-7}$  cm/sec (0.135 ft/yr) (see Section 5.3).

## 4.0 EVALUATION OF REMEDIAL ALTERNATIVES

### 4.1 Options for Soil and Groundwater Remediation

The primary options available for remediation of the site include the following. The advantages, disadvantages, relative costs, and other factors relating to these options are summarized in Table 6.

- **OPTION A:** Installation of a combination soil vapor extraction (SVE) and pump-and-treat system. The pump-and-treat system will draw down the water table and recover groundwater for on-site treatment by diffused aeration and a series of carbon filters. The SVE system will remove the volatile hydrocarbons from the soil and will stimulate in-situ biodegradation of the remaining petroleum hydrocarbons.
- **OPTION B:** Installation of a closed-loop bio-reactor system designed to pump ground water from the surface aquifer, remove the contaminants through biological remediation, and apply the treated water to the areas of contaminated soil to flush more contaminants into the recovery wells for further treatment.
- **OPTION C:** Installation of a combination SVE and Air-Sparging system which will aerate both the saturated and unsaturated zones to remove volatile hydrocarbons and to stimulate in-situ biodegradation of the remaining petroleum hydrocarbons.
- **OPTION D:** Excavation of contaminated soil and natural (passive) remediation of the groundwater of the site. Under this option, the natural processes of biological degradation and attenuation are considered adequate to control and/or remediate the site. After initial soil excavation and installation of any necessary monitoring wells, no action is taken other than monitoring of the groundwater plume. NCAC Title 15, subchapter 2L, section .0106, paragraph 1 provides the option of natural remediation when the following conditions are met.
  1. All sources of contamination have been removed;
  2. The product has the capacity to degrade under site conditions;
  3. The time and direction of plume migration can be predicted with reasonable certainty;
  4. Plume migration will not result in violation of groundwater standards at any existing or foreseeable receptors;
  5. The plume will not migrate onto any property which is not served by the municipal water system;
  6. The plume will not intercept any surface waters;

7. The groundwater monitoring system will be sufficient to track the degradation and attenuation of the plume and to detect contaminants prior to their reaching any existing or foreseeable receptor at least one year's travel time up-gradient of the receptor and no greater than five years travel time down-gradient from the contaminant site;
8. All necessary access agreements pursuant to (7) above have been or can be obtained;
9. Public notice of the request has been provided in accordance with regulations; and
10. The proposed corrective action plan will be consistent with all other applicable laws.

#### **4.2 Recommendations and Rationale for Selection**

Pyramid Environmental recommends Option D above as the most appropriate option for this site. The rationale for this recommendation is given below.

The soil boring investigation has delimited the areal extent of the affected soil TPH above 10 ppm by Method 5030 to be approximately 150-200 ft<sup>2</sup>. The areal extent of soil with TPH greater than 40 ppm by Method 3550 is approximately 450-500 ft<sup>2</sup>. The depth to which soil can be excavated/treated is constrained by the shallow groundwater to approximately 8 feet. So the total amount of soil that must be remediated is approximately 5600 ft<sup>3</sup>, or 207 yd<sup>3</sup>. Given the relatively low levels of contamination remaining on the site, the relatively small volumes, and the shallow extent, excavation would be the most cost-effective solution for remediation of the site soils.

After the excavation, confirmatory soil sampling and analysis will be performed under the supervision of a licensed geologist to demonstrate that no soil with TPH above state action levels remains on site. The excavated soil would either be transported to a state-approved disposal facility for remediation and the excavation back-filled with clean fill material, or the soil could be treated on-site using a state-approved portable soil burner. In the latter case the excavated and treated soil would be used to backfill the excavation after confirmatory sampling and analysis demonstrates that the soil TPH has been reduced to below detectable limits.

The subject property is located in a highly industrial area which is serviced by municipal water. Since there are no identified or foreseeable receptors within 5 years migration distance down-gradient of the contaminant plume, natural remediation is the most logical, and obviously the most cost effective solution for remediation of the contaminated groundwater on the site. The following section of this report provides the detailed information required to demonstrate that the site meets all of the requirements of NCAC Title 15, subchapter 2L, section .0106, paragraph 1 for approval of natural remediation for the site.

## 5.0 REQUIREMENTS FOR NATURAL REMEDIATION

### 5.1 Sources of Contamination

The primary sources of the contamination, the USTs, have been removed from the site. Hydrocarbon-containing soils which currently remain on the site could constitute a secondary source for contamination of the groundwater. These soils will be removed by excavation as described above.

### 5.2 Capacity to Degrade

The transport and fate of the identified contaminants include the processes of volatilization, absorption and bacterial degradation. It has been demonstrated that bacteria, yeasts, fungi, and algae have the capacity to grow on and degrade a wide variety of organic compounds including hydrocarbons (<sup>2</sup>Ceringha, 1984; <sup>3</sup>Tabak, et al., 1981). These organisms are indigenous to the site soils and groundwater, so significant biodegradation can be expected both within the unsaturated and saturated zones of migration. The limiting factor in the efficiency of biodegradation is the availability of sufficient oxygen to sustain the biological activity.

All the contaminants identified in the groundwater of the site are biodegradable<sup>4</sup>, with the exception of lead. Lead was found at 16 ppb which is slightly above the state's groundwater standard of 15 ppb for lead<sup>5</sup>; however, this level of lead could easily be natural since natural soils typically contain 2-200 ppm of lead<sup>6</sup>.

### 5.3 Plume Migration / Modeling

Figure 4 shows the groundwater piezometric surface as determined by a survey of the monitoring wells on site. These data indicate a groundwater gradient of 0.02 ft/ft (1.15°) toward the west-southwest. This is consistent with the gradients determined by both Shield Environmental and Triangle Environmental.

Triangle Environmental conducted a rising head test and determined the hydraulic conductivity (K) of the site soils to be  $2.6 \times 10^{-6}$  cm/sec, or  $7.37 \times 10^{-3}$  ft/day. Given the observed groundwater gradient (dh/dl) of 0.02, and assuming an effective porosity of 40% ( $n_{ed}=0.4$ ), we can calculate the groundwater velocity as follows:

$$V = (K / n_{ed}) \times dh/dl = 1.3 \times 10^{-7} \text{ cm/sec} = 3.685 \times 10^{-4} \text{ ft/day} = 0.135 \text{ ft/yr.}$$

Even if these values are off by 1-2 orders of magnitude, the groundwater would not be expected to travel more than a few feet per year. Even at 10 ft/yr it would take the plume approximately 25 years to reach the property boundary in the down-gradient direction.

### MODELING:

To confirm these estimations, migration of the contaminant plume has been modeled using the BIOPLUME-II software developed by the National Center of Groundwater Research at Rice University. The modeling was performed using a 20'x20' grid. The layout of the grid on the site is shown in Figure 7.

Three levels of modeling were performed. The initial modeling was performed assuming the hydrologic gradient ( $dh/dl = 0.02$ ) determined from the monitoring wells on the site (Figure 4), hydraulic conductivity ( $K = 9 \times 10^{-8}$  ft/sec) determined from rising-head tests performed on the site, and the initial contaminant plume as delineated by the groundwater analysis (Figure 5). The initial modeling included the effects of convective transport, hydrodynamic dispersion, retardation, and oxygen-limited biodegradation. In the second level of modeling, all the parameters were the same as the first level except that the hydraulic conductivity was increased by two orders of magnitude. In the third level of modeling, all the parameters were the same as the second level except that the effects of oxygen-limited biodegradation were not included.

The important parameters used in the modeling procedures are summarized in Table 7. Where these parameters represent assumptions or estimations, an effort was made to use the most conservative values appropriate for the site. Appendix I includes the output files for all three levels of BIOPLUME-II modeling.

The results of the Level 1 modeling are summarized in Figure 8. Figure 8a shows the current BTEX (benzene, toluene, ethylbenzene, and xylenes) plume as defined by groundwater analyses, Figure 8b shows the plume after five years, and Figure 8c shows the plume after ten years. Because of the extremely low hydraulic conductivity used in this model, even after 10 years the center of the plume has not migrated significantly. Even in this stagnant condition, the maximum BTEX concentration of the plume has been reduced to 1568.7 ppb, a reduction of over 66%, and the area of the plume has been significantly reduced.

The results of the Level 2 modeling, showing the effects of increasing the hydraulic conductivity by two orders of magnitude, are shown in Figure 9. The initial plume (Time = 0) is the same as in Figure 8a. Figure 9a shows the BTEX plume after 1 year, Figure 9b shows the plume after five years, and Figure 9c shows the plume after ten years. After 10 years, the leading edge of the plume has advanced by 160', or approximately 16' per year, and the maximum BTEX concentration of the plume has been reduced to only 85.25 ppb, a reduction of over 98%. At this rate, it would take the plume over 15 years to reach the property boundary and it would be reduced to below detectable concentrations before that.

The results of the Level 3 modeling, showing the migration of the plume with the higher Hydraulic Conductivity but with no biodegradation, are shown in Figure 10. The initial plume (Time = 0) is the same as in Figure 8a. Figure 10a shows the BTEX plume after 1 year, Figure 10b shows the plume after five years, and Figure 10c shows the plume after ten years. After 10 years, the leading edge of the plume has advanced by 180', or approximately 18' per year, and the maximum BTEX concentration of the plume has been reduced to 499.7 ppb, a reduction of over 89%. At this rate, it would take the plume over 13 years to reach the property boundary.

#### **5.4 Existing and Foreseeable Receptors**

The site and all adjoining properties are supplied with municipal water, and all private properties within 1500' of the site have access to the municipal water system (Figure 6). There are no water supply wells within at least 1500' of the site in the down-gradient direction (west).

There are two water supply wells located 700-900' south of the site; however, these properties have access to municipal water. Since these wells are not located down-gradient of the site, and since the potential for migration of the plume to these wells is very small, it is the opinion of Pyramid Environmental that they do not represent potential receptors. There is one water supply well located approximately 2000' east of the site where there is no access to municipal water; however, given the distance and the up-gradient position, this well is also not a potential receptor.

The entire area surrounding the subject site is highly industrial, including several large petroleum product tank farms and pipelines. The adjoining property owners are shown in Figure 11 and Table 8. The property to the west (down-gradient) of the subject property is owned by Ashland Petroleum Company, which includes most of the area within 1500' down-gradient of the hydrocarbon plume. Given the present and foreseeable future use of these properties and the availability of municipal water, it is highly unlikely that any water supply wells or other foreseeable receptors will ever be installed.

#### **5.5 Adjacent Properties & Municipal Water System**

Figure 6 shows the locations of municipal waterlines servicing the site and adjoining properties. According officials at the Greensboro Water and Sewer Department, all of the adjoining properties are serviced by the municipal water system. Figure 11 and Table 8 identify the adjoining property owners.

The adjacent property boundary in the down-gradient direction (Ashland Oil) is approximately 250' from the leading edge of the contaminant plume. Even with the most conservative model assuming a hydraulic conductivity two orders of magnitude higher than test measurements on the site indicated and assuming no biodegradation, it would take the plume at least 13 years to reach the property boundary (see Section 5.3).

## **5.6 Surface Waters**

The nearest surface water is an intermittent creek approximately 700' west of the site. This creek is not used as a water source for any residential, commercial, industrial, or agricultural purpose. There are no public water intakes within at least 1500' of the site. Given the estimated groundwater velocities for the site, it will take the plume over 14,800 years to reach that creek. Even with the most conservative model assuming a hydraulic conductivity two orders of magnitude higher than test measurements on the site indicated and assuming no biodegradation, it would take the plume at least 38 years to reach the intermittent creek.

## **5.7. Groundwater Monitoring System**

There are now seven serviceable groundwater monitoring wells on the site, including one deep-screened well (Figures 2 & 5). One of the two down-gradient wells (MW-5) was removed. The other (MW-6) was BDL below state groundwater standard for all contaminants except chloroform, which was present in the first sampling but not in the second (Table 3). In the opinion of Pyramid Environmental, well MW-5 should be replaced. Regular sampling and analysis of the existing wells (including the MW-5 replacement) should be sufficient to monitor the migration and degradation of the plume. If the monitoring indicates movement of the plume, additional monitoring wells can be installed further down-gradient on the subject property to the west of the West Brothers' Building.

## **5.8 Access Agreements**

It is not anticipated that any monitoring wells or any other form of encroachment will be necessary beyond the subject property's boundaries; therefore, no access agreements will be required.

## **5.9 Public Notice**

All owners of properties adjacent to the subject property (Table 8), as well as the Mayor of Greensboro and the Guilford County Health Director have been notified via certified mail of this request for natural remediation in accordance with Title 15A: 2L.0114-b. Copies of the notification letters and returned receipts are included in Appendix II. Should this request be approved, all of the above individuals shall be notified within 30 days of the decision in accordance with Title 15A: 2L.0114-c.

## **5.10 Other Applicable Laws**

Every reasonable effort will be made to insure that all aspects of this corrective action plan will be implemented in a manner conformable to all applicable laws and environmental regulations.

## 6.0 REFERENCES

- <sup>1</sup> **Groundwater Section Guidelines for the Investigation and Remediation of Soils and Groundwater.** NC Dept. of Environment, Health, and Natural Resources, Div. of Environmental Management, Groundwater Section. March, 1993.
- <sup>2</sup> Cerniglia, C.E., "Microbial Transformation of Aromatic Hydrocarbons" in: **Petroleum Microbiology**, R.M. Atlas, ed.. McMillan, New York, 1984; pp. 99-128.
- <sup>3</sup> Tabak, H.H., S.A. Quave, C.I. Nashni, and E.F. Barth, "Biodegradability Studies with Organic Priority Pollutant Compounds". **Journal WPCF**, 1981, v.53, #10, pp. 1503-1518.
- <sup>4</sup> Verschueren, Karel, **Handbook of Environmental Data on Organic Chemicals.** Van Nostrand Reinhold, New York, 1983, pp1075-1076.
- <sup>5</sup> North Carolina Administrative Code: Title 15; Subchapter 2L.
- <sup>6</sup> **Hazardous Waste Land Treatment.** US-EPA Office of Solid Waste and Emergency Response, SW 874 (April, 1983), page 273, Table 6.46.

## 7.0 CLOSURE

This report is prepared for, and made available solely for the use of, the Client, and the contents thereof may not be used or relied upon by any other person without the express written consent and authorization of the consultant. The observations, conclusions, and recommendations documented in this report are based on site conditions and information available at the time of Pyramid's investigation. Pyramid Environmental, Inc. appreciates the opportunity to provide this environmental service.

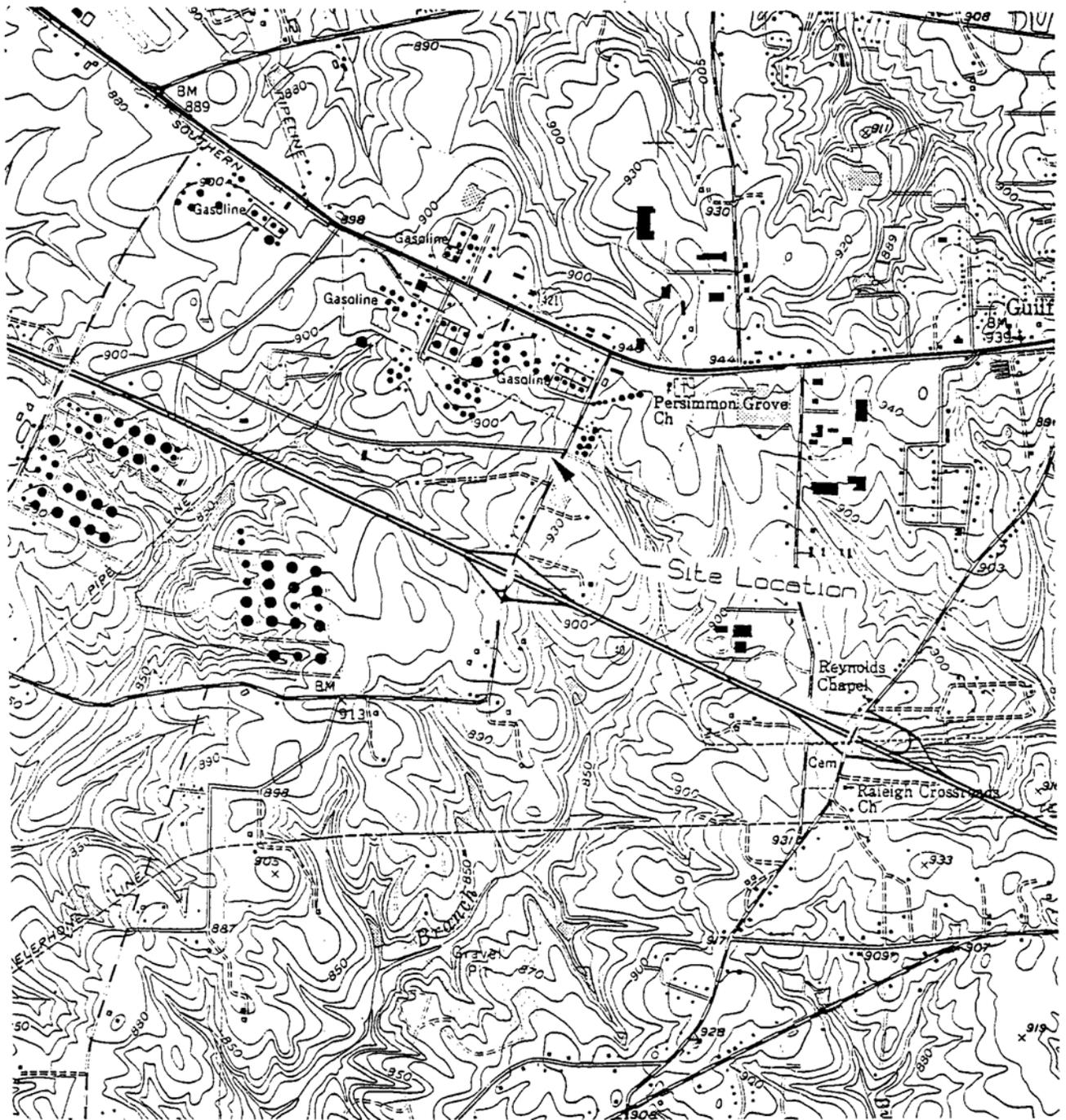


Prepared by:

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Reviewed by:

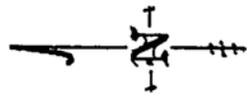
  
Douglas A. Canavello, PG  
License # 1066



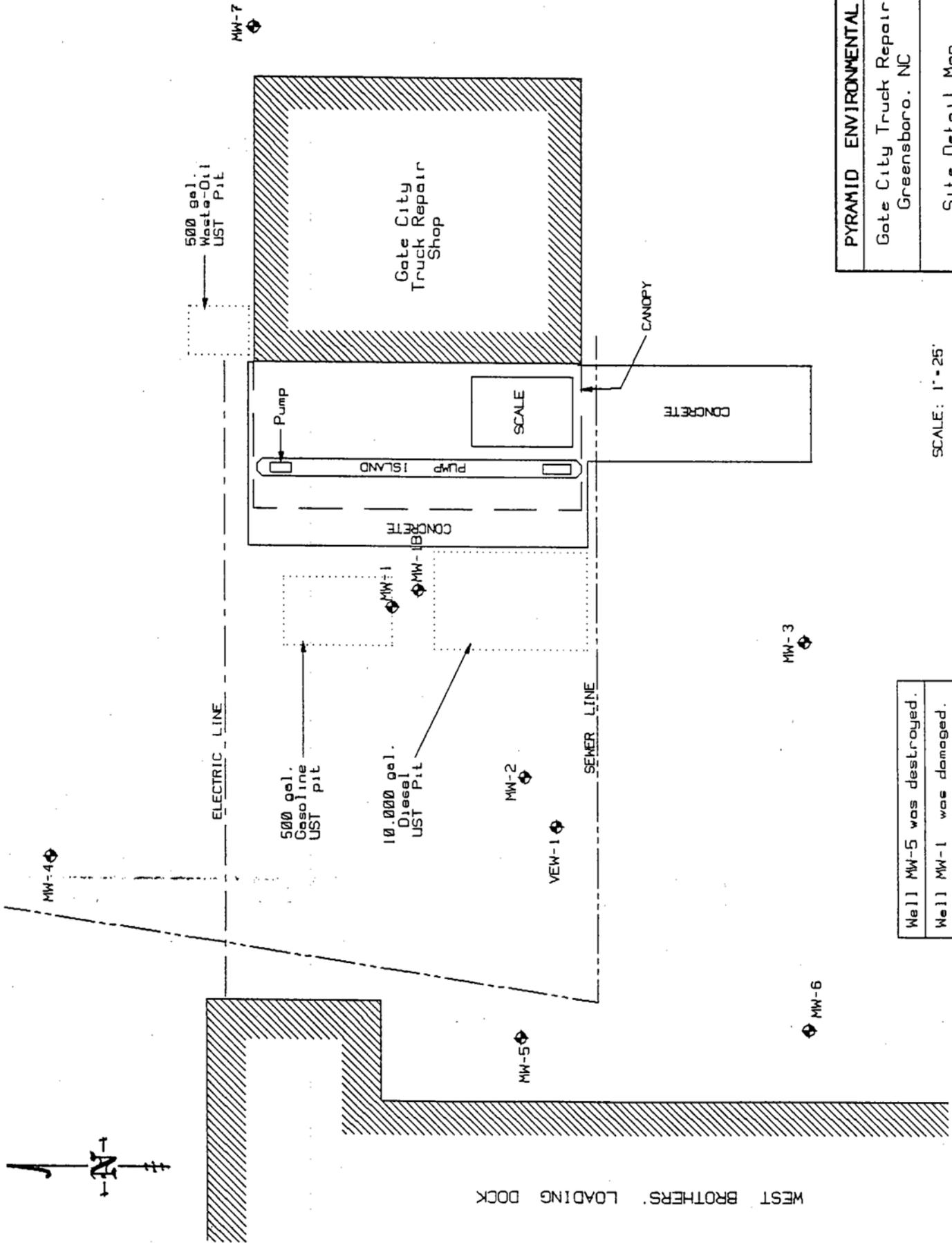
North ↑

Scale: 1" = 2000'  
 USGS Topographic Map  
 Guilford, NC Quadrangle

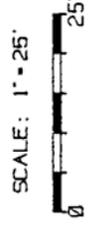
PYRAMID ENVIRONMENTAL	
Gate City Truck Repair Greensboro, NC	
Site Location Map	
May 1995	Figure 1



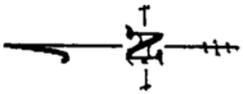
WEST BROTHERS' LOADING DOCK



PYRAMID ENVIRONMENTAL	
Gate City Truck Repair Greensboro, NC	
Site Detail Map	
June, 1995	Figure 2



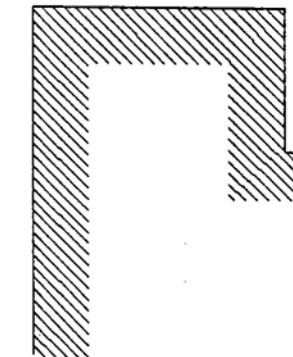
Well MW-5 was destroyed.
Well MW-1 was damaged.
Well VEW-1 screened from 51-61' subsurface.



WEST BROTHERS' LOADING DOCK

MW-4  
BDL  
BDL

Area with detectable TPH by Method 9071 (none above 250 ppm)



Area with TPH above 10 ppm by Method 5030

Area with detectable TPH by Method 5030

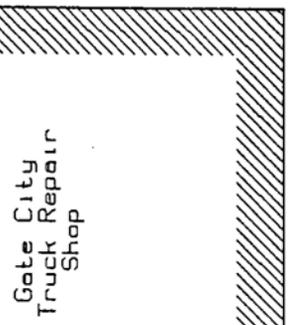
Area with detectable TPH by Method 9071 (none above 250 ppm)

B-3  
BDL  
BDL

B-1  
BDL  
BDL

B-2  
BDL  
11.7

B-8  
BDL  
1.0



Gate City Truck Repair Shop

MW-5  
BDL  
BDL

VIEW-1

MW-2

B-6  
BDL  
BDL

MW-1B

B-4  
BDL  
B2.5

MW-1

B-9  
BDL  
10.1

B-8  
BDL  
1.0

Area with detectable TPH by Method 3550

AISX  
BDL  
2.40

B-7  
BDL  
1.6

Area with TPH above 40 ppm by Method 3550

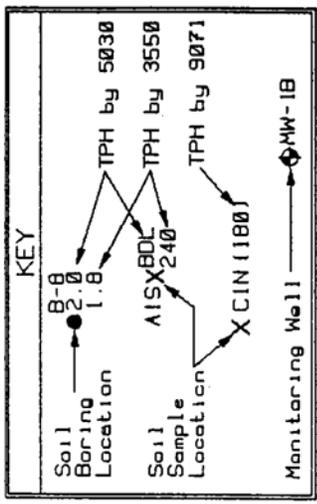
MW-3

MW-6  
BDL  
BDL

MW-1B

MW-1B

MW-1B

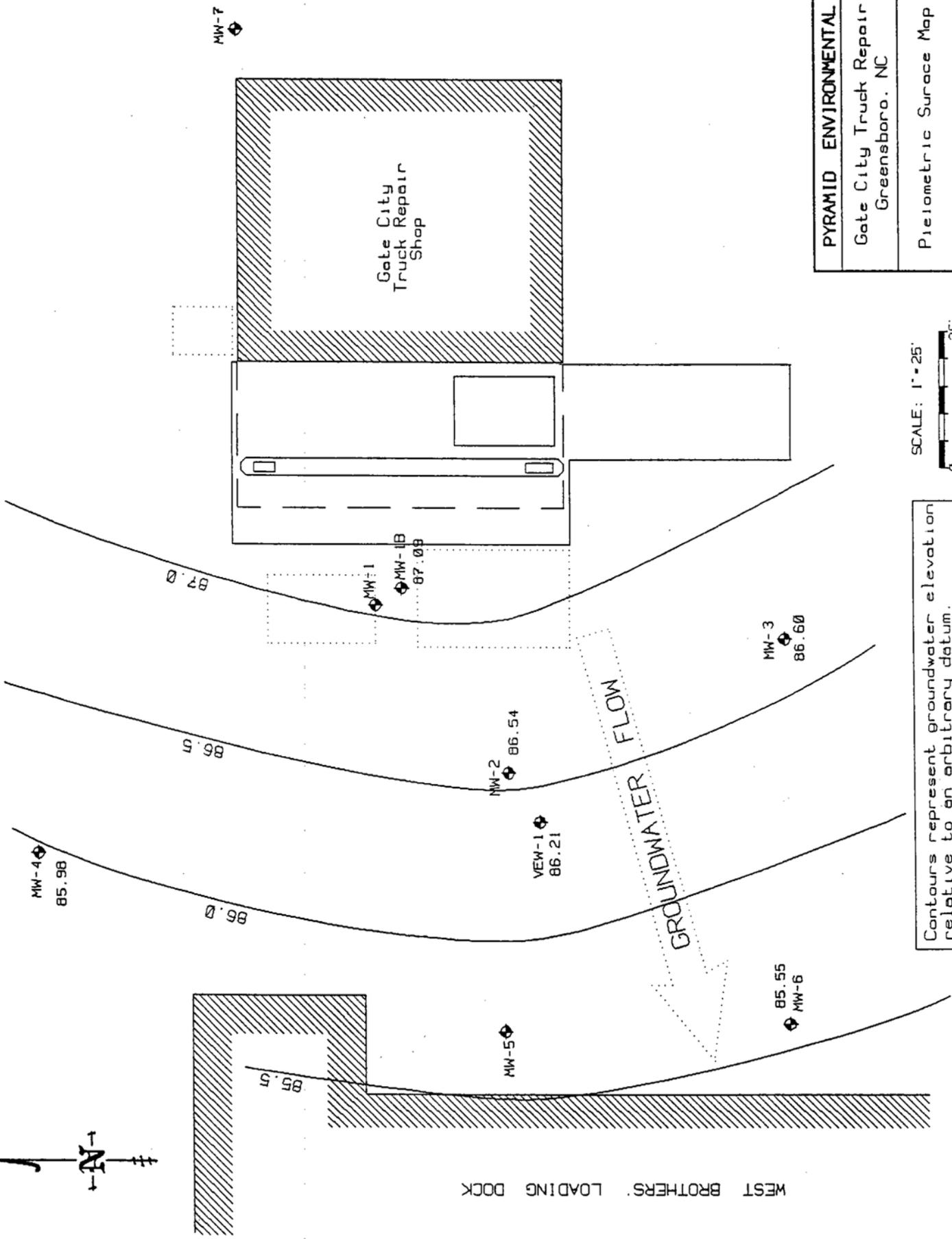


<b>PYRAMID ENVIRONMENTAL</b>	
Gate City Truck Repair Greensboro, NC	
Results of Soil Analyses	
June, 1995	Figure 3



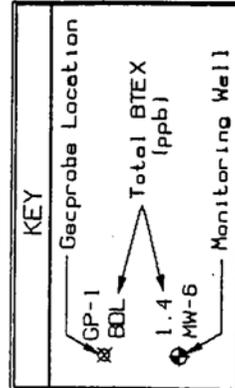
All Values in parts per million (ppm).  
BDL = Below Detection Limit.

PYRAMID ENVIRONMENTAL	
Gate City Truck Repair Greensboro, NC	
Pietometric Surface Map	
June, 1995	Figure 4

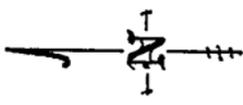


Contours represent groundwater elevation relative to an arbitrary datum.  
Contour Interval = 0.5'

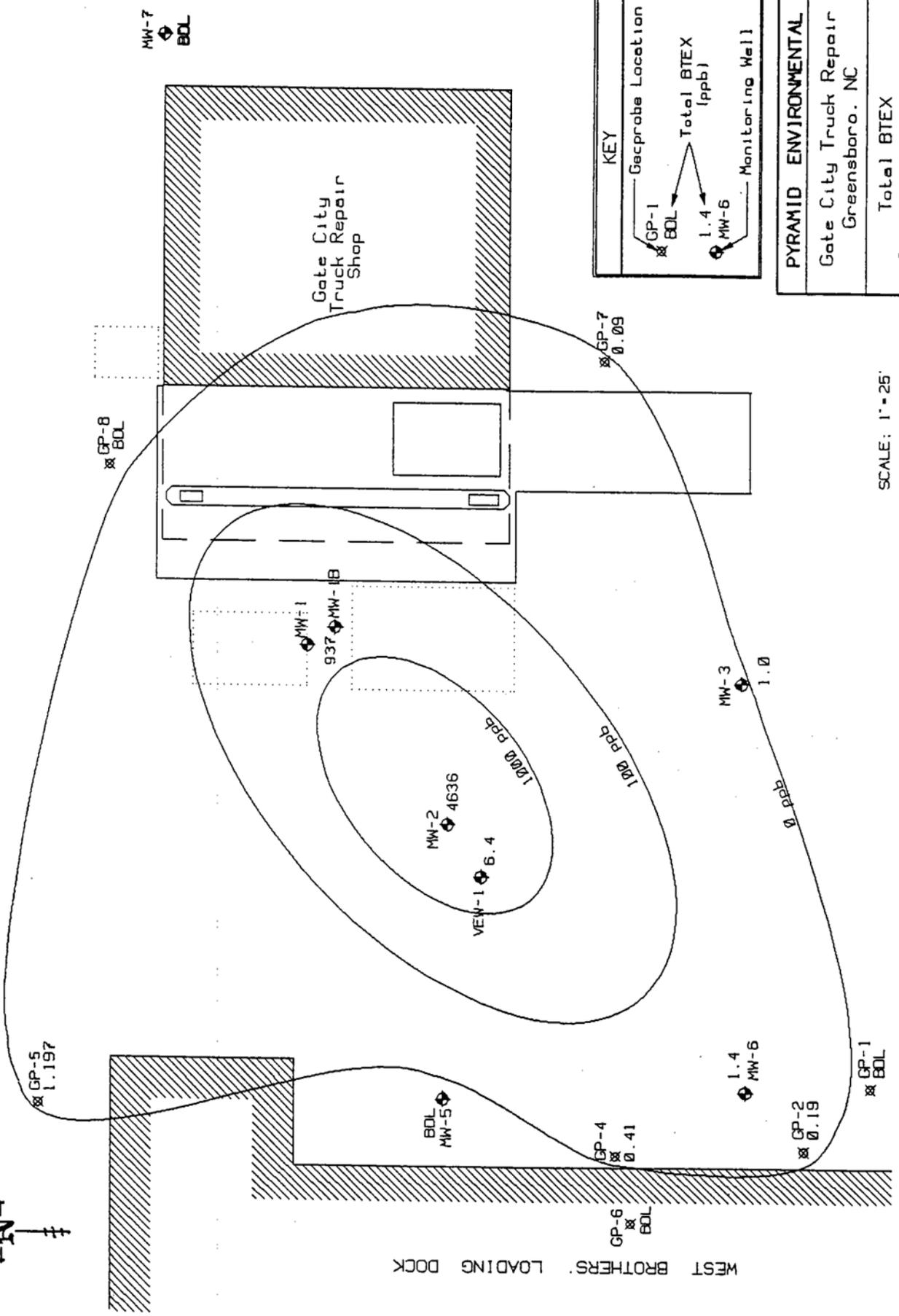
Contours represent total concentration of BTEX (Benzene, Toluene, Ethylbenzene, & Xylenes) in parts per billion (ppb).  
BDL = Below Detection Limit.



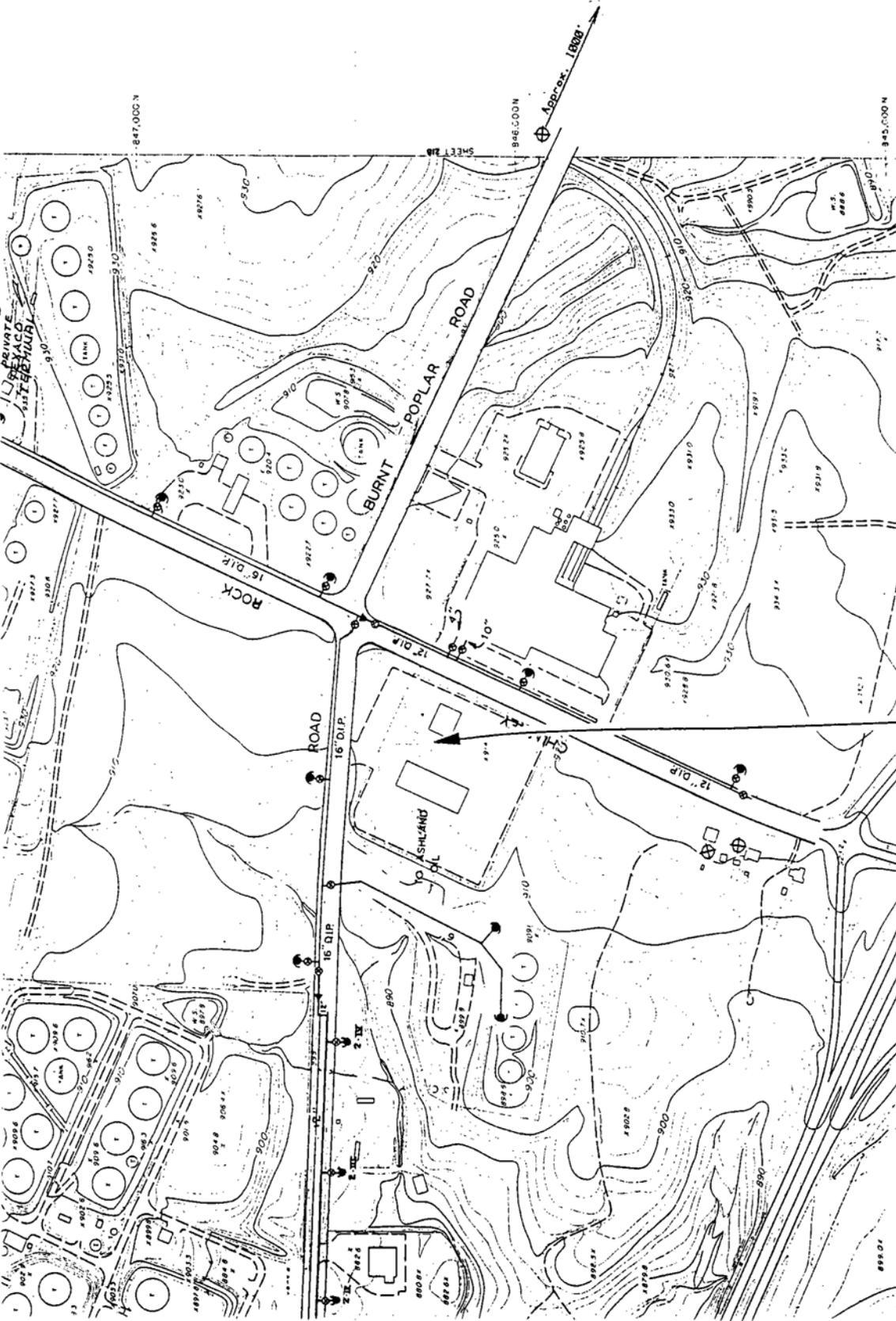
<b>PYRAMID ENVIRONMENTAL</b>	
Gate City Truck Repair Greensboro, NC	
Total BTEX Isoconcentration Map	
June, 1995	Figure 5



WEST BROTHERS' LOADING DOCK



NORTH



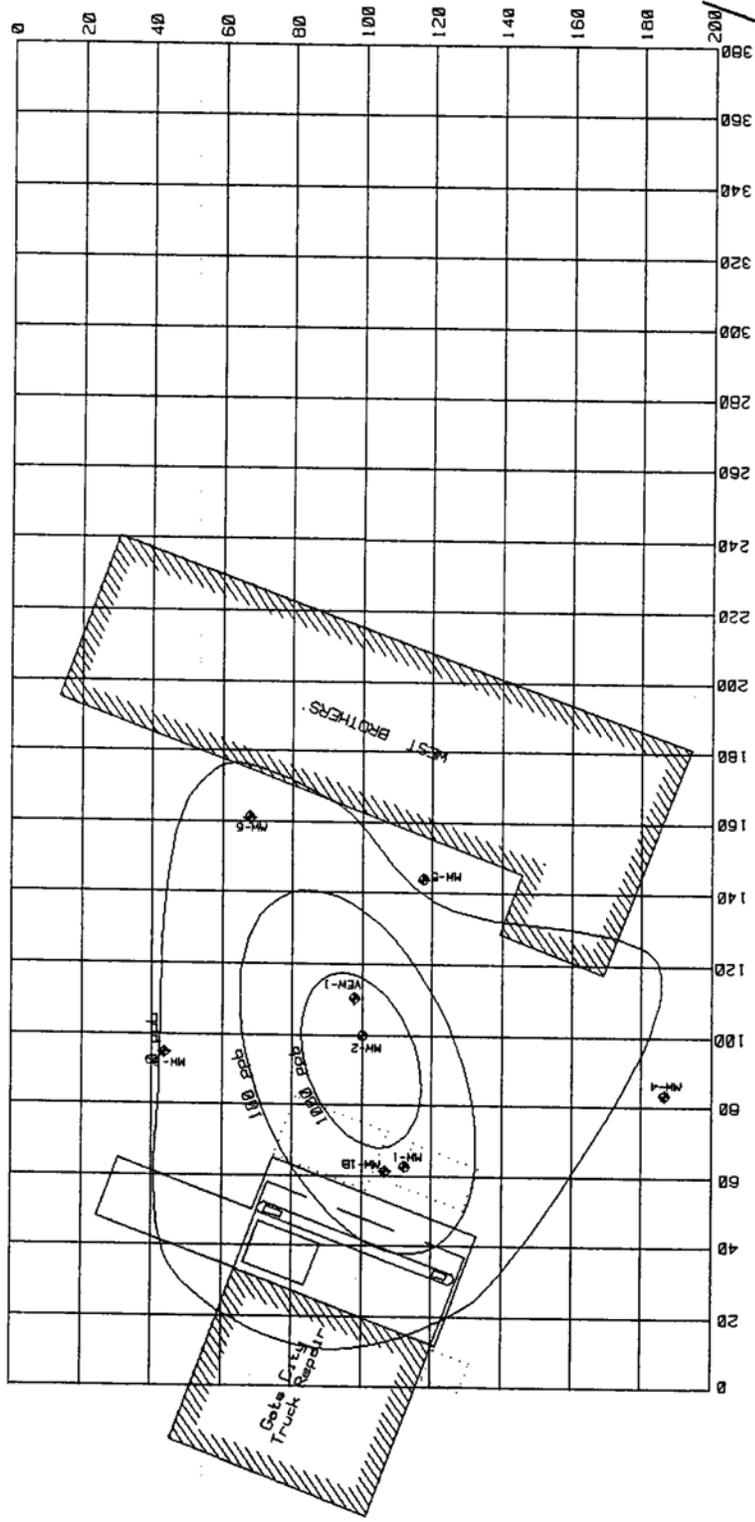
PYRAMID ENVIRONMENTAL
Gate City Truck Repair Greensboro, NC
City of Greensboro Water Line Map
June, 1995
Figure 6

SCALE: 1" = 400'

Site Location

⊕ Water Supply Well

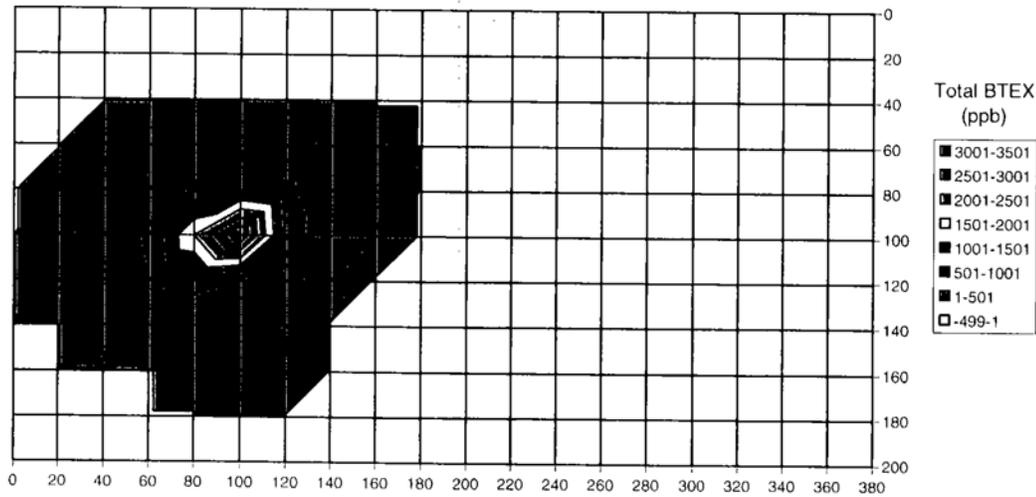
20' X 20' Grid for BIOPLUME II Modeling (Figures 8. 9. & 10).



Contours represent current plume as defined by total BTEX concentration in parts per billion (ppb).  
(See Figure 5)

<b>PYRAMID ENVIRONMENTAL</b>
Gale City Truck Repair Greensboro, NC
BIOPLUME II Model Grid
July, 1995
Figure 7

Figure 8a: Level 1 - Present Plume. (Max. BTEX = 4636 ppb)



BIOPLUME II  
RESULTS  
MODELING LEVEL 1  
 $T = 5 \times 10^{-6} \text{ ft}^2/\text{sec}$   
With Biodegradation

Figure 8b: Level 1 - After 5 years. (Max BTEX = 2668 ppb)

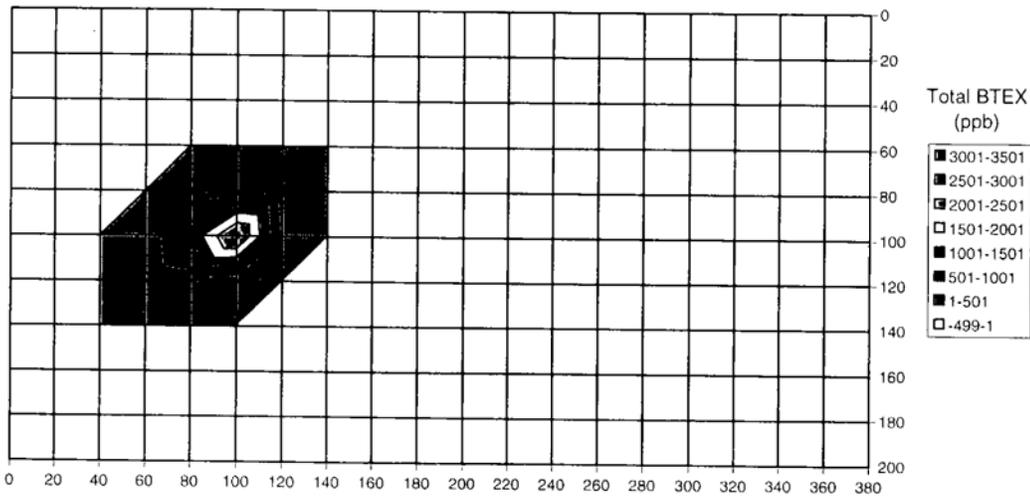
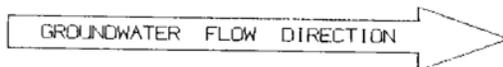
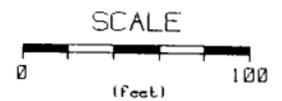
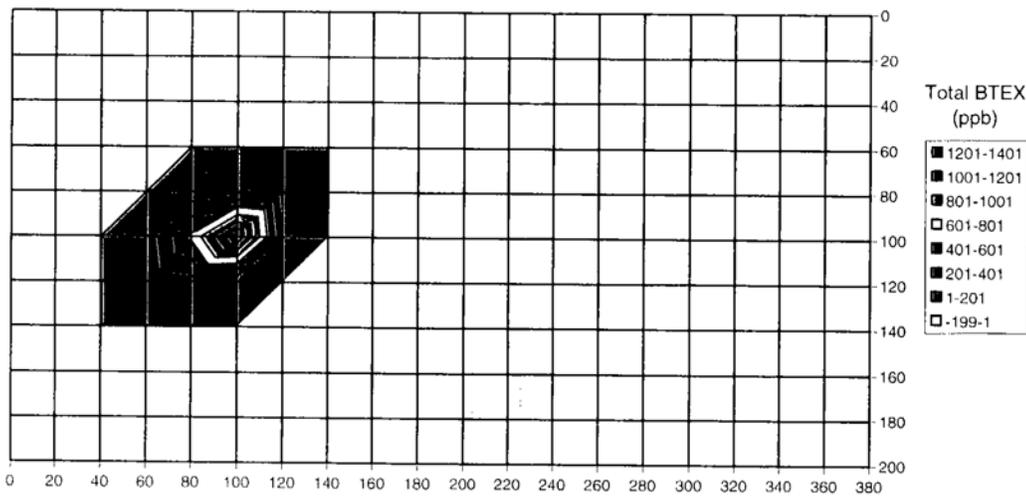
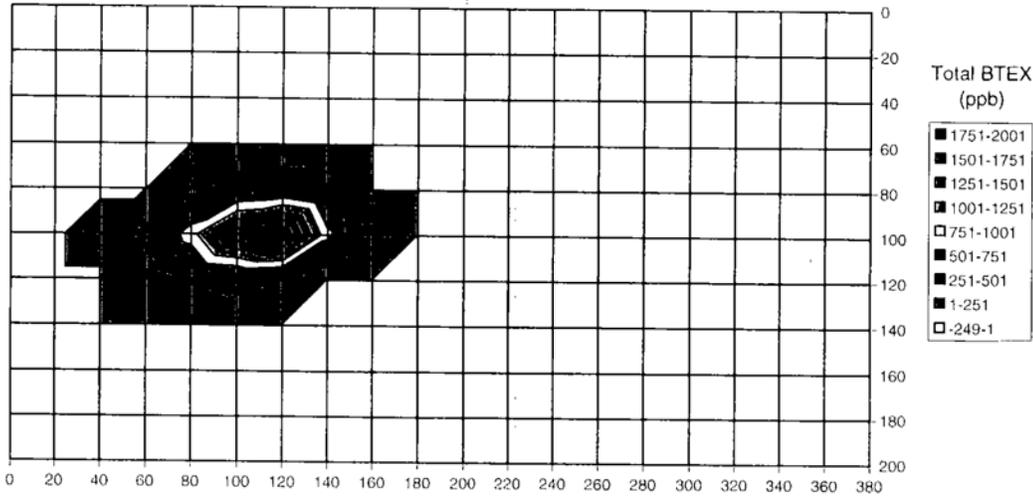


Figure 8c: Level 1 - After 10 years. (Max. BTEX = 1569 ppb)



PYRAMID ENVIRONMENTAL	
Gate City Truck Repair Greensboro, NC	
Bioplume II Modeling Level 1	
July 1995	Figure 8

Figure 9a: Level 2 - After 1 year. (Max. BTEX = 2051 ppb)



BIOPLUME II  
RESULTS  
MODELING LEVEL 2  
 $T = 5 \times 10^{-4} \text{ ft}^2/\text{sec}$   
With Biodegradation

Figure 9b: Level 2 - After 5 years. (Max. BTEX = 625 ppb)

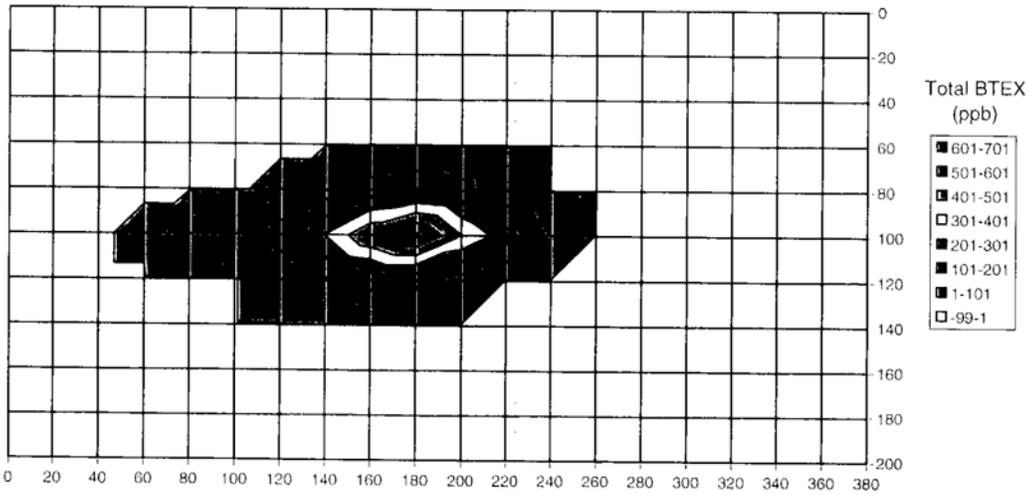
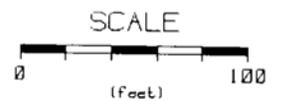
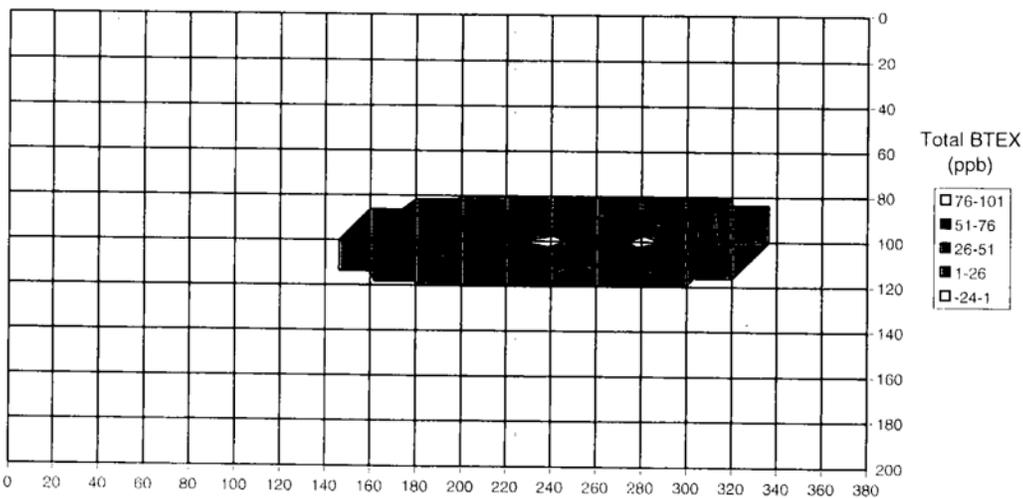
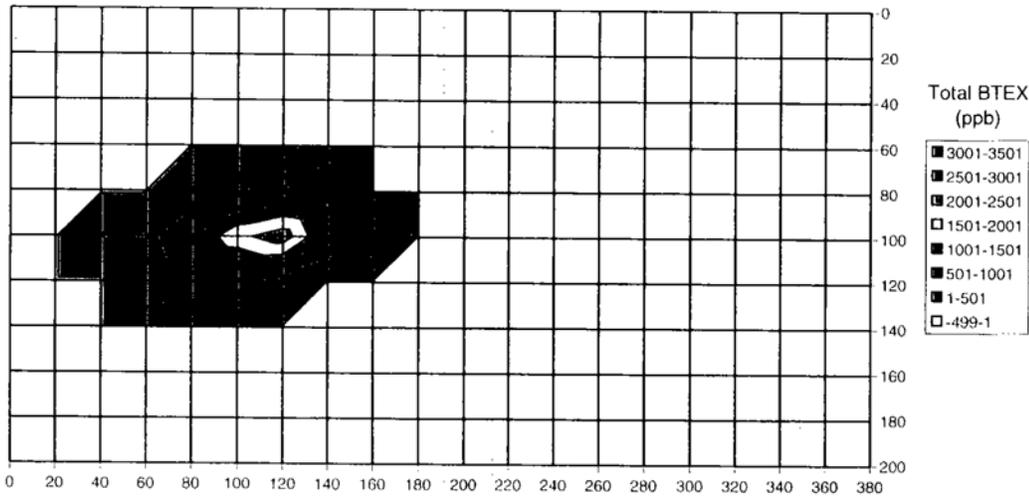


Figure 9c: Level 2 - After 10 years. (Max. BTEX = 85 ppb)



PYRAMID ENVIRONMENTAL	
Gate City Truck Repair Greensboro, NC	
Bioplume II Modeling Level 2	
July 1995	Figure 9

Figure 10a: Level 3 - After 1 year. (Max. BTEX = 2297 ppb)



BIOPLUME II  
RESULTS  
MODELING LEVEL 3  
 $T = 5 \times 10^{-4} \text{ ft}^2/\text{sec}$   
No Biodegradation

Figure 10b: Level 3 - After 5 years. (Max. BTEX = 1114 ppb)

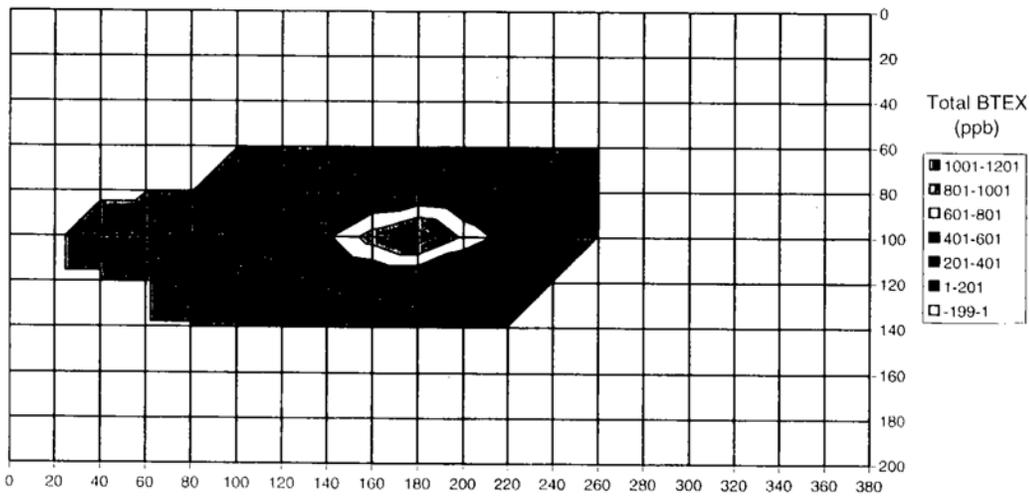
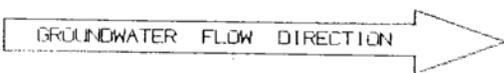
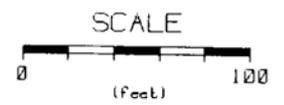
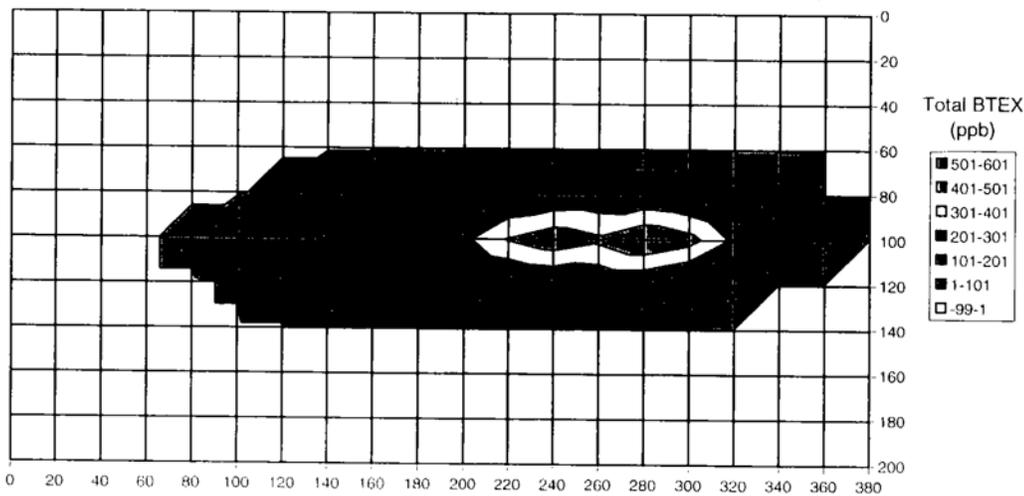
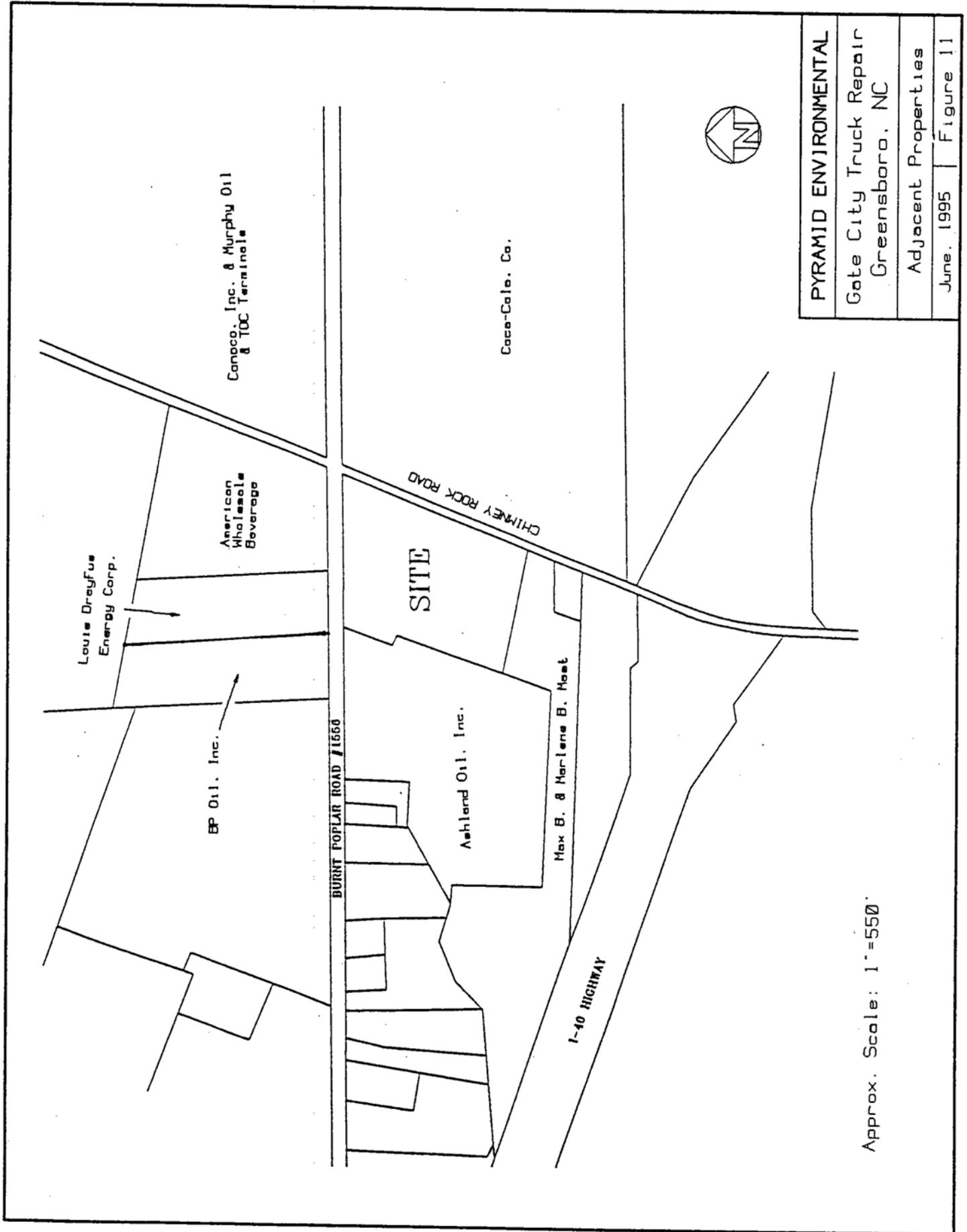


Figure 10c: Level 3 - After 10 years. (Max. BTEX = 500 ppb)



PYRAMID ENVIRONMENTAL  
Gate City Truck Repair  
Greensboro, NC  
Bioplume II Modeling  
Level 3  
July 1995 Figure 10



Approx. Scale: 1"=550'

PYRAMID ENVIRONMENTAL	
Gate City Truck Repair Greensboro, NC	
Adjacent Properties	
June, 1995	Figure 11

**TABLE 1: Target Clean-up Values**

Method	Maximum TPH in soil	Target Clean-up
5030	46 ppm	10 ppm
3550	240 ppm	40 ppm
Methods	Maximum BTEX & Other Compounds in Groundwater	Target Clean-up
601, 602, 625, 3030C	BTEX = 4636 ppb Other - see Table 3.	BDL or 2L criteria for termination

TPH = Total Petroleum Hydrocarbons.

BTEX = Benzene, Toluene, Ethylbenzene, & Xylenes.

ppm = parts per million.

ppb = parts per billion.

**TABLE 2: Results of Soil Sample Analyses.**

Sample ID	Date Sampled	Location	Depth (ft)	OVA*	TPH* (5030)	TPH* (3550)	TPH* (9071)
AIS	1/27/93	Diesel UST Pit	7'	---	BDL	240	---
B1N	1/27/93	Gas. UST Pit	7'	---	46	BDL	---
CIN	1/27/93	W. Oil UST Pit	7'	---	---	---	180
CIS	1/27/93	W. Oil UST Pit	7'	---	---	---	190
Comp-1	1/27/93	Stockpile	---	---	2400	690	---
Comp-2	1/27/93	Stockpile	---	---	41	BDL	---
CS-1 #	6/8/93	Stockpile	---	---	---	---	---
MW-1-5	5/21/93	MW-1	5'	2.0	---	---	---
MW-2-5	5/21/93	MW-2	5'	4.5	---	---	---
MW-3-5	5/21/93	MW-3	5'	< 1	---	---	---
MW-4-5	9/2/93	MW-4	5'	< 1	BDL	BDL	---
MW-4-10	9/2/93	MW-4	10'	< 1	---	---	---
MW-5-5	9/2/93	MW-5	5'	< 4	BDL	BDL	---
MW-5-10	9/2/93	MW-5	10'	< 1	---	---	---
MW-6-5	9/2/93	MW-6	5'	1.5	BDL	BDL	---
MW-6-10	9/2/93	MW-6	10'	< 1	---	---	---
B-1	5/16/95	B-1	5-7'	---	BDL	BDL	---
B-2	5/16/95	B-2	5-7'	---	11.7	BDL	---
B-3	5/16/95	B-3	5-7'	---	BDL	BDL	---
B-4	5/16/95	B-4	5-7'	---	BDL	82.5	---
B-6	5/16/95	B-6	5-7'	---	BDL	BDL	---
B-7	5/16/95	B-7	5-7'	---	1.2	1.6	---
B-8	5/16/95	B-8	5-7'	---	2.0	1.7	---
B-9	5/16/95	B-9	5-7'	---	BDL	10.1	---

TPH = Total Petroleum Hydrocarbons.

\* Results in parts per million (ppm).

OVA = Organic Vapor Analyzer (Field Test).

BDL = Below Detection Limit.

# Sample CS-1 was analyzed by Methods 8080, 8270, 8240, & TCLP Metals. See lab. report for results.

TABLE 3: Results of Groundwater Analyses (Methods 601, 602, 625 & Lead).

Parameter	MW-1 6/1/93	MW-2 6/1/93	MW-3 6/1/93	MW-4 9/8/93	MW-4 6/16/94	MW-5 9/8/93	MW-6 9/8/93	MW-6 6/16/94	MW-7 6/30/94	VEW-1 9/8/93	VEW-1 6/21/94	WSW 11/23/93
<b>Method 602 Results</b>												
Benzene	250	2200	1	BDL	---	BDL	BDL	---	BDL	4.5	BDL	BDL
Toluene	47	36	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	BDL
Ethylbenzene	BDL	900	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	BDL
Xylenes (total)	640	1500	BDL	BDL	---	BDL	1.4	---	BDL	1.9	BDL	3
"BTEX"	937	4636	1	BDL	---	BDL	1.4	---	BDL	6.4	BDL	3
1,2-Dichlorobenzene	BDL	BDL	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	1
1,4-Dichlorobenzene	BDL	BDL	BDL	BDL	---	BDL	BDL	---	BDL	BDL	BDL	1
MTBE	50	240	BDL	BDL	---	BDL	BDL	---	BDL	BDL	---	BDL
IPE	74	300	BDL	---	---	---	---	---	BDL	---	---	BDL
All Other 602 Parameters	BDL	BDL	BDL	BDL	---	BDL	BDL	BDL	BDL	BDL	BDL	BDL
<b>Method 601 Results</b>												
1,2 Dichloroethane	3.4	7.9	BDL	BDL	---	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Bromo-dichloro Methane	BDL	BDL	BDL	BDL	---	1.5	BDL	BDL	BDL	BDL	BDL	BDL
Methylene Chloride	BDL	BDL	BDL	BDL	---	BDL	BDL	BDL	BDL	BDL	BDL	4
Chloroform	BDL	BDL	BDL	BDL	---	38	.6	BDL	BDL	.88	BDL	BDL
All Other 601 Parameters	BDL	BDL	BDL	BDL	---	BDL	BDL	BDL	BDL	BDL	BDL	BDL
<b>Method 625 Results</b>												
Phenol	BDL	12	BDL	BDL	---	BDL	BDL	BDL	BDL	BDL	---	BDL
Bis-(2-eh)-Phthalate	BDL	BDL	BDL	BDL	---	BDL	43	BDL	BDL	BDL	---	BDL
All Other 625 Parameters	BDL	BDL	BDL	BDL	---	BDL	BDL	BDL	BDL	BDL	---	BDL
<b>Method 3030C Results</b>												
Lead	---	---	---	.016	.004	.012	BDL	---	---	BDL	---	---

MTBE = Methyl-tertiary-butyl-ether.  
IPE - Isopropyl Ether

BTEX = Sum of benzene, toluene, ethylbenzene, and xylenes.  
ppb = parts per billion (µg/l).  
BDL = Below Detection Limit.

**TABLE 4: Geoprobe Sample Analytical Results.**

Geoprobe Boring	Date Sampled	Site Screening GC Results				
		Benzene	Toluene	Ethylbenzene	Xylenes	"BTEX"
GP-1	8/16/93	BDL	BDL	BDL	BDL	BDL
GP-2	8/16/93	.054	.137	BDL	BDL	1.424
GP-3	8/16/93	1.72	1.34	BDL	BDL	3.06
GP-4	8/16/93	.041	.271	.099	BDL	0.411
GP-5	8/16/93	.071	.022	BDL	1.104	1.197
GP-6	8/16/93	BDL	BDL	BDL	BDL	BDL
GP-7	8/16/93	BDL	.085	BDL	BDL	.085
GP-8	8/16/93	BDL	BDL	BDL	BDL	BDL

BTEX = Sum of all above parameters.  
 Values in parts per billion (ppb).

GC = Gas Chromatography.  
 BDL = Below Detection Limit.

**TABLE 5: Groundwater Elevation Calculations (5/9/95).**

WELL	TOC Surveyed Height	TOC Elevation w.r.t. Datum	Water Level from TOC	Water Table w.r.t. Datum
MW-1	5.595	94.405	7.32	87.085
MW-2	5.26	94.74	8.2	86.54
MW-3	5.545	94.455	7.86	86.595
MW-4	5.5	94.5	8.52	85.98
MW-5	-----	-----	-----	-----
MW-6	5.14	94.86	9.31	85.55
MW-7	-----	-----	-----	-----
VEW-1	5.085	94.915	8.71	86.205

TOC = top of casing.  
 Datum is arbitrarily set at instrument level = 100'.

**TABLE 6: Evaluation of Remedial Alternatives.**

<b>OPTION:</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Soil Remediation Method	Soil Vapor Extraction	Soil Flushing	Soil Vapor Extraction	Excavation
Groundwater Remediation Method	Pump & Treat	Closed Loop Bio-reactor	Air Sparging	Natural (Passive)
Feasibility for Site	Yes	Yes	Yes	Yes
Time to Final Clean-up	3-5 years	1-2 years	2-3 years	5-10 years
Advantages	Retards plume migration. Remediates both soil & groundwater. Exposes soil in vadose zone. Established technology.	Contaminants remediated insitu. Remediates both soil & groundwater. No effluent.	Contaminants remediated insitu. Remediates both soil & groundwater. No effluent. Established technology.	Cost Effective. Low impact on property operations. Immediate soil remediation & natural groundwater remediation.
Disadvantages	Large volume of groundwater effluent. Air emissions.	Difficult to control plume & distribution of nutrients.	Difficult to control plume & ensure even air-flow. Air emissions.	No plume control. Longer duration.
Initial Capital Outlay	Moderate to High	High	Moderate	Moderate
Yearly Overhead Expenses	Moderate to High	Moderate	Moderate	Low
Permits Required	Water Discharge Permit	None	Injection Well Permits	None

Land subsidence

TABLE 7: Parameters for Plume Migration Models.

PARAMETER	LEVEL 1	LEVEL 2	LEVEL 3
Simulation Time	10 years	10 years	10 years
Number of step	10	10	10
Grid Size	11 x 20	11 x 20	11 x 20
Cell Size	20' x 20'	20' x 20'	20' x 20'
Hydraulic Gradient (dh/dl)	.02	.02	.02
Hydraulic Conductivity (K)	$9 \times 10^{-8}$ ft/sec	$9 \times 10^{-6}$ ft/sec	$9 \times 10^{-6}$ ft/sec
Aquifer Thickness (D)	53'	53'	53'
Transmissivity (T=KD)	$5 \times 10^{-6}$ ft <sup>2</sup> /sec	$5 \times 10^{-4}$ ft <sup>2</sup> /sec	$5 \times 10^{-4}$ ft <sup>2</sup> /sec
Effective Porosity ( $n_{ed}$ )	.30	.30	.30
Initial Concentration of O <sub>2</sub>	.5 ppm	.5 ppm	.5 ppm
Coefficient of Reaeration	0	0	0
Coefficient of Anaerobic Decay	0	0	0
Stoichiometric Ratio (Hydrocarbons/Oxygen)	3	3	3
Dispersivity Ratio (Transverse/Longitudinal)	.1	.1	.1
Ratio of T <sub>yy</sub> to T <sub>xx</sub>	1	1	1
Biodegradation Flag	ON	ON	OFF

**TABLE 8: Adjoining Property Owners**

<b>Map #</b>	<b>Block #</b>	<b>Lot #</b>	<b>Adjacent Property Address</b>	<b>Property Owner</b>	<b>Property Owner Address</b>
7031	959	36	-SITE- 6301 Burnt Poplar Drive	Lindley Property Trust	Greensboro, NC
7031	959	35	208 S. Chimney Rock Road	Max B. & Marlene B. Mast	8810 High Ridge Lane Concord, NC 28027
7031	959	10	6311 Burnt Poplar Drive	Ashland Oil, Inc.	P.O. Box 14000 Lexington, KY 40512
1-28	930	6	201A S. Chimney Rock Road	Coca-Cola, Co.	P.O. Drawer 1734 Atalanta, GA 30301
1-28	930	23	115 S. Chimney Roack Road	Conoco, Inc. & Murphy Oil & TOC Terminals	P.O. Box 1039 Wilmington, DE 19899
7029	960	2	6310 S. Chimney Rock Road	American Wholesale Beverage Co., Inc.	6200 Swing Ct. Ste. B Greensboro, NC 27409
7029	960	5	6316 6318 Burnt Poplar Road	BP Oil, Inc. c/o Truckstops of America	P.O. Box 94563 Cleveland, OH 44101
7029	960	6	6312 6314 Burnt Poplar Road	Louis Dreyfus Energy Corp.	10 Westport Road Wilton, CT 06897

Appendix I: Bioplume-II Files on diskette.

GATE-L1.INP	Level 1 Model Input File
GATE-L1.OP1	Level 1 Model Output File
G-1-H-00.DAT	Level 1 Output Data: Hydrocarbon plume at T=00 years
G-1-H-05.DAT	Level 1 Output Data: Hydrocarbon plume at T=05 years
G-1-H-10.DAT	Level 1 Output Data: Hydrocarbon plume at T=10 years
GATE-L2.INP	Level 2 Model Input File
GATE-L2.OP1	Level 2 Model Output File
G-2-H-01.DAT	Level 2 Output Data: Hydrocarbon plume at T=01 years
G-2-H-05.DAT	Level 2 Output Data: Hydrocarbon plume at T=05 years
G-2-H-10.DAT	Level 2 Output Data: Hydrocarbon plume at T=10 years
GATE-L3.INP	Level 3 Model Input File
GATE-L3.OP1	Level 3 Model Output File
G-3-H-01.DAT	Level 3 Output Data: Hydrocarbon plume at T=01 years
G-3-H-05.DAT	Level 3 Output Data: Hydrocarbon plume at T=05 years
G-3-H-10.DAT	Level 3 Output Data: Hydrocarbon plume at T=10 years



# Pyramid Environmental, Inc.

June 26, 1995

CERTIFIED MAIL: # Z 011 275 744  
RETURN RECEIPT REQUESTED

Dr. Harold Gable  
Director, Guilford County Health Dept.  
301 North Eugene Street  
Greensboro, NC 27401

**SUBJECT:** NOTICE CONCERNING THE REQUEST FOR A CORRECTIVE  
ACTION PLAN BASED ON NATURAL PROCESSES OF DEGRADATION AND  
ATTENUATION OF CONTAMINANTS.

GATE CITY TRUCK REPAIR PROPERTY  
6301 BURNT POPLAR RD.,  
GREENSBORO, NC  
DEM INCIDENT # 10064, GUILFORD COUNTY, NC

Dear Dr. Gable:

This letter is to inform you that the North Carolina Division of Environmental Management (DEM) is being requested to approve a an environmental cleanup in your area. In accordance with North Carolina General Statutes, a set of Groundwater Classifications and Standards has been put in place for the protection of all groundwaters across the state. State guidelines require that you, as director of the health department with jurisdiction over the site, be informed of the proposed activities.

Pursuant to the notification requirements of Title 15A NCAC 2L.0114(b), Pyramid Environmental, Inc., on behalf of Lindley Property Trust, is providing notice of the request for a Corrective Action Plan (CAP) under Title 15A NCAC 2L.0106 (l). The property is located at 6301 Burnt Poplar Road, at the intersection of Chimney Rock Road. Some of the constituents found in the groundwater at the above location are typical of gasoline and/or diesel fuel, and have been detected at this site in concentrations that exceed the Groundwater Quality Standards outlined in 15A NCAC 2L.0202.

Pyramid Environmental believes that if the proposed CAP is approved by the DEM, implementation will result in:

1. No active groundwater treatment will be implemented on this site in favor of natural remediation in accordance with 15A NCAC 2L.0106 (l).
2. The most recent groundwater analyses indicate that the maximum concentrations of the primary contaminants: benzene, toluene, ethylbenzene, and xylenes (BTEX) is approximately 4636 parts per billion (ppb), and that the contamination is constrained to a small plume of 16,000 square feet.
3. Since the properties in the area are supplied with municipal water and there are no water supply wells, public water intakes, or any other known or foreseeable receptors within 1500' downgradient of the plume, the contaminants identified in the groundwater pose no threat to public health or safety, or to property or property values in the area.
4. Calculations of groundwater velocity based on the observed hydrologic gradient and analysis of soil characteristics at the site has indicated that the plume will migrate at a rate of less than 1 foot per year, at which rate it will take the plume over 500 years to migrate off the subject property.
5. The processes of volatilization, adsorption, and biological degradation can be expected to remediate the affected groundwater with time.
6. The monitoring wells already in place on the site are sufficient to monitor migration and degradation of the plume. The wells will be sampled and analyzed quarterly to insure that the plume does not spread beyond the property boundaries. If the monitoring indicates movement of the plume, additional monitoring wells can be installed further down-gradient on the subject property.
7. The contaminant plume is not expected to have any significant adverse impact on any adjoining properties.

Any written comments concerning this request should be submitted within 30 days of June 30, 1995 to the DEM Groundwater Section regional office in Winston-Salem, NC. The Winston-Salem regional office has the proposed CAP and detailed site information on record for public perusal. You may make copies of any of this information at a charge of 10 cents per page. Please send written comments and/or requests to examine the proposed CAP to the following address below.

NC DEM - Groundwater Section  
585 Waughtown St.  
Winston-Salem, NC 27107  
(910) 771-4600

Winston-Salem regional office staff may be contacted during normal weekday business hours to answer questions pertaining to this request. Notification of this request for corrective action is also being made to Greensboro Mayor Carolyn Allen, and to the owners of all properties adjacent to the site.

Respectfully,



G. VanNess Burbach, PG  
Pyramid Environmental, Inc.

CC: NC-DEM Groundwater Section,  
Lindley Property Trust



# Pyramid Environmental, Inc.

June 26, 1995

CERTIFIED MAIL: # Z 011 275 249  
RETURN RECEIPT REQUESTED

Mayor Carolyn S. Allen  
Office of the Mayor  
P.O. Box 3136  
Greensboro, NC 27402

**SUBJECT:** NOTICE CONCERNING THE REQUEST FOR A CORRECTIVE ACTION PLAN BASED ON NATURAL PROCESSES OF DEGRADATION AND ATTENUATION OF CONTAMINANTS.

GATE CITY TRUCK REPAIR PROPERTY  
6301 BURNT POPLAR RD.,  
GREENSBORO, NC  
DEM INCIDENT # 10064, GUILFORD COUNTY, NC

Dear Mayor Allen:

This letter is to inform you that the North Carolina Division of Environmental Management (DEM) is being requested to approve a an environmental cleanup in your area. In accordance with North Carolina General Statutes, a set of Groundwater Classifications and Standards has been put in place for the protection of all groundwaters across the state. State guidelines require that you, as chief administrative officer of the community with jurisdiction over the site, be informed of the proposed activities.

Pursuant to the notification requirements of Title 15A NCAC 2L.0114(b), Pyramid Environmental, Inc., on behalf of Lindley Property Trust, is providing notice of the request for a Corrective Action Plan (CAP) under Title 15A NCAC 2L.0106 (l). The property is located at 6301 Burnt Poplar Road, at the intersection of Chimney Rock Road. Some of the constituents found in the groundwater at the above location are typical of gasoline and/or diesel fuel, and have been detected at this site in concentrations that exceed the Groundwater Quality Standards outlined in 15A NCAC 2L.0202.

Pyramid Environmental believes that if the proposed CAP is approved by the DEM, implementation will result in:

1. No active groundwater treatment will be implimented on this site in favor of natural remediation in accordance with 15A NCAC 2L.0106 (l).
2. The most recent groundwater analyses indicate that the maximum concentrations of the primary contaminants: benzene, toluene, ethylbenzene, and xylenes (BTEX) is approximately 4636 parts per billion (ppb), and that the contamination is constrained to a small plume of 16,000 square feet.
3. Since the properties in the area are supplied with municipal water and there are no water supply wells, public water intakes, or any other known or foreseeable receptors within 1500' downgradient of the plume, the contaminants identified in the groundwater pose no threat to public health or safety, or to property or property values in the area.
4. Calculations of groundwater velocity based on the observed hydrologic gradient and analysis of soil characteristics at the site has indicated that the plume will migrate at a rate of less than 1 foot per year, at which rate it will take the plume over 500 years to migrate off the subject property.
5. The processes of volatilization, adsorbtion, and biological degradation can be expected to remediate the affected groundwater with time.
6. The monitoring wells already in place on the site are sufficient to monitor migration and degradation of the plume. The wells will be sampled and analyzed quarterly to insure that the plume does not spread beyond the property boundaries. If the monitoring indicates movement of the plume, additional monitoring wells can be installed further down-gradient on the subject property.
7. The contaminant plume is not expected to have any significant adverse impact on any adjoining properties.

Any written comments concerning this request should be submitted within 30 days of June 30, 1995 to the DEM Groundwater Section regional office in Winston-Salem, NC. The Winston-Salem regional office has the proposed CAP and detailed site information on record for public perusal. You may make copies of any of this information at a charge of 10 cents per page. Please send written comments and/or requests to examine the proposed CAP to the following address below.

NC DEM - Groundwater Section  
585 Waughtown St.  
Winston-Salem, NC 27107  
(910) 771-4600

Winston-Salem regional office staff may be contacted during normal weekday business hours to answer questions pertaining to this request. Notification of this request for corrective action is also being made to Dr. Harold Gable, Director of the Guilford County Health Department, and to the owners of all properties adjacent to the site.

Respectfully,



G. VanNess Burbach, PG  
Pyramid Environmental, Inc.

CC: NC-DEM Groundwater Section,  
Lindley Property Trust



# Pyramid Environmental, Inc.

June 26, 1995

CERTIFIED MAIL: # Z 011 275 244  
RETURN RECEIPT REQUESTED

Amoco Oil Co. & Citco Petroleum Corp.  
Property Tax Dept. Mail Code 2408  
200 East Randolph Drive  
Chicago, IL 60601

**SUBJECT:** NOTICE CONCERNING THE REQUEST FOR A CORRECTIVE  
ACTION PLAN BASED ON NATURAL PROCESSES OF DEGRADATION AND  
ATTENUATION OF CONTAMINANTS.

GATE CITY TRUCK REPAIR PROPERTY  
6301 BURNT POPLAR RD.,  
GREENSBORO, NC  
DEM INCIDENT # 10064, GUILFORD COUNTY, NC

To whom it may concern:

This letter is to inform you that the North Carolina Division of Environmental Management (DEM) is being requested to approve a an environmental cleanup in your area. In accordance with North Carolina General Statutes, a set of Groundwater Classifications and Standards has been put in place for the protection of all groundwaters across the state. State guidelines require that you, as owner of a property adjacent to the site, be informed of the proposed activities.

Pursuant to the notification requirements of Title 15A NCAC 2L.0114(b), Pyramid Environmental, Inc., on behalf of Lindley Property Trust, is providing notice of the request for a Corrective Action Plan (CAP) under Title 15A NCAC 2L.0106 (l). The property is located at 6301 Burnt Poplar Road, at the intersection of Chimney Rock Road. Some of the constituents found in the groundwater at the above location are typical of gasoline and/or diesel fuel, and have been detected at this site in concentrations that exceed the Groundwater Quality Standards outlined in 15A NCAC 2L.0202.

Pyramid Environmental believes that if the proposed CAP is approved by the DEM, implementation will result in:

1. No active groundwater treatment will be implemented on this site in favor of natural remediation in accordance with 15A NCAC 2L.0106 (l).
2. The most recent groundwater analyses indicate that the maximum concentrations of the primary contaminants: benzene, toluene, ethylbenzene, and xylenes (BTEX) is approximately 4636 parts per billion (ppb), and that the contamination is constrained to a small plume of 16,000 square feet.
3. Since the properties in the area are supplied with municipal water and there are no water supply wells, public water intakes, or any other known or foreseeable receptors within 1500' downgradient of the plume, the contaminants identified in the groundwater pose no threat to public health or safety, or to property or property values in the area.
4. Calculations of groundwater velocity based on the observed hydrologic gradient and analysis of soil characteristics at the site has indicated that the plume will migrate at a rate of less than 1 foot per year, at which rate it will take the plume over 500 years to migrate off the subject property.
5. The processes of volatilization, adsorption, and biological degradation can be expected to remediate the affected groundwater with time.
6. The monitoring wells already in place on the site are sufficient to monitor migration and degradation of the plume. The wells will be sampled and analyzed quarterly to insure that the plume does not spread beyond the property boundaries. If the monitoring indicates movement of the plume, additional monitoring wells can be installed further down-gradient on the subject property.
7. The contaminant plume is not expected to have any significant adverse impact on any adjoining properties.

Any written comments concerning this request should be submitted within 30 days of June 30, 1995 to the DEM Groundwater Section regional office in Winston-Salem, NC. The Winston-Salem regional office has the proposed CAP and detailed site information on record for public perusal. You may make copies of any of this information at a charge of 10 cents per page. Please send written comments and/or requests to examine the proposed CAP to the following address below.

NC DEM - Groundwater Section  
585 Waughtown St.  
Winston-Salem, NC 27107  
(910) 771-4600

Winston-Salem regional office staff may be contacted during normal weekday business hours to answer questions pertaining to this request. Notification of this request for corrective action is also being made to Greensboro Mayor Carolyn Allen, Guilford County Heath Director Dr. Harold Gable, and to all other owners of all properties adjacent to the site.

Respectfully,



G. VanNess Burbach, PG  
Pyramid Environmental, Inc.

CC: NC-DEM Groundwater Section,  
Lindley Property Trust



# Pyramid Environmental, Inc.

June 26, 1995

CERTIFIED MAIL: # Z 011 275 248  
RETURN RECEIPT REQUESTED

BP Oil, Inc.  
C/O Truckstops of America  
Property Tax Dept.  
P.O. Box 94563  
Cleveland, OH 44101

**SUBJECT:** NOTICE CONCERNING THE REQUEST FOR A CORRECTIVE ACTION PLAN BASED ON NATURAL PROCESSES OF DEGRADATION AND ATTENUATION OF CONTAMINANTS.

GATE CITY TRUCK REPAIR PROPERTY  
6301 BURNT POPLAR RD.,  
GREENSBORO, NC  
DEM INCIDENT # 10064, GUILFORD COUNTY, NC

To whom it may concern:

This letter is to inform you that the North Carolina Division of Environmental Management (DEM) is being requested to approve a an environmental cleanup in your area. In accordance with North Carolina General Statutes, a set of Groundwater Classifications and Standards has been put in place for the protection of all groundwaters across the state. State guidelines require that you, as owner of a property adjacent to the site, be informed of the proposed activities.

Pursuant to the notification requirements of Title 15A NCAC 2L.0114(b), Pyramid Environmental, Inc., on behalf of Lindley Property Trust, is providing notice of the request for a Corrective Action Plan (CAP) under Title 15A NCAC 2L.0106 (l). The property is located at 6301 Burnt Poplar Road, at the intersection of Chimney Rock Road. Some of the constituents found in the groundwater at the above location are typical of gasoline and/or diesel fuel, and have been detected at this site in concentrations that exceed the Groundwater Quality Standards outlined in 15A NCAC 2L.0202.

Pyramid Environmental believes that if the proposed CAP is approved by the DEM, implementation will result in:

1. No active groundwater treatment will be implemented on this site in favor of natural remediation in accordance with 15A NCAC 2L.0106 (l).
2. The most recent groundwater analyses indicate that the maximum concentrations of the primary contaminants: benzene, toluene, ethylbenzene, and xylenes (BTEX) is approximately 4636 parts per billion (ppb), and that the contamination is constrained to a small plume of 16,000 square feet.
3. Since the properties in the area are supplied with municipal water and there are no water supply wells, public water intakes, or any other known or foreseeable receptors within 1500' downgradient of the plume, the contaminants identified in the groundwater pose no threat to public health or safety, or to property or property values in the area.
4. Calculations of groundwater velocity based on the observed hydrologic gradient and analysis of soil characteristics at the site has indicated that the plume will migrate at a rate of less than 1 foot per year, at which rate it will take the plume over 500 years to migrate off the subject property.
5. The processes of volatilization, adsorption, and biological degradation can be expected to remediate the affected groundwater with time.
6. The monitoring wells already in place on the site are sufficient to monitor migration and degradation of the plume. The wells will be sampled and analyzed quarterly to insure that the plume does not spread beyond the property boundaries. If the monitoring indicates movement of the plume, additional monitoring wells can be installed further down-gradient on the subject property.
7. The contaminant plume is not expected to have any significant adverse impact on any adjoining properties.

Any written comments concerning this request should be submitted within 30 days of June 30, 1995 to the DEM Groundwater Section regional office in Winston-Salem, NC. The Winston-Salem regional office has the proposed CAP and detailed site information on record for public perusal. You may make copies of any of this information at a charge of 10 cents per page. Please send written comments and/or requests to examine the proposed CAP to the following address below.

NC DEM - Groundwater Section  
585 Waughtown St.  
Winston-Salem, NC 27107  
(910) 771-4600

Winston-Salem regional office staff may be contacted during normal weekday business hours to answer questions pertaining to this request. Notification of this request for corrective action is also being made to Greensboro Mayor Carolyn Allen, Guilford County Health Director Dr. Harold Gable, and to all other owners of all properties adjacent to the site.

Respectfully,



G. VanNess Burbach, PG  
Pyramid Environmental, Inc.

CC: NC-DEM Groundwater Section,  
Lindley Property Trust



# Pyramid Environmental, Inc.

June 26, 1995

CERTIFIED MAIL: # Z 011 275 245  
RETURN RECEIPT REQUESTED

Conoco, Inc., & Murphy Oil, & TOC Terminals  
P.O. Box 1039  
Wilmington, DE 19899

**SUBJECT:** NOTICE CONCERNING THE REQUEST FOR A CORRECTIVE ACTION PLAN BASED ON NATURAL PROCESSES OF DEGRADATION AND ATTENUATION OF CONTAMINANTS.

GATE CITY TRUCK REPAIR PROPERTY  
6301 BURNT POPLAR RD.,  
GREENSBORO, NC  
DEM INCIDENT # 10064, GUILFORD COUNTY, NC

To whom it may concern:

This letter is to inform you that the North Carolina Division of Environmental Management (DEM) is being requested to approve a an environmental cleanup in your area. In accordance with North Carolina General Statutes, a set of Groundwater Classifications and Standards has been put in place for the protection of all groundwaters across the state. State guidelines require that you, as owner of a property adjacent to the site, be informed of the proposed activities.

Pursuant to the notification requirements of Title 15A NCAC 2L.0114(b), Pyramid Environmental, Inc., on behalf of Lindley Property Trust, is providing notice of the request for a Corrective Action Plan (CAP) under Title 15A NCAC 2L.0106 (l). The property is located at 6301 Burnt Poplar Road, at the intersection of Chimney Rock Road. Some of the constituents found in the groundwater at the above location are typical of gasoline and/or diesel fuel, and have been detected at this site in concentrations that exceed the Groundwater Quality Standards outlined in 15A NCAC 2L.0202.

Pyramid Environmental believes that if the proposed CAP is approved by the DEM, implementation will result in:

1. No active groundwater treatment will be implemented on this site in favor of natural remediation in accordance with 15A NCAC 2L.0106 (l).
2. The most recent groundwater analyses indicate that the maximum concentrations of the primary contaminants: benzene, toluene, ethylbenzene, and xylenes (BTEX) is approximately 4636 parts per billion (ppb), and that the contamination is constrained to a small plume of 16,000 square feet.
3. Since the properties in the area are supplied with municipal water and there are no water supply wells, public water intakes, or any other known or foreseeable receptors within 1500' downgradient of the plume, the contaminants identified in the groundwater pose no threat to public health or safety, or to property or property values in the area.
4. Calculations of groundwater velocity based on the observed hydrologic gradient and analysis of soil characteristics at the site has indicated that the plume will migrate at a rate of less than 1 foot per year, at which rate it will take the plume over 500 years to migrate off the subject property.
5. The processes of volatilization, adsorption, and biological degradation can be expected to remediate the affected groundwater with time.
6. The monitoring wells already in place on the site are sufficient to monitor migration and degradation of the plume. The wells will be sampled and analyzed quarterly to insure that the plume does not spread beyond the property boundaries. If the monitoring indicates movement of the plume, additional monitoring wells can be installed further down-gradient on the subject property.
7. The contaminant plume is not expected to have any significant adverse impact on any adjoining properties.

Any written comments concerning this request should be submitted within 30 days of June 30, 1995 to the DEM Groundwater Section regional office in Winston-Salem, NC. The Winston-Salem regional office has the proposed CAP and detailed site information on record for public perusal. You may make copies of any of this information at a charge of 10 cents per page. Please send written comments and/or requests to examine the proposed CAP to the following address below.

NC DEM - Groundwater Section  
585 Waughtown St.  
Winston-Salem, NC 27107  
(910) 771-4600

Winston-Salem regional office staff may be contacted during normal weekday business hours to answer questions pertaining to this request. Notification of this request for corrective action is also being made to Greensboro Mayor Carolyn Allen, Guilford County Health Director Dr. Harold Gable, and to all other owners of all properties adjacent to the site.

Respectfully,



G. VanNess Burbach, PG  
Pyramid Environmental, Inc.

CC: NC-DEM Groundwater Section,  
Lindley Property Trust



# Pyramid Environmental, Inc.

June 26, 1995

CERTIFIED MAIL: # Z 011 275 243  
RETURN RECEIPT REQUESTED

Attn: Frank O. Fox  
Coca-Cola, Ltd.  
P.O. Drawer 1734  
Atlanta, GA 30301

**SUBJECT:** NOTICE CONCERNING THE REQUEST FOR A CORRECTIVE ACTION PLAN BASED ON NATURAL PROCESSES OF DEGRADATION AND ATTENUATION OF CONTAMINANTS.

GATE CITY TRUCK REPAIR PROPERTY  
6301 BURNT POPLAR RD.,  
GREENSBORO, NC  
DEM INCIDENT # 10064, GUILFORD COUNTY, NC

Dear Mr. Fox:

This letter is to inform you that the North Carolina Division of Environmental Management (DEM) is being requested to approve a an environmental cleanup in your area. In accordance with North Carolina General Statutes, a set of Groundwater Classifications and Standards has been put in place for the protection of all groundwaters across the state. State guidelines require that you, as owner of a property adjacent to the site, be informed of the proposed activities.

Pursuant to the notification requirements of Title 15A NCAC 2L.0114(b), Pyramid Environmental, Inc., on behalf of Lindley Property Trust, is providing notice of the request for a Corrective Action Plan (CAP) under Title 15A NCAC 2L.0106 (l). The property is located at 6301 Burnt Poplar Road, at the intersection of Chimney Rock Road. Some of the constituents found in the groundwater at the above location are typical of gasoline and/or diesel fuel, and have been detected at this site in concentrations that exceed the Groundwater Quality Standards outlined in 15A NCAC 2L.0202.

Pyramid Environmental believes that if the proposed CAP is approved by the DEM, implementation will result in:

1. No active groundwater treatment will be implimented on this site in favor of natural remediation in accordance with 15A NCAC 2L.0106 (l).
2. The most recent groundwater analyses indicate that the maximum concentrations of the primary contaminants: benzene, toluene, ethylbenzene, and xylenes (BTEX) is approximately 4636 parts per billion (ppb), and that the contamination is constrained to a small plume of 16,000 square feet.
3. Since the properties in the area are supplied with municipal water and there are no water supply wells, public water intakes, or any other known or foreseeable receptors within 1500' downgradient of the plume, the contaminants identified in the groundwater pose no threat to public health or safety, or to property or property values in the area.
4. Calculations of groundwater velocity based on the observed hydrologic gradient and analysis of soil characteristics at the site has indicated that the plume will migrate at a rate of less than 1 foot per year, at which rate it will take the plume over 500 years to migrate off the subject property.
5. The processes of volatilization, adsorbtion, and biological degradation can be expected to remediate the affected groundwater with time.
6. The monitoring wells already in place on the site are sufficient to monitor migration and degradation of the plume. The wells will be sampled and analyzed quarterly to insure that the plume does not spread beyond the property boundaries. If the monitoring indicates movement of the plume, additional monitoring wells can be installed further down-gradient on the subject property.
7. The contaminant plume is not expected to have any significant adverse impact on any adjoining properties.

Any written comments concerning this request should be submitted within 30 days of June 30, 1995 to the DEM Groundwater Section regional office in Winston-Salem, NC. The Winston-Salem regional office has the proposed CAP and detailed site information on record for public perusal. You may make copies of any of this information at a charge of 10 cents per page. Please send written comments and/or requests to examine the proposed CAP to the following address below.

NC DEM - Groundwater Section  
585 Waughtown St.  
Winston-Salem, NC 27107  
(910) 771-4600

Winston-Salem regional office staff may be contacted during normal weekday business hours to answer questions pertaining to this request. Notification of this request for corrective action is also being made to Greensboro Mayor Carolyn Allen, Guilford County Health Director Dr. Harold Gable, and to all other owners of all properties adjacent to the site.

Respectfully,



G. VanNess Burbach, PG  
Pyramid Environmental, Inc.

CC: NC-DEM Groundwater Section,  
Lindley Property Trust



# Pyramid Environmental, Inc.

June 26, 1995

CERTIFIED MAIL: # Z 011 275 242  
RETURN RECEIPT REQUESTED

Ashland Oil, Inc.  
P.O. Box 14000  
Lexington, KY 40512

**SUBJECT:** NOTICE CONCERNING THE REQUEST FOR A CORRECTIVE ACTION PLAN BASED ON NATURAL PROCESSES OF DEGRADATION AND ATTENUATION OF CONTAMINANTS.

GATE CITY TRUCK REPAIR PROPERTY  
6301 BURNT POPLAR RD.,  
GREENSBORO, NC  
DEM INCIDENT # 10064, GUILFORD COUNTY, NC

To whom it may concern:

This letter is to inform you that the North Carolina Division of Environmental Management (DEM) is being requested to approve a an environmental cleanup in your area. In accordance with North Carolina General Statutes, a set of Groundwater Classifications and Standards has been put in place for the protection of all groundwaters across the state. State guidelines require that you, as an owner of property adjacent to the site, be informed of the proposed activities.

Pursuant to the notification requirements of Title 15A NCAC 2L.0114(b), Pyramid Environmental, Inc., on behalf of Lindley Property Trust, is providing notice of the request for a Corrective Action Plan (CAP) under Title 15A NCAC 2L.0106 (l). The property is located at 6301 Burnt Poplar Road, at the intersection of Chimney Rock Road. Some of the constituents found in the groundwater at the above location are typical of gasoline and/or diesel fuel, and have been detected at this site in concentrations that exceed the Groundwater Quality Standards outlined in 15A NCAC 2L.0202.

Pyramid Environmental believes that if the proposed CAP is approved by the DEM, implementation will result in:

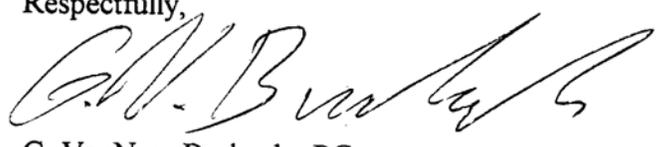
1. No active groundwater treatment will be implemented on this site in favor of natural remediation in accordance with 15A NCAC 2L.0106 (l).
2. The most recent groundwater analyses indicate that the maximum concentrations of the primary contaminants: benzene, toluene, ethylbenzene, and xylenes (BTEX) is approximately 4636 parts per billion (ppb), and that the contamination is constrained to a small plume of 16,000 square feet.
3. Since the properties in the area are supplied with municipal water and there are no water supply wells, public water intakes, or any other known or foreseeable receptors within 1500' downgradient of the plume, the contaminants identified in the groundwater pose no threat to public health or safety, or to property or property values in the area.
4. Calculations of groundwater velocity based on the observed hydrologic gradient and analysis of soil characteristics at the site has indicated that the plume will migrate at a rate of less than 1 foot per year, at which rate it will take the plume over 500 years to migrate off the subject property.
5. The processes of volatilization, adsorption, and biological degradation can be expected to remediate the affected groundwater with time.
6. The monitoring wells already in place on the site are sufficient to monitor migration and degradation of the plume. The wells will be sampled and analyzed quarterly to insure that the plume does not spread beyond the property boundaries. If the monitoring indicates movement of the plume, additional monitoring wells can be installed further down-gradient on the subject property.
7. The contaminant plume is not expected to have any significant adverse impact on any adjoining properties.

Any written comments concerning this request should be submitted within 30 days of June 30, 1995 to the DEM Groundwater Section regional office in Winston-Salem, NC. The Winston-Salem regional office has the proposed CAP and detailed site information on record for public perusal. You may make copies of any of this information at a charge of 10 cents per page. Please send written comments and/or requests to examine the proposed CAP to the following address below.

NC DEM - Groundwater Section  
585 Waughtown St.  
Winston-Salem, NC 27107  
(910) 771-4600

Winston-Salem regional office staff may be contacted during normal weekday business hours to answer questions pertaining to this request. Notification of this request for corrective action is also being made to Greensboro Mayor Carolyn Allen, Guilford County Health Director Dr. Harold Gable, and to all other owners of all properties adjacent to the site.

Respectfully,



G. VanNess Burbach, PG  
Pyramid Environmental, Inc.

CC: NC-DEM Groundwater Section,  
Lindley Property Trust



# Pyramid Environmental, Inc.

June 26, 1995

CERTIFIED MAIL: # Z 011 275 246  
RETURN RECEIPT REQUESTED

American Wholesale Beverage Co., Inc.  
6200 Swing Ct., Ste. B  
Greensboro, NC 27409-2022

**SUBJECT:** NOTICE CONCERNING THE REQUEST FOR A CORRECTIVE ACTION PLAN BASED ON NATURAL PROCESSES OF DEGRADATION AND ATTENUATION OF CONTAMINANTS.

GATE CITY TRUCK REPAIR PROPERTY  
6301 BURNT POPLAR RD...  
GREENSBORO, NC  
DEM INCIDENT # 10064, GUILFORD COUNTY, NC

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Pyramid Environmental believes that if the proposed CAP is approved by the DEM, implementation will result in:

1. No active groundwater treatment will be implemented on this site in favor of natural remediation in accordance with 15A NCAC 2L.0106 (I).
2. The most recent groundwater analyses indicate that the maximum concentrations of the primary contaminants: benzene, toluene, ethylbenzene, and xylenes (BTEX) is approximately 4636 parts per billion (ppb), and that the contamination is constrained to a small plume of 16,000 square feet.
3. Since the properties in the area are supplied with municipal water and there are no water supply wells, public water intakes, or any other known or foreseeable receptors within 1500' downgradient of the plume, the contaminants identified in the groundwater pose no threat to public health or safety, or to property or property values in the area.
4. Calculations of groundwater velocity based on the observed hydrologic gradient and analysis of soil characteristics at the site has indicated that the plume will migrate at a rate of less than 1 foot per year, at which rate it will take the plume over 500 years to migrate off the subject property.
5. The processes of volatilization, adsorption, and biological degradation can be expected to remediate the affected groundwater with time.
6. The monitoring wells already in place on the site are sufficient to monitor migration and degradation of the plume. The wells will be sampled and analyzed quarterly to insure that the plume does not spread beyond the property boundaries. If the monitoring indicates movement of the plume, additional monitoring wells can be installed further down-gradient on the subject property.
7. The contaminant plume is not expected to have any significant adverse impact on any adjoining properties.

Any written comments concerning this request should be submitted within 30 days of June 30, 1995 to the DEM Groundwater Section regional office in Winston-Salem, NC. The Winston-Salem regional office has the proposed CAP and detailed site information on record for public perusal. You may make copies of any of this information at a charge of 10 cents per page. Please send written comments and/or requests to examine the proposed CAP to the following address below.

NC DEM - Groundwater Section  
585 Waughtown St.  
Winston-Salem, NC 27107  
(910) 771-4600

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Respectfully,



G. VanNess Burbach, PG  
Pyramid Environmental, Inc.

CC: NC-DEM Groundwater Section,  
Lindley Property Trust



# Pyramid Environmental, Inc.

June 26, 1995

CERTIFIED MAIL: # Z 011 275 247  
RETURN RECEIPT REQUESTED

Louis Dreyfus Energy Corp.  
10 Westport Rd.  
Wilton, CT 06897

**SUBJECT:** NOTICE CONCERNING THE REQUEST FOR A CORRECTIVE ACTION PLAN BASED ON NATURAL PROCESSES OF DEGRADATION AND ATTENUATION OF CONTAMINANTS.

GATE CITY TRUCK REPAIR PROPERTY  
6301 BURNT POPLAR RD.,  
GREENSBORO, NC  
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Pyramid Environmental believes that if the proposed CAP is approved by the DEM, implementation will result in:

1. No active groundwater treatment will be implemented on this site in favor of natural remediation in accordance with 15A NCAC 2L.0106 (I).
2. The most recent groundwater analyses indicate that the maximum concentrations of the primary contaminants: benzene, toluene, ethylbenzene, and xylenes (BTEX) is approximately 4636 parts per billion (ppb), and that the contamination is constrained to a small plume of 16,000 square feet.
3. Since the properties in the area are supplied with municipal water and there are no water supply wells, public water intakes, or any other known or foreseeable receptors within 1500' downgradient of the plume, the contaminants identified in the groundwater pose no threat to public health or safety, or to property or property values in the area.
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585 Waughtown St.  
Winston-Salem, NC 27107  
(910) 771-4600

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Respectfully,



G. VanNess Burbach, PG  
Pyramid Environmental, Inc.

CC: NC-DEM Groundwater Section,  
Lindley Property Trust

Is your RETURN ADDRESS completed on the reverse side?

**SENDER:**

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- Addressee's Address
- Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Ashland Oil, Inc.  
P.O. Box 14000  
Lexington, KY  
40512

4a. Article Number

Z 011 275 242

4b. Service Type

- Registered       Insured  
 Certified       COD  
 Express Mail       Return Receipt for Merchandise

7. Date of Delivery

6-28-95 JW

5. Signature (Addressee)

*[Signature]*

6. Signature (Agent)

*[Signature]*

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991 \*U.S. GPO: 1993-352-714

**DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

Is your RETURN ADDRESS completed on the reverse side?

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- Complete items 1 and/or 2 for additional services.
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I also wish to receive the following services (for an extra fee):

- Addressee's Address
- Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Frank O. Fox  
Coca-Cola, Ltd.  
P.O. Drawer 1734  
Atlanta, GA 30301

4a. Article Number

Z 011 275 243

4b. Service Type

- Registered       Insured  
 Certified       COD  
 Express Mail       Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

*[Signature]*

6. Signature (Agent)

*[Signature]*

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991 \*U.S. GPO: 1993-352-714

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I also wish to receive the following services (for an extra fee):

- Addressee's Address
- Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Amoco Oil Co. &  
Citco Petroleum Corp.  
200 E. Randolph Dr.  
Chicago, IL 60601

4a. Article Number

Z 011 275 244

4b. Service Type

- Registered       Insured  
 Certified       COD  
 Express Mail       Return Receipt for Merchandise

7. Date of Delivery

6/30/95

5. Signature (Addressee)

*[Signature]*

6. Signature (Agent)

*[Signature]*

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991 \*U.S. GPO: 1993-352-714

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- Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Conoco, Inc. & Murphy  
Oil, & TOC Terminal  
P.O. Box 1039  
Wilmington, DE 19899

4a. Article Number

Z 011 275 245

4b. Service Type

- Registered  Insured  
 Certified  COD  
 Express Mail  Return Receipt for Merchandise

7. Date of Delivery

JUL 3 1995

5. Signature (Addressee)

6. Signature (Agent)

*[Signature]*

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991 \*U.S. GPO: 1993-352-714

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- Restricted Delivery

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3. Article Addressed to:

American Wholesale  
Beverage Co., Inc.  
6200 Swing Ct., Ste. B  
Greensboro, NC 27409-2022

4a. Article Number

Z 011 275 246

4b. Service Type

- Registered  Insured  
 Certified  COD  
 Express Mail  Return Receipt for Merchandise

7. Date of Delivery

6/25

5. Signature (Addressee)

6. Signature (Agent)

*[Signature]*

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991 \*U.S. GPO: 1993-352-714

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- Restricted Delivery

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Louis Dreyfus  
Energy Corp.  
10 Westport Rd.  
Wilton, CT 06897

4a. Article Number

Z 011 275 247

4b. Service Type

- Registered  Insured  
 Certified  COD  
 Express Mail  Return Receipt for Merchandise

7. Date of Delivery

JUL -3 1995

5. Signature (Addressee)

6. Signature (Agent)

*[Signature]*

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1.  Addressee's Address

2.  Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:  
B.P. Oil, Inc.  
c/o Truckstops at America  
Property Tax Dept.  
P.O. Box 94563  
Cleveland, OH 44101

4a. Article Number  
Z 011 275 248

4b. Service Type  
 Registered  Insured  
 Certified  COD  
 Express Mail  Return Receipt for Merchandise

7. Date of Delivery  
JUN 28 1995

5. Signature (Addressee)

6. Signature (Agent)  
*[Signature]*

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991 \*U.S. GPO: 1993-352-714 **DOMESTIC RETURN RECEIPT**

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1.  Addressee's Address

2.  Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:  
Mayor Carolyn S. Allen  
Office of the Mayor  
P.O. Box 3136  
Greensboro, NC 27402

4a. Article Number  
Z 011 275 249

4b. Service Type  
 Registered  Insured  
 Certified  COD  
 Express Mail  Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

6. Signature (Agent)  
*[Signature]*

8. Addressee's Address (Only if requested and fee is paid)

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2.  Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:  
Dr. Harold Gable, director  
Guilford County Health Dept.  
301 N. Eugene St.  
Greensboro, NC 27401

4a. Article Number  
Z 011 275 744

4b. Service Type  
 Registered  Insured  
 Certified  COD  
 Express Mail  Return Receipt for Merchandise

7. Date of Delivery  
6/29/95

5. Signature (Addressee)  
*[Signature]*

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991 \*U.S. GPO: 1993-352-714 **DOMESTIC RETURN RECEIPT**

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