

**ENVIRONMENTAL SITE ASSESSMENT**

For the Property Located at

**1135 Roosevelt Avenue**

In

**Pawtucket, RI**

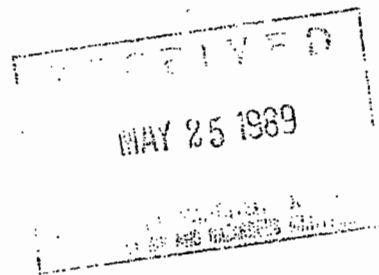
Prepared for:

Arbeka Webbing Company  
1135 Roosevelt Avenue  
Pawtucket, RI 02862

April 5, 1989  
Project No. 90298RI



**BRIGGS**



*Briggs Associates, Inc.*  
527 Pound Road, Cumberland, RI, 02864  
(401) 658-2990

0

(

l

BRIGGS ASSOCIATES, INC.

527 Pound Road, Cumberland, RI 02864 Telephone (401) 658-2990  
FAX (401) 658-2977

April 5, 1989

Mr. Fred Bowdin  
Arbeka Webbing Company  
1135 Roosevelt Avenue  
Pawtucket, RI 02862

Dear Mr. Bowdin,

Briggs Associates Inc. is pleased to submit four copies of our Environmental Site Assessment Report. The work described herein was undertaken in accordance with your approval of our Proposal Number RI1089.024.0 dated February 24, 1989.

As indicated in the report, we have concluded that the site has been impacted by releases of petroleum and hazardous materials to the environment. The impacts, however, appear to be minor and should present no imminent hazard to the public. Short term remedial actions/investigations in the form of additional precision testing and/or tank removal or repair and are in order, (See Section 6.2 of the report):


Thank you for engaging our services to undertake this project. If you have any questions, please do not hesitate to contact us at your convenience.

Sincerely,  
BRIGGS ASSOCIATES, INC.  
(401) 658-2990

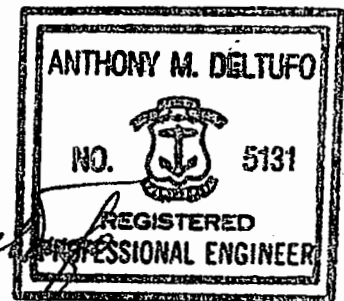


Stephen R. Lemoine  
Geologist

SRL:AMD:sl



Anthony M. DeLufo, P.E.  
Manager, Geotechnical Dept.



**1.0 GENERAL**

- 1.1 Authorization
- 1.2 Purpose and Scope of the Investigation

**2.0 FIELD INVESTIGATIONS**

- 2.1 Test Borings
- 2.2 Observation Wells

**3.0 SITE CONDITIONS**

- 3.1 Surface Conditions
- 3.2 Interior Conditions
- 3.3 Subsurface Conditions
- 3.4 Groundwater

**4.0 LABORATORY INVESTIGATIONS**

- 4.1 Sampling Procedure
- 4.2 Chemical Testing
- 4.3 Groundwater Laboratory Analysis
- 4.4 Laboratory and Field Soil Analysis

**5.0 SITE RESEARCH INVESTIGATION**

- 5.1 Site History
- 5.2 Pawtucket Assessor's office
- 5.3 Pawtucket Building Inspector
- 5.4 Pawtucket Office of Fire Prevention
- 5.5 Pawtucket Town Clerk's Office
- 5.6 Pawtucket Water Supply Board
- 5.7 Rhode Island Department of Environmental Management

## TABLE OF CONTENTS ( Continued )

### 6.0 FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

- 6.1 Summary of Significant Findings
- 6.2 Conclusions and Recommendations
- 6.3 Limitations

### TABLES

- Table 1- Summary of Analytical Results, Groundwater
- Table 2 - Summary of Analytical Results, Soils

### ATTACHMENTS

- Figure 1 - Site Location Plan
- Figure 2 - Lot Location Plan
- Figure 3 - Borehole Location Plan

- Appendix A - Test Boring Logs
- Appendix B - Observation Well Logs
- Appendix C - Site Photographs
- Appendix D - Precision Testing Results
- Appendix E - Chemical Testing Results
- Appendix F - Ambient Air Analysis

## 1.0 GENERAL

### 1.1 Authorization

In accordance with your approval of our Proposal Number RI1089.024.0 dated February 24, 1989, we have undertaken and completed our Environmental Site Assessment Report for the property occupied by the Arbeka Webbing Company which is located at 1135 Roosevelt Avenue, in Pawtucket, RI. A Site Location Plan is included as Figure 1 to this report. The site consists of Lot #407 as depicted on Pawtucket Assessor's Plat #5B. A Lot Location Plan is included as Figure 2 to this report.

### 1.2 Purpose and Scope of the Investigation

A site investigation was performed to determine whether or not petroleum or hazardous substances are present on or beneath the site. To accomplish this, the following tasks were performed:

- a. Performed a visual site inspection by our Geologist.
- b. Drilled three (3) test borings and installed three (3) observation wells on the site. Provided full time resident inspection of the exploration and sampling operations by our Geologist.
- c. Researched the site history with the Town and State Agencies to evaluate the past and present environmental site conditions.
- d. Collected soil and groundwater samples in the field for laboratory testing.
- e. Used a photoionization meter in the field to test the soil samples for presence of total ionizable compounds.
- f. Analyzed the soil samples for the presence of total petroleum hydrocarbons and RCRA metals.
- g. Analyzed the groundwater samples for volatile organic compounds, and the presence of oil and grease.
- h. Evaluated all the data obtained and submitted this report of our findings, conclusions, and recommendations.

## 2.0 FIELD INVESTIGATIONS

### 2.1 Test Borings

The subsurface conditions at the site were explored by drilling three (3) test borings to a maximum depth of 30.0 feet below existing grade. The test borings were drilled by Briggs Associates, Inc. (BAI) on March 8 and 9, 1989 under the supervision of Mr. Stephen R. Lemoine, Geologist, of BAI. The test borings were performed in accordance with ASTM D-1586, "Penetration Test and Split Barrel Sampling of Soils". Standard Penetration Tests (SPT) were performed at approximately 5 foot depth intervals. Auger flight samples were taken where poor recovery was obtained with the spoon sampler. The test boring locations are shown on Figure 3 to this report, Borehole Location Plan.

Subsurface soil samples obtained from the test borings were classified in the field by visual and textural examination using the Unified Soils Classification System. Soil samples were preserved in pre-cleaned glass bottles for laboratory analyses. The test boring logs are included in Appendix A to this report.

### 2.2 Observation Wells

Following the completion of the test borings, observation wells were installed in the completed boreholes B-1C, B-2, and B-3. The observation wells were numbered OW-1 through OW-3, respectively. All wells were installed to an approximate depth of 10 feet below the groundwater table. The wellpoints consisted of a 15.0 foot long section of 2.0 inch diameter slotted polyvinyl chloride (PVC) pipe. The slotted pipes were attached to a 2.0 inch diameter PVC riser pipe. Following the installation of the wellpoints and riser pipe, clean Ottawa silica sand was placed around the wellpoint to a height of 2.0 to 3.5 feet above the slotted PVC section. A bentonite seal, approximately 1.0 feet deep, was then placed above the silica sand filter. The remainder of the borehole annulus was backfilled with on-site soil material. Cast iron gate boxes and a 6.0" cement seal were installed at the ground surface to prevent infiltration of the surface water to the well tip. The wells are permanent installations and may be used to observe water levels in the future. Water level readings are shown on the test boring logs. The Observation Well Installation Records are included in Appendix B to this report.

## 3.0 SITE CONDITIONS

### 3.1 Surface Conditions

A surficial investigation of the site was conducted by Mr. Stephen R. Lemoine, Geologist, of Briggs Associates, Inc. on March 8, 1989. Photographs of the site were taken and are included as Appendix C to this report.

The site is located on the south side of Roosevelt Avenue at the intersection with Bates Street. It consists of Lot #407 as depicted on Pawtucket Assessor's Plat #5B. The site is approximately 4.5 acres in plan dimension. The site is currently occupied by a two story industrial building which is constructed of brick and concrete. Paved parking lots are located at the west and east sides of the property. The topography of the site is nearly level. Areas of grass cover are located near the building entrance and along the west, south, and east sides of the property. The grass appears unstressed and in excellent condition.

An electrical transformer is located south of the alleyway south of the building. The transformer is of modern design and appears to be in good condition with no evidence of leakage of dielectric fluids. Also at the south side, there is a small drain located within a sunken recess adjacent to the building. There was no evidence of any stainage or foul odors in the vicinity of this drain. Manholes to two underground fuel tanks are located in the parking lot approximately twenty five feet west from the southwest corner of the building, (See Section 3.3 for a detailed discussion of these tanks). The area around these tanks was clean with no evidence of stainage or spillage.

There was no surface evidence of any significant stainage, spillage, or leakage of petroleum or hazardous materials anywhere on the exterior portion of the site. There was no evidence of any illegal or illicit activities occurring on the site at the time of the inspection.

The areas to the north, south, and west of the site are residential, occupied by single family dwellings. Abutting the site to the east there is a lot which is used as a playing field. The ground surface on this lot is unpaved and grass covered.



### 3.2 Interior Conditions

An inspection of the building interior was conducted by Mr. Stephen R. Lemoine on March 2, 1989.

The building has two levels and a basement. The first and second levels are occupied by machinery and raw materials used for the manufacture of bandaging materials and other health care products. The basement level serves as a storage and maintenance area. The following chemical materials were observed to be in storage on the first level: two (2) 55 gallon drums of "antifoam", and two (2) 55 gallon drums of "Pal 500". The following chemical materials were observed to be in storage in the basement: six (6) 55 gallon drums of lubricating oil, one (1) 55 gallon drum of urethane, one (1) 55 gallon drum of latex, and two (2) 55 gallon drums of 1,1,1, trichloroethane. There were no chemical drums observed to be in storage on the second level. Of the above chemicals, only the 1,1,1, trichloroethane and its associated additive ingredients has a high health hazard rating and is regulated as a toxic/hazardous substance. However, there was no evidence of any any spillage, stainage, or leakage from any of the drums and there was no evidence of any significant spillage or stainage by petroleum or hazardous materials anywhere in the buiding. Overall, the building appeared to be exceptionally clean.

### 3.3 Subsurface Conditions

Our knowledge of the subsurface conditions is based in part on the results of the field investigations described in Section 2.0 of this report. The following generalized soil strata were encountered starting from beneath the asphalt pavement:

- 1) *FILL*: An upper layer of fill material consisting of silty sand, gravelly sand, concrete and/or brick was observed in B-1A, B-1B, and B-1C only. Auger refusal occurred in B-1A and B-1B due to the presence of concrete blocks. The fill was observed down to a maximum depth of approximately 20 feet in B-1C.
- 2) *SAND, SILTY SAND, and/or GRAVELLY SAND*: This unit has variable characteristics and was observed at its maximum thickness in B-2 where it extends down to a maximum depth of approximately 25 feet.
- 3) *FINE SAND/SILT*: This unit is characterized by its uniform gradation and small grain size. This unit was encountered in the bottom of all three boreholes down to the maximum depth of 30 feet.

As evidenced by the presence of manholes, there are two underground storage tanks located side by side approximately 25 feet west of the southwest corner of the building. According to information provided by the plant manager, one tank is of 5000 gallons capacity and the other is of 10,000 gallons capacity. Both tanks are in current use and are used to store #2 fuel oil. An additional 3000 gallon tank is located underneath a sunken area immediately against the the foundation wall of the building. This tank is reportedly of concrete construction and was formerly used to store both #6 and #2 fuel oils. The tank reportedly had leakage problems and was abandoned and filled with soil approximately 10 years ago. A review of available records indicates that none of the tanks on the site have been registered with the Rhode Island Department of Environmental Management. The 10,000 gallon tank is registered with the Pawtucket Office of Fire Prevention.

The two tanks which are in current use were precision tested by Briggs Associates Inc. on 3/14/89, (see Appendix D). It was conclusively determined that the smaller 5000 gallon tank has leakage problems. The system (tank and associated piping) was observed to have an unacceptable leakage rate of -.24612 gallons per hour. Test results for the larger 10,000 gallon tank were inconclusive due to the presence of trapped air inside of the tank. It is suspected that the tank may be tilted in such a way that the vent inlet is not intercepting all of the upper void space inside of the tank. It is recommended that both of the tanks should be excavated and exposed. The smaller tank should be either removed and disposed of or isolated, retested to determine the exact location of the leakage, and repaired. The larger tank should be be bled-off and retested to confirm its integrity. It is recommended that the old abandoned 3000 gallon tank located adjacent to the building foundation be left alone; Due to its precarious location, removal of this tank could possibly cause severe structural damage to the foundation of the building.

Borehole #B-1C was located between the old abandoned concrete tank and the two newer tanks. Borehole #B-2 was located approximately 13 feet west of the two newer tanks. Olfactory evidence, photoionization readings, and laboratory analysis of selected soil samples collected from these boreholes are all indicative of anomalous concentrations of petroleum hydrocarbons, (see Section 4.4 for a detailed discussion). These results are consistent with information which indicates that the old abandoned tank had a prior history of leakage and that, at least, the smaller of the two newer tanks is presently leaking. It is probable that both of these sources are contributing to the contamination which was observed in both boreholes.

### 3.4 Groundwater

Groundwater was encountered in the three boreholes which were drilled on the site as part of this investigation. Observed water table depths range from 19.2 feet to 20.3 feet below the existing grade. Based on this information, the ground water flow direction is estimated to be westerly in the immediate vicinity of the site. These groundwater levels are dependent on seasonal factors and may not represent the exact levels to be encountered in the future.

Floating product was noted while purging observation wells OW-1 and OW-2. One sixteenth of one inch (1/16") of floating #2 fuel oil was observed on the first two well bails collected from OW-1. A sheen of #2 fuel oil was observed on the first twelve bails from OW-2.

Laboratory analysis of groundwater samples indicates anomalous levels of fuel oil derived compounds in OW-1 and OW-2. Trace levels of one or more solvent derived compounds were also noted in all three wells, (See Section 4.3 for a detailed discussion of analytical results).

## 4.0 LABORATORY INVESTIGATIONS

### 4.1 Sampling Procedure

All soil and water samples were obtained under the supervision of a Briggs Geologist. Prior to obtaining water samples, the observation wells were purged of water equivalent to a minimum of 3 times the volume of the well and then allowed to stabilize. After the water level stabilized, a clear teflon bailer was used to obtain water samples for laboratory testing. Before sampling, the bailer was cleaned in a three-step process. First, the bailer was thoroughly cleaned with tap water, then a methyl alcohol bath, followed by a distilled water rinsing. Water samples were stored in 40 ml teflon septum-capped vials for volatile organic compounds analysis, and in 1000 ml glass jars for oil and grease analysis. The vials were capped immediately after sampling and inverted to check for the presence of air bubbles. Soil samples were stored in 8 oz. glass jars. All containers were precleaned prior to sampling.

All water samples were preserved and stored at approximately 50 degrees Fahrenheit. Soil and water samples were transferred to our Rockland, Massachusetts laboratory following the conclusion of the subsurface exploration program.

### 4.2 Chemical Testing

The results of the analytical chemical testing are reported in Appendix E of this report. Samples were analyzed by the following procedural methods:

1. Metals in Soil: EPA Methods for Chemical Analysis of Water and Waste: 206.2, 208.1, 213.1, 218.1, 239.1, 245.5, 270.2, 272.1, and Method 3050, SW-846.
2. Volatile Organic Compounds: EPA Method 624 (GC.MS), 1982 and EPA 600/4-82-057.
3. Total Petroleum Hydrocarbons: For soils, Standard Methods 503D and 503E.
4. Oil and Grease: Method 413.1 in the Federal Register 45 (98):33127:33128. A solvent extraction method was used to collect the material with subsequent weighing.

### 4.3 Groundwater Laboratory Analysis

Water samples collected from all three of the observation wells installed as part of this investigation were analyzed for volatile organic compounds and oil and grease. Complete analytical reports are included in Appendix E and summarized in Table 1.

Anomalous levels of one or more of four fuel oil derived compounds (benzene, toluene, ethylbenzene, and xylenes) were noted in samples collected from OW-1 and OW-2. The levels for benzene slightly exceed the limiting criterion for drinking water in OW-1. The results are consistent with information which indicates that the older, abandoned tank had a prior history of leakage and that the 5000 gallon newer tank is presently leaking. Since the tanks, fuel lines, and both of the wells are located so proximal to each other, it is probable that both of these possible sources have contributed to the fuel contamination which is being observed in both wells.

Trace levels of one or more of five volatile organic compounds (chloroform, bromodichloromethane, 1,1 dichloroethene, 1,1 dichloroethane, and 1,1,1, trichloroethane) were detected in all three wells. These compounds are all derivatives of solvent type chemicals. Of the above, only 1,1,1 trichloroethane is presently in use on the site. There is currently no evidence that this compound is being disposed of or discharged anywhere on the site or on immediately abutting properties. Prior spillage or dumping activities of solvents on or abutting the site could possibly account for the anomalous observed concentrations. Regardless, the levels are low and do not exceed established drinking water criteria and there are no known drinking water wells immediately downgradient from the site.

Anomalous concentrations of oil and grease (10 ppm and 30 ppm, respectively) were noted in water samples collected from OW-1 and OW-3. The source of contamination in OW-1 is likely to be from the abandoned, formerly leaking, 3000 gallon tank or from the currently leaky 5000 gallon tank. The source of contamination in OW-3 is unknown. Since this well is located in a parking lot, a past spill from a leaky automobile crankcase is a conjectural possibility.

#### 4.4 Laboratory and Field Soil Analysis

Ambient air analyses were performed, in the field, on all soil samples obtained from the three borings. The soil samples were analyzed for total ionizable compounds with the Photovac Tip II photoionization meter. Environmental air sampling is accomplished with the TIP II by (1) headspace analysis of sample containers, or (2) analysis of ambient air near the target media. The headspace analysis method was used for all samples. The levels found in the samples range from 0.1 to 61.0 ppm. Anomalously high levels (>10 ppm) were observed in B-1C and B-2. The higher levels were usually associated with fuel oil odor and are believed to be indicative of fuel oil contamination. A summary of the ambient air analyses is contained in Appendix F.

Selected soil samples from B-1C and B-2 were analyzed for total petroleum hydrocarbons. Complete analytical reports are included in Appendix E and summarized in Table 2. Levels in B-1C and B-2 at 20 to 21.5 feet (close to the water table) are only slightly elevated. A shallow sample from B-1C at 2.5 feet indicates anomalously high concentrations. The shallow depth of this sample suggests that the area in the vicinity may have been effected by a surface spill.

Selected soil samples from all three boreholes were analyzed for Resource Conservation and Recovery Act metals. Complete analytical reports are included in Appendix E and summarized in Table 2. The results indicate levels of metals in all three boreholes which are lower than the maximum allowable concentration levels established by the U.S. EPA.

**TABLE 1**

*Summary of Analytical Results, Groundwater*

Lab I.D. Number Well Number	8911D OW-1	8911E OW-2	8911F OW-3	Limits Criteria
<b>VOLATILE ORGANIC COMPOUNDS (µg/l)</b>				
Chloroform	ND <sup>2</sup>	ND	14	NE <sup>1</sup>
Bromodichloromethane	ND	ND	4.6	NE <sup>1</sup>
1,1 Dichloroethene	4.1	ND	ND	7.0 <sup>3</sup>
1,1 Dichloroethane	2.2	ND	ND	5.0 <sup>3</sup>
1,1,1, Trichloroethane	8.2	1.3	ND	140 <sup>4</sup>
Benzene	7.4	1.6	ND	5.0 <sup>3</sup>
Toluene	1.9	ND	ND	340 <sup>5</sup>
Ethylbenzene	72	ND	ND	NE
Xylenes	260	ND	ND	620 <sup>5</sup>
OIL & GREASE (mg/l)	10	4	30	NE <sup>1</sup>

1. Not Established.
2. Not Detectable
3. U.S. EPA Proposed Maximum Contaminant Level
4. ORS Drinking Water Guideline
5. U.S. EPA Drinking Water Health Advisory, 1/27/87.

µg/l = micrograms per liter or parts per billion  
 mg/l = milligrams per liter or parts per million

**TABLE 2**

*Summary of Analytical Results, Soil*

Lab I.D. Number	8911A	8911B	8911C	LIMITS
Borehole Number	B-1C	B-2	B-2	CRITERIA
Sample Numbers	SS-5	AF-1	SS-5	

**TOTAL PETROLEUM HYDROCARBONS (mg/kg)**

	70	430	30	NE <sup>1</sup>
--	----	-----	----	-----------------

**RCRA METALS (mg/kg) - Bulk Analysis**

Note 2

Arsenic	4.0	14.0	4.2	100.0
Barium	13	19	13	2000
Cadmium	<0.5	<0.5	<0.5	20.0
Chromium	3.7	6.2	3.3	100.0
Lead	8.9	63.0	6.3	100.0
Mercury	1.6	2.1	1.4	20.0
Silver	0.6	0.5	<0.5	100.0

1. Not established

2. 40 CFR Chapter 1, Section 261.24, Maximum Concentration of Contaminants Characteristic of EP Toxicity (Table 1) times 20 for comparison with bulk analysis.

mg/kg = milligrams per kilogram or parts per million



## 5.0 SITE RESEARCH INVESTIGATION

### 5.1 Site History

Based on information provided by the Pawtucket Assessor's Office, the building on the site was constructed during 1918. The property has changed ownership approximately four times throughout its modern history, however it has always been utilized for its existing use, the manufacture of bandaging material and other health care products.

### 5.2 Pawtucket Assessor's Office

Based on information obtained from the Pawtucket Assessor's Office the site consists of Lot 407 as shown on Plat #5B. The current owner is listed as "Arbeka Webbing Company". Prior ownership is listed as follows:

- R.I. Industrial Facilities, (1981)
- Arbeka Aquisition Corporation, (1981)
- Prescott Corporation, (1919)
- Arbeka Webbing Company, (1918)

### 5.3 Pawtucket Building Inspector

According to a zoning map maintained by the Pawtucket Building Inspector's Office, the site is zoned "MO", (Manufacturing Open). The site is not located in a flood plain or in a water protection district.

### 5.4 Pawtucket Office of Fire Prevention

The Pawtucket Office of Fire Prevention has record of an underground storage permit for a 10,000 gallon underground fuel oil tank tank which was issued during 1978. The Office has no record of the other 5000 and 3000 gallon fuel oil tanks which are present on the site.

### 5.5 Pawtucket Town Clerk's Office

The Pawtucket Town Clerk's Office does not not maintain records of underground tanks or other relevant permits.

## 5.6 Pawtucket Water Supply Board

According to Leo Terrien, Meter Superintendent, there are no water supply wells in the general vicinity of the site to the best of the Board's knowledge.

## 5.7 Rhode Island Department of Environmental Management (RIDEM)

The Rhode Island Department of Environmental Management has no record of any spills or other environmental concerns for the site or for the immediately abutting premises. There are dozens of spills and/or responses recorded in RIDEM files which are located within a one mile radius of the site. All of these involve only minor releases of petroleum/hazardous materials. The most proximal reported incident is as follows:

- **Webster Street, (Site of former Joy Chemical Company)**  
-6/16/88- Numerous empty 55 gallon drums were reported to be located within a wetland area on the property. The former contents of the drums is unknown. No other information is available and it is not known if any action was ever taken. The site is located approximately 1/4 mile south of the subject site.

Considering the distance, it appears unlikely that the above site should have any severe impact on the site-in-question.

In addition to the above, there is one site listed on the CERCLIS list which is located one-fourth of a mile to the southwest at the Sunoco Station on 736 Broadway. This site is a confirmed hazardous waste disposal site which is under remedial investigation by the U.S. EPA. Because this site appears to be hydrologically downgradient, it is unlikely that it would have any adverse impact on the site-in-question.

The Rhode Island Department of Environmental Management has no record of any underground petroleum storage tanks registered for the subject site or for the immediately abutting properties.

## 6.0 FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

### 6.1 Summary of Significant Findings

Briggs Associates Inc. has completed the scope of services as defined in our Proposal Number RI1089.024.0 dated February 24, 1989. The results of our investigation are summarized as follows:

- The site is located in a largely residential area. It has been used as a facility for the manufacture of bandaging materials and health care products since 1918.
- The depth to groundwater on the site ranges from approximately 19.2 to 20.3 feet below existing grade. Groundwater flow direction in the immediate vicinity of the site is estimated to be westerly.
- There are three underground petroleum storage tanks located on the site. One of the tanks (3000 gallons) is abandoned and formerly held both #6 and #2 fuel oils. This tank reportedly had a past history of leakage problems. Two of the tanks (5000 gallons and 10,000 gallons) are in current use and are used to store #2 fuel oil. None of the tanks have been registered with the Rhode Island Department of Environmental Management.
- Results of precision tests conducted by Briggs Associates on 3/14/89 indicate that the smaller 5000 gallon tank has an unacceptable leakage rate of -.24612 gallons per hour. Test results for the larger 10,000 gallon tank were inconclusive due to the presence of trapped air inside of the tank. It is suspected that the tank may be tilted in such a way that the vent inlet is not intercepting all of the upper void space inside of the tank.
- Readings of total ionizable compounds and olfactory evidence indicate the existence of fuel oil contaminated soils in the vicinity of B-1C and B-2 which are located adjacent to the three underground tanks, (see Figure 3).
- Analysis of selected soil samples from B-1C and B-2 indicate slightly elevated concentrations of total petroleum hydrocarbons at a depth of 25 to 26.5 feet. A shallow sample from B-1C at 2.5 feet depth indicates anomalously high concentrations. The shallow depth of this sample suggests that the area in the vicinity may have been effected by a surface spill.
- Floating product was noted while purging observation wells OW-1 and OW-2. One sixteenth of one inch (1/16") of floating #2 fuel oil was observed on the first two well bails collected from OW-1. A sheen of #2 fuel oil was observed on the first twelve bails from OW-2.

- Anomalous levels of one or more of four fuel oil derived volatile organic compounds (benzene, toluene, ethylbenzene, and xylenes) were noted in samples collected from OW-1 and OW-2. The levels for benzene reported as detected in OW-1 slightly exceed the limiting criterion for drinking water. The results are consistent with information which indicates that the older, abandoned tank had a prior history of leakage and that the 5000 gallon newer tank is presently leaking. It is probable that both of these possible sources have contributed to the fuel contamination which is being observed in both wells.
- Trace levels of one or more of five solvent-derived volatile organic compounds (chloroform, bromodichloromethane, 1,1 dichloroethene, 1,1 dichloroethane, and 1,1,1, trichloroethane) were detected in all three wells which were installed on the site as part of this investigation. The levels do not exceed established drinking water criteria. The source of this contamination is uncertain.
- A review of available records on file with RIDEM indicates that there are no documented spills, leaks, or other releases of hazardous materials to the environment on the site or on the properties which immediately abutt the site. There are numerous recorded incidents of spills/releases within a one mile radius of the site, however none of these should have any impact on the site.
- There appears to be no record of any drinking water wells located downgradient from the site as far as the Blackstone River.

## 6.2 Conclusions and Recommendations

Based on the investigative methods described herein and the data collected, Briggs Associates, Inc. concludes that the subject site has been impacted by releases of petroleum and hazardous materials to the environment. The impacts, however, appear to be minor and should present no imminent hazard to the public.

Our recommendations for remedial actions for the subject site are outlined as follows:

- 1) In accordance with a previous request by RIDEM, a copy of this report should be immediately sent to Mike Mulhare of the Rhode Island Department of Environmental Management.

- 2) The area above the two active tanks on the site should be excavated and the tanks and piping exposed. The leaking 5000 gallon fuel oil tank should be pumped out and either a) the tank removed and disposed, or b) the tank isolated and precision tested separately from the lines to determine the exact location of the leakage. Once the location of the leakage is determined, the fault in the system can possibly be repaired. If it is desired that the tank be removed, then a Certificate of Closure should be obtained for the tank from RIDEM.

The trapped air in the 10,000 gallon fuel tank should be bled off and the system re-tested. If the tank or lines should fail the precision test, the system should be repaired or replaced. Since this tank is only 10 years old, it would probably be most cost effective to repair the system.

- 3) The abandoned 3000 gallon fuel oil tank located adjacent to the building foundation should be left in place. Removal of this tank could cause structural damage to the building foundation.
- 4) All active and abandoned underground tanks on the site should be registered with the Rhode Island Department of Environmental Management and the Pawtucket Office of Fire Prevention.

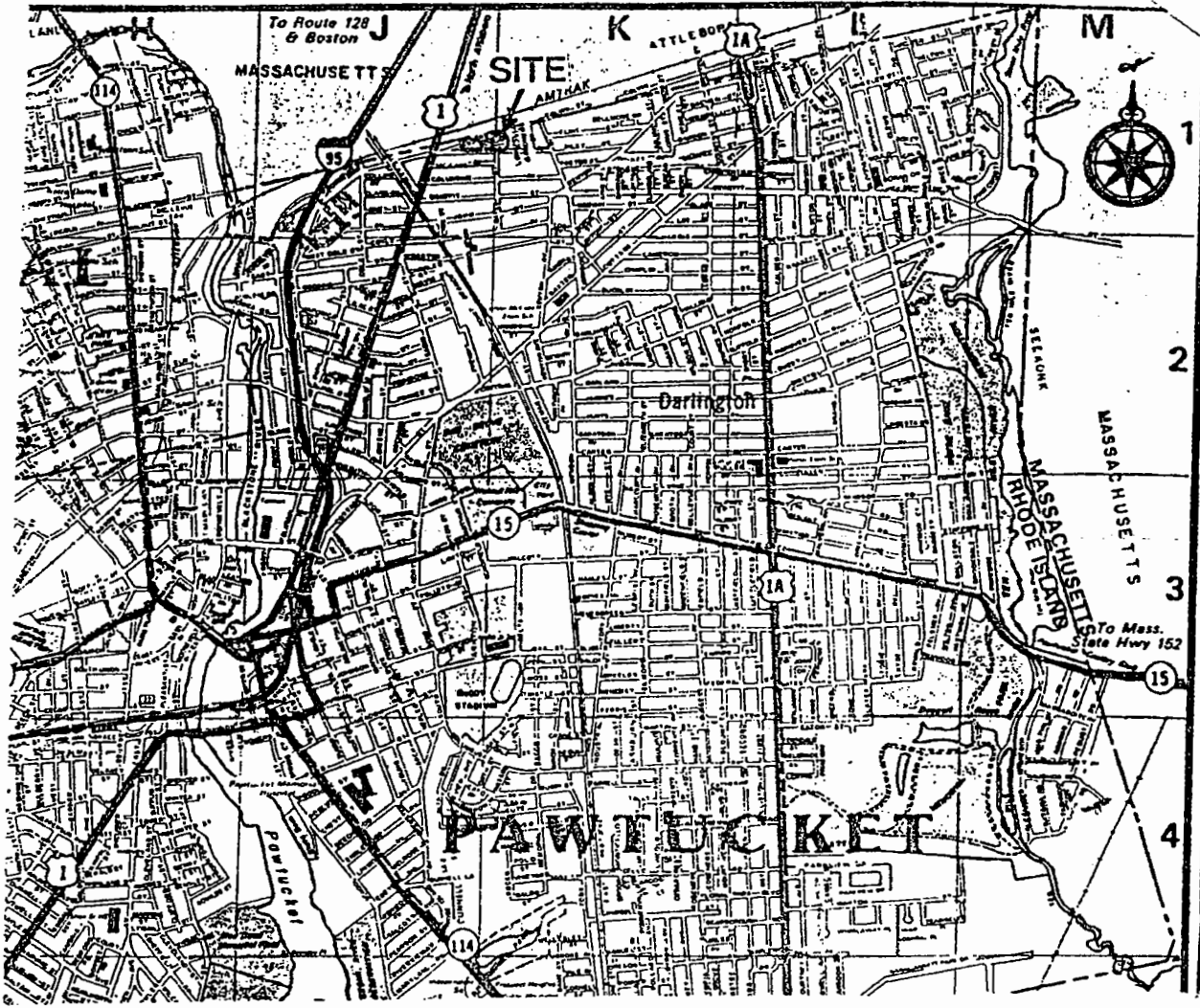
The above-mentioned work (2) should be performed by a RIDEM approved tank removal/testing contractor. Briggs Associates Inc. would be happy to re-precision test the 10,000 gallon tank. Briggs Associates Inc. does not perform tank pumping, removal, or disposal but can coordinate with suitable subcontractors. If additional environmental testing such as observation well installation, groundwater sampling and/or chemical testing is required by RIDEM, then Briggs Associates Inc. is well equipped and highly experienced in this area.

### 6.3 Limitations

The recommendations and conclusions provided herein are based solely on the scope of work conducted and the availability of information at this time. Any additional information concerning this site or abutting parcels should be provided to Briggs Associates Inc. so that our recommendations and conclusions can be reviewed and modified accordingly.

The opinions stated in this report are based upon professional expertise; no other guarantee or warranty is implied within.

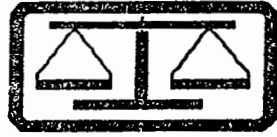
**ATTACHMENTS**



**SITE LOCATION PLAN**

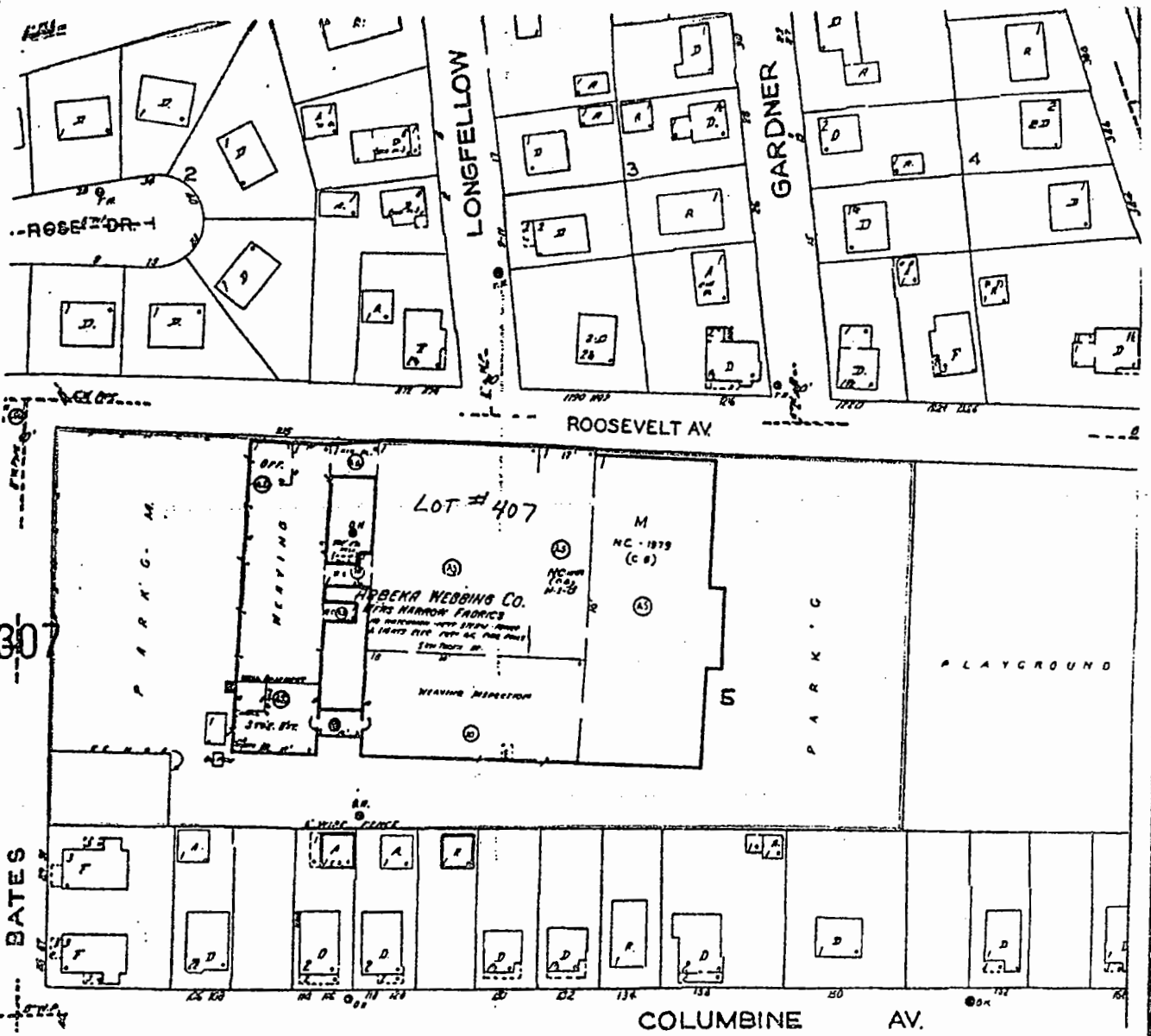


**BRIGGS**

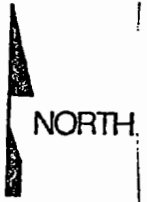


527 Pound Road, Cumberland, RI 02864

DR. BY: SRL	SCALE: No Scale	PROJ. NO. 90298
CK'D BY: AMD	DATE: 3/29/89	FIG. NO. 1



**LOT LOCATION PLAN**



**BRIGGS**



527 Pound Road, Cumberland, RI 02864

DR. BY: SRL	SCALE: 1"=100'	PROJ. NO. 90298
CK'D BY: AMD	DATE: 3/29/89	FIG. NO. 2



B-3, OW-3

PARKING LOT

ROOSEVELT AVE.

BUILDING

T-FORMER

DRAIN

-Alley-

PARKING LOT

UST

⊗ B-1C, OW-1

UST

UST

⊗ B-2, OW-2

### BOREHOLE LOCATION PLAN

NORTH



# BRIGGS



527 Pound Road, Cumberland, RI 02864

DR. BY: SRL

SCALE: No Scale

PROJ. NO. 90298

CK'D BY: AMD

DATE: 3/29/89

FIG. NO. 3

**APPENDIX A**

Test Boring Logs