205254

SITE INVESTIGATION

PAPERBOARD SPECIALTIES, INC.

PATERSON, PASSAIC COUNTY

EPA ID NO.: NJD147427843

VOLUME 1 OF 3

New Jersey Department of Environmental Protection
Division of Publicly Funded Site Remediation
Environmental Measurements and Site Assessment Section

PAPER BOARD SPECIALTIES

AKA: RAYCO INC.
AKA: MORRIS PAPERBOARD COMPANY
AKA: BERLES CARTON COMPANY
AKA: CHIN AM, INC.

177 - 302 THIRD AVENUE
186 - 218 THIRD AVENUE
PATERSON, PASSAIC COUNTY, NEW JERSEY
EPA ID#: NJD147427843

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PRELIMINARY ASSESSMENT AND SITE INVESTIGATION REPORT

PART I: GENERAL INFORMATION

Site Name: Paper Board Specialties, Inc.
Aka: Rayco Inc.
Aka: Morris Paperboard Company
Aka: Berles Carton Company
Aka: Chin Am, Inc.
Address: 177 - 302 Third Avenue; 186 - 218 Third Avenue
Municipality: Paterson **State:** New Jersey **Zip Code:** 07514
County: Passaic
EPA ID No.: NJD147427843
Block: 428 **Lot(s):** 1
Block: 429 **Lot(s):** 1
Block: 454 **Lot(s):** 1
Block: 455 **Lot(s):** 1
Latitude: 40° 56′ 12" **Longitude:** 74° 08′ 38"
Acreage: 3.86 **SIC Code:** 2631

Current Owner: Paper Board Specialties, Inc.
Mailing Address: 177 Third Avenue
City: Paterson **State:** New Jersey **Zip Code:** 07514
Telephone No.: N/A

Current Operator: Facility is no longer in operation.
Mailing Address:
City: **State:** **Zip Code:**
Telephone No.:

Owner/Operator History:

NAME	OPERATOR/ OWNER	DATES	
		FROM	TO
Lemor Corp.	operator	unknown	unknown
Rayco Inc.	owner/operator	unknown	6/2/49
Anthony Russo	owner	unknown	11/4/53
James and Frances Russo	owner	unknown	5/18/56
Morris Paperboard Company	owner/operator	6/2/49	12/5/67
Berles Carton Co.	owner/operator	12/5/67	9/10/85
China National Packaging Corp.	owner	5/10/85	9/29/89
China Am, Inc.	operator	9/10/85	9/29/89

Paper Board Specialties, Inc.	owner	9/29/85	Present
Paper Board Specialties, Inc.	operator	9/29/89	4/92

Surrounding Land Use (zoning, adjacent properties):

Paper Board Specialties is located in a mixed industrial and residential section of Paterson, New Jersey. The site consists of two parcels of land separated by Third Avenue and bordered by Route 20 to the northeast, East 26TH Street to the west and the Arista Metalcraft Company to the south. Additional industries bordering the site include Print & Peel and Omega Industries.

Distance to Nearest Residence or School: 100 feet (residence)
Direction: West
Population Density (residents per square mile): 16,700 (1990 census)

PART II: SITE OPERATIONS

Discuss all current and past operations at the site.

Paper Board Specialties, Inc. operated as manufacturer of paperboard and rolled paper products at its facility located on Third Avenue in the City of Paterson, Passaic County, from 1989 until 1992. The Paper Board Specialties site has been utilized since the early 1900s for manufacturing operations. The facility, now closed following the declaration of bankruptcy by Paper Board Specialties in April 1992, consists of one large, single story building within which maintenance, manufacturing and storage took place. The main building is currently unoccupied. An adjacent lot, which is currently vacant with the exception of several abandoned trailers and various industrial equipment and debris, was used for material storage.

Available documentation indicates the earliest known operator of the site was a company called Lemor Corp. The types of operations conducted by Lemor were not found in the documentation reviewed. The manufacturing building located at the site appears to have been originally occupied by Rayco, Inc. beginning prior to 1949. Operations conducted by Rayco are believed to have involved the dyeing of fabrics.

The vacant lot adjacent to the manufacturing facility was owned by Anthony Russo prior to 1953 and by James and Francis Russo prior to 1956. An oil distribution service was located on the eastern portion of the lot while the western portion of the property was undeveloped.

The Morris Paperboard Company purchased the Rayco facility in 1949 and began production of paperboard products. Morris Paperboard obtained the adjoining Russo property in approximately 1956. On December 5, 1967, Morris Paperboard merged with the Berles Carton Company which was located at 86 Fifth Avenue, Paterson, New Jersey. At this time, the Third Avenue facility also became known as the Berles Carton Company. In 1985, the site was sold to Chim Am, Inc. of Beijing, China, following the declaration of bankruptcy by Berles Carton Company. Paper Board Specialties purchased the site from Chin Am in 1989 after Chin Am also failed to render a profit from their operations.

On-site operations conducted by Paper Board Specialties consisted of the production of high quality paperboard cartons from recycled fiber. The mill was able to produce a variety of grades and widths of paperboard including chip, white-lined, tanned-back and clay-coated, all for the folding cartons industry. The companies occupying the site prior to Paperboard, dating back to the Morris Paperboard Company, are assumed to have conducted similar operations at the site although it is unknown to what extent recycled paper was used in the past.

Stock preparation consisted of four separate lines capable of producing multi-ply paperboard. Each line contained a hydrapulper, or beater, where the raw material wastepaper was mixed with water and various chemicals to strengthen the paper fibers, creating a pulp mash. The mash was then passed through a series of filters, screens and "Jordan" refiners to clean and further improve the uniformity and consistency of the pulp mash. When the pulp mash preparation was completed, the paper stock material was pumped into one of eight holding or forming vats.

The paperboard sheet production process occurred in holding or forming vats. The vats, six of which were of counter-flow design and two of which were of uni-flow design, contained rotating cylinder molds with stainless steel screening. The vat felt assembly section of the machine was equipped with component parts to clean, stretch and press the paper stock into a wet sheet consisting of eight layers of recycled pulp. The wet sheet then entered a dryer section consisting of fifty-nine 48-inch diameter unfelted dryers arranged in three tiers and enclosed by an exhaust hood. The dryers removed a significant amount of the moisture content from the wet sheet to produce paperboard. A sheeter then cut the paperboard to the required size and the finished sheets were loaded onto pallets for delivery by truck. (Attachment A)

The paperboard products were produced from recycled waste paper. Chemicals which were used in the preparation of the paperboard included natural coniferous resin, collagen, sulfuric acid, ammonia, acrylic and melominic resins, aluminum sulfate, amphoteric or direct acidic dyes, kaolin clay, precipitated calcium carbonate, starch and white pigments for coating. (Attachments B and C)

Approximately 200 pounds of sodium hydroxide and a small quantity of waste oil, associated with the boiler room and the machine shop, were also present at the site according to the chemical inventory completed on June 1, 1984. Twelve transformers are also located within the main building in two electrical substations. (Attachment D)

The vast quantity of water (approximately one million gallons per day) required in the paperboard production process was obtained from four on-site bedrock production wells and the Paterson City Water Department. Approximately 650,000 gallons of water per day was lost in the drying process through evaporation. The remaining process water was recycled or discharged to the sanitary sewer system. All non-recyclable process water and floor drain discharges flowed into a basement sump pit which directed the wastewater to the sanitary sewer system for treatment by the Passaic Valley Sewerage Authority. (Attachment E)

Four underground storage tanks (USTs) existed beneath the main building at the Paper Board Specialties site. A 5,000-gallon UST containing unleaded gasoline was removed in 1987. No soil samples were collected at the time the tank was removed. Two 20,000-gallon USTs containing #6 fuel oil and one 10,000-gallon UST containing #4 fuel oil were located beneath the boiler room floor. Upon inspection of these tanks by SDS Service Company of Millburn, New Jersey, in February 1986, it was determined that one of the 20,000-gallon tanks (Tank A) had a split weld and the lines leading to the tank were leaking. (Attachment Z) The other 20,000-gallon tank (Tank B) failed an integrity test and was believed to be contributing to the presence of a layer of free product, non-aqueous phase liquid (NAPL) present on the surface of the water table beneath the site. (Attachment G)

Waste solvents are reported to have been added to one or all of the on-site fuel oil tanks in the past with the resulting mixture being fed to the facility's boilers. Two of these tanks were emptied of their contents by Active Oil Service of Newark, New Jersey. The two tanks which had the potential for leakage were removed in January 1990, however, portions of the tanks extending below the water table were left in place to prevent destabilization of the of the building foundation. The third tank (Tank C) remained in place with an undetermined quantity of remaining oil. In September 1994 the Department engaged the services of a clean-up contractor, S & D Environmental Services of Edison, New Jersey, to remove the remaining oil in Tank C.

Based on information provided by a 1950 Sanborn Fire Insurance Map of the area, (Map 7) an additional four USTs containing fuel oil and two USTs containing gasoline were identified on the portion of the adjacent vacant lot previously occupied by the fuel oil dealer. Additional information concerning the capacity of these tanks is unavailable, however, the tanks are the likely source of

contamination beneath this portion of the site. On November 10, 1993, the NJDEP, New Jersey Geological Survey (NJGS) investigated this area using Ground Penetrating Radar and concluded that the tanks had been removed. No other information is available in the files regarding this area.

Additional areas of concern (AOCs) include a 500-gallon fuel oil spill associated with the fuel oil dealership which occurred approximately 20 years ago, an additional fuel oil spill which occurred in the past while refueling the USTs, a concrete vault located within the boiler room which contained oily wastewater, drum storage areas, asbestos containing material coating the boilers and associated piping and transformers containing polychlorinated biphenyl (PCB) contaminated oil.

The 500-gallon fuel oil spill occurred approximately 20 years ago on a portion of the vacant lot following a break in the valve of a tanker truck during refueling operations. The tanker truck, which was owned by Hess Inc., reportedly was driven to a portion of the vacant lot where an excavation was located and discharged the leaking oil into the excavation until the valve could be repaired. According to a site representative, the majority of the oil was then removed. No additional information regarding this incident could be located.

The concrete vault, which contained oily wastewater, was drained and steam cleaned by Technical Resources, Inc. of Rockville, Maryland, while Chin Am was operating on site.

A spill of #6 fuel oil occurred approximately 20 years ago during the refueling of the USTs located adjacent to the boiler room. Fuel oil reportedly migrated downgradient towards the Passaic River and into the storm sewers along Third Avenue. It is not known if any soil was affected.

Drums have been stored throughout the outdoor portion of the Paper Board Specialties property and within the manufacturing building. Although most of these areas are paved with asphalt or concrete which serves as a primary containment system, some unpaved areas also exist.

The dielectric oil contained in the transformers at the site was sampled and the presence of PCBs was verified. The oil was removed and properly disposed of, although contamination of the underlying concrete pad may have occurred since visible staining had been noted (Attachment H). A site representative claimed that the majority of the transformers were removed by General Electric of Philadelphia, Pennsylvania, and replaced with newer models which do not contain PCBs. No additional information concerning PCBs spillage at the site was found in the documentation reviewed.

During an inspection of the Paper Board Specialties site conducted by the Paterson Health Department in March 1989, numerous violations were noted. These violations included an unlabeled 55-gallon drum overflowing with waste oil, additional unlabeled rusty drums and a dumpster overflowing with solid waste. (Attachment F) During a followup inspection conducted by the Paterson Health Department in April 1990, it was noted that one of three transformers stored on the vacant lot was leaking oil onto the pavement. Numerous 55-gallon drums containing waste oil were also noted on the lot. Paper Board Specialties was informed that the drums must be properly removed. (Attachment Y)

According to an official with the Paterson Health Department, numerous drums and small containers of corrosives and waste oil have been left haphazardly on the vacant lot portion of the site. These drums were sampled in August 1992 and were shown to contain corrosives with a very low pH. The Paterson Health Department had not been able to contact the owners and had to obtain a search warrant to collect these samples. (Attachment R)

When Chin Am, Inc. purchased the site from the Berles Carton Company in September 1985, the property was subject to the requirements of the Environmental Cleanup Responsibility Act (ECRA). However, since Berles had previously declared bankruptcy, Chin Am, Inc. agreed to sign an Administrative Consent Order (ACO) with the NJDEP which stated that the site would be remediated under ECRA guidelines following the transaction. (Attachments I, J and K) ECRA requires subject facilities to remediate the facility before ownership of the property is transferred.

On December 16, 1989 Chin Am, Inc. and the NJDEP entered into an ACO for the sale of business assets and the sale of real property by Chin Am to Paper Board Specialties. It was agreed that Paper Board Specialties would act as the contact with the NJDEP regarding compliance of the ACO, although Chin Am would also be held responsible for the cleanup. (Attachment L) A Notice of Violation (NOV) and Offer of Settlement was issued by NJDEP to Chin Am, Inc. on January 16, 1990, for failure to implement a Phase I soil and ground water investigation within the timeframes specified in the ACO. (Attachment M)

On March 26, 1993, the NJDEP, Bureau of Field Operations - Site Assessment Section (BFO-SAS), conducted Pre-Sampling Assessment (PSA) at the facility. During the PSA, approximately ten drums containing corrosives and lubricating oil were observed scattered throughout the interior of the building. Also, three trailers, numerous drums, a propane tank, a truck weigh station and solid waste materials were noted on the vacant lot across the street. One of the trailers contained numerous drums of waste oil and lubricating oil and a second trailer housed a transformer, the status of which was unknown. In addition, approximately ten drums of caustic felt cleaner, eleven drums of waste oil and lubricants

and four canisters of liquified petroleum gas were noted in the trailers.

A subsurface investigation was initiated by the NJDEP following the Paperboard Specialties bankruptcy. The investigation was based on preliminary sampling conducted by Bell Environmental Consultants, Inc., Phase I contractor for Chin Am, Inc. On September 1,7 and 27 and October 6, 1993, the NJDEP, Division of Publicly Funded Site Remediation (DPFSR), Bureau of Environmental Measurements and Quality Assurance (BEMQA), Environment Measurements Section (EMS), collected samples of ground water and product from existing monitoring wells at the site. Soil samples were also collected from various locations. In addition, in October 1993, the NJDEP, NJGS, conducted a geophysical investigation of the site using ground penetrating radar (GPR) to provide markout locations for the USTs, subsurface utilities and other potentially hazardous objects for a planned subsurface investigation. (Attachment AA)

During sampling in the parking/storage lot, another area of contamination was discovered (Area A parking lot). On November 9 and 10, 1993, EMS conducted an additional ground water and sub-surface soil investigation of the area. (Attachment BB)

In September 1994, the NJDEP engaged a clean-up contractor, S & D Environmental Services of Edison, New Jersey, to remove the remaining oil in the Tank C and to conduct the removal of drums, waste containers and other materials from the site. The oil has since been removed from Tank C along with most of the drums, with the rest staged for removal.

In January 1995, the NJDEP engaged the services of Handex Environmental Recovery, Inc of Morganville, New Jersey, to install twenty five monitoring wells and to perform a pump test for removal of floating petroleum products, and to provide recommendations for further remediation. The report and recommendations by Handex have not been received.

It has been reported by the former employees that waste solvents and transformer oil had been routinely added to one, or all, of the fuel oil tanks at the site in the past and the resulting mixture fed to the boilers. On February 29, 1996 the NJDEP, EMSA, collected two ash samples from inside the boilers (B1-N and B2-O) at the site. Sample B1-N was collected from inside the newer boiler, located inside the building adjacent to the wall near 25th Street. Sample B2-O was collected from the bottom access door of the older boiler located in the same area as the newer boiler but further inside the building. The samples were analyzed for dioxins by Southwest Research Instruments of San Antonio, Texas.

The following dioxins were detected in the samples collected:

SAMPLE NUMBER	CONTAMINATION	CONC. (NG/KG)
B-1N	2,3,7,7-TCDD	0.836J
	1,2,3,7,8-PeCDD	2.75J
	1,2,3,4,7,8-HxCDD	1.82J
	1,2,3,6,7,8-HxCDD	2.48J
	1,2,3,7,8,9-HxCDD	2.87J
	1,2,3,4,6,7,8-HpCDD	8.39J
	OCDD	16.8J
	2,3,7,8-TCDF	52.8
	1,2,3,7,8-PeCDF	17.2
	2,3,4,7,8-PeCDF	31.7
	1,2,3,4,7,8-HxCDF	37.6
	1,2,3,6,7,8-HxCDF	13.6
	1,2,3,7,8,9-HxCDF	3.16J
	2,3,4,6,7,8-HxCDF	8.19J
	1,2,3,4,6,7,8-HpCDF	37.7
	1,2,3,4,7,8,9-HpCDF	5.40J
	OCDF	9.66J

TOTAL DIOXIN	CONC.	TOTAL DIBENZOFURAN	CONC.
Total Tetra-Dioxins	13.1	Total Tetra-Furans	183
Total Penta-Dioxins	19.1	Total Penta-Furans	172
Total Hexa-Dioxins	18.5	Total Hexa-Furans	100
Total Hepta-Dioxins	14.6	Total Hepta-Furans	43.1

SAMPLE NUMBER	CONTAMINATION	CONC. (NG/KG)
B-2O	2,3,7,8-TCDD	ND
	1,2,3,7,8-PeCDD	ND
	1,2,3,4,7,8-HxCDD	2.27J
	1,2,3,6,7,8-HxCDD	2.84J
	1,2,3,7,8,9-HxCDD	3.39J
	1,2,3,4,6,7,8-HpCDD	12.1
	OCDD	31.1
	2,3,7,8-TCDF	12.4
	1,2,3,7,8-PeCDF	3.24J
	2,3,4,7,8-PeCDF	6.95
	1,2,3,4,7,8-HxCDF	9.94
	1,2,3,6,7,8-HxCDF	4.43J
	1,2,3,7,8,9-HxCDF	2.52J
	2,3,4,6,7,8-HxCDF	5.12J
	1,2,3,4,6,7,8-HpCDF	24.8
	1,2,3,4,7,8,9-HpCDF	3.93J
	OCDF	16.1

TOTAL DIOXIN	CONC.	TOTAL DIBENZOFURAN	CONC.
Total Tetra-Dioxin	49.0	Total Tetra-Furans	49.8
Total Penta-Dioxin	35.6	Total Penta-Furans	48.7
Total Hexa-Dioxin	33.7	Total Hexa-Furans	36.1
Total Hepta-Dioxin	31.1	Total Hepta-Furans	28.7

J - Estimated
(Attachment KK)

The sample results revealed the presence of dioxins. The presence of dioxin in boiler ash might be explained by the burning of transformer oil or solvant waste, as alleged by former Paper Board Specialties employees.

On May 13, 1997, the NJDEP, EMSA, received a data validation report prepared by the NJDEP, Bureau of Environmental Measurements and Quality Assurance, Quality Assurance Section, for samples collected on February 28, 1996. All sample data were found acceptable. (Attachment LL)

On February 29, 1996 the NJDEP, EMSA, collected one sample, JSS1, from a feed pipe connecting the UST and the newer boiler. The sample, which consisted of very thick viscous material, was analyzed for PCBs by Inchcape Testing Service (ITS) Laboratories of Colchester, Vermont.

The following contaminants were detected in the sample collected from the boiler feed pipe.

SAMPLE NUMBER	CONTAMINANT	CONC. (ppm)
JSS-1	Heptachlor epoxide	1.4 J
	Endrin	21 P
	4,4'-DDE	4.8 P
	4,4'-DDD	3.4 JP
	4,4'-DDT	110 EP
	Endrin aldehyde	69 P
	alpha-Chlordane	1.6 JP
	Aroclor-1260	1,500 E
	Diluted (DF=500)	
	Endrin	28 DJP
	Endrin aldehyde	70 DP
	Aroclor-1260	2,500 D

D = Diluted
J = Estimated
P = Estimated for pesticide
(Attachment VV)

The sample results revealed the presence of PCBs in the feed pipe which suggests that PCBs may have been present in one UST.

On October 6, 1996 the NJDEP, EMSA, received a data validation report conducted by the NJDEP, Bureau of Environmental Measurements and Quality Assurance, Quality Assurance Section, for the sample collected on February 29, 1996. The reported results are quantitatively qualified. (Attachment SS)

A Letter of Credit amounting to $500,000 was posted by Chin Am as financial assurance as per the ECRA ACO requirements. Since Paper Board Specialties filed for Chapter 11 Bankruptcy Protection in April 1992, this Letter of Credit was deposited into a Standby Trust Account payable to NJDEP. (Attachment N) With the accrued interest, a total amount of $534,000 was paid to the State Treasury in November 1995. These funds are currently being utilized by the NJDEP for site remediation activities. Activities completed as of this date include the surface removal of potentially hazardous materials; removal of drums, transformer fluid and UST contents (>500 ppm PCBs); UST closure; a subsurface investigation including the installation of additional monitoring wells; the emergency removal of friable asbestos material from the roof and sidewalks, and securing of the site (fencing).

AOC SUMMARY TABLE

AOC Name	HRS Source Type	Physical State	Waste Quantity
Underground Storage Tanks Area (Truck Bays Area)	UNDERGROUND TANKS / CONTAMINATED GROUND WATER	LIQUID	20,0000 gals
Product Plume Area (Waste Paper Storage)	CONTAMINATED GROUND WATER	LIQUID	40,000 gals
Area Adjacent to Underground Water Storage Reservoirs (Machine Room)	CONTAMINATED SOIL	SOLID	20,000 sq. ft.
Unpaved Area Between Building and Route 20	CONTAMINATED SOIL	SOLID	10,000 sq. ft.
Paved Parking (Eastern) Area	CONTAMINATED SOIL	SOLID	10,000 sq. ft.
Boiler Room	CONTAMINATED SOIL	SOLID	2,000 sq. ft.

PART III: PERMITS

A. NJPDES

No record of any discharge permits for on-site operations was found during the file search.

Number	Date Issued	Expiration Date	Formation or Water Body Discharged To
None			

B. New Jersey Air Pollution Control Certificates

Plant ID No.: Unregistered
No. of Certificates: 0
Equipment Permitted: A Cleaver Brooks OL-60 water tube boiler which generated 47,000 pounds of steam per hour was permitted with the NJDEP, Division of Environmental Quality (Attachment O).

C. BUST Registration

Registration No.: N/A
No. of Tanks:

None of the USTs previously located on site were registered with the NJDEP, Bureau of Underground Storage Tanks (BUST).

Tank No.	Capacity (gallons)	Contents of Tank	Integrity
NONE			

D. Other Permits

No record of any other permits for site operations was found during the file search.

Issuing Agency	Permit Type	Permit No.	Date Issued	Expiration Date
NONE				

PART IV: SOIL EXPOSURE

Describe soil type. Include soil series, composition of the soil and permeability of the soil.

The Soil Survey of Passaic County, New Jersey, identifies two soil types in the vicinity of the Paper Board Specialties site: Urban Land Boonton complex soils (UbC) and Urban Land Riverhead complex soils (UrB). UbC soils consist of stony and gravelly, fine, sandy loam glacial deposits resulting from the weathering of red sandstone, shale, basalt and granitic gneiss. UrB soils consist of stratified and sorted, cobbly or gravelly, coarse-textured glacial outwash materials resulting from glacial erosion of granitic gneiss, sandstone or shale materials (Attachment Q). The permeability of these materials ranges from 10^{-1} to 10^{-4} cm/sec.

Soils identified during monitoring well installation on site indicate that the surface material extending to 3 feet below the surface consists of fill made up of fine to medium sand, gravel, silt and concrete (see Ground Water Route Section).

Briefly discuss contaminants identified in the soil. Include sampling date, sampling agency or company, sample locations, depth and contaminant level.

An excavation of contaminated soils at the facility was undertaken in two distinct phases (Phase I and Phase II) by Bell Environmental Consultants of Dover, New Jersey. Phase I post excavation sampling was initiated in February 1990 and Phase II post excavation sampling was initiated in July 1990. The post excavation samples were collected following the removal of visibly contaminated soils from three distinct areas of the site (Areas A, C and D). Area A consists of the vacant lot located on the south side of Third Avenue. Area C consists of the portion of the property adjacent to Route 20 which contains the main manufacturing building. Area D consists of the location of the three fuel oil USTs and the former gasoline UST. The amount of soil excavated was not found in the documentation reviewed.

The following areas were sampled during the Phase I portion of the investigation in February 1990 and analyzed for semi-volatile base neutral (BNs) and priority pollutant metals. Contaminants detected above NJDEP Soil Cleanup Criteria in samples collected from Area A (SD-1 through SD-3 and SC-3 through SC-8) included benzo(a)pyrene at 3.2 ppm and hexachlorobenzene at 2.9 ppm. Contaminants identified at elevated levels in Area C (SA-1 through SA-7) included benzo(a)anthracene at 4.8 ppm and benzo(a)pyrene at 2.6 ppm. No contaminants above the NJDEP Soil Cleanup Criteria (SCC) were detected. (Attachments P and R)

Soil samples (SB-1 through SB-8) were collected following the removal of two fuel oil USTs (UST-A and UST-C) from Area D in July 1990 by Bell Environmental Consultants of Dover, New Jersey, as part of the Phase II post excavation sampling. Samples collected following the removal of UST-A were analyzed for total petroleum hydrocarbons (TPHC) and semi-volatile base neutral extractables plus unknowns (BNs + 15). Samples collected from the UST-C excavation were analyzed for TPHCs, BNs + 15 and volatile organics plus 15 unknowns (VOCs + 15). No contaminants above NJDEP SCC were detected in those samples collected from the UST-A excavation. Contaminants detected above NJDEP SCC for the UST-C samples include benzo(a)anthracene (6.95 ppm), benzo(k)fluoranthene (5.76 ppm), benzo(a)pyrene (8.14 ppm), indeno(1,2,3-cd)pyrene (7.15 ppm) and naphthalene (10.3 ppm).

Additional samples were collected during the Phase II portion of the investigation and analyzed for TPHCs and BNs. Samples collected from Area A contained concentrations above NJDEP SCC for the following compounds: benzo(a)anthracene at 18 and 60 ppm, chrysene at 55 ppm, benzo(b)fluoranthene at 55 ppm, benzo(a)pyrene at 21 and 70 ppm, benzo(k)fluoranthene at 54 ppm and indeno(1,2,3-cd)pyrene at 40 ppm. No contaminants were detected at levels above NJDEP SCC for those samples collected from Area C.

From September 27 through October 6, 1993, the NJDEP, Division of Publicly Funded Site Remediation (DPFSR), Bureau of Environmental Measurements and Quality Assurance (BEMQA), Environment Measurements Section (EMS), conducted sampling of soils from various site locations. A total of seven soil borings were completed inside the truck bay and UST areas. Three borings were completed outside the building: one near the UST area, one outside the truck bay area and one directly across 3rd Avenue. In addition, twelve borings were completed along the outside perimeter of the building.

Samples were collected from four locations in the parking lot. The samples were analyzed by the NJDEP Mobile Laboratory for volatile organics and total petroleum hydrocarbons. The soil samples were analyzed for TPHC with Ensys immunoassay field analysis kits. In addition, as confirmatory samples, seven samples were analyzed by the NJ Department of Health Laboratory for TPHC. (Attachment BB)

The results indicated that TPHC levels in the soil borings exceeded the 10,000 ppm NJDEP SCC in the UST area and truck bay area samples. Outside these areas, only one sample collected along Route 20 South (S-7) exceeded the NJDEP SCC at a depth of 5 to 7 feet. Samples S-4 and S-5, also collected from borings located near Route 20 South, exhibited elevated levels of petroleum product at approximately 5 to 7 feet below the ground surface, but below the NJDEP SCC.

During September 27 through October 6, 1993, sampling by the NJDEP, EMS, disclosed another area of contamination, the Area A parking lot which was previously occupied by the fuel oil distributor. On November 9 and 10, 1993, EMS conducted an additional sub-surface soil investigation of the Area A parking lot. A total of five soil borings were completed and samples collected. The samples were analyzed by the NJDEP, Bureau of Organic and Analytical Services and the Bureau of Radiation and Inorganic Analytical Services for volatile organics, semivolatile organics, PCBs and metals. Soil samples were also analyzed by the NJDEP Mobile Laboratory for total volatile organics and TPHC. In addition, Ensys Immunoassay field analysis kits for petroleum hydrocarbons were employed to assist in the delineation of suspected contaminated soils. (Attachment BB)

On December 13 through December 15, 1995, the NJDEP, Bureau of Environmental Measurements and Quality Assurance, Environmental Measurements and Site Assessment Section (EMSA), collected 22 soil samples and 2 duplicate samples from the site. The samples were collected in compliance with the Department's Technical Requirements for Site Remediation, N.J.A.C. 7:26E, at various depths ranging from 2 to 14 feet. The samples were collected using small diameter direct push points inserted utilizing a Geoprobe[R], a hydraulically powered soil probing unit, based on visual observations and field instrument readings. (Map 3 A)

The samples were analyzed for volatile organic compounds, semivolatile compounds, PCBs/pesticides and benzidine by Inchcape Environmental Laboratories of Colchester, Vermont (N.J. Certification #85972).

The sample results are summarized in the following table:

SAMPLE NUMBER	SAMPLE DEPTH (ft)	CONTAMINANT	LAB RESULTS (ppm)	SCC (ppm) I G W	SCC (ppm) R D C
EDS-2B	6-8	Acetone	.006JB	100	
		Pyrene	.068J	100	
WDS-1	7-7.7	Acetone	.008JR	100	
		Di-n-butylphthalate	.022J	100	
		Fluoranthene	.099J	100	
		Pyrene	.092J	100	
		Benzo(a)anthracene	.056J	500	
		Chrysene	.055J	500	
		bis(2-Ethylhexyl)phthalate	.036J	100	
		Benzo(b)fluoranthene	.039J	50	
		Benzo(k)fluoranthene	.051J	500	
		Benzo(a)pyrene	.050J	100	
		Indeno(1,2,3-cd)pyrene	.027J	500	
		Benzo(g,h,i)perylene	.027J	NEC	
WDS-2	7-8	Acetone	.006JB	100	
		Di-n-butylphthalate	.020J	100	
		bis(2-Ethylhexyl)phthalate	.021J	100	

WDS-3	7-8	Acetone	.015B	100	
		Di-n-butylphthalate	.022J	100	
		Fluoranthene	.042J	100	
		Pyrene	.044J	100	
		Benzo(a)anthracene	.026J	500	
		bis(2-Ethylhexyl)phthalate	.017J	100	
		Benzo(b)fluoranthene	.022J	50	
		Benzo(k)fluoranthene	.030J	500	
		Benzo(a)pyrene	.028J	100	
		Indeno(1,2,3-cd)pyrene	.018J	500	
		Benzo(g,h,i)perylene	.019J	NEC	
P1-CS2A	2-6	Acetone	.046B		1000
		Toluene	.06J		1000
		Ethylbenzene	.001J		1000
		Xylene	.007J		2800
		Naphthalene	.120J		410
		2-Methylnaphthalene	.072J		2800
		Acenaphthylene	.041J		NEC
		Acenaphthene	.210J		3400
		Dibenzofuran	.160J		NEC
		Fluorene	.320J		2300
		Phenanthrene	4.30		NEC
		Anthracene	.690J		10,000
		Carbazole	.150J		NEC
		Fluoranthene	5.50		3400
		Pyrene	5.70		2300
		Benzo(a)anthracene	**3.40**		**0.9**
		Chrysene	3.60		9
		bis(2-Ethylhexyl)phthalate	.250J		49
		Benzo(a)pyrene	**3.00**		**0.66**
		Indeno(1,2,3-cd)pyrene	**1.20**		**0.9**
		Dibenzo(a,h)anthracene	.560J		0.66
		Benzo(g,h,i)perylene	1.40		NEC
		Aldrin	.0054J		NEC
		Endosulfan I	.062		340
		4,4'-DDE	.014JP		2
		Endrin	.0095JP		17
		4,4'-DDT	.020		2
		Endrin ketone	.096JP		NEC
		Endrin aldehyde	.017JP		NEC
		alpha-Chlordane	.0049JP		NEC
		Aroclor 1260	.220		0.49

P1-CS2B	10-14	Acetone	6.20J	100	
		Ethylbenzene	**180.0**	**100**	
		Xylene	3.10J	10	
		Naphthalene	3.80J	100	
		2-Methylnaphthalene	10.0J	NEC	
		Fluorene	5.90J	100	
		Phenanthrene	18.0J	NEC	
		Anthracene	3.30J	100	
		Fluoranthene	8.80J	100	
		Pyrene	16.0J	100	
		Benzo(a)anthracene	6.20J	500	
		Chrysene	7.70J	500	
		Benzo(b)fluoranthene	5.50YJ	50	
		Benzo(a)pyrene	3.70J	100	
		Indeno(1,2,3-cd)pyrene	1.80J	500	
		Benzo(g,h,i)perylene	2.80J	NEC	
		Endosulfan I	.052P	NEC	
		4,4'-DDE	.041P	50	
P1-CS1A	2-4	Acetone	.006JB		1000
		Toluene	.002J		1000
		Naphthalene	.059J		230
		2-Methylnaphthalene	.056J		2800
		Acenaphthylene	.600		NEC
		Acenaphthene	.022J		3400
		Dibenzofuran	.036J		NEC
		Fluorene	.069J		2300
		Phenanthrene	.430		NEC
		Anthracene	.150J		10000
		Carbazole	.052J		NEC
		Di-n-butylphthalate	.044J		5700
		Fluoroanthene	1.40		2300
		Pyrene	2.20		1700
		Benzo(a)anthracene	**1.40**		**0.9**
		Chrysene	1.80		9
		Benzo(b)fluoranthene	**2.60**		**0.9**
		Benzo(k)fluoranthene	**2.50**		**0.9**
		Benzo(a)pyrene	**2.50**		**0.66**
		Indeno(1,2,3-cd)pyrene	**1.00**		**0.9**
		Dibenz(a,h)anthracene	.500		0.66
		Benzo(g,h,i)perylene	.900		NEC
		Endosulfan I	.045		NEC
		Endosulfan sulfate	.12JP		NEC
		Endrin ketone	.01JP		NEC

P1-CS1B	6-8	2-Butanone	.690JB	50	
		Ethylbenzene	4.00	100	
		Xylene (total)	2.90	10	
		2-Methylnaphthalene	91.00	NEC	
		Fluorene	9.60J	100	
		Phenanthrene	26.0J	NEC	
		Pyrene	8.80J	100	
		Benzo(a)anthracene	4.40J	500	
		Chrysene	9.60J	500	
		Benzo(a)pyrene	4.30J	100	
		gamma-BHC (Lindane)	.011JP	50	
		Endosulfan I	.031P	NEC	
		Endrin	.039JP	100	
		Endosulfan II	.034JP	NEC	
		Endosulfan sulfate	.044JP	NEC	
		Endrin ketone	.049	NEC	
		alpha-Chlordane	.028P	NEC	
		gamma-Chlordane	.031	NEC	
EPL-1	7.5-9.5	Fluorene	6.00J	100	
		Phenanthrene	8.40J	NEC	
		bis(2-Ethylhexyl)phthalate	14.0BJ	100	
EPL-3	7.5-9	Acetone	.009JB	100	
		Naphthalene	.079J	100	
		Acenaphtylene	.038J	NEC	
		Acenaphthene	.035J	100	
		Fluorene	.073J	100	
		Phenanthrene	.470	NEC	
		Anthracene	.069J	100	
		Di-n-butylphthalate	.059J	100	
		Fluoranthene	.580	100	
		Pyrene	.900	100	
		Benzo(a)anthracene	.470	500	
		Chrysene	.640	500	
		Benzo(b)fluoranthene	.450	50	
		Benzo(k)fluoranthene	.480	500	
		Benzo(a)pyrene	.620	100	
		Indeno(1,2,3-cd)pyrene	.230J	500	
		Dibenz(a,h)anthracene	.76J	100	
		Benzo(g,h,i)perylene	.260J	NEC	
		Endosulfan I	.082	NEC	
		Endrin	.025JP	50	

EPL-4	7.5-8	Acetone	.010JB	100	
		Naphthalene	.200J	100	
		2-Methylnaphthalene	.270J	NEC	
		Acenaphthylene	.160J	NEC	
		Acenaphthene	.250J	100	
		Dibenzofuran	.160J	NEC	
		Diethylphthalate	.150J	100	
		Fluorene	.310J	100	
		Phenanthrene	2.80	NEC	
		Anthracene	.550J	100	
		Carbazole	.250J	NEC	
		Fluoranthene	3.30	100	
		Pyrene	3.20	100	
		Benzo(a)anthracene	1.80	500	
		Chrysene	2.10	500	
		Benzo(a)pyrene	2.00	100	
		Indeno(1,2,3-cd)pyrene	.66J	500	
		Dibenz(a,h)anthracene	.22J	100	
		Benzo(g,h,i)perylene	.70J	NEC	
		Endosulfan I	.067	NEC	
		4,4'-DDE	.028P	50	
		Endrin	.011JP	50	
		Endrin ketone	.014J	NEC	
		alpha-Chlordane	.005JP	NEC	
EPL-2B	9.5-10	Acetone	.008JB	100	
		Carbon Disulfide	.003J	NEC	
		Tetrachloroethene	.002J	1	
		Naphthalene	.14	100	
		2-Methylnaphthalene	.14J	NEC	
		Acenaphthylene	.071J	NEC	
		Acenaphthene	.49J	100	
		Dibenzofuran	.38J	NEC	
		Fluorene	.74J	100	
		Phenanthrene	6.40	NEC	
		Anthracene	1.40	100	
		Carbazole	.55J	NEC	
		Fluoranthene	5.60	100	
		Pyrene	6.60	100	
		Benzo(a)anthracene	3.10	500	
		Chrysene	3.10	500	
		Benzo(b)fluoranthene	2.20	50	
		Benzo(k)fluoranthene	1.80	100	
		Benzo(a)pyrene	2.30	100	
		Indeno(1,2,3-cd)pyrene	18.0	500	
		Dibenz(a,h)anthracene	.850	100	
		Benzo(g,h,i)perylene	2.00	NEC	
		Aldrin	.0021P	50	
		Heptchlor epoxide	.001JP	NEC	
		Endosulfan I	.023	NEC	
		Endrin	.0064	50	
		Endrin ketone	.007P	NEC	
		Endrin aldehyde	.002JP	NEC	
		alpha-Chlordane	.001JP	NEC	

P2-CS1A	6-7.5	Acetone	.008JB	100	
		Carbon Disulfide	.003J	NEC	
		Tetrachloroethene	.002J	1	
		Naphthalene	.140J	100	
		2-Methylnaphthalene	.140J	NEC	
		Acenaphthylene	.071J	NEC	
		Acenaphthene	.49J	100	
		Dibenzofuran	.38J	NEC	
		Fluorene	.74J	100	
		Phenanthrene	6.40	NEC	
		Anthracene	1.40	100	
		Carbazole	.550J	NEC	
		Fluoranthene	5.60	100	
		Pyrene	6.60	100	
		Benzo(a)anthracene	3.10	500	
		Chrysene	3.10	500	
		Benzo(b)fluoranthene	2.20	50	
		Benzo(k)fluoranthene	1.80	100	
		Benzo(a)pyrene	2.30	100	
		Indeno(1,2,3-cd)pyrene	1.80	500	
		Dibenz(a,h)anthracene	.85J	100	
		Benzo(g,h,i)perylene	2.00	NEC	
		Aldrin	.0021P	50	
		Heptchlor epoxide	.001JP	NEC	
		Endosulfan I	.023	NEC	
		Endrin	.0064	50	
		Endrin ketone	.0070P	NEC	
		Endrin aldehyde	.002JP	NEC	
		alpha-Chlordane	.001JP	NEC	
P2-CS1B	10-14	Acetone	.018JB	100	
		Benzene	.010J	1	
		Toluene	.012J	500	
		Entylbenzene	.019J	100	
		Xylene (total)	.38	10	
		2-Methylnaphthalene	12.0J	NEC	
		Fluorene	1.30J	100	
		Phenanthrene	3.40J	NEC	
		bis(2-Ethylhexyl)phthalate	1.60BJ	100	
		beta-BHC	.0014J	NEC	
		Endosulfan I	.0015J	NEC	
		Endosulfan II	.002JP	NEC	
		Endrin ketone	.055P	NEC	
P2-CS2A	6-6.5	Acetone	.012B	100	
		Naphthalene	.16J	100	
		2-Methylnaphthalene	.15J	NEC	
		Acenaphthylene	.31J	NEC	
		Acenaphthene	.21J	100	
		Dibenzofuran	.18J	NEC	
		Fluorene	.30J	100	
		Phenanthrene	3.00	NEC	
		Anthracene	.490	100	
		Carbazole	.210J	NEC	
		Fluoranthene	2.60	100	
		Pyrene	2.90	100	
		Endosulfan I	.054P	NEC	
		Dieldrin	.018JP	NEC	
		alpha-Chlordane	.019JP	NEC	

P2-CS2B	13-13.5	Acetone	.036JB	100	
		Xylene	.050J	10	
		Fluorene	.910J	100	
		Pyrene	.550J	100	
		bis(2-Ethylhexyl)phthalate	1.70BJ	100	
		beta-BHC	.001JP	NEC	
		Endrin aldehyde	.002JP	NEC	
278	6-8	Acetone	.100JB	100	
		Ethylbenzene	.130J	100	
		Xylene (total)	.078J	10	
		Phenanthrene	1.90J	NEC	
		Pyrene	1.00J	100	
		2-Methylnaphthalene	5.40J	NEC	
		4,4'-DDE	.0078P	NEC	
		Endrin	.0064	50	
		Endosulfan II	.0042	NEC	
		Endosulfan sulfate	.0039P	NEC	
		Endrin aldehyde	.014	NEC	
279	6-8	Acetone	.008JB	100	

ppm - parts per million
SCC - Soil Cleanup Criteria I G W - Impact to Ground Water
SCC - Soil Cleanup Criteria R D C- Residential Direct Contact
NEC = No Established Criteria
J = Estimated Concentration
B = Detected in blank
(Attachment CC)

Two soil samples collected at 2 to 6 feet, P1-CS1A and P1-CS2A, exhibited concentrations of semivolatile organic compounds above the NJDEP SCC for Residential Direct Contact. Only one deep soil sample collected at 10 to 14 feet, P1-CS2B, exhibited volatile compound contamination (ethylbenzene at 180 ppm) above the NJDEP SCC for Impact to Ground Water.

Pesticides detected in the samples were at or above background concentrations but below the NJDEP SCC. Only sample P1-CS2A exhibited PCBs at 0.220 ppm which is below the NJDEP SCC for Residential Direct Contact. No benzidine was detected.

On March 28, 1996, the NJDEP, EMSA, received a data validation report prepared by the NJDEP, Bureau of Environmental Measurements and Quality Assurance, Quality Assurance Section, for samples collected on December 13-15, 1996. The volatile organics data for samples P1-CS1B, P2-CS1B and P2-CS2B were rejected due to the laboratory analyzing the samples beyond the holding time. The semivolatile organics data were acceptable and pesticides/PCBs analysis data were acceptable with qualification. (Attachment DD)

The following four samples were analyzed only for semivolatile compounds and benzidine by Inchcape Environmental Laboratories. The results are summarized in the following table:

SAMPLE NUMBER	SAMPLE DEPTH (ft)	CONTAMINANT	LAB RESULTS (ppm)	NJSCC (ppm)
EDS-1A	2 - 4	Fluoranthene	.020J	2300
		Pyrene	.023J	1700
		bis(2-Ethylhexyl)phthalate	.020J	0.66
EDS-2A	2 - 4	bis(2-Ethylhexyl)phthalate	.036J	0.66
EDS-3A	4 - 5	Phenanthrene	.130J	NEC
		Fluoranthene	.160J	2300
		Pyrene	.220J	1700
		Benzo(a)anthracene	.10J	0.9
		Chrysene	.110J	9
		Benzo(b)fluoranthene	.086J	0.9
		Benzo(k)fluoranthene	.053J	0.9
		Benzo(a)pyrene	.140J	0.66
		Indeno(1,2,3-cd)pyrene	.052J	0.9
		Benzo(g,h,i)perylene	.083J	NEC
EPL-2A	4 - 7	Naphthalene	3.4J	230
		2-Methylnaphthalene	5.1J	2800
		Acenaphthalene	1.2J	NEC
		Acenaphthene	8.8J	3400
		Dibenzofuran	5.6J	NEC
		Fluorene	13.0J	2300
		Phenanthrene	100	NEC
		Anthracene	26	3400
		Carbazole	3.0J	NEC
		Fluoranthene	77	2300
		Pyrene	91	1700
		Benzo(a)anthracene	**37**	**0.9**
		Chrysene	**36**	**9**
		Benzo(b)fluoranthene	**22**	**0.9**
		Benzo(k)fluoranthene	**27**	**0.9**
		Benzo(a)pyrene	**34**	**0.66**
		Indeno(1,2,3-cd)pyrene	**20**	**0.9**
		Dibenz(a,h)anthracene	**94J**	**0.66**
		Benzo(g,h,i)perylene	26	NEC

ppm - parts per million
SCC - Residential Direct Contact Soil Cleanup Criteria
NEC = No Established Criteria
J = Estimated Concentration
B = Detected in blank
(Attachment EE)

One soil sample, EPL-2A, exhibited concentrations of semivolatile organic compounds above NJDEP SCC for Residential Direct Contact. No benzidine was detected.

On March 28, 1996, the NJDEP, EMSA, received a data validation report prepared by the NJDEP, Bureau of Environmental Measurements and Quality Assurance, Quality Assurance Section, for samples collected on December 13 through 15, 1996. However, the above samples were not included in the formal Data Validation Review (Attachment DD).

Two samples were analyzed only for semivolatile compounds, pesticides and benzidine by Inchcape Environmental Laboratories. The results are summarized in the following table:

SAMPLE NUMBER	SAMPLE DEPTH (ft)	CONTAMINANT	LAB RESULTS (ppm)	SCC IGW(ppm)
EDS-1B	6 - 9	Fluorene	0.16J	100
		Chrysene	0.14J	9
EDS-3B	6 - 8	Phenanthrene	0.067J	NEC
		Di-n-butylphthalate	0.02J	100
		Fluoranthene	0.1J	100
		Pyrene	0.11J	NEC
		Chrysene	0.058J	500
		bis(2-Ethylhexyl)phthalate	0.029	100
		Benzo(b)fluoranthene	0.044J	50
		Benzo(k)fluoranthene	0.057J	500
		Benzo(a)pyrene	0.043J	100
		Indeno(1,2,3-cd)pyrene	0.031J	500
		Benzo(g,h,i)perylene	0.04J	NEC

ppm - parts per million
SCC / IGW - Soil Cleanup Criteria (Impact to Ground Water)
NEC = No Established Critaria
J = Estimated Concentration
B = Detected in blank
(Attachment EE)

Semivolatile compounds and pesticides were detected at concentrations below the NJDEP SCC. No benzidine was detected.

On March 28, 1996 the NJDEP, EMSA received a data validation report prepared by the NJDEP, Bureau of Environmental Measurements and Quality Assurance, Quality Assurance Section, for samples collected on December 13 through 15, 1996. Sample EDS-3B, however, was not included in the formal Data Validation Review. For sample EDS-1B, the data validation report indicates that data were acceptable for semivolatile organics and for the pesticides/PCBs the data are acceptable with qualifications (Attachment DD).

All soil samples were analyzed for TPHC by Industrial Corrosion Management Inc. (ICM) of Randolph, New Jersey (N.J. Certification #14116). The results are summarized in the following table:

SAMPLE NUMBER	SAMPLE DEPTH (ft)	CONTAMINANT	LAB RESULTS (ppm)	SCC (ppm)
EDS-1B	6 - 8	TPHC	540	10,000
EDS-2B	6 - 8	TPHC	360	10,000
EDS-3B	6 - 8	TPHC	30	10,000
WDS-1	7 - 7.6	TPHC	36	10,000

WDS-2	7 - 8	TPHC	0	10,000
WDS-3	7 - 8	TPHC	29	10,000
P1-CS-2A	2 - 4	TPHC	3,400	10,000
P1-CS-2B	**10 - 14**	**TPHC**	**10,000**	**10,000**
P1-CS-1A	2 - 4	TPHC	210	10,000
P1-CS-1B	6 - 8	TPHC	5,400	10,000
OEPL-1	7.5 -9.5	TPHC	3,600	10,000
EPL-3	7.5 -9.5	TPHC	40	10,000
EPL-4	7.5 - 8	TPHC	43	10,000
EPL-2B	9.5-10	TPHC	2,400	10,000
P2-CS-1A	6 -7.5	TPHC	200	10,000
P2-CS-1B	10 - 14	TPHC	5,000	10,000
P2-CS-2A	6 - 6.5	TPHC	84	10,000
P2-CS-2B	13 -13.5	TPHC	8,800	10,000
278 (P1-CS-1B)	7 - 8	TPHC	3,000	10,000
279(EDS-2B	6 - 8	TPHC	350	10,000

ppm - parts per million
SCC - Residential Direct Contact Soil Cleanup Criteria
NEC = No Established Criteria
(Attachment GG)

Sample WDS-2 represents background soil conditions.

On May 26, 1996, the NJDEP, EMSA, received a data validation report prepared by the NJDEP, Bureau of Environmental Measurements and Quality Assurance, Quality Assurance Section, for samples collected on September 13 through 15, 1995. All sample data were found acceptable. (Attachment HH)

Total petroleum hydrocarbons were detected at concentrations which were significantly above background and also above NJDEP SCC in soil sample P1-CS2B. These contaminants constitute an observed release which is attributed to the UST in the truck bay area.

On February 28, 1996, the NJDEP, Bureau of Environmental Measurements and Quality Assurance, Environmental Measurements and Site Assessment Section (EMSA), collected two soil samples (Cut-1 and Cut-2) at the site. The samples were collected in compliance with the Department's Technical Requirements for Site Remediation, N.J.A.C. 7:26E, from two soil piles containing well cuttings. The samples were collected based on visual observations (Map 3) and were analyzed using the Toxicity Characteristic Leaching Procedure (TCLP) methods for volatile organic and semivolatile organic

compounds, pesticides, PCBs, metals, phenols, cyanides, ignitability, corrosivity and reactivity (ICR) by Industrial Corrosion Management Inc. (ICM).

The following contaminants were detected in the soil samples collected:

SAMPLE NUMBER	CONTAMINANT	CONC. (ppm)
CUT-1	volatile organic compounds	ND
	semivolatile organics pesticides /	ND
	PCBs	ND
	metals:	
	Barium	ND
	Chromium	1.6
	Lead	0.01
	cyanides	0.14
	Phenols	ND
	Ignitability	ND
	Corrosivity	9.0
	Reactivity (sulfide)	ND
	Reactive cyanide	ND
CUT-2	volatile organic compounds	ND
	semivolatile organics pesticides /	ND
	PCBs	ND
	metals:	
	Barium	ND
	Chromium	1.0
	Lead	0.01
	cyanides	0.07
	Phenols	ND
	Ignitability	ND
	Corrosivity	9.5
	Reactive sulfide	ND
	Reactive cyanide	ND

ND = None Detected
ppm - parts per million
(Attachment II)

On September 5, 1996 the NJDEP, EMSA, received a data validation report prepared by the NJDEP, Bureau of Environmental Measurements and Quality Assurance, Quality Assurance Section, for samples collected on February 28, 1995. All sample data were found acceptable. (Attachment JJ)

SUMMATION:
Two soil samples collected at 2 to 6 feet, P1-CS1A and P1-CS2A, exhibited concentrations of contaminants above NJDEP SCC for Residential Direct Contact. Only one deep soil sample P1-CS2B, collected at 10 to 14 feet, exhibited volatile organic compound contamination (ethylbenzene at 180 ppm) above background and above the NJDEP SCC for Impact to Ground Water. Ethylbenzene is attributable to site operations and constitutes an observe release to soil.

Pesticides detected in the samples were at or above background concentrations but below NJDEP SCC. Sample P1-CS2A exhibited PCBs at 0.220 ppm, which is above background but below the NJDEP SCC for Residential Direct Contact. The detection of PCBs in sub-surface soils lends further support to the allegation that transformer oil may have been added to USTs at the facility. Their presence in the soil suggests that one or more of these USTs may have leaked.

At the eastern parking lot area, one soil sample, EPL-2A, exhibited concentrations of benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene above NJDEP SCC for Residential Direct Contact. These contaminant concentrations constitute an observed release.

Total petroleum hydrocarbons were detected at concentrations which were significantly above background and also above NJDEP SCC. The presence of petroleum hydrocarbons in sub-surface soils does indicate that some or all of the site's USTs may have leaked contents to surounding soils in the truck bay area and to work sites at the eastern parking lot area.

The ash samples from inside and around the boilers revealed the presence of dioxins. The presence of dioxins in the ash samples may suggest that materials other than fuel oil were burned in the boiler. The operational temperatures of the boilers may have been insufficient to destroy the contaminants such as PCBs thus producing various dioxins.

If no soil sampling has been conducted, discuss areas of potentially contaminated soil, areas that are visibly contaminated or results from soil gas surveys.

Soil sampling has been conducted on-site.

Number of people occupying residences or attending school or day care on or within 200 feet of the site: 30

Number of workers on or within 200 feet of the site: 175

PART V: GROUND WATER ROUTE

A. HYDROGEOLOGY

Describe geologic formations and aquifer(s) of concern. Include interconnections, confining layers, discontinuities, composition, hydraulic conductivity and permeability.

Paterson, New Jersey, is located along the eastern edge of the Newark Basin. The Newark Basin, contained within the Piedmont Physiographic Province, is dominated by upper Triassic to lower Jurassic non-marine sedimentary stream and lake deposits

interbedded with basaltic lava flows and intruded by diabasic sills and dikes. The beds in the basin generally strike northeast to southwest and dip between 5 and 20 degrees southwest. The bedrock underlying the site is the Triassic Passaic Formation (formerly nown as the Brunswick Formation) which consists of a series of alternating beds of sandstone, siltstone and shale interbedded with a conglomeratic rock along the basin's faulted northeast border. The sediments of the Newark Basin are overlain by Jurassic to Holocene consolidated and unconsolidated sands, gravels, silts and clays. (Attachment Q)

Site specific stratigraphy is based on the drilling logs prepared when monitoring wells were installed on site. The upper 2 to 3 feet consists of fill composed of fine to medium sand, gravel, silt and concrete. Beneath this is a layer of recent alluvium composed of unconsolidated soils derived from the weathering of regional consolidated deposits. The variable lithology evident on the site consists of alternating deposits of coarse sands and gravels, clays, silts and fine sands ranging from 2 to 6 feet in thickness. Beneath these deposits is a layer of weathered rock consisting of partially consolidated brownish red, silty clays, clayey sands, silts, silty sands and sandy clays with coarse sand and fine to medium gravel present.

Ground water in the Paterson area occurs within both the surface alluvial deposits and fracture zones within the underlying consolidated bedrock. The most consistent source of ground water is within the fracture zones of the underlying Passaic Formation which typically occurs at depths of between 200 and 300 feet. Recharge of the unconsolidated deposits occurs by direct recharge resulting from precipitation and surface infiltration. Recharge of the bedrock aquifer occurs by recharge from overlying units and directly from precipitation in those areas in which the bedrock is exposed to precipitation.

Ground water beneath the site occurs approximately 8 to 18 feet below the surface and flows in a northeast direction towards the Passaic River located approximately 300 feet to the east of the site.

Depth to aquifer of concern: 8 feet
Thickness of aquifer: 6,000 feet
Direction of ground water flow: Northeast
Karst (Y/N): N
Wellhead Protection Area (Y/N):N **Distance:** NA

B. MONITORING WELL INFORMATION

Well No.	Screen Depth	Formation	Location
MWB-1	22 feet	Passaic Formation	Southeast corner of machine building
MWB-2	15.5 feet	Recent Alluvium	Boiler room area
MWB-3	28 feet	Passaic Formation	East of maintenance shop
MWB-4	14.5 feet	Recent Alluvium	Truck loading area
MWB-5	12.5 feet	Recent Alluvium	Northwest corner of property
BEC-1S	13 feet	Recent Alluvium	Rear of maintenance building
BEC-2S	13.5 feet	Recent Alluvium	North Central Portion of property
BEC-1D	80 feet	Passaic Formation	East of maintenance shop
BEC-2D	75 feet	Passaic Formation	Truck bay area
NJ-1	13 feet	Recent Alluvium	Truck bay area
NJ-2	13 feet	Recent Alluvium	Truck bay area
NJ-3	13 feet	Recent Alluvium	Warehouse area
NJ-2A	20 feet	Recent Alluvium	Machine room area
NJ-4	14 feet	Recent Alluvium	Truck bay area
NJ-5	14 feet	Recent Alluvium	Warehouse
NJ-6	14 feet	Recent Alluvium	Waste paper storage
NJ-7	15 feet	Recent Alluvium	Paved parking area (outside)
NJ-8	14 feet	Recent Alluvium	Paperboard storage area (outside)
NJ-9	20 feet	Recent Alluvium	Machine room area
NJ-10	21 feet	Recent Alluvium	Machine room area
NJ-11	21 feet	Recent Alluvium	Waste paper storage
NJ-12	20 feet	Recent Alluvium	Waste paper storage

NJ-13	15 feet	Recent Alluvium	Sidewalk area outside truck bay
NJ-14	9 feet	Recent Alluvium	North corner of property
NJ-15	17 feet	Recent Alluvium	Warehouse area
NJ-16	19 feet	Recent Alluvium	Warehouse area
NJ-17	19 feet	Recent Alluvium	Warehouse area
NJ-18	24 feet	Passaic Formation	Wastepaper storage
NJ-20	50 feet	Passaic Formation	Warehouse area
NJ-21	48 feet	Passaic Formation	Warehouse area
NJ-22	50 feet	Passaic Formation	Wastepaper storage
NJ-23	47 feet	Passaic Formation	Wastepaper storage
NJ-24	38 feet	Passaic Formation	North corner of property
NJ-26	45 feet	Passaic Formation	Outside - paved parking area

Identify the upgradient well(s): MWB-1

Briefly discuss why the monitoring wells were installed and describe contaminants identified in the monitoring wells. Include Well No., sampling date, sampling agency or company, contaminant levels and remediation standards.

Nine monitoring wells located at the Paper Board Specialties site were sampled on February 20, 1990 by Bell Environmental Consultants, Inc. of Dover, New Jersey. The samples were analyzed for the presence of non-aqueous phase liquids (NAPLs), volatile organics plus fifteen non-priority pollutant compounds (VOs + 15), base/neutrals plus fifteen non-priority pollutant compounds (BNs + 15), total petroleum hydrocarbons (TPHC) and priority pollutant metals. The presence of a free floating layer of NAPL, believed to consist of #4 and #6 fuel oil, in MWB-2, MWB-4, BEC-1D, BEC-1S and BEC-2D prohibited the collection of samples from these wells, as per NJDEP protocol. Concentrations of VOs above the New Jersey Groundwater Quality Standards (NJGWQS) were detected in MWB-5 with a total VO concentration of 1,914 parts per billion (ppb). Individual VOs detected included benzene at 8 ppb in MWB-5, methylene chloride (also detected in the blank) in all four wells sampled, chloroform at 57 ppb in MWB-5 and total xylene at 1,631 ppb in MWB-5. The BN analyses revealed elevated concentrations of bis(2-ethylhexyl) phthalate in MWB-3 at 9 ppb and BEC-2S at 3 ppb. Metals detected above NJGWQS included arsenic at 8.9 parts per

million (ppm) in MWB-1, 5.4 ppm in MWB-3, 5.5 ppm in MWB-5 and 3.9 ppm in BEC-2S; beryllium at 4 ppm in MWB-1, 1.1 ppm in MWB-5 and 2.2 ppm in BEC-2S; lead at 22.7 ppm in MWB-1, 161 ppm in MWB-3, 12.4 ppm in MWB-5 and 23.7 ppm in BEC-2S; and nickel at 133 ppm in MWB-1 and 112 ppm in BEC-2S.

There are four production wells (PW-1 through PW-4) located on the Paper Board site, ranging from approximately 400 to 625 feet in depth. None of the facility production wells are currently in operation.

Well No.	Well depth	Formation	Location
PW-1	465 feet	Passaic	Wastepaper storage
PW-2	400 feet	Passaic	Warehouse area
PW-3	625 feet	Passaic	Maintenance room
PW-4	400 feet	Passaic	North corner of property

Documentation indicates that the operators of Berles Carton had noticed oil in their production water discharge and eventually determined that PW-4 was contaminated with approximately 17 feet of free product. This well is located approximately 50 feet downgradient of the three USTs in the boiler room area. Three of the four production wells (PW-1 through PW-3) located on site were sampled on February 20, 1990. The fourth well (PW-4) was not sampled due to the presence of the NAPL layer. Elevated levels of total VOs were detected in all three wells. Individual contaminants detected included 1,1-dichloroethene at 4 ppb in PW-2 and 2 ppb in PW-3; methylene chloride (also detected in the blank) at 21 ppb in PW-1; chloroform at 32 ppb in PW-1 and 6 ppb in PW-2; benzene at 9 ppb in PW-2; trichloroethene at 18 ppb in PW-1, 347 ppb in PW-2 and 37 ppb in PW-3; tetrachloroethene at 5 ppb in PW-1, 32 ppb in PW-2 and 9 ppb in PW-3; and chlorobenzene at 4 ppb in PW-3. BNs detected above the NJGWQS consisted of bis(2-ethylhexyl) phthalate (also found in the blank) at a concentration of 5 ppb in PW-1, 14 ppb in PW-2 and 6 ppb in PW-3. Metals detected at concentrations above the NJGWQS were limited to arsenic at 0.03 ppm in PW-2. (Attachment P)

On September 1,7 and 27 and October 6, 1993 the NJDEP, Division of Publicly Funded Site Remediation (DPFSR), Bureau of Environmental Measurements and Quality Assurance (BEMQA), Environmental Measurements Section (EMS), conducted sampling of ground water and product from eight existing monitoring wells at various locations throughout the site. Ground water samples from the four monitoring wells (BEC-1S, BEC-2S, MWB-5 and MWB-1) containing no floating product were collected on September 1, 1993. All of the samples

were analyzed for volatile and semivolatile organic compounds and metals by Industrial Corrosion Management Inc. (ICM) of Randolph, New Jersey, (N.J. Certification #14116) and NET Laboratories of Thorofare, New Jersey, (N.J. Certification # 08153) for total dissolved solids (TDS), pH, and dissolved oxygen (DO). NET also performed analysis on MWB-5 for diisopropyl ether (DIPE), tertiary-butyl alcohol (TBA), methyl-tertiary butyl ether (MTBE), methanol and ethanol.

Samples were analyzed by ICM for volatile and semivolatile organic compounds and metal with the following results:

MW NUMBER	CONTAMINANT	LAB RESULTS	NJGWQS
BEC-1S	2-Methylnaphthalene	0.9	NEC
	Acenaphthene	0.7	NEC
	Dibenzofuran	2.0J	NEC
	Fluorene	2.0J	300
	Phenanthene	1.0J	NEC
	Di-n-butylphalate	0.8BJ	900
	Antimony	**35.1B**	**2**
	Arsenic	7.1B	8
	Cadmium	2.0B	4
	Manganese	**16,300**	**50**
BEC-2S	Methylene Chloride	2.0J	30
	Di-n-butylphalate	2.0BJ	900
	Bis(2-Ethylhexyl)phthalate	1.0J	30
	Cadmium	3.9B	4
	Manganese	**8,840**	**50**
MWB-1	Methylene Chloride	4.0J	30
	Di-n-butylphalate	0.9BJ	900
	Cadmium	3.1B	4
	Manganese	**12,600**	**50**
	Lead	**79.6**	**10**
	Silver	9.6B	NEC
MWB-5	Methylene Chloride	2.0J	30
	Phenol	33	4,000
	4-Methylphenol	16	NEC
	Naphthalene	0.7J	NEC
	2-Methylnaphthalene	1.0J	NEC
	Phenanthrene	0.9J	NEC
	Di-n-butylphalate	0.7BJ	900
	Pyrene	1.0J	500
	Bis(2-Ethylhexyl)phthalate	2.0J	30
	Benzo(b)fluoranthene	1.0J	NEC
	Arsenic	**21.6**	**8**
	Cadmium	**38.8**	**4**
	Manganese	**7,350**	**50**
	Lead	**62.0**	**10**

NJGWQS = New Jersey Ground Water Quality Standards
J = Estimated
E = Estimated
B = Contamination found in Blank
NEC = No Established Criteria
All values are in ppb.

(Attachment MM)

On June 4, 1997, the NJDEP, EMSA, received a data validation report prepared by the NJDEP, Bureau of Environmental Measurements and Quality Assurance, Quality Assurance Section, for samples collected in September / October 1993. All sample data were found acceptable. (Attachment NN)

Samples were analyzed by NET Laboratory for total dissolved solids (TDS), pH, and dissolved oxygen (DO) with the following results:

MW NUMBER	Dissolved Oxygen (mg/l)	pH	Total Dissolved Solids(mg/l)
BEC-1S	4.5	6.43	290
BEC-2S	6.4	6.34	430
MWB-1	7.3	6.58	2,535
MWB-5	3.5	6.22	505

(Attachment OO)

NET Laboratory also performed analysis on MWB-5 sample for diisopropyl ether (DIPE), tertiary-butyl alcohol (TBA), methyl-tertiary butyl ether (MTBE), methanol and ethanol. The results were "non-detected" for these selected organics. (Attachment OO)

On June 4, 1997, the NJDEP, EMSA, received a data validation report prepared by the NJDEP, Bureau of Environmental Measurements and Quality Assurance, Quality Assurance Section, for samples collected in September / October 1993. All sample data were found acceptable. (Attachment PP)

From September 27 through October 6, 1993 the NJDEP, DPFSR, BEMQA, EMS, conducted sampling of ground water from various site locations. The ground water samples were collected from the same locations as the aforementioned soil boring samples using small diameter, direct push points inserted utilizing a Geoprobe^{R}, a hydraulically powered soil probing unit. A total of seven samples were collected inside the truck bay and UST area. In addition, sixteen samples were collected on the outside perimeter of the building and one across 3rd Avenue near parking area. No trip blank, field blank or duplicate samples were collected. The samples were analyzed by the NJDEP Mobile Laboratory for volatile organics and TPHC. The samples were also analyzed for TPHC using an Ensys immunoassay field analysis test kit.

The results indicate that the highest concentrations of ground water contaminants are located directly under the UST area and extends into the truck bay area. In addition, contamination in the

parking lot area was considered to be separate from the contamination found in and around the building. On November 9 and 10, 1993, the NJDEP, EMS, conducted an additional sub-surface investigation of the area A parking lot. Two well point piezometers were installed. From the well points, samples were collected and analyzed by the NJDEP Mobile Laboratory for total volatile organics and TPHC. In addition, Ensys immunoassay field analysis kits for petroleum hydrocarbons were employed to assist in the characterization of the suspected ground water contamination. Based on the laboratory results, ground water contamination with petroleum products is present beneath the area A parking lot. (Attachment QQ)

On February 28, 1996, the NJDEP, EMSA, collected ground water samples from twelve monitoring wells. All samples were analyzed for volatile and semivolatile organic compounds, pesticides, metals and cyanide by Inchcape Environmental Laboratories of Colchester, Vermont (N.J. Certification #85972). The following contaminants were detected:

MW NUMBER	CONTAMINANT	LAB RESULTS	NJGWQS
BEC-2D	1,1-Dichloroethane	2J	70
	1,3-Dichlorobenzene	8J	600
	1,2,4-Trichlorobenzene	3J	9
	N-nitrosodiphenylamine (1)	4J	20
	Di-n-butylphthalate	50	900
	bis(2-Ethylhexyl)phthalate	17JB	30
	Magnesium	8020	NEC
	Manganese	**1,160**	**50**
MWB-1	Chloroform	2J	6
	Di-n-butylphthalate	1JB	900
	bis(2-Ethylhexyl)phthalate	3JB	30
	Lead	**12.8**	**10**
	Mercury	0.49	2
	Nickel	45.2	100
	Cyanide	18.6	200
	Methylene Chloride	ND	30
	Cadmium	1.2B	4
	Manganese	**2,960**	**50**
	Silver	2.1B	NEC
	Arsenic	3.2B	8
	Beryllium	0.86B	20
MWB-3	1,1-Dichloroethane	1J	70
	1,1,1-Trichloroethane	3J	30
	bis(2-Ethylhexyl)phthalate	11B	30
	Lead	4.3	10
	Manganese	**426**	**50**
	Arsenic	ND	8

MWB-5	Chloroform	1J	6
	Toluene	2J	1000
	Ethylbenzene	33	700
	Xylene	38	40
	Naphthalene	1J	NEC
	Arsenic	**48.4**	**8**
	Cadmium	**19.0**	**4**
	Lead	**157**	**10**
	Manganese	**3,900**	**50**
	Mercury	0.44	2
	Beryllium	2.6B	20
	Nickel	45.2	100
	Methylene Chloride	ND	30
	Phenol	ND	4000
	4-Methylphenol	ND	NEC
	2-Methylnaphthalene	ND	NEC
	Phenanthrene	ND	NEC
	Di-n-butylphthalate	ND	900
	Pyrene	ND	200
	bis(2-Ethylhexyl)phthalate	ND	30
	Benzo(b)fluoranthene	ND	NEC
NJ-12	**Benzene**	**3J**	**1**
	Ethylbenzene	6J	700
	Xylene	9J	40
	Naphthalene	22	NEC
	2-Methylnaphthalene	16J	NEC
	Dibenzofuran	4J	NEC
	Fluorene	7J	300
	Phenanthrene	8J	NEC
	Fluoranthene	1J	300
	Pyrene	3J	200
	bis(2-Ethylhexyl)phthalate	3JB	30
	Arsenic	**18.5**	**8**
	Chromium	69.3	100
	Lead	**25.8**	**10**
	Manganese	**24,400**	**50**
	Cyanide	99.5	200
NJ-13	**Benzene**	**12**	**1**
	Xylene	2J	40
	2-Methynaphthalene	10J	NEC
	Acenaphthene	1J	400
	Dibenzofuran	1J	NEC
	Fluorene	2J	300
	Phenanthrene	2J	NEC
	Di-n-butylphthalate	1JB	900
	bis(2-Ethylhexyl)phthalate	3JB	30
	Lead	8.9	10
	Manganese	**9,070**	**50**
	Mercury	0.22	2
NJ-14	Chloroform	2J	6
	bis(2-Ethylhexyl)phthalate	2JB	30
	Manganese	**1,010**	**50**

NJ-15	Acetone	12	700
	2-Butanone	22	NEC
	Benzene	**1J**	**1**
	Xylene (total)	4J	40
	2-Methylnaphthalene	2J	NEC
	Phenanthrene	11J	NEC
	Pyrene	2J	200
	Chrysene	2J	NEC
	bis(2-Ethylhexyl)phthalate	3JB	30
	Arsenic	**21.5**	**8**
	Chromium	68.0	100
	Lead	**148**	**10**
	Manganese	**11,900**	**50**
	Nickel	81.0	100
NJ-26	1,1-Dichloroethene	3J	NEC
	1,1-Dichloroethane	12	70
	1,1,1-Trichloroethane	5J	30
	Acenaphthene	6J	400
	Dibenzofuran	5J	NEC
	Fluorene	8J	300
	Phenanthrene	2B	NEC
	Di-n-butylphthalate	1JB	900
	bis(2-Ethylhexyl)phthalate	9JB	30
	Lead	3.4	10
	Manganese	**5,970**	**50**
NJ-2A	4-Methylphenol	1J	NEC
	bis(2-Ethylhexyl)phthalate	1JB	30
	Lead	**78.4**	**10**
	Manganese	**784**	**50**
NJ-7	bis(2-Ethylhexyl)phthalate	3JB	30
	Lead	4.8	10
	Manganese	**881**	**50**
NJ-9	bis(2-Ethylhexyl)phthalate	2JB	30
	Arsenic	**161**	**8**
	Barium	**2,740**	**2,000**
	Beryllium	19.1	20
	Chromium	**653**	**100**
	Copper	**1,320**	**1,000**
	Lead	**945**	**10**
	Manganese	**6,630**	**50**
	Mercury	**3.2**	**2**
	Nickel	**415**	**100**
	Silver	4.1	NEC
	Zinc	1840	5000

NJGWQS = New Jersey Ground Water Quality Standards
J = Estimated
All values are in ppb
B = compound also present in blank
NEC = No Established Criteria
(Attachment RR)

Monitoring well MWB-1 is upgradient and establishes background conditions. Several contaminants detected at low levels were also present in blanks except for lead and manganese. Concentrations for both metals exceed the NJGWQS and may be migrating from the adjacent industrial area. However, volatile and semivolatile organic compounds, pesticides, other metals and cyanide were detected at concentrations above background and constitute an observe release to ground water. Benzene, detected at 12 ppb and metals such as arsenic at 161 ppb, cadmium at 19 ppb, barium at 2,740 ppb, chromium at 653 ppb, copper at 1320 ppb, mercury at 3.2 ppb, nickel at 415 ppb in addition to lead at 945 ppb and manganese at 24,400 ppb exceeded the NJGWQS and are attributable to site operation.

On October 3, 1996, the NJDEP, EMSA, received a data validation report prepared by the NJDEP, Bureau of Environmental Measurements and Quality Assurance, Quality Assurance Section, for samples collected on February 28, 1996. The analytical results for sample MWB-1 for semi-volatile compounds were rejected, however, after to reanalysis of the sample, the results were acceptable except for certain analytes which were qualified due to the QA/QC deficiencies. (Attachment SS)

On February 27, 1996, the NJDEP, EMSA, collected ground water samples from two monitoring wells and one production well. All of the samples were analyzed for volatile and semivolatile organic compounds, pesticides, PCBs, phenols, cyanides, ignitability, corrosivity and reactivity (ICR) by Industrial Corrosion Management Inc. (ICM) of Randolph, New Jersey (N.J. Certification #14116).

The results are summarized below.

MW NUMBER	CONTAMINANT	CONC. (ppb)	NJGWQS (ppb)
NJ-23	**Benzene**	**690**	**1**
	Toluene	700	1,000
	Ethylbenzene	**1,900**	**700**
	Xylene (total)	**8,300**	**40**
	Fluorene	134J	300
	Phenanthrene	334J	NEC
	Chrysene	136J	NEC
BEC-1D	Toluene	120J	1,000
	Ethylbenzene	690	700
	Xylene (total)	**1,170**	**40**
	Fluorene	181J	300
	Phenanthrene	429J	NEC
	Naphthalene	155J	NEC
	Chrysene	148L	NEC

PW-2	**1,1-Dichloroethane**	**1,900**	**70**
	Benzene	**53J**	**1**
	Tetrachloroethene	220J	1
	Toluene	94J	1,000
	Chlorobenzene	**110J**	**4**
	Xylene(total)	**570**	**40**
	Fluorene	102J	300
	Phenanthrene	237J	NEC
	bis(2-ethylhoxyl)phthalate	**1,710**	**30**
	Chrysene	119J	NEC

NJGWQS = New Jersey Ground Water Quality Standards
J = Estimated
All values are in ppb.
NEC = No Established Criteria
(Attachment TT)

Volatile and semivolatile organic compounds were detected above background with some compounds significantly above the NJGWQS including benzene at 690 ppb, ethylbenzene at 1,900 ppb, xylene (total) at 8,300 ppb, chlorobenzene at 110 ppb, 1,1-dichloroethane at 1,900 ppb and bis(2-ethylhexyl)phthalate at 1,700 ppb. No pesticides, PCBs or metals above background concentrations, phenols or reactive cyanide were detected.

On October 6, 1996, the NJDEP, EMSA, received a data validation report prepared by the NJDEP, Bureau of Environmental Measurements and Quality Assurance, Quality Assurance Section, for samples collected on February 27 and 28, 1996. All sample data were found acceptable. (Attachment SS)

On February 28, 1996, the NJDEP, EMSA, collected two monitoring well and one production well samples (NJ-23, BEC-1D and PW-2) from the site. The samples petroleum product samples were collected in compliance with the NJDEP Technical Requirements for Site Remediation, N.J.A.C. 7:26E. The samples were analyzed using Toxicity Characteristic Leaching Procedure (TCLP) for volatile organic compounds, semivolatile compounds, pesticides, PCBs, phenol, cyanide, ignitability, corrosivity, and reactivity (ICR) by Industrial Corrosion Management Inc. (ICM) of Randolph, New Jersey (N.J. Certification #14116).

The following contaminants were detected in the samples collected:

SAMPLE NUMBER	CONTAMINANT	CONC. (ppm)	TCRL for TCLP (ppm)
NJ-23	volatile organic:		
	Benzene	0.690	0.50
	Ethylbenzene	1.900	NE
	Xylene(total)	8.300	NE
	semivolatile:		
	Fluorene	0.134J	NE
	Phenanthrene	0.334J	NE
	Chrysene	0.136J	NE
	pesticides	ND	NE
	PCBs	ND	NE
	metals:		
	Arsenic	0.00064	5.0
	Lead	0.00024	5.0
	Selenium	0.00036	1.0
	cyanide	ND	NE
	Phenol	0.0028	NE
	Ignitability (Flash point^{0}C)	0.096	NE
	Corrosivity	ND	NE
	Reactivity (sulfide)	ND	NE
	Reactive cynide	ND	NE
BEC-1D	volatile organic:		
	Benzene	0.120J	0.5
	Ethylbenzene	0.690	NE
	Xylene(total)	1.170	NE
	semivolatile:		
	Naphthalene	0.155J	NE
	Chrysene	0.148J	NE
	pesticides	ND	NE
	PCBs	ND	NE
	metals:		
	Arsenic	0.00028	5.0
	Lead	0.00042	5.0
	Selenium	0.00026	1.0
	cyanide	ND	NE
	Phenol	ND	NE
	Ignitability (Flash point^{0}C)	0.098	NE
	Corrosivity	ND	NE
	Reactive sulfide	ND	NE
	Reactive cynide	ND	NE

PW-2	volatile organic:		
	1,1-Dichloroethane	1.900	NE
	Benzene	0.053J	0.5
	Tetrachloroethene	0.220J	NE
	Toluene	0.094J	NE
	Chlorobenzene	0.110J	100
	Xylene(total)	0.570	NE
	semivolatile:		
	Bis(2-ethylhexyl)phthalate	1.710	NE
	Chrysene	0.119J	NE
	pesticides	ND	NE
	PCBs	ND	NE
	metals:		
	Lead	0.00033	5.0
	Selenium	0.00022	1.0
	cyanide	ND	NE
	Phenol	ND	NE
	Ignitability (Flash point^{0}C)	0.094	NE
	Corrosivity	ND	NE
	Reactivity (sulfide)	ND	NE
	Reactive cynide	ND	NE

ND - Not Detected
ppm - parts per million
NE - Not Established
TCRL for TCLP - Toxicity Characteristic Regulatory Levels for Toxicity Characteristic Leaching Procedure (TCLP)
(Attachment TT)

On October 6, 1996, the NJDEP, EMSA, received a data validation report prepared by the NJDEP, Bureau of Environmental Measurements and Quality Assurance, Quality Assurance Section, for samples collected on February 28, 1996. All sample data were found acceptable. (Attachment SS)

On January 30 and February 28, 1996, the NJDEP, EMSA, collected seventeen floating product samples from eight monitoring wells and three production wells. From the eight wells that contained less then two feet of product, one sample was collected (NJ-21, NJ-23, NJ-2A, BEC-1D, NJ-15, NJ-20, PW1-A and PW-3). From the other three wells (NJ-6, MWB-2 and PW-2) that contained product in excess of two feet, three samples were collected (at the top, middle and bottom). All of the samples were submitted for fingerprinting analysis to the United States Coast Guard Marine Safety Laboratories, Oil Identification Laboratory, in Groton, Connecticut. The sample collected from well NJ-2 did not contain a quantity of petroleum oil sufficient for fingerprinting.

Analyses indicated that the samples contain a severely biodegraded heavy fuel oil resembling a bulk fuel oil derived from a common source. The three PW-2 samples contained a contaminant that is not typically observed in petroleum oil. Samples MWB-2B and MWB-2C (samples collected of the product in the middle and at the bottom) also contained lower concentrations of the same contaminant. (Attachment UU)

On January 10, 1996, the NJDEP, EMSA, collected two samples, UST B and MW-4. The samples, which consisted of a very thick, viscous material, were analyzed for PCBs by the NJDOH Environmental Chemistry Laboratory. PCBs were not detected in MW-4; Aroclor 1260 was detected in UST B at 538 ppm. (Attachment YY)

The following table is a summary of four site monitoring wells sampled during 1990, 1993 and 1996:

MW NUMBER	CONTAMINANT	'90 Results	'93 Results	'96 RESULTS	NJGWQS
MWB-1	Chloroform	1.0J	ND	2J	6
	Di-n-butylphthalate	NA	0.9BJ	1JB	900
	bis(2-Ethylhexyl)phthalate	2.0J	ND	3JB	30
	Lead	**22,700**	**79.6**	**12.8**	**10**
	Mercury	**300**	ND	0.49	**2**
	Nickel	**133,000**	139	45.2	**100**
	Cyanide	NA	NA	18.6	200
	Methylene Chloride	3.0JB	4.0J	ND	30
	Cadmium	NA	3.1B	1.2B	4
	Manganese	NA	**12,600**	**2,960**	**50**
	Silver	NA	9.6B	2.1B	NEC
	Arsenic	**8,900**	7.8B	3.2B	**8**
	Beryllium	**4,000**	2.6B	0.86B	**20**
MWB-3	1,1-Dichloroethane	ND		1J	70
	1,1,1-Trichloroethane	2.0J		3J	30
	bis(2-Ethylhexyl)phthalate	9J		11B	30
	Lead	**161,000**		4.3	**10**
	Manganese	NA		**426**	**50**
	Arsenic	**5,400**		ND	**8**
MWB-5	**Chloroform**	**57**	ND	1J	**6**
	Toluene	158	ND	2J	1000
	Ethylbenzene	36	ND	33	700
	Xylene	**1,631**	ND	38	**40**
	Naphthalene	56	0.7J	1J	NEC
	Arsenic	**5,500**	**21.6**	**48.4**	**8**
	Cadmium	NA	**38.8**	**19.0**	**4**
	Lead	**12,400**	**62.0**	**157**	**10**
	Manganese	NA	**7,350E**	**3900**	**50**
	Mercury	**200**	ND	0.44	**2**
	Beryllium	**1,100**	0.45B	2.6B	**20**
	Nickel	**1,100**	33.6B	45.2	**100**
	Methylene Chloride	24J	2.0J	ND	30
	Phenol	NA	33	ND	4000
	4-Methylphenol	NA	16	ND	NEC
	2-Methylnaphthalene	NA	1.0J	ND	NEC
	Phenanthrene	NA	0.9J	ND	NEC
	Di-n-butylphthalate	NA	0.7BJ	ND	900
	Pyrene	NA	1.0J	ND	200
	bis(2-Ethylhexyl)phthalate	ND	2.0J	ND	30
	Benzo(b)fluoranthene	NA	1.0J	ND	NEC

BEC-2S	Methylene Chloride	3JB	2.0J		30
	Di-n-butylphalate	NA	2.0BJ		900
	Bis(2-Ethylhexyl)phthalate	3JB	1.0J		30
	Cadmium	NA	3.9B		4
	Manganese	NA	**8,840E**		**50**
	Beryllium	**2,200**	0.51B		**20**
	Lead	**23,700**	ND		**10**
	Nickel	**112,000**	13B		**100**
	Mercury	**300**	ND		**2**

NJGWQS = New Jersey Ground Water Quality Standards
J = Estimated
All values are in ppb.
B = compound also present in blank

It appears that the 1990 metals results are reported in the wrong units, however, metals concentrations such as lead, arsenic, manganese and cadmium are consistantly high and exceed the NJGWQS.

C. POTABLE WELL INFORMATION

Distance to nearest potable well: 0.51 mile

Depth of nearest potable well: 300 feet

Identify all public supply wells within 4 miles of the site:

Water Company	Distance from Site (miles)	Depth (feet)	Formation
Fair Lawn Borough	0.5-2.1	300-458	Passaic
Garfield Water Department	2.1	300-404	Passaic
Hawthorne Boro	0.6-2.5	285-485	Passaic
Ridgewood Village	1.6-4.0	201-500	Passaic

Discuss private potable well use within 4 miles of the site. Include depth, formation and distance, if available.

Ten domestic potable wells within the City of Paterson are registered with the NJDEP. These wells range in depth from 100 to 310 feet. The nearest well is approximately 1,000 feet from the site. This information was supplied by the Paterson Health Department and it is probable that many of these wells have since been abandoned or are solely for non-potable use. (Attachment X)

Tabulate for each aquifer the population utilizing that aquifer for drinking purposes within 4 miles of the site. Include only those populations which utilize wells that have a potential to be impacted, not wells which are actually impacted.

Distance from site (miles)	Population/Aquifer		
	Passaic Formation	Pleistocene Stratified Drift	
0 - 1/4	0	0	
1/4 - 1/2	0	0	
1/2 - 1	25,170	0	
1 - 2	21,620	0	
2 - 3	31,217	3,526	
3 - 4	21,147	0	

Identify industrial/irrigation wells within the vicinity of the site. Include depth, formation, distance and direction, if available.

INDUSTRIAL WELL	DISTANCE FROM SITE	DIRECTION	DEPTH (feet)	FORMATION
Fisher Scientific Company Chemical Div.	1.1-1.3 miles	northeast	25-400	Passaic
Tilcon New Jersey, Inc.	1.2 mile	west	250-600	Passaic
Nabisco Brands,Inc.	1.4 mile	northeast	393	Passaic

D. POTENTIAL

Discuss the potential for ground water contamination, including any other information concerning the ground water contamination route.

Ground water contamination with VOs, BNs, metals and a layer of free product NAPL has been confirmed at the site. This contamination is the result of the cumulative impact of numerous spills, leaking USTs and poor housekeeping. The potential for an off-site source contributing to the on-site ground water contamination also exists since numerous industrial establishments are located upgradient of the site and contaminants were detected in the background well, MWB-1.

PART VI: SURFACE WATER ROUTE

A. SURFACE WATER

Does a migration pathway to surface water exist? (Y/N): Y

Flood plain: 100-500 year **Slope:** <3%

Does contaminated ground water discharge to surface water? (Y/N):

Ground water is believed to discharge to the Passaic River, however, this has not been confirmed via sampling.

Identify known or potentially contaminated surface water bodies. Follow the pathway of the surface water and indicate all adjoining bodies of water along a route of 15 stream miles.

Surface Water Body	Distance from Site (miles)	Flow (cfs)	Usage(s)
Passaic River	300 feet	>1,000	FW2-NT

The FW2-NT (Fresh Water - NonTrout) designation establishes these waters as suitable for primary and secondary recreation, maintenance, migration and propagation of the natural and established biota, and as a public potable water supply following such treatment as required by law.

Identify drinking water intakes and fisheries within 15 miles downstream (or upstream in tidal areas) of the site. For each intake or fishery identify the distance from the point of surface water entry, the name of the fishery and/or supplier and population served.

There are no drinking water intakes within 15 miles downstream of the site.

The State of New Jersey has taken a number of steps, in the form of consumption advisories, closures and sales bans, to limit the exposure of the fish-eating public to toxic contaminants. Currently in place are advisories to limit the consumption of fish from the Passaic River and prohibitions of sale or consumption of all fish, shellfish and crustaceans taken from the tidal Passaic River, approximately four miles downstream from the site.

Briefly discuss surface water or sediment sampling conducted in relation to the site. Discuss visual observations if analytical data are not available (include date of observation). Include surface water body, sampling date, sampling agency or company, contaminant.

No surface water sampling has occurred in conjunction with this site.

Discuss the potential for surface water contamination, include any additional information concerning the surface water route.

A potential for surface water contamination as a result of current site conditions exists. The discharge of contaminated runoff into the Passaic River via the storm sewer system may have occurred. It is suspected, but not known, if contaminated ground water from the site has discharged to the Passiac River.

B. SENSITIVE ENVIRONMENTS

Identify all sensitive environments, including wetlands, along the 15 stream-mile pathway from the site:

Environment Type	Surface Water Body	Flow (cfs)	Distance from Site	Wetland Frontage
R20W	Passaic River	>1,000	0.1	15 Miles
PF01	Passaic River	>1,000	3.9 4.5	0.1 0.1
PSS1/EM	Passaic River	>1,000	3.7	0.1
PEM	Passaic River	>1,000	4.0	0.15

R2OW - Riverine open water wetlands
PF01 - Palustrine broad-leaved deciduous wetlands
PSS1/EM - Palustrine shrub/scrub, emergent wetlands
PEM - Palustrine emergent wetlands

PART VII: AIR ROUTE

Discuss observed or potential air release.

Sample results confirm the presence of PCBs in fuel oil stored/discharged on site. The presence of dioxins in ash samples collected from the boilers confirms allegations that waste solvents and transformer oil had been added to the fuel oil tanks and the resulting mixture fed to the boilers. This would indicate that the potential for a release of dioxins from the boilers to the air existed when the boilers were in operation. The boilers are currently inactive.

The presence of asbestos has been confirmed. The former president of Paper Board Specialties asserts that the majority of these materials have been removed by IDM Corporation of South River, New Jersey.

On October 13, 1995, the NJDEP, Bureau of Environmental Measurements and Quality Assurance, Environmental Measurements and Site Assessment Section (EMSA), collected two samples (S-A and S-B) from the site. The samples were collected from two areas and analyzed for asbestos containing material by the New Jersey Department of Health (MAP 2B)

The analyses indicated the following:

SAMPLE NUMBER	TYPE OF ASBESTOS	PERCENT ASBESTOS	ANALYSIS
S-A	Chrysotile	18 %	RAW, PLM, X-RAY
S-B	Amosite	14 %	RAW, CLEANED, PLM, X-RAY

(Attachment WW)

There is no potential for an air release at the Paper Board Specialties site since the cessation of operations. However, in early 1996, the rooftop heating unit, measuring approximately 15 feet by 40 feet and insulated with asbestos material, collapsed due to weather conditions. The asbestos material was scattered over the building roof as well as the sidewalk.

On March 27, 1996, the County of Passaic, New Jersey, engaged the services of Porcello Engineering, Inc. of Fairfield, New Jersey, to collect two bulk samples from the site. The analyses revealed the following:

SAMPLE NUMBER	TYPE OF ASBESTOS	PERCENT
JSH-96-03-27-01	Amosite Non-Fibrous	55 % 45 %
JSH-96-03-27-02	Amosite Non-Fibrous	60 % 40 %

(Attachment XX)

The NJDEP, DPFSR, subsequently engaged the services of an asbestos abatement contractor to remove and properly dispose of any friable material which had migrated into the neighboring business and residential areas.

Identify populations residing within 4 miles of the site.

Distance (miles)	Population
0 - 1/4	510
1/4 - 1/2	2,570
1/2 - 1	8,060
1 - 2	36,000
2 - 3	66,590
3 - 4	75,970

Identify sensitive environments and wetland acreage within 4 miles of the site.

Wetlands within 0.5 mile of the site include palustrine forested, emergent, palustrine forested shrub/scrub and riverine open water wetlands. These are associated with the Passaic River.

Identify all land resources (commercial agriculture, silviculture or recreation) within 4 miles of the site.

There are no commercial agriculture, silvicultive or recreation areas within 4 miles of the site.

PART VIII: REMOVAL ACTION AND/OR IEC CONDITION

Discuss conditions which constitute an Immediate Environmental Concern (IEC) or warrant EPA Removal Action consideration (improper storage of incompatible/reactive materials, leaking or unsound containers, inadequate site security, subsurface gas threat).

There are no on-site conditions which constitute an Immediate Environmental Concern (IEC) or warrant EPA Removal Action consideration.

PART IX: ENFORCEMENT ACTIONS

1. **Type of enforcement activity:** Notice of Violation (NOV) of an Administrative Consent Order (ACO) and Offer of Settlement (OOS)
   Issuing agent: NJDEP, Division of Hazardous Waste Management (DHWM), Industrial Site Evaluation Element (ISEE)

   Date: 1/16/90
   Description of violation: Failure on the part of Chin Am to fulfill the requirements set forth in the ACO.

Follow-up activity: Chin Am submitted the appropriate documentation required under the ACO. (Attachment V)

2. **Type of enforcement activity:** NOV and OOS
Issuing agent: NJDEP, PRPSR, ISEE
Date: 11/19/91
Description of violation: Failure on the part of Paper Board Specialties to fulfill the requirements set forth in the ACO.

Follow-up activity: Paper Board Specialties has filed for bankruptcy and has not complied with the ACO requirements. (Attachment W)

PART X: CONCLUSIONS AND RECOMMENDATIONS

List each area of concern and state whether further remediation is required.

Areas Of Concern:

1. Underground Storage Tanks Area

The remediation of the site is on-going with the surface removal of potential sources. The disposal of these potential sources such as the numerous drums located within the main building is practically complete. Transformers still present on site have been tested for PCBs and removed when necessary. All known USTs within the building have been removed and the tanks pumped out with the exception of tanks which extend below the water table. These were left in place to prevent destabilization of the building foundation. Based on the adjacent area samples, the soils are most likely impacted with petroleum hydrocarbons (Figure A). Also, ground water is contaminated with petroleum products (Figure B) and benzene (Figure C). In addition, the ground water beneath this area is also impacted with arsenic and lead which may be attributable to an upgradient, off-site source (Figure D). Any remaining asbestos on site and especially in this area should be identified and properly removed. Further remediation of this area of concern is required.

2. Product Plume Area (Waste Paper Storage and Truck Bays)

Total petroleum hydrocarbons were detected in soil at concentrations which were significantly above background and also above NJDEP SCC in soil sample P1-CS2B. These contaminant concentrations constitute an observed release which is attributed to the UST. Soil sample EPL-2A, collected in waste paper storage area,exhibited concentrations of semivolatile organic compounds above NJDEP SCC.

Ground water contamination is extensive beneath the truck bay and extends beneath central area of the building. Petroleum product samples submitted for fingerprinting analysis to the United States Coast Guard Marine Safety Laboratories, Oil Identification Laboratory of Groton, Connecticut, indicate that the samples are similar and contain a severely biodegraded heavy fuel oil resembling a bulk fuel oil derived from a common source. Contamination found in the PW-2 samples contained a contaminant that is not typically observed in petroleum oil. Samples MWB-2B and MWB-2C also contained lower concentrations of the same contaminant. This contaminant was not identified by the laboratory. (Figure B)

The 20,000-gallon tank (Tank B) failed an integrity test and was believed to be contributing to the presence of a layer of free product non-aqueous phase liquid (NAPL) present on the surface of the water table beneath the site (Attachment G). Sample results (Attachment YY) indicate that this tank contained Aroclor 1260 at 538 ppm. It is recommended that the product layer be analyzed for PCBs.

In addition to petroleum products, benzene was also detected in ground water (Figure C). Ground water in this area is also impacted with arsenic and lead which may be attributable to an upgradient, off-site source (Figure D).

Further remediation is recommended for this area of concern.

In January 1995 the NJDEP engaged a services of Handex Environmental Recovery, Inc. of Morganville, New Jersey, to perform a pump test for the removal of floating petroleum products and to provide recommendations for further remediation. The report and recommendations have not been received.

3. Area Adjacent to Underground Water Storage Reservoirs (Machine Room)

The three soil samples (WDS-1, WDS-2 & WDS-3) collected at a depth of 7 to 8 feet exhibited very low levels of contamination. The ground water, however, is impacted with heavy metals (Well NJ-9) such as arsenic at 161 ppb, cadmium at 19 ppb, barium at 2,74 ppb, chromium at 653 ppb, copper at 1,320 ppb, mercury at 3.2 ppb and nickel at 415 ppb, all exceeding the NJGWQS. In addition, lead at 945 ppb and manganese at 6,630 ppb, exceeded the NJGWQS. These contaminants are also found in the upgradient well but at significantly lower concentrations (Figure D).

Further remediation is recommended for this area of concern.

4. Unpaved Area Between Building and Route 20

The three soil samples (EDS-1, EDS-2 & EDS-3) collected at a depth of 2 to 7 feet exhibited very low levels of contamination. The ground water, however, is contaminated with petroleum products (Figure B) and benzene (Figure C). In addition, this area is also impacted with arsenic and lead which may be attributable to an upgradient, off-site source (Figure D). Further remediation is recommended for this area of concern.

5. Paved Parking (Eastern) Area

The underground fuel oil tanks and gasoline tanks associated with the former fuel oil dealer have been removed as confirmed by ground penetrating radar. Soil sample EPL-2A exhibited concentrations of semivolatile organic compounds above the NJDEP SCC. In addition, TPHC were detected in the same soil sample at levels below the NJDEP SCC. Based on the results, the contamination is localized in the east end of the parking lot extending out towards Route 20. Delineation of the contaminants in the Route 20 area is recommended (Figure C). Further remediation of this area of concern is recommended.

6. Boiler Room

The results of the samples collected from the boilers and the connecting pipes confirmed that waste solvents and transformer oil had been added to one or all of these fuel oil tanks in the past and the resulting mixture fed to the boilers. Dioxins were confirmed in ash samples inside one boiler and in ash surrounding the other boiler. Further remediation of this area is recommended.

Based on the data compiled, the site is assigned a lower priority for further action under CERCLA.

Submitted by: John Usmiani
Title: HSMS I
Date:4/15/97 **Revised:** September 1999

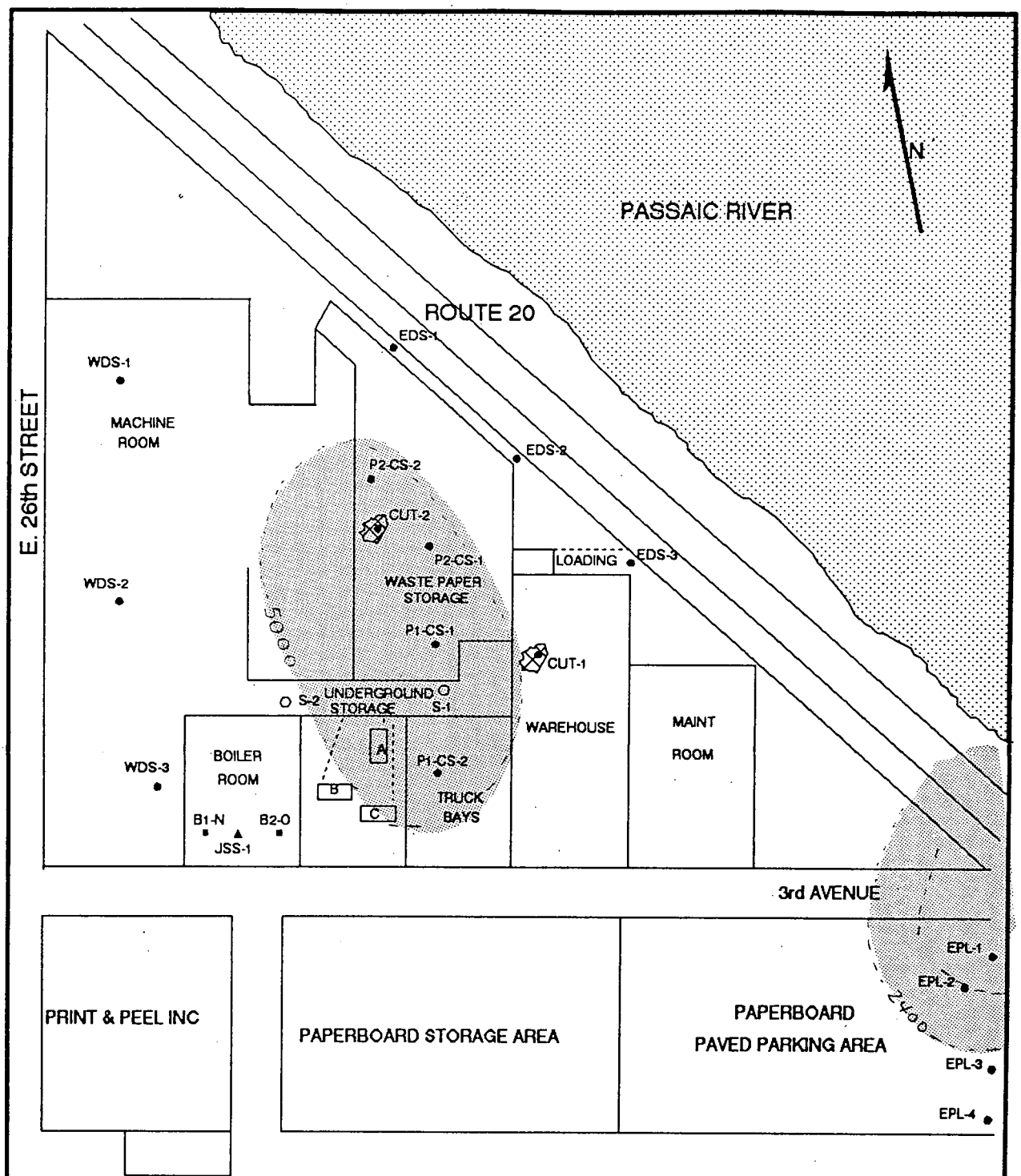


FIGURE A

TOTAL PETROLEUM HYDROCARBONS PLUME

PAPER BOARD SPECIALTIES, INC.
177-302 THIRD AVENUE
PATERSON, PASSAIC COUNTY
NOT TO SCALE

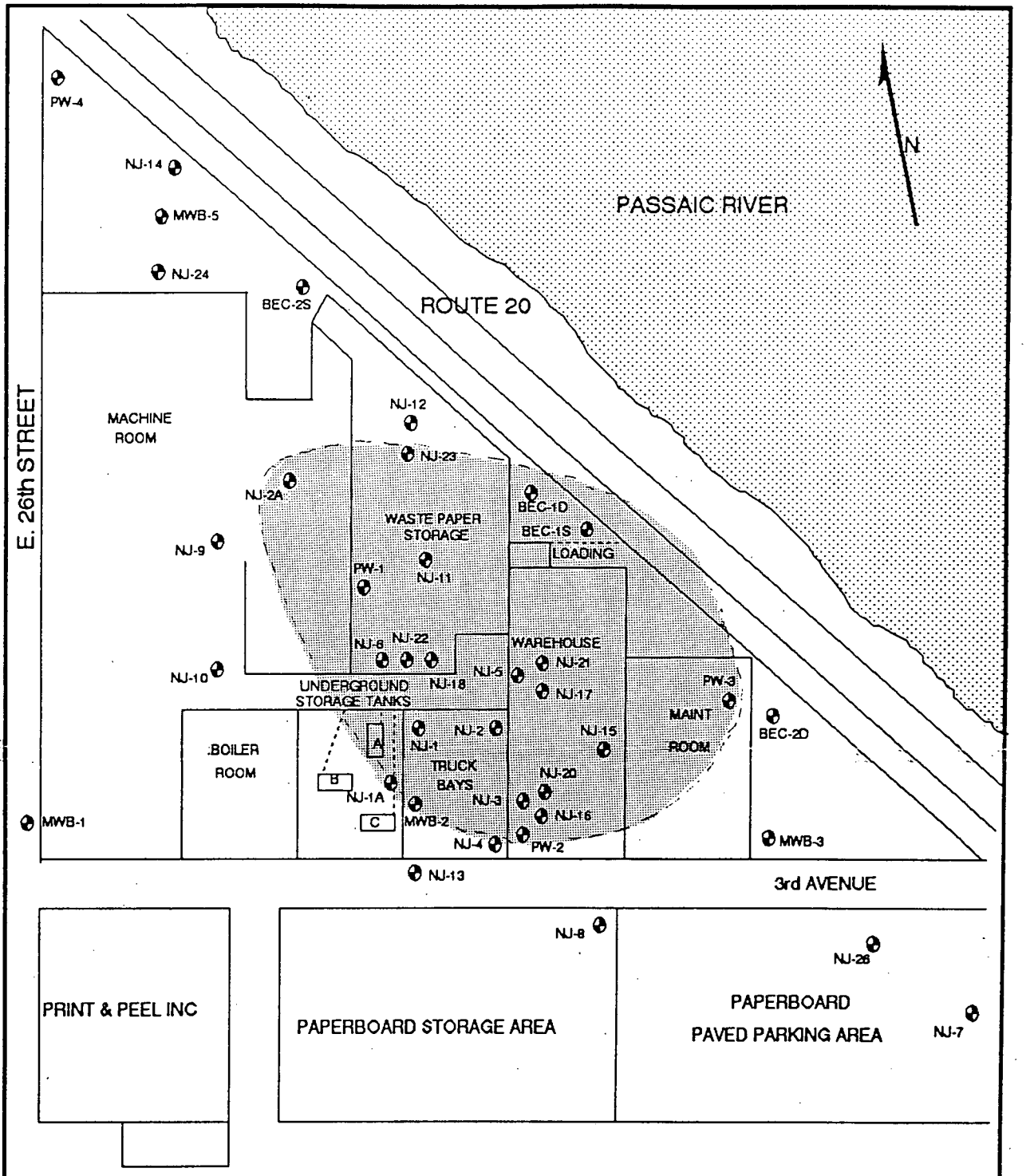


FIGURE B

PETROLEUM PRODUCT PLUME

PAPER BOARD SPECIALTIES, INC.
177-302 THIRD AVENUE
PATERSON, PASSAIC COUNTY
NOT TO SCALE

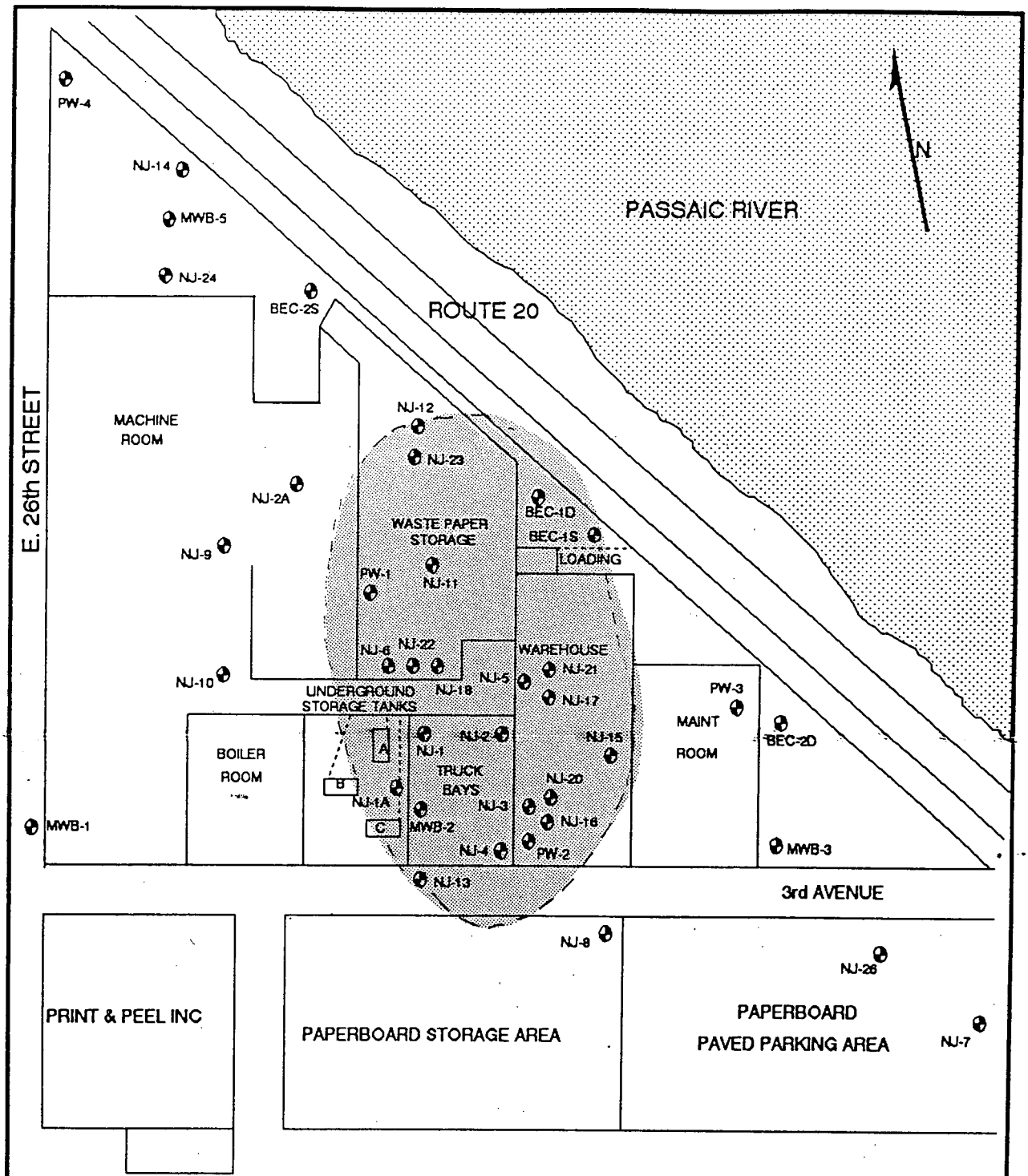


FIGURE C

PAPER BOARD SPECIALTIES, INC.
177-302 THIRD AVENUE
PATERSON, PASSAIC COUNTY
NOT TO SCALE

BENZENE PLUME

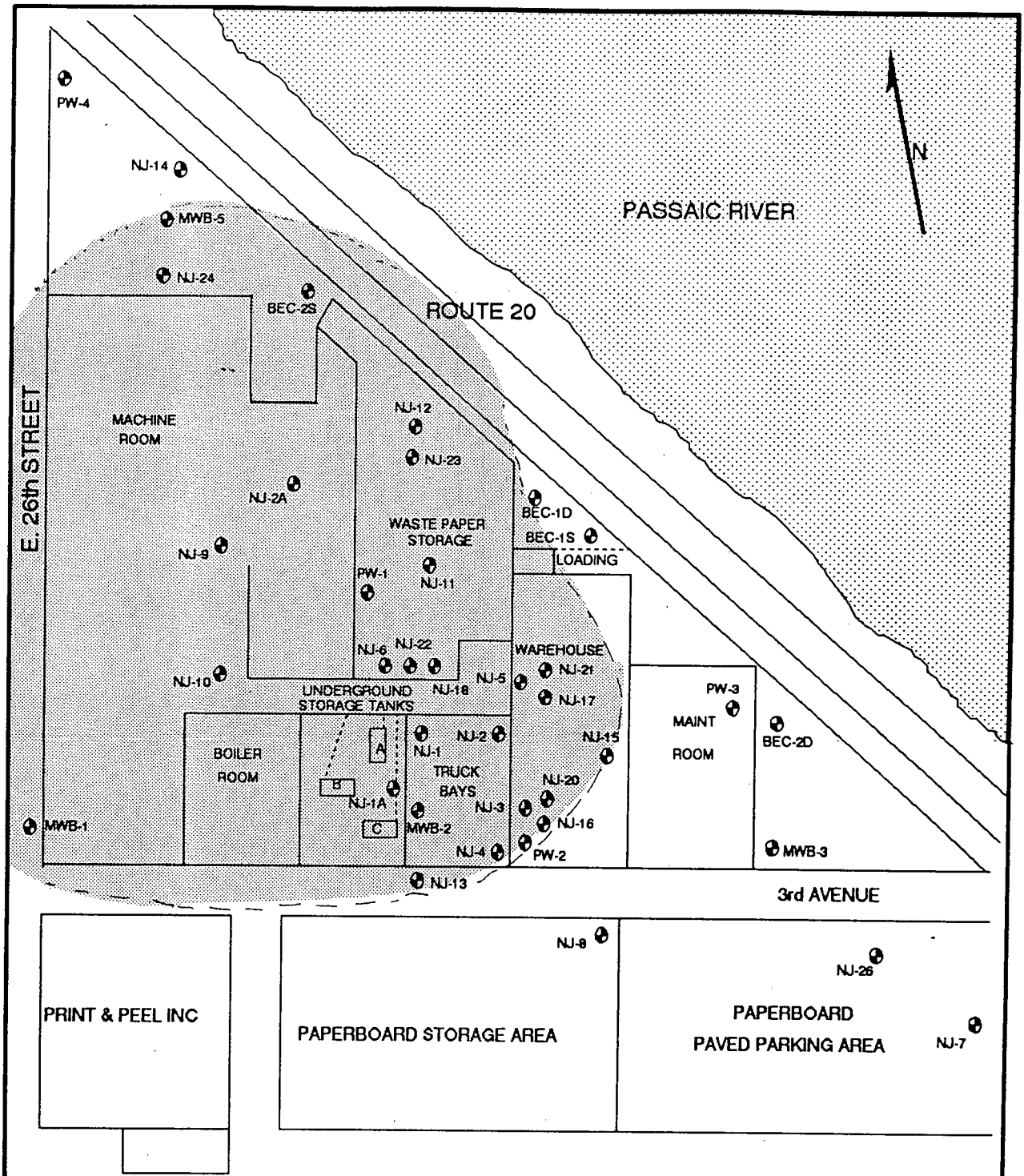


FIGURE D

ARSENIC AND LEAD PLUME

PAPER BOARD SPECIALTIES, INC.
177-302 THIRD AVENUE
PATERSON, PASSAIC COUNTY
NOT TO SCALE

PART XI: POTENTIALLY RESPONSIBLE PARTIES

NAME	OWNER/OPERATOR/ KNOWN DISCHARGER	CURRENT ADDRESS
Lemur Corp.	operator	Unknown
Rayco Inc.	owner/operator	Unknown
Anthony Russo	owner	Unknown
James and Frances Russo	owner	Unknown
Morris Paperboard Company	owner/operator	Unknown
Berles Carton Co.	owner/operator	Unknown
China National Packaging Corp.	owner	Unknown
China Am, Inc.	operator	Unknown
Paper Board Specialties, Inc.	operator	Unknown
Paper Board Specialties, Inc.	owner	Unknown

MAPS

USGS QUADRANGLE MAP

SCALE 1:24000

1 ½ 0 1 MILE

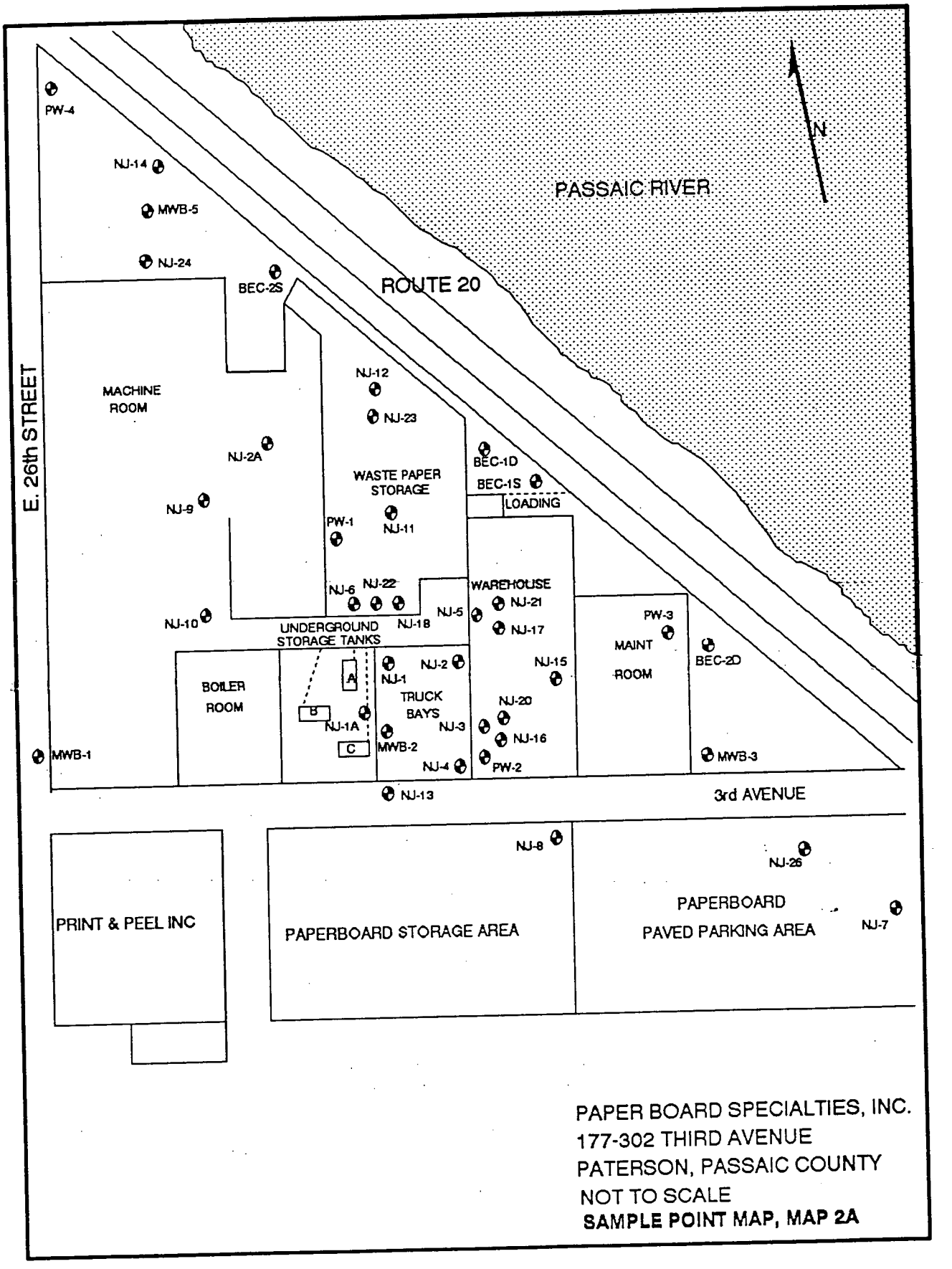
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

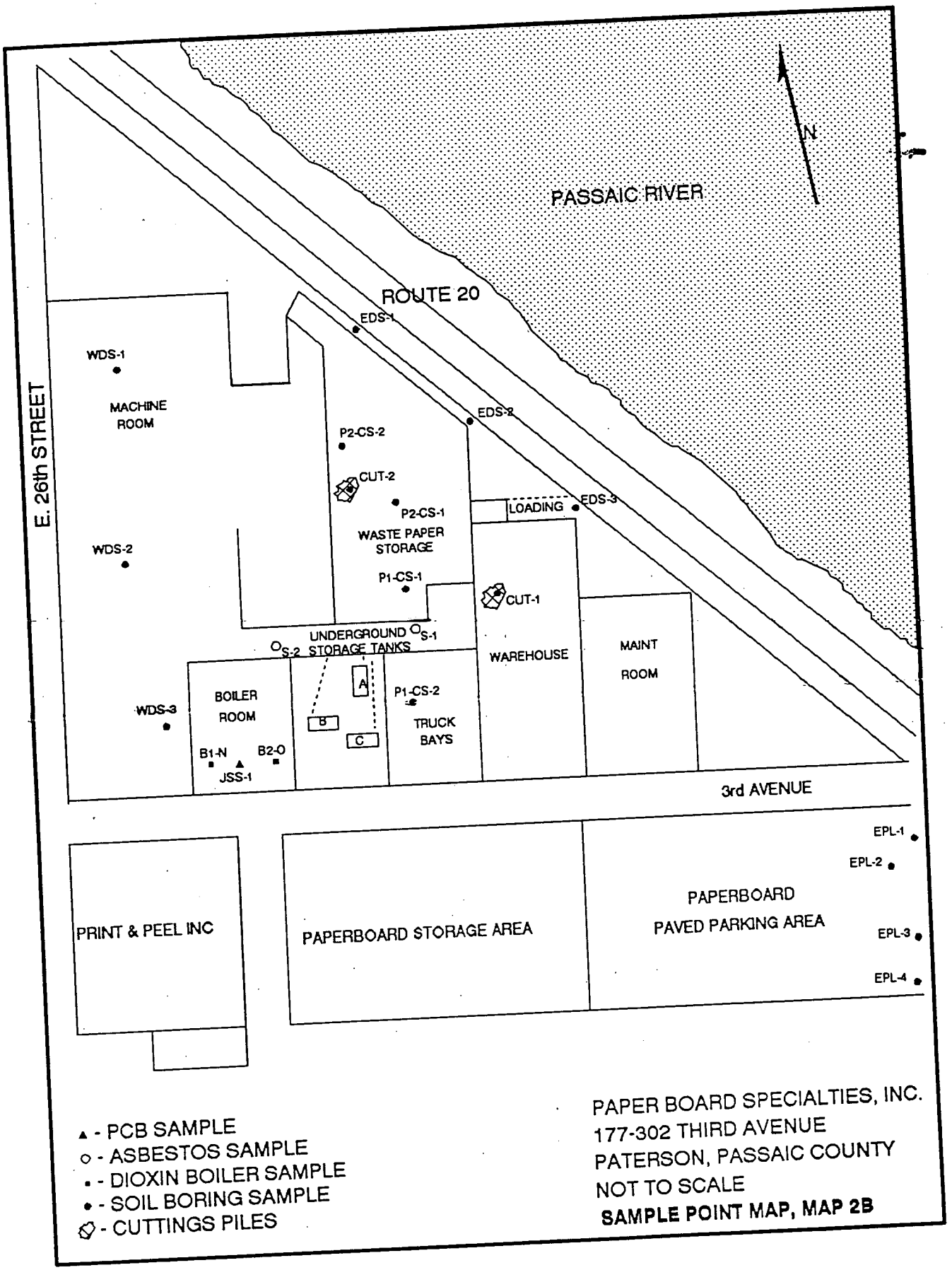
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

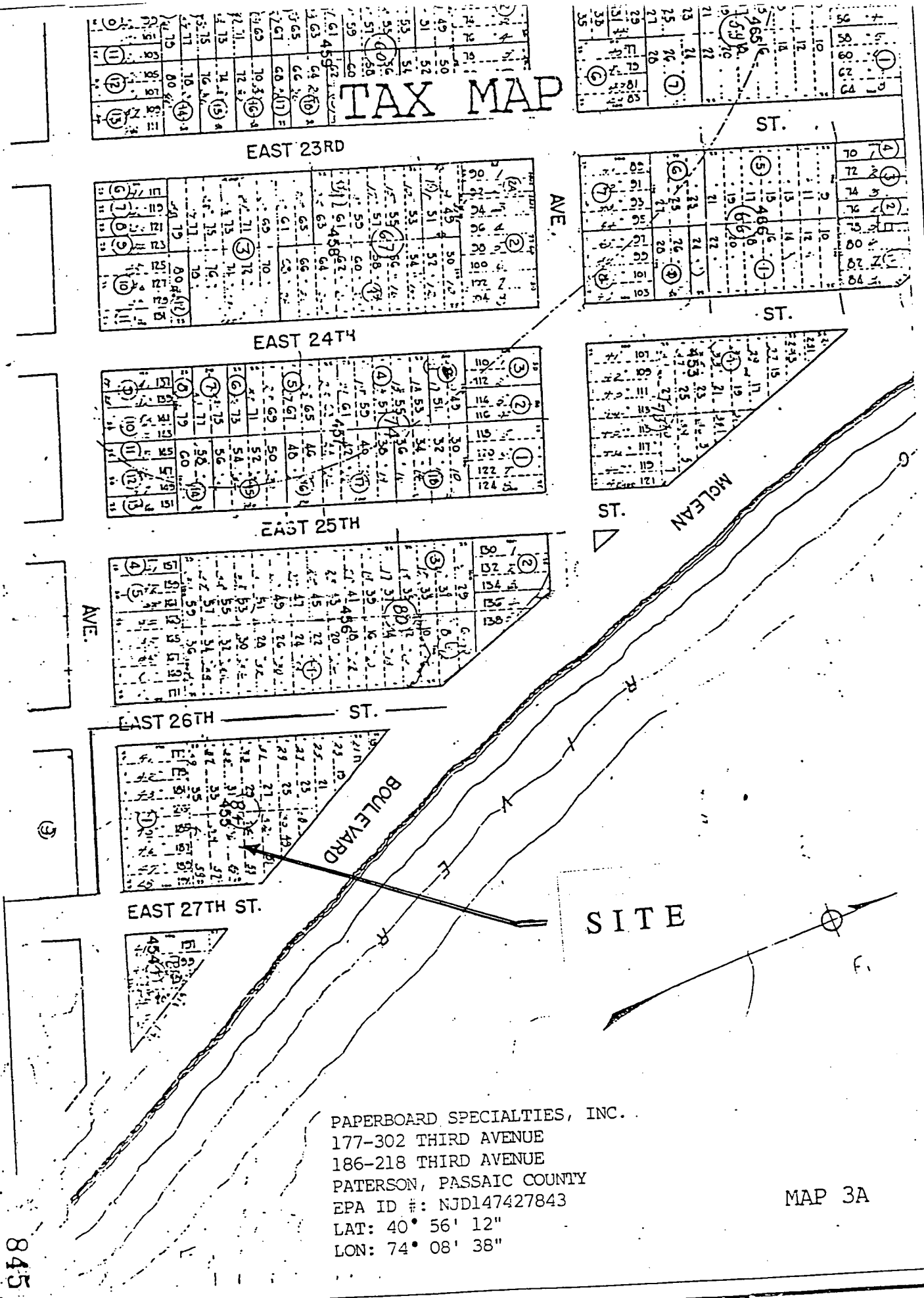
PAPERBOARD SPECIALTIES, INC.
177-302 THIRD AVENUE
186-218 THIRD AVENUE
PATERSON, PASSAIC COUNTY
EPA ID #: NJD147427843
LAT: 40° 56' 12"
LON: 74° 08' 38"

MAP 1



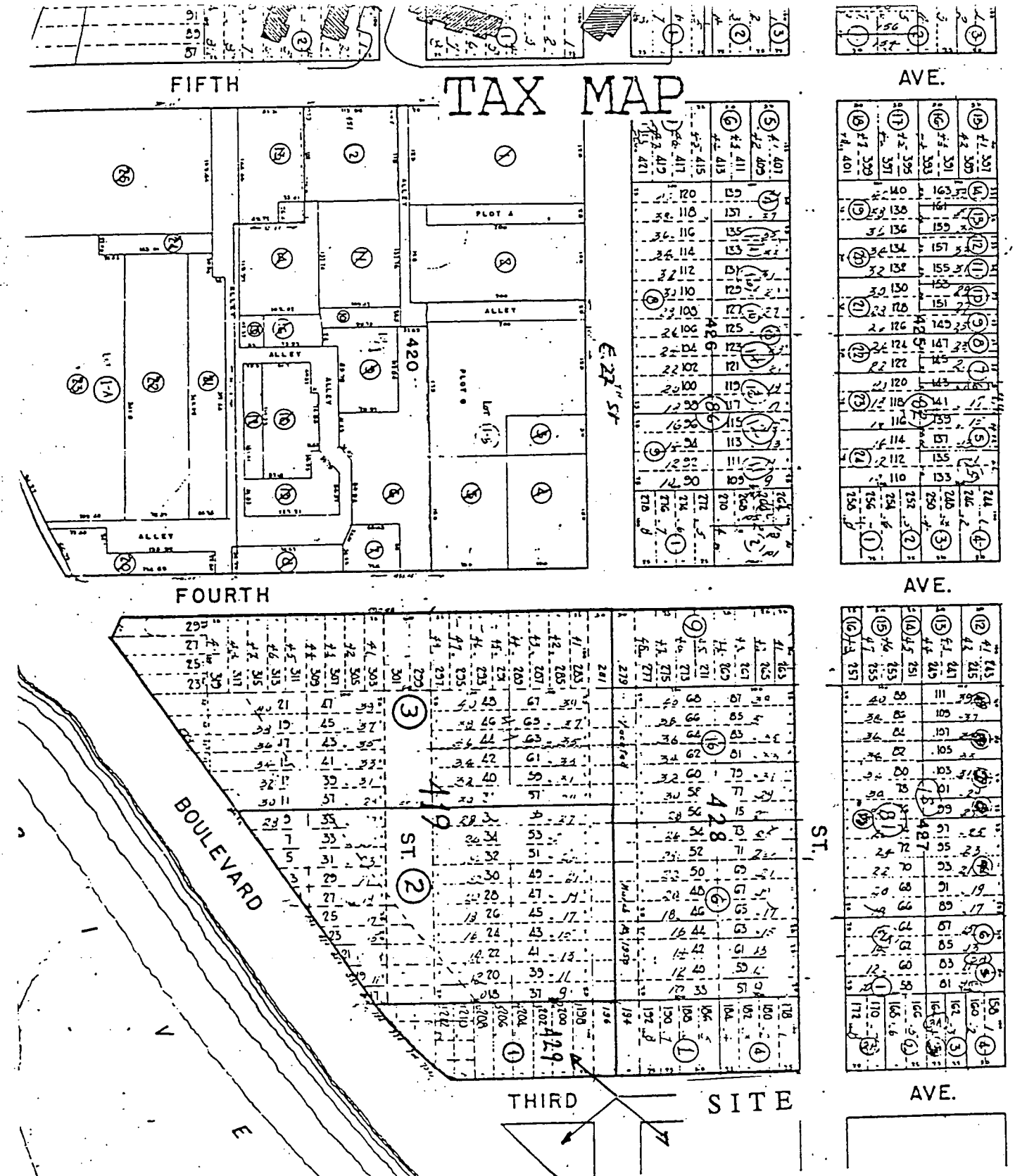
PAPER BOARD SPECIALTIES, INC.
177-302 THIRD AVENUE
PATERSON, PASSAIC COUNTY
NOT TO SCALE
SAMPLE POINT MAP, MAP 2A


PASSAIC RIVER
N
ROUTE 20
EDS-1
EDS-2
EDS-3
WDS-1
MACHINE ROOM
E. 26th STREET
P2-CS-2
CUT-2
P2-CS-1
WASTE PAPER STORAGE
LOADING
WDS-2
P1-CS-1
CUT-1
UNDERGROUND STORAGE TANKS
S-1
S-2
WAREHOUSE
MAINT ROOM
BOILER ROOM
A
B
C
P1-CS-2
TRUCK BAYS
WDS-3
B1-N
B2-O
JSS-1
3rd AVENUE
EPL-1
EPL-2
EPL-3
EPL-4
PRINT & PEEL INC
PAPERBOARD STORAGE AREA
PAPERBOARD PAVED PARKING AREA
▲ - PCB SAMPLE
○ - ASBESTOS SAMPLE
▪ - DIOXIN BOILER SAMPLE
• - SOIL BORING SAMPLE
- CUTTINGS PILES
PAPER BOARD SPECIALTIES, INC.
177-302 THIRD AVENUE
PATERSON, PASSAIC COUNTY
NOT TO SCALE
SAMPLE POINT MAP, MAP 2B



PAPERBOARD SPECIALTIES, INC.
177-302 THIRD AVENUE
186-218 THIRD AVENUE
PATERSON, PASSAIC COUNTY
EPA ID #: NJD147427843
LAT: 40° 56' 12"
LON: 74° 08' 38"

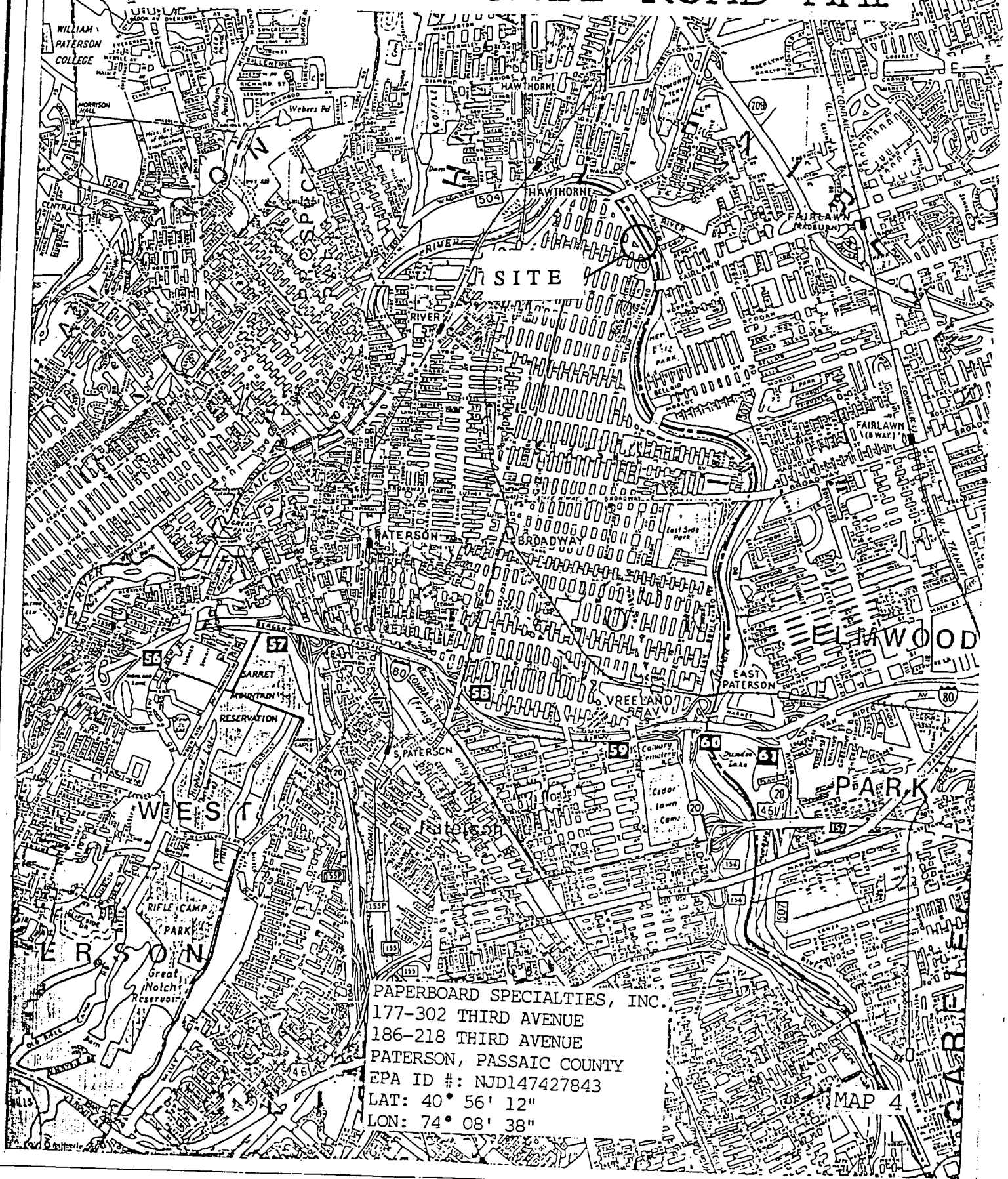
MAP 3A



PAPERBOARD SPECIALTIES, INC.
177-302 THIRD AVENUE
186-218 THIRD AVENUE
PATERSON, PASSAIC COUNTY
EPA ID #: NJD147427843
LAT: 40° 56' 12"
LON: 74° 08' 38"

MAP 3B

PASSAIC COUNTY ROAD MAP



PAPERBOARD SPECIALTIES, INC.
177-302 THIRD AVENUE
186-218 THIRD AVENUE
PATERSON, PASSAIC COUNTY
EPA ID #: NJD147427843
LAT: 40° 56' 12"
LON: 74° 08' 38"

SUBJECT TO REVISION

100,000 GPD WATER WITHDRAWAL POINTS ONLY AND CONTAMINATED SITES WITHIN 5.0 MILES OF:

LATITUDE 405612
LONGITUDE 740838

DRAFT

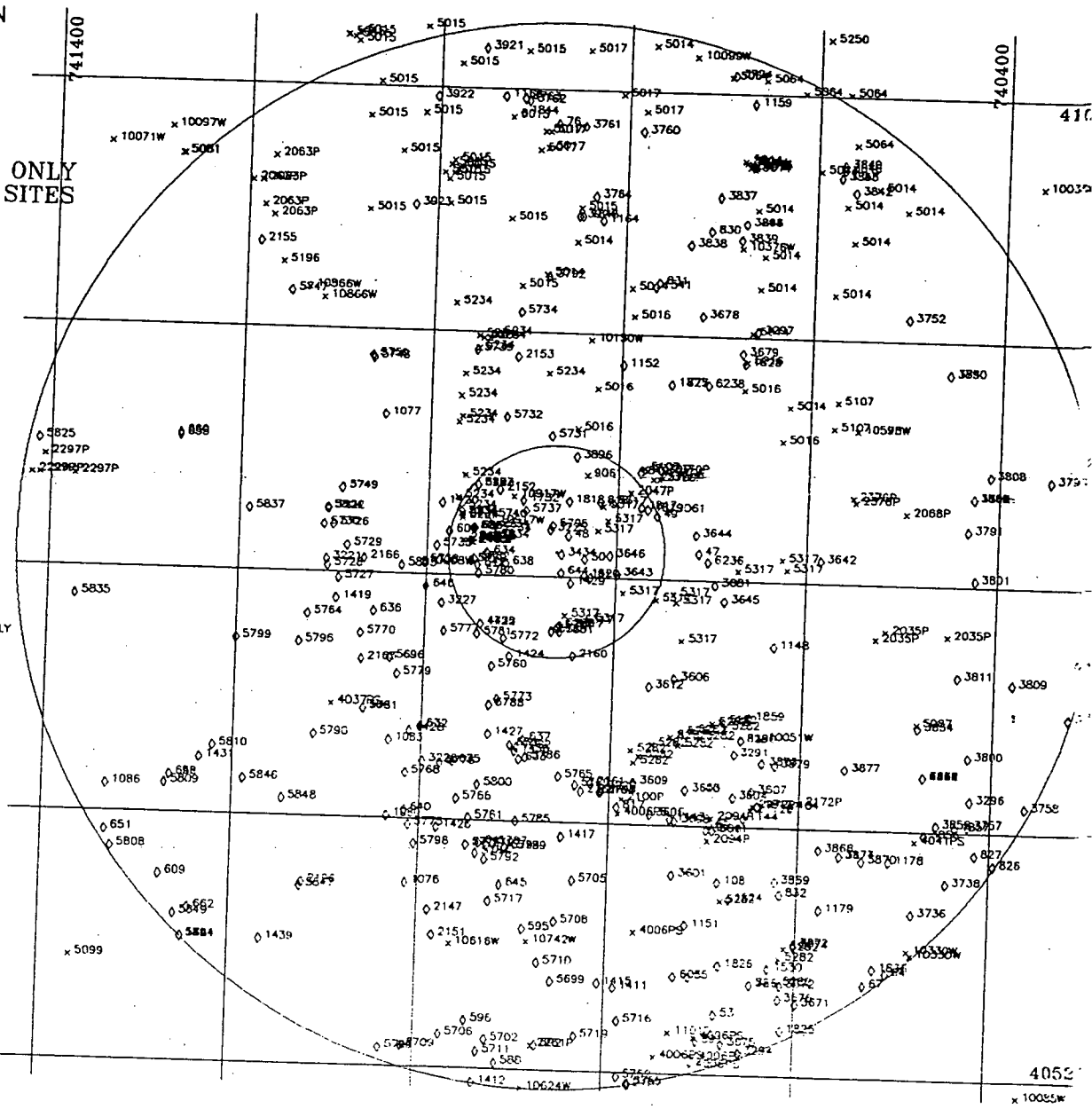
SCALE: 1:63,360
(1 Inch = 1 Mile)

× 100,000 GPD WATER WITHDRAWAL POINTS ONLY
◊ CONTAMINATED SITES
1 MILE AND 5 MILE RADII INDICATED

CONTAMINATED SITE LIST
AS OF 03/21/95

PLOT PRODUCED BY:
NJDEP
WATER SUPPLY ELEMENT
BUREAU OF WATER ALLOCATION
CN-426
TRENTON, NJ 08625

DATE: 04/18/97



SUBJECT TO REVISION

 PRELIMINARY SURVEY OF WATER WITHDRAWAL POINTS WITHIN 5.0 MILES OF 405612 LAT. 740838 LON. (IN ORDER BY PERMIT NUMBER) - 04/18/97

NUMBER	NAME	SOURCEID	LOCID	LAT	LON	LLACC	DISTANCE	COUNTY	MUN	DEPTH	GED1	GED2	CAPACITY
10008W	TILCON NEW JERSEY, INC.	4300102	WELL #1	405605	741003	T	1.2	31	10	600	GTRB		95.5
	TILCON NEW JERSEY, INC.	4300103	WELL #2	405605	741003	T	1.2	31	10	250	GTRB		100
	TILCON NEW JERSEY, INC.	4300104	WELL #3	405605	741003	T	1.2	31	10	290	GTRB		95.5
10035W	WASHINGTON POND/CANCELLED	2307298		405917	740337	T	5.6	03	66	250			60
10051W	GRANT CHEMICAL COMPANY	2604140	#1	405443	740625	T	2.6	03	11	300			300
10071W	HIGH MT. RD. SCHOOL	2303216	#1	405929	741328	U	5.7	03	20	84	GOGU		100
10085W	TAKASAGO INT. USA/FLAVOR DIV.	2603466	#1	405152	740338	T	6.6	03	62	445	GTRB		210
10097W	URBAN FARMS SHOPPING CTR. INC.	2303535	#1	405937	741250	T	5.4	03	20	87	GOSD		200
10099W	UPPER RIDGEWOOD TENNIS CLUB	2304640	#1	410019	740718	T	4.8	03	51	280	GTRB		115
10150W	FAIR LAWN MEMORIAL CEMETERY	2305707	#1	405757	740820	T	2.0	03	17	300	GTRB		150
10330W	BASF CORPORATION	2600130	WELL 2	405302	740450	T	4.9	03	31	435	GTRB		200
	BASF CORPORATION	4639261	WELL 1	405300	740448	T	5.0	03	31	335	GTRB		200
10376W	MAPLE RIDGE ASSOC.	2300713	WELL 1	405844	740646	U	3.3	03	51	190	GTRB		100
	MAPLE RIDGE ASSOC.	2300675	WELL 2	405844	740646	U	3.3	03	51	180	GTRB		100
10573W	BERGEN CO. COMUNITY COLLEGE	4300101		405715	740530	F	3.0	03	46	200	GTRB		180
10590W	BERGEN CO. DIV. OF PARKS	4300100		405715	740530	F	3.0	03	46	210	GTRB		275
10616W	INTERNATIONAL VEILING CORP.	2600902	WELL	405300	740939	T	3.8	31	02	307			120
10624W	SWEPCO TUBE CORP.	2605011	1	405151	740851	S	5.0	31	03	300			200
10742W	ALFRED HELLER HEAT TREATING CO	UNKNOWN	002	405202	740850	T	3.6	31	02		GTRB		150
	ALFRED HELLER HEAT TREATING CO	2604290	001	405312	740850	T	3.6	31	02	300	GTRB		200
10866W	HOLLAND CHRISTIAN HOME	2302726	WELL 1	405820	741120	T	3.4	31	06	350	GTRBS		100
	HOLLAND CHRISTIAN HOME	2301424	WELL 2	405815	741110	T	3.2	31	06	211	GTRBS		50
10917W	STEAM LEASING ASSOCIATES	2306893	PW-1	405626	740919	T	0.7	03	17	410	TRBP		200
	STEAM LEASING ASSOCIATES	2313895	PW-2	405639	740906	T	0.7	03	17	310	TRBP		230
1101D	FOSTER WHEELER PASSAIC. INC.			405220	740718		4.6	31	07	45	GD		175
2017P	HACKENSACK GOLF CLUB	2305058	2	405702	740304	S	5.0	03	44	320	GTRB		60
	HACKENSACK GOLF CLUB	LOWER LAKE	1	405705	740304	F	5.0	03	44		GTRB		300
2035P	ARCOLA COUNTRY CLUB	4600126	3	405520	740515	S	3.1	03	45	200	GTRB		160
	ARCOLA COUNTRY CLUB	2603872	4	405507	740509	S	3.1	03	45	208	GTRB		125
	ARCOLA COUNTRY CLUB	POND	1	405525	740430	U	3.7	03	45	5	GTRB		200
	ARCOLA COUNTRY CLUB	POND	2	405525	740430	U	3.7	03	45	15	GTRB		200
2047P	NABISCO INC.	2303369	2	405642	740752	F	0.9	03	17	393	GTRB		350
2063P	HIGH MOUNTAIN GOLF CLUB	POND 2	#2	405900	741150	U	4.3	03	21	4	GOSD		500
	HIGH MOUNTAIN GOLF CLUB	2304168	1	405912	741155	U	4.5	03	21	105	GTRB		50
	HIGH MOUNTAIN GOLF CLUB	2304529	2	405912	741152	U	4.5	03	21	200	GTRB		80
	HIGH MOUNTAIN GOLF CLUB	2306167	3	405855	741144	U	4.1	03	21	220	GTRB		50
	HIGH MOUNTAIN GOLF CLUB	2306801	4	405929	741144	U	4.6	03	21	180	GTRB		80
	HIGH MOUNTAIN GOLF CLUB	POND 1	#1	405900	741150	U	4.3	03	21	2	GOSD		250
2068P	RIDGEWOOD COUNTRY CLUB	4300032	1 (OH)	405625	740458	T	3.2	03	45	30e	GTRB		120
	RIDGEWOOD COUNTRY CLUB	4300033	2(EAST)	405625	740458	T	3.2	03	45	275	GTRB		275
	RIDGEWOOD COUNTRY CLUB	2303832	3(WEST)	405625	740458	T	3.2	03	45	500	GTRB		250
	RIDGEWOOD COUNTRY CLUB	POND		405625	740458	T	3.2	03	45	2	GTRB		1300
2094P	D.A.K. MANUFACTURING CORP.	2600466	1	405414	740625	S	1.9	03	11		GTRB		
	D.A.K. MANUFACTURING CORP.	4600210	2	405414	740625	U	2.9	03	11		GTRB		
	D.A.K. MANUFACTURING CORP.	4600211	3	405412	740625	U	2.9	03	11		GTRB		
	D.A.K. MANUFACTURING CORP.	2603007	4	405412	740625	U	2.9	03	11		GTRB		
2100P	MARCAL PAPER MILLS, INC.	4600008	1	405412	740752	S	3.0	03	11	150	GTRB		80
	MARCAL PAPER MILLS, INC.	4600009	2	405412	740752	S	3.4	03	11	[illegible]	GTRB		150
	MARCAL PAPER MILLS, INC.	4600010	3	405412	740752	S	3.4	03	11	170	GTRB		280
	MARCAL PAPER MILLS, INC.	4600011	4	405412	740752	S	3.4	03	11	125	GTRB		250
	MARCAL PAPER MILLS, INC.	4600012	5	405412	740752	S	3.4	03	11	227	GTRB		80
	MARCAL PAPER MILLS, INC.	4600013	6	405412	740752	S	3.4	03	11		GTRB		125
2172P	PARK 80 ASSOCIATES	2604224	1	405412	740752	S	2.6	03	11		GTRB		300
	PARK 80 ASSOCIATES	2604225	2	405412	740752	S	2.0	03	11		GTRB		200
	PARK 80 ASSOCIATES	2604226	3	405412	740752	S	2.0	03	11		GTRB		300
							2.0	03	11		GTRB		0

NUMBER	NAME	SOURCEID	LOCID	LAT	LON	LLACC	DISTANCE	COUNTY	MUN	DEPTH	GED1	GED2	CAPACITY
	PARK BO ASSOCIATES	2604104	4	405412	740600	S	3.3	03	57	300	GTRB		
2261P	BASF CORPORATION	2602812	2	405212	740845	U	4.6	31	02	600	GTRB		218
2297P	FREAKNESS HILL COUNTRY CLUB	4300047	1	405654	741404	T	4.8	31	14	350	GTRB		105
	FREAKNESS HILL COUNTRY CLUB	4300048	2	405645	741407	T	4.8	31	14	561	GTRB		100
	FREAKNESS HILL COUNTRY CLUB	2304756	3	405645	741345	T	4.5	31	14	342	GTRB		200
	FREAKNESS HILL COUNTRY CLUB	POND	1	405645	741412	T	4.9	31	14	6	GOSD		1000
	FREAKNESS HILL COUNTRY CLUB	POND	2	405645	741412	T	4.9	31	14		GOSD		200
2370P	FISHER SCIENTIFIC CO. CHEM DIV	2605038	PW2	405653	740730	U	1.3	03	17	335	GTRB		60
	FISHER SCIENTIFIC CO. CHEM DIV	TRENCH	IT-1	405651	740733	U	1.2	03	17	25	GRS		30
	FISHER SCIENTIFIC CO. CHEM DIV	2306701	PW-4	405649	740738	U	1.1	03	17	400	GTRB		60
	FISHER SCIENTIFIC CO. CHEM DIV	2308700	PW-5	405653	740742	U	1.1	03	17	350	GTRB		60
	FISHER SCIENTIFIC CO. CHEM DIV	TRENCH	IT-2	405649	740734	U	1.2	03	17	25	GRS		30
2376P	PARAMUS GOLF AND COUNTRY CLUB	4300096	2	405640	740530	F	2.8	03	46	200	GTRB		200
	PARAMUS GOLF AND COUNTRY CLUB	STORAGE POND		405640	740530	F	2.8	03	46	10	GOSD		1200
	PARAMUS GOLF AND COUNTRY CLUB	4300095	1	405642	740532	F	2.8	03	46	150	GTRB		30
2463P	UNITED TECHNOLOGIES CORP.	2313294	X02-84	405618	740932	U	0.8	31	04	43.5	GOGV		10
	UNITED TECHNOLOGIES CORP.	2313289	XR1-92	405617	740937	U	0.9	31	04	92	GTRB		5
	UNITED TECHNOLOGIES CORP.	2313293	XR4-84	405616	740932	U	0.8	31	04	49.6	GTRB		70
	UNITED TECHNOLOGIES CORP.	2313276	X04-84	405616	740931	U	0.8	31	04	38.5	GOGU		15
	UNITED TECHNOLOGIES CORP.	2313290	XR2-92	405616	740931	U	0.8	31	04	72.5	GTRB		10
	UNITED TECHNOLOGIES CORP.	2313294	X02-92	405617	740932	U	0.8	31	04	35.0	GOGU		60
	UNITED TECHNOLOGIES CORP.	2313291	XR3-92	405618	740932	U	0.8	31	04	87.7	GTRB		10
	UNITED TECHNOLOGIES CORP.	2313292	XR2-93	405618	740931	U	0.8	31	04	74	GTRB		50
4006PS	DUNDEE WATER POWER & LAND CO.	DUNDEE UK/G.S.	G.S. PAPER	405308	740742	T	3.6	03	21		SPPAS		
	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	WHIPPANY	405209	740727	T	4.8	31	03		SP		
	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	CHELTON CO	405208	740702	T	4.9	31	03		SP		
	DUNDEE WATER POWER & LAND CO.	DUNDEE UK/MARC	MARCAL CO.	405405	740754	T	2.5	03	11		SPPAS		
	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	PASSAIC IN	405219	740702	T	4.7	31	03		SP		
	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	PANTASOTE	405204	740704	T	4.9	31	03		SP		
4037PS	GREAT FALLS HYDROELECTRIC CO	PASSAIC RIVER		405455	741056		2.5	31	06		SPPAS		
4041PS	STEPAN CHEMICAL COMPANY	SADDLE RIVER		405335	740447		4.3	03	54		SPGAD		2000
5014	RIDGEWOOD VILLAGE WATER SUPPLY	4300004	CARR 1	405923	740640	G	4.0	03	51	250	GTRB		
	RIDGEWOOD VILLAGE WATER SUPPLY	4300005	CARR 2	405924	740639	G	4.1	03	51	250	GTRB		
	RIDGEWOOD VILLAGE WATER SUPPLY	4300006	CARR 3	405925	740640	G	4.1	03	51	250	GTRB		
	RIDGEWOOD VILLAGE WATER SUPPLY	4300007	CARR 4	405925	740639	G	4.1	03	51	200	GTRB		
	RIDGEWOOD VILLAGE WATER SUPPLY	4300008	CARR 5	405925	740640	G	4.1	03	51	215	GTRB		
	RIDGEWOOD VILLAGE WATER SUPPLY	4300009	CARR 6	405926	740642	G	4.1	03	51	150	GTRB		
	RIDGEWOOD VILLAGE WATER SUPPLY	4300010	CARR 7	405926	740645	G	4.1	03	51	175	GTRB		
	RIDGEWOOD VILLAGE WATER SUPPLY	4300011	CARR 8	405927	740646	G	4.1	03	51	175	GTRB		
	RIDGEWOOD VILLAGE WATER SUPPLY	4300012	CARR 9	405924	740643	G	4.0	03	51	175	GTRB		
	RIDGEWOOD VILLAGE WATER SUPPLY	4300013	GROVE ST.	405802	740638	G	2.7	03	51	299	GTRB		200
	RIDGEWOOD VILLAGE WATER SUPPLY	4300014	E. ROSEWO.	405822	740547	G	3.5	03	51	201	GTRB		600
	RIDGEWOOD VILLAGE WATER SUPPLY	4300015	LINWOOD	405903	740637	G	3.7	03	51	261	GTRB		700
	RIDGEWOOD VILLAGE WATER SUPPLY	2300355	E. SADDLE R	405915	740521	G	4.5	03	51	200	GTRB		300
	RIDGEWOOD VILLAGE WATER SUPPLY	2301644	SPRING	405924	740634	G	3.1	03	51	200	GTRB		300
	RIDGEWOOD VILLAGE WATER SUPPLY	2301643	WALTHER	405906	740541	G	4.2	03	51	200	GTRB		175
	RIDGEWOOD VILLAGE WATER SUPPLY	2301445	PARAMUS	405948	740536	G	4.0	03	51	200	GTRB		150
	RIDGEWOOD VILLAGE WATER SUPPLY	2301771	HANOVER	410027	740544	G	4.9	03	51	200	GTRB		125
	RIDGEWOOD VILLAGE WATER SUPPLY	2301634	RAYMOR	405829	740649	G	2.6	03	51	200	GTRB		200
	RIDGEWOOD VILLAGE WATER SUPPLY	2305903	1F TIME	405840	740632	G	2.4	03	51	200	GTRB		350
	RIDGEWOOD VILLAGE WATER SUPPLY	2305902	BALDWIN	405914	740505	G	4.3	03	51	200	GTRB		215
	RIDGEWOOD VILLAGE WATER SUPPLY	2704470	PINE	405943	740631	G	3.9	03	51	299	GTRB		125
	RIDGEWOOD VILLAGE WATER SUPPLY	2704458	TWINER	405903	740559	G	4.3	03	51	299	GTRB		850
	RIDGEWOOD VILLAGE WATER SUPPLY	2704170	STEVENS	405916	740437	G	2.9	03	51	100	GTRB		225
	RIDGEWOOD VILLAGE WATER SUPPLY	2305931	WEST END	405903	740535	G	2.6	03	51	200	GTRB		
	RIDGEWOOD VILLAGE	2301827	MEER	405909	740537	G	4.	03	51	200	GTRB		375
5015	RIDGEWOOD VILLAGE												

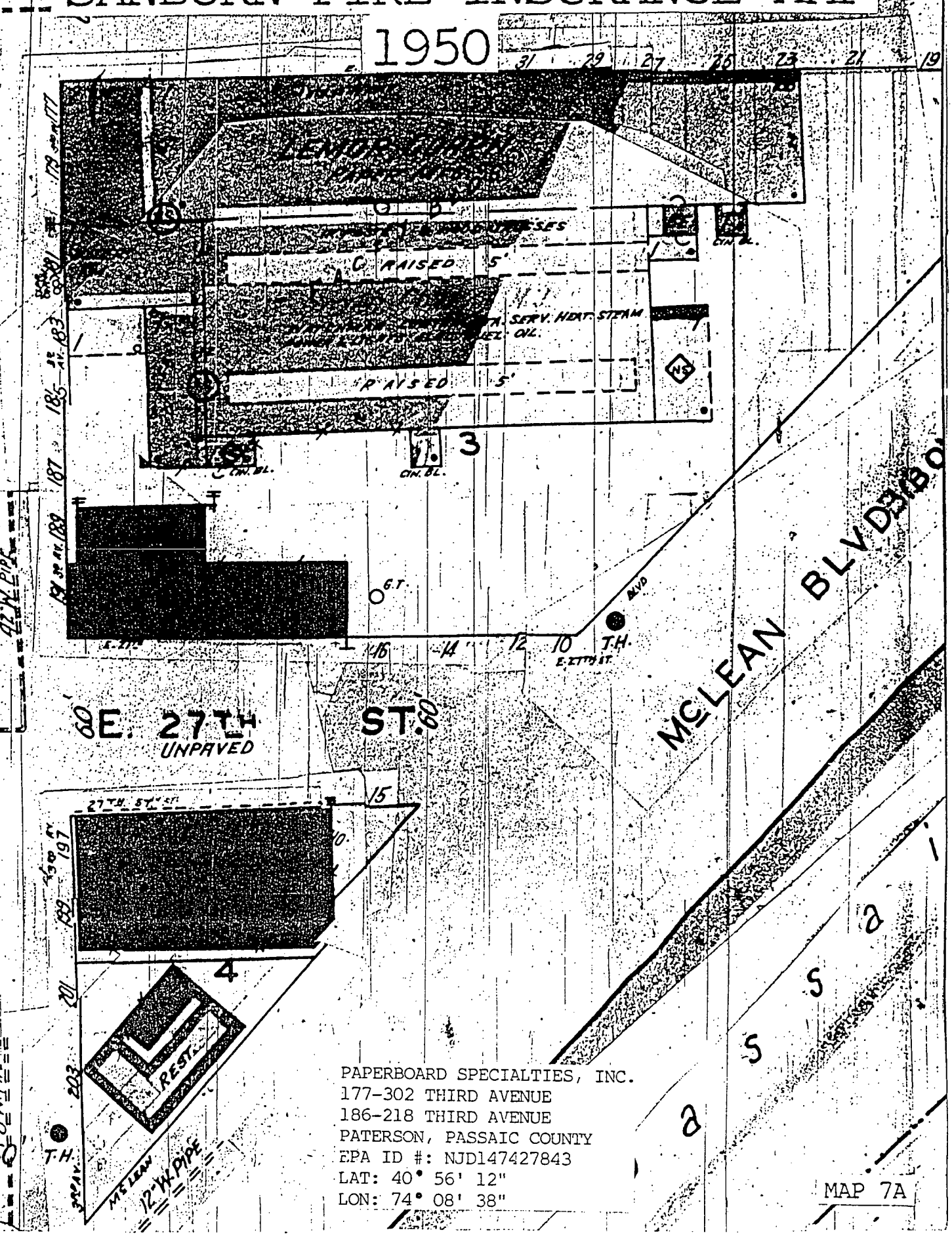
NUMBER	NAME	SOURCEID	LOCID	LAT	LON	LLACC	DISTANCE	COUNTY	MUN	DEPTH	GED1	GED2	CAPACITY
	RIDGEWOOD VILLAGE	2301046	MIDLAND	410019	740905	G	4.7	03	70	416	GTRB		400
	RIDGEWOOD VILLAGE	4300016	CEDAR 1	405915	740953	G	3.7	03	70	414	GTRB		150
	RIDGEWOOD VILLAGE	4300017	CEDAR 2	405918	740956	G	3.7	03	70	400	GTRB		100
	RIDGEWOOD VILLAGE	4300018	CEDAR 3	405918	740950	G	3.7	03	70	500	GTRB		100
	RIDGEWOOD VILLAGE	4300019	CEDAR 4	405922	740952	G	3.8	03	70	315	GTRB		300
	RIDGEWOOD VILLAGE	4300020	CEDAR 5	405921	740947	G	3.8	03	70	379	GTRB		150
	RIDGEWOOD VILLAGE	4300021	CEDAR 6	405924	740950	G	3.8	03	70	325	GTRB		150
	RIDGEWOOD VILLAGE	2302130	LAFAYETTE	405856	740913	G	3.2	03	70	350	GTRB		300
	RIDGEWOOD VILLAGE	2302620	SICOMAC	405859	741043	G	3.7	03	70	302	GTRB		280
	RIDGEWOOD VILLAGE	2302619	NEWTOWN	405946	740914	G	4.1	03	70	300	GTRB		225
	RIDGEWOOD VILLAGE	2302622	EDER	405945	741044	G	4.5	03	70	300	GTRB		440
	RIDGEWOOD VILLAGE	2304169	GOFFLE	405902	740829	G	3.3	03	70	300	GTRB		250
	RIDGEWOOD VILLAGE	2305158	WEISH	405903	740952	G	3.4	03	70	300	GTRB		450
	RIDGEWOOD VILLAGE	4300022	AMES 3	410022	741053	G	5.2	03	70	350	GTRB		300
	RIDGEWOOD VILLAGE	4300023	AMES 5	410025	741100	G	5.3	03	70	350	GTRB		175
	RIDGEWOOD VILLAGE	4300024	AMES 6	410024	741056	G	5.2	03	70	455	GTRB		175
	RIDGEWOOD VILLAGE	4300025	AMES 7	410026	741053	G	5.2	03	70	352	GTRB		175
	RIDGEWOOD VILLAGE	2301834	RUSSELL	410002	741038	G	4.7	03	70	300	GTRB		150
	RIDGEWOOD VILLAGE	2302229	FRANKLIN	410030	741009	G	5.1	03	70	400	GTRB		300
	RIDGEWOOD VILLAGE	2304273	LAKEVIEW	405947	741009	G	4.3	03	70	300	GTRB		400
	RIDGEWOOD VILLAGE	2302230	VAN HOUTEN	410012	740947	G	4.7	03	70	301	GTRB		
	RIDGEWOOD VILLAGE	2513251	FARM WELL	405823	740905	G	2.5	03	70	157	GTRB		400
5016	RIDGEWOOD VILLAGE	2301443	MAIN	405713	740827	G	1.27	03	70	300	GTRB		350
	RIDGEWOOD VILLAGE	2301770	PROSPECT	405748	740641	G	2.5	03	70	300	GTRB		400
	RIDGEWOOD VILLAGE	2302227	AKERMAN	405734	740642	G	2.3	03	70	300	GTRB		250
	RIDGEWOOD VILLAGE	2301835	GLEN ROCK	405839	740753	G	2.3	03	70	300	GTRB		150
	RIDGEWOOD VILLAGE	2304171	LEIGH	405709	740617	G	2.3	03	70	300	GTRB		125
	RIDGEWOOD VILLAGE	2304172	BROOK	405733	740815		1.6	03	70	300	GTRB		125
5017	RIDGEWOOD VILLAGE WATER SUPPLY	4313004	2WORTENDYK	405939	740853	T	4.0	03	25	1137	GTRB		125
	RIDGEWOOD VILLAGE WATER SUPPLY	4313007	4WORTENDYK	405939	740850	T	4.0	03	25	515	GTRB		290
	RIDGEWOOD VILLAGE WATER SUPPLY	4313005	6WORTENDYK	405930	740856	T	3.8	03	25	307	GTRB		130
	RIDGEWOOD VILLAGE WATER SUPPLY	2301047	WALDO	410020	740826	G	4.7	03	25	420	GTRB		325
	RIDGEWOOD VILLAGE WATER SUPPLY	4300029	FAIRVIEW	405950	740749	G	4.2	03	25	402	GTRB		250
	RIDGEWOOD VILLAGE WATER SUPPLY	2304573	COLLEGE	405956	740804	G	4.4	03	25	500	GTRB		160
	RIDGEWOOD VILLAGE WATER SUPPLY	4313006	7WORTENDYK	405931	740851	T	3.8	03	25	748	GTRB		100
5064	HOHOKUS BOROUGH WATER DEPT.	2300592	1	410001	740541	G	5.1	03	25	410	GTRB		185
	HOHOKUS BOROUGH WATER DEPT.	2300645	2	405936	740536	G	4.7	03	25	314	GTRB		225
	HOHOKUS BOROUGH WATER DEPT.	2301592	4	410000	740609	G	4.9	03	25	701	GTRB		275
	HOHOKUS BOROUGH WATER DEPT.	2307758	6	410007	740634	G	4.8	03	25	700	GTRB		325
	HOHOKUS BOROUGH WATER DEPT.	2308759	5	410006	740656	G	4.8	03	25	700	GTRB		275
5081	UNITED WATER NEW JERSEY	2306712	4 WYANDOTT	405934	741242	F	5.1	03	21	178	GOSD		400
	UNITED WATER NEW JERSEY	2306764	5 HIGH MTN	405934	741243	G	5.1	03	21	71	GOSD		750
5087	UNITED WATER NEW JERSEY INC.	2603017	ROCHELLE P	406451	740448	G	3.7	03	51	477	GTRB		200
5099	PASSAIC VALLEY WATER COMM.	LITTLE FALLS		405250	741340		3.4	03	15		SPRAB		
5107	UNITED WATER NEW JERSEY INC.	2304260	PARAMUS 1	405714	740545		2.8	03	45	29	GOSD		200
	UNITED WATER NEW JERSEY INC.	2306602	PARAMUS 2	405715	740545		2.8	03	45	138	GOSD		150
	UNITED WATER NEW JERSEY INC.	2306450	BUNDERHOO	405654	740744		1.1	03	45	287	GTRB		200
	UNITED WATER NEW JERSEY INC.	SADDLE RIVER		405724	740543		2.4	03	45		SPRAB		
5196	HALEDON BOROUGH	RESERVOIR	HALEDON	405831	741137	F	3.7	03	45		SPRP		
5234	HAWTHORNE BOROUGH	4300056	1	405757	740725	G	2.1	03	17	253	GTRB		175
	HAWTHORNE BOROUGH	4300057	2	405751	740731	G	2.1	03	17	240	GTRB		150
	HAWTHORNE BOROUGH	4300058	3	405755	740721	G	2.2	03	17	215	GTRB		250
	HAWTHORNE BOROUGH	4300059	5	405757	740724	G	2.1	03	17	211	GTRB		150
	HAWTHORNE BOROUGH	4300060	6	405754	740731	G	2.1	03	17	187	GTRB		250
	HAWTHORNE BOROUGH	4300061	7	405628	740728	G	2.4	03	17	170	GTRB		150
	HAWTHORNE BOROUGH	4300062	[illegible]	405629	740731	G	2.4	03	17	[illegible]	GTRB		75

NUMBER	NAME	SOURCEID	LOCID	LAT	LON	LLACC	DISTANCE	COUNTY	MUN	DEPTH	GED1	GED2	CAPACITY
	HAWTHORNE BOROUGH	4300063	5	405630	740938	G	0.9	31	04	285	GTRB		210
	HAWTHORNE BOROUGH	4300064	6	405630	740938	G	0.9	31	04	388	GTRB		150
	HAWTHORNE BOROUGH	4300065	7	405630	740939	G	1.0	31	04	369	GTRB		140
	HAWTHORNE BOROUGH	4300066	8	405633	740939	G	1.0	31	04	416	GTRB		210
	HAWTHORNE BOROUGH	4300067	10	405624	740918	G	0.6	31	04	300	GTRB		200
	HAWTHORNE BOROUGH	4300068	11	405622	740917	G	0.6	31	04	300	GTRB		400
	HAWTHORNE BOROUGH	4300069	12	405619	740918	G	0.6	31	04	300	GTRB		400
	HAWTHORNE BOROUGH	2303100	UTTER AVE	405740	740646	G	1.7	31	04	300	GTRB		175
	HAWTHORNE BOROUGH	2303099	GRAND AVE	405718	740940	G	1.6	31	04	300	GTRB		125
	HAWTHORNE BOROUGH	2303101	BAMFORD AV	405715	740942	F	1.5	31	04	300	GTRB		300
	HAWTHORNE BOROUGH	2303289	BOFFLE HIL	405814	740946	G	2.5	31	04	350	GTRB		150
	HAWTHORNE BOROUGH	2304139	CEDAR AVE	405649	740937	G	1.1	31	04	400	GTRB		300
	HAWTHORNE BOROUGH	2304691	FIRST ST.	405739	740939	G	1.9	31	04	400	GTRB		200
	HAWTHORNE BOROUGH	2305139	MAITLAND	405638	740941	G	1.0	31	04	400	GTRB		200
	HAWTHORNE BOROUGH	4300086	REA AVE.	405728	740941	G	1.7	31	04	400	GTRB		200
5250	WALDWICK WATER DEPARTMENT	2302291	4	410028	740554	G	5.4	03	64	290	GTRB		300
5282	GARFIELD WATER DEPARTMENT	4600113	1	405439	740717	G	2.1	03	11	404	GTRB		100
	GARFIELD WATER DEPARTMENT	4600114	2	405445	740716	G	2.0	03	11	358	GTRB		125
	GARFIELD WATER DEPARTMENT	4600118	10	405451	740650	G	2.2	03	11	350	GTRB		150
	GARFIELD WATER DEPARTMENT	4600119	11	405448	740648	G	2.3	03	11	353	GTRB		190
	GARFIELD WATER DEPARTMENT	4600120	12	405443	740722	G	2.0	03	11	350	GTRB		140
	GARFIELD WATER DEPARTMENT	4600121	14	405439	740734	G	2.0	03	11	485	GTRB		140
	GARFIELD WATER DEPARTMENT	4600122	16	405436	740747	G	2.0	03	11	400	GTRB		60
	GARFIELD WATER DEPARTMENT	4600123	17	405433	740742	G	2.1	03	11	353	GTRB		110
	GARFIELD WATER DEPARTMENT	4600124	1	405430	740745	T	2.1	03	11	300	GTRB		150
	GARFIELD WATER DEPARTMENT	2604016	1A	405302	740607	G	4.2	03	21	400	GTRB		300
	GARFIELD WATER DEPARTMENT	2604063	2	405257	740610	G	4.3	03	21	475	GTRB		150
	GARFIELD WATER DEPARTMENT	2604103	6	405245	740611	G	4.5	03	21	300	GTRB		150
	GARFIELD WATER DEPARTMENT	2604064	8C	405224	740648	G	3.6	03	21	405	GTRB		400
	GARFIELD WATER DEPARTMENT	4600115	4	405446	740709	G	2.1	03	11	353	GTRB		90
	GARFIELD WATER DEPARTMENT	4600116	5	405443	740704	G	2.2	03	11	253	GTRB		275
	GARFIELD WATER DEPARTMENT	4600117	6	405450	740656	G	2.2	03	11	354	GTRB		165
5317	FAIR LAWN BOROUGH	4600147	2	405553	740723	G	1.2	03	17	300	GTRB		80
	FAIR LAWN BOROUGH	4600151	7	405530	740734	G	1.0	03	17	456	GTRB		200
	FAIR LAWN BOROUGH	4600152	8	405530	740717	G	1.4	03	17	430	GTRB		200
	FAIR LAWN BOROUGH	4600153	9	405553	740755	G	0.7	03	17	404	GTRB		115
	FAIR LAWN BOROUGH	2600465	16	405536	740829	G	0.7	03	17	413	GTRB		250
	FAIR LAWN BOROUGH	2601032	17	405541	740832	G	0.6	03	17	350	GTRB		200
	FAIR LAWN BOROUGH	2601197	19	405538	740823	G	0.7	03	17	400	GTRB		400
	FAIR LAWN BOROUGH	2300390	14	405600	740812	F	0.4	03	17	400	GTRB		100
	FAIR LAWN BOROUGH	2600293	15	405539	740816	G	0.7	03	17	402	GTRB		200
	FAIR LAWN BOROUGH	2300249	10	405607	740804	G	0.7	03	17	300	GTRB		75
	FAIR LAWN BOROUGH	2300250	11	405602	740809	G	0.6	03	17	400	GTRB		75
	FAIR LAWN BOROUGH	2307538	25	405616	740812	G	2.1	03	17	300	GTRB		200
	FAIR LAWN BOROUGH	2307539	26	405611	740815	G	2.1	03	17	400	GTRB		100
	FAIR LAWN BOROUGH	2307541	28	405615	740843	G	1.7	03	17	352	GTRB		250
	FAIR LAWN BOROUGH	4600219	5	405549	740721	G	1.2	03	17	300	GTRB		150
	FAIR LAWN BOROUGH	2300251	12	405608	740806	G	0.6	03	17	400	GTRB		70

Number of Observations: 219

SANBORN FIRE INSURANCE MAP

1950

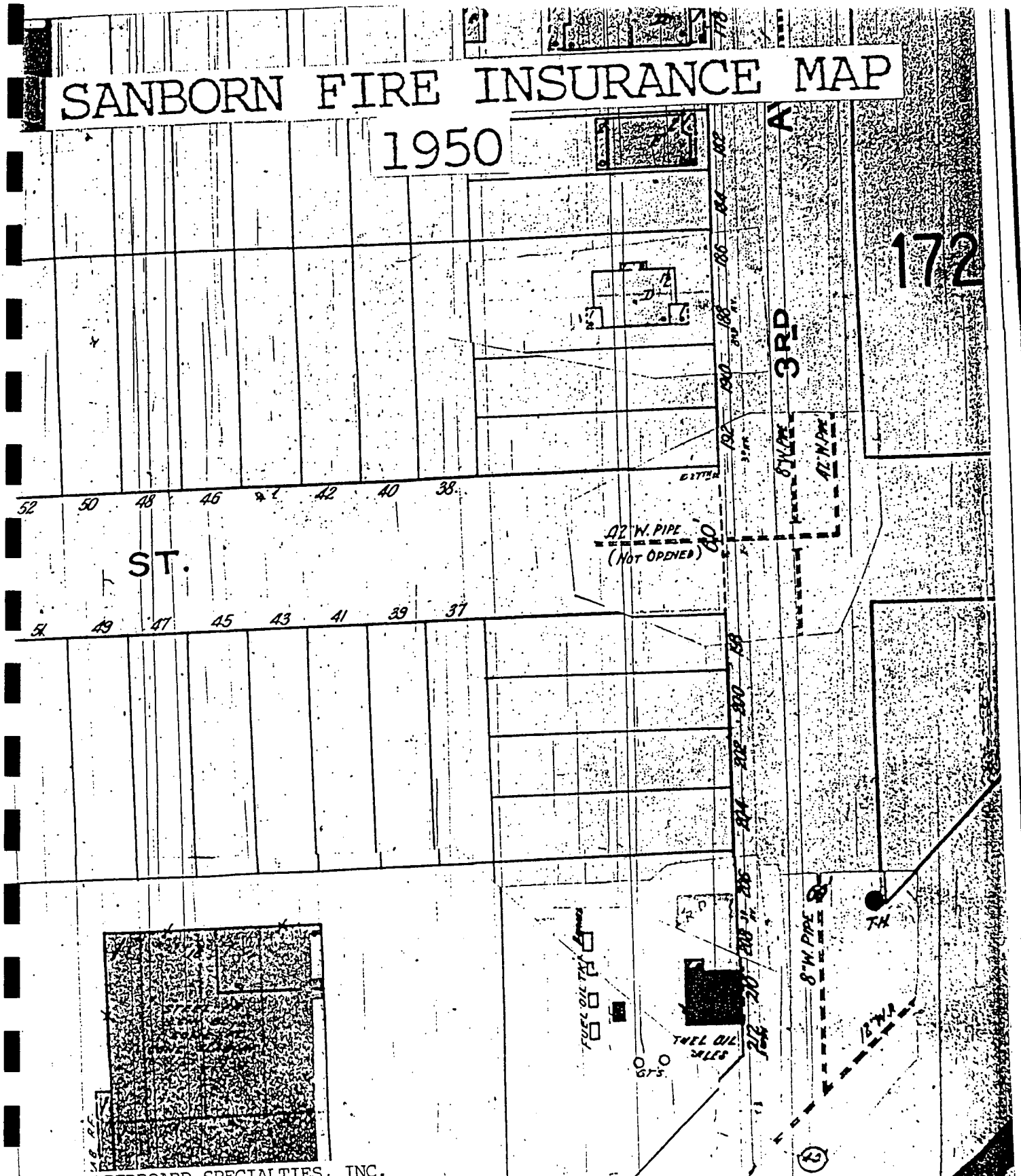


PAPERBOARD SPECIALTIES, INC.
177-302 THIRD AVENUE
186-218 THIRD AVENUE
PATERSON, PASSAIC COUNTY
EPA ID #: NJD147427843
LAT: 40° 56' 12"
LON: 74° 08' 38"

MAP 7A

SANBORN FIRE INSURANCE MAP

1950



PAPERBOARD SPECIALTIES, INC.
177-302 THIRD AVENUE
186-218 THIRD AVENUE
PATERSON, PASSAIC COUNTY
EPA ID #: NJD147427843
LAT: 40° 56' 12"
LON: 74° 08' 38"

KEY

TILE 1ST / BRICK 1ST / PYROBAR 1ST — Fire proof construction. (OR FIRE RES'TIVE CONST'N)

ADOBE — Adobe building.

HEIGHT OF BUILDING IN FEET FROM GROUND TO ROOF LINE. — Stone building.

(C. BR.) — Concrete, lime, cinder or cement brick

(C. B.) — Hollow concrete or cement block const'n

(CONC.) — Concrete or reinforced concrete const'n

(TILE) — Tile building.

NUMBER OF STORIES 4 — Brick building with frame cornice.

TWO STORIES AND BSMT 28 COMPOSITION ROOF — " " " stone front.

SHINGLE ROOF X — " " " frame side. (DIVIDED BY FRAME PARTITION)

(VEN'D) — Brick veneered building.

BRICK 1ST — " and frame building.

FRAME, BRICK LINED — Frame building, brick lined.

F=FLAT S=STORE — " " metal clad.

D=DWELLING — Frame building.

A in B AUTO IN B'S'MT — Iron building.

LOFT — Tenant building occupied by various manufacturing or occupancies

(ASB. CL.) — Frame building covered with asbestos

NON COMBUSTIBLE ROOF COVERING OF METAL, SLATE, TILE OR ASBESTOS SHINGLES — Brick building with brick or metal cornice.

SKYLIGHT LIGHTING TOP STORY ONLY — Fire wall 6 inches above roof.

3. SKYLIGHT LIGHTING THREE STORIES — " " 12 " " "

W.G. WIRED GLASS SKYLIGHT — " " 18 " " "

FIRE WALL 48 INCHES ABV. R.L. — " " 36 " " "

4 — Figures 8, 12, 16 indicate thickness of wall in inches.

6 — Wall without opening and size in inches.

2 3 4 5 ALL — Wall with openings on floors as designated.

Opening with single iron or tin clad door.

" " double iron " " " doors.

" " standard fire doors.

(H.T.) WATER TANK — Openings with wired glass doors.

BRICK 1ST — Drive or passage way.

Stable.

A. — Auto. House or private garage.

(C. B.) / (C.B. & BR.) — Solid brick with interior walls of C.B. or C.B. and brick mixed.

(C.B. & BR. CONST'N) — Mixed construction of C.B. and brick with one wall of solid brick.

(C.B. & BR. CONST'N) (BR. FACED) — Mixed construction of C.B. and brick with one wall faced with 4" brick.

(C.B. & BR. CONST'N) — Mixed construction of C.B. and brick throughout.

MANSARD ROOF — DOTS REPRESENT OPENINGS. STEMS INDICATE STORIES, COUNTING FROM LEFT TO RIGHT, LOOKING TOWARD BUILDING.

Window opening in first story.

Window openings in second and third stories.

Window openings in second and fourth stories.

Windows with wired glass.

Windows with iron or tin clad shutters.

10 TO 22 — Window openings tenth to twenty-second stories.

BLOCK ← CURB LINE 50' PROP. LINE → BLOCK — Width of street (BETWEEN BLOCK LINES, NOT CURB LINES.)

E — Open elevator.

FE — Frame enclosed elevator.

ET — " " " with traps.

ESC — " " " " self closing traps.

CBET — Concrete block enclosed elevator with traps.

TESC — Tile enclosed elevator with self closing traps.

BE — Brick enclosed elev. with wired glass door.

I.R.C. — Iron chimney

" (WITH SPARK ARRESTOR) I.R.CH.S.A.

Brick chimney.

(15) Ground elevation.

5 — Block number.

U.P.B. — Vertical steam boiler.

G.T. — Gasoline tank.

V.P. — Vertical pipe or stand pipe.

(O.U.) — Open under.

AFA — Automatic fire alarm.

IEP — Independent electric plant.

Siamese fire dept. connection

(AS) — Automatic sprinklers.

Single fire dept. connection

(ACS) — Automatic chemical sprinklers.

(A S) — Automatic sprinklers in part of building only. (NOTE UNDER SYMBOL INDICATES PROTECTED PORTION OF BUILDING)

1ST ONLY

(N.S.) — Not sprinklered.

24 — Reference to adjoining page.

Outside vertical pipe on fire escape.

Fire engine house, as shown on key map.

(FA) — Fire alarm box.

Fire pump.

Single hydrant.

D.H. — Double "

T.H. — Triple "

(36) — Under page number refers to corresponding page of previous edition.

Q.H. — Quadruple hydrant of the "High Pressure Fire Service".

H.P.F.S. (FA) — Fire alarm box of the "High Pressure Fire Service"

H.P.F.S. 20" W. PIPE (H.P.F.S.) / 12" — Water pipes of the "High Pressure Fire Service" and hydrants of the "High Pressure Fire Service" as shown on key map.

6" W. PIPE — Water pipes and size in inches.

6" W. PIPE (PRIVATE) — Water pipes of private supply

2 D 4 5 — House numbers shown nearest to buildings are official or actually up on buildings.

O — Old house numbers shown furthest from buildings.

CODING OF STRUCTURAL UNITS FOR FIREPROOF AND NON-COMBUSTIBLE BUILDINGS

FRAMING

CODE	STRUCTURAL UNIT
A.	Reinforced Concrete Frame.
B.	Reinforced Concrete Joists, Columns, Beams, Trusses, Arches, Masonry Piers.
C.	Protected Steel Frame.
D.	Individually Protected Steel Joists, Columns, Beams, Trusses, Arches.
E.	Indirectly Protected Steel Frame.
F.	Indirectly Protected Steel Joists, Columns, Beams, Trusses, Arches.
G.	Unprotected Steel Frame.
H.	Unprotected Steel Joists, Columns, Beams, Trusses, Arches.
O.	Masonry Bearing Walls.

FLOORS

CODE	STRUCTURAL UNIT
1.	Reinforced Concrete. Reinforced Concrete with Masonry Units. Pre-cast Concrete or Gypsum Slabs or Planks.
2.	Concrete on Metal Lath, Incombustible Form Boards, Paper-backed Wire Fabric, Steel Deck, and Cellular, Ribbed or Corrugated Steel Units.
3.	Open Steel Deck or Grating.

LAND USE CODE APPLICABLE TO CHANGES DIAGRAMMED AFTER 1961

R	RESIDENTIAL	M	MANUFACTURING
RT	RESIDENTIAL - TRANSIENT	P	PUBLIC OR INSTITUTIONAL
C	COMMERCIAL	U	UTILITY
W	WAREHOUSE	T	TRANSPORTATION

NUMERICAL PREFIX INDICATES THE NUMBER OF ESTABLISHMENTS IN EACH CATEGORY

ROOF

CODE	STRUCTURAL UNIT
a.	Reinforced Concrete. Reinforced Concrete with Masonry Units. Reinforced Gypsum Concrete. Pre-cast Concrete or Gypsum Slabs or Planks.
b.	Concrete or Gypsum on Metal Lath, Incombustible Form Boards, Paper-backed Wire Fabric, Steel Deck, and Cellular, Ribbed or Corrugated Steel Units.
c.	Incombustible Composition Boards with or without Insulation. Masonry or Metal Tiles.
d.	Steel Deck, Corrugated Metal or Asbestos Protected Metal with or without Insulation.

The coding for framing, floor and roof structural units as shown above is used in describing the construction of fire-resistive buildings. In addition, reports for fire-resistive buildings will show the date built and wall construction when other than brick.

F P buildings have masonry floors and roof; concrete and/or directly or indirectly protected steel framing; and clay brick, stone or poured concrete walls.

F P X buildings are F P buildings with inferior walls such as concrete block, cement brick, metal or glass panels, etc.

N C buildings have unprotected steel framing and fire-resistive but non-masonry floors and roof.

FP-1962 (CONC.) A-1-a — A fire-resistive building built in 1962 with concrete walls and reinforced concrete frame, floors and roof.

FPX-1962 (METAL PANELS) F-2-b NONCOMP. CEIL'G — A fire-resistive building built in 1962 with metal panel walls, indirectly protected steel frame, concrete floors and roof on metal lath, noncombustible ceilings.

NC-1962 (C.B.) H-2-d — A noncombustible building built in 1962 with concrete block walls; unprotected steel columns and beams; concrete floors on metal lath and steel deck roof.

ATTACHMENT A

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ANDREW S. KESSLER***
MICHAEL A. SAFFER
KENNETH R. COHEN

*NJ AND NY BARS
**NJ AND WASHINGTON D.C. BARS
***NJ, NY AND WASHINGTON D.C. BARS

BONNIE J. SENGOTTA
MITCHELL H. BERGER***
MARY ANN WALKER COLLINS
TOMAS ESPINOSA*
ELISE R. SLOAN*
LORI KIRSCH GOODWIN*
ELLEN J. GOLDFINGER*
CATHERINE E. BROWN*
SUSAN L. WEGNER

OF COUNSEL
PHILIP I. KAGAN***

VICTOR GREENBURG
(1921-1980)
BENEDICT KRIEGER
(1925-1986)

March 19, 1990

#25415

Mr. Michael J. Mandracchia, Supervisor
Bureau of ECRA
NJ Dept. of Environmental Protection
Div. of Hazardous Waste Management
Industrial Site Evaluation Element
CN - 028
Trenton, New Jersey 08625

Re: ECRA No.: 85317, 89925

Dear Mr. Mandracchia:

I enclose herewith an original and two (2) copies of the information requested by your office through Charles Trautman necessary to complete the SES. This information is the Description of Operations at the former facility of Chin Am now owned by Paper Board Specialties and the Inventory of Materials at the site. With this, we have now submitted all information requested by your office. Please appendix this to the SES already submitted.

Should you have any questions, please do not hesitate to contact me at the above address and number.

Very truly yours,

TOMAS ESPINOSA

TE/cr

Enclosures

cc: Mr. Charles Trautman

ATTACHMENT A-1

DESCRIPTION OF OPERATIONS

The Paper Mill is not in operation now. However, when in operation, the Paper Mill will be operated as a specialty mill. The main production machine is able to produce a variety of grades and widths of paperboard on a given work day. Because of the adaptability of the main production machine, the Company will be able to accept, produce for, and satisfy a number of small orders in a given work day, thereby providing prompt "turnaround" or manufacture long runs of a particular grade and width of paperboard. In contrast, the larger mills generally manufacture long runs of a particular grade and width of paperboard. This practice enlarges the time between order placement and delivery and, to a certain extent, is frequently incompatible with the needs of the smaller specialty customer. The specialty mill is capable of realizing higher prices per ton than can be charged by the larger mills.

The Paper Mill will be able to produce chip, white lined, tanned backed, clay coated and other specialty grades of paperboard for the folding carton industry and others.

The stock preparation process consists of four separate lines providing the capability of producing multi-ply paperboard. Each line contains a hydrapulper or beater where the raw material waste paper is mixed with water and chemicals (to strengthen the paper fibers) in order to create a pulp mash. The mash is then passed through a series of filters, screens and Jordan refiners to clean and further improve the uniformity and consistency of the pulp

ATTACHMENT A-2

mash. When the pulp mash preparation has been completed, the paper stock material is pumped into one of eight holding or forming vats.

The main paperboard machine is a Beloit cylinder with a width of 80 inches which trims to 74 inches. The main paperboard sheet production process commences in the eight holding or forming vats. The vats, six of which are of counter-flow design and two of which are of uni-flow design, contain rotating cylinder molds with stainless steel screening. The vat felt assembly section of the machine, equipped with component parts to clean, stretch and press the paper stock, picks up the paper stock in liquid form from the vats and forms a "wet" sheet which consists of eight layers of recycled pulp. The principal advantage of this system is that lesser grades of waste paper may be utilized for the inner layers of the finished product without compromising or adversely affecting overall product quality. The better grades of waste paper are then used for the outer layers of the finished product.

The "wet sheet" is then moved into a dryer section, consisting of fifty nine (59) 48" diameter unfelted dryers, arranged in 3 tiers, enclosed by an exhaust hood. Utilizing steam, the dryers remove a significant portion of the moisture content from the "wet sheet" to produce paperboard.

The machine ends with a sheeter which cuts the paperboard in the sizes required by the customer. The finished sheets are hand loaded onto pallets for shipping to customers.

ATTACHMENT A-3

Basic weight and moisture content are recorded by an Accuray control system.

The machine is presently driven by a line shaft which is steam turbine actuated. The Company intends to purchase and install a 250 horsepower (rated capacity) D.C. motor, manufacturer by Westinghouse Electric, to replace this system in order to enhance production efficiency and conserve on the use of electrical energy.

Auxiliary equipment includes an air compressor system, vacuum system, laboratory and workshop.

The steam generation system consists of two boilers, one gas or oil fired (installed 8 years ago) which is normally in operation and one fuel oil fired boiler employed as a standby. The gas fired boiler can be switched over to fuel oil while running. A smaller low pressure heating system boiler is also maintained for immediate use when required.

The Paper Mill contains the necessary production machinery and equipment for the manufacture of various grades of paperboard. Upon completion of the repair, renovation, restoration and refurbishing work, the Company anticipates that the Paper Mill will have the capacity to produce 34,000 tons of paperboard per year, including higher grade coated and white lined paperboard, when operating on a three shift basis for 320 working days per year.

Raw Materials to be Used in Operation

The Company's products are made from recycled wastepaper. Due to governmental regulations and policies requiring that paper

ATTACHMENT A-4

products be removed from the waste stream at the collection point and recycled, there currently exists an abundant supply of recycled wastepaper. Prices for recycled wastepaper have declined in the past several years as a result of such mandatory recycling. The Company will not use any wood pulp from trees to make its products.

Chemicals

Chemicals commonly used in cardboard preparation are:

Natural coniferous resin, collagen, synthetic (acrylic and/or melominic) resins, aluminum sulfate for sizing;

Amphoteric or direct acidic dyes (to make the color of the waste paper stock uniform);

Kaolin clay, precipitated calcium carbonate, starch as fillers;

White pigments for coating.

The solids separated during stock preparation and "white water" treatment (screening, centrifugation rejects, excess no reusable micro fibers) may be present as solid waste on the site.

ATTACHMENT A-5

Paper Board Specialties Inc.

March 16, 1990

Inventory of
Materials in the Mill

Description	Location
1/2 drum fimack brown	upstairs warehouse
10 lbs. black-dye	" "
Paper Kraft 1/2 drum	" "
10 lbs. Yellow	" "
4 Rosin size	warehouse
2 drum clay	" "
1 1/2 drum denenker	" "
13 ton alum	" "
12 ton dualite	" "
1500 lbs. salt for boiler room	boiler room
100 gal. kerosene	" "
8000 gal. #6 oil	" "
20 gal. #600 oil	" "
2 drum amokon oil #32	" "
100 approx. boiler treatment	" "

All material except clay, dualite, and alum is in drums.

by John Shortino

177 Third Avenue, Paterson, New Jersey 07514
TEL (201) 523-3040 • FAX (201) 523-2895

ATTACHMENT A-6

ATTACHMENT B

APPENDIX E

INVENTORY OF SUBSTANCES AND WASTES

As discussed in Appendix C, the substances presently on site are that of the raw process materials. The materials are in their original containers which consist of 55 gallon drums and 50 pound paper bags. All containers have been catalogued by location and sequential numbering and are shown on Appendix A.

Table 1 reflects an overall list of materials used in the process, with the substance quantities still in the plant at the time of closing indicated. This table was prepared as part of a preliminary ECRA Cleanup Plan for the Berles Carton Company by Risk Science International (RSI) of Washington, D.C. in September 1984.

As exhibited by Table 1, many of the containers display trade names of their contents. This fact, as well as miscellaneous items and overall poor condition of the containers, make precise content composition impossible at this time. The new owner is presently engaged in staging the containers in a centralized area indicated on Appendix A.

As the containers are staged, the compounds will be positively identified where possible. Management at Chinam, Inc. is currently in the process of staging these drums. The quality of the inventory will also be determined and any material suitable for use will remain on site. Some materials that were damaged from freezing will be returned to the supplier for reprocessing. Unidentified drums will be sampled, analyzed and disposed of by accepted methods according to the results of analysis.

ATTACHMENT B-1

APPENDIX E

TABLE 1

MATERIAL	QUANTITY (LBS.)	LOCATION
Plasamine PLH	0	See Appendix A
Fluid Pexol	6000	"
Beater Clay EG-21	0	"
Douglas Pearl Starch	9200	"
Aluminum Sulfite	2000	"
Dicalite	16500	"
Titanox 1070	0	"
Ethylex 2050	0	"
Penford Gum 270-P	16800	"
Paracol 802-D	2520	"
Feltkleene LCS	0	"
Nopcowite 300-PS	1700	"
Driac	4400	"
PD-800	0	"
Foamaster DF120	0	"
Berchem D	0	"
X-100	100	"
MX2009-2025-2043	0	"
145F	0	"
Bersize-109	1800	"
Metasol DST	0	"
Sulfuric Acid	200	"
Soda Ash	0	"
B-130	0	"
FCA-2001 Felt Clean	0	"
Feltmaster CLF	0	"
Webco 32	40 gal.	"
Titanium 2131	4250	"
Berchem K-90	857	"
Berchem BR-1	450	"
Berbond 30-H	0	"
Berchem CL	575	"
Berchem CL110	0	"
Berset 86-325	500	"
S-92 De-Foamer	800	"
Berchem BG	0	"
Bersize S-505	450	"
Penford Gum 290	0	

ATTACHMENT B-2

APPENDIX E

TABLE 1 (Cont'd)

MATERIAL	QUANTITY (LBS.)	LOCATION
Hydro Gloss 90	0	"
White Clay	0	"
Hydra Fine	0	"
KCS	500	"
CP	220	"
R-20	0	"
Unitane OR-572	0	"
Amonia	110	"
Foamaster VF	50	"
Procoat 180	0	"
Thelle Kaogloss	0	"
Premier 50	17950	"
25-11-89	0	
L-31		"
Chrysoidine Y	625	"
Bismark Brown	725	"
Oaoer Kraft Orange	400	"
Calcomine Yellow	85	"
Nigrozine Black	5	"
Nigrozine Brown	100	"
Calcozine Aurimine OD	70	"
Direct Azuring G	20	"
Leucophor P-539	0	"
Calcozine Brown	200	"
Calcozine Yellow	0	"
Oxatrol	165	"
OSTS	30 gal.	"
Volomine	45 gal.	"
DPH	185	"
Caustic Soda	205	"
Fuel Oil Treatment	53 gal.	"
Salt (Solar)	4250	

ATTACHMENT B-3

ATTACHMENT C

MATERIAL SAFETY DATA SHEET

ERCEN, INC.

BERCHEM 4110 CL-110

SECTION I - IDENTIFICATION

FACTURER'S NAME..... BERCEN, INC.

EMERGENCY PHONE NUMBER
(401) 943-7400

DRESS..... 1381 Cranston Street
Cranston, Rhode Island 02920

DE NAME..... BERCHEM 4110

EMICAL NAME..... Modified Polyethylene Emulsion

EMICAL FAMILY..... Polyethylene

CHEMICAL FORMULA Proprietary

SECTION II - HAZARDOUS INGREDIENTS

ARDOUS COMPONENTS

HAZARDOUS % TLV (Units)

ne

SECTION III - PHYSICAL DATA

EARANCE/ODOR..... Tan, opaque emulsion, mild waxy odor. pH 10.0 ± 0.5

OILING Point(F)..... 212°F

ECIFIC GRAVITY (H20=1). 1.04

POR PRESSURE (mm Hg)... N/A

LATILITY/VOL(%)..... 60%

APOR DENSITY (Air=1).... N/A

APORATION RATE..... N/A

LUBILITY IN H20..... Completely soluble

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

LASH POINT..... Over 212°F PMCC

OWER FLAME LIMIT..... N/A

GHER FLAME LIMIT..... N/A

XTINGUISH MEDIA..... CO_2, dry chemical, foam, water

OR FIRE..... None

USUAL FIRE HAZARD..... None

SECTION V - HEALTH HAZARD DATA

RESHOLD LIMIT VALUE.... None established.

OVER EXPOSURE EFFECTS.... None known.

IRST AID PROCEDURES..... Flush eyes with water. Wash skin with soap and water. If irritation to eyes or skin develops or persists, get medical attention. Do not ingest.

SECTION VI - REACTIVITY DATA

CHEMICAL STABILITY..... Stable

CONDITIONS TO AVOID.....

NCOMPATIBLE MATERIALS... Will precipitate in presence of strong mineral acids.

ATTACHMENT C-1

EM, INC.

OSITION PRODUCTS... Thermal decomposition may produce carbon dioxide and carbon monoxide.

RDOUS POLYMERIZATION. Will not occur.
ERIZATION AVOID.....

SECTION VII - SPILL OR LEAK PROCEDURE

PILL ..... Flush small spills to drain with water. Absorb larger spills with sand or similar material.

E DISPOSAL METHOD.... Dispose of absorbed material in a landfill following current local, state and federal regulations.

SECTION VIII - SPECIAL PROTECTION

RATORY PROTECTION... Not normally needed.
TILATION.....
L EXHAUST..... Yes
NICAL EXHAUST.....
IAL.....
ER.....
ECTIVE GLOVES..... Rubber
PROTECTION..... Chemical splash goggles and face shield
ER PROTECTIVE PMENT Suitable work clothing.

SECTION IX - SPECIAL PRECAUTIONS

AUTIONARY MEASURES... Good housekeeping procedures will suffice. Store in original container at 40°-90°F.

CIAL PRECAUTIONS..... Rinse container properly before reuse.

SECTION X - DATE AND SOURCE OF INFORMATION

E PREPARED
-86

NAME AND TITLE
John M. Ross Director of Research

SHEET NUMBER

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ATTACHMENT C-2

MATERIAL SAFETY DATA SHEET

EN, INC. BERCHEM 4000 CL

SECTION I - IDENTIFICATION

CTURER'S NAME..... BERCEN, INC.

EMERGENCY PHONE NUMBER (401) 943-7400

ESS..... 1381 Cranston Street
Cranston, Rhode Island 02920

NAME..... BERCHEM 4000
ICAL NAME..... High Density Polyethylene Emulsion
ICAL FAMILY..... Polyethylene Emulsion

CHEMICAL FORMULA Proprietary

SECTION II - HAZARDOUS INGREDIENTS

DOUS COMPONENTS

HAZARDOUS % TLV (Units)

SECTION III - PHYSICAL DATA

RANCE/ODOR..... Light tan, slightly hazy solution, mild waxy odor. pH 10.0 ± 0.5

ING Point(F)..... 212°F
IFIC GRAVITY (H2O=1). 1.00
R PRESSURE (mm Hg)... N/A
ITILITY/VOL(%)..... 72%
OR DENSITY (Air=1).... N/A
DRATION RATE..... N/A
BILITY IN H2O..... Completely miscible

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

SH POINT..... Over 212°F TCC
ER FLAME LIMIT..... N/A
ER FLAME LIMIT..... N/A
NGUISH MEDIA..... CO_2, dry chemical, foam, water
FIRE..... None
UAL FIRE HAZARD..... None

SECTION V - HEALTH HAZARD DATA

ESHOLD LIMIT VALUE.... None established.
R EXPOSURE EFFECTS.... None known.
RST AID PROCEDURES..... Flush eyes with water. Wash skin with soap and water. If irritation to eyes or skin develops or persists, get medical attention. Do not ingest.

SECTION VI - REACTIVITY DATA

EMICAL STABILITY..... Stable
NDITIONS TO AVOID.....
OMPATIBLE MATERIALS... May be incompatible with strong acids. Will precipitate.

ATTACHMENT C-3

EN, INC.

OSITION PRODUCTS... Thermal decomposition may produce carbon dioxide and carbon monoxide.

DOUS POLYMERIZATION. Will not occur.
RIZATION AVOID.....

SECTION VII - SPILL OR LEAK PROCEDURE

ILL ..... Flush small spills to drain with water. Absorb larger spills with sand or similar material.

DISPOSAL METHOD.... Dispose of absorbed material in a landfill following current local, state and federal regulations.

SECTION VIII - SPECIAL PROTECTION

RATORY PROTECTION... Not normally needed.
ILATION.....
EXHAUST..... Yes
NICAL EXHAUST.....
CIAL.....
R.....
CTIVE GLOVES..... Rubber
ROTECTION..... Chemical splash goggles
R PROTECTIVE Suitable work clothing.
MENT

SECTION IX - SPECIAL PRECAUTIONS

AUTIONARY MEASURES... Good housekeeping procedures will suffice. Store in original container at 40°-90°F.

IAL PRECAUTIONS..... Rinse container properly before reuse.

SECTION X - DATE AND SOURCE OF INFORMATION

PREPARED	NAME AND TITLE	SHEET NUMBER
-86	John M. Ross Director of Research	

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ATTACHMENT C-4

INC.

SECTION I - IDENTIFICATION

URER'S NAME.....	BERCEN, INC.	EMERGENCY PHONE NUMBER (401) 943-7400
.....	1381 Cranston Street Cranston, Rhode Island 02920	
ME.....	BERCHEM 4100	
NAME.....	Self Emulsifiable Lecithin	CHEMICAL Proprietary
AL FAMILY.....	Phosphatide	FORMULA

SECTION II - HAZARDOUS INGREDIENTS

	HAZARDOUS %	TLV (Units)
S COMPONENTS		

SECTION III - PHYSICAL DATA

ANCE/ODOR.....	Brown viscous liquid. pH 4 - 5
Point(F).....	Over 212°F
C GRAVITY (H2O=1).	1.01
PRESSURE (mm Hg)...	N/A
ITY/VOL(%).....	0.0%
ENSITY (Air=1)....	N/A
RATION RATE.....	N/A
ITY IN H2O.....	Completely Dispersible

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

POINT.....	Over 212°F PMCC
FLAME LIMIT.....	N/A
R FLAME LIMIT.....	N/A
UTSH MEDIA.....	CO_2, dry chemical, foam, water
RE.....	None
AL FIRE HAZARD.....	None

SECTION V - HEALTH HAZARD DATA

HOLD LIMIT VALUE....	None established.
EXPOSURE EFFECTS....	Possible irritation to eyes. Possible skin irritation with prolonged or repeated contact. Do not ingest.
T AID PROCEDURES.....	Flush eyes with water. Wash skin with soap and water. If irritation to eyes or skin develops or persists, get medical attention. Do not ingest.

SECTION VI - REACTIVITY DATA

CAL STABILITY.....	Stable
ITIONS TO AVOID.....	
PATIBLE MATERIALS...	Strong acids. Strong alkalies. Strong oxidizers.

ATTACHMENT C-5

OSITION PRODUCTS... Thermal decomposition may produce carbon dioxide, carbon monoxide and nitrous oxides.

DOUS POLYMERIZATION. Will not occur.
RIZATION AVOID.....

SECTION VII - SPILL OR LEAK PROCEDURE

ILL ..... Flush small spills to drain with water. Absorb larger spills with sand or similar material.

DISPOSAL METHOD.... Incinerate under acceptable conditions or bury in a landfill following current local, state and federal regulations.

SECTION VIII - SPECIAL PROTECTION

ATORY PROTECTION... Not normally needed.
LATION.....
EXHAUST..... Yes
ICAL EXHAUST.....
TAL.....
R.....
CTIVE GLOVES..... Vinyl or rubber
ROTECTION..... Safety glasses
R PROTECTIVE Suitable work clothing.
MENT

SECTION IX - SPECIAL PRECAUTIONS

UTIONARY MEASURES... Avoid contact with eyes and skin, wash thoroughly after handling. Store in original container at 40°-90°F.

AL PRECAUTIONS..... Rinse container properly before reuse.

SECTION X - DATE AND SOURCE OF INFORMATION

PREPARED NAME AND TITLE SHEET NUMBER
-86 John N. Ross Director of Research

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ATTACHMENT C-6

BERCHEM 4200 Def DJ

EN, INC.

SECTION I - IDENTIFICATION

ACTURER'S NAME..... BERCEN, INC.

EMERGENCY PHONE NUMBER
(401) 943-7400

ESS..... 1381 Cranston Street
Cranston, Rhode Island 02920

NAME..... BERCHEM 4200
TCAL NAME..... Mixture of Hydrocarbons and Esters
ICAL FAMILY..... Petroleum Product

CHEMICAL FORMULA Proprietary

SECTION II - HAZARDOUS INGREDIENTS

DOUS COMPONENTS	HAZARDOUS %	TLV (Units)

SECTION III - PHYSICAL DATA

ARANCE/ODOR..... Clear straw color, characteristic hydrocarbon oil odor.
LING Point(F)..... Initial 400°F
CIFIC GRAVITY (H20=1). 0.90
R PRESSURE (mm Hg)... N/A
TILITY/VOL(%)..... 0.0%
OR DENSITY (Air=1).... N/A
ORATION RATE..... N/A
BILITY IN H20..... Completely Dispersible

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

SH POINT..... 380°F COC
JER FLAME LIMIT..... N/A
HER FLAME LIMIT..... N/A
INGUISH MEDIA..... Water as fog, CO_2, dry chemical
R FIRE..... Typical for petroleum oils.
SUAL FIRE HAZARD..... None

SECTION V - HEALTH HAZARD DATA

ESHOLD LIMIT VALUE.... None established.
R EXPOSURE EFFECTS.... Slight drying effect on eyes and skin.
RST AID PROCEDURES..... Flush eyes with water. Wash skin with soap and water. If irritation to eyes or skin develops or persists, get medical attention. Do not ingest.

SECTION VI - REACTIVITY DATA

EMICAL STABILITY..... Stable
ONDITIONS TO AVOID.....
COMPATIBLE MATERIALS... Strong oxidizers.

ATTACHMENT C-7

BERCEN, INC. BERCHEM 4200

COMPOSITION PRODUCTS... Thermal decomposition may produce carbon dioxide and carbon monoxide.
AZARDOUS POLYMERIZATION. Will not occur.
LYMERIZATION AVOID.....

SECTION VII - SPILL OR LEAK PROCEDURE

R SPILL ..... Flush small spills to drain with water. Absorb larger spills with sand or similar material.
ASTE DISPOSAL METHOD.... Bury in landfill following current local, state and federal regulations.

SECTION VIII - SPECIAL PROTECTION

SPIRATORY PROTECTION... Not normally needed.
ENTILATION.....
OCAL EXHAUST..... Yes
CHANICAL EXHAUST.....
ECIAL.....
THER.....
OTECTIVE GLOVES..... Rubber
E PROTECTION..... Chemical splash goggles or safety glasses
THER PROTECTIVE QUIPMENT Suitable work clothing.

SECTION IX - SPECIAL PRECAUTIONS

ECAUTIONARY MEASURES... Store in original container at 40°-90°F.
ECIAL PRECAUTIONS..... Rinse container properly before reuse.

SECTION X - DATE AND SOURCE OF INFORMATION

ATE PREPARED	NAME AND TITLE	SHEET NUMBER
-1-86	John M. Ross Director of Research	

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ATTACHMENT C-8

MATERIAL SAFETY DATA SHEET

ERCEN, INC. BERCHEM 4292 Rev. 5-92

SECTION I - IDENTIFICATION

UFACTURER'S NAME..... BERCEN, INC.

EMERGENCY PHONE NUMBER
(401) 943-7400

DRESS..... 1381 Cranston Street
Cranston, Rhode Island 02920

DE NAME..... BERCHEM 4292

EMICAL NAME..... Paraffinic Hydrocarbon

EMICAL FAMILY..... Hydrocarbon

CHEMICAL FORMULA Proprietary

SECTION II - HAZARDOUS INGREDIENTS

ARDOUS COMPONENTS HAZARDOUS % TLV (Units)

ne

SECTION III - PHYSICAL DATA

PEARANCE/ODOR..... Off white liquid, mild oily odor.

LING Point(F)..... 210°-212°F

ECIFIC GRAVITY (H2O=1).. 0.87

POR PRESSURE (mm Hg)... N/A

ATILITY/VOL(%)..... 0.0%

OR DENSITY (Air=1).... N/A

APORATION RATE..... N/A

UBILITY IN H2O..... Completely Dispersible

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

ASH POINT..... Over 212°F PMCC

WER FLAME LIMIT..... N/A

GHER FLAME LIMIT..... N/A

TINGUISH MEDIA..... CO_2, dry chemical, foam, fog

R FIRE..... None

USUAL FIRE HAZARD..... None

SECTION V - HEALTH HAZARD DATA

HRESHOLD LIMIT VALUE.... None established.

ER EXPOSURE EFFECTS.... None known.

RST AID PROCEDURES..... Flush eyes with water. Wash skin with soap and water. If irritation to eyes or skin develops or persists, get medical attention. Do not ingest.

SECTION VI - REACTIVITY DATA

EMICAL STABILITY..... Stable

NDITIONS TO AVOID.....

COMPATIBLE MATERIALS... Strong oxidizers.

COMPOSITION PRODUCTS... Thermal decomposition may produce carbon dioxide and carbon monoxide.

ATTACHMENT C-9

DOUS POLYMERIZATION. Will not occur.
ERIZATION AVOID.....

SECTION VII - SPILL OR LEAK PROCEDURE

SPILL ..... Flush to sewer or absorb in sand or similar material.

E DISPOSAL METHOD.... Incinerate under acceptable conditions or bury in a landfill following current local, state and federal regulations.

SECTION VIII - SPECIAL PROTECTION

PIRATORY PROTECTION... Not normally needed.
ILATION.....
AL EXHAUST..... Yes
CHANICAL EXHAUST.....
IAL.....
R.....
TECTIVE GLOVES..... Rubber
PROTECTION..... Chemical splash goggles
R PROTECTIVE Suitable work clothing.
IPMENT

SECTION IX - SPECIAL PRECAUTIONS

CAUTIONARY MEASURES... Good housekeeping procedures will suffice. Store in original container at 40°-90°F.
IAL PRECAUTIONS..... Rinse container properly before reuse.

SECTION X - DATE AND SOURCE OF INFORMATION

E PREPARED	NAME AND TITLE	SHEET NUMBER
3-86	John M. Ross Director of Research	

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ATTACHMENT C-10

MATERIAL SAFETY DATA SHEET

SECTION I IDENTIFICATION OF PRODUCT

MANUFACTURER'S NAME: BERCEN, INC.	EMERGENCY TELEPHONE NO. (401) 943-7400
ADDRESS: 1381 Cranston St., Cranston, R. I. 02920	
TRADE NAME AND SYNONYMS: BERCHEM 4290 K-90	
CHEMICAL NAME AND SYNONYMS: Polyphosphoric Ester Acid	
CHEMICAL FAMILY: Anhydride - K Salt	MOLECULAR FORMULA

SECTION II HAZARDOUS COMPONENTS OF MIXTURES

COMPONENT	%	THRESHOLD LIMIT VALUE (UNITS)

SECTION III PHYSICAL DATA

APPEARANCE AND ODOR	Clear Viscous Liquid - Mild Odor		
BOILING POINT (DEGREES FAHRENHEIT)	212°F	SPECIFIC GRAVITY (WATER = 1)	1.13 ± .01
VAPOR PRESSURE (MM. OF MERCURY)	10.9	PERCENT VOLATILE (BY VOLUME)	12 - 15%
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (BUTYL ACETATE = 1)	
SOLUBILITY IN WATER	Soluble	EVAPORATION RATE (ETHYL ETHER = 1)	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (SPECIFY METHOD) (DEGREES FAHRENHEIT)	135°F TCC	FLAMMABLE LIMITS (PERCENT BY VOLUME)	LOWER	UPPER
FIRE-EXTINGUISHING MEDIA	Water, Carbon Dioxide or Chemical Foam			
SPECIAL FIRE-FIGHTING PROCEDURES	None required			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

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READ THE BACK

ATTACHMENT C-11

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	Not known
EFFECTS OF OVEREXPOSURE	None expected
EMERGENCY AND FIRST AID PROCEDURES	If taken internally - induce vomiting, consult physician. If splashed in eyes - flush with water, consult physician. Wash skin well with water.

SECTION VI REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (Materials to avoid)	Strong bases and oxidizing agents		
HAZARDOUS DECOMPOSITION PRODUCTS	Thermal decomposition may produce CO, CO_2, acidic gases		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	Flush to sewer with water or absorb
WASTE DISPOSAL METHOD	Bury absorbed material in secure landfill following current local, state and federal regulations.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)	None required			
VENTILATION	LOCAL EXHAUST	acceptable	SPECIAL	
	MECHANICAL (General)	acceptable	OTHER	
PROTECTIVE GLOVES	Rubber gloves		EYE PROTECTION	Splash Goggles
OTHER PROTECTIVE EQUIPMENT	Safety shower and eye bath.			

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	Store in original containers at 45-90°F
OTHER PRECAUTIONS	Use good housekeeping procedures

SECTION X DATE AND SOURCE OF INFORMATION

DATE	NAME AND TITLE	SHEET NUMBER
4/12/85	John McRose Director, Research	

ATTACHMENT C-12

ETY DATA SHEET

TION OF PRODUCT

	EMERGENCY TELEPHONE NO. (401) 943-7400

rylate

MOLECULAR FORMULA

MPONENTS OF MIXTURES

	%	THRESHOLD LIMIT VALUE (UNITS)

PHYSICAL DATA

yellow liquid

SPECIFIC GRAVITY (WATER = 1)	1.04
PERCENT VOLATILE (BY VOLUME)	88%
EVAPORATION RATE (BUTYL ACETATE = 1)	NA
EVAPORATION RATE (ETHYL ETHER = 1)	NA

AND EXPLOSION HAZARD DATA

		LOWER	UPPER
	FLAMMABLE LIMITS (PERCENT BY VOLUME)		

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ATTACHMENT C-13

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	None known
EFFECTS OF OVEREXPOSURE	Eye contact may cause irritation.
EMERGENCY AND FIRST AID PROCEDURES	Eyes - flush with water, consult physician Skin - wash well with water Do not ingest

SECTION VI REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (Materials to avoid)	Strong alkalies and oxidizers		
HAZARDOUS DECOMPOSITION PRODUCTS	Thermal decomposition may produce CO, CO_2		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	Flush to sewer or absorb in sand or similar material. Spill area will be slippery, wash well.
WASTE DISPOSAL METHOD	Flush to sewer or bury in landfill following current local, state and federal regulations.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)		SPECIAL	
VENTILATION	LOCAL EXHAUST acceptable	OTHER	
	MECHANICAL (General)	EYE PROTECTION	Goggles
PROTECTIVE GLOVES	Rubber		
OTHER PROTECTIVE EQUIPMENT	None		

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	Good housekeeping procedures will suffice. Store in original container at 45-90°F.
OTHER PRECAUTIONS	

SECTION X DATE AND SOURCE OF INFORMATION

DATE 4/11/85	NAME AND TITLE John Moss Director of Research	SHEET NUMBER

ATTACHMENT C-14

MATERIAL SAFETY DATA SHEET

SECTION I IDENTIFICATION OF PRODUCT

MANUFACTURER'S NAME: BERCEN CHEMICAL CO., INC.	EMERGENCY TELEPHONE NO.: (401) 943-7400
ADDRESS: 1381 Cranston St., Cranston, R. I. 02920	
TRADE NAME AND SYNONYMS: BERCHEM CP	
CHEMICAL NAME AND SYNONYMS: Carboxylated styrene/butadiene and starch	
CHEMICAL FAMILY: Latex polymer	MOLECULAR FORMULA:

SECTION II HAZARDOUS COMPONENTS OF MIXTURES

COMPONENT	%	THRESHOLD LIMIT VALUE (UNITS)
None		

SECTION III PHYSICAL DATA

APPEARANCE AND ODOR: Thick yellow emulsion	
BOILING POINT (DEGREES FAHRENHEIT): 212°F	SPECIFIC GRAVITY (WATER = 1): 1.0 - 1.1
VAPOR PRESSURE (MM. OF MERCURY): NA	PERCENT VOLATILE (BY VOLUME): NA
VAPOR DENSITY (AIR = 1): NA	EVAPORATION RATE (BUTYL ACETATE = 1): NA
SOLUBILITY IN WATER: Complete	EVAPORATION RATE (ETHYL ETHER = 1): NA

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (SPECIFY METHOD) (DEGREES FAHRENHEIT): 210°F	FLAMMABLE LIMITS (PERCENT BY VOLUME)	LOWER	UPPER
FIRE-EXTINGUISHING MEDIA: Water, CO2, Foam			
SPECIAL FIRE-FIGHTING PROCEDURES: None known			
UNUSUAL FIRE AND EXPLOSION HAZARDS: None			

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READ THE BACK

ATTACHMENT C-15

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	NA
EFFECTS OF OVEREXPOSURE	Possible irritation of the skin or eyes.
EMERGENCY AND FIRST AID PROCEDURES	In case of skin contact, wash with soap and water. In case of eye contact, clush with water. If swallowed, induce vomitting and call a physician.

SECTION VI REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (Materials to avoid)			
HAZARDOUS DECOMPOSITION PRODUCTS			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	Flush with water
WASTE DISPOSAL METHOD	Flush with water or discard in landfill

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)				
VENTILATION	LOCAL EXHAUST	X	SPECIAL	
	MECHANICAL (General)	X	OTHER	
PROTECTIVE GLOVES	Rubber or plastic		EYE PROTECTION	Safety glasses or goggles
OTHER PROTECTIVE EQUIPMENT	None			

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	If contact with the skin or eyes is made, wash with water.
OTHER PRECAUTIONS	None

SECTION X DATE AND SOURCE OF INFORMATION

DATE	NAME AND TITLE	SHEET NUMBER
2/2/84	[illegible]	

ATTACHMENT C-16

ATERIAL ...

BERSET 2425 86-320

EN, INC.

SECTION I - IDENTIFICATION

CTURER'S NAME..... BERCEN, INC.

EMERGENCY PHONE NUMBER (401) 943-7400

ESS..... 1381 Cranston Street
Cranston, Rhode Island 02920

E NAME..... BERSET 2425

ICAL NAME..... Modified Melamine Formaldehyde Resin

ICAL FAMILY..... Melamine Formaldehyde Resin

CHEMICAL FORMULA Proprietary

SECTION II - HAZARDOUS INGREDIENTS

ARDOUS COMPONENTS	HAZARDOUS %	TLV (Units)
aldehyde CAS # 50-00-0	0.4 - 0.7%	1 ppm in air

SECTION III - PHYSICAL DATA

ARANCE/ODOR..... Clear water white viscous liquid. pH 9.0 ± 0.5

LING Point(F)..... 212°F

ECIFIC GRAVITY (H2O=1). 1.22

OR PRESSURE (mm Hg)... N/A

ATILITY/VOL(%)..... 30%

POR DENSITY (Air=1).... N/A

PORATION RATE..... N/A

UBILITY IN H2O..... Completely soluble

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

ASH POINT..... 110°F PMCC

OWER FLAME LIMIT..... N/A

GHER FLAME LIMIT..... N/A

TINGUISH MEDIA..... CO_2, dry chemical, foam, water

OR FIRE..... None

NUSUAL FIRE HAZARD..... None

SECTION V - HEALTH HAZARD DATA

HRESHOLD LIMIT VALUE.... 1 ppm in air for Formaldehyde

VER EXPOSURE EFFECTS.... Possible irritation to eyes. Possible skin irritation with prolonged or repeated contact. Do not ingest.

IRST AID PROCEDURES..... Flush eyes with water. Wash skin with soap and water. If irritation to eyes or skin develops or persists, get medical attention. Do not ingest. Inhalation effects disappear on removal to fresh air.

SECTION VI - REACTIVITY DATA

CHEMICAL STABILITY..... Stable

CONDITIONS TO AVOID.....

INCOMPATIBLE MATERIALS... Strong acids.

ATTACHMENT C-17

CEN, INC.

POSITION PRODUCTS... Thermal decomposition may produce carbon dioxide, carbon monoxide, formaldehyde, methyl alcohol and nitrous oxides.

DOUS POLYMERIZATION. Will not occur.
MERIZATION AVOID.....

SECTION VII - SPILL OR LEAK PROCEDURE

SPILL ..... Flush to sewer or absorb in sand or similar material.

E DISPOSAL METHOD.... Flush to sewer or bury absorbed material in landfill following current local, state and federal regulations.

SECTION VIII - SPECIAL PROTECTION

IRATORY PROTECTION... Use NIOSH approved cannister mask in accordance with limitations of equipment. If limitations are exceeded, use air supplied mask.

TILATION.....
AL EXHAUST..... Yes
CHANICAL EXHAUST.....
CIAL.....
ER.....
TECTIVE GLOVES..... Rubber
E PROTECTION..... Chemical splash goggles and face shield
ER PROTECTIVE IPMENT Suitable work clothing.

SECTION IX - SPECIAL PRECAUTIONS

ECAUTIONARY MEASURES... Avoid skin and eye contact. Do not ingest. Avoid exposure to vapors. Containers should be grounded when pouring. Store in original container at 40°-90°F.

ECIAL PRECAUTIONS..... Formaldehyde has been shown to cause nasal carcinomas in labortory animals and is listed as a suspected carcinogen by the ACIGH and IARC. Rinse container properly before reuse.

SECTION X - DATE AND SOURCE OF INFORMATION

ATE PREPARED	NAME AND TITLE	SHEET NUMBER
30-86	John M. Ross Director of Research	

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ATTACHMENT C-18

MATERIAL SAFETY DATA SHEET

SECTION I IDENTIFICATION OF PRODUCT

MANUFACTURER'S NAME BERCEN CHEMICAL CO., INC.	EMERGENCY TELEPHONE NO. (401) 943-7400
ADDRESS 1381 Cranston St., Cranston, R. I. 02920	
TRADE NAME AND SYNONYMS BERSET TG	
CHEMICAL NAME AND SYNONYMS Metal complexed reactant	
CHEMICAL FAMILY	MOLECULAR FORMULA Proprietary

SECTION II HAZARDOUS COMPONENTS OF MIXTURES

COMPONENT	%	THRESHOLD LIMIT VALUE (UNITS)

SECTION III PHYSICAL DATA

APPEARANCE AND ODOR Slightly hazy solution, slight acetic acid odor.	
BOILING POINT (DEGREES FAHRENHEIT) 200°F	SPECIFIC GRAVITY (WATER = 1) 1.18
VAPOR PRESSURE (MM. OF MERCURY) NA	PERCENT VOLATILE (BY VOLUME) 50%
VAPOR DENSITY (AIR = 1) NA	EVAPORATION RATE (BUTYL ACETATE = 1) NA
SOLUBILITY IN WATER complete	EVAPORATION RATE (ETHYL ETHER = 1) NA

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (SPECIFY METHOD) (DEGREES FAHRENHEIT) Over 200°F COC	FLAMMABLE LIMITS (PERCENT BY VOLUME)	LOWER	UPPER
FIRE-EXTINGUISHING MEDIA Water, foam,. CO2			
SPECIAL FIRE-FIGHTING PROCEDURES None			
UNUSUAL FIRE AND EXPLOSION HAZARDS None			

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READ THE BACK

ATTACHMENT C-19

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	None known
EFFECTS OF OVEREXPOSURE	None known
EMERGENCY AND FIRST AID PROCEDURES	Skin - wash with soap and water. Eyes - Flush with large amounts of water and consult a physician. Do not ingest.

SECTION VI REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (Materials to avoid)	Alkalies		
HAZARDOUS DECOMPOSITION PRODUCTS			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	Flush to sewer or absorb in sand or similar material.
WASTE DISPOSAL METHOD	Flush to sewer or bury in landfill following current regulations.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)	None needed		SPECIAL
VENTILATION	LOCAL EXHAUST acceptable		OTHER
	MECHANICAL (General)	EYE PROTECTION	Goggles
PROTECTIVE GLOVES	Yes		
OTHER PROTECTIVE EQUIPMENT	None required		

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	Good housekeeping procedures will suffice.
OTHER PRECAUTIONS	Store between 40°F and 90°F.

SECTION X DATE AND SOURCE OF INFORMATION

DATE	NAME AND TITLE	SHEET NUMBER
2/7/84		

ATTACHMENT C-2C

ERCEN, INC.

SECTION I - IDENTIFICATION

MANUFACTURER'S NAME..... BERCEN, INC.

EMERGENCY PHONE NUMBER
(401) 943-7400

ADDRESS..... 1381 Cranston Street
Cranston, Rhode Island 02920

TRADE NAME..... BERBOND 8150
CHEMICAL NAME..... Polyvinyl Acetate Homopolymer
CHEMICAL FAMILY..... Latex

CHEMICAL FORMULA Proprietary

SECTION II - HAZARDOUS INGREDIENTS

HAZARDOUS COMPONENTS	HAZARDOUS %	TLV (Units)
None		

SECTION III - PHYSICAL DATA

APPEARANCE/ODOR..... White emulsion. pH 7.0 ± 0.5
BOILING Point(F)..... 210°-212°F
SPECIFIC GRAVITY (H2O=1). 1.09
VAPOR PRESSURE (mm Hg)... N/A
VOLATILITY/VOL(%)..... 50%
VAPOR DENSITY (Air=1).... N/A
EVAPORATION RATE..... N/A
SOLUBILITY IN H2O..... Completely soluble

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT..... Over 212°F PMCC
LOWER FLAME LIMIT..... N/A
HIGHER FLAME LIMIT..... N/A
EXTINGUISH MEDIA..... CO_2, dry chemical, foam, water
FOR FIRE..... None
UNUSUAL FIRE HAZARD..... None

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE.... None established.
OVER EXPOSURE EFFECTS.... Possible irritation to eyes. Possible skin irritatio with prolonged or repeated contact. Do not ingest.
FIRST AID PROCEDURES..... Flush eyes with water. Wash skin with soap and water If irritation to eyes or skin develops or persists, get medical attention. Do not ingest.

SECTION VI - REACTIVITY DATA

CHEMICAL STABILITY..... Stable
CONDITIONS TO AVOID.....
INCOMPATIBLE MATERIALS... Strong acids. Strong alkalies. Strong oxidizers.

ATTACHMENT C-21

EN, INC.

OMPOSITION PRODUCTS... Thermal decomposition may produce carbon dioxide and carbon monoxide.

RDOUS POLYMERIZATION. Will not occur.
YMERIZATION AVOID.....

SECTION VII - SPILL OR LEAK PROCEDURE

SPILL ..... Flush to sewer or absorb in sand or similar material.

E DISPOSAL METHOD.... Bury in landfill following current local, state and federal regulations.

SECTION VIII - SPECIAL PROTECTION

SPIRATORY PROTECTION... Not normally needed.
ILATION.....
L EXHAUST..... Yes
CHANICAL EXHAUST.....
IAL.....
R.....
OTECTIVE GLOVES..... Rubber
PROTECTION..... Chemical splash goggles
R PROTECTIVE PMENT Suitable work clothing.

SECTION IX - SPECIAL PRECAUTIONS

ECAUTIONARY MEASURES... Good housekeeping procedures will suffice. Store in original container at 40°-90°F.

CIAL PRECAUTIONS..... Protect from freezing. Rinse container properly before reuse.

SECTION X - DATE AND SOURCE OF INFORMATION

TE PREPARED	NAME AND TITLE	SHEET NUMBER
-86	John M. Ross Director of Research	

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ATTACHMENT C-22

MATERIAL SAFETY DATA SHEET

BERCEN, INC.

BERSIZE 6205 S-505

SECTION I - IDENTIFICATION

MANUFACTURER'S NAME..... BERCEN, INC.

EMERGENCY PHONE NUMBER (401) 943-7400

ADDRESS..... 1391 Cranston Street
Cranston, Rhode Island 02920

TRADE NAME..... BERSIZE 6205
CHEMICAL NAME..... Monomeric Size
CHEMICAL FAMILY..... Synthetic Size

CHEMICAL FORMULA Proprietary

SECTION II - HAZARDOUS INGREDIENTS

HAZARDOUS COMPONENTS | HAZARDOUS % | TLV (Units)

None

SECTION III - PHYSICAL DATA

APPEARANCE/ODOR..... White emulsion, mild waxy odor. pH 4.5 ± 0.5
BOILING Point(F)..... 210°-212°F
SPECIFIC GRAVITY (H2O=1). 0.988
VAPOR PRESSURE (mm Hg)... N/A
VOLATILITY/VOL(%)..... 60%
VAPOR DENSITY (Air=1).... N/A
EVAPORATION RATE..... N/A
SOLUBILITY IN H2O..... Completely Dispersible

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT..... Over 212°F TCC
LOWER FLAME LIMIT..... N/A
HIGHER FLAME LIMIT..... N/A
EXTINGUISH MEDIA..... CO_2, dry chemical, foam, water
FOR FIRE..... None
UNUSUAL FIRE HAZARD..... None

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE.... None established.
OVER EXPOSURE EFFECTS.... None known.
FIRST AID PROCEDURES..... Flush eyes with water. Wash skin with soap and water If irritation to eyes or skin develops or persists, get medical attention. Do not ingest.

SECTION VI - REACTIVITY DATA

CHEMICAL STABILITY..... Stable
CONDITIONS TO AVOID.....
INCOMPATIBLE MATERIALS... Strong oxidizers.
DECOMPOSITION PRODUCTS... Thermal decomposition may produce carbon dioxide, carbon monoxide, formaldehyde and nitrous oxides.

ATTACHMENT C-23

EN, INC.

DOUS POLYMERIZATION. Will not occur.
MERIZATION AVOID.....

SECTION VII - SPILL OR LEAK PROCEDURE

SPILL ..... Flush to sewer or absorb in sand or similar material.

DISPOSAL METHOD.... Flush to sewer or bury absorbed material in landfill following current local, state and federal regulations.

SECTION VIII - SPECIAL PROTECTION

RATORY PROTECTION... Not normally needed.
LATION.....
AL EXHAUST..... Yes
ANICAL EXHAUST.....
IAL.....
ER.....
TECTIVE GLOVES..... Rubber
PROTECTION..... Chemical splash goggles or safety glasses
ER PROTECTIVE IPMENT Suitable work clothing.

SECTION IX - SPECIAL PRECAUTIONS

CAUTIONARY MEASURES... Good housekeeping procedures will suffice. Store in original container at 40°-90°F.

ECIAL PRECAUTIONS..... Rinse container properly before reuse.

SECTION X - DATE AND SOURCE OF INFORMATION

SHEET NUMBER

TE PREPARED
0-86

NAME AND TITLE
John M. Ross Director of Research

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ATTACHMENT C-24

BERCEN, INC.

SECTION I - IDENTIFICATION

UFACTURER'S NAME..... BERCEN, INC.

EMERGENCY PHONE NUMBER
(401) 943-7400

DRESS..... 1381 Cranston Street
Cranston, Rhode Island 02920

E NAME..... BERSIZE 6609
ICAL NAME..... Modified Imidazolidone
EMICAL FAMILY..... Imidazolidone

CHEMICAL FORMULA Proprietary

SECTION II - HAZARDOUS INGREDIENTS

ZARDOUS COMPONENTS	HAZARDOUS %	TLV (Units)
ne		

SECTION III - PHYSICAL DATA

PEARANCE/ODOR..... Buff colored emulsion, mild odor. pH 5.0 ± 0.5
LING Point(F)..... 210°-212°F
CIFIC GRAVITY (H20=1). 0.98
POR PRESSURE (mm Hg)... N/A
ATILITY/VOL(%)..... 55%
OR DENSITY (Air=1).... N/A
APORATION RATE..... N/A
UBILITY IN H20..... Completely Dispersible

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

SH POINT..... Over 212°F PMCC
ER FLAME LIMIT..... N/A
GHER FLAME LIMIT..... N/A
INGUISH MEDIA..... CO_2, dry chemical, foam, water
FIRE..... None
USUAL FIRE HAZARD..... None

SECTION V - HEALTH HAZARD DATA

HRESHOLD LIMIT VALUE.... None established.
R EXPOSURE EFFECTS.... None known.
ST AID PROCEDURES..... Flush eyes with water. Wash skin with soap and water. If irritation to eyes or skin develops or persists, get medical attention. Do not ingest.

SECTION VI - REACTIVITY DATA

EMICAL STABILITY..... Stable
NDITIONS TO AVOID.....
NCOMPATIBLE MATERIALS... Strong acids. Strong oxidizers.
COMPOSITION PRODUCTS... Thermal decomposition may produce carbon dioxide, carbon monoxide, formaldehyde and nitrous oxides.

ATTACHMENT C-25

HAZARDOUS POLYMERIZATION. Will not occur.
POLYMERIZATION AVOID.....

SECTION VII - SPILL OR LEAK PROCEDURE

FOR SPILL ..... Flush small spills to drain with water. Absorb large spills with sand or similar material.

WASTE DISPOSAL METHOD.... Flush to sewer or bury absorbed material in landfill following current local, state and federal regulations.

SECTION VIII - SPECIAL PROTECTION

RESPIRATORY PROTECTION... Not normally needed.
VENTILATION.....
LOCAL EXHAUST..... Yes
MECHANICAL EXHAUST.....
SPECIAL.....
OTHER.....
PROTECTIVE GLOVES..... Rubber
EYE PROTECTION..... Chemical splash goggles or safety glasses
OTHER PROTECTIVE EQUIPMENT Suitable work clothing.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONARY MEASURES... Good housekeeping procedures will suffice. Store in original container at 40°-90°F.

SPECIAL PRECAUTIONS..... Rinse container properly before reuse.

SECTION X - DATE AND SOURCE OF INFORMATION

DATE PREPARED	NAME AND TITLE	SHEET NUMBER
4-30-86	John M. Ross Director of Research	

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ATTACHMENT C-26

MATERIAL SAFETY DATA SHEET

MSDS OR 346
DATE 7-2-79

(Approved by U.S. Department of Labor as "Essentially Similar" to Form OSHA-20)

I. PRODUCT IDENTIFICATION

CHEMICAL NAME AND SYNONYMS NA	REGULAR TELEPHONE NO. 302—575-5000 CHEMTREC TELEPHONE NO. 800—424-9300
CHEMICAL FAMILY Potassium Soap of Modified Rosin	CAS NO. –
FORMULA NA	MOLECULAR WEIGHT –
TRADE NAME AND SYNONYMS PALE FLUID PEXOD® (60% Solids)	

II. HAZARDOUS INGREDIENTS

MATERIAL	%	TLV-TWA VALUES ADOPTED BY ACGIH
Note: As Hercules interprets the U. S. Occupational Safety and Health Act of 1970, this product should not be considered a hazardous material.		

III. PHYSICAL DATA

BOILING POINT, 760 mm Hg	100°C (212°F)	FREEZING POINT	0°C (32°F)
VAPOR PRESSURE @	17.5 mm Hg	SPECIFIC GRAVITY (H_2O=1)	1.14 Typical
VAPOR DENSITY (AIR=1)	<1	PERCENT VOLATILE BY VOLUME (%)	Unknown
SOLUBILITY IN WATER, % BY WEIGHT @	Complete	EVAPORATION RATE (BUTYL ACETATE=1)	<1
APPEARANCE AND ODOR: Brown water solution; soapy odor		pH 10% dilution	9 Typical

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD) NA-Water paste		AUTOIGNITION TEMPERATURE NA	
FLAMMABLE LIMITS IN AIR PERCENT BY VOLUME	LOWER NA		UPPER NA

EXTINGUISHING MEDIA: NA

SPECIAL FIRE-FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

NOTES: NA = NOT APPLICABLE

ATTACHMENT C-27

We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. We accept no responsibility for results obtained by the application of this information or the safety and suitability of our products, either alone or in combination with other products. Users are advised to make their own tests to determine the safety and suitability of each such product or product combination for their own purposes. Unless otherwise agreed in writing, we sell the products without warranty, and buyers and users assume all responsibility and liability for loss or damage arising from the handling and use of our products, whether used alone or in combination with other products.

926 6806 0100-0 DATE 7-2-79
OR 346

V. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: Not established.

EFFECTS OF OVEREXPOSURE: Causes eye irritation. Prolonged and repeated contact may cause mild skin irritation or sensitization.

EMERGENCY AND FIRST AID PROCEDURES:

EYES: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

SKIN: Wash with soap and running water.

VI. REACTIVITY DATA

STABILITY		CONDITIONS TO AVOID: None
UNSTABLE		
STABLE	X	

INCOMPATIBILITY (MATERIALS TO AVOID): None

HAZARDOUS DECOMPOSITION PRODUCTS: None

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID: None
	WILL NOT OCCUR	X	

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Scrape up and salvage in metal containers. Soak up small spills with earth or sand. Wash area with detergent and water.

WASTE DISPOSAL METHOD: Landfill in accordance with local, state and Federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE)		None is normal use.	SPECIAL	-
VENTILATION	LOCAL EXHAUST	-	OTHER	-
	MECHANICAL (GENERAL)	Recommended	EYE PROTECTION: Splash goggles	

PROTECTIVE GLOVES: Rubber

OTHER PROTECTIVE EQUIPMENT: -

IX. SPECIAL PRECAUTIONS

PRECAUTIONARY LABELING:

WARNING! CAUSES EYE IRRITATION. Avoid contact with eyes. Wash thoroughly after handling.

FIRST AID: EYES: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

SKIN: Wash with soap and running water.

ATTACHMENT C-28

OTHER HANDLING AND STORAGE CONDITIONS: Not damaged by freezing or high temperatures. Recommend storage and handling temperature 15-32°C (60-90°F). Viscosity increases at low temperatures.

hooker PROCESS chemicals

REPRODUCED BY
OLSEN CHEMICAL CO., INC.
62-04 Main Street
Paterson, N.J. 07514
Tel #(201) 345-4000

ADAPTED FROM USDL FORM NO. L38 - 005-4

MATERIAL SAFETY DATA SHEET

NFPA Designation

CHEMICAL NAME: Sodium Hydroxide, Granular, Flake or Beads		PLANT CODE	MATERIAL CODE NO.
MANUFACTURER'S NAME: Hooker Chemical Corporation		EMERGENCY TELEPHONE NO.	
ADDRESS: (NUMBER, STREET, CITY, STATE AND ZIP CODE)			
CHEMICAL NAME AND SYNONYMS: Sodium Hydroxide		TRADE NAME: Caustic Soda, Lye	
CHEMICAL FORMULA: NaOH	MOL. WT.: 40.01	USES: Mfg of chemicals, soap, textiles, paper, etc	

Physical Properties

BOILING POINT (°F)	2535	SPECIFIC GRAVITY (H_2O =1)	2.13
VAPOR PRESSURE (mmHg)		PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (= 1)	
SOLUBILITY IN WATER @ 68°F	50%		

APPEARANCE AND ODOR: White to off-white odorless solid

Fire and Explosion Hazard Data

FLASH POINT: none °F	METHOD	FLAMMABLE LIMITS: UEL -- LEL --	AUTOIGNITION TEMP.: none °F

EXTINGUISHING MEDIA

SPECIAL FIRE FIGHTING PROCEDURES: As appropriate for surrounding fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Hot or molten material will react violently with water liberating heat and causing splashing.

Reactivity

INCOMPATIBILITY: Reacts with zinc, aluminum, tin, lead, etc, liberating flammable hydrogen; can react violently with acids and with many organic compounds.

HAZARDOUS DECOMPOSITION PRODUCTS: --

CONDITIONS TO AVOID: Wear protective equipment to avoid contact with body or inhalation of mist or dust. In processes, control rates of addition to control temperature and avoid violent reactions.

ATTACHMENT C-28

Mfr. 11-1904

THRESHOLD LIMIT VALUE (C) 2 milligrams per cubic meter of air.

EFFECTS OF OVEREXPOSURE (SKIN, EYE, INHALATION, ETC.) Caustic soda is a primary irritant. Solid caustic and concentrated solutions are destructive to tissues and cause serious burns. Contact with any form may cause severe damage to eyes. Inhalation of dust or mist can cause injury to the entire respiratory tract. Ingestion damages mucous membranes and tissues of the gastrointestinal tract. Dilute solutions may cause burns which are not immediately evident.

EMERGENCY AND FIRST AID PROCEDURES For external exposures, flush with large amounts of water - speed of removal of caustic is of prime importance, especially for eyes. If taken internally, dilute by drinking water or milk - do not induce vomiting. If inhaled, remove to clean air. For all eye exposures and serious over-exposures, get medical attention.

SPECIAL MEDICAL PROCEDURES Unless directed otherwise by a physician: for skin exposures, avoid salves or ointments for 24 hours; in the case of ingestion, following dilution, fruit juice or dilute vinegar may be administered to neutralize caustic; for eye exposures, after the first 15 minutes of flushing, a few drops of pontocaine solution may be instille

Special Protection Information

VENTILATION As required to control dust or mist.

RESPIRATORY (TYPE) Filter or dust type.

GLOVES (TYPE) Rubber, neoprene or vinyl.

EYE (TYPE) Chemical safety goggles, plus face shield where appropriate.

OTHER Rubber safety toe shoes or boots, cotton coveralls, hard hat.

SPECIAL PRECAUTIONS FOR HANDLING AND STORAGE Store in a cool, dry place. Keep separate from acids, metals, explosives, organic peroxides and easily ignitable materials. Wear complete protective equipment in handling product.

STEPS TO TAKE IN EVENT OF SPILL OR RELEASE Get complete protective equipment; shovel spilled material into steel containers. Flush area with ample water, rinse with diluted acid, preferably acetic, and finally with water.

WASTE DISPOSAL Dissolve and/or flush to retention area for pH adjustment and dilution before discharging to sewer or stream.

REMARKS Caustic soda and trichloroethylene are especially hazardous since they react to form spontaneously flammable dichloroacetylene.

REFERENCES (1) MCA Safety Data Sheet SD-9: Caustic Soda (1968).
(2) Sax, N I, Dangerous Properties of Industrial Materials, 3rd Edition (1968).
Hooker Technical Data Sheet 739

The information presented herein, while not guaranteed, was prepared by technically knowledgeable personnel and to the best of our knowledge is true and accurate. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other or additional considerations.

NAME G W Darling

LOC. Niagara-ICD

DATE December 1971
April 1980

ATTACHMENT C-30

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME: OLSEN CHEMICAL CO., INC.	EMERGENCY TELEPHONE NO.: (201) 345-4000
ADDRESS (Number, Street, City, State, and ZIP Code): 62-64 East 26th St., Paterson, NJ 07514	
CHEMICAL NAME AND SYNONYMS: N.A.	TRADE NAME AND SYNONYMS: Olco Oxatrol Dry Boiler Water Treatment
CHEMICAL FAMILY: N.A.	FORMULA: N.A.

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	Decomposes	SPECIFIC GRAVITY (H_2O=1)	2.63
VAPOR PRESSURE (mm Hg.)	N.A.	PERCENT, VOLATILE BY VOLUME (%)	N.A.
VAPOR DENSITY (AIR=1)	N.A.	EVAPORATION RATE (_____=1)	N.A.
SOLUBILITY IN WATER	10.0% at 10°C		
APPEARANCE AND ODOR	White powder, no discernible odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used): Not Flammable	FLAMMABLE LIMITS: N.A.	Lel	Uel
EXTINGUISHING MEDIA: N.A.			

ATTACHMENT C-31

SPECIAL FIRE FIGHTING PROCEDURES: Wear NIOSH-approved self-contained breathing apparatus. Use water-spray to keep containers cool, and to knock down fumes.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Sulfur dioxide gas: toxic, corrosive, and an oxidizer. Sodium Sulfide residue: flammable, dangerous fire risk, strong irritant to skin and tiss. incompatible with acids.

SECTION V - HEALTH HAZARD DATA

Threshold Limit Value: As per Sodium Sulfite.

Effects of Overexposure: Inhalation of product dust or mist may irritate respiratory tract. Ingestion may irritate gastrointestinal tract. Estimated to be very toxic. Large doses may cause violent colic and diarrhea, circulatory disturbances, central nervous system depression, and even death.
Skin - Dust or mist may cause skin irritation from prolonged contact. Solutions will irritate.
Eyes - Dust or mist may irritate or burn eyes. Solutions will irritate or burn.

Emergency and First Aid Procedures: Eyes - Immediately flush with plenty of water, continuing for at least 15 minutes. Get medical attention.
Skin - Promptly wash with plenty of soap and water.
Inhalation - Remove to fresh air. If symptoms persist, get medical attention.
Ingestion - If conscious, immediately give 2 to 4 glasses of water or milk, and induce vomiting by touching finger to back of throat. Call a physician.

SECTION VI - REACTIVITY DATA

Stability: Stable

Conditions to avoid: High temperatures (before melting): yield sulfur dioxide gas and hazardous residue.

Incompatibility (materials to avoid): Strong oxidizers, acids.

Hazardous Decomposition Products: Sulfur dioxide gas, Sodium sulfide residue, etc.

Hazardous Polymerization: Will not occur.

SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled: Promptly shovel up dry chemical into an empty container, and cover. Store in a cool, dry area, away from acids or oxidizers. Keep container closed. Protect from physical damage. Cautiously spray residue with plenty of water.

Waste Disposal Method: Dissolve in water, using caution as solution can get hot. Neutralize with acid and flush to sewer with plenty of water if permitted by applicable disposal regulations. Good ventilation is required during neutralization due to release of SO_2 gas. Oxidation to sodium sulfate solution may be required, as for example, by adding a slight excess of dilute hydrogen peroxide carefully and with stirring. Neutralized waste may have to be disposed of by and approved contractor. Obey local regulations regarding disposal.

SECTION VIII - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify type): If dusty or misty conditions, dust mask approved by NIOSH.

Ventilation: Local Exhaust - If dusty or misty conditions.

Protective Gloves: Cotton gloves.

Eye Protection: Goggles or face shield.

Other Protective Equipment: Eye wash facility.

ATTACHMENT C-32

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be taken in handling and storing: Away from acids or oxidizers.

Other Precautions: None

ATTACHMENT C-33

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1357

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME: Olsen Chemical Co., Inc.	EMERGENCY TELEPHONE NO: 201-345-4000
ADDRESS (Number, Street, City, State, and ZIP Code): 62 E. 26th St., Paterson, NJ 07514	
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
CHEMICAL FAMILY: Boiler Water Treatment Compound	FORMULA: OLCO OST-14

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
None		

SECTION III - PHYSICAL DATA

BOILING POINT (°F.) A water solution		SPECIFIC GRAVITY (H_2O=1)	1.04
VAPOR PRESSURE (mm Hg.) properties about		PERCENT, VOLATILE BY VOLUME (%)	.95
VAPOR DENSITY (AIR=1) same as water		EVAPORATION RATE (_____=1) same as water	
SOLUBILITY IN WATER			
APPEARANCE AND ODOR clear light tan liquid with slight odor			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) N.A.	FLAMMABLE LIMITS Not flammable	LEL	UEL
EXTINGUISHING MEDIA A water solution, not combustibel			
SPECIAL FIRE FIGHTING PROCEDURES N.A.			
UNUSUAL FIRE AND EXPLOSION HAZARDS N.A.			

ATTACHMENT C-34

(Continued on reverse side)

SECTION V - HEALTH HAZARD DATA

SHOLD LIMIT VALUE N.A.

CTS OF OVEREXPOSURE Harmful if swallowed. Can cause irritation to skin and eyes

GENCY AND FIRST AID PROCEDURES Wash from eyes or skin with plenty of clean, cool water. See Physician if irritation occurs.

SECTION VI - REACTIVITY DATA

TABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	

OMPATABILITY (Materials to avoid) None

AZARDOUS DECOMPOSITION PRODUCTS None

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Spills should be absorbed in sawdust or sand and buried in an approved location. Wash area with copious amount of water

WASTE DISPOSAL METHOD

SECTION VIII - SPECIAL PROTECTION INFORMATION

ESPIRATORY PROTECTION (Specify type) None

ENTILATION	LOCAL EXHAUST	Norman	SPECIAL
	MECHANICAL (General)		OTHER

ROTECTIVE GLOVES wear rubber gloves	EYE PROTECTION wear goggles

OTHER PROTECTIVE EQUIPMENT None

SECTION IX - SPECIAL PRECAUTIONS

RECAUTIONS TO BE TAKEN IN HANDLING AND STORING

keep container closed when not in use.

OTHER PRECAUTIONS

Form OSHA-20
Rev. May 72

ATTACHMENT C-35

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1367

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME: Olsen Chemical Co., Inc.	EMERGENCY TELEPHONE NO: 201-345-4000
ADDRESS (Number, Street, City, State, and ZIP Code): 62-64 East 26th Street, Paterson, New Jersey 07514	
CHEMICAL NAME AND SYNONYMS: N.A.	TRADE NAME AND SYNONYMS: Olco Volomine
CHEMICAL FAMILY: N.A.	FORMULA: N.A.

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
Cyclohexylamine	12	9

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	unknown	SPECIFIC GRAVITY (H_2O=1)	.98
VAPOR PRESSURE (mm Hg.)	unknown	PERCENT, VOLATILE BY VOLUME (%)	NIL
VAPOR DENSITY (AIR=1)	Unknown	EVAPORATION RATE (_____=1)	unknown
SOLUBILITY IN WATER complete			
APPEARANCE AND ODOR colorless liquid with chacteristic Amine odor.			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used): unknown	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA: "Alcohol" foam, dry chemical, Co_2, water spray use to keep container cool.			
SPECIAL FIRE FIGHTING PROCEDURES: Wear protective clothing and self-contained apparatus.			
UNUSUAL FIRE AND EXPLOSION HAZARDS: unknown			

ATTACHMENT C-36

(Continued on reverse side)

Form OSHA-20

SECTION V - HEALTH HAZARD DATA

RESHOLD LIMIT VALUE unknown

FFECTS OF OVEREXPOSURE unknown

MERGENCY AND FIRST AID PROCEDURES
Remove contaminated clothing and flush affected area with copious amount of water. or eye contact, flush eyes with copious amount of water and seek medical attention. If inhaled, move to fresh air. If swallowed, seek medical aid.

SECTION VI - REACTIVITY DATA

TABILITY	UNSTABLE		CONDITIONS TO AVOID Incompatible with most rubber and elastomaric compounds.
	STABLE	X	

NCOMPATABILITY (Materials to avoid) Oxydizing materials

ZARDOUS DECOMPOSITION PRODUCTS Unknown.

HAZARDOUS OLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Less than 10 gallons, flush to chemical of municipal sewer leading to treatment facility. Large quantities, absorbed into clay, snad or earth, place into appropriate containers and dispose of as decsribed below.

ASTE DISPOSAL METHOD
Incinerate in an approved incinerator or take to a chemically secure land disposal site meeting RCRA Requirements and permitted to receive this materials.

SECTION VIII - SPECIAL PROTECTION INFORMATION

ESPIRATORY PROTECTION (Specify type)

VENTILATION	LOCAL EXHAUST Good Ventilation	SPECIAL
	MECHANICAL (General)	OTHER

ROTECTIVE GLOVES Butyl Rubber	EYE PROTECTION Goggles or Face Shield

OTHER PROTECTIVE EQUIPMENT

SECTION IX - SPECIAL PRECAUTIONS

RECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Avoid excessive storage temperatures.

OTHER PRECAUTIONS none.

SECTION V - HEALTH HAZARD DATA

RESHOLD LIMIT VALUE Unkown

FECTS OF OVEREXPOSURE May irritate skin or eyes. Dust may be irritating.

ERGENCY AND FIRST AID PROCEDURES Flush with water. Rinse eyes for 15 minutes.

If ingested, induce vomitting and contact a physician.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	

COMPATABILITY (Materials to avoid) Acids.

HAZARDOUS DECOMPOSITION PRODUCTS Will not occur.

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

TEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Sweep up.

WASTE DISPOSAL METHOD In accordance with local government regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

ESPIRATORY PROTECTION (Specify type) Dust mask needed if dust is excessive.

VENTILATION	LOCAL EXHAUST non-required		SPECIAL
	MECHANICAL (General)		OTHER
ROTECTIVE GLOVES rubber		EYE PROTECTION goggles or face shield	

OTHER PROTECTIVE EQUIPMENT None

SECTION IX - SPECIAL PRECAUTIONS

RECAUTIONS TO BE TAKEN IN HANDLING AND STORING Keep in dry atmosphere.

OTHER PRECAUTIONS

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME: Olsen Chemical Co., Inc.	EMERGENCY TELEPHONE NO.: 201-345-4000
ADDRESS (Number, Street, City, State, and ZIP Code): 62-64 East 26th Street, Paterson, New Jersey 07514	
CHEMICAL NAME AND SYNONYMS: N.A.	TRADE NAME AND SYNONYMS: OLCO-F.O.T. -Fuel Oil Treatment
CHEMICAL FAMILY: N.A.	FORMULA: N.A.

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
None		

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	Unk.	SPECIFIC GRAVITY (H_2O=1)	.88
VAPOR PRESSURE (mm Hg.)	Unk.	PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)	Unk.	EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER Moderate			
APPEARANCE AND ODOR Clear brown liquid with aromatic odor			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used): Greater than 1100 F Closed up	FLAMMABLE LIMITS: none flammable	Lel	Uel
EXTINGUISHING MEDIA: Water spray, CO_2 or chemical extinguisher			
SPECIAL FIRE FIGHTING PROCEDURES: As for petroleum fire. Material is combustible but not flammable.			
UNUSUAL FIRE AND EXPLOSION HAZARDS: Do not store or mix with strong oxidizing agents.	ATTACHMENT C-39		

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
100 PPM for 8 hour day.

EFFECTS OF OVEREXPOSURE
Headache, dizziness. Prolonged skin contact may cause dermatitis

EMERGENCY AND FIRST AID PROCEDURES
Evacuate to fresh air. If in eyes, flush 15 minutes with water. Call physician.

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		avoid temperature 110° F
	STABLE	X	

INCOMPATABILITY (Materials to avoid) Strong oxydizing agent

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	XX	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Clean-up procedures same as #2 Fuel Oil spilled. Cover with sand, earth or other absorbent materials and dispose of properly. Avoid flames or sparks. Ventilate area.

WASTE DISPOSAL METHOD

Do not release to water. Dispose as #2 Fuel Oil in a approved waste facility.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)
Good ventilation.

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General) Explosion Proof	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Solvent Resistant	face shield or goggles

OTHER PROTECTIVE EQUIPMENT
Protect skin, eyes, and clothing against contact for hydrocarbon solvents.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Keep drum closed. Avoid heat and flame. Do not store near strong oxidizing agent

OTHER PRECAUTIONS none

Form OSHA-20
Rev. May 72

ATTACHMENT C-40

SUPPLEMENTAL APPENDIX E
INVENTORY

ROHM AND HAAS COMPANY

CORPORATE PRODUCT INTEGRITY DEPARTMENT
INDEPENDENCE MALL WEST
PHILADELPHIA, PA 19105

EMERGENCY TELEPHONE
215-592-3000 (ROHM AND HAAS)
800-424-9300 (CHEMTREC)

HAZARD RATING
4=EXTREME
3=HIGH
2=MODERATE
1=SLIGHT
0=INSIGNIFICANT
*=SEE SECTION IV

FIRE 1 | TOXICITY 3 | SPE 0

MATERIAL SAFETY DATA SHEET

OSHA HAZARDOUS

LIST 7

MATERIAL	CODE	KEY	DOT HAZARD CLASS
TRITON® X-100 Surfactant	61572	904147-7	NONREGULATED
	DATE ISSUED 11/21/85		

FORMULA	CHEMICAL NAME OR SYNONYMS
C33.4 H60.8 O10.7	Octylphenoxypolyethoxyethanol nonionic surfactant

I — COMPOSITIONAL INFORMATION

	CAS REG. NO.	APPROX WT %	TWA/TLV R&H	OSHA	ACGIH
Octylphenoxypolyethoxyethanol	9036-19-5	100	NE	NE	NE

II — PHYSICAL PROPERTY INFORMATION

APPEARANCE · ODOR · pH	VISCOSITY
Clear viscous liquid; mild odor; pH of (5%) 6-8	240 cps Brookfield

MELTING OR FREEZING POINT	BOILING POINT	VAPOR PRESSURE (mm Hg)	VAPOR DENSITY (AIR=1)
7C/45F pour point	270C/520F	<1 @20C/68F	>1
SOLUBILITY IN WATER	**PERCENT VOLATILE (BY WEIGHT)**	**SPECIFIC GRAVITY (WATER=1)**	**EVAPORATION RATE (BUTYL ACETATE)**
Complete	0	1.07	<1

III — FIRE AND EXPLOSION HAZARD INFORMATION

FLASH POINT	AUTO IGNITION TEMPERATURE	LOWER EXPLOSION LIMIT (%)	UPPER EXPLOSION LIMIT (%)
288C/550F COC	NA	NA	NA

EXTINGUISHING MEDIA

[X] FOAM [ ] "ALCOHOL" FOAM [X] CO_2 [X] DRY CHEMICAL [X] WATER SPRAY [ ] OTHER

SPECIAL FIRE-FIGHTING PROCEDURES

Wear respirator (pressure-demand, self-contained breathing apparatus, MSHA/NIOSH-approved equivalent) and full protective gear.

UNUSUAL FIRE AND EXPLOSION HAZARDS

IV — HEALTH HAZARD INFORMATION

ROHM AND HAAS RECOMMENDED WORK PLACE EXPOSURE LIMITS

EFFECTS OF OVEREXPOSURE

Eye Contact: Severely irritating to eyes; possibly permanent injury.
Skin Contact: Moderately irritating to skin.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation: Move subject to fresh air. Give artificial respiration if breathing has stopp

Eye and Skin Contact: Flush eyes with a large amount of water for at least 15 minutes. Ge prompt medical attention. Flush skin thoroughly with water. Remove and wash clothing befor reuse.

ATTACHMENT C-42

Ingestion: If swallowed dilute by giving 2 glasses of water to drink. See a physician. Never give anything by mouth to an unconscious person.

MATERIAL SAFETY DATA

I PRODUCT IDENTIFICATION

UFACTURER'S NAME	Ralston Purina Company	REGULAR TELEPHONE NO EMERGENCY TELEPHONE NO	314-982-1186
RESS	Checkerboard Square, St. Louis, MO 63188		
RADE NAME	PRO-COTE 150, 180, 183, 183Z, 200		
ONYMS	"Coating Binder"		
PPING ME[1]	DOT: Paste:Flour (Dry Paste Flour)		
	IATA: Paste:Flour (Dry Paste Flour)		

II HAZARDOUS INGREDIENTS[2]

MATERIAL OR COMPONENT	CAS NO.	%	HAZARD DATA
N/A			

III PHYSICAL DATA

OILING POINT 760 MM HG	N/A	MELTING POINT	N/A
ECIFIC GRAVITY (H_2O = 1)	1.38 (Bulk Density 40-45#/ft^3)	VAPOR PRESSURE	N/A
APOR DENSITY (AIR = 1)	N/A	SOLUBILITY IN H_2O % BY WT	Limited at neutral pH
VOLATILES BY VOL	N/A	EVAPORATION RATE (BUTYL ACETATE = 1)	N/A
PPEARANCE AND ODOR	Course-Light tan powder Odor-Slight grain	Ph (AS IS) N/A Ph (1% SOLN.) 4.5-4.8	

IV FIRE AND EXPLOSION DATA

ASH POINT (EST METHOD)	N/A	AUTOIGNITION TEMPERATURE	N/A
AMMABLE LIMITS IN AIR % BY VOL	LOWER N/A	UPPER N/A	
EXTINGUISHING MEDIA	Water, CO_2, etc.		
PECIAL FIRE FIGHTING PROCEDURES	Conventional		
UNUSUAL FIRE AND EXPLOSION HAZARD	None		

ATTACHMENT C-43

HEALTH HAZARD DATA	HAZARD CLASSIFICATION	BASIS FOR CLASSIFICATION	SOURCE
ROUTES OF EXPOSURE INHALATION	N/A	N/A	N/A
SKIN CONTACT	N/A	N/A	N/A
SKIN ABSORPTION	N/A	N/A	N/A
EYE CONTACT	N/A	N/A	N/A
INGESTION	N/A	N/A	N/A

EFFECTS OF OVEREXPOSURE N/A

ACUTE OVEREXPOSURE N/A

CHRONIC OVEREXPOSURE N/A

EMERGENCY AND FIRST AID PROCEDURES

EYES N/A

SKIN N/A

INHALATION N/A

INGESTION N/A

NOTES TO PHYSICIAN N/A

ATTACHMENT C-44

DITIONS CONTRIBUTING TO INSTABILITY

N/A

OMPATIBILITY

Strong Oxidizing Agents

ARDOUS DECOMPOSITION PRODUCTS

N/A

DITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

N/A

VII DISPOSAL, SPILL OR LEAK PROCEDURES

ATIC TOXICITY (LC 50 HR TLM)

None

TE DISPOSAL METHOD

Normal--As with any non-hazardous material

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Sweep up and discard.

TRALIZING CHEMICALS

Water

VIII SPECIAL PROTECTION INFORMATION

ILATION REQUIREMENTS

Standard for non-toxic, dusty materials

PERSONAL PROTECTIVE EQUIPMENT

Dust Mask If Desired

RATORY (SPECIFY IN DETAIL)

E

N/A

CES

N/A

CLOTHING AND EQUIPMENT

N/A

ATTACHMENT C-45

IX SPECIAL PRECAUTIONS

AUTIONARY MENTS

None

ER HANDLING AND GE REQUIREMENTS None

Keep Dry

TIONAL REGULATORY CONCERNS

FEDERAL

FDA

USDA

CPSC

TSCA

OTHER

STATE

FDA: The PRO-COTE products we sell are in compliance with all federal laws and regulations within the meaning of the Federal Food, Drug and Cosmetic Act and the implementing FDA regulations as applicable to paper coating components including generally recognized as safe (GRAS) status for Substances Migrating to Food from Paper and Paperboard Products (21 CFR, § 182.90) and for use in Resinous and Polymeric Coating (21 CFR, § 175.300(b)(1) and (2)).

IS THIS PRODUCT, OR ALL ITS INGREDIENTS, BEING CERTIFIED FOR INCLUSION ON THE TOXIC SUBSTANCES CONTROL ACT INVENTORY OF CHEMICAL SUBSTANCES: Yes

TSCA: Pertaining to this products, the remainder of our product lines and all substances used in our products, we do certify that all have been properly registered in the initial inventory of chemical substances through EPA. Whereas some of our products are mixtures of listed ingredients, the majority fall under the designation of PRO-COTE which is listed in the Trademark and Product Names section and falls under the CAS Registry No. of 68153-28-6 (soy protein isolate).

PREPARED BY R. O. Summers

TITLE Quality Assurance Manager, Polymer Division

COMPANY Ralston Purina Company

Checkerboard Sq. Plaza St. Louis, MO 63188

ATTACHMENT C-46

6202-04-06-82

CALGON CORPORATION
SUBSIDIARY OF MERCK & CO., INC.

PRODUCT NAME	METASOL D3T		
MANUFACTURER'S NAME	Calgon Corporation	EMERGENCY TELEPHONE NO.	(412) 777-8000
ADDRESS	P. O. Box 1346, Pittsburgh, Pennsylvania 15230		
CHEMICAL NAME AND SYNONYMS	Thiadiazine	FORMULA	Biocide

SECTION II — HAZARDOUS INGREDIENTS

PRINCIPAL HAZARDOUS COMPONENT (S)	%	ORAL LD_{50}	DERMAL LD_{50}	TLV (Units)
Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione	98	Rat (1) 500 mg/kg	Unknown	N/A

(1) NIOSH Registry of Toxic Effects of Chemical Substances, 1979

SECTION III — PHYSICAL DATA

BOILING POINT (°F)	Solid	SPECIFIC GRAVITY (H_2O=1)	Solid
VAPOR PRESSURE (mmHg.)	Solid	PERCENT VOLATILE BY VOLUME (%)	Solid
VAPOR DENSITY (AIR=1)	Solid	pH	Solid
SOLUBILITY IN WATER	Slight	Melting Point	100 - 103°C

APPEARANCE AND ODOR: Off-white crystalline powder, practically odorless

SECTION IV — FIRE AND EXPLOSION HAZARD DATA

			Lel	Uel
FLASH POINT (Method Used)	None	FLAMMABLE LIMITS		

EXTINGUISHING MEDIA: Will not burn; may release toxic or corrosive materials if container is destroyed.

SPECIAL FIRE FIGHTING PROCEDURES: Use self-contained breathing apparatus and full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

ATTACHMENT C-47

While this information and recommendations set forth herein are believed to be accurate as of the date hereof, CALGON CORPORATION MAKES NO WARRANTY WITH RESPECT HERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME: Thiele Kaolin Company	EMERGENCY TELEPHONE NO.: (912) 552-3951
ADDRESS (Number, Street, City, State, and ZIP Code): P. O. Box 1056, Kaolin Road, Sandersville, GA 31082	
CHEMICAL NAME AND SYNONYMS: Kaolin	TRADE NAME AND SYNONYMS: All Thiele Grades
CHEMICAL FAMILY: Clay	FORMULA: $Al_2O_3 \cdot 2SiO_2 \cdot 2H_2O$

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
The above product is not a hazardous material under current Department		
of Labor definitions.		

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	Solid	SPECIFIC GRAVITY (H_2O=1)	2.60
VAPOR PRESSURE (mm Hg.)	Solid	PERCENT, VOLATILE BY VOLUME (%)	N.A.
VAPOR DENSITY (AIR=1)	N.A.	EVAPORATION RATE (_____ =1)	N.A.
SOLUBILITY IN WATER	N.A.		
APPEARANCE AND ODOR	Off-White		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA: No fire or explosion hazard			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

ATTACHMENT C-48

(Continued on reverse side)

Form OSHA-20
Rev. May 72

MEDICAL EMERGENCY ONLY, 24 HOUR SERVICE: 1-800-328-0026

ECONOMICS LABORATORY, INC.
St. Paul MN 55102

Product Information: 1-612-293-2233
Date of Issue: September 13, 1985

1.0 IDENTIFICATION /

1.1 Product Name: 145-NF
1.2 Product Type: Alkaline Felt and Wire Cleaner

2.0 HAZARDOUS INGREDIENTS /

	%	TLV (mg/m3) TWA	STEL
2.1 Sodium hydroxide (caustic soda) 1310-73-2	8	2 C	

This product contains no other ingredient considered hazardous according to the criteria of 29 CFR 1910.1200.

3.0 PHYSICAL DATA /

3.1 Appearance and Odor: Clear pale yellow liquid; sweet odor
3.2 Solubility in Water: Complete
3.3 pH: (1%) 11.9 - 12.3
3.4 Boiling Point: 212 deg F Specific Gravity: 1.105 @ 68 deg F

4.0 FIRE AND EXPLOSION DATA /

4.1 Special Fire Hazards: None
4.2 Fire Fighting Methods: Product does not support combustion.

5.0 REACTIVITY DATA /

5.1 Stability: Stable under normal conditions of handling.
5.2 Conditions to Avoid: Reacts violently with acids. Reacts with soft metals such as aluminum and zinc.

6.0 SPILL OR LEAK PROCEDURES / USE PROPER PROTECTIVE EQUIPMENT

6.1 Cleanup: Dike or dam large spills. Recover, pump to containers or soak up on inert absorbent. Flush residue to sewer with plenty of water.
6.2 Waste Disposal: 145-NF is Corrosive (D002) according to RCRA criteria.

UNK = Unknown at this time TLV = Threshold Limit Value
TWA = Time Weighted Average STEL = Short Term Exposure Level
C = Ceiling Limit, Not To Be Exceeded

MATERIAL SAFETY DATA SHEET

ECONOMICS LABORATORY, INC.
370 Wabasha St.
St. Paul, Minnesota 55102

929380
Product Name: MX-2043
Issue Date: 2/24/83

Emergency Phone No: (612)-293-2233

Section 1.00

N/A = Not Applicable

Chemical Name and Synonyms: N/A
Chemical Family: Detergent
Trade Name and Synonyms:

2.00 HAZARDOUS INGREDIENTS

Materials:	Approx. %	TLV Units

None - There are no hazardous ingredients in this product.

3.00 PHYSICAL DATA

Boiling Point: >200 deg F
Vapor Pressure: Unknown
Specific Gravity: 1.096
Appearance and Odor: Water white liquid; Sweet mildly irritating odor
Solubility in Water: Complete
Percent Volatiles by Volume: 45%
Vapor Density: 3.5
Evaporation Rate: (N-butyl acetate =1): <1
Other:

4.00 FIRE AND EXPLOSION HAZARD DATA

Flash Point: 185 deg F (Tag open cup)
Flammable Limits:
Lel - 1.5
Uel - 9.7
Extinguishing Media: Water, dry chemcial or carbon dioxide foam
Special Fire Fighting Procedures: None
Unusual Fire and Explosion Hazards:

5.00 HEALTH HAZARD DATA:

Threshhold Limit Value:

Effects of Overexposure:
Ingestion: Gastric discomfort. Eyes: Burning. Skin: Possible irritation. Inhalation: Headache, nausea.

Emergency First Aid and Procedures:
EXTERNAL: Immediately flush skin with plenty of water. EYES: Immediately flush with plenty of water for at least 15 minutes. INTERNAL: If swallowed, DO NOT induce vomiting. Immediately drink large quantity of water. INHALATION: Move to fresh air.

6.00 REACTIVITY DATA

Stability: Stable
Conditions to Avoid: Strong oxidizing chemcials
Incompatibility:
Hazardous Decomposition Products: Oxides of carbon

ATTACHMENT C-50

MATERIAL SAFETY DATA SHEET

MEDICAL EMERGENCY ONLY, 24 HOUR SERVICE: 1-800-328-0026

ECONOMICS LABORATORY, INC.
St. Paul MN 55102

Product Information: 1-612-293-2233
Date of Issue: September 13, 1985

1.0 IDENTIFICATION /

1.1 Product Name: 2015
1.2 Product Type: Repulping aid

2.0 HAZARDOUS INGREDIENTS /

	%	TLV (mg/m3) TWA	TLV (mg/m3) STEL
2.1 This product contains no ingredients considered hazardous according to the criteria of 29 CFR 1910.1200.			

3.0 PHYSICAL DATA /

3.1 Appearance and Odor: Clear, water-white to yellow liquid
3.2 Solubility in Water: Insol.
3.3 pH: (5%) 4.5-7.0
3.4 Boiling Point: >400 F Specific Gravity: 0.97

4.0 FIRE AND EXPLOSION DATA /

4.1 Special Fire Hazards: None
4.2 Fire Fighting Methods: CO_2 and dry chemicals

5.0 REACTIVITY DATA /

5.1 Stability: Stable
5.2 Conditions to Avoid: Avoid contact with oxidizers

6.0 SPILL OR LEAK PROCEDURES / USE PROPER PROTECTIVE EQUIPMENT

6.1 Cleanup: Dike or dam large spills. Recover, pump to containers or soak up on inert absorbent. Flush residue to sewer with plenty of water.
6.2 Waste Disposal: Consult state and local authorities for restrictions on disposal of chemical waste.

UNK = Unknown at this time TLV = Threshold Limit Value
TWA = Time Weighted Average STEL = Short Term Exposure Level
C = Ceiling Limit, Not To Be Exceeded

ATTACHMENT C-51

MATERIAL SAFETY DATA SHEET

ECONOMICS LABORATORY, INC.
370 Wabasha St.
St. Paul, Minnesota 55102

921619-01
Product Name: MX-2009
Issue Date: 5/17/82

Emergency Phone No: (612)-293-2233

Section 1.00

N/A = Not Applicable

Chemical Name and Synonyms: N/A
Chemical Family: Surfactant
Trade Name and Synonyms:

2.00 HAZARDOUS INGREDIENTS

Materials:	Approx. %	TLV Units

3.00 PHYSICAL DATA

Boiling Point: >212 Deg F
Vapor Pressure: Unknown
Specific Gravity: 1.045
Appearance and Odor: Clear, light amber viscous liquid; sweet odor
Solubility in Water: Complete
Percent Volatiles by Volume: 30.0
Vapor Density: Unknown
Evaporation Rate: (n-butyl aceate): <1
Other:

4.00 FIRE AND EXPLOSION HAZARD DATA

Flash Point: N/A
Flammable Limits: N/A
Lel - N/A
Uel - N/A
Extinguishing Media: N/A
Special Fire Fighting Procedures: None
Unusual Fire and Explosion Hazards: None

5.00 HEALTH HAZARD DATA:

Threshhold Limit Value:

Effects of Overexposure:
INGESTION: Gastric discomfort - diarrhea. EYES: Burning. SKIN CONTACT: Mild irritation (prolonged exposure).

Emergency First Aid and Procedures:
EXTERNAL: Immediately flush skin with plenty of cool running water for at least 15 minutes. Remove contaminated clothing and wash before reuse. EYES: Immediately flush with plenty of cool running water. Remove contact lenses, if applicable. Continue flushing for at least 15 minutes. INTERNAL: Call a physician immediately. If swallowed, DO NOT induce vomiting. Rinse mouth; then immediately drink 1 to 2 large glasses of water. Never give anything by mouth to an unconscious person. GET MEDICAL ATTENTION IMMEDIATELY.

ATTACHMENT C-52

MATERIAL SAFETY DATA SHEET

MEDICAL EMERGENCY ONLY, 24 HOUR SERVICE: 1-800-328-0026

ECONOMICS LABORATORY, INC.
St. Paul MN 55102

Product Information: 1-612-293-2233
Date of Issue: September 13, 1985

1.0 IDENTIFICATION /

1.1 Product Name: Driac
1.2 Product Type: Acid felt and wire cleaner

2.0 HAZARDOUS INGREDIENTS /

	%	TLV (mg/m3) TWA	TLV (mg/m3) STEL
2.1 Sodium Bisulfate 7681-38-1	100	1	UNK

3.0 PHYSICAL DATA /

3.1 Appearance and Odor: Off white powder; slight acid odor
3.2 Solubility in Water: Complete
3.3 pH: 1.4 (1%)

4.0 FIRE AND EXPLOSION DATA /

4.1 Special Fire Hazards: High temperatures may generate hazardous decomposition products including oxides of sulfur.
4.2 Fire Fighting Methods: Product does not support combustion.

5.0 REACTIVITY DATA /

5.1 Stability: Stable under normal conditions of handling.
5.2 Conditions to Avoid: Mix only with water. Can react violently with alkaline material. Do not mix with chlorinated detergents or sanitizers - will cause hazardous vapors.

6.0 SPILL OR LEAK PROCEDURES / USE PROPER PROTECTIVE EQUIPMENT

6.1 Cleanup: Pick up without raising dust. Flush area with water.
6.2 Waste Disposal: Consult state and local authorities for restrictions on disposal of chemical waste.

7.0 HEALTH HAZARD DATA / DANGER

7.1 Effects of Overexposure:
Skin and Eyes: CAUSES SEVERE CHEMICAL BURNS. Eye contact may cause blindness.
If Swallowed: HARMFUL OR FATAL. Causes chemical burns of mouth, throat and stomach.
If Inhaled: Vapors or mist cause irritation, including a burning taste, sneezing, coughing and difficulty breathing. People with asthma or other lung problems may be more susceptible.

UNK = Unknown at this time
TWA = Time Weighted Average
C = Ceiling Limit, Not To Be Exceeded
TLV = Threshold Limit Value
STEL = Short Term Exposure Level

ATTACHMENT C-53

MATERIAL SAFETY DATA SHEET

nd Shamrock Chemicals Company
s Chemicals Division
. Kemble Avenue
931
town, New Jersey 07960-1931

ight Health Hazard 1 Slightly Combustible 0 Nonreactive

tings based upon NIOSH "Identification System for Occupationally Hazardous Materials 974)."

TMENT OF TRANSPORTATION INFORMATION

OPER SHIPPING NAME:
Not Applicable

HAZARD CLASS:
Not Applicable

PRODUCT IDENTIFICATION

ufacturer's Name
AMOND SHAMROCK CHEMICALS COMPANY

Regular Telephone No. 201/267-1000
Chemtrec Telephone No. 800/424-9300

ress
50 Mt. Kemble Avenue, CN 1931
rristown, New Jersey 07960-1931

duct Name
DAMASTER(R) DF-120

HAZARDOUS INGREDIENTS

rial or component	%	Hazard Data
Blend of petroleum derivative and proprietary additives.	100	*PEL: 5 mg/m^3 (mist)

A Permissible Exposure Limit

PHYSICAL DATA

ling Point, 760 mm Hg
Not Available

Melting Point
Not Applicable

ecific Gravity (H_2O=1)
0.88

Freezing Point
26°F (-3°C)

or Pressure
Not Available

Vapor Density (Air = 1)
Not Available

ubility in H_2O, % by WT.
Dispersible

% Volatiles by Vol.
0.2

poration Rate (Butyl Acetate = 1)
Not Available

Density at 20°C
7.3 lb/gal

ATTACHMENT C-54

Appearance and Odor
Pale yellow liquid;
hydrocarbon odor

pH:
2%: 6.5

IV FIRE AND EXPLOSION DATA

DEVELOP EMERGENCY ACTION PLAN

Flash Point (Test Method)
240°F (116°C) PMCC

Autoignition Temperature
Not Available

Flammable Limits in Air, %by Vol.

Lower
Not Available

Upper
Not Available

Extinguishing Media
Water spray, CO_2, dry chemical.

Special Fire Fighting Procedures
Cool exposed containers with water spray. Self-contained breathing apparatus in confined areas.

Unusual Fire and Explosion Hazard
None

V HEALTH HAZARD INFORMATION

Routes of Exposure

Inhalation
Excessive inhalation of vapors or mist may cause irritation of respiratory tract, headache and dizziness. Prolonged exposure to aerosol or mist may cause lung inflammatory condition.

Skin Contact
May be irritating on prolonged contact.

Skin Absorption
Some absorption expected on prolonged contact. Not expected to be toxic.

Eye Contact
Mild transient irritation expected.

Ingestion
Not expected to be toxic. Aspiration pneumonia may occur should vomiting occur.

Effects of Overexposure

Acute Overexposure
Not expected to be toxic by any route of exposure under normal circumstances.

Chronic Overexposure
Prolonged exposure to mist or aerosol may cause lung inflammatory condition.

ency and First Aid Procedures

s:
Flush at once with large amounts of water for at least 15 minutes holding lids apart. Get medical attention.

kin:
Wash thoroughly with soap and water. Remove contaminated clothing. If irritation should develop, get medical attention.

nhalation:
Remove to fresh air.

ngestion:
DO NOT induce vomiting. If vomiting should occur spontaneously, keep airway clear. Get medical attention. Product may present an aspiration hazard. Never give anything by mouth to an unconscious person.

REACTIVITY DATA

nditions Contributing to Instability
one

compatibility
trong oxidizing agents.

azardous Decomposition Products
CO and CO_2 on burning.

nditions Contributing to Hazardous Polymerization
None

I SPILL OR LEAK PROCEDURES

eps to be Taken if Material is Released or Spilled
Soak-up with absorbent material and place in labeled waste container for disposal. Wear adequate personal protective clothing and equipment.

aste Disposal Method
Dispose of in approved chemical waste land-fill or incinerate in accordance with applicable Federal, State, and local regulations.

VIII INDUSTRIAL HYGIENE CONTROL MEASURES

entilation Requirements
Local exhaust ventilation recommended.

pecific Personal Protective Equipment
Respiratory (Specify in Detail)
Not required under normal use. NIOSH/MSHA approved respirator if necessary. Follow manufacturer's recommendation.

ATTACHMENT C-56

Eye
Chemical splash goggles or face shield.

Gloves
Rubber or plastic.

her Clothing and Equipment
Standard work clothing and work shoes.

SPECIAL PRECAUTIONS

cautionary Statements

CAUTION! MAY CAUSE IRRITATION

Avoid contact with eyes, skin and clothing.
Avoid breathing mist.
Wear chemical splash goggles, gloves and protective clothing when handling.
Use with adequate ventilation and employ respiratory protection where mist or spray may be generated.
Wash thoroughly after handling.

er Handling and Storage Requirements

orage
Product may congeal or stratify if cold. Warm to 122°F (50°C) and mix well before using.

posal
Dispose of in approved chemical waste landfill or incinerate in accordance with all Federal, State and local regulations.

pared by: William J. Meyers DATE: June 7, 1983

l information recommendations and suggestions appearing herein concerning our product are ed upon tests and data believed to be reliable. However, it is the user's ponsibility to determine the safety, toxicity, and suitability for his own use of the oduct described herein. Since the actual use by others is beyond our control, no arantee, expressed or implied, is made by Diamond Shamrock Chemicals Company as to the ects of such use, the results to be obtained, or the safety and toxicity of the product does Diamond Shamrock Chemicals Company assume any liability arising out of use, by hers, of the product referred to herein. The information herein is not to be construed absolutely complete since additional information may be necessary or desirable when ticular or exceptional conditions or circumstances exist or because of applicable laws government regulations.

ATTACHMENT C-57

MATERIAL SAFETY DATA SHEET

ond Shamrock Chemicals Company
ss Chemicals Division
t. Kemble Avenue
931
istown, New Jersey 07960-1931

gh Health Hazard 2 Moderately Combustible 1 Slightly Reactive

tings based upon NIOSH "Identification System for Occupationally Hazardous Materials
974)."

RTMENT OF TRANSPORTATION INFORMATION

ROPER SHIPPING NAME:
Sodium Hydrosulfite

HAZARD CLASS:
Flammable Solid, UN 1384

PRODUCT IDENTIFICATION

ufacturer's Name
DIAMOND SHAMROCK CHEMICALS COMPANY

Regular Telephone No. 201/267-1000
Chemtrec Telephone No. 800/424-9300

ess
350 Mt. Kemble Avenue, CN 1931
orristown, New Jersey 07960-1931

oduct Name
NOPCOWITE(R) 300-PS

HAZARDOUS INGREDIENTS

erial or component	%	Hazard Data
Stabilized Sodium Hydrosulfite	100	*PEL: None Established

HA Permissible Exposure Limit

PHYSICAL DATA

ling Point, 760 mm Hg
Not Applicable

Melting Point
Not Available

ecific Gravity (H_2O=1)
1.20

Freezing Point
Not Applicable

apor Pressure
Not Applicable

Vapor Density (Air = 1)
Not Applicable

olubility in H_2O, % by WT.
Forms clear solutions

Density at 20°C
10.0 lb/gal

vaporation Rate (Butyl Acetate = 1)
Not Applicable

% Volatiles by Vol.
Nil

ATTACHMENT C-58

arance and Odor
e powder; no distinct odor

pH
Not Available

FIRE AND EXPLOSION DATA

DEVELOP EMERGENCY ACTION PLAN

sh Point (Test Method)
Applicable

Autoignition Temperature
Not Applicable

mmable Limits in Air, % by Vol.

Lower
Not Applicable

Upper
Not Applicable

inguishing Media
uge with water to extinguish this material as it has its own oxygen supply, thus ing dry chemicals or CO_2 ineffective.

cial Fire Fighting Procedures
l exposed containers with water spray. Self-contained breathing apparatus in fined areas.

al Fire and Explosion Hazard
mmable solid. Heats spontaneously when in contact with water.

HEALTH HAZARD INFORMATION

th Hazard Data
ay cause irritation to mucous membranes of the body.

es of Exposure
nhalation
Will cause irritation of respiratory tract.

kin Contact
Moderate irritation which may produce severe irritation on prolonged contact.

in Absorption
No data available.

e Contact
May cause severe conjunctivitis and possible corneal damage.

gestion
May be severely irritating to mucous membranes of the mouth, throat, esophagus and stomach.

ects of Overexposure
Acute Overexposure
Irritating to skin and mucous membranes of eyes, respiratory tract and digestive tract.

Chronic Overexposure
Corrosive effects may result on prolonged tissue contact.

ATTACHMENT C-59

rgency and First Aid Procedures

es:
Flush immediately with large amounts of water for at least 15 minutes holding lids apart. Washing eyes within one minute is essential to achieve maximum effectiveness. Get immediate medical attention.

kin:
Wash thoroughly with plenty of soap and water. Remove contaminated clothing and footwear. Discard footwear contaminated on inner surface. Get medical attention.

Inhalation:
Remove to fresh air.

Ingestion:
DO NOT induce vomiting. Give large amounts of water followed by milk if available. If vomiting occurs spontaneously, keep airway clear. Get immediate medical attention. Never give anything by mouth to an unconscious person.

otes to Physician
Induction of vomiting may damage the gastrointestinal mucosa due to corrosivity of product. However, retention may promote the liberation of sulfurous acid with resultant gastric irritation and diarrhea. Gastric lavage should be considered, taking into account the amount of product swallowed as well as the corrosivity of the material.

A soothing ointment may be applied to irritated skin after thorough cleansing.

I REACTIVITY DATA

onditions Contributing to Instability
Stable under normal conditions.

compatibility
Avoid contact with moisture as this causes material to heat spontaneously. Avoid contact with strong oxidizing agents.

azardous Decomposition Products
Decomposes in water to form sulfur dioxide, sulfur trioxide, sodium sulfite, sodium thiosulfite.

onditions Contributing to Hazardous Polymerization
Not known to polymerize.

II SPILL OR LEAK PROCEDURES

teps to be Taken if Material is Released or Spilled
Sweep-up or vacuum into labeled waste container for disposal. Do not add to combustible organic material. Flush area with plenty of water. Dispose of contaminated water in accordance with applicable Federal, State and local regulations. Wear adequate personal protective clothing and equipment.

ATTACHMENT C-60

e Disposal Method
CRA hazardous ignitable waste (D001). Storage for prolonged periods (greater than 90 s) must meet requirements of the Environmental Protection Agency and the Resource nservation and Recovery Act. Large quantities may be buried in a chemical waste dfill that accepts flammable solids in accordance with applicable Federal, State, and al regulations. Small quantities may be sewered in accordance with applicable ederal, State and local regulations.

INDUSTRIAL HYGIENE CONTROL MEASURES

tilation Requirements
tal exhaust ventilation recommended.

cific Personal Protective Equipment
spiratory (Specify in Detail)
Use a NIOSH/MSHA approved respirator following manufacturer's recommendations.

ve
Face shield and goggles or chemical splash goggles.

loves
Rubber, neoprene or plain cloth gloves.

er Clothing and Equipment
Standard work clothing and work shoes. Wash contaminated clothing with soap and water and dry before reuse.

SPECIAL PRECAUTIONS

autionary Statements
ANGER
AUSES EYE BURNS
not get in eyes, on skin or on clothing.
void breathing dust.
o not take internally
se with adequate ventilation.
hen handling wear chemical splash goggles, gloves and protective clothing.
ash thoroughly after handling.
eep container closed.

her Handling and Storage Requirements

STORAGE AND DISPOSAL

rage
ay generate heat when wet. Store in a cool, dry place away from low flash point materials. Avoid exposure to atmosphere. Keep container tightly closed when not in se.

sposal
A RCRA hazardous ignitable waste (D001). Storage for prolonged periods (greater than 0 days) must meet the requirements of the Environmental Protection Agency and the Resource Conservation and Recovery Act. Large quantities may be buried in a chemical waste landfill that accepts flammable solids in accordance with applicable Federal, State and local regulations. Small quantities may be sewered in accordance with applicable Federal, State and local regulations.

ATTACHMENT C-61

DATE: March 9, 1983

fed by: William J. Meyers

information recommendations and suggestions appearing herein concerning our product are upon tests and data believed to be reliable. However, it is the user's nsibility to determine the safety, toxicity, and suitability for his own use of the ict described herein. Since the actual use by others is beyond our control, no ntee, expressed or implied, is made by Diamond Shamrock Chemicals Company as to the ts of such use, the results to be obtained, or the safety and toxicity of the product does Diamond Shamrock Chemicals Company assume any liability arising out of use, by rs, of the product referred to herein. The information herein is not to be construed solutely complete since additional information may be necessary or desirable when icular or exceptional conditions or circumstances exist or because of applicable laws overnment regulations.

ATTACHMENT C-62

MATERIAL SAFETY DATA SHEET

amond Shamrock Chemicals Company
ocess Chemicals Division
350 Mt. Kemble Avenue
N 1931
orristown, New Jersey 07960-1931

1 Slight Health Hazard | 1 Slightly Combustible | 0 Nonreactive

Ratings based upon NIOSH "Identification System for Occupationally Hazardous Materials (1974)."

EPARTMENT OF TRANSPORTATION INFORMATION

PROPER SHIPPING NAME:
Not Applicable

HAZARD CLASS:
Not Applicable

PRODUCT IDENTIFICATION

anufacturer's Name
DIAMOND SHAMROCK CHEMICALS COMPANY

Regular Telephone No. 201/267-1000
Chemtrec Telephone No. 800/424-9300

ddress
350 Mt. Kemble Avenue, CN 1931
Morristown, New Jersey 07960-1931

roduct Name
FOAMASTER(R) VF

I HAZARDOUS INGREDIENTS

Material or component	%	Hazard Data
Blend of petroleum derivative and proprietary additives	100	*PEL: 5 mg/m^3 (mist)

*OSHA Permissible Exposure Limit

II PHYSICAL DATA

Boiling Point, 760 mm Hg
Not Available

Melting Point
Not Applicable

Specific Gravity (H_2O=1)
0.92

Freezing Point
Not Available

Vapor Pressure
Not Available

Vapor Density (Air = 1)
Not Available

Solubility in H_2O, % by WT.
Dispersible

% Volatiles by Vol.
Nil

Evaporation Rate (Butyl Acetate = 1)
Not Available

Density at 20°C
7.7 lb/gal

ATTACHMENT C-63

Chronic Overexposure
Prolonged exposure to mist or aerosol may cause lung inflammatory condition.

Emergency and First Aid Procedures

Eyes:
Flush at once with large amounts of water for at least 15 minutes holding lids apart. Washing eyes within one minute is essential to achieve maximum effectiveness. Get medical attention.

Skin:
Wash with plenty of soap and water. Remove contaminated clothing. Wash clothing before reuse. Get medical attention if irritation should develop.

Inhalation:
Remove to fresh air.

Ingestion:
DO NOT induce vomiting. If vomiting occurs spontaneously, keep airway clear. Get medical attention. Never give anything by mouth to an unconscious person.

VI REACTIVITY DATA

Conditions Contributing to Instability
None

Incompatibility
Strong oxidizing agents.

Hazardous Decomposition Products
CO and CO_2 on burning.

Conditions Contributing to Hazardous Polymerization
None

VII SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled
Contain large spills and remove by vacuum truck. Soak-up small spills with absorbent material and place in labeled waste container for disposal. Wear adequate personal protective clothing and equipment.

Waste Disposal Method
Dispose of in approved chemical waste land-fill or incinerate in accordance with applicable Federal, State, and local regulations.

VIII INDUSTRIAL HYGIENE CONTROL MEASURES

Ventilation Requirements
Local exhaust ventilation recommended.

ATTACHMENT C-64

Process Chemicals Division
Diamond Shamrock Corporation
350 Mt. Kemble Avenue
Morristown, New Jersey 07960

Material Safety

Diamond Shamrock

GENERAL INFORMATION Felt Conditioner

Data Sheet

Rating based on NIOSH "Identification System for Occupationally Hazardous Materials" (1974).

I PRODUCT IDENTIFICATION

MANUFACTURER'S NAME: Diamond Shamrock Corporation	REGULAR TELEPHONE NO. 201-267-1000 EMERGENCY TELEPHONE NO. 201-267-1000
ADDRESS: 350 Mt. Kemble Avenue, Morristown, NJ 07960	
TRADE NAME: Feltmaster CLF	
SYNONYMS:	

II HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	%	HAZARD DATA
Sulfuric Acid	< 20	*PEL: 1 mg/m^3
Isobutyl Alcohol	< 20	*PEL: 100 ppm
Hydroxyacetic Acid	< 10	No PEL* Established
*OSHA Permissible Exposure Limit (PEL)		

III PHYSICAL DATA

BOILING POINT, 760 MM HG: N/D	MELTING POINT: N/A FREEZING POINT: N/D
SPECIFIC GRAVITY (H_2O=1): 1.07	VAPOR PRESSURE: N/D
VAPOR DENSITY (AIR=1): N/D	SOLUBILITY IN H_2O, % BY WT: 5% white emulsion
% VOLATILES BY VOL: 26	EVAPORATION RATE (BUTYL ACETATE=1): N/D
APPEARANCE AND ODOR: Light straw colored liquid	
pH: 5%: 1.3	

ATTACHMENT C-65

N/D = Not Determined N/A = Not Applicable

All information recommendations and suggestions appearing herein concerning our product are based upon tests and data believed to be reliable, however it is the user's responsibility to determine the safety, toxicity and suitability for his own use of the product described herein. Since the actual use by others is beyond our control, no guarantee expressed or implied, is made by Diamond Shamrock Corporation as to the effects of such use, the results to be obtained, or the safety and toxicity of the product nor does Diamond Shamrock Corporation assume any liability arising out of use by others of the product referred to herein. Nor is the information herein to be construed as absolutely complete since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations.

Data Sheet

IV FIRE AND EXPLOSION DATA

FLASH POINT (TEST METHOD)	AUTOIGNITION TEMPERATURE
104°F (40°C) PMCC	N/D

FLAMMABLE LIMITS IN AIR, % BY VOL	LOWER	UPPER
	N/D	N/D

EXTINGUISHING MEDIA

Foam, CO_2, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Cool exposed containers with water spray. Self-contained breathing apparatus in confined areas.

UNUSUAL FIRE AND EXPLOSION HAZARD Combustible Liquid. Acid components will attack metals releasing flammable hydrogen gas. Hazardous in contact with many organic materials such as cyanides and sulfides which liberate hydrogen cyanide and hydrogen sulfide.

V HEALTH HAZARD INFORMATION

HEALTH HAZARD DATA

Corrosive Liquid

ROUTES OF EXPOSURE

INHALATION Concentrated vapor may cause severe damage to upper respiratory tract. May also cause dizziness, nausea, headache, intoxication, weakness, fatigue, unconsciousness, asphyxiation and chemical pneumonitis.

SKIN CONTACT

Destructive to tissues contacted. Causes severe burns.

SKIN ABSORPTION

See "Skin Contact" above.

EYE CONTACT Destructive to eye tissue. Will cause extreme burns that may result in permanent damage and even blindness.

INGESTION Can cause burns of mucous membranes of gastrointestinal tract, nausea, vomiting and diarrhea if swallowed.

EFFECTS OF OVEREXPOSURE

ACUTE OVEREXPOSURE Burns, ulceration, scarring, blindness, dizziness, weakness, fatigue, nausea, vomiting, intoxication, diarrhea, asphyxiation.

CHRONIC OVEREXPOSURE Chronic local effect may consist of multiple areas of superficial destruction of skin or primary irritant dermatitis.

EMERGENCY AND FIRST AID PROCEDURES

EYES Get immediate medical attention. Immediately flush with large amounts of water, holding lids apart, for at least 15 minutes.

SKIN Wash area with plenty of water. Remove contaminated clothing and foot wear. Get medical attention.

INHALATION Remove to fresh air. Give oxygen if available. Get medical attention.

INGESTION DO NOT induce vomiting. Give large amounts of water followed by milk if available. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIAN

ATTACHMENT C-66

Data Sheet

VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

Avoid sources of ignition such as open flames, sparks or hot surfaces.

INCOMPATIBILITY

Organic materials, strong oxidizing agents, metals and finely divided combustible materials.

HAZARDOUS DECOMPOSITION PRODUCTS

CO, CO_2 and oxides of sulfur and nitrogen on burning.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

None

VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Stop leaks immediately. Contain by diking, then cover with alcohol foam. Pump into acid resistant container, label and place in safe area for disposal. Neutralize remaining traces with dry soda ash. Do not use vacuum trucks due to electrical ignition hazard. Wear adequate personal protective clothing and equipment.

NEUTRALIZING CHEMICALS

Dry soda ash, gorund limestone, hydrated builders lime.

WASTE DISPOSAL METHOD

Approved chemical waste land-fill in accordance with applicable local, state and federal regulations.

VIII INDUSTRIAL HYGIENE CONTROL MEASURES

VENTILATION REQUIREMENTS

Local exhaust ventilation recommended.

SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY (SPECIFY IN DETAIL)

NIOSH approved cartridge reapirator for acid vapors if necessary.

EYE

Chemical splash goggles or face shield.

GLOVES

Rubber or neoprene.

OTHER CLOTHING AND EQUIPMENT

Emergency showers and eye baths.

ATTACHMENT C-67

Data Sheet

IX SPECIAL PRECAUTIONS

PRECAUTIONARY STATEMENTS

DANGER! CAUSES SEVERE BURNS TO EYES AND SKIN

Do not get in eyes, on skin or on clothing.
Do not breathe mist, spray or vapor.
Use with adequate ventilation.
Employ respiratory protection when overexposed to mists.
Wear chemical splash goggles, face shield, rubber gloves and protective clothing when handling.
Wash thoroughly after handling.
Avoid contact with organic materials, strong oxidizers, metals and finely divided combustible materials.
Keep container closed when not in use.

OTHER HANDLING AND STORAGE REQUIREMENTS

Freezing does not damage product. If frozen, allow to warm to room temperature and mix well before using.

Store away from oxidizers, powdered metals and finely divided combustible materials. Do not smoke near open drums or tanks.

ATTACHMENT C-68

PREPARED BY William J. Meyers

DATE April 8, 1981

MATERIAL SAFETY DATA SHEET

CORPORATE HEALTH & SAFETY
WINDSOR, CT
Phone (203) 285-9693

MANUFACTURER — Georgia Kaolin Company, Inc.
ADDRESS — 2700 [illegible], 22 East
Union [illegible]
PHONE — 201-851-2800

SECTION I, MATERIAL IDENTIFICATION

Material Name: KCS-SD
CAS# 1332-58-7

HMIS RATINGS	
HEALTH HAZARD	0
FLAMMABILITY HAZARD	0
REACTIVITY HAZARD	0
MAX PERSONAL PROTECTION	E

SECTION II, INGREDIENT AND HAZARDS

	%	HAZARD DATA
Ingredient — Kaolin Clay	>97%	TLV for nuisance dust: 10 mg/m^3 of total dust <1% quartz (or 5mg/m^3 respirable dust).
Water	< 3%	
Predispersed: Sodium Polyacrylate/Soda Ash Dispersant Approx.	0.35%	
Undispersed: No dispersant		

SECTION III, PHYSICAL DATA

Boiling Point — Not Applicable

Specific Gravity of Kaolin - 2.62

Appearance & Odor - White, odorless powder

pH 20% aqueous suspension - Predispersed grades 6.0 - 7.5
- Undispersed grades 4.0 - 5.0

SECTION IV, FIRE AND EXPLOSION DATA

	LOWER	UPPER

Nonflammable, nonexplosive

SECTION V, HEALTH HAZARD INFORMATION TLV (See Sect. II)

Skin contact, skin absorption, eye contact, ingestion: Hazard Classification - None. Basis for classification: Historical. Emergency and First Aid Procedures: Eyes - flush with water. Inhalation: No acute effects. Classified as a nuisance dust by the American Conference of Governmental and Industrial Hygienists. Exposure to large quantities of kaolin over several years without use of a dust mask could affect respiratory function. See Am. Rev. Respir. Dis. 1983; 127:215-220; 231-235; 141-142.

ATTACHMENT C-69

COMBUSTION ENGINEERING

ATERIAL SAFETY DATA SHEET

CORPORATE HEALTH & SAFETY
WINDSOR, CT
Phone (203) 285-9693

MANUFACTURER — Georgia Kaolin Company, Inc.
ADDRESS — 2700 U.S. Highway 22 East
Union, NJ 07083
PHONE — 201 851-2800

ECTION I, MATERIAL IDENTIFICATION

Material Name: Premier SD
CAS# 1332-58-7

HMIS RATINGS

HEALTH HAZARD	0
FLAMMABILITY HAZARD	0
REACTIVITY HAZARD	0
MAX PERSONAL PROTECTION	E

ECTION II, INGREDIENT AND HAZARDS

	%	HAZARD DATA
Ingredient — Kaolin Clay	>97%	TLV for nuisance dust: 10 mg/m^3 of total dust <1% quartz (or 5mg./m^3 respirable dust).
Water	< 3%	
Predispersed: Sodium Polyacrylate/Soda Ash Dispersant Approx.	0.35%	
Undispersed: No dispersant		

SECTION III, PHYSICAL DATA

Boiling Point — Not Applicable

Specific Gravity of Kaolin - 2.62

Appearance & Odor - White, odorless powder

pH 20% aqueous suspension - Predispersed grades 6.0 - 7.5
- Undispersed grades 4.0 - 5.0

SECTION IV, FIRE AND EXPLOSION DATA

	LOWER	UPPER

Nonflammable, nonexplosive

SECTION V, HEALTH HAZARD INFORMATION TLV (See Sect. II)

Skin contact, skin absorption, eye contact, ingestion: Hazard Classification - None. Basis for classification: Historical. Emergency and First Aid Procedures: Eyes - flush with water. Inhalation: No acute effects. Classified as a nuisance dust by the American Conference of Governmental and Industrial Hygienists. Exposure to large quantities of kaolin over several years without use of a dust mask could affect respiratory function. See Am. Rev. Respir. Dis. 1983; 127:215-220; 231-235; 141-142.

ATTACHMENT C-70

COMBUSTION ENGINEERING

MATERIAL SAFETY DATA SHEET

DOC. NO: 10285 K02 PRODUCT GROUP: Wrens Waterwash

I. PRODUCT IDENTIFICATION

MANUFACTURERS NAME: J.M. HUBER CORPORATION - CLAY DIVISION
ADDRESS: Route 4 Macon, Georgia 31298
TELEPHONE NO.: (912) 745-4751

TRADE NAME/LABEL NAME: HYDRAGLOSS 90

CHEMICAL NAME/SYNONYMS: Kaolin; China Clay; Hydrated Aluminum Silicate

SHIPPING NAME: DOT: Not Restricted. IATA: Not Restricted.

II. HAZARDOUS INGREDIENTS

MATERIAL: Kaolin CAS NO. 1332-58-7

Kaolin is a naturally occurring mineral substance containing many ingredients in small but varying amounts. Kaolin dust is listed as a nuisance dust by the ACGIH when toxic impurities are not present (e.g. quartz less than 1%).

The possible health effects of kaolin dust as a whole have been the subject of several epidemiological studies. No study suggests that any particular ingredient in the mixture contributes identifiably to the possible health effects of the mixture as a whole.

II-a. OTHER INGREDIENTS

Additives or ingredients which may be present and which might be of industrial hygiene interest:

Bactericide(s)--Slurry shipments only. MSDS available on request.
Toxic effects shown below are for the concentrated (undiluted) bactericide.
Treatment levels in the slurry range from 100-500 ppm (as-is basis).

1. Nalco 7848, et al (3, 5, dimethyl - 1, 3, 5 2H tetrahydrothiadiazine-z-thione): Allergic sensitizer. May give off small quantities of ammonia, formaldehyde, dimethylamine, and other irritant gases. These gases could accumulate in the top of slurry tank cars in very low concentrations. Avoid breathing fumes when opening tank car hatches.
2. Proxel GXL, et al (1,2-benzisothiazolin-3-one) : Skin irritant. Contact sensitizer at 500 ppm of the pure active ingredient.
3. Vancide TH, et al (Hexahydro-1,3,5-triethyl-s-triazine) : Eye irritant. Acute oral LD50 = 0.516 ml/kg in rats (pure active ingredient). Decomposition products: ethylamine, and formaldehyde at pH less than 6.3.

Silica(quartz):
Inhalable silica (quartz) is not expected to be present in the dust from this product at levels exceeding 1%. If levels above 1% are detected then additional respiratory protective measures should be taken.

ATTACHMENT C-71

DOC. NO.: 10285 K02

III. HEALTH HAZARD DATA

ROUTE OF EXPOSURE	HAZARD DETERMINATION	BASIS FOR DETERMINATION
INHALATION	Nuisance Dust*	OSHA PEL= 15 mg/cu.meter(Total Dust). OSHA PEL= 5 mg/cu.meter(Respir. Dust).
INHALATION	Nuisance Dust*	ACGIH TLV= 10 mg/cu.meter(Total Dust). ACGIH TLV= 5 mg/cu.meter(Respir. Dust).

SOURCE: OSHA 29 CFR 1910.1000 Table Z-3.
SOURCE: ACGIH TLV's-Threshold Limit Values for Chem. Substances.

* ACGIH classifies kaolin as a nuisance dust when toxic impurities are not present (e.g. quartz less than 1%).

SKIN CONTACT	Non-hazardous	Historical
SKIN ABSORPTION	Non-hazardous	Historical
EYE CONTACT	Nuisance Dust	Historical
INGESTION	Non-hazardous	Historical

SOURCE: To the best of our knowledge no studies have been done on eye, skin or ingestion hazards.

EFFECTS OF ACUTE OVEREXPOSURE: No acute effects. Brief exposures to nuisance dust concentrations above the 8-hour recommended Threshold Limit Value (TLV) should pose no acute health problems.

EFFECTS OF CHRONIC OVEREXPOSURE: As is true with any kaolin clay, long term overexposure to high concentrations of this dust without the use of a dust mask may produce X-ray evidence of dust in the lungs. Continued long term overexposure may affect respiratory function in some individuals.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Unknown.

EMERGENCY AND FIRST AID PROCEDURES:
EYES AND SKIN: No special precautions; flush with water.
INHALATION AND INGESTION: No special precautions.

IV. PHYSICAL DATA

N.A.= Not Applicable

APPEARANCE AND ODOR: White Powder or Slurry with Negligible Odor.

BOILING POINT:N.A.

% VOLATILES BY VOL.: Slurry : 30%(+/-2%) Water. Powder : Negligible.

VAPOR PRESSURE:N.A.

SPECIFIC GRAVITY (Water = 1.0): 2.61

EVAPORATION RATE (BUTYL ACETATE=1):N.A.

MELTING POINT: Approx. 1700 Degrees C.

VAPOR DENSITY:N.A.

pH: 6.0 - 7.5 at 28% solids.

SOLUBILITY IN WATER:Negligible.

ATTACHMENT C-72

V. FIRE AND EXPLOSION DATA

FLASH POINT: None.
FLAMMABLE LIMITS IN AIR: N.A.
AUTOIGNITION TEMP.: None.

Kaolin is not a fire hazard or an explosive hazard in either the powder or slurry form. No special fire fighting procedures or extinguishing media are required.

VI. REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY: None.
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION: None.
HAZARDOUS DECOMPOSITION PRODUCTS: None for kaolin.

VII. DISPOSAL, SPILL OR LEAK PROCEDURES

AQUATIC TOXICITY: (96 hour TLm)
Aluminum III Silicate (2:1) -- over 1,000 ppm (insignificant hazard).
Hydrated Aluminum Silicate (Kaolin) -- Not listed.
Source: Registry of Toxic Effects of Chemicals (July, 1980)

WASTE DISPOSAL METHOD:
Kaolin is not classified as a hazardous waste under RCRA Section 3001. Use normal solid waste disposal procedures which are in compliance with Federal, State and Local Regulations.

SPILL OR LEAK PROCEDURES:
Kaolin is not classified as a "toxic pollutant" or a "hazardous substance" under Sections 307 and 311 of the Clean Water Act. Accidental releases can be cleaned up by sweeping, vacuuming or flushing with water.

NEUTRALIZING CHEMICALS: None Required.

VIII. SPECIAL PROTECTION INFORMATION

VENTILATION
Use sufficient general area ventilation. Local exhaust may be necessary where Threshold Limit Values (TLV's) are exceeded or dusty conditions exist.

PERSONAL PROTECTIVE EQUIPMENT:
EYE: Non-essential but desirable. GLOVES: Non-essential. OTHER: None.
RESPIRATORY PROTECTION: For dusty conditions wear a dust mask approved by NIOSH.

DOC. NO.: 10285 K02

IX. SPECIAL PRECAUTIONS

PRECAUTIONARY STATEMENTS/LABELING:
Kaolin accumulations on walking surfaces will cause very slippery conditions when wet.

O.S.H.A./ H.M.I.S. LABEL

HEALTH	= 0*	No Acute Effects.
FLAMMABILITY	= 0	None.
MAX. PERSONAL PROTECTION	= E*	Dust Mask.
REACTIVITY	= 0	None.

* See Material Safety Data Sheet. Prolonged breathing of excessive dust may affect lung function. Use dust mask for dusty conditions.

This product is labeled in accordance with OSHA's Hazard Communication Regulations (29 CFR 1910.1200) and the HMIS Rating System. For additional information on the HMIS Rating System, contact:

The National Paint and Coatings Association
1500 Rhode Island Ave., N.W.
Washington, D.C. 20005

ADDITIONAL REGULATORY CONCERNS:

FEDERAL:

FDA: Kaolin enjoys several sanctions under FDA Regulations. Please contact our Technical Services Department for more specific information.

USDA: None. CPSC: None. OTHER: None.

TSCA:
Is this product, or all its ingredients being certified for inclusion on the Toxic Substances Control Act Inventory of Chemical Substances? Yes.

OSHA:
Has this product, or any of its ingredients in concentrations above 0.1% been:
Listed in the NTP Annual Report on Carcinogens? No.
Found to be a potential carcinogen by OSHA or IARC? No.

STATE: Consult Local and State Hazard Communication Regulations.

FOR MORE INFORMATION CONTACT: Tech. Services Dept. PHONE: (912) 745-4751.
J.M. HUBER CORPORATION- CLAY DIVISION DATE: October 1, 1985.

The information contained in this Material Safety Data Sheet is believed to be reliable. No guarantee is implied or expressed regarding the accuracy of this information or the use of the product since the conditions for use are beyond our control. Nothing contained herein should be construed as a recommendation to use this product in conflict with existing patents covering any material or its use.

ATTACHMENT C-74

MATERIAL SAFETY DATA SHEET

I. PRODUCT IDENTIFICATION

MANUFACTURERS NAME: J.M. HUBER CORPORATION - CLAY DIVISION
ADDRESS: Route 4 Macon, Georgia 31298
TELEPHONE NO.: (912) 745-4751

TRADE NAME/LABEL NAME: HYDRAFINE

CHEMICAL NAME/SYNONYMS: Kaolin; China Clay; Hydrated Aluminum Silicate

SHIPPING NAME: DOT: Not Restricted. IATA: Not Restricted.

II. HAZARDOUS INGREDIENTS

MATERIAL: Kaolin CAS NO. 1332-58-7

Kaolin is a naturally occurring mineral substance containing many ingredients in small but varying amounts. Kaolin dust is listed as a nuisance dust by the ACGIH when toxic impurities are not present (e.g. quartz less than 1%).

The possible health effects of kaolin dust as a whole have been the subject of several epidemiological studies. No study suggests that any particular ingredient in the mixture contributes identifiably to the possible health effects of the mixture as a whole.

II-a. OTHER INGREDIENTS

Additives or ingredients which may be present and which might be of industrial hygiene interest:

Bactericide(s)--Slurry shipments only. MSDS available on request.
Toxic effects shown below are for the concentrated (undiluted) bactericide. Treatment levels in the slurry range from 100-500 ppm (as-is basis).

1. Nalco 7848, et al (3, 5, dimethyl - 1, 3, 5 2H tetrahydrothiadiazine-z-thione): Allergic sensitizer. May give off small quantities of ammonia, formaldehyde, dimethylamine, and other irritant gases. These gases could accumulate in the top of slurry tank cars in very low concentrations. Avoid breathing fumes when opening tank car hatches.
2. Proxel GXL, et al (1,2-benzisothiazolin-3-one) : Skin irritant. Contact sensitizer at 500 ppm of the pure active ingredient.
3. Vancide TH, et al (Hexahydro-1,3,5-triethyl-s-triazine) : Eye irritant. Acute oral LD50 = 0.316 ml/kg in rats (pure active ingredient). Decomposition products: ethylamine, and formaldehyde at pH less than 6.3.

Silica(quartz):
Inhalable silica (quartz) is not expected to be present in the dust from this product at levels exceeding 1%. If levels above 1% are detected then additional respiratory protective measures should be taken.

DOC. NO.: 10285 K01

III. HEALTH HAZARD DATA

ROUTE OF EXPOSURE	HAZARD DETERMINATION	BASIS FOR DETERMINATION
INHALATION	Nuisance Dust*	OSHA PEL= 15 mg/cu.meter(Total Dust). OSHA PEL= 5 mg/cu.meter(Respir. Dust).
INHALATION	Nuisance Dust*	ACGIH TLV= 10 mg/cu.meter(Total Dust). ACGIH TLV= 5 mg/cu.meter(Respir. Dust).

SOURCE: OSHA 29 CFR 1910.1000 Table Z-3.
SOURCE: ACGIH TLV's-Threshold Limit Values for Chem. Substances.

* ACGIH classifies kaolin as a nuisance dust when toxic impurities are not present (e.g. quartz less than 1%).

SKIN CONTACT	Non-hazardous	Historical
SKIN ABSORPTION	Non-hazardous	Historical
EYE CONTACT	Nuisance Dust	Historical
INGESTION	Non-hazardous	Historical

SOURCE: To the best of our knowledge no studies have been done on eye, skin or ingestion hazards.

EFFECTS OF ACUTE OVEREXPOSURE: No acute effects. Brief exposures to nuisance dust concentrations above the 8-hour recommended Threshold Limit Value (TLV) should pose no acute health problems.

EFFECTS OF CHRONIC OVEREXPOSURE: As is true with any kaolin clay, long term overexposure to high concentrations of this dust without the use of a dust mask may produce X-ray evidence of dust in the lungs. Continued long term overexposure may affect respiratory function in some individuals.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Unknown.

EMERGENCY AND FIRST AID PROCEDURES:
EYES AND SKIN: No special precautions; flush with water.
INHALATION AND INGESTION: No special precautions.

IV. PHYSICAL DATA

N.A.= Not Applicable

APPEARANCE AND ODOR: White Powder or Slurry with Negligible Odor.

BOILING POINT:N.A.

% VOLATILES BY VOL.: Slurry : 30%(+/-2%) Water. Powder : Negligible.

VAPOR PRESSURE:N.A.

SPECIFIC GRAVITY (Water = 1.0): 2.61

EVAPORATION RATE (BUTYL ACETATE=1):N.A.

MELTING POINT: Approx. 1700 Degrees C.

VAPOR DENSITY:N.A.

pH: 6.0 - 7.5 at 28% solids.

SOLUBILITY IN WATER:Negligible.

ATTACHMENT C-76

DOC. NO.: 10285 K01

V. FIRE AND EXPLOSION DATA

AUTOIGNITION TEMP.: None.

FLASH POINT: None.
FLAMMABLE LIMITS IN AIR: N.A.

Kaolin is not a fire hazard or an explosive hazard in either the powder or slurry form. No special fire fighting procedures or extinguishing media are required.

VI. REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY: None.
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION: None.
HAZARDOUS DECOMPOSITION PRODUCTS: None for kaolin.

VII. DISPOSAL, SPILL OR LEAK PROCEDURES

AQUATIC TOXICITY: (96 hour TLm)
Aluminum III Silicate (2:1) -- over 1,000 ppm (insignificant hazard).
Hydrated Aluminum Silicate (Kaolin) -- Not listed.
Source: Registry of Toxic Effects of Chemicals (July, 1980)

WASTE DISPOSAL METHOD:
Kaolin is not classified as a hazardous waste under RCRA Section 3001. Use normal solid waste disposal procedures which are in compliance with Federal, State and Local Regulations.

SPILL OR LEAK PROCEDURES:
Kaolin is not classified as a "toxic pollutant" or a "hazardous substance" under Sections 307 and 311 of the Clean Water Act. Accidental releases can be cleaned up by sweeping, vacuuming or flushing with water.

NEUTRALIZING CHEMICALS: None Required.

VIII. SPECIAL PROTECTION INFORMATION

VENTILATION
Use sufficient general area ventilation. Local exhaust may be necessary where Threshold Limit Values (TLV's) are exceeded or dusty conditions exist.

PERSONAL PROTECTIVE EQUIPMENT:
EYE: Non-essential but desirable. GLOVES: Non-essential. OTHER: None.
RESPIRATORY PROTECTION: For dusty conditions wear a dust mask approved by NIOSH.

ATTACHMENT C-77

IX. SPECIAL PRECAUTIONS

PRECAUTIONARY STATEMENTS/LABELING:

Kaolin accumulations on walking surfaces will cause very slippery conditions when wet.

O.S.H.A./ H.M.I.S. LABEL

HEALTH	= 0*	No Acute Effects.
FLAMMABILITY	= 0	None.
MAX. PERSONAL PROTECTION	= E*	Dust Mask.
REACTIVITY	= 0	None.

* See Material Safety Data Sheet. Prolonged breathing of excessive dust may affect lung function. Use dust mask for dusty conditions.

This product is labeled in accordance with OSHA's Hazard Communication Regulations (29 CFR 1910.1200) and the HMIS Rating System. For additional information on the HMIS Rating System, contact:

The National Paint and Coatings Association
1500 Rhode Island Ave., N.W.
Washington, D.C. 20005

ADDITIONAL REGULATORY CONCERNS:

FEDERAL:

FDA: Kaolin enjoys several sanctions under FDA Regulations. Please contact our Technical Services Department for more specific information.

USDA: None. CPSC: None. OTHER: None.

TSCA:

Is this product, or all its ingredients being certified for inclusion on the Toxic Substances Control Act Inventory of Chemical Substances? Yes.

OSHA:

Has this product, or any of its ingredients in concentrations above 0.1% been:

Listed in the NTP Annual Report on Carcinogens? No.
Found to be a potential carcinogen by OSHA or IARC? No.

STATE: Consult Local and State Hazard Communication Regulations.

FOR MORE INFORMATION CONTACT: Tech. Services Dept. PHONE: (912) 745-4751.
J.M. HUBER CORPORATION- CLAY DIVISION DATE: October 1, 1985.

The information contained in this Material Safety Data Sheet is believed to be reliable. No guarantee is implied or expressed regarding the accuracy of this information or the use of the product since the conditions for use are beyond our control. Nothing contained herein should be construed as a recommendation to use this product in conflict with existing patents covering any material or its use.

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ATTACHMENT D

waste. It is defined as the amount of oxygen required by the living organisms engaged in the utilization and stabilization of the organic matter in the waste. TSS, as the name implies, measures the quantity of solids suspended in the effluent stream.

Hazardous Substances

A preliminary review of the inventory of chemicals present at Berles on June 1, 1984, and during the RSI site visit revealed only six substances considered hazardous under ECRA. Due to time constraints, the chemical identification of all the trade names on the inventory list was not possible. However, it is probable that less than six others, all present in small quantities, may turn out to be "hazardous." The six compounds known to be classified as hazardous are ammonia, sulfuric acid, sodium hydroxide (caustic soda), waste oil (from the machine shop), no. 4 and no. 6 fuel oil, and aluminum sulfite. It should be noted that aluminum sulfite is not on the ECRA list of hazardous compounds, but aluminum sulfate is. The compounds are closely related, but the sulfite is less hazardous than the sulfate. For the purposes of the clean up, they will be treated as equivalent.

Except for the fuel oil, waste oil, and sodium hydroxide, which is used in the boiler, all the determined and potential hazardous substances at the facility are used in the process. When the plant was active, the process substances would have been found in two forms, as raw materials and in the wastewater effluent. At present, 110 gallons of ammonia, 200 gallons of sulfuric acid, and 2000 pounds of aluminum

ATTACHMENT D-1

sulfite remain, according to the inventory. All residuals of these materials would have been washed away with the wastewater effluent.

The hazardous process chemicals used at the facility, including those whose precise chemical identities have not yet been determined, are all either corrosive or acutely toxic. Sulfuric acid is corrosive as is aluminum sulfite, which is essentially the weaker, sulfurous acid. Ammonia is acutely toxic. Acute toxicity means that the compound shows its poisonous nature immediately when a threshold level is exceeded. Because the hazardous effects of corrosives and acutely toxic materials depend on their concentrations, they are allowed to be put into the wastewater effluent without treatment in dilute forms. None of the process chemicals at the facility show chronic toxicity, i.e., toxic effects due to long term exposures to subthreshold levels.

Only a small quantity of waste oil remains in the machine shop. It is currently sitting in the sump pans under a few pieces of equipment. It is estimated that less than one 55-gallon drum of this material remains on-site. The toxicity of waste oil is generally chronic, and is due to the small quantities of additives. Without analysis, it is impossible to predict the source of the hazard from this waste oil, however the small quantity present should not present a great risk.

The remaining hazardous substances are in or near the boiler room. Two hundred and five pounds of sodium hydroxide are in containers near the back up boiler. This material is a corrosive. Fuel oil was stored in three tanks underground near the boiler room. Two 30,000-gallon tanks contained no. 6 fuel oil, while one 10,000-gallon tank contained no. 4 fuel oil. The reusable oil and the underlying sludge

ATTACHMENT D-2

have been removed from these tanks by Active Oil Service of Newark. According to Mr. Ledoux, the residual oil in the tanks was "squeegeed" off the walls and removed. Fuel oil is a blend of numerous organic compounds and additives. Some of these are acutely toxic and some show chronic toxicity. However, all are present as small fractions of the total.

As indicated in the chemical inventory (Appendix A), numerous other barrels and bags of raw materials remain on-site. None of these are considered hazardous under ECRA. Some of the materials present in the largest quantities include starch (9200 pounds), kaolin (17,950 pounds) which is a type of clay, and titanium (under various names) which is a non-toxic white pigment.

Preliminary Clean Up Plan

From the above discussion it is clear that the hazardous substance clean up required by ECRA will focus on three areas:

- the hazardous raw materials
- the waste oil
- the fuel oil and underground tanks

Each area will be addressed separately.

Before RSI was asked to consult on the clean up, the New Jersey Department of Environmental Protection (NJ DEP) was requested by Mr. Jeffrey Sakal, Esq., of Wolff & Samson, to inspect the facility and provide a preliminary clean up cost estimate (Appendix C). Mr. Anthony McMahon of the NJ DEP inspected the site and provided a a cost estimate of $250,000. This estimate was a "worst case scenario" based on the presence of about "100 55-gallon drums on-site, poor

ATTACHMENT D-3

housekeeping practices, some floor staining indicating spills and at least one underground storage tank" (Appendix C). As discussed above, most of the drums on site contain nonhazardous materials. Fortunately, the poor housekeeping practices do not concern hazardous substances. The floor staining has the appearance of rust. The hazardous substances at the facility would probably not cause such staining, rather, it could be due to a nonhazardous resin or other innocous material. As indicated, there are actually three underground tanks. The considerably smaller clean up cost estimate, that is presented here, is due to the fact that most of the concerns expressed by the NJ DEP reflect the poor housekeeping at the facility and their lack of detailed information.

Hazardous raw materials

The hazardous raw materials at the facility are contained in their original packages. RSI saw no evidence that the barrels containing hazardous materials were leaking or corroding. It is probably also a reasonable asumption that since these are regularly used materials, the containers currently on-site have not been there for very long. The simplest method of disposing of these materials will be by selling them with the plant or in separate lots. The materials are commonly used and have value. Barring this, it is suggested that the materials be returned to the vendor for resale. A third alternative disposal mechanism would be to neutralize the corrosives (the acids and caustics), dilute the ammonia and other acutely toxic hazardous substances to acceptable levels, and dispose of them to the sewer. This disposal would not present a different

ATTACHMENT D-4

quality wastewater effluent than was generated during the plant's operation. Disposal to the sewer would entail a charge from the sewer commission, but this should be relatively small. The worst and most expensive method of disposing of these materials would be to treat them as hazardous wastes and have them disposed of or neutralized by an outside contractor. This could entail meeting New Jersey hazardous waste regulations, and, depending on the method of disposal, could lead to future liabilities.

The best methods of disposing of the hazardous raw materials will create income for Berles. Disposal to the sewer will cost a maximum of $1000, and probably much less.

Waste oil

Disposal of the waste oil from the machine shop must be done by a licensed disposal service since waste oil is regulated as a hazardous waste in New Jersey. The disposal process will involve draining the oil from the sump pans into an approved 55-gallon drum. There appears to be considerably less than 55 gallons of waste oil in the machine shop. It would be best if the contractor was able to process the oil for recycling, which will depend on the make-up of the oil. However, due to the small quantity, no disposal mechanism will be very expensive. Disposal of the waste oil should cost a maximum of $1000, and probably much less.

Fuel oil and underground tanks

The three underground tanks have already been emptied of their fuel oil and sludge by Active Oil Service. According to Mr. Ledoux,

ATTACHMENT D-5

the walls of the tanks have been wiped clean. The ECRA regulations require that all underground tanks that contained hazardous substances must be pressure tested to determine if they had leaked. The pressure testing methods are specified in the regulations, and a list of acceptable contractors is supplied. Pressure testing of the three tanks should cost approximately $1500. If the tanks prove to be intact, this is all the clean up that needs to be done.

The pressure tests may indicate that one or more of the underground tanks has a leak. If so, further clean up will be required. However, the high viscosity of the fuel oils used means that movement of any leakage should have been very slow or negligible. Clean up should be relatively simple. The leaking tank will be exhumed. The soils in the excavation will be examined for the presence of leaked fuel oil, which can be done by sight, smell, various equipment that detects the presence of organic vapors, chemical analysis, or a combination thereof. Contaminated soil will be removed, put in appropriate containers, and disposed of at a facility having a permit to accept such waste. Depending on the quantity of soil and the extent of contamination, disposal can be by incineration or in a landfill. As a worst case, if all three tanks need to be removed and a substantial quantity of contaminated soil is discovered, it is estimated that this effort will cost $50,000. If the facility is bought entire, with the intent to continue operations, any exhumed fuel tank will need to be replaced. For ECRA purposes, the excavations only need to be filled with clean fill.

ATTACHMENT D-6

Summary

The clean up of the Berles facility to ECRA specifications is estimated to cost less than $20,000, and probably less than $10,000. This cost includes sale or disposal of the hazardous raw materials, clean up and disposal of the waste oil in the machine shop, and pressure testing of the underground fuel tanks. If one or more of the tanks is found to have a leak, the cost will increase, but it still will be considerably less than the $250,000 estimate given by the NJ DEP.

The ECRA regulations request a soil and groundwater sampling plan be implemented as part of the development of the clean up plan. RSI believes that such a sampling program, which can be costly, is not necessary for this site. All the property is paved or covered with buildings except for a very small area next to Route 20. All drains in the plant led to the sewer, making the probability negligible that any spilled or leaked material had entered the ground (other than the fuel oil discussed above). Usuable ground water under the property appears to be very deep, since the company wells draw on water 300-400 feet down. Also, except for the fuel oil, no materials used in quantity would present a risk of environmental impairment from a gradual leak into the ground. The materials would probably have been considerably diluted and neutralized.

Based on the documentation provided by Berles and the site visit of the facility, RSI believes that the three areas outlined represent the only tasks necessary for compliance with the ECRA regulations. The clean up cost estimate presented has been based on that belief. It should be noted that the cost could vary, in either direction, based

ATTACHMENT D-7

on additional information about the facility and on the outcome of discussions with the NJ DEP.

ATTACHMENT D-8

ATTACHMENT E

Let's protect our earth

NJDEP
Industrial Site
Evaluation Element
CN 028
Trenton, NJ 08625

FEB 29 1988

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
CN 029
TRENTON, NEW JERSEY 08625

FEB 26 1988

DIRK C. HOFMAN, P.E.
DEPUTY DIRECTOR

ORGE G. McCANN, P.E.
DIRECTOR

M E M O R A N D U M

TO: Jody Ruff, Case Manager, Bureau of Industrial Site Evaluation, DHWM

FROM: Gil Oudijk through Walter Samsel, Section Chief, Bureau of Ground-Water Pollution Analysis, New Jersey Geological Survey

SUBJECT: Berles Carton Company/Chinam, Inc., Paterson City, Passaic County, ECRA Case no. 85-317 - Review of revised sampling plan dated 16 November 1987

The sampling plan for Berles Carton Company was reviewed and the following comments are forwarded. The 16 November 1987 sampling plan prepared by Technical Resources, Inc. should be approved provided that the following recommendations are incorporated into the investigation.

Background:

The Berles Carton Company was located on the corner of Third Avenue and East 26th Street in Paterson City, Passaic County. Berles manufactured paperboard until 1985 when it was sold to Chinam, Inc. of Beijing, China. Chinam has continued operations in a similar fashion. Berles did not use any hazardous chemicals in their manufacturing processes.

At present, vast quantities of water are used to manufacture paperboard. There are four onsite production wells. These wells extend to a depth of approximately 400 feet below the ground surface. Each well is cased to a depth of 20 to 30 feet below grade. Chinam/Berles also receives water from the Paterson Water Department. Table 1 shows a typical daily water budget for the site.

Based on the water budget, it appears that approximately 650,000 gallons of water are lost from the site per day. During a 27 January 1988 site inspection, the writer observed 2 to 3 feet of process water flowing in the basement of the facility. It is possible that process water infiltrates the subsurface through cracks in the basement floor.

ATTACHMENT E-1

New Jersey Is An Equal Opportunity Employer

Table 1. -- Origin and fate of daily water use in gallons at Chinam, Inc., Paterson City, Passaic County

Date	City water	Onsite well water	Total onsite water use	Sewer discharge	Net loss
12 Jan	539,308	561,300	1,100,608	449,410	651,198
22 Jan	677,688	707,900	1,385,588	634,210	751,378
26 Jan	531,828	706,600	1,238,428	633,230	605,198

Berles operated three 10,000-gallon underground storage tanks which contained no. 2 fuel oil. One tank was determined to be leaking and was excavated and removed. Soil samples were not collected during excavation. An additional 5,000-gallon unleaded gasoline tank existed on the northeastern portion of the site (fig. 1). This tank was excavated and removed from the site in 1987. Soil samples were not collected from the excavation.

According to the plant engineer, Mr. John Shortino, two oil spills occurred onsite in the late 1960's due to overfilling of the underground tanks. Each spill was of approximately 500 gallons. Any site remediation is unknown.

As of February 1988, three onsite production wells are in service. These wells include nos. 1, 2 and 4. Well no. 3 is no longer in service due to the presence of oil in the well. According to the plant engineer, oil appeared in the well in the early 1970's.

Hydrogeology:

Based on drilling logs of wells proximate to the Berles facility and the onsite production wells, the surficial deposits in the area consist of a red silt and sand with occasional gravel and cobbles. These deposits are part of a Wisconsinan-age, glaciofluvially-derived outwash deposit. The thickness of these deposits are 20 to 30 feet.

Bedrock is located beneath these glacial deposits and consists of the Passaic Formation of the Brunswick Supergroup. The Passaic is a Triassic-age, red to gray, highly-fractured, siltstone with interbedded sandstones, mudstones and argillites. Ground water will flow in secondary openings such as faults and joints. The depth to water is approximately 25 feet. The ground-water flow direction is likely controlled by the pumping of the production wells.

ATTACHMENT E-2

Recommendations:

1. Five monitor wells should be installed at locations shown in figure 1. An additional monitor well is added near the gasoline tank excavation. This well is needed to determine whether the gasoline tank has impacted ground water and will also determine ground-water quality downgradient of the production area. All monitor wells should extend to 15 feet below the water table. The wells must be screened or openhole across the water table.

2. To determine the stratigraphy of the surficial deposits, split-spoon soil samples should be obtained at five-foot intervals, at soil strata changes and zones of obvious contamination. Continuous split-spoon soil samples should be obtained fromat least one borehole. Based on field instrumentation readings, one soil sample from each borehole should be submitted for analysis.

   a. If no soil samples disclose apparent contamination, the soil sample directly (0-2 foot interval) above the water table should be submitted for analysis. If the water table is below bedrock, the soil sample should be collected in the 0-2 foot interval above bedrock.

3. All soil samples should be analysed for volatile organic compounds as outlined in SW846:8240 and base neutral compounds as outlined in SW846:8250.

4. All monitor wells must be drilled under direct supervision of a NJ licensed well driller and inspected by a qualified hydrogeologist.

5. Ground-surface elevation, top of inner-casing elevation, top of screen elevation, static-water level, ground-water elevation, product level, product thickness must be measured to the nearest 0.01 foot above a common datum or mean sea level and submitted in tabular form for each monitor well. Corrections for ground-water elevation must be made if floating product is present. The basis for these corrections must be given.

6. If free product is detected in any monitor wells, the horizontal extent of free product must be delineated expeditiously. This will require the installation of additional monitor wells than initially planned. Free product recovery should be implemented as soon as possible.

7. All onsite monitor wells should be sampled within eight weeks, but no sooner than two weeks, after installation and development. All ground-water samples should be analysed for the following parameters:

ATTACHMENT E-3

a. Volatile organic compounds using EPA Method 624 plus o,m,p-xylenes plus the identification and quantification of the fifteen highest non-targeted compounds. The gas chromatograph run should be extended for 40 minutes to insure elution and detection of high molecular weight fuel-oil compounds. The fifteen highest peaks on the 40 minute run should be quantified. The total number of peaks should be reported;

b. Base neutral compounds using EPA Method 625 plus the quantification and identification of the fifteen highest non-targeted compounds;

c. Petroleum hydrocarbons using EPA Method 418.1. The sample should be obtained from across the water table;

d. Priority pollutant metals;

e. Field pH and conductivity;

f. Any oil sheens or odors should be noted.

8. The four onsite production wells should be sampled and analysed for the above parameters.

9. Monitor wells which are determined to contain free product need not be sampled at this time. It will be assumed that ground water in these wells is highly polluted. It may become necessary to sample these wells in the future to monitor remediation.

10. Upon completion of the field investigation, a report should be prepared and submitted to NJDEP by a qualified hydrogeologist. The report must contain, at a minimum, the following information:

a. Results of all chemical and geotechnical analyses including laboratory data sheets and the required QA/QC documentation;

b. Stratigraphic logs and as-built construction diagrams for each monitor well including geologic descriptions for each strata encountered, geologic cross-sections and field-instrumentation readings during drilling. Additionally, drilling logs for the four onsite production wells should be submitted;

c. Top of inner casing casing elevation for each monitor well to the nearest 0.01 foot above a common datum or mean sea level;

d. At a minimum, monthly synoptic water level, product-level and product-thickness readings to the nearest 0.01 foot above a common datum or mean sea level for each monitor well and production well;

e. At least two ground-water elevation contour maps using two sets of synoptic water-level data which are at least one

ATTACHMENT E-4

month apart;

f. At least two product-thickness contour maps;

g. Ground-water pollutant concentration maps for each major dissolved pollutant for each set of sampling data;

h. A site map including:

i. Exact site location;
ii. Structures and improvements including utilities;
iii. Topography;
iv. Locations of all past and present waste-disposal systems including septic tanks, seepage pits, underground tanks, dry wells, sanitary-sewer lines and storm-sewer lines; and
v. Areas of known or suspected spills, waste disposal areas and chemical storage.

i. A sample location map including monitor-well locations with screened-interval depth, top of inner-casing elevation and soil-sampling locations;

j. Conclusions concerning ground-water flow mechanisms in the aquifer both horizontally and vertically to include actual hydraulic gradients and ground-water flow velocities; and

k. Recommendations for additional investigative work to determine the horizontal and vertical extent of ground-water pollution and/or remedial measures to eliminate sources of pollution and restore the site to background conditions in a timely fashion.

11. One sample of process water collected from the basement floor should be obtained for analysis. The water sample should be collected from the lowest point in the basement. The sample should be analysed for BTX, phenols using EPA Method 604 and Priority Pollutant Metals.

12. Since it is likely that up to 650,000 gallons of process water is infiltrating the subsurface through the basement floor, it should be determined whether a NJPDES (Discharge to Ground Water) permit is necessary for the site. Additionally, the fate of the excess water should be explained in context to the entire water budget.

cc: Vince DeGregorio, BERA
Ken Goldstein, BUST
Jay Ash, NJGS
Karen Swanson, BGWQM
MPA/HK/FILE

ATTACHMENT E-5

ATTACHMENT F

CITY OF PATERSON
DEPARTMENT OF HUMAN RESOURCES

FRANK X. GRAVES, JR.
MAYOR

MS. NELLIE POU
DIRECTOR

DIVISION OF HEALTH
John J. Ferraioli, Health Officer

176 Broadway, Paterson, New Jersey 07505

(201) 881-3900

CERTIFIED LETTER #1050
RETURN RECEIPT REQUESTED

March 29, 1989

Chinam Incorporated
177 3rd Avenue
Paterson, NJ 07514

ATTENTION: MR. JOHN SHORTINO, PLANT SUPERINTENDENT

Dear Mr. Shortino:

On Monday, March 20 and Tuesday, March 21, 1989 an inspection was conducted in response to a complaint about the conditions of outside yards of Chinam's property. Upon arrival the following was observed.

OUTSIDE YARD

1. The dumpster in the first yard closest to Route 20 was overflowing with garbage, paper debris, and other solid waste material. Near the dumpster was a 55-gallon drum which contained a thick waste oil. The drum was dented, rusty and overflowing with oil. Waste oil is considered a Hazardous Waste in the State of New Jersey. All containers that store/transport hazardous waste must be securely closed when not in use and labelled "Hazardous Waste". Near the propane tank, there were several old, rusty drums some of which were empty and some containing unknown material. Since the drums were not clearly labelled with their contents, all drums that contain any materials and that are not properly labelled will be considered to contain hazardous material/waste unless Chinam can prove otherwise.

2. The second yard contained several hundred wooden pallets which were awaiting disposal.

INSIDE PLANT

1. A Community Right-To-Know Survey for 1987 or 1988 was not available for review as is required by Law. You claimed to have sent the completed 1988 Survey to the New Jersey Department of Environmental Protection in Trenton in the fall of 1988. I requested a copy of your 1987 Survey from Trenton and a copy is attached which you may keep for your company records. On your behalf, another blank Survey for 1988 will be sent to you from Trenton.

ATTACHMENT F-1

CHINAM INCORPORATED

2. A walkthrough was conducted and the following was observed. Near the basement stairs were several drums (12 - 15) on pallets and on the floor. A few drums were labelled BUSAN 85 which is used as a bacteriacide in your production process. If this material contains a hazardous substance, then it must be listed on your Right-To-Know Survey. Some drums were labelled CORROSIVE but the identity of the contents were not labelled on the drums. One blue polyurethane drum was observed fuming and was not properly closed. Other drums contained garbage, solid waste material. In a room past the stairs, several drums (5) were observed and one in particular was labelled CORROSIVE and had a thick, black liquid in it. This drum was uncovered and the material was volatilizing. All drums that contain hazardous materials must be covered when not in use. Housekeeping in this area was poor to unsatisfactory.

Fines #1 #2

3. Near the bay area along the wall walking towards the Office there were several drums (10) labelled Mist Oil 150. The drums were stacked two tier high. Again, if this material contains a hazardous substance then it must be listed on your Right-To-Know Survey.

RECOMMENDATIONS

1. All outside yard areas must be maintained clear and free of paper debris, garbage and solid waste materials. All debris, etc., must be properly containerized and not overflowing from the dumpsters and removed at regular intervals.

2. Since Chinam generates a hazardous waste oil, that waste must be properly containerized, labelled, and disposed of in accordance with Federal, State, and Local laws and regulations. Please review the attached GENERATORS HAZARDOUS WASTE INFORMATION SERIES to insure that Chinam is in compliance. You should also obtain a copy of the New Jersey Hazardous Waste Management regulations.

3. Chinam is a manufacturer of Coverted Paper and Paperboard Products having the SIC Code - 2649. (See highlighted area on RTK survey.) Therefore, Chinam is subjected to the OSHA Hazard Communication Standard which is found in the Code of Federal Regulations (CFR) 1910.1200, United States Department of Labor. You should review the attachment to insure that Chinam is in compliance. There may be other laws, regulations, standards that you may also be required to comply with.

ATTACHMENT F-2

4. Since Chinam is deficient in general housekeeping, storage of chemical products, hazardous waste, etc., you are hereby directed to immediately comply with the following:

   A. All drums that contain chemical products that are stored and or used in the workplace must be inventoried, labelled, and secured.

   B. All drums that contain any amount of unknown material(s) must be sampled to determine their contents. As stated previously, all materials that are found in unlabelled drums will be deemed HAZARDOUS unless proven to be non hazardous. Proof must be determined by laboratory analysis, and the burden of proof is the sole responsibility of Chinam.

   C. A completed, accurate 1988 RTK Survey must be available for inspection along with the Material Safety Data Sheets (MSDS) for each hazardous substance found in the workplace.

5. If not already done, all owners of Underground Storage Tanks (UST) must: (1) Register the tank(s) with the Bureau of Underground Storage Tanks within the Department of Environmental Protection, (2) Keep track of inventory, (3) Report any leaks to the DEP Hotline (4) Comply with regulations. Please review the enclosed fact sheet on UST's.

This office will grant you 30 days from receipt of this directive to correct any deficiencies and to come into compliance with the above mentioned regulations. A follow-up inspection will be conducted to insure that compliance has occurred.

If you have any questions or if I could be of further assistance, please contact me at 881-3914, 3917.

Sincerely,

Alexis Mudrick

ALEXIS MUDRICK
ENVIRONMENTAL SPECIALIST
OFFICE OF ENVIRONMENTAL SCIENCE

AM:vb

enclosures: 1987 Right-To-Know Survey, copy
29 CFR 1910.1200 OSHA Hazard Communication
Hazardous Waste Information Series
Fact Sheet of Underground Storage Tank Program

cc: Chief J. Tice, Paterson Fire Department

ATTACHMENT F-3

ATTACHMENT G

Elson T. Killam Associates, Inc.
Environmental and Hydraulic Engineers
27 Bleeker Street, P.O. Box 1008, Millburn, NJ 07041
Tel. 201/379-3400 Telex 642-057 Telecopier 201/376-1072

July 24, 1986

Mr. Leonid Carnett
State of New Jersey
Department of Environmental Protection
Bureau of Industrial Site Evaluation
428 East State Street
Trenton, NJ 08625

RECEIVED
JUL 25 10 30 AM '86
DIVISION OF
WASTE MANAGEMENT
HSM BRIS

RE: BERLES CARTON COMPANY
177 THIRD AVENUE
PATERSON CITY, PASSAIC COUNTY
ECRA CASE NO. 85317

Dear Mr. Carnett:

In response to your letter of June 24, 1986, we have prepared the following specific revisions and insertions for the above referenced ECRA case. The response is as follows according to the item numbers on the check-list.

Fee Payment: Enclosed is a certified check made payable to your office for $100.00. This should complete the payment of Initial Notice, Sampling Plan, and/or Underground Tank Test review fees.

Item 11b As described in previous submissions, there are four (4) underground tanks at this facility. Locations of these tanks are shown on the enclosed figure. In order to make things clear on how Chinam, Inc. plans to address these tanks we have summarized proposed actions below:

Tanks A & B - Tank A has not been tested by the Petrotite method because of a repair patch that existed prior to purchase by Chinam, Inc. Tank B was tested and the results indicated leakage as included in a previous submission. Several problems

ATTACHMENT G-1

exist in regard to drilling borings in the location of these tanks and restrict the number of borings physically possible. These problems are listed below:

1) There are no drawings of tank construction availabe.
2) The tanks were installed prior to the construction of the building.
3) The floor above the tanks is composed of approximately 7" of poured concrete.
4) The tanks were installed on top of a concrete pad.
5) The low clearance and limited access will restrict soil borings at some locations.
6) Spacing between the tanks is estimated to be approximately three feet at some locations.
7) A trench with tank piping restricts borings.

Due to the problems described above, we propose to place a total of 12 borings and one well around the tanks and as close to the tanks as physically possible as shown on the revised Sampling Location Plan. These borings are intended to vertically define the possibility of contamination which may be a result of the previous spill, which was described in the Initial ECRA Notice and/or leaks in the tanks. If these borings indicate that soil contamination does exist, further sampling and/or remedial actions will be implemented upon approval of the NJDEP. If

ATTACHMENT G

during drilling any obvious contamination is observed, sampling will be suspended and a new plan submitted for tank removal, remedial action and sampling. Borings will be drilled down to the groundwater and samples collected at 6-12" and 24-30" below the tank bottom and 6" above groundwater. Soil samples will also be collected at these levels during well installation in addition to a groundwater sample that will be collected after a period of at least on week after well development. Drilling methods, sampling methodology and sample analysis will be in accordance with the Sampling Plan included in the Initial ECRA Notice. All samples in this area will be analyzed for petroleum hydrocarbons only.

Please realize site conditions may restrict and/or prohibit actual locations of these borings which may vary due to site conditions. However, every effort will be made to complete this work.

Tank C - Tank C was tested on July 21, 1986 and was found to be tight. Results are not available at this time and will be forwarded to the NJDEP when available.

In order to test this tank the remote fill had to be disconnected. During this work a minor amount of discolored soil was discovered at an elbow and underneath the remote fill. To address this a samll amount of soil was removed and grab samples

collected underneath as shown on the enclsoed figure. These samples will be analyzed for PHC and results supplied to the NJDEP when available.

Gasoline Tank - The abandoned underground gasoline tank has been removed by man- agement of Chinam Incorporated . Subsequent to this tank removal, Chinam Incorporated requested Killam Associates to sample underneath the former tank location. However, rainwater had entered the excavation and we were unable to collect samples. Therefore, we propose to collect samples immediately after the water is pumped out of the excavation. Pumping and disposal ~~of this water~~ will be handled by Olsen & Hassold, Inc.

Olsen & Hassold, Inc.
62-64 E. 26th Streret
Paterson, NJ 07514
(201) 345-4000

Samples (S-3-7) will be collected with a stainless steel trowel at a depth of one foot at locations as shown on the enclosed figure. Samples will be analyzed for the volatile fraction of priority pollutants and petroleum hydrocarbons. Sampling methodology and sample analysis will be in accordance with the Sampling Plan included in the initial ECRA Notice.

ATTACHMENT G-4

Item 12: Enclosed are the remaining MSDS sheets our office was able to acquire.

If you have a need for further information for this project, please contact me.

Very truly yours,

ELSON T. KILLAM ASSOCIATES, INC.

Richard J. Konkowski

Richard J. Konkowski

RJK:ncg

ATTACHMENT G-5

ATTACHMENT H

EASTERN HIGH VOLTAGE, INC.

ELECTRICAL ENGINEERING, TESTING & MAINTENANCE SPECIALISTS

January 7, 1986

Story Electric Motor Repair Co., Inc.
20 Francisco Avenue
Little Falls, New Jersey 07424

Attention: Mr. Dave Wilberton

Reference: Emergency PCB Cleanup at
CHI NAN, Inc. - Paterson, N.J.

Dear Mr. Wilberton:

We have recently performed emergency PCB cleanup services for your company at the above referenced location. Listed below please find a summary of the services performed.

EQUIPMENT

[2] Electrical Substations
[12] Transformers

SERVICE

1. Repair of all leaking bushings, gauges, valves, etc.

2.* Cleanup and disposal of spilled PCB's from the transformer exteriors and substation floors.

3. Removal and disposal of approximately sixty [60] gals. of PCB insulating [8674 PPM] liquid from one [1] Cortrans, 333 KVA, transformer - [S/N-68H22873]. New 10c oil was added and should be tested after ninety [90] days to determine new PCB concentration.

*Please Note

Substation floor was thoroughly scrubbed and cleaned to remove PCB contamination. However, it is possible the PCB remains in the concrete. Samples should be taken and analyzed to determine if further cleanup is required.

P.O. BOX 8213 • TRENTON, NEW JERSEY 08650 • TELEPHONE (609) 890-8300

ATTACHMENT H-1

Should you have any questions or need any further information, please don't hesitate to call.

Very truly yours,

EASTERN HIGH VOLTAGE, INC.

Joseph F. Wilson

Joseph F. Wilson
Sales Manager

JFW:my

ATTACHMENT H-2

Provisional ... NJP000022582

Provisional Number Questionnaire

1. Name of Facility Requesting ID Number

   CHINAM, INC.

2. Name and Telephone Number of Person Making Request

   ERWIN SILVERMAN (201) 345-1640

3. Date of Request for Provisional Number

   12/8/85

4. Time and Date of Episode Causing Emergency

   12/6/85

5. Projected Date all Hazardous Waste Activity Will Be Terminated

   December 18, 1985

6. Location of Episode

   (2) ELECTRICAL SUBSTATIONS

7. Measures Taken to Control Episode

   LEAK REPAIR AND CLEAN UP OF SPILLED LIQUIDS

8. Description of Episode

   TRANSFORMERS LEAKING AT VARIOUS LOCATIONS IN BUILDING

9. List Type and Quantity of Wastes

   1. -POLYCHLORINATE BIPHENYLOS (LIQUIDS) 82 gals
   2. POLYCHLORINATE BIPHENYLOS (SOLIDS) 300 LBS

10. Name and EPA ID Number of Transporter(s)

    EASTERN HIGH VOLTAGE INC, NJD980526768

11. Name and EPA ID Number of Treatment, Storage and/or Disposal Facility (If Known)

    STORAGE - EASTERN HIGH VOLTAGE NJD980526768
    DISPOSAL - ENSCO ARD069748192 AR0000404PCB

12. Provide all Provisional Numbers Previously Assigned (If Any)

    NONE

13. Do You Wish to Obtain a Permanent EPA ID Number?

    NO

14. Comments

    MANIFEST FORMS SUBMITTED TO THE STATE OF NEW JERSEY AGENCY

15. Signature and Date

1/13/86

ATTACHMENT H-3

ATTACHMENT I

WOLFF & SAMSON
A Professional Corporation
5 Becker Farm Road
Roseland, New Jersey 07068
(201)740-0500
Attorneys for Debtor

UNITED STATES BANKRUPTCY COURT
FOR THE DISTRICT OF NEW JERSEY
Banktruptcy No. 84-00453

In Proceedings for a Reorganization Under Chapter 11 of the Bankruptcy Code

In the Matter Of

BERLES CARTON COMPANY, INC.,
a New Jersey Corporation,

Debtor.

APPLICATION FOR AUTHORIZATION TO DEBTOR-IN-POSSESSION TO ENTER INTO LEASE AGREEMENT WITH OPTION TO PURCHASE DEBTOR'S PLANT AND EQUIPMENT

TO: HONORABLE VINCENT J. COMMISA
United States Bankruptcy Judge

The application of Berles Carton Company, Inc., as debtor and debtor-in-possession, respectfully shows unto Your Honor.

1. The debtor is the owner of real property, known as 177-203 Third Avenue, Paterson, New Jersey, as more particularly described in Exhibit A annexed.

2. The premises owned by the debtor include a complete plant and equipment used in the production of paper board now being operated by the debtor. The office equipment, plant and equipment, machine shop, and other physical assets, (exclusive of motor vehicles, and inventory of finished goods and raw materials), are more particularly described in Exhibit B annexed.

ATTACHMENT I-1

3. Since the Chapter 11 proceedings were commenced on January 30, 1984, the debtor-in-possession has been authorized to borrow up to $1,000,000 from Midlantic National Bank, on a revolving fund, against which approximately $40,000 is outstanding and is secured by a continuing lien on all of the assets of the debtor and debtor-in-possession.

4. The business of the debtor has been suspended due to a lack of working capital.

5. The debtor-in-possession will be unable to provide from available financing sources sufficient funds to support all maintenance in the facility and to pay over $600,000 of unpaid administration obligations exclusive of any professional fees. Additional equity capital or adequate credit is not available to the debtor-in-possession.

6. In light of these financial circumstances, the debtor-in-possession has negotiated with Mr. Philip Damato, a major creditor and supplier to the debtor and debtor-in-possession (through J. Damato Paper Stock), subject to approval by the Court, pursuant to §363 (b), and (f) of the Code, for the facility of the debtor to be leased for a 6 year term to a new entity to be formed by Mr. Damato, pursuant to the Letter of Intent executed by Mr. Damato, Exhibit C annexed.

7. The proposed lease shall be for a term of six years and shall provide for the following terms and conditions:

a) annual rent net to the landlord shall be calculated at $10 per ton of paper board produced and sold at the demised premises, a minimum annual rent of $225,000. and with

ATTACHMENT I-2

a maximum annual net rent of $300,000; the lease shall provide for all repairs, maintenance, insurance, taxes, and assessments to be paid by the tenant as additional rent.

b) the premises shall be leased and conveyed as is, without representations or warranties, express or implied.

c) the proposed lease shall provide for a total maximum net rent of $1,800,000 payable to the landlord and an additional $500,000 payable upon exercise of the option to purchase for a total of $2,300,000 net to the landlord.

d) the proposed lease is subject to entry of a satisfactory agreement between proposed tenant and United Paper Workers International Union, Local 300; and further subject to satisfactory lending arrangements between tenant and Midlantic National Bank for continued financing of the operation.

8. The proposed lease is subject to (a) the entry of a satisfactory agreement between the tenant and United Paper Workers International Union, Local 300, and (b) the tenant arranging satisfactory lending arrangments with Midlantic National Bank for continued financing of the operation.

9. In addition, the debtor-in-possession is required to comply with the provisions of the Environmental Cleanup Responsibility Act, N.J.S.A.13:1K-6 et seq.

10. The maximum total rental to be paid in accordance with the lease, net to the landlord, over six years, would be $1,800,000, and upon exercise of the option to purchase contained in the lease, an additional $500,000 would be paid to the debtor, for all of the real property, plant, machinery, equipment, parts and chemicals owned by the debtor, free of all

ATTACHMENT I-3

liens, claims and encumbrances, with valid liens, claims and encumbrances to attach to the proceeds of sale, pursuant to §363 (b) and (f) of the Code.

11. If the proposed lease and option to purchase are approved, upon the terms set forth in the Letter of Intent, or any higher or better terms, the Debtor's estate will avoid forced sale; maximize the recovery of outstanding accounts receivable and inventory and to liquidate valid liens, encumbrances, priority claims and expenses of administration.

WHEREFORE, Applicant prays for an Order granting the authority pursuant to §363(b) and (f) of the Code to enter into a lease agreement and to grant a purchase option for the debtor's described real property, plant, machinery and equipment, free of liens, claims and encumbrances, with valid liens to attach to the proceeds of sale, less provision for administrative costs under §506(c) substantially upon the terms set forth in the Letter of Intent executed by Philip Damato on behalf of Morris Box Board Co., Inc., a corporation to be formed, or upon any higher or better terms as may be made.

WOLFF & SAMSON
Attorneys for Debtor

By: _____
WILLIAM S. KATCHEN

Dated: October 2, 1984

ATTACHMENT I-4

ATTACHMENT J

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WASTE MANAGEMENT
HAZARDOUS SITE MITIGATION ADMINISTRATION
CN 028, Trenton, N.J. 08625

JORGE H. BERKOWITZ, PH.D.
ADMINISTRATOR

MARWAN M. SADAT, P.E.
DIRECTOR

IN THE MATTER OF
BERLES CARTON COMPANY

: ADMINISTRATIVE
: CONSENT ORDER

The following FINDINGS are made and ORDER is issued pursuant to the authority vested in the Commissioner of the New Jersey Department of Environmental Protection (hereinafter "NJDEP") by N.J.S.A. 13:1D-1 et seq. and the Environmental Cleanup Responsibility Act, N.J.S.A. 13:1K-6 et seq., and duly delegated to the Assistant Director for Enforcement and Field Operations within the Division of Waste Management pursuant to N.J.S.A. 13:1B-4.

FINDINGS

1. The Environmental Cleanup Responsibility Act, N.J.S.A. 13:1K-6 et seq. ("ECRA" or "the Act"), was signed into New Jersey State Law by Governor Thomas H. Kean on September 2, 1983, and took effect on December 31, 1983.

2. ECRA required the NJDEP to adopt rules and regulations to implement the Act. On March 6, 1984, NJDEP adopted the Interim ECRA Regulations, N.J.A.C. 7:1-3 ("Regulations") in compliance with the Administrative Procedure Act, N.J.S.A. 52:14B-1 et seq., upon acceptance for filing by the Office of Administrative Law pursuant to N.J.A.C. 1:30-4.4(d).

3. ECRA requires that the owner or operator of an industrial establishment planning to sell or transfer operations (a) notify the NJDEP in writing within five (5) days of the execution of an agreement of sale or option to purchase pursuant to N.J.A.C. 7:1-3.7, (b) submit within (60) days prior to sale a Negative Declaration or Cleanup Plan to the NJDEP for approval, and (c) obtain, upon approval of any necessary Cleanup Plan by the NJDEP, a surety bond or other financial security approved by the NJDEP guaranteeing performance of the Cleanup Plan in an amount equal to the cost estimate for the approved Cleanup Plan.

4. N.J.S.A. 13:1K-13 provides that failure to submit a Negative Declaration or Cleanup Plan pursuant to ECRA is grounds for voiding the sale by NJDEP. Any person who knowingly gives or causes to be given any false information or who fails to comply with the provisions of ECRA is liable for a penalty of not more than $25,000.00 for each occurrence, and each day of a violation of a continuing nature constitutes an additional and separate offense. Furthermore, any officer or management official of an industrial establishment who knowingly directs or authorizes the violation of any provisions of the Act shall be personally liable for the $25,000.00 penalties for each violation described above.

ATTACHMENT J-

5. Berles Carton Company ("Berles"), a New Jersey corporation, owns and operates a manufacturing facility located at 177-302 Third Avenue and 186-218 Third Avenue, Paterson City, Paterson County; said site being further known as Lot 1, Block 455; Lot 1, Block 454; Lot 1, Block 429 and Lot 1, Block 428 on the tax map of the City of Paterson ("Paterson facility" or "subject Industrial Establishment"). Berles has informed NJDEP that the Standard Industrial Classification ("SIC") number which best describes the operations at the Paterson facility is 2631 within Major Group 26. Berles has further informed NJDEP that hazardous substances are used in the operations at the Paterson facility. The Paterson facility is an Industrial Establishment as defined by ECRA.

6. Berles and the China National Packaging Corporation of Beijing, Inc., Peoples Republic of China ("China Corporation") intend to enter into a transaction involving the sale or transfer of the subject Industrial Establishment. The China Corporation owns all the stock of Chinam, Inc., a New Jersey corporation, located at 177 Third Avenue, Paterson City, Paterson County ("Chinam"). Upon completion of the ECRA transaction between Berles and China Corporation, Chinam shall own and operate the Paterson facility as a wholly owned subsidiary of China Corporation. The China Corporation has expressly assigned to Chinam its ECRA obligations and responsibilities pursuant to the ECRA transaction for the Paterson facility. NJDEP, Berles, the China Corporation and Chinam expressly agree that the transaction involving the Paterson facility is subject to ECRA and the Regulations. The China Corporation has informed NJDEP that due to the nature of the transaction, Chinam cannot comply with all of the requirements of ECRA and the Regulations prior to December 31, 1985. Therefore, Chinam, acting in all ECRA matters for the China Corporation has requested that NJDEP prepare an Administrative Consent Order which when effective, will allow the transaction to be consummated prior to the completion of all administrative requirements under ECRA.

7. In appropriate cases, NJDEP may allow transactions subject to ECRA to proceed prior to completing the standard ECRA administrative process by execution of an Administrative Consent Order. The Administrative Consent Order specifies a time schedule for completion of ECRA requirements by the industrial establishment and provides for financial assurance in a form and amount acceptable to NJDEP prior to consummation of any transactions subject to ECRA. Failure to fully comply with all the terms and conditions of the Administrative Consent Order shall subject the Ordered Party(ies) to the full range of penalties and remedies prescribed in the Act, the Regulations, and the Administrative Consent Order.

8 Furthermore, Chinam, upon behalf of Berles, agrees to pay to NJDEP a penalty set forth in Paragraph 15 of this Administrative Consent Order for Berles ECRA violation more fully described in a December 9, 1985 Notice of Violation issued by NJDEP to Berles.

ORDER

NOW, THEREFORE, IT IS ORDERED AND AGREED THAT:

9. ECRA Program Requirements

ATTACHMENT J-2

A. Chinam shall submit the Initial Notice (commonly referred to as ECRA I and II) required by N.J.A.C. 7:1-3.7 within thirty (30) days from the effective date of this Administrative Consent Order.

B. Within ninety (90) days from receipt of NJDEP's written approval of the Sampling Plan prepared, pursuant to N.J.A.C. 7:1-3.7(d)14 and N.J.A.C. 7:1-3.9, Chinam shall initiate, complete, and submit to NJDEP the results from any NJDEP-approved Sampling Plan including, but not limited to, complete delineation of environmental contamination on-site, and any off-site environmental contamination resulting from discharges of hazardous wastes or substances on or from the subject Industrial Establishment. NJDEP and Chinam recognize that additional sampling may be necessary during the various stages of the implementation of this Administrative Consent Order and ECRA, including during the implementation of a Cleanup Plan, at the subject Industrial Establishment to delineate fully the nature and extent of environmental contamination on-site, and any off-site environmental contamination resulting from discharges of hazardous substances or wastes on or from the subject Industrial Establishment. Therefore, Chinam agrees to submit any additional sampling plans for NJDEP review and approval required by NJDEP in writing during the various stages of the implementation of this Administrative Consent Order and ECRA, including during the implementation of a Cleanup Plan, to further delineate the nature and extent of environmental contamination on or from the subject Industrial Establishment. NJDEP and Chinam mutually agree that Chinam shall submit any additional sampling plans required to NJDEP for review and approval within thirty (30) days of the receipt of said written request. Within ninety (90) days from receipt of NJDEP's written approval of any additional sampling plans, Chinam shall initiate, complete and submit to NJDEP the results from any additional NJDEP-approved sampling plan required pursuant to this paragraph.

C. Chinam shall submit a Negative Declaration or Cleanup Plan within sixty (60) days from receipt of a written demand from NJDEP for a Negative Declaration or Cleanup Plan. If a Cleanup Plan is required, the Cleanup Plan shall address remediation of any contamination identified on or from the subject Industrial Establishment. Any Negative Declaration or Cleanup Plan submitted shall conform to N.J.A.C. 7:1-3. NJDEP shall notify Chinam in writing requiring Chinam to submit either a Negative Declaration or Cleanup Plan when sampling results have satisified NJDEP's requirement to delineate fully the nature and extent of environmental contamination on or from the subject Industrial Establishment.

D. Chinam shall implement any NJDEP approved Cleanup Plan in accordance with the approved time schedule or defer implementation of all or part of the Cleanup Plan subject to NJDEP approval pursuant to N.J.A.C. 7:1-3.14.

E. Should NJDEP determine that any submittal made under Paragraph 9 of this Administrative Consent Order is inadequate or incomplete, then NJDEP shall provide Chinam with written notification of the deficiency(ies), and Chinam shall revise and resubmit the required information within a reasonable period of time not to exceed thirty (30) days from receipt of such notification.

ATTACHMENT J-3

F. All submissions requred pursuant to Paragraph 9 or any other provision of this Administrative Consent Order shall be accompanied by all appropriate fees required pursuant to the Fee Schedule for ECRA, N.J.A.C. 7:1-4.

10. Financial Assurance

A. Chinam shall obtain and provide to NJDEP financial assurance in the form of a surety bond or letter of credit in the amount of $500,000. The financial assurance must conform with the requirements of N.J.S.A. 13:1K-9(b)3, N.J.A.C. 7:1-3.10, N.J.A.C. 7:1-3.13, and this Administrative Consent Order. This financial assurance shall be submitted to NJDEP along with a fully executed Administrative Consent Order pursuant to Paragraph 16 of this Administrative Consent Order.

B. Chinam shall establish and submit to NJDEP a standby trust fund within seven (7) days from the effective date of this Administrative Consent Order. The financial institution which issues the financial assurance shall agree to promptly and directly deposit all amounts up to the total value of the financial assurance into the standby trust fund upon demand by NJDEP.

C. Upon NJDEP approval of a Cleanup Plan, Chinam shall amend the amount of the financial assurance, described in A. above, to equal the estimated cost of implementation of the approved Cleanup Plan, or shall provide such other financial assurance as may be approved by NJDEP in an amount equal to the estimated cost of implementation of the approved Cleanup Plan.

D. In the event that NJDEP determines that Chinam has failed to perform any of its obligations under this Administrative Consent Order or ECRA, NJDEP may draw on the financial assurance provided, however, that before any such demand is made, NJDEP shall notify Chinam in writing of the obligation(s) with which it has not complied, and Chinam shall have reasonable time, not to exceed fourteen (14) calendar days, to perform such obligation(s) to NJDEP's satisfaction. Nothing in this paragraph shall prevent NJDEP from collecting stipulated penalties pursuant to the terms of this Administrative Consent Order for cause.

E. Upon NJDEP's written approval of a Negative Declaration, Chinam shall be relieved of any further obligation to maintain in full force and effect the financial assurance required by this Administrative Consent Order for the facility which is the subject of the NJDEP-approved Negative Declaration. Upon NJDEP's written approval of the completion of any cleanup required by this Administrative Consent Order, as verified by final site inspection pursuant to N.J.A.C. 7:1-3.12(e) and upon Chinam's satisfaction of all financial obligations in connection therewith, Chinam shall be relieved of any further obligation to maintain in full force and effect the financial assurance required by this Administrative Consent Order for the facility at which the approved cleanup has been completed.

ATTACHMENT J-4

11. Additional Conditions of Consent

A. Chinam and the China Corporation shall allow NJDEP access to the subject Industrial Establishment for the purpose of undertaking all necessary monitoring and environmental cleanup activities.

B. Compliance with the terms of this Administrative Consent Order shall not excuse Chinam or the China Corporation from obtaining and complying with any applicable federal, state or local permits, statutes, regulations and/or orders while carrying out the obligations imposed by ECRA through this Administrative Consent Order. The execution of this Administrative Consent Order shall not excuse Chinam or the China Corporation from compliance with all other applicable environmental permits, statutes, regulations and/or orders and shall not preclude NJDEP from requiring that Chinam or the China Corporation obtain and comply with any permits, and/or orders issued by NJDEP under the authority of the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq., and the Spill Compensation and Control Act ("Spill Act") N.J.S.A. 58:10-23.11 et seq., for the matters covered herein. The terms and conditions of any such permit shall not be pre-empted by the terms and conditions of this Administrative Consent Order if the terms and conditions of any such permit are more stringent than the terms and conditions of this Administrative Consent Order. Should any of the measures to be taken by Chinam or the China Corporation during the remediation of any ground water and surface water pollution result in a new or modified discharge as defined in the NJPDES regulations, N.J.A.C. 7:14A-1 et seq., then Chinam or the China Corporation shall obtain a NJPDES permit or permit modification from NJDEP prior to commencement of said activity.

C. NJDEP agrees that it will not bring any action, nor will ~~it recommend~~ that the Attorney General's Office bring any action for failure to comply with (a) the time requirements in N.J.S.A. 13:1K-9(b)1 that NJDEP be ~~notified within~~ five (5) days of the sale of the Paterson facility and (b) the time requirement in N.J.S.A. 13:1K-9(b)2 ~~that a~~ Negative Declaration or Cleanup Plan be submitted sixty (60) days prior to the sale of the Paterson facility. NJDEP also agrees that it will not bring any action, nor will it recommend that the Attorney General bring any action seeking monetary penalties for Chinam's failure to meet the time requirements specified in (a) and (b) of this paragraph.

D. No obligations imposed by this Administrative Consent Order (other than by paragraph "E" below) are intended to constitute a debt, claim, penalty or other civil action which could be limited or discharged in a bankruptcy proceeding. All obligations imposed by this Administrative Consent Order shall constitute continuing regulatory obligations imposed pursuant to the police power of the State of New Jersey, intended to protect the public health, safety and welfare.

E. In the event that Chinam fails to comply with any of the provisions of this Administrative Consent Order, Chinam shall pay to NJDEP stipulated penalties in the amount of $5,000.00 for each day on which Chinam fails to comply with any obligation under this Administrative Consent Order provided, however, that no such stipulated penalty shall be payable by Chinam with respect to such period that said failure to comply results from Force Majeure.

F. The provisions of this Administrative Consent Order shall be binding upon Chinam, the China Corporation and their officers, management officials, employees, agents, successors in interest, assigns, tenants, and any trustee in bankruptcy or receiver appointed pursuant to a proceeding in law or equity.

ATTACHMENT J-5
11

G. Chinam's failure to submit an approvable Negative Declaration or Cleanup Plan shall constitute grounds for the NJDEP to void the subject sale or transfer. NJDEP's right to void the subject sale or transfer shall terminate upon NJDEP's written approval of an appropriate Negative Declaration or Cleanup Plan submitted by Chinam pursuant to this Administrative Consent Order and ECRA.

H. Any submission to be made to NJDEP in accordance with this Administrative Consent Order shall be directed to:

Anthony J. McMahon, Chief
Bureau of Industrial Site Evaluation
Division of Waste Management
428 East State Street
Trenton, NJ 08608

12. Force Majeure

If any event occurs which purportedly causes or may cause delays in the achievement of any deadline contained in this Administrative Consent Order, Chinam shall notify NJDEP in writing within ten (10) days of the delay or anticipated delay, as appropriate, referencing this paragraph and describing the anticipated length, precise cause or causes, measures taken or to be taken and the time required to minimize the delay. Chinam shall adopt all necessary measures to prevent or minimize any delay. If any delay or anticipated delay had been or will be caused by fire, flood, storm, riot, strike or other circumstances alleged to be beyond the control of Chinam, then the time for performance hereunder may be extended by NJDEP for a period no longer than the delay resulting from such circumstances, provided that NJDEP may grant additional extensions for good cause. If the events causing such delay are not found by NJDEP to be beyond the control of Chinam, failure to comply with the provisions of the Administrative Consent Order shall constitute a breach of the Administrative Consent Order's requirements. The burden of proving that any delay is caused by circumstances beyond Chinam's control and the length of such delay attributable to those circumstances shall rest with Chinam. Increases in the costs or expenses incurred in fulfilling the requirements contained herein shall not be a basis for an extension of time. Similarly, delay in completing an interim requirement shall not automatically justify or excuse delay in the attainment of subsequent requirements.

13. Reservation of Rights

This Administrative Consent Order shall be fully enforceable in the New Jersey Superior Court having jurisdiction over the subject matter and signatory parties upon the filing of a summary action for compliance pursuant to ECRA. This Administrative Consent Order may be enforced in the same manner as an Administrative Order issued by NJDEP pursuant to other statutory authority and shall not preclude NJDEP from taking whatever action it deems appropriate to enforce the environmental protection laws of the State of New Jersey in any manner not inconsistent with the terms of this Administrative Consent Order. It is expressly recognized by NJDEP and Chinam and the China Corporation that nothing in this Administrative Consent Order shall be construed as a waiver by NJDEP of its rights with respect to enforcement of ECRA on bases other than those set forth in the ECRA Program

Requirements section of this Administrative Consent Order or by Chinam of its right to seek review of any enforcement action as provided by the Administrative Procedure Act, N.J.S.A. 52:14B-1 et seq. Furthermore, nothing in this Administrative Consent Order shall constitute a waiver of any statutory right of NJDEP to require Chinam or the China Corporation to implement additional remedial measures should NJDEP determine that such measures are necessary to protect the public health, safety and welfare.

14. Chinam and the China Corporation hereby consent to entry of this Administrative Consent Order and waive their rights to a hearing concerning the terms hereof pursuant to N.J.S.A. 52:14B-1 et seq.

15. Prior to formal execution of this Administrative Consent Order, Chinam shall pay to NJDEP a penalty of $9,000 to satisify Berle's obligations pursuant to a December 9, 1985 Notice of Violation issued by NJDEP to Berles. Chinam shall make the $9,000 certified check or money order made payable to the "New Jersey Department of Environmental Protection" and Chinam shall deliver said penalty to the address set forth in Paragraph 11(H) of this Administrative Consent Order.

ATTACHMENT J-7

16. The Administrative Consent Order shall take effect upon execution of the Administrative Consent Order by the parties together with the obtaining of financial assurance required by Paragraph 10 and payment of a penalty pursuant to Paragraph 11H of this Administrative Consent Order. This Administrative Consent Order shall be null and void unless the parties sign and submit the Administrative Consent Order and financial assurance and payment of the penalty to NJDEP within thirty (30) days of the date of signing of the Administrative Consent Order by NJDEP. Upon the effective date of the Administrative Consent Order, Berles may complete the sale or transfer of the Paterson facility subject to the China Corporation the Administrative Consent Order. Chinam shall submit a fully executed Administrative Consent Order to NJDEP together with the financial assurance required by Paragraph 10 within seven (7) days from the effective date.

NEW JERSEY DEPARTMENT OF
ENVIRONMENTAL PROTECTION

Date: Dec 31, 1985

By: Joseph Rogalski
Joseph Rogalski, Assistant
Director for Enforcement &
Field Operations

CHINA NATIONAL PACKAGING CORPORATION
OF BEIJING, INC., PEOPLES REPUBLIC OF
CHINA

Date: Jan. 2, 1986

By: 纪 兴

Name: Ji Xing

Title: Secretary

CHINAM, INC.

Date: Jan. 2, 1986

By: 纪 兴

Name: Ji Xing

Title: Secretary

ATTACHMENT J-8

ATTACHMENT K

WOLFF & SAMSON
A Professional Corporation
5 Becker Farm Road
Roseland, New Jersey 07068
(201)740-0500
Attorneys for Debtor

FILED
CLIFFORD P. KIRSCH, CLERK
OCT 2 1984
U.S. BANKRUPTCY COURT DISTRICT OF N.J.
BY: CHARLOTTE CAFONE DEPUTY

UNITED STATES BANKRUPTCY COURT
FOR THE DISTRICT OF NEW JERSEY
Banktruptcy No. 84-00453

In Proceedings for a Reorganization Under Chapter 11 of the Bankruptcy Code

In the Matter Of

BERLES CARTON COMPANY, INC.,
a New Jersey Corporation,

Debtor.

NOTICE OF PROPOSED LEASE AND SALE OF PROPERTY FREE OF LIENS, CLAIMS AND ENCUMBRANCES

TO: ALL CREDITORS
EQUITY SECURITY HOLDERS
PARTIES IN INTEREST

SIRS:

PLEASE TAKE NOTICE that the undersigned, attorneys for the debtor and debtor-in-possession, will move before the Honorable Vincent J. Commisa, Bankruptcy Judge, at the United States Courthouse & Post Office Building, Federal Square, Newark, New Jersey, on the 5th day of November, 1984, at 10:00 a.m. in the forenoon or as soon thereafter as counsel may be heard, pursuant to §363(b) and (f) of the Bankruptcy Code, and Rule 6004(a), for entry of an Order authorizing the debtor and debtor-in-possession to lease to Morris Box Board Co., Inc. (a corporation to be formed), the real estate, plant machinery and

ATTACHMENT K-1

equipment of the Debtor, Schedule A annexed, and to grant an option to purchase the demised premises and machinery, equipment and chemicals for the sum of $2,300,000, less all net rent paid to the Debtor, free of all liens, claims and encumbrances, with valid liens to attach to proceeds, subject to any higher or better offer as shall be accepted by the debtor-in-possession and approved by the Court.

The proposed lease shall be for a term of six years and shall provide for the following terms and conditions:

a) annual rent net to the landlord shall be calculated at $10 per ton of paper board produced and sold at the demised premises, a minimum annual rent of $225,000. and with a maximum annual net rent of $300,000; the lease shall provide for all repairs, maintenance, insurance, taxes, and ~~assessments~~ to be paid by the tenant as additional rent.

b) the premises shall be leased and conveyed as is, without representations or warranties, express or implied.

c) the proposed lease shall provide for a total maximum net rent of $1,800,000 payable to the landlord and an additional $500,000 payable upon exercise of the option to purchase for a total of $2,300,000 net to the landlord.

d) the proposed lease is subject to entry of a satisfactory agreement between proposed tenant and United Paper Workers International Union, Local 300; and further subject to satisfactory lending arrangements between tenant and Midlantic National Bank for continued financing of the operation.

Any party in interest desiring to submit a higher or better offer or to arrange for an inspection of the demised

ATTACHMENT K-2

premises is requested to contact the office of the undersigned, counsel to the debtor-in-possession, attention William S. Katchen, Esq. (201) 740-0500.

PLEASE TAKE FURTHER NOTICE that any creditor, equity security holder or other party in interest objecting to the foregoing application of the debtor, shall be required to file with the Clerk of the Bankruptcy Court, U.S. Post Office & Courthouse Building, Federal Square, Newark, New Jersey, and serve a copy of such objection upon Wolff & Samson, P.A., 5 Becker Farm Road, Roseland, New Jersey, not later than five days before the hearing date set forth above. Any objection shall set forth (i) the basis of the objector's interest in or claims against the debtor; (ii) the specific grounds for any objection; and (iii) a request for hearing on the objections before the Court at the above time and place.

A copy of the debtor's application is on file with the Clerk of the Bankruptcy Court and available for inspection during business hours and at the office of the undersigned, counsel for the debtor and debtor-in-possession.

PLEASE TAKE FURTHER NOTICE that any party in interest submitting an offer shall be deemed to submit to the jurisdiction of the Bankruptcy Court to enforce such offer, in accordance with the terms, if such offer be accepted and approved by the Court.

ATTACHMENT K-3

In the event no timely objection and request for hearing is filed and served pursuant to this Notice, the Court will be requested to enter an Order without a hearing pursuant to §102(1)(B) of the Code.

WOLFF & SAMSON
Attorneys for Debtor & Debtor-In-Possession

By: _____
WILLIAM S. KATCHEN

Dated: October 2, 1984

ATTACHMENT K-4

ATTACHMENT L

Let's protect our earth

CN 028
Trenton, N.J. 08625-0028

(609)633-7141

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT

Michele M. Putnam
Deputy Director
Hazardous Waste Operations

John J. Trela, Ph.D., Director

Lance R. Miller
Deputy Director
Responsible Party Remedial Action

IN THE MATTER OF
CHINA NATIONAL PACKAGING CORPORATION OF
BEIJING, INC., OF THE PEOPLES REPUBLIC OF CHINA;
CHIN AM, INC.; AND PAPER BOARD SPECIALTIES
OF PATERSON, INC.
ECRA CASE #'s 85317, 89925

: AMENDMENT TO
: ADMINISTRATIVE
: CONSENT ORDER

The following FINDINGS are made and ORDER is issued pursuant to the authority vested in the Commissioner of the New Jersey Department of Environmental Protection (hereinafter "NJDEP") by N.J.S.A. 13:1D-1 et seq. and the Environmental Cleanup Responsibility Act, N.J.S.A. 13:1K-6 et seq.("ECRA"), and duly delegated to the Assistant Director for the Industrial Site Evaluation Element within the Division of Hazardous Waste Management pursuant to N.J.S.A. 13:1B-4.

FINDINGS

1. China National Packaging Corporation of Beijing, Inc., of the Peoples Republic of China ("CNP" or "Ordered Party") and Chin Am, Inc., a wholly-owned subsidiary of China National Packaging Corporation of Beijing, Inc., of the Peoples Republic of China ("Chin Am" or "Ordered Party") entered into an Administrative Consent Order ("ACO") with NJDEP effective January 2, 1986 (the "Chin Am ACO"), ECRA Case #85317, to allow Berles Carton Company to complete a sale of real property and business assets to Chin Am to be consummated prior to completion of the standard ECRA administrative process.

2. Subsequent to May 11, 1989, the Department alleges that China National Packaging Corporation of Beijing, Inc. of the Peoples Republic of China, and Chin Am, Inc., have failed to submit pursuant to Paragraph 9.E of the Chin Am ACO the required soil and ground water sampling results of the Phase I activities at the Paterson facility. On or about July 28, 1989, Chin Am, Inc. was notified by NJDEP letter that the Department would reserve the right to assess penalties for this alleged violation.

3. On September 29, 1989, Chin Am entered into an agreement to sell the real property and business assets, including all improvements, fixtures, machinery and equipment at the Paterson facility to Paper Board Specialties of Paterson, Inc. ("PSP" or "Ordered Party") ("PSP Sale").

ATTACHMENT L-1

TUB

4. PSP has requested that NJDEP prepare an Amendment to the Chin Am ACO to include the PSP Sale and to allow the PSP Sale to be consummated prior to completion of the standard ECRA administrative process in accordance with the Chin Am ACO.

ORDER

NOW, THEREFORE, IT IS ORDERED AND AGREED THAT:

5. The provisions of this Amendment shall become part of the Chin Am ACO. The Chin Am ACO as amended, shall remain in full force and effect. The PSP Sale may be consummated prior to the completion of the standard ECRA administrative process.

6. Paragraphs 5 and 6 of the Chin Am ACO shall be amended to read as follows:

A. Industrial Establishment

ECRA Case #89925 SIC #:2631
Facility Name: Chin Am Mill
"Paterson facility"
Facility Location: 177-302 and 186-218 Third Avenue
Paterson, Passaic County

Block(s): 455, 454, 429, and 428 Lot: 1

Initial Notice Status: Incomplete

Owner: Chin Am, Inc., a New Jersey Corporation
Operator: Chin Am, Inc., a New Jersey Corporation

B. Transaction:

Seller: Chin Am, Inc., a New Jersey Corporation
Buyer: Paper Board Specialties of Paterson, Inc., a New Jersey Corporation

Description: Pursuant to an agreement of sale dated September 29, 1989, Chin Am shall sell the real property and all business assets, including all improvements, fixtures, machinery, and equipment at the Paterson facility to Paper Board Specialties of Paterson, Inc. Operations at the Paterson facility will continue under Paper Board Specialties of Paterson, Inc.

7. Within seven (7) days from the effective date of this Amendment, Chin Am shall provide NJDEP with written documentation that Chin Am shall allow NJDEP and PSP access to the Paterson facility for the purpose of undertaking all necessary monitoring and environmental cleanup activities at the site.

8. PSP shall complete the Initial Notice (commonly referred to as ECRA I and II) for ECRA case #89925 required by N.J.A.C. 7:26B-3 within thirty (30) days from the effective date of this ACO.

ATTACHMENT L-2

TOB

9. Within seven (7) days from the effective date of this Amendment, PSP shall provide to NJDEP a copy of the written agreement between Chin Am and PSP.

10. Execution of this Amendment to the Chin Am ACO shall not release China National Packaging Corporation of Beijing, Inc., Peoples Republic of China, and Chin Am, Inc. from any penalties accruing from the alleged violation referenced above in Paragraph 2 of the Findings.

11. Notwithstanding the provisions of Paragraph 15.A herein, PSP shall not be held responsible for the alleged violation referenced above in Paragraph 2 of the Findings prior to the execution of this Amendment.

12. PSP agrees not to contest the authority or jurisdiction of the Department to issue this Amendment to the Chin Am ACO and also agrees not to contest the terms of this Amendment.

13. Any signatory to this Amendment to the Chin Am ACO, who is executing this Amendment to the Chin Am ACO on behalf of an entity other than that individual, shall provide to NJDEP appropriate documentary evidence as specified in N.J.A.C. 7:26B-1.13 authorizing the signatory to bind the entity to the provisions of this Amendment to the Chin Am ACO. This documentary evidence shall be submitted to NJDEP along with this executed Amendment to the Chin Am ACO.

14. Any Ordered Party to this Amendment to the Chin Am ACO shall provide to NJDEP at least thirty (30) days prior written notice of the dissolution of its corporate identity or liquidation of its assets, and shall provide immediate written notice to NJDEP of filing of a petition for bankruptcy no later than the day after filing. Upon receipt of notice of dissolution of corporate identity, liquidation of assets or filing of a petition for bankruptcy, NJDEP may request and within fourteen (14) days of NJDEP's written request an Ordered Party shall obtain and submit to NJDEP, additional financial assurance pursuant to this ACO.

15. Responsibility of the Ordered Parties

A. Upon execution of this Amendment to the Chin Am ACO, PSP shall be the lead party for contact with NJDEP and for compliance with the terms and conditions of this ACO. NJDEP and the Ordered Parties have agreed that the Ordered Parties shall be responsible, each of them jointly, severally and individually, for performance of all obligations listed in this ACO.

B. NJDEP and the Ordered Parties mutually agree that in the event that PSP, CNP, or Chin Am fails or refuses to perform any ECRA obligations, as determined by NJDEP, NJDEP may exercise full discretion concerning the ECRA obligations of the Ordered Parties for ECRA compliance. The Ordered Parties expressly agree that in the event that PSP, CNP, or Chin Am fails or refuses to perform any obligation(s) under this ACO as determined by NJDEP, NJDEP shall have the right to exercise any option or combination of options available to NJDEP under this ACO, ECRA, the Regulations or any other statute to ensure full and complete ECRA compliance by PSP, CNP and/or Chin Am.

ATTACHMENT L-3
TOB

16. This Amendment shall take effect upon the execution of this Amendment by the parties. This Amendment shall be null and void unless PSP submits this signed Amendment to NJDEP within thirty (30) days of signing of this Amendment by NJDEP. Upon the effective date of this Amendment, PSP may complete the PSP Sale. PSP shall submit a fully executed Amendment to NJDEP within five (5) business days from the effective date.

NEW JERSEY DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Date: 12/13/89

By: _____
KARL J. DELANEY, ASSISTANT DIRECTOR
INDUSTRIAL SITE EVALUATION ELEMENT

CHINA NATIONAL PACKAGING
CORPORATION OF BEIJING, INC.,
OF THE PEOPLES REPUBLIC OF CHINA
(Ordered Party)

Date: 12/14/89

By: Guo Xianpei

Name: Guo Xianpei

Title: Secretary

CHIN AM, INC.
(Ordered Party)

Date: 12/14/89

By: _____

Name: Hsu WENHU

Title: Secretary

ATTACHMENT L-4

ATTACHMENT M

State of New Jersey
Department of Environmental Protection and Energy
Division of Responsible Party Site Remediation
CN 028
Trenton, NJ 08625-0028
Tel. # 609-633-7141
Fax. # 609-777-4285

Karl J. Delaney
Director

A. Weiner
Commissioner

NOV 10 1991

IN THE MATTER OF CHINA NATIONAL PACKAGING CORPORATION OF BEIJING, INC., OF THE PEOPLES REPUBLIC OF CHINA, CHIN AM, INC. AND PAPERBOARD SPECIALTIES OF PATERSON, INC.

NOTICE OF VIOLATION AND OFFER OF SETTLEMENT

ECRA CASE #85317

This NOTICE OF VIOLATION AND OFFER OF SETTLEMENT is issued pursuant to the authority vested in the Commissioner of the New Jersey Department of Environmental Protection and Energy (hereinafter "NJDEPE") by N.J.S.A. 13:1D-1 et seq. and the Environmental Cleanup Responsibility Act, ("ECRA") N.J.S.A. 13:1K-6 et seq., and duly delegated to the Assistant Director, Industrial Site Evaluation Element of the Division of Responsible Party Site Remediation pursuant to N.J.S.A. 13:1B-4.

FINDINGS

1. Chin Am, Inc., a New Jersey Corporation, operated a recycling cardboard manufacturing facility located at 177-302 Third Avenue and 186-218 Third Avenue, Paterson City, Passaic County; said site being formerly owned by Chin Am, Inc.; said site being currently owned and operated by Paperboard Specialties of Paterson, Inc., said site being further known as Blocks 428, 429, 445, 454, Lot 1; on the tax map of the City of Paterson ("Paterson facility" or "the Site"). The Standard Industrial Classification ("SIC") number which best described the operations at the Paterson facility is 2631. Furthermore, hazardous substances or wastes as defined by ECRA were utilized during at the Paterson facility. The Paterson facility is an Industrial Establishment as defined by ECRA.

2. On or about September 10, 1985, Berles Carton Co. entered into an agreement to sell the real property at the Paterson facility to the China National Packaging Corporation of Beijing, Inc., of the Peoples Republic of China ("China National Corporation"). It was designated that upon completion of the aforementioned transaction, Chin Am, Inc., a wholly-owned

ATTACHMENT M-1

subsidiary of the China National Corporation, would own and operate the Paterson facility.

3. On January 2, 1986, Chin Am, Inc., China National Corporation and NJDEPE entered into an Administrative Consent Order ("CHC ACO") which allowed the above described sale to be consummated prior to the completion of all the ECRA requirements, and specified a time schedule for completion of ECRA requirements by the Paterson facility (ECRA Case #85317). Chin Am, Inc., China National Corporation and NJDEPE expressly agreed that the sale of the Paterson facility was subject to ECRA.

4. On or about September 29, 1989, Chin Am, Inc. entered into an agreement to sell its business assets and the real property at the Paterson facility to Paperboard Specialties of Paterson, Inc. ("Paperboard Specialties"). Pursuant to the Agreement, upon completion of the aforementioned transaction, Paperboard Specialties would own and operate at the Paterson facility. Additionally, in Section 7 of the Agreement, Paperboard Specialties agreed to assume and perform Chin Am, Inc.'s responsibilities and obligations under ECRA.

5. On December 16, 1989, Chin Am, Inc., China National Corporation and NJDEPE entered into an Amendment to the above referenced Administrative Consent Order ("CHC AMENDMENT") which allowed the sale described in Paragraph 4 of this NOTICE OF VIOLATION AND OFFER OF SETTLEMENT to be consummated prior to the completion of all the ECRA requirements, and specified a time schedule for completion of ECRA requirements for the Paterson facility. Chin Am, Inc., China National Corporation and NJDEPE expressly agreed that the sale of the Paterson facility was subject to ECRA. Chin Am, Inc., China National Corporation and Paperboard Specialties expressly agreed that execution of the CHC AMENDMENT would not release Chin Am, Inc. and/or China National Corporation from any penalties accruing as detailed below in Paragraph 6 of this NOTICE OF VIOLATION AND OFFER OF SETTLEMENT. Chin Am, Inc., China National Corporation, Paperboard Specialties and NJDEPE also agreed that Paperboard Specialities would be the lead party for contact with the NJDEPE and for completion of the ECRA requirements for the Paterson facility.

6. NJDEPE sent a NOTICE OF VIOLATION AND OFFER OF SETTLEMENT dated January 16, 1990 to Chin Am, Inc. and China National Corporation, informing them that they were in violation of ECRA and the Regulations for failure to implement the required Phase I soil and ground water sampling activities as referenced in the Cleanup Plan proposal dated December 5, 1988, and for the failure to submit the required soil and ground water results within the time frame specified by NJDEPE in violation of N.J.A.C. 7:26B-4.3 and Paragraphs 9.B and 9.E of the CHC ACO.

7. On or about January 30, 1990, NJDEPE received a proposed Cleanup Plan for the Paterson facility.

8. On or about February 16, 1990, Chin Am, Inc. filed a Petition for bankruptcy with the United States Bankruptcy Court.

ATTACHMENT M-2

9. On April 20, 1990, NJDEPE met with representatives from Chin Am, Inc. to discuss the NOTICE OF VIOLATION AND OFFER OF SETTLEMENT dated January 16, 1990. To date, Chin Am, Inc. and/or China National Corporation have not made an offer to the NJDEPE to settle the outstanding penalty matter.

10. By letter dated May 24, 1990, which was received on or about May 29, 1991 by Tomas Espinosa, the designated agent ("Agent") acting on behalf of Chin Am, Inc., NJDEPE granted a Cleanup Plan approval for the Paterson facility with conditions.

11. Chin Am, Inc., China National Corporation and/or Paperboard Specialties did not contest the conditions of the NJDEPE's Cleanup Plan approval letter dated May 24, 1990.

12. On or about June 10, 1990, NJDEPE received a progress report and additional information dated June 6, 1990 from Donald Bello, of Bello Environmental Consultants, Inc., the environmental consultant ("Consultant") for ECRA Case #85317.

13. By letter dated August 20, 1990, which was received on or about August 24, 1991 by the Agent, NJDEPE advised Chin Am, Inc., China National Corporation and Paperboard Specialties that pursuant to item #6 of the May 24, 1990 Cleanup Plan approval, the monthly progress report had not been received by this office within the time frames set by NJDEPE.

14. On or about October 10, 1990, NJDEPE received a letter dated June 6, 1990 from the Consultant informing NJDEPE that there would be some delay in submittal of the previous investigation performed at the Paterson facility but that this material should be resolved within a period of three weeks.

15. By letter dated December 3, 1990, which was received on or about December 7, 1990 by the Agent, NJDEPE advised Chin Am, Inc., China National Corporation and Paperboard Specialties that they were in violation of the CHC ACO for failing to submit progress reports, results, and effectuate the cleanup activities pursuant to the time frames set forth in the May 24, 1990 Cleanup Plan approval. Therefore, NJDEPE required that items #1-7 of the December 3, 1990 letter be submitted to this office along with a new revised cleanup activities schedule within fifteen (15) days after receipt of the December 3, 1990 letter. Additionally, Chin Am, Inc., China National Corporation and Paperboard Specialties were advised that NJDEPE had determined that the June 6, 1990 progress report was deficient and that items #8-13 of the December 3, 1990 letter and a Cleanup Plan Addendum must be submitted along with the progress report due on February 11, 1991.

16. On or about January 28, 1991, NJDEPE received a report dated December 1990 from the Consultant entitled the "Report on the Results of an ECRA Soil/Ground Water Quality Investigation."

17. NJDEPE received letters which contained additional information dated February 22, 1991, March 7, 1991, March 13, 1991, March 19, 1991, April 19, 1991 from Philip J. Vinch of CAV

ATTACHMENT M-3

Environmental Services, Inc., the new environmental consultant ("new Consultant").

18. On or about June 13, 1991, NJDEPE received a letter dated June 13, 1991 from the new Consultant. Included as part of this June 13, 1990 submittal was a change of authorized agent for ECRA Case #85317 from Tomas Espinosa to the new Consultant.

19. By letter dated June 28, 1991, which was received on or about July 2, 1991 by Jonathan Kohn, the Trustee in Bankruptcy for Chin Am, Inc. ("Trustee"), NJDEPE advised Chin Am, Inc., in response to a letter received from the Trustee dated May 24, 1991, that considerable portions of the cleanup activities on Site had not been performed within the time frames pursuant to the May 24, 1990 Cleanup Plan approval and that the above parties were out of compliance with ECRA and the regulations promulgated pursuant thereto. Additionally, NJDEPE advised Chin Am, Inc. and China National Corporation that they would remain out of compliance and penalties would continue to accrue until such time as all of the requirements of the May 24, 1990 Cleanup Plan approval were met.

20. By letter dated August 16, 1991, which was received on or about August 19, 1991 by the Trustee, Dominick Desidero of Paperboard Specialties and William Oeters of Recovery Technologies Industries (the newest consultant), Chin Am, Inc., China National Corporation and Paperboard Specialties were advised that NJDEPE had determined that the December 1990 "Report on the Results of an ECRA Soil/Ground Water Quality Investigation" was deficient. Therefore, NJDEPE required Chin Am, Inc. and/or China National Corporation to address the deficiencies as stated in the August 16, 1991 letter, implement new sampling in accordance with the August 16, 1991 letter, initiate free product recovery at the Site, and to submit a Cleanup Plan Addendum, a revised QA/QC package and a new revised cleanup activities schedule along with the progress report due on October 15, 1991. Additionally, NJDEPE reiterated that Chin Am, Inc. and/or China National Corporation were out of compliance with the May 24, 1990 Cleanup Plan approval and that NJDEPE reserved its rights to assess penalties back to the original due date of the material.

21. On August 8, 1991, August 20, 1991, August 23, 1991 and September 24, 1991, NJDEPE personnel inspected the Paterson facility. During these inspections, it was confirmed that cleanup activities were not being implemented in accordance with the May 24, 1990 Cleanup Plan approval.

22. Paragraph 11.E of the CHC ACO provides that; In the event that Chin Am, Inc. or China National Corporation fails to comply with any of the provisions of this Administrative Consent Order, Chin Am, Inc. and/or China National Corporation shall pay to NJDEPE stipulated penalties in the amount of $5,000.00 for each day on which Chin Am, Inc. and/or China National Corporation fails to comply with any obligation under this Administrative Consent Order provided, however, that no such stipulated penalty

ATTACHMENT M-4

shall be payable by Chin Am, Inc. and/or China National Corporation with respect to such period that said failure to comply results from Force Majeure.

23. Paragraph 9.D of the CHC ACO provides that Chin Am, Inc. and/or China National Corporation shall implement any NJDEPE approved Cleanup Plan in accordance with the approved cleanup activities schedule.

24. Paragraph 15.B of the CHC AMENDMENT provides that; In the event that Chin Am, Inc., China National Corporation or Paperboard Specialities fails or refuses to perform any obligation(s) under this ACO as determined by NJDEPE, NJDEPE shall have the right to exercise any option or combination of options available to NJDEPE under this ACO, ECRA, the Regulations or any other statute to ensure full and complete ECRA compliance by Chin Am, Inc., China National Corporation and/or Paperboard Specialities. Notwithstanding the provisions of Paragraph 11.E of the CHC ACO, Paperboard Specialties shall additionally be held responsible for penalties for non compliance with ECRA and the Regulations pursuant to N.J.A.C. 7:26B-9.3.

25. Based on the above FINDINGS, the Department alleges that Chin Am, Inc., China National Corporation and/or Paperboard Specialties failed to comply with ECRA and the Regulations promulgated pursuant thereto, N.J.A.C. 7:26B. Specifically, Chin Am, Inc., China National Corporation and Paperboard Specialties allegedly failed to implement the cleanup activities pursuant to the May 24, 1990 Cleanup Plan approval in accordance with N.J.A.C. 7:26B-5, Paragraph 9.D of the CHC ACO and ECRA and the Regulations promulgated pursuant thereto, N.J.A.C. 7:26B for a period of three-hundred-thirty-five (335) days and have accumulated penalties in the amount of $764,500.00. As of November 8, 1991, the Department has not received the above information.

OFFER OF PENALTY SETTLEMENT

26. NJDEPE may settle any claim for a penalty pursuant to ECRA or N.J.A.C. 7:26B-9.3. NJDEPE will accept a payment in full settlement of this matter in the amount of $458,700.00 for the alleged violation referenced in this NOTICE OF VIOLATION AND OFFER OF SETTLEMENT subject to the following conditions:

a. If NJDEPE receives payment of $458,700.00 within twenty (20) calendar days after Chin Am, Inc.'s, China National Corporation's and/or Paperboard Specialties' receipt of this NOTICE OF VIOLATION AND OFFER OF SETTLEMENT:

b. Payment shall be made by a certified or cashier's check payable to "Treasurer, State of New Jersey" and shall be submitted together with a copy of this NOTICE OF VIOLATION AND OFFER OF SETTLEMENT to:

ATTACHMENT M-5

New Jersey Department of Environmental Protection and Energy
Bureau of Revenue-DFMPGS
CN 402
401 East State Street
Trenton, New Jersey 08625

c. Payment shall be made by certified mail, return receipt requested or by hand delivery.

d. Chin Am, Inc., China National Corporation and/or Paperboard Specialties shall implement the cleanup activities pursuant to the May 24, 1990 Cleanup Plan approval within twenty (20) days after receipt of this NOTICE OF VIOLATION AND OFFER OF SETTLEMENT.

27. If Chin Am, Inc., China National Corporation and/or Paperboard Specialties do not comply with all of the conditions of Paragraph 26 of this NOTICE OF VIOLATION AND OFFER OF SETTLEMENT within the stipulated time frame, NJDEPE shall immediately refer this matter to the Office of the Attorney General for commencement of litigation pursuant to the Penalty Enforcement Law, N.J.S.A. 2A:58-1 et seq., to collect maximum statutory penalties as allowed by ECRA and to seek any other relief allowed by ECRA or any other law.

28. Except as provided in Paragraph 26 regarding submission of payment to NJDEPE, all submissions, questions or other contact with NJDEPE pursuant to this NOTICE OF VIOLATION AND OFFER OF SETTLEMENT should be addressed to:

Bureau of ECRA Applicability and Compliance
Division of Responsible Party Site Remediation
CN 028
Trenton, New Jersey 08625
Attention: Barbara Murray, Chief
(609) 633-7141

RESERVATION OF RIGHTS

29. Notice is given that this NOTICE OF VIOLATION AND OFFER OF SETTLEMENT is issued only for the violations and period identified hereinabove and that violations of any statutes, rules or permits other than those herein cited may be cause for enforcement actions, either administrative or judicial, being instituted without further notice. By issuing this NOTICE OF VIOLATION AND OFFER OF SETTLEMENT, NJDEPE does not waive its right to initiate enforcement actions.

30. Notice is further given that Chin Am, Inc.'s, China National Corporation's and/or Paperboard Specialties' payment pursuant to this NOTICE OF VIOLATION AND OFFER OF SETTLEMENT shall not relieve Chin Am, Inc., China National Corporation and/or Paperboard Specialties of their obligation to comply with ECRA

ATTACHMENT M-6

and N.J.A.C. 7:26B and the CHC ACO and the CHC AMENDMENT. NJDEPE's acceptance of any payment made pursuant to this NOTICE OF VIOLATION AND OFFER OF SETTLEMENT shall not constitute a waiver by NJDEPE of its right to compel Chin Am, Inc., China National Corporation and/or Paperboard Specialties to specifically perform their obligations under ECRA, N.J.A.C. 7:26B-3 or of its right to void a sale or transfer of an Industrial Establishment pursuant to ECRA and N.J.A.C. 7:26B and NJDEPE expressly reserves those rights.

Date: 11/15/91

Kenneth T. Hart, Assistant Director, Industrial Site Evaluation Element

cc: Barbara Murray, Chief, BEAC
Anthony Cinque, BEAC
Jeannette Cleary, BEAC
William J. Pascrell, Jr., Mayor, City of Paterson
John J. Ferraioli, Division of Health, City of Paterson
David Shotwell, Northern Field Operations

ATTACHMENT M-7

ATTACHMENT N

MAY 19 1992

STANDBY TRUST AGREEMENT

Re: Environmental Cleanup Responsibility Act

This Standby Trust Agreement, hereinafter "Agreement" entered into as of January 2, 1986 by and between CHINAM, INC., having a principal place of business at 177 Third Avenue, Paterson, New Jersey, a New Jersey corporation, hereinafter "Grantor", and BANK OF CHINA, a national bank, hereinafter "Trustee."

WHEREAS, the New Jersey Department of Environmental Protection, hereinafter "NJDEP", an agency of the State of New Jersey, has established the Interim Environmental Cleanup Responsibility Act Regulations, N.J.A.C. 7:1-3, pursuant to the Environmental Cleanup Responsibility Act, N.J.S.A. 13:1K-6 et seq. hereinafter "ECRA", applicable to the Grantor, requiring that certain procedures be followed by industrial establishments to ensure adequate preparation and implementation of acceptable cleanup procedures as a precondition of any closure or sale or transfer of any industrial establishment in accordance with ECRA; and

WHEREAS, the Grantor has entered into an Administrative Consent Order with NJDEP dated January 2, 1986, hereinafter "Consent Order", under which Grantor has agreed, among other things, to undertake certain actions in order to comply with ECRA with respect to the industrial establishment described above; and

WHEREAS, the Grantor is required within 14 days of written approval of the ECRA cleanup plan by NJDEP to provide a surety bond or other financial security pursuant to N.J.A.C. 7:1-3.13 in an amount equal to the cost of said approved cleanup plan; and

WHEREAS, the Grantor is further required to establish a standby trust fund to provide a mechanism for access by NJDEP to all or part of such financial assurance required by ECRA to assure implementation of the ECRA cleanup plan to be approved by NJDEP for the above described industrial establishment in accordance with ECRA and the Consent Order; and

WHEREAS, the Grantor, acting through its duly authorized officer or management official, has selected the Trustee to be the trustee under this Agreement, and the Trustee is willing to act as trustee;

ATTACHMENT N-1

NOW THEREFORE, the Grantor and the Trustee agree as follows:

Section 1. Definitions.

As used in this Agreement:

(a) The term "Grantor" means the owner or operator of the industrial establishment entering into this Agreement and any successors or assigns of the Grantor.

(b) The term "Trustee" means the Trustee who enters into the Agreement and any successor Trustee.

Section 2. Identification of Industrial Establishment and Cost Estimates.

This Agreement pertains to the industrial establishments and cost estimates identified on Attachment A.

Section 3. Establishment of Fund.

The grantor and the trustee hereby establish a trust fund, hereinafter the "Fund", for the benefit of NJDEP. The Grantor and the Trustee intend that no third party shall have access to the Fund except as herein provided. The Fund is established initially as consisting of the total sum of zero dollar which is acceptable to the Trustee and NJDEP. Such property and any other property subsequently transferred to the trustee is referred to as the Fund, together with all earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, IN TRUST, as hereinafter provided. The trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor, any payments necessary to discharge any liabilities of the grantor established by the NJDEP.

Section 4. Payment for ECRA Cleanup.

The trustee shall make payment from the Fund as the NJDEP Commissioner, or his designee, shall direct, in writing, to provide for the payment of the ECRA cleanup costs of the industrial establishment pursuant to the Administrative Consent Order dated January 2, 1986 and this Agreement. The Trustee shall reimburse the Grantor or other persons, as specified by the NJDEP, from the Fund for ECRA cleanup expenditures in such amounts as the NJDEP shall direct in writing. In addition,

ATTACHMENT N-2

the Trustee shall refund to the grantor such amounts the NJDEP specifies in writing. Upon refund such funds shall no longer constitute part of the Fund as defined herein.

Section 5. Payments Comprising the Fund.

Payments made to the Trustee for the Fund shall consist of cash or securities acceptable to the Trustee.

Section 6. Trustee Management.

At such time as the corpus of the Fund is funded, the Trustee shall invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however to the provisions of this Section. In investing, reinvesting, exchanging, selling and managing the Fund, the Trustee shall discharge his duties with respect to the Fund solely in the interest of the NJDEP as the beneficiary and with the care, skill, prudence and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and like aims; except that:

(i) Securities or other obligations of the Grantor or any other owner or operator of the facilities or any of their affiliates, as defined in the Investment Company Act of 1940, as amended, 15 U.S.C. 80a-2(a), shall not be acquired or held, unless they are securities or other obligations of the Federal or a State government;

(ii) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal or State government; and

(iii) The trustee is authorized to hold cash awaiting investment of distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

Section 7. Commingling and Investment.

The Trustee is expressly authorized in its discretion:

(a) to transfer from time to time any or all of the assets of the Fund to any common, commingled or collective trust fund created by the Trustee in which the Fund is eligible to

ATTACHMENT N-3

participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

(b) To purchase shares in any investment company registered under the Investment Company Act of 1940, 15 U.S.C. 80a-1 et seq., including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the trustee. The Trustee may vote such shares in its discretion.

Section 8. Express Powers of trustee.

Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

(a) To sell, exchange, convey, transfer or otherwise dispose of any property held by it, by public or private sale. No person dealing with the trustee shall be bound to see to the application of the purchase money or to inquire into the validity or expedience of any such sale or other disposition;

(b) To make, execute, acknowledge and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;

(c) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such fiduciaries in a qualified central depository even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depository with other securities deposited therein by another person or to deposit or arrange for the deposit of any securities issued by the Federal Government of the United States or any agency or instrumentality thereof, with a Federal Reserve bank, but the books and records of the trustee shall at all times show that all securities are part of the Fund;

(d) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee in its separate corporate capacity, or in any banking institution affiliated with the Trustee, to the extent insured by an agency of the Federal or State government; and

ATTACHMENT N-4

(e) To compromise or otherwise adjust all claims in favor of or against the Fund.

Section 9. Taxes and Expenses.

All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the grantor and all other proper charges and disbursements of the Trustee shall be paid from the Fund.

Section 10. Annual Valuation.

The Trustee shall annually, at least 30 days prior to the anniversary date of establishment of the Fund, furnish to the Grantor and to the NJDEP a statement confirming the value of the Trust. Any securities in the Fund shall be valued at market value as of no more than 60 days prior to the anniversary date of establishment of the Fund. The failure of the Grantor to object in writing to the Trustee within 90 days after the statement has been furnished to the grantor and the NJDEP shall constitute a conclusively binding assent by the Grantor, barring the Grantor from asserting any claim or liability against the Trustee with respect to matters disclosed in the statement.

Section 11. Advice of Counsel.

The Trustee may from time to time consult with counsel, who may be counsel to the grantor, with respect to any question arising as to the construction of this Agreement or any action to be taken hereunder. The trustee shall be fully protected, to the extent permitted by law, in acting upon the advice of counsel.

Section 12. Trustee Compensation.

The Trustee shall be entitled to reasonable compensation for its services, as agreed upon in writing from time to time with the Grantor.

Section 13. Successor Trustee.

The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the grantor has appointed a successor trustee and this successor accepts the appointment. The successor trustee shall ha

ATTACHMENT N-5

the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor trustee's acceptance of the appointment, the trustee shall assign, transfer and pay over to the successor trustee the funds and properties then constituting the Fund. If for any reason, the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor trustee or for instructions. The successor trustee shall specify the date on which it assumes administration of the trust in a writing sent to the Grantor, the NJDEP and the present Trustee by certified mail 10 days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this Section shall be paid as provided in Section 9.

Section 14. Successor Grantor.

Sixty days prior to the Grantor ceasing to exist if dissolution is contemplated, the Grantor must notify and provide NJDEP with the names and addresses of any and all successors and assigns along with a notarized acknowledgement from same stating that the successors and assigns assume responsibilities concerning financial assurance.

Section 15. Instructions to the Trustee.

All orders, requests and instructions by the Grantor to the Trustee shall be in writing, signed by such persons as are designated in the attached Attachment B or such other designees as the grantor may designate by amendment to Attachment B. The trustee shall be fully protected in acting without inquiry in accordance with the Grantor's orders, requests and instructions. All orders, requests and instructions by the NJDEP to the trustee shall be in writing, signed by the NJDEP Commissioner or his/her designee and the Trustee shall act and shall be fully protected in acting in accordance with such orders, requests and instructions. The Trustee shall have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the Grantor of NJDEP hereunder has occurred.

The Trustee shall have no duty to act in the absence of such orders, requests and instructions from the Grantor and/or NJDEP, except as provided for herein.

ATTACHMENT N-6

Section 16. Amendment of Agreement.

This Agreement may be amended by an instrument in writing executed jointly by the Grantor or the Grantor's principals, successors and assigns if grantor has dissolved, the Trustee and the NJDEP or by the trustee and the NJDEP if the Grantor ceases to exist and no successors or assigns are named.

Section 17. Irrevocability and Termination.

Subject to the right of the parties to amend this Agreement, as provided in Section 16, this Trust shall be irrevocable and shall continue until terminated at the written agreement of the Grantor, the Trustee and the NJDEP or of the Trustee and the NJDEP, if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expenses, shall be delivered to the Grantor.

Section 18. Immunity and Indemnification.

The Trustee shall not incur personal liability of any nature in connection with any act of omissions, made in good faith, in the administration of this Trust or in carrying out any directions by the Grantor or the NJDEP issued in accordance with this Agreement. The trustee shall be indemnified and saved harmless by the Grantor or from the Trust Fund, or both, from and against any personal liability to which the trustee may be subjected by reason of any act or conduct in its official capacity including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.

Section 19. Choice of Law.

This Agremeent shall be administered, construed and enforced according to the laws of the State of New Jersey.

Section 20. Intepretation.

As used in this Agreement, words in the singular include the plural and words in the plural include the singular.

The descriptive headings for each Section of this Agreement shall not affect the interpretation or the legal efficacy of this Agreement.

IN WITNESS WHEREOF, the parties have caused this Agreement

ATTACHMENT N-7

to be executed by their respective authorized officers or management officials, duly authorized, and their corporate seals to hereunto affixed and attested, as of the date set forth below:

January 9, 1986.

Date: January 9, 1986

CHINAM, INC.

by

JI XING, President

Date: Jan 15, 1986

BANK OF CHINA

by 賈仲淳

JIA CHUAN-LIN MANAGER

ATTACHMENT N-8

STATE OF NEW JERSEY)
) SS:
COUNTY OF PASSAIC)

On this day of January, 1986 before me personally came Ji Xing to me known, who, being by me duly sworn did depose and say that he is the President of Chinam, Inc., the corporation described in and which executed the within instrument; that he knows the seal of said corporation; that the seal affixed to such instrument is such corporate seal; that it was sc affixed by order of the Board of Directors of said corporation, and that he signed his name thereto by like order.

Sworn to and subscribed)
before me this 9th day)
of January, 1986.)

JI, XING

RICHARD J. SAVINO
ATTORNEY AT LAW
STATE OF NEW JERSEY

ATTACHMENT N-9

ATTACHMENT O

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF ENVIRONMENTAL QUALITY
AIR POLLUTION CONTROL PERMIT PROGRAM
BUREAU OF NEW SOURCE REVIEW
CN 027
TRENTON, NEW JERSEY 08625

Date: 3/ 9/92

PAPERBOARD SPECIALTIES
DOMINICK DESIDERIO
177 3RD AVE.
PATERSON , NJ, 07514-0000

Plant Location: PATERSON
County: PASSAIC
Applicant's Designation of Stack:CLEAVER BROOKS BOILER STACK
Application Log #: 01903882
Approval Date: 3/ 5/92
Approval Status Code:05

PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT

This permit is being issued under the authority of chapter 106, P.L. 1967 (N.J.S.A. 26:2C-9.2). You may construct, install, or alter the control apparatus or equipment as indicated on the application referenced above.

The Status of this approval is referenced above.
Please see page 2 of this letter for the explanation the status code.

You will be sent Form VEM-017 at a later date. Form VEM-017 will include your New Jersey Plant ID Number, New Jersey Stack Number, and Certificate Number.

If you have any questions regarding this document, please write to the Bureau of New Source Review at the above address. Questions regarding Certificates to Operate should be directed to the Regional Office.

Approved by: _____
Chief

C: BNSR File
Regional Office

ATTACHMENT O-1

DEPARTMENT OF ENVIRONMENTAL PROTECTION
ISION OF ENVIRONMENTAL QUALITY

BUREAU OF NEW SOURCE REVIEW
AIR PERMIT ENGINEERING

PERMIT REVIEW FORM

Permit Category:3 Log Number:01903852

Date Received:900822 Cancel Permit:0000000 ID/Stack#:

Company:PAPERBOARD SPECIALTIES Legal Action:0

Stack Designation:CLEAVER BROOKS BOILER STACK Source Code:1040

Controls: Control Code:0000

TAMINANT	WITHOUT CONTROL		WITH CONTROL		EFF	NJAC 7:27-
	LB/HR	TON/YR	LB/HR	TON/YR		
iculate	1.020	.460	1.020	.460	.000	4.2
	.000	.000	.000	.000	.000	
	18.120	3.670	18.120	3.670	.000	9.2
	22.800	30.000	22.800	30.000	.000	8.2
	1.900	2.440	1.900	2.440	.000	8.2
TOTAL)	.280	1.220	.280	1.220	.000	8.2
(TOTAL)	.000	.000	.000	.000	.000	
	.000	.000	.000	.000	.000	
	.000	.000	.000	.000	.000	
	.000	.000	.000	.000	.000	
	.000	.000	.000	.000	.000	
	.000	.000	.000	.000	.000	

uator:DB Date Completed:920303 Time Units:0140

ICABLE REGULATIONS

N SPS:0000 NESHAPS: TVOS:N RISK:N MODEL:N PINELANDS:N TCPA:N RCRA:0

SION CHANGE:I (Increase/Decrease/No Change)

MMENDATION

PROVE P/CT NOT REQUIRED X APPROVE W/ CONDITIONS STACKTEST ODOR OPACITY X OTHER (ATTACHED)

SAPPROVE DENY CANCEL

ECTION PRIORITY M (High/Medium/Low)

UPERVISOR_____ DATE__/__/__ | |CONCUR | |DO NOT CONCUR

DDITIONS_____ LETTER # 01/055 P/CT STARTUP_____

ECTION CHIEF_____ DATE__/__/__ | |CONCUR | |DO NOT CONCUR

FOR
REAU CHIEF [signature] DATE 3/5/92 X |APPROVE| |DISAPPROVE

SAPPROVAL CONCUR_____ DATE__/__/__ APEDS entry date __/__/__

ATTACHMENT 0-2

ATTACHMENT TO AIR POLLUTION CONTROL PERMIT
TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS
OR EQUIPMENT AND CERTIFICATE TO OPERATE CONTROL
APPARATUS OR EQUIPMENT

FOR

Applicant: Paperboard Specialties
Location: 177 3rd Ave., Paterson, N.J.
BNSR Log Number: 01-90-3882
Stack Designation: Cleaver Brooks Boiler Stack
APC Plant ID No.: unregistered

As of the effective date of this permit (see VEM-045), these conditions supersede any previous conditions.

All other conditions stated in the application for this permit also apply. In the event of any conflict, the conditions contained herein shall govern.

DEFINITIONS:

The Department: New Jersey Department of Environmental Protection

BTS: Bureau of Technical Services
New Jersey Department of Environmental Protection
CN-411, Trenton, NJ 08625
(609) 530-4041

Regional Enforcement Office:

Metropolitan Regional Air Pollution Control Office
NJ Dept. of Environmental Protection
2 Babcock Place
West Orange, New Jersey 07052
Phone: (201) 669-3935

The Applicant shall comply with the following terms and conditions for this Permit to Construct, Install or Alter Control Apparatus or Equipment and Certificate to Operate Control Apparatus or Equipment (this Permit). This approval incorporates by reference the terms, conditions, and information supplied by the Applicant in the application for this permit (the Application).

I. EMISSION LIMITS

A. Opacity

Natural Gas Operation

ATTACHMENT O-3

The applicant shall not use the equipment in a manner which will cause visible emissions, exclusive of condensed water vapor. Compliance with this provision shall be verified visually by the use of the New Jersey Test Method 2 (N.J.A.C. 7:27B-2), or approved equivalent, or by opacity monitoring.

Fuel Oil Operation

The applicant shall not use the equipment in a manner which will cause visible emissions to equal or exceed ten percent opacity, exclusive of condensed water vapor. Compliance with this provision shall be verified visually by the use of the New Jersey Test Method 2 (N.J.A.C. 7:27B-2), or approved equivalent, or by opacity monitoring.

B. Emissions during Start-up, Shutdown, and Transfer Periods

1. Start-up shall be the period of time from the initiation of boiler operation until the unit reaches operation at greater than 5% capacity. This period shall not exceed thirty minutes.

2. Shutdown shall be the period of time from the initiation of boiler operation until boiler operation ceases. This period shall not exceed thirty minutes.

3. Transfer period shall be the period of time from operating on one form of fuel until the unit operates on another form of fuel. This period shall not exceed ten minutes.

4. During the start-up, shutdown, and transfer periods, visible emissions shall not exceed twenty percent opacity. Compliance with this provision shall be determined by the use of an opacity monitor, New Jersey Air Test Method 2 (N.J.A.C. 7:27B-2), or other methods approved by the Chief, BTS.

II. OPERATING REQUIREMENTS

Total number six fuel oil consumption shall not exceed 170,000 gallons per year. Compliance shall be determined from fuel consumption monitoring. (Condition III)

Total natural gas consumption shall not exceed 255 million standard cubic feet per year. Compliance shall be determined from fuel consumption monitoring. (Condition III)

III. MONITORING AND RECORD KEEPING

A. Operating load shall be continuously monitored by installation and operation of a cumualative fuel flow meter. A meter shall be installed to measure the total fuel flow of

natural gas and number six fuel oil. The meters shall be approved by the Bureau of Technical Services.

B. The applicant shall record fuel use daily and shall determine total annual fuel use weekly.

IV. REPORTING REQUIREMENTS

A. The Applicant shall report any exceedance of opacity conditions specified in these Conditions for this Permit, in writing, within three working days after the event, to the Regional Enforcement Office.

B. Any operation of the equipment which may cause off-property effects, including odors shall be reported by the Applicant, to the extent required by the Air Pollution Control Act, N.J.S.A. 26:2C-19(e).Such report shall be made by calling the Environmental Action Hotline at (609) 292-7172.

V. FEDERAL REQUIREMENTS

A. The equipment covered by this Permit is subject to the Federal New Source Performance Standards (NSPS) for Small Industrial Commercial-Institutional Steam Generating Units, 40 CFR, Part 60, subparts A and Dc. Compliance with all applicable provisions of these regulations is required.

VI. OTHER REQUIREMENTS

A. This Equipment shall not cause any air contaminant, including an air contaminant detectable by the sense of smell, to be present in the outdoor atmosphere in such quantity and duration which is, or tends to be, injurious to human health or welfare, animal or plant life or property, or would unreasonably interfere with the enjoyment of life or property, except in areas over which the owner or operator has exclusive use or occupancy.

B. Permits and certificates issued under N.J.A.C. 7:27-8 are based on emissions of air contaminants only and do not in any way relieve the Applicant from the obligation to obtain necessary permits from other governmental agencies.

C. The Department issues this permit on the basis of the equipment descriptions and operating procedures presented in the Application. If the final design and operation of the equipment differ from those presented, this Permit approval is invalid.

D. As a condition of this Permit, the Applicant shall comply with all terms and conditions of any Administrative Consent Order related to this Permit.

ATTACHMENT O-5

E. The equipment covered by this Permit will be subject to a maximum of four (4) periodic compliance inspections (as defined in N.J.A.C. 7:27-8.1) over the life of the Certificate, after it receives final approval for a five-year duration. The Applicant will be invoiced for a $200 service fee per inspection pursuant to N.J.A.C. 7:27-8.11 after conduct of the periodic compliance inspection.

VEM-003
8/85

Side 1

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

BUREAU OF AIR POLLUTION CONTROL

APPLICATION FOR
PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT
AND
CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT

TO: New Jersey Department of Environmental Protection
Bureau of Air Pollution Control
CN-027, Trenton, NJ 08625

Read Instructions Before Completing Application

SECTION A

1. Full Business Name: Paperboard Specialties
2. Mailing Address: 177 3rd Ave. (No.) Paterson (Street) (City) NJ (State) 07514 (Zip Code)
3. Division and/or Plant Name:
4. Plant Location: A/A (No.) (Street) (City) (State) (Zip Code) Passaic (County)
5. Location of Equipment on Premises (bldg., dept., area, etc.): Main Boiler Room
6. Nature of Business: Paperboard Manufacturing
7. Estimated Starting Date of Construction: in use
8. Date Equipment to be put in use: in use
9. Plant Contact: Dominick Desiderio (Name (print or type)) President (Title) (201)523-3040 (Telephone No.)
Andy Polo Plant Engineer

SECTION B

REASON FOR APPLICATION (Check One)

- [x] New Equipment without Control Apparatus
- [ ] New Equipment with Control Apparatus
- [ ] New Control Apparatus on Existing Equipment
- [ ] Five Year Renewal of Certificate No. (s)
- [ ] Other (Explain)
- [ ] Modification to Existing Equipment
- [ ] Modification to Existing Control Apparatus
- [ ] Painting Tank White

SECTION C

STACK INFORMATION (EQUIVALENT STACK INFORMATION)

1. Company Designation of Stack (s): Cleaver Brooks Boiler Stack
2. Previous Certificate Numbers (if any): none
3. a. Number of Sources Venting to this Stack: 1 (Complete a separate VEM-004 for each source)
   b. Number of Stacks Venting Source Operation (s): 1
4. Distance to the nearest Property Line (ft.): 16
5. Stack Diameter (inches): 36
6. Discharge Height Above Ground (ft.): 60
7. Exit Temperature of Stack Gases (°F): 590
8. Volume of Gas Discharged at Stack Conditions (A.C.F.M.): 11,700
9. Discharge Directions: [ ] Horizontal [x] Up [ ] Down

The information supplied on applications VEM-003 and VEM-004, including the data in supplements, is to the best of my knowledge true and correct.

Dominick Desiderio (Signature) 8/14/90 (Date)

Dominick Desiderio (Name (print or type)) President (Title)

This application will not be processed unless proper fee is submitted. FOR ASSISTANCE CALL (201) 523-3040

FOR DEPARTMENT USE ONLY

N.J.J.D. STACK LOG NO. CT. NO.

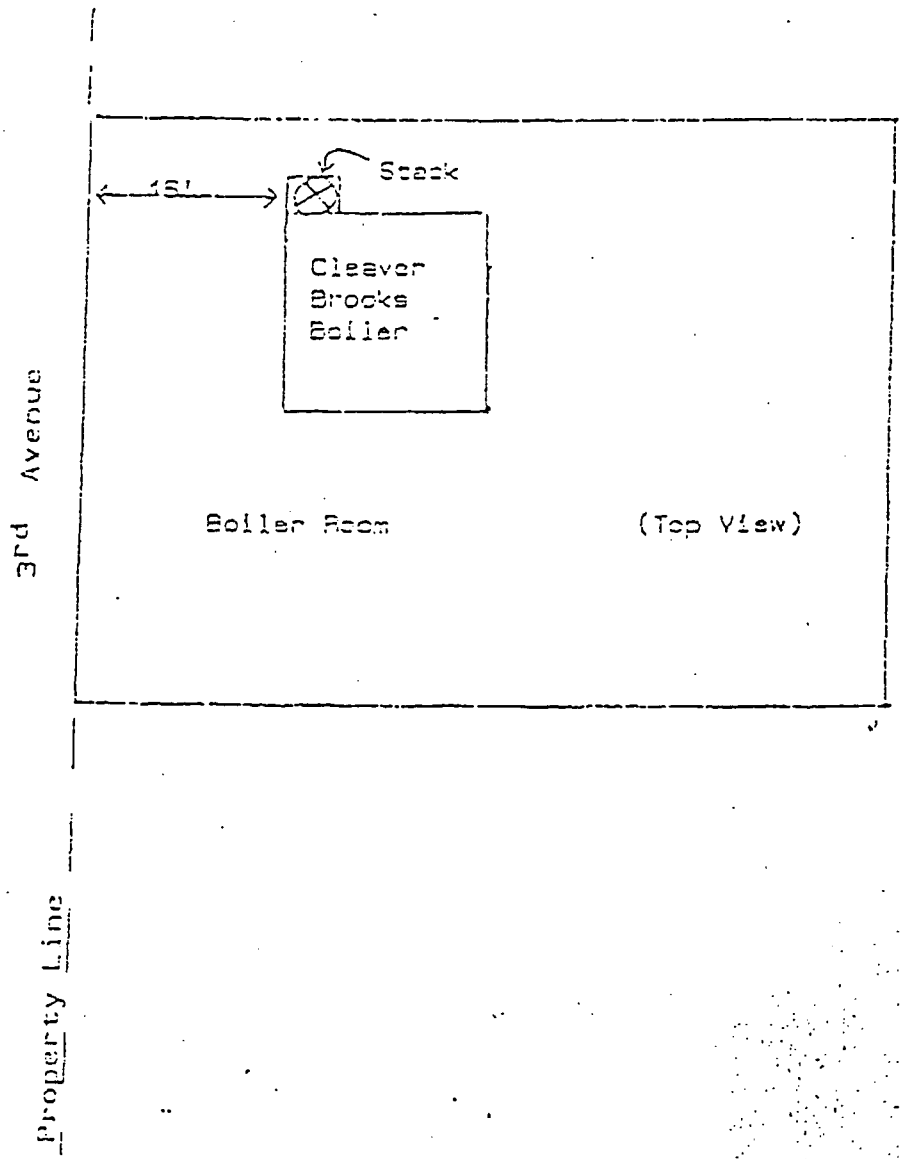
PAID ENGR.
DATE 8/20/90
AMOUNT 250

ATTACHMENT 0-

SECTION D DIAGRAM INSTRUCTIONS - A diagram must be included showing the configuration of all stacks, control apparatus and sources related to this application. NOTE: In cases of multiple stacks, include the following information for each stack: (1) distance to nearest property line, (2) stack diameters, (3) stack height above ground, (4) exit temperature (°F) of stack gases, (5) volume rate of gases (ACFM) discharged at stack conditions, (6) the location and type of control apparatus, (7) direction of flows, and (8) maximum stack emissions.

Air from boiler is discharged upwards at 11,700 ACFM (28 ft/sec) and 550 °F. The discharge occurs 30 ft above ground level through a 38" diameter stack.

The unit has no control apparatus



ATTACHMENT D-8

VEM-004

Side 1

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

BUREAU OF AIR POLLUTION CONTROL

APPLICATION FOR
PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT
AND
CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT

Source Emissions and Source Data Form
(Complete this form for each source and submit with application Form VEM-003)

SECTION A

SOURCE INFORMATION

1. Source Description: Cleaver Brooke DL-ED Water Tube Boiler generating 47,000 lb steam/hr

2. Operating Schedule: 24 Hours/Day; 8760 Hours/Year; in use Operation Starting Date

3. % Annual Production Throughput By Quarter: 25 Jan.-Mar.; 25 Apr.-June; 25 July-Sept.; 25 Oct.-Dec.

4. Volume Of Gas Discharged From This Source (ACFM): 11,700 Source Discharge Temperature (°F): 580

SECTION B

CONTROL APPARATUS ON SOURCE: None

	Capital Cost (Dollars)	Annual Operating Cost (Dollars)	No. of Sources Connected
Primary			
Secondary			
Tertiary			

SECTION C

AIR CONTAMINANTS FROM SOURCE

CONTAMINANT NAME	Emissions w/o Control (lbs./hr.) Natural Gas	Emissions with no Control (lbs./hr.) #6 Fuel Oil	How Determined
Particulates	0.123	1.02	calc old
SO_x	0.036	18.12	"
CO	1.03	1.90	"
CH_4	0.305	0.38	"
NO_x	12.20	22.80	"

TO ENSURE PROPER COORDINATION BETWEEN VEM-003 and VEM-004 FORMS, INSERT IDENTICAL COMPANY NAME AND DESIGNATION OF STACK FROM VEM-003, SIDE 1.

Full Business Name: Paperboard Specialties

ATTACHMENT 0-9

A. MANUFACTURING AND MATERIALS HANDLING N/A

1. Process Description _____

2. Total Amount Materials Processed ☐ Batch _____ lb/batch. _____ hr/batch ☐ Continuous _____ lb/hr

3.

Raw Materials	% By Wt.	Raw Materials	% By Wt.

B. FUEL BURNING EQUIPMENT

1. Gross Heat Input (10^6 BTU/HR) 61
2. Type Heat Exchange ☐ Direct ☒ Indirect ☐ Internal Combustion Engine

	PRIMARY FUEL	SECONDARY FUEL
3. a. Type of Fuel:	Natural Gas	#6 Fuel Oil
b. Heating Value (Btu/lb):	24,187	18,784
4. Method of Firing:	Forced Draft	Forced Draft
5. % Sulfur in Fuel (Dry):	--	0.3
6. % Ash Content of Fuel (Dry):	--	0.01
7. Amount Burned/Yr.:	473	0 (as day tank)

Units: Solid Fuel (Tons) Liquid Fuel (10^3 Gal.) Gaseous Fuel (10^6 Ft.^{3})

C. INCINERATION N/A

1. Type of Unit _____
2. Constituents of Waste(s) _____
3. Waste Code ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
4. Amount Burned (lbs./hr.) _____ Type of Auxil. Fuel (if any) _____

D. STORAGE FACILITY N/A

1. Tank Contents _____
2. Type of Tank or Bin _____ Height or Length (Ft.) _____
3. Capacity _____ (10^3 Ft.^{3}) ☐ (10^3 Gal.) ☐ Equivalent or Actual Diameter (Ft.) _____

THE REMAINING QUESTIONS ARE TO BE ANSWERED ONLY FOR LIQUID STORAGE

4. Vapor Pressure at 70°F (PSIA) _____ Storage Temp. If Not Ambient (°F) _____
5. Filling Rate (Gal/Min) _____ Annual Throughput (10^3 Gal/Yr) _____
6. Method of Fill: ☐ Top ☐ Bottom ☐ Submerged ☐ Other (Explain Below)
7. Color of Tank: ☐ White ☐ Other Exposed to Sun's Rays ☐ Yes ☐ No
8. Insulation Data for Insulated Tanks (Volatile Organic Substances)

Type _____, Thickness (Inches) _____, Thermal Conductivity (Btu/hr/ft^2/°F) _____

FOR DEPARTMENT USE ONLY

☐☐☐☐ - ☐☐☐ - ☐☐☐

ATTACHMENT 0-10

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

BUREAU OF AIR POLLUTION CONTROL

APPLICATION FOR PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT AND CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT

New Jersey Department of Environmental Protection
Bureau of Air Pollution Control
CN-027, Trenton, NJ 08625

Read Instructions Before Completing Application

Full Business Name: Paperboard Specialties
Mailing Address: 177 3rd Ave. (No.) Paterson (Street) (City) NJ (State) 07514 (Zip Code)

3. Division and/or Plant Name:
Plant Location: A/A (No.) (Street) (City) (State) (Zip Code) Passaic (County)
5. Location of Equipment on Premises (bldg., dept., area, etc.): Main Boiler Room
Nature of Business: Paperboard Manufacturing
Estimated Starting Date of Construction: in use
8. Date Equipment to be put in use: in use
9. Plant Contact: Dominick Desiderio (Name (print or type)) President (Title) (201)523-3040 (Telephone No.)

REASON FOR APPLICATION *(Check One)*

- [x] New Equipment without Control Apparatus
- [ ] New Equipment with Control Apparatus
- [ ] New Control Apparatus on Existing Equipment
- [ ] Five Year Renewal of Certificate No. (s)
- [ ] Other *(Explain)*
- [ ] Modification to Existing Equipment
- [ ] Modification to Existing Control Apparatus
- [ ] Painting Tank White

STACK INFORMATION (EQUIVALENT STACK INFORMATION)

1. Company Designation of Stack (s): Cleaver Brooks Boiler Stack
2. Previous Certificate Numbers (if any): none
3. a. Number of Sources Venting to this Stack: 1 (Complete a separate VEM-004 for each source)
   b. Number of Stacks Venting Source Operation (s): 1
4. Distance to the nearest Property Line (ft.): 15
5. Stack Diameter (inches): 35
6. Discharge Height Above Ground (ft.): 60
7. Exit Temperature of Stack Gases (°F): 590
8. Volume of Gas Discharged at Stack Conditions (A.C.F.M.): 11,700
9. Discharge Directions: [ ] Horizontal [x] Up [ ] Down

...mation supplied on applications VEM-003 and VEM-004, including the data in supplements, is to the best of my knowledge and correct.

Dominick Desiderio (Signature) 8/14/90 (Date)

Dominick Desiderio (Name (print or type)) President (Title)

...application will not be processed unless proper fee is submitted. FOR ASSISTANCE CALL (609) 292-6716

PAID - BNSR
DATE 8/22/90
AMOUNT 250.—

DEPARTMENT USE ONLY

N.D. STACK 0 0 0 LOG NO. CT. NO.

01-90-3882

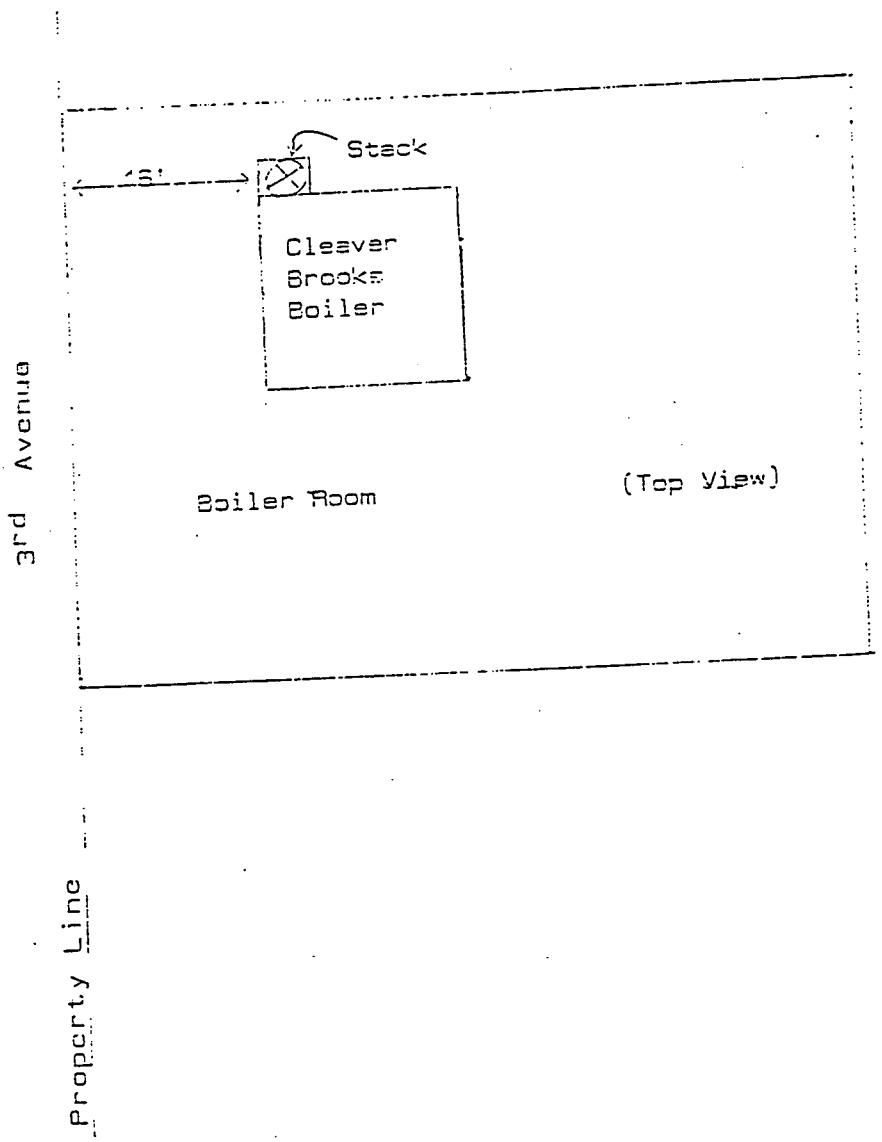
ATTACHMENT 0-11

FEE _____ EVAL. _____

SECTION D DIAGRAM INSTRUCTIONS - A diagram must be included showing the configuration of all stacks, control apparatus and sources related to this application. NOTE: In cases of multiple stacks, include the following information for each stack: (1) distance to nearest property line, (2) stack diameters, (3) stack height above ground, (4) exit temperature (°F) of stack gases, (5) volume rate of gases (ACFM) discharged at stack conditions, (6) the location and type of control apparatus, (7) direction of flows, and (8) maximum stack emissions.

Air from boiler is discharged upwards at 11,700 ACFM (28 ft/sec) and 590 °F. The discharge occurs 80 ft above ground level through a 36" diameter stack.

The unit has no control apparatus



ATTACHMENT 0-12

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

BUREAU OF AIR POLLUTION CONTROL

APPLICATION FOR
PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT
AND
CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT

Source Emissions and Source Data Form
(Complete this form for each source and submit with application Form VEM-003)

SECTION E

SOURCE INFORMATION

1. Source Description: Cleaver Brooks DL-60 Water Tube Boiler generating 47,000 lb steam/hr

2. Operating Schedule: 24 (Hours/Day); 8760 (Hours/Year); in use (Operation Starting Date)

3. % Annual Production Throughput By Quarter: 25 (Jan.-Mar.); 25 (Apr.-June); 25 (July-Sept.); 25 (Oct.-Dec.)

4. Volume Of Gas Discharged From This Source (ACFM): 11,700 Source Discharge Temperature (°F): 590

SECTION F

CONTROL APPARATUS ON SOURCE: None

	Capital Cost (Dollars)	Annual Operating Cost (Dollars)	No. of Sources Connected
Primary			
Secondary			
Tertiary			

SECTION G

AIR CONTAMINANTS FROM SOURCE

CONTAMINANT NAME	Emissions w/o Control (lbs./hr.) Natural Gas	Emissions with no Control (lbs./hr.) #6 Fuel Oil	How Determined
Particulates	0.183	1.02	calc. aid
SO_x	0.035	18.12	"
CO	1.03	1.90	"
CH_4	0.305	0.38	"
NO_x	12.20	22.80	"

TO ENSURE PROPER COORDINATION BETWEEN VEM-003 and VEM-004 FORMS, INSERT IDENTICAL COMPANY NAME AND DESIGNATION OF STACK FROM VEM-003, SIDE 1.

Full Business Name: Paperboard Specialties

Company Designation of Stack(s): Cleaver Brooks Boiler Stack

ATTACHMENT O-13

SECTION II

A. MANUFACTURING AND MATERIALS HANDLING N/A

1. Process Description _____

2. Total Amount Materials Processed ☐ Batch _____ lb/batch. _____ hr/batch
   ☐ Continuous _____ lb/hr

3.

Raw Materials	% By Wt.	Raw Materials	% By Wt.

B. FUEL BURNING EQUIPMENT

1. Gross Heat Input (10^6 BTU/HR) 61
2. Type Heat Exchange ☐ Direct ☒ Indirect ☐ Internal Combustion Engine

	PRIMARY FUEL	SECONDARY FUEL
3. a. Type of Fuel:	Natural Gas	#6 Fuel Oil
b. Heating Value (Btu/lb):	24,187	18,794
4. Method of Firing:	Forced Draft	Forced Draft
5. % Sulfur in Fuel (Dry):	--	0.3
6. % Ash Content of Fuel (Dry):	--	0.01
7. Amount Burned/Yr.:	473	0

Units: Solid Fuel (Tons) Liquid Fuel (10^3 Gal.) Gaseous Fuel (10^6 Ft.^{3})

C. INCINERATION N/A

1. Type of Unit _____
2. Constituents of Waste(s) _____
3. Waste Code ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
4. Amount Burned (lbs./hr.) _____ Type of Auxil. Fuel (if any) _____

D. STORAGE FACILITY N/A

1. Tank Contents _____
2. Type of Tank or Bin _____ Height or Length (Ft.) _____
3. Capacity _____ (10^3 Ft.^{3}) ☐ (10^3 Gal.) ☐ Equivalent or Actual Diameter (Ft.) _____

THE REMAINING QUESTIONS ARE TO BE ANSWERED ONLY FOR LIQUID STORAGE

4. Vapor Pressure at 70°F (PSIA) _____ Storage Temp. If Not Ambient (°F) _____
5. Filling Rate (Gal/Min) _____ Annual Throughput (10^3 Gal/Yr) _____
6. Method of Fill: ☐ Top ☐ Bottom ☐ Submerged ☐ Other (Explain Below)
7. Color of Tank: ☐ White ☐ Other Exposed to Suns Rays ☐ Yes ☐ No
8. Insulation Data for Insulated Tanks (Volatile Organic Substances)
   Type _____, Thickness (Inches) _____, Thermal Conductivity (Btu/hr/ft^2/°F) _____

FOR DEPARTMENT USE ONLY

☐☐☐☐☐ - ☐☐ - ☐☐☐

ATTACHMENT 0-14

ATTACHMENT P

REPORT ON THE RESULTS OF AN ECRA SOIL/GROUND WATER QUALITY INVESTIGATION AT THE PAPERBOARD SPECIALITIES OF PATERSON, INC. FACILITY PATERSON, NEW JERSEY ECRA Case # 85317

Submitted to:

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
BUREAU OF ENVIRONMENTAL EVALUATION, CLEANUP
AND RESPONSIBILITY ASSESSMENT

BELL ENVIRONMENTAL CONSULTANTS, INC.
10 North Sussex Street
Dover, New Jersey 07801

December, 1990

ATTACHMENT P-1

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ATTACHMENT P-3

LIST OF FIGURES

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4.0	Phase II Exploration Plan	Appendix I
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ATTACHMENT P-4

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TABLE NO.	DESCRIPTION	LOCATION
1.0	Summary of Phase I Soil Sample Locations	Appendix II
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ATTACHMENT P-5

1.0 INTRODUCTION

Paperboard Specialities of Paterson, Inc. (PBS) owns and operates an industrial establishment located on Lot 1/Block 455, Lot 1/Block 454, Lot 1/Block 429 and Lot 1/Block 428 in a residential and industrial area of Paterson, Passaic County, New Jersey (Figure 1). The facility has been utilized since the early 1900's for the manufacturing of paper products. The facility is comprised of a single building and includes potable water supplied by the City of Paterson, a city supplied sanitary sewer hookup and four (4) bedrock production wells.

The facility, originally operated by Berles Carton Company, was sold in 1985 to Chinam, Inc. which resulted in a mandated environmental investigation under the New Jersey Environmental Cleanup Responsibility Act (ECRA). During Chinam's ownership, various investigations of soil and ground water quality were undertaken in an attempt to comply with ECRA requirements. In 1989, PBS purchased the facility from Chinam, Inc. and assumed the responsibility for compliance with the ECRA requirements. PBS subsequently retained Bell Environmental Consultants, Inc. (BEC) to review the previous ECRA investigations and to implement an investigation designed to address the concerns of the New Jersey Department of Environmental Protection (NJDEP). Based on a December 3, 1990 letter from the NJDEP, PBS is required to submit the following information:

1. Progress reports for the Months of August, September and October, 1990;
2. Analytical results for post-excavation samples obtained from Area A (South side of 3rd Avenue) and from Area D (Along the Route 20 property line);
3. Analytical results for post-remedial samples obtained from UST-A of Area B;
4. Analytical results for post-remedial samples obtained from UST-C of Area B;
5. Analytical results for post-remedial verification samples obtained from the transformer substation area, and
6. A report documenting the asbestos remediation activities undertaken at the facility.

This report summarizes the efforts and data collected to date in response to those items outlined in the NJDEP's December 3, 1990 letter and serves to comply with item #7 of the NJDEP letter. It should be noted that the required progress reports (Item #1) are included in Appendix IV, No. 1.

2.0 SITE INVESTIGATIONS

Site specific field investigations were conducted at the PBS facility in order to locate, identify, quantify and assess the impact, if any, resulting from past site operations. Specific elements of the investigations included UST removal, excavation of contaminated soils, post-excavation soil sampling, installation of exploratory ground water monitoring wells, ground water sampling, asbestos remediation and PCB wipe sampling. The investigation at the PBS facility was undertaken in distinct and separate tasks.

2.1 Task 1 - Underground Storage Tank Removal

n February 6, 1990 (UST-A) and August 20, 1990 (UST-C), BEC personnel documented the excavation of two (2) uel oil USTs located within the PBS facility by Joe Royce Contractors (UST-A) and A. F. LaFerrera (UST-C), (both companies were directly retained by PBS). Subsequent to receipt of local construction permits, UST xcavations were scheduled and the local fire officials notified. In general, the procedures followed during UST removal included, at a minimum, the following:

1. Upon arrival at the site, the concrete and soil covering each UST was removed.
2. The top of each UST was then opened and any liquid remaining in the tank was removed and transported for disposal.
3. Each UST was purged of vapors using either an air compressor and/or dry ice.
4. Each UST was then cleaned and cut to facilitate removal.
5. Subsequently, each UST was cut and both the UST and piping removed from the excavation and transported offsite for disposal.

It should be noted that UST-A was located approximately 3.0 feet below the static ground water level, contained a 2' x 2' patch along the western sidewall and extended beneath the PBS office. Additionally, UST-C was lined with approximately 3 inches of concrete and was located adjacent to an external weight bearing wall along Third Avenue. Consequently, and per PBS's conversations with the NJDEP, the lower third of each tank (i.e., that portion below the water level) was left in place in order to avoid any possibility of damage to the PBS structure. During UST removal, there were no visible signs of leakage from either UST.

2.2 Task 2 Excavation of Contaminated Soils

The excavation of contaminated soils at the PBS facility was undertaken in two (2) distinct phases as shown below.

2.2.1 Phase I

In response to the NJDEP's May 30, 1989 letter (Appendix IV, No. 2) regarding the facility original soil sampling plan (as submitted by Chinam, Inc. and prepared by Technical Resources, Inc. [TRI]), PBS undertook the excavation of contaminated soil from those Areas of Environmental Concern (AECs) addressed in the NJDEP's letter which included (Figure 3):

AREA A (South Side of Third Avenue)

- Former sample location SA-1
- Former sample location SA-2
- Former sample location SA-7
- Former sample location SC-3

AREA D (Along Route 20 property line)

- o Former sample location SC-5
- o Former sample location SC-6
- o Former sample location SC-7
- o Former sample locations SD-1, SD-2 and SD-3

Excavation of contaminated soils was undertaken at selected AECs (Figure 3) using a rubber tired backhoe with contaminated soil staged on and covered with plastic at a location chosen by PBS. Each AEC was excavated vertically to a minimum depth of three (3) feet below grade and horizontally for a minimum of four (4) feet.

2.2.2 Phase II

Consequent to a review of the analytical data from the Phase I investigation, it was documented that contaminant levels at selected locations remained in excess of NJDEP standards. Additionally, and in response to the NJDEP's letter of May 24, 1990 (Appendix IV, No. 3) additional AEC's were included in the Phase II investigation. Consequently, PBS undertook the excavation of contaminated soil from the following AECs (Figure 4):

AREA A (South Side of Third Avenue)

- o Former sample location SA-1
- o Former sample location SA-7

AREA D (Along Route 20 property line)

- o Former sample location SC-5
- o Former sample location SC-6
- o Former sample location SC-7
- o Former sample locations SD-1 and SD-3

AREA E (Along South Side of Third Avenue)

- o Location of suspected transformer oil discharge

Excavation of contaminated soils was undertaken using a rubber tired backhoe with contaminated soil staged on and covered with plastic at a location chosen by PBS. Each AEC was excavated as follows:

1. AECs previously excavated under Phase I were re-excavated vertically to a minimum of two (2) feet below the previous depth and horizontally for an additional four (4) feet.

2. Newly identified AECs were excavated vertically to a depth of three (3) feet and horizontally until there were no visible signs of contamination.

2.3 Task 3 Post-Excavation Soil Sampling

2.3.1 Remedial Investigations

Subsequent to the excavation of contaminated soils during Phase I and II, post-excavation soil samples were

obtained in order to document the effect of the remedial program. Tables 1 and 2 (Phase I) and Tables 3 and 4 (Phase II) list the location of each soil sample and the type of chemical analysis performed. Post excavation soil samples during both phases were obtained from excavated areas at the locations shown on Figure 3 (Phase I) and Figure 4 (Phase II) using dedicated laboratory cleaned teflon spatulas in accordance with BEC corporate Quality Assurance\Quality Control (QA/QC) procedures (Appendix IV). Soil samples were kept cool using ice until delivery to Laboratory Resources, Inc. (Phase I, NJDEP certification #02046) and Wastex Industries, Inc. (Phase II, NJDEP certification # 77371). In response to concerns raised by the NJDEP, post-excavation analytical parameters included, on a location basis, volatile organics plus 15 unknowns (VO+15), semi-volatile base neutral extractables plus unknowns (BN+15), polychlorinated biphenyls (PCBs), total petroleum hydrocarbons (TPHC) and zinc.

2.3.2 UST Excavations

Subsequent to the excavation of UST-A and UST-C, post-excavation soil samples were obtained in order to document the impact, if any, of UST usage on surrounding soil quality. As ground water was encountered above the base of the USTs, post excavation soil samples were obtained from the sidewalls of each UST excavation at the interval corresponding to 6" above the soil/ground water interface (Figure 3 [UST-A] and 4 [UST-C]). Post-excavation samples were obtained using dedicated laboratory cleaned teflon spatulas in accordance with BEC corporate QA/QC procedures (Appendix IV). Soil samples were kept cool using ice until delivery to an NJDEP certified laboratory for chemical analysis. To insure the integrity of the data, QA/QC samples included a field duplicate (to document the accuracy of the laboratory data) and a field blank (to insure that the sampling equipment is not introducing contaminants into the sample). Post-excavation soil samples from UST-A were analyzed for TPHC with 20% analyzed for BN+15 while UST-C samples were analyzed for TPHC, BN+15 and VO+15.

2.4 Ground Water Quality Investigation

2.4.1 Installation of Exploratory Ground Water Monitoring Wells

In order to document the effect, if any, of site usage on local ground water quality, and to determine the potential magnitude of ground water remediation, BEC personnel supervised the installation of four (4) exploratory ground water monitoring wells (BEC-1S, 2S, 1D and 2D, Figure 4) at the PBS facility to the depths indicated on Table 5. Monitoring wells were advanced through the overlying soils to investigate subsurface geologic conditions and contaminant distributions. Unconsolidated monitoring wells were installed using a hollow stem auger drilling technique while consolidated monitoring wells were installed using an air rotary drilling method. Samples of unconsolidated materials were obtained using a two inch diameter split barrel sampler equipped with basket retainers to maximize sample recovery. Soil samples were geologically classified using the Burmister Soil Classification System with stratigraphic units described using the Unified Soil Classification System. Additionally, observations regarding color, composition, moisture content, and presence of visible contamination were noted in the soil boring logs.

Unconsolidated ground water monitoring wells, constructed of 4-inch diameter schedule 40 PVC well screen (20-slot) and riser pipe with threaded joints, were installed in accordance with current NJDEP-Division of Water Resources specifications for monitoring wells installed in unconsolidated formations. Consolidated monitoring wells were constructed of 8" steel casing cemented into the consolidated bedrock with an openhole completion. In order to document the presence or absence of a non-aqueous phase layer (NAPL), monitoring wells

were screened across the static water level. Subsequent to completion, monitoring wells were developed using a submersible pump for a minimum of one hour or until discharge was clear.

Ground water monitoring well logs, well construction details, and well screen settings are shown in Appendix V and summarized on Table 5. Due to the high traffic potential at the site, monitoring wells were flush mount completions. Drilling equipment (drill rig, spoons, drill pipe, bit, tools, etc.) was steam cleaned after each hole to reduce the potential for cross contamination. The procedures used on this project are outlined in BEC's field sampling QA/QC document (Appendix III). Monitoring wells were subsequently surveyed for both horizontal control, vertical elevation (U.S.G.S.) and longitude and latitude by a licensed New Jersey surveyor. Completed NJDEP Monitoring Well Certification Forms A and B are shown in Appendix IV, No. 4.

2.4.2 Ground Water Sampling Methods

Ground water samples for chemical analysis were obtained from each of the four (4) newly installed monitoring wells and from the five preexisting monitoring wells at the PBS site. Well sampling was performed on February 20, 1990 after allowing sufficient time for the ground water regime to equilibrate. Prior to sampling, the static water level in each monitoring well was measured and recorded. Subsequently, laboratory cleaned dedicated teflon bailers were used to: 1) document the presence of a NAPL, if any; 2) purge a minimum of three (3) well volumes from each non-NAPL containing monitoring well, and 3) obtain the required ground water samples. Ground water samples were kept on ice until delivery to Laboratory Resources, Inc. (NJDEP certification #02046) for analysis of VO+15, BN+15 and priority pollutant metals (PPM). Field QA/QC samples included one (1) duplicate and one (1) field blank (analyzed for VO+15, BN+15 and PPM) and one (1) travel blank (analyzed for VO+15). The field blank was prepared by pouring distilled water through a pre-cleaned teflon bailer while the travel blank was supplied by the analytical laboratory. Ground water sampling was undertaken using the procedures outlined in BEC's QA/QC document (Appendix III). Additionally, samples were obtained from three (3) of the onsite production wells via taps in the production well outlet lines. Samples from the production wells were analyzed for VO+15, BN+15 and PPM.

2.4.3 Ground Water Elevation Measurements

To assess the direction of ground water flow and the hydraulic gradient of the water table aquifer at the property, BEC surveyed the elevations of the monitoring well casings, measured the depth to ground water at each monitoring well and calculated the elevation of the ground water table. The depths to ground water in the monitoring wells were measured on two separate occasions during the investigation using a Solnist electronic water level indicator. This data, summarized on Table 5, was used to construct a potentiometric surface elevation map (Figure 5).

2.5 Miscellaneous Site Investigations

2.5.1 Asbestos

In response to concerns raised by the NJDEP, PBS retained International Dismantling and Machinery Corporation

of South River, New Jersey to undertake an asbestos inspection of the facility and to removal selected areas of friable asbestos. The results of this investigation are included in Appendix IV, No. 5.

2.5.2 Transformer Substation

In response to concerns raised by the NJDEP, BEC personnel undertook the wipe sampling of a single stained area within the former transformer substation. Samples from this area were obtained by wiping a hexane soaked gauze pad across the stained area. This pad was then placed in a laboratory cleaned sample jar and kept on ice until delivery to Veritech Laboratories in Butler, New Jersey for PCB analysis.

3.0 SITE SPECIFIC RESULTS

3.1 Regional Geologic Setting

Paterson, New Jersey, is located along the eastern edge of the Newark Basin which is one of a series of step faulted half graben basins which extend linearly from Newfoundland to South Carolina and Georgia. The Newark Basin, contained within the Piedmont Physiographic Province, is dominated by upper Triassic (Carnian) to Lower Jurassic (Hertangian-Simeumurian) non-marine sedimentary stream and lake deposits interbedded with quartz normative, olivine-poor, tholeiitic basaltic lava flows and intruded by diabasic sills and dikes. The beds in the basin generally strike northeast to southwest and dip between 5° to 20° southwest. The bedrock underlying the site is the Triassic Passaic Formation (formerly the Brunswick Formation) which consists of a series of alternating beds of sandstone, siltstone and shale interbedded with a conglomeratic facies along the basins faulted northeast border. The sediments of the Newark Basin were subsequently overlain by a mantle of Jurassic to Holocene consolidated and unconsolidated sand, gravels, silts and clays.

3.2 Site Stratigraphy

Site specific stratigraphy, based on information reported by TRI in their December 5, 1988 submission, and as obtained during BEC's onsite investigation, is as follows:

FILL

Drilling log information indicates the presence of Fill material at locations between the northwest and northeast portions of the facility. This fill is mainly composed of fine to medium sand, gravel silt and concrete and varies in thickness from 2 to 3 feet.

RECENT ALLUVIUM

The Recent Alluvium is typically composed of unconsolidated soils derived from the weathering of regional consolidated deposits. The variable lithology evident on the site is potentially due to varying depositional environments (i.e., during periods of heavy rainfall and flash flooding events, river deposits would typically consists of alternating deposits of coarse sands and gravels while low energy periods would

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result in an increase in clays, silts, and fine sands). The soil log information indicates that the Recent Alluvium is composed of a dark-brown unconsolidated, well sorted, medium to coarse sand with silt, gravel and some pebbles, and is probably not continuous throughout the site. The alluvium deposit ranges from 2 to 6 feet in thickness.

RESIDUAL SOIL/WEATHERED ROCK

Soil log information indicates the presence of a residual soil (weathered rock) unit beneath the Recent Alluvium unit. This stratum, developed by the weathering of the underlying Passaic Formation, is distinguishable from overlying material as sampler penetration resistance is significantly increased. This unit possesses a characteristic bright red-brown or brownish red color and is comprised of very stuffy silty clays, clayey sands, silts, silty sands, and sandy clays with coarse sand and fine to medium gravel (shale fragments) present. The elevation at which increased sampler resistance was encountered is roughly consistent with the elevation postulated to correspond to the top of continuous bedrock.

3.3 Hydrogeologic Setting

3.3.1 Background

Ground water within the region occurs within both the surface alluvial deposits and fracture zones within the underlying consolidated bedrock. Historically, large diameter wells completed within the stratified glacial deposits have shown good well yields. Additionally, minor quantities of groundwater obtainable from weathered soil layers (although they would run dry occasionally during period of drought) or the alluvium.

The most consistent source of ground water within Passaic County is within the fractured zones of the underlying Passaic Formation which typically occurs at depths of between 200 and 300 feet. Four such wells currently exist at the PBS site (facility production wells) and are used to provide process water. Recharge of the unconsolidated deposits primarily occurs by direct recharge due to precipitation and surface infiltration. Recharge of the bedrock aquifer probably occurs by recharge from overlying units and/or directly in areas exposed to precipitation.

3.3.2 Site Specific

Ground water conditions at the PBS site were investigated by use of physical observation, monitoring wells and by direct measurement of the facility's production wells. The monitoring well drilling data reveals that the Recent Alluvium strata is a single water bearing unit at the site and consists of a sequence of sand, silt, and gravel (varying frm 2 to 6 feet in thickness) occurring along the margin of the Passaic River. This unit, present beneath the entire site and extending southwest for an unknown distance, occurs at or near land surface. Much of the unit is covered by facility and/or impervious areas. Ground water occurs in this zone at shallow depths of 8 to 18 feet below the land surface (under water table conditions). According to monitoring well water levels observed during well installation, ground water flow through the alluvium tends to mirror surface topography, flowing generally northeast or northward (Figure 5). Discharge to the Passaic River is indicated by the related locations of the river and ground water. This unit probably receives little direct recharge on-site as most recharge water is directed away from the site before

infiltration.

4.0 CHEMICAL RESULTS

4.1 Soil

The results of chemical analyses performed on surface and subsurface soils are summarized in this section. The analyses undertaken during this investigation were based on meetings with the NJDEP and included Zinc, TPHC, VO+15, PCB and BN+15. The forward scanning computer library searches were conducted to determine if any non-priority pollutant compounds were present in the soils.

4.1.1 UST Post Excavation Soil Samples

Section 4.1.1 addresses the results of post-excavation soil sampling from the two (2) removed UST within Area B.

4.1.1.1 UST-A

Post-excavation soil samples, obtained subsequent to the removal of UST-A were, per conversations with the NJDEP, analyzed for TPHC with 20% (minimum of 2) analyzed for BN+15. The chemical results for these samples indicate no detectable levels of base neutrals. However, TPHC levels in excess of the NJDEP guideline level of 100 ppm were detected in samples PE-1T (148 ppm), PE-5T (186 ppm) PE-6T (240 ppm) and PE-7T (126 ppm). Figure 6 indicates, on a per location basis, those analytical parameters which are over the current NJDEP ECRA cleanup "guidelines" (hereafter "guidelines").

4.1.1.2 UST-C

Post-excavation soil samples, obtained subsequent to the removal of UST-C, were analyzed for TPHC, BN+15 and VO+15. The chemical results for these samples indicate contaminant levels in excess of NJDEP guidelines for base neutrals (10,000 ppb), volatile organics (1,000 ppb) and TPHC (100 ppm) as follows:

- **Base Neutrals** - PE-1 (77,658 ppb), PE-2 (26,730 ppb), PE-3 (73,840 ppb), PE-4 (16,830 ppb), PE-6 (307,198 ppb) and PE-8 (251,241 ppb).
- **Volatile Organics** - PE-2 (46,950 ppb), PE-4 (51,245 ppb), PE-6 (127,209 ppb) and PE-8 (38,634 ppb).
- TPHC - PE-1 (536 ppm), PE-2 (663 ppm), PE-4 (5779 ppm), PE-5 (284 ppm), PE-6 (1149 ppm), PE-7 (9992 ppm) and PE-8 (1550 ppm).

Figure 7 indicates, on a per location basis, those analytical parameters which are over the current NJDEP ECRA cleanup guidelines.

4.1.2 Phase I

This section addresses the results of remedial post-excavation soil samples obtained during the Phase I investigation. A complete summary of those compounds detected is included as Tables 6 and 7. These results have been presented in terms of those analytes which were detected on a per area basis. Additionally, Figure 6 indicates, on a per location basis, those analytical parameters which are over the current NJDEP ECRA cleanup guidelines. It should be noted that TPHC results are in parts per million (mg/kg [ppm]) while the remainder are in parts per billion (ug/kg [ppb]).

4.1.2.1 AREA A

Post-excavation soil samples obtained subsequent to excavation of the contaminated soil were analyzed for TPHC with 20% analyzed for BN+15. The results of the sampling in Area A (locations SA-1, SA-2, SA-7 and SC-3) indicate elevated levels of contamination from locations SA-1 (PE-2 [BN+15 @ 44,810 ppb]) and SA-7 (PE-22 [BN+15 @ 18,075 ppb). Low levels of contamination were detected in the majority of the additional samples obtained. Figure 6 indicates, on a per location basis, those analytical parameters which are over the current NJDEP ECRA cleanup guidelines.

4.1.2.2 AREA D

Post-excavation soil samples, obtained subsequent to excavation of contaminated soil, were analyzed for TPHC with 20% analyzed for BN+15. The analytical data from soil samples obtained in this area indicates that the majority of the samples contain levels of volatile, base neutral and TPHC contamination below the current guideline (Figure 6). Contamination above guideline levels was restricted to a base neutral concentration of 71,050 ppb in the sample from PE-26.

4.1.3 Phase II

This section will address the results of the laboratory analyses of post-excavation soil samples obtained during the Phase I investigation. A complete summary of those compounds detected is included as Tables 9 and 10. These results have been presented in terms of those analytes which were detected on a per area basis. Figure 7 indicates, on a per location basis, those analytical parameters which are over the current NJDEP ECRA cleanup guidelines.

4.1.3.2 AREA A

Post-excavation soil samples obtained subsequent to excavation of contaminated soil were analyzed for TPHC and BN+15. The results of the sampling in Area A (locations SA-1 and SA-7) indicates the elevated levels of

ontamination as follows:

- **Base Neutrals** - PE-2sa1 (16,160 ppb), PE-3sa1 (22,770 ppb), PE-4sa1 (21,020 ppb), PE-1sa7 (370,500 ppb), PE-3sa7 (311,280 ppb), PE-4sa7 (1,029,800 ppb), PE-1sc5 (14,470 ppb), PE-2sc5 (14,640 ppb), PE-3sc5 (40,150 ppb), PE-4sc5 (58,940 ppb), PE-4sc6 (13,020 ppb) and PE-1sd2 (14,350 ppb).

- **TPHC** - PE-1sa7 (582 ppm).

Figure 7 indicates, on a per location basis, those analytical parameters which are over the current NJDEP ECRA cleanup guidelines.

4.1.3.3 AREA D

Post-excavation soil samples obtained subsequent to excavation of contaminated soil were analyzed for TPHC with 20% analyzed for BN+15. The results of the sampling in Area A (locations SA-1, SA-2, SA-7 and SC-3) indicates the elevated levels of contamination from locations SA-1 (PE-2 [BN+15 @ 44,810 ppb]) and SA-7 (PE-22 [BN+15 @ 18,075 ppb). Low levels of contamination were detected in the majority of the additional samples obtained. Figure 6 indicates, on a per location basis, those analytical parameters which are over the current NJDEP ECRA cleanup "guidelines" (hereafter "guidelines").

4.1.3.4 AREA E

The analytical data from soil samples obtained in the suspected Transformer Oil spill area indicated elevated levels of TPHC in excess of NJDEP guideline levels at locations PE-T1 (423 ppm), PE-T3 (363 ppm) and PE-T4 (267 ppm). However, no concentration of polyclorinated biphenyls (PCBs) were detected in excess of the method detection limit.

4.1.3.5 Transformer Substation

The analytical data from wipe samples obtained from the former Transformer Substation indicates one sample with a PCB-1260 concentration of 11 ppm.

4.2 Ground Water

The results of chemical analyses performed on ground water samples are summarized in this section. Due to the voluminous nature of the ground water analytical data, the complete Tier II data package is included as volume III. Ground water samples were analyzed for VO+15, PPM, BN+15, TPHC, pH and TDS with the forward scanning computer library searches conducted to determine if any non-priority pollutant compounds were present in the ground water.

4.2.1 Field QA/QC Samples

A travel blank, a field blank and a duplicate sample were obtained and submitted to the analytical laboratory for analysis. The analytical results on the QA/QC samples indicated the following:

1. The travel blank, which accompanied the sample shipment, was analyzed for VO+15 and indicated low levels of contamination with methylene chloride (<4 ppb).

2. Contaminants in the field blank included methylene chloride (<2 ppb), and a TDS level of 48 ppm.

After reviewing the laboratory data, it is probable that the methylene chloride is a laboratory contaminant while the TDS level in the field blank is due to the sampling equipment.

4.2.2 Ground Water Analysis-Monitoring Wells

This section addresses the results of the laboratory analyses of ground water samples. A complete summary of all the ground water analytical data is presented on Table 12. It should be noted that due to the presence of NAPL, and per NJDEP protocol, monitoring wells MW-2, MW-4 BEC-1D, BEC-2D and BEC-1S were not sampled. A review of the analytical data indicates elevated levels of volatile organics in excess of the NJDEP guideline of 10 ppb total dissolved volatiles in only MWB-5 (1,914 ppb total volatiles). The contaminants found in MWB-5 included 1,1,1 Trichlorethane, Benzene, Tetrachloroethane, Ethylbenzene, and total xylenes.

Additionally, elevated levels of base neutrals (>50 ppb) were detected in samples from MWB-1 (149 ppb [147 non-priority compounds]), MWB-3 (119 ppb [110 non-priority compounds]) and MWB-5 (1,907 ppb [1,851 non-priority compounds]). Additionally, one elevated level of lead (161 ppm) was detected in the ground water sample from MWB-3.

5.2.3 Ground Water Analysis-Production Wells

This section addresses the results of the laboratory analyses of ground water samples obtained from the on-site production wells. It should be noted that production well PW-4 was not sampled due to the presence of NAPL. A complete summary of all the ground water analytical data is presented on Table 12.

A review of the analytical data indicates elevated levels of volatile organics in excess of the NJDEP guideline of 10 ppb total dissolved volatiles in samples from the three (3) non-NAPL containing production wells. The contaminants found included 1,1 Dichloroethene, 1,1 Dichlorethane, Chloroform, 1,1,1 Trichlorethane, Benzene, Trichlorethane, Toluene, Tetrachloroethane, Chlorobenzene, 1,4 Dichlorobenze, and 1,2 Dichlorobenzene, Ethylbenzene. Additionally, no elevated levels of base neutrals (>50 ppb) or priority pollutant metals were detected in concentrations in excess of NJDEP guideline levels.

5.0 SUMMARY AND DISCUSSION OF RESULTS

5.1 Soil

The evaluation of the analytical data developed to characterize the PBS facility site indicates that the contaminants which will likely control the soil remediation at this site will be total petroleum hydrocarbons (TPHC) and semi-volatile base neutrals. That is, this is the predominant contaminant on-site, the spatial extent of which overlaps and exceeds the boundaries of other site contaminants which are present in reduced concentrations.

The analysis of soil TPHC and BN data for the PBS site shows that concentrations in selected samples are in excess of NJDEP guideline levels. The BN compounds detected are typical of higher molecular weight compounds typical of asphalt products. The significance of the data is that it is difficult to conclusively link the contamination to a single discrete source. The data may well reflect contamination originally present in fill material or preferential adsorption characteristics or physical barriers of fill material. As such, it is probable that an extensive delineation program will be required to document the lateral and vertical extent of the elevated BN and TPHC concentrations.

5.2 Ground Water

A review of the ground water analytical data indicates that the ground water underlying the PBS facility is contaminated with a series of priority and non-priority volatile and semi-volatile compounds. However, the presence of NAPL within five wells on the facility suggests either an, as yet, undefined source either on or off the facility. A fingerprinting analysis of the NAPL from BEC-1D indicates a combination of #2 and #6 fuel oil. As PBS has indicated that the facility has not utilized #2 fuel, a contributory off-site source is suggested.

APPENDIX I - FIGURES

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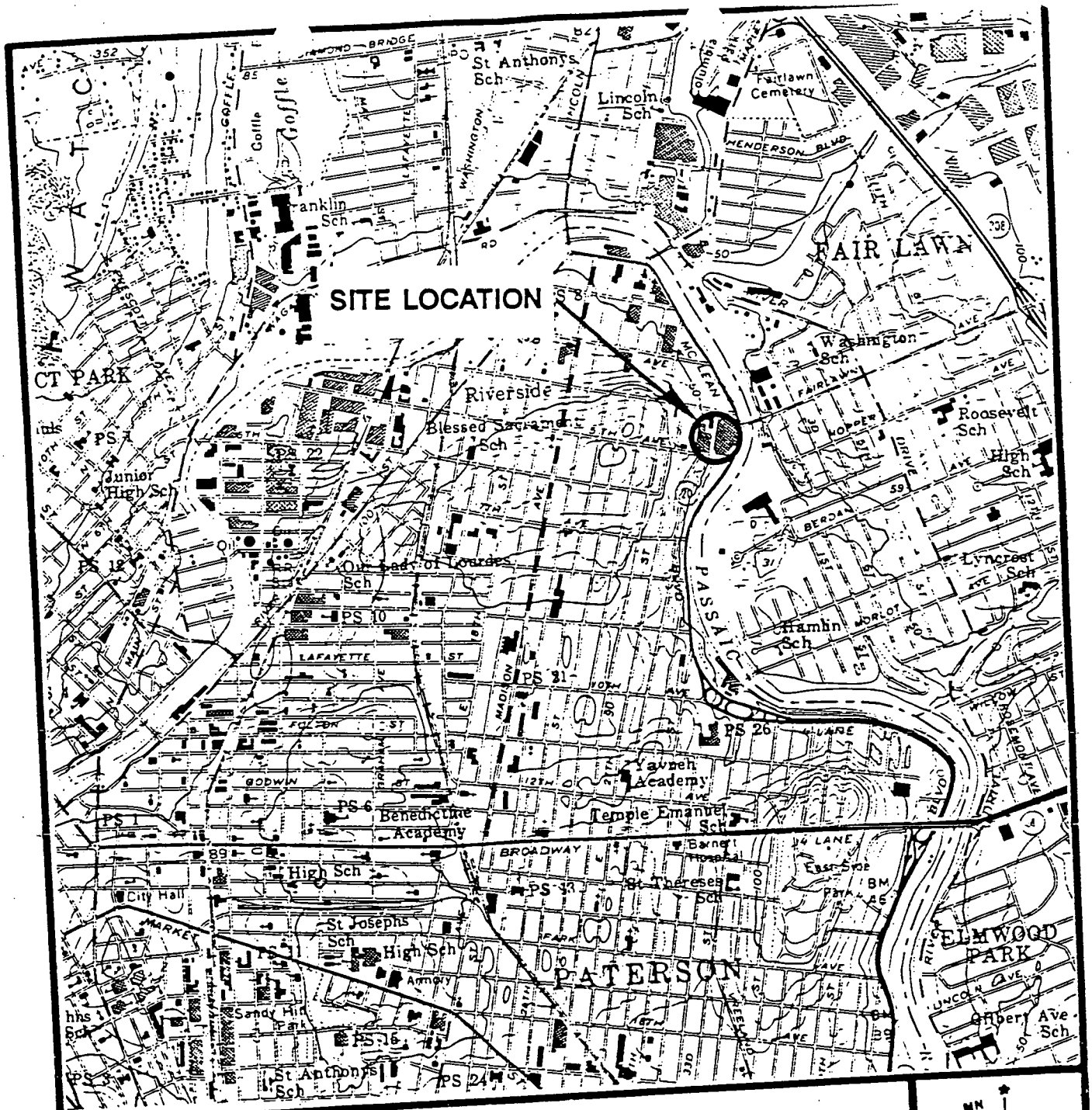

SITE LOCATION MAP
for
PAPERBOARD SPECIALTIES

PATERSON

PASSAIC COUNTY

NEW JERSEY

MN GN

11-1/2° 204 MILS

0°17' 5 MILS

FIGURE No.:

SCALE 1:24,000

1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 KILOMETER

.5 0

CONTOUR INTERVAL 10 FEET

DATUM IS MEAN SEA LEVEL

BEC PROJECT No.: 89-039-01

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APPENDIX II - TABLES

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TABLE 1
PAPERBOARD SPECIALITIES - PATERSON, NJ
SUMMARY OF PHASE I SOIL SAMPLE LOCATIONS

AREA OF CONCERN	DESCRIPTION	LOCATION
SA-1	PE-1	North Wall
SA-1	PE-2	Excavation Center
SA-1	PE-3	East Wall
SA-2	PE-6	Northeast wall
SA-2	PE-7	Excavation Center
SA-2	PE-8	Southwest Wall
SA-7	PE-21	West Wall
SA-7	PE-22	East Wall
SC-3	PE-11	West Wall
SC-3	PE-12	Excavation Center
SC-3	PE-13	East Wall
SC-5	PE-16	Southeast Wall
SC-5	PE-18	Excavation Center
SC-5	PE-20	Northwest Wall
SC-6	PE-25	Southeast wall
SC-6	PE-26	Northwest wall
SC-7	PE-23	Southeast wall
SC-7	PE-24	Northwest wall
SD-1/2/3	PE-27	Northwest wall
SD-1/2/3	PE-28	Excavation Center
SD-1/2/3	PE-29	Southeast Wall
SD-1/2/3	PE-30	Southwest wall

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TABLE 2
PAPERBOARD SPECIALITIES - PATERSON, NJ
PHASE I SOIL SAMPLE ANALYTICAL PARAMETERS

	TPHC	BN+15	BTEX	Zinc
PE-1	X	-	-	-
PE-2	-	X	-	-
PE-3	X	-	-	-
PE-6	X	-	-	-
PE-7	-	X	-	-
PE-8	X	-	-	-
PE-11	X	-	-	-
PE-12	-	X	-	-
PE-13	X	-	-	-
PE-16	X	-	-	-
PE-18	X	-	-	-
PE-20	-	X	-	X
PE-21	X	-	-	-
PE-22	X	X	-	-
PE-23	X	-	-	-
PE-24	X	X	-	-
PE-25	X	-	-	-
PE-26	X	X	-	-
PE-27	X	-	-	-
PE-28	X	-	-	-
PE-29	X	X	-	-
PE-30	X	-	-	-
PE-31	X	X	-	-

ATTACHMENT P-22

TABLE 4
PAPERBOARD SPECIALITIES - PATERSON, NJ
PHASE II SOIL SAMPLE ANALYTICAL PARAMETERS

	TPHC	VO+15	BN+15	PCBs
PE-1sa1	X	-	X	-
PE-2sa1	X	-	X	-
PE-3sa1	X	-	X	-
PE-4sa1	X	-	X	-
PE-1sa7	X	-	X	-
PE-2sa7	X	-	X	-
PE-3sa7	X	-	X	-
PE-4sa7	X	-	X	-
PE-1sc7	X	-	X	-
PE-2sc7	X	-	X	-
PE-3sc7	X	-	X	-
PE-4sc7	X	-	X	-
PE-1sc5	X	-	X	-
PE-2sc5	X	-	X	-
PE-3sc5	X	-	X	-
PE-4sc5	X	-	X	-
PE-1sc6	X	-	X	-
PE-2sc6	X	-	X	-
PE-3sc6	X	-	X	-
PE-4sc6	X	-	X	-
PE-1sd2	X	-	X	-
PE-2sd2	X	-	X	-
PE-3sd2	X	-	X	-
PE-4sd2	X	-	X	-
PE-1T	X	-	-	X
PE-2T	X	-	-	X
PE-3T	X	-	-	X
PE-4T	X	-	-	X

ATTACHMENT P-24

Bell Environmental Consultants, Inc.

TABLE 5 - MONITORING WELL DATA SUMMARY
PAPERBOARD SPECIALTIES, PATERSON, NEW JERSEY

WELL NUMBER	BOTTOM OF WELL (feet)	BOTTOM ELEVATION (msl)	GROUND ELEVATION (msl)	TOC PVC ELEVATION (msl)	DEPTH OF TOP OF SCREEN (feet)	TOP OF SCREEN ELEVATION (msl)	LENGTH OF SCREEN (feet)	MATERIAL SCREENED	LATITUDE	LONGITUDE
MWB-1	22.00	28.56	50.56	50.62	12.00	38.56	10.00	Sand	40 56' 11.8"	74 08' 37.5"
MWB-2	15.50	29.48	44.98	45.02	5.50	39.48	10.00	Sand	40 56' 04.2"	74 08' 35.5"
MWB-3	28.00	12.07	40.07	40.33	15.00	25.07	13.00	Sand	40 56' 11.7"	74 08' 32.9"
MWB-4	14.50	24.26	38.76	DAMAGED	10.00	28.76	4.50	Sand	40 56' 13.9"	74 08' 34.0"
MWB-5	12.50	26.90	39.40	DAMAGED	10.00	29.40	2.50	Sand	40 56' 15.4"	74 08' 35.3"
BEC-1S	13.00	26.16	39.16	39.25	3.00	36.16	10.0	Slty Sand	40 56' 13.7"	74 08' 33.6"
BEC-2S	13.50	27.23	40.73	40.83	3.50	37.23	10.0	Cly Sand	40 56' 15.2"	74 08' 35.1"
BEC-1D	80.00	-41.11	38.89	38.92	***	***	***	Slty Sand	40 56' 13.8"	74 08' 33.9"
BEC-2D	75.00	-35.32	39.68	41.61	***	***	***	Gvly Sand	40 56' 12.2"	74 08' 33.0"

NOTE: *** - Indicates that due to the consolidated well construction, no well screen exists.

WELL NUMBER	02/20/90 DEPTH TO WATER(ft)	02/20/90 TOC PVC ELEVATION	02/20/90 GROUND WATER ELEVATION
MWB-1	11.86	50.62	38.76
MWB-2	NAPL	45.02	---
MWB-3	8.00	40.33	32.33
MWB-4	NAPL	DAMAGED	---
MWB-5	5.25	DAMAGED	---
BEC-1S	NAPL	39.25	---
BEC-2S	6.65	40.83	34.18
BEC-1D	NAPL	38.92	---
BEC-2D	NAPL	41.61	---

NOTE: NAPL - Indicates a Non-Aqueous Phase Layer present on top of ground water.

ATTACHMENT P-25

TABLE 6
PAPERBOARD SPECIALITIES - PATERSON, NJ
SUMMARY OF PHASE I PETROLEUM HYDROCARBON ANALYSIS

LOCATION	SAMPLE NO.	DEPTH (Ft.)	TPHC (PPM)
SA-1/PE-1	6001	3.0	39
SA-1/PE-2	6002	3.0	NA
SA-1/PE-3	6003	3.0	170
SA-2/PE-6	6006	3.0	28
SA-2/PE-7	6007	3.0	NA
SA-2/PE-8	6007	3.0	61
SA-7/PE-21	6011	3.0	150
SA-7/PE-22	6012	3.0	69
SC-3/PE-11	6016	3.0	21
SC-3/PE-13	6018	3.0	ND
SC-5/PE-16	6021	3.0	230
SC-5/PE-18	6023	3.0	270
SC-6/PE-25	6030	3.0	290
SC-6/PE-26	6031	3.0	180
SC-6/PE-25(Dup.)	6030	3.0	290
SC-7/PE-23	6027	3.0	940
SC-7/PE-24	6028	3.0	140
SD-1/2/3/PE-27	6034	3.0	610
SD-1/2/3/PE-28	6035	3.0	12
SD-1/2/3/PE-29	6036	3.0	100
SD-1/2/3/PE-30	6037	3.0	37

Notes:

NA - Sample not analyzed
ND - No TPHC's above method detection limit.

ATTACHMENT P-26

TABLE 7

SUMMARY OF PHASE I POST-EXCAVATION SOIL ANALYTICAL RESULTS - IDENTIFIED COMPOUNDS
PAPERBOARD SPECIALITES OF PATERSON, INC., PATERSON, NEW JERSEY

Excavation Location	----SA-1----			----SA-2----			----SC-3----			---SC-5---			
Sample No:	6001	6002	6003	6006	6007	6008	6016	6017	6018	6021	6023	6025	1001
Sample Location:	PE-1	PE-2	PE-3	PE-6	PE-7	PE-8	PE-11	PE-12	PE-13	PE-16	PE-18	PE-20	FIELD
Date Sampled:	2/20/90	2/20/90	2/20/90	2/20/90	2/20/90	2/20/90	2/20/90	2/20/90	2/20/90	2/20/90	2/20/90	2/20/90	2/20/90
BASE NEUTRAL COMPOUNDS (UG/L)													
Naphthalene	N.A.	N.D.	N.A.	N.A.	N.D.	N.A.	N.A.	36.0 J	N.A.	N.A.	N.A.	N.D.	N.D.
Acenaphthylene	N.A.	1200.0 J	N.A.	N.A.	N.D.	N.A.	N.A.	34.0 J	N.A.	N.A.	N.A.	N.D.	N.D.
Hexachlorobenzene	N.A.	2900.0 J	N.A.	N.A.	N.D.	N.A.	N.A.	N.D.	N.A.	N.A.	N.A.	N.D.	N.D.
Phenanthrene	N.A.	690.0 J	N.A.	N.A.	N.D.	N.A.	N.A.	640.0	N.A.	N.A.	N.A.	110.0 J	N.D.
Anthracene	N.A.	N.D.	N.A.	N.A.	N.D.	N.A.	N.A.	89.0 J	N.A.	N.A.	N.A.	26.0 J	N.D.
Di-n-Butylphthalate	N.A.	6600.0	N.A.	N.A.	120.0 J	N.A.	N.A.	N.D.	N.A.	N.A.	N.A.	N.D.	N.D.
Flouranthene	N.A.	N.D.	N.A.**	N.A.	N.D.	N.A.	N.A.	1000.0	N.A.	N.A.	N.A.	160.0 J	N.D.
Benzidine	N.A.	5700.0	N.A.	N.A.	100.0 J	N.A.	N.A.	N.D.	N.A.	N.A.	N.A.	N.D.	N.D.
Pyrene	N.A.	N.D.	N.A.	N.A.	N.D.	N.A.	N.A.	930.0	N.A.	N.A.	N.A.	160.0 J	N.D.
Benzo(a)Anthracene	N.A.	3200.0 J	N.A.	N.A.	68.0 J	N.A.	N.A.	430.0	N.A.	N.A.	N.A.	77.0 J	N.D.
Chrysene	N.A.	4500.0	N.A.	N.A.	89.0 J	N.A.	N.A.	630.0	N.A.	N.A.	N.A.	110.0 J	N.D.
bis(2-ethylhexyl)phthalate	N.A.	690.0 J	N.A.	N.A.	9.0 J	N.A.	N.A.	120.0 J	N.A.	N.A.	N.A.	270.0 J	N.D.
Benzo(b)Flouranthene	N.A.	3300.0 J	N.A.	N.A.	95.0 J	N.A.	N.A.	430.0	N.A.	N.A.	N.A.	99.0 J	N.D.
Benzo(k)Flouranthene	N.A.	3300.0 J	N.A.	N.A.	64.0 J	N.A.	N.A.	310.0 J	N.A.	N.A.	N.A.	69.0 J	N.D.
Benzo(a)Pyrene	N.A.	3200.0 J	N.A.	N.A.	70.0 J	N.A.	N.A.	420.0	N.A.	N.A.	N.A.	77.0 J	N.D.
Indeno(1,2,3-cd)Pyrene	N.A.	1700.0 J	N.A.	N.A.	58.0 J	N.A.	N.A.	200.0 J	N.A.	N.A.	N.A.	44.0 J	N.D.
Dibenzo(a,h)Anthracene	N.A.	530.0 J	N.A.	N.A.	N.D.	N.A.	N.A.	79.0 J	N.A.	N.A.	N.A.	N.D.	N.D.
Benzo(g,h,i)Perylene	N.A.	1300.0 J	N.A.	N.A.	51.0 J	N.A.	N.A.	160.0 J	N.A.	N.A.	N.A.	43.0 J	N.D.
TOTAL PRIORITY COMPOUNDS	N.A.	38810.0	N.A.	N.A.	715.0	N.A.	N.A.	5508.0	N.A.	N.A.	N.A.	1245.0	N.D.
TOTAL NON-PRIORITY COMPOUNDS	N.A.	6000.0	N.A.	N.A.	700.0	N.A.	N.A.	2120.0	N.A.	N.A.	N.A.	1430.0	120.0
PRIORITY POLLUTANT METALS (MG/L)													
Zinc	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	27.0	N.A.

NOTES: N.D. - Compound Not Detected.
J - Estimated value; less than detection limit.
N.A. - Indicates that compound was not included in analysis.
* Sample No. 6038 from PE-27
** Sample No. 6039 from PE-29

ATTACHMENT P-27

TABLE 7 (cont.)

SUMMARY OF PHASE I POST-EXCAVATION SOIL ANALYTICAL RESULTS - IDENTIFIED COMPOUNDS
PAPERBOARD SPECIALITES OF PATERSON, INC., PATERSON, NEW JERSEY

Excavation Location	---SA-7---			---SC-7---			----SC-6----				---SD-1---		---SD-2---	
Sample No:	6011	6012	6013	6027	6028	6029	6030	6032	6031	6033	6034	6035	6036	6037
Sample Location:	PE-21	PE-22	PE-22	PE-23	PE-24	PE-24	PE-25	PE25	PE-26	PE-26	PE-27	PE-28	PE-29	PE-30
Date Sampled:	2/20/90	2/20/90	2/20/90	2/20/90	2/20/90	2/20/90	2/20/90	2/20/90	2/20/90	2/20/90	2/20/90	2/20/90	2/20/90	2/20/90
BASE NEUTRAL COMPOUNDS (UG/L)														
Naphthalene	N.A.	N.A.	140.0 J	N.A.	N.A.	N.D.	N.A.	N.A.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.
Acenaphthylene	N.A.	N.A.	860.0	N.A.	N.A.	N.D.	N.A.	N.A.	N.A.	1700.0	N.A.	N.A.	N.A.	N.A.
Acenaphthene	N.A.	N.A.	N.D.	N.A.	N.A.	81.0 J	N.A.	N.A.	N.A.	400.0	N.A.	N.A.	N.A.	N.A.
Flourene	N.A.	N.A.	75.0 J	N.A.	N.A.	N.D.	N.A.	N.A.	N.A.	360.0 J	N.A.	N.A.	N.A.	N.A.
Phenanthrene	N.A.	N.A.	880.0	N.A.	N.A.	270.0 J	N.A.	N.A.	N.A.	2800.0	N.A.	N.A.	N.A.	N.A.
Anthracene	N.A.	N.A.	310.0 J	N.A.	N.A.	77.0 J	N.A.	N.A.	N.A.	1000.0	N.A.	N.A.	N.A.	N.A.
Flouranthene	N.A.	N.A.	1500.0	N.A.	N.A.	520.0	N.A.	N.A.	N.A.	4200.0	N.A.	N.A.	N.A.	N.A.
Pyrene	N.A.	N.A.	1600.0	N.A.	N.A.	440.0	N.A.	N.A.	N.A.	4800.0	N.A.	N.A.	N.A.	N.A.
Benzo(a)Anthracene	N.A.	N.A.	1100.0	N.A.	N.A.	270.0 J	N.A.	N.A.	N.A.	2700.0	N.A.	N.A.	N.A.	N.A.
Chrysene	N.A.	N.A.	1400.0	N.A.	N.A.	330.0 J	N.A.	N.A.	N.A.	3100.0	N.A.	N.A.	N.A.	N.A.
bis(2-ethylhexyl)phthalate	N.A.	N.A.	110.0 J	N.A.	N.A.	1500.0	N.A.	N.A.	N.A.	180.0 J	N.A.	N.A.	N.A.	N.A.
Benzo(b)Flouranthene	N.A.	N.A.	1400.0	N.A.	N.A.	290.0 J	N.A.	N.A.	N.A.	3500.0	N.A.	N.A.	N.A.	N.A.
Benzo(k)Flouranthene	N.A.	N.A.	1400.0	N.A.	N.A.	310.0 J	N.A.	N.A.	N.A.	2500.0	N.A.	N.A.	N.A.	N.A.
Benzo(a)Pyrene	N.A.	N.A.	1400.0	N.A.	N.A.	2650.0	N.A.	N.A.	N.A.	2300.0	N.A.	N.A.	N.A.	N.A.
Indeno(1,2,3-cd)Pyrene	N.A.	N.A.	480.0	N.A.	N.A.	100.0 J	N.A.	N.A.	N.A.	720.0	N.A.	N.A.	N.A.	N.A.
Dibenzo(a,h)Anthracene	N.A.	N.A.	260.0 J	N.A.	N.A.	31.0 J	N.A.	N.A.	N.A.	390.0	N.A.	N.A.	N.A.	N.A.
Benzo(g,h,i)Perylene	N.A.	N.A.	410.0	N.A.	N.A.	86.0 J	N.A.	N.A.	N.A.	600.0	N.A.	N.A.	N.A.	N.A.
TOTAL PRIORITY COMPOUNDS	N.A.	N.A.	13325.0	N.A.	N.A.	4565.0	N.A.	N.A.	N.A.	31250.0	N.A.	N.A.	N.A.	N.A.
TOTAL NON-PRIORITY COMPOUNDS	N.A.	N.A.	4730.0	N.A.	N.A.	1140.0	N.A.	N.A.	N.A.	39800.0	N.A.	N.A.	N.A.	N.A.
VOLATILE ORGANIC COMPOUNDS (UG/L														
Toluene	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	2.0*	N.A.	9.0**	N.A.

NOTES: N.D. - Compound Not Detected.
J - Estimated value; less than detection limit.
N.A. - Indicates that compound was not included in analysis.
* Sample No. 6038 from PE-27
* * Sample No. 6039 from PE-29

ATTACHMENT P-28

TABLE 8 - SUMMARY OF POST-EXCAVATION SOIL ANALYTICAL RESULTS FOR UST-A
PAPERBOARD SPECIALITIES OF PATERSON, INC., PATERSON, NEW JERSEY

Sample No:	6001	6002	6003	6004	6005	2006	2007	6008	1001
Sample Location:	PE-1T	PE-2T	PE-3T	PE-4T	PE-5T	PE-6T	PE-7T	PE-7T	FIELD
Date Sampled:	2/6/90	2/6/90	2/6/90	2/6/90	2/6/90	2/6/90	2/6/90	2/6/90	2/6/90
BASE NEUTRAL COMPOUNDS (UG/L)									
N-Nitrosodimethlamine	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
bis(2-Chloroethyl)ether	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
1,3-Dichlorobenzene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
1,4-Dichlorobenzene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
1,2-Dichlorobenzene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
bis(2-Chloroisopropyl)ether	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Hexachloroethane	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
N-Nitroso-di-n-propylamine	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Nitrobenzene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Isophorone	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
bis(2-Chloroehtoxy)methane	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
1,2,4-Trichlorobenzene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Naphthalene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Hexachlorobutadiene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Hexachlorocyclopentadiene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
2-Chloronaphthalene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Acenaphthylene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Dimethylphthalate	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
2,6-Dinitrotoluene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Acenaphthene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
2,4-Dinitrotoluene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Flourene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
4-Chlorophenyl phenyl ether	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Diethylphthalate	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
N-Nitrosodiphenylamine	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Azobenzene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
4-Bromophenyl phenyl ether	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Hexachlorobenzene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Phenanthrene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Anthracene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Di-n-Butylphthalate	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Flouranthene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Benzidine	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Pyrene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Butylbenzylphthalate	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Benzo(a)Anthracene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
3,3'-Dichlorobenzidine	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Chrysene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
bis(2-ethylhexyl)phthalate	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Di-n-Octylphthalate	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Benzo(b)Flouranthene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Benzo(k)Flouranthene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Benzo(a)Pyrene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Indeno(1,2,3-cd)Pyrene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Dibenzo(a,h)Anthracene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
Benzo(g,h,i)Perylene	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
TOTAL PRIORITY COMPOUNDS	N.A.	N.D.	N.A.	N.D.	N.A.	N.A.	N.A.	N.A.	N.D.
PETROLEUM HYDROCARBONS (MG/L)	148.0	96.0	72.0	98.0	186.0	240.0	126.0	132.0	N.D.

NOTES: N.D. - Compound Not Detected.
N.A. - Indicates that compound was not included in analysis.

ATTACHMENT P-29

TABLE 9
PAPERBOARD SPECIALITIES - PATERSON, NJ
SUMMARY OF PHASE II PETROLEUM HYDROCARBON ANALYSIS

LOCATION/ POST-EXCAVATION #	SAMPLE NO.	DEPTH (Ft.)	TPHC (PPM)
SA-1/PE-1	PE-1sa1	5.0	ND
SA-1/PE-2	PE-2sa1	5.0	ND
SA-1/PE-3	PE-3sa1	5.0	ND
SA-1/PE-4	PE-4sa1	5.0	ND
SA-7/PE-1	PE-1sa7	5.0	582
SA-7/PE-2	PE-2sa7	5.0	38
SA-7/PE-3	PE-3sa7	5.0	ND
SA-7/PE-4	PE-4sa7	5.0	ND
SC-5/PE-1	PE-1sc5	5.0	ND
SC-5/PE-2	PE-2sc5	5.0	ND
SC-5/PE-3	PE-3sc5	5.0	ND
SC-5/PE-4	PE-4sc5	5.0	ND
SC-6/PE-1	PE-1sc6	5.0	ND
SC-6/PE-2	PE-2sc6	5.0	ND
SC-6/PE-3	PE-3sc6	5.0	ND
SC-6/PE-4	PE-4sc6	5.0	ND
SC-6/PE-1(Dup)	PE-1sc6	5.0	129
SC-7/PE-1	PE-1sc7	5.0	ND
SC-7/PE-2	PE-2sc7	5.0	ND
SC-7/PE-3	PE-3sc7	5.0	ND
SC-7/PE-4	PE-4sc7	5.0	ND
SD-1/3/PE-1	PE-1sd1	5.0	ND
SD-1/3/PE-2	PE-2sd1	5.0	ND
SD-1/3/PE-3	PE-3sd1	5.0	ND
SD-1/3/PE-4	PE-4sd1	5.0	ND
PE-T1	PE-T1	2.0	423
PE-T2	PE-T2	2.0	76
PE-T3	PE-T3	2.0	363
PE-T4	PE-T4	2.0	267

ATTACHMENT P-30

TABLE 10 - SUMMARY OF PHASE II POST-EXCAVATION SOIL ANALYTICAL RESULTS - IDENTIFIED COMPOUNDS
PAPERBOARD SPECIALITES OF PATERSON, INC., PATERSON, NEW JERSEY

Excavation Location	----SA-1----				----SA-7----				----SC-7----			
Sample No:	6001	6002	6003	6004	6005	6006	6007	6008	6009	6010	6011	6012
Sample Location:	PE-1SA1	PE-2SA1	PE-3SA1	PE-4SA1	PE-1SA7	PE-2SA7	PE-3SA7	PE-4SA7	PE-1SC7	PE-2SC7	PE-3SC7	PE-4SC7
Date Sampled:	7/20/90	7/20/90	7/20/90	7/20/90	7/20/90	7/20/90	7/20/90	7/20/90	7/20/90	7/20/90	7/20/90	7/20/90
BASE NEUTRAL COMPOUNDS (UG/L)												
Acenaphthylene	N.D.	N.D.	N.D.	410.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Hexachlorobenzene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Phenanthrene	N.D.	N.D.	850.0	780.0	69000.0	44000.0	120000.0	3100.0	N.D.	N.D.	N.D.	N.D.
Flouranthene	130.0J	900.0	1400.0	1800.0	76000.0	68000.0	230000.0	3200.0	N.D.	N.D.	N.D.	N.D.
Benzidine	N.D.	1100.0	3400.0	2100.0	160000.0	83000.0	190000.0	14000.0	N.D.	N.D.	N.D.	N.D.
Pyrene	140.0 J	900.0	1500.0	1900.0	3700.0 J	33000.0	110000.0	4400.0	N.D.	N.D.	N.D.	N.D.
Benzo(a)Anthracene	N.D.	N.D.	890.0	1300.0	N.D.	18000.0 J	60000.0	2000.0	N.D.	N.D.	N.D.	N.D.
Chrysene	N.D.	580.0	830.0	1200.0	N.D.	N.D.	55000.0	1800.0 J	N.D.	N.D.	N.D.	N.D.
Benzo(b)Flouranthene	N.D.	440.0	640.0	1100.0	N.D.	N.D.	55000.0	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo(k)Flouranthene	N.D.	420.0 J	590.0	1200.0	N.D.	N.D.	54000.0	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo(a)Pyrene	N.D.	440.0	600.0	1100.0	N.D.	21000.0	70000.0	N.D.	N.D.	N.D.	N.D.	N.D.
Indeno(1,2,3-cd)Pyrene	N.D.	N.D.	430.0	770.0	N.D.	N.D.	42000.0	N.D.	N.D.	N.D.	N.D.	N.D.
Benzo(g,h,i)Perylene	N.D.	N.D.	400.0	740.0	N.D.	N.D.	40000.0 J	N.D.	N.D.	N.D.	N.D.	N.D.
TOTAL PRIORITY COMPOUNDS	270.0	4780.0	11530.0	14400.0	308700.0	267000.0	971000.0	154500.0	N.D.	N.D.	N.D.	N.D.
TOTAL NON-PRIORITY COMPOUNDS	4310.0	11380.0	11240.0	6620.0	61800.0	44280.0	58800.0	3300.0	1320.0	1270.0	2120.0	2020.0

Excavation Location	---SC-5---					(DUP)	---SC-6---			---SD-2---			
Sample No:	6013	6014	6015	6016	6017	6029	6018	6019	6020	6021	6022	6023	6024
Sample Location:	PE-1SC5	PE-2SC5	PE-3SC5	PE-4SC5	PE-1SC6	PE-1SC6	PE-2SC6	PE-3SC6	PE-4SC6	PE-1SD2	PE-2SD2	PE-3SD2	PE-4SD2
Date Sampled:	7/20/90	7/20/90	7/20/90	7/20/90	7/20/90	7/20/90	7/20/90	7/20/90	7/20/90	7/20/90	7/20/90	7/20/90	7/20/90
BASE NEUTRAL COMPOUNDS (UG/L)													
Hexachloroethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	710.0	820.0
Phenanthrene	570.0	N.D.	8300.0	13000.0	N.D.	N.D.	N.D.	N.D.	570.0	560.0	N.D.	N.D.	420.0
Anthracene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	280.0 J	170.0 J	N.D.	N.D.	N.D.
Flouranthene	620.0	N.D.	9900.0	13000.0	N.D.	N.D.	N.D.	N.D.	1100.0	920.0	N.D.	630.0	650.0
Benzidine	1900.0	N.D.	11000.0	19000.0	550.0	N.D.	N.D.	N.D.	1800.0	2100.0	N.D.	N.D.	N.D.
Pyrene	680.0	N.D.	5000.0	5900.0	N.D.	N.D.	N.D.	N.D.	1100.0	990.0	N.D.	620.0	610.0
Benzo(a)Anthracene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	580.0	530.0	N.D.	N.D.	N.D.
Chrysene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	570.0	520.0	N.D.	400.0	N.D.
bis(2-ethylhexyl)phthalate	560.0	600.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	420.0	N.D.	N.D.	N.D.	N.D.
Benzo(b)Flouranthene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	450.0	410.0	N.D.	N.D.	N.D.
Benzo(k)Flouranthene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	370.0	430.0	N.D.	N.D.	N.D.
Benzo(a)Pyrene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	450.0	440.0	N.D.	N.D.	N.D.
Benzo(g,h,i)Perylene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	2360.0	2500.0
TOTAL PRIORITY COMPOUNDS	4330.0	600.0	34200.0	50900.0	550.0	N.D.	N.D.	N.D.	7690.0	7070.0	N.D.	N.D.	N.D.
TOTAL NON-PRIORITY COMPOUNDS	10140.0	14040.0	5950.0	8040.0	4840.0	5560.0	3640.0	4340.0	5330.0	7280.0	4487.0	7410.0	5520.0

NOTES: N.D. - Compound Not Detected.
J - Estimated value; less than detection limit.
N.A. - Indicates that compound was not included in analysis.

ATTACHMENT P-31

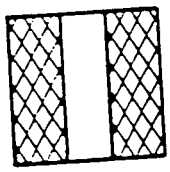
TABLE 11 - SUMMARY OF POST-EXCAVATION SOIL ANALYTICAL RESULTS FOR UST-C
PAPERBOARD SPECIALITIES OF PATERSON, INC., PATERSON, NEW JERSEY

Sample Location:	PE-T10	PE-T12	PE-T13	PE-T14	PE-T15	PE-T16	PE-T16	PE-T17	PE-T18	PE-T18	FIELD BLANK	TRIP BLANK
Sample No:	6001	6002	6003	6004	6005	2006	2006	2007	6008	6009	1001	1001
Date Sampled:	8/30/90	8/30/90	8/30/90	8/30/90	8/30/90	8/30/90	8/30/90	8/30/90	8/30/90	8/30/90	8/30/90	8/30/90
BASE NEUTRAL COMPOUNDS (ug/L)												
Naphthalene	N.D.	N.D.	N.D.	N.D.	N.D.	9608.0	N.A.	N.D.	10336.0	N.D.	N.D.	N.A.
Acenaphthene	N.D.	N.D.	2415.0	N.D.	N.D.	N.D.	N.A.	N.D.	N.D.	N.D.	N.D.	N.A.
Flourene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.D.	2953.0	N.D.	N.D.	N.A.
Phenanthrene	5957.0	N.D.	N.D.	N.D.	N.D.	3880.0	N.A.	N.D.	7752.0	N.D.	N.D.	N.A.
Flouranthene	9134.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.D.	N.D.	N.D.	N.D.	N.A.
Pyrene	15090.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.D.	N.D.	N.D.	N.D.	N.A.
Benzo(a)Anthracene	6949.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.D.	N.D.	N.D.	N.D.	N.A.
Chrysene	7942.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.D.	N.D.	N.D.	N.D.	N.A.
Benzo(b)Flouranthene	6949.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.D.	N.D.	N.D.	N.D.	N.A.
Benzo(k)Flouranthene	5758.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.D.	N.D.	N.D.	N.D.	N.A.
Benzo(a)Pyrene	8141.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.D.	N.D.	N.D.	N.D.	N.A.
Indeno(1,2,3-cd)Pyrene	7148.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	3567.0	N.D.	N.D.	N.D.	N.A.
TOTAL PRIORITY COMPOUNDS	73068.0	N.D.	2415.0	N.D.	N.D.	13488.0	N.A.	3567.0	21041.0	N.D.	N.D.	N.A.
Total TIC's *	4590.0	26730.0	71425.0	16830.0	3010.0	293710.0	N.A.	N.D.	230200.0	30160.0	N.D.	N.A.
PETROLEUM HYDROCARBONS (mg/L)	536.0	663.0	95.0	5779.0	284.0	1149.0	N.A.	9992.0	N.D.	1550.0	N.A.	N.A.
VOLATILE ORGANIC COMPOUNDS (ug/L)												
Methylene Chloride	36.0 B	N.D.	30.0 B	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Benzene	72.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Toluene	0.0	N.D.	N.D.	N.D.	N.D.	560.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Ethylbenzene	N.D.	N.D.	N.D.	N.D.	N.D.	2128.0	2129.0	N.D.	3244.0	N.D.	N.D.	N.D.
Total Xylenes	N.D.	N.D.	N.D.	645.0	N.D.	7671.0	8918.0	N.D.	16890.0	N.D.	N.D.	N.D.
Total Priority Compounds	132.0	N.D.	N.D.	645.0	N.D.	10359.0	11047.0	N.D.	20134.0	N.D.	N.D.	N.D.
Total TIC's *	430.0	46950.0	1230.0	50600.0	600.0	116850.0	148550.0	2720.0	18500.0	N.D.	10.0	10.0

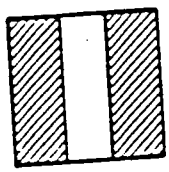
NOTE: N.D. - Indicates that thee compound was included in the analysis, but was not detected.
J - Indicates an estimated value.
B - Indicates the analyte was found in the blank as well as the sample.
* - Tentatively Identified Compounds - laboratory indicates that these values should be considered estimated values.

ATTACHMENT P-32

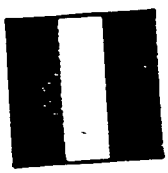
WELL COMPLETION SYMBOL LEGEND



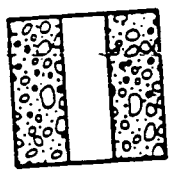
CEMENT GROUT WITH BENTONITE



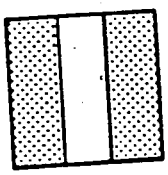
GRANULAR BENTONITE SLURRY



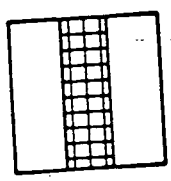
BENTONITE PELLETS



BACKFILLED CUTTINGS



SAND PACK



WELL SCREEN (PVC OR STAINLESS)

BELL ENVIRONMENTAL CONSULTANTS, INC.
CONSULTING ENVIRONMENTAL SCIENTISTS
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ATTACHMENT P-34

DRILLING LOG LEGEND

	CLASSIFICATION	LOG	LITHOLOGIC DESCRIPTION
SEDIMENTARY	CONGLOMERATE (BRECCIA)		QUARTZ-CONGLOMERATE, GRAYWACKE-CONGLOMERATE, ARKOSIC-CONGLOMERATE, LITHIC-CONGLOMERATE
	SANDSTONE		QUARTZ-ARENITE, QUARTZ WACKE, GRAYWACKE, ARKOSE, TUFFACEOUS SANDSTONES
	SILTSTONE		CARBONACEOUS, CALCAREOUS, SILICEOUS, DIATOMACEOUS, OR MICACEOUS SILTSTONE
	CLAYSTONE/MUDSTONE		CLAY SHALE, MARL
	SHALE		CARBONACEOUS, CALCAREOUS, SILICEOUS, DIATOMACEOUS, OR MICACEOUS SHALES
	LIMESTONE/DOLOSTONE		CALCARENITE, DOLOMITIC OR SILICEOUS LIMESTONE, CALCITIC DOLOSTONE
	CHERT		BEDDED CHERT, PORCELLANITE
IGNEOUS	VOLCANIC		RHYOLITE, QUARTZ LATITE, RHYODACITE, DACITE, LATITE, ANDESITE, BASALT, TUFF
	PLUTONIC		GRANITE, QUARTZ MONZONITE, GRANODIORITE, TANALITE MONZONITE, DIORITE, PERIDOTITE, DUNITE
METAMORPHIC	SCHISTOSE		SCHIST, PHYLLITE, SLATE, PHYLLONITE
	GRANOBLASTIC		GRANULITE, MARBLE, AMPHIBOLITE, TACTITE, SKARN, SERPENTINITE
	SEMISCHIST		GNEISS, BANDED GNEISS
	HORNFELSIC		ALBITE-EPIDOTE-HORNFELS, PYROXENE-HORNFELS, HORNBLENDE-HORNFELS
	CATACLASTIC		MYLONITE, PHACOIDAL ROCKS, MELANGE
TECTONIC	BRECCIA ZONE		FAULT BRECCIA, CRUSH BRECCIA CRUSH CONGLOMERATE
	SHEAR ZONE/FAULT	S F	CLAY GAUGE, SLICKENSIDES, USE S FOR SHEAR AND F FOR FAULT

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ATTACHMENT P-35

A. DEFINITION OF SOIL COMPONENTS AND FRACTIONS

Material	Symbol	Fraction	Sieve Size	Definition
Boulders	Bldr	---	9"+	Material retained on 9" sieve
Cobbles	Cbl	---	3" to 9"	Material passing the 9" sieve
Gravel	G	coarse (c) medium (m) fine (f)	1" to 3" 3/8" to 1" #10 to 3/8"	Material passing the 3" sieve and retained on the #10 sieve
Sand	S	coarse (c) medium (m) fine (f)	#30 to #10 #60 to #30 #200 to #60	Material passing the #10 sieve and retained on the #200 sieve
Silt	$	---	Passing #200 (0.075 mm)	Material passing the #200 sieve that is non-plastic in character and exhibits little or no strength when air-dried
Organic Silt	O$	---	---	Material passing a #200 sieve which exhibits plastic properties within a moisture content range.

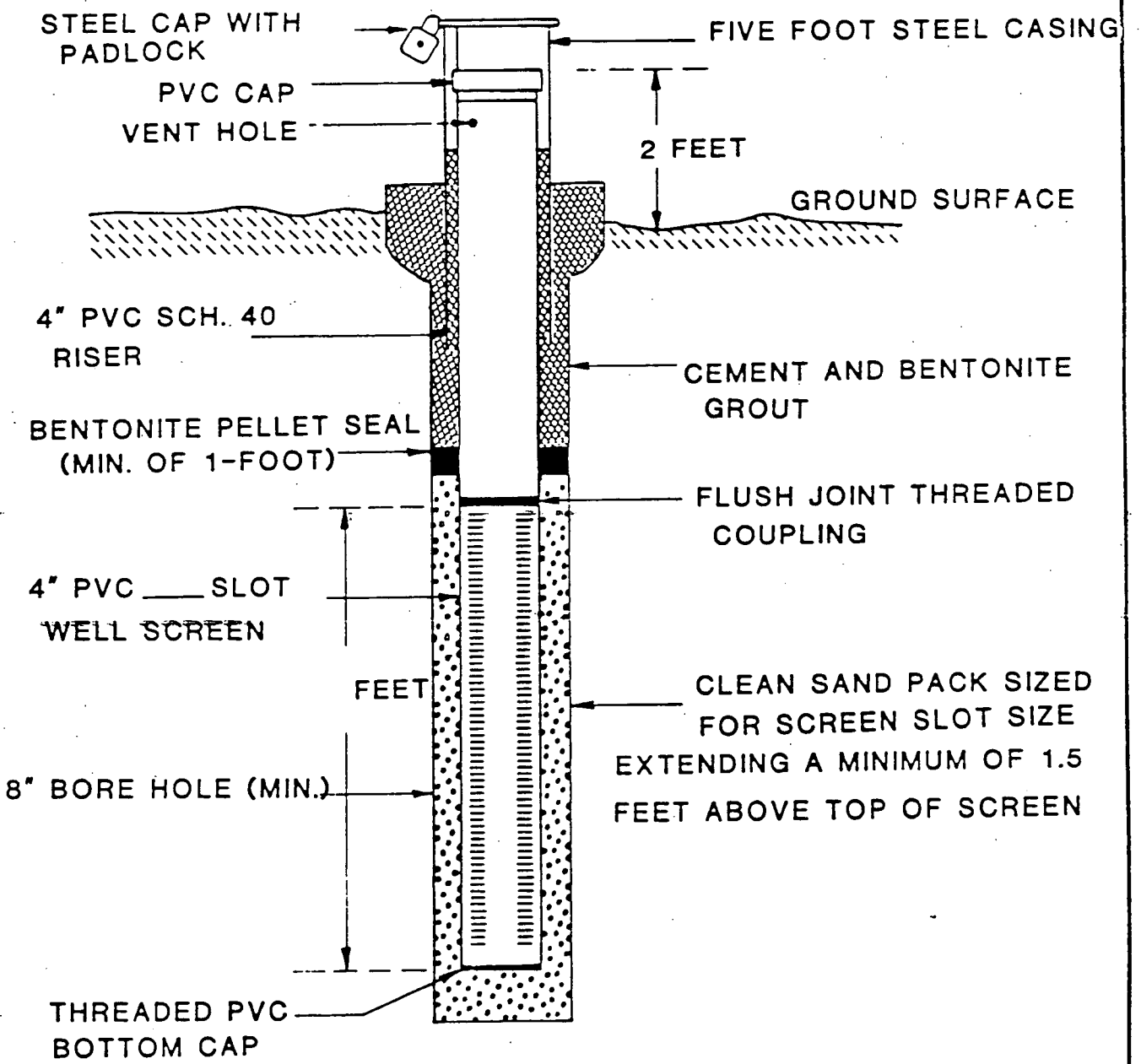
Material		Plasticity	Plasticity Index	
Clayey Silt	Cy$	Slight (Sl)	1 - 5	Clay-soil
Silt & Clay	$&C	Low (L)	5 - 10	Material passing the #200 sieve which exhibits plasticity, clay qualities within a certain range of moisture content, and considerable strength when air-dried
Clay & Silt	C&$	Medium (M)	10 - 20	
Silty Clay	$yC	High (H)	20 - 40	
Clay	C	Very High (VH)	40+	

B. DEFINITION OF COMPONENT PROPORTIONS

Component	Written	Proportions*	Symbol	Percentage Range by Weight
Principal	CAPITALS	---		50 or more
Minor	Lower Case	and	a.	35 to 50
		some	s.	20 to 35
		little	l.	10 to 20
		trace	t.	1 to 10

* Minus sign (-) lower limit, plus sign (+) upper limit, no sign middle range. Signs used with proportions, words or symbols to indicate lower or upper end of percentage range.

TYPICAL WELL COMPLETION
UNCONSOLIDATED FORMATIONS



NOT TO SCALE

NOTES:

1. In shallow wells of less than 15 feet, the bentonite pellet seal may be extended.

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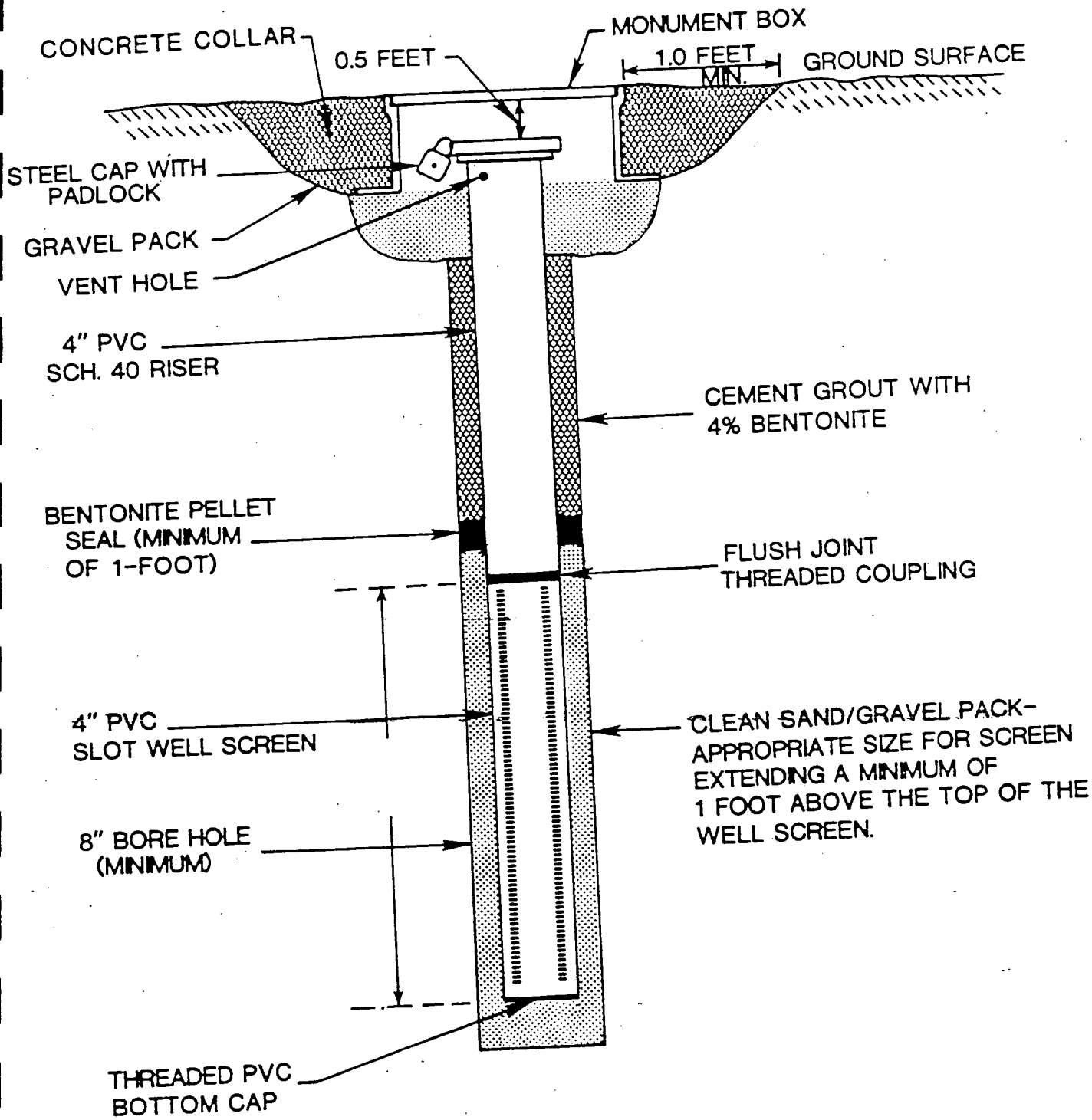
ATTACHMENT P-37

TYPICAL FLUSH ...
WELL COMPLETION
UNCONSOLIDATED FORMATIONS



NOT TO SCALE

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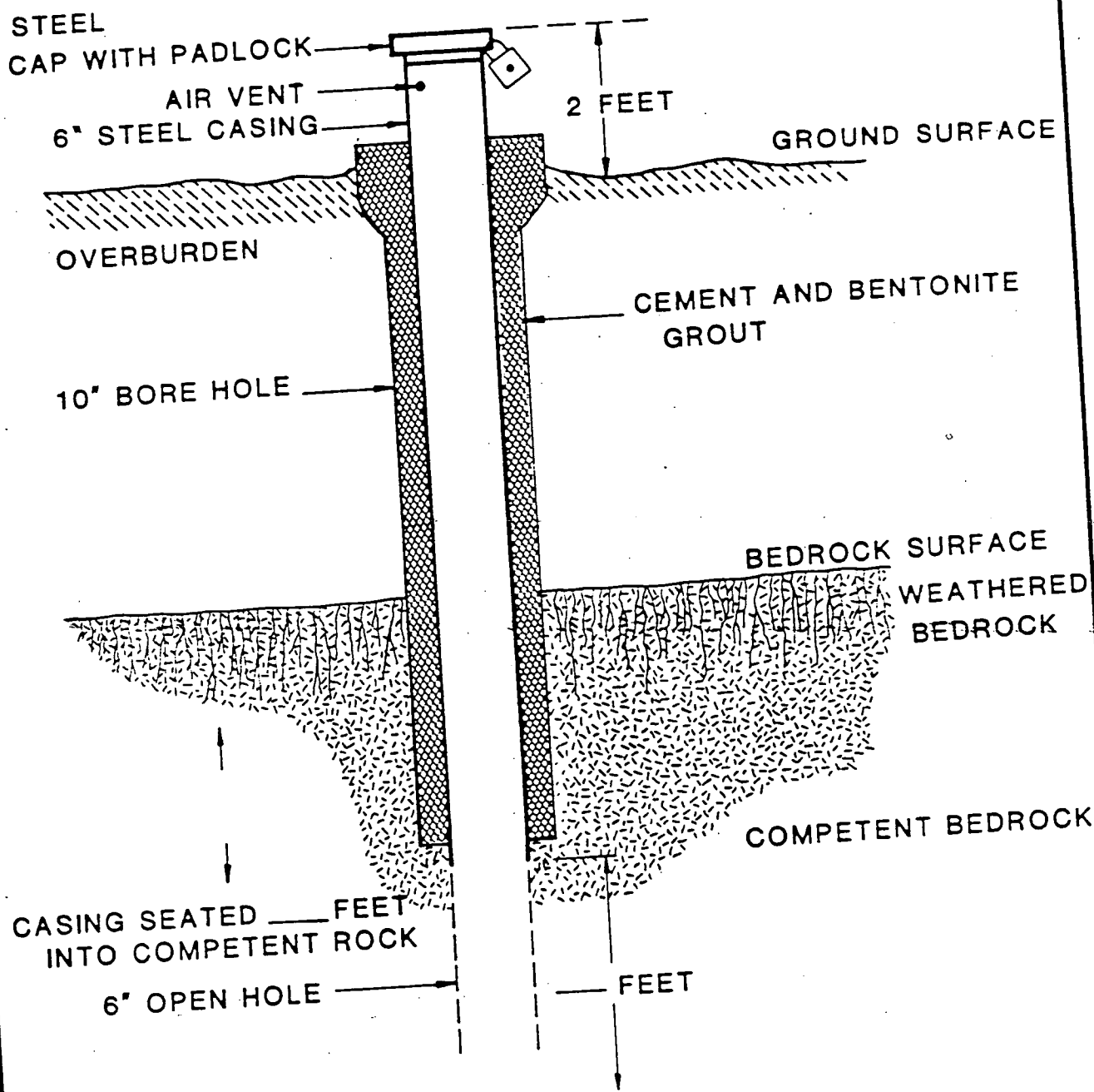
ATTACHMENT P-38

TYPICAL WELL COMPLETION CONSOLIDATED FORMATIONS



NOT TO SCALE

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ATTACHMENT P-39

EXPLORATORY DRILLING LOG - UNCONSOLIDATED FORMATIONS

Location: BEC-2S

ECT: Chin Am

PROJECT #: 89-039-01

GGED: L. Fankhauser

DRILLER: B. Spear/M. McGinnis
EQUIPMENT: Schramm Rotodrill/Gus Pech Brat 22R

RTED: January 30, 1990

FINISHED: January 30, 1990

LOCATION SKETCH

QUIPMENT DATA			GROUNDWATER DATA				SAMPLE DATA	
	CASING	SAMPLER	DEPTH	DATE	TIME	REFERENCE	DIST.	UNDISTURBED
PE	H.S.A.	-				Nothc in PVC	X	-
IAM.	6 5/8"	-					ELEVATION DATA	
IGHT	-	-					GROUND	CASING	DATUM
ALL	-	-							MSL

ELL LOG	LOG	DEPTH	BLOW COUNT	REC. (FT)	SAMPLE NUMBER	DESCRIPTION	REMARKS
						0'0"	
		0				CONCRETE 0'6"	
		1				Light Brown Sand and Gravel FILL	
		2					
		3				4'0"	
		4				Br cfS, s(-)$, l(-) Cbl	
		5					
		6				Brown Well Graded Silty Cobbly SAND (SW)	
		7					
		8					
		9					
		10					
		11				Br cfS, s(-) $, l(-) Cbl	
		12					

RILL1.9.89

ATTACHMENT P-40

EXPLORATORY DRILLING LOG – UNCONSOLIDATED FORMATIONS

Location: BEC-2S

PROJECT #: 89-039-01

E: Chin Am

LOG	DEPTH	BLOW COUNT	REC. (FT)	SAMPLE NUMBER	DESCRIPTION	REMARKS
	13				Br cfS, s(-)$, 1(-) Cbl 13'6"	
	14				End of Boring @ 13'6"	
	15				Well Construction Data	
	16				Screen: 4" dia., sch. 40, 20-slot PVC Riser: 4" dia., sch. 40 PVC Sand: Jessie Morie #1 Grout: Cement with bentonite Permit # 26-18933-0	
	17					
	18					
	19					
	20					
	21					
	22					
	23					
	24					
	25					
	26					
	27					
	28					
	29					
	30					
	31					
	32					
	33					
	34					
	35					

RILL2.9.89

ATTACHMENT P-41

EXPLORATORY DRILLING LOG - UNCONSOLIDATED FORMATIONS

Location: BEC-1S

JECT: Chin Am

PROJECT #: 89-039-01

ED L. Fankhauser

DRILLER: B. Spear/M. McGinnis
EQUIPMENT: Schramm Rotodrill/Gus Pech Brat 22R

TED: January 30, 1990

FINISHED: January 30, 1990

LOCATION SKETCH

EQUIPMENT DATA			GROUNDWATER DATA				SAMPLE DATA	
	CASING	SAMPLER	DEPTH	DATE	TIME	REFERENCE	DIST.	UNDISTURBED
YPE	H.S.A.	-	-			Nothc in PVC	X	-
IAM.	6 5/8"	-					ELEVATION DATA	
IGHT	-	-					GROUND	CASING	DATUM
ALL	-	-							MSL

LL OG	LOG	DEPTH	BLOW COUNT	REC. (FT)	SAMPLE NUMBER	DESCRIPTION	REMARKS
						0'0"	
		0				CONCRETE 0'6"	
		1				Br cfS, s(-)$, 1(-) Cbl	
		2					
		3					
		4				Brown Well Graded Silty Cobbly SAND (SW)	soil saturated with oil
		5					
		6					strong odors in borehole
		7					
		8					
		9					
		10					
		11				Br cfS, s(-)$, 1(-) Cbl	
		12					

RILL1.9.89

ATTACHMENT P-42

EXPLORATORY DRILLING LOG - UNCONSOLIDATED

Location: BEC-1S

PROJECT #: 89-039-01

: Chin Am

LOG	DEPTH	BLOW COUNT	REC. (FT)	SAMPLE NUMBER	DESCRIPTION	REMARKS
					Br cfS, s(-)S, l(-) Cbl 13'0"	Refusal
	13				End of Boring @ 13'0"	
	14				Well Construction Data	
	15				Screen: 4" dia., sch. 40, 20-slot PVC Riser: 4" dia., sch. 40 PVC Sand: Jessie Morie #1 Grout: Cement with bentonite Permit # 26-18932-1	
	16					
	17					
	18					
	19					
	20					
	21					
	22					
	23					
	24					
	25					
	26					
	27					
	28					
	29					
	30					
	31					
	32					
	33					
	34					
	35					

DRILL2.9.89

ATTACHMENT P-43

Location: BEC-1D

CT: Chin Am

PROJECT #: 89-039-01

ED
L. Fankhauser

DRILLER: B. Spear
EQUIPMENT: Schramm Rotodrill

TED: January 29, 1990

FINISHED: January 29, 1990

LOCATION SKETCH

QUIPMENT DATA				GROUNDWATER DATA				SAMPLE DATA		
	CASING	SAMPLER	CORE	DEPTH	DATE	TIME	REFERENCE	DIST.	UNDIST.	CORE
PE	Air Rotary	-						X		
A.	8"	-						ELEVATION DATA		
	-	-						GRND	CASING	DATUM
LL	-	-								MSL

ELL G	LOG	DEPTH	RUN/ BOX #	REC %	RQD	SAMPLE NUMBER	DESCRIPTION	REMARKS
		2, 1					0'0"	
		0					CONCRETE 0'6"	
		1, 2, 3, 4					Br cfS, 1(-)$, s(-) Cbl Brown Well Graded Silty Cobbly SAND (SW) 5'0"	
		5, 6, 7, 8, 9, 10, 11, 12					Br cfS, 1(-)$, a(-)G Brown Well Graded Silty SAND and Gravel (SW)	odors of oil in cuttings cuttings moist; sheen present

1.9.89

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ATTACHMENT P-44

EXPLORATORY DRILLING LOG - CONSOLIDATED FORMATIONS

Location: BEC-1D

PROJECT: Chin Am

PROJECT NO.: 89-039-01

EL	LOG	DEP.	RUN/ BOX #	REC %	RQD	SAMPLE NUMBER	DESCRIPTION	REMARKS
		13					Br cfS, 1(-)$, a(-)G	odors in cuttings
		14					15'0"	Bedrock
		15					Rd Sh	cuttings dry
		16						
		17						
		18						
		19					Red SHALE	
		20						
		21						
		22						
		23						
		24						
		25					Rd Sh	
		26						
		27						
		28						
		29						
		30						
		31						
		32						
		33					Red SHALE	
		34						

CK2.9.89

BELL ENVIRONMENTAL CONSULTANTS, INC.
CONSULTING ENVIRONMENTAL SCIENTISTS

ATTACHMENT P-45

EXPLORATORY DRILLING LOG - CONSOLIDATED FORM

Location: BEC-1D

PROJECT NO.: 89-039-01

PROJECT: Chin Am

DRILL	LOG	DEP.	RUN/ BOX #	REC %	RQD	SAMPLE NUMBER	DESCRIPTION	REMARKS
		35					Rd Sh	
		36						
		37						
		38						
		39						
		40						
		41					Red Shale	
		42						
		43						
		44						
		45						
		46						
		47						
		48						
		49						
		50					Rd Sh	
		51						
		52						
		53						
		54						
		55						
		56						

RDC13.9.89

BELL ENVIRONMENTAL CONSULTANTS, INC.
CONSULTING ENVIRONMENTAL SCIENTISTS

ATTACHMENT P-46

EXPLORATORY DRILLING LOG - CONSOLIDATED FORMATIONS

Location: REC-1D

PROJECT NO.: 89-039-01

ECT: Chin Am

L	LOG	DEP.	RUN/ BOX #	REC %	RQD	SAMPLE NUMBER	DESCRIPTION	REMARKS
		57					Rd Sh	
		58						
		59						
		60					Red Shale	
		61						
		62						
		63						
		64						
		65						
		66						
		67						
		68					Rd Sh	
		69						Cutting Moist
		70						
		71						
		72					Red Shale	Strong Odors and sheen Present in water
		73						
		74						
		75						
		76						
		77						
		78					Rd Sh	

ROCK3.9.89

BELL ENVIRONMENTAL CONSULTANTS, INC.
CONSULTING ENVIRONMENTAL SCIENTISTS

ATTACHMENT P-47

EXPLORATORY DRILLING LOG - CONSOLIDATED FORMATIONS

Location: BEC-1D

PROJECT NO.: 89-039-01

CT: Chin Am

LOG	DEP.	RUN/ BOX #	REC %	RQD	SAMPLE NUMBER	DESCRIPTION	REMARKS
	79					Rd Sh	
						80'0"	
	80						
						End of boring @ 80'0" well Construction Data	
						Casing: 8" dia., Steel cemented 5 feet into bedrock	
						permit # 26-18934-8	

3.9.89

BELL ENVIRONMENTAL CONSULTANTS, INC.
CONSULTING ENVIRONMENTAL SCIENTISTS

ATTACHMENT P-48

ATTACHMENT Q

SOIL SURVEY OF

Passaic County, New Jersey

United States Department of Agriculture
Soil Conservation Service
In cooperation with
New Jersey Agricultural Experiment Station
and
Cook College, Rutgers University

ATTACHMENT Q-1

Figure 7.—An area of extremely stony Swartswood soil.

rongly sloping Swartswood soils, and small areas of Chenango and Rockaway soils.

Severe limitations to residential, commercial, and industrial development are caused mainly by boulders and stones (fig. 7), slow permeability in the fragipan, and seepage above the fragipan. Accessibility is difficult because of the surrounding rough and rocky land. This soil is commonly used to grow trees and to provide watershed protection. The high stone content severely limits landscaping and lawn establishment. Capability unit VIIs-19; woodland group 3x.

Swartswood extremely stony fine sandy loam, 8 to 15 percent slopes (SeC).—This soil has the profile described as representative of the series. Stones commonly make up 10 percent of the material in the soil profile. Stones larger than 5 feet in diameter are throughout the soil material. Stones on the surface are 2 to 5 feet apart. Rock crops out in places. Included in mapping were areas of Wurtsboro soils, gently sloping and steep areas of Swartswood soils, and small areas of Rockaway and Chenango soils.

This soil generally has severe limitations for high-density community development, industrial sites, recreation areas, or other uses that require intensive land smoothing and grading. Limitations are caused mainly by boulders and stones, slope, and the fragipan. Accessibility is difficult because of the surrounding steep slopes and rock outcrops. High stone content and a moderate hazard of erosion severely limit landscaping and lawn establishment. Capability unit VIIs-19; woodland group 3x.

Swartswood extremely stony fine sandy loam, 15 to 25 percent slopes (SeD).—This soil has a profile similar to the one described as representative of the series. Stones commonly make up more than 10 percent of the soil material in the profile. Stones larger than 5 feet in diameter are throughout. Stones on the surface are 2 to 5 feet apart. Depth to bedrock is generally 3½ to 6 feet. Rock crops out in a few places. Included in mapping were areas of a soil similar to Swartswood soil but that lacks mottling at a depth of less than 36 inches and has a fragipan at a greater depth. Also included were areas of Wurtsboro and Rockaway soils.

This soil generally has severe limitations for high-density community development, industrial sites, and recreation areas. Limitations are caused mainly by boulders and stones and by slope. Accessibility is difficult because of the surrounding rough and rocky land. High stone content and a severe hazard of erosion severely limit landscaping and lawn establishment. Capability unit VIIs-19; woodland group 3x.

Swartswood-Rock outcrop complex, 3 to 15 percent slopes (SrC).—This complex consists of Swartswood soils and hard conglomerate or sandstone bedrock outcrops. The Swartswood soil has a profile similar to the one described as representative of the Swartswood series. The outcrops make up 15 to 30 percent of each mapped area. The exposed bedrock is in broad areas or small, sharp, closely spaced outcrops. Outcrops are a few inches to several feet high. Depth of the soil between outcrops is commonly 3½ to 6 feet. Boulders and stones cover 5 to 10 percent of the surface. Included in mapping were areas of Wurtsboro or Norwich soils or a soil that is shallow to bedrock. Also included were numerous small depressions occupied by shallow muck (Muck, shallow), 15 to 40 inches thick.

Most areas of this complex are wooded. Depth to bedrock and presence of rock outcrops are the major limitations. Stones limit landscaping and lawn establishment on Swartswood soils. Capability unit VIIs-19; woodland group 4x.

Urban Land

Urban land consists of areas that have been developed for residential, commercial, or industrial use. During development these areas were leveled or cut and filled to such an extent that 40 to 80 percent of the original soil has been altered.

Urban land-Boonton complex, gently sloping (UbB).—This complex consists of areas where man has altered the soil, areas of Boonton soils, and small inclusions of Holyoke or Haledon soils. Urban land makes up 40 to 80 percent of each mapped area, and Boonton soils make up 20 to 60 percent. Extensive areas are under paving or under structures. Slopes are dominantly 3 to 8 percent, but some areas have been leveled by man or are steep edges of cuts or fills.

The soil materials and the Boonton soils are mostly stony and gravelly glacial deposits derived from shale, sandstone, basalt, and granitic materials. Depth to shale, sandstone, or basalt bedrock ranges from 3 to 10 feet but is generally more than 6 feet. Stones, cobblestones, and gravel are common throughout the materials, and boulders are common in some areas. Not assigned to a capability unit or woodland group.

Urban land-Boonton complex, sloping (UbC).—This complex consists of areas where man has altered the soil, areas of Boonton soils, and small inclusions of Holyoke soils and bedrock outcrops.

ATTACHMENT Q-2

Urban land makes up 40 to 80 percent of each mapped area, and Boonton soils make up 20 to 60 percent. Slopes are dominantly 8 to 15 percent. In some tracts extensive areas are under paving or structures. In preparing building sites, developers have made extensive cuts and fills. Such sites generally have steep, shallow cuts or fills at the edges. The soil materials consist of stony and gravelly fine sandy loam glacial deposits composed mostly of red sandstone and shale, basalt, and granitic gneiss. Depth to shale, sandstone, or basalt bedrock ranges from 3 to more than 10 feet but is generally 6 to 10 feet. Where bedrock is at a depth of 3 to 6 feet, the sandstone and shale in most places are rippable to a depth of at least 6 feet. Not assigned to a capability unit or woodland group.

Urban land-Riverhead complex, gently sloping (UrB).—This unit consists of areas where man has altered the soil, areas of Riverhead soils, and small inclusions of Otisville and Pompton soils. Urban land makes up 40 to 80 percent of each mapped area, and Riverhead soils make up 20 to 60 percent. Slopes are dominantly 3 to 8 percent. Extensive areas are under paving or structures. The soil materials are stratified and sorted, cobbly or gravelly, coarse-textured glacial outwash materials composed mostly of granitic gneiss, sandstone, or shale materials. Depth to bedrock in most areas is more than 10 feet. Not assigned to a capability unit or woodland group.

Urban land-Rockaway complex (Ux).—This unit consists of areas where man has altered the soil, areas of Rockaway soils, and small inclusions of Hibernia and Netcong soils. Urban land makes up 40 to 80 percent of each mapped area and Rockaway soils make up 20 to 60 percent. Slopes are dominantly 3 to 15 percent. Extensive areas are under paving or structures. The soil materials are very stony and gravelly sandy loam glacial deposits derived mainly from granitic gneiss materials. Depth to granitic gneiss bedrock ranges from 3 feet to many feet but is mostly 6 to 10 feet. Not assigned to a capability unit or woodland group.

Whippany Series

The Whippany series consists of somewhat poorly drained soils that have a moderately fine textured or fine textured subsoil underlain by coarser textured material. These nearly level to gently sloping soils are adjacent to the glacial lake bottoms. The soils formed in lacustrine deposits composed of silty and clayey material underlain by sandy material of glacial outwash origin. These soils have been used for farming and, more recently, for housing and industrial development. Some areas are still wooded. The areas adjacent to large streams are subject to flooding.

In a representative profile the surface layer is very dark brown silt loam about 3 inches thick. The subsoil is about 29 inches thick. The upper 6 inches is brown silt loam, the next 6 inches is yellowish-brown silty clay loam, and the next 8 inches is mottled, dark-brown clay loam. The lower 9 inches of the subsoil is also mottled, dark-brown clay loam but contains less clay than the layer above it. The upper part of the substratum is dark-brown loam about 8 inches thick. The lower part, between depths of 40 and 60 inches, is yellowish-brown sandy loam.

Permeability is slow in the subsoil and moderately rapid in the substratum. Available water capacity is high. The seasonal high water table is at a depth of ½ to 1½ feet. Limitations for community, recreational, and industrial development are caused mainly by the seasonal high water table. Most Whippany soils do not flood frequently, but some areas in the lowest positions are subject to flooding.

Representative profile of Whippany silt loam, sandy loam substratum, 0 to 5 percent slopes, in a wooded area in Wayne Township; 830 feet southeast of intersection of Parrish Drive and Dey Road, 100 feet north of Dey Road:

A1—0 to 3 inches, very dark brown (10YR 2/2) heavy silt loam; moderate, medium, granular structure; very friable; dark-colored stains on sand grains; few uncoated sand grains; many roots; many fine pores; medium acid; gradual, smooth boundary.

B1—3 to 9 inches, brown (10YR 4/3) silt loam; weak, medium, subangular blocky structure; friable; dark-colored stains on some sand grains; common uncoated sand grains; many roots; many fine pores; medium acid; abrupt, smooth boundary.

B21t—9 to 15 inches, yellowish-brown (10YR 5/6) heavy silty clay loam; many grayish-brown (10YR 5/2) mottles; moderate, medium, subangular blocky structure; firm; plastic and sticky; few patchy clay films on ped faces; common roots; few fine pores; fine rust-colored stains in few root channels; medium acid; gradual, wavy boundary.

B22t—15 to 23 inches, dark-brown (7.5YR 4/4) heavy clay loam; many, fine and medium, distinct, pale-brown (10YR 6/3) and common, medium, prominent, grayish-brown (10YR 5/2) mottles; strong, medium, subangular blocky structure; firm; sticky and plastic; few patchy clay films on ped faces; common roots; slightly acid; clear, wavy boundary.

B3—23 to 32 inches, dark-brown (7.5YR 4/4) clay loam; common, medium, faint, strong-brown (7.5YR 5/6) and gray (N 5/0) mottles; strong, medium, subangular blocky structure; firm; few clay films lining pores; common roots; neutral; abrupt, smooth boundary.

IIC1—32 to 40 inches, dark-brown (7.5YR 4/4) loam; massive; friable; many uncoated sand grains; few roots; neutral; abrupt, smooth boundary.

IIIC2—40 to 60 inches, yellowish-brown (10YR 5/6) sandy loam; massive; friable; many uncoated sand grains; few roots; 5 percent pebbles; neutral.

The thickness of the solum ranges from 30 to 40 inches. Depth to bedrock ranges from 6 to 10 feet or more. Coarse fragments make up 0 to 5 percent of the solum and as much as 20 percent of the soil material below a depth of 40 inches. The content of coarse fragments in the substratum is variable depending on the sequence of strata. Coarse fragments are mainly granitic gneiss and lesser amounts of conglomerate, sandstone, shale, and traprock. Reaction of the soils in unlimed areas is medium acid in the surface layer and neutral in the substratum.

In the A1 horizon color ranges from very dark brown (10YR 2/2) to very dark grayish brown (10YR 3/2). The Ap horizon is dark grayish brown (10YR 4/2) to dark yellowish brown (10YR 4/4). In the B horizon color ranges from yellowish brown (10YR 5/6) in the upper part to dark brown (7.5YR 4/4) or yellowish red (5YR 5/6) in the lower part. Texture is dominantly heavy silty clay loam or heavy clay loam, but in individual subhorizons it ranges from heavy silt loam to clay. High- and low-chroma mottles are throughout the B horizon. The C horizon is variable in both color and texture. The dominant colors are dark reddish brown (5YR 3/4) to dark brown (7.5YR 4/4). Grayish mottles range from few to many.

ATTACHMENT Q-3

ATTACHMENT R

Field Notes

Time: 8:15am

Date: August 27, 1992

Location: Paperboard Specialties
177 Third Avenue
Paterson, New Jersey

Inspectors: Damian Albanese, Environmental Specialist
Alexis Rinaldi, Environmental Specialist
Joseph Salomon, Environmental Specialist
Claudet Campbell, Environmental Specialist
Michele Iapachino, Environmental Specialist
Tom Fay, Sheriff's Department
Don Covello, Sheriff's Department
Hector Hernandez, Sheriff's Department

^^

After the Warrant was posted on the fence near the entrance, the Sheriff's Department cut open the chain on the fence to allow us entry. I then conducted a quick walk through of the property to see what was there. Photographs were taken by Hector Hernandez and Claudet Campbell. During this walk through I observed the following:

1. There was a large white cardboide container in the center of the property. Inside the container was a large round clear plastic which appeared to have a clear liquid inside. The container was marked "corrosive".

2. Also in the middle of the lot there were two pallets which contained 5 metal 55 gallon drums. Four (4) of the five (5) drums contained an unknown substance and the other one was empty. One of these drums contained a waxy substance which could be seen coming out of the top of the drum and has spilled onto the ground.

3. Behind these drums next to a trailer there were another five 55 gallon metal drums. All of these drums were empty.

4. In front of the first trailer on the left there are two (2) metal 55 gallon drums. One of them is on it's side and a waxy substance has spilled out of it.

5. There are eleven (11) 55 gallon drums located on the lot next to the above ground white propane tank. Six (6) of these drums were plastic and the other five (5) were metal.

26, 27, 28, 29, 30 – inside trailer
No drum log recorded

ATTACHMENT R-1

6. There were also four (4) trailers parked on this lot. The two (2) middle trailers contained several pallets of a white powdery material. The bags of this material were labeled "Dicalite Filter Aids". There was also some solid waste and scrap metal throughout this lot.

7. I then walked to the lot that is adjacent to Route 20. On this lot I found solid waste debris scattered throughout the property. There was a pallet next to the boat on this lot which contained three plastic gallon containers that were filled with waste oil. There were also seven Quart containers that were filled with waste oil.

8. Also on this lot there were four (4) trailers. One which looked like a horse trailer and which was next to the boat, contained some tools and equipment. The two (2) red trailers on the far left of the property contained electrical equipment. The silver trailer which was next to the red trailer contained about twenty-two (22) 55 gallon drums. It was very difficult to climb over the drums to get an exact count.

9. Once we had inventoried the property we began to collect samples from some of the drums. Damian Albanese collected the samples with the assistance from Joseph Salomon, Tom Fay and Don Covello. Samples where taken from the following drums:

   Drum # 15, Sample # 1
   Drum # Sample #
   Drum # 19, Sample # 3
   1 Gallon Container Waste Oil, Sample # 4 (waste oil)
   1 Gallon Prestone Container, Sample # 5 (waste oil)
   * Blue Plastic 55gl drum inside trailer, Sample # 6 (clear liquid)
   Drum # 31, Inside Trailer, Sample # 7 (clear oily substance)

10. Photographs were taken of the property and a drum log was also taken. Upon completion of our sampling we then secured the property by chaining the fence and installing a new padlock.

11. Alexis Rinaldi back at the office conducted a field test on sample # 6. This material was a clear yellowish liquid and after conducting a field test it was found to have a pH of 0.

* DB resampled

ATTACHMENT R-2

ATTACHMENT S

PATERSON FIRE DEPT.
WILLIAM J. COMER
CHIEF
WILLIAM R. SHORTWAY
BATTALION CHIEF
FIRE OFFICIAL

UFC NEW JERSEY UNIFORM FIRE CODE

XX☒ NOTICE OF VIOLATION AND ORDER TO TERMINATE
☐ NOTICE AND ORDER TO PAY PENALTY

BUREAU OF
FIRE PREVENTION
111 BROADWAY
PATERSON, NEW JERSEY
07505
TELEPHONE: 881-6715

IDENTIFICATION

OWNER/AGENT/OCCUPANT:
Name Ji Xing, ChinAm, Inc.
Address 177 3rd Avenue
Town/State/Zip Paterson, N.J. 07514

LOCATION OF VIOLATION:
Address 177 3rd Avenue
Town/State/Zip Paterson, N.J. 07514
Registration No.

ACTION

DATE OF NOTICE: 3-23-89 COMPLIANCE DUE DATE: 4-24-89 DATE OF INSPECTION: 3-18-89

TAKE NOTICE that you have been found to be in violation of the State Uniform Fire Code Act and Regulations promulgated thereunder (N.J.A.C. 5:18-1 et. seq.) in that:

A representative of this office has inspected the above mentioned premises and found the following violations:

"SEE ATTACHED PAGES"

You are hereby ordered to terminate the said violations on or before April 24,1989.

XX☒ Failure to comply with this Order will subject you to a penalty of $ 1,000.00/$500.00 per day.

☐ You are hereby ordered to pay a penalty in the amount of $ _____ for each violation for a total penalty of $ _____. Each _____ that any of the said violations remain outstanding after _____ shall result in an additional penalty of $ _____ per _____.

If you wish to contest the validity of the above action, in accord with N.J.A.C. 5:18 - 2.11, you may request a hearing before the Construction Board of Appeals of the City of Paterson, N.J.; within 15 business days of receipt of these Orders. The Application to the Construction Board of Appeals may be used for this purpose.

Your application for appeal must be in writing, setting forth your address and name, the address of the building or site in question, the specific sections of the Regulations in question, and the extent and nature of your reliance on the Regulations and, if necessary, a brief statement setting forth your position and the nature of the relief sought by you. You may also append any documents that you consider useful.

The fee for an appeal is $ 50.00 to be forwarded with your application to the Board of Appeals office at 111 Broadway, Paterson, N.J. 07505

If you have questions concerning this matter, please call: Inspector J. Mania,/B/C J. Tice 881-6715

NOTICE OF VIOLATION AND ORDER TO TERMINATE: B/C James Tice DATE: 3/23/89
FO

NOTICE AND ORDER OF PENALTY: _____ DATE: _____
FO

ATTACHMENT S-1

VIOLATIONS

REGISTRATION NO: _____

DATE: 3-22-89

PREMISES: 177 3RD AVENUE & 184 3RD AVENUE

violation(s) discovered on the above premises are as follows:

Failure to register hazardous material under the New Jersey Community Right to Known Act, Sara Title III, Section 311 & 312 to the State and Local agencies.
First floor door leading to second floor offices is broken and sticking. Violation of N.J.A.C. 5:18-3.2(a) F-505.1.
Second floor exit door to fire escape blocked. Violation of N.J.A.C.5:18-3.2(a) F-501.2.
No illuminated exit sign over door to fire escape,and directional exit sign. Violation of N.J.A.C. 5:18-3.1(a) F-504.1.
No illuminated exit signs over exit doors throughout entire building. Violation of N.J.A.C. 5:18-3.1(a) F-504.1.
No emergency lighting throughout entire building. Violation of N.J.A.C. 5:18-4.11(i).1.
Exit blocked with rollers on first floor in front of building. Violation of N.J.A.C. 5:18-3.2(a) F-501.2
Not all fire extinguishers are hung properly. Violation of N.J.A.C. 5:18-2.9(a).2.
No fire extinguisher signs posted. Violation of N.J.A.C. 5:18-3.1(a) F-409.1.
Some fire extinguishers need to be serviced, inspected and tagged. Violation of N.J.A.C. 5:18-3.1(a) F-409.1. and N.J.A.C. 5:18-3.2(a) F-409.5.
Small cans of combustible liquids not stored in metal cabinets N.J.A.C. 5:18-3.2(a) F-2801.1.
Wood piles/saw dust (combustible materials) not stored and cleaned up. Violation of N.J.A.C. 5:18-3.1(a) F-305.1.

If box is checked, see additional page(s) for violations _____to _____

ATTACHMENT S-2

VIOLATIONS

PREMISES: 177 3RD AVENUE & 184 3RD AVENUE

13. Hazardous masterials (over 20 55 gal drums) stored improperly N.J.A.C. 5:18-3.2(a) F-2801.1 and F-2901.2.
14. Corrosive materials stored improperly. Violation of N.J.A.C. 5:18-3.2(a) F-2801.1 and F-2901.2.
15. Welding/cutting torch being used without a permit. Violation of N.J.A.C. 5:18-3.1(a) F-2001.2.
16. No "NO SMOKING" signs posted throughout building. Violation of N.J.A.C. 5:18-3.2(a) F-310.3.
17. Improper storage of portable propane tanks in building. Violation of N.J.A.C. 5:18-3.2(a) F-2401.9.
18. Sprinkler heads not properly maintain.(Lint and dust coated) all heads throughout the building must be cleaned. Violation of N.J.A.C. 5:18-3.2(a) F-403.1.
19. Rear small room near loading dock stored with debris and waste (combustible materials). Violation of N.J.A.C. 5:18-3.1(a) F-305.3.
20. No sprinkler system protection in offices on first floor. Violation of N.J.A.C. 5:18-3.2(a) F-400.1.
21. Both sprinkler systems (wet/dry) shut down. Pipes broken. Violation of N.J.A.C. 5:18-3.2(a) F-403.1.
22. Fire doors inoperable and blocked open on both sides. Violation of N.J.A.C. 5:18-3..2(a) F-309.1.
23. Waste and debris in yard surrounding building. Violation of N.J.A.C. 5:18-3.1(a) F-304.1.
24. Waste and debris in yard at 184 3rd Avenue. Violation of N.J.A.C. 5:18-3.1(a) F-304.1.
25. No aisle space in yard at 184 3rd Avenue. Violation of N.J.A.C. 5:18-3.1(a) F-1301.1 and F-1301.2.1.
26. Yard with large propane tank (184 3rd Avenue) Dumpsters overflowing with garbage and waste. Yard with large amounts of garbage and waste/debris. Violation of N.J.A.C. 5:18-3.1(a) F-304.1.
27. Fire department connections outside not properly marked and identified. Violation of N.J.A.C. 5:18-3.1(a) F-400.5.
28. Failure to have sprinkler system tested annually. Violation of N.J.A.C. 5:18-3.1(a) F-404.4.

ATTACHMENT S-3

VIOLATIONS

PREMISES: 177 3RD AVENUE & 184 3RD AVENUE

No fire extinguisher in pallet yard. Violation of N.J.A.C. 5:18-3.2(a) F-1301.7.

Propane cylinders in shed in yard (184 3rd Avenue) not properly secured. Violation of N.J.A.C. 5:18-3.2(a) F-2401.9.

Housekeeping/aisle space in building poor. Needs to be corrected immediately. Violation of N.J.A.C. 5:18-2.9(a).1 & 5:18-2.9(a).3.

Service equipment areas, electrical panelboards, motor control centers blocked and not accessible. Needs clearance. Violation of N.J.A.C. 5:18-3.2(a) F-312.2 and N.J.A.C. 5:18-3.1(a) F-312.1.

Disposal of combustible or flammable liquid in yard at 184 3rd Avenue. (drum of black liquid) Drum is leaking on to ground. Violation of N.J.A.C. 5:18-3.2.(a) F-2801.6.

ATTACHMENT S-4

ATTACHMENT T

PROPOSED CLEANUP PLAN FOR THE PAPERBOARD SPECIALITIES, INC. FACILITY IN PATERSON, NEW JERSEY
ECRA Case # 85317

Submitted to:

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
BUREAU OF ENVIRONMENTAL EVALUATION, CLEANUP
AND RESPONSIBILITY ASSESSMENT

BELL ENVIRONMENTAL CONSULTANTS, INC.
10 North Sussex Street
Dover, New Jersey 07801

January, 1990

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1.0 INTRODUCTION

Subsequent to the the purchase of the former Chinam, Inc (Berles Carton, Co.) facility, Paperboard Specialties, Inc. (PBS) retained Bell Environmental Consultants, Inc. (BEC) to review the status of the site remediation plan previously submitted under the New Jersey Environmental Cleanup Responsibility Act (ECRA). Consequent to a review of information provided by the New Jersey Department of Environmental Protection (NJDEP) and Technical Resources, Inc. (TRI), the following conclusions were reached:

1. The Phase I soil remediation program, previously conditionally approved by the NJDEP, was acceptable and technically responsive.

2. The Phase II soil and groundwater biological remediation was not technically justified based on the type and extent of hydrogeologic and analytical data available. A BEC internal memo detailing BEC's review of the TRI Phase II plan has been enclosed in Appendix IV, No. 1.

Consequently, BEC has, in conjunction with PBS, prepared this revised proposed cleanup plan for the PBS facility in Paterson, New Jersey. The objectives of this plan are to investigate and remediate, where technically feasible, contamination documented during earlier investigations.

2.0 BACKGROUND INFORMATION

2.1 Regional Geologic Setting

Paterson, New Jersey, is located along the eastern edge of the Newark Basin which is one of a series of step faulted half graben basins which extend linearly from Newfoundland to South Carolina and Georgia.

The Newark Basin, contained within the Piedmont Physiographic Province, is dominated by upper Triassic (Carnian) to Lower Jurassic (Hertangian-Simeumurian) non-marine sedimentary stream and lake deposits interbedded with quartz normative, olivine-poor, tholeiitic basaltic lava flows and intruded by diabasic sills and dikes. The beds in the basin generally strike northeast to southwest and dip between 5° to 20° southwest. The bedrock underlying the site is the Triassic Passaic Formation (formerly the Brunswick Formation) which consists of a series of alternating beds of sandstone, siltstone and shale interbedded with a conglomeratic facies along the basins faulted northeast border.

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The sediments of the Newark Basin were subsequently overlain by a mantle of Jurassic to Holocene consolidated and unconsolidated sand, gravels, silts and clays.

2.2 Site Stratigraphy

Site specific stratigraphy, based on information reported by TRI in their December 5, 1988 submission, is as follows:

FILL

Drilling log information indicates the presence of Fill material at locations MW-4 and MW-5 between the northwest and northeast portions of the facility. This fill is mainly composed of fine to medium sand, gravel silt and concrete and varies in thickness from 2 to 3 feet.

RECENT ALLUVIUM

The Recent Alluvium is typically composed of unconsolidated soils derived from the weathering of regional consolidated deposits. The variable lithology evident on the site (MW-4 and MW-5) is potentially due to varying depositional environments (i.e., during periods of heavy rainfall and flash flooding events, river deposits would typically consists of alternating deposits of coarse sands and gravels while low energy periods would result in an increase in clays, silts, and fine sands).

The soil log information indicates that the Recent Alluvium is composed of a dark-brown unconsolidated, well sorted medium to coarse sand with silt, gravel and some pebbles and is probably not continuous throughout the site. The alluvium deposit ranges from 2 to 6 feet in thickness.

RESIDUAL SOIL/WEATHERED ROCK

Soil log information indicates the presence of a residual soil (weathered rock) unit beneath the Recent Alluvium unit. This stratum, developed by the weathering of the underlying Passaic Formation, is distinguishable from overlying material as sampler penetration resistance is significantly increased. This unit possesses a characteristic bright red-brown or brownish red color and is comprised of very stuffy silty clays, clayey sands, silts, silty sands, and sandy clays with coarse sand and fine to medium gravel (shale fragments) present. The elevation at which increased sampler resistance was encountered is roughly consistent with the elevation postulated to correspond to the top of

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continuous bedrock.

2.3 Hydrogeologic Setting

2.3.1 Background

Information describing groundwater conditions and resources of Passaic County has been obtained from the TRI report prepared for Chinam, Inc. in 1988. Groundwater within the region occurs within both the surface alluvial deposits and fracture zones within the underlying consolidated bedrock. Historically, large diameter wells completed within the stratified glacial deposits have shown good well yields. Additionally, minor quantities of groundwater obtainable from weathered soil layers (although they would run dry occasionally during period of drought) or the alluvium.

The most consistent source of groundwater within Passaic County is within the fractured zones of the underlying Passaic Formation which typically occurs at depths of between 200 and 300 feet. Four such wells currently exist at the PBS site (facility production wells) and are used to provide process water. Recharge of the unconsolidated deposits primarily occurs by direct recharge due to precipitation and surface infiltration. Recharge of the bedrock aquifer probably occurs by recharge from overlying units and/or directly in areas exposed to precipitation.

2.3.2 Site Specific

Groundwater conditions at the PBS site were investigated by use of physical observation, monitoring wells and by direct measurement of the facility's production wells. The monitoring well drilling data reveals that the Recent Alluvium strata is a single water bearing unit at the site and consists of 2 to 6 foot thick sequence of sand, silt, gravel occurring along the margin of the Passaic River. This unit, present beneath the entire site and extending southwest for an unknown distance, occurs at or near land surface. Much of the unit is covered by facility and/or impervious areas. Groundwater occurs in this zone at shallow depths of 8 to 18 feet below the land surface under water table conditions.

According to monitoring well water levels observed during well installation, groundwater flow through the alluvium tends to mirror surface topography, flowing generally northeast or northward. Discharge to the Passaic River is indicated by the related locations of the river and groundwater. This unit probably receives little direct recharge on-site as most recharge water is directed away from the site before

infiltration.

3.0 EVALUATION OF PREVIOUSLY PROPOSED CLEAN-UP PLAN

An evaluation of the cleanup proposal previously submitted by TRI is included in Appendix IV, No. 1. This document presents PBS's revised proposed groundwater cleanup plan based on our review of the existing data and incorporates the previously conditionally approved soil remediation plan.

4.0 PROPOSED CLEAN UP

The remediation of the PBS facility will initially encompass three distinct phases as follows:

1. Remediation of previously documented soil contamination detected at boring locations SA-1, SA-2, SA-7, SC-3, SC-5 SC-6, SC-7, SD-1 and SD-2 and adjacent to UST-A (located adjacent to the truck bay);

2. Remediation of the non aqueous phase liquid (NAPL) layer detected in production well #3, and

3. Remediation of low levels of volatile and semi-volatile organic chemical detected in groundwater samples.

After evaluating various treatment technologies, the following cleanup plan is proposed to address the areas of concern identified above.

4.1 PHASE I - Soil Remediation

4.1.1 Analysis

The remediation of petroleum hydrocarbons (PHC) and base neutral (BN) contamination in soils is commonly accomplished through the use of an excavation approach which includes removal of the contaminated soil followed by replacement with clean soil. In evaluating the feasibility of this approach at the PBS facility, the following disadvantages were noted:

1. Due to potential heterogeneity of PHC concentrations, and the probability of surface soil contamination due to surface runoff, the efficiency of a large excavation effort would be poor. That is, PBS may remove a large amount of minimally contaminated soil along with the more contaminated material. This would reduce the

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net benefit of excavation as opposed to the cost of the effort in dollars, landfill space, and other resources.

2. The excavation process would result in the exposure of contaminants to precipitation and surface runoff, potentially increasing the horizontal and vertical migration of contaminants.

3. While posing the real risk of increasing the mobilization of contaminants, the excavation alternative does not offer any benefits with respect to containing site contaminants or avoiding off-site impact assuming the placement and continued integrity of a surface asphalt cap. Since the majority of the site is paved, the existing situation does not pose any threat to persons who occupy or work at the site.

However, the benefits of excavation include the following:

1. Ultimate removal of TPHC and BN contamination from within the site.

2. Excavation of all contaminated soils would assure maintenance of present conditions.

4.1.2 Proposed Remediation

In light of the low levels of contamination previously detected, PBS proposes to undertake a limited soil excavation, post excavation soil sampling and soil disposal program. The Phase I program will incorporate those comments presented by the NJDEP regarding the TRI Phase I soil remediation proposal. Post excavation soil samples will be obtained using dedicated laboratory cleaned teflon spatulas in accordance with BEC corporate Quality Assurance\Quality Control (QA/QC) procedures (Appendix III) and will be kept cool using ice until delivery to Laboratory Resources QA/QC procedures included in Appendix IV, No. 2). To insure the integrity of the data, QA/QC samples will include:

- One field duplicate (to document the accuracy of the laboratory data) for every twenty (20) soil samples;
- One (1) field blank (to insure that the sampling equipment is not introducing contaminants into the sample) for each day of soil sampling, and
- One (1) travel blank (to insure no cross contamination) for each day of volatile organic sampling.

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The specific cleanup of those areas of soil contamination previously documented, including analytical parameters, is outlined below.

- AREA A (South side of 3rd Avenue) - Excavation of sample locations SA-1, SA-2 and SA-7 to a minimum depth of two (2) feet. Post-excavation soil samples will be analyzed for total petroleum hydrocarbons (TPHC) with twenty percent (20%) of the samples also analyzed for semi-volatile base neutral extractables plus unknowns (BN+15).

- AREA C (Along Route 20 Property Line) - Excavation of sample locations SC-3, SC-5 SC-6 and SC-7 to a minimum depth of two (2) feet. Post-excavation soil samples will be analyzed for TPHC with 20% also analyzed for BN+15 and samples from location SC-5 analyzed for zinc.

- AREA D (Former gasoline UST location) - Excavation of sample locations SD-1 and SD-2 to a minimum depth of two (2) feet with post-excavation soil samples analyzed for TPHC and Benzene, Toluene and Xylene (BTX).

- AREA ~~D~~ B (Oil tank location) - Excavation and removal of UST-A located adjacent to the truck bay. This removal will include, to the extent structurally feasible, the excavation of soils saturated with product and any #6 oil detected within the excavation. If feasible, eight (8) post-excavation samples will be obtained along the base of the excavation and analyzed for TPHC. Additionally, 20% (or a minimum of 2) will be analyzed for BN+15 25%

Soil excavation will continue until the analytical data indicates that soil contamination is below NJDEP action levels (TPHC-100 ppm, Total BN-10 ppm and BTX-1 ppm). Non-targeted BN compounds which are not hazardous will not be included in the determination of total BN concentration. Horizontal delineation samples will be obtained on a one per 900 square feet basis and vertical samples on a one per 50 linear feet basis (obtained at the mid-level point of the sidewall). However, for limited excavations, at least one base and one sidewall sample will be obtained from each discreet area.

4.1.3 Soil Staging

All excavated soil will be staged on the PBS site on paved areas along the north side of 3rd Avenue. The excavated soils will be stored on and covered with plastic pending sampling, classification and disposal at an licensed facility. In undertaking the disposal of the soil, PBS will comply with any applicable regulations and/or NJDEP permits.

4.1.4 Site Restoration

Subsequent to the backfilling of all excavations, all unpaved areas will be covered with 6 inches of crushed granular stone. The overlay (or surface course) will consist of a 2-inch bituminous asphalt concrete course of F.A.B.C. mix I-5. The pavement will be laid to allow existing site drainage patterns to continue. Subsequently, a hot A.C. 20 Tack will be applied to all the edges to prevent surface water infiltration.

For existing asphalt areas, sags and depressions will be brought level using a leveling course. When the repairs are completed, the existing asphalt area will be thoroughly cleaned and an emulsified asphalt tack coat will be applied to ensure a uniform and complete adherence of the overlay. The overlay (or surface course) will consist of a 2-inch bituminous asphalt concrete course of F.A.B.C. mix I-5. The pavement will be laid to allow existing site drainage patterns to continue. Subsequently, a hot A.C. 20 Tack will be applied to all the edges to prevent surface water infiltration.

To ensure the continued integrity of the cap, a program of continuing maintenance will be implemented. Maintenance of the cap will be on an as needed basis. The site will be inspected annually for the next 10 years in the Spring and the entire area of the cap will be walked. Visual inspection will note the condition of the cap and immediate repairs to cracks, holes or settlement conditions will be proposed and implemented where necessary, as soon as possible.

4.2 PHASE II - NAPL Recovery

Phase II activities entail the removal of the shaft pump located within PW-3 and the passive removal of any NAPL bearing production and/or monitoring wells, a plan which had previously been tentatively approved by the NJDEP. However, PBS proposed to incorporate two changes to the originally submitted plan.

The earlier plan, proposed utilizing R.E. Wright Associates, Inc.'s Modular Recovery System, was composed of three pneumatic driven recovery pumps (to bail out floating free product) and an oil-water separator. There are two main concerns with the system as originally proposed: 1) pneumatic systems have a tendency to clog in the presence of large amounts of viscous product in the pneumatic lines and 2) the system does not differentiate between water and product, thus requiring an oil-water separator.

To eliminate the need for an oil-water separator, the currently proposed plan will utilize a Remedial Systems, Inc. Oil Separator Pump (OSP). This system would pump only water-free product; thus eliminating viscosity variation problems and the need for an oil-water separator. The OSP would be utilized to initially passively recover NAPL out of PW-3 and can be easily moved to different wells if required. The OSP will, during Phase III, be combined with a water table depression pump (WTDP) in order to recover any remaining NAPL.

4.3 PHASE III - Groundwater Remediation

Phase III activities have been completely revised from previous submittals with bioreclimation of the contaminated soils and groundwater eliminated in favor of a groundwater withdrawal and treatment approach.

While bioreclimation has been demonstrated to adequately remediate No. 6 fuel oil, the geology of the site does not lend itself to water infiltration -- the key to a successful bioreclimation project. According to TRI, the residual soil and weathered rock in the injection zone (four feet below grade) is "comprised of very stuffy silty clay, clayey sand silt, silty sand, and sandy clay...of the Brunswick Formation". These tight soils, which have a low transmissivity, are not conducive to moving nutrients through the site. Without complete control over nutrient movement, bioreclimation is extremely difficult. There are also several other problems with the proposed program which are addressed in the Appendix IV, No. 1.

Presented herein is a conceptual plan for the new proposed groundwater remediation program. Actual system parameters will be submitted in the Engineer's Report prepared in support of the NJPDES application and Request for Treatment Works Approval. Determination of these parameters will be finalized after completion of well installation and groundwater sampling.

Based on data gathered to date, it is estimated there are two contamination plumes. The fuel oil plume, centered on the truck bays, is the largest with contaminants including BNs, TPHC and BTEX. Additionally, there is a smaller gasoline plume centered around MW-5, the majority of which consists of BTEX contamination (very little BN or TPHC was detected and what BN contaminants were found are believed to be the leading edge of the fuel oil plume).

4.3.1 Installation of Exploratory Groundwater Monitoring Wells

In order to comply with previous requests of the NJDEP, the following

additional monitoring wells will be installed:

- Two (2) unconsolidated shallow (<18 feet) groundwater monitoring wells located adjacent to SC-5 and approximately 30 feet northwest of SC-6, and

- Two (2) consolidated groundwater monitoring wells completed within the first water bearing zone of the underlying bedrock (estimated to be less than 60 feet) and located adjacent to MW-3 and MW-4.

These wells will be designed to document the horizontal extent of both dissolved and Non Aqueous Phase Liquid (NAPL) contamination. Unconsolidated monitoring wells will be installed in boreholes advanced using a hollow stem auger drilling technique while consolidated wells will be installed using an air rotary drilling method. Soil samples, for stratigraphic control only, would be obtained from both the unconsolidated and consolidated wells. Soil samples would be geologically classified using the Burmister Soil Classification System with stratigraphic units described using the Unified Soil Classification System. Additionally, observations regarding color, composition, moisture content, and presence of visible contamination would be noted in the soil boring logs.

Unconsolidated groundwater monitoring wells would be constructed of 4-inch diameter PVC well screen (10-slot) and riser pipe with threaded joints and would be installed in accordance with current NJDEP-Division of Water Resources specifications for monitoring wells installed in unconsolidated formations. Consolidated monitoring wells will consist of eight (8) inch steel casing cemented a minimum of five (5) feet into competent bedrock. If feasible, the remainder of the borehole will be completed as an open hole completion. Shallow monitoring wells will be screened above the water level in order to document the presence or absence of a non-aqueous phase layer (NAPL). Subsequent to completion, monitoring wells would be developed for a minimum of one hour or until discharge was clear. Pending disposal, drill cuttings and well development water would be stored in 55 gallon drums.

Drilling operations will be supervised by a BEC geologist who will be responsible for evaluating stratigraphic changes and determining the proper setting for the well screens. All monitoring wells would be installed by a licensed New Jersey driller in accordance with BEC QA/QC procedures (Appendix III). All wells will then be surveyed for horizontal control, vertical elevation and longitude and latitude by a licensed New Jersey surveyor.

4.3.2 Groundwater Sampling

Subsequent to allowing two weeks for the wells to equilibrate with the local groundwater regime, BEC personnel will obtain samples from the three (3) production and nine (9) existing monitoring wells (five previous, four newly installed). Sampling will be undertaken using laboratory cleaned, dedicated teflon spatulas in accordance with standard NJDEP and BEC QA/QC procedures and will, at a minimum, include:

- Measurement of the static water level in each monitoring well;
- Groundwater monitoring wells will be checked for the presence of NAPL;
- Groundwater samples will be drawn from each well after purging a minimum of 3 times the standing volume of water in the well. Groundwater samples will be analyzed for volatile organics plus unknowns (VO+15), BN+15, TPHC, priority pollutant metals (PPM), pH and total dissolved solids (TDS). Additionally, samples from MW-5 will be analyzed for tertiary butyl alcohol (TBA) and methyl tertiary butyl ether (MTBE).
- NJDEP required QA/QC samples will include:
  - A sample duplicate (to insure the validity of the data) analyzed for VO+15, BN+15, TPHC, PPM, ph, TDS, MTBE and TBA
  - A field blank (to insure that the sampling equipment is not introducing contaminants to the sample) analyzed for VO+15, BN+15, TPHC, PPM, ph, TDS, MTBE and TBA; and
  - A travel blank (to insure no cross contamination between samples) analyzed for VO+15, MTBE and TBA.

4.3.3 Aquifer Testing

Under 4.3.3, BEC will implement an aquifer testing program designed to allow for the determination of selected aquifer parameters (i.e., transmissivity, hydraulic conductivity, etc.) which will be necessary for finalization of remediation equipment specifications This testing would, at a minimum, include the following:

- Measurement of static water levels over a minimum of six (6) full days using an In-situ computerized data logger and pressure transducers.

- Down-hole variable head tests (slug/bail) will be conducted on all monitoring wells using an In-Situ™ SE1000B microprocessor data logger and pressure transducers. The variable head tests will be performed as follows:

  1. The pressure transducer will be inserted five to ten feet below the phreatic surface and the data logger calibrated;

  2. A solid PVC slug will then be lowered into each well and the liquid level measurement recorded until the induced hydraulic head returned to the original static water level.

  3. A second test will then be performed by removing the PVC slug from the well and recording the head recovery.

  4. Implementation of a detailed aquifer testing program to include a 24 pump testing of existing production wells. This program would be designed to allow for documentation of the effect, if any, of production well pumping on the shallow aquifer.

4.3.4 Remediation Analysis

The recovery system will consist of five wells as follows: 1) One (1) well directly downgradient of the UST area (to attack the plume source), and 2) four (4) wells along the downgradient property edge to prevent migration of the plume off site. For design purposes, it has been assumed that each well will produce 10 to 15 gpm although the actual production rate will be determined subsequent to completion of the aquifer testing undertaken under 4.3.4. During aquifer testing, two influent samples (analyzed for BTEX, naphthalene and TPHC) and two effluent samples (analyzed for NJPDES discharge parameters) will be obtained. The results of these analyses will be utilized in obtaining the required NJDEP air permit for the air stripper.

Groundwater withdrawal will continue until action levels are achieved for two consecutive quarters. That is, total volatile concentrations will be less than 10 ppb; total BN less than 50 ppb; TPHC less than 1000 ppb and lead less than 50 ppb. If well pumping does not provide a significant enough radius of influence, then then additional wells and/or a recovery trench will be installed. In either case, hydraulic control over the site will be achieved with no problem anticipated in implementing the recommended treatment works system if water flows are lower than anticipated.

4.3.5 Proposed Remediation

TWA AIR STRIPPER

The proposed treatment works facility is an integrated air stripper/ groundwater recovery system. The selected equipment will be fully controlled so that in a shut down condition, the entire system will shut down. When the fault condition is no longer present, the system will automatically restart. Control schemes built into the system will include the shut down of the water pumps if: 1) a high water level occurs in the air stripper or storage tank; 2) the blower goes down, and/or 3) there is a loss of air pressure in the air stripper. Additionally, a telemetry system will be installed so the entire system and remediation process can be operated and monitored remotely by computer.

The recommended air stripper is designed to meet surface water discharge standards. That is, benzene, toluene, ethylbenzene and xylenes will be less than 50 ppb each; total volatiles less than 100 ppb; naphthalene less than 50 ppb; total petroleum hydrocarbons less than 15 ppm; and lead less than 50 ppb. To achieve this removal, a two and a half foot diameter air stripper is specified. The tower height depends upon the packing selected, but will be approximately 20 feet tall. Packing equivalent to 15 feet of #1 Tri-Packs will be used. The exact tower height and packing material will be determined after competitive bidding of the air stripper tower. Treated water will be discharged to the Passaic River via gravity from the air stripper sump to a storm drain located on Route 20.

NJPDES DSW

Since the yield and radius of influence of each recovery well cannot yet be determined, it is difficult to estimate the total number of recovery wells needed. The current estimate is four recovery wells along Route 20 will sufficiently contain the plume. If the wells yield 10-15 gpm as expected, then approximately three years of pumping would be required to remediate the site.

Written monthly progress reports detailing implementation of the cleanup plan will be submitted to the NJDEP until the fourth month after the water treatment works is operational, when quarterly reports will be submitted. A final written report will be submitted after completion of soils excavation and again after completion of groundwater remediation. These reports will detail actual cleanup actions performed and final cleanup costs (including overhead), compared to cleanup actions, schedule and costs approved in the cleanup plan. The report will include dates of cleanup activities, additional sampling results and other pertinent information.

The soils report will also contain the following: copies of local building and soil movement permits, photodocumentation of excavation activities (pre-, post-, and actual), field survey of excavation size and

final post-excavation sample locations, and certifications for excavation stoppage due to structural integrity, if required.

Additional information for the groundwater final report will include: 1) copies of air and water permits - both state and local; 2) photo documentation of treatment works (during installation, operation and dismantling); 3) quarterly groundwater and isoconcentration maps; 4) summaries of DMRs, and 5) the results of any modeling studies performed on the site.

5.0 ESTIMATE OF COSTS AND SCHEDULE OF IMPLEMENTATION

An estimated schedule of implementation of the proposed remedial actions and monitoring programs, and their associated costs, is outlined on Table 1. In all estimation calculations, the following assumptions are being made:

- Excavated petroleum contaminated soils are not hazardous and can be disposed of at any secure landfill.
- Contamination is only in the upper aquifer and a pumping rate of 75 gpm is a reasonable maximum for design purposes.

APPENDIX I - TABLES

ATTACHMENT T-18

TABLE 1: COST ESTIMATE FOR PBS SITE REMEDIATION

PHASE	TASK	SUB-TASK	QUANTITY	UNIT COST	ESTIMATED COST	TASK SUB-TOTAL	PHASE TOTAL
PHASE I - SOIL REMEDIATION:	EXCAVATION	EXCAVATION	2 DAYS	$650 /DAY	$1,300.00		
		PROF. LABOR	18 HOURS	$45 /HOUR	$810.00	$2,110.00	
	SAMPLING	ANALYTICAL:					
		AREA A	15 TPHC	$60 /SAMPLE	$900.00		
			3 BN+15	$300 /SAMPLE	$900.00		
		AREA C	20 TPHC	$60 /SAMPLE	$1,200.00		
			4 BN+15	$300 /SAMPLE	$1,200.00		
			1 ZINC	$15 /SAMPLE	$15.00		
		AREA D	10 TPHC	$60 /SAMPLE	$600.00		
			2 BTX	$125 /SAMPLE	$250.00		
		UST	8 TPHC	$60 /SAMPLE	$480.00		
			2 BN+15	$300 /SAMPLE	$600.00		
		QA/QC	3 TPHC	$60 /SAMPLE	$180.00		
			3 BN+15	$300 /SAMPLE	$900.00		
			1 BTX	$125 /SAMPLE	$125.00		
		PROF. LABOR	10 HOURS	$45 /HOUR	$450.00	$7,800.00	
	BACK FILL	BACK FILL	20 CUBIC YARDS	$8 /CUBIC YARD	$160.00	$160.00	
	SOIL DISPOSAL	SAMPLING	1 SAMPLE	$750 /SAMPLE	$750.00		
		TRANSPORT & DISPOSAL	40 TONS	$75 /TON	$3,000.00	$3,750.00	
	PAVING	PAVING	400 SQUARE FEET	$5 /SQUARE FOOT	$2,000.00	$2,000.00	
	PROJECT MGMT	MANAGEMENT	90 HOURS	$55 /HOUR	$4,950.00		
		EXPENSES			$500.00	$5,450.00	$21,270.00
PHASE II - NAPL RECOVERY:	RECOVERY	CONTROLLER	1 UNIT	$1,800 /UNIT	$1,800.00		

ATTACHMENT T-19

TABLE 1: COST ESTIMATE FOR PBS SITE REMEDIATION

PHASE	TASK	SUB-TASK	QUANTITY	UNIT COST	ESTIMATED COST	TASK SUB-TOTAL	PHASE TOTAL
		SUPPLY LINE	50 FEET	$2.40 /FOOT	$120.00		
		DISCHARGE LINE	50 FEET	$11.40 /FOOT	$570.00		
					----------	$2,490.00	
	PROJECT	ENGINEERING	30 HOURS	$70 /HOUR	$2,100.00		
		INSTALLATION	30 HOURS	$50 /HOUR	$1,500.00		
		MANAGEMENT	20 HOURS	$55 /HOUR	$1,100.00		
					----------	$5,270.00	
	ANALYSIS	LABOR	15 HOURS	$45 /HOUR	$675.00		
		ANALYTICAL	3 TPHC	$60 /SAMPLE	$180.00		
			3 BN+15	$300 /SAMPLE	$900.00		
					----------	$1,755.00	
						----------	$9,515.00
PHASE III - GROUNDWATER REMEDIATION:	WELL INSTALLATION	DRILLING			$14,000.00		
		SUPERVISION	30 HOURS	$50 /HOUR	$1,500.00		
					----------	$15,500.00	
	GROUNDWATER SAMPLING	ANALYTICAL WELLS	12 BN+15	$300 /SAMPLE	$3,600.00		
			12 VO+15	$250 /SAMPLE	$3,000.00		
			12 TPHC	$60 /SAMPLE	$720.00		
			12 PPM	$210 /SAMPLE	$2,520.00		
			12 TDS	$60 /SAMPLE	$720.00		
			1 TBA	$60 /SAMPLE	$60.00		
			1 MTBE	$60 /SAMPLE	$60.00		
		ANALYTICAL QA/QC	2 BN+15	$300 /SAMPLE	$600.00		
			3 VO+15	$250 /SAMPLE	$750.00		
			2 TPHC	$60 /SAMPLE	$120.00		
			2 TDS	$210 /SAMPLE	$420.00		
			2 TBA	$60 /SAMPLE	$120.00		
			2 MTBE	$60 /SAMPLE	$120.00		
					----------	$12,810.00	
	AQUIFER TESTING	SAMPLING	20 HOURS	$45 /HOUR	$900.00		
		DESIGN	10 HOURS	$70 /HOUR	$700.00		
		IMPLEMENTATION	72 HOURS	$45 /HOUR	$3,240.00		
		REVIEW	30 HOURS	$70 /HOUR	$2,100.00		

ATTACHMENT T-20

[redacted]: [redacted]STIM[redacted]OR P[redacted]E RE[redacted]TION[redacted]

PHASE	TASK	SUB-TASK	QUANTITY	UNIT COST	ESTIMATED COST	TASK SUB-TOTAL	PHASE TOTAL
					----------	$6,940.00	
	RECOVERY						
		WATER TABLE DEPRESSION PUMP	5 PUMPS	$1,150 /PUMP	$5,750.00		
		WELL HEAD COMPLETION	5 WELLS	$300 /WELL	$1,500.00		
		TRENCHING & PIPING	300 FEET	$40 /FOOT	$12,000.00		
		LABOR	40 HOURS	$45 /HOUR	$1,800.00		
					----------	$21,050.00	
	TREATMENT WORKS						
		AIR STRIPPER WITH CONTROLS	1 UNIT	$20,000 /UNIT	$20,000.00		
		INSTALLATION	40 HOURS	$45 /HOUR	$1,800.00		
		MATERIALS			$1,500.00		
		PERMITTING	60 HOURS	$55 /HOUR	$3,300.00		
					----------	$26,600.00	
	SAMPLING & ANALYSIS						
		DISCHARGE MONITORING FOR DSW PARAMETERS	24 MONTHS	$375 /MONTH	$9,000.00		
					----------	$9,000.00	
		WELL MONITORING (TPHC, BTX, NATHALEN	5 WELLS/QTR 12 QUARTERS	$1,375 /QUARTER	$16,500.00		
		PROF. LABOR	15 DAYS/YEAR (10 HOURS/DAY)	$450 /DAY	$6,750.00		
					----------	$23,250.00	
	O&M (2 YEARS)						
		SITE MAINTENANCE	50 DAYS	$600 /DAY	$30,000.00		
		TOWER CLEANING	10 DAYS	$900 /DAY	$9,000.00		
					----------	$39,000.00	
						----------	$154,150.00
					PROJECT TOTAL		$184,935.00

ATTACHMENT T-21

NO. 1. - REVIEW OF TRI PROPOSED GROUNDWATER REMEDIATION

ATTACHMENT T-22

NO. 2. - LABORATORY QA/QC PROCEDURES

ATTACHMENT T-23

MEMO

TO: DMB

FROM: M. Daly

RE: Bioreclimation Critique for Chin Am, Paterson, NJ, Page 4

DATE: 12/15/89

nutrient concentration due to water evaporation. One could never know how much enrichment has been added to this area. Additionally, 0.1" water per day will turn the pit into a mud pond, encourage insect propagation, and render the area unusable. Instead, one should consider turning the area into an infiltration gallery and repaving.

Recovery Well Pumps and System Piping

TRI's recovery well design is rather unusual. The purpose of water recycle, with its expensive pump system, is unclear. Contrary to TRI's statement, depth to water has no bearing on the ability to pump at low flow rates. A submersible pump can go as low as 1.2 gpm and a surface mount even lower.

Submersible pumps are very light weight and will not be placed very deep; so there is no need for them to be hard piped in place. Instead, a flexible hose should be used to connect the pump to trench piping. This way, the pump can easily be raised and lowered for maintenance or adjustment in pumping depth.

Heat welding of piping is a needless expense. PVC glue will not add contaminants if applied properly and allowed to cure. Piping should be buried, unless all lines are heat taped (great expense). Having the pipes above ground exposes them to accidental breakage and is a safety hazard.

Nutrient Addition System

TRI's nutrient addition scheme is also needlessly complicated. A much simpler system would be to combine the surge tank, mixing pipe, nutrient mixing tank and distribution box into one 100-200 gallon tank. Water from the stripper discharge line could be bled into this tank according to the feeding schedule. Once the tank is full, nutrients are added and mixed with a portable mixer, and allowed to gravity drain to the IW's. Each injection line should have a flowmeter and control valve to easily adjust as the bioreclimation proceeds.

Not all water must be treated to nondetectable levels. Since storm and sanitary sewers are available on site, recovered water needs only to be treated to discharge to sewer quality (DSW or SIU). The water to be

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MEMO

TO: DMB

FROM: M. Daly

RE: Bioreclimation Critique for Chin Am, Paterson, NJ, Page 5

DATE: 12/15/89

enriched for reinjection can be sent through a carbon unit for final polishing. Since this water would be needed once or twice a week, the flow will be quite low and the carbon unit can be quite small.

ATTACHMENT T-28

PHASE II BIOLOGICAL REMEDIATION PLAN

ECRA CASE #85317

July 27, 1989

Submitted to:

Division of Hazardous Waste Management
Department of Environmental Protection

Submitted by:

Technical Resources, Inc.
3202 Tower Oaks Boulevard
Suite 200
Rockville, MD 20852
(301) 231-5250

For

ChinAm, Inc.
177 Third Ave.
Paterson, NJ 07514

ATTACHMENT T-29

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ATTACHMENT T-29

PHASE II BIOREMEDIATION CLEANUP PLAN

SECTION I

INTRODUCTION

Oil stains have been found around Underground Storage Tank A (UST-A) and nearby indoor truck bay area in ChinAm, Inc. facility. A clean-up plan was proposed by combination of soil excavation of contaminated soil from these areas and the biological remediation of both soil and groundwater. In this plan, soil excavation will remove the soil contaminated with No. 6 diesel fuel around the UST-A which was caused by spill in the past, and the soil in surrounding area with visible oil stains. The goal for soil excavation is to remove all the soil with higher than 1,000 ppm Total Petroleum Hydrocarbon (TPHC) in concentration. The follow-up biological remediation will then clean up the soil and groundwater to below 100 ppm TPHC for the negative declaration.

In the NJDEP conditional approval of the cleanup plan, additional information was requested to provide a more detailed description of the bioremediation processes, which is the main subject of this cleanup plan amendment.

Biodegradation is a process in which microorganisms break down organic compounds by using them as carbon and energy sources. Some microorganisms that occur naturally in soil can adapt to the organic chemical contaminants and become contaminant-tolerant or even contaminant-degrading. The technology of using these organisms for soil cleanup consists of providing an environment to enhance microbial activity.

Bioremediation is a destruction process which uses soil microorganisms to chemically ~~degrade~~ organic contaminants. The microorganisms can include bacteria, fungi and yeast. Biodegradation of hazardous wastes can occur as both an intra-cellular as well as an extra-cellular activity. When intra-cellular biodegradation occurs, the hazardous organic compound is used as an energy source by the cell. When extra-cellular biodegradation occurs, the waste is broken down as a result of exposure to enzymes that are produced by the cell in the process of metabolizing other substances. In this latter case, the enzymes are

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excreted outside the cell membrane where they come into contact with the waste material and trigger the breakdown action. Both intra-cellular and extra-cellular biodegradation can occur in the presence or in the absence of oxygen. In the presence of oxygen (aerobic) process, bacteria, fungi and yeasts biodegrade organic compounds to carbon dioxide, water and cell protein. In the absence of oxygen (anaerobic) process, they biodegrade the waste generating methane, carbon dioxide and cell protein.

Bioremediation has successfully treated many non-halogenated compounds, but it is less successful with halogenated compounds. Non-halogenated aromatics, heterocyclics and other polar compounds have exhibited removal efficiencies in excess of 95%. Simple halogenated aliphatic compounds were also successfully treated; however, the more complex halogenated and nitrated compounds exhibited lower removal efficiencies, ranging from approximately 50% to 85%. In addition, multi-halogenated compounds may be toxic to many microorganisms.

In-situ bioreclamation involves the introduction of microbial nutrients (typically ammonia and orthophosphate) and an electron acceptor (typically oxygen, delivered as a solution of hydrogen peroxide) into the saturated zone of a contaminated aquifer. Since all these materials are readily soluble in water, the process delivers the nutrients to the contaminants by transporting solutions of the materials through the areas of contamination, converting the region into a bioactive zone.

During the in-situ bioremediation process, groundwater is withdrawn from the formation to maintain hydraulic containment and to increase the hydraulic head and thus the flow rate of nutrients through the formation. The captured water typically is treated to remove contaminants, and then a major portion of the water is amended with nutrients and re-injected. This process is much more aggressive than simple groundwater treatment processes which rely on solubilization and transport of the contaminant from the soil/groundwater matrix.

In our proposal, the in-situ biological remediation of contaminants in soil and groundwater involves stimulation of the indigenous subsurface microbial population in order to promote degradation of organic contaminants. This process utilizes aerobic degradation pathways and, therefore, requires that a source of

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oxygen be supplied to the sub-surface environment. Previous work by others has shown that conventional aeration techniques cannot consistently supply an adequate amount of oxygen for in-situ treatment and, thus, limit the amount of degradation that occurs. To improve the degradation efficiency, we propose to use additional low levels of hydrogen peroxide as an oxygen source, which could provide as much as 50 times the level of oxygen provided by conventional aeration. In addition to supplying oxygen to maintain the aerobic conditions, nutrients, such as nitrogen and phosphorus, will be added to enhance the growth of the microbial population.

A. Overview of in-situ biological degradation

In-situ biological remediation is a technique which utilizes microbial degradation for treating zones of contamination in the subsurface environment. The basic concept involves altering environmental conditions to enhance microbial metabolism or co-metabolism of organic contaminants. In-situ biological degradation involves stimulating the indigenous subsurface microbial populations to degrade the organic wastes "in place." To enhance biodegradation, it is necessary to provide elements which may limit bacterial growth and metabolism. Non-photosynthetic microorganisms obtain energy for growth by oxidation of substrates in the presence of an electron acceptor, such as oxygen (Bouwer, E.J. 1984). Both oxygen and an organic substrate are required for aerobic microorganisms to obtain energy for all growth and maintenance. In addition, nutrients such as nitrogen, phosphate, and trace elements are required for cell growth. These elements must be present for in-situ biological degradation to be effective as a treatment alternative.

There are many factors which affect the rate of biodegradation of organic compounds. These factors include temperature, pH, the number and species of microorganisms present, concentration of the substrate, presence of microbial toxicants and nutrients, and availability of electron acceptors (MacKay, D. M., 1985).

Organic contaminants available in the subsurface can provide the carbon and energy source required for bacterial metabolism, and thus serve as primary substrates (U.S.EPA, 1985). However, the subsurface environment is generally

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characterized by low nutrient concentrations and limited availability of an electron acceptor required to support a microbial population for successful biodegradation.

Oxygen can be supplied to the subsurface to support aerobic respiration in the form of air, pure oxygen, hydrogen peroxide, or ozone. Hydrogen peroxide is to be used as the oxygen source for this project and it releases oxygen according to the following chemical reaction: $2\ H_2O_2 \rightarrow O_2 + 2\ H_2O$. Hydrogen peroxide has several advantages, compared to other sources, because greater concentrations of oxygen can be delivered to the subsurface, less equipment is required to oxygenate the subsurface, and biogrowth at the well can be minimized (Yaniga, P. M., 1984).

Nitrogen and phosphorus are the nutrients most frequently present in limited concentrations in soils. Other nutrients required for microbial metabolism include potassium, magnesium, calcium, sulfur, sodium, manganese, iron, and trace metals. Many of these nutrients may be present in the aquifer in sufficient quantities that additional supplements are not required (U.S. EPA, 1985).

The chemical form of nutrients may not be critical in terms of microbial requirements, depending on the site; however, other factors should be considered. For instance, nitrogen is typically supplied in the form of ammonia-nitrogen rather than nitrate-nitrogen. Ammonia is more easily assimilated by microorganisms and nitrate is considered a pollutant in drinking water in concentrations grater than 10 mg/L. Specific constituents of nutrients may also present difficulties. Diammonium phosphate can result in excessive precipitation in the formation (Jamison, V. W., 1976). Nutrient solutions containing sodium salts can cause dispersion of clays resulting in reduced permeability (U.S. EPA, 1985). High concentrations of calcium in the formation can form salts with phosphate, causing precipitation and loss of nutrient availability. Site geochemistry must be considered in determining the form and concentrations of nutrients added.

In general, organic contaminants present at selected sites may serve as primary substrates for microbial populations. Utilization of the organic compounds for cell growth and maintenance can result in successful site remediation if an

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adequate and adapted population of microbes exist in the subsurface environment. However, a sufficient supply of nutrients and an electron acceptor, namely oxygen, must be provided in order to maintain a healthy aerobic microbial population necessary for successful biodegradation.

B. Treatability of the Contaminant in ChinAm Inc. Facility

1. Contaminant Treatability

In-situ biodegradation has been most commonly employed to treat subsurface contamination by petroleum-based products. Compounds which have been documented as candidates for biological degradation include oily wastes such as crude oil tank bottoms, bunker C fuel oil, waxy raffinate wastes, high octane gasoline substances, and diesel fuel. In-situ biodegradation was a technical outgrowth of landspreading technology. Exxon's Baytown refinery has been disposing of oily wastes by land farming since 1953 (Rogoshewski, P. J. 1977). Research in land farming has also been performed by Shell Oil company (Kincannon, C. B. 1972) and by Sun Ventures Inc (Raymond, R. L., 1975).

In-situ biodegradation began with the treatment of residual petroleum products in groundwater after no more free product could be recovered by pumping. Treatments consisted of supplying oxygen, by means of air sparging, and nutrients to the subsurface using injection/pumping well systems. In this manner, Sun Ventures remediated a spill of high octane gasoline in Ambler, Pennsylvania (Jamison, V. W., 1975) and a gasoline leak in Millville, New Jersey (Lee, M. D., 1984). A similar technique was used for a gasoline and diesel fuel spill at La Grande, Oregon (Minugh, E. M., 1983). The American Petroleum Institute is sponsoring a demonstration of in-situ biodegradation at a gasoline-contaminated aquifer in Indiana, using hydrogen peroxide as an oxygen source (Carlson, C. 1984). Other cases of biodegradation of gasoline-, or hazardous material-contaminated aquifers exist, a majority of which have been performed for private industries and their results are not well publicized. We summarized two case studies in Appendix A to illustrate the treatability and removal efficiency of petroleum products by bioremediation processes.

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In-situ biodegradation has been used to clean up subsurface environments contaminated with substances other than gasoline and petroleum-based compounds. Treatability studies conducted for other sites have indicated that the subsurface microflora could be stimulated to degrade methylene chloride, acetone, n-butyl alcohol, and dimethyl aniline contaminants resulting from a leaking underground storage tank (U.S. EPA, 1984). In another case, mutant bacteria were used to enhance biodegradation of acrylonitrile, phenol, o-chlorophenol, ethylene glycol, propyl acetate, and dichlorobenzene (Lee, M. D., 1984). However, in this case, other processes, including above ground biological treatment, air stripping, and carbon adsorption, were combined with in-situ biological treatment to accomplish site remediation.

As reported to NJDEP at December 5, 1988, The soil and groundwater sample analyses indicated that the contaminants in ChinAm Inc, Paterson facility are the petroleum products and some inorganic metals (Appendix B). The full scale bioremediation system constructed and operated at a Superfund site in Minnesota has achieved a 90% removal to total PAH's in their 360 days operation period. (Linkeheil, R.J., 1987, also enclosed in Table 1, Case Study A, Appendix A) and produce the treatment effluent with less than 1 ppb concentration for most petroleum hydrocarbons. Therefore, it is quite technically feasible to reduce PAH concentration to below 100 ppm by bioremediation process at the ChinAm facility.

Metal ions such as antimony, and zinc were not present at the site at levels which would be toxic to the microbial population. Inorganic metal compounds are not amenable to in-situ biological treatment and no reduction in concentrations are expected due to microbial degradation.

2. Hydrogeologic Setting

In order to transport nutrients through the areas of contamination, it will be necessary to have a detailed understanding of the hydrogeology of a site. The rate-limiting step for in-situ processes typically is the ability to move nutrient-enriched water through the areas of highest contamination. Since both the soils and the contaminant distribution at a site are typically non-homogeneous, the initial determination of feasibility and cost usually will be limited to an estimate

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of total volume of degradable material in the area of concern and the anticipated groundwater injection and recovery rates.

Permeability and aquifer thickness are both important aquifer characteristics which affect the rate of groundwater movement through the treatment area. These two characteristics affect the cross-sectional area of flow and the amount of drawdown which can be created in a well. The drawdown, in turn, influences the hydraulic head that can be created and the size of the area of influence of a well, which in turn affects the number of wells that would be required to capture a contaminated plum.

Another characteristic which is important but often overlooked is the depth to the water table. At sites with very shallow water tables, injection of water into a well or trench can easily lead to flooding. Shallow injection points limit the amount of hydraulic head which can be applied to the injection system and limit the area of influence of injection wells. Collectively these parameters affect the rate of travel of injected water into a contaminated area, which in turn affect the required well spacings, capital costs and treatment times.

The site hydrogeology of the ChinAm facility will be described in detail in the following section.

ATTACHMENT T-36

SECTION II
SITE CHARACTERIZATION

1. Site Characterization

Data on site characteristics were collected from soil borings, and chemical analysis of groundwater and soils, and hydrological field measurements. The location of soil borings is shown in Figure 2.1. Priority pollutant analysis was also conducted on groundwater samples taken from four pre-existing production wells in addition to five newly drilled monitoring wells. The hydrologic field studies was conducted when groundwater samples were collected from all the monitoring wells. Raw data from site characterization activities are given in Table 2.1. The groundwater flow directions are plotted in Figure 2.2, and 2.3.

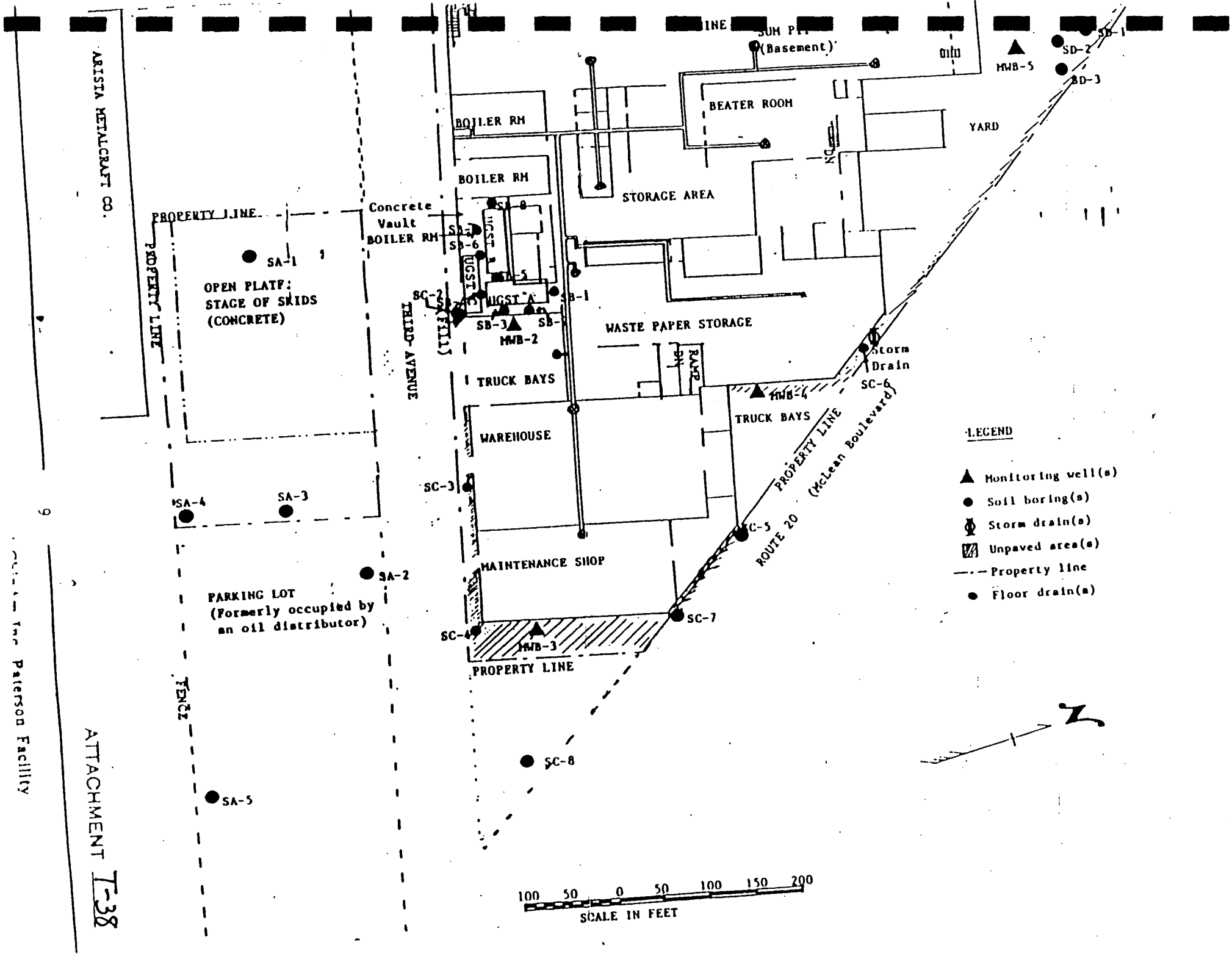
Table 2.1 Summary of the Available Hydrologic Study Results

Monitor Well ID Number	Well Case Elevation in ft. ASL	Depth From TOC in ft. 10/04/88	Actual ASL in ft. 10/04/88	Depth From TOC in ft. 02/04/89	Actual ASL in ft. 02/04/89
1	50.75	16.00	34.75	13.92	36.83
2	45.14	7.70	37.44	8.25	36.89
3	40.40	13.60	26.80	12.42	27.98
4	38.92	10.10	28.82	9.17	29.75
5	39.66	10.30	29.36	9.21	30.45

2. Site Hydrogeology

In order to design the in-situ bioreclamation system, a determination of the hydrogeologic characteristics of the site was required. Field hydrogeologic investigations were conducted for the determination of the distribution of the No. 6 Diesel fuel which was underlying the site and of the physical properties of the saturated zone. Based on findings from sub-surface investigations and hydrologic studies, the contaminant materials were found to have very high viscosity which

ATTACHMENT T-37



ATTACHMENT T-38

The Paterson Facility

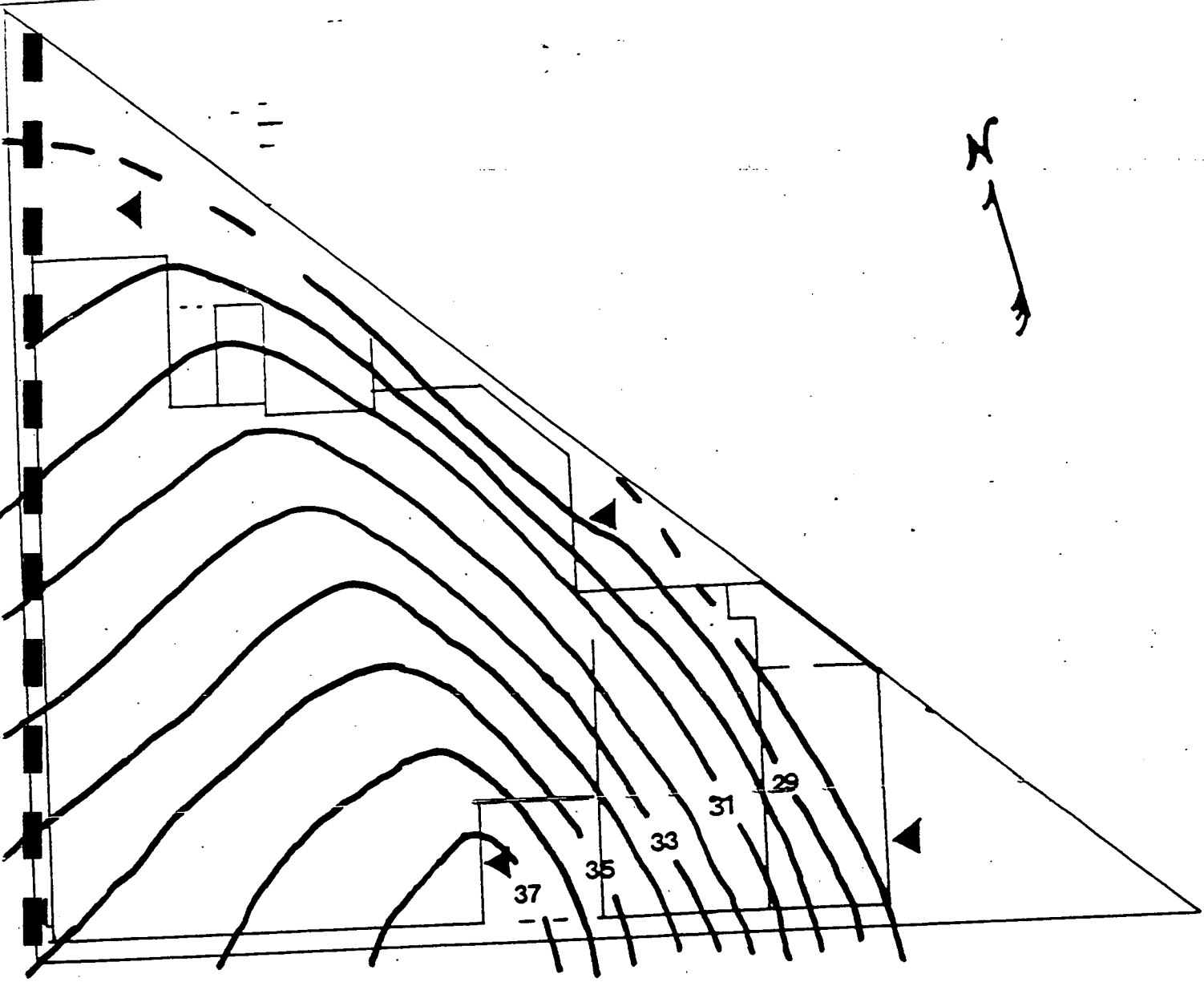


Figure 2.2 Groundwater Surface Elevation Contours at 10/4/88

ATTACHMENT T-39

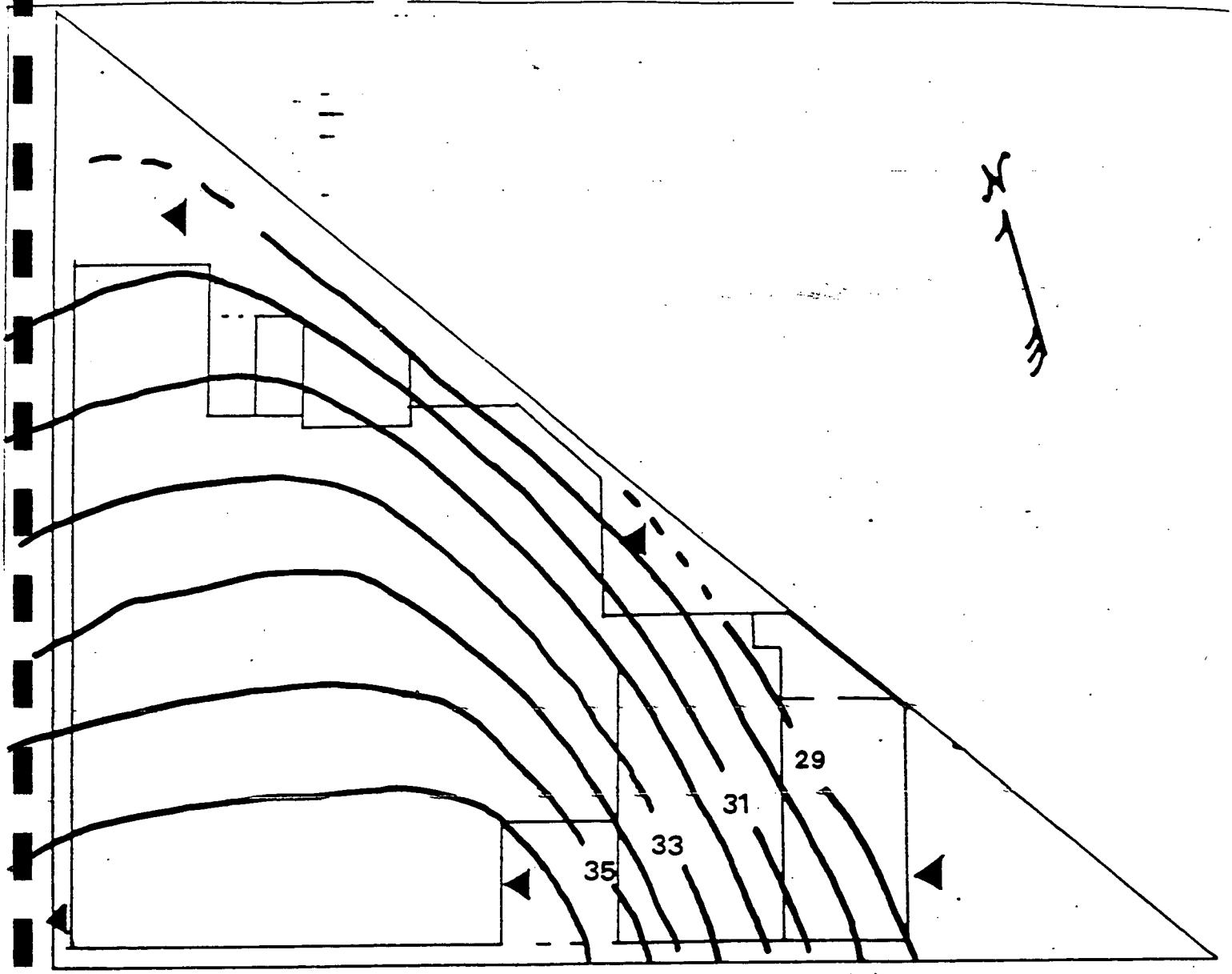


Figure 2.3 Groundwater Surface Elevation Contours at 2/4/89

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in addition to the depth of shallow groundwater from the surface level, the transport of contaminants were predicted to be slow.

To characterize the subsurface at this site, five monitoring well were drilled as deep as 30 feet below land surface. The bore holes were drilled using hollow stem augers and samples were taken every 5 feet until touch the water table. Drilling logs for these five boreholes are presented in Appendix C. Detailed regional and site geology and groundwater hydrology are summarized as following:

REGIONAL GEOLOGY

The study area bedrock geology is dominated by consolidated sediments of the Late Triassic Brunswick Formation of the Newark Series. The Brunswick consists of an inter-bedded association of soft brownish red/red-brown shale, mudstone, and sandstone. The unit occurs as the fill of an elongate basin some 20 miles wide which extends southwest to northwest across the Passaic Quadrangle (includes parts of Morris, Passaic, and Union Counties). Total unit thickness is estimated to be on the order to 10,000 feet. Generally, the unit strikes northeast and dips west or northeast at angles of 10 to 15 degrees. Extensive faults traverse the Newark rocks, primarily along strikes; downthrow to the east is indicated. Igneous intrusions through the Newark rocks have created the subparallel series watching ridges. Nemickas (1974) has mapped the Brunswick rock surface using well drilling information. In the vicinity of the subject site, bedrock, or the upper Brunswick surface, is estimated to occur between 160 and 180 feet mean sea level. The bed rock surface apparently sloped northwest in the vicinity of the site.

The study area surfacial geology is dominated by the Late Triassic to Holocene in age and are composed of consolidated to unconsolidated sand gravel, silt and clay with pebbles up to an estimated maximum thickness 200 feet in the Passaic River valley portion. The Holocene deposit in the site vicinity may extend to greater than 20 feet in thickness. However this is an estimate due to the absence of deeply penetrating wells into the bed rock.

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SITE GEOLOGY

Based upon interpretation of the data collected during site investigation, a descriptive analyses of site subsurface condition was prepared. The lithology of site has been described by visual inspection of monitoring well drilling and spilt spool sampling. The lithology encountered include topsoil, fill, recent alluvium, and residual soil (i.e., weathered bedrock). A description of each unit as follows:

- TOPSOIL : A thin veneer of top soil was encountered at MW-1 of soil. The top horizon is primarily associated with loss soil, concrete, and some pavement fragments. The thickness of loss soil at this site is approximately one-half feet (below the East 26th street level). The top soil was encountered below the loose soil mainly consists of brown sandy clayey silt, gravel and some organic fibers and three roots.

- FILL : The fill material was encountered at MW-4 and MW-5 locations on top of Recent alluvium. Based on the drilling information, the fill material situated between northwest and northeast of facility property. This stratum is mainly composed of fine to medium sand, gravel silt and some concrete, varies on thickness foam 2 to 3 feet below the concrete pad. The approximate thickness of concrete pad at MW-4 and MW-5 is about 1 to 2 feet.

- RECENT ALLUVIUM : The Recent alluvium is unconsolidated, relatively fresh slightly weathered detritus of the parent rock type in the site vicinity (surrounding highlands). The slight variable lithology between MW-4 and MW-5 is due to the shifting energy level of the depositional environment. Heavily loaded, high-discharge Passaic River during periods of heavy rainfall and as flash flooding events, deposited coarse sand, gravel and cobble gravel, clays, silts, and fine sands were laid down by low-energy streams and in flood-plain deposits. The monitoring well drilling data indicates that the Recent alluvium is probably not continuous in the site. The lithology at the site is mainly composed of dark-brown unconsolidated, well sorted medium to course sand with silt, gravel, and some pebbles. This unit occurs beneath the undifferentiated light brown alluvium (MW-1) and fill material (MW-4 and MW-5). The Recent alluvium ranges from 2 to 6 feet in thickness in the

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ChinAm facility and averages about 4 feet. Based on lithology, this unit probably has the highest permeability of lower units.

- RESIDUAL SOIL/WEATHERED ROCK : Residual soil (weathered rock) was encountered beneath the Recent alluvium unit at the site. The stratum has been developed by the weathering form parent rock. The unit is clearly distinguishable from overlying material as sampler penetration resistance was significantly high exceeding 50 below per foot. This unit possess a characteristic of bright red-brown or brownish red color and is comprised of very stuffy silty clay, clayey sand silt, silty sand, and sandy clay with numerous coarse sand and fine to medium gravel (shale fragments) present. This type of bed rock is wide spreader in Passaic River basin known as Brunswick Formation. . The elevation at which sampler refusal was encountered at MW-1 location is roughly consistent with the elevations postulated to correspond to the top of continuous bed rock.

GROUNDWATER HYDROLOGY

Information describing groundwater conditions and resources of Passaic County has been obtained from Nemickas (1976). An overview of this report has been prepared to support the Nemickas investigation.

Groundwater typically occurs in alluvial deposits, and the underlying bedrock. The bedrock is not considered to be an aquifer of consequence primarily due to the poor transmissive qualities ascribed to the very stuffy clays and other fines present within them. Historically, it was a common practice to construct large-diameter wells into the stratified falcial deposits which occur two or more miles northeast of the site. Usually, modest quantities of shallow groundwater could be obtained from the weathered soil layers within the stratified bedrock materials, however, they would run dry occasionally during periods of drought. Moderate quantities could be obtained from the alluvium, but its occurrence is limited to stream valleys. The most reliable source of groundwater was reported to be the fractured zones of the underlying Brunswick Formation. Numerous wells were drilled into the rock in Passaic County in the past. The rock aquifer typically occurs at depths between 200 and 300 feet and is soft and easily penetrated.

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Four such wells (facility production wells) were known to exist at the subject site and were used to provide process water.

Groundwater was reported to occur in the alluvium and under water table (unconfined) conditions and under artisan (confined) conditions in the bedrock. Recharge of the unconsolidated deposits primarily occurs by precipitation falling on and infiltrating through exposed portions of the units. Recharge of the bedrock aquifer probably occurs by flow from overlying and adjacent units or directly where the rock is exposed to precipitation or such water.

Groundwater conditions at the subject site were investigated by use of physical observation, monitoring wells, and by direct measurements of facility's production wells. The monitoring well drilling data reveals that Recent alluvium strata is considered to be a single water bearing at the site. The alluvium consists of 2 to 6-foot thick sequence of sand, silt, gravel which occurs along the margin of the Passaic River. It was encountered at all monitoring well location. The alluvium unit is apparently present beneath the entire site and extends south-west, uphill beyond the site for a unknown distance. It occurs at or near land surface. Much of the unit is covered by facility and concrete pad. Groundwater occurs in this zone at shallow depths of 8 to 18 feet below the land surface under water table conditions.

In this unit, the water table may be in a replica of the topographic surface. Groundwater in this zone flows from recharge areas (high lands) to discharge areas (low lands). Topographically high areas form the groundwater divides between areas of differentiated flow. An area with unique flow pattern and hydrogeologic characteristics may be called a "groundwater basin". Groundwater flow does not cross basin boundaries, but rather enters the basin in the recharge zone and then flows directly, via the shortest possible route, to the nearest point of discharge. According to monitoring well water levels observed during well installation groundwater flow through the alluvium trends to mirror surface topography, flowing generally northeast or northward. Discharge to the Passaic River is indicated by the related locations of the river and groundwater.

The shallow zone probably receives very little precipitation recharge on-site, as most of the study area was either paved or covered by industrial facilities, and

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that certain chemical structures are inherently more accessible to microbial degradation than others. The aqueous solubility, molecular size and types of chemical bonds within a particular chemical structure will affect the ability of a bacteria to metabolize the molecules and obtain energy from the process. Several published literature summarize the biodegradability of the types of compounds which are most frequently of concern. But the degradation of viscous organics materials like number 6 fuel oil are often controlled by their physical condition in the soil/contaminant matrix. In general, naturally occurring microorganisms, such as those which have developed at the contaminated site or in specific residues, commonly are effective contaminated soils. Genetically engineering microorganisms have not been shown to be needed (Raymond, C. L., 1989). In the proposed clean-up plan, ChinAm Inc., will not use any genetically engineering microorganisms.

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SECTION III.

BIOLOGICAL REMEDIATION SYSTEM

1. Treatment System Design

The treatment system to be used in ChinAm facility includes three parts: pumping system which will pump water from the ground, the mixing system which will mix the groundwater with a nutrient and hydrogen peroxide solution, and the injection system which returned the nutrient enriched groundwater back to the perched aquifer at a separate location.

The configuration and number of pumping and injection wells are designed to allow sufficient nutrient enriched groundwater flow through the contaminant plume under the UST-A and nearby indoor truck bay area. Each pumping well contains a durable, 0.5-horsepower, submersible well pump which is designed to run continuously for the life of the cleanup process in ChinAm facility. Since the water table is merely 15 feet (in average) below the surface, it is not feasible to use a pump that is capable of operating at the extremely low flow rates required at this site. Therefore, it is necessary to pump water from the well at a much higher rate than is needed, and return the unused portion to the well. This operation is achieved through a dual-valve system located above the well casing. Figure 3.1 illustrates a typical pumping well. The release valve is set to allow the desired amount of flow into the system, while the check valve provides the necessary back pressure on the pump and allows the overflow to pass into the discharge line that returns the water to the well.

Once groundwater enters the bioremediation system, it travels to a central surge tank. Any overflow from the surge tank is transferred by pipe into drums for storage. A valve at the bottom of the surge tank releases water at a controlled rate into a pipe into which specially formulated nutrient and a stabilized hydrogen peroxide solution (FMC Restore 375K and 105, respectively) are introduced. Figure 3.2 illustrates the mixing system which will be used in ChinAm, Inc. to introduce the Restore 375K (nutrient formula) and the diluted FMC 105 (stabilized hydrogen peroxide solution). This flow then passes through a section of baffled pipe to facilitate mixing before it enters a distribution box for

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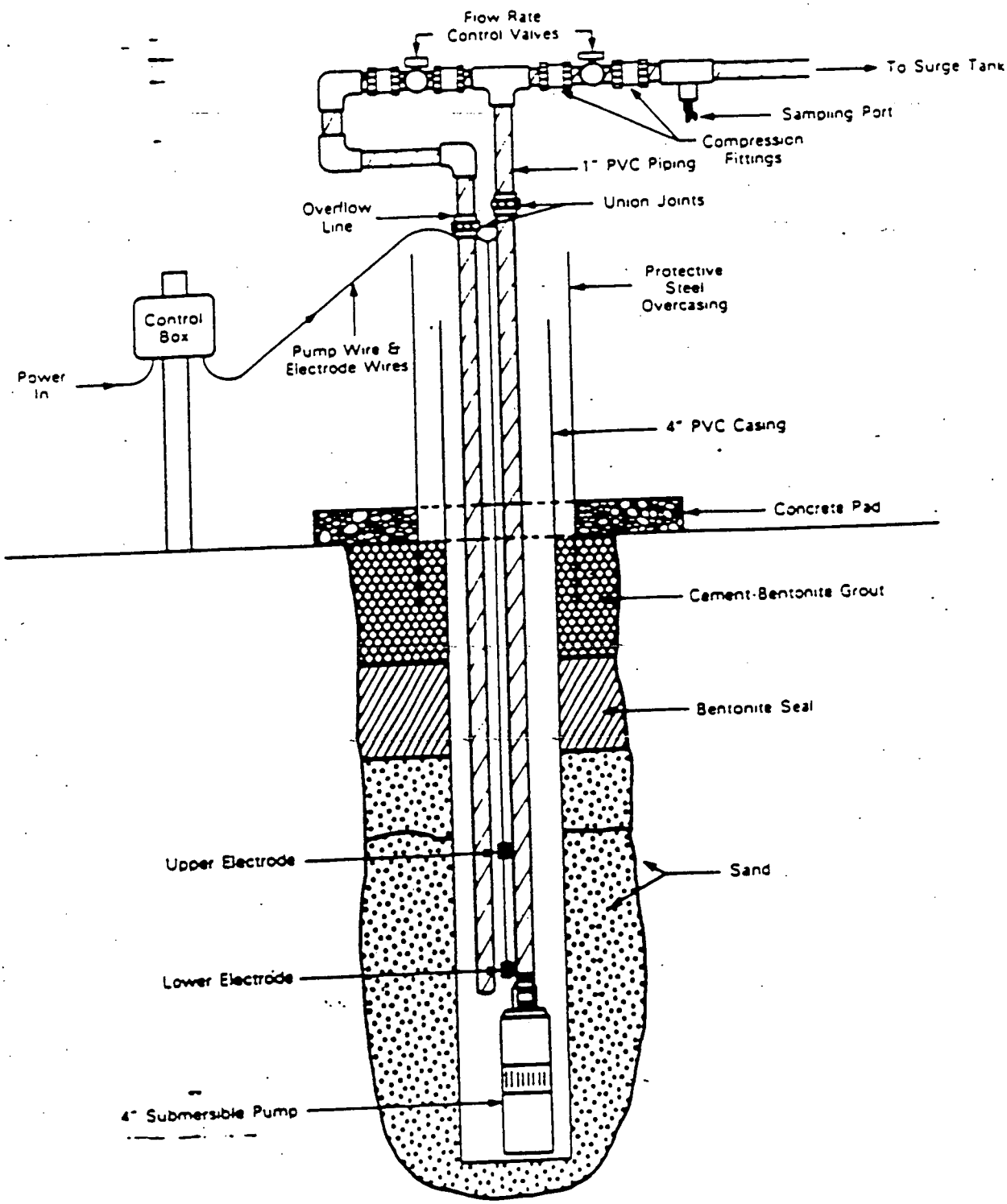

Figure 3.2 Cross Section of a Typical Pumping Well
(Not to Scale)

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dividing the flow among the three injection wells. In order to keep a continuous water injection pattern, two of the three lines to the injection wells will install valves to control flow rates into the wells, while the third line remains unobstructed to prevent a backup of water in the distribution box. In addition to the injection wells which are designed to cleanup the groundwater, the water sprayer will be installed above the UST and nearby indoor truck bay area after the breakthrough of the concrete pad in such area and the excavation of soil with above 1000 ppm TPHC contamination. The nutrient enriched groundwater will also be sprayed through the remained soil once a day at a rate equivalent to one tenth inch rainfall per day to enhance the biodegradation process through the soil by sending the nutrient enriched solution and by maintaining the moisture level in the soil layer.

All of the piping, valves, and fittings used to construct the system are made of PVC or teflon to reduce the potential of cross contamination. Other than the pumps and decontaminated monitoring probes, PVC and teflon will be the materials present in the wells. Each pump is individually controlled by dedicated electrodes that detect high and low water levels in the well. When the level of water in the well drops below a safe level for pump operation (0.5 foot above the intake), the pump will automatically shut off. Once the well recharges, the pump will once again be turned on. A similar system is installed in the surge tank to prevent overflow. At high level, a switch is thrown to cut off all pumps until the water in the surge tank reaches a specified lower level. This system prevents overflow while allowing for continuous injection.

2. Treatment System Construction

ChinAm Inc. will use five pumping wells and three injection wells in the bioremediation system. The pre-drilled monitor well #4 and #5 will be served as two of ~~the five~~ pumping wells. Three more pumping wells will be installed along the Route 20. Three injection wells will be installed along ~~the~~ third avenue. Each well will be drilled using identical procedures as for monitor well #4 and #5. The drill rig will be positioned as close to the well locations as possible. The first step in well installation will be steam clean the drill rig and bit. This will be performed for each new well to reduce the potential for contamination. The

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drill rig will be auger type and no drilling mud will be used. The well will be constructed by following the NJDEP Unconsolidated Well Specifications.

Following the construction of the wells, each well will be carefully developed to remove all of the remaining fines. This will be performed by first using an air compressor to clean out the screens with forced air and suspend the fines through agitation. A jet pump will then be used to remove the contaminated water from the well until no more fines remain.

Construction of the piping system will be performed in sections. All connections will be heat-welded in order to avoid the use of glues, which could introduce unwanted organic contaminants into the system. All pipes, joints, and valves well be constructed of PVC or teflon. All piping runs will be carefully measured and each of the welded subsections of pipe will be welded together. The pumps and pump lines will then be lowered into the pumping wells. Each pump will be wired to a control box and tested for proper operation independently for proper operation. Once the pumps operates correctly, the upper section of piping containing the two control valves and the sampling port will be connected to the pump line using a union joint. The overflow return line will then be lowered into the well and also attached with a union joint. Once the pumps installed, tests will be performed for each well to determine optimum pumping rates.

The surge tank as proposed in our plan, is constructed from a polyethylene 55-gallon drum laid on its side so that the bottom bung could be used to release water at the controlled rate and the top bung could be used to release overflow. One inch holes will be drilled in the top to allow water from the pumping wells to enter. The distribution box will be constructed from a PVC box in which three outflow holes and one inflow hole will be drilled. A top will also be made of PVC ~~to keep~~ rainwater and other substances from entering the system. Wooden platforms will be constructed to elevate each container to a pre-determined height to provide gravity flow for injection. The containers will then be mounted and leveled. A pipeline will be fashioned to connect the surge tank to the distribution tank. This line includes a ball valve to meter flow from the surge tank followed by a feed inlet for nutrients and hydrogen peroxide and a 1-foot section of baffled 2-inch PVC pipe to help facilitate mixing of the nutrients

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and hydrogen-peroxide solution with groundwater. Finally, cross pipes will be installed to connect each of the injection wells with the central distribution system. A number of wooden poles firmly anchored in the ground will provide the lateral support to the cross pipe system.

3. System Start-up

Following completion of construction, in the system start-up stage, each pump will be set at a rate determined from the pumping tests to result in steady-state yield. This flow will be divided equally to the three injection wells and the water sprayer system in UST and indoor truck bay area. However, when one or more injection wells can not accept the equally divided flow, in order to avoid the surcharge inside the injection wells, the flows will be adjusted to the maximum that could be accommodated by each well, and the excess quantity will be used in water spryer system. Groundwater will be circulated through the system for several days prior to the introduction of nutrients so that flow rates could be re-adjusted and any other problems with the system could be debugged.

After several days of recirculating groundwater, a specially formulated nutrient solution will be introduced into the system. This nutrient solution is introduced to adjust the pH of the system, ensure an excess of phosphate that would assist in hydrogen peroxide stabilization, increases emulsification of insoluble organics, and fortify the microbial populations. Stabilized hydrogen peroxide addition will be commenced approximately 2 weeks later at a total concentration of 100 ppm in the groundwater injection flow. The concentration may be adjusted to increase the dissolved oxgen level.

An injection system will be set up to introduce both the nutrient and peroxide solution together. Once both solutions are mixed together in 30 gallon drums, a ~~small~~ chemical feed pump draws the solution at a prescribed rate and feeds it via flexible tubing to the line between the surge tank and the distribution box.

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SECTION IV

SAMPLING AND MONITORING

In order to determine the effectiveness of the clean-up operation, a proper sampling and monitoring plan should be defined for the proposed bioremediation process. As a rule of thumb, the amount of oxygen required for a microbial process is approximately 3 lb O_2/lb of biodegradable organic present within the treatment area. This can best be estimated from general indicator measurements such as Total Organic Carbon (TOC) or Total Petroleum Hydrocarbon (TPHC) rather than from GC-MS tabulations (Brubaker, G. R., 1989). The following sections discuss the soil and groundwater sampling conducted during system construction and at regular intervals throughout the clean-up process.

1. Soil Sampling

~~Two soil~~ samples will be collected seasonally during the proposed three years clean-up process period and analyzed for TPHC. ~~The initial soil samples will~~ be collected during well drilling time. The TPHC level from this drilling will be used as baseline to determine the percentage removal efficiency and the TPHC level still remained in the contaminated area. When TPHC level is reduced to below 100 ppm in two consequent soil boring samples within three month, we can conclude that the soil clean-up process complete ~~for negative declaration~~.

In order to identify the activity of the microorganism and to determine the process is in aerobic or anaerobic status, the field analyses will be performed on soil samples with a field test kit. Field analyses will include pH, calcium, iron, magnesium, manganese, ammonia-nitrogen, nitrate-nitrogen, nitrite-nitrogen, phosphate, and sulfate.

2. Groundwater Sampling and Monitoring

Hydraulic, chemical, biological, and physical parameters will be monitored regularly throughout the duration of the clean-up process to determine process performance.

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a. Hydraulic Parameters

Water level measurements and groundwater, nutrient, and peroxide flow rates will be recorded daily. Prior to initiating pumping each day, static water levels will be measured by ChinAm Inc.'s employee, for each of the pumping and injection wells. The measuring device will be decontaminated between each well to prevent cross-contamination of the wells. Measurements will be recorded using the top of each well casing as the reference point.

Groundwater flow rates will be measured as groundwater emptied into the distribution box. Nutrient and hydrogen peroxide flows to the distribution pipe will be re-directed past the baffled pipe section, directly into the distribution box during groundwater flow measurement. Nutrient and hydrogen peroxide flow measurements will be recorded daily from each of the nutrient and peroxide storage tanks.

b. Routine Analysis

An extensive groundwater monitoring program will be implemented during the phase II clean-up process. These monitoring include the twice per week of the measuring of temperature, conductivity, dissolved oxygen (DO), pH, chloride NH_3-N, NO_3-N, SO_4, PO_4, and H_2O_2 by the plant operator. The monthly analysis of the alkalinity, acidity, total hardness, TPHC level by a NJDEP certified analytical laboratory. The seasonally analysis of the BN+15 will be performed by a NJDEP certified analytical laboratory.

Initial groundwater samples will be collected and analyzed for TPHC and priority pollutants (metal, and BN+15) to establish baseline values of contaminants present at ChinAm facility. The follow-up analysis will be used to evaluate the efficiency of the clean-up process. When TPHC level drop to below 100 ppm, in two consequent quarterly analysis, ChinAm will document all the analytical results and request the negative declaration to NJDEP.

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3. Cost Estimation.

Cleanup cost has been estimated in the last Clean-up Plan Proposal to NJDEP dated December 5, 1988. The estimated cost is shown below:

Table 3.1 Cost Estimation for Phase II Cleanup activities.

Item	Estimated Cost
Site Preparation for In-situ Biological Remediation	
* Assume 100 cu.yd. of soil need to be removed from site.	
Site Preparation and Soil Excavation @$74/cu.yd.	$7,400
Transportation 100 cu.yd. of Soil @$62/cu.yd.	$6,200
Disposal 100 cu.yd. Soil @43/ton	$8,127
Well Construction	
* 2-6 more wells are needed for biological remediation	
* Estimated for 6 unit of 15 ft. wells	
Materials, equipment, and labor	$8,400
Mobilization and demobilization cost for well driller	$1,500
Construction of Recirculation System	
Up to 5 units of pump @$1,337/Unit	$6,685
Up to 500 ft. pneumatic supply line, @$2.40/ft.	$1,200
Up to 500 ft. product discharge line, @$11.40/ft.	$5,700
Crafting & material handling	$75
Reactor for Biological Treatment	$10,000
Sampling and Analysis	
5 wells, monthly TPHC, 3 yr. @45/sample	$8,100
5 wells, quarterly BN+15, 3 yr., @$285/sample	$17,100
2 soil boring at 3 depth each, quarterly, 3 yr.	$3,240
Labor @$280/day, 12 days/yr., 3 yr.	$10,080
Chemicals	
Nutrients and hydrogen peroxide	$75,000
Other Direct Costs and Travel	$20,000
Labor Costs (Non-Construction)	$45,000
Total Cost For Phase II Activities	$233,807

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We believe that the original cost estimation is still valid based on the following reasons:

- Drilling cost of six well were proposed and the cost has not been changed.
- Cost for pipe line is based on more expensive teflon line in that cost estimation which will cover any cost difference during the construction period since the pipeline can be made of PVC.
- More expensive pneumatic pump were proposed when cheaper submersible well pump can be used instead during the clean-up process.
- Cost of nutrients and oxidizers for enhancing microorganism activities were estimated in the original cleanup plan for a three-year period. The unit cost remains the same while the period of performance could be shorter than three years.
- Cost of chemical analyses were estimated based on a three-year period while clean-up process can be much shorter than three years.
- In all estimation calculation, the assumptions were made based on above average price found in NJ state, which include :
  - Soil excavation cost at $37/cu.yd. for outdoor soil, and $74/cu.yd. for indoor soil.
  - Transportation of the waste material at $62/cu.yd. for 440 miles distance.
  - Disposal cost at $43/ton.

Based on the above-mentioned reasons, we believe that the total cost of $233,807 is adequate and appropriate for the phase II biological remediation operation.

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APPENDIX A.

CASE STUDIES

Numerous bioremediation case studies exist that identify the performance that can be achieved. The following illustrate specific applications :

Case Study A :

(Ref: Linkeheil, R.J. and Patnode, T.J. "Bioremediation of Contamination by Heavy Organics at a Wood Preserving Plant Site." Proc. 8th National Superfund Conference, Washington, D.C., HMCRI Institute, Silver Spring, MD, pp. 193-197, 1987)

On-site treatment was chosen as the closure alternative for a creosote impoundment at a Superfund site in Minnesota. This alternative was identified in the feasibility study as the most cost-effect source control measure for the site. The effectiveness of the bioremediation technology to detoxify contaminated soils at the site was demonstrated in pilot-scale studies. Results of these studies were used to develop design criteria for a full-scale treatment facility.

A lined 3-ac land treatment facility was constructed in 1985 to treat 10,000 yd^3 of contaminated soil and sludges from the creosote impoundment. The facility has operated successfully since 1986, achieving greater than 90% reduction of polynuclear aromatic hydrocarbons (PAHs).

Before the on-site treatment alternative was implemented, bench-scale and pilot-scale studies were conducted to define operating and design parameters for the full-scale facility. Several performance, operating and design parameters were evaluated:

- Soil characteristics
- Climate
- Treatment supplements
- Reduction of gross organics and PAH compounds
- Toxicity reduction
- Effect of initial loading rate
- Effect of re-application

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Three different loading rates were evaluated in the test plot studies: 2.5 and 10% benzene extractable (BE) hydrocarbons. The soils used in the pilot study consisted of a fine sand collected from the upper 2 ft of the impoundment. The soil was contaminated with creosote constituents consisting primarily of PAH compounds. Total PAHs in the soil ranged from 1000 to 10,000 ppm. and BE hydrocarbons ranged from approximately 2 to 10% by weight.

Because the natural soils were fine sands and extremely permeable, the full-scale system included a liner and leachate collection system. To simulate the proposed full-scale conditions, the pilot studies consisted of five lined, 50 ft & 2/32 test plots with leachate collection. The studies were designed to maintain conditions which promote the degradation of hydrocarbons. These included:

- Maintain a pH of 6.0 to 7.0 in the medium
- Maintain soil carbon to nitrogen ratios between 50:1 and 25:1
- Maintain soil moisture near field capacity

Hydrocarbon losses in the test plots were measured using benzene as the extraction solvent. The analysis of BE hydrocarbons provided a general parameter well suited to wastes containing high molecular weight aromatics such as creosote wastes. Reductions of BE hydrocarbons were fairly similar between all the field plots. Average removals in these plots over 4 month were approximately 40%.

More than 62% of PAHs were eliminated in all test plots over 4 months. The pilot-scale studies identified operating and design criteria for a full-scale system:

- Treatment period could be extended through October
- soil moisture should be maintained near field capacity
- Soil pH should be maintained between 6.0 and 7.0
- Soil carbon:nitrogen ratios should be maintained between 25:1 and 50:1
- Fertilizer applications should be in small, frequent doses

The full-scale system was constructed and operated. BE hydrocarbons and the PAH compounds were monitored. BE hydrocarbon concentrations decreased approximately 60% in the first year of operation. Most of the decrease occurred during the first 120 days (May through September). Little decrease in BE hydrocarbon concentrations occurred during the fall and winter months.

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PAH removals in the pilot-scale and in the full-scale efficiencies were higher than test plot removal and for BE hydrocarbons.

Table 1. Comparison of Full-scale and Test Plot Removals

	% Removal	Average Half-life (days)	
	Test Plots[2]	Full Scale	Test Plots
	93-93	<45	29-33
	83-85	45	46-49
	32-60	115	95-226
	65-76	65	61-83
	35-56	150	106-200

[1] After 193 days of treatment
[2] After 126 days of treatment

The amount of PAH degradation was proportional to the PAH compounds. The 2-ring and 3-ring The 4-ring and 5-ring PAHs degraded at slower compounds are strongly adsorbed to soils and were in zone of the facility. Table 2 summarizes water collection system of the facility. Only acenaphthene found in the drain water samples. Concentrations for analytical detection limits.

Table 2. Underdrain Water Quality

CONCENTRATION, ppb		
June 1986	August 1986	October 1986
<1	<1	<1
<1	<1	<1
<1	<1	<1
<1	<1	<1
<1	3.7	2.7
<1	<1	<1
<1	<1	<1
<1	<1	<1
<1	<1	1.4
<1	2.1	

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Pyrene	<1	<1	<1
Benzo(a)anthracene	<1	<1	<1
Chrysene	<1	<1	<1
Benzofluoranthenes	<1	<1	<1
Benzopyrenes	<1	<1	<1
Indeno(1,2,3,c,d)Pyrene	<1	<1	<1
Dibenzo(a,h)anthrancene	<1	<1	<1
Benzo(g,h,i)perylene	<1	<1	<1

The full-scale unit has matched or surpassed the performance of the pilot-scale unit in degrading creosote organics. One advantage of on-site treatment is that it reduces the source of contaminants at the site in a very cost-effective manner. It also meets the approach of regulatory agencies toward on-site remedies and reduces the liability of the owner/operator due to off-site disposal.

CASE STUDY B

(Ref: Jacques, R.B. and Loehr, R.C. "Biological Detoxification of a Contaminated Soil" Proc, Environmental Engineering Conference, Vancouver, B.C. ASCE, July, 1988.)

On-site bioremediation was evaluated, using laboratory treatability studies, to decontaminate soil containing petrochemical wastes. The objective was to identify the use of this technology as a viable closure alternative for the contaminated soils from ponds, impoundments and storage lagoons that contained waste industrial sludges. Toxicity screening analyses estimated the potential impact of the material on soil biota, the relative toxicity of the contaminated soil, the initial application rates to be used and the detoxification that occurred during bioremediation. Six detailed treatability studies evaluated the effect of : (1)loading rates, (2) moisture level and (3) need for amendments. The primary emphasis was on determining degradation (loss) rates of representative polyaromatic (PAH) hydrocarbons.

The results of the treatability studies indicated that the moisture level in the bioremediation of contaminated soil was a critical parameter for the degradation of 2-, 3-, and 4-ring PAHs. With the moisture content maintained at 80% of field capacity, degradation rates were considerable greater than at drier

ATTACHMENT T-62

conditions, such as 40% of field capacity. For contaminated soil alone, maintaining the moisture content at 80% of field capacity did not result in adequate PAH degradation. Other parameters, such as acclimated organisms and nutrients, also played an important role in achieving degradation of PAH compounds. When a 1% dry waste activated sludge amendment was added to the contaminated soil, degradation of 2- and 3- ring PAHs occurred. The waste activated sludge supplied acclimated microorganisms, nutrients and other factors that enhanced PAH degradation.

Uncontaminated soil contained indigenous microorganisms that quickly initiated degradation of PAH compounds when the environmental factors were appropriate for microbial activity. Specially developed strains of microorganisms to degrade PAHs were not necessary.

The results indicated that bioremediation was an appropriate closure alternative for these contaminated soils from lagoons containing waste industrial sludges. A pilot-scale study to obtain larger-scale technical and economical feasibility data is being planned.

ATTACHMENT T-63

APPENDIX B.

CHEMICAL ANALYSIS RESULTS FOR SOIL BORING AND GROUNDWATER SAMPLES

ATTACHMENT T-64

Table 1. Summary of the pH level, Conductivity and TPHC concentrations for all Groundwater Samples.

Well ID	Sample ID	pH	Conductivity (mmho/cm)	TPHC (mg/l)
MWB-1	MW-1	7.30	1840	84.3
MWB-2	MW-2	6.65	2810	< 1.0
MWB-3	MW-3	6.74	974	< 0.1
MWB-4	MW-4	6.83	< 1	22853
MWB-5	MW-5	7.01	724	2.3
PWB-1	PW-1	6.44	629	0.8
PWB-2	PW-2	7.58	557	< 0.1
PWB-4	PW-3	7.38	713	210
	FB-1		20	< 0.1

ATTACHMENT T-65

Table 2. Metal Concentration in Ground Water Samples in mg/l level.

Priority Pollutant Metal	MWB -1 (MW-1)	MWB -2 (MW-2)	MWB -3 (MW-3)	MWB -4 (MW-4)	MWB -5 (MW-5)	PWB -1 (PW-1)	PWB -2 (PW-2)	PWB -4 (PW-3)	FIELD BLANK (FB-1)	METHOD BLANK	REPORTING LIMITS
Antimony	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0500
Arsenic	ND	0.017	ND	ND	ND	ND	ND	ND	ND	ND	0.0050
Beryllium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0050
Cadmium	0.012	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0050
Chromium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0100
Copper	0.036	0.014	0.023	0.018	0.030	0.026	0.025	0.033	0.057	ND	0.0100
Lead	0.040	0.033	0.033	0.031	0.072	ND	ND	ND	ND	ND	0.0200
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0002
Nickel	0.042	1.273	ND	ND	0.028	ND	ND	ND	ND	ND	0.0200
Selenium	0.044	0.032	ND	ND	ND	ND	ND	ND	ND	ND	0.0050
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0100
Thallium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0500
Zinc	0.084	0.158	0.013	0.030	0.119	0.028	0.022	0.021	ND	ND	0.0050

ATTACHMENT T-66

Table 3. Volatile Organic Compound Concentration in Groundwater Analysis in ppm Before Blank Calibration.

CAS No.	Chemical Name	MWB-1 (MW-1)	MWB-2 (MW-2)	MWB-3 (MW-3)	MWB-4 (MW-4)	MWB-5 (MW-5)	PWB-1 (PW-1)	PWB-2 (PW-2)	PWB-4 (PW-3)
	Analysis Date	10/31	10/31	10/31	10/31	10/31	10/31	10/31	10/31
67-66-3	Chloroform	0.009	---	---	---	0.230	---	0.010	---
71-43-2	Benzene	---	---	---	---	---	0.013	---	---
71-55-6	1,1,1-Trichloroethane	---	---	---	---	---	0.009	0.014	---
75-09-2	Methylene Chloride	0.006	0.006	---	---	0.140	0.002	0.003	---
79-01-6	Trichloroethene	---	---	---	---	---	0.410	1.500	0.085
100-41-4	Ethylene benzene	---	0.038	---	---	0.150	---	---	---
108-88-3	Toluene	---	---	---	---	3.200	---	---	---
127-18-4	Tetrachloroethene	---	---	---	---	---	0.049	0.072	---
156-60-5	Trans-1,2-Dichloroethene	---	---	---	---	---	0.030	0.069	---
	Total Xylenes	---	0.015	---	---	(7.900)	---	---	---
	Total Dichlorobenzene	---	---	---	---	---	0.021	0.009	---
	Unknown Alkene (RT 8.54)	---	---	---	---	---	0.220	---	---
	Unknown Propane (RT 17.32-17.34)	---	---	---	---	---	2.100	---	0.130
	Unknown (RT 37.52)	---	---	---	1.500	---	---	---	---
	Unknown (RT 41.40)	---	---	---	---	0.940	---	---	---
	Unknown (RT 43.00)	---	---	---	---	0.640	---	---	---

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Table 4. Semivolatile Compound Concentration in Groundwater Analysis in ppm Before Blank Calibration.

CAS No.	Chemical Name	MWB-1 (MW-1)	MWB-2 (MW-2)	MWB-3 (MW-3)	MWB-4 (MW-4)	MWB-5 (MW-5)	PWB-1 (PW-1)	PWB-2 (PW-2)	PWB- (PW-
	Analysis Date	10/31	10/31	10/31	10/31	10/31	10/31	10/31	10/
85-01-8	Phenanthrene	---	0.006	---	21.000	---	---	---	---
86-73-7	Fluorene	---	0.003	---	82.000	---	---	---	---
91-20-3	Naphthalene	---	0.021	---	---	---	---	---	---
91-57-6	2-Methylnaphthalene	---	0.021	---	630.000	0.032	---	---	---
117-81-7	Bis(2-Ethylhexyl)phthalate	0.020	0.011	0.006	---	0.013	0.013	0.010	---
129-00-0	Pyrene	---	0.001	---	---	---	---	---	---
541-73-1	1,3-Dichlorobenzene	---	---	---	---	---	0.002	0.002	---
	Unknown Benzene (RT 7.59)	---	---	---	---	0.290	---	---	---
	Ethyl Methyl Benzene Isomer (RT 8.21)	---	---	---	---	0.019	---	---	---
	Unknown (RT 8.86)	---	---	---	---	0.011	---	---	--
	Ethyl Methyl Benzene Isomer (RT 9.12)	---	---	---	---	0.340	---	---	--
	Unknown Benzene (RT 9.24)	---	---	---	---	0.160	---	---	---
	Ethyl Methyl Benzene Isomer (RT 9.50)	---	---	---	---	0.150	---	---	---
	Unknown Alkane (RT 9.73)	---	---	---	790.000	---	---	---	---
	Unknown Benzene (RT 9.88)	---	---	---	---	0.310	---	---	---
	Unknown Benzene (RT 10.50)	---	---	---	---	0.150	---	---	---
	Unknown Alkane (RT 10.71)	---	0.027	---	---	---	---	---	---
	Unknown Benzene (RT 10.83)	---	---	---	---	0.120	---	---	---
	Methyl Propyl Benzene Isomer (RT 11.07)	---	---	---	---	0.078	---	---	---
	Ethyl Dimethyl Benzene Isomer (RT 11.21)	---	---	---	---	0.073	---	---	---
	Unknown Benzene (RT 11.43)	---	---	---	---	0.021	---	---	---
	Ethyl Dimethyl Benzene Isomer (RT 11.69)	---	---	---	---	0.077	---	---	---
	Unknown Alkane (RT 11.94)	---	---	---	720.000	---	---	---	---
	Unknown Benzene (RT 12.62)	---	---	---	---	0.013	---	---	---
	Unknown Alkane (RT 13.05)	---	---	---	---	0.013	---	---	---
	Unknown Decane (RT 14.31)	---	---	---	260.000	---	---	---	---
	Unknown (RT 15.47)	---	---	---	430.000	---	---	---	---
	Unknown Alkane (RT 16.00)	---	---	---	690.000	---	---	---	---
	Unknown Alkane (RT 16.55)	---	0.030	---	---	---	---	---	---
	Unknown Aromatic (RT 16.60)	---	---	---	280.000	---	---	---	---
	Unknown Alkane (RT 17.83)	---	---	---	390.000	---	---	---	---
	Dimethyl Naphthalene Isomer (RT 18.21)	---	0.021	---	---	---	---	---	---
	Unknown Decane (RT 18.89)	---	---	---	2,500.000	---	---	---	---
	Unknown Alkane (RT 22.61-22.64)	---	0.028	---	5,000.000	---	---	---	---
	Unknown Decane (RT 22.72)	---	---	---	5,000.000	---	---	---	---
	Unknown Alkane (RT 24.05)	---	---	---	3,900.000	---	---	---	---
	Unknown Alkane (RT 24.19)	---	---	---	2,600.000	---	---	---	---
	Unknown Alkane (RT 25.41)	---	---	---	4,100.000	---	---	---	---
	Unknown Alkane (RT 26.70)	---	---	---	340.000	---	---	---	---
	Unknown Alkane (RT 27.93)	---	---	---	2,800.000	---	---	---	---

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Table 5. Results for blank samples in water analysis in ppm.

	Field Blank 10/31	Trip Blank 10/31	Method Blank 10/31
VOLATILE COMPOUND			
Methylene Chloride	0.006	0.007	0.004
SEMIVOLATILE COMPOUND			
bis(2-Ethylhexyl)phthalate	0.065	----	----

ATTACHMENT T-69

Table 6. Volatile Organic Compound Concentration in Groundwater Analysis in ppm After Blank Calibration.

CAS No.	Chemical Name	MWB-1 (MW-1)	MWB-2 (MW-2)	MWB-3 (MW-3)	MWB-4 (MW-4)	MWB-5 (MW-5)	PWB-1 (PW-1)	PWB-2 (PW-2)	PWB-4 (PW-3)
	Analysis Date	10/31	10/31	10/31	10/31	10/31	10/31	10/31	10/31
67-66-3	Chloroform	0.009	---	---	---	0.230	---	0.010	---
71-43-2	Benzene	---	---	---	---	---	0.013	---	---
71-55-6	1,1,1-Trichloroethane	---	---	---	---	---	0.009	0.014	---
75-09-2	Methylene Chloride	---	---	---	---	0.133	---	---	---
79-01-6	Trichloroethene	---	---	---	---	---	0.410	1.500	0.085
100-41-4	Ethylene benzene	---	0.038	---	---	0.150	---	---	---
108-88-3	Toluene	---	---	---	---	3.200	---	---	---
127-18-4	Tetrachloroethene	---	---	---	---	---	0.049	0.072	---
156-60-5	Trans-1,2-Dichloroethene	---	---	---	---	---	0.030	0.069	---
	Total Xylenes	---	0.015	---	---	7.900	---	---	---
	Total Dichlorobenzene	---	---	---	---	---	0.021	0.009	---
	Unknown Alkene (RT 8.54)	---	---	---	---	---	0.220	---	---
	Unknown Propane (RT 17.32-17.34)	---	---	---	---	---	2.100	---	0.130
	Unknown (RT 37.52)	---	---	---	1.500	---	---	---	---
	Unknown (RT 41.40)	---	---	---	---	0.940	---	---	---
	Unknown (RT 43.00)	---	---	---	---	0.640	---	---	---

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Table 7. Semivolatile Compound Concentration in Groundwater Analysis in ppm After Blank Calibration.

CAS No.	Chemical Name	MWB-1 (MW-1)	MWB-2 (MW-2)	MWB-3 (MW-3)	MWB-4 (MW-4)	MWB-5 (MW-5)	PWB-1 (PW-1)	PWB-2 (PW-2)	PWB- (PW-
	Analysis Date	10/31	10/31	10/31	10/31	10/31	10/31	10/31	10/
85-01-8	Phenanthrene	---	0.006	---	21.000	---	---	---	---
86-73-7	Fluorene	---	0.003	---	82.000	---	---	---	---
91-20-3	Naphthalene	---	0.021	---	---	---	---	---	---
91-57-6	2-Methylnaphthalene	---	0.021	---	630.000	0.032	---	---	---
129-00-0	Pyrene	---	0.001	---	---	---	---	---	---
541-73-1	1,3-Dichlorobenzene	---	---	---	---	---	0.002	0.002	---
	Unknown Benzene (RT 7.59)	---	---	---	---	0.290	---	---	---
	Ethyl Methyl Benzene Isomer (RT 8.21)	---	---	---	---	0.019	---	---	---
	Unknown (RT 8.86)	---	---	---	---	0.011	---	---	--
	Ethyl Methyl Benzene Isomer (RT 9.12)	---	---	---	---	0.340	---	---	--
	Unknown Benzene (RT 9.24)	---	---	---	---	0.160	---	---	--
	Ethyl Methyl Benzene Isomer (RT 9.50)	---	---	---	---	0.150	---	---	--
	Unknown Alkane (RT 9.73)	---	---	---	790.000	---	---	---	---
	Unknown Benzene (RT 9.88)	---	---	---	---	0.310	---	---	---
	Unknown Benzene (RT 10.50)	---	---	---	---	0.150	---	---	---
	Unknown Alkane (RT 10.71)	---	0.027	---	---	---	---	---	---
	Unknown Benzene (RT 10.83)	---	---	---	---	0.120	---	---	---
	Methyl Propyl Benzene Isomer (RT 11.07)	---	---	---	---	0.078	---	---	---
	Ethyl Dimethyl Benzene Isomer (RT 11.21)	---	---	---	---	0.073	---	---	---
	Unknown Benzene (RT 11.43)	---	---	---	---	0.021	---	---	--
	Ethyl Dimethyl Benzene Isomer (RT 11.69)	---	---	---	---	0.077	---	---	--
	Unknown Alkane (RT 11.94)	---	---	---	720.000	---	---	---	--
	Unknown Benzene (RT 12.62)	---	---	---	---	0.013	---	---	--
	Unknown Alkane (RT 13.05)	---	---	---	---	0.013	---	---	---
	Unknown Decane (RT 14.31)	---	---	---	260.000	---	---	---	---
	Unknown (RT 15.47)	---	---	---	430.000	---	---	---	---
	Unknown Alkane (RT 16.00)	---	---	---	690.000	---	---	---	---
	Unknown Alkene (RT 16.55)	---	0.030	---	---	---	---	---	---
	Unknown Aromatic (RT 16.60)	---	---	---	280.000	---	---	---	---
	Unknown Alkane (RT 17.83)	---	---	---	390.000	---	---	---	---
	Dimethyl Naphthalene Isomer (RT 18.21)	---	0.021	---	---	---	---	---	---
	Unknown Decane (RT 18.89)	---	---	---	2,500.000	---	---	---	---
	Unknown Alkane (RT 22.61-22.64)	---	0.028	---	5,000.000	---	---	---	---
	Unknown Decane (RT 22.72)	---	---	---	5,000.000	---	---	---	---
	Unknown Alkane (RT 24.05)	---	---	---	3,900.000	---	---	---	---
	Unknown Alkane (RT 24.19)	---	---	---	2,600.000	---	---	---	---
	Unknown Alkane (RT 25.41)	---	---	---	4,100.000	---	---	---	--
	Unknown Alkane (RT 26.70)	---	---	---	340.000	---	---	---	--
	Unknown Alkane (RT 27.93)	---	---	---	2,800.000	---	---	---	--

ATTACHMENT T-71

CN 028
N.J. 08625-0028

(609)633-7141

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT

John J. Trela, Ph.D., Director

Lance R. Miller
Deputy Director
Responsible Party Remedial Action

Michele M. Putnam
Deputy Director
Facilities Waste Operations

RECEIVED
MAY 16 1989

MAY 11 1989

Amended:
MAY 30 1989

Dr. Andy Chen
Technical Resources, Inc.
3202 Monroe Street
Rockville, Maryland 20852

Dear Dr. Chen:

RE: Berles Carton Co.
Paterson City, Passaic County
ECRA CASE # 85317

The Department has conducted a technical review of the Cleanup Plan proposal dated December 6, 1988 and the prior data report submissions dated September 28, 1988, October 27, 1988 and November 16, 1988. Based upon this review the Department has determined that the entire Cleanup Plan can not be approved at this time due to the lack of details supplied for the implementation of the Phase II bioremediation activities. The Phase II remediation proposal is conceptually acceptable, but the specifics of the in-situ bioremediation program must first be submitted. Therefore, Berles Carton shall submit a revised Cleanup Plan in triplicate, as conditioned below, within 30 days of receipt of this letter pursuant to paragraph 9.E of the January 2, 1986 Administrative Consent Order.

Phase I activities are acceptable as conditioned below and shall be implemented immediately upon receipt of this letter. A progress report detailing the status of the Phase I activities shall be submitted within thirty (30) days of receipt of this letter. In addition, the soil and ground water sampling results from Phase I shall be submitted within ninety (90) days of receipt of this letter pursuant to paragraph 9.E of the January 2, 1986 Administrative Consent Order.

Phase I - Soil

1. Berles Carton shall collect vertical and horizontal delineation post-excavation samples in each area excavated (please refer to the Draft ECRA Sampling Plan Guide for guidance). The post-excavation samples collected in Area A shall be analyzed for petroleum hydrocarbons (PHC) and base neutral organic compounds plus fifteen (BN+15), in Area C for PHC and BN+15 with samples around SC-5 also to include zinc, and Area D (underground gasoline tank) for PHC, benzene, toluene and xylene.

ATTACHMENT T-72

Phase I - Ground Water

2. Berles Carton shall immediately begin remediating the free product from the contaminated monitoring wells. Progress reports shall be submitted monthly detailing the status of the product recovery until completion.

3. Berles Carton shall install two additional ground water monitoring wells along the downgradient perimeter of the facility for further delineation of the free product (see enclosed site map for well locations). Any free product detected shall be remediated as proposed for MW2, MW4 and production well 3. In addition, Berles Carton shall document that the product removal being conducted, from the wells which contain free product, is sufficient enough to capture the entire plume.

4. Berles Carton shall conduct another round of ground water sampling from the three active production wells, the five (5) existing monitoring wells and the two newly installed wells and analyze them for volatile organic compounds plus fifteen (VO+15), BN+15, PHC, priority pollutant metals, pH and total dissolved solids. The analysis for MW-5 shall also include methyl-t-butyl ether and tertiary butyl alcohol. All wells containing free product do not need to sampled, however, the thickness of the product shall be reported.

Phase II - Soil

5. Berles Carton shall submit the following information, at a minimum, in the revised Cleanup Plan: all sources of contamination, original sample concentrations versus the target concentration for all areas of concern, the type of soil, volume of soil, volume of water, a list and the status of all necessary permits, confirmatory sampling frequency and parameters, results of laboratory and pilot feasibility studies, a time schedule for instituting all remediation steps and a revised cost estimate that reflects the conditions of this letter.

Phase II - Ground Water

6. Berles Carton shall submit a proposal which addresses the vertical delineation of the ground water contamination. The vertical delineation shall include the installation of one additional well downgradient of the most contaminated monitoring well and screened at the next depth interval from the existing monitoring wells.

7. Berles Carton shall address the remediation of the toluene and xylene ground water contamination detected in MW-5. It appears that the contamination may have originated from the underground gasoline tank adjacent to this well. The exact distance between MW-5 and the underground gasoline tank can not be determined from the site map submitted because the site map provides two different scales. Therefore, Berles Carton shall submit a corrected site map that provides one accurate scale.

ATTACHMENT T-73

8. Berles Carton shall contact the local sewerage authority regarding the ground water contamination detected in the production wells since this water is eventually discharged to the sanitary sewer as waste water. Also, oil was noted around the floor drain trench in the boiler room during the NJDEP geologists site inspection. Presently, Berles Carton only reports monthly COD and TSS values to the Passaic Valley Sewerage Authority. In addition, the discharge of any recovered ground water from the monitoring wells on site to a surface water body and/or sewers (storm, sanitary and industrial) is not permissible without proper authorization from the local authorities and the NJDEP.

9. Berles Carton shall submit the following ground water information for each well:

   Depth of Water
   Estimated water volume in well

   Purge date/Time
   Purge volume
   Depth to water after purging
   pH
   TDS

   Sample date/Time
   Depth to water before sampling
   pH
   TDS
   Comments (i.e. slow recharge, turbidity, odor, HNU/OVA readings, etc.)

10. Berles Carton shall not purge the ground water monitoring wells to dryness. The wells shall be sampled no later than two hours after the purging of the well.

11. Berles Carton shall submit monitoring well Certification Forms A and B. Form A (As-Built Certification) and Form B (Location Certification) shall be completed for each ground water monitoring well installed.

12. Berles Carton shall conduct a well survey within a half mile radius of the site locating all industrial, monitoring, domestic and municipal wells on a scaled site map. The well depths and logs for each well shall be included.

13. Berles Carton shall submit a ground water contour map that does not include monitoring wells with free product. A separate product thickness contour map shall be submitted using all the monitoring wells.

14. Berles Carton shall contact the Department at least two (2) weeks prior to soil sampling or the drilling of monitoring wells in order for an NJDEP Case Manager and/or geologist to be present.

15. Berles Carton shall obtain a NJPDES/DGW permit for the injection of treated ground water back to the aquifer. Since it will take three to four months for the final NJPDES permit to be issued,

Berles Carton shall apply within sixty (60) days of the Cleanup Plan approval for the NJPDES/DGW permit (see enclosed permit application).

16. Berles Carton shall delineate the ground water contamination plume and submit recovery well locations that will capture the entire plume. In addition, a pump test or slug test shall be conducted to determine specific aquifer characteristics. This information is needed for the design of the injection wells, determining the "capture zone" of the recovery wells and in evaluating how effective the proposed in-situ bioremediation of the ground water will be for this particular site.

If you have any questions, please contact the Case Manager, Jodi Ruff, at (609) 633-7141.

Very truly yours,

Dawn M. Pompeo, Section Chief
Bureau of Environmental Evaluation
and Cleanup Responsibility Assessment

JR/cam
c: V. DiGregorio, BEERA
S. Mitchell, BGWDC
M. Utzinger, Paterson Health Department
T. O'Brien, BEAC

ATTACHMENT T-75

ATTACHMENT U

RECOVERY TECHNOLOGY INDUSTRIES

PAPER BOARD SPECIALTY
177 Third Ave.
Paterson, N.J. 07514

ECRA #: 85317
Report Period: March 30, 1992 to April 10, 1992

To David Miele
N.J. D.E.P.E.- Industrial Site Evaluation Element

Prepared by
Recovery Technology Industries

April 14, 1992

ATTACHMENT U-1

400 Hamilton Avenue • Brooklyn, New York 11231 • NY (718) 237-2189 • NJ (201) 804-5768 • NY Fax (718) 858-7734

RECOVERY TECHNOLOGY INDUSTRIES

April 2, 1992

Paper Board Specialty
177 Third Avenue
Paterson, N.J. 07514

Schedule Of Events

As directed by N.J. D.E.P.E. Recovery Technology Industries is proceeding with the pumping of free product (Heavy oil & Water).

Since there are no utilities available at the site we are providing a generator to operate our equipment.

Gary Sanderson of N.J. D.E.P.E. made an inspection on March 30, 1992 to insure that the clean up was proceeding as per agreement worked out by Paper Board Specialty's attorney David Buinno and the N.J. D.E.P.E. at Trenton, N.J..

ATTACHMENT 4-2

100 Hamilton Avenue • Brooklyn, New York 11231 • NY (718) 237-2189 • NJ (201) 804-5768 • NY Fax (718) 858-7734

RECOVERY TECHNOLOGY INDUSTRIES

Cost of setup for mandated removal of oil & water from underground polluted water.

Initial set up: $ 5,000.00

1. Includes setting up pumps

2. Set up oil & water adding tanks 1000 gallon - 5000 gallon

3. Set up generator

4. All hoses and vacuum truck

5. Provide emergency oil clean up material

6. Provide 2 clean up operations

7. Provide record keeping and administration as required by Law (Office Staff Site Engineer.)

8. Transmit to N.J. D.E.P.E. all requested data, manifest and time sheets pertaining to work in progress.

A **DAILY RATE** of - $ 1,000.00
Providing operation on an emergency basis.

A **REMOVAL CHARGE** of $ .90 per gallon of oil/water mix as listed on the truck manifest.

ATTACHMENT U-3

400 Hamilton Avenue • Brooklyn, New York 11231 • NY (718) 237-2189 • NJ (201) 804-5768 • NY Fax (718) 858-7734

RECOVERY TECHNOLOGY INDUSTRIES

Please find attached our daily logs for Paper Board Specialty.

Pumping Free Product

Exhibit 1 - Daily time sheets

Exhibit 2 - Manifests covering oil/water mix removed from site for 1992.

Exhibit 3 - Fingerprint analysis of oil in ground water, Location (Well #: PW-2).

Exhibit 4 - August, 1991 Daily Logs.

Exhibit 5 - Manifest for 1991 oil removal from Paterson site.

Spill report given to operator #6 N.J. Hotline April 7, 1:30PM, 92-4-6-12-24-16. Possible leaking underground tank or line in main building. Possible that it is feeding oil into the ground. R.T.I. notified the owners attorney, David Buinno at (201) 992-1100. R.T.I. does not have access to the buildings interior at this time, due to the fact that the company is not in service.

ATTACHMENT U-4

400 Hamilton Avenue • Brooklyn, New York 11231 • NY (718) 237-2189 • NJ (201) 804-5768 • NY Fax (718) 858-7734

RECOVERY TECHNOLOGY INDUSTRIES

Attached to this document you will find legal documents and agreements between R.T.I. and Paper Board Specialty as filed. Also invoice records to date.

The following are the operational procedures presently being used by R.T.I..

1 - Well #: BEC-2D is being pumped out on a daily basis at a rate of 5 gpm removing oil/water mix. A 15 minute shut down per hour is required to allow recharge.

2 - Oil continues to appear in undiminished amounts indicating that further pumping is required.

3 - R.T.I. is not able to produce a cleanup plan for this site at this present time due to the fact that the property is in the process of reorganization.

4 - Further deliniation of a cleanup plan will require instructions from the owners attorney David Biunno.

5 - R.T.I. presently has a 6,000 gallon storage tank on site.

6 - R.T.I. also has a 4 KW generator with all necessary pumps and hoses. Reason being there are no operating utilities on site.

7 - R.T.I. is supplying labor to proceed with pumping and monitoring of the free product.

ATTACHMENT U-5

400 Hamilton Avenue • Brooklyn, New York 11231 • NY (718) 237-2189 • NJ (201) 804-5763 • NY Fax (718) 858-7734

RECOVERY TECHNOLOGY INDUSTRIES

Recovery Technology Industries will continue to operate the clean up for no longer than 30 days, unless further directed by the N.J. D.E.P.E. at the disgression of Paper Board Specialties attorney, David Buinno.

All work is to be billed weekly and paid in a timely manner, no later than 15 days from receipt of the bill at your office.

Failure to adhere to D.E.P.E. guide lines could place your site into enforcement by the state, resulting in fines.

Payment Due - $5,000.00 on set up

Daily - $1,000.00

Gallons Manifested - $ .90 per gallon on receipt of manifest

copy to: David Biunno
Gary Sanderson N.J. D.E.P.E.
William Oeters

ATTACHMENT 4-6

400 Hamilton Avenue • Brooklyn, New York 11231 • NY (718) 237-2189 • NJ (201) 804-5768 • NY Fax (718) 858-7734

ATTACHMENT V

Let's protect our earth

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
Lance R. Miller, Acting Director
CN 028
Trenton, N.J. 08625-0028
(609) 633-7141
Fax # (609) 633-1454

IN THE MATTER OF
CHINA NATIONAL PACKAGING
CORPORATION OF BEIJING, INC.,
OF THE PEOPLES REPUBLIC OF
CHINA AND CHIN AM, INC.

NOTICE OF VIOLATION OF AN
ADMINISTRATIVE CONSENT ORDER
AND OFFER OF SETTLEMENT

ECRA CASE #85317

This NOTICE OF VIOLATION OF AN ADMINISTRATIVE CONSENT ORDER AND OFFER OF SETTLEMENT is issued pursuant to the authority vested in the Commissioner of the New Jersey Department of Environmental Protection (hereinafter "NJDEP") by N.J.S.A. 13:1D-1 et seq. and the Environmental Cleanup Responsibility Act, ("ECRA") N.J.S.A. 13:1K-6 et seq., and duly delegated to the Assistant Director, Industrial Site Evaluation Element of the Division of Waste Management pursuant to N.J.S.A. 13:1B-4.

FINDINGS

1. Berles Carton Co., a New Jersey Corporation operated a cardboard manufacturing facility located at 177-302 Third Avenue and 186-218 Third Avenue, Paterson City, Passaic County; said site being currently owned by Chin Am, Inc.; said site being further known as Blocks 428, 429, 445, 454, Lot 1; on the tax map of the City of Paterson ("Paterson facility"). The Standard Industrial Classification ("SIC") number which best described the operations at the Paterson facility is 2631. Furthermore, Berles Carton Co. handled hazardous substances or wastes, as defined by ECRA, during its ownership and operation of the Paterson facility. The Paterson facility is an Industrial Establishment as defined by ECRA.

2. On or about September 10, 1985, Berles Carton Co. entered into an agreement to sell the real property at the Paterson facility to the China National Packaging Corporation of Beijing, Inc., of the Peoples Republic of China ("China National Corporation"). Upon completion of the aforementioned transaction, Chin Am, Inc., a wholly-owned subsidiary of the China National Corporation, shall own and operate the Paterson facility.

3. On January 2, 1986, Chin Am, Inc., China National Corporation and NJDEP entered into an Administrative Consent Order ("CHC ACO") which allowed the above described sale to be consummated prior to the completion of all the ECRA requirements, and specified a time schedule for completion of ECRA requirements by the Paterson facility. Chin Am, Inc., China National Corporation

ATTACHMENT V-1

and NJDEP expressly agreed that the sale of the Paterson facility was subject to ECRA.

4. Pursuant to Paragraph 9.E of the CHC ACO, Chin Am, Inc. and China National Corporation agreed that should NJDEP determine that any submittal made under Paragraph 9 of the CHC ACO is inadequate or incomplete, then NJDEP shall provide Chin Am, Inc. and/or China National Corporation with written notification of the deficiency(ies), and Chin Am, Inc. and/or China National Corporation shall revise and resubmit the required information within a reasonable period of time not to exceed thirty (30) days from receipt of such notification.

5. On or about February 25, 1987, Dawn Pompeo of the Bureau of Environmental Evaluation and Cleanup Responsibility Assessment ("BEECRA") inspected the Paterson facility.

6. NJDEP sent its inspection report dated March 9, 1987, which was received on or about March 12, 1987, by Dr. Andy Chen, of Technical Resources, Inc., the designated agent for Chin Am, Inc. and China National Corporation ("Agent").

7. On or about December 6, 1988, NJDEP received a Cleanup Plan Proposal for the Paterson facility, dated December 5, 1988.

8. By letter dated May 11, 1989, NJDEP addressed the findings of its review of the Cleanup Plan Proposal for the Paterson facility, dated December 5, 1988, and all of the prior data report submissions dated September 28, 1988, October 27, 1988, and November 16, 1988. This May 11, 1989 NJDEP letter had to undergo an amendment dated May 30, 1988.

9. On May 30, 1989, NJDEP sent to the Agent, via telefax, the newly amended May 11, 1988 letter, dated May 30, 1989, which included a comment that the original time frames as outlined in the original May 11, 1988 letter still were in effect.

10. NJDEP sent its amended letter dated May 30, 1989, which was received on or about June 9, 1989, by Alfred F. Koller, Esq. In this letter, NJDEP again addressed its findings as referenced in the May 11, 1989 letter in Paragraph 8 of this NOTICE OF VIOLATION OF AN ADMINISTRATIVE CONSENT ORDER AND OFFER OF SETTLEMENT and expressed that the entire Cleanup Plan for the Paterson facility could not be approved. NJDEP thereby specified that Chin Am, Inc. and/or China National Corporation submit a Revised Cleanup Plan to the Department within thirty (30) days after receipt of the original May 11, 1989 letter. Additionally, NJDEP specified that Chin Am, Inc. and/or China National Corporation shall implement the Phase I soil and ground water Sampling activities as referenced in the Cleanup Plan Proposal dated December 5, 1988 immediately after receipt of the May 11, 1989 letter. Finally, NJDEP required that Chin Am, Inc. and/or China National Corporation submit to this office soil and ground water Sampling results from Phase I Sampling activities within ninety (90) days after receipt of the May 11, 1989 letter.

11. On June 15, 1989, NJDEP received a letter dated June 12,

ATTACHMENT V-2

1989, from Mr. Koller requesting a thirty (30) day extension for implementation of the Phase I soil and ground water Sampling activities referenced in the Cleanup Plan Proposal dated December 5, 1988. Mr. Koller specified that the extension was necessary because Chin Am, Inc. and/or China National Corporation did not have sufficient funds to implement the required Phase I soil and ground water Sampling activities and was in the negotiating process to obtain a buyer for the Paterson facility in order to obtain such funds.

12. By letter dated July 28, 1989, which was received on or about August 1, 1989, by Mr. Koller, NJDEP denied the above referenced extension request.

13. On July 28, 1989, NJDEP received the required Revised Cleanup Plan (entitled 'Phase II Biological Remediation Plan'), which was originally due on June 13, 1989.

14. On October 3, 1989, a telephone conversation between Ms. Ruff and Mr. Koller yielded that the Phase I soil and ground water Sampling activities as referenced in the Cleanup Plan Proposal dated December 5, 1988 had not been initiated as of October 3, 1989.

15. By letter dated October 20, 1989, which was received on or about October 25, 1989, by Mr. Koller, NJDEP commented upon its findings of its review of the Revised Cleanup Plan (entitled 'Phase II Biological Remediation Plan') dated July 27, 1989. NJDEP informed Chin Am, Inc. and/or China National Corporation that there were inconsistencies within the report that needed to be addressed. Additionally, NJDEP informed Chin Am, Inc. and/or China National Corporation that a contingency plan for cleanup alternatives was not included in the Revised Cleanup Plan (entitled 'Phase II Biological Remediation Plan'), dated July 27, 1989. Therefore, NJDEP could not grant approval to the Cleanup Plan for the Paterson facility. NJDEP thereby requested that Chin Am, Inc. and/or China National Corporation submit a second Revised Cleanup Plan, which would incorporate the specific deficiencies described in this October 20, 1989 letter, including a contingency plan, within thirty (30) days after receipt of the October 20, 1989 letter.

16. On or about November 26, 1989, NJDEP received a letter dated November 20, 1989, from Mr. Donald Bello, the newly designated environmental counsel ("Counsel"), requesting an extension for the submission of the second revised Cleanup Plan as referenced in NJDEP's October 20, 1989 letter.

17. By letter dated December 8, 1989, which was received on or about December 12, 1989, by Counsel, NJDEP granted the above referenced extension request until January 4, 1989. This extension was granted only for the submission of a second Revised Cleanup Plan for the Paterson facility as referenced in NJDEP's October 20, 1989 letter.

18. To date, Chin Am, Inc. and/or China National Corporation has not implemented the required Phase I soil and ground water

ATTACHMENT V-3

Sampling activities, which were to have been initiated immediately after receipt of the May 11, 1989, amended May 30, 1989 letter. Additionally, to date, the Department is not in receipt of the required soil and ground water Sampling results of the Phase I Sampling activities as referenced in the Cleanup Plan Proposal dated December 5, 1988. These violations are on-going.

19. Paragraph 11.E of the CHC ACO provides that; In the event that Chin Am, Inc. or China National Corporation fails to comply with any of the provisions of this Administrative Consent Order, Chin Am, Inc. and/or China National Corporation shall pay to NJDEP stipulated penalties in the amount of $5,000.00 for each day on which Chin Am, Inc. and/or China National Corporation fails to comply with any obligation under this Administrative Consent Order provided, however, that no such stipulated penalty shall be payable by Chin Am, Inc. and/or China National Corporation with respect to such period that said failure to comply results from Force Majeure.

20. Based on the above findings, NJDEP has determined that Chin Am, Inc. and China National Corporation failed to implement the required Phase I soil and ground water Sampling activities as referenced in the Cleanup Plan Proposal dated December 5, 1988, and have failed to submit the required soil and ground water Sampling results of the Phase I Sampling activities at the Paterson facility within the time frame specified by NJDEP in violation of Paragraph 9.E of the CHC ACO.

21. Based on the findings, NJDEP hereby gives notice that Chin Am, Inc. and China National Corporation have violated Paragraph 9.E of the CHC ACO, and continued to be out of compliance for a period of one hundred-ninety-six (196) days as of December 28, 1989.

OFFER OF PENALTY SETTLEMENT

22. NJDEP may settle any claim for a penalty pursuant to ECRA or N.J.A.C. 7:26B-9.3. NJDEP will accept a payment in full settlement of this matter in the amount of $980,000.00 for the violations referenced in this NOTICE OF VIOLATION OF AN ADMINISTRATIVE CONSENT AND OFFER OF SETTLEMENT subject to the following conditions:

a. If NJDEP receives payment of $980,000.00 within twenty (20) calendar days after receipt of this NOTICE OF VIOLATION OF AN ADMINISTRATIVE CONSENT ORDER AND OFFER OF SETTLEMENT:

b. Payment shall be made by a certified or cashier's check payable to "Treasurer, State of New Jersey" and shall be submitted together with a copy of this NOTICE OF VIOLATION OF AN ADMINISTRATIVE CONSENT ORDER AND OFFER

ATTACHMENT V-4

OF SETTLEMENT to:

New Jersey Department of Environmental Protection
Bureau of Revenue - DFMPGS
CN 402
401 East State Street
Trenton, New Jersey 08625

c. Payment shall be made by certified mail, return receipt requested or by hand delivery.

Failure to comply with these conditions shall result in this Offer of Settlement being automatically rescinded by the Department. Notice is given that in such event, NJDEP shall immediately refer this matter to the Office of the Attorney General to initiate a civil action for collection of the maximum statutory penalties allowed by ECRA and to seek all other appropriate relief.

23. Except as provided in Paragraph 22 regarding submission of payment to NJDEP, all submissions, questions or other contact with NJDEP pursuant to this NOTICE OF VIOLATION OF AN ADMINISTRATIVE CONSENT ORDER AND OFFER OF SETTLEMENT should be addressed to:

Bureau of ECRA Applicability and Compliance
Division of Hazardous Waste Management
CN 028
Trenton, New Jersey 08625
Attention: Barbara S. Murray, Chief
(609) 633 - 7141

RESERVATION OF RIGHTS

24. Notice is given that this NOTICE OF VIOLATION OF AN ADMINISTRATIVE CONSENT ORDER AND OFFER OF SETTLEMENT is issued only for the violations and period identified hereinabove and that violations of any statutes, rules or permits other than those herein cited may be cause for enforcement actions, either administrative or judicial, being instituted without further notice. By issuing this NOTICE OF VIOLATION OF AN ADMINISTRATIVE CONSENT ORDER AND OFFER OF SETTLEMENT, NJDEP does not waive its right to initiate enforcement actions.

25. Notice is further given that Chin Am, Inc.'s and/or China National Corporation's payment pursuant to this NOTICE OF VIOLATION OF AN ADMINISTRATIVE CONSENT ORDER AND OFFER OF SETTLEMENT shall not relieve Chin Am, Inc. and China National Corporation of their obligation to comply with ECRA and N.J.A.C. 7:26B and the above Administrative Consent Order.

ATTACHMENT V-5

NJDEP's acceptance of any payment made pursuant to this NOTICE OF VIOLATION OF AN ADMINISTRATIVE CONSENT ORDER AND OFFER OF SETTLEMENT shall not constitute a waiver by NJDEP of its right to compel Chin Am, Inc. and/or China National Corporation to specifically perform their obligations under ECRA, N.J.A.C. 7:26B and the above referenced Administrative Consent Order, or of any right it may have to void a sale or transfer of an industrial establishment pursuant to ECRA and N.J.A.C. 7:26B and NJDEP expressly reserves those rights.

Date: 1/16/90

Karl Delaney, Assistant Director, Industrial Site Evaluation Element

cc: Kenneth T. Hart, Chief, BEECRA
Barbara S. Murray, Chief, BEAC
Jodi Ruff, BEECRA

ATTACHMENT V-6