NEWARK BAY STUDY AREA

# ADDITIONAL SITES AND CANDIDATE PRPS FOR THE NEWARK BAY STUDY AREA

VOLUME I OF III

PRP DATA EXTRACTION FORM AND EVIDENCE CONCERNING:

**CENTRAL STEEL DRUM COMPANY, INC.**
**NEWARK SITE**

PREPARED BY:
TIERRA SOLUTIONS, INC.

SUBMITTED TO:
USEPA REGION II

MARCH 2008

99723

**NEWARK BAY STUDY AREA**
**PRP DATA EXTRACTION FORM**

# *Central Steel Drum Company, Inc. Newark, New Jersey Site*

**CANDIDATE PRP(S):**

In 1997, the United States Environmental Protection Agency ("USEPA") sent "Request for Information Pursuant to Section 104(e) of CERCLA, 42 U.S.C. § 9604(e)" letters to over 300 parties in order to determine if they had transacted any business with the Central Steel Drum Company for the disposal, treatment or storage of any drums or other containers. Responses indicated that the entities listed below sent drums to the Central Steel Drum facility; and those with an asterisk (*) are associated with specific hazardous substances as discussed hereafter in this Data Extraction Form ("DEF").

- Akzo Nobel Coatings, Inc. (successor to Reliance Universal, Inc.)*
- American Inks & Coatings Corporation
- Armstrong World Industries, Inc.*
- American National Can Group, Inc. (successor to American National Can Company)
- APOLAN International, Inc. (f/k/a Atlantic Polymers & Products, Inc.)*
- BASF Corporation
- Borden & Remington Corp.*
- Borden Chemical, Inc.*
- Chiyoda America Inc.*
- Ciba Specialty Chemicals Holding Inc. (for Ciba Geigy Corporation, Pigments Division)*
- Congoleum Corporation*
- Del Val Ink & Color, Inc.*
- Houghton International Inc. (f/k/a E.F. Houghton & Co., Inc.)
- Flint Group Germany GmbH (for Flint Ink Corporation)
- Georgia-Pacific Corporation (successor to Fort James Corporation for CZ Inks)*
- Mace Adhesives & Coating Co., Inc.*
- INX International Ink Co. (successor to Midland Color Co.)*
- Minnesota Mining & Manufacturing Co. (3M)*
- Sun Chemical Corporation (for Converters Ink Company, General Printing Ink and US Ink)*
- Valspar Corporation (successor to Lilly Industries, Inc. for Guardsman Products, Inc.)
- R.T. Vanderbilt Company, Inc. (for Vanderbilt Chemical Corporation)*

BBH000001, BBH000004, BBH000005, BBH000006, BBH000007, BBH000008, BBH000009, BBH000010, BBH000011, BBH000012, BBH000013, BBH000014, BBH000015, BBH000016, BBH000017, BBH000018, BBH000019, BBH000020, BBH000021, BBH000022, BBH000023, BBH000024

Other evidence reviewed to date indicates The Sherwin Williams Company sent drums to the Central Steel Drum Company and should be considered a PRP. BBG000037, BBG000120

**CURRENT MAILING ADDRESS/CONTACT INFO FOR PRP(S):**

PRPs known associated with specific hazardous substances at the Site:

**Akzo Nobel Coatings, Inc.**
**Robert J. (Bob) Margevich**
1313 Windsor Avenue
Columbus, OH 43216

**Armstrong World Industries, Inc.**
**Michael D. Lockhart, Chairman & CEO**
2500 Columbia Avenue
Lancaster, PA 17604

**APOLAN International**
**Peter Graefe, President**
P.O. Box 790
Oakhurst, NJ 07755

**Borden & Remington Corp.**
**Daniel Bogan, President and CEO**
63 Water Street
Fall River, MA 02721

**Borden Chemical, Inc.**
**Craig O. Morrison, President and CEO**
180 E. Broad Street
Columbus, OH 43215

**Chiyoda America Inc.**
**John S. Sato, President**
378 Thousand Oaks Boulevard
Morgantown, PA 19543

**Ciba Specialty Chemicals Holding Inc.**
**Armin Meyer, Chairman**
540 White Plains Road
Tarrytown, NY 10591

**Congoleum Corporation**
**Roger S. Marcus**
3705 Quakerbridge Road
Mercerville, NJ 08619

**Del Val Ink and Color Incorporated**
**Frank A. Hamel, Jr., President**
1301 Taylor's Lane
P.O. Box 155
Cinnaminson, NJ 08077

**Georgia-Pacific Corporation**
**James (Jim) Hannan, President, CEO and COO**
133 Peachtree Street NE
Atlanta, GA 30303

**Mace Adhesives and Coatings Co., Inc.**
**James F. Gilloran, President**
38 Roberts Road
P.O. Box 37
Dudley, MA 01571

**INX International Ink Co.**
**Rick Clendenning, President**
150 N. Martingale Road
Schaumburg, IL 60173

**Minnesota Mining & Mfg. Co. (3M)**
**George W. Buckley, Chairman, President and CEO**
3M Center
St. Paul, MI 55144

**The Sherwin Williams Company**
**John G. Morikis, President and COO**
101 Prospect Avenue NW
Cleveland, OH 44115

BBI000001, BBI000003, BBI000005, BBI000007, BBI000008, BBI000009, BBI000010, BBI000011, BBI000012, BBI000015, BBI000016, BBI000018, BBI000019, BBI000020, BBI000022

PRPs associated with the Site but specific hazardous substances not yet identified:

**American Inks and Coatings Corp.**
**William P. Rimel, III, President and CEO**
P.O. Box 803
Valley Forge, PA 19482
330 Pawling Road
Phoenixville, PA 19460

**American National Can Group, Inc.**
**Curtis J. Clawson, President and COO**
8770 West Bryn Mawr Avenue
Chicago, IL 60631

**BASF Corporation**
**Kurt W. Bock, Chairman and CEO**
100 Campus Drive
Florham Park, NJ 07932

**Houghton International Inc.**
**William F. (Bill) MacDonald, Jr., Chairman, President and CEO**
Madison and Van Buren Avenues
Valley Forge, PA 19482

**Flint Group Germany GmbH**
**Michael J. Gannon, President and COO**
14909 Beck Road
Plymouth, MI 48170

**The Valspar Corporation**
**William L. (Bill) Mansfield, Chairman, President and CEO**1101 3rd Street South
Minneapolis, MN 55415

BBI000002, BBI000004, BBI000006, BBI000013, BBI000014, BBI000017, BBI000021

**FACILITY ADDRESS:**

The street address of the former Central Steel Drum Company, Inc. ("CSD") site (the "Site") is:

704-738 Doremus Avenue
Newark, Essex County, New Jersey 07105

Also reported as:

843-871 Delancy Street
Newark, Essex County, New Jersey 07105

The Site is comprised of a tract of land, approximately 8.5 acres in size, identified as Block 5074, Lot 1 on the City of Newark, NJ tax map. The Site, located at the corner of Doremus Avenue and Delancy Street, is bounded by Delancy Street and the Motiva Enterprises Newark Terminal petroleum storage facility to the north; the Propane Power Corporation to the northeast and east, along with the Newark Police Firearms Training Facility, Ironbound Intermodal Industries and the Hess Newark Terminal; a Conrail right-of-way and railroad tracks, Doremus Avenue and the Passaic Valley Sewerage Commissioners ("PVSC") treatment plant to the west-northwest; and an unnamed drainage ditch and a commuter/freight railroad yard and rail lines to the south-southwest. The drainage ditch extends along the south end of the Site from Doremus Avenue eastward for approximately 2,300 feet to Newark Bay. BBG000111, BBG000129, BBG000133, BBG000188, BBG000192

The location of the drainage ditch, as taken from NJDEP 2000 Orthophotographs, is depicted on the following aerial photograph. Historical drainage, as taken from 1941 and 1956 Essex County Mosquito Extermination Commission maps, is also shown on the aerial photograph. BBG000192, BBJ000001, BBJ000002

The approximate locations of the Site and drainage features are shown on the following annotated aerial photograph:

**Central Steel Drum Company, Inc.**
704 Doremus Avenue
Newark, Essex County, New Jersey

Aerial Photograph Copyright 2008
Photo Source: Google Earth (Sanborn/Tele Atlas/State of NJ)

Site boundary line locations as shown are approximations

**FINANCIAL VIABILITY** (annual revenue, # of employees)**:**

CSD filed for bankruptcy in January 1993 and discontinued incineration operations at the Site in February 1994. BBG000054, BBH000002

USEPA conducted an emergency removal action at the Site from October 1997 to January 1998, which included the removal of thousands of drums, ash piles, debris, asbestos, and visibly contaminated surface soils. In November 1997, USEPA sent "Request for Information Pursuant to Section 104(e) of CERCLA, 42 U.S.C. § 9604(e)" letters to over 300 parties in order to determine if they had transacted any business with CSD for the disposal, treatment or storage of any drums or other containers. As discussed in the previous Candidate PRP(s) section, numerous parties were identified as having sent drums to the CSD facility. To date, however, there appears to have been no cost recovery efforts by EPA against any of those PRPs who sent drums and hazardous substances to the Site. BBH000001

The Candidate PRPs identified above all appear to be existing, operating entities. BBI000001, BBI000002, BBI000003, BBI000004, BBI000005, BBI000006, BBI000007, BBI000008, BBI000009, BBI000010, BBI000011, BBI000012, BBI000013, BBI000014, BBI000015, BBI000016, BBI000017, BBI000018, BBI000019, BBI000020, BBI000021, BBI000022

**DATES OF OPERATION** (include info. on predecessors/successors if known)**:**

Available information documents the following key dates in the corporate successorship and the history of the operations at the CSD Site:

- 1902-1922: The Site was originally occupied by The Land Filling & Improvement Company.

- 1922-1951: The Site was occupied by a number of ink manufacturing concerns, including International Inks, Inc., The International Printing Ink Corporation, Philip Ruxton, Inc., and Interchemical Corporation.

- 1951-1952: In 1951, the Site was purchased from Interchemical Corporation by Bessie Baron, Mollie Ratner, Dorothy Greenberg, and Ruth Greenberg.

  Leo Baron, Bessie Baron's husband, began operating a drum reconditioning facility under the name Central Steel Drum Company on the Site in 1952.

- 1965-1968: In April 1965, Baron, Ratner and the Greenbergs incorporated Dore Realty Company, Inc. ("Dore Realty"), with themselves as principals, and transferred ownership of the Site to Dore Realty.

  In 1966, CSD was incorporated in the State of New Jersey and a group headed by Abbie Greenberg (Ruth Greenberg's husband) acquired the operations and the name Central Steel Drum Company from Leo Baron. CSD leased the Site from Dore Realty.

  In July 1966, Bessie Baron, Dorothy Greenberg, Mollie Ratner, Ruth

Greenberg and Abbie Greenberg purchased the Site from Dore Realty. On that same day, Dore Realty was dissolved. As a result, CSD leased the Site from Baron, Ratner, and the Greenbergs.

In July 1968, Bessie Baron, Mollie Ratner, and Dorothy Greenberg bought out Abbie and Ruth Greenberg's shares of the Site and retained full ownership of the Site.

Subsequently (the exact date unknown) the group headed by Abbie Greenberg conveyed the CSD operations to a group identified as: Allen Fischer, President; Gerry Greenberg (Dorothy Greenberg's son) and Edward Fischer, Vice-Presidents; Neil Fischer, Secretary; and Jeffrey Skuraton, Treasurer.

- 1979-1985: In 1979, NJDEP became involved with the Site when the Department received an anonymous complaint of illegal waste disposal practices at the Site, namely the burying of incinerator ash at the back of the Site. NJDEP began Site inspections in 1980 that continually disclosed full drums on-Site, numerous spills on the ground, poor operating practices, and generally sloppy housekeeping. From that time forward, NJDEP issued numerous Notices of Violation, Administrative Orders, and Administrative Penalties to CSD for violations noted during Site inspections; however, none of the penalties were paid.

  In March 1980, CSD was issued a Notice of Prosecution by NJDEP for engaging in the unauthorized disposal of solid waste (incinerator ash), specifically chemical waste, on Site.

  In 1983, NJDEP referred CSD to Criminal Justice for a criminal investigation and to the Attorney General for an injunction against CSD for numerous violations of the Solid Waste Management Act.

  On November 25, 1983, EPA issued CSD a Consent Agreement and Final Compliance Order for a number of RCRA violations, and required an investigation into Site contamination and the development of a remediation program under the direction of NJDEP. This case subsequently became inactive in 1985.

- 1988: In 1988, Jane Ratner-Mattson and Marian Ratner-Abrams inherited Mollie Ratner's shares in the Site.

- 1993: On January 7, 1993, NJDEP entered into a Judicial Consent Order ("JCO") with Central Steel Drum, Dorothy Greenberg, Bessie Baron, Jane Ratner-Mattson, and Marian Ratner-Abrams for the remediation of all pollution at, or emanating from, or previously emanating from, CSD's drum reconditioning facility.

  On January 11, 1993, CSD filed a Petition for Reorganization under Chapter 11 of the Bankruptcy Code.

- 1994: On February 10, 1994, NJDEP enter into an Amended JCO with Central Steel Drum, et al that required CSD to completely cease its drum incinerating operations at the Site as a result of numerous Air Pollution Control Act violations.

  CSD shut down the incinerator operations on February 16, 1994; however, the plant continued partial operations, processing inventory through April 1, 1994.

  CSD and the property owners abandoned the Site sometime in 1994.

- 1996-1998: In October 1996, the City of Newark foreclosed on the Site due to tax default.

  USEPA conducted an emergency removal action at the Site from October 1997 to January 1998, which included the removal of thousands of drums, ash piles, debris, asbestos, and visibly contaminated surface soils. No subsurface soil or groundwater remediation was conducted during the removal action. At the conclusion of EPA's activities, control of the Site was returned to the City of Newark.

  In November 1997, USEPA sent "Request for Information Pursuant to Section 104(e) of CERCLA, 42 U.S.C. § 9604(e)" letters to over 300 parties in order to determine if they had transacted any business with the Central Steel Drum Company for the disposal, treatment or storage of any drums or other containers.

  The City of Newark signed a Memorandum of Agreement ("MOA") with NJDEP, effective June 15, 1998, to conduct a remedial investigation as part of their continuation of the Brownfields redevelopment initiative at the Site.

- 2006: The City of Newark adopted a Resolution on October 4, 2006 designating Glopak Corporation as the redeveloper of the Site.

BBG000022, BBG000054, BBG000106, BBG000133, BBG000141, BBG000147, BBG000154, BBG0000155, BBG000156, BBG000167, BBG000174, BBG000184, BBG000188, BBG000195, BBG000222, BBG0000225, BBG000227, BBH000001, BBH000002, BBH000003

**DESCRIPTION OF FACILITY OPERATIONS** (list CERCLA hazardous substances used, manufactured or present)**:**

CSD's operations consisted of the reconditioning of steel drums that contained residues of paints, foods, organic and inorganic chemicals including hazardous substances. Operations involved storage of drums, drum incineration (to burn residues and paint), sand blasting, and painting of drums. CSD received used drums, reportedly many still containing wastes, from various industries, including the food, paint, adhesives, and ink industries. CSD processed approximately 3,000 thirty- and fifty-five-gallon drums per day, and daily received used drum shipments of varying quantities. NJDEP noted in the 1993 JCO that it is estimated that there had

been as many as 35,000 to 60,000 drums on Site at any one time. CSD claimed that it was their business practice to accept only "empty drums" – those containing 1 inch or less of residue. However, USEPA and NJDEP inspections have documented the acceptance and presence of partially and completely full drums. BBG000111, BBG000133, BBG000167

The following hazardous substances and materials (without limitation) have been associated with the noted PRPs:

- 1,4-Butanediol [APOLAN Intl.]
- 2-Ethylhexanol [Armstrong World Industries]
- 1-Methoxy-2-acetoxypropane [Akzo Noble Coatings]
- 1,1,1-Trichloroethane [Armstrong World Industries]
- 1,2,4-Trimethylbenzene [Akzo Nobel Coatings]
- Acetone [Borden & Remington, Del Val Ink]
- Aluminum sulfate [Ciba Specialty Chemicals]
- Butyl benzyl phthalate {Armstrong World Industries]
- Chlorobenzene [Armstrong World Industries]
- Chlorinated polyolefin [Armstrong World Industries]
- Chlorinated solvent based inks (1,1,1-trichloroethane, cyclohexanone and other ingredients) [Congoleum Corp.]
- Dibutyl amine [R.T. Vanderbilt]
- Dibutyl phthalate [Del Val Ink]
- Diisobutylamine [R.T. Vanderbilt]
- Diphenylmethane diisocyanate [APOLAN Intl.]
- Ethanol [Borden Chemical, Mace Adhesives, INX]
- Ethylbenzene [Del Val Ink, 3M]
- Ethylene glycol [R.T. Vanderbilt]
- Ethylene glycol butyl ether [Akzo Nobel Coatings]
- Hexane [R.T. Vanderbilt]
- Isopropanol [Borden Chemical, INX]
- Isopropyl alcohol [Akzo Nobel Coatings, Congoleum Corp., Mace Adhesives, R.T. Vanderbilt]
- Manganese compounds [INX]
- Methanol [R.T. Vanderbilt]
- Methylene Chloride [Borden & Remington, R.T. Vanderbilt]
- Methyl ethyl ketone ("MEK") [Congoleum Corp., Borden & Remington, Borden Chemical, Chiyoda America, Mace Adhesives, 3M, Sun Chemical, R.T. Vanderbilt]
- MEK solvent based inks (MEK, cyclohexanone and other ingredients) [Congoleum Corp.]
- Octylphenoxypolyethoxyethanol [Armstrong World Industries]
- Pentanedioic acid (dimethyl glutarate) [Ciba Specialty Chemicals]
- Petroleum distillates [INX]
- Plasticizer (butyl benzyl phthalate) [Congoleum Corp.]
- Polyvinyl chloride resins [Congoleum Corp.]
- Solvent- and water-based inks [Georgia-Pacific]
- Solvents (acetates and alcohols) [Georgia-Pacific, Sun Chemical]
- Tetra hydro furan [Congoleum Corp.]

- Toluene [Congoleum Corp., Borden & Remington, Chiyoda America, Del Val Ink, Mace Adhesives, 3M, Sun Chemical]
- Vyns-3 (vinyl chloride, vinyl acetate) [Congoleum Corp.]
- Water based inks (latex, isopropyl alcohol and other ingredients) [Congoleum Corp.]
- Xylene [Akzo Nobel Coatings, Armstrong World Industries, Borden & Remington, Chiyoda America, Del Val Ink, 3M]

BBH000004, BBH000006, BBH000008, BBH000010, BBH000011, BBH000012, BBH000013, BBH000014, BBH000015, BBH000018, BBH000019, BBH000024

The drum recycling process consisted of flipping the drums over and allowing the contents to drain on the ground, and then placing the inverted drums on a conveyor line that moved them through the drum incinerator, where the residues inside the drums were burned at approximately 2,000$^{o}$F. As a result of the incineration process, a sludge was generated that was accumulated by a scraper belt into an open bin. Sludge not removed by the scrapers was removed by hand and put into drums. The bin and drum contents were then put into the sludge incinerator where they were heated to a temperature range of 2,000$^{o}$F to 2,600$^{o}$F for 8 hours. The resultant ash was accumulated in piles 4 to 5 feet high and 15 feet in diameter, with no protection from wind or rain. Some of the ash was transported off-Site, but most of it was broadcast throughout the Site to fill in potholes and the wetland areas near the drainage ditch. BBG000111, BBG000133, BBG000167

The incinerator residue (ash) was analyzed in 1981 and found to contain the following inorganic/metal contaminants at the levels indicated:

- Arsenic at 2.86 parts per million ("ppm")
- Barium at 610 ppm
- Cadmium at 48.3 ppm
- Chromium at 870 ppm
- Copper at 6,165 ppm
- Lead at 9,000 ppm
- Mercury at 0.093 ppm
- Molybdenum at 922 ppm
- Nickel at 120 ppm
- Selenium at 0.093 ppm
- Silver at 0.083 ppm

BBG000120

In 1979, NJDEP became involved with the Site when the Department received an anonymous complaint of illegal waste disposal practices at the Site, namely the burying of incinerator ash at the back of the Site. NJDEP began Site inspections in 1980 that continually disclosed full drums on-Site, numerous spills on the ground, poor operating practices, and generally sloppy housekeeping. From this time forward, NJDEP issued numerous Notices of Violation and Administrative Orders to, and levied Administrative Penalties upon, CSD for violations noted during Site inspections. BBG000195, BBG000227

In March 1980, CSD was issued a Notice of Prosecution by NJDEP for engaging in the unauthorized disposal of solid waste (incinerator ash), specifically chemical waste, on-Site. BBG000174

In 1981, USEPA conducted a Site inspection and noted the presence of full drums, spillage, and sloppy housekeeping. As a result, USEPA followed-up in 1982 with the issuance of a Complaint and Compliance Order relating to CSD's violation of RCRA, and its illegal treatment of incinerator ash and sludge. BBG000195

In 1983, NJDEP referred CSD to Criminal Justice for a criminal investigation, and to the Attorney General for an injunction against CSD for numerous violations of the Solid Waste Management Act. A 1990 New Jersey Division of Law memorandum indicated that the files did not contain the result of these referrals. BBG000195

In 1994, NJDEP shut the facility down as a result of Air Pollution Control Act violations, and CSD and the property owners abandoned the Site. NJDEP reported that approximately 50,000 gallons of hazardous waste in thousands of drums, many in deteriorating condition, were abandoned on-Site between the facility shut down in 1994 and the commencement of the USEPA emergency removal action in 1997. Some of the drums were located directly on the ground, while others were in abandoned truck trailers. BBG000133, BBG000141, BBG000188

In October 1996, the City of Newark foreclosed on the Site due to tax default. BBG000147

USEPA conducted an emergency removal action at the Site from October 1997 to January 1998, which included the removal of thousands of drums, ash piles, debris, asbestos, and visibly contaminated surface soils. No subsurface soil or groundwater remediation was conducted during the removal action. At the conclusion of USEPA's activities, control of the Site was returned to the City of Newark. BBG000133

The USEPA ID number for the Site is CERCLIS No. NJD011482577. The NJDEP Known Contaminated Sites List identification number for the Site is NJ011482577. BBG000022, BBG000181

The City of Newark signed a Memorandum of Agreement ("MOA") with NJDEP, effective June 15, 1998, to conduct a remedial investigation as part of the continuation of the Brownfields redevelopment initiative at the Site. BBG000022

The Site currently is vacant, except for the Main Building, and covered by gravel and weeds. The Main Building, which consists of several interconnected smaller buildings, was reported by NJDEP to contain numerous drains and to be in disrepair. BBG000133

An on-Site septic disposal system, installed prior to CSD's purchase of the Site in 1951, was used for the discharge/disposal of sanitary waste. BBD000004, BBG000227

The topography of the Site is relatively flat with drainage ditches to the east and south. Catch basins on the eastern portion of the Site reportedly discharged to the drainage ditch along the east side of the Site. Wetlands are present in the southern portion of the Site, and a tidally influenced drainage ditch is located to the south of the Site. Although the southern drainage ditch is outside the Site property boundaries, NJDEP reported that it contained rotting drums and received waste

liquids that ran off the Site. The drainage ditch discharges into Newark Bay approximately 2,300 feet east of the Site. BBG000141, BBG000192

On-Site Areas of Concern previously identified during Remedial Investigations conducted by the City of Newark, USEPA, and the NJDEP include the following:

- **Heavy Drum Storage Pad** - located in the southwest portion of the Site and consisted of a concrete pad, with a trench for the collection of residue. Drums containing over 1 inch of residue were stored in this area. The City of Newark's 2004 Remedial Investigation Report ("2004 RIR") stated that "[h]istorically drum contents were discarded in this area, including drums filled with unknown contents." The areas around the pad were unpaved and received surface water and stormwater runoff, which drained into the adjacent ditch.

- **Drum Conveyor/De-Heading Shed** – located northwest of the Main Building. Drums were placed on a conveyor, which entered the de-heading shed where the tops were removed. The 2004 RIR noted two sumps were present in this area, along with stained soil and residues from past operations.

- **Abandoned Truck Trailer Area** – located in the northern portion of the Site where truck trailers were parked, many of which contained unprocessed drums. This area had also been used for the storage of drums. According to the 2004 RIR, this area was potentially impacted by miscellaneous spills in the past, which have subsequently been covered with gravel.

- **Drum Flip Operation Area** – located east of the incinerator where drums were flipped onto a conveyor prior to incineration. The 2004 RIR noted that sludge material from the drums was allowed to spill onto the ground without any containment present. Incinerator ash was also stored in piles in this area.

- **Incineration Area** – located just east of the Main Building and contained the incinerator and dust collectors. South of the incineration area is a quenching sump, where drums where sprayed with water to remove excess residue.

- **Septic System** – located adjacent to the Main Building on the southwest side, below the former office trailers. The 2004 RIR indicated that prior to 1951, a septic system was used for the discharge/disposal of sanitary waste and that it was possible that chemicals were disposed in this septic system. The on-Site septic system was reported to still be in use in the 1990 Remedial Investigation Phase I workplan.

- **10,000 Gallon Gasoline and Diesel Underground Storage Tanks (USTs)** – two 10,000-gallon USTs: one containing gasoline and located immediately west of the Main Building, and the other containing diesel fuel located in the southwestern portion of the Site adjacent to the ditch. According to the 2004 RIR, the contents of the tanks were removed, and then the tanks were cleaned and abandoned in place.

- **Raw Material Storage Shed** – located south of the Main Building. Paints and other chemicals in drums and small containers were stored in this small shed.

- **Main Building Area** – located in the central portion of the Site. Once the drums had been incinerated and sand blasted, they were painted in one of three paint booths located

in this building. The 2004 RIR noted paint residues on the concrete floors and a floor/trench system within the building. No details on the construction of the floor drain system were available.

- **South Truck Trailer Area** – located in the southwestern portion of the Site adjacent to the drainage ditch. This unpaved area contained trailers that stored unprocessed drums. Drum handling and unloading was also conducted in this area.

- **Drainage Ditches** – located along the southern and eastern boundaries of the Site. NJDEP noted that a drainage system lead from the incinerator to the eastern drainage ditch. These ditches also received runoff from the entire Site that was discharged to Newark Bay approximately 2,300 feet east of the Site.

BBG000130, BBG000141, BBG000192

During remedial investigation activities, groundwater was encountered on Site at 1 to 1.5 feet below the ground surface, with a deeper aquifer at a depth of approximately 20 feet. During precipitation events, the groundwater table may extend in some places to the ground surface. According to NJDEP, potentiometric surface maps produced in the 1980s revealed little hydraulic gradient in the shallow water table. NJDEP concluded that it is likely that groundwater flow is directed towards the drainage ditches around the perimeter of the property. BBG000130, BBG000141, BBG000187

The 2004 RIR **"**indicated that data gaps still existed, particularly at the Drum Conveyor/De-heading Shop, Abandoned Truck Trailer Area, and the Drum Flip Operation Area where additional vertical and horizontal soil delineation was required. Also, dioxin impacts to soil and sediment had been documented, although the extent and magnitude have not been fully defined. During a 2001 investigation, six soil and three sediment samples were collected and analyzed for dioxin, and each of the six samples had toxic equivalent ("TEQ") dioxin values ranging between 0.011 parts per billion ("ppb") to 0.66 ppb. The 2004 RIR concluded that, due to the relatively widespread distribution of the samples and the fact that 6 out of the 6 samples tested positive for dioxin, this constituent could exist across the Site and extend to off-Site areas in the south ditch area. As a follow-up, the 2004 RIR proposed a dioxin "screening" assessment to cover the entire Site and ditch areas. BBG000181, BBG000183

On October 4, 2006, the City of Newark adopted a Resolution designating Glopak Corporation ("Glopak") as the redeveloper of the Site. Glopak, a manufacturer of plastic bags and recycler of plastics, is seeking "innocent purchaser" protection from Spill Act liability following completion of remediation of the Site and receipt of a No Further Action letter from NJDEP. BBG000184

According to NJDEP Case Manager, Stephen Kehayes, the Site is still in the remedial investigation phase, and soil sampling and analysis activities (including for dioxins) were conducted for the entire Site, including the drainage ditches, in the summer of 2007. As of the date of this DEF, NJDEP had not received the sampling results. BBG000176

Information concerning specific hazardous substances handled and/or present at the Site in connection with Site operations is presented in subsequent sections of this DEF.

**SITE SOIL SAMPLING AND CONTAMINATION:**

Soil sampling and analysis conducted in 1986, 1990, 2001 and 2004 indicated the following hazardous substances were detected in Site soils at the levels indicated:

Polychlorinated Dibenzo-p-Dioxins ("PCDDs"):

- 2,3,7,8-TCDD up to 0.06 ppb
- 1,2,3,7,8-PeCDD up to 0.013 ppb
- 1,2,3,4,7,8-HxCDD up to 0.024 ppb
- 1,2,3,6,7,8-HxCDD up to 0.25 ppb
- 1,2,3,7,8,9-HxCDD up to 0.11 ppb
- 1,2,3,4,6,7,8-HpCDD up to 8.7 ppb
- OCDD up to 85 ppb

Polychlorinated Dibenzofurans ("PCDFs"):

- 2,3,7,8-TCDF up to 0.075 ppb
- 1,2,3,7,8-PeCDF up to 0.019 ppb
- 2,3,4,7,8-PeCDF up to 0.042 ppb
- 1,2,3,4,7,8-HxCDF up to 0.12 ppb
- 1,2,3,6,7,8-HxCDF up to 0.028 ppb
- 1,2,3,7,8,9-HxCDF up to 0.0034 ppb
- 2,3,4,6,7,8-HxCDF up to 0.038 ppb
- 1,2,3,4,6,7,8-HpCDF up to 1.2 ppb
- 1,2,3,4,7,8,9-HpCDF up to 0.071 ppb
- OCDF up to 3.8 ppb

TEQ (non-PCB) up to 0.259 ppb

PCBs:

- Aroclor-1016 up to 22,000 ppb
- Aroclor-1242 up to 490 ppb
- Aroclor-1254 up to 180,000 ppb
- Aroclor-1260 up to 80,000 ppb
- Total PCBs up to 180,000 ppb

Chlorinated Herbicides:

- 2,4,5-Trichlorophenoxyacetic acid up to 55 ppb (USEPA Class I Pesticide Chemical associated with the formation of dioxin)
- 2,4-Dichlorophenoxyacetic acid up to 280 ppb (USEPA Class I Pesticide Chemical associated with the formation of dioxin)
- Dicamba up to 200 ppb (USEPA Class I Pesticide Chemical associated with the formation of dioxin)
- Silvex up to 260 ppb (USEPA Class I Pesticide Chemical associated with the formation of dioxin)

Organochlorine Pesticides:

- Aldrin up to 38,000 ppb
- Alpha-Benzene hexachloride ("-BHC") up to 160 ppb

- Beta-BHC up to 3,300 ppb
- Chlordane up to 150,000 ppb
- Delta-BHC up to 170 ppb
- Dieldrin up to 17,000 ppb
- Endosulfan sulfate up to 5.7 ppb
- Endrin up to 1,500 ppb
- Endrin aldehyde up to 2,600 ppb
- Endrin ketone up to 31 ppb
- Gamma-BHC ("Lindane") up to 75 ppb (USEPA Class II Pesticide Chemical associated with the formation of dioxin)
- Heptachlor epoxide up to 140 ppb
- Methoxychlor up to 1,500 ppb
- p,p'-DDD up to 28,000 ppb
- p,p'-DDE up to 8,200 ppb
- p,p'-DDT up to 41,000 ppb

Organics:

- Chlorobenzene up to 480,000 ppb (USEPA Dioxin Precursor Chemical associated with the formation of dioxin)
- 1,2-Dichlorobenzene up to 70,000 ppb (USEPA Dioxin Precursor Chemical associated with the formation of dioxin)
- 1,4-Dichlorobenzene up to 7,600 ppb (USEPA Dioxin Precursor Chemical associated with the formation of dioxin)
- Phenol up to 8,400 ppb (USEPA Class III Organic Chemical associated with the formation of dioxin)
- 1,2,4-Trichlorobenzene up to 98,000 ppb (USEPA Dioxin Precursor Chemical associated with the formation of dioxin)
- Acenaphthene up to 11,000 ppb
- Acetone up to 22,000 ppb
- Benzene up to 18,000 ppb
- Anthracene up to 53,000 ppb
- Benzo(a)anthracene up to 190,000 ppb
- Benzo(a)pyrene up to 130,000 ppb
- Benzo(b)fluoranthene up to 110,000 ppb
- Benzo(g,h,I)perylene up to 52,000 ppb
- Bis(2-chloroisopropyl)ether up to 67,000 ppb
- Bis(2-ethylhexyl)phthalate up to 1,600,000 ppb
- Butylbenzylphthalate up to 200,000 ppb
- 2-Butanone up to 7,800 ppb
- Cis-1,2-dichloroethene up to 77,000 ppb
- Chrysene up to 210,000 ppb
- 1,1-Dichloroethane up to 27,000 ppb
- 1,2-Dichloroethane up to 340,000 ppb
- Di-n-butylphthalate up to 320,000 ppb
- Di-n-octylphthalate up to 320,000 ppb
- Ethylbenzene up to 1,100,000 ppb
- Fluorene up to 220,000 ppb
- Isophorone up to 9,300 ppb

- Methylene chloride up to 1,200 ppb
- 2-Methylnaphthalene up to 78,000 ppb
- Naphthalene up to 120,000 ppb
- Phenanthrene up to 200,000 ppb
- Pyrene up to 390,000 ppb
- Styrene up to 60,000 ppb
- Toluene up to 12,000,000 ppb
- Total Organic Compounds ("TOC") up to 335,885,000 ppb
- Total Petroleum Hydrocarbon ("TPH") up to 150,157,000 ppb
- 1,1,1-Trichloroethane up to 120,000 ppb
- Trichloroethene up to 93,000 ppb
- Tetrachloroethene up to 220,000 ppb
- Xylene (s) up to 5,600,000 ppb

Inorganics:

- Aluminum up to 18,000 ppm
- Antimony up to 200 ppm
- Arsenic up to 69 ppm
- Barium up to 5,400 ppm
- Beryllium up to 1.9 ppm
- Cadmium up to 340 ppm
- Calcium up to 69,000 ppm
- Chromium up to 13,000 ppm
- Cobalt up to 130 ppm
- Copper up to 3,700 ppm
- Iron up to 410,000 ppm
- Lead up to 28,000 ppm
- Magnesium up to 28,000 ppm
- Manganese up to 29,000 ppm
- Mercury up to 94 ppm
- Nickel up to 830 ppm
- Zinc up to 15,000 ppm

BBG000111, BBG000130, BBG000181, BBG000183, BBG000223

**GROUNDWATER SAMPLING AND CONTAMINATION:**

Groundwater sampling events conducted in 1990 and 2001 reported the following hazardous substances present in the groundwater at the levels indicated:

- Chlorobenzene up to 440 ppb (USEPA Dioxin Precursor Chemical associated with the formation of dioxin)
- Benzene up to 1,500 ppb
- 2,4,6-Trichlorophenol up to 10 ppb
- Carbon disulfide up to 6 ppb
- Chlordane up to 0.55 ppb
- p,p'-DDD up to 0.23 ppb

- p,p'-DDT up to 0.64 ppb
- 4-Methyl-2-pentanone up to 980 ppb
- Toluene up to 1,900 ppb
- Xylenes (total) up to 1,760 ppb
- Aluminum up to 240,000 ppb
- Antimony up to 470 ppb
- Arsenic up to 940 ppb
- Barium up to 47,000 ppb
- Cadmium up to 700 ppb
- Chromium up to 32,000 ppb
- Copper up to 310,000 ppb
- Iron up to 3,200,000 ppb
- Lead up to 260,000 ppb
- Manganese up to 11,000 ppb
- Mercury up to 350 ppb
- Nickel up to 2,800 ppb
- Selenium up to 380 ppb
- Thallium up to 31 ppb
- Zinc up to 250,000 ppb

BBG000129, BBG000223

**DRAINAGE DITCHES - - SEDIMENT SAMPLING AND CONTAMINATION:**

Sediment samples collected in 1990 and 2001 from the drainage ditches, located along the east and south sides of the Site, contained the following hazardous substances at the levels indicated:

PCDDs:
- 2,3,7,8-TCDD up to 0.13 ppb
- 1,2,3,7,8-PeCDD up to 0.047 ppb
- 1,2,3,4,7,8-HxCDD up to 0.082 ppb
- 1,2,3,6,7,8-HxCDD up to 0.28 ppb
- 1,2,3,7,8,9-HxCDD up to 0.21 ppb
- 1,2,3,4,6,7,8-HpCDD up to 9.6 ppb
- OCDD up to 130 ppb

PCDFs:
- 2,3,7,8-TCDF up to 0.45 ppb
- 1,2,3,7,8-PeCDF up to 0.096 ppb
- 2,3,4,7,8-PeCDF up to 0.28 ppb
- 1,2,3,4,7,8-HxCDF up to 0.69 ppb
- 1,2,3,6,7,8-HxCDF up to 0.2 ppb
- 1,2,3,7,8,9-HxCDF up to 0.012 ppb
- 2,3,4,6,7,8-HxCDF up to 0.3 ppb
- 1,2,3,4,6,7,8-HpCDF up to 2.9 ppb
- 1,2,3,4,7,8,9-HpCDF up to 0.29 ppb
- OCDF up to 7.9 ppb

TEQ (non-PCB) up to 0.665 ppb

PCBs:

- Aroclor-1254 up to 29,000 ppb
- Aroclor-1260 up to 40,000 ppb
- Total PCBs up to 40,000 ppb

Chlorinated Herbicides:

- 2,4-Dichlorophenoxyacetic acid up to 280 ppb (USEPA Class I Pesticide Chemical associated with the formation of dioxin)
- Dicamba up to 160 ppb (USEPA Class I Pesticide Chemical associated with the formation of dioxin)
- Silvex up to 260 ppb (USEPA Class I Pesticide Chemical associated with the formation of dioxin)

Organochlorine Pesticides:

- Aldrin up to 290 ppb
- Chlordane up to 7,800 ppb
- Dieldrin up to 1,100 ppb
- Endrin up to 1,500 ppb
- Endrin aldehyde up to 840 ppb
- Lindane up to 97 ppb (USEPA Class II Pesticide Chemical associated with the formation of dioxin)
- Heptachlor epoxide up to 49 ppb
- p,p'-DDD up to 950 ppb
- p,p'-DDE up to 4,600 ppb
- p,p'-DDT up to 3,400 ppb

Organics:

- Chlorobenzene up to 6,700 ppb (USEPA Dioxin Precursor Chemical associated with the formation of dioxin)
- Phenol up to 4,800 ppb (USEPA Class III Organic Chemical associated with the formation of dioxin)
- Acetone up to 3,500 ppb
- Benzene up to 300 ppb
- Benzo(a)anthracene up to 1,700 ppb
- Benzo(a)pyrene up to 1,900 ppb
- Benzo(b)fluoranthene up to 2,200 ppb
- Benzo(k)fluoranthene up to 1,700 ppb
- Benzo(g,h,I)perylene up to 1,700 ppb
- Bis(2-ethylhexyl)phthalate up to 260,000 ppb
- Carbon disulfide up to 93,000 ppb
- Chrysene up to 3,800 ppb
- Di-n-butylphthalate up to 8,200 ppb
- Di-n-octylphthalate up to 33,000 ppb
- Ethylbenzene up to 700,000 ppb
- Fluoranthene up to 12,000 ppb
- Indeno(1,2,3-cd)pyrene up to 700 ppb

- Naphthalene up to 8,900 ppb
- Phenanthrene up to 18,000 ppb
- Pyrene up to 11,000 ppb
- Styrene up to 690,000 ppb
- Toluene up to 12,000,000 ppb
- TOC up to 120,000,000 ppb
- TPH up to 21,785,000 ppb
- Total Xylenes up to 3,560,000 ppb

Inorganics:

- Aluminum up to 14,000 ppm
- Antimony up to 340 ppm
- Arsenic up to 66 ppm
- Barium up to 6,300 ppm
- Cadmium up to 180 ppm
- Calcium up to 42,000 ppm
- Chromium up to 1,300 ppm
- Cobalt up to 2,400 ppm
- Copper up to 1,540 ppm
- Iron up to 190,000 ppm
- Lead up to 12,000 ppm
- Magnesium up to 17,000 ppm
- Manganese up to 1,300 ppm
- Mercury up to 13 ppm
- Nickel up to 260 ppm
- Zinc up to 21,000 ppm

BBG000130, BBG000181, BBG000223

**DRAINAGE DITCHES - - SURFACE WATER SAMPLING AND CONTAMINATION:**

Surface water samples collected by NJDEP personnel from the drainage ditches in 1990 contained the following hazardous substances at the levels indicated:

- Anthracene up to 6.2 ppb
- Bis(2-ethylhexyl)phthalate up to 3,000 ppb
- 2-Butanone up to 490 ppb
- Butylbenzyl phthalate up to 210 ppb
- Carbon disulfide up to 15 ppb
- Chrysene up to 8.2 ppb
- 1,1-Dichloroethane up to 65 ppb
- 1,2-Dichloroethene up to 14 ppb
- Di-n-butylphthalate up to 260 ppb
- Di-n-octylphthalate up to 19 ppb
- Ethylbenzene up to 100 ppb
- Fluorene up to 6 ppb
- Isophorone up to 89 ppb

- 4-Methyl-2-pentanone up to 190 ppb
- 2-Methylphenol up to 18 ppb
- 4-Methylphenol up to 73 ppb
- Naphthalene up to 55 ppb
- Phenanthrene up to 60 ppb
- Phenol up to 350 ppb
- Styrene up to 30 ppb
- TPH up to 93,000 ppb
- Toluene up to 1,400 ppb
- 1,1,1-Trichloroethane up to 270 ppb
- Xylenes up to 510 ppb
- Antimony up to 415 ppb
- Cadmium up to 339 ppb
- Chromium up to 3,420 ppb
- Copper up to 4,830 ppb
- Lead up to 31,200 ppb
- Mercury up to 18 ppb
- Nickel up to 355 ppb
- Zinc up to 13,000ppb

The surface water samples collected from the ditches were not analyzed for dioxins, pesticides, or herbicides. BBG000223

**OFF-SITE SEDIMENTS SAMPLING AND CONTAMINATION:**

Sediment sampling conducted in Newark Bay indicates contamination matching the hazardous substances reported to be on-Site. A review was conducted of the analytical results for three Newark Bay sediment samples, identified as SD001-RF3, SD002-FR3, and NB01SED052, located in the vicinity of the outfalls of ditches that drain the Site. The approximate locations of the Newark Bay sediment samples are identified on the following annotated aerial photograph:

**Newark Bay Sediment Samples**

Central Steel Drum Company, Inc.
704 Doremus Avenue
Newark, Essex County, New Jersey

Aerial Photograph Copyright 2008
Photo Source: Google Earth (Tele Atlas/Sanborn/DigitalGlobe)

All annotated locations are shown are approximations

A review of data from sampling of the surface sediment in Newark Bay Core SD001-RF3, located approximately 200 feet east of the outfall of the unnamed ditch, indicated the following concentrations of hazardous substances that also match those reported to be on-Site:

PCDDs:

- 2,3,7,8-TCDD up to 3.99 ppb
- 1,2,3,7,8-PeCDD up to 0.0057 ppb
- 1,2,3,4,7,8-HxCDD up to 0.00433 ppb
- 1,2,3,6,7,8-HxCDD up to 0.0215 ppb
- 1,2,3,7,8,9-HxCDD up to 0.0117 ppb
- 1,2,3,4,6,7,8-HpCDD up to 0.332 ppb
- OCDD up to 3.54 ppb

PCDFs:

- 2,3,7,8-TCDF up to 0.0208 ppb
- 1,2,3,7,8-PeCDF up to 0.0145 ppb
- 2,3,4,7,8-PeCDF up to 0.0321 ppb
- 1,2,3,4,7,8-HxCDF up to 0.121 ppb
- 1,2,3,6,7,8-HxCDF up to 0.0719 ppb
- 1,2,3,7,8,9-HxCDF up to 0.0062 ppb
- 2,3,4,6,7,8-HxCDF up to 0.0165 ppb
- 1,2,3,4,6,7,8-HpCDF up to 0.724 ppb
- 1,2,3,4,7,8,9-HpCDF up to 0.015 ppb
- OCDF up to 0.979 ppb

Dioxin TEQ up to 4.044 ppb
Total TEQ up to 4.06 ppb

Organochlorine Pesticides:

- 4,4’-DDE up to 21 ppb
- Total DDT up to 21 ppb
- Alpha-BHC up to 23 ppb
- Endrin ketone up to 18 ppb

Organics:

- 1,2,4-Trichlorobenzene up to 46 ppb
- 1,2-Dichlorobenzene up to 24 ppb
- 1,3-Dichlorobenzene up to 22 ppb
- 1,4-Dichlorobenzene up to 72 ppb
- 2-Methylnaphthalene up to 90 ppb
- 4-Chloroaniline up to 110 ppb
- 4-Methylphenol up to 670 ppb
- Acenaphthene up to 170 ppb
- Acenaphthylene up to 560 ppb
- Anthracene up to 1,100 ppb
- Benzo(a)anthracene up to 1,800 ppb
- Benzo(a)pyrene up to 1,900 ppb
- Benzo(b)fluoranthene up to 1,600 ppb

- Benzo(g,h,i)perylene up to 740 ppb
- Benzo(k)fluoranthene up to 1,800 ppb
- Bis(2-ethylhexyl)phthalate up to 9,500 ppb
- Chrysene up to 2,000 ppb
- Fluoranthene up to 3,700 ppb
- Naphthalene up to 300 ppb
- Phenanthrene up to 920 ppb
- Pyrene up to 2,900 ppb

Inorganics:

- Aluminum up to 10,000 ppm
- Arsenic up to 12.3 ppm
- Barium up to 128 ppm
- Beryllium up to 0.67 ppm
- Cadmium up to 2.4 ppm
- Calcium up to 7,310 ppm
- Chromium up to 148 ppm
- Cobalt up to 9.1 ppm
- Copper up to 136 ppm
- Iron up to 24,900 ppm
- Lead up to 162 ppm
- Magnesium up to 6,150 ppm
- Manganese up to 340 ppm
- Mercury up to 2.8 ppm
- Nickel up to 38.3 ppm
- Zinc up to 301 ppm

A review of data from sampling of the surface sediment in Newark Bay Core SD002-RF3, located approximately 225 feet southeast of the outfall of the unnamed ditch, indicated the following concentrations of hazardous substances that also match those reported to be on-Site:

PCDDs:

- 2,3,7,8-TCDD up to 0.207 ppb
- 1,2,3,7,8-PeCDD up to 0.00704 ppb
- 1,2,3,4,7,8-HxCDD up to 0.00615 ppb
- 1,2,3,6,7,8-HxCDD up to 0.0519 ppb
- 1,2,3,7,8,9-HxCDD up to 0.0241 ppb
- 1,2,3,4,6,7,8-HpCDD up to 0.702 ppb
- OCDD up to 6.14 ppb

PCDFs:

- 2,3,7,8-TCDF up to 0.0292 ppb
- 1,2,3,7,8-PeCDF up to 0.023 ppb
- 2,3,4,7,8-PeCDF up to 0.0479 ppb
- 1,2,3,4,7,8-HxCDF up to 0.219 ppb
- 1,2,3,6,7,8-HxCDF up to 0.146 ppb
- 1,2,3,7,8,9-HxCDF up to 0.0112 ppb
- 2,3,4,6,7,8-HxCDF up to 0.0246 ppb

- 1,2,3,4,6,7,8-HpCDF up to 1.57 ppb
- 1,2,3,4,7,8,9-HpCDF up to 0.0253 ppb
- OCDF up to 1.7 ppb

Dioxin TEQ up to 0.314 ppb
Total TEQ up to 0.347 ppb

Organochlorine Pesticides:

- 4,4'-DDE up to 20 ppb
- Alpha-BHC up to 19 ppb
- Total DDT up to 20 ppb

Organics:

- 1,2,4-Trichlorobenzene up to 50 ppb
- 1,2-Dichlorobenzene up to 46 ppb
- 1,3-Dichlorobenzene up to 35 ppb
- 1,4-Dichlorobenzene up to 100 ppb
- 2-Methylnaphthalene up to 200 ppb
- 4-Chloroaniline up to 280 ppb
- 4-Methylphenol up to 96 ppb
- Acenaphthene up to 150 ppb
- Acenaphthylene up to 490 ppb
- Anthracene up to 900 ppb
- Benzo(a)anthracene up to 1,500 ppb
- Benzo(a)pyrene up to 1,900 ppb
- Benzo(b)fluoranthene up to 1,500 ppb
- Benzo(g,h,i)perylene up to 1,100 ppb
- Benzo(k)fluoranthene up to 1,800 ppb
- Bis(2-ethylhexyl)phthalate up to 5,800 ppb
- Chrysene up to 2,000 ppb
- Fluoranthene up to 3,400 ppb
- Naphthalene up to 320 ppb
- Phenanthrene up to 860 ppb
- Pyrene up to 2,700 ppb

Inorganics:

- Aluminum up to 8,930 ppm
- Arsenic up to 10.7 ppm
- Barium up to 119 ppm
- Beryllium up to 0.63 ppm
- Cadmium up to 4.5 ppm
- Calcium up to 4,900 ppm
- Chromium up to 212 ppm
- Cobalt up to 9.4 ppm
- Copper up to 176 ppm
- Iron up to 20,800 ppm
- Lead up to 225 ppm
- Magnesium up to 5,310 ppm

- Manganese up to 288 ppm
- Mercury up to 5.5 ppm
- Nickel up to 44.2 ppm
- Zinc up to 437 ppm

A review of data from sampling of the core sediment in Newark Bay Core NB01SED052, located approximately 500 feet off shore, indicated the following concentrations of hazardous substances that also match those reported to be on-Site:

PCDDs:

- 2,3,7,8-TCDD up to 2.23 ppb
- 1,2,3,7,8-PeCDD up to 0.0262 ppb
- 1,2,3,4,7,8-HxCDD up to 0.0197 ppb
- 1,2,3,6,7,8-HxCDD up to 0.109 ppb
- 1,2,3,7,8,9-HxCDD up to 0.0579 ppb
- 1,2,3,4,6,7,8-HpCDD up to 1.42 ppb
- OCDD up to 14.1 ppb

PCDFs:

- 2,3,7,8-TCDF up to 0.0967 ppb
- 1,2,3,7,8-PeCDF up to 0.0537 ppb
- 2,3,4,7,8-PeCDF up to 0.133 ppb
- 1,2,3,4,7,8-HxCDF up to 0.339 ppb
- 1,2,3,6,7,8-HxCDF up to 0.0881 ppb
- 1,2,3,7,8,9-HxCDF up to 0.0182 ppb
- 2,3,4,6,7,8-HxCDF up to 0.0561 ppb
- 1,2,3,4,6,7,8-HpCDF up to 1.27 ppb
- 1,2,3,4,7,8,9-HpCDF up to 0.0487 ppb
- OCDF up to 2.49 ppb

PCBs:

- Aroclor-1242 up to 1,200 ppb
- Aroclor-1248 up to 5,200 ppb
- Aroclor-1254 up to 4,200 ppb
- Aroclor-1260 up to 1,300 ppb

Total TEQ up to 2.625 ppb

Chlorinated Herbicides:

- Silvex up to 14 ppb

Organochlorine Pesticides:

- 4,4’-DDE up to 140 ppb
- Total DDT up to 110 ppb
- Beta-BHC up to 2.7 ppb

Organics:

- Chlorobenzene up to 22 ppb

- 1,4-Dichlorobenzene up to 780 ppb
- Hexachlorobenzene up to 1,300 ppb
- Benzene up to 130 ppb
- Ethylbenzene up to 130 ppb
- 1,1,1-Trichloroethane up to 18 ppb
- 1,1-Dichloroethane up to 18 ppb
- 1,2-Dichloroethane up to 18 ppb
- 2-Methylnaphthalene up to 1,700 ppb
- 4-Chloroaniline up to 1,500 ppb
- 4-Methylphenol up to 1,300 ppb
- Acenapthene up to 1,100 ppb
- Acenaphthylene up to 810 ppb
- Anthracene up to 6,800 ppb
- Benzo(a)anthracene up to 3,900 ppb
- Benzo(a)pyrene up to 3,000 ppb
- Benzo(b)fluoranthene up to 3,700 ppb
- Benzo(g,h,i)perylene up to 1,900 ppb
- Benzo(k)fluoranthene up to 1,700 ppb
- Bis(2-ethylhexyl)phthalate up to 310,000 ppb
- Chrysene up to 4,500 ppb
- Di-n-octylthphalate up to10,000 ppb
- Fluoranthene up to 9,200 ppb
- Naphthalene up to 10,000 ppb
- Phenanthrene up to 7,300 ppb
- Phenol up to 1,300 ppb
- Pyrene up to 8,400 ppb

Inorganics:

- Aluminum up to 21,000 ppm
- Arsenic up to 53 ppm
- Barium up to 287 ppm
- Beryllium up to 1.2 ppm
- Cadmium up to 13.5 ppm
- Calcium up to 11,300 ppm
- Chromium up to 749 ppm
- Cobalt up to 15.2 ppm
- Copper up to 434 ppm
- Iron up to 37,800 ppm
- Lead up to 452 ppm
- Magnesium up to 9,560 ppm
- Manganese up to 528 ppm
- Mercury up to 16.2 ppm
- Nickel up to 78 ppm
- Zinc up to 985 ppm

**PERMITS** (provide dates)**:**

NPDES:

According to the NJPDES Permittee Database, CSD was issued NJPDES Permit No. NJ0067199, effective July 1, 1995 and expiration June 30, 1998. BBE000006

During a September 1990 Site inspection, NJDEP informed CSD that an NJPDES permit was required for the wash water from the drum cleaning operation and waste residue around the incineration area that were "ultimately discharged (via an unnamed ditch to Newark Bay) to surface waters of the State." NJDEP did not cite CSD for failure to obtain a permit, but rather issued a letter in November 1990 directing then to obtain a permit or enforcement action, including the imposition of penalties, may result. CSD filed an application for an NJPDES permit to discharge to surface water in April 1991. In 1992, analysis of Site stormwater runoff indicated the presence of copper (8.1 ppb), zinc (81 ppb), boron (110 ppb), iron (670 ppb), manganese (213 ppb), molybdenum (42 ppb), magnesium (12,000 ppb), and titanium (10 ppb). BBD000004, BBD000005, BBE000002, BBE000003

POTW (pretreatment):

No information is available at this time.

**NEXUS TO NEWARK BAY STUDY AREA** (describe in detail; cite to supporting documentation; date or time period of disposal; list CERCLA hazardous substances and volume, if known):

Direct (e.g. pipe, outfall, spill):

The topography of the Site is relatively flat with drainage ditches to the east and south. Catch basins on the eastern portion of the Site reportedly discharged to the drainage ditch along the east side of the Site. Wetlands are present in the southern portion of the Site, and a tidal influenced drainage ditch is located to the south of the Site. Although the southern drainage ditch is outside the Site property boundaries, NJDEP reported that it contained rotting drums and received waste liquids from Site runoff. The drainage ditch discharges into Newark Bay approximately 2,300 feet east of the Site. BBG000141, BBG000192

NJDEP noted that on the south end of the Site was an existing wetland where drums were observed in the past. Also a tide-influenced drainage ditch in the wetland emptied into Newark Bay. It was believed that wastes were discharged into this ditch. Site drainage, including stormwater, was released via the drainage ditch system to Newark Bay. BBG000133

In July 1981 after responding to a burning rail tank car in Newark, the EPA/TAT response team was escorted to the nearby CSD site by a representative of the Newark Fire Department. The following observations were reported:

"The facility was extremely disreputable and housekeeping non-

> existant (sic). The site…is virtually covered with pools of oil and various chemicals. The area is all filled marsh and is not covered by concrete or asphalt. Along the back of the site, oil and chemicals were observed flowing into adjacent ditches and wetlands. The number of drums on the site is unknown, however…would estimate the number to be in the tens of thousands, many of which are leaking."

BBG000120

In a February 1982 Hazardous Waste Investigation report, NJDEP observed an "[o]utcropping from the drainage ditch banks contained old rusted drums, plastic material, wood, and various colored sludges (i.e., yellow, white, blue, etc.)." BBG000124

In a 1982 letter to NJDEP, USEPA stated that "[t]he company disposed of hazardous waste ash on the property in the past, and sampling has confirmed the presence of hazardous waste in the…adjoining polluted creek. BBG000118

In 1987, NJDEP issued CSD a Notice of Violation for the discharge of hazardous substances, specifically massive surface water contamination as a direct result of poor housekeeping. BBG000076

The 1990 Remedial Investigation Phase I workplan noted that waste residues and runoff from the drum flip operations area drained to a concrete pit, and that "CSD also indicated…[w]hen flooding occurs, stormwater is pumped out of the pit and discharged toward the ditch to the east." BBG000227

In July 1990, an inspector for the Suburban Regional Health Commission informed NJDEP that he had been to CSD and the following observations were reported:

> "[t]he wash curtain that washes out hazardous waste, oil, and paint sludges goes out to the surface water….they spill the waste onto the ground and [it] has built up a layer of pollution that is leaching into the bay."

BBG000218

In September 1990, NJDEP issued CSD a Notice of Violation for an unpermitted discharge to the waters of the State. The inspector specifically noted red paint spilled around the incinerator area ends up in the surface waters of the State. BBG000069

NJDEP stated in the 1993 JCO that "…CSD's drum emptying and transfer operation results in the dumping, spillage and discharge of hundreds, if not thousands, of gallons of drum residues each day." BBG000167

Sanitary Sewer (provide name and location of Combined Sewer Outfall ("CSO"); details regarding CSO overflows and dates):

An on-Site septic disposal system was used for the discharge/disposal of sanitary waste. BBD000004, BBG000227

Storm Sewer (provide name and location of CSO; details regarding CSO overflows and dates):

Stormwater from the Site drains to Newark Bay via drainage ditches located along the eastern and southern boundaries of the Site. BBG000133

Runoff:

The Site is located within the 100-year floodplain and in an area described as a coastal high hazard area and riverine floodway. The topography of the Site is relatively flat with drainage ditches to the east and south. Catch basins on the eastern portion of the Site reportedly discharged to the drainage ditch along the east side of the Site. Wetlands are present in the southern portion of the Site, and a tide-influenced drainage ditch is located to the south of the Site. Although the southern drainage ditch is outside the Site property boundaries, NJDEP reported that it contained rotting drums and received waste liquids Site runoff. The drainage ditch discharges into Newark Bay approximately 2,300 feet east of the Site. BBG000111, BBG000141, BBG000192

In a 1980 NJDEP Hazardous Waste Investigation report, the assistant manager of CSD stated:

> "the company uses the (incinerator) ash to fill pot holes on the company's grounds. It was also used as a fill material at the rear of the property…. since this area was low and flooding occurs often, the rear of the property was being filled in to prevent this from happening in the future."

BBG000032

The incinerator residue (ash) was analyzed in the 1981 and found to contain arsenic (2.86 ppm), barium (610 ppm), cadmium (48.3 ppm), chromium (870 ppm), copper (6,165 ppm), lead (9,000 ppm) mercury (0.093 ppm), molybdenum (922 ppm), nickel (120 ppm, selenium (0.093 ppm), and silver (0.083 ppm). BBG000120

During a 1981 joint USEPA and NJDEP inspection of the Site, inspectors noted "that there were random open drums filled with sludge matter and also drums with more than an inch of an adhesive or resin material inside. Some drums were found laying on the ground in disarray with resinous material spilling from it." BBG000037

A 1982 NJDEP inspection noted approximately 20-30 full drums and some leaking onto the ground. BBG000124

In a February 1982 Hazardous Waste Investigation report, NJDEP noted:

> "contaminated run-off with an oily sheen was observed flowing in the drainage ditch from under the gravel on the parking lot. A heavy silver oil sheen was noted on most of the water surface in this ditch and the water had a grayish-red tint to it

BBG000124

NJDEP documented in the February 1982 Hazardous Waste Investigation report that housekeeping throughout the facility was very poor, specifically noting:

- Spillage of white sludge on soil in drum staging area in western section of facility;
- Purple liquid, approximately 40'x 40', on soil in the staging area;
- Multi-colored sludges and blue liquid on soil next to chain conveyor for incinerator;
- Pink and white spills on soil east of incinerator;
- Drum spraying a red liquid from a leak onto soil next to incinerator;
- Pile of incinerator ash stored on soil next to incinerator;
- Yellow and white solid material dumped in area next to drainage ditch where it empties into the stream;
- Stream bed containing garbage and sludges, and sheen on water
- Drums in stream at the southeast section of the facility;
- Purple soil near stream in southeast section of the facility; and
- Contaminated run-off with sheen running from southwest section of the property into the stream.

BBG000124

In 1983, NJDEP personnel noted "…drums were piled on their sides from 4 to 10 drums high. Their residual contents were spilled on to the ground…." BBG000111

In a 1983 memo, NJDEP documented:

> "…concern in this facility is with the run-off from the drum storage areas and the incineration process. Spillages occur in the drum storage areas and along the chain conveyor as the drum is turned upside down for incineration. Both areas are open and subject to rain. All contaminated rain water is washed into the ditch that runs along both sides at the rear of the property. Inspection of this drainage ditch revealed half-buried, rotting drums, and multi-colored liquid due to chemical contamination."

BBG000111

NJDEP performed a Preliminary Assessment of the Site in March 1985 and noted "…numerous drums were observed leaking, and the resulting spills were observed collecting in a runoff with an oily sheen that was flowing from the site directly into a drainage ditch which discharges directly into Newark Bay." BBG000196

The 1985 USEPA Potential Hazardous Waste Site Preliminary Assessment reported "[c]ontaminated runoff with an oily sheen flowing into a drainage ditch then into Newark Bay was observed. The banks of the ditch contained rusted drums and various colored sludges." BBG000111

A 1985 USEPA Preliminary Assessment reported "[s]oil contaminated due to poor handling and storage of drums was observed. Contents of some drums were observed to be leaking directly onto the ground." BBG000111

A 1985 USEPA Preliminary Assessment reported that "NJDEP inspections conducted at this site during 1980-83 revealed ground water, surface water, soil, and air contamination at this facility." BBG000111

Historically, there were numerous solid and liquid drum discharge locations throughout the Site, and ash waste disposal practices facilitated the broadcast of hazardous incinerator ash throughout the Site. BBG000129

Hazardous substances detected in on-Site soils include (without limitation) the following:

- Dioxin (PCDDs and PCDFs)
- PCBs
- 2,4,5-Trichlorophenoxyacetic acid (USEPA Class I Pesticide Chemical associated with the formation of dioxins)
- 2,4-Dichlorophenoxyacetic acid (USEPA Class I Pesticide Chemical associated with the formation of dioxin)
- Dicamba
- Silvex
- Aldrin
- Dieldrin
- Lindane (USEPA Class II Pesticide Chemical associated with the formation of dioxin)
- pp'-DDD
- pp'-DDE
- pp'-DDT
- Chlorobenzene (USEPA Dioxin Precursor Chemical associated with the formation of dioxin)
- Phenol (USEPA Class III Organic Chemical associated with the formation of dioxin)
- 1,2,4-Trichlorobenzene (USEPA Dioxin Precursor Chemical associated with the formation of dioxin)
- Benzene
- 1,1-Dichloroethene
- Ethylbenzene
- Methylene chloride
- Tetrachloroethene
- Toluene
- Trichloroethene
- Total xylenes
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Bis(2-ethylhexyl)phthalate
- Butylbenzylphthalate
- Chrysene
- Di-n-octylphthalate
- Naphthalene

- Antimony
- Arsenic
- Barium
- Cadmium
- Copper
- Lead
- Mercury
- Nickel
- Zinc

BBG000130

Groundwater:

During remedial investigation activities, groundwater was encountered on Site at 1 to 1.5 feet below the ground surface, with a deeper aquifer at a depth of approximately 20 feet. During precipitation events, the groundwater table may extend in some places to the ground surface. According to NJDEP, potentiometric surface maps produced in the 1980s revealed little hydraulic gradient in the shallow water table. NJDEP concluded that it is likely that groundwater flow is directed towards the drainage ditches around the perimeter of the property. BBG000130, BBG000141, BBG000187

As stated above, a 1985 USEPA Preliminary Assessment reported that "NJDEP inspections conducted at this site during 1980-83 revealed ground water, surface water, soil, and air contamination at this facility." BBG000111

1985 USEPA Preliminary Assessment concluded that "[d]ue to drum spills, disposal of hazardous waste on an unprotected concrete slab and poor housekeeping practices, there is potential for ground water contamination. Depth to ground water approx. 30 in." BBG000111

The following hazardous substances were detected in groundwater samples above NJDEP Groundwater Quality Criteria:

- Chlordane
- p,p'-DDD
- p,p'-DDT
- Chlorobenzene (USEPA Dioxin Precursor Chemical associated with the formation of dioxin)
- Benzene
- Xylenes
- Aluminum
- Antimony
- Arsenic
- Barium
- Cadmium
- Chromium
- Iron
- Lead

- Manganese
- Mercury
- Nickel
- Selenium
- Thallium
- Zinc

BBG000129, BBG000130, BBG000223

**POTENTIAL NEXUS TO NEWARK BAY STUDY AREA** (describe in detail; cite to supporting documentation; list CERCLA hazardous substances; and volume, if known):

Direct (e.g. pipe, outfall, spill):

A 1987 memo from the Executive Director of the Suburban Regional Health Commission to NJDEP stated that the "site is approximately 2000′ from Newark Bay. Evidence of gross dumping of hazardous materials indicates company may be a significant contributor to Bay pollution." BBG000090

Sanitary Sewer (provide name and location of CSO; details regarding CSO overflows and dates):

No additional information is available at this time.

Storm Sewer (provide name and location of CSO; details regarding CSO overflows and dates):

1985 USEPA Preliminary Assessment concluded the "[p]otential exists [of heavy rains causing] the overflow of spilled chemicals from Central Steel Drum's property into sewers or storm drains." BBG000111

Runoff:

No additional information is available at this time.

Groundwater:

No additional information is available at this time.

## REFERENCES

| TAB NO. | BATES NO. | DATE | DESCRIPTION |
|---|---|---|---|
| 1 | BBD000004 | 09/13/91 | Letter from J M Sorge to NJDEP Re: NJDEP/DSW Permit Application |
| 2 | BBD000005 | 04/17/92 | Letter from J M Sorge to NJDEP Re: NJDEP/DSW Permit Application |
| 3 | BBE000002 | 05/30/91 | Letter from NJDEP to CSD Re: Receipt of April 1991 NJPDES Permit Application |

| | | | |
|---|---|---|---|
| 4 | BBE000003 | 11/05/90 | Letter from NJDEP to CSD Re: NJPDES Permit Requirement |
| 5 | BBE000006 | 12/31/00 | NJPDES Archive Database (excerpt) |
| 6 | BBG000022 | 06/15/98 | Memorandum of Agreement by Rule Between NJDEP and the City of Newark |
| 7 | BBG000032 | 01/29/80 | NJDEP Hazardous Waste Investigation |
| 8 | BBG000037 | 12/07/81 | EPA/NJDEP Joint Inspection Report |
| 9 | BBG000054 | 05/10/94 | Letter from J M Sorge to NJDEP Re: Progress Report No. 2 |
| 10 | BBG000069 | 09/17/90 | NJDEP Investigation Memorandum |
| 11 | BBG000076 | 04/24/87 | NJDEP Notice of Violation |
| 12 | BBG000090 | 12/15/87 | NJDEP Memorandum Re: 1987 Memos from Suburban Regional Health Commission |
| 13 | BBG000106 | 09/21/88 | NDEP Internal Memo Re: Case Transfer |
| 14 | BBG000111 | 07/25/86 | *Final Draft Site Inspection Report and Hazard Ranking System Model* prepared by NUS Corp. |
| 15 | BBG000118 | 12/02/82 | Letter from USEPA to NJDEP Re: Contamination at CSD |
| 16 | BBG000120 | 09/18/81 | Memo from Ecology & Environment, Inc. to USEPA Re: July 28, 1981 Railcar Fire in Newark and Visit to CSD Site |
| 17 | BBG000124 | 02/03/82 | NJDEP Hazardous Waste Investigation |
| 18 | BBG000129 | 06/01/04 | *Remedial Investigation Workplan Addendum for Groundwater and Groundwater Screening Sample Results Summary* prepared by URS Corp. |
| 19 | BBG000130 | 06/01/04 | *Revised Soil Remedial Investigation Results Summary Report* prepared by URS Corp. (excerpts) |
| 20 | BBG000133 | Undated | NJ Division of Law, Hazardous Site Litigation Section, SOL Referral (marked "Confidential: Attorney-Client Privileged," Source: NJDEP files June 2007) (incomplete) |
| 21 | BBG000141 | 09/22/99 | NJDEP Internal Memo Re: Remedial Investigation Workplan |
| 22 | BBG000147 | 05/1997 | EPA Expedited Removal Assessment Criteria |
| 23 | BBG000154 | 05/13/98 | USEPA Letter to NJDEP Re: Removal Action Completed |
| 24 | BBG000155 | 12/15/97 | Letter from URS Greiner to NJDEP Re: Revised Grant Application |
| 25 | BBG000156 | 12/29/95 | NJ Division of Law fax to NJDEP Re: Deed dated 10/26/89 |
| 26 | BBG000167 | 01/07/93 | Superior Court of New Jersey Law Division-Essex County Docket No. C-152-91; Civil Action, Judicial Consent Order between the NJDEPE and Central Steel Drum |
| 27 | BBG000174 | 03/28/80 | Notice of Prosecution issued by NJDEP |
| 28 | BBG000176 | 03/28/07 | Letter from ARCADIS to NJDEP Re: Remediation Investigation Work Plan |
| 29 | BBG000181 | 06/07/06 | Response to NJDEP Comment Letter dated June 24, 2004 prepared by URS Corp. |

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|---|---|---|---|
| 30 | BBG000183 | 02/04/05 | Scope of Work for Remedial Investigation prepared by URS Corp. |
| 31 | BBG000184 | 03/14/07 | City of Newark/Glopak Inc. Brownfield Redevelopment Project Briefing |
| 32 | BBG000187 | 11/07/03 | NJDEP Internal Memorandum Re: Remedial Investigation Report |
| 33 | BBG000188 | Undated | Synopsis of CSD/Newark MOA Case |
| 34 | BBG000192 | 03/21/05 | Addendum Scope of Work for Remedial Investigation prepared by URS Corp. |
| 35 | BBG000195 | 07/16/90 | NJDEP Internal Confidential Memorandum Re: Central Steel Drum (Source: NJDEP files June 2007) |
| 36 | BBG000196 | 06/06/91 | NJDEP v. CSD et al; Superior Court of New Jersey Chancery Division-Essex County; Civil Action, Verified Complaint |
| 37 | BBG000218 | 07/18/90 | NJDEP Report of Phone Call or Visit |
| 38 | BBG000222 | Undated | Dore Realty Co. v. CSD et al; Superior Court of New Jersey Essex County: Chancery Division; Civil Action, Brief |
| 39 | BBG000223 | 10/31/90 | Memo from NJDAG to NJDEP Re: CSD 1990 Sampling Results (marked "Confidential Memorandum," Source: NJDEP files June 2007) |
| 40 | BBG000225 | 02/10/94 | Superior Court of New Jersey Law Division-Essex County Docket No. C-152-91; Civil Action, Amendment to January 8, 1993 Judicial Consent Order between the NJDEPE and Central Steel Drum |
| 41 | BBG000227 | 07/1990 | *Remedial Investigation Phase I* prepared by J M Sorge, Inc. |
| 42 | BBH000001 | 11/26/97 | Letter from USEPA to Addressees Re: Request for Information Pursuant to Section 104(e) of CERCLA |
| 43 | BBH000002 | 01/12/93 | In the Matter of: Central Steel Drum Company, Inc.; United States Bankruptcy Court for the District of New Jersey Case No. 93-20194 WFT; Oder to Show Cause in Proceedings for a Reorganization Under Chapter 11 of the Bankruptcy Code |
| 44 | BBH000003 | 07/11/96 | Memo from NJ Division of Law to NJDEP Re: CSD Investigation Summary |
| 45 | BBH000004 | 01/16/98 | USEPA 104(e) Response for Akzo Nobel Coatings Inc. (excerpts) |
| 46 | BBH000005 | 01/19/98 | USEPA 104(e) Response for American Inks and Coatings Corp. (excerpts) |
| 47 | BBH000006 | 01/21/98 | USEPA 104(e) Response for Armstrong World Industries, Inc. (excerpts) |
| 48 | BBH000007 | 12/30/97 | USEPA 104(e) Response for American National Can Company (excerpts) |
| 49 | BBH000008 | 01/20/98 | USEPA 104(e) Response for APOLAN International (excerpts) |
| 50 | BBH000009 | 01/29/08 | USEPA 104(e) Response for BASF Corporation (excerpts) |

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|---|---|---|---|
| 51 | BBH000010 | 01/15/98 | USEPA 104(e) Response for Borden & Remington Corp. (excerpts) |
| 52 | BBH000011 | 02/02/98 | USEPA 104(e) Response for Borden Chemical, Inc. (excerpts) |
| 53 | BBH000012 | 01/20/98 | USEPA 104(e) Response for Chiyoda America Inc. (excerpts) |
| 54 | BBH000013 | 01/21/98 | USEPA 104(e) Response for Ciba Specialty Chemicals Corporation (excerpts) |
| 55 | BBH000014 | 02/18/98 | USEPA 104(e) Response for Congoleum Corporation (excerpts) |
| 56 | BBH000015 | 01/30/98 | USEPA 104(e) Response for Del Val Ink & Color, Inc. (excerpts) |
| 57 | BBH000016 | 01/08/98 | USEPA 104(e) Response for Houghton International Inc. (excerpts) |
| 58 | BBH000017 | 01/13/98 | USEPA 104(e) Response for Flint Ink Corporation (excerpts) |
| 59 | BBH000018 | 12/23/97 | USEPA 104(e) Response for Fort James Corporation (excerpts) |
| 60 | BBH000019 | 12/11/97 | USEPA 104(e) Response for Mace Adhesives and Coatings Co., Inc. (excerpts) |
| 61 | BBH000020 | 01/19/98 | USEPA 104(e) Response for INX International Ink Co. (excerpts) |
| 62 | BBH000021 | 01/29/98 | USEPA 104(e) Response for 3M Company (excerpts) |
| 63 | BBH000022 | 06/09/98 | USEPA 104(e) Response for Sun Chemical Corporation (excerpts) |
| 64 | BBH000023 | 02/20/98 | USEPA 104(e) Response for Lilly Industries, Inc. (excerpts) |
| 65 | BBH000024 | 01/28/98 | USEPA 104(e) Response for Vanderbilt Chemical Corporation (excerpts) (portions stamped "Confidential," Source: EPA Region II files January 2008) |
| 66 | BBI000001 | 3/15/08 | Hoovers report for Akzo Nobel Inc., www.hoovers.com |
| 67 | BBI000002 | 3/17/08 | Online Sources for American Inks & Coating Corp. |
| 68 | BBI000003 | 3/12/08 | Hoovers report for Armstrong World Industries, Inc., www.hoovers.com |
| 69 | BBI000004 | | Hoovers report for American National Can Group, Inc., www.hoovers.com |
| 70 | BBI000005 | 3/15/08 | Website: APOLAN International, www.apolan.com |
| 71 | BBI000006 | 3/17/08 | Hoovers report for BASF Corp., www.hoovers.com |
| 72 | BBI000007 | 3/17/08 | Website: Borden & Remington Corp., www.boremco.com |
| 73 | BBI000008 | 3/15/08 | Hoovers report for Borden Chemical, Inc., www.hoovers.com |
| 74 | BBI000009 | 3/17/08 | Environmental Release Report: Chiyoda America Inc., www.scorecard.org |
| 75 | BBI000010 | 3/15/08 | Hoovers report for Ciba Specialty Chemicals Holding Inc., www.hoovers.com |

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| 76 | BBI000011 | 3/12/08 | Hoovers report for Congoleum Corporation, www.hoovers.com |
| 77 | BBI000012 | 3/15/08 | Website: Del Val Ink and Color Incorporated, www.dvink.com |
| 78 | BBI000013 | 3/17/08 | Hoovers report for Houghton International Inc., www.hoovers.com |
| 79 | BBI000014 | 3/17/08 | Hoovers report for Flint Group Germany GmbH, www.hoovers.com |
| 80 | BBI000015 | 3/17/08 | Hoovers report for Fort James Corp. and Georgia-Pacific Corp., www.hoovers.com |
| 81 | BBI000016 | 3/17/08 | Website: Mace Adhesives & Coatings Co., Inc., www.maceco.com |
| 82 | BBI000017 | 3/17/08 | Website: INX International Ink Co., www.inxinternational.com |
| 83 | BBI000018 | 3/17/08 | Hoovers report for 3M Company, www.hoovers.com |
| 84 | BBI000019 | 3/15/08 | Hoovers report for The Sherwin-Williams Company, www.hoovers.com |
| 85 | BBI000020 | 3/15/08 | Hoovers report for Sun Chemical Corporation, www.hoovers.com |
| 86 | BBI000021 | 3/17/08 | Hoovers report for The Valspar Corporation, www.hoovers.com |
| 87 | BBI000022 | 3/15/08 | Hoovers report for R.T. Vanderbilt Company, Inc., www.hoovers.com |
| 88 | BBJ000001 | 09/1941 | Drainage Map of a Portion of the Newark Bay Salt Marsh, Essex County Mosquito Extermination Commission, Sept., 1941 |
| 89 | BBJ000002 | 03/31/56 | Drainage Map Section, Essex County Mosquito Extermination Commission, March 31, 1956 |

IP-31

JM Sorge, Inc.

AUG 30 1993

50 County Line Road, Somerville, NJ 08876 • (908) 218-0066
FAX (908) 218-9185

September 13, 1991

RECEIVED
#2
SEP 16 1991
STATE OF NEW JERSEY
DEPT. ENVIRONMENTAL PROTECTION
DIVISION WATER RESOURCES
BUR. OF IND. WASTE MGMT.

Mr. Ramamurthy Pyarilal, P.E.
Supervision Environmental Engineer
NJ Department Environmental Protection
Division of Water Resources
Surface Water Section
Bureau of Industrial Discharge Permits
CN 029
Trenton, NJ 08625-0029

Attn: Mr. Matthew Precinski

Re: Central Steel Drum Company
Newark, Essex County, NJ 0067199
NJDEP/DSW Permit Application

Dear Mr. Pyarilal:

The following provides the information requested by your office in accordance with the Notice of Administrative Deficiency correspondence dated August 16, 1991 for the above-referenced facility. The enclosed Form CP#1 (Attachment A) displays the proper lot and block numbers for the property and includes the necessary endorsements of the Applicant/Operator. Please note that the original Form CP#1 has been sent to the Applicant/Owner for the correct information with regard to Item 1a and for certification of Endorsement A. The correspondence requesting the property owner's signature is included as Attachment B. The original Form CP#1 will be sent to your office as soon as possible.

Form WQM-003 has been sent to the proper officials of the municipality and local sewerage authority for the required certifications (Endorsements A and C). Copies of the signed and dated letters requesting the proper endorsements, as well as the certified mail receipt, are provided as Attachment C. The certified mail return receipt will be provided to the Department shortly after it is received in this office.

Attachment D includes the two (2) figures requested. Figure 1 is a U.S.G.S. map which depicts the location of the subject facility, while Figure 2 is a site plan of the facility which provides the information requested in Item 5.c) of your August 16, 1991 correspondence.

As discussed in the Central Steel Drum Company's (CSD) New Jersey Pollutant Discharge Elimination System/Discharge to Surface Water (NJPDES/DSW) permit application submitted to the Department in April 1991, general stormwater runoff entering the ditch at the southeast corner of the site is the subject of this DSW permit application. No specific "discharge pipe" or catch basin exists for the stormwater runoff. Rather, the ground surface acts as the "conveyance" for the stormwater which, during periods of heavy rainfall, reaches the ditch on the southern side of the property. No treatment system exists for this situation. The point source discharge location of the runoff is depicted on Figure 2 of Attachment D. The stormwater runoff comes in contact with the ground surface in the vicinity of the facility's incinerator unit where hazardous substances are present. This situation, as well as a description of the stormwater runoff process and the analytical results of numerous soil and groundwater samples collected at the site, was discussed, in detail, in the Attachments to the April 11, 1991 NJPDES/DSW permit application submitted by J M Sorge, Inc. (JMS) on behalf of CSD.

Regarding Item 5.d) of your August 16, 1991 correspondence, please note that significant rainfall is necessary to conduct the required sampling. A total volume of approximately 21 liters must be collected from the discharge to satisfy the analytical requirements of EPA Form 2C. Arrangements have been made with the analytical laboratory, Envirotech Research, Inc. of Edison, NJ, to provide the required sample bottles at very short notice so that the discharge can be sampled as soon as possible, providing the amount of rainfall is adequate. Upon completion of the discharge sampling and receipt of the laboratory analytical results, the entire EPA Form 2C will be completed and submitted to the Department.

Should you have any questions with regard to the CSD NJPDES/DSW permit application, please contact Mr. Joseph Sorge or me at your convenience.

Very truly yours,

James M. Clabby
Project Manager

JMC/nk

Enclosure
cc: Mr. Alan Fischer, CSD
Mr. Neil Fischer, CSD
Mr. Peter Herzberg, Esq.
Mr. Joseph Sorge, JMS

**ATTACHMENT A**

**UPDATED FORM CP#1**

Let's protect our earth

FOR OFFICIAL USE

# State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

## STANDARD APPLICATION FORM (CP #1)

## CONSTRUCTION PERMIT NUMBER 1

## CONSTRUCTION AND DISCHARGE PERMITS

*READ REQUIREMENTS — FOLLOW INSTRUCTIONS CAREFULLY — PLEASE PRINT OR TYPE*

1a. Applicant/Owner** _____ Telephone ( ) _____

Permanent Legal Address _____

City or Town _____ State _____ Zip Code _____

Federal Tax I.D. or S.S. # _____

1b. Applicant/Operator Central Steel Drum Company Telephone (201) 344-8500

Permanent Legal Address 704 Doremus Avenue

City or Town Newark State NJ Zip Code 07105

1c. Co-permittee* N/A Telephone ( ) _____

Permanent Legal Address _____

City or Town _____ State _____ Zip Code _____

2. Location of Work Site 704 Doremus Avenue, Newark, NJ

Name of Facility, if applicable Central Steel Drum Company

Address (Street/Road) 704 Doremus Avenue

Lot No. 1 Block No. 5074 E.P.A. I.D. # NJD 0011482577

City or Town Newark State NJ Zip Code 07105

* Municipality Newark County Essex

3. If applicable, give name of: Engineer/Surveyor/Well Driller/Geologist/Soil Scientist *(Specify)*

Name Joseph M. Sorge N.J. License No. _____

Name of Firm, if employee J M Sorge, Inc.

Address (Street/Road) 50 County Line Road

City or Town Somerville State NJ Zip Code 08876

Municipality Branchburg County Somerset

Telephone (908) 218-0066

4. This is an application for New Jersey Polluntant Discharge Elimination System Permit
*(Name of permit, certification, approval, jurisdictional determination, or exemption. See item 9, next page.)*

Discharge to Surface Water

* *This section must be completed by any local governmental unit when it is a Co-permittee. (Not required for Treatment Works Approvals.)*

** *Sewer System Applications (Treatment Works Approvals) should be made on behalf of the eventual owner of the proposed system.*

DETACH FORM FROM PRECEDING DOCUMENT

5. Fee is attached (if applicable). $ N/A

6. Estimated construction cost of project:

   a. $ N/A total cost of the project
   b. $ N/A portion for which this permit is requested

7. I have included certifications of any public notifications. ____Yes ____No N/A

8. If applicable:
   *(For Waterfront Development and Stream Encroachment applications, 8c. must be completed.)*

   a. Source of Water Supply N/A - STORMWATER RUNOFF
   b. For Treatment at (Water Treatment Plant) N/A
   c. Stream, Waterway, Pond or Lake N/A
   d. Wastewater Treatment Facility N/A

9. Have any other applications for this site/project been submitted, or have any state permits been issued for this project? *(If yes, indicate status and project number below.)*

   X Yes _____No _____Decision

   Identify any state Green Acres or federal Land and Water Conservation Fund projects separately.

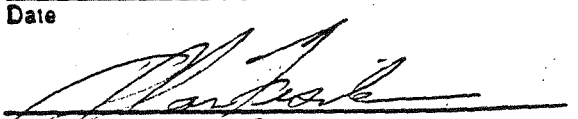
| | PERMIT TYPE *(Use additional sheets if necessary)* | APPLICATION STATUS (Pending - Approved) | PROJECT # |
|---|---|---|---|
| 9.1 | CAFRA | | |
| 9.2 | Waterfront Development | | |
| 9.3 | Tidal or Coastal Wetlands | | |
| 9.4 | Freshwater Wetlands Permit | | |
| 9.5 | Fresnwater Wetlands Transitional Area Waiver (after July 1, 1989) | | |
| 9.6 | Stream Encroachment | | |
| 9.7 | Water Quality Certificate (Section 401) | | |
| 9.8 | Open Water Fill | | |
| 9.9 | Tidelands (Riparian) Grant, Lease or License | | |
| 9.10 | Dam Construction/Repair | | |
| 9.11 | Purchase Water Diversion: | | |
| 9.12 | Divert Water Supply for Public Use | | |
| 9.13 | Divert Surface Waters for Private Use | | |
| 9.14 | Divert Subsurface/Percolating Water for Private Use | | |
| 9.15 | Well Drilling | Approved | |
| 9.16 | Permanent Water Lowering | | |

| PERMIT TYPE *(Use additional sheets if necessary)* | APPLICATION STATUS (Pending - Approved) | PROJECT # |
|---|---|---|
| 9.17 Temporary Water Lowering | | |
| 9.18 Construct/Modify, Operate Public Potable Water Works | | |
| 9.19 Connection between an approved water supply and non-approved supply | | |
| 9.20 Sewer Systems: Collectors, Pump Station, etc | | |
| 9.21 Exemption from Sewer Ban | | |
| 9.22 New Jersey Pollution Discharge Elimination System (Specify) | DGW-pending | NJ0067199 |
| 9.23 Underground Storage Tanks | APPROVED | UST |
| 9.24 Solid Waste Permits (Specify) | | |
| 9.25 Hazardous Waste Permits (Specify) GENERATOR | APPROVED | NJD0011482577 |
| 9.26 Air Quality Permits (Specify) | see attachment A | |
| 9.27 Delaware and Raritan Canal Review Zone "Certificate of Approval" | | |
| 9.28 Pinelands Certificate | | |
| 9.29 Green Acres Program Review "Certificate of Approval" (Specify projects) | | |
| 9.30 Other State agencies' permits | | |
| 9.31 Local Permits | | |
| 9.33 Federal Permits RCRA | | |

10. Brief Description of the Proposed Project and Intended Use:

To obtain a valid New Jersey Pollutant Discharge Elimination System (NJPDES) permit to discharge to the surface water of the State of New Jersey for Cental Steel Drum.

11. I certify under penalty of law that the information provided in this document is true, accurate and ... aware that there are significant civil and criminal penalties for submitting false, inaccurate or incomplete information, including fines and/or imprisonment.

| | |
|---|---|
| N/A<br>Type: Name and Date | N/A<br>Signature of Applicant/Owner |
| N/A<br>Type: Position | N/A<br>Date |
| Alan Fischer 9/5/91<br>Type: Name and Date |  <br>Signature of Applicant/Operator |
| Vice President<br>Type: Position | 9/5/91<br>Date |
| N/A<br>Type: Name and Date | N/A<br>Signature of Co-permittee* |
| N/A<br>Type: Position | N/A<br>Date |

## ENDORSEMENTS

*Some permit applications require specific endorsements of owners, agents, municipalities, etc. Endorsements may be required for your permit.*

*Verify the need for endorsements in the "Requirements" section of the Standard Application Form CP #1 booklet or with the appropriate DEP agency.*

### A. PROPERTY OWNER'S CERTIFICATION*

I hereby certify that_____
*Property Owner's Name*
is the owner of the property upon which the proposed work is to be done. This endorsement is certification that the owner grants permission for the conduct of the proposed activity.

In addition, the aforementioned property owner shall certify:

1. Whether any work is to be done within an easement — Yes_____ *(Initial)* No_____ *(Initial)*

2. Whether any part of the entire project (i.e., pipeline, roadway, cable, transmission line, etc.) will be located within property belonging to the State of New Jersey — Yes_____ *(Initial)* No_____ *(Initial)*

_____

_____

_____
*Type or Print Name and Address of Owner, if different from Item 1 on Page 1*

_____
*Date*

_____
*Signature of Owner*

* *Not required for Sewer System Application (Treatment Works Approvals)*

B. APPLICANT'S AGENT

I, the Applicant/Owner N/A or Applicant/Operator (when the owner of the facility and the operator of the facility are distinct parties)_____

or Co-permittee (when the Co-permittee is a local governmental unit)_____

authorize to act as my agent/representative in all matters pertaining to my application the following person:

Name_____ Phone_____

Address_____ County_____

City or Town_____ State_____ Zip Code_____

Occupation/Profession_____

_____
*(Signature of Applicant/Owner)*

_____
*(Signature of Applicant/Operator)*

_____
*(Signature of Co-permittee)**

AGENT'S CERTIFICATION

Sworn before me
this_____day of
_____19_____

I agree to serve as agent for the above-mentioned applicant

_____
*Notary Public*

_____
*(Signature of Agent )*

---

C. PROPER CONSTRUCTION AND OPERATION CLAUSE N/A
(Sewer Extensions, Treatment Works Approval, Water Works, Underground Storage Tanks)

I, the Applicant/Owner_____ or Applicant/Operator (when the owner of the facility and the operator of the facility are distinct parties)_____

or Co-permittee (when the Co-permittee is a local governmental unit)_____,

agree that the works will be properly constructed and operated in accordance with the engineering plans and specifications, as approved, and the conditions under which approval is granted by the State Department of Environmental Protection.

_____
*(Signature of Applicant/Owner)*

_____
*(Signature of Applicant/Operator)*

_____
*(Signature of Co-permittee)**

* *Not required for Sewer System Application (Treatment Works Approvals)*

D. STATEMENT OF PREPARER OF PLANS, SPECIFICATIONS, SURVEYOR'S OR ENGINEER'S REPORT N/A

I hereby certify that the engineering plans, specifications and engineer's report applicable to this project comply with the current rules and regulations of the State Department of Environmental Protection with the exceptions as noted.

(Signature of Engineer)

Type: Name and Date

Position, Name of Firm

*PROFESSION ENGINEER'S EMBOSSED SEAL*

---

E. OWNER'S COMPLIANCE WARRANT (NJPDES ONLY)

I, the Applicant/Owner N/A or (Applicant/Operator) (when the owner of the facility and the operator of the facility are distinct parties) Alan Fischer or Co-permittee (when the Co-permittee is a local governmental entity) N/A, hereby agree that any treatment works constructed to meet the NPDES/NJPDES permit discharge limits will be properly constructed and operated to meet those limits. I also warrant that the discharge(s) will meet the effluent limitations as described in the NPDES/NJPDES permit, as issued.

N/A
(Date)

N/A
(Signature of Applicant/Owner)

9/5/91
(Date)

(Signature of Applicant/Operator)

N/A
(Date)

N/A
(Signature of Co-permittee)*

* *Not required for Treatment Works Approvals*

F. PARTY RESPONSIBLE FOR THE CONSTRUCTION OF THE PROPOSED FACILITY
(Sewer Extensions, Treatment Works Approvals, Underground Storage Tanks)

Name of Developer N/A

Phone _____

Address _____ County _____

City _____ State _____ Zip Code _____

Contact Person _____

# ATTACHMENT B

# REQUEST FOR APPLICANT/OWNER ENDORSEMENT

J. CLABBY

WILENTZ
GOLDMAN
& SPITZER
ATTORNEYS AT LAW
A PROFESSIONAL CORPORATION

**PETER J. HERZBERG**
**(908) 855-6464**

90 Woodbridge Center Drive
P.O. Box 10
Woodbridge, NJ 07095-0958
(908) 636-8000
Fax (908) 855-6117

777 West Park Avenue
Oakhurst, NJ 07755
(908) 493-1000
Fax (908) 493-8387

111 John Street
Suite 2300
New York, NY 10038
(212) 267-3091
Fax (212) 267-3828

Please reply to Woodbridge

September 10, 1991

**Our file #103304.001**

Lila Woodsmith, Esq.
169 King Street
Armonk, New York 10504

**Re: Central Steel Drum**
**NJPDES/DSW Permit Application**

Dear Lila:

As discussed, I am herewith enclosing Central Steel Drum's application to obtain an NJPDES/DSW Permit. There is a requirement that the owner sign the application form. I have placed two yellow "post-its" in the places that require information regarding the owner and the signature of the owner. I would appreciate if you could attend to this matter as soon as possible.

Very truly yours,

Peter J. Herzberg/lk

Peter J. Herzberg

PJH/lk
Enclosure

ATTACHMENT C

REQUEST FOR MUNICIPALITY
AND SEWERAGE AUTHORITY ENDORSEMENTS

J M Sorge, Inc.

50 County Line Road, Somerville, NJ 08876 • (908) 218-0066
FAX (908) 218-9185

**Certified Mail - Return Receipt Requested**

September 11, 1991

Mr. Al Zach
Director - Engineering Department
City of Newark
920 Broad Street
Newark, NJ 07102

Re: Central Steel Drum Co.
704 Doremus Avenue
Newark, NJ
Form WQM-003 Endorsement "A" for
NJPDES DSW Permit

Dear Mr. Zach:

The purpose of this letter is to inform you that Central Steel Drum Company is applying for a New Jersey Pollutant Discharge Elimination System (NJPDES), Discharge to Surface Water (DSW) permit for storm water runoff at the above-referenced site. Since the general topography of the site area will result in a runoff of untreated storm water to the surface waters of the State, (DSW), NJPDES regulation 7:14A-2.1(K), Item 2, requires an endorsement in the form of a signature by the appropriate governing body. This endorsement confirms that the "project as proposed is in conformance with the requirements of all municipal ordinances" and is accepted by the municipality. Please note that no construction, etc., has been proposed. The "project" is simply permitting the surficial runoff of storm water to a drainage ditch which extends from the site to the west, beneath Doremus Avenue, eventually entering Newark Bay.

Attached is a complete copy (less endorsements and EPA Form 2C) of the NJPDES, DSW Permit Application for Central Steel Drum. Once you have reviewed this information, please sign the enclosed Endorsement "A" of Form WQM-003, and return the original form to my attention at the address above, so that it may be forwarded to the New Jersey Department of Environmental Protection (NJDEP) as part of the NJPDES, DSW application.

Should you have any questions regarding this matter, please do not hesitate to contact me at (908) 218-0066.

Very truly yours,

James M. Clabby
Project Manager

JMC/nk
Enclosure

P 266 204 238

**RECEIPT FOR CERTIFIED MAIL**

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
*(See Reverse)*

U.S.G.P.O. 1989-234-555

| | |
|---|---|
| Sent to Dr Zach | |
| Street and No. City of Newark 920 Broad St | |
| P.O., State and ZIP Code Newark, NJ 07102 | |
| Postage | $ |
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt showing to whom and Date Delivered | |
| Return Receipt showing to whom, Date, and Address of Delivery | |
| TOTAL Postage and Fees | $ |
| Postmark or Date | |

PS Form 3800, June 1985

J M Sorge, Inc.

50 County Line Road, Somerville, NJ 08876 • (908) 218-0066
FAX (908) 218-9185

**Certified Mail - Return Receipt Requested**

September 11, 1991

Mr. Carmen Della Pia
Passaic Valley Sewerage Authority
600 Wilson Avenue
Newark, NJ 07105

Re: Central Steel Drum Co.
704 Doremus Avenue
Newark, New Jersey 07105
Form WQM-003 Endorsement "C" for
NJPDES DSW Permit

Dear Mr. Della Pia:

The purpose of this letter is to inform you that Central Steel Drum Company is applying for a New Jersey Pollutant Discharge Elimination System (NJPDES) Discharge to Surface Water (DSW) Permit for storm water runoff at the above-referenced site. Since the general topography of the site area will result in a runoff of untreated storm water to the surface waters of the State, (DSW), NJPDES regulation 7:14A-2.1(K), Item 2, requires an endorsement in the form of a signature by the Sewerage Agency in which the project is located. This endorsement confirms that the project is in conformance with the applicable 201 facilities ordinances and is accepted and approved as proposed. This letter is <u>not</u> to pursue permission to discharge to your treatment facility, only to notify you that a drainage source DSW is being permitted within your service area. Please note, that no construction, etc., has been proposed. The "project" is simply permitting the surficial runoff of storm water to a drainage ditch which extends from the site to the west, beneath Doremus Avenue, eventually entering Newark Bay.

Attached is a complete copy (less endorsements and EPA Form 2C) of the NJPDES, DSW Permit Application for Central Steel Drum. Included in the application is a site map illustrating the site drainage pattern and the discharge point. Once you have reviewed this information, please sign the enclosed Endorsement "C" of Form WSM-003, and return the original form to my attention at the address above, so that it may be forwarded to the New Jersey Department of Environmental Protection (NJDEP) as part of the NJPDES, DSW application.

Should you have any questions regarding this matter, please do not hesitate to contact me at (908) 218-0066.

Very truly yours,

James M. Clabby
Project Manger

JMC/nk

Enclosure

P 266 204 239

**RECEIPT FOR CERTIFIED MAIL**

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

*(See Reverse)*

| | |
|---|---|
| Sent to: Mr Carmen Della Pia | |
| Street and No. Passaic Valley Sewerage 1600 Wilson Ave. | |
| P.O., State and ZIP Code Newark, NJ 07105 | |
| Postage | $ |
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt showing to whom and Date Delivered | |
| Return Receipt showing to whom, Date, and Address of Delivery | |
| TOTAL Postage and Fees | $ |
| Postmark or Date | |

SEP 1991 USPO

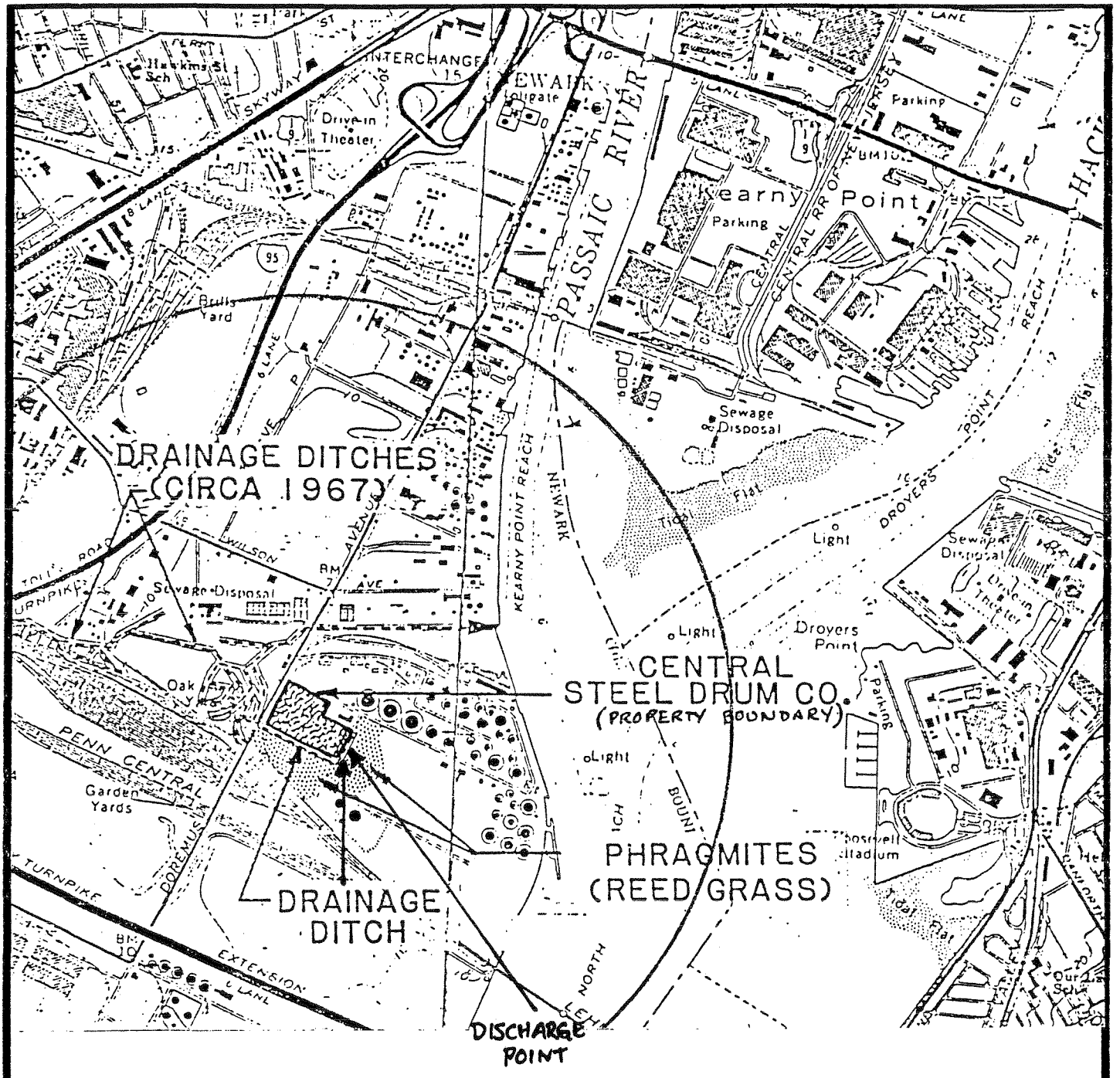
PS Form 3800, June 1985

U.S.G.P.O. 1989-234-555

ATTACHMENT D

FIGURE 1 - U.S.G.S. SITE LOCATION MAP

FIGURE 2 - FACILITY SITE PLAN




SCALE: 1"=2000'-0"

1000 0 2000 4000

SCALE IN FEET

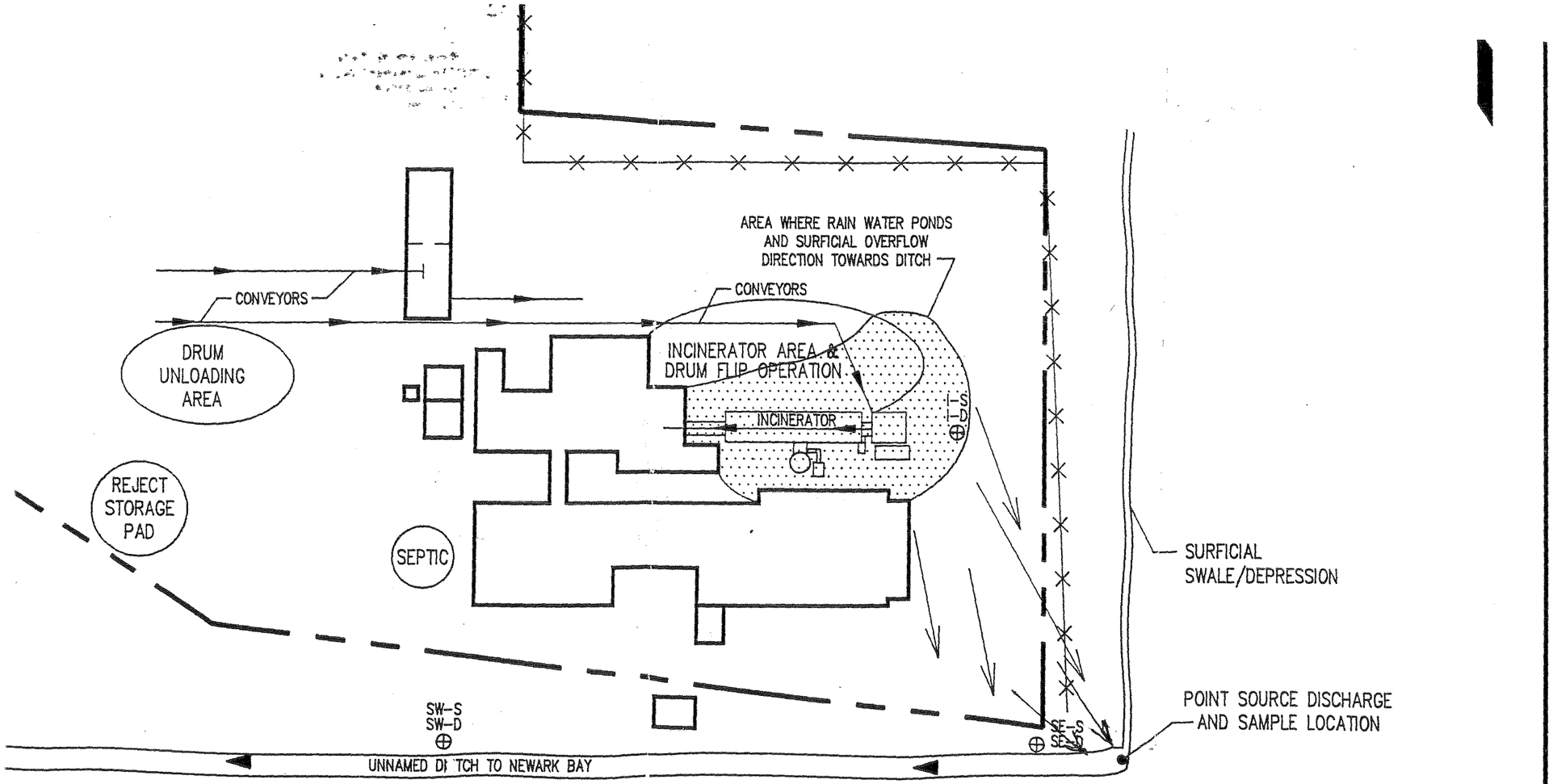
SOURCE:

U.S.G.S. 7.5
MINUTE SERIES
ELIZABETH AND
JERSEY CITY
QUADRANGLE - NJ

| JM SORGE, INC. | CENTRAL STEEL DRUM |
|---|---|

SITE LOCATION MAP

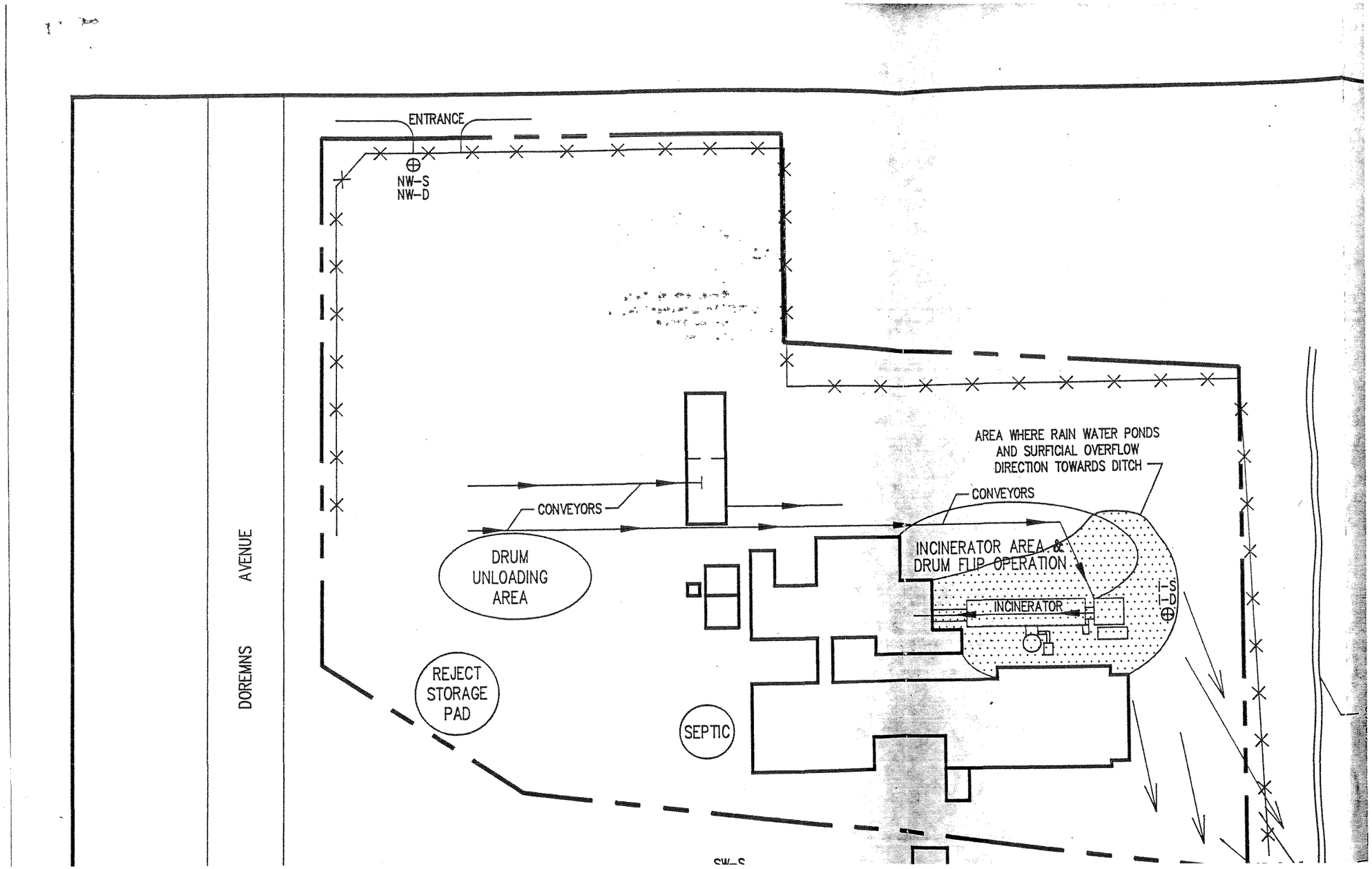
FIGURE 1

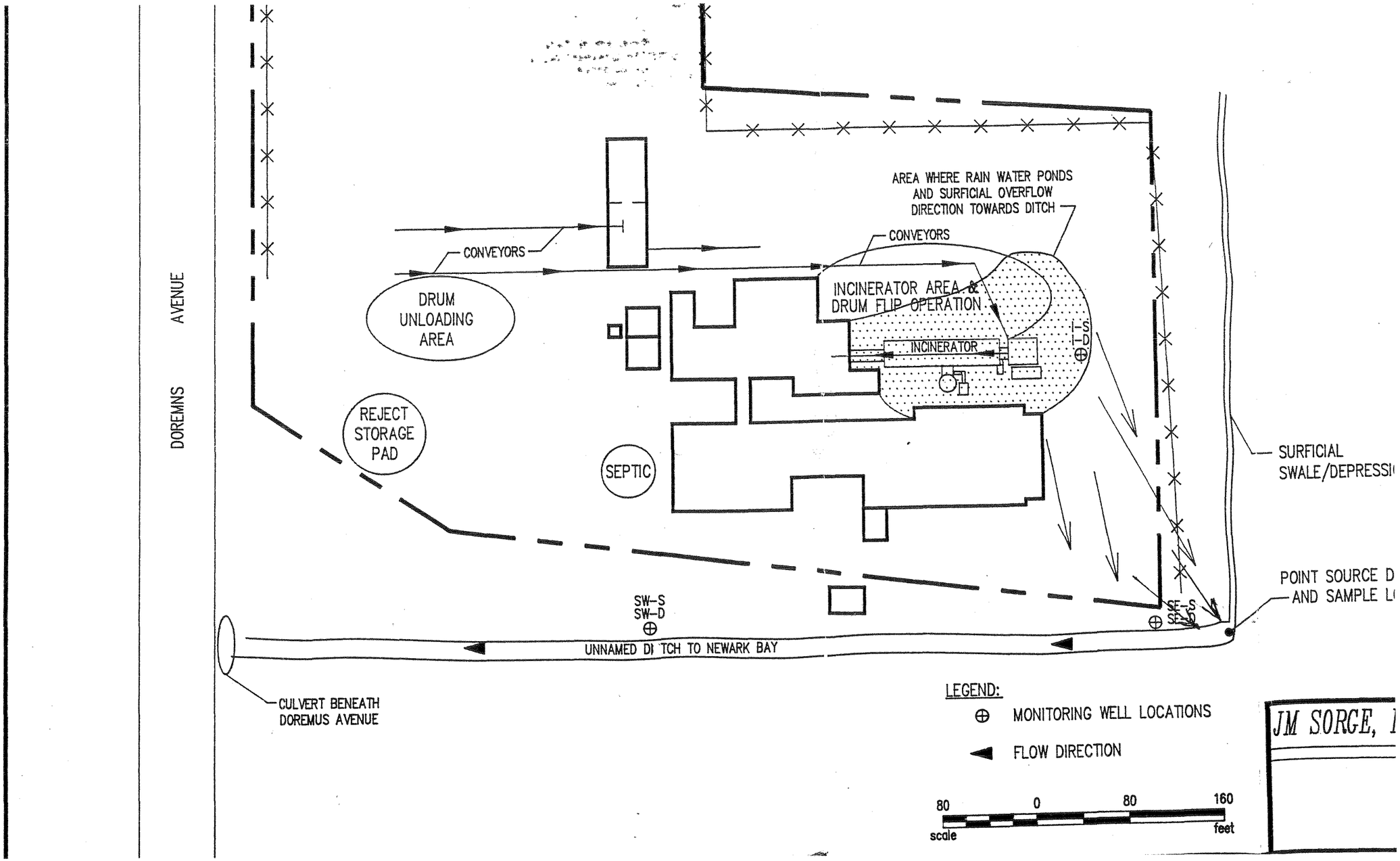



JM SORGE, INC. | CENTRAL STEEL DRUM

SITE MAP

FIGURE 2


ENTRANCE
NW-S
NW-D
DOREMNS AVENUE
CONVEYORS
DRUM UNLOADING AREA
REJECT STORAGE PAD
SEPTIC
AREA WHERE RAIN WATER PONDS AND SURFICIAL OVERFLOW DIRECTION TOWARDS DITCH
CONVEYORS
INCINERATOR AREA & DRUM FLIP OPERATION
INCINERATOR
SW-S


DOREMUS AVENUE
AREA WHERE RAIN WATER PONDS AND SURFICIAL OVERFLOW DIRECTION TOWARDS DITCH
CONVEYORS
CONVEYORS
DRUM UNLOADING AREA
INCINERATOR AREA & DRUM FLIP OPERATION
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CULVERT BENEATH DOREMUS AVENUE
LEGEND:
MONITORING WELL LOCATIONS
FLOW DIRECTION
80 0 80 160
scale
feet
JM SORGE, I

JM Sorge, Inc.

50 County Line Road, Somerville, NJ 08876 • (908) 218-0066
FAX (908) 218-9185

April 17, 1992

Mr. William Boehle
Chief - Surface Water Section
New Jersey Department Environmental Protection
and Energy
Bureau of Industrial Discharge Permits
401 E. State Street
Trenton, NJ 08625-0029

RECEIVED
#21
APR 22
STATE OF NEW JERSEY
DEPT. ENVIRONMENTAL PROTECTION
DIVISION WATER RESOURCES
BUR. OF IND. WASTE DISCH.

Re: Central Steel Drum Company
Newark, Essex County, NJ 0067199
NJPDES/DSW Permit Application

Dear Mr. Boehle:

The following provides the remainder of the required information requested by Mr. Ramamurthy Pyarilal of the Bureau of Industrial Discharge Permits - Special Cases Unit, in accordance with the Notice of Administrative Deficiency correspondence dated August 16, 1991, for the above-referenced facility. Mr. Matthew Precinski, of Mr. Pyarilal's staff, informed me that the Special Cases Unit had reviewed the original New Jersey Pollutant Discharge Elimination System/Discharge to Surface Water (NJPDES/DSW) Permit application for Central Steel Drum (CSD) and had determined that a General Industrial Site Stormwater Runoff Permit (5G) did not apply to this facility. According to Mr. Precinski, the Special Cases Unit forwarded this case to the Permits Unit of your Bureau in November 1991.

The original NJPDES/DSW permit application for CSD was submitted to the Department in April 1991. The April 1991 application was reviewed by Mr. Pyarilal's unit and was determined to be administratively incomplete. Therefore, a Notice of Administrative Deficiency (NAD) was issued by your Bureau on August 16, 1991. CSD responded to the NAD in a correspondence dated September 13, 1991. The response provided the majority of the information requested in the NAD. A copy of the August 16, 1991 NAD and the September 13, 1991 response (less Attachments) are included as Attachment A. As you will notice, certain items of information requested in the NAD were not included in the September 1991 response. Therefore, to fulfill the requirements of the NAD, I have attached the remaining information required to complete the NJPDES/DSW permit application for the CSD facility.

The original Form CP#1, which includes all necessary endorsements by both the property owner and the applicant/operator, is provided in Attachment B. Copies of the signed and dated letters sent to the officials of the municipality and the local sewerage authority requesting the proper endorsements of Form WQM-003, as well as the certified mail return receipts proving that the required endorsements were requested, are presented in Attachment C. Please note that no response to our request for Endorsement A of Form WQM-003 has been received from the City of Newark, and the Passaic Valley Sewerage Authority (PVSA) has informed me that they will not complete Endorsement C until Endorsement A is signed by the municipality.

As indicated in CSD's September 13, 1991 correspondence, significant rainfall was necessary to collect a sufficient volume of surficial discharge/runoff water to satisfy the analytical requirements of EPA Form 2C. On September 26, 1991, J M Sorge, Inc. (JMS) personnel collected the required samples. The samples were collected at the point source discharge location in accordance with the procedures outlined in the Department's document entitled Field Procedures Manual for Water Data Acquisition. The complete EPA Form 2C with all required certifications, as well as the complete laboratory analytical report of the results of the discharge/runoff sample, are included as Attachment D.

Should you have any questions or require additional information with regard to this matter, please contact me at your earliest convenience.

Very truly yours,

James M. Clabby
Project Manager

JMC/nk

Enclosure

cc: Mr. Alan Fischer
Mr. Neil Fischer
Mr. Peter Herzberg, Esq.

# ATTACHMENT D

## EPA FORM 2C
## AND
## COMPLETE LABORATORY ANALYTICAL RESULTS

Please print or type in the unshaded areas only.

Approval expires 7-31-88

FORM 2C NPDES

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

# APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER

## EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS

*Consolidated Permits Program*

## I. OUTFALL LOCATION

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

| A. OUTFALL NUMBER (list) | B. LATITUDE | | | C. LONGITUDE | | | D. RECEIVING WATER (name) |
|---|---|---|---|---|---|---|---|
| | 1. DEG. | 2. MIN. | 3. SEC. | 1. DEG. | 2. MIN. | 3. SEC. | |
| 001 | 74 | 07 | 23 | 40 | 42 | 30 | Unnamed ditch to Newark Bay |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

## II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined *(e.g., for certain mining activities)*, provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and *storm water* runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

| 1. OUTFALL NO. (list) | 2. OPERATION(S) CONTRIBUTING FLOW | | 3. TREATMENT | | |
|---|---|---|---|---|---|
| | a. OPERATION (list) | b. AVERAGE FLOW (include units) | a. DESCRIPTION | b. LIST CODES FROM TABLE 2C-1 | |
| 001 | Ponded stormwater on surface in area of incinerator unit. Stormwater floods area during heavy rains and overflows (via surface) to unnamed ditch | 914.6 GPD Average based on an average of 41.45 in. precipitation annually. Site = 12,920 Ft.$^2$ | None | 4 | A |
| | | | | | |
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OFFICIAL USE ONLY *(effluent guidelines sub-categories)*

CONTINUE ON REVERSE

## V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding – **Complete one set of tables for each outfall** – **Annotate the outfall number in the space provided.** NOTE: Tables V-A, V-B, and V-C are included on **separate sheets numbered V-1 through V-9.**

D. Use the space below to list any of the pollutants listed in Table 2c-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

| 1. POLLUTANT | 2. SOURCE | 1. POLLUTANT | 2. SOURCE |
|---|---|---|---|
| Xylene | -Outfall 001<br>-Source unknown<br>-Results Provided as Attachment B | | |

## VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ YES *(list all such pollutants below)* ☒ NO *(go to Item VI-B)*

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: NJD 0011482577

*Form Approved. OMB No. 2040-0086 Approval expires 7-31-88*

OU 00

## V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

**PART A** - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

| 1. POLLUTANT | 2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION | a. MAXIMUM DAILY VALUE (2) MASS | b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION | b. MAXIMUM 30 DAY VALUE *(if available)* (2) MASS | c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION | c. LONG TERM AVRG. VALUE *(if available)* (2) MASS | d. NO. OF ANALYSES | 3. UNITS *(specify if blank)* a. CONCENTRATION | 3. UNITS b. MASS | 4. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION | 4. INTAKE a. LONG TERM AVERAGE VALUE (2) MASS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| a. Biochemical Oxygen Demand *(BOD)* | 8 | | | | | | 1 | mg/l | | | |
| b. Chemical Oxygen Demand *(COD)* | 62 | | | | | | 1 | mg/l | | | |
| c. Total Organic Carbon *(TOC)* | 18.4 | | | | | | 1 | mg/l | | | |
| d. Total Suspended Solids *(TSS)* | 22 | | | | | | 1 | mg/l | | | |
| e. Ammonia *(as N)* | 1.1 | | | | | | 1 | mg/l | | | |
| f. Flow | VALUE 914.6 Avg. | | VALUE | | VALUE | | 1 | GPD | | VALUE | |
| g. Temperature *(winter)* | VALUE 1.6°C | | VALUE | | VALUE | | 1 | °C | | VALUE | |
| h. Temperature *(summer)* | VALUE 22.5°C | | VALUE | | VALUE | | 1 | °C | | VALUE | |
| i. pH | MINIMUM 7.19 | MAXIMUM | MINIMUM | MAXIMUM | | | 1 | STANDARD UNITS | | | |

**PART B** - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for a which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for wh column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and re

| 1. POLLUTANT AND CAS NO. *(if available)* | 2. MARK 'X' a. BELIEVED PRESENT | 2. MARK 'X' b. BELIEVED ABSENT | 3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION | a. MAXIMUM DAILY VALUE (2) MASS | b. MAXIMUM 30 DAY VALUE *(if available)* (1) CONCENTRATION | b. MAXIMUM 30 DAY VALUE *(if available)* (2) MASS | c. LONG TERM AVRG. VALUE *(if available)* (1) CONCENTRATION | c. LONG TERM AVRG. VALUE *(if available)* (2) MASS | d. NO. OF ANALYSES | 4. UNITS a. CONCENTRATION | 4. UNITS b. MASS | 5. INTAKE *(optional)* a. LONG TERM AVERAGE VALUE (1) CONCENTRATION | 5. INTAKE a. LONG TERM AVERAGE VALUE (2) MASS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a. Bromide (24959-67-9) | | X | <5 | | | | | | 1 | mg/l | | | |
| b. Chlorine, Total Residual | | X | <0.2 | | | | | | 1 | mg/l | | | |
| c. Color | | X | 60 | | | | | | 1 | Pt/Co. Units | | | |
| d. Fecal Coliform | | X | 2500 | | | | | | 1 | Colonies/100 ml. | | | |
| e. Fluoride (16984-48-8) | | X | 0.17 | | | | | | 1 | mg/l | | | |
| f. Nitrate-Nitrite *(as N)* | | X | 0.45 | | | | | | 1 | mg/l | | | |

ND = Not detected in analysis

| EPA I.D. NUMBER (copy from Item 1 of Form 1) | OUTFALL NUMBER |
|---|---|
| NJD 0011482577 | 001 |

Form Approved
OMB No 2040-0086
Approval expires 7-31-88

CONTINUED FROM PAGE 3 OF FORM 2-C

**PART C -** If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

| 1. POLLUTANT AND CAS NUMBER (If available) | 2. MARK 'X' | | | 3. EFFLUENT | | | | | | | 4. UNITS | | 5. INTAKE (optional) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | a. TESTING REQUIRED | b. BELIEVED PRESENT | c. BELIEVED ABSENT | a. MAXIMUM DAILY VALUE (1) CONCENTRATION | a. MAXIMUM DAILY VALUE (2) MASS | b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION | b. MAXIMUM 30 DAY VALUE (if available) (2) MASS | c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION | c. LONG TERM AVRG. VALUE (if available) (2) MASS | d. NO. OF ANALYSES | a. CONCENTRATION | b. MASS | a. LONG TERM AVERAGE VALUE (1) CONCENTRATION | a. LONG TERM AVERAGE VALUE (2) MASS | b. NO. OF ANALYSES |
| **METALS, CYANIDE, AND TOTAL PHENOLS** | | | | | | | | | | | | | | | |
| 1M. Antimony, Total (7440-36-0) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 2M. Arsenic, Total (7440-38-2) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 3M. Beryllium, Total, 7440-41-7) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 4M. Cadmium, Total (7440-43-9) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 5M. Chromium, Total (7440-47-3) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 6M. Copper, Total (7440-50-8) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 7M. Lead, Total (7439-92-1) | | X | | 8.1 | | | | | | 1 | ug/l | | | | |
| 8M. Mercury, Total (7439-97-6) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 9M. Nickel, Total (7440-02-0) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 10M. Selenium, Total (7782-49-2) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 11M. Silver, Total (7440-22-4) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 12M. Thallium, Total (7440-28-0) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 13M. Zinc, Total (7440-66-6) | | X | | 81 | | | | | | 1 | ug/l | | | | |
| 14M. Cyanide, Total (57-12-5) | | | X | <0.02 | | | | | | 1 | mg/l | | | | |
| 15M. Phenols, Total | | | X | <0.05 | | | | | | 1 | mg/l | | | | |
| **DIOXIN** | | | | | | | | | | | | | | | |
| 2,3,7,8-Tetrachlorodibenzo-P-Dioxin (1764 01-6) | | | X | DESCRIBE RESULTS: No 2,3,7,8 - TCDD was detected in effluent sample. | | | | | | | | | | | |

| 1. POLLUTANT AND CAS NUMBER (If available) | 2. MARK 'X' a. TESTING REQUIRED | b. BELIEVED PRESENT | c. BELIEVED ABSENT | 3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION | (2) MASS | b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION | (2) MASS | c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION | (2) MASS | d. NO. OF ANALYSES | 4. UNITS a. CONCENTRATION | b. MASS | 5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION | (2) MASS | b. NO. OF ANALYSES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GC/MS FRACTION – VOLATILE COMPOUNDS** *(continued)* | | | | | | | | | | | | | | | |
| 22V. Methylene Chloride (75-09-2) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 23V. 1,1,2,2-Tetrachloroethane (79-34-5) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 24V. Tetrachloroethylene (127-18-4) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 25V. Toluene (108-88-3) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 26V. 1,2-Trans-Dichloroethylene (156-60-5) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 27V. 1,1,1-Trichloroethane (71-55-6) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 28V. 1,1,2-Trichloroethane (79-00-5) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 29V. Trichloroethylene (79-01-6) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 30V. Trichlorofluoromethane (75-69-4) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 31V. Vinyl Chloride (75-01-4) | | | X | ND | | | | | | 1 | ug/l | | | | |
| **GC/MS FRACTION – ACID COMPOUNDS** | | | | | | | | | | | | | | | |
| 1A. 2-Chlorophenol (95-57-8) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 2A. 2,4-Dichlorophenol (120-83-2) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 3A. 2,4-Dimethylphenol (105-67-9) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 4A. 4,6-Dinitro-O-Cresol (534-52-1) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 5A. 2,4-Dinitrophenol (51-28-5) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 6A. 2-Nitrophenol (88-75-5) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 7A. 4-Nitrophenol (100-02-7) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 8A. P-Chloro-M-Cresol (59-50-7) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 9A. Pentachlorophenol (87-86-5) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 10A. Phenol (108-95-2) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 11A. 2,4,6-Trichlorophenol (88-06-2) | | | X | ND | | | | | | 1 | ug/l | | | | |

ND Not detected in analysis

EPA ID NUMBER (copy from item 1 of Form 1) NJD 0011482577 | FALL NUMBER 001

Form ... OMB ... 40-00... Approval expires 7-31-88

CONTINUED FROM PAGE V-6

| 1. POLLUTANT AND CAS NUMBER (if available) | 2. MARK 'X' a. TESTING REQUIRED | b. BELIEVED PRESENT | c. BELIEVED ABSENT | 3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION | (2) MASS | b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION | (2) MASS | c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION | (2) MASS | d. NO. OF ANALYSES | 4. UNITS a. CONCENTRATION | b. MASS | 5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION | (2) MASS | b. NO. ANALYSES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS** *(continued)* | | | | | | | | | | | | | | | |
| 22B. 1,4-Dichlorobenzene (106-46-7) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 23B. 3,3'-Dichlorobenzidine (91-94-1) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 24B. Diethyl Phthalate (84-66-2) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 25B. Dimethyl Phthalate (131-11-3) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 26B. Di-N-Butyl Phthalate (84-74-2) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 27B. 2,4-Dinitrotoluene (121-14-2) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 28B. 2,6-Dinitrotoluene (606-20-2) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 29B. Di-N-Octyl Phthalate (117-84-0) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (122-66-7) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 31B. Fluoranthene (206-44-0) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 32B. Fluorene (86-73-7) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 33B. Hexachlorobenzene (118-74-1) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 34B. Hexachlorobutadiene (87-68-3) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 35B. Hexachlorocyclopentadiene (77-47-4) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 36B. Hexachloroethane (67-72-1) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 38B. Isophorone (78-59-1) | | | X | 2.6 | | | | | | 1 | ug/l | | | | |
| 39B. Naphthalene (91-20-3) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 40B. Nitrobenzene (98-95-3) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 41B. N-Nitrosodimethylamine (62-75-9) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 42B. N-Nitrosodi-N-Propylamine (621-64-7) | | | X | ND | | | | | | 1 | ug/l | | | | |



CONTINUE ON REVE...

| 1. POLLUTANT AND CAS NUMBER (if available) | 2. MARK 'X' a. TESTING REQUIRED | b. BELIEVED PRESENT | c. BELIEVED ABSENT | 3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION | (2) MASS | b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION | (2) MASS | c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION | (2) MASS | d. NO. OF ANALYSES | 4. UNITS a. CONCENTRATION | b. MASS | 5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION | (2) MASS | b. NO. OF ANALYSES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GC/MS FRACTION – PESTICIDES (continued) | | | | | | | | | | | | | | | |
| 17P. Heptachlor epoxide (1024-57-3) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 18P. PCB-1242 (53469-21-9) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 19P. PCB-1254 (11097-69-1) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 20P. PCB-1221 (11104-28-2) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 21P. PCB-1232 (11141-16-5) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 22P. PCB-1248 (12672-29-6) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 23P. PCB-1260 (11096-82-5) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 24P. PCB-1016 (12674-11-2) | | | X | ND | | | | | | 1 | ug/l | | | | |
| 25P. Toxaphene (8001-35-2) | | | X | ND | | | | | | 1 | ug/l | | | | |



ND = Not detected in analysis



U.S. GOVERNMENT PRINTING OFFICE: 1987

**ENVIROTECH RESEARCH, INC.**

777 New Durham Road
Edison, New Jersey 08817
Tel: (908) 549-3900
Fax: (908) 549-3679

CHECKED IN 11/11/91

DATA ENTERED

November 5, 1991

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876

Attention: Mr. Chris Finley

Re: Job No. A049 - Central Steel

Dear Mr. Finley:

Enclosed are the results you requested for the following samples taken 9/26/91:

| Lab No. | Client ID | Analysis Requested |
|---|---|---|
| 57052 | Surface Runoff | VOA+15w/Acrolein,Acrylonitrile and Dichlorofluoromethane, BNA+25,PP Metals w/ Al,Ba,B, Co,Fe,Mg,Mo,Mn,Sn,and Ti, Pest/PCB,CN-,Phenols,COD, TOC,TSS,pH,S=,Dioxin, Radioactivity,BOD,$NH_3$, Bromide,Tot. Res. Chlorine, Fecal Coliform,$NO_3$,$NO_2$, TON,Phosphate,Color,$SO_4$, $SO_3$,MBAS & Oil and Grease |

Please call me at 549-3900 if you have any questions.

Very truly yours,

Michael J. Urban
Laboratory Manager

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## Analytical Methodology Summary

Volatile Organics:

Water samples are analyzed for volatile organics by purge and trap GC/MS as specified in EPA Method 624. Solid samples are analyzed for priority pollutant volatile organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8240. Water samples are analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX) by GC-PID as specified in EPA Methods 503.1 and 602. Solid samples are analyzed for BTEX as specified in EPA Method 8020.

Acid and Base/Neutral Extractable Organics:

Water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable priority pollutants as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by EPA Methods 624, 625, 8240 and 8270. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatiles, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in EPA Method 608. Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8080.

Total Petroleum Hydrocarbons:

Water samples are analyzed for petroleum hydrocarbons by I.R. using EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with the March 1990 N.J. DEP "Remedial Investigation Guide" Apendix A, page 52, and analyzed by U.S. EPA Method 418.1.

Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as follows:

P - Inductively Coupled Plasma Emission Spectroscopy (ICP)

A - Flame Atomic Absorption

F - Furnace Atomic Absorption

CV - Manual Cold Vapor (Mercury)

Water analyses are performed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition).

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471. Other specific Atomic Absorption method references are as follows:

| | Water Test Method | | Solid Test Method | |
|---|---|---|---|---|
| Element | Flame | Furnace | Flame | Furnace |
| Aluminum | 202.1 | 202.2 | 7020 | -- |
| Antimony | 204.1 | 204.2 | 7040 | 7041 |
| Arsenic | -- | 206.2 | -- | 7060 |
| Barium | 208.1 | -- | 7080 | -- |
| Beryllium | 210.1 | 210.2 | 7090 | 7091 |
| Cadmium | 213.1 | 213.2 | 7130 | 7131 |
| Calcium | 215.1 | -- | 7140 | -- |
| Chromium, Total | 218.1 | 218.2 | 7190 | 7191 |
| Chromium, (+6) | 218.4 | 218.5 | 7197 | 7195 |
| Cobalt | 219.1 | 219.2 | 7200 | 7201 |
| Copper | 220.1 | 220.2 | 7210 | -- |
| Iron | 236.1 | 236.2 | 7380 | -- |
| Lead | 239.1 | 239.2 | 7420 | 7421 |
| Magnesium | 242.1 | -- | 7450 | -- |
| Manganese | 243.1 | 243.2 | 7460 | -- |
| Nickel | 249.1 | 249.2 | 7520 | -- |
| Potassium | 258.1 | -- | 7610 | -- |
| Selenium | -- | 270.2 | -- | 7740 |
| Silver | 272.1 | 272.2 | 7760 | -- |
| Sodium | 273.1 | -- | 7770 | -- |
| Tin | 283.1 | 283.2 | 7870 | -- |
| Thallium | 279.1 | 279.2 | 7840 | 7841 |
| Vanadium | 286.1 | 286.2 | 7910 | 7911 |
| Zinc | 289.1 | 289.2 | 7950 | -- |

Cyanide:

Water samples are analyzed for cyanide using EPA Method 335.2. Cyanide is determined in solid samples as specified in the EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Phenols:

Water samples are analyzed for total phenols using EPA Method 420.1. Total phenols are determined in solid samples by preparing the sample as outlined in the EPA, Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Cleanup of Semivolatile Extracts:

Upon request Method 3611 Alumina Column Cleanup and/or Mehtod 3650 Acid-Base Partition Cleanup are performed to improve detection limits by the removal of saturated hydrocarbon interferences.

Hazardous Waste Characteristics: .

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability - Method 1020

Corrosivity - Water pH Method 9040
Soil pH Method 9045

Reactivity - Chapter 7, Section 7.3.3 and 7.3.4 respectively for hydrogen cyanide and hydrogen sulfide release.

Toxicity - TCLP Method 1311

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846 3rd Edition, November 1986.
- Standard Methods for the Examination of Water and Wastewater, 17th Edition.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 1979.

# DATA REPORTING QUALIFIERS

ND - The compound was not detected at the indicated concentration.

J - Mass spectral data indicates the presence of a compound that meets the identification criteria. The result is less than the specified detection limit but greater than zero. The concentration given is an approximate value.

B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

**ENVIROTECH RESEARCH, INC.**

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 11/5/91
Job No.: A049 - Central Steel
N.J. Certified Lab No. 12543
QA Batch 2251

## VOLATILE ORGANICS

| Parameter | Lab No. 57052<br>Client ID: Surf. Runoff<br>Units: ug/l | Detection Limit<br>Units: ug/l |
|---|---|---|
| Benzene | ND | 5.0 |
| Bromodichloromethane | ND | 5.0 |
| Bromoform | ND | 5.0 |
| Bromomethane | ND | 10 |
| Carbon tetrachloride | ND | 5.0 |
| Chlorobenzene | ND | 5.0 |
| Chloroethane | ND | 10 |
| 2-Chloroethylvinyl ether | ND | 10 |
| Chloroform | ND | 5.0 |
| Chloromethane | ND | 10 |
| Dibromochloromethane | ND | 5.0 |
| 1,1-Dichloroethane | ND | 5.0 |
| 1,2-Dichloroethane | ND | 5.0 |
| 1,1-Dichloroethene | ND | 5.0 |
| trans-1,2-Dichloroethene | ND | 5.0 |
| 1,2-Dichloropropane | ND | 5.0 |
| cis-1,3-Dichloropropene | ND | 5.0 |
| trans-1,3-Dichloropropene | ND | 5.0 |
| Ethyl benzene | ND | 5.0 |
| Methylene chloride | ND | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 |
| Tetrachloroethene | ND | 5.0 |
| Toluene | ND | 5.0 |
| 1,1,1-Trichloroethane | ND | 5.0 |
| 1,1,2-Trichloroethane | ND | 5.0 |
| Trichloroethene | ND | 5.0 |
| Trichlorofluoromethane | ND | 5.0 |
| Vinyl chloride | ND | 10 |
| Xylenes (Total) | 8.1J | 5.0 |
| Acrolein | ND | 100 |
| Acrylonitrile | ND | 100 |
| Dichlorodifluormethane | ND | 10 |

**ENVIROTECH RESEARCH, INC.**

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: SURF RUN-OFF

Sample No.: 57052 Job No.: A049 Fraction: VOC

Concentration Units: PPM ~~PPB~~

| | COMPOUND NAME | Retention Time | Estimated Conc. |
|---|---|---|---|
| 1. | NO VOLATILE ORGANICS COMPOUNDS FOUND T.C. | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
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| 21. | | | |
| 22. | | | |
| 23. | | | |
| 24. | | | |
| 25. | | | |

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 11/5/91
Job No.: A049 - Central Steel
N.J. Certified Lab No. 12543
QA Batch 1699A

## ACID EXTRACTABLES

| Parameter | Lab No. 57052<br>Client ID: Surf. Runoff<br>Units: ug/l | Detection Limit<br>Units: ug/l |
|---|---|---|
| 2-Chlorophenol | ND | 10 |
| 2-Nitrophenol | ND | 10 |
| Phenol | ND | 10 |
| 2,4-Dimethylphenol | ND | 10 |
| 2,4-Dichlorophenol | ND | 10 |
| 2,4,6-Trichlorophenol | ND | 10 |
| 4-Chloro-3-methylphenol | ND | 10 |
| 2,4-Dinitrophenol | ND | 50 |
| 2-Methyl-4,6-dinitrophenol | ND | 50 |
| Pentachlorophenol | ND | 50 |
| 4-Nitrophenol | ND | 50 |

**ENVIROTECH RESEARCH, INC.**

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 11/5/91
Job No.: A049 - Central Steel
N.J. Certified Lab No. 12543
QA Batch 1699A

## BASE/NEUTRAL EXTRACTABLES

| Parameter | Lab No. 57052<br>Client ID: Surf. Runoff<br>Units: ug/l | Detection Limit<br>Units: ug/l |
|---|---|---|
| 1,3-Dichlorobenzene | ND | 10 |
| 1,4-Dichlorobenzene | ND | 10 |
| Hexachloroethane | ND | 10 |
| Bis(2-chloroethyl) ether | ND | 10 |
| 1,2-Dichlorobenzene | ND | 10 |
| Bis(2-chloroisopropyl) ether | ND | 10 |
| N-Nitrosodi-n-propylamine | ND | 10 |
| Nitrobenzene | ND | 10 |
| Hexachlorobutadiene | ND | 10 |
| 1,2,4-Trichlorobenzene | ND | 10 |
| Isophorone | 2.6J | 10 |
| Naphthalene | ND | 10 |
| Bis(2-chloroethoxy) methane | ND | 10 |
| Hexachlorocyclopentadiene | ND | 10 |
| 2-Chloronaphthalene | ND | 10 |
| Acenaphthylene | ND | 10 |
| Acenaphthene | ND | 10 |
| Dimethyl phthalate | ND | 10 |
| 2,6-Dinitrotoluene | ND | 10 |
| Fluorene | ND | 10 |
| 4-Chlorophenyl phenyl ether | ND | 10 |
| 2,4-Dinitrotoluene | ND | 10 |
| Diethylphthalate | ND | 10 |
| N-Nitrosodiphenylamine | ND | 10 |
| Hexachlorobenzene | ND | 10 |

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 11/5/91
Job No.: A049 - Central Steel
N.J. Certified Lab No. 12543
QA Batch 1699A

BASE/NEUTRAL EXTRACTABLES (con't)

| Parameter | Lab No. 57052<br>Client ID: Surf. Runoff<br>Units: ug/l | Detection Limit<br>Units: ug/l |
|---|---|---|
| 4-Bromophenyl phenyl ether | ND | 10 |
| Phenanthrene | ND | 10 |
| Anthracene | ND | 10 |
| Dibutyl phthalate | ND | 10 |
| Fluoranthene | ND | 10 |
| Pyrene | ND | 10 |
| Benzidine | ND | 20 |
| Butyl benzyl phthalate | ND | 10 |
| Bis(2-ethylhexyl) phthalate | ND | 10 |
| Chrysene | ND | 10 |
| Benzo(a)anthracene | ND | 10 |
| 3,3'-Dichlorobenzidine | ND | 20 |
| Di-n-octyl phthalate | ND | 10 |
| Benzo(b)fluoranthene | ND | 10 |
| Benzo(k)fluoranthene | ND | 10 |
| Benzo(a)pyrene | ND | 10 |
| Indeno(1,2,3-c,d)pyrene | ND | 10 |
| Dibenzo(a,h)anthracene | ND | 10 |
| Benzo(ghi)perylene | ND | 10 |
| N-Nitrosodimethylamine | ND | 10 |

**ENVIROTECH RESEARCH, INC.**

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: SURFACE RUNOFF

Sample No.: 57052 Job No.: A049 Fraction: BNA

Concentration Units: PPM (PPB)

| | COMPOUND NAME | Retention Time | Estimated Conc. |
|---|---|---|---|
| 1. | 2-BUTOXY-ETHANOL | 9.69 | 9 |
| 2. | UNKNOWN | 11.05 | 32 |
| 3. | 2-METHYL-2-PROPENOIC ACID, 2-HYDROXYETHYL ESTER | 12.64 | 390 |
| 4. | UNKNOWN | 14.57 | 9 |
| 5. | 3,5,5-TRIMETHYL-HEXANOIC ACID | 15.46 | 9 |
| 6. | UNKNOWN | 15.84 | 14 |
| 7. | (2-BUTOXYETHOXY)-ETHANOL (ISOMER) | 16.34 | 95 |
| 8. | UNKNOWN | 18.06 | 14 |
| 9. | 2-METHYL-2-PROPENOIC ACID, 1,2-ETHANEDIYL ESTER | 18.70 | 36 |
| 10. | UNKNOWN | 19.92 | 43 |
| 11. | " | 20.56 | 30 |
| 12. | " | 22.88 | 20 |
| 13. | 2-METHYL-BENZENE SULFONAMIDE | 24.16 | 12 |
| 14. | UNKNOWN | 26.56 | 48 |
| 15. | " | 26.74 | 18 |
| 16. | " | 27.09 | 820 |
| 17. | " | 29.21 | 30 |
| 18. | 2-METHYL-2-PROPENOIC ACID, 1,2-ETHANEDIYL BIS- | 31.05 | 680 |
| 19. | (OXY-2,1-ETHANEDIYL) ESTER | — | — |
| 20. | UNKNOWN | 31.46 | 39 |
| 21. | | | |
| 22. | | | |
| 23. | | | |
| 24. | | | |
| 25. | | | |

**ENVIROTECH RESEARCH, INC.**

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 11/5/91
Job No.: A049 - Central Steel
N.J. Certified Lab No. 12543
QA Batch 1671

ORGANOCHLORINE PESTICIDES and PCBs

| Parameter | Lab No. 57052<br>Client ID: Surf. Runoff<br>Units: ug/l | Detection Limit<br>Units: ug/l |
|---|---|---|
| Aldrin | ND | 0.10 |
| alpha-BHC | ND | 0.10 |
| beta-BHC | ND | 0.10 |
| delta-BHC | ND | 0.10 |
| gamma-BHC (Lindane) | ND | 0.10 |
| Chlordane | ND | 1.0 |
| 4,4'-DDD | ND | 0.20 |
| 4,4'-DDE | ND | 0.20 |
| 4,4'-DDT | ND | 0.20 |
| Dieldrin | ND | 0.20 |
| Endosulfan I | ND | 0.10 |
| Endosulfan II | ND | 0.20 |
| Endosulfan sulfate | ND | 0.20 |
| Endrin | ND | 0.20 |
| Endrin aldehyde | ND | 0.40 |
| Heptachlor | ND | 0.10 |
| Heptachlor epoxide | ND | 0.10 |
| Toxaphene | ND | 2.0 |
| PCB-1016 | ND | 1.0 |
| PCB-1221 | ND | 1.0 |
| PCB-1232 | ND | 1.0 |
| PCB-1242 | ND | 1.0 |
| PCB-1248 | ND | 1.0 |
| PCB-1254 | ND | 1.0 |
| PCB-1260 | ND | 1.0 |

**ENVIROTECH RESEARCH, INC.**

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 11/5/91
Job No.: A049 - Central Steel
N.J. Certified Lab No. 12543
QA Batch 1701

METALS

| Parameter | Lab No. 57052<br>Client ID: Surf. Runoff<br>Units: ug/l | Detection Limit<br>Units: ug/l | Method Code |
|---|---|---|---|
| Antimony | ND | 60 | P |
| Arsenic | ND | 10 | F |
| Beryllium | ND | 5.0 | P |
| Cadmium | ND | 5.0 | P |
| Chromium | ND | 10 | P |
| Copper | ND | 25 | P |
| Lead | 8.1 | 3.0 | F |
| Mercury | ND | 0.2 | CV |
| Nickel | ND | 40 | P |
| Selenium | ND | 5.0 | F |
| Silver | ND | 10 | P |
| Thallium | ND | 10 | F |
| Zinc | 81 | 20 | P |
| Aluminum | ND | 200 | P |
| Barium | ND | 200 | P |
| Boron | 110 | 30.0 | P |
| Cobalt | ND | 50.0 | P |
| Iron | 670 | 100 | P |
| Manganese | 213 | 15.0 | P |
| Molybdenum | 42 | 10.0 | P |
| Magnesium | 12000 | 5000 | P |
| Tin | ND | 5.0 | P |
| Titanium | 10 | 10.0 | P |

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

## ENVIROTECH RESEARCH, INC.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 11/5/91
Job No.: A049 - Central Steel
N.J. Certified Lab No. 12543

WET CHEM

Lab No. 57052
Client ID: Surf. Runoff

| Parameter | Units: mg/l |
|---|---|
| TOC | 18.4 |
| COD | 62 |
| Total Sulfide | 1.2 |
| TSS | 22 |
| Phenol | < 0.05 |
| Cyanide | < 0.02 |
| Ammonia as N | 1.1 |
| BOD | 8 |
| Bromide | < 5 |
| Color (Pt/Co. units) | 60 |

**ENVIROTECH RESEARCH, INC.**

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 11/5/91
Job No.: A049 - Central Steel
N.J. Certified Lab No. 12543

WET CHEM

| | Lab No. 57052<br>Client ID: Surf Runoff<br>Units mg/l |
|---|---|
| Chlorine, total residual | < 0.2** |
| Fecal Coliforms | 2500* |
| Flouride | 0.17 |
| Total Organic Nitrogen | 1.1 |
| MBAS/LAS | 0.20 |
| Nitrate as N | 0.45 |
| Nitrite as N | 0.02 |
| Oils and Grease | 3 |
| Phosphorus, total | 0.24 |
| Sulfate | 25 |
| Sulfite | 2** |
| pH 7.19 standard units | |

* This result expressed in colonies/100ml.
** As received.

INTERNATIONAL TECHNOLOGY CORPORATION

# ANALYTICAL SERVICES

## CERTIFICATE OF ANALYSIS

Mike Urban
Envirotech Research, Inc.
777 New Durham Road
Edison, NJ 08817

October 10, 1991
**REVISED NOVEMBER 26, 1991**

**TDL PROJECT NUMBER:** 484387

**This is the Certificate of Analysis for the following samples:**

| | |
|---|---|
| **Client Project ID:** | A049 |
| **Date Received by Lab:** | September 27, 1991 |
| **Number of Samples:** | One (1) |
| **Sample Type:** | Water |

## I. Introduction/Case Narrative

Results for these analyses were originally reported in our report dated October 10, 1991. There was a systematic error in the calculation of those results which produced numbers which were twice the actual values. This report contains the corrected numbers for the analyses. Please disregard results from the original report.

One (1) water sample was received on September 27, 1991 for the analysis of 2,3,7,8-TCDD. (See Appendix A, Cross Reference List and Appendix C, Chain-of-Custody records.) The sample and blank were spiked prior to extraction with an internal standard solution containing 25 ng $^{13}C$-2,3,7,8-TCDD. The sample and blank were extracted and cleaned up using a modified version of the EPA reference method described in "RCRA SW-846, Method 8280." Extracts were analyzed by GC/MS operating in the selected ion monitoring mode for enhanced sensitivity. The procedures used were consistent with USEPA Method 613, "2,3,7,8-Tetrachlorodibenzo-p-Dioxin", July 1982.

The sample was labeled with the following:

A049-57052

Reviewed and Approved:

Duane K. Root
Analytical Operations Manager

DIT063-A/wkh

Mike Urban
ENVIROTECH RESEARCH, INC.
Date: November 26, 1991
Client Project ID: A049 TDL Project No.: 484387
IT ANALYTICAL SERVICES
304 DIRECTORS DRIVE
KNOXVILLE, TN
(615) 690-3211

## II. Analytical Results/Methodology

### SAMPLE PREPARATION

Approximately 500 ml of the sample and 1000 ml distilled water (for the blank) were transferred into individual separatory funnels. The sample and blank were spiked with the internal standard mixture, and then triple-extracted with $CH_2Cl_2$. The resulting extracts were filtered into a KD flask and the volume reduced to approximately 1 ml.

### SAMPLE CLEANUP

The sample and blank were cleaned up using dual column chromatography consisting of an acid-modified silica gel column followed by a neutral alumina column to aid in the removal of chemical interferences. Detailed descriptions of these cleanup techniques can be found in Option A of the U.S. Environmental Protection Agency, Region VII Protocol for "The Determination Of 2,3,7,8-TCDD In Soil And Sediment", revised September, 1983. Final extracts were concentrated to near dryness and raised to 50 µl with nonane containing 25 ng $^{13}C$-1,2,3,4-TCDD which was used as a recovery standard.

### GC/MS ANALYSIS

**Isomer Specific TCDD** - The sample extracts were analyzed using HRGC/LRMS scanning in the selected ion monitoring mode for enhanced sensitivity. The column used for this isomer specific analysis was a 60 m SP-2331 fused silica capillary column. Before acquisition of the sample data, a seven isomer performance mixture containing the six most closely eluting TCDD isomers was analyzed.

A five-point calibration plot was analyzed in triplicate. The mean response factors obtained from this fifteen-point calibration were used for all subsequent calculations. The shift standard, analyzed on the same day as the sample, produced a response factor within 10% of the fifteen-point curve for TCDD.

### GC/MS RESULTS

**Isomer Specific TCDD** - The results for the isomer specific analysis, shown in Appendix B, are reported in ng/L (ppt). A detection limit is calculated from 2.5 times the signal in the area of the elution of $^{13}C$-TCDD whenever a sample contains no detectable 2,3,7,8-TCDD.

## III. Quality Control

Routine laboratory QA/QC was followed. Recoveries for the internal standards for the sample are presented with the sample analysis data.

# APPENDIX A

**Mike Urban**
**ENVIROTECH RESEARCH, INC.**
Date: November 26, 1991
Client Project ID: A049 TDL Project No.: 484387

IT ANALYTICAL SERVICES
304 DIRECTORS DRIVE
KNOXVILLE, TN
(615) 690-3211

# CROSS REFERENCE LIST

| TDL SAMPLE NO. | CLIENT SAMPLE NO. | MATRIX |
|---|---|---|
| BB4042 | A049-57052 | Water |

DIT063-A/wkh

# APPENDIX B

**Mike Urban**
**ENVIROTECH RESEARCH, INC.**
Date: November 26, 1991
Client Project ID: A049 TDL Project No.: 484387

IT ANALYTICAL SERVICES
304 DIRECTORS DRIVE
KNOXVILLE, TN
(615) 690-3211

## Dioxin/Furan Analysis - Modified Method 613

**Client Sample ID:** A049-57052 (Water)
**Sample Date:** September 26, 1991
**TDL Sample ID:** BB4042
**Extraction Date:** October 1, 1991

| Analyte | Conc. (ng/L) | Internal Standard | % Recovery |
|---|---|---|---|
| **Isomer Specific Analysis Date:** | October 3, 1991 | | |
| 2,3,7,8-TCDD | ND(1.9) | $^{13}$C-2,3,7,8-TCDD | 103 |

**Mike Urban**
**ENVIROTECH RESEARCH, INC.**
Date: November 26, 1991
Client Project ID: A049 TDL Project No.: 484387

IT ANALYTICAL SERVICES
304 DIRECTORS DRIVE
KNOXVILLE, TN
(615) 690-3211

# Dioxin/Furan Analysis - Modified Method 613

**Client Sample ID:** Method Blank
**Sample Date:** NA
**TDL Sample ID:** BLK2100
**Extraction Date:** October 1, 1991

| Analyte | Conc. (ng/L) | Internal Standard | % Recovery |
|---|---|---|---|
| **Isomer Specific Analysis Date:** | October 3, 1991 | | |
| 2,3,7,8-TCDD | ND(1.9) | $^{13}$C-2,3,7,8-TCDD | 97 |

DIT063-A/wkh

# APPENDIX C

ENVIROTECH
AME OF CLIENT (FOR REPORT AND BILLING)

DDRESS

TY STATE ZIP

MIKE URBAN
TENTION

IONE

# CHAIN-OF-CUSTODY RECORD

COC NO.
*000000105*

ENVIROTECH JOB NO. A049

PROJECT NAME


ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD
EDISON, N.J. 08817

(201) 549-3900
908


| DATE SMPLD. | TIME SMPLD. | SMPLD. BY | MATRIX | PRES. | NO. OF CONT. | SAMPLE LOCATION/DESCRIPTION | ANALYSIS REQUESTED | ENVIROTECH SAMPLE NUMBER |
|---|---|---|---|---|---|---|---|---|
| 9/26/91 | | | $H_2O$ | 4°C | 1 | A049-57052 | DIOXIN (2,3,7,8, TETRA-CHLORO DI BENZO-P-DIOXIN) | |
| | | | | | | BB 4042 | | |
| | | | | | | Cooler temp is at 7°C. | by 613 | |
| | | | | | | Sample OK. MLW 9-27-91 | | |
| | | | | | | CONTAINER NO. *0000330* | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

TOTAL NO. OF CONTAINERS: 1

ECIAL INSTRUCTIONS:

| RELINQUISHED BY: | DATE/TIME | 1. RECEIVED BY: | 3. RELINQUISHED BY: | DATE/TIME | 3. RECEIVED BY: |
|---|---|---|---|---|---|
| [signature] | 9/26/91 2:30p | [signature] 9-27-91 TDL 0930 | | - | |
| RELINQUISHED BY: | DATE/TIME | 2. RECEIVED BY: | 4. RELINQUISHED BY: | DATE/TIME | 4. RECEIVED BY: |
| | - | | | - | |

6 of 7

# SAMPLE TRACKING SHEET

Extraction Page 2100 Project No 484387

Client ENVIROTECH (Code) Project Manager NANCY

Date In 9-27-91 Date Due 10-25-91 Storage T1-C

Relinquished to Extractions by MLW Date 9-28-91 Received by BC Date 09-30-91

Relinquished to GC/MS by BC Date 10-03-91 Received by NM Date 10-3-91

| Sample ID No | Matrix | Method | Vol/ Weight | Spiking Solution Book Page | Spiking Solution Volume | Extraction Date | Acid Pretreat | Filter/ ND | One Column | Dual Column | Acid/Caustic Wash | Activated Carbon | Blow Down | Take-Up Solution Book Page | Take-Up Solution Volume | 2,3,7,8 TCDD Operator | 2,3,7,8 TCDD Date | 2,3,7,8 TCDF Status Code | Total Dioxin/Total Furan Operator | Total Dioxin/Total Furan Date | Total Dioxin/Total Furan Status Code | Total Dioxin/Total Furan Instrument |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BB4042 | WATER | 613 | 500ml | 1007:34 | 1ml | ~~09-30-91~~ BC 10-01-91 | | | | 10-03 | | | 10-03 | 1009:35 | 50ml | SY | 10-3-91 | OK | | | | |
| BLK 2100 | MB | ↓ | 1000ml | ↓ | ↓ | ↓ | | | | ↓ | | | ↓ | ↓ | ↓ | SY | 10-3-91 | OK | | | | |

Comments 1-1l

Run for 2,3,7,8 TCDD/TCDF if positive results are found in tetra of Totals Run
Estimate of 2,3,7,8 congeners for penta thru octa is requested

HOLDING TIME INFO:
Collection Date 9-26-91
Extract by 10-3-91
Analyze by 11-10-91

qhc-e\MAC\forms\SAMPTRAK
Revised 8/17/91

TELEDYNE ISOTOPES

DELIVERED OCT 25 1991

REPORT OF ANALYSIS

RUN DATE 10/24/91

| WORK ORDER NUMBER | CUSTOMER P.O. NUMBER | DATE RECEIVED | DELIVERY DATE | PAGE |
|---|---|---|---|---|
| 3-3873 | | 09/27/91 | 10/30/91 | 1 |

MR MARK HAVLENBEEK
ENVIROTECH RESEARCH INC
777 NEW DURHAM ROAD
EDISON NJ 08817

WATER DRINKING - NEW JERSEY

| TELEDYNE SAMPLE NUMBER | CUSTOMER'S IDENTIFICATION | STA NUM | COLLECTION-DATE START DATE | COLLECTION-DATE START TIME | COLLECTION-DATE STOP DATE | COLLECTION-DATE STOP TIME | NUCLIDE | ACTIVITY ( PCI/LITER) | NUCL-UNIT-% U/M * | MID-COUNT TIME DATE | MID-COUNT TIME TIME | VOLUME - UNITS ASH-WGHT-% * | LAB. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 52504 | A049-57052 | | 09/26 | | | | RA-226 | L.T. 7. E-01 | | 10/17 | | | 2 |
| | | | | | | | GR-A | L.T. 4. E 00 | | 10/07 | | | 3 |
| | | | | | | | GR-B | 9.0 +-2.8 E 00 | | 10/07 | | | 3 |
| | | | | | | | TOT-RA | 1.7 +-1.2 E 00 | | 10/02 | | | 3 |

LAST PAGE OF REPORT

APPROVED BY J. GUENTHER 10/24/91

SEND 1 COPIES TO ENSOSS MR MARK HAVLENBEEK

2 - GAS LAB. 3 - RADIO CHEMISTRY LAB. 4 - GE(LI) GAMMA SPEC LAB. 5 - TRITIUM GAS/L.S. LAB. 6 - ALPHA SPEC LAB.

JM Sorge
AME OF CLIENT (FOR REPORT AND BILLING)

DDRESS

ITY STATE ZIP

TTENTION

HONE

# CHAIN-OF-CUSTODY RECORD

JMS COC 1279

ENVIROTECH JOB NO. A049

Central Steel Drum
PROJECT NAME


**ENVIROTECH RESEARCH, INC.**
777 NEW DURHAM ROAD
EDISON, N.J. 08817

(201) 549-3900


| DATE SMPLD. | TIME SMPLD. | SMPLD. BY | MATRIX | PRES. | NO. OF CONT. | SAMPLE LOCATION/DESCRIPTION | ANALYSIS REQUESTED | ENVIROTECH SAMPLE NUMBER |
|---|---|---|---|---|---|---|---|---|
| 26 Sept 91 | 11:15 | AH | H2O | | 28 | surface runoff | NOROES: PP+40 · DIOXIN Bis(chloromethyl)ether VOA Dichlorodifluoromethane PM 13 + Al, Ba, B, Ca, Fe, Mg, Mo, Mn, Sn, Ti BOD · COD · TOC · TSS · pH · Temp (AH) Ammonia, Bromide, total res. Cl fecal coliform F⁻ nitrite-nitrate TON, total phosphorus, color Radioactivity (α, β, total radium, radium 226) SO4, sulfide, SO3 surfactants, O+G* | 57052 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

TOTAL NO. OF CONTAINERS: 28

PECIAL INSTRUCTIONS: ECRA deliverables * OK added per A. Heffern 9/26/91

| 1. RELINQUISHED BY: | DATE/TIME | 1. RECEIVED BY: | 3. RELINQUISHED BY: | DATE/TIME | 3. RECEIVED BY: |
|---|---|---|---|---|---|
| Robert Heffern | 26 Sept 91 1:29 | JM Sorge | | - | |
| 2. RELINQUISHED BY: | DATE/TIME | 2. RECEIVED BY: | 4. RELINQUISHED BY: | DATE/TIME | 4. RECEIVED BY: |
| | - | | | - | |

ENVIROTECH
ME OF CLIENT (FOR REPORT AND BILLING)

DRESS

Y STATE ZIP

MIKE URBAN
TENTION

ONE

# CHAIN-OF-CUSTODY RECORD

COC NO.

*000000105*

ENVIROTECH JOB NO. A049

PROJECT NAME


ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD
EDISON, N.J. 08817

(201)549-3900
908


| DATE SMPLD. | TIME SMPLD. | SMPLD. BY | MATRIX | PRES. | NO. OF CONT. | SAMPLE LOCATION/DESCRIPTION | ANALYSIS REQUESTED | ENVIROTECH SAMPLE NUMBER |
|---|---|---|---|---|---|---|---|---|
| 9/26/91 | | | $H_2O$ | 4°C | 1 | A049-57052 | DIOXIN (2,3,7,8, TETRA-CHLORO DI BENZO-P-DIOXIN) | |
| | | | | | | BB 4042 | | |
| | | | | | | Cooler temp is at 7°C. | by 613 | |
| | | | | | | Sample OK. MLW 9-27-91 | | |
| | | | | | | CONTAINER NO. *0000330* | | |

TOTAL NO. OF CONTAINERS: 1

ECIAL INSTRUCTIONS:

| RELINQUISHED BY: | DATE/TIME | 1. RECEIVED BY: | 3. RELINQUISHED BY: | DATE/TIME | 3. RECEIVED BY: |
|---|---|---|---|---|---|
| [signature] | 9/26/91 2:30p | 9-27-91 [signature], TOI 0930 | | - | |
| RELINQUISHED BY: | DATE/TIME | 2. RECEIVED BY: | 4. RELINQUISHED BY: | DATE/TIME | 4. RECEIVED BY: |
| | - | | | - | |

484387 T1-C

# CHAIN-OF-CUSTODY RECORD

NAME OF CLIENT (FOR REPORT AND BILLING) ENVIROTECH

ADDRESS

CITY STATE ZIP

ATTENTION MIKE URBAN

PHONE

ENVIROTECH JOB NO. _____

PROJECT NAME


ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD
EDISON, N.J. 08817
(201) 549-3900


| DATE SMPLD. | TIME SMPLD. | SMPLD. BY | MATRIX | PRES. | NO. OF CONT. | SAMPLE LOCATION/DESCRIPTION | ANALYSIS REQUESTED | ENVIROTECH SAMPLE NUMBER |
|---|---|---|---|---|---|---|---|---|
| 9/26/91 | | | $H_2O$ | $HNO_3$ 4oz | 2 | A049-57052 | RADIOACTIVITY (ALPHA, BETA, TOTAL RADIUM, RADIUM 226) | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

TOTAL NO. OF CONTAINERS: _____

SPECIAL INSTRUCTIONS: _____

| 1. RELINQUISHED BY: | DATE/TIME 9/26/91 - | 1. RECEIVED BY: 9-27-91 1200 | 3. RELINQUISHED BY: | DATE/TIME - | 3. RECEIVED BY: |
|---|---|---|---|---|---|
| 2. RELINQUISHED BY: | DATE/TIME - | 2. RECEIVED BY: | 4. RELINQUISHED BY: | DATE/TIME - | 4. RECEIVED BY: |

ENVIROTECH

E OF CLIENT (FOR REPORT AND BILLING)

STATE ZIP

MERE URBAN

NTION

# CHAIN-OF-CUSTODY RECORD

ENVIROTECH JOB NO. _____

PROJECT NAME

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD
EDISON, N.J. 08817
(201) 549-3900

| TE. PLD. | TIME SMPLD. | SMPLD. BY | MATRIX | PRES. | NO. OF CONT. | SAMPLE LOCATION/DESCRIPTION | ANALYSIS REQUESTED | ENVIROTECH SAMPLE NUMBER |
|---|---|---|---|---|---|---|---|---|
| | | | $H_2O$ | WHERE APPLICABLE | | A049-57052 | BOD, $NH_3$, BROMIDE, | |
| | | | | | | | TOTAL RESIDUAL CHLORINE, | |
| | | | | | | | FECAL COLIFORM, FLUORIDE, | |
| | | | | | | | $NO_3$-$NO_2$, TON, PHOSPHORUS | |
| | | | | | | | COLOR, $SO_4$, $SO_3$, MBAS, | |
| | | | | | | | OIL | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

TOTAL No. OF CONTAINERS: _____

CIAL INSTRUCTIONS: _____

| RELINQUISHED BY: | DATE/TIME | 1. RECEIVED BY: | 2. RELINQUISHED BY: | DATE/TIME | 3. RECEIVED BY: |
|---|---|---|---|---|---|
| | 9/26/84 13:00 | | | - | |
| RELINQUISHED BY: | DATE/TIME | 2. RECEIVED BY: | 4. RELINQUISHED BY: | DATE/TIME | 4. RECEIVED BY: |
| | - | | | - | |

# LABORATORY CHRONICLE


## ENVIROTECH RESEARCH, INC.

777 NEW DURHAM ROAD, EDISON, NJ 08817

(908) 549-3900


CLIENT SORGE

MATRIX $H_2O$

SAMPLE No. 57052

DATE SAMPLED 9/26/91

DATE RECEIVED 9/26/91

JOB No. A049

| Analytic Parameter | Extraction Date/Time | Extractor's Initials | Analysis Date/Time | Analyst's Initials | QA Batch No. |
|---|---|---|---|---|---|
| Antimony | 10-8-91 | RP | 10/14/91 1613 | JM | 1701 |
| Beryllium | | | | | |
| Cadmium | | | | | |
| Chromium | | | | | |
| Copper | | | | | |
| Nickel | | | | | |
| Silver | | | | | |
| Zinc | | | | | |
| Lead | | | 10/15/91 1914 | JM | |
| Arsenic | | | 10/17/91 0653 | | |
| Selenium | | | 10/16/91 2209 | | |
| Thallium | | | 10/15/91 1632 | | |
| Mercury | 10-8-91 | RP | 10-8-91 | RP | |
| Al | 10-8-91 | RP | 10/14/91 1613 | JM | |
| Ba | | | | | |
| B | | | 10/17/91 0929 | | |
| Co | | | 10/14/91 1613 | | |
| Fe | | | | | |
| Mg | | | | | |

# LABORATORY CHRONICLE


## ENVIROTECH RESEARCH, INC.

777 NEW DURHAM ROAD, EDISON, NJ 08817

(908) 549-3900


CLIENT Sorge — DATE SAMPLED 9/26/91

MATRIX $H_2O$ — DATE RECEIVED 9/26/91

SAMPLE No. 57052 — JOB No. A049

| Analytic Parameter | Extraction Date/Time | Extractor's Initials | Analysis Date/Time | Analyst's Initials | QA Batch No. |
|---|---|---|---|---|---|
| Mo | 10-8-91 | RF | 10/16/91 1118 | JM | 1201 |
| Mn | ↓ | ↓ | 10/14/91 1613 | ↓ | ↓ |
| Sn | | | 10/18/91 1008 | | |
| Ti | | | 10/14/91 1613 | | |
| VOA+15 [BIS(CHLOROMETHYL) ETHER DICHLORODIFLUOROMETHANE] | | HCl PRES | 9/27/91 | TC | 2251 |
| BNA+25 | 9-27-91 | SS | 10/2/91 | LD | 1699 |
| PCB/PEST | 9/30/91 | MJC | 10-2-91 | SC | 1671 |
| $CN^-$ | 9/27/91 | DD DH | 10/2/91 | DD | 1178 |
| PHENOLS | ↓ | ↓ | 10/1/91 | DD DH | 1160 |
| COD | [illegible] | [illegible] | [illegible] | [illegible] | 1017 |
| TOC | | | 10/22/91 | KH | 1026 |
| TSS | Filtered 9/26/91 | DH | 9/27/91 | DH | 1027 |
| pH | | | 9/26/91 | DD | 1121 |
| $S^=$ | | | 10/10/91 | DD DH | 1044 |

# LABORATORY CHRONICLE


## ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900


CLIENT Sorge | DATE SAMPLED 9/26/91

MATRIX $H_2O$ | DATE RECEIVED 9/26/91

SAMPLE No. 57052 | JOB No. A049

| Analytic Parameter | Extraction Date/Time | Extractor's Initials | Analysis Date/Time | Analyst's Initials | QA Batch No. |
|---|---|---|---|---|---|
| DIOXIN | SUBBED TO I.T. | | | | |
| RADIOACTIVITY | SUBBED TO TELEDYNE | | | | |
| BOD | SUBBED TO CHYUN | | | | |
| $NH_3$ | | | | | |
| BROMIDE | | | | | |
| TOT. RES. CHL. | | | | | |
| FECAL COLI | | | | | |
| $F^-$ | | | | | |
| $NO_3$-$NO_2$ | | | | | |
| TON | | | | | |
| PHOS | | | | | |
| COLOR | | | | | |
| $SO_4$ | | | | | |
| $SO_3$ | | | | | |
| MBAS | | | | | |
| O&G | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
CN029
Trenton, N J 08625-0029

(609) 292-1637
Fax # (609) 984-7938

MAY 3 0 1991

Central Steel Drum Company
c/o JM Sorge Inc.
50 County Line Road
Somerville, NJ 08876

Attn: James M. Clabby

RE: NJPDES Permit No. NJ0067199

Facility Name: CENTRAL STEEL DRUM COMPANY
Municipality : NEWARK
County : ESSEX
Category(ies): E LAND APPL IND WASTE RESIDUALS
5G GEN INDUST SITE STRMWTR RNFF

Dear Mr. Clabby

On April 12, 1991 the Bureau of Information Systems received your application for a New Jersey Pollutant Discharge Elimination System (NJPDES) permit. It has been forwarded for further review to the Bureau(s) of:

Pretreatment & Residuals
Industrial Discharge Permits

If this is a renewal application please be advised that the conditions of an expired permit are continued in force pursuant to the "Administrative Procedure Act", N.J.S.A. 52:14B-11, until the effective date of a new permit if:

1. The permittee has submitted a timely and complete application for renewal as provided in N.J.A.C. 7:14A-2.1, 3.2 (DSW), 4.4 (IWMF), 5.8 (UIC), and 10; and

2. The Department, without fault on the part of the permittee, fails to issue a new permit with an effective date on or before the expiration date of the previous permit (e.g., when issuance is impractical due to constraints of time or resources).

Any questions concerning the status of your application should be directed to the Bureau(s) of:

| | |
|---|---|
| Pretreatment & Residuals | (609)633-3823 |
| Industrial Discharge Permits | (609)292-4860 |

Sincerely,

Debra A. Jensen
Bureau of Information Systems
Management Services Element

C: Bureau of Pretreatment & Residuals
Bureau of Industrial Discharge Permits
Enforcement - Metro Region

FOR OFFICIAL USE
NJC007196
PAC. XISV
NHAC

# State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

## STANDARD APPLICATION FORM (CP #1)

## CONSTRUCTION PERMIT NUMBER 1

## CONSTRUCTION AND DISCHARGE PERMITS

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1 2 1991
DEPT. OF ENVIRON. PROTECTION
Division
Bureau of Information

*READ REQUIREMENTS — FOLLOW INSTRUCTIONS CAREFULLY — PLEASE PRINT OR TYPE*

1a. Applicant/~~Owner~~** Central Steel Drum Company Telephone (201) 344-8500
Permanent Legal Address 704 Doremus Avenue
City or Town Newark State NJ Zip Code 07105
Federal Tax I.D. or S.S. #

1b. Applicant/Operator Central Steel Drum Company Telephone (201) 344-8500
Permanent Legal Address 704 Doremus Avenue
City or Town Newark State NJ Zip Code 07105

1c. Co-permittee* N/A Telephone ( )
Permanent Legal Address
City or Town State Zip Code

2. Location of Work Site 704 Doremus Avenue, Newark, NJ
Name of Facility, if applicable Central Steel Drum Company
Address (Street/Road) 704 Doremus Avenue
Lot No. Block No. E.P.A. I.D. # NJD 0011482577
City or Town Newark State NJ Zip Code 07105
Municipality Newark County Essex

3. If applicable, give name of: Engineer/Surveyor/Well Driller/Geologist/Soil Scientist *(Specify)*
Name Joseph M. Sorge N.J. License No.
Name of Firm, if employee J M Sorge, Inc.
Address (Street/Road) 50 County Line Road
City or Town Somerville State NJ Zip Code 08876
Municipality Branchburg County Somerset
Telephone (908) 218-0066

4. This is an application for New Jersey Polluntant Discharge Elimination System Permit
*(Name of permit, certification, approval, jurisdictional determination, or exemption. See item 9, next page.)*
Discharge to Surface Water

* *This section must be completed by any local governmental unit when it is a Co-permittee. (Not required for Treatment Works Approvals.)*

** *Sewer System Applications (Treatment Works Approvals) should be made on behalf of the eventual owner of the proposed system.*

DETACH FORM FROM PRECEDING DOCUMENT

5. Fee is attached (if applicable). $ N/A

6. Estimated construction cost of project:

   a. $ N/A total cost of the project
   b. $ N/A portion for which this permit is requested

7. I have included certifications of any public notifications. ___Yes ___No N/A

8. If applicable:
   *(For Waterfront Development and Stream Encroachment applications, &c. must be completed.)*

   N/A - STORMWATER RUNOFF

   a. Source of Water Supply
   b. For Treatment at (Water Treatment Plant) N/A
   c. Stream, Waterway, Pond or Lake N/A
   d. Wastewater Treatment Facility N/A

9. Have any other applications for this site/project been submitted, or have any state permits been issued for this project? *(If yes, indicate status and project number below.)*

   X Yes ___No ___Decision

   Identify any state Green Acres or federal Land and Water Conservation Fund projects separately.

| | PERMIT TYPE *(Use additional sheets if necessary)* | APPLICATION STATUS (Pending - Approved) | PROJECT # |
|---|---|---|---|
| 9.1 | CAFRA | | |
| 9.2 | Waterfront Development | | |
| 9.3 | Tidal or Coastal Wetlands | | |
| 9.4 | Freshwater Wetlands Permit | | |
| 9.5 | Freshwater Wetlands Transitional Area Waiver (after July 1, 1989) | | |
| 9.6 | Stream Encroachment | | |
| 9.7 | Water Quality Certificate (Section 401) | | |
| 9.8 | Open Water Fill | | |
| 9.9 | Tidelands (Riparian) Grant, Lease or License | | |
| 9.10 | Dam Construction/Repair | | |
| 9.11 | Purchase Water Diversion: | | |
| 9.12 | Divert Water Supply for Public Use | | |
| 9.13 | Divert Surface Waters for Private Use | | |
| 9.14 | Divert Subsurface/Percolating Water for Private Use | | |
| 9.15 | Well Drilling | Approved | |
| 9.16 | Permanent Water Lowering | | |

| PERMIT TYPE *(Use additional sheets if necessary)* | APPLICATION STATUS (Pending - Approved) | PROJECT # |
|---|---|---|
| 9.17 Temporary Water Lowering | | |
| 9.18 Construct/Modify, Operate Public Potable Water Works | | |
| 9.19 Connection between an approved water supply and non-approved supply | | |
| 9.20 Sewer Systems: Collectors, Pump Station, etc | | |
| 9.21 Exemption from Sewer Ban | | |
| 9.22 New Jersey Pollution Discharge Elimination System (Specify) | DGW PENDING | NJ0067199 |
| 9.23 Underground Storage Tanks | Approved | UST- |
| 9.24 Solid Waste Permits (Specify) | | |
| 9.25 Hazardous Waste Permits (Specify) GENERATOR | APPROVED | NJD-001148257 7 |
| 9.26 Air Quality Permits (Specify) | See Attachment A | |
| 9.27 Delaware and Raritan Canal Review Zone "Certificate of Approval" | | |
| 9.28 Pinelands Certificate | | |
| 9.29 Green Acres Program Review "Certificate of Approval" (Specify projects) | | |
| 9.30 Other State agencies' permits | | |
| 9.31 Local Permits | | |
| 9.33 Federal Permits RCRA | | |

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APR 12 1991
DEPT OF ENVIRON. PROTECTION
Division Water Resources

10. Brief Description of the Proposed Project and Intended Use:

To obtain a New Jersey Pollutant Discharge Elimination System (NJPDES) permit to discharge to the surface water of the State of New Jersey for Central Steel Drum Company

mation, incl[illegible] ines and/or imprisonment.

Type: Name and Date

Signature of Applicant/Owner

Type: Position

Date

Mr. Neil Fischer 4/11/91
Type: Name and Date

Signature of Applicant/Operator

VICE-PRESIDENT
Type: Position

4/11/91
Date

Type: Name and Date

Signature of Co-permittee*

Type: Position

Date

## ENDORSEMENTS

*Some permit applications require specific endorsements of owners, agents, municipalities, etc. Endorsements may be required for your permit.*

*Verify the need for endorsements in the "Requirements" section of the Standard Application Form CP #1 booklet or with the appropriate DEP agency.*

A. **PROPERTY OWNER'S CERTIFICATION***

I hereby certify that Neil Fischer
Vice-President of the Corporation *Property Owner's Name*
is the [illegible] upon which the proposed work is to be done. This endorsement is certification the owner grants permission for the conduct of the proposed activity.

In addition, the aforementioned property owner shall certify:

1. Whether any work is to be done within an easement — Yes_____ No_____
*(Initial)* *(Initial)*

2. Whether any part of the entire project (i.e., pipeline, roadway, cable, transmission line, etc.) will be loc within property belonging to the State of New Jersey — Yes_____ No_____
*(Initial)* *(Initial)*

Neil Fischer
704 Doremus Avenue
Newark, NJ 07105
*Type or Print Name and Address of [illegible] if different from Item 1 on Page 1*

4/11/91
*Date*

*Signature of Owner*

* *Not required for Sewer System Application (Treatment Works Approvals)*

B. APPLICANT'S AGENT

I, the ~~Applicant/Owner~~ _____ or Applicant/Operator (when the owner of the facility and the operator of the facility are distinct parties) Neil Fischer or Co-permittee (when the Co-permittee is a local governmental unit) _____ authorize to act as my agent/representative in all matters pertaining to my application the following person:

Name J M Sorge, Inc. Phone (908) 218-0066

Address 50 County Line Road County Somerset

City or Town Somerville State NJ Zip Code 08876

Occupation/Profession Environmetal Consultant

_____
*(Signature of Applicant/Owner)*

_____
*(Signature of Applicant/Operator)*

_____
*(Signature of Co-permittee)**

AGENT'S CERTIFICATION

Sworn before me
this 11 day of
April 19 91

Neil O'Keefer
Notary Public
NEIL O'KEEFER
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires

I agree to serve as agent for the above-mentioned applicant

_____
*(Signature of Agent)*

C. PROPER CONSTRUCTION AND OPERATION CLAUSE N/A
(Sewer Extensions, Treatment Works Approval, Water Works, Underground Storage Tanks)

I, the Applicant/Owner _____ or Applicant/Operator (when the owner of the facility and the operator of the facility are distinct parties) _____ or Co-permittee (when the Co-permittee is a local governmental unit) _____ agree that the works will be properly constructed and operated in accordance with the engineering plans and specifications, as approved, and the conditions under which approval is granted by the State Department of Environmental Protection.

_____
*(Signature of Applicant/Owner)*

_____
*(Signature of Applicant/Operator)*

_____
*(Signature of Co-permittee)**

* *Not required for Sewer System Application (Treatment Works Approvals)*

D. STATEMENT OF PREPARER OF PLANS, SPECIFICATION AND SURVEYOR'S OR ENGINEER'S REPORT N/A

I hereby certify that the engineering plans, specifications and engineer's report applicable to this project comply with the current rules and regulations of the State Department of Environmental Protection with exceptions as noted.

(Signature of Engineer)

Type: Name and Date

Position, Name of Firm

*PROFESSION ENGINEER'S EMBOSSED SEAL*

E. OWNER'S COMPLIANCE WARRANT (NJPDES ONLY)

I, the ~~Applicant/Owner~~ _____ or Applicant/Operator (when the owner of the facility and the operator of the facility are distinct parties) Neil Fischer or Co-permittee (when the Co-permittee is a local governmental entity) _____ hereby agree that any treatment works constructed to meet the NPDES/NJPDES permit discharge limits will be properly constructed and operated to meet those limits. I also warrant that the discharge(s) will meet the effluent limitations as described in the NPDES/NJPDES permit, as issued.

(Date) (Signature of Applicant/Owner)

4/11/91 (Signature of Applicant/Operator)

(Date) (Signature of Co-permittee)*

* *Not required for Treatment Works Approvals*

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES

Let's protect our earth

# NEW JERSEY POLLUTANT DISCHARGE ELIMINATION SYSTEM
## SUPPLEMENT TO THE STANDARD APPLICATION FORM CP #1

## APPLICATION TO DISCHARGE WASTEWATERS AND RESIDUALS TO THE STATE'S LAND AND WATER

*ver all questions. Please print or type.*

Circle the letter(s) for those discharge activities presently conducted or to be conducted as part of the facility's operation. (Seasonal facility operation shall be considered as a present operation.)

In the space provided, indicate if there is an existing NJPDES or NJPDES permit for each circled activity (yes/no).

In the space provided, indicate if this application is for a "new" source, and "existing" source, or a "renewal" of a current permit.

| DISCHARGE ACTIVITY | YES/NO | NEW,EXISTING,RENEWAL |
|---|---|---|
| **Wastewater Facility Management** | | |
| A. Sanitary Surface Water Discharge | | |
| AB. Discharge to Regional Outfall Authority | | |
| B. Industrial/Commercial Surface Water Discharge | | |
| B4. General Permit Fuel Cleanup | | |
| C. Thermal Surface Water Discharge | | |
| CE. General Permit Non-Contact Cooling Water | | |
| CSO. Combined Sewer Overflow | | |
| D. Land Application of Sludge and Septage | | |
| DNC. Discharge Allocation Certificate | | |
| KI. Autodealers Carwash | | |
| L. Indirect Discharge to POTW (SIU) | | |
| P. Spray Irrigation - Sanitary | | |
| Q. Overland Flow - Sanitary | | |
| R. Infiltration/Percolation Lagoon - Sanitary | | |
| S. Surface Impoundment - Sanitary | | |
| T. Underground Injection (UIC) - Sanitary | | |
| V. Sludge Processing/Distribution Facility | | |
| Z. Residuals Transfer Facilities (Sludge) | | |
| 1. Municipal Solid Waste Transfer Facility | | |
| 2. Sanitary Sludge Storage Facility | | |
| 3. Residuals Infiltration/Percolation Lagoon | | |
| 4. Residuals Surface Impoundment | | |
| 5. Group I - Stormwater Runoff | | |
| 5G. General Permit Industrial Site Storm Water Runoff | No | New |
| 6. Group II - General Permit Stormwater Runoff | | |
| **Ground Water Quality** | | |
| E. Land Application of Industrial Waste Residuals | Yes | Existing |
| E2. In Situ Treatment | | |
| F. Landfill - Industrial/Commercial Waste | | |
| G. Spray Irrigation - Industrial | | |
| H. Overland Flow - Industrial | | |
| I. Infiltration/Percolation Lagoon - Industrial | | |
| J. Surface Impoundment - Industrial | | |
| K. Underground Injection (UIC) - Industrial | | |
| O. Landfill - Municipality/Sanitary | | |
| 7. Underground Storage Tanks | | |
| **Other** | | |
| 85. Above Ground Storage Tank Facilities | | |
| U. Dredge Spoils | | |
| X. Confidentiality Request | | |
| Y. 316 Variance Work | | |
| 8. Other/Miscellaneous | | |
| 9. Master Performance Permits | | |

2. Location of Facility: Latitude 74° 07' 23" Longitude 40° 42' 30"

Receiving Stream: UNNAMED DITCH TO Newark Bay

River Basin: Passaic

3. Name and address of applicant's parent corporation, subsidiary, or partnership data. *(Attach additional sheets if necessary.)*

Name N/A Telephone No. _____

Mailing Address _____

City or Town _____ State _____ Zip Code _____

4. Facility's Contact Person *(This person must be responsible for and familiar with the facility operation.)*

Name Mr. Neil Fischer Telephone No. (201) 344-8500

Address of Operator 704 Doremus Avenue

City or Town Newark State NJ Zip Code 07105

5. Is the facility a ☐ Federal Facility ☐ Public Facility (a local government subdivision)
☐ State Facility ☒ Private Facility

6. List in order of priority all Standard Industrial Codes (SIC) which best reflect the principal products or services provided by the facility.

| SIC | PRODUCTS OR SERVICES PROVIDED |
|---|---|
| 5085 | Sale of reconditioned drums |
| | |
| | |
| | |
| | |

7. If applicable, identify all administrative orders, temporary or permanent injunctions, civil administrative penalties, civil penalties, or criminal actions concerning pollution issued against the facility during the last five (5) years. SEE ATTACHM

| ENFORCEMENT ACTION | DATE OF ACTION | RESULT |
|---|---|---|
| Incinerator Cited re: Emissions | 2/8/87 | Obtained Air Permit |
| Directive Letter | 3/6/87 | Obtained NJDPDES-DGW Per |
| Violations re: Air Pollution Permits | 9/7/88 | Administrative Consent Or |
| NJDEP Directive (withdrawn) | 5/9/90 | Remedial Inves. Work Plan<br>Remedial Measures Work Plan<br>Directive withdrawn 02/ |

8. If applicable, list all locations involved in the storage of solid or liquid waste at the facility for which the NJPDES applic is being made and the ultimate disposal sites of solid or liquid wastes generated by the facility being permitted.

| STORAGE SITE(S) | ULTIMATE DISPOSAL SITE(S) |
|---|---|
| N/A | |
| | |
| | |
| | |

FILE

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
METRO BUREAU OF REGIONAL ENFORCEMENT
2 BABCOCK PLACE
WEST ORANGE, NEW JERSEY 07052

(201) 669-3900

November 5, 1990

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Neil Fischer, Secretary - Treasurer
Central Steel Drum Company
704 Doremus Avenue
Newark, NJ 07105

Re: The New Jersey Pollutant Discharge Elimination System
Central Steel Drum Company
Newark/Essex County

Dear Mr. Fisher:

An inspection of your facility was conducted on September 9, 1990 by a representative of this Division. During this inspection, it was learned that wash water from the drum cleaning operation and waste residue around the incinerator area are ultimately discharged to the surface waters of the State. This activity is governed by the New Jersey Pollutant Discharge Elimination System (NJPDES) Regulations, N.J.A.C. 7:14A-1 et seq. These regulations state: "No person shall discharge any pollutant except in conformity with a valid NJPDES permit." Our records indicate no such permit exists for your facility.

You are therefore directed to obtain a NJPDES permit for the discharge at your facility within thirty (30) days of receipt of this correspondence. Permit application forms can be obtained by contacting:

Mr. George Caporale, Chief
Bureau of Information Systems
Management Services Element
Division of Water Resources
P.O. Box CN-029
Trenton, NJ 08625

Any questions concerning the completion of the application should be addressed to Mr. Caporale or the BIS staff, who may be reached at (609) 984-4425. The completed application must be sent to Mr. Caporale, with a copy of the cover letter to this writer.

Failure to comply with this directive may result in further enforcement action by this office, including the imposition of penalties, pursuant to N.J.S.A. 58:10A-10. Therefore, kindly devote your full attention to this matter. If you have any questions concerning this directive, please contact Theophilus N. Ashie at (201) 669-3900.

Very truly yours,

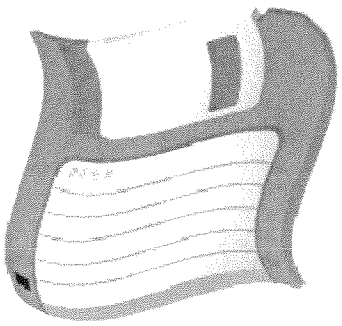
Janet Budesa Carroll
Acting Supervisor
Surface Water and
Sewer System Enforcement
Metro Bureau of
Regional Enforcement

E29:G25

c: Mr. George Caporale, BIS
Dr. Adewale Troutman, H.O.
Theodore Hayes, BGWDC

# NJPDES Permittee Database

It is recommended that you print this page for later reference.



The Division of Water Quality receives many requests for information from the New Jersey Pollutant Discharge Elimination System database.

To make these requests easier to fulfill, the Division has made some of this information available on-line, at no cost, in a limited format. Simply click on the links below to access the data you need.


1. NJPDES Municipal Flow Data
2. NJPDES Archive Database - Administrative Information
3. NJPDES Database - NJEMS Active Permit Report
4. NJPDES Database - Address List for Facilities Reporting Bioassay Test Data
5. NJPDES Database - Open Public Records Act (OPRA)


## NJPDES Municipal Flow Data

The file Mun_Flow_Data_Summary.XLS contains the annual 12 month average flow data from 1994 to 2006 for municipal NJPDES/DSWs.

Disclaimer and STP Type Code

Mun_Flow_Data_Summary_06.xls

## NJPDES Archive Database - Administrative Information Extract

Database files last updated 12/31/00.

The NJPDES Archive Database contains the names, addresses and other information of all permitted New Jersey Pollutant Discharge Elimination System (NJPDES) Dischargers that were in the old NJPDES database when it was shutdown on 12/31/00. The old

www.nj.gov/dep/dwq/database.htm

NJPDES database was replaced by the new NJEMS database system. Once downloaded, the database can be viewed and sorted in a spreadsheet by the following categories:

| | |
|---|---|
| Permit Number | Facility Name |
| Municipality | County |
| Discharge Basin | Major/Minor Facility Indicator |
| Type of Discharge (Permit Category) | |

The database also contains the following fields:

| | |
|---|---|
| Facility Longitude | Facility Latitude |
| Facility Lot and Block Number (if available) | Facility Contact Person and Phone |
| Facility Address | Facility Ownership (Public/Private) |
| NJDEP Enforcement Region | Facility SIC Code |
| Issuance Date of Draft Permit | Issuance Date of Final Permit |
| Permit Expiration Date | Date Application Received |

The database *does not* contain:

- Facility Design Flow
- Effluent Monitoring Data (i.e., DMR data)
- Individual Permit Limits
- Treatment Systems/Levels at Facilities

| njpdes | facname | facstreet | facpo | faccity | facst | faczip | faczip4 | factele | faccont | county | muni | facenfrg | facmaj | facsic1 | factyown | facbasin | basin | faclat | faclong | lots |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NJ0067199 | CENTRAL | 704 DORE | | NEWARK | NJ | 07105 | 0000 | 201344850 | NEIL FISC | ESSEX | NEWARK | NE | MA | 5085 | PRI | | | 404230 | 740723 | |

| blks | permname | permstreet | permpobox | permcity | permst | permzip5 | permzip4 | adesc | apprecd | drafttofac | issued | effective | expiration | cats |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CENTRAL | 704 DORE | | NEWARK | NJ | 07105 | 0000 | NEW | 8/12/1987 | 6/1/1995 | 7/1/1995 | 7/1/1995 | 6/30/1998 | RF |

State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection
Bureau of Field Operations - Case Assignment Section
P. O. Box 434, Trenton, NJ 08625-0434
(609) 292-2943

Robert C. Shinn, Jr.
Commissioner

JUN 15 1998

Paul Butler
City of Newark
Department of Engineering
City Hall
920 Broad Street
Newark, New Jersey 07102

Re: 843-871 Delancy Street, Newark, Essex County
Block: 5074 Lot: 1
Incident #: 98-6-10-0020-44

Dear Mr. Butler:

The purpose of this letter is to provide you with written notification that Department of Environmental Protection has reviewed the Memorandum of Agreement application for the above referenced site and determined that it is administratively complete. This letter constitutes the Memorandum of Agreement by rule pursuant to N.J.A.C. 7:26C-3.3. The date of this letter is considered the effective date of the Memorandum of Agreement.

Within thirty (30) calendar days from the effective date of the Memorandum of Agreement, you are required to submit to the Department a schedule of implementation of those activities and/or phases enumerated in the Memorandum of Agreement. If all remedial activities required by this Memorandum of Agreement are completed, then please submit a schedule of when required documents will be submitted. This schedule is needed to assure that Department personnel can be appropriately assigned to this matter to ensure timely response by the Department.

Until a case manager is assigned, your contact for the Department concerning all matters addressed by the Memorandum of Agreement is Bruce Venner. Please contact Bruce Venner at 609-633-0719 if you have any questions.

**All reports should be sent to :**

New Jersey Department of Environmental Protection and Energy
Division of Responsible Party Site Remediation
Bureau of Federal Case Management
401 East State Street – P.O. Box 028
Trenton, New Jersey 08625-0028

Attention:Bruce Venner, Bureau Chief

Enclosed is a copy of the certification that must accompany all submittals to the Department.

Sincerely,

Mark J. Pedersen, Section Chief
Case Assignment Section

Enclosures
C: Newark Health Department

New Jersey is an Equal Opportunity Employer

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
SITE REMEDIATION PROGRAM

**MEMORANDUM OF AGREEMENT APPLICATION FOR NON-RESIDENTIAL PROPERTIES**

**PLEASE TYPE OR PRINT** DATE December 30, 1997

A. Current Property Use: Agricultural _____
Industrial _____ Undeveloped _____
Commercial _____ Other Abandoned

B. Site Name Central Steel Drum
Street Address 843-871 Delancy Street
Newark Zip Code 07105
Municipality Newark County Essex

Tax Block and Lot Number(s) Block 5074, Lot 1

Latitude _____ Longitude _____
Acreage 8.5
Geographic Boundaries Doremus Avenue and Delancy Street
EPA ID # (if applicable) CERCLIS No. NJD011482577

C. Who will be executing this Agreement? (if different than Question B)

Name City of Newark
Affiliation Owner
Address 920 Broad Street
City Newark State NJ Zip Code 07102
State of Incorporation NA Corp. Status NA
Telephone # 973-733-7994

D. Select which phase(s) of the remediation process are to be performed and what document(s) are to be submitted pursuant to the MOA being requested.

| REMEDIAL PHASE | DOCUMENTS TO BE SUBMITTED |
|---|---|
| [ ] Preliminary Assessment | [ ] Preliminary Assessment Report |
| [ ] Site Investigation | [ ] Site Investigation Report |
| [ X] Remediation Investigation | [X ] Remedial Investigation Work Plan |
| [ ] Remedial Action | [X ] Remedial Investigation Report |
| | [ ] Remedial Action Selection Report |
| | [ ] Remedial Action Workplan |
| | [ ] Remedial Action Report |

E. Current Property Owner(s):
Name(s) Same as Part C
Firm _____ Telephone # _____
Street Address _____
Municipality _____
State _____ Zip Code _____

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MAR - 9 1998

F. Current Business Operator(s):
Name(s) N/A
Firm _____ Telephone # _____
Street Address _____
Municipality _____
State _____ Zip Code _____

G. Current Business Owner(s) (if different than question Part E or F):
Name(s) N/A
Firm _____ Telephone # _____
Street Address _____
Municipality _____
State _____ Zip Code _____

H. Provide the information requested below on the previous owners of the site and the entities who operated at the site.

| Name | Owner or Operator | From | To |
|---|---|---|---|
| Central Steel Drum | Owner/Operator | 1952 | 1991 |
| International Printing Ink | Owner/Operator | | 1952 |
| | | | |

I. For those former Owner(s) and/or Operator(s) identified above (in paragraph H), give a brief discussion of all operations at the site, including but not limited to types of operations, materials used, waste generated and waste disposal techniques.
The site has been used for the storage, cleaning, and reclaiming of steel drums. Illegal dumping of drummed materials is possible. A sludge burner was present on-site.

J. Are there currently or have there ever been any notices on the deed which constitute a Declaration of Environmental Restriction (DER) pursuant to N.J.A.C. 7:26E-1 et seq. ?

Yes _____ No _____ Unknown X

If yes, please state the name of the site as it was identified in the DER, the address, lot and block and EP ID number (if applicable) associated with the site.

K. Are there currently, or have there ever been, any hazardous substances as defined by N.J.A.C. 7:1E-1, *et seq.*, used, generated, treated, stored, disposed or discharged at the site? (i.e., Fuel Oil, Gasoline)
Yes X No _____ Various hazardous substances.

L. Are there currently, or have there ever been, any hazardous wastes as defined by N.J.A.C. 7:26-8, *et seq.*, used, generated, treated, stored and disposed or discharged at the site?
Yes X No Unknown Various hazardous wastes.

M. Are there currently, or have there ever been, any above or below ground storage tanks at the site?
Yes X No Unknown

N. Did the discharge impact groundwater?
Yes X No Unknown

O. What are the current operations at the site?
The site is currently abandoned. EPA completed removal actions in November of 1997. These actions included the staging, testing and removal of the drums; removal of two underground storage tanks; and general site cleanup.

P. What are the intended future uses of the site?
Brownfields Redevelopment

Q. Describe briefly the major types of contaminants found at the site and what media they affect.
Soils contaminated with various organic and inorganic contaminants. Groundwater found at a depth of less than 4 feet below the ground surface is likely to be affected. However, no comprehensive groundwater investigations on the site were conducted.

R. Describe in detail how the contamination came to exist at the site. For example, were there past spills, landfill operations, industrial septic systems, USTs, deposition of fill material, etc.?
Contamination occurred from past operations on the site including disposal on site of drum residues and ash, spills from drum handling, and poor housekeeping processes.

S. List any civil/criminal actions taken against the owner/operator, managers or officials associated with the site for violations of any environmental laws or statutes.

Check here if no violations or alleged violation [ ]
Date of action March 28, 1982
Section of law or statute violated Section 3008 of the Solid Waste Disposal Act
Type of enforcement action Notice of Prosecution
Description of violation Complaints of sloppy operations, illegal practices with respect to hazardous waste handling, and odors from the incinerator.

How was the violation or alleged violation resolved?
The violation was not fully resolved, the owners later abandoned the site.

T. List all permits currently held by the applicant for the site. (NJPDES, RCRA, etc.)
None

U. Has a Hazardous Discharge Site Remediation Fund Grant or Loan Application been filed with the Department?

Yes X No _____

V. Has a loan/grant application pursuant to the Underground Storage Tank Finance Act been filed with the Department?

Yes _____ No X

W. Is the site located in a Neighborhood Empowerment Zone as defined in P.L.1996, c.62 (New Jersey Redevelopment Act) ?

Yes _____ No _____ Unknown X

X. Who will be the contact for all matters of this application?

Name Paul Butler Title Project Manager
Affiliation Employee of City of Newark
Address 920 Broad Street
City/Town Newark State NJ Zip Code 07102
Phone 973-733-7994

Y. Is the site currently, or has it ever been, under the oversight of any other program within the Department of Environmental Protection?

Yes X No _____

If Yes, explain: An administrative Consent Order was drafted on April 27, 1982. No action or compliance was taken by the former owner.

The following certification shall be signed by the highest ranking individual with overall legal responsibility for implementing the remediation of the site, but shall not include contractors or consultants:

1. for a corporation, by a principal executive officer of at least the level of vice president;
2. for a partnership or sole proprietorship, by a general partner or the proprietary, respectively; or;
3. for a municipality, State, Federal or other public agency, by either a principal executive officer or ranking elected official;

The certification may also be signed by a duly authorized representative of those persons described above. A person is a duly authorized representative only if:

1. The authorization is made in writing by a person described above:

2. The authorization specifies either an individual or a position having a responsibility for the overall operation of the site or activity, such as the position of plant manager, or a superintendent or person of equivalent responsibility (a duly authorized representative may thus be either a named individual or an individual occupying a named position);

3. The written authorization is submitted to the Department; and

4. If the authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of this subsection shall be submitted to the Department prior to or together with any reports, information or applications to be signed by an authorized representative.

*" I certify that I am fully aware of the requirements of N.J.A.C. 7:26C-3, specifically as it pertains to the memorandum of agreement by rule. Further, I agree to pay the Department's oversight costs for the Department review of any submissions pursuant to the memorandum of agreement until such time as I notify the Department that is no longer feasible or desirable for me to continue with the memorandum of agreement."*

SIGNATORY

DATE: 1/6/98 BY: _____
Signature

Howard S. Cazarus, Director
Printed Full Name Signed Above

DATE: 1/6/98 BY: _____
Notary Signature

YOLANDA REID
NOTARY PUBLIC OF NEW JERSEY
I.D. # 2088715
My Commission Expires Nov. 27, 1999

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

DATE: 6/12/98 BY: _____
Mark Pedersen, Section Chief
DRPSR, Case Assignment Section

The Department will review the application and will respond in writing, within thirty calendar days from receipt of the application, as to whether the application is administratively complete or not. If the application is incomplete the deficiencies shall be listed. If the application is complete, the applicant will be deemed to have entered into an Agreement by rule pursuant to N.J.A.C. 7:26C-3.3.

103- DEED BARGAIN AND SALE (Covenant as to Grantor's Acts) IND TO IND OR CORP -- Plain Language ADG VET-1

Copyright © 1987 By ALL STATE LEGAL SUPPLY CO One Commerce Drive, Cranford, N.J. 07016

# DEED

Prepared by: (Print signer's name below signature)
Brian J. Halligan
BRIAN J. HALLIGAN

This Deed is made on October 26 1988

BETWEEN

Jane Ratner Mattson and Marian Ratner Abrams as co-executrices of the Last Will & Testament of Mollie Ratner, Deceased

whose address is 25 Hardscrabble Hill, Chappaqua, New York and 10810 Missouri Ave., Los Angeles, Ca., respectively referred to as the Grantor.

AND

Jane Ratner Mattson, Individual Co-Tenant and

Marian Ratner Abrams, Individual Co-Tenant

whose post office address is 25 Hardscrabble Hill, Chappaqua, N. Y. and 10810 Missouri Ave., Los Angeles, Ca., respectively referred to as the Grantee. The words "Grantor" and "Grantee" shall mean all Grantors and all Grantees listed above.

Transfer of Ownership. The Grantor grants and conveys (transfers ownership of) the property described below to the Grantee. This transfer is made for the sum of One Dollar ($1.00)

The Grantor acknowledges receipt of this money.

Tax Map Reference. (N.J.S.A. 46:15-2.1) Municipality of Newark
Block No. 5074 Lot No. 1 Account No.

☐ No property tax identification number is available on the date of this deed. (Check box if applicable.)

* an undivided 33 1/3 % in

Property. The property consists of the land and all the buildings and structures on the land in the City of Newark County of Essex and State of New Jersey. The legal description is:

SEE ATTACHED SCHEDULE A

DATE

Jan 11 2 55 PM '89

BK5060PG 779

SCHEDULE A

BEGINNING at a pipe set in the easterly line of Bay Shore Connecting Railroad at its interesection with the southerly line of Delancy Street; and from thence running south 33 degrees 03 minutes 30 seconds west along said easterly line of Bay Shore Connecting Railroad 611.61 feet to another pipe set in said easterly line of Bay Shore Connecting Railroad, and to the center line of Jasper Creek; thence along said center line of Jasper Creek south 32 degrees 17 minutes 30 seconds east 107.77 feet to a pipe; thence south 59 degrees 18 minutes east 40.70 feet to a pipe, and land now or formerly belonging to Emily R. McGregor; thence along said land north 44 degrees 21 minutes east 100.50 feet to a pipe set at a corner in the last mentioned land; thence along the same south 47 degrees 52 minutes 30 seconds east 774.70 feet; more or less, to a pipe and certain land (consisting of approximately forty-five acres) hitherto conveyed by Internation Inks, Inc. to L. A. Ault, Trustee, by deed dated May 29, 1928, and recorded in the Office of the Register of the County of Essex on June 6, 1928; thence along said last mentioned land north 33 degrees 5 minutes 30 seconds east 677.88 feet to a pipe set in said southerly line of said Delancy Street at a point which is distant 923.35 feet on a course south 56 degrees 54 minutes 30 seconds east from the point of beginning; and thence along said southerly line of Delancy Street north 56 degrees 54 minutes 30 seconds west 923.35 feet to the easterly line of Bay Shore Connecting Railroad at the point of BEGINNING.

EXCEPTING, however, all that certain tract or parcel of land situate, lying and being in the City of Newark, in the County of Essex and State of New Jersey.

BEGINNING at a point in the easterly right-of-way line of the Bay Shore Connecting Railroad, said point being distant south 56 degrees 54 minutes 30 seconds east 50 feet from the intersection of the easterly line of Doremus Avenue and the southerly line of Delancy Street measured along said southerly line of Delancy Street, and south 33 degrees 03 minutes 30 seconds west 441.61 feet measured along said easterly right-of-way line of the Bay Shore Connecting Railroad; running thence south 33 degrees 03 minutes 30 seconds west still along said easterly right-of-way line of the Bay Shore Connecting Railroad 170 feet to a point; thence south 32 degrees 17 minutes 30 seconds east 107.77 feet to the point of intersection of lands formerly of Austen H. McGregor Estate, Inc.; thence south 59 degrees 18 minutes east along said lands fromerly of Austen H. McGregor Estate, Inc., 40.70 feet; thence north 44 degrees 21 minutes east 100.50 feet still along lands formerly of Austen H. McGregor Estate, Inc. to a point; thence north 20 degrees 59 minutes 34 seconds west 195.41 feet to the point of place of Beginning. *

BEING the same premises conveyed by Dore RealtyCo., Inc. to Abbie Greenberg, Mollie Ratner, Dorothy Greenberg and Bessie Baron by deed dated July 22, 1966 and recorded on July 26, 1966 in the Office of the Register of Essex County at Deed Book 4183, Page 255.

BEING the same premises of which Abbie Greenberg and Gertrude Greenberg transferred their 25% interest thereof to Bessie Baron, Mollie Ratner and Dorothy Greenberg by Deed dated August 30, 1968 and recorded September 3, 1968 in the Office of the Essex County Register, Deed Book 4284, Page 883.

* AND EXCEPTING all that certain tract or parcel of land and premises hereinafter more particularly described, situate, lying and being in the City of Newark, in the County of Essex, as follows:

BEGINNING at a point in the south line of Delancy Street therein distant 388.35 feet easterly from the intersection of same and the east right-of-way line of the Bay Shore Connecting Railroad, said intersection being in the south line of Delancy Street therein distant 50.00 feet easterly from the intersection of the south line of Delancy Street and the east line of Doremus Avenue; thence along Delancy Street south 56 degrees 54 minutes 30 seconds East; 535.00 feet; thence 33 degrees 05 minutes 30 seconds West 677.88 feet; thence North 47 degrees 52 minutes 30 seconds West, 162.01 feet; thence North 33 degrees 05 minutes 30 seconds East, 452.44 feet; thence North 56 degrees 54 minutes 30 seconds West, 375.00 feet; thence North 33 degrees 05 minutes 30 seconds East, 200.00 feet to the south line of Delancy Street and point of beginning.

The above description is according to a survey made May 1, 1952, by Francis J. A. Hoare, Engineer and Surveyor, Newark, N. J.

Subject to any state of facts an accurate survey may show.

SUBJECT, however, to a certain easement granted to John Maneely Company by Philip Ruxton, Incorporated, a New York Corporation, by indenture dated August 5, 1947, and recorded in the Register's Office of the County of Essex on August 13, 1947, in Deed Book K110 for said County on pages 66, 68, for a single tract connection to the Bay Shore Connecting Railroad in and over a certain right-of-way situate in the City of Newark, County of Essex, State of New Jersey and extending ten (10) feet on either side of the center line of said right-of-way, which center line is described as follows:

BEGINNING at a point in the easterly line of Bay Shore Connecting Railroad distant southerly ninety-three and ninety one-hundredths (93.90) feet from the intersection of the southerly line of Delancy Street with the easterly line of Bay Shore Connecting Railroad; thence northeasterly on a curve to the right with a radius of two hundred and eighty-seven and ninety one-hundredths (287.90) feet a distance of one hundred and one and nineteen one-hundredths (101.19) feet to a point in the southerly line of Delancy Street distant easterly thirty-six and thirty one-hundredths (36.30) feet from the intersection of the easterly line of Bay Shore Connection Railroad with the southerly line of Delancy Street.

**Promises by Grantor.** The Grantor promises that the Grantor has done no act to encumber the property. This promise is called a "covenant as to grantor's acts" (N.J.S.A. 46:4-6). This promise means that the Grantor has not allowed anyone else to obtain any legal rights which affect the property (such as by making a mortgage or allowing a judgment to be entered against the Grantor).

**Signatures.** The Grantor signs this Deed as of the date at the top of the first page.

Witnessed by:

x _____

x _____

x Jane Ratner Mattson (Seal)
Jane Ratner Mattson, Co-Executrix

x _____
Marian Ratner Abrams, Co-Executrix

CALIFORNIA
STATE OF ~~XXXXXXXXXX~~, COUNTY OF LOS ANGELES SS.:

I CERTIFY that on October 19, 1988,

Marian Ratner Abrams personally came before me and acknowledged under oath, to my satisfaction, that this person (or if more than one, each person):

(a) is named in and personally signed this Deed;
(b) signed, sealed and delivered this Deed as his or her act and deed; and
(c) made this Deed for $ 1.00 as the full and actual consideration paid or to be paid for the transfer of title. (Such consideration is defined in N.J.S.A. 46:15-5.)

x _____
(Print name and title below signature)
Notary Public

OFFICIAL SEAL
Phillip J. Gomez
NOTARY PUBLIC-CALIFORNIA
PRINCIPAL OFFICE IN
LOS ANGELES COUNTY
My Commission Expires May 28, 1991

BK5060PG 788

17144

THIS AGREEMENT made this 18th day of September, 1968 by and between MOLLIE RATNER, residing at 135 Ocean Parkway, Brooklyn, New York, BESSIE BARON, residing at 1299 Wellington Avenue, West Englewood, New Jersey and DOROTHY GREENBERG, residing at 6131 La Gorce Drive, Miami Beach, Florida, (hereinafter sometimes called the "Wives") and their respective husbands, namely MURRAY RATNER, LEO BARON and JACK GREENBERG.

WITNESSETH:

WHEREAS the Wives are owners, as tenants in common, each having a one-third interest, of the premises known as 704 Doremus Avenue, Newark, New Jersey, and

WHEREAS Dore Realty Co., Inc., the predecessor in title of the Wives, as landlord, entered into a written lease of the said property with Abbie Greenberg, as tenant, under date of June 6, 1966, thereafter assigned by Abbie Greenberg to Central Steel Drum Co., Inc., for a term of ten years at the net net annual rent of $42000 payable at the rate of $3500 monthly with a right or privilege of renewal for an additional ten years at a net net rent of $36,000 per year payable at the rate of $3000 monthly, and

WHEREAS it is the intent and purpose of the parties hereto that they, and their heirs and successors in the event of the death of any of the parties hereto shall continue to receive said rents and income during the period of the said lease, and any aforesaid renewal thereof, and

WHEREAS the parties are desirous that no sale or dis-

position of the said real property, by partition or by any other means, shall be made by the parties during the term of the said lease or any renewal thereof,

NOW, THEREFORE, in consideration of the sum of One ($1.00) Dollar each to the other in hand paid and in consideration of the mutual promises herein contained, the parties agree as follows:

1. The parties hereby incorporate by reference, as their mutual agreement and understanding, the recitals hereinabove set forth.

2. The parties agree, for themselves, their heirs, successors and assigns, that during the term of the aforesaid lease of the premises described above, and during the term of any renewal thereof, they will not sell, assign or otherwise dispose of, by partition, sale or any other means, their respective interests in the said premises known as 704 Doremus Avenue, Newark, New Jersey.

3. The parties hereby waive, for the term or terms aforesaid, any and all rights which they, or any of them, may have to demand or sue for partition of the said premises or to institute any proceeding in law or equity which would affect the parties herein of their respective rights or interests as tenants in common of the aforesaid premises, or of their rights and interests in the rents and income of said premises.

4. This agreement may be modified, superseded or revoked only by a writing executed and acknowledged by all of the

parties hereto in the form required for recording deeds in the State of New Jersey.

5. This agreement, and all of the terms hereof shall be binding upon the parties hereto and upon their respective heirs, successors, executors, administrators and assigns.

IN WITNESS WHEREOF the parties have hereunto set their hands and seals all of the day and year first above written.

Mollie Ratner (L.S.)
MOLLIE RATNER

Bessie Baron (L.S.)
BESSIE BARON

Dorothy Greenberg (L.S.)
DOROTHY GREENBERG

Murray Ratner (L.S.)
MURRAY RATNER

Leo Baron (L.S.)
LEO BARON

Jack Greenberg (L.S.)
JACK GREENBERG

HAZARDOUS WASTE INVESTIGATION

Inspector: Mike Nalbone
Date: 1-29-80
Location: Central Steel Drum

St: 704 Doremus Ave.

Town: Newark

County: Essex

Lot: 2
Block: 5074

Origin of Complaint: Anonymous

Complaint: Drum reclaimer burying waste in back of property.

Follow-up report on investigation in Nov. 1979

Findings:

On Jan. 29, 1979, I made a follow-up investigation at Central Steel Drum Company to ascertain information on their disposal of incinerator ash. I spoke with Mr. Alan Fischer assistant manager of Central Steel Drum. I asked Mr. Fischer what the company did with its incinerator ash and how much accumulated a day. I was told that the company uses the ash to fill pot holes on the companys grounds. It was also used as a fill material at the rear of the property. Mr. Fischer said that since this area was low and flooding occurs often, the rear of the property was being filled in to prevent this from happening in the future. He indicated that the company accumulates approximately one 55 gallon drum a day.

I noted during my investigation two (2) piles of incinerator ash located on the fill site which were still smoldering. (see area (A) on attached sketch) I requested that these two piles of incinerator ash be cleaned up and put in a container immediately. I indicated to Mr. Fischer that this was hazardous waste which should go to a special waste facility and not landfilled. Mr. Fischer disagreed with me indicating that according to the manufacturer of the incinerator after the material was burned it was no longer hazardous. I then indicated I would remain on the site untill the incinerator ash was picked up and put into a container. Mr. Fischer explained to me that he would clean up the ash from the fill site and place it in the roll off container being rented from Fiore & Sons. He also said that all the incinerator ash accumulated in the future will also be put in the roll off container untill an analysis is completed and a decision can be made whether its hazardous and non-hazardous.

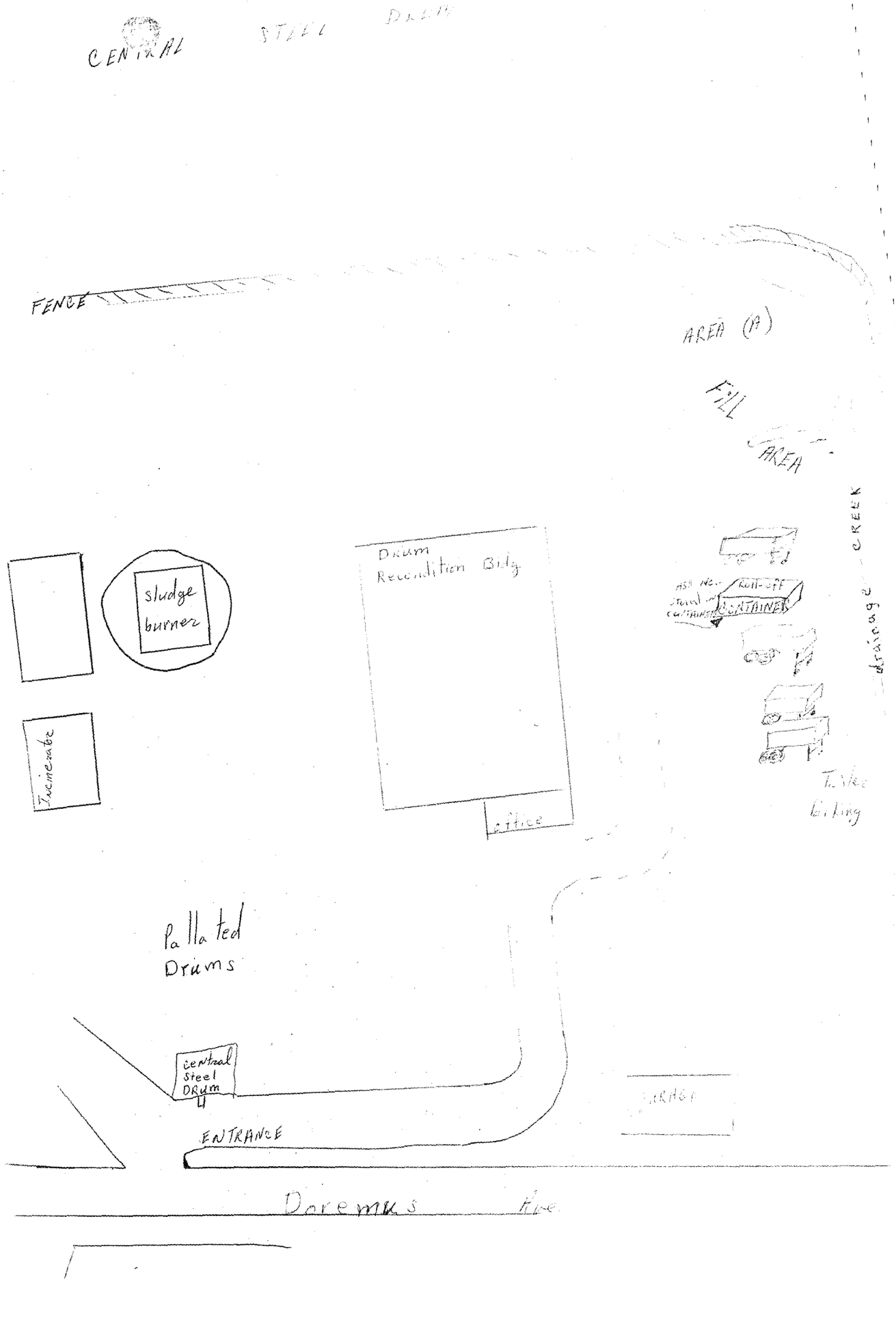
I checked for registration permits held by Central Steel Drum. The company had no SWA registration for landfilling special waste and it also had no SWA registration for landfilling solid waste. Their was a permit from Air Pollution Control certificate #042490 and DEP plant #05284 for the operation of the consumat C-225 (sludge burner incinerator). Although Mr. Fischer indicated that their was a registration permit for the second incinerator on site, their was no record of it on file.

I noted that the fill site designated as area (A) also consisted of drum lids, metal lid racks, wood pieces, scrap drums and paper. ((note* incinerator ash was noted mixed with dirt used in the fill area)). This area was approximately 80' by 30' and was in contact with the water in the drainage creek.

By three o'clock in the afternoon the clean up was completed and a sample was taken of the incinerator ash by myself and central steel drum for analysis. I indicated to Mr. Fischer that untill registration with our dept for landfilling has been approved as well as disposing of incinerator ash, all operation in this manner shall stop. Mr. Fischer requested the proper application forms for registering the company to legally carry out the disposal & landfilling of waste. I told him I would send out the necessary information to him.

The drums noted in a report on Nov. 27, 1979 were placed in the rear of the property because of poor house cleaning methods according to Mr. Fischer. The drums contained small amounts of material accumulated from other drums which were to be reconditioned. The material in these drums was incinerated according to Mr. Fischer. Mr. Fischer also said that the entire site is going thru a house cleaning operation to discontinue sloppy procedures on site.

11b


CENTRAL
STEEL
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AREA (A)
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RECONDITION BLDG
OFFICE
SLUDGE
BURNER
INCINERATOR
ROLL-OFF
CONTAINER
DRAINAGE
CREEK
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DRUMS
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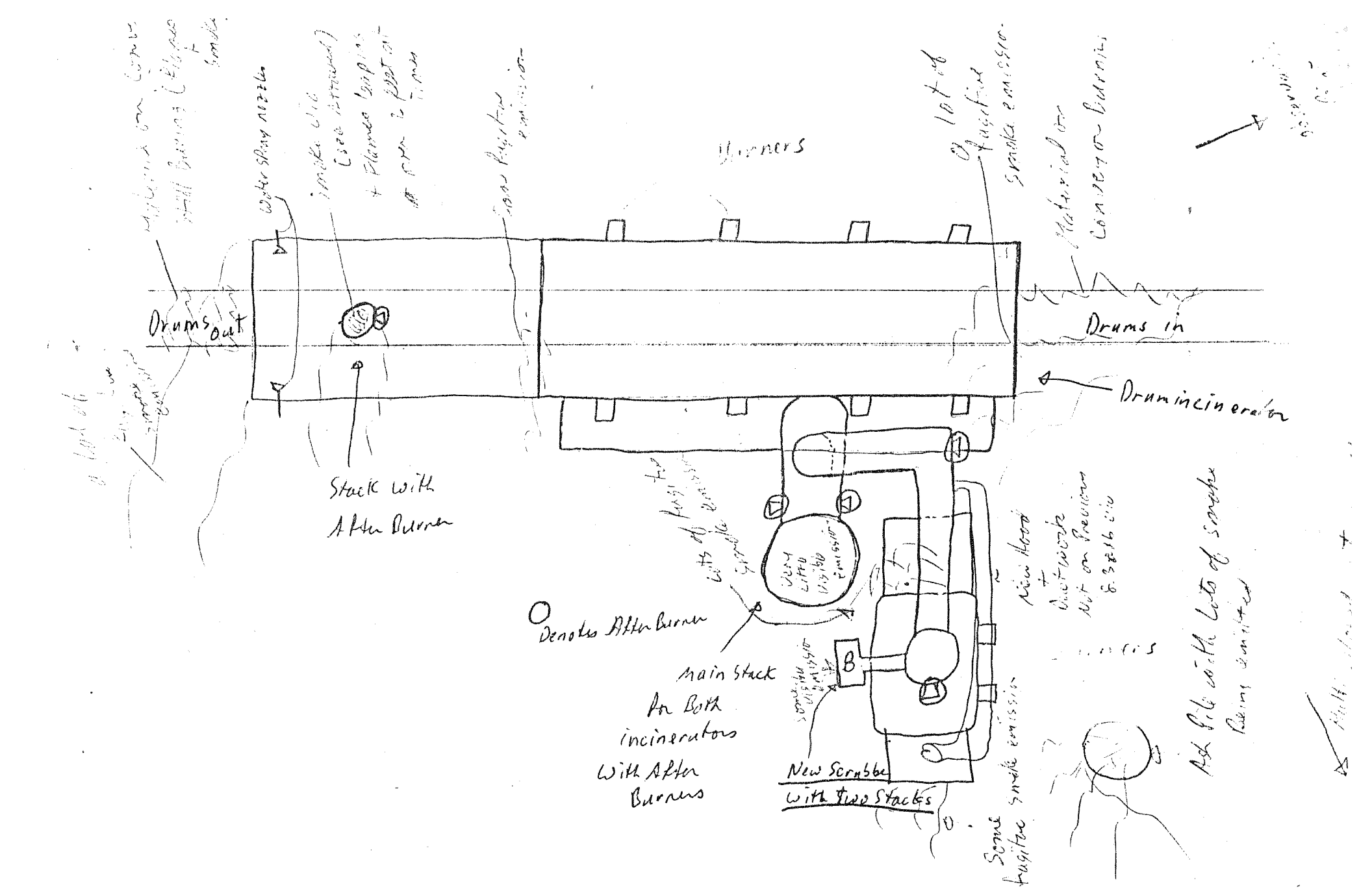
STEEL
DRUM
ENTRANCE
GARAGE
FENCE




See Also Drawings in
Report Dated 5-7-81
in Land File.

8

COPY SENT TO: WILLIAM SNOOSE

Central Steel Drum Co.
704 Doremus Avenue
Newark, N.J. 07105
EPA I.D. # NJD011482577

December 7, 1981

Objective:

On December 7, 1981 Angela Morales (Source Monitoring Section), John Witkowski (Emergency Response Section), Hank Wheat and Mike Skirka (Technical Assistance Team) were asked to perform a joint inspection at Central Steel Drum located at 704 Doremus Avenue, Newark, N.J. 07105. This site was referred to us by enforcement to determine possible RCRA, CERCLA, NPDES and FWPCA violations.

History of site

Central Steel Drum (CSD) is a steel drum reconditioning company which accepts "empty drums" for processing. Prior to the inception of this company, the facility was used by an ink pigment manufacturer.

C.S.D. Company processes approximately 3,000 thirty and fifty-five gallon "empty drums" per day, but receives daily shipments of varying quantities of these drums. Not all shipments are processed the same day since certain grades of drums are are in higher demand than others. Approximately 30% of incoming drums formerly contained material from the paint industry, 30-40% contained materials from the food industry and the remaining 30-40% contain varying miscellaneous residues such as adhesives, inks and sandy material.

Operating Process at Facility

C.S.D. Co. refinishes "empty drums" by putting them through a process line, part of which involves incineration, cleaning and painting.

C.S.D. Co. claims to operate a "dry process", where water is not a waste product but is recycled. The water in this operation is used for cooling purposes associated with the incinerator.

At the beginning of the refinishing process, drums are turned upside down on a conveyor line and moved through the drum incinerator where the residue inside the drum is burned at 2,000° F. During the process, a sludge is generated and accumulated by a scraper belt into an open bin. Any sludge not removed by the scrapers is removed by hand and stored in open drums. The bin and any drums containing this sludge is then taken to the sludge incinerator that exposes the sludge to a temperature range of 2,000°-2,600° F for 8 hours (Official stated C.S.D. Co. was having problems with the incinerator). The resultant ash is then scraped out by hand from the incinerator and accumulated in a pile 10-15 feet away. This pile is reportedly placed on a concrete slab with no containment or protection from wind or rain erosion. The pile is approximately 4-5 feet high and 15 feet in diameter.

C.S.D. Co. has their waste ash transported by Jonas Waste Removal located at Barkridge Road, Sewell, N.J. 08080 and it is disposed of at Geological Reclamation Operations and Waste Systems, Inc.(GROWS Inc.) located at Bordentown NewFord Mill Road in Morrisville, PA. 19067.

FINDINGS: Based upon information provided by company officials and a review of existing records.

Manifest System:

C.S.D. Co had an insufficient manifest system. The TSD facility certification form was not found along with the generator form. Parts of the manifest were not completely filled out(ie. DOT waste description was missing). In addition, manifests for shipments prior to January 1981 were not available on request. There were a total of 11 manifest out of a possible 17 shipments.

Inspection Schedule:

No written inspection plan was available upon request. No one is assigned the responsibility of checking the waste for signs of disturbance.

Personnel Training:

No documents indicating job descriptions, actual training or future training to be given to personnel were available upon request.

Contingency Plan:

No contingency plan was available. The emergency coordinator is the supervisor in the vicinity of the emergency.

Operating Record:

No operating records were available upon request. Information on the location waste analysis, and operating summary reports of the waste ash were not available.

Closure and Post-Closure Plan:

No plans were available on request.

Waste Analysis Plan:

CSD did not have their own waste analysis plan but, Mr. Adamson, the plant manager, showed us two waste analysis performed by GROWS Inc. on the ash pile CSD manifests as non-hazardous. (See Appendix C for a recent EP Toxicity waste analysis performed on the waste ash.)

Visual Inspection of Facility

Mr. Adamson conducted a tour of the facility operations. All members of the inspection team were present with the exception of Mike Skirka who stayed behind with the equipment that was brought to the facility.

En route to the incinerating portion of the facility we were conducted past machinery that was throwing particules into the air and obstructing our vision. In addition, "empty drums" were blocking the way and were immediately removed by Mr. Adamson. Also, the corridors were filled with sludge and particulate matter. Upon arriving at the incinerator, we found approximately three men, without respiratory protection, loading drums with Sherwin-Williams labels onto a conveyor belt leading into the incinerator. At this point fumes were coming from the incinerator and Ms. Morales informed Mr. Adamson that she could not stay at this point of the process for too long a period of time. As the drums with Sherwin-Williams labels entered the incinerator, a plume of grey smoke and combustion by-product was emitted from the incinerator. At this point Hank Wheat, who was operating an HNU photoionization analyzer (organic vapor detector) indicated to us that the meter had been fluctuating and was now reading off scale(over 2,000 ppm). Standard operating procedure required that we wear Self-Contained Breathing Apparatus(SCBA) protection so we immediately left the incineration area. While leaving the area, another darker plume and an acidic mist surrounded us. The incinerator operation came to a halt for lunch break and the plume and mists dispersed.

Mr. Adamson then took us to the sludge burning incinerator and showed us how the scraper system worked. He stated that the company was having problems with the sludge incinerator and that it was presently burning sludge at a temperature range of 2,000-2,600°F for 8 hours. The resultant ash is scraped out of the incinerator by hand and is accumulated on what appeared to be bare ground 15 feet away. The pile is offered no protection from the elements. The pile is reportedly transported from the facility every ten days in a 20 cubic yard container.

At this point it was noted by Ms. Morales and Mr. Wheat, that there were random open drums filled with sludge matter and also drums with more than an inch of an adhesive or resin material inside. Some drums were found laying on the ground in disarray with resinous material spilling from it.

The inspection team then started back to the office and, en route, noted what appeared to be a ditch on the southeastern part of the facility. When asked what it was, Mr. Adamson stated that it was a small creek and that he would provide us with the name when we returned to the office. The area around the ditch appeared to be disturbed and the ditch had a green color with an oily sheen to it. Upon arriving at the office, Mr. Adamson asked Mr. Fischer(the company Secretary who signed the notification form) the name of the creek and no one seemed to know.

This concluded the inspection.

DISCUSSION

CSD recycles "empty drums" and in the process a sludge is generated. This sludge is then burned in a sludge burning incinerator which turns the sludge into an ash. CSD does not perform waste analysis on their waste since they believe it to be non-hazardous after it is burned. A waste analysis was performed by GROWS Inc.'s outside independent laboratory, Ages Laboratory located in Potstown, PA. GROWS Inc. has a Retesting Policy that requires that a sample of waste be tested every year to insure that the waste they receive is the same as the initial shipment. The initial sample in this case was tested on July 8, 1980 and the retested sample was tested on July 16, 1981(Please note the date of letter in Appendix C.) The analysis performed on the waste ash sample include a test for EP Toxicity which showed the sample to be EP Toxic for lead. CSD is in violation for not manifesting their waste as hazardous and for not providing their own Waste Analysis Plan.

In a letter to Julio Morales-Sanchez, Director of Enforcement,(See Appendix A) CSD stated it did not file for a Part A permit since they do not take in materials for treatment nor do they store for more than 90 days. There seems to be confusion on their part since these elements are not the only criteria for falling within the jurisdiction of a TSD facility. This puts them in violation for treating hazardous waste without a TSD permit. It appears from the letter that CSD may have been in the computer system as having submitted a Part A application but, then deleted as a result of their letter to EPA.

There have been additional violation such as lack of Records Inspection, Facility Inspection and Contingency Plan. Also their waste pile and incinerator do not meet RCRA specifications.

RECOMMENDATIONS:

Enforcement action be taken.

Suggest that a sampling inspection be performed at the facility by both the Air and Water Sections of EPA for possible contamination of air, soil, groundwater and nearby creek.

Suggest that the Local Health Department be notified concerning health violations. OSHA was called and arrived at the facility on December 8th, 1981. They cited CSD for not having an adequate cover on one of their pulleys.

CSD has called in Environmental Consulting Testing located in Cherry Hill, N.J. to perform an environmental audit on the facility. It is recommended that EPA obtain their report on the site which should be ready in approximately two weeks.

Notify DEP of CSD's operations and possible violations.

JM Sorge, Inc.

50 County Line Road, Somerville, NJ 08876 • (908) 218-0066
FAX (908) 218-9185

May 10, 1994

Mr. Joel Bernstein
NJ Department of Environmental Protection & Energy
Div. of Responsible Party Site Remediation
CN 028
Trenton, NJ 08625-0028

Re: Progress Report No. 2
JCO Dated January 7, 1993
Central Steel Drum Facility
704 Doremus Ave. - Newark

Dear Mr. Bernstein:

The following provides the quarterly progress report as required in accordance with the requirements of the Court approved JCO. The following Progress Report covers the period from January 1994 through April 30, 1994. The following activities were initiated or completed during the referenced period.

**IRM Plan Progress**

Plant Closure

The facility's incinerator was shut down on February 16, 1994. The plant continued partial operations processing inventory through April 1, 1994. A complete General Information Notice (GIN) was submitted to NJDEPE on April 27, 1994.

Ash Disposal

Central Steel Drum (CSD) is currently removing the residual incinerator ash from the facility. The residual ash material is scheduled for removal from the site on or before May 18, 1994 in accordance with the Department's letter of April 13, 1994.

Drum Flip Cleanup

CSD completed an inspection of the drum flip area in accordance with the Department's correspondence of April 13, 1994. There was no residual material present on the drum flip pad; therefore, the IRM plan is considered complete for this area.

**RIW Plan Progress**

RIW

The RIW Plan approved by the Department on December 17, 1993 was developed assuming that the plant would continue to operate. Since the plant has been closed, a significant revision of the Plan is required. In order to develop a practical RIW Plan for the site, CSD and the current site owner, must determine the intended future use of the site. Specifically, any plans for partial or total plant demolition must be clearly defined. A revised RIW Plan and schedule will be prepared following finalization of CSD/owner's plans for the site.

During the next period (June through September 1994) we anticipate that CSD will finalize future plans for the site. We are hopeful that CSD will secure financing for the RIW program. This will allow J M Sorge, Inc. (JMS) to modify the RIW and commence implementation of the revised plan, as limited by the funds available.

The actual costs expended to date for technical support services in preparing the revised IRM and RIW are approximately $25,000. Since no previous budget was established for the preparation of these documents, no budget comparison is possible.

Should you have any questions regarding this initial Progress Report, please give me a call at your convenience.

Yours truly,

Joseph M. Sorge
President

JMS:nk

cc: Mr. Gerald Greenberg
Peter Herzberg, Esq.

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NEW J. SEY DEPARTMENT OF ENVIRON. TAL PROTECTION
DIVISION OF WATER RESOURCES

# INVESTIGATION MEMORANDUM

**Persons Conducting Investigation** Theo Ashie

**Complaint No./~~NJPDES No~~** 50-079C

**Date of Investigation** 9-17-96

**Routing** DW

**Location of Incident** CENTRAL STEEL DRUM COMPAN
704 DOREMUS AVENUE, NEWARK

**Purpose of Investigation** To investigate the discharge of pollutants to the surface waters of the State.

**Persons Interviewed** Neil Fischer, Secretary-Treasure Central Steel Drum Company

## Summary of Findings

The investigation revealed that there is a violation of N.J.S.A. 58:10A-1 et seq. at the facility. There was evidence of red paint spills around the incinerator area, and the spills ultimately ended up in the waters of the state. The drums used in the manufacturing process were not properly stored, and there were no retainer walls around the compressors so that there was evidence of discharge to the ground from the compressors. Also random spillage of oil and paint was seen all around the storage area. A notice of violation was issued for unpermitted discharge to the waters of the state and for poor housekeeping.

See attached; Industrial Survey
Industrial Stormwater non-file forms.

BBG000069

NEW J. SEY DEPARTMENT OF ENVIRONM TAL PROTECTION
DIVISION OF WATER RESOURCES

# INVESTIGATION MEMORANDUM

**Persons Conducting Investigation** Theo Ashie

**Complaint No./~~NJPDES No~~** 50-0790

**Date of Investigation** 9-17-90

**Routing** DW

**Location of Incident** CENTRAL STEEL DRUM COMPANY 704 DOREMUS AVENUE, NEWARK

**Purpose of Investigation** To investigate the discharge of pollutants to the surface waters of the State.

**Persons Interviewed** Neil Fischer, Secretary-Treasurer Central Steel Drum Company

## Summary of Findings

The investigation revealed that there is a violation of N.J.S.A. 58:10A-1 et seq. at the facility. There was evidence of red paint spills around the incinerator area, and the spills ultimately ended up in the waters of the state. The drums used in the manufacturing process were not properly stored, and there were no retainer walls around the compressors so that there was evidence of discharge to the ground from the compressors. Also random spillage of oil and paint was seen all around the storage area. A notice of violation was issued for unpermitted discharge to the waters of the state and for poor housekeeping.

See attached; Industrial Survey
Industrial Stormwater non-file forms.

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
METRO BUREAU OF REGIONAL ENFORCEMENT
2 BABCOCK PLACE
WEST ORANGE, NEW JERSEY 07052

Short Form

**INDUSTRIAL SURVEY**

DATE: 9/17/90

FACILITY NAME: Central Steel Drum Company PHONE: _____

ADDRESS: 704 Doremus Avenue, Newark, NJ 07105

OWNER: Central Steel Drum Company PHONE: (201) 344-8500

Nature and type of operation: Manufacture (recycle) steel drums

Length of time at present address: Since 1951

Previous occupants and nature of operations: Interchemicals Inc: Manufactured Ink

Underground tanks including size, contents, used or abandoned: None

COMMENTS: Uniform Haz. Wastes Manifest EPA ID # NJ011452577.
✓ 8 Monitoring Wells on site; sampled 3 weeks ago.

INFORMATION FURNISHED BY: Neil Fischer, Secretary-Treasurer
(Company representative) (Title)

**SITE DIAGRAM (Including UG tanks, wells, etc.)**

✓ Red paint spilled around the incinerator area ends up in the surface and ground waters of State.
✓ Recirculated water is used to paint the outside of the drums.
✓ Poor housekeeping: Drums not properly stored
✓ Retainer walls needed around compressors to prevent discharge to SW
✓ Facility has air pollution permits (Byron Sullivan)
✓ Random spillage (oil/paint) evident in storage area

SURVEY CONDUCTED BY: Thea Ashie Environmental Spec.
(NJDEP Representative) (Title)

✓ Paint is used to spray finished drums.

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DWR-047
12/88

C # 50-079

# State of New Jersey
## DEPARTMENT OF ENVIRONMENTAL PROTECTION
### DIVISION OF WATER RESOURCES
CN 029
TRENTON, NEW JERSEY 08625

## NOTICE OF VIOLATION

DATE 9-17-90

METRO ENFORCEMENT ELEMENT
BUREAU OF REGIONAL ENFORCEMENT
TELEPHONE NO (201) 669-3900

PCWS # _____ TYPE SUPPLY _____ NJPDES # _____ TYPE DISCH GW SW RCRA# _____
NAME OF FACILITY CENTRAL STEEL DRUM COMPANY
LOCATION OF FACILITY 704 DOREMUS AVE MUN. NEWARK COUNTY ESSEX
FACILITY REPRESENTATIVE AND TITLE NIEL FISCHER

You are hereby NOTIFIED that during an inspection of your facility on the above date, the following violations were noted and remedial actions are required:

DESCRIPTION OF VIOLATION/REMEDIAL ACTION: UNPERMITTED DISCHARGE TO THE SURFACE & GROUND WATERS OF THE STATE, AND POOR HOUSEKEEPING

The above noted violations are in violation of the following N.J. Statutes/Regulation, and will be recorded as part of the permanent enforcement history of your facility:

- ☑ New Jersey Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and appropriate Regulations.
- ☐ New Jersey Safe Drinking Water Act (N.J.S.A. 58:12A-1 et seq.) and appropriate Regulations.
- ☐ New Jersey Water Supply Management Act (N.J.S.A. 58:1A-1 et seq.) and appropriate Regulations.
- ☐ New Jersey Solid Waste Management Act (N.J.S.A. 13:1E-1 et seq.) and appropriate Regulations.
- ☐ New Jersey Underground Storage of Hazardous Substance Act (N.J.S.A. 58:10A-21 et seq.) and appropriate Regulations.

Remedial action to correct the violations must be initiated immediately. Within five (5) calendar days of receipt of this Notice of Violation, you shall telephone the investigator issuing this notice at the above number with the corrective measures you have initiated to attain compliance. The issuance of this document serves as notice to you that the Department has determined that a violation has occurred and does not preclude the State of New Jersey or any of its agencies, from initiation of further administrative or judicial enforcement action, or from assessing penalties, with respect to this or other violations. Violations of these regulations are subject to penalties of up to $25,000 per day.

Further enforcement action, which will require a written response, may be issued on these violation(s) and any additional violations found during the inspection.

Theo Ashie
*Investigator, Division of Water Resources, DEP*
THEO ASHIE

Violation received by
NIEL FISHER

White - Original  Canary - Bureau File  Pink - Criminal Justice  Goldenrod - Central File

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~~DIVISION OF WASTE MANAGEMENT~~
~~120 ROUTE 150, YARDVILLE, N.J. 08620~~
BUREAU, EMERGENCY RESPONSE & BADCOCK AVE. WEST ORANGE

14

# NOTICE OF VIOLATION 07052.

ID NO. 870424 0008 DATE 24 APR 87

NAME OF FACILITY CENTRAL STEEL DRUM COMPANY

LOCATION OF FACILITY 704 DOREMUS AVE NEWARK, ESSEX

NAME OF OPERATOR NEIL FISCHER, CORPORATE OWNER.

You are hereby NOTIFIED that during my inspection of your facility on the above date, the following violation(s) of the Solid Waste Management Act, (N.J.S.A. 13:1E-1 et seq.) and Regulations (N.J.A.C. 7:26-1 et seq.) promulgated thereunder and/or the Spill Compensation and Control Act, (N.J.S.A. 58:10-23.11 et seq.) and Regulations (N.J.A.C. 7:1E-1 et seq.) promulgated thereunder were observed. These violation(s) have been recorded as part of the permanent enforcement history of your facility.

DESCRIPTION OF VIOLATION NJSA 58:10-23.11.c. DISCHARGE OF HAZARDOUS SUBSTANCE PROHIBITED: MASSIVE WATER CONTAMINATION, DIRECT RESULT OF POOR HOUSEKEEPING. GROUND CONTAMINATION ON A SCALE EQUAL TO IF NOT GREATER THAN WATER CONTAMINATION SOIL CONTAMINATION BELOW 6" IN DEPTH ENTIRE SITE;

Remedial action to correct these violations must be initiated immediately and be completed by 9 MAY 87. Within fifteen (15) days of receipt of this Notice of Violation, you shall submit in writing, to the investigator issuing this notice at the above address, the corrective measures you have taken to attain compliance. The issuance of this document serves as notice to you that a violation has occurred and does not preclude the State of New Jersey, or any of its agencies from initiating further administrative or legal action, or from assessing penalties, with respect to this or other violations. Violations of these regulations are punishable by penalties of $25,000 per violation.

Joseph E Hoyle Jr 1175
Investigator, Division of Waste Management (201)669-3951
Department of Environmental Protection
Hoyle, Joseph E Jr



BBG000076

~~120 ROUTE 158, YARDVILLE, N.J. 08620~~
BUREAU, EMERGENCY RESPON
2 BABCOCK PIPE, WEST ORANGE
07052

# NOTICE OF VIOLATION

ID NO. 87 04 24 0008 DATE 24 APR 87

NAME OF FACILITY CENTRAL STEEL DRUM CO

LOCATION OF FACILITY 704 DOREMUS AVE NEWARK, ESSEX

NAME OF OPERATOR NEIL FISCHER, CORPORATE OWNER

You are hereby NOTIFIED that during my inspection of your facility on the above date, the following violation(s) of the Solid Waste Management Act, (N.J.S.A. 13:1E-1 et seq.) and Regulations (N.J.A.C. 7:26-1 et seq.) promulgated thereunder and/or the Spill Compensation and Control Act, (N.J.S.A. 58:10-23.11 et seq.) and Regulations (N.J.A.C. 7:1E-1 et seq.) promulgated thereunder were observed. These violation(s) have been recorded as part of the permanent enforcement history of your facility.

DESCRIPTION OF VIOLATION NJSA 58:10-23.11.E. FAILURE TO NOTIFY DEPARTMENT; DELIBERATE AND WILLFUL ACT DISREGARD OF ENVIRONMENTAL CONSISTENCY: MASSIVE GROUND AND WATER CONTAMINATION, IMPROPER DISPOSAL (INCINERATION) OF SOLID WASTE MATERIALS (PLASTICS) RESULTING IN TOXIC AND NOXIOUS AIR RELEASES

* REFERRED BY [signature]

Remedial action to correct these violations must be initiated immediately and be completed by 9 MAY 87. Within fifteen (15) days of receipt of this Notice of Violation, you shall submit in writing, to the investigator issuing this notice at the above address, the corrective measures you have taken to attain compliance. The issuance of this document serves as notice to you that a violation has occurred and does not preclude the State of New Jersey, or any of its agencies from initiating further administrative or legal action, or from assessing penalties, with respect to this or other violations. Violations of these regulations are punishable by penalties of $25,000 per violation.

[signature] 1175
Investigator, Division of Waste Management
Department of Environmental Protection (201) 669-3951
Hoyle, Joseph E. Jr.

12

Dave Haulle

Investigate & Lit. Solicit from EPA about this case.

1-11-88

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
CN 027, TRENTON, N.J. 08625

JORGE H. BERKOWITZ, Ph.D.
DIRECTOR

(609) 292-5383

MEMORANDUM

December 15, 1987

TO: Assistant Director Ronald Corcory

FROM: Assistant Director Anthony McMahon

SUBJECT: Central Steel Drum, Inc.
704 Doremus Avenue
Newark

The attached memorandums dated April 28 and August 5, 1987 from Mr. Jack Farley, Executive Director of the Suburban Regional Health Commission, suggest violations of the New Jersey Administrative Code under your purview.

OKK/sh

c: O. Keiderling
J. Farley
B. Sullivan

Tony - This should be referred to Yacoub's group. I believe Tom Sebecki has done something here recently. Dave B

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# Suburban Regional Health Commission

## MEMORANDUM

**TO:** Byron Sullivan, DEP-MFO-Air

**DATE:** August 5, 1987

**FROM:** Jack Farley, SRHC

**SUBJECT:**

I.D. No. 05274
Central Steel Drum Inc.
704 Doremus Avenue
Newark, New Jersey 07105

The enclosed data is submitted for your action and relates to an Order Compliance inspection on 7-29-87 by S.R.H.C. The inspection was conducted in response to violations originally recorded on 4-24-87 @ 02:10 hours.

Re: A/O A870631 (5.2(A))

Company continues to emit objectionable odors detectable off-property. Previous odor incidents have generated gross health concerns down wind. There were no citizen complaints on 7-29-87.

Re: A/O A870632 (26:2C-19(E))

Company again failed to notify N.J.D.E.P. as required. There were no citizen complaints on 7-29-87.

Re: A/O A870633 (8.3(E)-2)

Company has not repaired or corrected operating deficiencies.

New Violations

New visual emission violations recorded, 11.3(B) & 11.3(C).

Please refer to my correspondence of 4-28-87. During the 7-29-87 Order Compliance inspection gross contamination of the plant grounds was noted. Contamination consists of paint sludges, oils, solvents, and a variety of unknown compounds which are evident in pad run-off, from leaking drums in storage, and from an unlined disposal dumpster. The company has been evasive in describing a a collection and disposal system.

The plant site is constructed on a "wet land area" within 2,000 ft. of Newark Bay. A ground and sub-soil sampling and investigative program is strongly recommended.

JJF/bm
enclosures
cc: Mr. McGinley, Newark Health

X-'1A 0?

# Suburban Regional Health Commission

## MEMORANDUM

**TO:** Byron Sullivan, DEP-MFO-Air

**DATE:** April 28, 1987

**FROM:** Jack Farley, SRHC

**SUBJECT:**

I.D. No. 05274
CENTRAL STEEL DRUM INC.
704 Doremus Avenue
Newark, New Jersey 07105

Confirming our recent discussion of enforcement activities by S.R.H.C. at the subject site, the enclosed violations and supporting data is submitted for your review and action.

BACKGROUND

S.R.H.C. has responded to approximately 24 citizen complaints alledging objectionable odors and smoke since 3-22-85.

Prior to 4-24-87, the majority of these complaints were not verified because they were received after the fact.

Since approximately 1-1-87 S.R.H.C. has received a series of smoke and odor complaints, principally from "Con-Rail" employees, alledging emissions between approximately midnight and 03:00 hours. The Con-Rail complainants normally work an 11 PM to 7 AM shift, in a railroad yard 500 ft. plus south of the alledged source.

LEGAL ACTION PRIOR TO 4-24-87

| LOG No. | DATE | CITE | BY |
|---|---|---|---|
| A860373CDS | 3-10-86 | 8.3(A) & (B) | ? |
| A860374CDS | " | 8.3(E)<br>1 on CT-13006 | ? |
| A870044SBA | 11-3-86 | 11.3(b) on CT-67438 | SRHC |
| A870073SBA | 11-18-86 | 8.3(E) 2 on CT-67438 | SRHC |
| ? "ACO" | 11-2-87 | 8.1 and 16.1<br>Penalty $35,000.00 | ? |

Copies are enclosed for your reference

Memo: B. Sullivan
April 28, 1987

ENFORCEMENT STRATEGY PRIOR TO 4-24-87

The late PM, early AM emission complaints presented a difficult enforcement problem to S.R.H.C. since they seemed to occur during periods of rainy, northeast winds, when a v/e observation was impossible. In addition, budget constraints precluded daily overtime site surveillance.

A file review indicated an eight hour daily operating condition for CT-67438 which covered the main drum tunnel and incinerator. (copy enclosed)

The S.R.H.C. investigation developed the data that the CT-67438 process was normally operated from 7 AM to 3 PM, allowed to cool down and then cleaned out between approximately 8 PM and midnight. It was obvious the process was either being operated longer than eight hours daily or improper clean out proceedures were being utilized during the late PM. During a 3-31-87 site conference with company management they requested time to investigate and rectify the situation. On 4-1-87 company management advised S.R.H.C. the problem was due to improper late PM clean out proceedures and poor supervision. They advised an abatement program had been instituted and requested a period of time to prove correction. No additional complaints were received by S.R.H.C. from 4-1-87 to 4-17-87. The investigation of the 4-17-87 complaint found an untrained employee had operated the CT-67438 process due to a holiday schedule. The company advised this situation had been corrected and an S.R.H.C. Order Compliance inspection for (A870044SBA and A870073SBA) was scheduled for 4-27-87.

S.R.H.C. EMERGENCY RESPONSE OF 4-24-87 02:10 HOURS

The incident report by S.R.H.C. responder R. Portuese is enclosed for your reference. His report indicates gross violations of the indicated environmental codes, improper process operations, lack of supervision, and the dumping of hazardous materials and/or the attempted incineration of hazardous materials.

The following 4-24-87 violations are forwarded for your review and action:

1. 8.3(E)-2 violation of previous A/O A870073SBA (CT-67438), main drum tunnel.

2. 8.3(E)-2 violation of (CT-67438), incinerator.

3. 5.2(A) obnoxious odors off property, affidavits attached.

4. 26:2C, 19E failure to notify the Department of a hazardous air contaminant release.

Memo: B. Sullivan
April 28, 1987

CONCLUSION

Company has demonstrated a gross disregard for environmental regulations and public health.

Please note site is approximately 2000' from Newark Bay. Evidence of gross dumping of hazardous materials indicates company may be a significant contributor to Bay pollution.

Please expidite the enclosed violations. It is also requested DEP Waste Management and Criminal Justice be advised of this situation.

JJF/bm
enclosures

cc: Mr. Joseph McGinley, NEWARK
Mr. Gary Allen, DEP-E/R

File
07-14-15

SEP 2 0

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
401 East State St.
CN 028
Trenton, N.J. 08625-0028
(609)633-1408

Lance R. Miller
Deputy Director
*Responsible Party Remedial Action*

SEP 21 1988

M E M O R A N D U M

TO: Colleen Hart, Administrative Assistant
Responsible Party Cleanup Element

FROM: Linda Grayson, Chief
Bureau of Planning and Assessment

SUBJECT: CASE TRANSFER: CENTRAL STEEL DRUM
704 DOREMUS AVENUE
NEWARK, ESSEX COUNTY, NJ
SIN SCORE 37.8

The subject case is being tranferred to the Responsible Party Cleanup Element Bureau of Case Management - State Program for overall case management responsibilities with regard to site remediation. The site was sampled by NUS Corp. in 1986 as part of the CERCLA PA/SI program. Analytical data show contamination with various metals and volatile organic compounds in soil, groundwater, and surface water samples collected at the site. Chlordane and PCB contamination were also detected in soil samples.

A Consent Agreement signed with EPA in 1983 required the facility to develop a remediation plan for the site under the direction of NJDEP. A site investigation was initiated by the consulting firm Environics in 1985, however the case became inactive shortly after that time. The facility recently applied for a NJPDES-DGW permit for the site, which is currently in the review stage. Future site investigation/remediation efforts should be coordinated with the Division of Water Resources.

A copy of the site inspection report, analytical data, and responsible party investigation summary is attached. Should you have any questions

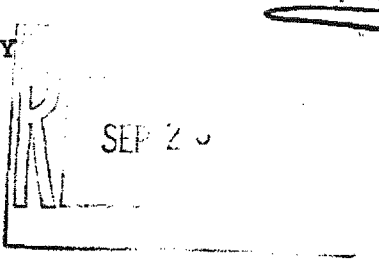
concerning the attached information, please contact Ed Gaven of my staff at 2-4320.

EG:mz
Attachment

c: Yacoub Yacoub, Chief, DHWM Metro Region Enforcement
Peter T. Lynch, Chief, DWR Metro Region Enforcement (w/o Attachments)
Steve Johnson, Chief, DWR Bureau of Ground Water Discharge Control (w/o Attachments)
Ernie Kuhlwein, Chief, Bureau of Hazardous Waste Engineering (w/o Attachments)
Bruce Venner, Acting Chief, BCTS (w/o Attachments)

RESPONSIBLE PARTY INVESTIGATION SUMMARY

CENTRAL STEEL DRUM
704 DOREMUS AVENUE
NEWARK, ESSEX COUNTY, NJ
EPA ID # NJD011482577




Central Steel Drum (CSD) is an active drum reconditioning facility located in a heavily industrialized area of Newark, Block 5074 Lot 1. The facility property covers 8.5 acres and is bordered by the Bay Shore Connecting Railroad to the west and Paragon Oil Company/Texaco to the south and east.

CSD has operated at the site since 1952. Prior to 1952 the site was occupied by an ink manufacturer, the International Printing Ink Division of Interchemical Corporation, which is now part of Inmont Corporation. Historical maps of the area show several building structures and 4 large oil tanks in the vicinity of the site in 1951, which also appear to have encompassed a portion of the Paragon Oil/Texaco property to the southeast.

A title/deed lookup indicates that the subject property was purchased from Interchemical Corp. in 1952 by the following persons: Bessie Baron, Mollie Ratner, Dorothy Greenberg, and Gertrude Greenberg. Present ownership of the property is under the names of Bessie Baron, Mollie Ratner, and Dorothy Greenberg. A lease agreement contract was made in 1966 for CSD to lease the property for a term of 10 years at an annual rent of $42,000, with renewal for an additional 10 years at $36,000. Prior to 1966 the above persons owned the property under the name of Dore Realty, which incorporated in 1965 and dissolved in 1966. The certificate of dissolution was signed by the following persons: Bessie Baron, Mollie Ratner, Abbie Greenberg, and Dorothy Greenberg.

The facility contains drum unloading and storage areas, a drum reconditioning building, a drum process incinerator and sludge incinerator, and paint shed. Drums are first processed through the main incinerator where residues are burned, generating a sludge which is stored in rolloff containers prior to being shipped offsite for disposal. Prior to 1983 sludge was burned in an incinerator and ash from the process was stored in open piles without containment. CSD has air permits for an incinerator, paint spray booth, main drum tunnel, and dust collector. The facility processes about 3,000 drums per day. Drums processed at the CSD facility are from the paint industry and food industry, along with other industries which produce adhesives and inks. A list of major drum suppliers submitted by CSD in 1982 is given in Attachment 1.

NJDEP involvement with the site began in 1979 as a result of an anonymous complaint that CSD was burying waste in the back of the property. A NJDEP inspection reported 10 drums full of unknown material behind several parked trailers next to a drainage creek in the southeast portion of the facility. During a follow-up inspection by NJDEP in January 1980, CSD representatives indicated that ash from the incinerator was being used to fill potholes at the facility and was also used as fill material in the rear of the property next to the drainage creek. Also noted were 2 piles of smoldering incinerator ash on the ground surface above the fill area.

A Notice of Prosecution was issued by NJDEP to CSD on 3/28/80 to cease

waste disposal activities and remove contaminated material which was buried onsite, however no records could be found to indicate that a cleanup of the fill area was ever conducted.

During September 1981 EPA conducted an inspection of the CSD facility after a response to a burning rail tank car at a nearby location. The CSD site was reported to be covered with pools of oil and unknown chemicals, some of which were observed flowing into adjacent drainage ditches and wetlands. A subsequent inspection by EPA representatives on 12/7/81 reported improper waste management practices, and noted the following observations:

- ash from the incinerator stored in open piles without containment prior to offsite disposal at GROWS Inc. landfill in Morrisville, Pa.
- leaking drums of resinous material onsite.
- drums containing greater than one inch of material.
- oily sheen in drainage ditch area.

A NJDEP inspection on 2/3/82 reported spillages of white sludge onsite, soil staining with purple and blue liquids, yellow and white solid material dumped in an area next to the drainage ditch, contaminated runoff from CSD facility into a stream at the southwestern section of the property, as well as sludge material, drums, and oily sheen in the stream bed.

NJDEP files contain analyses of the CSD incinerator ash residue and solid waste material conducted by the following laboratories over the period 1980-1983:

| | | |
|---|---|---|
| - | Applied Geotechnical and Environmental Services Corp. (AGES) | 6/13/80 |
| - | G.R.O.W.S. Inc. | 11/6/81 |
| - | S & W Waste Inc. | 5/4/33 |
| - | Townley Research and Consulting Inc. | 5/4/83 |

Contaminants detected in the above samples included the following substances: cadmium, chromium, copper, lead, zinc, carbon tetrachloride, chloroform, toluene, trichloroethylene, tetrachloroethylene, xylene, and petroleum hydrocarbons. EP Toxicity analyses by GROWS Inc. and S & W Waste showed the material to be EP toxic for lead.

CSD has shipped waste to the following facilities according to Bureau of Manifests and Information Systems records:

| Facility | Waste Type | Period |
|---|---|---|
| S & W Waste Inc., Kearny, NJ | D008 (lead) | 1984 |
| SRS, Linden, N.J. | D001 (ignitable) | 1984 |
| Fondessy Enterprises, Oregon, Ohio | D008 (lead) | 1984-1986 |
| Michigan Disposal Inc., Belleville, Mich. | D008 (lead) | 1984-1986 |
| | X910 (solid) | 1986-1987 |
| City Sand and Landfill, Sumpter, Mich. | X910 (solid) | 1987 |
| Wayne Disposal Inc., Belleville, Mich. | D008 (lead) | 1985-1986 |
| | X910 (solid) | 1987-1988 |

NJDEP inspections during 1983 included the collection of samples from various locations around the CSD facility. Soil samples analyzed by the NJDOH Laboratory showed volatile organic contamination up to 44,885 ppb. A

liquid sample from an auger hole showed total volatile organic contamination of 1,400 ppb. Soil samples analyzed by ETC showed soil contamination with benzene, ethylbenzene, toluene, methylene chloride, 1,1,1-trichloroethane, trichloroethylene, and tetrachloroethylene, with total VO concentrations on the order of 99,000 ppb. A drum sample showed the presence of methylene chloride, toluene, and 1,1,1-trichloroethane.

EPA issued a Consent Agreement and Final Compliance Order on 11/25/83 for a number of RCRA violations and also required the facility to conduct an investigation of contamination and develop a remediation program under the direction of NJDEP. A hydrogeologic assessment report was submitted by Environics on 4//9/85 to NJDEP/DHWM and DWR Metro Region Enforcement. A total of 6 monitoring wells were installed at the site, 3 shallow wells (10 feet deep) and 3 deep wells (25 feet deep). November 1985 sampling data showed the following metals to be present in the groundwater beneath the facility at concentrations above NJDEP groundwater quality criteria: arsenic, barium, cadmium, chromium, copper, lead, mercury, zinc. BNA and VO compounds were also detected in the groundwater at concentrations up to 412 ppb and 150 ppb, respectively. The most significant VO contaminants were xylene (104 ppb) and toluene (21 ppb). The case subsequently became inactive after 1985.

During 1987 the facility was inspected by DWR Enforcement and DEQ Bureau of Emergency Response. As a result of a DWR Enforcement inspection conducted 1/7/87, CSD was required to apply for a NJPDES-DGW permit. The facility submitted a NJPDES permit application during July 1987 which is currently under review by DWR Ground Water Discharge Control. On 4/24/87 the Bureau of Emergency Response responded to an emergency complaint of acrid odors entering the Conrail yard at 611 Delancy St. An inspection of the CSD facility reported smoldering debris from the furnace piled throughout the property and smoldering material in a rolloff container. Notices of Violation were issued for improper disposal of solid wastes, toxic air releases, and contamination of soil. A second inspection conducted in September 1987 reported illegal operations of the main incinerator and sludge burner along with massive fugitive emissions. During 1988 an ACO was issued by DEQ Enforcement requiring the facility to upgrade the drum incineration system.

EPA sent an Information Request Letter to CSD on 9/10/87 for information concerning RCRA activities. Samples of the incinerator residue were recently collected by EPA for EP Toxicity analyses in order to determine if the material should be classified as a hazardous waste.

The site was sampled in 1986 by the EPA contractor NUS Corp. as part of the CERCLA PA/SI program. Samples included 4 soil, 3 groundwater, and 1 surface water. The contaminants detected along with highest concentrations are listed below:

SOIL

| | |
|---|---|
| barium | 3310 ppm |
| chromium | 1360 ppm |
| copper | 916 ppm |
| lead | 10,400 ppm |
| zinc | 4,180 ppm |
| 1,1,1-trichloroethane | 160 ppb |

| | |
|---|---|
| tetrachloroechylene | 3,900 ppb |
| toluene | 92,000 ppb |
| ethylbenzene | 38,000 ppb |
| styrene | 33,000 ppb |
| xylene(s) | 190,000 ppb |
| arochlor - 1254 | 1,900 ppb |
| chlordane | 150,000 ppb |

GROUNDWATER

| | |
|---|---|
| barium | 4,210 ppb |
| cadmium | 219 ppb |
| chromium | 877 ppb |
| lead | 32,100 ppb |
| manganese | 32,000 ppb |
| nickel | 343 ppb |
| mercury | 36 ppb |
| vanadium | 361 ppb |
| zinc | 15,200 ppb |
| methylene chloride | 115 ppb |
| 2-hexanone | 6.3 ppb |
| 1,1,2,2-tetrachloroethane | 3.3 ppb |
| ethylbenzene | 2.5 ppb |
| toluene | 1.5 ppb |
| xylene(s) | 2.7 ppb |

SURFACE WATER (drainage ditch)

| | |
|---|---|
| lead | 2,460 ppb |
| acetone | 2,088 ppb |
| 2-butanone | 3,872 ppb |
| 4-methyl-2-pentanone | 100 ppb |
| 2-hexanone | 6.3 ppb |
| 1,1-dichloroethene | 2.4 ppb |
| bromoform | 2.4 ppb |
| 1,1,1-trichloroethane | 3.6 ppb |
| 1,1,2,2-tetrachloroethane | 5.9 ppb |
| toluene | 46 ppb |
| ethylbenzene | 6.1 ppb |
| xylene(s) | 32 ppb |

Soil contamination was detected from samples collected in the vicinity of the drum storage area, next to the rollof containers, and in the southeast corner of the property near the drainage ditch. Metal contaminants detected in the groundwater were generally higher for monitor wells located near the plant entrance, while volatile organic contamination was higher in samples collected from a monitor well in the rear of the property near the drainage ditch. The surface water sample showed volatile organic contamination in the drainage ditch which leads to the Newark Bay

CONCLUSIONS/RECOMMENDATIONS

Central Steel Drum Company should be considered the primary responsible party in this case based upon the sampling data as well as prior inspections by NJDEP personnel and observations of drum spillages and leakages, improper disposal/storage of incinerator ash and sludge, and general sloppy housekeeping methods. Substances found in the incinerator ash residue and drum samples were also detected in soil, groundwater, and surface water samples collected onsite. The property owners (Bassie Baron, Mollie Ratner, Dorothy Greenberg) should also be considered a responsible party.

The prior owner-operator Interchemical Corporation (now part of Inmont Corporation) is not considered a responsible party at this time since no detailed information could be obtained regarding their operation or waste disposal practices. Interchemical Corporation owned the property from 1948-1952 according to county records. An Information Request Letter may be used to obtain more information concerning operations by Interchemical Corp. at the subject site prior to 1952.

Soil at the CSD facility is contaminated with metals and volatile organic compounds. PCB contamination and chlordane were also detected in soil samples. Groundwater beneath the facility is contaminated with metals and volatile organics. Volatile organic contamination was also detected in a drainage ditch which leads to the Newark Bay. A study should be conducted to determine the extent of soil, groundwater, and surface water contamination, as well as any adverse impact on Newark Bay and nearby wetland areas. The facility should be required to develop a remediation plan for contaminated sections of the property under the direction of NJDEP as required by the Consent Agreement which was signed with EPA in 1983. The existing monitor wells and pending NJPDES-DGW permit may be considered for future site investigations.

Investigation Conducted By:

Edward Gaven, HSMS III EM 9-15-88
Bureau of Planning and Assessment
65 Prospect Street
Trenton, NJ
609-292-4320

RESPONSIBLE PARTY

1. Corporate Name: Central Steel Drum Company
Address: 704 Doremus Avenue
Newark, NJ 07105

Registered Agent: Edward B. Fischer
704 Doremus Avenue
Newark, NJ 07105

Corporate Status: Active, SIC code 3412. Central Steel Drum Company operates a single manufacturing facility in Newark, with 110 total employees.

Financial Status: Current Dun and Bradstreet records indicate annual sales of $5,000,000. No information on total corporate assests was available.

Principals: Alan Fischer
President
39 Harvey Dr.
Short Hills, NJ
Block 5001 Lot 8
Assessed value (1984): $298,100

Gerald Greenberg
Vice President
Last known address as of December 1983:
1530 Palisades Avenue
Fort Lee, NJ
(This is a co-op complex known as "The Colony")

Neil Fischer
Vice President and Plant Manager
47 Spencer Dr.
Short Hills, NJ
Block 5105 Lot 20
Assessed value (1984): $182,700

Edward Fischer
Vice President
Address listed in 1983 was the same as Alan Fischer.

Jeffrey Skuraton
Treasurer
89 Hartshorn Dr.
Short Hills, NJ
Block 4004 Lot 15
Assessed value (1985): $388,800

2. Property Owners: Bessie Baron
Mollie Ratner
Dorothy Greenberg

Address: 704 Doremus Avenue
Newark, N.J.

Corporate Status: The above persons may have operated under the name of Dore Realty Co., Inc. during 1965-1966. Dore Realty was dissolved in 1966 according to Department of State records, although the property owner certification on the NJPDES permit application identified Dore Realty Inc. as the present owner of the property, as signed by Gerald Greenberg, Vice-President for CSD.

Financial Status: Unknown; property value according to Newark Tax Assessors Ofice, Block 5074 Lot 1, is listed below:

| | |
|---|---|
| land (8.5 acres): | $169,900 |
| building | 81,900 |
| | $251,800 |

date of last assessment: 1986

DISCHARGE/ABANDONMENT INFORMATION:

Location: Central Steel Drum facility
704 Doremus Avenue
Newark, Essex County, NJ
Block 5074 Lot 1

SUBSTANCES DISCHARGED/ABANDONED: The following contaminants have been detected in soil and/or groundwater samples collected at the site:

barium
cadmium
chromium
copper
lead
mercury
zinc
1,1-dichloroethene
1,1,2,2-tetrachloroethane
1,1,1-trichloroethane
trichloroethylene
tetrachloroethylene
methylene chloride
benzene
ethylbenzene
toluene
xylene
acetone
2-butanone
4-methyl-2-pentanone
2-hexanone
arochlor 1254
chlordane

Description of Property affected: Soil throughout the 8.5 acre site is contaminated with the most significant contamination detected in the following areas:

- drum storage area
- vicinity of rolloff containers
- southeast portion of facility near drainage ditch.

Metals and volatile organic contaminants have also been detected in groundwater beneath facility. A drainage ditch which leads to the Newark Bay is alo affected from migration of contaminants from the CSD facility. Nearby wetlands and neighboring properties may also be affected including the Paragon oil/Texaco property to the southeast, known as Block 5074 Lots 3 and 5, which covers a total of 10.5 acres.

RELAVANT FILES AND CONTACTS

1. NJDEP Metro Regional Enforcement Files
   2 Babcock Place
   West Orange, NJ
   DHWM File #07-14-15: facility inspections, correspondence
   hydrogeologic assessment, sampling data
   Contact: Dave Beeman: 201-669-3960
   DEQ Plant ID# 05284: air permits, legal action log, inspection
   reports.
   Contact: Joseph Hoyle/Prit Pals: 201-669-3935
   DWR Files: NJPDES application, correspondence
   Contact: Tom Harrington: 201-669-3900

2. NJDEP/DWR Ground Waste Discharge Control
   401 East State Street
   Trenton, NJ
   NJPDES permit application hydrogeologic assessment
   Contact: Don Kramer: 609-292-0424

3. NJDEP/DWR Geological Survey
   25 Arctic Parkway
   Trenton, NJ
   Correspondence, sampling data,
   Contact: Emmanuel Charles: 609-292-0668

4. NJDEP/DWR Central File
   401 East State Street
   Trenton, NJ
   NJPDES # NJ0051772: NJPDES information, correspondence

5. NJDEP/DHWM/BHWE Central File
   401 East State Street
   Trenton, NJ
   RCRA status information

6. NJDEP/DHWM/Bureau of Manifests & Information Systems
   401 East State Street
   Trenton, NJ
   Hazardous waste manifests annual report
   Contact: Ken Klautman: 609-292-7081

7. NJDEP Information Resource Center
   432 East State Street
   Trenton, NJ
   Dun and Bradstreet financial assessments, corporate information
   Contact: Maria Baratta: 609-984-2249

8. NJ Department of State Division of Commercial Recording
   Mountain View Office Complex
   20 Bear Tavern Road
   West Trenton, NJ
   Certificates of incorporation

9. U.S. Environmental Protection Agency - Region II
   Hazardous Waste Compliance Branch
   Air and Waste Management Division
   26 Federal Plaza
   New York, NY
   Contact: James Sanderson: 212-264-6155

10. Newark Hall of Rcords
    Martin Luther King Blvd.
    Newark, NJ
    property deed information

11. Newark Engineering Department
    920 Broad Street
    Newark, NJ
    contact: Mr. Butler: 201-733-8520

CENTRAL STEEL DRUM COMPANY

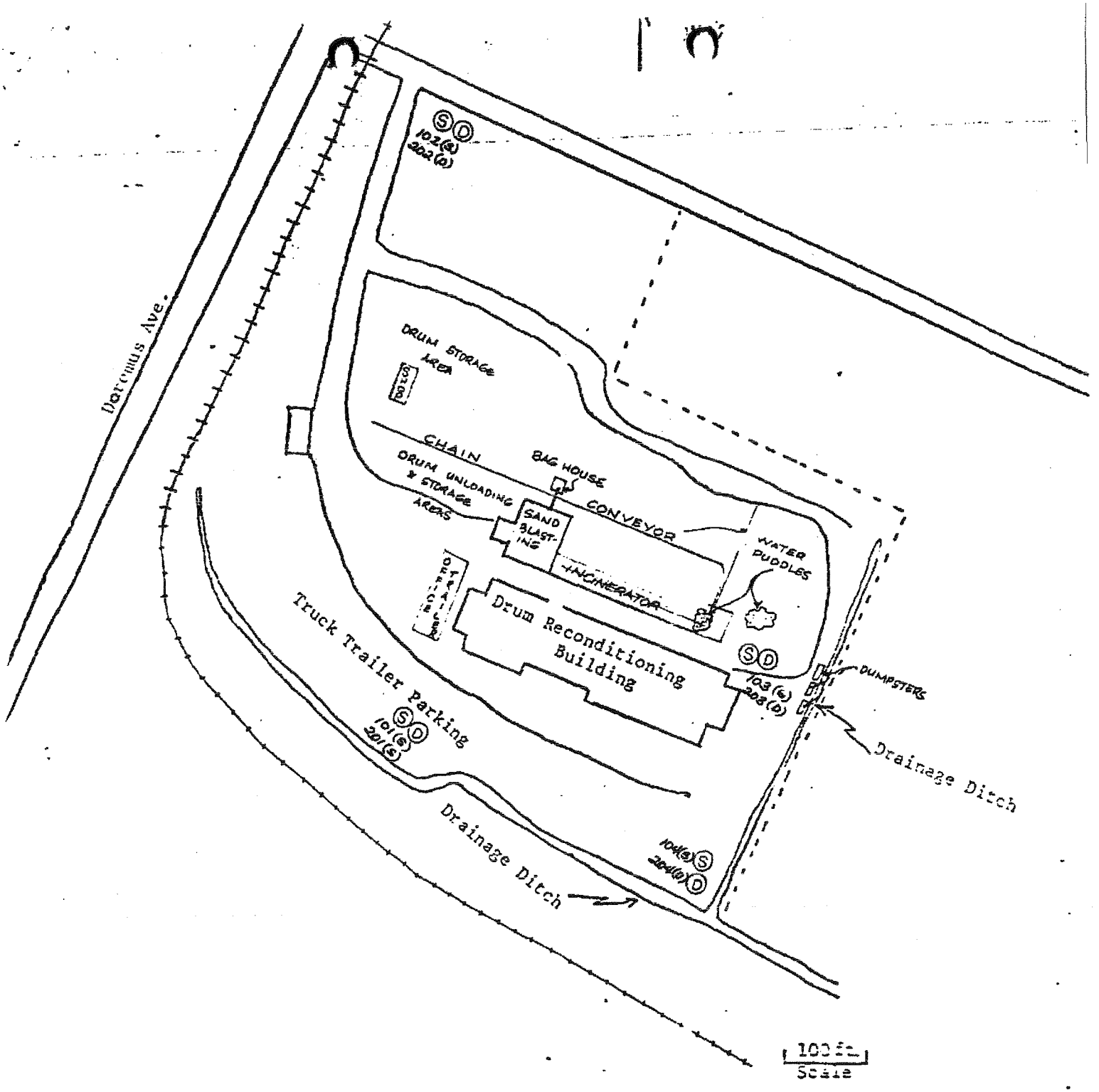
MAJOR DRUM SUPPLIERS & PRODUCTS

| | | PRODUCT |
|---|---|---|
| 1. | Aunt Millies Sauces, Inc.<br>200 Brenner Drive<br>Congers, New York 10920 | Tomato Paste |
| 2. | The Borden-Chemical Co.<br>Ink Division<br>8-10 22nd St.<br>Fair Lawn, New Jersey 07411 | Inks |
| 3. | Custom Chemical<br>30 Paul Kohnar Place<br>East Paterson, New Jersey 07407 | Pheonolic Coatings |
| 4. | E. I. Du Pont De Nemours<br>Chambers Works<br>Deepwater, New Jersey | Chemicals |
| 5. | Ferro Corporation<br>Ferro Composites Div.<br>Norwalk, Conn. 06856 | Sealers |
| 6. | Fitchburg Coated<br>East Corey Street<br>Moosic, Pennsylvania 18507 | Hot Melt Adhesives |
| 7. | R. B. Fuller Co.<br>59 Brunswick Ave.<br>Edison, New Jersey 08817 | Adhesives |
| 8. | Glidden & Co.<br>Third and Barn Sts.<br>Reading, Pennsylvania 19601 | Paint |
| 9. | Globe Products<br>55 Webro Road<br>Clifton, New Jersey 07015 | Pie Fillings |
| 10. | J. M. Huber Corp.<br>Raritan Center<br>Pershing Ave.<br>Edison, New Jersey 08817 | Ink |
| 11. | Inmont Corp.<br>Color & Chemical Division<br>Bound Brook, New Jersey 08805 | Paint Bases |

ATTACHMENT 1

| | | PRODUCT |
|---|---|---|
| 12. | Inmont Corp.<br>Color & Chemical Division<br>Hawthorne, New Jersey 07506 | Paint Bases and Intermediates |
| 13. | Minute Maid Co.<br>Coca Cola Division<br>Hightstown, New Jersey 08520 | Orange Juice Concentrate |
| 14. | Mortell Company<br>144 Grant Street<br>Perth Amboy, New Jersey 08862 | Sealers |
| 15. | National Starch & Chemical<br>225 Belleville Avenue<br>Bloomfield, New Jersey 07014 | Adhesives |
| 16. | National Starch & Chemical<br>1735 West Front Street<br>Plainfield, New Jersey 07061 | Adhesives |
| 17. | North Brunswick Coatings & Chemical<br>430 Jersey Avenue<br>North Brunswick, New Jersey 08902 | Paints |
| 18. | Orelite Chemical Coatings Co.<br>62 Woolsey Street<br>Irvington, New Jersey 07111 | Paint |
| 19. | Sicpa North America<br>25 Mc Lean Blvd.<br>Paterson, New Jersey 07514 | Printing Inks |
| 20. | Sinclair & Valentine Co.<br>Secaucus Road<br>Secaucus, New Jersey 07094 | Printing Inks |

ATTACHMENT 1




Central Steel Drum Co.
704 Duremus Ave.
Newark, NJ

(S) Recommended locations for shallow monitor wells

(D) Recommended locations for deep monitor wells

02-8511-15-SI

# FINAL DRAFT
# SITE INSPECTION REPORT
# AND HAZARD RANKING SYSTEM MODEL
# CENTRAL STEEL DRUM
# NEWARK, NEW JERSEY

PREPARED UNDER

TECHNICAL DIRECTIVE DOCUMENT NO. 02-8511-15
CONTRACT NO. 68-01-6699

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

JULY 25, 1986

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY

Daniel Caramagno

DANIEL CARAMAGNO
PROJECT MANAGER

REVIEWED/APPROVED BY

Ronald M. Naman

RONALD M. NAMAN
REGIONAL PROJECT MANAGER

BBG000111

NUS CORPORATION
RARITAN PLAZA III
KING GEORGE ROAD
EDISON, NEW JERSEY 08837
(201) 225-6160

C-584-07-86-63

July 25, 1986

Ms. Diana Messina
U.S Environmental Protection Agency
Region II
Edison, New Jersey 08817

Dear Diana:

Enclosed are the Site Inspection Report (EPA Form 2070-13) and the MITRE Hazard Ranking System (HRS) documents for Central Steel Drum in Newark, New Jersey. The site inspection was authorized under TDD #02-8511-15.

Very truly yours,

Daniel Caramagano

Reviewed and Approved:

DC/mg

Enclosure

# SECTION 1

## SITE INSPECTION REPORT EXECUTIVE SUMMARY

NUS CORPORATION
A Halliburton Company

# POTENTIAL HAZARDOUS WASTE SITE
# SITE INSPECTION REPORT
# EXECUTIVE SUMMARY

| | |
|---|---|
| Central Steel Drum<br>**Site Name** | NJD011482577<br>**EPA Site ID Number** |
| 704 Doremus Avenue<br>Newark, New Jersey<br>**Address** | 02-8511-15<br>**TDD Number** |

## SITE DESCRIPTION

Central Steel Drum, which currently occupies the site, reconditions open steel drums received from various industries ranging from food to paint manufacturing. The initial phase of reconditioning involves incineration; this is followed by sand blasting and repainting. Central Steel Drum has been in operation since 1951. Prior to this the site was occupied by an ink manufacturer which is now part of what is known as Inmont Chemical Corporation. The site occupies eight acres.

The NJDEP has closely followed site operations since 1980. Past methods of improper ash disposal include open piles and mixing of ash with on site fill. Ash is currently stored in roll off containers and is manifested under Resource Conservation and Recovery Act (RCRA) law. In addition, state inspection reports record residue from drums received being spilled on the ground.

The site is located in the industrial area on Newark Bay east of the NJ Turnpike and north of Newark International Airport. The site is situated on filled marsh land. The residential area begins 1.5 miles from the site (Ironbound section of Newark). On site drainage ditches feed into Newark Bay and groundwater recharges the industrially used Brunswick aquifer west-northwest of the site.

On February 6, 1986, a site inspection was conducted by NUS Corporation Region II FIT. Four soil, three groundwater, and one surface water sample were collected and analyzed for hazardous substance list (HSL) chemicals.

**Prepared by:** Daniel Caramagno of NUS Corporation **Date:** 2/14/86

# SECTION 2

## ENVIRONMENTAL PROTECTION AGENCY FORM 2070-13

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION
01 STATE 02 SITE NUMBER
NJ D011482577

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)
Central Steel Drum

02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
704 Doremus Avenue

03 CITY
Newark

04 STATE | 05 ZIP CODE | 06 COUNTY | 07 COUNTY CODE | 08 CONG DIST.
NJ | 07105 | Essex | 013 | 10

09 COORDINATES
LATITUDE 40° 42' 30". N
LONGITUDE 74° 07' 30". W

10 TYPE OF OWNERSHIP (Check one)
X A. PRIVATE _ B. FEDERAL _ C. STATE
_ D. COUNTY _ E. MUNICIPAL _ F. OTHER
_ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION
2 / 5 / 86
MONTH DAY YEAR

02 SITE STATUS
X ACTIVE
_ INACTIVE

03 YEARS OF OPERATION
1951 / Current
BEGINNING YEAR / ENDING YEAR
_ UNKNOWN

AGENCY PERFORMING INSPECTION (Check all that apply)
_ A. EPA X B. EPA CONTRACTOR NUS Corporation (Name of firm)
_ C. MUNICIPAL _ D. MUNICIPAL CONTRACTOR _____ (Name of firm)
_ E. STATE _ F. STATE CONTRACTOR _____ (Name of firm)
_ G. OTHER _____ (Specify)

| 05 CHIEF INSPECTOR | 06 TITLE | 07 ORGANIZATION | 08 TELEPHONE NO. |
|---|---|---|---|
| Daniel Caramagno | Chemical Engineer | NUS Corporation | (201) 225-6160 |
| **09 OTHER INSPECTORS** | **10 TITLE** | **11 ORGANIZATION** | **12 TELEPHONE NO.** |
| Rick Adkisson | Environmental Scientist | NUS Corporation | (201) 225-6160 |
| Richard Pagano | Geologist | NUS Corporation | (201) 225-6160 |
| Luke Darragh | Environmental Scientist | NUS Corporation | (201) 225-6160 |
| Don Hessemer | Environmental Scientist | NUS Corporation | (201) 225-6160 |

| 13 SITE REPRESENTATIVES INTERVIEWED | 14 TITLE | 15 ADDRESS | 16 TELEPHONE NO. |
|---|---|---|---|
| Bruce Doremus | Environmental Consultant | Environics | (201) 272-3770 |
| Alan Fischer | President | Central Steel Drum<br>704 Doremus Ave., Newark, NJ | (201) 344-8500 |

| 17 ACCESS GAINED BY (Check one) | 18 TIME OF INSPECTION | 19 WEATHER CONDITIONS |
|---|---|---|
| X PERMISSION<br>_ WARRANT | 0930 | Cloudy, 35°F, slight breeze from the south |

IV. INFORMATION AVAILABLE FROM

| 01 CONTACT | 02 OF (Agency/Organization) | 03 TELEPHONE NO. |
|---|---|---|
| Diana Messina | U.S. EPA | (201) 321-6685 |

| 04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM | 05 AGENCY | 06 ORGANIZATION | 07 TELEPHONE NO. | 08 DATE |
|---|---|---|---|---|
| Daniel Caramagno | | NUS Corporation | (201) 225-6160 | 02 / 06 / 86<br>MONTH DAY YEAR |

## II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

**01 PHYSICAL STATES (Check all that apply)**

- _ A. SOLID
- _ B. POWDER, FINES
- X C. SLUDGE
- X D. OTHER Ash (Specify)
- X E. SLURRY
- X F. LIQUID
- _ G. GAS

**02 WASTE QUANTITY AT SITE** (Measures of waste quantities must be independent)

TONS Unknown
CUBIC YARDS Unknown
NO. OF DRUMS Unknown

**03 WASTE CHARACTERISTICS (Check all that apply)**

- X A. TOXIC
- _ B. CORROSIVE
- _ C. RADIOACTIVE
- X D. PERSISTENT
- _ E. SOLUBLE
- _ F. INFECTIOUS
- _ G. FLAMMABLE
- _ H. IGNITABLE
- _ I. HIGHLY VOLATILE
- _ J. EXPLOSIVE
- _ K. REACTIVE
- _ L. INCOMPATIBLE
- _ M. NOT APPLICABLE

## III. WASTE TYPE

| CATEGORY | SUBSTANCE NAME | 01 GROSS AMOUNT | 02 UNIT OF MEASURE | 03 COMMENTS |
|---|---|---|---|---|
| SLU | SLUDGE | Unknown | | Ash from drum incineration operations is currently stored in roll off containers and is manifested under RCRA law. Prior to this, sludge was stored in piles or spread as fill on site. Other substances noted are a result of drum residue being spilled on the ground. Another potential source of contamination is on site painting operations. |
| OLW | OILY WASTE | Unknown | | |
| SOL | SOLVENTS | Unknown | | |
| PSD | PESTICIDES | | | |
| OCC | OTHER ORGANIC CHEMICALS | | | |
| IOC | INORGANIC CHEMICALS | | | |
| ACD | ACIDS | | | |
| BAS | BASES | | | |
| MES | HEAVY METALS | Unknown | | |

## IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

| CATEGORY | 02 SUBSTANCE NAME | 03 CAS NUMBER | 04 STORAGE/DISPOSAL METHOD | 05 CONCENTRATION | 06 MEASURE OF CONCENTRATION |
|---|---|---|---|---|---|
| MES | Lead | 7439-92-1 | Unknown | 32,100 | mg/kg |
| MES | Zinc | 7440-66-6 | Unknown | 1010 | mg/kg |
| OCC | 1,1,2,2 Tetrachloroethane | 127-18-4 | Unknown | 5.9 | ug/kg |
| OCC | Ethylbenzene | 100-41-4 | Unknown | 6.1 | ug/kg |
| OCC | Xylenes | 1330-20-7 | Unknown | 32 | ug/kg |
| SOL | Toluene | 108-88-3 | Unknown | 46 | ug/kg |
| SOL | 2-Hexanone | 591-78-6 | Unknown | 6.3 | ug/kg |
| PSD | Chlordane | 57-74-9 | Unknown | 150000 | ug/kg |
| SOL | Tetrachloroethene | 127-18-4 | Unknown | 3900 | ug/kg |
| PSD | 4,4-DDE | 72-55-9 | Unknown | 1300 | ug/kg |
| SOL | Methylene Chloride | 75-09-2 | Unknown | 115 | ug/kg |
| SOL | 2-Butanone | 78-93-3 | Unknown | 3872 | ug/kg |
| OCC | Isophorone | 78-59-1 | Unknown | 340 | ug/kg |
| OCC | 4-Methyl-2-Pentanone | 108-10-1 | Unknown | 14 | ug/kg |
| OCC | Styrene | 100-42-5 | Unknown | 12 | ug/kg |
| SOL | Phenol | 108-95-2 | Unknown | <8.7 | ug/kg |
| OCC | 4-Methyphenol | 106-44-5 | Unknown | <20 | ug/kg |
| OCC | Benzo (b) Fluoranthene | 205-99-2 | Unknown | <2000 | ug/kg |
| SOL | 1,2,4 Trichlorobenzene | 120-82-1 | Unknown | <220 | ug/kg |
| OCC | Napthalene | 91-20-3 | Unknown | <310 | ug/kg |
| OCC | 2-Methylnaphthalene | 91-57-6 | Unknown | <120 | ug/kg |
| OCC | Phenanthrene | 85-01-8 | Unknown | <200 | ug/kg |
| OCC | Fluoranthene | 206-44-0 | Unknown | <310 | ug/kg |

SEE ATTACHMENT A

## V. FEEDSTOCKS (See Appendix for CAS Numbers)

| CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER | CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER |
|---|---|---|---|---|---|
| FDS | N/A | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |

## VI. SOURCES OF INFORMATION (See specific references. e.g., state files, sample analysis, reports)

Malcolm Pirnie Preliminary Assessment of 3/5/85
Site Inspection 2/5/86 - NUS FIT Region II
U.S. EPA Contract Laboratory Program Sample Management Office. Analytical results of samples collected 2/5/86 by NUS Corporation FIT II

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

| CATEGORY | 02 SUBSTANCE NAME | 03 CAS NUMBER | 04 STORAGE/DISPOSAL METHOD | 05 CONCENTRATION | 06 MEASURE OF CONCENTRATION |
|---|---|---|---|---|---|
| OCC | Pyrene | 129-00-0 | Unknown | <300 | ug/kg |
| OCC | Chrysene | 218-01-9 | Unknown | <190 | ug/kg |
| OCC | Benzo (b) Fluoranthene | 205-99-2 | Unknown | <550 | ug/kg |
| OCC | Benzo (k) Fluoranthene | 207-08-9 | Unknown | <270 | ug/kg |
| OCC | Benzo (a) Pyrene | 50-32-8 | Unknown | <310 | ug/kg |
| SOL | 1,1-Dichloroethene | 75-35-4 | Unknown | <2.4 | ug/kg |
| SOL | 1,1,1-Trichloroethane | 71-55-2 | Unknown | <3.6 | ug/kg |
| OCC | Bromoform | 75-25-2 | Unknown | <2.4 | ug/kg |

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 X A. GROUNDWATER CONTAMINATION 02 OBSERVED (DATE: ) _ POTENTIAL X ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0 04 NARRATIVE DESCRIPTION

NJDEP inspection found drum residue spill stains, improper ash disposal and poor housekeeping. Site inspection of 2/5/86 found spilled drums and stained soil. Groundwater use is industrial only. Site groundwater samples obtained on 2/5/86 contained numerous contaminants.

01. X B. SURFACE WATER CONTAMINATION 02 OBSERVED (DATE: ) _ POTENTIAL X ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0 04 NARRATIVE DESCRIPTION

A drainage ditch leading to Newark Bay was found to contain an oily surface sheen. According to NJDEP files the banks contained rusted drums and sludge deposits. Surface water is not used for drinking, therefore population affected is 0. However, there are boating marinas in Jersey City for recreational vessels. Surface water sample obtained on 2/5/86 contained various contaminants.

01 X C. CONTAMINATION OF AIR 02 X OBSERVED (DATE: 2/8/82 ) _ POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0 04 NARRATIVE DESCRIPTION

In 1981 NJDEP inspection reported HNU readings in excess of 2000 ppm. Smoke from the incinerator was black. Various violations have been cited by NJDEP. However, no air readings above background were observed on 2/5/86. Residential population is beyond one mile from the site.

01. _ D. FIRE/EXPLOSIVE CONDITIONS 02 OBSERVED (DATE: ) _ POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 04 NARRATIVE DESCRIPTION

No potential exists.

01. X E. DIRECT CONTACT 02 X OBSERVED (DATE: 2/5/86 ) _ POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0 04 NARRATIVE DESCRIPTION

Though site is three quarters fenced, back property is open to marsh and gate is open and unattended in business hours. No residences are within one mile, and only workers are possibly affected.

01 X F. CONTAMINATION OF SOIL 02 X OBSERVED (DATE: 2/5/86 ) _ POTENTIAL _ ALLEGED
03 AREA POTENTIALLY AFFECTED: 8 (ACRES) 04 NARRATIVE DESCRIPTION

NJDEP inspections found various stains on the ground and drums were found leaking their contents on the ground. Site Inspection of 2/5/86 confirmed this.

01. G. DRINKING WATER CONTAMINATION 02 OBSERVED (DATE: ) _ POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 04 NARRATIVE DESCRIPTION

No potential exists as the source of drinking water for Newark is several miles distant.

01 X H. WORKER EXPOSURE/INJURY 02 OBSERVED (DATE: ) X POTENTIAL _ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: 110 04 NARRATIVE DESCRIPTION

Potential for exposure exists due to spills and contaminated soil.

01 I. POPULATION EXPOSURE/INJURY 02 OBSERVED (DATE: ) _ POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 04 NARRATIVE DESCRIPTION

No potential exists because the area within a mile radius of the site is industrial.

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 X J. DAMAGE TO FLORA — 02 _ OBSERVED (DATE: _____) X POTENTIAL _ ALLEGED
04 NARRATIVE DESCRIPTION

A low potential exists as area is industrial in nature. However contamination of Newark Bay life may occur as a result of drainage off site.

01 X K. DAMAGE TO FAUNA — 02 _ OBSERVED (DATE: _____) X POTENTIAL _ ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)

A low potential exists as area is industrial in nature, though contamination of aquatic life may occur through site drainage.

01 X L. CONTAMINATION OF FOOD CHAIN — 02 _ OBSERVED (DATE: _____) X POTENTIAL _ ALLEGED
04 NARRATIVE DESCRIPTION

A low potential exists as surface drainage may contaminate life in Newark Bay.

01 X M. UNSTABLE CONTAINMENT OF WASTES (Spills/runoff/standing liquids/leaking drums) — 02 X OBSERVED (DATE: 3/28/80) _ POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

Incinerator ash was formerly stored on an open concrete slab. Storage is now in roll off containers at slab area.

01 X N. DAMAGE TO OFFSITE PROPERTY — 02 _ OBSERVED (DATE: _____) X POTENTIAL _ ALLEGED
04 NARRATIVE DESCRIPTION

Drainage ditch passes other property in Newark Bay area.

01 X O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 _ OBSERVED (DATE: _____) X POTENTIAL _ ALLEGED
04 NARRATIVE DESCRIPTION

Potential exists if heavy rains cause overflow and runoff.

01 X P. ILLEGAL/UNAUTHORIZED DUMPING — 02 X OBSERVED (DATE: 3/28/80) _ POTENTIAL _ ALLEGED
04 NARRATIVE DESCRIPTION

NJDEP noted Central Steel Drum as operating a Treatment/Storage/Disposal (TSD) facility without proper authorization. Since that time Central Steel Drum has improved in their compliance to RCRA regulations. Sand pile noted on Site Reconnaissance 1/30/86 by NUS FIT.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

None

III. TOTAL POPULATION POTENTIALLY AFFECTED: 110 (Central Steel Drum Employees Only)

IV. COMMENTS

Due to industrial setting the only direct exposure is to daily workers. Water use in area is either industrial or non-existent. Since the NJDEP investigations Central Steel Drum has made an effort to improve waste manifesting and incineration.

V. SOURCES OF INFORMATION (Cite specific references. e.g., state files, sample analysis, reports)

Malcolm Pirnie Preliminary Assessment of 3/5/85
Site Inspection 2/5/86 - NUS FIT Region II

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

1. IDENTIFICATION
01 STATE 02 SITE NUMBER
NJ D011482577

## II. PERMIT INFORMATION

| 01 TYPE OF PERMIT ISSUED (Check all that apply) | 02 PERMIT NUMBER | 03 DATE ISSUED | 04 EXPIRATION DATE | 05 COMMENTS |
|---|---|---|---|---|
| _ A. NPDES | | | | |
| _ B. UIC | | | | |
| X C. AIR State Permit | 0067438 | 08/11/82 | | Periodic three month renewal |
| X D. RCRA | NJD011482577 | 10/09/80 | | Generator ID Number |
| _ E. RCRA INTERIM STATUS | | | | |
| _ F. SPCC PLAN | | | | |
| _ G. STATE (Specify) | | | | |
| _ H. LOCAL (Specify) | | | | |
| _ I. OTHER (Specify) | | | | |
| _ J. NONE | | | | |

## III. SITE DESCRIPTION

| 01 Storage/Disposal (Check all that apply) | 02 AMOUNT | 03 UNIT OF MEASURE |
|---|---|---|
| _ A. SURFACE IMPOUNDMENT | | |
| X B. PILES | | Unknown |
| _ C. DRUMS, ABOVE GROUND | | |
| _ D. TANK, ABOVE GROUND | | |
| _ E. TANK, BELOW GROUND | | |
| _ F. LANDFILL | | |
| _ G. LANDFARM | | |
| _ H. OPEN DUMP | | |
| X I. OTHER Roll off containers (Specify) Onsite fill | 20 | cu. yds. unknown |

04 TREATMENT (Check all that apply)
- X A. INCINERATION
- _ B. UNDERGROUND INJECTION
- _ C. CHEMICAL/PHYSICAL
- _ D. BIOLOGICAL
- _ E. WASTE OIL PROCESSING
- _ F. SOLVENT RECOVERY
- _ G. OTHER RECYCLING/RECOVERY
- _ H. OTHER (Specify)

05 OTHER
- X A. BUILDINGS ON SITE

06 AREA OF SITE
8 (Acres)

07 COMMENTS

Since the beginning of NJDEP inspections in 1980, Central Steel Drum has made an effort to conform to regulations concerning waste handling and incineration. Also, immediate area of site is heavily contaminated from past practices. The site inspection was conducted to determine the extent of contaminant release.

## IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

_ A. ADEQUATE, SECURE _ B. MODERATE _ C. INADEQUATE, POOR X D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

Drums received are "empty" for reprocessing. However on site inspection found several drum spills staining the ground. Waste is stored in two roll off containers and is manifested for disposal. Containers are on concrete slabs but slab is covered with mud and spilled material and is barely discernable. Ash was previously stored in piles and mixed with on site fill.

## V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: X YES _ NO

02 COMMENTS

Site is fenced on three sides and is open to an area containing thick, tall grass. Gate is open during working hours and not guarded. As a result, entrance is easily obtained.

## VI SOURCES OF INFORMATION (Cite specific references. e.g., state files, sample analysis, reports)

Malcolm Pirnie Preliminary Assessment of 2/5/85
Site Inspection 2/5/86 - NUS FIT Region II

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - DEMOGRAPHIC, AND ENVIRONMENTAL DATA

1. IDENTIFICATION
01 STATE 02 SITE NUMBER
NJ D011482577

## II. DRINKING WATER SUPPLY

| 01 TYPE OF DRINKING SUPPLY (Check as applicable) | 02 STATUS | | | | | 03 DISTANCE TO SITE |
|---|---|---|---|---|---|---|
| | SURFACE | WELL | ENDANGERED | AFFECTED | MONITORED | |
| COMMUNITY | A. X | B. _ | A. | B. _ | C. _ | A. >3 (mi) |
| NON-COMMUNITY | C. _ | D. _ | D. X | E. _ | F. _ | B. N/A (mi) |

## III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

_ A. ONLY SOURCE FOR DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available)

_ B. DRINKING

X C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available)

_ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER: 0

03 DISTANCE TO NEAREST DRINKING WATER WELL: N/A (mi)

| 04 DEPTH TO GROUNDWATER | 05 DIRECTION OF GROUNDWATER FLOW | 06 DEPTH TO AQUIFER OF CONCERN | 07 POTENTIAL YIELD OF AQUIFER | 08 SOLE SOURCE AQUIFER |
|---|---|---|---|---|
| 3 (ft) | WNW | 20 (ft) | $2.0 \times 10^7$ (gpd) | _ YES X NO |

09 DESCRIPTION OF WELLS (Including useage, depth, and location relative to population and buildings)

Wells are commercially owned and are west and northwest of site. Wells vary from 200-900 feet in depth and average about 350 ft. No drinking wells are present. Nearest down gradient well is on Delancey Street, Newark and is owned by Rutherford and Delancey Holding Corporation. The nearest well is one mile from the site. All the wells to the west of the site tap the Brunswick Aquifer which is charged by Newark Bay. Groundwater flow is away from Newark Bay because of heavy pumping conditions in Newark.

| 10 RECHARGE AREA | | 11. DISCHARGE AREA | |
|---|---|---|---|
| YES / NO | COMMENTS | YES / NO | COMMENTS |
| X NO | Newark Bay recharges aquifer of concern. | X NO | Water recharges Brunswick Formation to the west. |

## IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

X A. RESERVOIR, RECREATION DRINKING WATER SOURCE

_ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES

_ C. COMMERCIAL, INDUSTRIAL

_ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

| NAME: | AFFECTED | DISTANCE TO SITE |
|---|---|---|
| Passaic River | | 1.0 (mi) |
| Newark Bay | | 0.75 (mi) |
| Drainage Ditch (Ditch is deep and filled with water year round) | X | On site (mi) |

## V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN (Population figures are based on residential only)

| ONE (1) MILE OF SITE | TWO (2) MILES OF SITE | THREE (3) MILES OF SITE |
|---|---|---|
| A. 0 NO. OF PERSONS | B. 53900 NO. OF PERSONS | C. 186900 NO. OF PERSONS |

02 DISTANCE TO NEAREST POPULATION: 1.5 (mi)

| 03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE | 04 DISTANCE TO NEAREST OFF-SITE BUILDING |
|---|---|
| 19900 | <0.1 (mi) |

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site. e.g., rural, village, densely populated urban area)

The immediate vicinity of the site contains industrial property. To the south is Newark International Airport (½ mile distance). To the west, at a distance of about 1.5 miles, is the densely populated Ironbound section of Newark. Newark Bay is east of the site. North of the site are several industrial complexes which contain marine facilities heavily served by commercial shipping.

## VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

X A. $10^{-6}$ - $10^{-8}$ cm/sec _ B. $10^{-4}$ - $10^{-6}$ cm/sec _ C. $10^{-4}$ - $10^{-3}$ cm/sec _ D. GREATER THAN $10^{-3}$ cm/sec

Soil is fill over marsh land with a clay lense over the aquifer of concern.

02 PERMEABILITY OF BEDROCK (Check one)

_ A. IMPERMEABLE (Less than $10^{-6}$ cm/sec) X B. RELATIVELY IMPERMEABLE ($10^{-4}$ - $10^{-6}$ cm/sec) _ C. RELATIVELY PERMEABLE ($10^{-2}$ - $10^{-4}$ cm/sec) _ D. VERY PERMEABLE (Greater than $10^{-2}$ cm/sec)

| 03 DEPTH TO BEDROCK | 04 DEPTH OF CONTAMINATED SOIL ZONE | 05 SOIL pH |
|---|---|---|
| 40 (ft) | Unknown (ft) | 6.9 - 7.6 |

| 06 NET PRECIPITATION | 07 ONE YEAR 24 HOUR RAINFALL | 08 SLOPE SITE SLOPE | DIRECTION OF SITE SLOPE | TERRAIN AVERAGE SLOPE |
|---|---|---|---|---|
| 14 (in) | 2.75 (in) | 0-1 % | East | 0-1 % |

09 FLOOD POTENTIAL

SITE IS IN 100 YEAR FLOODPLAIN _ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

10

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE: A. 2.5 (mi) OTHER: B. N/A (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

>2 (mi)

ENDANGERED SPECIES: N/A

13 LAND USE IN VICINITY

DISTANCE TO:

| COMMERCIAL/INDUSTRIAL | RESIDENTIAL AREAS: NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES | AGRICULTURAL LANDS PRIME AG LAND | AGRICULTURAL LANDS AG LAND |
|---|---|---|---|
| A. Adjacent (mi) | B. 1.5 (mi) | C. >3 (mi) | D. >3 (mi) |

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

The site is located about one mile west of Newark Bay and North of Newark International Airport. The area is flat with less than 1% slope. The surrounding area is former wetland that has been filled in. Drainage "Streams" or ditches are located on site and lead into Newark Bay.

## VII SOURCES OF INFORMATION (Cite specific references e.g., state files, sample analysis, reports)

William D. Nichols, Groundwater Resources of Essex County, New Jersey: Special Report 28, United States Geological Survey
Telecon with Sy Goodman - USDA, 4/3/85
Preliminary Report on the Geology and Groundwater Supply of Newark, New Jersey Area; Special Report #1 New Jersey Department of Conservation and Economic Development
Paul B. Dahlgren, Hydrogeologic Assessment for Central Streel Drum, Environics Inc.

## II. SAMPLES TAKEN

| SAMPLE TYPE | 01 NUMBER OF SAMPLES TAKEN | 02 SAMPLES SENT TO | 03 ESTIMATED DATE RESULTS AVAILABLE |
|---|---|---|---|
| GROUNDWATER | 3 | All Organics Sent To: | |
| SURFACE WATER | 1 | Environmental Testing and Certification Labs | |
| WASTE | | 284 Raritan Center Parkway | |
| AIR | | Edison, NJ 08818 | |
| RUNOFF | | | |
| SPILL | | All Inorganics Sent To: | |
| SOIL | 4 | JTC Environmental Consultants Inc. | |
| VEGETATION | | Four Research Place, Suite L-10 | |
| OTHER | | Rockville, Maryland 20850 | |

## III. FIELD MEASUREMENTS TAKEN

| 01 TYPE | 02 COMMENTS |
|---|---|
| Air | OVA, HNU used for checking air contamination for Health and Safety reasons. No readings above background except upon well opening. |

## IV. PHOTOGRAPHS AND MAPS

01 TYPE X GROUND _ AERIAL

02 IN CUSTODY OF NUS Corporation - FIT II
(Name of organization or individual)

03 MAPS
X YES
_ NO

04 LOCATION OF MAPS
NUS Corporation - FIT II Region Office

## V. OTHER FIELD DATA COLLECTED (Provide narrative description)

Field Notebook #1864 filed under TDD #02-8511-15.

## VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Site Inspection, 2/5/86 - NUS FIT Region II

## II. CURRENT OWNER(S)

| 01 NAME | 02 D + B NUMBER | PARENT COMPANY (If applicable) 08 NAME | 09 D + B NUMBER |
|---|---|---|---|
| Central Steel Drum | | | |
| 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | 04 SIC CODE | 10 STREET ADDRESS (P.O. Box, RFD#, etc.) | 11 SIC CODE |
| 704 Doremus Avenue | | | |
| 05 CITY / 06 STATE | 07 ZIP CODE | 12 CITY / 13 STATE | 14 ZIP CODE |
| Newark NJ | 07105 | | |

| 01 NAME | 02 D + B NUMBER | 08 | 09 D + B NUMBER |
|---|---|---|---|
| 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | 04 SIC CODE | 10 STREET ADDRESS (P.O. Box, RFD#, etc.) | 11 SIC CODE |
| 05 CITY / 06 STATE | 07 ZIP CODE | 12 CITY / 13 STATE | 14 ZIP CODE |

| 01 NAME | 02 D + B NUMBER | 08 NAME | 09 D + B NUMBER |
|---|---|---|---|
| 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | 04 SIC CODE | 10 STREET ADDRESS (P.O. Box, RFD#, etc.) | 11 SIC CODE |
| 05 CITY / 06 STATE | 07 ZIP CODE | 12 CITY / 13 STATE | 14 ZIP CODE |

| 01 NAME | 02 D + B NUMBER | 08 NAME | 09 D + B NUMBER |
|---|---|---|---|
| 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | 04 SIC CODE | 10 STREET ADDRESS (P.O. Box, RFD#, etc.) | 11 SIC CODE |
| 05 CITY / 06 STATE | 07 ZIP CODE | 12 CITY / 13 STATE | 14 ZIP CODE |

## III. PREVIOUS OWNER(S) (List most recent first)

| 01 NAME | 02 D + B NUMBER | 04 SIC CODE | 07 ZIP CODE |
|---|---|---|---|
| Inter Chemical (Inmont) | | | |
| 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | | | |
| 1255 Broad Street | | | |
| 05 CITY / 06 STATE | | | |
| Clifton NJ | | 07015 | |

| 01 NAME | 02 D + B NUMBER | 04 SIC CODE | 07 ZIP CODE |
|---|---|---|---|
| 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | | | |
| 05 CITY / 06 STATE | | | |

| 01 NAME | 02 D + B NUMBER | 04 SIC CODE | 07 ZIP CODE |
|---|---|---|---|
| 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | | | |
| 05 CITY / 06 STATE | | | |

## IV. REALTY OWNER(S) (If applicable; list most recent first)

| 01 NAME | 02 D + B NUMBER | 04 SIC CODE | 07 ZIP CODE |
|---|---|---|---|
| 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | | | |
| 05 CITY / 06 STATE | | | |

| 01 NAME | 02 D + B NUMBER | 04 SIC CODE | 07 ZIP CODE |
|---|---|---|---|
| 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | | | |
| 05 CITY / 06 STATE | | | |

## V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Site Inspection 2/5/86 - NUS FIT Region II

1. IDENTIFICATION
01 STATE 02 SITE NUMBER
NJ D011482577

II. CURRENT OPERATOR(S) | OPERATOR'S PARENT COMPANY (If applicable)

| | | | |
|---|---|---|---|
| 01 NAME | 02 D + B Number | 10 NAME | 11 D + B NUMBER |
| (Same as current owner)<br>03 STREET ADDRESS (P.O. Box, RFD#, etc.) | 04 SIC CODE | 12 STREET ADDRESS (P.O. Box, RFD#, etc.) | 13 SIC CODE |
| 05 CITY 06 STATE | 07 ZIP CODE | 14 CITY 15 STATE | 16 ZIP CODE |
| 08 YEARS OF OPERATION 09 NAME OF OWNER | | | |

III. PREVIOUS OPERATOR(S) (List most recent first: Provide only if different from owner) | PREVIOUS OPERATOR'S PARENT COMPANIES (If applicable)

| | | | |
|---|---|---|---|
| 01 NAME | 02 D + B Number | 10 NAME | 11 D + B NUMBER |
| (Same as previous owner)<br>03 STREET ADDRESS (P.O. Box, RFD#, etc.) | 04 SIC CODE | 12 STREET ADDRESS (P.O. Box, RFD#, etc.) | 13 SIC CODE |
| 05 CITY 06 STATE | 07 ZIP CODE | 14 CITY 15 STATE | 16 ZIP CODE |
| 08 YEARS OF OPERATION 09 NAME OF OWNER | | | |

| | | | |
|---|---|---|---|
| 01 NAME | 02 D + B Number | 10 NAME | 11 D + B NUMBER |
| 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | 04 SIC CODE | 12 STREET ADDRESS (P.O. Box, RFD#, etc.) | 13 SIC CODE |
| 05 CITY 06 STATE | 07 ZIP CODE | 14 CITY 15 STATE | 16 ZIP CODE |
| 08 YEARS OF OPERATION 09 NAME OF OWNER | | | |

| | | | |
|---|---|---|---|
| 01 NAME | 02 D + B Number | 10 NAME | 11 D + B NUMBER |
| 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | 04 SIC CODE | 12 STREET ADDRESS (P.O. Box, RFD#, etc.) | 13 SIC CODE |
| 05 CITY 06 STATE | 07 ZIP CODE | 14 CITY 15 STATE | 16 ZIP CODE |
| 08 YEARS OF OPERATION 09 NAME OF OWNER | | | |

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Site Inspection 2/5/86 - NUS FIT Region II

## II ON-SITE GENERATOR

| 01 NAME | 02 D + B NUMBER |
|---|---|
| Central Steel Drum | NJ D011482577 |
| 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | 04 SIC CODE |
| 704 Doremus Avenue | |
| 05 CITY / 06 STATE | 07 ZIP CODE |
| Newark / NJ | 07105 |

## III OFF-SITE GENERATOR(S)

| 01 NAME | 02 D + B NUMBER | 01 NAME | 02 D + B NUMBER |
|---|---|---|---|
| 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | 04 SIC CODE | 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | 04 SIC CODE |
| 05 CITY / 06 STATE | 07 ZIP CODE | 05 CITY / 06 STATE | 07 ZIP CODE |

| 01 NAME | 02 D + B NUMBER | 01 NAME | 02 D + B NUMBER |
|---|---|---|---|
| 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | 04 SIC CODE | 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | 04 SIC CODE |
| 05 CITY / 06 STATE | 07 ZIP CODE | 05 CITY / 06 STATE | 07 ZIP CODE |

## IV. TRANSPORTER(S)

| 01 NAME | 02 D + B NUMBER | 01 NAME | 02 D + B NUMBER |
|---|---|---|---|
| National Corporate Disposal | | | |
| 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | 04 SIC CODE | 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | 04 SIC CODE |
| 68 East Main Street | | | |
| 05 CITY / 06 STATE | 07 ZIP CODE | 05 CITY / 06 STATE | 07 ZIP CODE |
| Bogota / NJ | | | |

| 01 NAME | 02 D + B NUMBER | 01 NAME | 02 D + B NUMBER |
|---|---|---|---|
| 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | 04 SIC CODE | 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | 04 SIC CODE |
| 05 CITY / 06 STATE | 07 ZIP CODE | 05 CITY / 06 STATE | 07 ZIP CODE |

## V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Site Inspection 2/5/86 - NUS FIT Region II

II. PAST RESPONSE ACTIVITIES

01 ___ A. WATER SUPPLY CLOSED — 02 DATE: _____ — 03 AGENCY: _____
04 DESCRIPTION

Not applicable.
01 ___ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE: _____ — 03 AGENCY: _____
04 DESCRIPTION

Not applicable.
01 ___ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE: _____ — 03 AGENCY: _____
04 DESCRIPTION

Not applicable.
01 ___ D. SPILLED MATERIAL REMOVED — 02 DATE: _____ — 03 AGENCY: _____
04 DESCRIPTION

Not applicable.
01 ___ E. CONTAMINATED SOIL REMOVED — 02 DATE: _____ — 03 AGENCY: _____
04 DESCRIPTION

Not applicable.
01 ___ F. WASTE REPACKAGED — 02 DATE: _____ — 03 AGENCY: _____
04 DESCRIPTION

Not applicable.
01 ___ G. WASTE DISPOSED ELSEWHERE — 02 DATE: _____ — 03 AGENCY: _____
04 DESCRIPTION

Not applicable.
01 ___ H. ON SITE BURIAL — 02 DATE: _____ — 03 AGENCY: _____
04 DESCRIPTION

Not applicable.
01 ___ I. IN SITU CHEMICAL TREATMENT — 02 DATE: _____ — 03 AGENCY: _____
04 DESCRIPTION

Not applicable.
01 ___ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE: _____ — 03 AGENCY: _____
04 DESCRIPTION

Not applicable.
01 ___ K. IN SITU PHYSICAL TREATMENT — 02 DATE: _____ — 03 AGENCY: _____
04 DESCRIPTION

Not applicable.
01 ___ L. ENCAPSULATION — 02 DATE: _____ — 03 AGENCY: _____
04 DESCRIPTION

Not applicable.
01 ___ M. EMERGENCY WASTE TREATMENT — 02 DATE: _____ — 03 AGENCY: _____
04 DESCRIPTION

Not applicable.
01 ___ N. CUTOFF WALLS — 02 DATE: _____ — 03 AGENCY: _____
04 DESCRIPTION

Not applicable.
01 ___ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE: _____ — 03 AGENCY: _____
04 DESCRIPTION

Not applicable.
01 ___ P. CUTOFF TRENCHES/SUMP — 02 DATE: _____ — 03 AGENCY: _____
04 DESCRIPTION

Not applicable.
01 ___ Q. SUBSURFACE CUTOFF WALL — 02 DATE: _____ — 03 AGENCY: _____
04 DESCRIPTION

Not applicable.

II. PAST RESPONSE ACTIVITIES

01 ___ R. BARRIER WALLS CONSTRUCTED 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

Not applicable.

01 ___ S. CAPPING/COVERING 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

Not applicable.

01 ___ T. BULK TANKAGE REPAIRED 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

Not applicable.

01 ___ U. GROUT CURTAIN CONSTRUCTED 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

Not applicable.

01 ___ V. BOTTOM SEALED 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

Not applicable.

01 ___ W. GAS CONTROL 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

Not applicable.

01 ___ X. FIRE CONTROL 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

Not applicable.

01 ___ Y. LEACHATE TREATMENT 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

Not applicable.

01 ___ Z. AREA EVACUATED 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

Not applicable.

01 ___ 1. ACCESS TO SITE RESTRICTED 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

Not applicable.

01 ___ 2. POPULATION RELOCATED 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

Not applicable.

01 ___ 3. OTHER REMEDIAL ACTIVITIES 02 DATE: _____ 03 AGENCY: _____
04 DESCRIPTION

Not applicable.

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Site Inspection 2/5/86 - NUS FIT Region II

## II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION X YES _ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

(1) 3/28/80 - Notice of Prosecution (NOP) to Central Steel Drum for improper ash disposal. CSD cited for illegally operating Treatment Storage Disposal facility (RCRA).

(2) Cited violations concerning incinerator emissions on February 8, 1982. Violations included capacity, past operation without a permit, and open burning.

(3) NJDEP-DWR required groundwater study in 1983.

## III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, report)

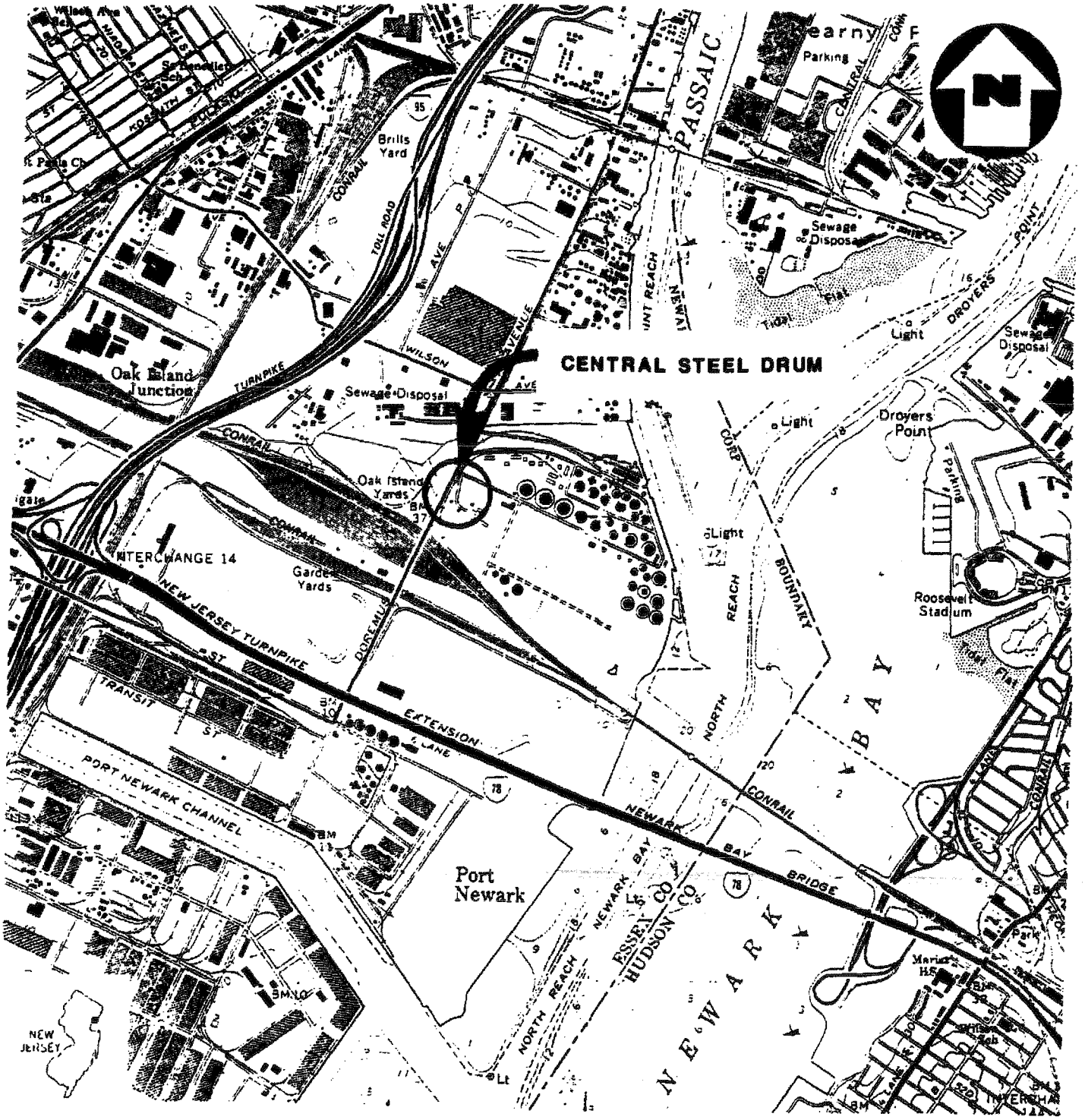
Telecon, Kevin Krouse of NJDEP - (201) 669-3960
Malcolm Pirnie, Preliminary Assessment of 3/5/85

CONTENTS


| | | |
|---|---|---|
| 1. | Figure A-1 | Site Location Map |
| 2. | Figure A-2 | Sample Location Map |
| 3. | Exhibit 1 | Site Inspection Photo Log |

# SECTION 3

## MAPS AND PHOTOGRAPHS




(QUAD ) ELIZABETH, N.J.

**FIGURE A-1**

## SITE LOCATION MAP

## CENTRAL STEEL DRUM, NEWARK, N.J.

(NOT TO SCALE )

NUS CORPORATION

A Halliburton Company

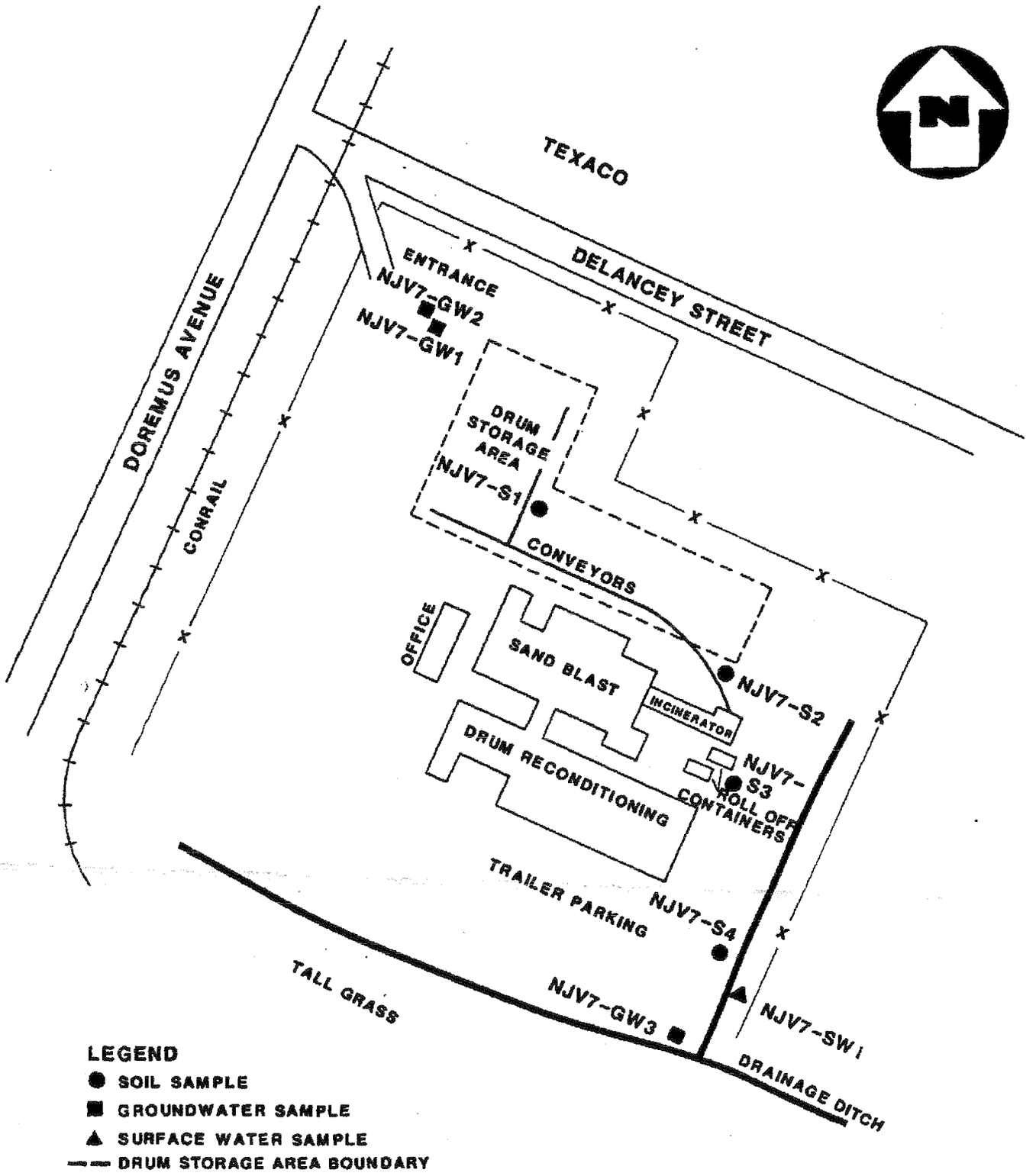



FIGURE A-2

## SAMPLE LOCATION MAP

## CENTRAL STEEL DRUM, NEWARK, N.J.

(NOT TO SCALE)

NUS CORPORATION
A Halliburton Company

CENTRAL STEEL DRUM
NEWARK, NEW JERSEY
TDD# 02-8511-15
FEBRUARY 5, 1986

PHOTOGRAPH LOG

EXHIBIT 1

CENTRAL STEEL DRUM
NEWARK, NEW JERSEY
TDD# 02-8511-15
FEBRUARY 5, 1986

PHOTOGRAPH INDEX

ALL PHOTOS TAKEN BY DANIEL CARAMAGNO

| Photo Number | Description | Time |
|---|---|---|
| 1P-1 | Soil sample S-1 being taken by Luke Darragh and Rich Pagano adjacent to conveyor in drum staging area. | 1100 |
| 1P-2 | Soil sample S-1. | 1108 |
| 1P-3 | Stained snow and soil near sand house. | 1120 |
| 1P-4 | Soil sample S-2 being taken adjacent to conveyor near incinerator by Luke Darragh. | 1122 |
| 1P-5 | Soil sample S-2. | 1126 |
| 1P-6 | Soil sample S-3 being collected by manifested waste containers by Luke Darragh and Rich Pagano. | 1133 |
| 1P-7 | Soil sample S-3. | 1135 |
| 1P-8 | Stained snow and soil near site entrance. | 1140 |
| 1P-9 | Groundwater sample GW1 being taken from well #102 by site entrance, by Luke Darragh, and Rich Pagano. | 1230 |
| 1P-10 | Photograph of sample GW1. | 1235 |
| 1P-11 | Entrance to Central Steel Drum with incinerator in background. | 1256 |
| 1P-12 | Well #202 being sampled by Rich Pagano for groundwater sample GW-2 near site entrance. | 1325 |
| 1P-13 | Sample GW-2. | 1400 |
| 1P-14 | Sample SW-1 being taken from drainage ditch at southeast corner of property by Rich Pagano. | 1515 |
| 1P-15 | Sample SW-1. | 1525 |

CENTRAL STEEL DRUM
NEWARK, NEW JERSEY
TDD# 02-8511-15
FEBRUARY 5, 1986

PHOTOGRAPH INDEX

ALL PHOTOS TAKEN BY DANIEL CARAMAGNO

| Photo Number | Description | Time |
|---|---|---|
| 1P-16 | Sample GW-3 taken from well #204 at southwest corner of property by Rich Pagano and Luke Darragh. | 1535 |
| 1P-17 | Sample GW-3. | 1545 |
| 1P-18 | Soil S-4 taken from southeast corner of property by Luke Darragh. | 1555 |
| 1P-19 | Soil sample S-4. | 1600 |

MALCOLM PIRNIE

# POTENTIAL HAZARDOUS WASTE SITE
# PRELIMINARY ASSESSMENT

| Central Steel Drum | 53 |
|---|---|
| **Site Name** | **Site ID Number** |
| 704 Doremus Avenue | Newark, Essex Co., NJ |
| **Address** | **City, State** |

**Date of Off-Site Reconnaissance** March 5, 1985

## SITE DESCRIPTION

Central Steel Drum is a steel drum reconditioning company that receives used/empty 55 gallon drums from various sources for processing. The initial phase of this process involves incineration of drums to remove finishes. As a result of a series of NJDEP field investigations conducted in 1981-82, Central Steel Drum received a notice of prosecution for illegal disposition of hazardous chemical waste on the premises.
NJDEP personnel who visited the site in September 1983 and November 1984 observed that, although the site looked better, no significant progress has been made in clean-up operations. During off-site reconnaissance of March 5, 1985 numerous drums were observed to be stored haphazardly on-site.

**PRIORITY FOR FURTHER ACTION:** High X Medium ___ Low ___ None ___

## RECOMMENDATIONS

Due to the long history of the drum reclaiming activities at the site and the largely unknown nature of the substances spilled during plant operations, an on-site inspection is strongly recommended. Also, due to very high potential for contamination of ground water, surface water and soil, it is suggested that sampling be continued at this facility until the clean up operations are completed.

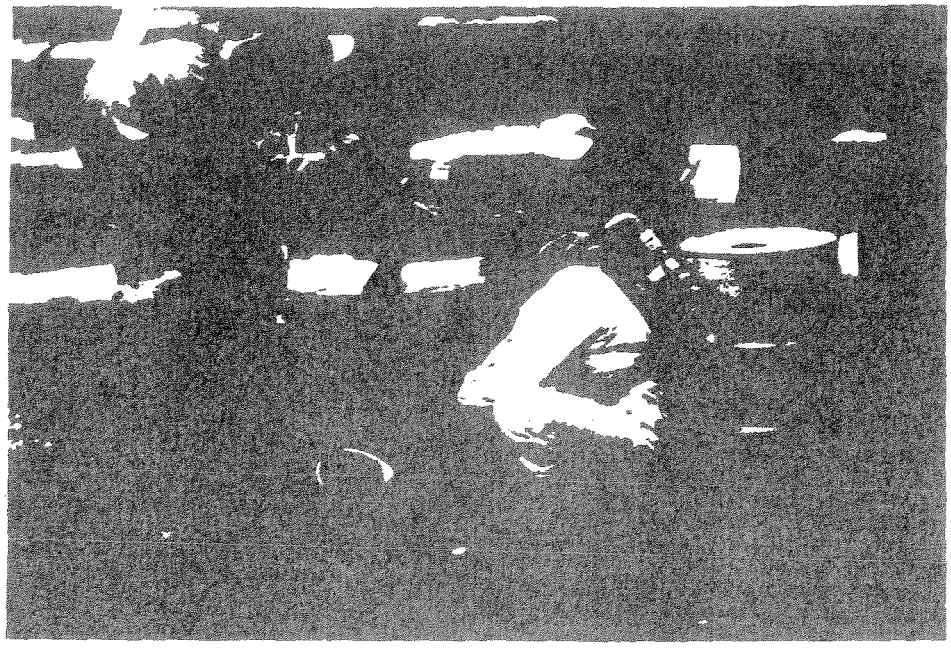
**Prepared by:** Soterios Stavrou **Date:** March 5, 1985

**Of:** JRB Associates

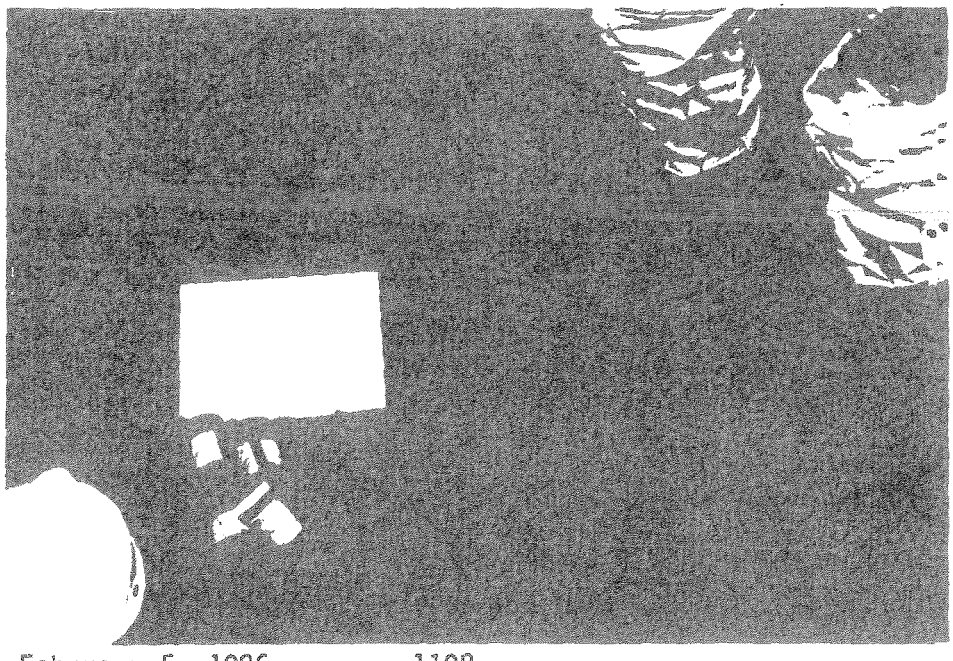
**REFERENCE #5**

NUS CORPORATION

CENTRAL STEEL DRUM, NEWARK, NEW JERSEY



1P-1 February 5, 1986 1100
Soil sample S-1 being taken by Luke Darragh and Rich Pagano adjacent to conveyor in drum staging area.
Photographer: Daniel Caramagno.
Barry Dambach of Environics is observing for Central Steel Drum.

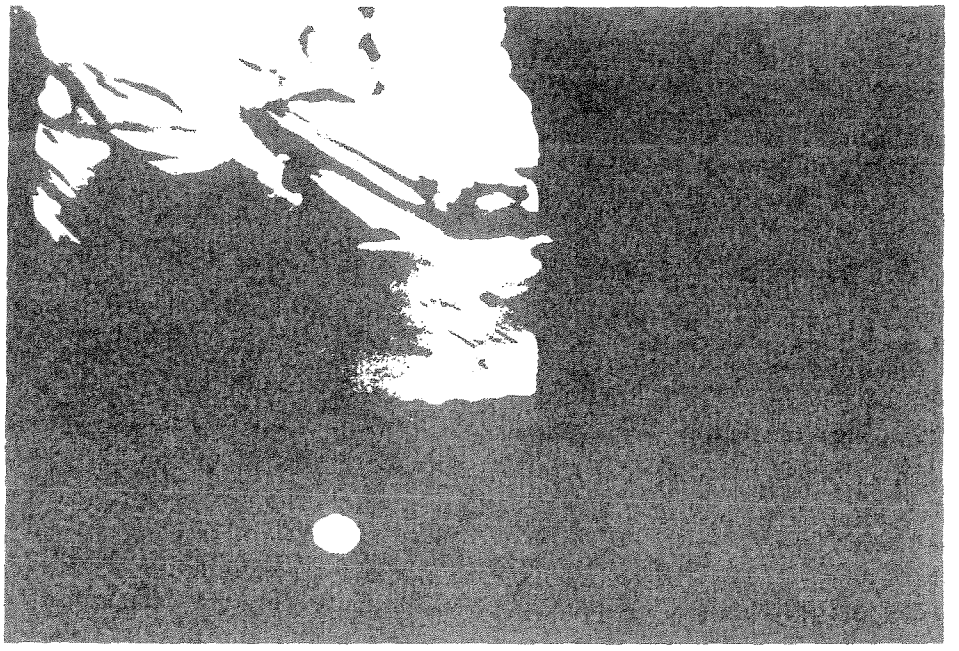


1P-2 February 5, 1986 1108
Soil sample S-1.
Photographer: Daniel Caramagno.

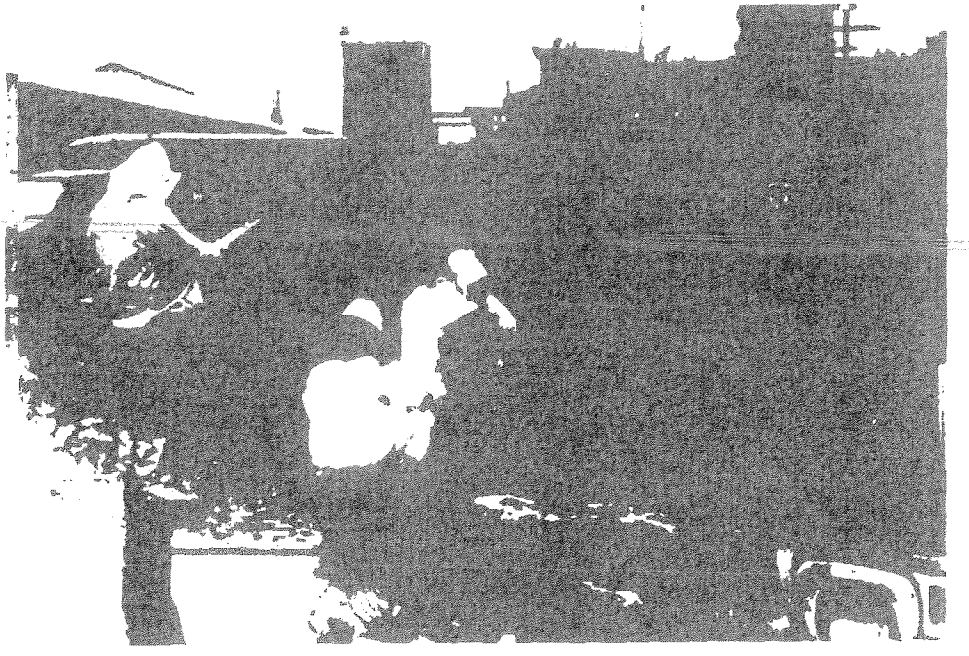
1P-3 February 5, 1986 1120
Stained snow and soil near sand house.
Photographer: Daniel Caramagno.

1P-4 February 5, 1986 1122
Soil sample S-2 being taken adjacent to conveyor near incinerator by Luke Darragh.
Photographer: Daniel Caramagno.
Barry Dambach observing.

CENTRAL STEEL DRUM, NEWARK, NEW JERSEY

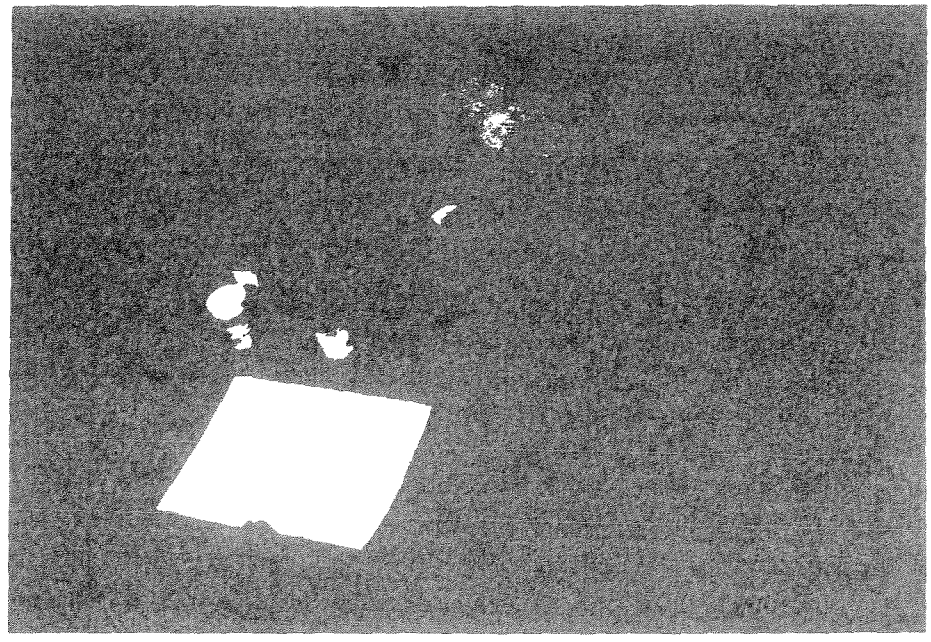


1P-5 February 5, 1986 1126
Soil sample S-2.
Photographer: Daniel Caramagno.



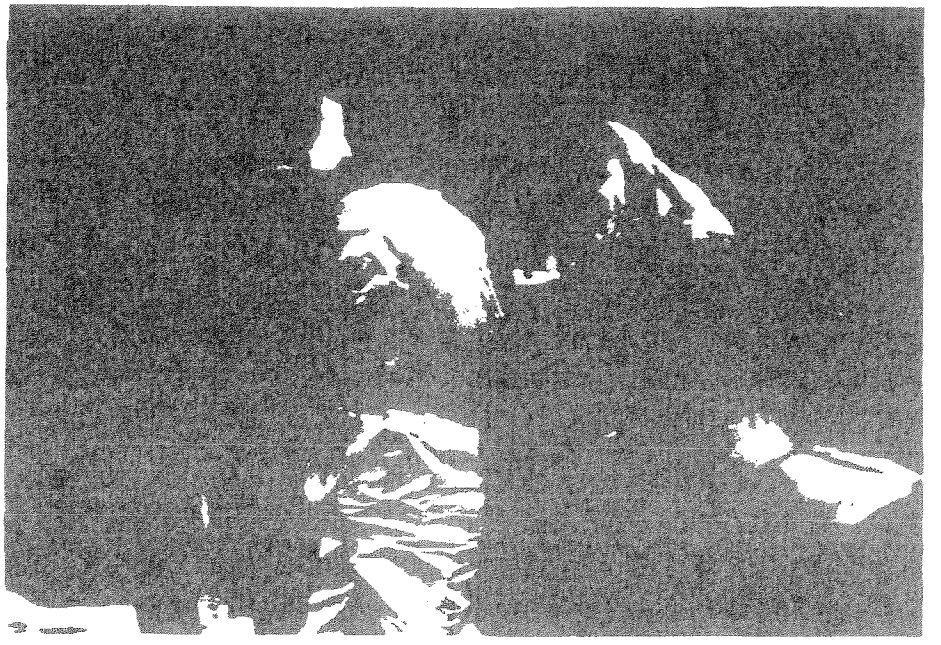
1P-6 February 5, 1986 1133
Soil sample S-3 being collected by manifested waste containers by Luke Darragh and Rich Pagano. Barry Dambach
Photographer: Daniel Caramagno.

CENTRAL STEEL DRUM, NEWARK, NEW JERSEY

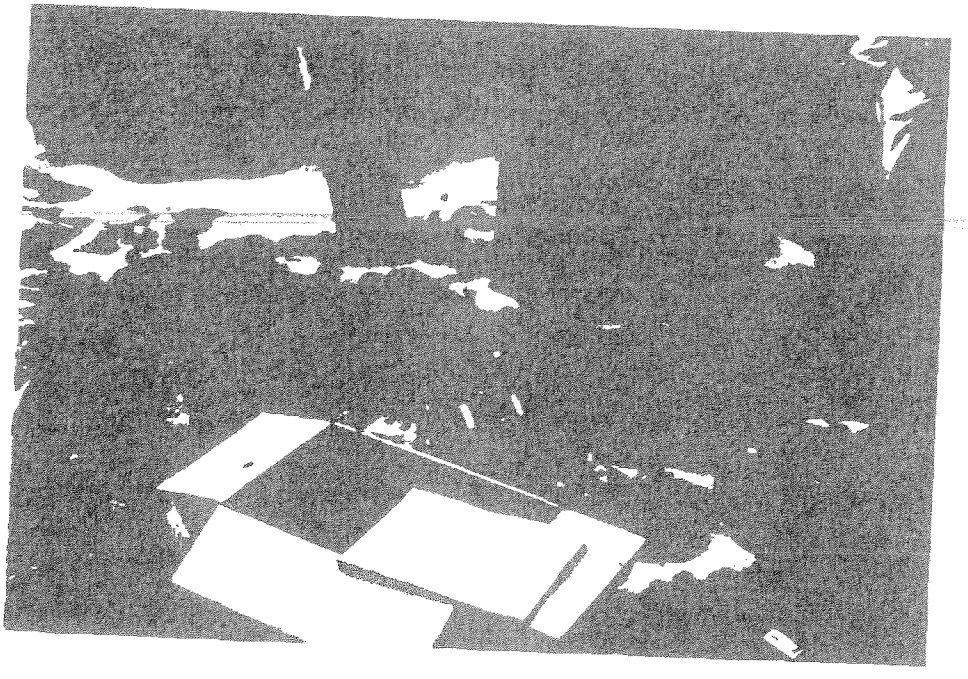


1P-7 February 5, 1986 1135
Soil sample S-3.
Photographer: Daniel Caramagno.

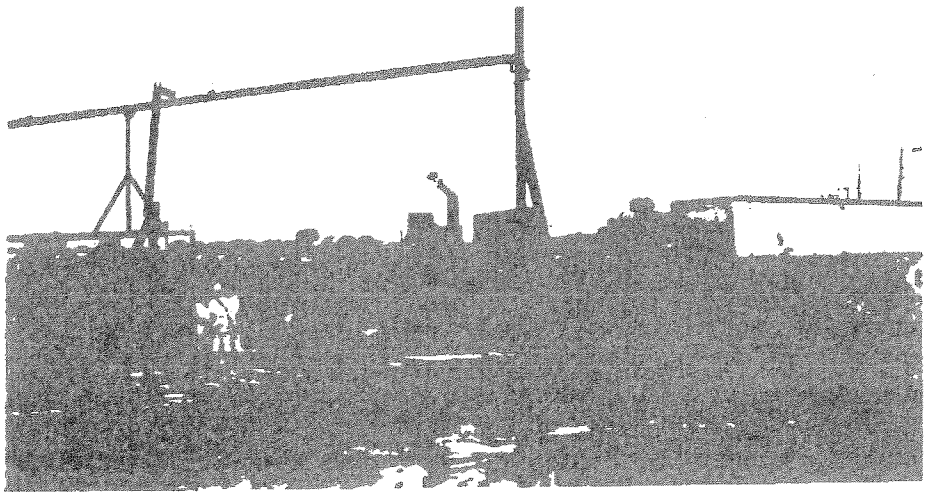
1P-8 February 5, 1986 1140
Stained snow and soil near site entrance.
Photographer: Daniel Caramagno.



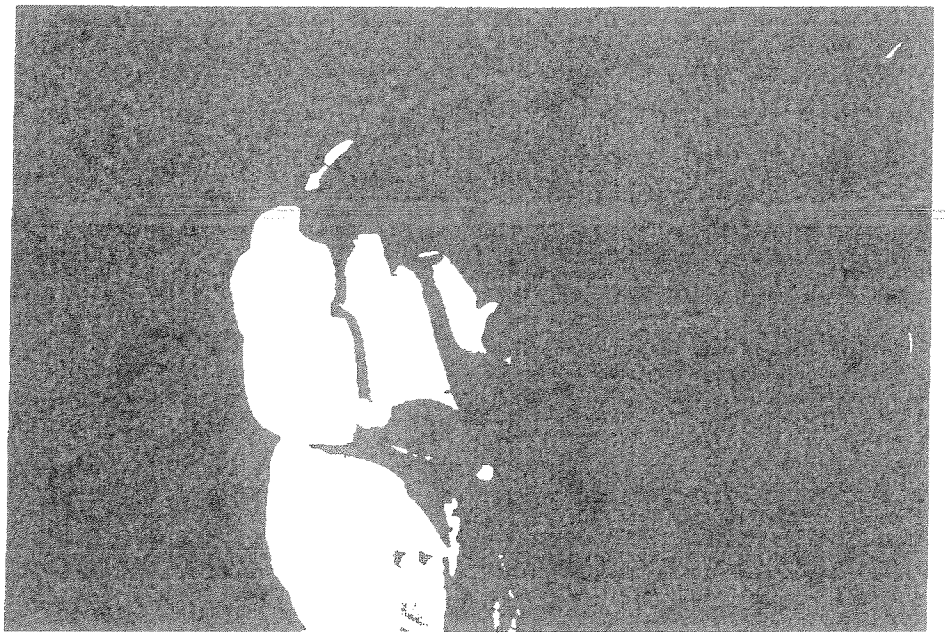
1P-9 February 5, 1986 1230
Groundwater sample GW1 being taken from well #102 by site entrance, by Luke Darragh, and Rich Pagano.
Photographer: Daniel Caramagno.



1P-10 February 5, 1986 1235
Photograph of sample GW1.
Photographer: Daniel Caramagno.

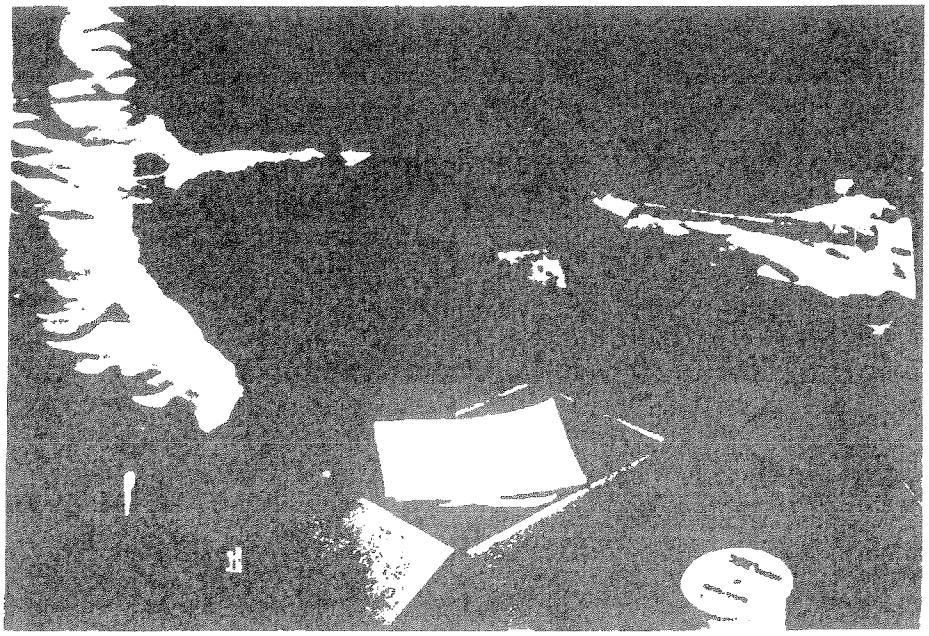


1P-11 February 5, 1986 1256
Entrance to Central Steel Drum with incinerator in background.
Photographer: Daniel Caramagno.



1P-12 February 5, 1986 1325
Well #202 being sampled by Rich Pagano for groundwater sample GW-2 near site entrance.
Photographer: Daniel Caramagno.

CENTRAL STEEL DRUM, NEWARK, NEW JERSEY

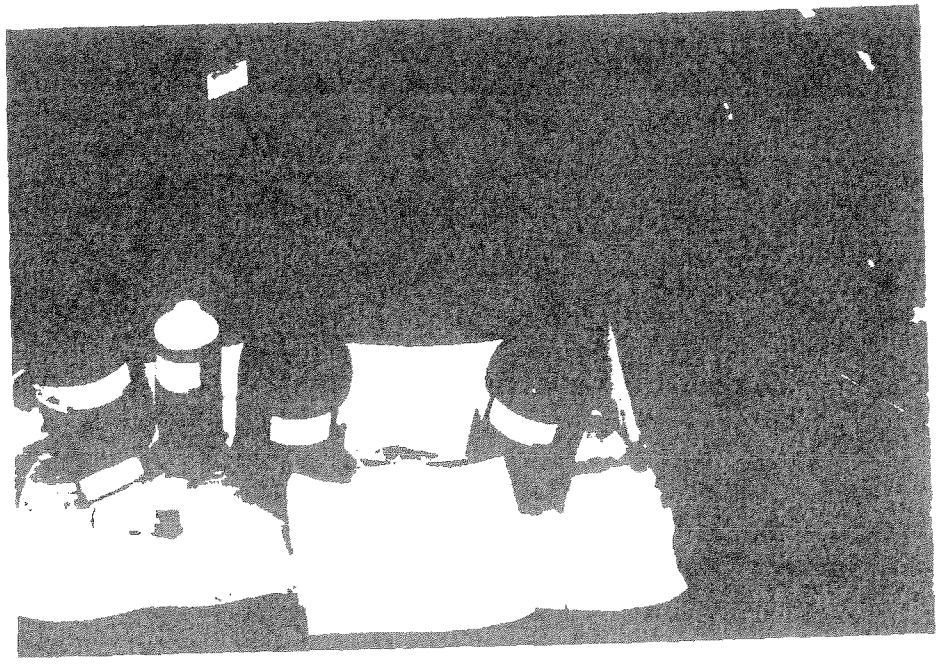


IP-13 February 5, 1986 1400
Sample GW-2.
Photographer: Daniel Caramagno.

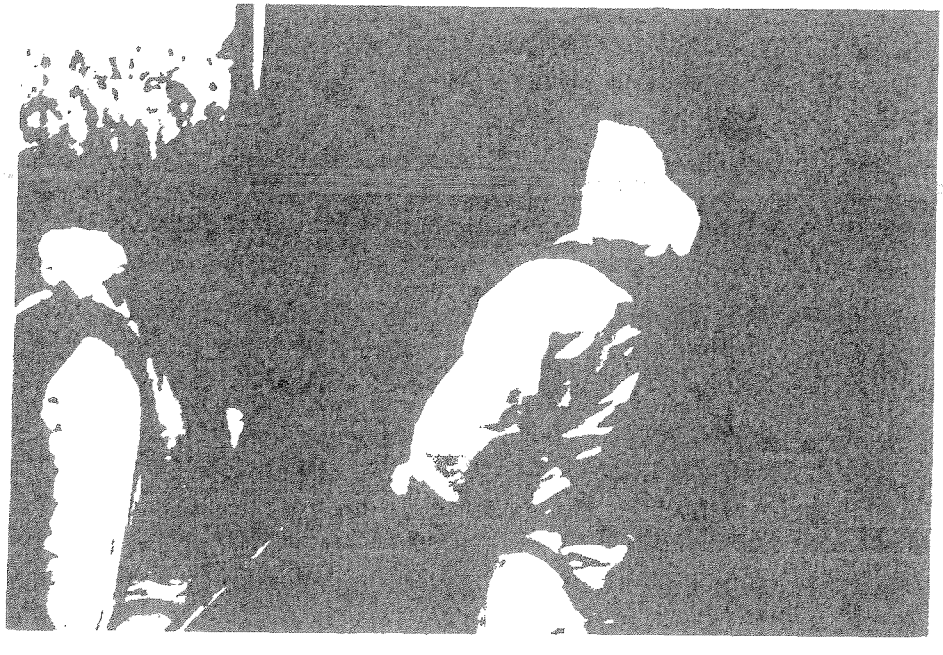
IP-14 February 5, 1986 1515
Sample SW-1 being taken from drainage ditch at southeast corner of property by Rich Pagano.
Photographer: Daniel Caramagno.

NUS CORPORATION

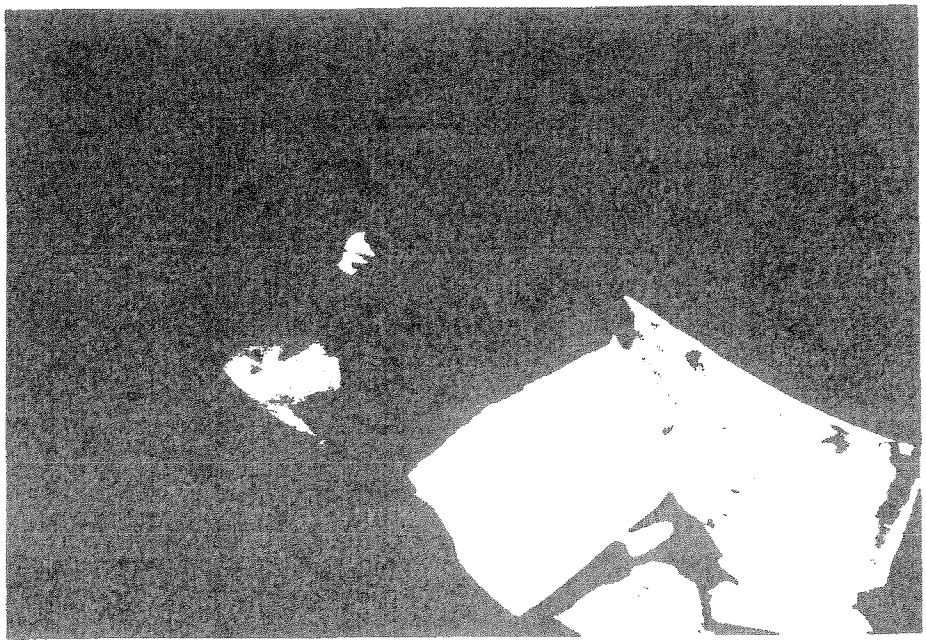
CENTRAL STEEL DRUM, NEWARK, NEW JERSEY



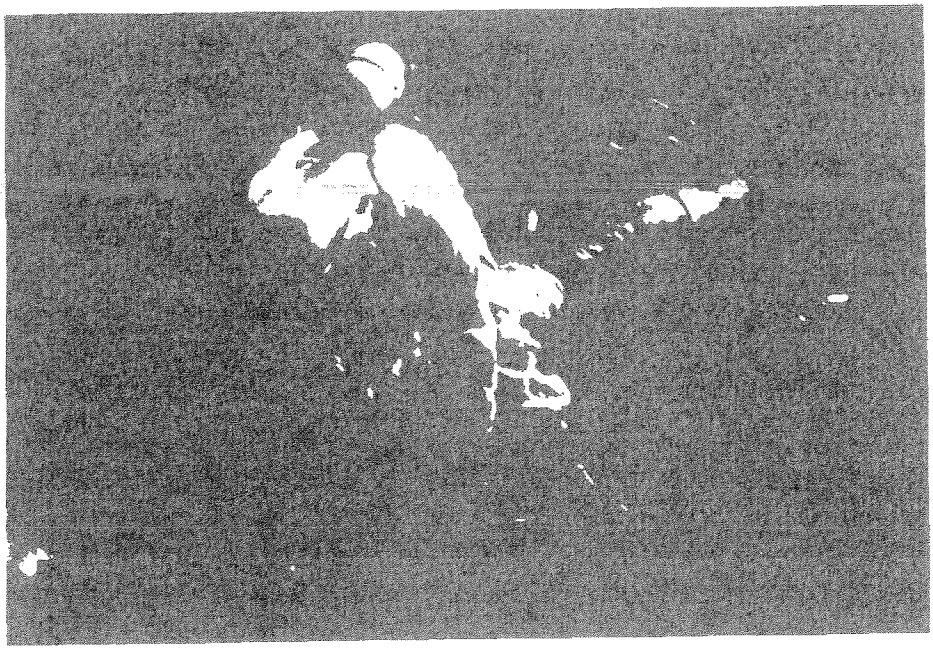
1P-15 February 5, 1986 1525
Sample SW-1.
Photographer: Daniel Caramagno.



1P-16 February 5, 1986 1535
Sample GW-3 taken from well #204 at southwest corner of property by Rich Pagano.
Photographer: Daniel Caramagno.



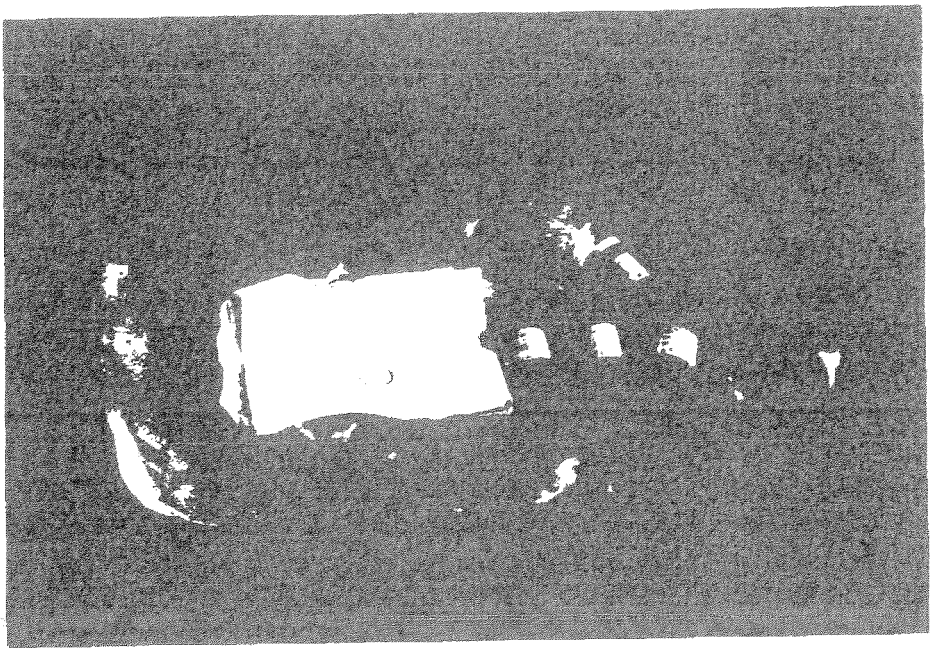
1P-17 February 5, 1986 1545
Sample GW-3.
Photographer: Daniel Caramagno.



1P-18 February 5, 1986 1555
Soil S-4 taken from southeast corner of property by Luke Darragh.
Photographer: Daniel Caramagno.

NUS CORPORATION

CENTRAL STEEL DRUM, NEWARK, NEW JERSEY



1P-19 February 5, 1986 1600
Soil sample S-4.
Photographer: Daniel Caramagno.

# SECTION 5

## HAZARD RANKING SYSTEM SCORING FORMS

**Facility name:** Central Steel Drum

**Location:** 704 Doremus Avenue, Newark, NJ

**EPA Region:** Region II

**Persons(s) in charge of the facility:** Alan Fischer

**Name of Reviewer:** Daniel Caramagno **Date:** 6/27/86

**General description of the facility:**
**(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; type of information needed for rating; agency action, etc.)**

Central Steel Drum is an eight acre facility which refurbishes open steel drums. The company has been in operation since 1951. Prior to this Inmont Chemical operated an ink manufacturing plant at the facility. Steps in drum refurbishing include incineration, sandblasting, and repainting for resale. Ash and sludge from the incineration process are reburned and currently stored in roll off containers for eventual disposal using the RCRA manifest system.

Potential hazards exist on site as a result of the past practice of storing ash in open piles and mixing it with fill on site. Also, residue from drums received has been spilled on site.

Contamination routes of concern include groundwater which is used industrially, and surface water. Newark Bay, an industrially used waterway has some marinas located nearby.

# SECTION 6

## BIBLIOGRAPHY OF INFORMATION SOURCES

# SECTION 7

## PRESS RELEASE SUMMARY–MITRE HAZARD RANKING SYSTEM

**SUMMARY STATEMENT**
**CENTRAL STEEL DRUM**
**NEWARK, NEW JERSEY**

Central Steel Drum is an eight acre drum refurbishing facility located in the City of Newark in Essex County, New Jersey. The site is situated east of the NJ Turnpike and a half mile north of Newark International Airport. Three quarters of a mile to the east is Newark Bay. The site is surrounded by commercial and industrial areas with the closest residential population a mile and a half to the west in the Ironbound section of Newark. The site is located on filled in marshland.

On site activities involve incineration of drums received, sandblasting, and, finally, drum repainting for resale. Sludge resulting from drum incineration is reburned and the resulting ash is currently manifested using a certified waste hauler.

Since 1980 Central Steel Drum has been investigated by NJDEP, and air code and waste disposal violations have been cited. In the past, ash resulting from incineration was mixed with fill material on site and stored in the open on a concrete slab. Poor housekeeping practices resulted in drum residues being spilled. The following are known to exist on site: toluene, ethylbenzene, xylenes, hexanone, and heavy metals such as mercury and zinc. As a result of these violations, Central Steel Drum has hired a consultant to complete a state required groundwater study on the site.

Contamination routes of concern include surface water and groundwater. Surface water use in the area is mainly industrial; there is also some recreational boating. Groundwater use is industrial.

# SECTION 8

## ATTACHMENTS- CITED DOCUMENTS

**REFERENCE #1**

# GROUND-WATER RESOURCES OF ESSEX COUNTY, NEW JERSEY

By

WILLIAM D. NICHOLS

Hydrologist, U. S. Geological Survey

SPECIAL REPORT NO. 28

1968

Prepared by the U. S. Geological Survey

in Cooperation with the

State of New Jersey

# GROUND-WATER RESOURCES OF ESSEX COUNTY, NEW JERSEY

By William D. Nichols

## ABSTRACT

Ground water in Essex County occurs in joints and fractures in consolidated rocks and in the voids of unconsolidated statified drift deposits. Wells in sandstone and shale of the Brunswick Formation of Triassic age yield from 35 to 820 gpm; the most productive water-bearing zones are commonly between depths of 300 to 400 feet. Drawdown due to pumping is greatest in the direction of strike of the formation (about N 30° E in Essex County) and least in the direction perpendicular to strike. Wells in the Watchung basalt, which is intercalated with rocks of the Brunswick Formation commonly yield small to moderate supplies but may occasionally yield up to 400 gpm. Large yields, ranging from 410 to 1,593 gpm, are common from wells tapping the stratified drift deposits in the western part of the county.

Quality of ground water is acceptable for most uses throughout the county. However, heavy pumpage in the Newark area has lowered water levels to more than 100 feet below sea level. The low water levels have reversed the natural gradient and induced the flow of salt water into the bedrock aquifer, seriously impairing ground-water quality there. Recent analyses of ground-water samples from Newark indicate that the chloride concentration in the aquifer has increased since the preliminary study of the problem by Herpers and Barksdale in 1951.

Highly productive stratified drift deposits are found primarily in that part of the county west of Second Watchung Mountain. They occur as valley-fill material in stream valleys cut into the underlying bedrock before the last glaciation. These deposits in Essex County are part of an extensive valley-fill aquifer system underlying the eastern Morris-western Essex County area. Water levels in these deposits in western Millburn Township have declined 36 feet since 1950, probably as a result of below normal rainfall for most of the period 1953 to 1966 together with constantly increasing pumpage throughout the area.

Withdrawals of ground water from all aquifers in Essex County for public supply averaged about 26 mgd (million gallons per day) in 1966. Pumpage for public supply from aquifers in unconsolidated sediments averaged 20.9 mgd, about 81 percent of the total from all aquifers.

Most of the productive aquifers in Essex County are currently being developed. Although the optimum potential of the stratified drift aquifers

in western Essex County and the Brunswick Formation in the northeastern part of the county probably has not been realized, development of these resources must be undertaken with care if anticipated increase in water needs of the county are to be met.

# GROUND-WATER HYDROLOGY

## INTRODUCTION

Ground water is derived from that part of precipitation that does not run off the surface of the land to streams or return to the atmosphere through evaporation and transpiration. Factors which determine the amount of water that infiltrates to the ground-water reservoir include (1) the porosity and permeability of the surficial material, (2) the slope of the land, (3) the amount and kind of natural and artificial cover, and (4) the intensity and amount of precipitation.

The permeability of a rock, or its ability to transmit water, depends on its porosity, that is, on the number and size of the interstices and on the extent to which the interstices are interconnected. The porosity of a rock, in turn, depends largely on: "the shape and arrangement of its constituent particles, the degree of assortment of its particles, the cementation and compacting to which it has been subjected since its deposition, the removal of mineral matter through solution by percolating waters, and the fracturing of the rock, resulting in joints and other openings" (Meinzer, 1923, p. 3). Porosity is expressed quantitatively as the ratio between the volume of void to the total volume of the rock, that is, as the percentage of the total volume of rock occupied by interstices.

On the basis of the type of openings in which ground water may occur, the geologic formations in Essex County may be divided into two groups: (1) consolidated rocks of Triassic age, and (2) unconsolidated sediments of Pleistocene age.

The primary pore spaces in consolidated rocks of the Brunswick Formation in Essex County are commonly so small that an insignificant quantity of water, if any, moves through them under the natural hydraulic gradients or those established by pumping. However, a joint and fracture system that has developed in the consolidated rocks provides secondary porosity and it is largely in and through these openings that the storage and movement of ground water takes place. In addition, vesicles and scoriaceous zones in the basalt add to the porosity in these rocks. Limited interconnected void space occurs in sandstone beds where cementing material is lacking. The volume of all of these openings constitute only a very small percentage of the total volume of the Brunswick Formation and, consequently, their capacity to store and transmit water is limited.

In unconsolidated sediments, water occurs in the pore spaces between the constituent grains. The capacity of unconsolidated sand and gravel deposits to store and transmit water is commonly much greater than that of the consolidated rocks. The reason for this is that the ratio of the

volume of void to the total volume of unconsolidated sediment is considerably greater than the ratio of the volume of fracture openings to the total volume of rock. The interstitial openings in clays and silts are so small, however, that they restrict the movement of water, even though the percentage of void space may be great.

## WATER-BEARING PROPERTIES OF MAJOR GEOLOGIC UNITS

### Consolidated Rocks

Rocks of the Brunswick Formation are the main source of ground water in Essex County. The shales and sandstones are generally capable of sustaining moderate to large yields to wells. The Watchung basalt commonly is capable of yielding only small to moderate quantities of water.

Water in these rocks occurs under both unconfined and confined conditions. Unconfined ground water occurs mainly in the upland areas where overlying unconsolidated deposits are thin or absent. Confined and semiconfined ground water conditions exist in lowland areas in Newark, parts of Fairfield, and along the Passaic River where clay beds in the unconsolidated Quaternary deposits mantle the underlying rocks. Wherever such confinement occurs, water beneath the relatively impermeable confining layers is commonly under artesian pressure. In many areas, such as parts of Fairfield and in the northern part of the county, water in wells tapping the confined aquifers will rise above the top of the aquifer and sometimes near or above land surface. In areas subjected to heavy pumping, such as the Newark area and western Millburn Township, the artesian pressure may be considerably reduced. Parts of the confined aquifer may even become dewatered as has happened in part of Newark, in which case the water remaining in the aquifer is no longer confined.

Confined ground water is also encountered in the shales and sandstone directly beneath the basalt flows in the western part of the county downdip from the outcrop area. Confined or semiconfined ground-water conditions may occur in some areas because of differences in permeability within the rock layers resulting from variations in fracturing or weathering or a combination of both.

Some of the various systems of joints and fractures in the consolidated rocks intersect so that water can move vertically as well as horizontally and zones of high secondary porosity are then interconnected. Most wells tapping these rocks draw water from more than one water-bearing zone. However, these zones in the Brunswick Formation have not yet been accurately defined. They are certainly within the first 600 feet below land surface, and for most practical purposes are probably within the first 400 feet. The best producing wells in the Brunswick Formation in



Essex County are for the most part between 300 and 400 feet deep. Nevertheless, the lack of any precise known boundaries makes it difficult to determine the optimum depth to which a well should be drilled in any given location. Also it is impossible to predict the yield of a proposed well except in very general terms based on the average yield of other wells in the area.

Two pumping tests, both at the same locality, were conducted by the U. S. Geological Survey in January 1949 on wells tapping the Brunswick Formation in Essex County. The wells (owned by P. Ballantine and Sons, Newark), shown on figure 5, were selected to provide the best possible spread of observation wells in as many directions as possible. As the results of the tests have been reported by Herpers and Barksdale (1951, p. 28-31) they will be only summarized here.

In the first test, the centrally located well I-1 was pumped and water levels were observed in the seven surrounding wells indicated on figure 5. Well II-9 was pumped during the second test and the same wells were used to observe water levels. In both tests, observation wells lying along the strike of the Brunswick Formation with respect to the pumping well showed the greatest drawdown. When well I-1 was pumped, there was a prompt and distinct decline of the water level in observation well II-8. When well II-9 was pumped, the water level in observation well II-10 responded promptly and distinctly. No significant response was seen in observation wells aligned in directions other than along the strike during either test.

In these tests, as well as in several others conducted, it is invariably noted that aquifers in the sedimentary rocks of Triassic age of northern New Jersey are anisotropic, that is, they do not transmit water equally in all directions (Vecchioli, 1967). The greatest drawdowns are observed in those wells aligned along the strike of the sedimentary layers with respect to the pumping well. The least amount of drawdown is observed in observation wells that are located transverse to the strike. These observations have been interpreted to indicate that water moves more readily along joints and fractures which strike parallel to the strike of the bedding than along joints and fractures which strike in other directions. It is useful, when planning future well locations, to know the direction in which wells will interfere most with each other and with existing wells. In general, wells should be spaced far apart along the direction of strike (approximately N 30° E for most of Essex County) because it is in this direction that the greatest interference occurs. They may be placed closer together perpendicular to the strike since interference is less in that direction.

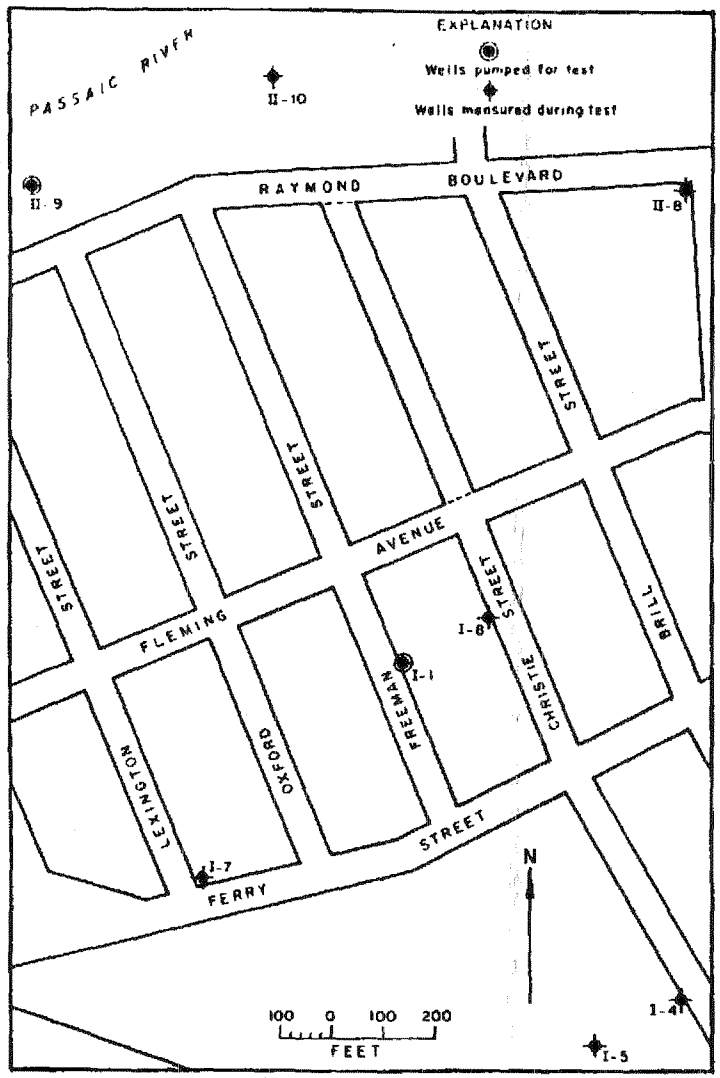



*Figure 5.—Location of wells at plants of P. Ballantine and Sons, Newark, N. J., used during pumping tests in January 1949 (after Herpers and Barksdale, 1951, fig. 3, p. 30).*



## Well Yield and Specific Capacity

Yields of 35 large diameter public-supply, industrial, and commercial wells tapping the Brunswick Formation range from 35 to 820 gpm (gallons per minute) (Table 2) and average 364 gpm. The distribution of the yields is as follows:

| *Yields* | *No. of wells* |
|---|---|
| 0-150 | 4 |
| 151-300 | 12 |
| 301-500 | 12 |
| >500 | 7 |

Depths of the same wells in the Brunswick Formation range from 115 to 856 feet; the average depth is 381 feet. Specific capacities of the 35 wells range from 0.21 to 70.00 gpm per foot of drawdown and average 11.07 gpm per foot of drawdown.

Wells tapping the Watchung Basalt commonly produce small to moderate quantities of water. Yields of 26 wells range from 7 to 400 gpm (Table 2) and average 116 gpm. The distribution of the yields is as follows:

| *Yields* | *No. of wells* |
|---|---|
| 0-100 | 15 |
| 100-199 | 5 |
| 200-300 | 5 |
| >300 | 1 |

Specific capacities of wells in the basalt range from 0.05 to 5.66 gpm per foot of drawdown and average 1.74 gpm per foot of drawdown. Several moderate to high yielding public supply and industrial wells have been developed in the Essex Fells-West Caldwell-Fairfield area. These higher yields may be the result of increased fracturing of the basalt which has been slightly folded in this area.

Figures 6, 7, and 8 are specific capacity cumulative frequency distribution graphs for wells in the Brunswick Formation in Essex County. In figure 6, specific capacities are grouped on the basis of well depth. Wells drilled between 300 and 399 feet deep appear to have consistently higher specific capacities than wells of other depths (fig. 6). This relationship suggests that the best water-bearing zones in the Brunswick Formation will be

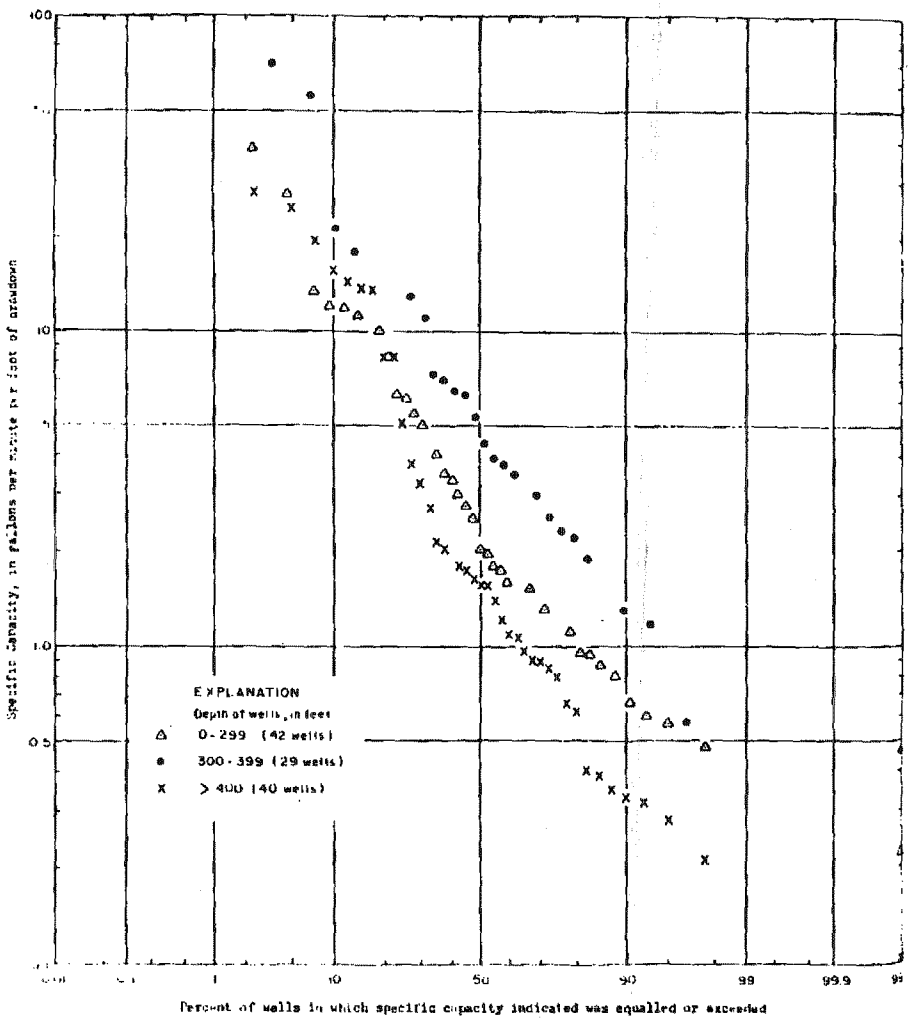



*Figure 6.—Cumulative frequency distribution of specific capacities of wells penetrating the Brunswick Formation grouped according to depth.*



encountered between depths of 300 and 400 feet and that significantly greater quantities of water generally will not be obtained by drilling below 400 feet. The specific capacities of wells grouped according to geographic area are shown in figure 7. These areas divide Essex County into three strips which are approximately parallel to the strike of the Brunswick Formation. The eastern strip is further divided into a northern part covering Belleville, Bloomfield, Glen Ridge, and Nutley, and a southern part covering East Orange, Irvington, and Newark. From this graph it readily can be seen that wells in Maplewood, Montclair, Orange, South Orange, and West Orange, have generally higher specific capacities than wells in other parts of Essex County. The wells in these communities are located in the area immediately east of First Watchung Mountain. In figure 8, specific capacities are related to well diameter. As should be expected, larger diameter wells have higher specific capacities.

## Quality of Water

Except for hardness-forming constituents and local salt-water contamination, water from the Triassic rocks commonly does not contain objectional concentrations of any chemical constituents throughout most of the county (Table 3). The hardness of water ranges from 104 ppm (parts per million) to 273 ppm. In the Newark area, salt-water contamination has seriously impaired the quality of ground water and chloride concentration are as high as 1,900 ppm.

Ground water has high chloride concentrations in areas of relatively heavy pumpage in eastern Newark adjacent to Newark Bay and the Passaic River. By 1900, water levels in these areas, notably in the southeastern section, were considerably below sea level (fig. 9). The major pattern of ground-water development had changed slightly by 1960. More significant however is the extent to which water levels had been lowered below sea level and the incerase in the size of the area affected by 1960 (fig. 10). Heavy ground-water withdrawals have lowered the general water level in these areas (fig. 10), reversing the natural gradient between the ground- and surface-water bodies, and have induced a flow of salt water from the river and bay into the underlying water-bearing formations. A water sample collected in 1879 from a well owned by the Celluloid Works, located in this part of Newark, contained only 6.2 ppm chloride. In 1948, water with 1,900 ppm chloride was collected from a well in the same area owned by P. Ballantine and Sons. A probable contributing factor in salt-water intrusion is the dredging of ship canals in Newark Bay and the Passaic River. In deepening these canals, semipervious Recent and Pleistocene sediments were removed which had acted as an imperfect barrier to the infiltration of salt water.

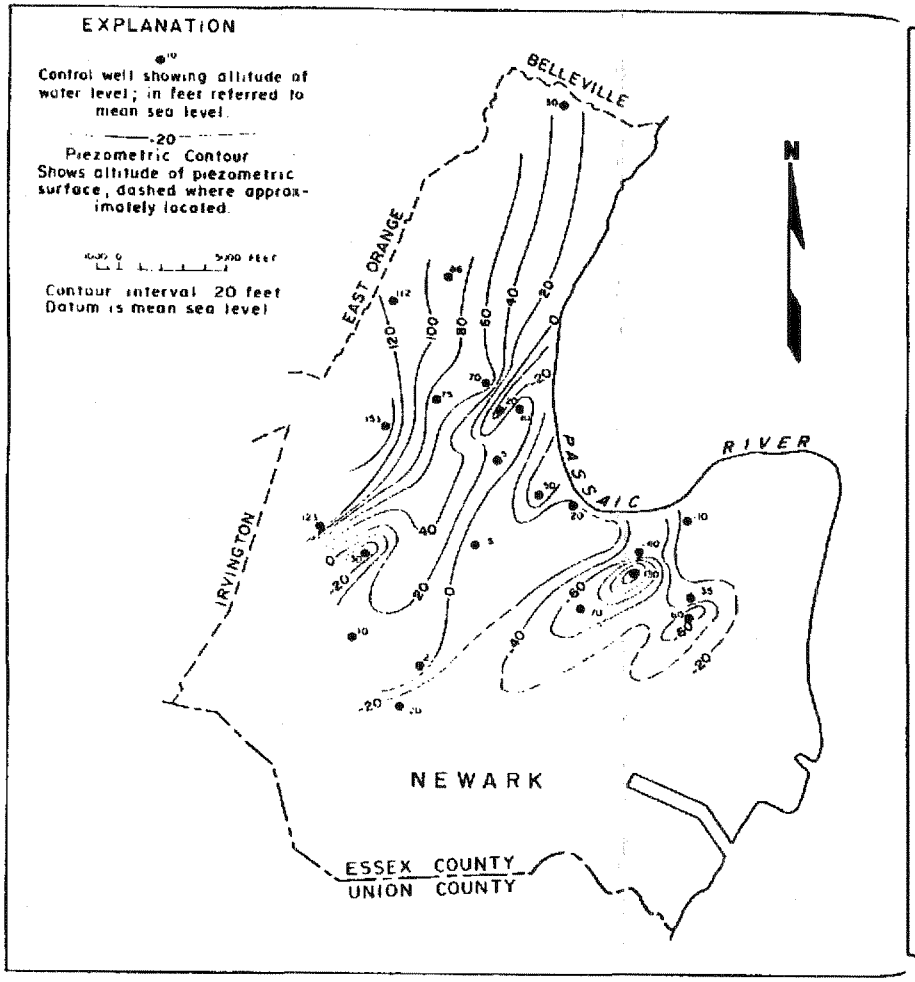



*Figure 9.—Generalized piezometric contours for the Brunswick Formation in the Newark area based on water levels in wells drilled between 1890 and 1900.*

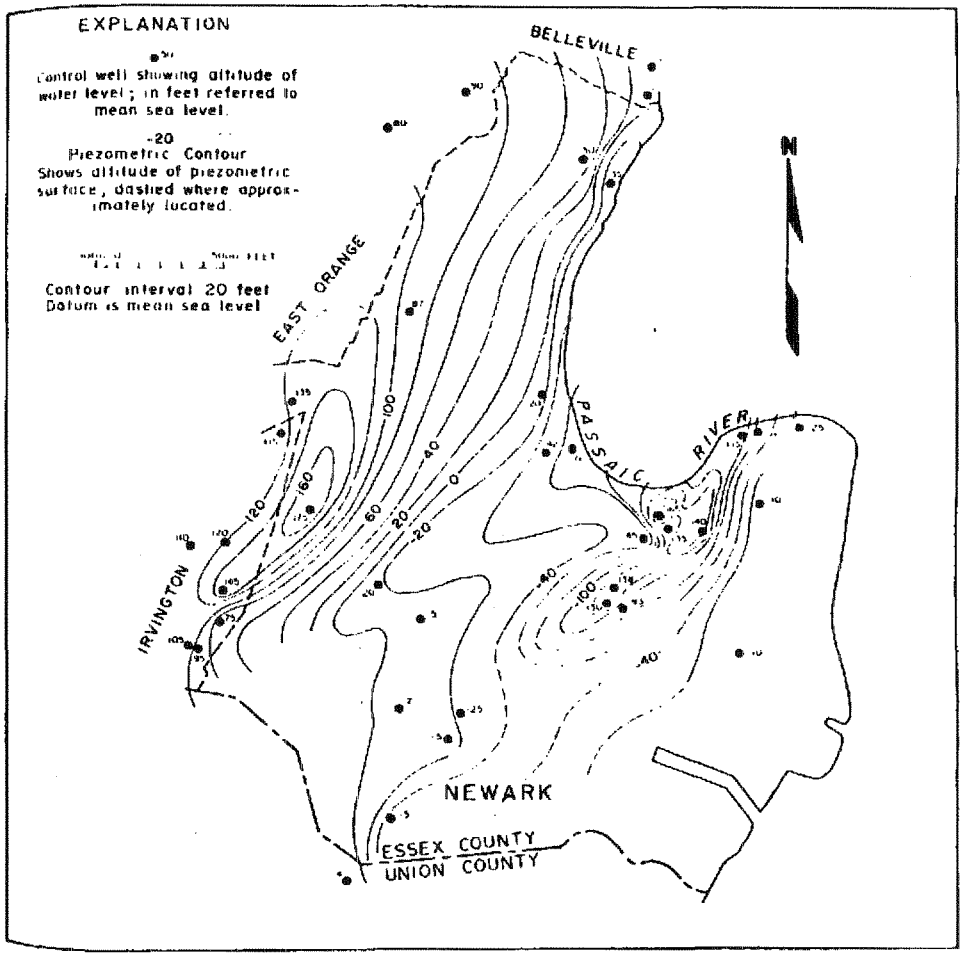



*Figure 10.—Generalized piezometric contours for the Brunswick Formation in the Newark area based on water levels in wells drilled between 1950 and 1960.*

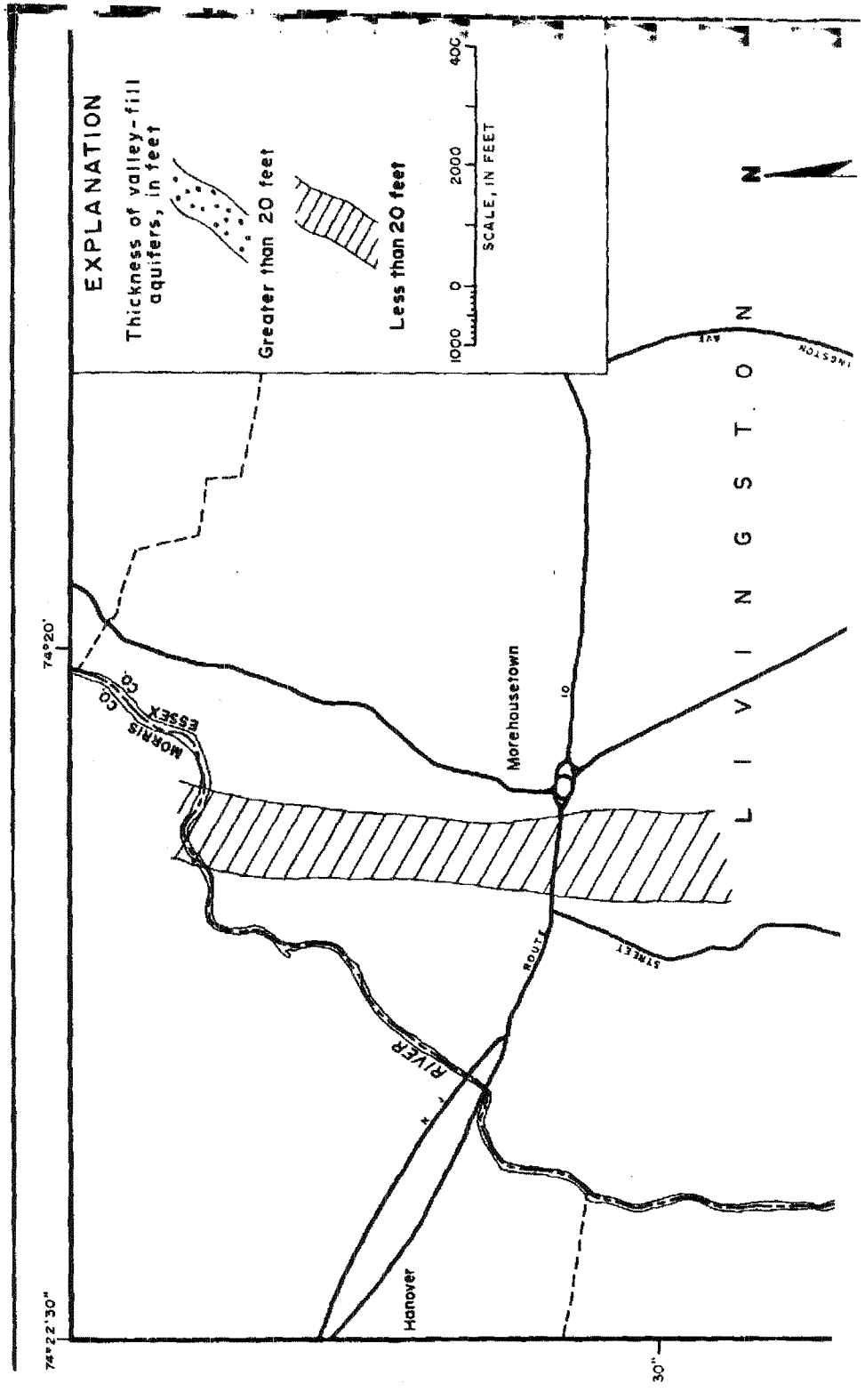
Salt-water contamination of the Brunswick Formation in the Newark area has been investigated by Herpers and Barksdale (1951). Their study was based on analyses of water samples collected in 1942 by the city of Newark. More recent analyses suggest there has been additional encroachment of saline water since 1942 throughout the problem area. In 1942, water from the Wilbur Driver Company's well No. 2 along the Passaic River in northern Newark contained 72 ppm chloride. In 1961, water from this same well contained 330 ppm chloride. Water from a well drilled by Mutual Benefit Life Insurance Company, 520 Broad Street, in 1965 contained 1,145 ppm chloride. Samples collected from other wells in this area contained less than 500 ppm chloride in 1942.

## Pleistocene Deposits

Unconsolidated sediments of Pleistocene age mantle the bedrock throughout much of Essex County (fig. 3). They consist of clay, silt, sand, gravel, and boulders and can be divided into two general categories—stratified drift and unstratified drift. Only sand and gravel aquifers in stratified drift deposits contain sufficient quantities of water to warrant discussion of their water-bearing properties.

Water in the stratified drift occurs under both unconfined (water table) and confined (artesian) conditions. Unconfined ground water occurs where sand and gravel deposits are not covered by clay, silt, or glacial till and are exposed at the surface. The distribution of these deposits is shown on figure 3. For the most part however, these sand and gravel deposits do not yield large quantities of water as they are commonly less than 20 feet thick and are not areally extensive. The unconfined aquifers are recharged directly from precipitation on the outcrop area. Confined and semiconfined ground water occurs where sand and gravel deposits have been covered by lake clay or silt, or by glacial till. These deposits are largely confined to the buried valley so they are not visible on the surface and their regional extent and distribution are therefore not readily apparent. The confined and semiconfined aquifers are recharged by leakage through overlying confining beds and by precipitation falling on outcrop areas outside Essex County. Some recharge may also be derived from the underlying and adjacent Brunswick Formation.

The most productive artesian and semi-artesian aquifers in the stratified drift in Essex County occur as valley fill in stream valleys that were cut in the bedrock before the last glaciation. Consequently the size, shape, and distribution of the aquifers conform to the size, shape, and distribution of the bedrock valleys. The bedrock valley underlying the Newark area (shown on fig. 4) is filled with till and clay, and contains only minor amounts of water-bearing sand. Extensive subsurface exploration in western



Essex and eastern Morris Counties has demonstrated that the valley-fill aquifers in Essex County are part of an extensive valley-fill aquifer system underlying much of these two counties (Vecchioli and others, 1968). Figure 11 shows the known distribution of valley-fill aquifers in western Essex County.

The most highly developed part of the valley-fill aquifer system is in western Millburn and southwestern Livingston. Four well fields tapping the Pleistocene sand and gravel are located in an area of less than 4 square miles. During 1965 an average of 13.6 mgd (million gallons per day) was pumped from these fields. Such continued heavy development has, naturally, lowered water levels in the aquifer. In 1925, the depth to water in the Canoe Brook well field of Commonwealth Water Company was about 30 feet below land surface. By 1965, the average depth to water in the same field had dropped to 83.5 feet below land surface.

Figure 12 shows the annual mean depth to water in the Commonwealth Water Company's Canoe Brook well field for the 20-year period 1947 to 1966. The water level has declined almost continuously since 1947. This is due in large part to increased demands placed on the adjacent Canoe Brook well fields of the Commonwealth Water Co. and East Orange Water Dept. for most of the period 1947 to 1961. Commonwealth Water Company's Passaic River well field was put into service in 1956 and although the demands on their Canoe Brook field were lessened, the combined pumpage (not shown) continued to increase. However, in spite of the fact that from 1961 to 1966 pumpage from the Commonwealth and East Orange Canoe Brook fields decreased, the water level in the Commonwealth Canoe Brook field continued to decline (fig. 12). Several factors probably have caused this continuing lowering of water level. The Passaic River well field taps the same aquifer and withdrawals there have undoubtedly had some effect on area water levels. In addition, Commonwealth's Canoe Brook well field area has had below average rainfall for 12 of the 13 years since 1953 with a consequent reduction in the amount of available recharge. The reduction in recharge together with increased demands during extended dry periods, especially from 1961 to 1966, have contributed to the steady decline of the water level in the aquifer.

Aquifer tests on the stratified drift deposits have been conducted by the U. S. Geological Survey at two localities in Essex County and at several places in Morris County. The reliability of the results of these tests are questionable for the following reasons: (1) the aquifers are not areally extensive; (2) it is impossible to control or eliminate outside interference; (3) it is seldom possible to establish pre-test water-level

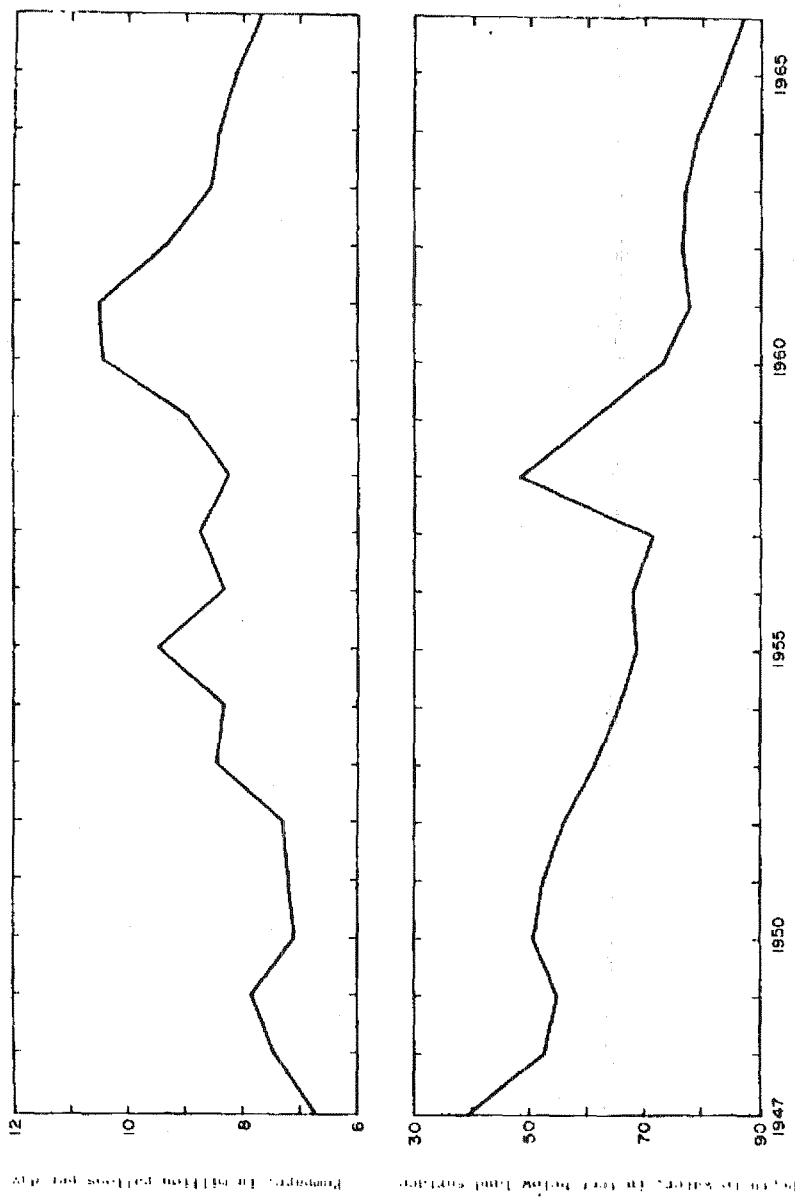



Figure 12.—Depth to water in the Commonwealth Water Company Canoe Brook well field and ground-water pumpage from the Commonwealth Water Company and East Orange Water Dept. Canoe Brook fields, 1947-66.



trends; and (4) observation wells commonly are insufficient in number or not properly located. It is therefore difficult to apply average figures for permeability, transmissivity, and the coefficient of storage to the valley fill aquifer and then use these figures to determine long-range effects of pumpage throughout the aquifer system. Each area must be evaluated in context with the numerous variables by which it is affected.

Stratified drift deposits are the most productive aquifers in Essex County. Yields of 27 large-diameter wells tapping these deposits range from 410 gpm to 1,593 gpm (table 2) and average 908 gpm. The distribution of the well yields is as follows:

| *Yields* | *No. of wells* |
|---|---|
| <500-gpm | 3 |
| 501- 800 gpm | 11 |
| 801-1,200 gpm | 9 |
| >1,200 gpm | 4 |

Water from the stratified drift deposits ranges in hardness from 104 ppm to 212 ppm (table 3). Most of the samples analyzed had sulfate concentrations of 40 ppm or less, chloride concentrations of less than 11 ppm, and nitrate concentrations of 3 ppm or less. However, water from one well in Essex Fells had chloride and nitrate concentrations of 28 ppm and 6.4 ppm, respectively, and water from two wells in Millburn had sulfate concentrations of 67 ppm and 77 ppm. The higher concentrations of these constituents suggests a low-grade pollution problem, probably resulting from either sewage or the use of chemical fertilizers in the area. Manganese concentrations slightly in excess of the Public Health Service's recommended maximum limit of 0.05 ppm occur locally in the Commonwealth well field.

# WATER SUPPLY

## UTILIZATION OF GROUND WATER

Public and industrial use of water in 1962 in Essex County averaged about 147 mgd. Of this amount, about 43 mgd were pumped from ground-water sources. This represents about 28 percent of the total water used in the county during 1962.

An average of 25.833 mgd of ground water was withdrawn for public supply from aquifers in Essex County in 1966 (Table 1). Of this an average of about 20.9 mgd, or 81 percent, was pumped from Quaternary stratified drift deposits. Pumpage in Millburn Township, amounting to about 15 mgd, exceeded by far the public-supply pumpage of ground water from any other municipality. Figure 13 shows the pumpage for public supply from aquifers in Essex County from 1947 to 1966.

**Table 1.—Ground-water pumpage for public supply from aquifers in Essex County in 1966.**

| *Water Department or Company* | *Average mgd* |
|---|---|
| Commonwealth Water Co. | 11.754 |
| East Orange Water Dept. | 4.571 |
| Essex Fells Water Dept. | 2.582 |
| Fairfield Water Dept. | .071 |
| Livingston Water Dept. | 2.112 |
| Orange Water Dept. | 3.026 |
| South Orange Water Dept. | 1.717 |
| Total | 25.883 |

## FUTURE DEMAND AND DEVELOPMENT

Future demand for water supply from all sources in Essex County depends largely on population trends and trends in water-consuming industries and devices. Per capita consumption of water in Essex County in 1960 was 131 gpd (gallons per day). This is expected to rise to about 223 gpd by the year 1990 (New Jersey Division of Water Policy and Supply, 1967, unpublished data). Estimates of total future water use by the New Jersey Division of Water Policy and Supply (unpublished data, 1967) suggest that about 230 mgd of potable water will be needed in the year 1990 on the basis of the above per capita consumption. Most of this increase will probably have to come from surface sources.

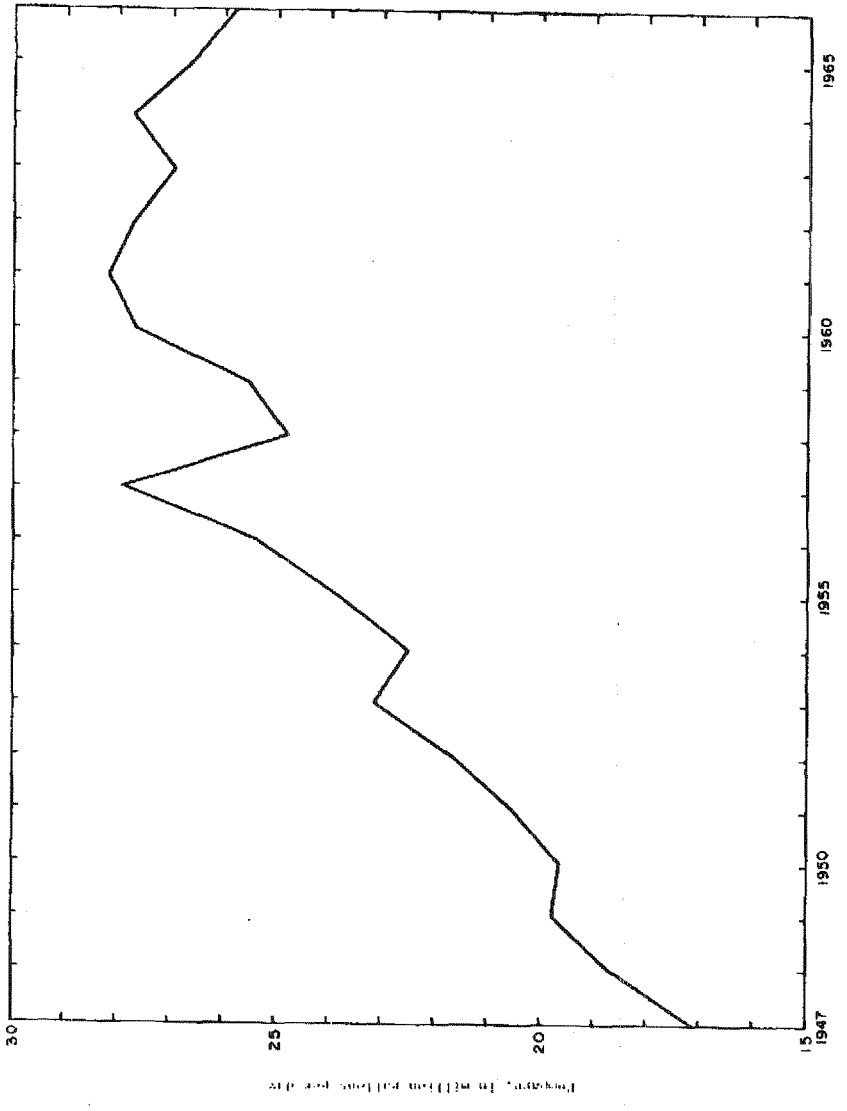



*Figure 13.—Ground-water pumpage for public supply, 1947 to 1966.*



The aquifers of the Brunswick Formation under part of the Newark area are currently overdeveloped and potable ground water is being mined. Water levels in this area will remain excessively low, as they have for the past 70 years, even if no additional development is attempted. Extensive development of the Brunswick Formation in western Essex County may have an adverse effect on water levels in the overlying stratified drift deposits since some of the recharge to these deposits may be derived from the underlying rocks.

The extent and distribution of aquifers in the stratified drift deposits have been fairly well determined for most of the western part of the county. These aquifers are being utilized throughout much of this part of the county and have been highly developed in parts of Millburn and Livingston Townships. Although the full potential of these deposits has probably not been realized, their optimum potential will not be known until more detailed hydrologic studies are made on the entire aquifer system.

Aquifer name:
Qsd, Stratified drift
TRb, Brunswick Formation
TR-b, Watchung Basalt

## TABLE 2.—RECORDS OF SELECTED WELLS IN ESSEX COUNTY, N. J.—Continued

Remarks:
O.W., Owners well

| Well | Owner or Tenant | Driller | Date Drilled | Altitude above mean sea level (ft) | Total depth drilled below land surface (ft) | Diameter of well (inches) | Depth to which well is cased (ft) | Screen setting (ft) | Aquifer | Static level below land surface (feet) | Yield (gpm) | Drawdown (ft) | Specific capacity (gpm ft) | Re |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | NTCLAIR (TOWN) | | | | | | | | | |
| 1 | Rapt & Ruden | Parkhurst Well & Pump Co. | 4-29-48 | 360 | 250 | 10 | 23 | none | TRb | 5 | 145 | 180 | .81 | |
| 2 | Bond's Ice Cream, Inc. | Parkhurst Well & Pump Co. | 3-10-50 | 510 | 157 | 8 | 21 | none | TRb | 15 | 150 | 55 | 2.73 | |
| 3 | Town of Montclair | ---------- | 1966 | --- | 300 | 10 | 41 | none | TRb | 24 | 950 | 51 | 18.62 | |
| 4 | Halne & Co. | Parkhurst Well & Pump Co. | 8- 9-49 | 280 | 350 | 8 | 31 | none | TRb | 18 | 350 | 182 | 1.92 | O.W.2 |
| 5 | M. Quadrel | Burrows Well Drilling Co. | June, 1955 | 260 | 151 | 6 | 18 | none | TRb | 33 | 75 | --- | ---- | |
| 6 | Montclair Auto Minit Man | Rinbrand Well Drilling Co. | 1-10-50 | --- | 200 | 6 | 16 | none | TRb | 40 | 60 | --- | ---- | |
| | | | | | NEWARK (CITY) | | | | | | | | | |
| 1 | Aluminum Finishing Co. | J. Foster | 7-20-53 | 50 | 150 | 8 | 55 | none | TRb | 30 | 100 | 30 | 3.33 | |
| 2 | Wilbur B. Driver Co. | Rinbrand Well Drilling Co. | 7- 2-53 | 15 | 400 | 10 | 93 | none | TRb | 45 | 240 | 155 | 1.55 | O.W.5 |
| 3 | Pittsburgh Plate Glass Co. | Layman & Co. | 1940 | 12 | --- | 12 | 90 | none | TRb | 9 | 390 | --- | ---- | |
| 4 | McEvoy Court Apartments | Parkhurst Well & Pump Co. | Oct. 1939 | 200 | 206 | 6 | 35 | none | TRb | 84 | 60 | 106 | .57 | |
| 5 | Columbia Theaters, Inc. | Wm. Stothoff Co., Inc. | 6- 9-53 | --- | 312 | 8 | 26 | none | TRb | 20 | 140 | 32 | 4.38 | |
| 6 | Pabst Brewing Co., Inc. | Artesian Well & Equip. Co. | 3-14-49 | 190 | 685 | 14 | 39 | none | TRb | 59 | 557 | 67 | 8.31 | O.W.4 |
| 7 | Pabst Brewing Co., Inc. | Artesian Well & Equip. Co. | 7-17-50 | 185 | 687 | 14 | 55 | none | TRb | 108 | 240 | 120 | 2.00 | O.W.5 |
| 8 | Newark Milk & Cream Co. | Rinbrand Well Drilling Co. | Feb. 1949 | 25 | 700 | 10 | 80 | none | TRb | 60 | 75 | 190 | .39 | |
| 9 | Continental Ins. Co. | S. P. D'Alessio | July 1965 | --- | 300 | 8 | 58 | none | TRb | 77 | 85 | 72 | 1.18 | |
| 10 | Newark Center Corp. | Garden State Artesian Well & Pump Co. | 2-18-55 | --- | 700 | 10-6 | 150 | none | TRb | 81 | 89 | 144 | .62 | O.W.1 |
| 11 | Kolker Chemical Works | Wm. Stothoff Co., Inc. | 12-11-51 | 12 | 802 | 12 | 127 | none | TRb | 117 | 600 | 43 | 13.95 | O.W.2 |
| 12 | Kolker Chemical Works | Wm. Stothoff Co., Inc. | 4-27-49 | 8 | 359 | 10 | 98 | none | TRb | 76 | 300 | 22 | 13.63 | O.W.1 |
| 13 | Eureka Construction Co. | Rinbrand Well Drilling Co. | 1-23-59 | 10 | 500 | 8 | 90 | none | TRb | 25 | 75 | 225 | .33 | |
| 14 | P. Ballentine & Sons | ---------- | 1937 | 12 | 875 | 16 | 95 | none | TRb | 227 | 375 | 153 | 1.79 | O.W.8, Plant |

Aquifer name:
Qsd, Stratified drift
TRb, Brunswick Formation
TRwb, Watchung Basalt

## TABLE 2.—RECORDS OF SELECTED WELLS IN ESSEX COUNTY, N. J.—Continued

Remarks:
O.W., Owners well numbe

| Well | Owner or Tenant | Driller | Date Drilled | Altitude above mean sea level (ft) | Total depth drilled below land surface (ft) | Diameter of well (inches) | Depth to which well is cased (ft) | Screen setting (ft) | Aquifer | Static level below land surface (feet) | Yield (gpm) | Drawdown (ft) | Specific capacity (gpm/ft) | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | NEWARK (CITY) - Continued | | | | | | | | | |
| 15 | Celanese Corp. of Amer. | P. H. & J. Colan | 1924 | 12 | 805 | 16-10 | 95 | none | TRb | 176 | 400 | 28 | 14.29 | O.W.26 |
| 16 | Celanese Corp. of Amer. | Layne-New York Co. | 5-16-47 | 14 | 856 | 16-10 | 75 | none | TRb | 147 | 778 | 40 | 19.45 | O.W.27 |
| 17 | J. Hensler Brewing Co. | P. Chaffitelli | 12-14-49 | 12 | 700 | 10-8 | 57 | none | TRb | 60 | 450 | 240 | 1.79 | O.W.4 |
| 18 | Synthetic Plastics Co. | Industrial Well & Pump Co. | 1-15-63 | 14 | 600 | 8 | 145 | none | TRb | 150 | 300 | 110 | 2.73 | O.W.1 |
| 19 | Ablon Finishes, Inc. | Frank Bott | 7-12-60 | 15 | 500 | 8 | 86 | none | TRb | 30 | 360 | 70 | 5.14 | |
| | Colan Corporation | ------- | 1930 | 10 | 290 | 8 | --- | none | TRb | 140 | 160 | 95 | 1.59 | |
| | Universal Grain Co. | Wm. Stothoff Co., Inc. | 10-18-51 | 10 | 303 | 8 | 79 | none | TRb | 143 | 200 | 53 | 3.77 | |
| | Mother's Food Products, Inc. | --------- | 1959 | 11 | 400 | 8 | 107 | none | TRb | 94 | 125 | 8 | 15.62 | |
| | Kar Auto Service Co. | P. Chaffitelli | 2- 8-50 | 208 | 300 | 6 | 35 | none | TRb | 23 | 60 | 104 | .58 | |
| | Food Fair Stores | Burrows Well Drilling Co. | April, 1955 | 100 | 298 | 8 | 35 | none | TRb | 105 | 250 | 45 | 5.56 | |
| | S. & S. Super Service Corp. | Rinbrand Well Drilling Co. | 2-18-50 | 50 | 190 | 6 | 94 | none | TRb | 45 | 20 | --- | ---- | |
| | Rutherford & Delaney Holding Co. | Garden State Artesian Well & Pump Co. | 7-31-56 | --- | 220 | 8-6 | 42 | none | TRb | 22 | 100 | 73 | 1.37 | O.W.1 |
| | Linde Air Products Co. | Artesian Well & Equip. Co. | July, 1954 | 10 | 500 | 12 | 44 | none | TRb | 17 | 124 | 190 | .65 | |
| | C-O Two Fire Equipment Co. | Parkhurst Well & Pump Co. | 4-27-50 | 10 | 603 | 10 | 127 | none | TRb | 35 | 89 | 215 | .41 | |
| | Suburban Motor Lodge, Inc. | Rinbrand Well Drilling Co. | June, 1950 | 10 | 555 | 8 | 128 | none | TRb | 15 | 20 | 235 | .08 | |
| | S. B. Penick & Co. | Wm. Stothoff Co., Inc. | 6- 7-61 | --- | 400 | 10 | 75 | none | TRb | 60 | 644 | 23 | 28.00 | O.W.2 |
| | | | | | NORTH CALDWELL BOROUGH | | | | | | | | | |
| 1 | Green Brook Country Club | H. A. Kieffer | July, 1951 | 310 | 300 | 8 | 33 | none | TRwb | 2 | 25 | 81 | .31 | O.W.3 |
| 2 | Green Brook Country Club | H. A. Kieffer | March, 1925 | 290 | 301 | 8 | --- | none | TRb & TRwb | flowing 25 gpm | 60 | --- | ---- | O.W.1. Redrilled |
| 3 | A. Struss | H. A. Kieffer | 8-16-55 | --- | 182 | 6 | 42 | none | TRwb | 65 | 25 | 5 | 5.00 | |
| 4 | A. F. Leitner | Algeier Bros. | 5-24-58 | --- | 195 | 6 | 25 | none | TRwb | 25 | 7 | 125 | .05 | |

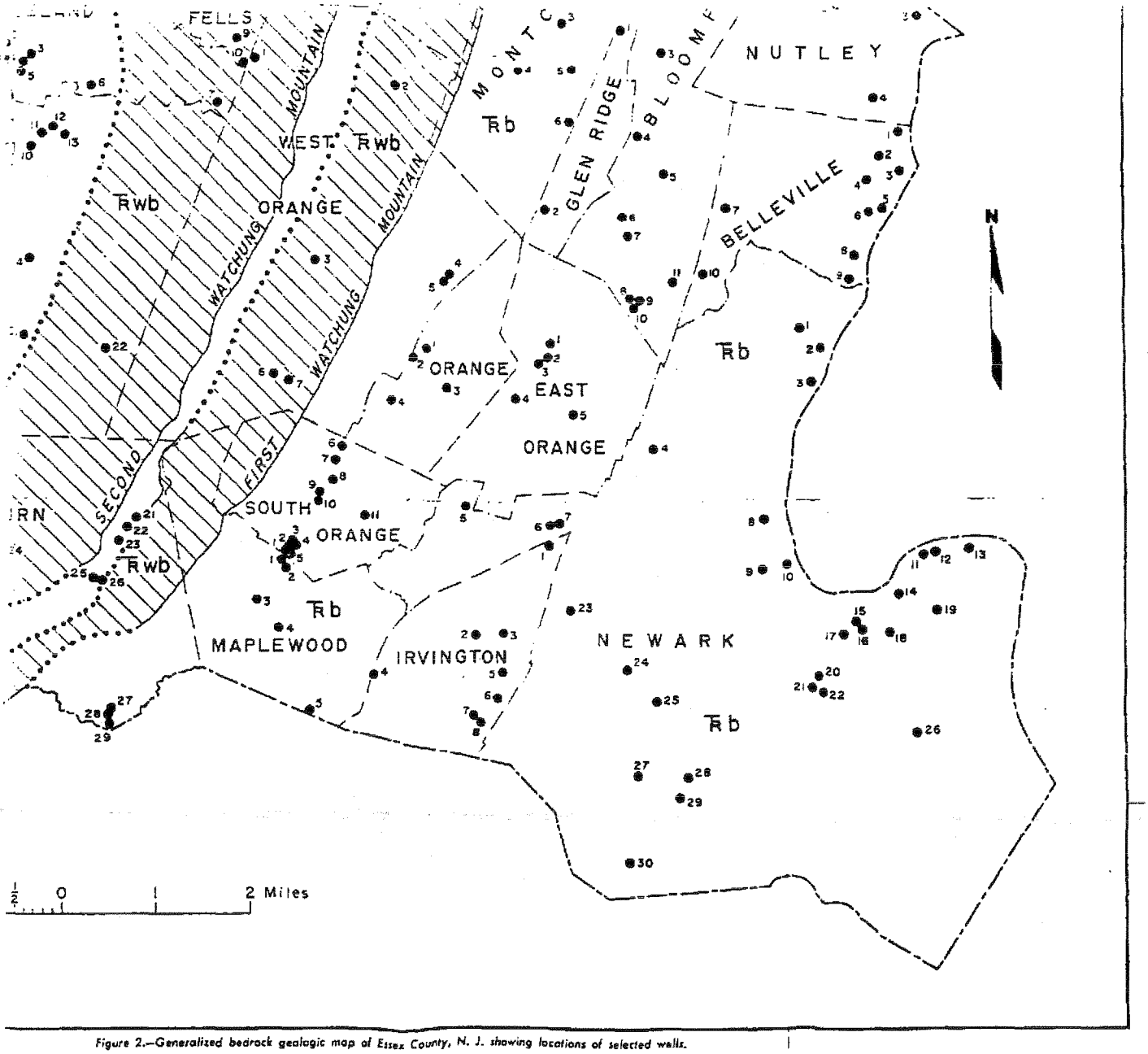
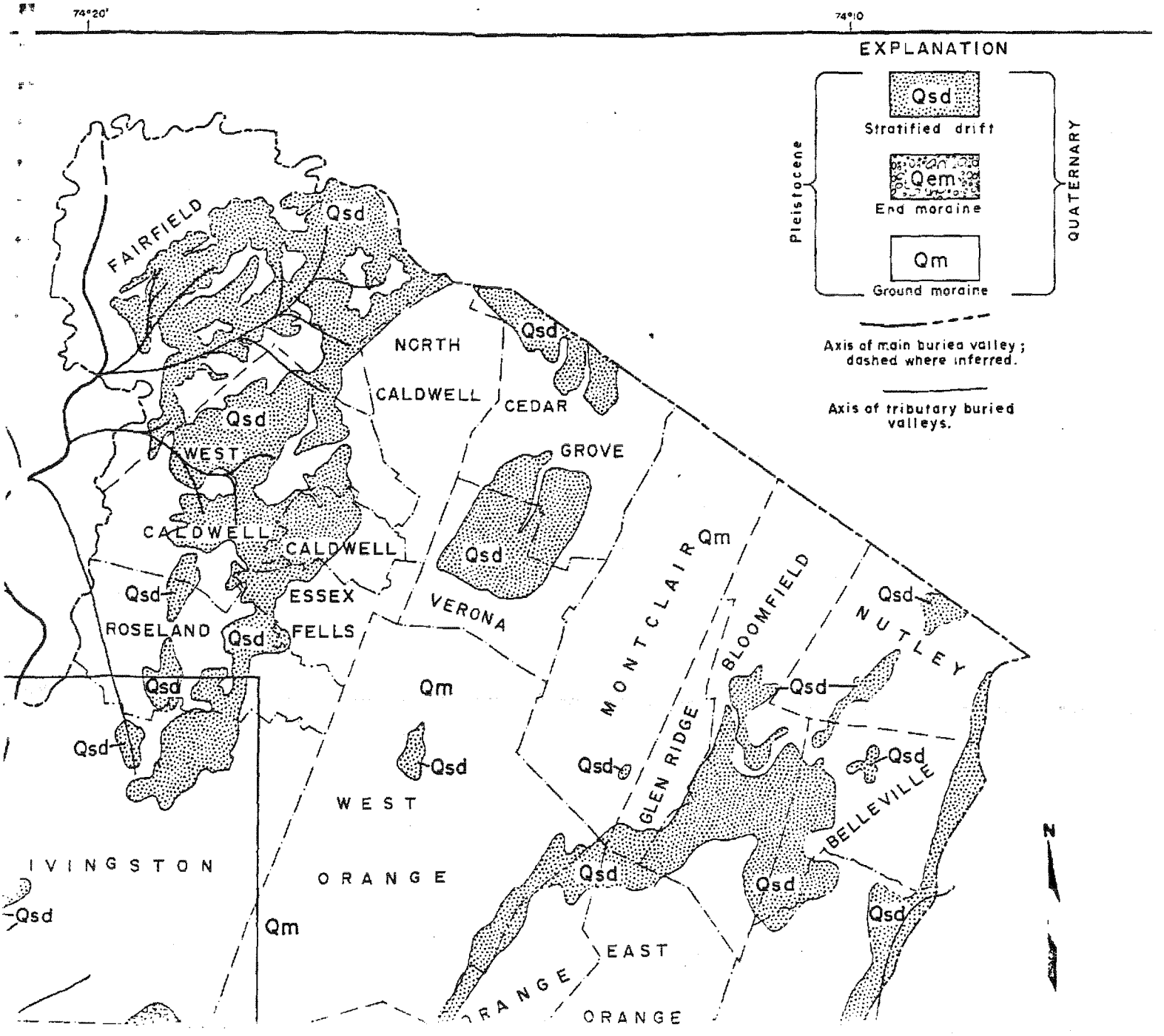



*Figure 2.—Generalized bedrock geologic map of Essex County, N. J. showing locations of selected wells.*


74°20'
74°10
EXPLANATION
Qsd
Stratified drift
Qem
End moraine
Qm
Ground moraine
Pleistocene
QUATERNARY
Axis of main buried valley; dashed where inferred.
Axis of tributary buried valleys.
FAIRFIELD
NORTH CALDWELL
CEDAR GROVE
WEST CALDWELL
CALDWELL
ESSEX FELLS
ROSELAND
VERONA
MONTCLAIR
GLEN RIDGE
BLOOMFIELD
NUTLEY
BELLEVILLE
WEST ORANGE
ORANGE
EAST ORANGE
IVINGSTON
Qsd
Qm
N

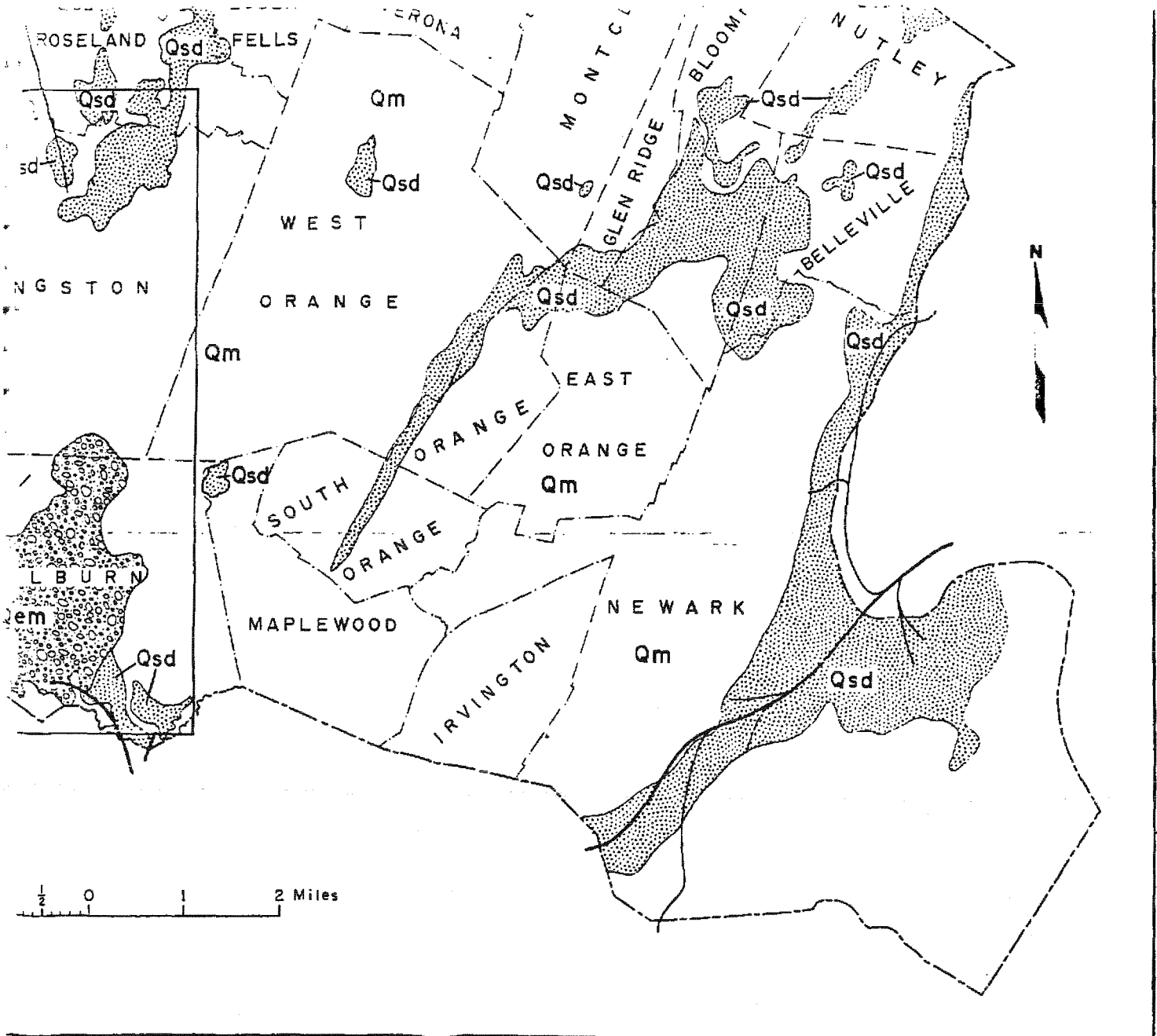



Figure 3.—Generalized surficial geologic map of Essex County, N. J. showing axes of buried valleys.

**REFERENCE #2**

02L-8511-1-1

# HYDROGEOLOGIC ASSESSMENT

CENTRAL STEEL DRUM COMPANY

704 DOREMUS AVENUE

NEWARK, N.J. 07105

**environics incorporated/environmental consultants**

46 JACKSON DRIVE • CRANFORD, NJ 07016-3580 • (201) 272-[illegible]

NOTES:

1. HORIZONTAL DATUM PER N.J. GEODETIC CONTROL SURVEY MONUMENTS NO. 641 AND NO. 9679.
2. VERTICAL DATUM IS NGVD PER CGS MONUMENT NO. Z-37. PUBLISHED ELEVATION 10.072'.
3. PROPERTY LINES SHOWN ARE APPROXIMATE AND ARE BASED ON TAX MAP DATA; DEEDS PROVIDED BY CLIENT.

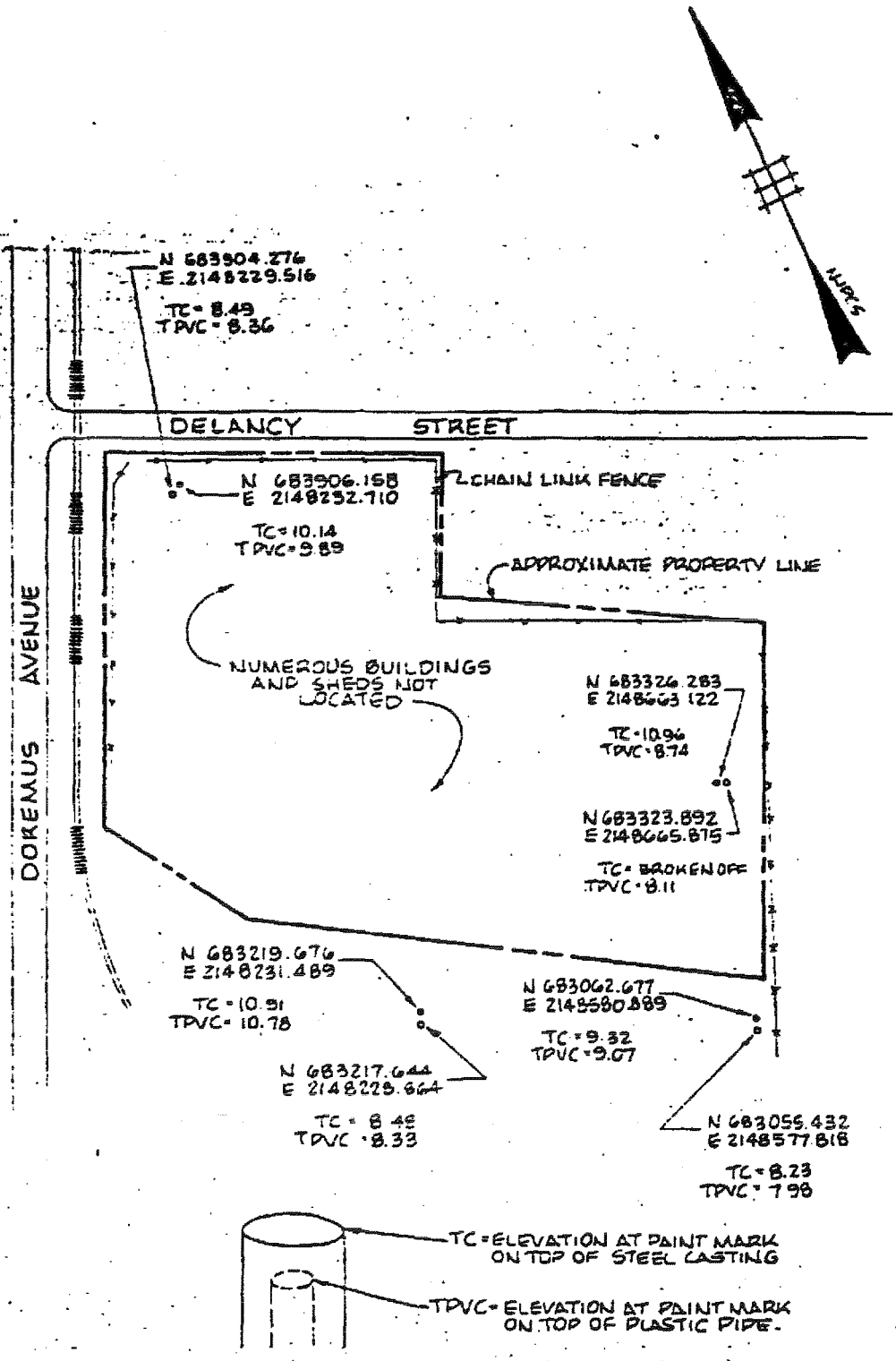



FIGURE NO. 1

# SKETCH SHOWING LOCATION OF WELLS

LOT 1, BLK 5074

CITY OF NEWARK
COUNTY OF ESSEX
NEW JERSEY


DATE SIGNED 3/14/85

BRUCE R. BLAIR

NJ PLS 12888 PA RS 049714 OH/P 20116 FL LS 5880

B2R Consultants

323 RT. 206
HILLSBOROUGH, NJ 08876


DUPLICATION IS A VIOLATION OF THE COPYRIGHT LAW

| | |
|---|---|
| DATE | 3 1 85 |
| SCALE | 1" = 200 |
| SHEET | 1 OF |
| REV. | |
| BOOK NO. | 122 22 |
| SURVEYED BY | DLB BR |
| JOB NO. | 84-293 |
| FILE NO. | |

TABLE 1

WELL AND GROUNDWATER ELEVATION DATA

| WELL NUMBER | WELL ELEVATION OUTER CASING | WELL ELEVATION INNER CASING | WATER ELEVATION 5/18/84 | WATER ELEVATION 5/31/84 | WATER ELEVATION 11/19/84 |
|---|---|---|---|---|---|
| 101 | 10.91 | 10.78 | 6.19 | 7.30 | 6.39 |
| 102 | 8.49 | 8.36 | 6.47 | 7.88 | 5.50 |
| 103 | DESTROYED | (8.11)* | - | (8.01) | - |
| 104 | 9.32 | 9.07 | 6.55 | 7.49 | 6.57 |
| 201 | 8.48 | 8.33 | 1.33 | 1.98 | 2.33 |
| 202 | 10.14 | 9.89 | 0.44 | 1.01 | 1.50 |
| 203 | 10.96 | 8.74 | - | 2.80 | 3.06 |
| 204 | 8.23 | 7.98 | 2.35 | 2.93 | 3.05 |

* ( ) INDICATES QUESTIONABLE VALUE

Water Level Measurements:

On May 18, 1984, and May 31, 1984, water levels were taken from the top of the inner casing of each well, using a steel tape. These water levels are plotted on Table 1 below:

Table 1. SUMMARY OF MONITORING WELL CONSTRUCTION/WATER LEVEL MEASUREMENTS

Client CENTRAL STEEL DRUM COMPANY — Measured by John Bee, C.P.G.

Location 704 Doremus Avenue — Measured w/ Steel tape

Newark, N.J. — Measuring point Top of inner casing

| WELL NO | WELL DIAM. (inches) | TOP OF OUTER CASING ELEV. (feet) | STICKUP | TOP OF INNER CASING ELEV. (feet) | STICKUP | TOTAL CASING/ SCREEN LENGTH (feet) | BOTTOM OF WELL FROM GL (feet) | SCREEN SETTING (specs) | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| 201 | 2" | | 1.0 | | | 22.7 | 21.0 | 18'-23' | Lock affixed |
| 101 | 4" | | 3.1 | | | 5.9 | 2.9 | 1'-4' | Lock affixed |
| 202 | 2" | | 3.0 | | | 26.6 | 23.8 | 19'-24' | Lock affixed |
| 102 | 4" | | 1.3 | | | 10.4 | 9.4 | 6"-9'6" | Lock affixed |
| 203 | 4" | | 0 | | | 24.4 | 24.4 | 22'-27' | Lock affixed |
| 103 | 4" | | -.4 | | | 3.8 | 4.2 | 6"-5'6" | Lock affixed |
| 204 | 4" | | .8 | | | 25.8 | 25.2 | 20'-25' | Lock affixed |
| 104 | 4" | | 1.8 | | | 11.0 | 9.4 | 6"-10'6" | Lock affixed |

| DATE | TIME to | WELL # | PUMP RATE Q | TIME | ELEV. TOC | D.T.W. | ELEV. WATER LEVEL | s | t | REMARKS Approx. Depth W Below GL (feet |
|---|---|---|---|---|---|---|---|---|---|---|
| 5/18/84 | 0835 | 201 | | | | 7.00 | | | | 6.00 |
| 5/31/84 | 1032 | | | | | 6.35 | | | | 5.55 |
| 5/18/84 | 0840 | 101 | | | | 4.59 | | | | 2.85 |
| | | | | | | 3.48 | | | | .31 |
| 5/18/84 | 0805 | 202 | | | | 9.45 | | | | 6.45 |
| 5/31/84 | 0905 | | | | | 8.88 | | | | 6.15 |
| 5/18/84 | 0800 | 102 | | | | 1.89 | | | | -0.64 |
| | | | | | | .48 | | | | + .64 |
| 5/31/84 | 0915 | 203 | | | | 5.94 | | | | 6.24 |
| 5/31/84 | 0920 | 103 | | | | 0.1 | | | | 0.1 |
| 5/18/84 | 0832 | 204 | | | | 5.63 | | | | 4.83 |
| 5/31/84 | 1024 | | | | | 5.05 | | | | 4.55 |
| 5/18/84 | 0820 | 104 | | | | 2.52 | | | | .77 |
| 5/31/84 | 1018 | | | | | 1.58 | | | | .02 |

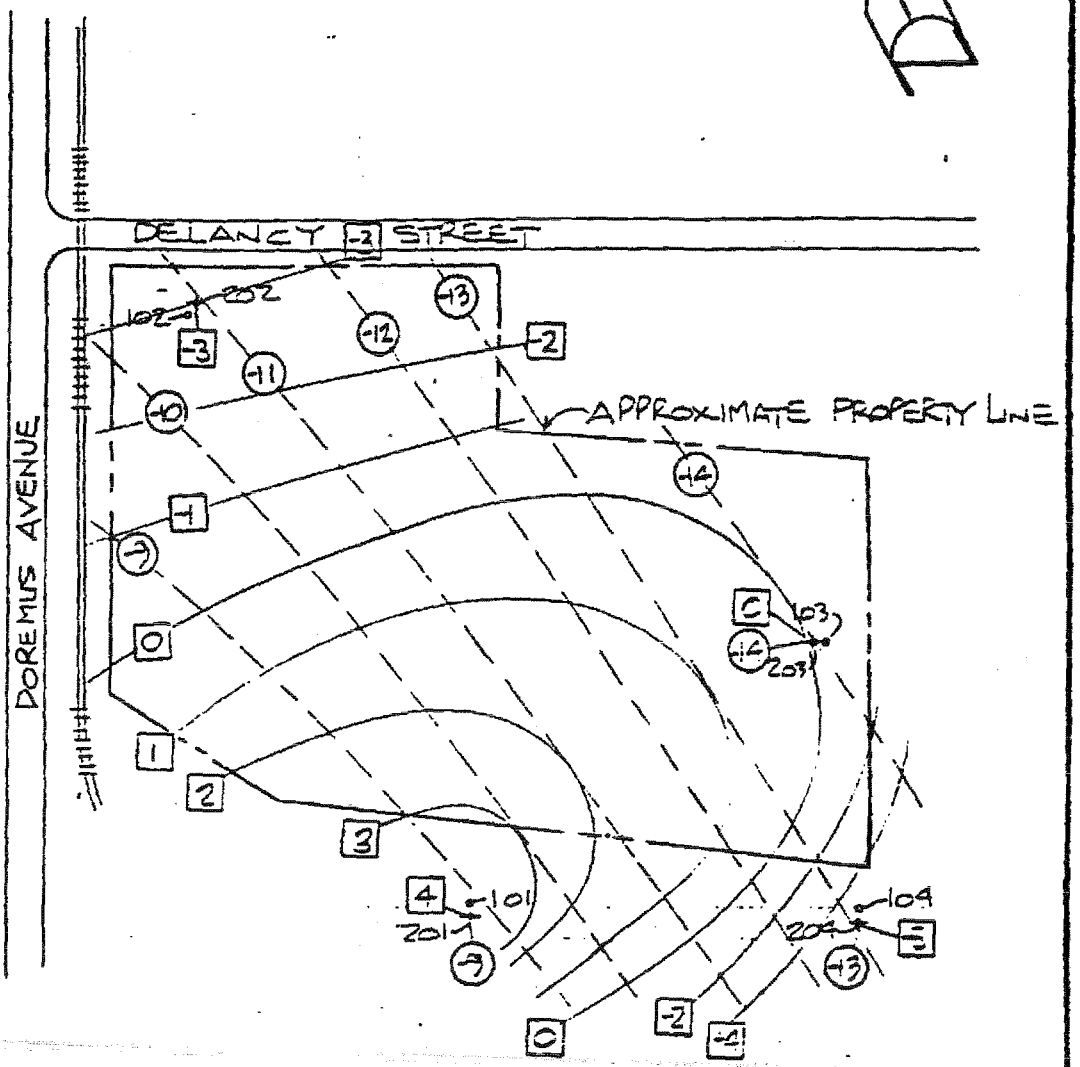
## 2. SUMMARY OF SITE HYDROGEOLOGY

In this report, the term "aquifer" will be used to describe the geologic units monitored by the wells installed on-site. Neither the shallow water table aquifer nor the deeper confined aquifer would be capable of exploitation for a water supply. Even without deterioration of water quality resulting from the industrial nature of the area, the proximity to salt water and the poor pumping characteristics encountered in both aquifers would make them unusable as a water supply.

The shallow water table aquifer varies in thickness between 4 feet at the southwestern corner (wells 101 & 201), to 12 feet at the southeastern corner (wells 104 & 204). The soil consists of re-worked (fill) sand, gravel, silt and clay.

The base of the water table system is a silty clay confining layer. The geometry of the confining layer is shown on figure 2 in the form of contours on the upper and lower surfaces. The upper surface of this confining unit appears to slope "radially" from a high point at the southwestern corner. The observed slope (approximately 2%) apparently exerts little or no influence on flow in the overlying shallow aquifer system.

The confining layer is thickest (13 to 14 feet) along a northwast to southwest trending line between wells 103/203




## EXPLANATION

[2] DENOTES ELEVATION OF UPPER SURFACE OF CONFINING LAYER

(-2) DENOTES ELEVATION OF LOWER SURFACE OF CONFINING LAYER

* DENOTES WELL SCREENED IN WATER TABLE AQUIFER

\+ DENOTES WELL SCREENED IN CONFINED AQUIFER

SCALE: 1"=200'-0"

| | | |
|---|---|---|
| ENVIRONICS, INC.<br>ENVIRONMENTAL CONSULTANTS<br>46 JACKSON DRIVE CRANFORD, N.J. 07016 | | |
| DRAWING TITLE<br>CONFINING LAYER GEOMETRY | DRAWING NO.<br>2 | REV.<br>0 |

and 101/201. The layer thins to approximately 8 feet at the northwest and southeast corners of the property. The lower surface of the confining layer slopes eastward as shown on figure 2 at slightly less than 2%. Available evidence suggests that this layer is continuous throughout the property.

The confined aquifer consists of silty sand and sandy silt. Thickness of the system was not determined.

## 3. FLOW IN THE SHALLOW SYSTEM

Groundwater in the shallow aquifer exists under water table conditions. In such a system, hydrostatic pressure at the top of the saturated zone is atmospheric. Flow direction is controlled by the hydraulic gradient, which is equal to the slope on the water table surface.

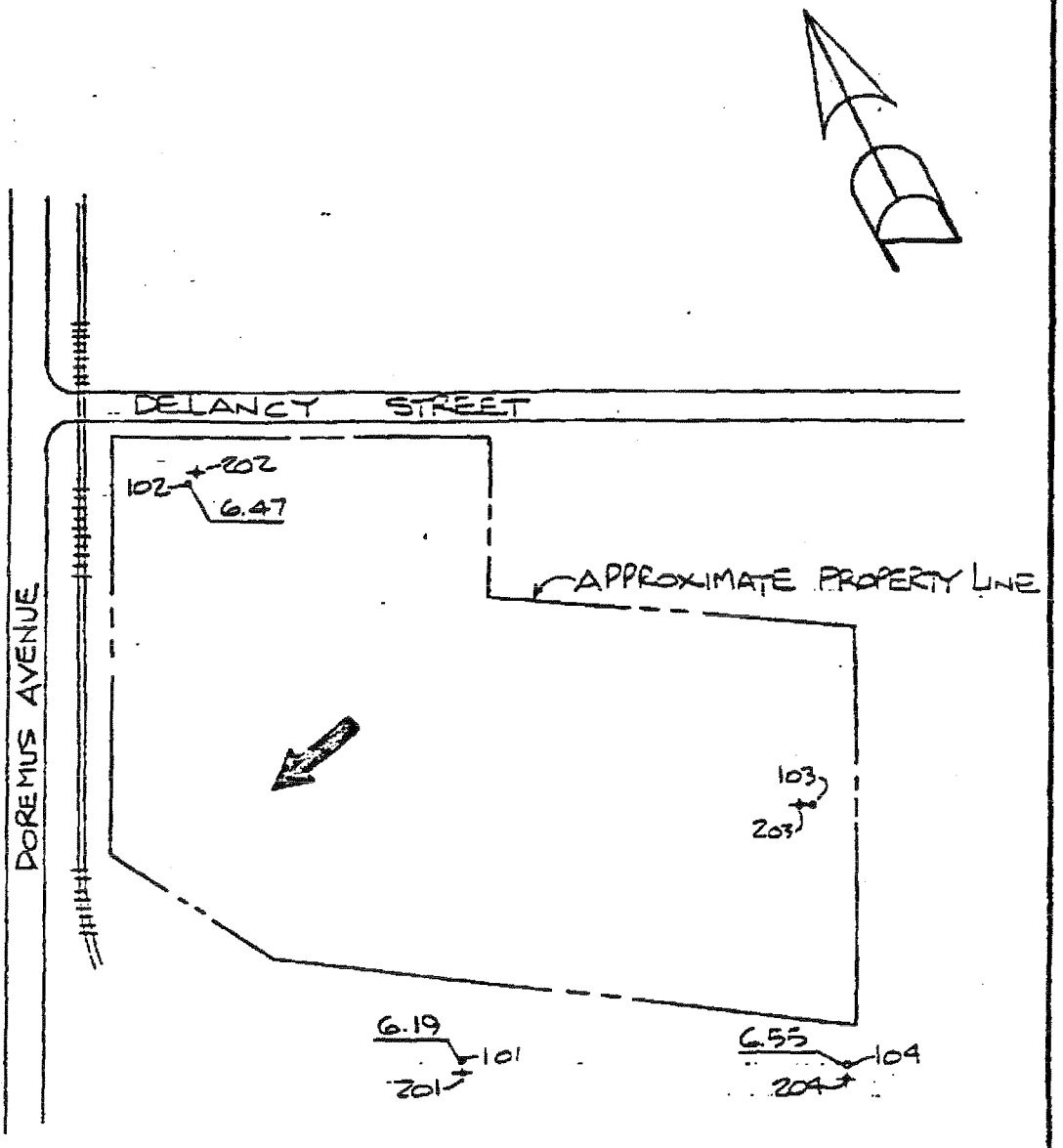
The determination of hydraulic gradient in a water table aquifer can be very complex due to the number of factors which may exert control, such as surface topography, surface water bodies, and variations in the permeability of the ground surface. In an area such as the site in question, the distribution of buildings and pavement, variation in the permeability of fill material, and even differential compaction, as might be induced by heavy vehicle traffic may all have an effect.

Water elevation data for the shallow aquifer at the Central Steel Drum Site for May 18, May 31 and November 19, 1984 are presented on figures 3,4 and 5 respectively.

Data from both occasions in May show a nearly static groundwater condition. The maximum difference in water elevations between the shallow wells on the May 18 measurement is less than 0.5 feet. There is a slight apparent slope to the southwest. However, considering the insignificant variation in the elevation of the water table surface, measured in wells which are hundreds of feet apart, virtually no certainty can be placed on that direction.

Results are similar for May 31, except that the water table is approximately 1 foot higher. As seen in table 1 and figure 4, the uncertain value for well 103 is consistant with the other 3 wells, suggesting a southwesterly flow direction. However, as with data from the previous occasion, no definite interpretation can be made.

Measurements from the 3 wells available on November 19,1984 (figure 5) suggest a gradient to the north. The maximum difference in water elevation on that date is slightly more than 1 foot. For a water table system, with wells spaced hundreds of feet apart, such a difference in elevation is insignificant.




EXPLANATION

APPARENT DOWN GRADIENT DIRECTION

• DENOTES WELL SCREENED IN WATER TABLE AQUIFER

+ DENOTES WELL SCREENED IN CONFINED AQUIFER

SCALE: 1"=200'-0"

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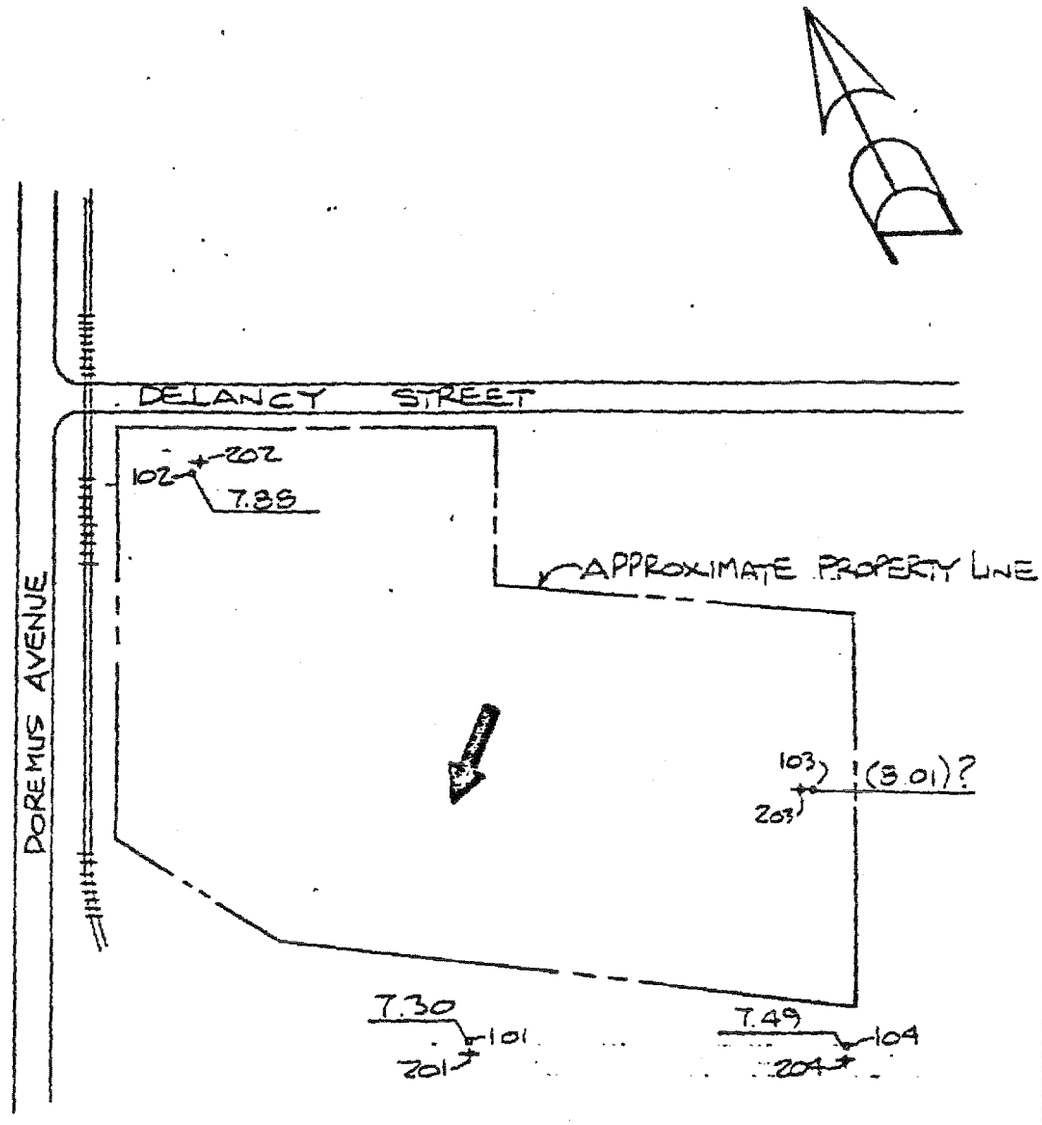
| DRAWING TITLE | DRAWING NO. | REV. |
|---|---|---|
| WATER TABLE ELEVATION 5/18/84 | 3 | 0 |




## EXPLANATION

APPARENT DOWN GRADIENT DIRECTION

- DENOTES WELL SCREENED IN WATER TABLE AQUIFER

+ DENOTES WELL SCREENED IN CONFINED AQUIFER

SCALE: 1"=200'-0"

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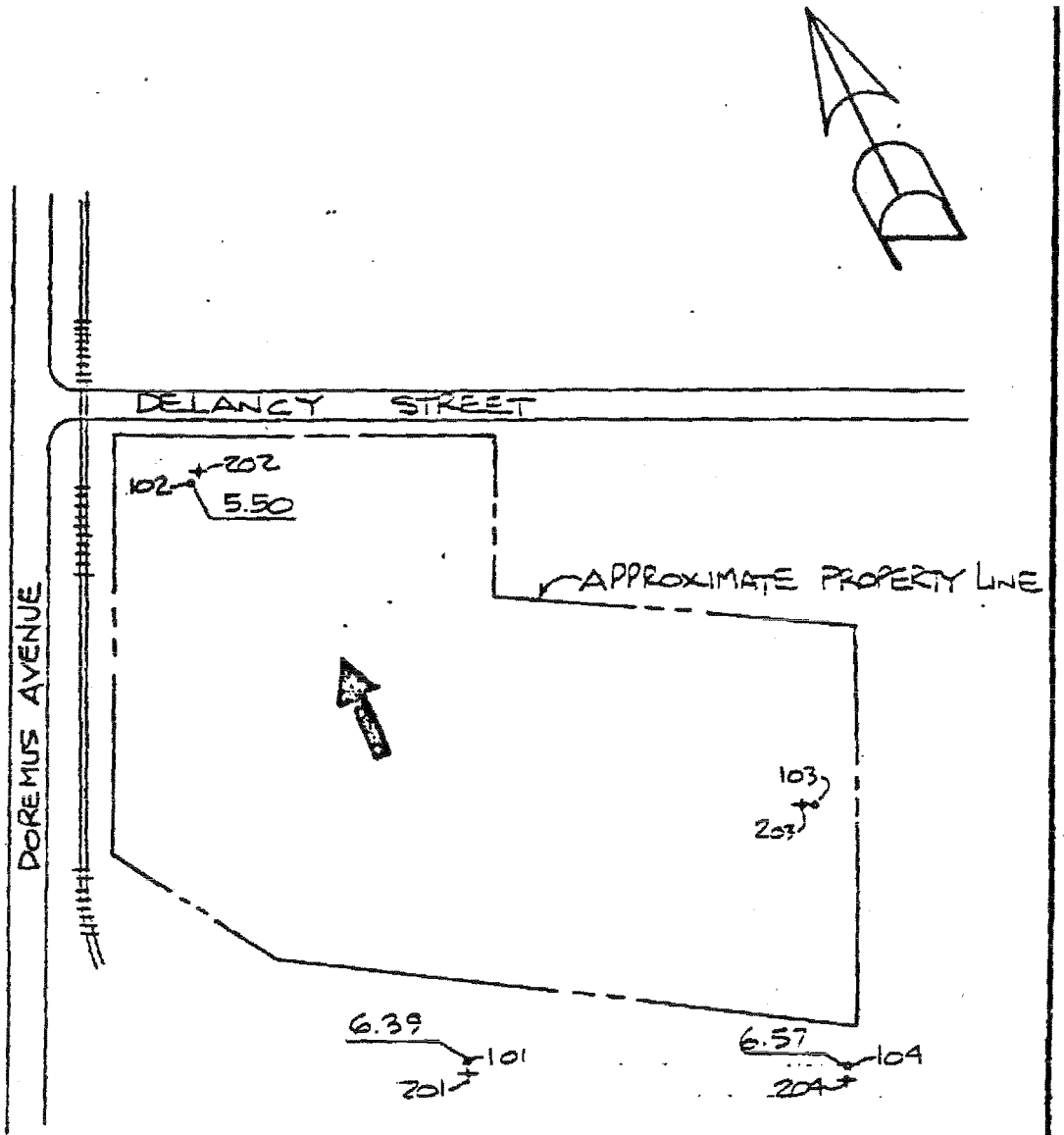
| DRAWING TITLE | DRAWING NO. | REV |
|---|---|---|
| WATER TABLE ELEVATION 5/31/94 | 4 | C |




## EXPLANATION

APPARENT DOWN GRADIENT DIRECTION

○ DENOTES WELL SCREENED IN WATER TABLE AQUIFER

+ DENOTES WELL SCREENED IN CONFINED AQUIFER

SCALE: 1"=200'-0"

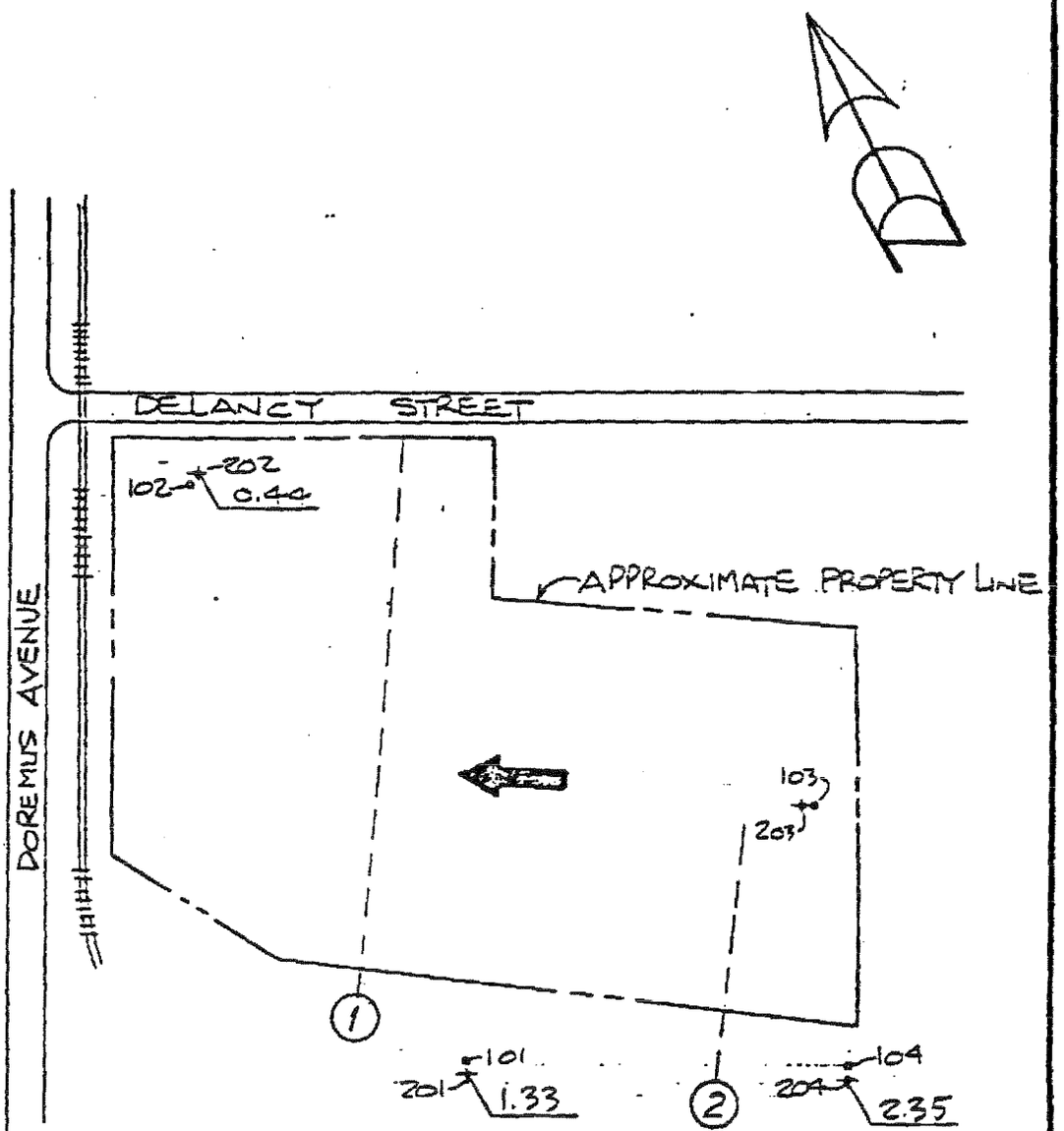
ENVIRONICS, INC.
ENVIRONMENTAL CONSULTANTS
46 JACKSON DRIVE CRANFORD, N.J. 07016

| DRAWING TITLE | DRAWING NO. | REV. |
|---|---|---|
| WATER TABLE ELEVATION 11/19/84 | 5 | 0 |

## 4 FLOW IN THE DEEP SYSTEM

The deep aquifer system at the site is a confined or semi-confined system. Such a system is saturated throughout, and hydrostatic pressure at the top of the aquifer is greater than atmospheric. Consequently, when tapped by a well, water will rise above the bottom of the confining layer, to a level which represents a point on an inaginary plane known as the "potentiometric surface". Flow direction is determined by the hydraulic gradient, which is equal to the slope of the potentiometric surface.

Contours on the potentiometric surface for the 3 sets of water elevation data are shown on figures 6, 7 and 8. Examination of these figures shows a virtually identical pattern on the three sets of measurements. In each case, the hydraulic gradient slopes in a direction slightly north of west, at a slope of 1 foot vertical to 400 feet horizontal, or 0.0025. Since there are no data avalaible on the thickness or permeability of the confined aquifer, it is not possible to estimate the rate of flow in that system. It may be stated with certainty, however, that there is flow in the direction indicated on the figures.




## EXPLANATION

DOWN GRADIENT DIRECTION

(1) CONTOUR ON POTENTIOMETRIC SURFACE

• DENOTES WELL SCREENED IN WATER TABLE AQUIFER

+ DENOTES WELL SCREENED IN CONFINED AQUIFER

SCALE: 1"=200'-0"

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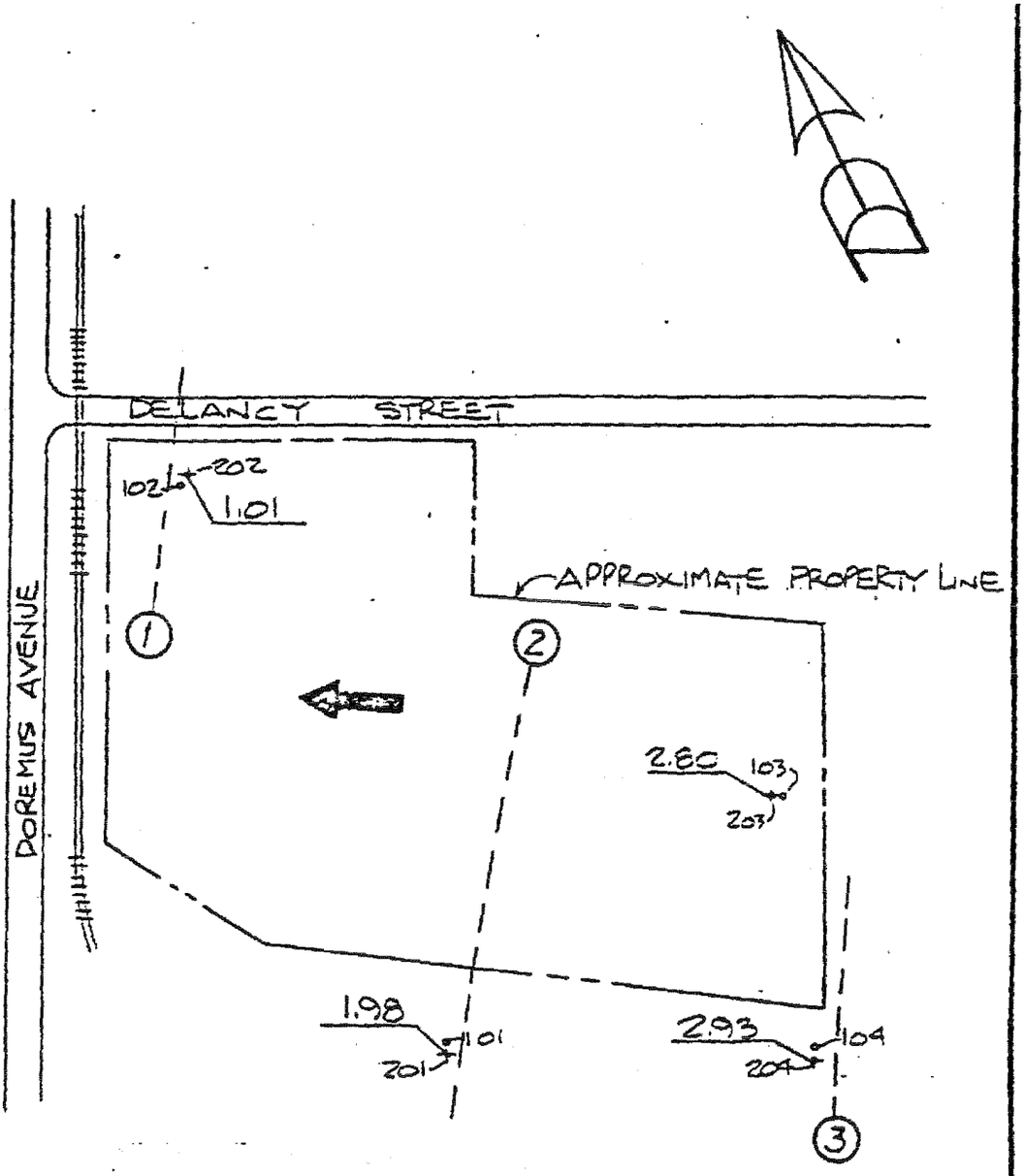
ENVIRONMENTAL CONSULTANTS
46 JACKSON DRIVE CRANFORD, N.J. 07016

| DRAWING TITLE | DRAWING NO. | REV. |
|---|---|---|
| POTENTIOMETRIC SURFACE 5/18/84 | 6 | 0 |




## EXPLANATION

⟵ DOWN GRADIENT DIRECTION

(1) CONTOUR ON POTENTIOMETRIC SURFACE

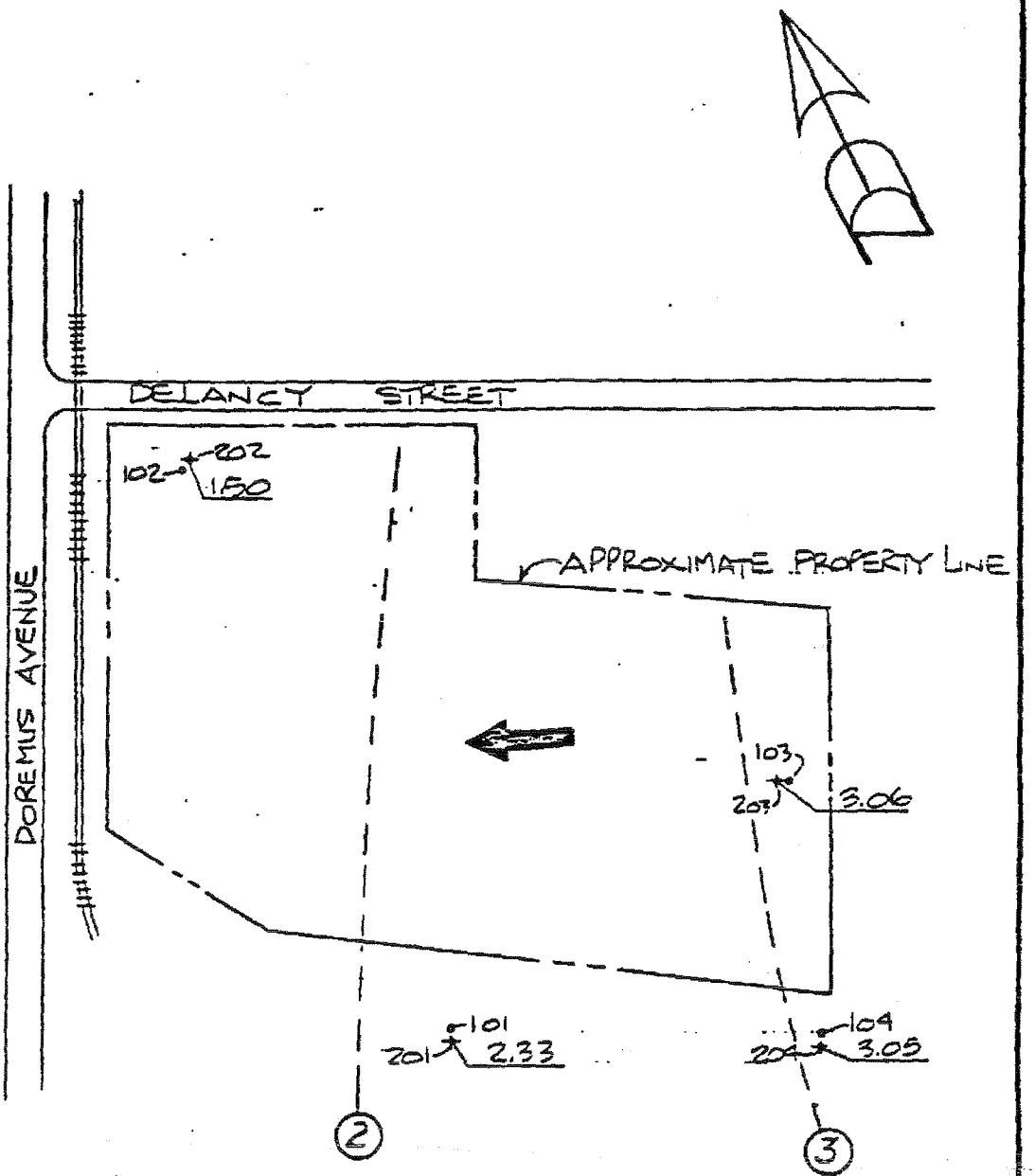
• DENOTES WELL SCREENED IN WATER TABLE AQUIFER

+ DENOTES WELL SCREENED IN CONFINED AQUIFER

SCALE: 1"=200'-0"

ENVIRONICS, INC.
ENVIRONMENTAL CONSULTANTS
46 JACKSON DRIVE CRANFORD, N.J. 07016

| DRAWING TITLE | DRAWING NO. | REV. |
|---|---|---|
| POTENTIOMETRIC SURFACE 5/31/84 | 7 | 0 |




## EXPLANATION

DOWN GRADIENT DIRECTION

(2) CONTOUR ON POTENTIOMETRIC SURFACE

• DENOTES WELL SCREENED IN WATER TABLE AQUIFER

+ DENOTES WELL SCREENED IN CONFINED AQUIFER

SCALE: 1"=200'-0"

| | | |
|---|---|---|
| ENVIRONICS, INC.<br>ENVIRONMENTAL CONSULTANTS<br>46 JACKSON DRIVE CRANFORD, N.J. 07016 | | |
| DRAWING TITLE<br>POTENTIOMETRIC SURFACE 11/19/84 | DRAWING NO.<br>8 | REV.<br>0 |

## 5. INTER-SYSTEM FLOW POTENTIAL

The discussion in Sections 3 and 4 has been confined to the horizontal componant of groundwater flow in each of the aquifer systems investigated. This Section will center on flow through the confining layer, in a vertical direction.

A nested pair of wells was installed at each drilling site. A nested pair of wells consists of two wells installed at the same location, screened either at different depths within one aquifer, or as in this case, in separate aquifers. The difference in water elevations in the wells of each pair indicates the vertical hydraulic gradient.

Since well 103 was destroyed, only 3 of the 4 pairs remain. However, in those pairs the data have been consistant for each measurement. These data are presented in table 2. In each case, the vertical hydraulic gradient has been downward at a magnitude between approximately 4 and 7 feet. The downward force of this elevation difference operates over the thickness of the confining layer, which as described in Section 2, varies between 8 and 14 feet. From these data, the downward gradient across the confining layer beneath the site may be calculated. This gradient varies between 0.21 and 0.875.

A reasonable estimate of the rate of downward flow through the confining layer may be calculated by using

TABLE 2

VERTICAL GRADIENT DATA

| WELL PAIR | DATE 5/13/84 | 5/31/84 | 11/19/84 |
|---|---|---|---|
| 101 | 6.19 | 7.30 | 6.39 |
| 201 | 1.33 (4.86) | 1.98 (5.32) | 2.33 (4.06) |
| 102 | 6.47 | 7.88 | 5.50 |
| 202 | 0.44 (6.03) | 1.01 (6.87) | 1.50 (4.00) |
| 103 | | DESTROYED | |
| 203 | - | - | - |
| 104 | 6.55 | 7.49 | 6.57 |
| 204 | 2.35 (4.20) | 2.93 (4.56) | 3.05 (3.52) |

Darcy's Law, and estimating the permeability of the confining layer. Darcy's Law states that groundwater flow is proportional to the permeability, the hydraulic gradient and the cross-sectional area. Based on the lithologic description of the silty clay encountered during the drilling operations, the permeability of the confining layer is estimated to vary between $10^{-6}$ and $10^{-8}$ centimeters per second. The cross-sectional area of the site is approximately 9 acres. Total flow through the confining layer, from the shallow aquifer to the deep aquifer, in units of gallons per day, is calculated therefore, to vary between lower and upper limits of approximately 20 and 7000 respectively.

## 6. SUMMARY AND CONCLUSIONS

Two aquifer systems were investigated at the Central Steel Drum site, a shallow water table system and a deeper confined system. The systems are separated by a silty clay confining unit, which varies in thickness between 8 and 14 feet over the 9 acre site.

Neither the water table or the confined aquifer has the potential for exploitation as a water source.

Virtually no horizontal flow could be detected in the water table system. Flow in the confined system, at an

undetermined rate, was found to be in a northwesterly direction.

Vertical flow across the confining layer is downward. The rate of downward flow across the entire site varies between limits of 20 and 7000 gallons per day.

DATE 5/18/84

# ENVIRONICS INC.
## WELL LOG

PROJECT CENTRAL STEEL DRUM
LOCATION 704 DOREMUS AVE., NEWARK
JOB # E916
GEOLOGIST JOHN BEE

DRILL HOLE # 203
DRILLING CONTRACTOR DIAMOND DRILLING
DRILLING METHOD 8" SOLID STEM AUGER w/CASING
TO CONFINING LAYER, CASED OFF, AUGERED INTO 2ND AQUIF

PERMIT # 26-6743 AGENCY NJDEP
COORDINATES N/S 74° 07' 23" E/W 40° 42' 30"

WELL CONSTRUCTION

| | | DIAMETER | LENGTH | MATERIAL | THREADED |
|---|---|---|---|---|---|
| BOREHOLE | NOMINAL | 8" | 28' | - | - |
| RISER PIPE | | 4" | +6 -22' | PVC | YES |
| CASING | | 8" | +6"-15' | SCH 40 STEEL | YES |
| SCREEN SLOT 30 | | 4" | 22'-27' | PVC | YES |

ELEVATION
TOC(MSL) GROUND ELEV
DEPTH TO WATER STATIC ELEV

QUALITY CONTROL

| ADDITIONS TO WELL | TYPE | SETTING DEPTH | QC SAMPLE |
|---|---|---|---|
| BENTONITE | GRANULAR | 19-20' | ✓ |
| GRAVEL PACK SIZE | MOIRE #1,2,3,4 | 20-28' | ✓ |
| CEMENT | SAYLOS TYPE 1 | TREMIED IN 19-0' | ✓ |

COMMENTS QC SAMPLE HELD LOCKED YES
CLEANING BETWEEN HOLES AUGER YES STEAM SPOON YES

| DEPTH FT. | SAMPLE # | PENETRATION RESISTANCE BLOWS/6" | IN. REC. | SOIL DESCRIPTION (DENSITY(OR CONSISTANCY)/ COLOR / SOIL TYPE-ACCESSORIES) | REMARKS (CHEMICAL COMP. / GEOLOGIC DATA / GROUND WATER) |
|---|---|---|---|---|---|
| | | | | 2" LAYER OF 1" DIAM. CRUSHED STONE | STATIC @ -1' BELOW GL, #103 |
| 0 | S1 | 9 9 10 | 20 | DARK GRAY TO BLACK, OIL SOAKED SANDY, SILTY, GRANULAR FILL | SOLVENT ODOR FROM 0-10' OIL SOAKED GROUNDWATER @ 10" |
| | S2 | 4 7 3 5 | 10 | | 4-2 |
| | S3 | 1 1 2 2 | 10 | | STATIC WATER @ 6.24' BELOW GL 5/31/84, 0916 |
| | S4 | 2 1 3 - | 12 | 8' | #203 |
| | S5 | 5 1 1 1 | 0 | DARK BROWN SILTY CLAY, WITH ROOTS, MOIST | TO SEAL OFF UPPER AQUIFER: WITH HOLE @ 10', DROVE CASING TO 15'. HOLE AUGERED TO 14', PUMPED OIL DEBRIS FROM CASED HOLE: HOLE DRY. TOOK SAMPLE S8 & S9. GOOD SEAL. |
| 10 | S6 | 2 2 2 2 | 15 | | |
| | S7 | 2 1 2 1 | 15 | | |
| | S8 | 1 2 1 2 | 20 | | CEMENT TREMIED IN 0-19' |
| | S9 | 1 2 1 2 | 20 | 3" THICK DARK BROWN ORGANIC TRANSITION ZONE @ 18'9" | BENTONITE SEAL EMPLACED 19'-20' |
| | S10 | 1 2 2 4 | 24 | 20' | NO SOLVENT ODOR @ 20' IN SOILS |
| 20 | S11 | 4 4 5 9 | 0 | 21'10" GRAY GREEN SILTY CLAY, MOIST | |
| | S12 | 9 4 4 5 | | RED BROWN SILTY MEDIUM SAND ALTERNATING WITH FINE SANDY CLAYEY SILT @ 25'8"-26', 27'6-28' | 4" DIAM, 30 SLOT SCREEN SET @ 22'-27'. MOIRE GRAVEL @ 20'-28' |
| | S13 | 4 6 4 5 | | | BOREHOLE COMPLETED @ 28'. |
| | S14 | 5 5 7 9 | | | |

GRAPHIC LOG U.S.C.S. #203

**REFERENCE #3**

MALCOLM PIRNIE

# POTENTIAL HAZARDOUS WASTE SITE
# PRELIMINARY ASSESSMENT

| Central Steel Drum | 53 |
|---|---|
| Site Name | Site ID Number |
| 704 Doremus Avenue | Newark, Essex Co., NJ |
| Address | City, State |

Date of Off-Site Reconnaissance March 5, 1985

## SITE DESCRIPTION

Central Steel Drum is a steel drum reconditioning company that receives used/empty 55 gallon drums from various sources for processing. The initial phase of this process involves incineration of drums to remove finishes. As a result of a series of NJDEP field investigations conducted in 1981-82, Central Steel Drum received a notice of prosecution for illegal disposition of hazardous chemical waste on the premises.
NJDEP personnel who visited the site in September 1983 and November 1984 observed that, although the site looked better, no significant progress has been made in clean-up operations. During off-site reconnaissance of March 5, 1985 numerous drums were observed to be stored haphazardly on-site.

Prepared by: Soterios Stavrou Date: March 5, 1985

Of: JRB Associates

EPA

**POTENTIAL HAZARDOUS WASTE SITE**
**PRELIMINARY ASSESSMENT**
**PART 1 - SITE INFORMATION AND ASSESSMENT**

I. IDENTIFICATION
01 STATE: NJ | 02 SITE NUMBER: 53

## II. SITE NAME AND LOCATION

| 01 SITE NAME (Legal, common, or descriptive name of site) | 02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER | | | | |
|---|---|---|---|---|---|
| Central Steel Drum Co. | 704 Doremus Avenue | | | | |
| 03 CITY | 04 STATE | 05 ZIP CODE | 06 COUNTY | 07 COUNTY CODE | 08 CONG. DIST. |
| Newark | NJ | 07105 | Essex | | |
| 09 COORDINATES LATITUDE: 40 42 30.0 | LONGITUDE: 74 07 30.0 | BLOCK: 5074 | LOT: 2 | | |

10 DIRECTIONS TO SITE (Starting from nearest public road): Route 199 to South Street. South Street East to Doremus Avenue.

## III. RESPONSIBLE PARTIES

| 01 OWNER (If known) | 02 STREET (Business, mailing, residential) | | | |
|---|---|---|---|---|
| Jeffrey Skyraton | 704 Doremus Avenue | | | |
| 03 CITY | 04 STATE | 05 ZIP CODE | 06 TELEPHONE NUMBER | |
| Newark | NJ | 07105 | (201)-3448500 | |
| 07 OPERATOR (If known and different from owner) | 08 STREET (Business, mailing, residential) | | | |
| Lance Gold (Plant Manager) | 704 Doremus Avenue | | | |
| 09 CITY | 10 STATE | 11 ZIP CODE | 12 TELEPHONE NUMBER | |
| Newark | NJ | 07105 | (201)-3448500 | |

13 TYPE OF OWNERSHIP (Check one)
☒ A. PRIVATE ☐ B. FEDERAL _____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER _____ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)
☒ A. RCRA 3001 DATE RECEIVED: 10/9/80 (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE (CERCLA 103c) DATE RECEIVED: _____ (MONTH DAY YEAR) ☐ C. NONE

## IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
☒ YES DATE 11/20/84 (MONTH DAY YEAR) ☐ NO

BY (Check all that apply)
☒ A. EPA ☒ B. EPA CONTRACTOR ☒ C. STATE ☐ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER _____ (Specify)

CONTRACTOR NAME(S): Ecology & Environment

| 02 SITE STATUS (Check one) | 03 YEARS OF OPERATION | |
|---|---|---|
| ☒ A. ACTIVE ☐ B. INACTIVE ☐ C. UNKNOWN | 1950 (BEGINNING YEAR) | pres (ENDING YEAR) ☐ UNKNOWN |

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
Substances present on site include heavy metals, petrohydrocarbons, purgeable organics, acid compounds, and base neutral organics. (Attachment A)

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
NJDEP inspections conducted at this site during 1980-83 revealed ground water, surface water, soil and air contamination at this facility.

## V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)
☒ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☐ C. LOW (Inspection on time available basis) ☐ D. NONE (No further action needed, complete current disposition form)

## VI. INFORMATION AVAILABLE FROM

| 01 CONTACT | 02 OF (Agency/Organization) | 03 TELEPHONE NUMBER | | |
|---|---|---|---|---|
| Fred Schmitt | NJDEP/BEERA | (609)-2921215 | | |
| 04 PERSON RESPONSIBLE FOR ASSESSMENT | 05 AGENCY | 06 ORGANIZATION | 07 TELEPHONE NUMBER | 08 DATE |
| Soterios Stavrou | | JRB Assoc. | (201)-5990100 | 3/5/85 (MONTH DAY YEAR) |

EPA FORM 2070-12 (7-81)

EPA

# POTENTIAL HAZARDOUS WASTE SITE
## PRELIMINARY ASSESSMENT
## PART 2 - WASTE INFORMATION

I. IDENTIFICATION
01 STATE: NJ | 02 SITE NUMBER: 53

## II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

**01 PHYSICAL STATES** (Check all that apply)
- [X] A. SOLID
- [ ] B. POWDER, FINES
- [X] C. SLUDGE
- [X] D. OTHER ash (Specify)
- [ ] E. SLURRY
- [X] F. LIQUID
- [ ] G. GAS

**02 WASTE QUANTITY AT SITE** (Measures of waste quantities must be independent)
- TONS
- CUBIC YARDS
- NO. OF DRUMS

**03 WASTE CHARACTERISTICS** (Check all that apply)
- [X] A. TOXIC
- [X] B. CORROSIVE
- [ ] C. RADIOACTIVE
- [ ] D. PERSISTENT
- [ ] E. SOLUBLE
- [ ] F. INFECTIOUS
- [X] G. FLAMMABLE
- [X] H. IGNITABLE
- [ ] I. HIGHLY VOLATILE
- [ ] J. EXPLOSIVE
- [ ] K. REACTIVE
- [ ] L. INCOMPATIBLE
- [ ] M. NOT APPLICABLE

## III. WASTE TYPE

| CATEGORY | SUBSTANCE NAME | 01 GROSS AMOUNT | 02 UNIT OF MEASURE | 03 COMMENTS |
|---|---|---|---|---|
| SLU | SLUDGE | | | |
| OLW | OILY WASTE | | | |
| SOL | SOLVENTS | unknown | | |
| PSO | PESTICIDES | | | |
| OCC | OTHER ORGANIC CHEMICALS | unknown | | |
| IOC | INORGANIC CHEMICALS | unknown | | |
| ACD | ACIDS | | | |
| BAS | BASES | | | |
| MES | HEAVY METALS | unknown | | |

## IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

| 01 CATEGORY | 02 SUBSTANCE NAME | 03 CAS NUMBER | 04 STORAGE/DISPOSAL METHOD | 05 CONCENTRATION | 06 MEASURE OF CONCENTRATION |
|---|---|---|---|---|---|
| IOC | Arsenic | 7440-38-2 | Drums | 3.84 | mg/kg |
| MES | Barium | 7440-39-3 | Drums | 279.0 | mg/kg |
| MES | Cadmium | 7740-43-9 | Drums | 82.0 | mg/kg |
| MES | Chromium | 7440-47-3 | Drums | 1162.0 | mg/kg |
| MES | Lead | 7439-92-1 | Drums | 14,350.0 | mg/kg |
| MES | Silver | 7440-22-4 | Drums | 9.47 | mg/kg |
| MES | Copper | 7440-50-8 | Drums | 1208.0 | mg/kg |
| MES | Nickel | 7440-02-0 | Drums | 132.0 | mg/kg |
| MES | Zinc | 7440-66-6 | Drums | 5682.0 | mg/kg |
| SOL | Toluene | 108-88-3 | Drums | 11 | ppm |
| SOL | Xylene | 1330-20-7 | Drums | 5.5 | ppm |
| SOL | Chloroform | 67-66-3 | Drums | 108 | ppm |
| SOL | Carbon tetrachloride | 56-23-5 | Drums | 12 | ppm |
| SOL | Trichloroethylene | 79-01-6 | Drums | 333 | ppm |
| SOL | Tetrachloroethylene | 127-18-4 | Drums | 1040 | ppm |
| OCC | Phenol | 108-95-2 | Drums | 0.6 | ppm |
| Attachments A, B | | | | | |
| | | | | | |

## V. FEEDSTOCKS (See Appendix for CAS Numbers)

| CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER | CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER |
|---|---|---|---|---|---|
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |
| FDS | | | FDS | | |

## VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

NJDEP/HSMA, DWM files: Attachments A, B

EPA

**POTENTIAL HAZARDOUS WASTE SITE**
**PRELIMINARY ASSESSMENT**
**PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS**

I. IDENTIFICATION
01 STATE: NJ | 02 SITE NUMBER: [illegible]

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION | 02 [ ] OBSERVED (DATE: ) | [X] POTENTIAL | [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: | 04 NARRATIVE DESCRIPTION
Due to drum spills, disposal of hazardous waste on an unprotected concrete slab and poor housekeeping practices, there is potential for ground water contamination. Depth to ground water approx. 30 in. (Att. B, C)

01 [X] B. SURFACE WATER CONTAMINATION | 02 [X] OBSERVED (DATE: 2/3/82) | [ ] POTENTIAL | [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED | 04 NARRATIVE DESCRIPTION
Contaminated runoff with an oily sheen flowing into a drainage ditch then into Newark Bay was observed. The banks of the ditch contained rusted drums and various colored sludges. (Attachments B, C, F)

01 [X] C. CONTAMINATION OF AIR | 02 [X] OBSERVED (DATE: 12/7/81) | [ ] POTENTIAL | [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED | 04 NARRATIVE DESCRIPTION
Large quantities of smoke and particulates were being emitted from incineration operations. An HNU photoionization analyzer indicated organic levels exceeding 2000 ppm. (Attachments B, D)

01 [X] D. FIRE/EXPLOSIVE CONDITIONS | 02 [ ] OBSERVED (DATE: ) | [X] POTENTIAL | [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED | 04 NARRATIVE DESCRIPTION
Potential may exist due to presence of flammable chemicals.

01 [ ] E. DIRECT CONTACT | 02 [ ] OBSERVED (DATE: ) | [ ] POTENTIAL | [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: | 04 NARRATIVE DESCRIPTION

01 [X] F. CONTAMINATION OF SOIL | 02 [X] OBSERVED (DATE: 2/3/82) | [ ] POTENTIAL | [ ] ALLEGED
03 AREA POTENTIALLY AFFECTED | 04 NARRATIVE DESCRIPTION
Soil contamination due across to poor handling and storage of drums was observed. Contents of some drums were observed to be leaking directly onto the ground. (Attachments B, C, F)

01 [ ] G. DRINKING WATER CONTAMINATION | 02 [ ] OBSERVED (DATE: ) | [ ] POTENTIAL | [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: | 04 NARRATIVE DESCRIPTION

01 [X] H. WORKER EXPOSURE/INJURY | 02 [ ] OBSERVED (DATE: ) | [X] POTENTIAL | [ ] ALLEGED
03 WORKERS POTENTIALLY AFFECTED: | 04 NARRATIVE DESCRIPTION
Potential for worker exposure or injury exists at the site due to spills and contaminated soil. On December 7, 1981 workers were observed incinerating drums without respiratory equipment. (Attachment B)

01 [ ] I. POPULATION EXPOSURE/INJURY | 02 [ ] OBSERVED (DATE: ) | [ ] POTENTIAL | [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: | 04 NARRATIVE DESCRIPTION

EPA

**POTENTIAL HAZARDOUS WASTE SITE**
**PRELIMINARY ASSESSMENT**
**PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS**

I. IDENTIFICATION
01 STATE: NJ | 02 SITE NUMBER: 53

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES (Spills/runoff/standing liquids/leaking drums) — 02 ☒ OBSERVED (DATE: 8/4/83) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION
Ash was stored on a concrete slab exposed to the elements. Numerous leaking drums and areas of spills were also observed. (Attachments B,C,D)

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☒ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Potential exists if heavy rains cause the overflow of spilled chemicals from Central Steel Drum's property into sewers or storm drains. (Attachments B,C,D)

01 ☒ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☒ OBSERVED (DATE: 8/4/83) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Due to the nature of the facility's operations, Central Drum was operating as a TSD facility without proper authorization. (Attachments B,C,D)

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED _____

IV COMMENTS

V SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)
NJDEP/HSMA, DWM files: Attachments A-H

QUAD Elizabeth

SITE 53 Central Steel Drum

LAT. 40°42'30" LONG 74°07'30"

Form CWR-1 (8/80)

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES

PERMIT NO. 26-4993

APPLICATION NO. _____

COUNTY _____

Addition

26-22-326

# WELL RECORD

45-65 Hoyt Place

1. OWNER Reliance Metals Corp ADDRESS Newark, N.J. 07105

Owner's Well No. _____ SURFACE ELEVATION _____ Feet (Please mean sea level)

2. LOCATION Lot 48 Blk-2395-A

3. DATE COMPLETED May 21, 1981 DRILLER Samuel Stathoff Co

4. DIAMETER: Top 8 Inches Bottom 8 Inches TOTAL DEPTH 400 Feet

5. CASING: Type Steel Diameter 8 Inches Length 90 Feet

6. SCREEN: Type _____ Slot or Opening _____ Diameter _____ Inches Length _____ Feet

Range in Depth { Top X Feet / Bottom _____ Feet Geologic Formation _____

Tail Pipe: Diameter _____ Inches Length _____ Feet

7. WELL FLOWS NATURALLY X Gallons per minute at _____ Feet above surface

Water rises to _____ Feet above surface

8. RECORD OF TEST: Date May 21, 1981 Yield 150 Gallons per minute (Approx)

Static water level before pumping 30 Feet below surface

Pumping level 200 feet below surface after 1 hours pumping

Drawdown 170 Feet Specific Capacity _____ Gals. per min. per ft. of drawdown

How pumped Air How measured Rough Gauge

Observed effect on nearby wells None

9. PERMANENT PUMPING EQUIPMENT:

Type Deming Sub Mfrs. Name Fig C721-15M15

Capacity 65-70 G.P.M. How Driven Elec H.P. 15 R.P.M. 3450

Depth of Pump in well 210 Feet Depth of Footpiece in well _____ Feet

Depth of Air Line in well 210 Feet Type of Meter on Pump _____ Size _____ Inches

10. USED FOR Factory Use AMOUNT { Average _____ Gallons Daily / Maximum _____ Gallons Daily

11. QUALITY OF WATER Good Sample: Yes ___ No ___

Taste Good Odor Swell Color _____ Temp. _____ °F.

12. LOG Clay, sand + Gravel 0-30' - Sand Stone - Slate 0-400' Are samples available? _____
(Show details on back of sheet or on separate sheet. If electric log is made, please furnish copy.)

13. SOURCE OF DATA Top of Well

14. DATA OBTAINED BY Dennis Neue Date May 22, 1981

NOTE: Use other side of this sheet for additional information such as log of materials encountered.

DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY & SUPPLY

Permit No. 26-2130
Application No. _____
County _____

# WELL RECORD

[illegible] Co. ADDRESS 12 LISTER AVE.

Owner's Well No. [illegible] SURFACE ELEVATION _____ Feet (Above mean sea level)

LOCATION NEWARK, N.J.

DATE COMPLETED 2/3/60 DRILLER GARDEN STATE WELL & PUMP CO.

DIAMETER: top 10 inches Bottom 8 inches TOTAL DEPTH 500 Feet

CASING: Type STEEL PIPE Diameter 10 inches Length 144 Feet

SCREEN: Type — Size of Opening ___ Diameter _____ inches Length _____ Feet

Range in Depth { Top _____ Feet / Bottom _____ Feet } Geologic Formation Trb

Tail piece: Diameter — inches Length _____ Feet

7. WELL FLOWS NATURALLY No Gallons per Minute at _____ Feet above surface

Water rises to NC Feet above surface

8. RECORD OF TEST: Date 2/3/60 Yield [illegible] Gallons per minute

Static water level before pumping 91 Feet below surface

Pumping level 122 feet below surface after 8 hours pumping

Drawdown 31 Feet Specific Capacity 4.8 Gals. per min. per ft. of drawdown

How Pumped DEEP WELL TURBINE How measured [illegible] DROP LINE

Observed effect on nearby wells None Made

9. PERMANENT PUMPING EQUIPMENT:

Type SUBM. TURBINE Mfrs. Name LANCASTER PUMP CO.

Capacity [illegible] TON G.P.M. How Driven [illegible] H.P. [illegible] R.P.M. 3500

Depth of Pump in well 200 Feet Depth of Footpiece in well [illegible] Feet

Depth of Air Line in well [illegible] Feet Type of Meter on Pump _____ Size ___ Inches

10. USED FOR INDUSTRIAL COOLING AMOUNT { Average _____ Gallons Daily / Maximum _____ Gallons Daily }

11. QUALITY OF WATER FAIR Sample: Yes ___ No. ___

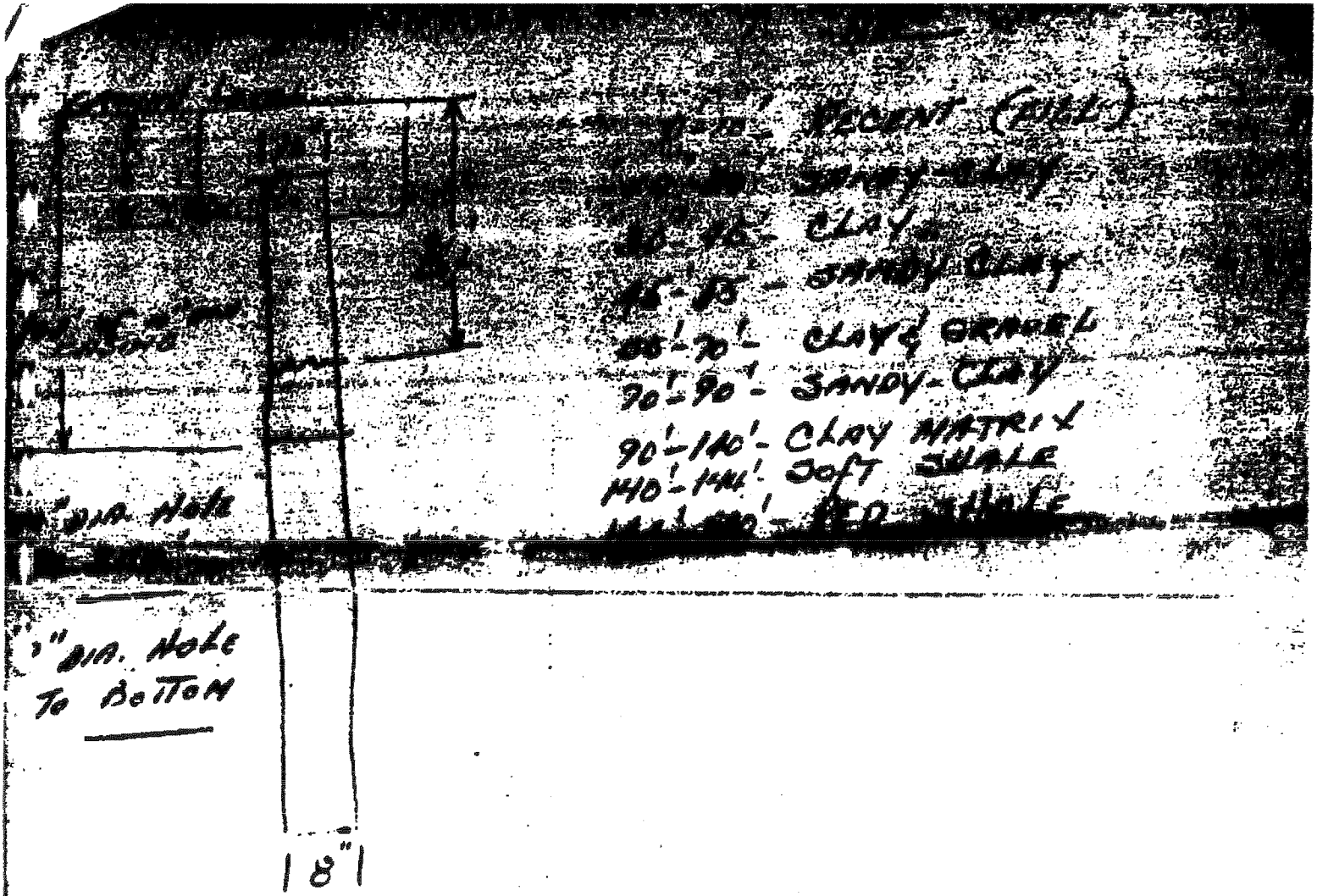
Taste BRACKISH Odor NONE Color CLEAR Temp. 55 °F

12. LOG OVER Are samples available? _____
(Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy)

13. SOURCE OF DATA BAILER

14. DATA OBTAINED BY DRILLER Date 3/8/60

(Use other side of this sheet for additional information such as log of materials penetrated, [illegible] special casing arrangements etc.)


RECENT (FILL)
CLAY
SANDY-CLAY
CLAY & GRAVEL
SANDY-CLAY
CLAY MATRIX
SOFT SHALE
HARD SHALE
" DIA. HOLE
" DIA. HOLE
TO BOTTOM
18"

36-22-358

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Permit No. 26-490
Application No. _____
County _____

# WELL RECORD

1. [redacted] Address 39 Anthon St., Worcester MJ
   Owner's Well No. _____ Surface Elevation _____ Feet (Above mean sea level)
2. Location Lot 17,19,21, Bl. 1092, Essex Cty.
3. Date Completed 11/28/80 Driller Somerville Well Drilling Co.,Inc.
4. Diameter: top 12 inches Bottom 8 inches Total Depth 300 Feet
5. Casing: Type Steel Diameter 8 inches Length 102 Feet
6. Screen: Type _____ Size of Opening _____ Diameter _____ inches Length _____ Feet
   Range in Depth { Top _____ Feet / Bottom _____ Feet  Geologic Formation _____
   Tail Pipe: Diameter _____ inches Length _____ Feet
7. Well flows naturally _____ Gallons per minute at _____ Feet above surface
   Water rises to _____ Feet above surface
8. Record of Test: Date 11/28/80 Yield 120 Gallons per minute
   Static water level before pumping 25' Feet below surface
   Pumping level 240' Feet below surface after 5 Hours pumping
   Drawdown 215 Feet Specific Capacity _____ Gals. per min. per ft. of drawdown
   How Pumped air How measured weir
   Observed effect on nearby wells None
9. Permanent Pumping Equipment:
   Type _____ Mfrs. Name _____
   Capacity _____ G.P.M. How Driven _____ H.P. _____ R.P.M. _____
   Depth of Pump in well _____ Feet Depth of Footpiece in well _____ Ft
   Depth of Air Line in well _____ Feet Type of Meter on Pump _____ Size _____ Inc
10. Used for Industrial Amount { Average _____ Gallons Da / Maximum _____ Gallons Da
11. Quality of Water good Sample: Yes _____ No. _____
    Taste None Odor None Color None Temp. _____
12. Log shale Are samples available? _____
    (Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy)
13. Source of Data Somerville Well Drilling Co.,Inc.
14. Data obtained by Same as above. Date 1/7/81

... additional information such as log of materials pene...

Form 87-10a (4)

0005-B
02-8511-15/NJV7

DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY & SUPPLY

Permit No. 26-1420
Application No. _____
County _____

# WELL RECORD

Pls. make copy.

1. OWNER Rutherford & Delaney Holding Corp. ADDRESS 62-106 Delaney St.
   Owner's Well No. ONE SURFACE ELEVATION _____ Feet (Above mean sea level)
2. LOCATION Newark, N.J.
3. DATE COMPLETED July 31, 1956 DRILLER Garden State Well & Pump Co.
4. DIAMETER: top 8 inches Bottom 6 inches TOTAL DEPTH 220 Feet
5. CASING: Type STL D.Pipe Diameter 8 inches Length 42 Feet
6. SCREEN: Type — Size of Opening — Diameter — inches Length — Feet
   Range { Top _____ Feet Geologic formation [illegible]
   Bottom _____ Feet
   Tail piece, Diameter _____ inches Length _____ Feet
7. WELL FLOWS NATURALLY — Gallons per Minute at — Feet above surface
   Water rises to — Feet above surface
8. RECORD OF TEST: Date 7-20-56 Yield 100 Gallons per minute
   Static water level before pumping [illegible] Feet below surface
   Pumping level 95 feet below surface after [illegible] hours pumping
   Drawdown 73 Feet Specific Capacity 1.3 Gals. per min. per ft. of drawdown
   How Pumped Elec. Turbine Pump How measured [illegible] Line
   Observed effect on nearby wells None [illegible]
9. PERMANENT PUMPING EQUIPMENT:
   Type Sub-Turbine Mfrs. Name [illegible]
   Capacity 125 G.P.M. How Driven Elec. Mtr. [illegible] G.P.M. 3437
   Depth of Pump in well 120 Feet Depth of Footpiece [illegible] 160 Feet
   Depth of Air Line in well No Feet Depth of Meter on Pump [illegible]
10. USED FOR Industrial Cooling AMOUNT Average _____ Gallons Daily
    Maximum _____ Gallons Daily
11. QUALITY OF WATER Hard Sample: Yes _____ No. ✓
    Taste Brackish Odor None Color Clear Temp. 54 °F
12. LOG 42 of Fill-Clay-Sand-Clay-Then Shale Are samples available No
    (Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy)
13. SOURCE OF DATA Cuttings Removed by Bailer
14. DATA OBTAINED BY Driller Date Aug. 10, 1956

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated [illegible] of the water, sketch map, sketch of special casing arrangements etc.)

252

S. & W. Waste, Inc.
115 JACOBUS AVENUE
SOUTH KEARNY, N.J. 07032
Tel: 344-4004

#53

MEMO TO: Bob Chitren
FROM: George Apostol
SUBJECT: CENTRAL STEEL
DATE: May 4, 1983

---

Gentlemen:

Herewith the results of the analysis of a sample received from Central Steel on 4/17/83.

Sample ID#KG080A

| Heavy Metals | Total mg/kg | EP Toxic Leachate mg/L |
|---|---|---|
| Arsenic | 3.84 | 0.0017 |
| Barium | 279 | 1.55 |
| Cadmium | 82 | 0.09 |
| Chromium | 1,162 | 0.522 |
| Lead | 14,350 | 6.86 ✓ |
| Mercury | - - | <0.002 N.D. |
| Selenium | <0.002 N.D. | <0.002 N.D. |
| Silver | 9.47 | 0.015 |
| Copper | 1,208 | 13.7 |
| Nickel | 132 | 0.23 |
| Zinc | 5,682 | 63 |
| Mo | 52 | - - |

Petroleum Hydrocarbons: 4.23%

Oil & Grease: 13.04%

PCB's: <4.8 mg/kg N.D.

GA:dd

Attachment A

Townley
CHEMISTRY · MICROBIOLOGY
RELATED SCIENCES

RESEARCH AND CONSULTING, INC.

591 SOMERSET STREET, NORTH PLAINFIELD, N. J. 07060 • (201) 757-1137

May 4, 1983

S & W Waste, Inc.
115 Jacobus Ave.
South Kearney, NJ 07032

Gentlemen:

Herewith our findings for the analysis of one sample of solid waste which we picked up on April 21, 1983:

TRC Sample: 8896
Source: KG080-A

| | |
|---|---|
| **Individual Petrohydrocarbons, ppm.** | |
| Varsol 18 | 3.7 |
| **Purgeable Organics** | |
| Toluene, ppm. | 11 |
| Xylene, ppm. | 5.5 |
| Methylene Chloride, % | 0.4 |
| Chloroform, ppm. | 108 |
| Carbon Tetrachloride, ppm. | 12 |
| Trichloroethylene, ppm. | 333 |
| Tetrachloroethylene, ppm. | 1040 |
| **Acid Extractable Compounds (phenols)** | |
| Phenol, ppm. | 0.6 |
| 4-nitro phenol, ppm. | 0.1 |
| **Base/Neutral Extractable Organics, ppm.** | Less than 4.7, none detected (detection limit represents sum total of detection limits for all 46 base-neutral priority pollutants. For each compound, the average detection limit is approximately 0.1 ppm.) |

Very truly yours,

Gary J. Gilbert

A-2

Central Steel Drum Co.
704 Doremus Avenue
Newark, N.J. 07105
EPA I.D. # NJD011482577

December 7, 1981

Objective:

On December 7, 1981 Angela Morales (Source Monitoring Section), John Witkowski (Emergency Response Section), Hank Wheat and Mike Skirka (Technical Assistance Team) were asked to perform a joint inspection at Central Steel Drum located at 704 Doremus Avenue, Newark, N.J. 07105. This site was referred to us by enforcement to determine possible RCRA, CERCLA, NPDES and FWPCA violations.

History of site

Central Steel Drum (CSD) is a steel drum reconditioning company which accepts "empty drums" for processing. Prior to the inception of this company, the facility was used by an ink pigment manufacturer.

C.S.D. Company processes approximately 3,000 thirty and fifty-five gallon "empty drums" per day, but receives daily shipments of varying quantities of these drums. Not all shipments are processed the same day since certain grades of drums are are in higher demand than others. Approximately 30% of incoming drums formerly contained material from the paint industry, 30-40% contained materials from the food industry and the remaining 30-40% contain varying miscellaneous residues such as adhesives, inks and sandy material.

Operating Process at Facility

C.S.D. Co. refinishes "empty drums" by putting them through a process line, part of which involves incineration, cleaning and painting.

C.S.D. Co. claims to operate a "dry process", where water is not a waste product but is recycled. The water in this operation is used for cooling purposes associated with the incinerator.

At the beginning of the refinishing process, drums are turned upside down on a conveyor line and moved through the drum incinerator where the residue inside the drum is burned at 2,000° F. During the process, a sludge is generated and accumulated by a scraper belt into an open bin. Any sludge not removed by the scrapers is removed by hand and stored in open drums. The bin and any drums containing this sludge are then taken to the sludge incinerator that exposes the sludge to a temperature range of 2,000°-2,600° F for 8 hours (official stated C.S.D. Co. was having problems with the incinerator). The resultant ash is then scraped out by hand from the incinerator and accumulated in a pile 10-15 feet away. This pile is reportedly placed on a concrete slab with no containment or protection from wind or rain erosion. The pile is approximately 4-5 feet high and 15 feet in diameter.

Attachment B

C.S.D. Co. has their waste ash transported by Jonas Waste Removal located at Barkridge Road, Sewell, N.J. 08080 and it is disposed of at Geological Reclamation Operations and Waste Systems, Inc.(GROWS Inc.) located at Bordentown NewFord Mill Road in Morrisville, PA. 19067.

FINDINGS: Based upon information provided by company officials and a review of existing records.

Manifest System:

C.S.D. Co had an insufficient manifest system. The TSD facility certification form was not found along with the generator form. Parts of the manifest were not completely filled out(ie. DOT waste description was missing). In addition, manifests for shipments prior to January 1981 were not available on request. There were a total of 11 manifest ~~out~~ of a possible 17 shipments.

Inspection Schedule:

~~No~~ written inspection plan ~~was~~ available upon request. No one is assigned the responsibility of checking the waste for signs of disturbance.

Personnel Training:

~~No~~ documents indicating job descriptions, actual training or future training to be given to personnel were available upon request.

Contingency Plan:

~~No~~ contingency plan was available. The emergency coordinator is the supervisor in the vicinity of the emergency.

Operating Record:

~~No~~ operating records were available upon request. Information on the location waste analysis, and operating summary reports of the waste ash were not available.

Closure and Post-Closure Plan:

No plans were available on request.

Waste Analysis Plan:

CSD did not have their own waste analysis plan but, Mr. Adamson, the plant manager, showed us two waste analysis performed by GROWS Inc. on the ash pile CSD manifests as non-hazardous. (See Appendix C for a recent EP Toxicity waste analysis performed on the waste ash.)

Visual Inspection of Facility

Mr. Adamson conducted a tour of the facility operations. All members of the inspection team were present with the exception of Mike Skirka who stayed behind with the equipment that was brought to the facility.

En route to the incinerating portion of the facility we were conducted past machinery that was throwing particules into the air and obstructing our vision. In addition, "empty drums" were blocking the way and were immediately removed by Mr. Adamson. Also, the corridors were filled with sludge and particulate matter. Upon arriving at the incinerator, we found approximately three men, without respiratory protection, loading drums with Sherwin-Williams labels onto a conveyor belt leading into the incinerator. At this point fumes were coming from the incinerator and Ms. Morales informed Mr. Adamson that she could not stay at this point of the process for too long a period of time. As the drums with Sherwin-Williams labels entered the incinerator, a plume of grey smoke and combustion by-product was emitted from the incinerator. At this point Hank Wheat, who was operating an HNU photoionization analyzer (organic vapor detector) indicated to us that the meter had been fluctuating and was now reading off scale(over 2,000°ppm). Standard operating procedure required that we wear Self-Contained Breathing Apparatus(SCBA) protection so we immediately left the incineration area. While leaving the area, another darker plume and an acidic mist surrounded us. The incinerator operation came to a halt for lunch break and the plume and mists dispersed.

Mr. Adamson then took us to the sludge burning incinerator and showed us how the scraper system worked. He stated that the company was having problems with the sludge incinerator and that it was presently burning sludge at a temperature range of 2,000°-2,600°F for 8 hours. The resultant ash is scraped out of the incinerator by hand and is accumulated on what appeared to be bare ground 15 feet away. The pile is offered no protection from the elements. The pile is reportedly transported from the facility every ten days in a 20 cubic yard container.

At this point it was noted by Ms. Morales and Mr. Wheat, that there were random open drums filled with sludge matter and also drums with more than an inch of an adhesive or resin material inside. Some drums were found laying on the ground in disarray with resinous material spilling from it.

The inspection team then started back to the office and, en route, noted what appeared to be a ditch on the southeastern part of the facility. When asked what it was, Mr. Adamson stated that it was a small creek and that he would provide us with the name when we returned to the office. The area around the ditch appeared to be disturbed and the ditch had a green color with an oily sheen to it. Upon arriving at the office, Mr. Adamson asked Mr. Fischer(the company Secretary who signed the notification form) the name of the creek and no one seemed to know.

This concluded the inspection.

DISCUSSION

CSD recycles "empty drums" and in the process a sludge is generated. This sludge is then burned in a sludge burning incinerator which turns the sludge into an ash. CSD does not perform waste analysis on their waste since they believe it to be non-hazardous after it is burned. A waste analysis was performed by GROWS Inc.'s outside independent laboratory, Ages Laboratory located in Potstown, PA. GROWS Inc. has a Retesting Policy that requires that a sample of waste be tested every year to insure that the waste they receive is the same as the initial shipment. The initial sample in this case was tested on July 8, 1980 and the retested sample was tested on July 16, 1981(Please note the date of letter in Appendix C.) The analysis performed on the waste ash sample include a test for EP Toxicity which showed the sample to be EP Toxic for lead. CSD is in violation for not manifesting their waste as hazardous and for not providing their own Waste Analysis Plan.

In a letter to Julio Morales-Sanchez, Director of Enforcement,(See Appendix A) CSD stated it did not file for a Part A permit since they do not take in materials for treatment nor do they store for more than 90 days. There seems to be confusion on their part since these elements are not the only criteria for falling within the jurisdiction of a TSD facility. This puts them in violation for treating hazardous waste without a TSD permit. It appears from the letter that CSD may have been in the computer system as having submitted a Part A application but, then deleted as a result of their letter to EPA.

There have been additional violation such as lack of Records Inspection, Facility Inspection and Contingency Plan. Also their waste pile and incinerator do not meet RCRA specifications.

RECOMMENDATIONS:

Enforcement action be taken.

Suggest that a sampling inspection be performed at the facility by both the Air and Water Sections of EPA for possible contamination of air, soil, groundwater and nearby creek.

Suggest that the Local Health Department be notified concerning health violations. OSHA was called and arrived at the facility on December 8th, 1981. They cited CSD for not having an adequate cover on one of their pulleys.

CSD has called in Environmental Consulting Testing located in Cherry Hill, N.J. to perform an environmental audit on the facility. It is recommended that EPA obtain their report on the site which should be ready in approximately two weeks.

Notify DEP of CSD's operations and possible violations.

# DIRECTORY TO APPENDIX

APPENDIX A: INITIAL SITE INFORMATION

APPENDIX B: SITE LOCATION AND DESCRIPTION

APPENDIX C: WASTE ANALYSIS REPORT

APPENDIX D: LIST OF COMPANIES AND CONTACTS

# APPENDIX A: INITIAL SITE INFORMATION

November 9, 1981

(7)

Central Steel Drum Recyclers
Dorneus Avenue, Newark, New Jersey

Fred N. Pubel, Chief
Emergency Response & Hazardous Materials Inspection Branch

Julio Morales-Sanchez Director
Enforcement Division

THRU: Barbara Metzger, Director
Environmental Services Division

Attached is a report concerning a facility which may have serious violations of RCRA regulations. I intend to follow up in order to document actual violations. If you wish to assign an attorney to coordinate the effort, I will work through any designee. It would be appreciated if John Witkowski were contacted in this regard (FTS 340-6657). We otherwise will pursue the matter with individual program elements.

In any event, please advise us as to any previous enforcement activities at this site.

Attachment

cc: Ken Stoller
bcc: John Witkowski

2-ES-ERHIB:FPubel:sm:Bldg.209:6657

ES-ERHIB
Pubel Metzger

B-7

ecology and environment, inc.
300 McGAW DRIVE, RARITAN CENTER, 2ND FLOOR, EDISON, NEW JERSEY 08837, TEL. 201-225-9659
International Specialists in the Environmental Sciences

MEMORANDUM

TO: Fred N. Rubel, Chief - Hazard Response Branch, U.S. EPA

FROM: Danny L. Barney, TATL II

SUBJECT: Central Steel Drum Recyclers, Doremus Avenue, Newark, New Jersey

DATE: 18 September 1981

During the EPA/TAT response to a burning rail tank car of ethylene oxide in Newark, New Jersey on 28 July 1981, TAT member Dave Marlowe and I were asked by the Newark Fire Department (NFD) to conduct air monitoring at the nearby Circle Air Freight facility. Although the freight facility was upwind of te burning car, we conducted the test and did note above background readings with the HNU. We were then escorted by NFD 2nd Battalion Chief Nolan to the nearby Central Steel Drum Recyclers on Doremus Avenue.

The recycling facility was closed for the night, with (reportedly) only a night watchman present. The night watchman gave verbal permission for Marlowe and I to survey the facility, which consists of an incinerator, drum painting buildings, and open drum storage. The facility was extremely disreputable and housekeeping non-existant. HNU readings were 20 to 30 ppm in open areas and 50 to 100 at the entrance of the drum painting area. The site, which covers 5 to 10 acres is virtually covered with pools of oil and various chemicals. The area is all filled marsh and is not covered by concrete or asphalt. Along the back of the site, oil and chemicals were observed flowing into adjacent ditches and wetlands. The number of drums on the site is unknown, however, I would estimate the number to be in the tens of thousands, many of which are leaking.

The incinerator was decrepit and had no scrubber system. Material cleaned from the drums was being burned inside the incinerator.

Partially through the inspection, the night watchman paged Marlowe and I on a P.A. system, and asked us to report to the office. We were then told we had to leave immediately. The watchman at this point was very upset and gave every indication of being extremely frightened. At that time we departed the site.

There is very strong visual evidence to suggest flagrent violations of NPDES, RCRA, FWPCA, and CERCLA. Due to the nature of the site and the magnitude of the problem, I recommend that a joint inspection be made by EPA, NJDEP, and local and State health officials. I also strongly recommend that EPA attorneys become involved in the case prior to any inspection, and that they provide the inspectors with any available information concerning ownership of the site, previous violation history, and current site status.

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DLB:ls

LAWRENCE W. BIERLEIN, P.C.
LAW OFFICES
910 SEVENTEENTH STREET, N. W.
WASHINGTON, D.C. 20006

(202) 659-9475

August 4, 1980

To: Members, National Barrel & Drum Association

Re: Notification to EPA of Hazardous Waste Activity

Every member of the drum reconditioning industry should attach this memo to their notification to EPA of involvement in hazardous waste activity.

EPA unofficially has advised this industry that an "empty" container, that formerly contained a material that would fall within the classification of hazardous waste, is not itself a hazardous waste unless the material is one of those listed in new Section 261.33(e).

EPA has refused to publish a formal acknowledgement of this position in the Federal Register, with any explanation of the term "empty," before the mandatory notification date of August 18.

Prudent business practice, therefore, compels every handler of "empty" packaging to give notice by August 18, 1980, of direct involvement in the generation, transportation, storage, treatment and disposal of every conceivable material that might be handled. EPA's failure to provide essential clarification in a timely manner forces this approach, even though many who give notice may not in fact be so engaged in waste handling. Where the regulations and the agency leave only doubt, commercial survival demands notification.

Sincerely,

Lawrence W. Bierlein
General Counsel

B-9

NEW YORK PHONE
(212) 267-3248

704 DOREMUS AVENUE
NEWARK, N. J. 07105

NJD011482577 (10)

# CENTRAL STEEL DRUM COMPANY

"Reconditioned and Relined Drums"

OK

March 12, 1981

done 3/18 af

Mr. Julio Morales-Sanchez, Director
Enforcement Division
U.S. Environmental Protection Agency
Region II
26 Federal Plaza
New York, New York 10278

Dear Mr. Morales-Sanchez:

We are generators of over 1000 kilos of waste per month which we hold for less than (90) days. We dispose of this waste through the manifest system at an approved site in the State of Penna.

We do not take in waste for treatment, nor do we storage waste for more than (90) days this is the reason we did not file for a Part A Permit.

Very truly yours,

CENTRAL STEEL DRUM

Alan I. Fischer,
Secretary

AIF:pg

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(11)

EPA

ACKNOWLEDGEMENT OF NOTIFICATION
OF HAZARDOUS WASTE ACTIVITY
*(VERIFICATION)*

This is to acknowledge that you have filed a Notification of Hazardous Waste Activity for the installation located at the address shown in the box below to comply with Section 3010 of the Resource Conservation and Recovery Act *(RCRA)*. Your EPA Identification Number for that installation appears in the box below. The EPA Identification Number must be included on all shipping manifests for transporting hazardous wastes; on all Annual Reports that generators of hazardous waste, and owners and operators of hazardous waste treatment, storage and disposal facilities must file with EPA; on all applications for a Federal Hazardous Waste Permit; and other hazardous waste management reports and documents required under Subtitle C of RCRA.

EPA I.D. NUMBER ➤ NJD011482577

CENTRAL STEEL DRUM COMPANY
704 DORMUS AVE
NEWARK NJ 07105

INSTALLATION ADDRESS ➤ 704 DORMUS
NEWARK NJ 07105

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EPA Form 8700-12R (4-80) 10/02/80

COPY FOR. ANGELA MORA
(12)

# RCRA GENERATOR INSPECTION FORM

COMPANY NAME: Central Steel Drum Co.

EPA I.D. NUMBER: NJD011482577

COMPANY ADDRESS: 704 Doremus Ave.
Newark, N.J. 07105

COMPANY CONTACT OR OFFICIAL: Paul Adamson

INSPECTOR'S NAME: Angela Morales

TITLE: Plant Manager.
(201) 344-8500

BRANCH/ORGANIZATION: Environment Services Dept

CHECK IF FACILITY IS ALSO A TSD FACILITY [X]

DATE OF INSPECTION: 12/7/81

| | YES | NO |
|---|---|---|
| (1) Is there reason to believe that the facility has hazardous waste on site? (yes) | X | |

a. If yes, what leads you to believe it is hazardous waste? Check appropriate box:

- [X] Company admits that its waste is hazardous during the inspection.
- [X] Company admitted the waste is hazardous in its RCRA notification and/or Part A Permit Application.
- [ ] The waste material is listed in the regulations as a hazardous waste from a nonspecific source (§261.31)
- [ ] The waste material is listed in the regulations as a hazardous waste from a specific source (§261.32)
- [ ] The material or product is listed in the regulations as a discarded commercial chemical product (§261.33)
- [X] EPA testing has shown characteristics of ignitability, corrosivity, reactivity or extraction procedure toxicity, or has revealed hazardous constituents (please attach analysis report) Appendix C in Report.
- [ ] Company is unsure but there is reason to believe that waste materials are hazardous. (Explain)

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| | YES | NO |
|---|---|---|
| b. Is there reason to believe that there are hazardous wastes on-site which the company claims are merely products or raw materials? | | Y |
| ~~Please explain.~~ | | |
| c. ~~Identify~~ the hazardous wastes that are on-site, and estimate approximate quantities of each. Paint Residue - Adhesives Ink | | |
| d. Describe the activities that result in the generation of hazardous waste. Residue clinging to the inside of drums is burnt deburned with air which is produced. | | |
| (2) Is hazardous waste stored on site? | ✓ | |
| a. What is the longest period that it has been accumulated? Indefinitely. | | |
| b. Is the date when drums were placed in storage marked on each drum? Drums are not dated or marked. | | ✓ |
| (3) Has hazardous waste been shipped from this facility since November 19, 1980? | | |
| a. If "yes," approximately how many shipments were made? | | |
| (4) Approximately how many hazardous waste shipments off site have been made since November 19, 1980? Approx 17 shipments - | | |
| a. Does it appear from the available information that there is a manifest copy available for each hazardous waste shipment that has been made? | ½ | ✓ |
| b. ~~If "no" or "don't know,"~~ please elaborate. | | |

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| | YES | NO |
|---|---|---|
| * c. Does each manifest (or a representative sample) have the following information? | | |
| — a manifest document number | ✓ | |
| — the generator's name, mailing address, telephone number, and EPA identification number | ✓ | |
| — the name, and EPA identification number of each transporter | ✓ | |
| — the name, address and EPA identification number of the designated facility and an alternate facility, if any: | ✓ | |
| — a description of the wastes (DOT) | | ✓ |
| — the total quantity of each hazardous waste by units of weight or volume, and the type and number of containers as loaded into or onto the transport vehicle | ✓ | |
| — a certification that the materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation under regulations of the Department of Transportation and the EPA | ✓ | |

Note WASTE IS MANIFESTED AS NON-HAZARDOUS.

| | | |
|---|---|---|
| (5) Were there any hazardous wastes stored on site at the time of the inspection? | ✓ | |
| a. If "yes," do they appear properly packaged (if in containers) or, if in tanks, are the tanks secure? | | ✓ |
| b. If not properly packaged or in secure tanks, please explain. WASTE ASH PILE | | |
| c. Are containers clearly marked and labelled? NO CONTAINERS | | ✓ |
| d. Do any containers appear to be leaking? | | ✓ |
| e. If "yes," approximately how many? | | |

*(6) Has the generator submitted an annual report to EPA covering the previous calendar year? ___ ✓

a. How do you know?

(7) Has the generator received signed copies (from the TSD facility) of all manifests for wastes shipped off site more than 35 days ago? Not All Manifest Were Available, Nor Were All the TSD Certification Statements. ___ ___

a. If "no," have Exception Reports been submitted to EPA covering these shipments? ___ ___

(8) General comments.

Please See Additional Report.

* The effective date for this requirement is March 1, 1982.

(16)

RCRA TREATMENT, STORAGE AND DISPOSAL FACILITY INSPECTION FORM
FOR TSD FACILITIES ONLY

COMPANY NAME: Central Steel Drum Co. EPA I.D. Number: NJD011482577

COMPANY ADDRESS: 704 DOREMUS AVENUE, NEWARK, N.J. 07105

COMPANY CONTACT OR OFFICIAL: Mr. Paul Adamson

TITLE: Plant Manager

OTHER ENVIRONMENTAL PERMITS HELD BY FACILITY: ☐ NPDES ☐ AIR ☐ OTHER } NONE

INSPECTOR'S NAME: Angela Morales

DATE OF INSPECTION: 12/7/81

BRANCH/ORGANIZATION: Surveillance + Monitoring

TIME OF DAY INSPECTION TOOK PLACE: 9 30 12 45

(1) Is there reason to believe that the facility has hazardous waste on site? Yes.

a. If yes, what leads you to believe it is hazardous waste? Check appropriate box:

☑ Company admits that its waste is hazardous during the inspection.

☑ Company admitted the waste is hazardous in its RCRA notification and/or Part A Permit Application.

☐ The waste material is listed in the regulations as a hazardous waste from a nonspecific source (§261.31)

☐ The waste material is listed in the regulations as a hazardous waste from a specific source (§261.32)

☐ The material or product is listed in the regulations as a discarded commercial chemical product (§261.33)

☑ EPA testing has shown characteristics of ignitability, corrosivity, reactivity or extraction procedure toxicity, or has revealed hazardous constituents (please attach analysis report) See Appendix C in Report

☐ Company is unsure but there is reason to believe that waste materials are hazardous. (Explain)

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| b. Is there reason to believe that there are hazardous wastes on-site which the company claims are merely products or raw materials? | — | ✓ | — |

Please explain:

c. Identify the hazardous wastes that are on-site, and estimate approximate quantities of each.
Waste ash generated through drum refinishing operation. Pile is 4-5 ft high and 15 feet in diam

| | | | |
|---|---|---|---|
| (2) Does the facility generate hazardous waste? | ✓ | — | — |
| (3) Does the facility transport hazardous waste? | — | ✓ | — |
| (4) Does the facility treat, store or dispose of hazardous waste? | ✓ | — | — |

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(17)

## VISUAL OBSERVATIONS

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| (5) SITE SECURITY (§265.14) | | | |
| a. Is there a 24-hour surveillance system? | — | ✓ | — |
| b. Is there a suitable barrier which completely surrounds the active portion of the facility? Fencing available but only partially surrounds area. | — | ✓ | — |
| c. Are there "Danger-Unauthorized Personnel Keep Out" signs posted at each entrance to the facility? | — | ✓ | — |

Guard on site during week from 4pm-7am and during the weekend from Sat 12noon - Mon. 7am

| | | | |
|---|---|---|---|
| (6) Are there ignitable, reactive or incompatible wastes on site? (§265.27) | ✓ | — | — |

a. If "YES", what are the approximate quantities? Solvent-based adhesive - residue in drums

| | | | |
|---|---|---|---|
| b. If "YES", have precautions been taken to prevent accidential ignition or reaction of ignitable or reactive waste? | — | ✓ | — |

c. If "YES", explain

d. In your opinion, are proper precautions taken so that these wastes do not:

| | | | |
|---|---|---|---|
| - generate extreme heat or pressure, fire or explosion, or violent reaction? | — | ✓ | — |
| - produce uncontrolled toxic mists, fumes, dusts, or gases in sufficent quantities to threaten human health? | — | ✓ | — |
| - produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions? | — | ✓ | — |
| - damage the structural integrity of the device or facility containing the waste? | — | — | ✓ |
| - threaten human health or the environment? | — | ✓ | — |

Please explain your answers, and comment if necessary.

e. Are there any additional precautions which you would recommend to improve hazardous waste handling procedures at the facility? Yes, Please see attached report.

(7) Does the facility comply with preparedness and prevention requirements including maintaining: (§265.32)

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(18)

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| - an internal communications or alarm system? | ✓ | | |
| - a telephone or other device to summon emergency assistance from local authorities? | ✓ | | |
| - portable fire equipment? | ✓ | | |
| - adequate aisle space? | | ✓ | |
| - in your opinion, do the types of wastes on site require all of the above procedures, or are some not needed? Explain. | ✓ | | |

In your opinion, do the types of wastes on site require all of the above procedures, or are some not needed? Explain.

| | | | |
|---|---|---|---|
| *(8) Have you inspected to verify that the groundwater monitoring wells (if any) mentioned in the facility's groundwater monitoring plan (see no. 19 below) are properly installed? | | ✓ | |
| NO GROUND MONITORING PLAN. | | | |
| If you have, please comment, as appropriate. | | | |
| (9) a. Is there any reason to believe that groundwater contamination already exists from this facility? If "YES", explain. Facility operation is very sloppy. Groundwater table is located 30 inches bela | ✓ | | |
| b. Do you believe that operation of this facility may affect groundwater quality? "Possibly" Adamson. | ✓ | | |
| c. If "YES", explain. Please see above (9a) explanation. | | | |

RECORDS INSPECTION:

| | | | |
|---|---|---|---|
| (10) Has the facility received hazardous waste from an off-site source since Nov. 19, 1980 (effective date of the regulations)? There is evidence that drums containing greater than 1 inch of waste were on site. | | | ✓ |
| a. If "YES", does it appear that the facility has a copy of a manifest for each hazardous waste load received? Company may not have a TSD facility permit. | | | |
| b. How many post-November 19 manifests does it have? (If the number is large, you may estimate. 11 Manifest were available but these many were from Jan 1981 to present. | | | |
| * c. Does each manifest (or a representative sample) have the following information? | | | |
| - a manifest document number | ✓ | | |

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NOTE - WASTE ARE MANIFESTED AS NON-HAZARDOUS

(19)

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| - the generator's name, mailing address, telephone number, and EPA identification number | ✓ | | |
| - the name, and EPA identification number of each transporter | ✓ | | |
| - the name, address and EPA identification number of the designated facility and an alternate facility, if any; | ✓ | | |
| - a DOT description of the wastes | | ✓ | |
| - the total quantity of each hazardous waste by units of weight or volume, and the type and number of containers as loaded into or onto the transport vehicle | ✓ | | |
| - a certification that the materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation under regulations of the Department of Transportation and the EPA | ✓ | | |
| d. Are there any indications that unmanifested hazardous wastes have been received since November 19, 1980? If YES, explain. | | | ✓ |
| (11) Does the facility have a written waste analysis plan specifying test methods, sampling methods and sampling frequency? (§265.13) | | ✓ | |
| a. Does the character of wastes handled at the facility change from day to day, week to week, etc., thus requiring frequent testing? (You may check more than one) Waste characteristics vary ✓ All wastes are basically the same ___ Company treats all waste as hazardous ___ Don't Know ___ | | | |
| b. Does hazardous waste come to this facility from off-site sources? | | | ✓ |
| c. If waste comes from an off-site source, are there procedures in the plan to insure that wastes received conform to the accompanying manifest? N/A | | | |
| (12) INSPECTIONS (§265.15) | | | |
| a. Does the facility have a written inspection schedule? | | ✓ | |
| b. Does the schedule identify the types of problems to be looked for and the frequency for inspections? | | ✓ | |
| c. Does the owner/operator record inspections in a log? | | ✓ | |
| d. Is there evidence that problems reported in the inspection log have not been remedied? If "YES," please explain. | | ✓ | |

(20)

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| (13) PERSONNEL TRAINING (§265.16) | | | |
| a. Is there written documentation of the following: | | | |
| - job title for each position at the facility related to hazardous waste management and the name of the employee filling each job? | | ✓ | |
| - type and amount of training to be given to personnel in jobs related to hazardous waste management? | | ✓ | |
| - actual training or experience received by personnel? | | ✓ | |
| (14) Does the facility have a written contingency plan for emergency procedures designed to deal with fires, explosion or any unplanned release of hazardous waste? (§265.51) | | ✓ | |
| a. Does the plan describe arrangements made with local authorities? | | ✓ | |
| b. Has the contingency plan been submitted to local authorities? | | ✓ | |
| How do you know? | | | |
| c. Does the plan list names, addresses, and phone numbers of Emergency Coordinators? | | ✓ | |
| d. Does the plan have a list of what emergency equipment is available? | | ✓ | |
| e. Is there a provision for evacuating facility personnel? | | ✓ | |
| f. Was an Emergency Coordinator present or on call at the time of the inspection? | ✓ | | |

Emergency coordinator is the Supervisor in the affected area

(15) Does the owner/operator keep a written operating record with: (§265.73)

MAY NOT BE APPLICABLE →

| | | | |
|---|---|---|---|
| - a description of wastes received with methods and dates of treatment, storage or disposal? | | | ✓ |
| - location and quantity of each waste? | | ✓ | |

MAY NOT BE APPLICABLE →

| | | | |
|---|---|---|---|
| - detailed records and results of waste analysis and treatability tests performed on wastes coming into the facility? | | | ✓ |
| - detailed operating summary reports and description of all emergency incidents that required the implementation of the facility contingency plan? | | ✓ | |
| *(16) Does the facility have written closure and post-closure plans? (§265.110) | | ✓ | |
| a. Does the written closure plan include: | | | |
| - a description of how and when the facility will be partially (if applicable) and ultimately closed? | | ✓ | |

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* Effective date for this requirement is May 19, 1981.

(21)

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| - an estimate of the maximum inventory of wastes in storage or treatment at any time during the life of the facility? | | ✓ | |
| - a description of the steps necessary to decontaminate facility equipment during closure? | | ✓ | |
| - a schedule for final closure including the anticipated date when wastes will no longer be received and when final closure will be completed? | | ✓ | |
| b. What is the anticipated date for final closure? | | | ✓ |
| c. Does the owner/operator have a written post-closure plan identifying the activities which will be carried on after closure and the frequency of these activities? | | ✓ | |
| d. Does the written post-closure plan include: | | | |
| - a description of planned groundwater monitoring activities and their frequencies during post-closure? | | ✓ | |
| - a description of planned maintenance activities and frequencies to ensure integrity of final cover during post-closure? | | ✓ | |
| - the name, address and phone number of a person or office to contact during post-closure? | | ✓ | |
| *(17) Does the owner/operator have a written estimate of the cost of closing the facility? (§265.142) What is it? | | ✓ | |
| *(18) Does the owner/operator have a written estimate of the cost for post-closure monitoring and maintenance? What is it? (§265.144) | | ✓ | |
| *(19) Has a groundwater monitoring plan been submitted to the Regional Administrator for facilities containing a surface impoundment, landfill or land treatment process? (This requirement does not apply to recycling facilities.) (§265.90) | | ✓ | |
| a. Does the plan indicate that at least one monitoring well has been installed hydraulically upgradient from the limit of the waste mangement area? | | | |
| b. Does the plan indicate that there are at least three monitoring wells installed hydraulically downgradient at the limit of the waste management area? | | | |

* This section applies only to disposal facilities.

** Effective date for this requirement is May 19, 1981.

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(22)

SITE-SPECIFIC

Please circle all appropriate activities and answer questions on indicated pages for all activities circled. When you submit your report, include only those site-specific pages that you have used.

| STORAGE | TREATMENT | DISPOSAL |
|---|---|---|
| Waste Pile p. 9 | Tank p. 8 | Landfill pp. 10-11 |
| Surface Impoundment p. 8 | Surface Impoundment pp. 8-9 | Land Treatment pp. 9, 10 |
| Container p. 7 | Incineration pp. 12-13 | Surface Impoundment p. 8 |
| Tank, above ground p. 8 | Thermal Treatment pp. 12-13 | Other _____ |
| Tank, below ground p. 8 | Land Treatment pp. 9-10 | |
| Other _____ | Chemical, Physical p. 13 and Biological Treatment (other than in tanks, surface impoundment or land treatment facilities) | |
| | Other _____ | |

CONTAINERS (§265.170)

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| 1. Are there any leaking containers? If "YES", explain. | ✓ | | |
| 2. Are there any containers which appear in danger of leaking? If "YES", explain. | ✓ | | |
| 3. Do wastes appear compatible with container materials? | | | ✓ |
| 4. Are all containers closed except those in use? | | ✓ | |
| 5. Do containers appear to be opened, handled or stored in a manner which may rupture the containers or cause them to leak? | ✓ | | |
| 6. How often does the plant manager claim to inspect container storage areas? Daily | | | |
| 7. Does it appear that incompatible wastes are being stored in close proximity to one another? If "YES", explain. Possibly. Different waste sludges are stored in same area. | ✓ | | |
| 8. Are containers holding ignitable or reactive wastes located at least 15 meters (50 feet) from the facility's property line? | ✓ | | |

9. What is the approximate number and size of containers with hazardous wastes?
Approx 25.

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(23)

| TANKS (§265.190) | YES | NO | DON'T KNOW |
|---|---|---|---|
| 1. Are there any leaking tanks? If "YES", explain. | — | — | — |
| 2. Are there any tanks which appear in danger of leaking. If "YES", explain. | — | — | — |
| 3. Are wastes or treatment reagents being placed in tanks which could cause them to rupture, leak, corrode or otherwise fail? If "YES", explain. | — | — | — |
| 4. Do uncovered tanks have at least 2 feet of freeboard or an adequate containment structure? | — | — | — |
| 5. Where hazardous waste is continuously fed into a tank, is the tank equipped with a means to stop this inflow? | — | — | — |
| 6. Does it appear that incompatible wastes are being stored in close proximity to one another, or in the same tank? If "YES", explain. | — | — | — |
| 7. How often does the plant manager claim to inspect container storage areas? | | | |
| 8. Are ignitable or reactive wastes stored in a manner which protects them from a source of ignition or reaction? If "YES", explain. | — | — | — |
| 9. What is the approximate number and size of tanks containing hazardous wastes? | | | |

| SURFACE IMPOUNDMENTS (§265.220) | | | |
|---|---|---|---|
| 1. Is there at least 2 feet of freeboard in the impoundment? | — | — | — |
| 2. Do all earthen dikes have a protective cover to preserve their structural integrity? If "YES", specify type of covering. | — | — | — |
| 3. Is there reason to believe that incompatible wastes are being placed in the same surface impoundment? If "YES", explain. | — | — | — |

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| | YES | NO | DON'T KNOW |
|---|---|---|---|
| 4. Are ignitable or reactive wastes being placed in surface impoundments without being treated to remove these characteristics? If "YES", explain. | — | — | — |
| 5. Are there any leaks, failures or is there any deteriorization in the impoundments? If "YES", explain. | — | — | — |
| 6. Give the approximate size of surface impoundments (gallons or cubic feet). | | | |

WASTE PILES (§265.250)

| | | | |
|---|---|---|---|
| 1. Is the waste pile protected from wind erosion? | — | ✓ | — |
| a. Does it appear to need such protection? | ✓ | — | — |
| b. Explain what type of protection exists. A concrete slab was claimed to contain pile, none was visible. | | | |
| 2. Does it appear that incompatible wastes are being stored in the same waste pile? If "YES", explain. | — | ✓ | — |
| 3. Is leachate run-off from a pile a hazardous waste? If "YES", explain this determination and answer (a) and (b) below. | ✓ | — | — |
| a. Is the pile placed on an impermeable base that is compatible with the waste? Please see waste analysis performed by GRACOS I | — | — | ✓ |
| b. Is the pile protected from precipitation and run-on? | — | ✓ | — |
| 4. In your judgment, are ignitable or reactive wastes managed in such a way that they are protected from any material or conditions which may cause them to ignite? Please explain or indicate if no such wastes are present. | — | — | ✓ |
| Are they placed on an existing pile so that they no longer meet the definition of ignitable or reactive waste? Please explain. | — | — | ✓ |

5. How many waste piles are on site, and approximately how large are they?

One waste pile approx. 4-5 ft. high, 15 feet in c

LAND TREATMENT (§265.270)

1. Can the facility operator demonstrate that the hazardous waste has been made less or non-hazardous by biological degradation or chemical reactions occurring in or on the

| 10 | YES | NO | DON'T KNOW |
|---|---|---|---|
| *2. Is run-on diverted away from the active portions of the land treatment facility? | ___ | ___ | ___ |
| *3. Is run-off collected? | ___ | ___ | ___ |
| 4. Are food chain crops being grown on the facility property? | ___ | ___ | ___ |
| a. If "YES", can the facility operator document that arsenic, lead and mercury: | | | |
| - will not be transferred to the crop or ingested by food chain animals or | ___ | ___ | ___ |
| - will not occur in greater concentrations in the crops grown on the land treatment facility than in the same crops grown on untreated soils. | ___ | ___ | ___ |
| b. Has notification of the growing of the food chain crops been made to the Regional Administrator? | ___ | ___ | ___ |
| 5. Is there a written and implemented plan for unsaturated zone monitoring? | ___ | ___ | ___ |
| 6. Are there records of the application dates, application rates, quantities and location of each hazardous waste placed in the facility? | ___ | ___ | ___ |
| 7. Do the closure and post-closure plans address: | | | |
| a. control of migration of hazardous wastes into the groundwater? | ___ | ___ | ___ |
| b. control of run-off, release of airborne particulate contaminants? | ___ | ___ | ___ |
| c. compliance with requirements for the growth of food-chain crops (if they are present)? | ___ | ___ | ___ |
| 8. Is ignitable or reactive waste immediately incorporated into the soil so the resulting waste no longer meets that definition? If "YES", explain. | ___ | ___ | ___ |
| 9. Are incompatible wastes placed in the same land treatment area? If "YES", explain. | ___ | ___ | ___ |
| 10. What is the area of the land receiving hazardous waste treatment? | ___ | ___ | ___ |
| LANDFILLS (§265.300) | | | |
| *1. Is run-on diverted away from the active portions of the landfill? | ___ | ___ | ___ |
| *2. Is run-off from active portions of the landfill collected? | ___ | ___ | ___ |

---

* Effective date for these requirements is May 19, 1981.

* These requirements are effective November 19, 1981.

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| 3. Is waste which is subject to wind dispersal controlled? Explain. | ___ | ___ | ___ |
| 4. Does the owner/operator maintain a map with: | | | |
| - the exact location and dimensions of each cell | ___ | ___ | ___ |
| - the contents of each cell and approximate location of each hazardous waste type | ___ | ___ | ___ |
| 5. Do the closure and post-closure plans address: | | | |
| - control of pollutant migration via ground water? | ___ | ___ | ___ |
| - control of surface water infiltration? | ___ | ___ | ___ |
| - prevention of erosion? | ___ | ___ | ___ |
| 6. Is ignitable or reactive waste treated before being placed in the landfill? Explain how you know. | ___ | ___ | ___ |
| 7. Are precautions taken to insure that incompatible wastes are not placed in the same landfill cell? If "NO", explain. | ___ | ___ | ___ |
| 8. Are bulk or non-containerized wastes containing free liquids placed in the landfill? If "YES", | ___ | ___ | ___ |
| a. Does the landfill have a liner which is chemically and physically resistant to the added liquid? | ___ | ___ | ___ |
| b. Is the waste treated and stabilized so that free liquids are no longer present? | ___ | ___ | ___ |
| *9. Are containers holding liquid waste or waste containing free liquids placed in the landfill? | ___ | ___ | ___ |
| 10. Are empty containers (e.g. those containing less than 1/2 inch of liquid) placed in the landfills? | ___ | ___ | ___ |
| If so, are they crushed flat, shredded or similarly reduced in volume before they are buried? | ___ | ___ | ___ |
| 11. What is the approximate area of the hazardous waste landfill? | | | |

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* Effective date for this requirement is November 19, 1981.

(27)

## INCINERATORS AND THERMAL TREATMENT
(§§265.340 and 265.379)

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| 1. What type of incinerator or thermal treatment is at the site (e.g. waterwall incinerator, boiler, fluidized bed, etc.)? Incinerator was installed in 1950. Natural Gas Unit on a conveyor belt. Connected to an after burner. | | | |
| 2. Was hazardous waste being incinerated or thermally treated during your inspection? If "YES", answer all following questions. If "NO", answer only questions 3 and 7. | — | — | ✓ |
| 3. Has waste analysis been performed (and written records kept) to include: | | | |
| - heating value of the waste | — | — | ✓ |
| - halogen content | — | — | ✓ |
| - sulfur content | — | — | ✓ |
| - concentration of lead | ✓ | — | — |
| - concentration of mercury | ✓ | — | — |

NOTE: Waste analysis need not be performed on each waste load if if there are documented data available to show waste characteristics that do not vary. If there are such documented data available, check here [ ].

| | | | |
|---|---|---|---|
| 4. Does it appear that the owner/operator brings his thermal treatment process to steady state (normal) conditions of operation before introducing hazardous wastes? | — | ✓ | — |
| 5. Did it appear during your inspection that there was adequate monitoring and inspection by owner/operator every 15 minutes during hazardous waste incineration for: | | | |
| - waste feed | — | ✓ | — |
| - auxiliary fuel feed | — | ✓ | — |
| - air flow | — | ✓ | — |
| - incinerator temperature | — | ✓ | — |
| - scrubber flow | — | ✓ | — |
| - scrubber pH | — | ✓ | — |
| - relevant level controls | — | ✓ | — |
| Every hour for: | | | |
| - stack plume (color and opacity) | — | ✓ | — |
| 6. Is there open burning of hazardous waste? | — | — | ✓ |

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a. If "YES", what is being burned? (only burning or detonation of explosives is permitted)

b. If open burning or detonation of explosives is taking place, approximately what is the distance from the open burning or detonation to the property of others?

| | YES | NO | DON'T KNOW |
|---|---|---|---|
| 6. Does the incinerator appear to be operating properly? (Do emergency shutdown controls and system alarms seem to be in good working order?) Please explain. Plant Manager Paul Adamson, stated there were problems with the temperature of the incinerator. | | ✓ | |
| a. Is there any evidence of fugitive emissions? | | | |
| 7. Is the residue from the incinerator treated by the owner as a hazardous waste? Please explain. Waste is being manifested as non hazardous. | | ✓ | |
| 8. What types of air pollution control devices (if any) are installed on the incinerator? Dont Know | | | |

CHEMICAL, PHYSICAL AND BIOLOGICAL TREATMENT (§265.400)

| | | | |
|---|---|---|---|
| 1. Does the treatment process system show any signs of ruptures, leaks, or corrosion? Please explain. | | | |
| 2. Is there a means to stop the inflow of continuously-fed hazardous wastes? | | | |
| 3. Is there ignitable or reactive waste fed into the treatment system? | | | |
| If "YES", has it been treated or protected from any material or conditions which may cause it to ignite or react? If so, explain how. | | | |
| Are the incompatible wastes placed in the same treatment process? If "YES", explain. | | | |

4. Describe the treatment system at this facility.

HAZARDOUS WASTE INVESTIGATION HW/EF 07-27

AI Inspector: Alphonse Iannuzzi Date: 2/3/82

Location: Central Steel Drum

St: 704 Doremus Ave.

Town: Newark

County: Essex

Property Owner:
Greenberg, Ratner & Baron
704-738 Doremus Avenue
Newark, NJ

Lot: 1 Block: 5074

Origin of Complaint:

Complaint: Follow-up of March 28, 1980 NOP

Findings:

On 2/3/82 Central Steel Drum (CSD) was investigated with Bill Brown, SWA Geologist, and Charlie Bazdlo, Newark City Engineering Department. Lance Gold, Plant Manager, and Dr. Fungaroli, from CSD's consulting company, AGES, were contacted.

Purpose

This investigation was a follow-up of a DEP issued NOP to CSD for disposing their incinerator ash on site. Bill Brown was present to determine the validity of CSD's consulting report and to pick adequate sampling points.

Sampling

Samples were not taken from parking lot covered with gravel where incinerator ash was dumped due to the ground being too frozen to dig. Two samples were taken along and in an unfrozen drainage ditch in the southeast section of the facility.

1. A sample of soil was taken from the east side of the drainage ditch bank approximately 6 inches under the water level, sample # AI 136A. This material consisted of a grey soil with yellow,blue and pink colors in it. Strong solvent odors were noted from this sample.

2. A second sample, AI 137A, was taken in the southeast drainage ditch prior to where it flows into a stream. This section was sampled due to it being a likely area where heavy metals would settle as a result of contaminated run-off. This sample was taken approximately 6 inches from the east bank and 6 inches under the water level. The sample consisted of a greyish soil which had strong solvent odors similar to those from sample AI 136A. Mr. Brown stated that this material appeared to be a dark grey soil mixed with ash and silt or clay. Sample data sheets for each sample and a diagram indicating where samples were taken is attached to report.

Attachment C

During sampling, due to raining during the inspection, contaminated run-off with an oily sheen was noted flowing into the drainage ditch from under the gravel on the parking lot. A heavy silver oil sheen was noted on most of the water surface in this ditch and the water had a greyish-red tint to it. The soils sampled appeared to be highly contaminated with material which was dumped

on site due to the discoloration and strong solvent odors. Outcropping from the drainage ditch banks contained old rusted drums, plastic material, wood, and various colored sludges (i.e., yellow, white, blue, etc.).

Observations - Youngstown Barrel & Drum truck

As noted in an EPA December 7, 1981 RCRA inspection report, a Youngstown Barrel & Drum truck (Youngstown, PA) was on site with approximately 60 drums that contained 4 inches or more material in them. Since CSD can only accept drums with one inch or less material in them, Mr. Gold stated that these drums were rejected by CSD. Mr. Gold stated that Environmental Consulting and Testing Service will handle legal ramifications of sending this material back to Youngstown (i.e., manifest). Two drums were checked on this truck and appeared to have a paint residue in them which this inspector approximated 2 to 3 inches.

Photographs

Housekeeping throughout the facility was very poor. The following include photographs (18) of such conditions:

1. Spillage of white sludge on soil in drum staging area in western section of facility.

2. Purple liquid, approximately 40' x 40', on soil also in staging area.

3. Multi-colored sludges on soil next to chain conveyor for incinerator in central section of lot.

4. Close up of spillage as described in #3.

5. Blue liquid on soil next to conveyor to incinerator in central section of lot.

6. Three full drums north of blasting building.

7. One full drum north of blasting building.

8. Two full drums next to blasting building on north side, one containing red and the other white sludge.

9. Incinerator putting out black smoke.

10. Full drum of black oily liquid and spill at its base on north side of blasting building. Mr. Gold stated that it is paint. Also noted in this areabut not photographed were four full 30 gallon drums containing a rusty metal substance and purple sludge.

11. Pink and white spills on soil and a full drum Mr. Brown is pointing to, east of the incinerator.

12. Drum spraying a red liquid from a leak onto soil, next to the incinerator.

(3)

13. Pile of incinerator ash stored on soil next to the incinerator. Mr. Gold stated that this material is stored in such a manner until Jonas Waste Removal, Sewell, NJ picks it up with a roll-off for disposal at GROWS landfill, PA.

14. Yellow and white solid material dumped in area next to drainage ditch where it empties into stream.

15. Stream bed containing garbage/sludges and sheen on stream near where sample #AI 137A was taken.

16. Drums in stream, southeast section of facility.

17. Purple soil near stream, southeast section of facility.

18. Contaminated run-off with sheen running from CSD property into stream, southwest section of property.

Synopsis

The previous photographs noted are an indication of the housekeeping problems at CSD. Other problems include:

1. Strong odors and thick black smoke emitted from the incinerator.

2. Contamination of soil, surface water, and groundwater from spillage.

3. Storage of approx. 20-30 full drums for more than 90 days. Mr. Gold stated that full drums were on site for several years and definitely since he started working 5 months ago.

4. Illegal waste storage pile (incinerator ash).

5. Illegal disposal of sludges dumped in areas sampled and spillage which was never cleaned up.

cc: Bill Brown, SWA
Angela Morales, EPA
William Saywer, EPA

February 8, 1982

Case Development Inspection - Central Steel & Drum, Newark, NJ

Mike Mehringer
Environmental Engineer
Air Facilities Branch

Jehuda Menczel, Chief
New Jersey-Puerto Rico Section
Air Facilities Branch

Location and Objective

On February 26, 1982 I documented opacity violations from two stacks at Central Steel & Drum (CSD) in Newark, New Jersey and then conducted an unannounced inspection of the facility. On December 7, 1981 members of EPA's S&A Division conducted an inspection and found possible RCRA, NPDES, and FWPCA violations and noted that a great deal of smoke and particulates were being emitted from various operations. William Sawyer of GEB suggested that AFB inspect the facility and try to document opacity violations to be included with other violations in the NOV that was being prepared.

Attendees

Paul Adamson - Plant Manager, Central Steel & Drum
Michael Mehringer - EPA, AFB

Discussion

CSD reconditions approximately 3,000 steel drums per day by placing "empty drums" on a conveyor and moving them through a drum incinerator where the residue is burned off. The drums had contained paint, food, glue, ink and various other materials, some possibly hazardous. Following incineration, any sludge is collected and burned in the sludge incinerator. Sludge and ash that is still not burned is taken by a carting company. The clean drums are then painted and resold.

Upon arrival at CSD, I noticed that smoke of various color and opacity was being emitted intermittently from two stacks which I later learned where the drum incinerator's main stack and afterburner stack. At times an orange flame rose from the afterburner stack. The stacks smoked heavily for about 15 minutes while I searched for a vantage point from which to read opacity. VE readings on the afterburner stack were made just outside the Texaco (CSD's neighbor) property line. The smoke varied in color, and opacity fluctuated drastically between 0 and 60% with a 30 minute average of 29.5%.

I was then approached by Charlie Sands of Texaco who suggested that I wait in his office for the main stack to begin smoking. He surmised that CSD was on break because no smoke was being emitted at the time. Mr. Sands said that he had complained to state and local agencies numerous times. Mr. Sands, who begins his shift at 3 a.m., stated that the smoke is heaviest early in the morning (4-6 a.m.) and leaves a film on the autos of Texaco employees. At 10:15 operations began

Attachment D

again and this time smoke was heavier from the main stack. Opacity r to 65% with a 30 minute average of 24.7%. As with the afterburner sta minute averages were higher. It should also be noted that smoke als from the incinerator near ground level, although piled drums prohibited k exact spot on the incinerator.

I then entered CSD property and presented my findings to Paul Adamsc Manager. During my inspection he stated that he has been spending a great time in the office and was not aware of the heavy smoke. He also stat emissions vary with drum residue. When asked if there was any intent installing pollution control equipment, he stated that CSD hopes to expan control equipment will be part of the expansion. He gave no details as to wh will be or what the expansion will include.

The facility is very old and poor housekeeping makes matters worse. T incinerator was only smoking lightly during my inspection, but the condition of t incinerator indicated that during times of heavy smoke, emissions could come fro many openings other than the stack. Paint spraying of the clean drums resulted in fugitive emissions and odors. Apparently the sludge incinerator was not operating.

Conclusion

| | 30 min. avg. | highest 6 min. avg. | highest single readings |
|---|---|---|---|
| Main Stack | 24.7 | 44.2 | 65 |
| Afterburner Stack | 29.5 | 36.7 | 60 |

CSD is in violation of NJAC 11.3(b), smoke from incinerators. This violations should be referred to GEB.

NJDEP is aware of the situation and has already documented many violations including opacity, operating without a permit, and open burning.

cc: W. Sawyer, 2ENF-GE
J. Walsh, NJDEP

D-2

**MEMO**

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

07-27

TO Charles Maack, Assistant Chief, Region II through James Mumman, Chief, Region II Enforcment

FROM Walter Samsel through William F. Athoff and Haig Kasabach, Deputy State Geologist, NJ Geological Survey

DATE March 22, 1983

SUBJECT Inspection At Central Steel Drum, Newark, Essex County

## Background

On January 24, 1983, Charles Maack (Enforcment Region II), Kevin Gashlin (Division of Waste Management), and this writer conferred with Lance Gold (Manager of Central Steel Drum) and proceeded to inspect the site. This site consists of thousands of steel drums stored outdoors, many mired in pools of liquid or standing in ground incrusted with the residue of evaporated liquid. Central Steel Drum (CSD) reconditions old steel drums received primarily from the paint and food industries. Part of CSD's reconditioning process entails turning over the drums, placing them on a conveyor belt, and then passing the drums through an incinerator. Presently, the residue derived from this initial incineration is collected and subjected to a second incineration. The remaining residue (ash) is then placed into an open dumpster or drums for removal from the premises. However, in the past, this residue was mixed with fill material and scattered throughout the site.

Kevin Gashlin informed this writer that the non-contact cooling water used in CSD's incinerator (apparently) circulates through open ditches on the Company's property. Lance Gold asserts that the receiving area and the area beneath the conveyor belt are covered by concrete. However, due to the thickness of the residue covering the aforementioned areas, it is difficult to confirm the existence of such a pad. In any case, Mr. Gold speculates that the pad under the conveyor belt is, at most, four to six feet wide.

According to Lance Gold, CSD is removing some of the residue off-site. Additionally, several 55-gallon drums containing liquids of various colors were discovered on CSD's premises during the on-site inspection of January 24th. Although Mr. Gold admitted that he does not know the contents of these drums, CSD is planning to have them removed from its premises. On the western portion of the site, there is an area in which many trailers are parked, an area strewed with many partially-filled drums that are stored on ground stained by earlier spills.

## Geology

A review of the borings in the area indicates that the stratigraphy of the site consists of fill and organic material that overlie lenses and layers of silt, clay, sand, and gravel resting upon the Brunswick Formation (approximately 40 feet below grade). There are apparently no potable wells in the general area; local bedrock wells are used exclusively for process water. The auger boring made by this writer in the southeast corner of the site (see attached map) consists of the following:

| | | |
|---|---|---|
| 0" to 17" | - | fill/red, silty sand* |
| 17" to 20" | - | fill/organic odor |
| 20" to 26.5" | - | fill/fibrous organic material |
| 26.5" to 36" | - | black, sandy clay/organic odor |
| 36" to 57" | - | black, very fine, sandy-silty clay |

*Water was encountered at 14"

Attachment E

Re: Central Steel Drum March 22, 1983

Soil and liquid samples were taken from the boring at a depth of approximately 17 inches. These samples along with a liquid sample taken at the confluence of the two drainage ditches — situated on the eastern and southern side of the site, respectively — were sent to the Health Department Lab for a volatile organic scan.

Recommendations

1. Six (6) monitor wells, four (4) shallow — i.e., approximately 10 feet deep — and two (2) deep — i.e., approximately 25 feet deep, should be installed for the purpose of defining the degree and extent of ground water contamination. Split spoon samples should be taken continuously during the drilling of the aforementioned wells (see the attached sketch for recommended locations). However, at the locations where deep and shallow wells are adjacent continuous split spoon samples need only be taken while drilling the deep well.

2. No sooner than one week after the installations of the monitor wells, water samples should be taken and analyzed for a priority pollutant scan. There is little doubt that severe contamination will be documented.

3. The DEP must approve the locations and specficiations of the proposed monitor wells prior to the commencement of any drilling.

4. CSD must improve its housekeeping procedures to minimize and contain spillage (viz., through the proper storage and containment of its drums).

5. CSD must attempt to ascertain the magnitude of soil contamination on its property and dispose of the same in accordance with the requirements of DEP's Division of Waste Management. Thus a comprehensive soil boring program also is recommended.

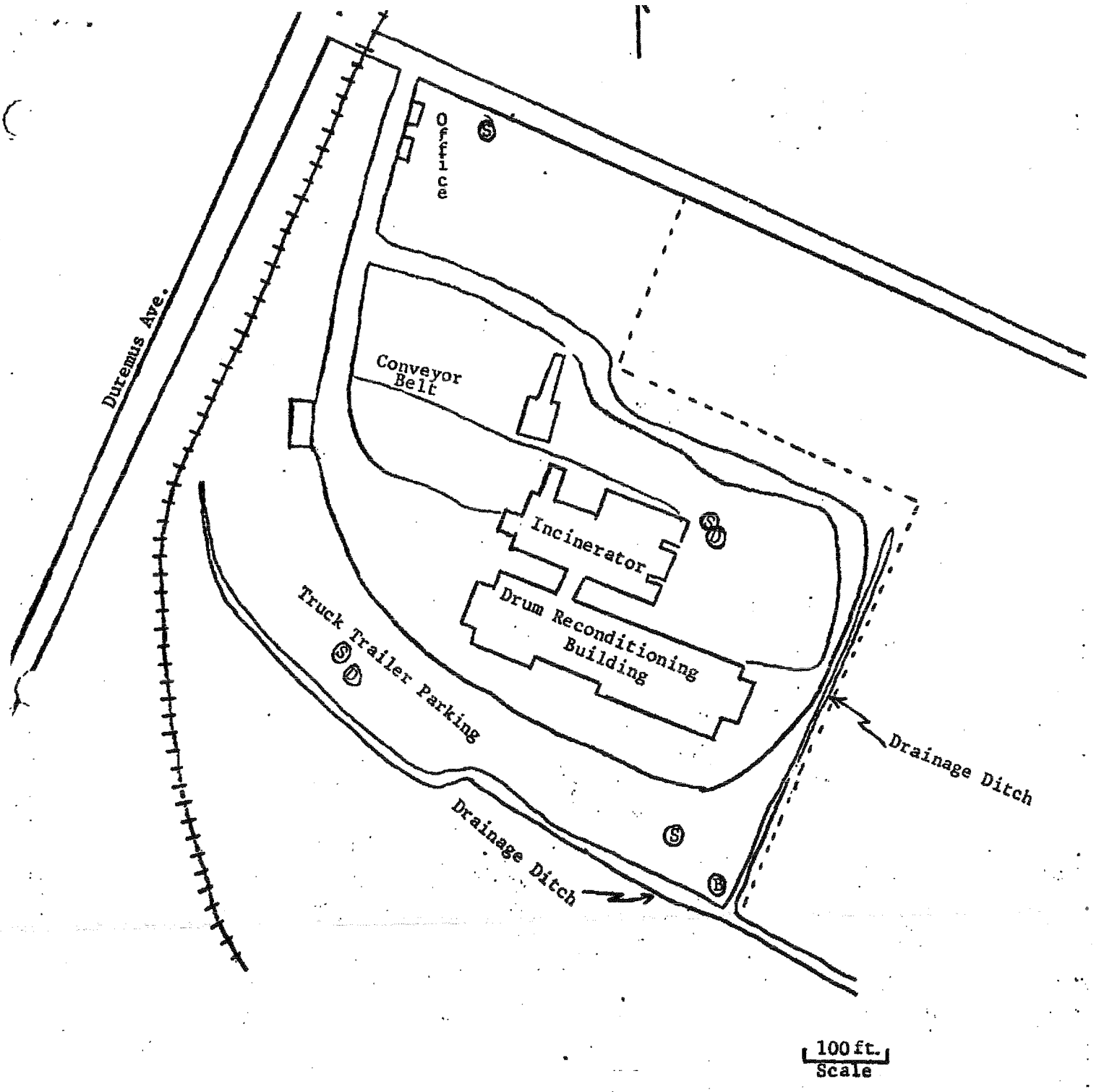
6. As a precaution, the local health department should be asked to substantiate that none of the local wells are being used for potable water.

7. Contingent upon the initial sampling results and the evaluation of their impact upon ground water, additional monitor wells and/or complete on-site cleanup operations may be required.

WS:clb

Attachment

cc: Kevin Gashlin - DWM ✓




Central Steel Drum Co.
704 Duremus Ave.
Newark, NJ

Ⓢ Recommended locations for shallow monitor wells

Ⓓ Recommended locations for deep monitor wells

Ⓡ Auger Boring made during Site Inspection

02-2153

**MEMO**

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

TO Mr. Howard Epstein, DAG through Messrs. Lynch, Chief and Plumb, Asst. Chief Metro Field Office

FROM Armando A. Arcenal 8/19/83 DATE August 18, 1983

SUBJECT Central Steel Drum, Newark, NJ

On August 4, 1983, a meeting was held at Central Steel Drum (Central Steel) facility in Newark between representatives from Central Steel, NJDEP's Division of Water Resources and Waste Management and Central Steel's consultants. In attendance were the following:

1. Mr. Lance Gold - Plant Manager, Central Steel Drum
2. Mr. Richard Sullivan - New Jersey First, Inc., Management Consultant
3. Mr. John R. Burger - Environics, Inc., Technical Consultant
4. Mr. Kevin Gashlin - Division of Waste Management
5. Mr. Walter Samsel - Division of Water Resources
6. Mr. Armando Arcenal - Division of Water Resources
7. Mr. Drew DiSessa - Summer Student

The purpose of the meeting was to discuss DWR requirements in the implemention of a ground water investigation at the site. Mr. Sullivan indicated to Walter Samsel that Mr. Burger is the technical consultant in this matter. Mr. Burger had notified Central Steel earlier that he would be late for the meeting. He was not informed of the change in the meeting location from Prospect Street in Trenton to the facility in Newark. Mr. Sullivan and Kevin Gashlin discussed the concern of Waste Management in this facility. An inspection of the facility was conducted prior to Mr. Burger's arival in order to save time.

Central Steel Drum reconditions drums containing residues of paints, foods, organic and inorganic chemicals including hazardous substances. Operations involved storage of drums, drum incineration (to burn residues and paints), sand blasting and painting of drums. In the storage areas, drums were piled on their sides from 4 to 10 - drums high. Their residual contents were spilled onto the ground which Mr. Gold said is a concrete platform. The "platform" is covered with dirt and multi-colored-sticky liquid. Strategically located in the drum storage area is a chain conveyor to transport the drums into the incinerator. During the inspection, a truck load of drums was being unloaded. The open drums were directly loaded on the conveyor for incineration while the closed drums were separated for removal of the tops.

Attachment F

The incinerator is about 50 ft. long with an ope ning the height and width of a standing 55-gal drum. The drums were turned upside down in a chain conveyor leading to the incinerator. At the head of the incinerator are water nozzles which spray a fine mist of water to wet the drums. Directly under this area is a puddle of milti-colored liquid about 5' x 5' and a foot deep. Unburned material in the process would fall directly under the chain conveyor and would return to the head of the incinerator. At this point, the sludge is scraped into the bucket of a parked bulldozer. The bucket would then be emptied periodically into a dumpster located by the fence at the back of the site.

Close to the incinerator is a large puddle, see diagram, about 20 feet in diameter and about 6 to 8 inches at the deepest. The water is muddy-brown with a sheen of oil and rainbow colored liquid on top. Mr. Gold said that this puddle remains even in hot dry weather. The large puddle is about 15 ft. away from the small puddle noted at the head of the incinerator. Small puddles of contaminated water were also observed at various places.

At the back of the site were 3 dumpsters located along the fence. One dumpster is being filled with sludge from the incinerator; the second is 3/4 full of liquid waste; and the third was completely filled with sludge. Kevin Gashlin indicated to Mr. Sullivan that this is a violation of RCRA because the facility is becoming a "storage facility". He implied that the third dumpster was noted in his last inspection.

In the sand blasting operation DWM is concerned with fine particulates collected from the bag house. The particulates empty through a chute into a dumpster directly under the bag house. There is a space of about 3 to 4 feet between the top of the dumpster and the chute opening. The particulates which are chocolate brown in color are blown away by wind during the emptying process. Fine particulates were observed around the dumpster, chain conveyor and up to 100 ft. away from the bag house.

When Mr. Burger arrived, Mr. Samsel indicated tentative locations for the shallow and deep monitoring wells. Walter recommended 4 shallow and 2 deep monitoring wells, but Mr. Burger suggested to have a complete set of 4 well clusters, consisting of shallow and deep wells, for the ground water study.

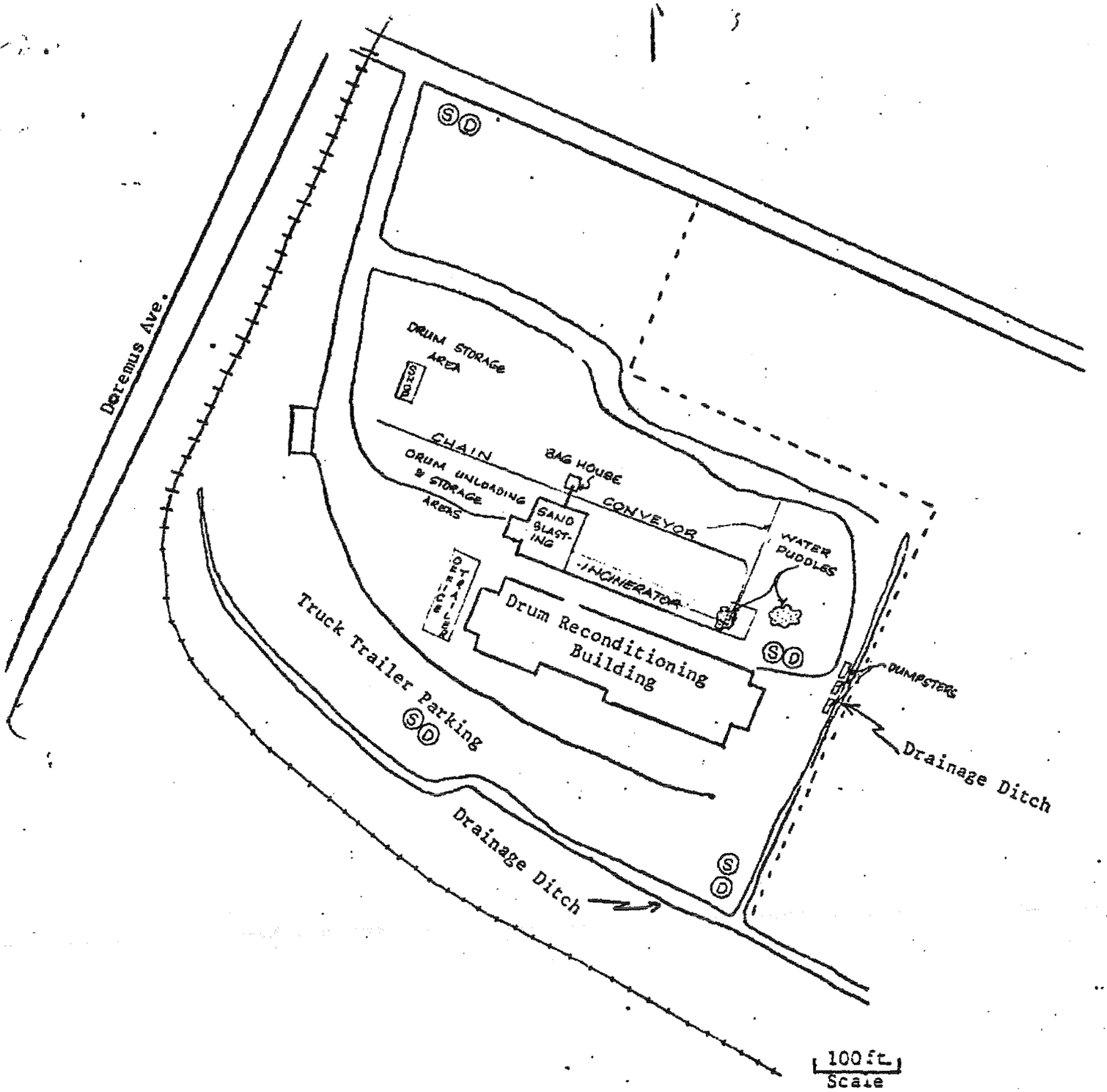
DWR's concern in this facility is with the run-off from the drum storage areas and the incineration process. Spillages occur in the drum storage areas and along the chain conveyor as the drum

is turn upside down for incineration. Both areas are open and subject to rain. All contaminated rain water is washed into the ditch that runs along both sides at the rear of the property. Inspection of this drainage ditch revealed half-buried, rotting drums, and milti-colored liquid due to chemical contamination.

Kevin Gashlin will write a memo regarding DWM's concerns and Walter Samsel will draft recommendations for further ground water investigation. These memos will be forwarded to Mr. Howard Epstein, the DAG assigned to this case, who will coordinate NJDEP's position on this matter.

E122:G25

cc: Kevin Gashlin
Walter Samsel
Drew DiSessa




Central Steel Drum Co.
704 Duremus Ave.
Newark, NJ

(S) Recommended locations for shallow monitor wells

(D) Recommended locations for deep monitor wells

ADM-012

**MEMO**

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

TO FILE - HW/EF 07-27 thru George Smajda

FROM Kevin Gashlin DATE September 6, 1983

SUBJECT Inspection at Central Steel Drum

On Thursday, September 1, 1983 I arrived at the subject location to check on progress of the ongoing clean-up I found several areas improved but overall no significant progress has been made during the past 8 months. Among improvements were:

1. Incinerator sludge was no longer being deposited onto the ground. A tractor was stationed at the area to catch generated sludge as it came off of the conveyor.

2. Fly-ash pad was clean. That is the extent of the improvements at the facility. Other conditions remain as per previous inspections.

A manifest check showed 135 yards$^3$ of incinerator ash/sludge removed since July 1. No waste paint was removed during this time.

About 50 drums were checked as they were being unloaded onto the conveyor chain. All were empty.

I reiterated the needs of the DWM to Lance Gold, production manager. Mr. Gold is not ultimately responsible for the condition of the facility. The attitude of management can be clearly evaluated by their inaction and lack of manpower dedicated to the clean-up while going forward with extensive construction at the site.

As of September 6th, I have not received the Environics Remedial Action Proposal which was to be forwarded to me by the CSD consultant.

c: Walt Samsel - DWR, Prospect St.
Howard Epstein - DAG, West Wing, Hughes Justice Complex
Lt. Braum - Essex County Prosecutors Office

ekd/

Attachment G

#53

ADM-012

**MEMO**

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

TO Vince Krisak

FROM Fred Sickels DATE November 21, 1984

SUBJECT Central Steel Drum, Newark, Essex County --- 07-14-15

November 20, 1984

1020 - G. Allen and I arrive on site to observe well sampling being conducted by John Burger of Environic, Inc. I had been contacted by Armand Arcenal - DWR - the previous afternoon and informed of this sampling. Also on site are Armand Arcenal and Helen Wright - DWR. Prior to entering the site, Mr. Allen and I enter the office building and speak to the receptionist. She contacts the supervisor and he states that we can enter the site. All company management were presently in a meeting and unavailable.

Mr. Allen and I observe Mr. Burger, Mr. Arcenal and Ms. Wright sample the wells. Mr. Arcenal states that he will send me the sample results when they are available. I ask Mr. Arcenal if DAG H. Epstein was still handling this case. He replied yes, but has had difficulty in contacting Mr. Epstein. I stated that I had the same problem, and have received little legal guidance in how to pursue this case. Mr. Arcenal stated that he has contacted Scott Dubin - ORS - regarding this matter and he is the better contact.

* Mr. Allen and I inspect the site. Cosmetically the site is better than during my previous inspection. Crushed stone has been placed on site, however, small spills around the drum storage area are still apparent. Ash produced by burning the contents in the drums is presently being placed in 20 yd. containers. This is an improvement over the method of dumping it on the ground previously employed by the company. Heavy contamination is still evident in the area of the incinerator. I could not locate the underground tank to observe if it has been pumped out and removed from site. We observe that the chain link fence is breached in one section near the drum storage area. There being no one available from the company to discuss our findings, we secure from site.

Comments:

* I will attempt to contact Scott Dubin and determine where the enforcement of this case presently stands. Due to the type of business conducted on this site, maintaining a perfectly clean environment may be extremely difficult. If ground water sampling indicates contamination is present, a recovery system should be installed. This will be determined by DWR. Also, the soil around the incinerator should be removed. Finally, the status of the underground tank should be determined. A mass removal of soil may be difficult due to the fact that ground water is located at approximately four feet. I will continue to monitor this case.

FOC4:dg

Attachment H

H1

MALCOLM PIRNIE

# OFF - SITE RECONNAISSANCE

Date: 3/5/85 Time In 12:40 PM Out 12:30 PM

Site ID No. 53

Site Name: Central Steel Drum

Location:

Address: 74 Dorcmus Ave.

City, County Newark, NJ Zip: 07105

Personnel: Joseph Zilio Title: Environmental Engineer

SOTERIOS STAVROU Ass Environmental Engineer

Conditions: Clear + Sunny Temperature: 50°F

Any evidence of imminent hazard? No Illegal Dumping? Possible

Uncapped Monitoring Wells? No If Yes, Notify NJDEP

Signature: Date: 3/5/85

Witness: Soterios Stavrou Date: 3/5/85

MALCOLM PIRNIE

FIELD NOTES



Site: Central Steel Drum  Site ID No. 53

Date: 3/5/85

- Numerous piles of drums stored over much of the area
- Perimeter access is open at rear of site w/ debris and Truck Trailers lining the boundary
- Grounds Keeping + Storage appears to be somewhat less than adequate
- Site is not paved
- Large puddles noticed around the facility
- Truck Trailers stored in site still have drums contained in them

Signature: [signature]  Date: 3/5/85

Witness: Sotirios Stamm  Date: 3/5/85

MALCOLM PIRNIE

PHOTO LOG



Subject: Central Steel Drum Site ID No. 53

Date: 3/5/85 Page No.

ASA: 100

| Frame No: | Object photographed:* | Location of photographer:* | Compass heading: |
|---|---|---|---|
| 22 | Entrance | Oneonus Ave. | NE |
| 23 | " | " | NE |
| 24 | Eastern end | " | [redacted]E |
| 1 | Facility Grounds | " | NE |
| 2 | " | " | NE |
| 3 | Western end | " | N |
| 4 | Northern end | Delancy St. | [redacted] SW |
| 5 | " | " | [redacted] SW |
| 6 | " | " | [redacted] SW |

*Indicate on sketch or map if possible

Signature: [signature] Date: 3/5/85

Witness: Saterwhite Stamm Date: 3/5/85

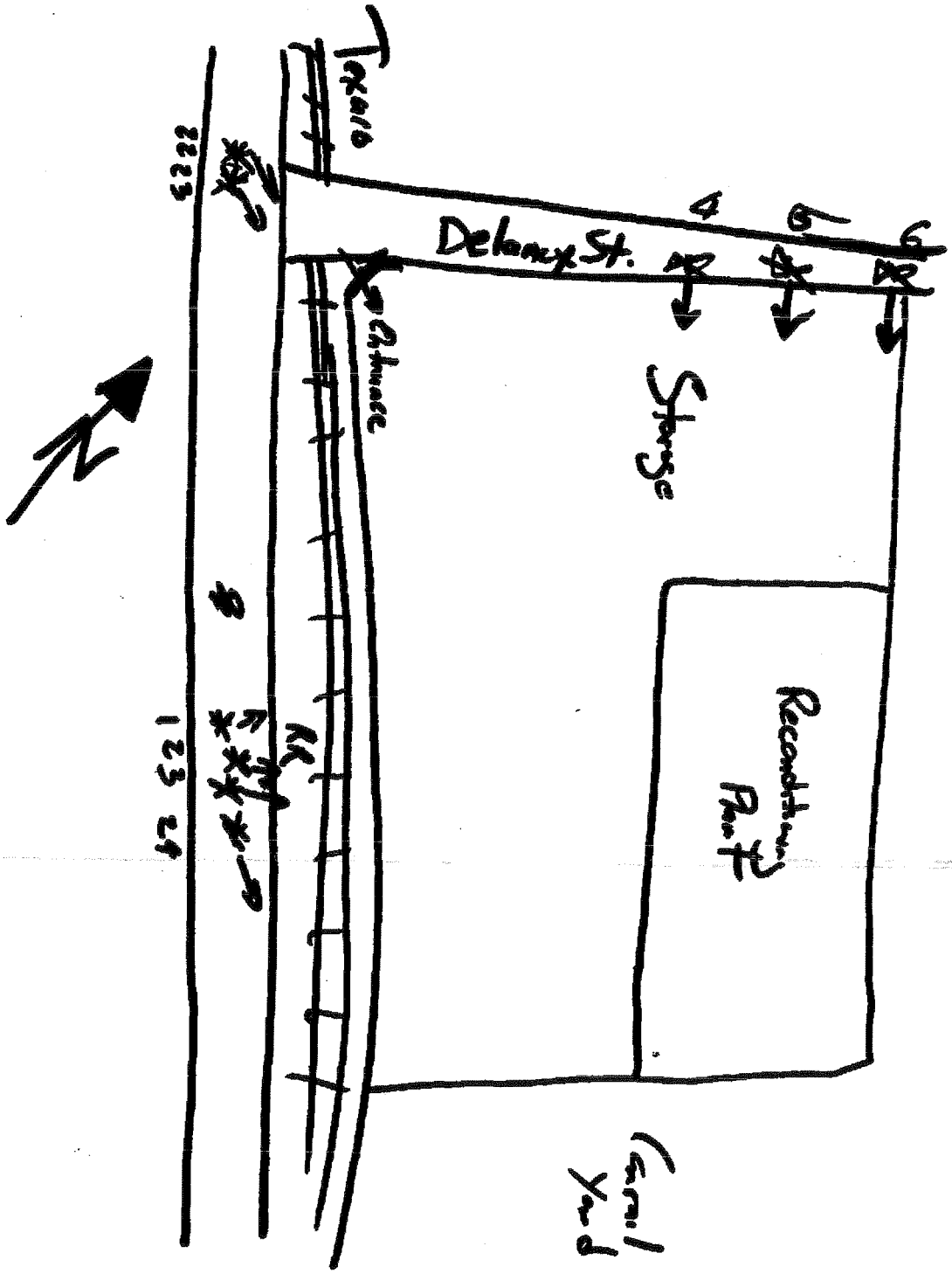
MALCOLM PIRNIE

MAPS AND SKETCHES



Site: Central Steel Div.

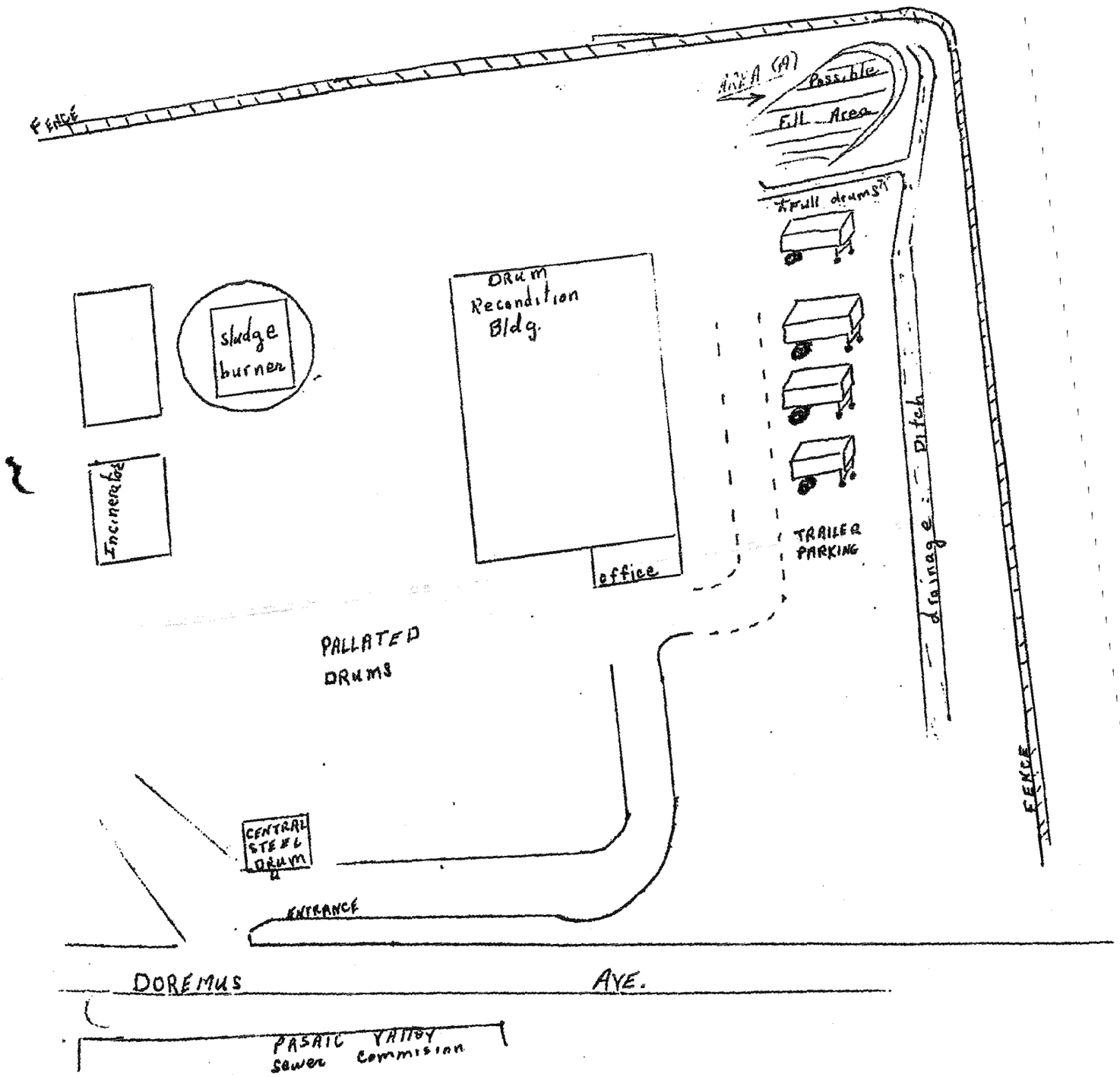
ID No. 53




Signature: [signature] Date: 3/5/85

Witness: Sutton Stanton Date: 3/5/85

Central Steel Drum



MALCOLM PIRNIE

SITE NAME: CENTRAL STEEL DRUM

ID NO: 53

LOCATION: _____

| FILE | SEARCH DATE | REVIEWER | RCRA 3001 FORM | CERCLA 103C FORM | PRELIMINARY INSP. REPORT | FIELD INSPECTION REPORTS | AGENCY INTERNAL MEMOS | RESP. PARTY CORRESPONDENCE | FORMAL REPORTING DOCUMENTS | SITE SKETCHES | ANALYTICAL DATA | SECOND SEARCH DATE | REMARKS | QA CHECK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HSMA | 2/1/85 | PK | | | | | | | | | | | | |

CODES:

✓ REVIEWED AND COPIED
X REVIEWED BUT NOT COPIED
NF NOT FOUND

MALCOLM PIRNIE

SITE NAME: Central Steel Drum

ID NO: 53

LOCATION: Newark
Block 5074 Lot 2
704 Doremus Ave.

| FILE | SEARCH DATE | REVIEWER | RCRA 3001 FORM | CERCLA 103C FORM | PRELIMINARY INSP. REPORT | FIELD INSPECTION REPORTS | AGENCY INTERNAL MEMOS | RESP. PARTY CORRESPONDENCE | FORMAL REPORTING DOCUMENTS | SITE SKETCHES | ANALYTICAL DATA | SECOND SEARCH DATE | REMARKS | QA CHECK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DWM | 1-29-85 | CH | | | | | ✓ | | | ✓ | ✓ | | | |

CODES:

✓ REVIEWED AND COPIED
X REVIEWED BUT NOT COPIED
NF NOT FOUND

MALCOLM PIRNIE

**Preliminary Assessment Photo Log**

SITE: CENTRAL STEEL DRUM

I.D. 53

DATE: MARCH 5, 1985

FRAME: 1 TIME: 12:00 AM DIRECTION: NE

DESCRIPTION: FACILITY VIEW FROM DOREMUS AVE

FRAME: 2 TIME: 12:00 AM DIRECTION: NE

DESCRIPTION: FACILITY VIEW FROM DOREMUS AVE

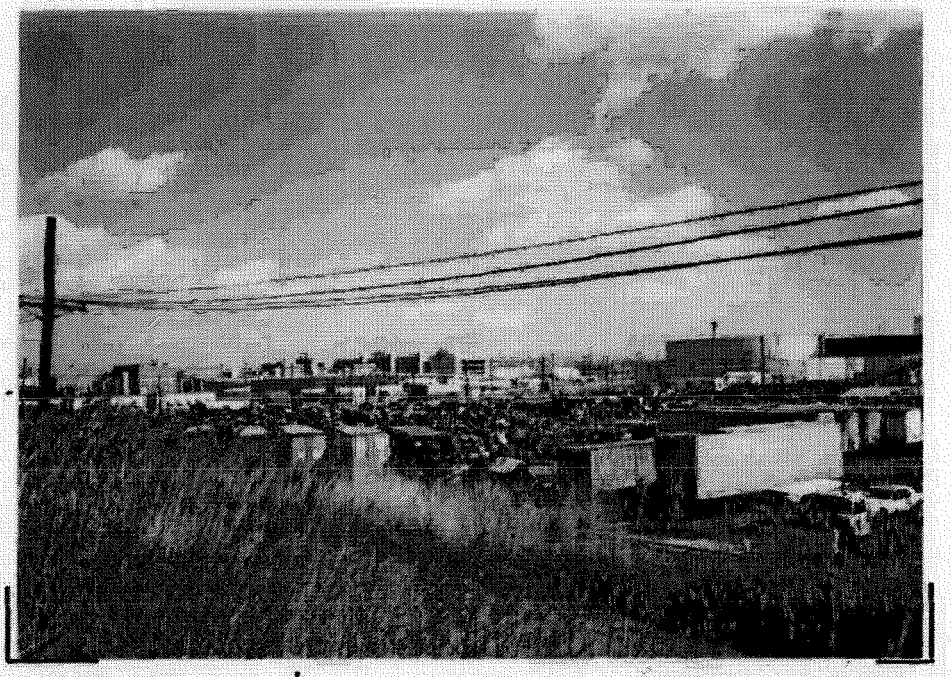
MALCOLM PIRNIE

Preliminary Assessment Photo Log

SITE: CENTRAL STEEL DRUM

I.D. 53

DATE: MARCH 5, 1985



FRAME: 3 TIME: 12:00 AM DIRECTION: N

DESCRIPTION: WESTERN END OF COMPLEX

FRAME: 4 TIME: 12:00 AM DIRECTION: SW

DESCRIPTION: NORTHERN END FROM DELANCY STREET

MALCOLM PIRNIE

**Preliminary Assessment Photo Log**

**SITE:** CENTRAL STEEL DRUM

**I.D.** 53

**DATE:** MARCH 5, 1985

**FRAME:** 5 **TIME:** 12:00 AM **DIRECTION:** SW

**DESCRIPTION:** NORTHERN END FROM DELANCY STREET

**FRAME:** 6 **TIME:** 12:00 AM **DIRECTION:** SW

**DESCRIPTION:** NORTHERN END FROM DELANCY STREET

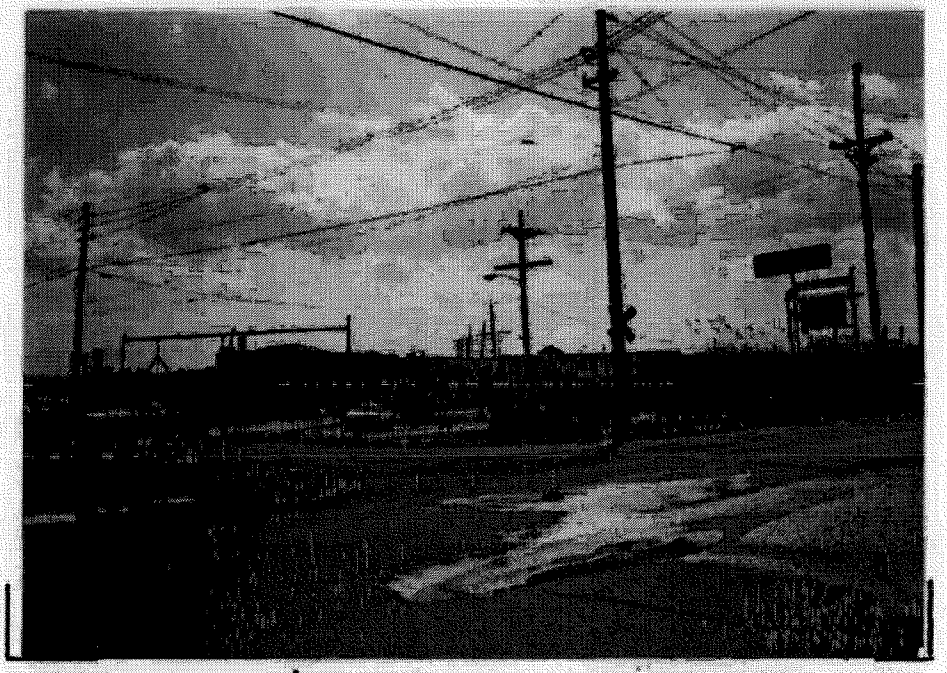
MALCOLM PIRNIE

# Preliminary Assessment Photo Log

SITE: CENTRAL STEEL DRUM

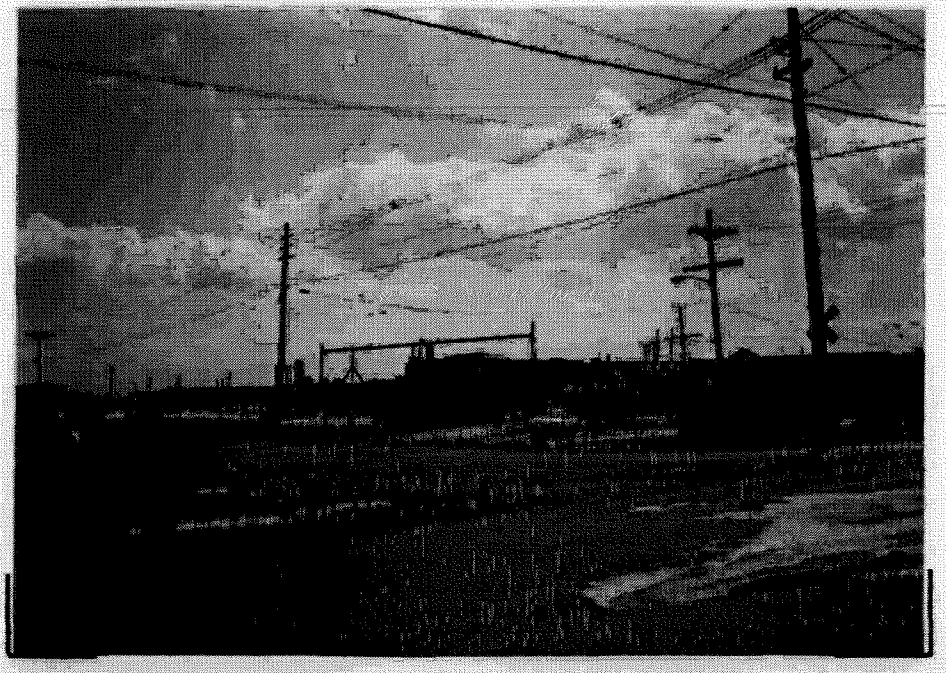
I.D. 53

DATE: MARCH 5, 1985



FRAME: 22 TIME: 12:00 AM DIRECTION: NE

DESCRIPTION: ENTRANCE FROM DOREMUS AVE



FRAME: 23 TIME: 12:00 AM DIRECTION: NE

DESCRIPTION: ENTRANCE FROM DOREMUS AVE

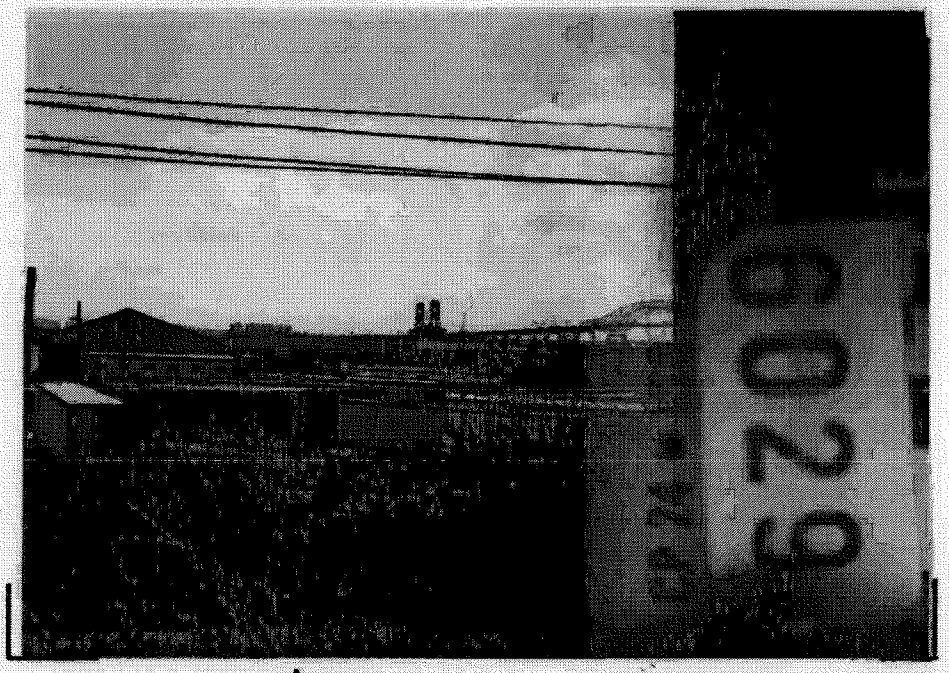
MALCOLM PIRNIE

# Preliminary Assessment Photo Log

SITE: CENTRAL STEEL DRUM

I.D. 53

DATE: MARCH 5, 1985




FRAME: 24 TIME: 12:00 AM DIRECTION: E

DESCRIPTION: EASTERN END OF FACILITY

FRAME: _____ TIME: _____ DIRECTION: _____

DESCRIPTION: _____

**NUS CORPORATION** — **TELECON NOTE**

| CONTROL NO: | DATE: | TIME: |
|---|---|---|
| | 4/3/85 | 1600 |

**DISTRIBUTION:**

| BETWEEN: | OF: | PHONE: |
|---|---|---|
| Sy Goodman | US Dept of Ag. Soil Conservation Serv | (201) 735-8210 |

**AND:** C. LaBar (NUS)

**DISCUSSION:**

Characterization of Soil in Unsaturated zone of Doremus Ave, Newark.

- Entire area was originally Marsh and is now covered with fill.
- The nature of fill materials could be anything and changes from site to site.
- You can't truely characterize ~~the~~ an area there unless you do some deep borings.
- Original state was an organic mat. with some ~~clays down to a depth of 15-20 ft~~
- Beneath organic mat was a mantle of silts some clays, (Anerobic, ~~of~~ $H_2S$) high permeability. a ~~[illegible]~~.
- This type of mantle would compact and reduce permeability when covered with fill material.

**ACTION ITEMS:**

NUS 067 REVISED 0681

# REFERENCE #7

**REFERENCE #9**

**NUS CORPORATION** — **TELECON NOTE**

| CONTROL NO: | DATE: | TIME: |
|---|---|---|
| 02-8511-15 | 2/10/86 | 1100 |

**DISTRIBUTION:**

| BETWEEN: | OF: | PHONE: |
|---|---|---|
| Kevin Krause | NJDEP | (201)669-3960 |

**AND:** Daniel Caramagno (NUS)

**DISCUSSION:**

Confirmation of Legal Actions at Central Steel Drum (CSD)

(1) Notice of Prosecution (NOP) to CSD for improper Ash disposal - 3/28/80
CSD cited for operating Treatment Storage Disposal (TSD) facility under RCRA

(2) Cited violations concerning incinerator emissions

(3) NJDEP - DWR requires onsite Groundwater monitoring.

Alic confirmed that all "creeks" in area are tidally influenced

**ACTION ITEMS:** Drainage Ditches.

NUS 067 REVISED 0581

**REFERENCE #10**

**NUS CORPORATION** **TELECON NOTE**

| CONTROL NO: | DATE: 1-24-85 | TIME: 1610 |
|---|---|---|

**DISTRIBUTION:**

| BETWEEN: | OF: City of Newark Water Supply Division | PHONE: (201) 733-~~6355~~ 3655 |
|---|---|---|

**AND:** C. LaBue (NUS)

**DISCUSSION:**

- Water Supply in Newark entirely from out of city reservoirs e.g. Wanaque, Belleville etc.

- No known use ~~of~~ of public supply well on Ferry St

**ACTION ITEMS:**

Newark Water Supply Division
Distribution Office — 733-3653
Manager (Little Falls) — 256-4965

NUS 067 REVISED 0581

**REFERENCE #11**

**NUS CORPORATION** — **TELECON NOTE**

| CONTROL NO: | DATE: | TIME: |
|---|---|---|
| 02-8511-15 | 2/12/86 | 0815 |

**DISTRIBUTION:**

| BETWEEN: | OF: | PHONE: |
|---|---|---|
| Inspector Gil Martin | Newark FD | (201) 733-7495 |

**AND:** Daniel Caramagno (NUS)

**DISCUSSION:**

Fire Hazard Potential of Central Steel Drum.

- Site does store paint and chemicals for refurbishing but not in great quantity and within general fire code regulations.

- CSD is being sued by Texaco next store for causing the ignition sparking the huge storage tank fire of a few years ago. However general evidence indicates Texaco is at fault by overfilling a storage tank which resulted in excessive vapor clouds forming near CSD incinerator.

**ACTION ITEMS:**

REFERENCE # 12

DRAFT

# GRAPHICAL EXPOSURE MODELING SYSTEM

# (GEMS)

# USER'S GUIDE

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDES AND TOXIC SUBSTANCES
EXPOSURE EVALUATION DIVISION
Task No. 4
Contract No. 68Ø16618
William Wood - Project Officer
Loren Hall - Task Manager

Prepared by:

GENERAL SOFTWARE CORPORATION
8401 Corporate Drive
Landover, Maryland 20785

Submitted: June 25, 1984

ZDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
3Enter GO to begin processing: GO
3
3Dataset name: NJ17 Length: 6
No. of variables: 4
3

| # | POP | HOUSE | DISTANCE (KM) | SECTOR |
|---|---|---|---|---|
| 1 | 0 | 0 | 0.40000001 | 1 |
| 2 | 0 | 0 | 0.81000000 | 1 |
| 3 | 1 | 1 | 1.6000000 | 1 |
| 4 | 53888 | 19882 | 3.2000000 | 1 |
| 5 | 136019 | 51090 | 4.8000002 | 1 |
| 6 | 155790 | 62931 | 6.4000001 | 1 |

3 (End of data for these variables.)
3
3Press RETURN to continue, type Pnnn to position record
3or type END to exit data window:
3
TMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMAI
24-Dec-85 02:00 PM OnLine Cap

REFERENCE #13

**NUS CORPORATION** — **TELECON NOTE**

| CONTROL NO: | DATE: | TIME: |
|---|---|---|
| 02-8511-15 | 2/24/86 | 1130 |

**DISTRIBUTION:**

| BETWEEN: | OF: | PHONE: |
|---|---|---|
| Operator | Roosevelt Marina | (201) 435-3864 |

**AND:** Daniel Caramagno (NUS)

**DISCUSSION:**

Roosevelt Marina is by Roosevelt Stadium in Jersey City which in turn is directly across ~~River~~ SC Newark Bay from area of Central Steel Drum

**ACTION ITEMS:**

NUS 067 REVISED 0681

**REFERENCE # 14**

TABLE 1

Sample Descriptions

Central Steel Drum

Newark, New Jersey

CASE #5507

| Sample ID Number | Organic Traffic Report # | Inorganic Traffic Report # | Date | Time (Hours) | Sample Type | Sample Location |
|---|---|---|---|---|---|---|
| S1 | BF590 | MBF433 | 2/05/86 | 1108 | Soil | Adjacent to conveyer belt in drain staging area. |
| S2 | BF591 | MBF434 | 2/05/86 | 1126 | Soil | Fifty feet from incinerator adjacent to conveyor belt. |
| S3 | BF592 | MBF435 | 2/05/86 | 1135 | Soil | Adjacent to manifest waste storage on south side of incinerator. |
| S4 | BF593 | MBF436 | 2/05/86 | 1555 | Soil | Adjacent to drainage ditch at southeast cc of property. |
| GW1 | BF583 | MBF426 | 2/05/86 | 1235 | Aqueous | Shallow well #102 by entrance. |
| GW2 | BF584 | MBF427 | 02/85/86 | 1400 | Aqueous | Deep well #202 by entrance. |
| GW3 | BF585 | MBF428 | 2/05/86 | 1545 | Aqueous | Deep well #204 at southeast corner of property. |
| SW1 | BF589 | MBF432 | 2/05/86 | 1500 | Aqueous | Surface water from drainage ditch at southeast corner of property. |
| Blank-1 | BF594 | MBF437 | 2/05/86 | N/A | Sample Blank | U.S. EPA Lab Edison, NJ. |

# ORGANIC DATA REPORTING QUALIFIERS

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of such flags must be explicit.

Value -If the result is a value greater than or equal to the detection limit, report the value.

U -Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J -Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g., 10J)

C -This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides $\geq$10 ng/ul in the final extract should be confirmed by GC/MS.

B -This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other -Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

Sample Number
BF590

# Organics Analysis Data Sheet
(Page 1)

Laboratory Name: ETC Corp. Case No: 5507

Lab Sample ID No: L1495V QC Report No: QV4400

Sample Matrix: Soil Contract No: 68-01-6766, 6788, 6789, 6790

Data Release Authorized By: C. Dwyer Date Sample Received: 2/6/86

## Volatile Compounds

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 2/13/86

Date Analyzed: 2/13/86

Conc/Dil Factor: 1 pH 6.9

Percent Moisture: (Not Decanted) 21.0%

| CAS Number | | ug/l or (ug/Kg) (Circle One) | |
|---|---|---|---|
| 74-87-3 | Chloromethane | 5.1 U | |
| 74-83-9 | Bromomethane | 5.1 U | |
| 75-01-4 | Vinyl Chloride | 5.1 U | |
| 75-00-3 | Chloroethane | 5.1 U | |
| 75-09-2 | Methylene Chloride | 100.2 B | CO |
| 67-64-1 | Acetone | 180.2 B | CO |
| 75-15-0 | Carbon Disulfide | 5.1 U | |
| 75-35-4 | 1, 1-Dichloroethene | 5.1 U | |
| 75-34-3 | 1, 1-Dichloroethane | 5.1 U | |
| 156-60-5 | Trans-1, 2-Dichloroethene | 5.1 U | |
| 67-66-3 | Chloroform | 5.1 U | |
| 107-06-2 | 1, 2-Dichloroethane | 5.1 U | |
| 78-93-3 | 2-Butanone | 5.1 U | |
| 71-55-6 | 1, 1, 1-Trichloroethane | 160.2 | CO |
| 56-23-5 | Carbon Tetrachloride | 5.1 U | |
| 108-05-4 | Vinyl Acetate | 5.1 U | |
| 75-27-4 | Bromodichloromethane | 5.1 U | |

| CAS Number | | ug/l or (ug/Kg) (Circle One) | |
|---|---|---|---|
| 78-87-5 | 1, 2-Dichloropropane | 5.1 U | |
| 10061-02-6 | Trans-1, 3-Dichloropropene | 5.1 U | |
| 79-01-6 | Trichloroethene | 5.1 U | |
| 124-48-1 | Dibromochloromethane | 5.1 U | |
| 79-00-5 | 1, 1, 2-Trichloroethane | 5.1 U | |
| 71-43-2 | Benzene | 5.1 U | |
| 10061-01-5 | cis-1, 3-Dichloropropene | 5.1 U | |
| 110-75-8 | 2-Chloroethylvinylether | 5.1 U | |
| 75-25-2 | Bromoform | 5.1 U | |
| 108-10-1 | 4-Methyl-2-Pentanone | 5.1 U | |
| 591-78-6 | 2-Hexanone | 5.1 U | |
| 127-18-4 | Tetrachloroethene | 5.1 U | |
| 79-34-5 | 1, 1, 2, 2-Tetrachloroethane | 5.1 U | |
| 108-88-3 | Toluene | 8.6 | |
| 108-90-7 | Chlorobenzene | 5.1 U | |
| 100-41-4 | Ethylbenzene | 7.1 | |
| 100-42-5 | Styrene | 5.1 U | |
| | Total Xylenes | 56.2 | CO |

**Data Reporting Qualifiers**

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

| | |
|---|---|
| Value | If the result is a value greater than or equal to the detection limit, report the value |
| U | Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample |
| J | Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J. |
| C | This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS |
| B | This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action |
| Other | Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report |

Laboratory Name: ETC Corp.

Case No: 5507

Sample Number: BF 590

# Organics Analysis Data Sheet
(Page 2)

## Semivolatile Compounds

Concentration: Low (Medium) (Circle One)

Date Extracted/Prepared: 2/25/86

Date Analyzed: 3/3/86 (RM)

Conc/Dil Factor: 1

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 62-75-9 | N-Nitrosodimethylamine | 23000 U |
| 108-95-2 | Phenol | 46000 U |
| 62-53-3 | Aniline | 23000 U |
| 111-44-4 | bis(-2-Chloroethyl)Ether | 23000 U |
| 95-57-8 | 2-Chlorophenol | 46000 U |
| 541-73-1 | 1, 3-Dichlorobenzene | 23000 U |
| 106-46-7 | 1, 4-Dichlorobenzene | 23000 U |
| 100-51-6 | Benzyl Alcohol | 23000 U |
| 95-50-1 | 1, 2-Dichlorobenzene | 23000 U |
| 95-48-7 | 2-Methylphenol | 46000 U |
| 39638-32-9 | bis(2-chloroisopropyl)Ether | 23000 U |
| 106-44-5 | 4-Methylphenol | 46000 U |
| 621-64-7 | N-Nitroso-Di-n-Propylamine | 23000 U |
| 67-72-1 | Hexachloroethane | 23000 U |
| 98-95-3 | Nitrobenzene | 23000 U |
| 78-59-1 | Isophorone | 23000 U |
| 88-75-5 | 2-Nitrophenol | 46000 U |
| 105-67-9 | 2, 4-Dimethylphenol | 46000 U |
| 65-85-0 | Benzoic Acid | 46000 U |
| 111-91-1 | bis(-2-Chloroethoxy)Methane | 23000 U |
| 120-83-2 | 2, 4-Dichlorophenol | 46000 U |
| 120-82-1 | 1, 2, 4-Trichlorobenzene | 23000 U |
| 91-20-3 | Naphthalene | 23000 U |
| 106-47-8 | 4-Chloroaniline | 23000 U |
| 87-68-3 | Hexachlorobutadiene | 23000 U |
| 59-50-7 | 4-Chloro-3-Methylphenol | 46000 U |
| 91-57-6 | 2-Methylnaphthalene | 23000 U |
| 77-47-4 | Hexachlorocyclopentadiene | 23000 U |
| 88-06-2 | 2, 4, 6-Trichlorophenol | 46000 U |
| 95-95-4 | 2, 4, 5-Trichlorophenol | 46000 U |
| 91-58-7 | 2-Chloronaphthalene | 23000 U |
| 88-74-4 | 2-Nitroaniline | 23000 U |
| 131-11-3 | Dimethyl Phthalate | 23000 U |
| 208-96-8 | Acenaphthylene | 23000 U |
| 99-09-2 | 3-Nitroaniline | 23000 U |

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 83-32-9 | Acenaphthene | 23000 U |
| 51-28-5 | 2, 4-Dinitrophenol | 46000 U |
| 100-02-7 | 4-Nitrophenol | 46000 U |
| 132-64-9 | Dibenzofuran | 23000 U |
| 121-14-2 | 2, 4-Dinitrotoluene | 23000 U |
| 606-20-2 | 2, 6-Dinitrotoluene | 23000 U |
| 84-66-2 | Diethylphthalate | 23000 U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 23000 U |
| 86-73-7 | Fluorene | 23000 U |
| 100-01-6 | 4-Nitroaniline | 23000 U |
| 534-52-1 | 4, 6-Dinitro-2-Methylphenol | 46000 U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 23000 U |
| 101-55-3 | 4-Bromophenyl-phenylether | 23000 U |
| 118-74-1 | Hexachlorobenzene | 23000 U |
| 87-86-5 | Pentachlorophenol | 46000 U |
| 85-01-8 | Phenanthrene | 23000 U |
| 120-12-7 | Anthracene | 23000 U |
| 84-74-2 | Di-n-Butylphthalate | 23000 U |
| 206-44-0 | Fluoranthene | 23000 U |
| 92-87-5 | Benzidine | 23000 U |
| 129-00-0 | Pyrene | 23000 U |
| 85-68-7 | Butylbenzylphthalate | 23000 U |
| 91-94-1 | 3, 3'-Dichlorobenzidine | 23000 U |
| 56-55-3 | Benzo(a)Anthracene | 23000 U |
| 117-81-7 | bis(2-Ethylhexyl)Phthalate | 17000 J |
| 218-01-9 | Chrysene | 23000 U |
| 117-84-0 | Di-n-Octyl Phthalate | 23000 U |
| 205-99-2 | Benzo(b)Fluoranthene (MS) | 23000 U |
| 207-08-9 | Benzo(k)Fluoranthene | 23000 U |
| 50-32-8 | Benzo(a)Pyrene | 23000 U |
| 193-39-5 | Indeno(1, 2, 3-cd)Pyrene | 23000 U |
| 53-70-3 | Dibenz(a, h)Anthracene | 23000 U |
| 191-24-2 | Benzo(g, h, i)Perylene | 23000 U |

(1)-Cannot be separated from diphenylamine

Case No: 5507

Sample Number: BF590

# Organics Analysis Data Sheet
## (Page 3)

### Pesticide/PCBs

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 2/12/87

Date Analyzed: 3/2/87

Conc/Dil Factor: 50

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 319-84-6 | Alpha-BHC | 150U |
| 319-85-7 | Beta-BHC | 150U |
| 319-86-8 | Delta-BHC | 530U |
| 58-89-9 | Gamma-BHC (Lindane) | 150U |
| 76-44-8 | Heptachlor | 290U |
| 309-00-2 | Aldrin | 290U |
| 1024-57-3 | Heptachlor Epoxide | 1900U |
| 959-98-8 | Endosulfan I | 530U |
| 60-57-1 | Dieldrin | 760U |
| 72-55-9 | 4, 4'-DDE | 590U |
| 72-20-8 | Endrin | 1000U |
| 33213-65-9 | Endosulfan II | 590U |
| 72-54-8 | 4, 4'-DDD | 150U |
| 7421-93-4 | Endrin Aldehyde | 1700U |
| 1031-07-8 | Endosulfan Sulfate | 3600U |
| 50-29-3 | 4, 4'-DDT | 290U |
| 72-43-5 | Methoxychlor | 4500U |
| 53494-70-5 | Endrin Ketone | 5900U |
| 57-74-9 | Chlordane | 150000 |
| 8001-35-2 | Toxaphene | 170000U |
| 12674-11-2 | Aroclor-1016 | 9000U |
| 11104-28-2 | Aroclor-1221 | 7300U |
| 11141-16-5 | Aroclor-1232 | 8400U |
| 53469-21-9 | Aroclor-1242 | 6200U |
| 12672-29-6 | Aroclor-1248 | 4500U |
| 11097-69-1 | Aroclor-1254 | 2300U |
| 11096-82-5 | Aroclor-1260 | 2400U |

$V_i$ = Volume of extract injected (ul)

$V_s$ = Volume of water extracted (ml)

$W_s$ = Weight of sample extracted (g)

$V_t$ = Volume of total extract (ul)

$V_s$ _____ or $W_s$ 75 ; $V_t$ 1000 $V_i$ 3

BF591

# Organics Analysis Data Sheet
(Page 1)

Laboratory Name: ETC Corp. Case No: 5507

Lab Sample ID No: L1496V QC Report No: QV4400

Sample Matrix: Soil Contract No: 68-01-6766, 6788, 6789, 6790

Data Release Authorized By: C. Dwyer Date Sample Received: 2/6/86

## Volatile Compounds

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 2/13/86

Date Analyzed: 2/13/86

Conc/Dil Factor: 1 pH 7.6

Percent Moisture: (Not Decanted) 38.7

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 74-87-3 | Chloromethane | 6.5U |
| 74-83-9 | Bromomethane | 6.5U |
| 75-01-4 | Vinyl Chloride | 6.5U |
| 75-00-3 | Chloroethane | 6.5U |
| 75-09-2 | Methylene Chloride | 95 B |
| 67-64-1 | Acetone | 120 B |
| 75-15-0 | Carbon Disulfide | 6.5U |
| 75-35-4 | 1, 1-Dichloroethene | 6.5U |
| 75-34-3 | 1, 1-Dichloroethane | 6.5U |
| 156-60-5 | Trans-1, 2-Dichloroethene | 6.5U |
| 67-66-3 | Chloroform | 6.5U |
| 107-06-2 | 1, 2-Dichloroethane | 6.5U |
| 78-93-3 | 2-Butanone | 560 |
| 71-55-6 | 1, 1, 1-Trichloroethane | 6.5U |
| 56-23-5 | Carbon Tetrachloride | 6.5U |
| 108-05-4 | Vinyl Acetate | 6.5U |
| 75-27-4 | Bromodichloromethane | 6.5U |

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 78-87-5 | 1, 2-Dichloropropane | 6.5U |
| 10061-02-6 | Trans-1, 3-Dichloropropene | 6.5U |
| 79-01-6 | Trichloroethene | 6.5U |
| 124-48-1 | Dibromochloromethane | 6.5U |
| 79-00-5 | 1, 1, 2-Trichloroethane | 6.5U |
| 71-43-2 | Benzene | 1.1 J |
| 10061-01-5 | cis-1, 3-Dichloropropene | 6.5U |
| 110-75-8 | 2-Chloroethylvinylether | 6.5U |
| 75-25-2 | Bromoform | 6.5U |
| 108-10-1 | 4-Methyl-2-Pentanone | 14 |
| 591-78-6 | 2-Hexanone | 6.5U |
| 127-18-4 | Tetrachloroethene | 6.5U |
| 79-34-5 | 1, 1, 2, 2-Tetrachloroethane | 6.5U |
| 108-88-3 | Toluene | 50 E |
| 108-90-7 | Chlorobenzene | 6.5U |
| 100-41-4 | Ethylbenzene | 6.7 |
| 100-42-5 | Styrene | 6.5U |
| | Total Xylenes | 30 |

**Data Reporting Qualifiers**

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

| | |
|---|---|
| | If the result is a value greater than or equal to the detection limit, report the value |
| U | Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample |
| J | Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J. |
| C | This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS |
| B | This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action |
| Other | Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report |

Laboratory Name: ETC Corp.

Case No: 5507

Sample Number: BFS91

# Organics Analysis Data Sheet
(Page 2)

## Semivolatile Compounds

Concentration: Low (Medium) (Circle One)

Date Extracted/Prepared: 2/25/86

Date Analyzed: 3/9/86

Conc/Dil Factor: 1

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 62-75-9 | N-Nitrosodimethylamine | 300000 U |
| 108-95-2 | Phenol | 60000 U |
| 62-53-3 | Aniline | 300000 U |
| 111-44-4 | bis(-2-Chloroethyl)Ether | 300000 U |
| 95-57-8 | 2-Chlorophenol | 60000 U |
| 541-73-1 | 1, 3-Dichlorobenzene | 300000 U |
| 106-46-7 | 1, 4-Dichlorobenzene | 300000 U |
| 100-51-6 | Benzyl Alcohol | 300000 U |
| 95-50-1 | 1, 2-Dichlorobenzene | 300000 U |
| 95-48-7 | 2-Methylphenol | 60000 U |
| 39638-32-9 | bis(2-chloroisopropyl)Ether | 300000 U |
| 106-44-5 | 4-Methylphenol | 60000 U |
| 621-64-7 | N-Nitroso-Di-n-Propylamine | 300000 U |
| 67-72-1 | Hexachloroethane | 300000 U |
| 98-95-3 | Nitrobenzene | 300000 U |
| 78-59-1 | Isophorone | 300000 U |
| 88-75-5 | 2-Nitrophenol | 60000 U |
| 105-67-9 | 2, 4-Dimethylphenol | 600000 U |
| 65-85-0 | Benzoic Acid | 600000 U |
| 111-91-1 | bis(-2-Chloroethoxy)Methane | 300000 U |
| 120-83-2 | 2, 4-Dichlorophenol | 600000 U |
| 120-82-1 | 1, 2, 4-Trichlorobenzene | 300000 U |
| 91-20-3 | Naphthalene | 300000 U |
| 106-47-8 | 4-Chloroaniline | 300000 U |
| 87-68-3 | Hexachlorobutadiene | 300000 U |
| 59-50-7 | 4-Chloro-3-Methylphenol | 600000 U |
| 91-57-6 | 2-Methylnaphthalene | 300000 U |
| 77-47-4 | Hexachlorocyclopentadiene | 300000 U |
| 88-06-2 | 2, 4, 6-Trichlorophenol | 600000 U |
| 95-95-4 | 2, 4, 5-Trichlorophenol | 600000 U |
| 91-58-7 | 2-Chloronaphthalene | 300000 U |
| 88-74-4 | 2-Nitroaniline | 300000 U |
| 131-11-3 | Dimethyl Phthalate | 300000 U |
| 208-96-8 | Acenaphthylene | 300000 U |
| 99-09-2 | 3-Nitroaniline | 300000 U |

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 83-32-9 | Acenaphthene | 300000 U |
| 51-28-5 | 2, 4-Dinitrophenol | 600000 U |
| 100-02-7 | 4-Nitrophenol | 600000 U |
| 132-64-9 | Dibenzofuran | 300000 U |
| 121-14-2 | 2, 4-Dinitrotoluene | 300000 U |
| 606-20-2 | 2, 6-Dinitrotoluene | 300000 U |
| 84-66-2 | Diethylphthalate | 300000 U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 300000 U |
| 86-73-7 | Fluorene | 300000 U |
| 100-01-6 | 4-Nitroaniline | 300000 U |
| 534-52-1 | 4, 6-Dinitro-2-Methylphenol | 600000 U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 300000 U |
| 101-55-3 | 4-Bromophenyl-phenylether | 300000 U |
| 118-74-1 | Hexachlorobenzene | 300000 U |
| 87-86-5 | Pentachlorophenol | 600000 U |
| 85-01-8 | Phenanthrene | 300000 U |
| 120-12-7 | Anthracene | 300000 U |
| 84-74-2 | Di-n-Butylphthalate | 300000 U |
| 206-44-0 | Fluoranthene | 300000 U |
| 92-87-5 | Benzidine | 300000 U |
| 129-00-0 | Pyrene | 300000 U |
| 85-68-7 | Butylbenzylphthalate | 300000 U |
| 91-94-1 | 3, 3'-Dichlorobenzidine | 300000 U |
| 56-55-3 | Benzo(a)Anthracene | 300000 U |
| 117-81-7 | bis(2-Ethylhexyl)Phthalate | 300000 U |
| 218-01-9 | Chrysene | 300000 U |
| 117-84-0 | Di-n-Octyl Phthalate | 300000 U |
| 205-99-2 | Benzo(b)Fluoranthene | 300000 U |
| 207-08-9 | Benzo(k)Fluoranthene | 300000 U |
| 50-32-8 | Benzo(a)Pyrene | 300000 U |
| 193-39-5 | Indeno(1, 2, 3-cd)Pyrene | 300000 U |
| 53-70-3 | Dibenz(a, h)Anthracene | 300000 U |
| 191-24-2 | Benzo(g, h, i)Perylene | 300000 U |

(1)-Cannot be separated from diphenylamine

Laboratory Name: _____

Case No: 5507

Sample Number: BF571

# Organics Analysis Data Sheet
## (Page 3)

### Pesticide/PCBs

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 2/12/88

Date Analyzed: 3/29/88

Conc/(Dil) Factor: 10

| CAS Number | | ug/l or (ug/Kg) (Circle One) |
|---|---|---|
| 319-84-6 | Alpha-BHC | 35 U |
| 319-85-7 | Beta-BHC | 35 U |
| 319-86-8 | Delta-BHC | 130 U |
| 58-89-9 | Gamma-BHC (Lindane) | 35 U |
| 76-44-8 | Heptachlor | 70 U |
| 309-00-2 | Aldrin | 70 U |
| 1024-57-3 | Heptachlor Epoxide | 460 U |
| 959-98-8 | Endosulfan I | 130 U |
| 60-57-1 | Dieldrin | 180 U |
| 72-55-9 | 4,4'-DDE | 1100 |
| 72-20-8 | Endrin | 250 U |
| 33213-65-9 | Endosulfan II | 140 U |
| 72-54-8 | 4,4'-DDD | 35 U |
| 7421-93-4 | Endrin Aldehyde | 410 U |
| 1031-07-8 | Endosulfan Sulfate | 870 U |
| 50-29-3 | 4,4'-DDT | 70 U |
| 72-43-5 | Methoxychlor | 1100 U |
| 53494-70-5 | Endrin Ketone | 1400 U |
| 57-74-9 | Chlordane | 48000 |
| 8001-35-2 | Toxaphene | 4000 U |
| 12674-11-2 | Aroclor-1016 | 2100 U |
| 11104-28-2 | Aroclor-1221 | 1700 U |
| 11141-16-5 | Aroclor-1232 | 200 U |
| 53469-21-9 | Aroclor-1242 | 1500 U |
| 12672-29-6 | Aroclor-1248 | 1100 U |
| 11097-69-1 | Aroclor-1254 | 550 U |
| 11096-82-5 | Aroclor-1260 | 580 U |

$V_i$ = Volume of extract injected (ul)

$V_s$ = Volume of water extracted (ml)

$W_s$ = Weight of sample extracted (g)

$V_t$ = Volume of total extract (ul)

$V_s$ _____ or $W_s$ .81 ; $V_t$ 1000 $V_i$ 3

Sample Number
BF592

# Organics Analysis Data Sheet
(Page 1)

Laboratory Name: ETC Corp.
Case No: 5507
Lab Sample ID No: L1497V
QC Report No: DV4406
Sample Matrix: Soil
Contract No: 68-01-6766, 6788, 6789, 6790
Data Release Authorized By: C. Dwyer
Date Sample Received: 2/6/86

## Volatile Compounds

Concentration: Low (Medium) (Circle One)
Date Extracted/Prepared: 2/14/86
Date Analyzed: 2/14/86
Conc/Dil Factor: 1 pH 6.9
Percent Moisture: (Not Decanted) 40.7

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 74-87-3 | Chloromethane | 6700 U |
| 74-83-9 | Bromomethane | 6700 U |
| 75-01-4 | Vinyl Chloride | 6700 U |
| 75-00-3 | Chloroethane | 6700 U |
| 75-09-2 | Methylene Chloride 49,000 | ~~35,000 B~~ |
| 67-64-1 | Acetone 92,000 B | ~~51,000 B~~ |
| 75-15-0 | Carbon Disulfide | 6700 U |
| 75-35-4 | 1, 1-Dichloroethene | 6700 U |
| 75-34-3 | 1, 1-Dichloroethane | 6700 U |
| 156-60-5 | Trans-1, 2-Dichloroethene | 6700 U |
| 67-66-3 | Chloroform | 6700 U |
| 107-06-2 | 1, 2-Dichloroethane | 6700 U |
| 78-93-3 | 2-Butanone | 6700 U |
| 71-55-6 | 1, 1, 1-Trichloroethane | 6700 U |
| 56-23-5 | Carbon Tetrachloride | 6700 U |
| 108-05-4 | Vinyl Acetate | 6700 U |
| 75-27-4 | Bromodichloromethane | 6700 U |

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 78-87-5 | 1, 2-Dichloropropane | 6700 U |
| 10061-02-6 | Trans-1, 3-Dichloropropene | 6700 U |
| 79-01-6 | Trichloroethene | 6700 U |
| 124-48-1 | Dibromochloromethane | 6700 U |
| 79-00-5 | 1, 1, 2-Trichloroethane | 6700 U |
| 71-43-2 | Benzene | 6700 U |
| 10061-01-5 | cis-1, 3-Dichloropropene | 6700 U |
| 110-75-8 | 2-Chloroethylvinylether | 6700 U |
| 75-25-2 | Bromoform | 6700 U |
| 108-10-1 | 4-Methyl-2-Pentanone | 6700 U |
| 591-78-6 | 2-Hexanone | 6700 U |
| 127-18-4 | Tetrachloroethene | 3,900 |
| 79-34-5 | 1, 1, 2, 2-Tetrachloroethane | 6700 U |
| 108-88-3 | Toluene | 92,000 |
| 108-90-7 | Chlorobenzene | 6700 U |
| 100-41-4 | Ethylbenzene | 38,000 |
| 100-42-5 | Styrene | 33,000 |
| | Total Xylenes | 190,000 |

### Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value — If the result is a value greater than or equal to the detection limit, report the value

U — Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read "U - Compound was analyzed for but not detected." The number is the minimum attainable detection limit for the sample

J — Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J

C — This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/µl in the final extract should be confirmed by GC/MS

B — This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

Other — Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report

Laboratory Name: [illegible]

Case No: 5507

| Sample Number |
|---|
| BF592 |

# Organics Analysis Data Sheet
(Page 2)

## Semivolatile Compounds

Concentration: Low Medium (Circle One)

Date Extracted/Prepared: 2/25/86

Date Analyzed: 3/4/86

Conc/Dil Factor: /

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 62-75-9 | N-Nitrosodimethylamine | 30000 U |
| 108-95-2 | Phenol | 60000 U |
| 62-53-3 | Aniline | 30000 U |
| 111-44-4 | bis(-2-Chloroethyl)Ether | 30000 U |
| 95-57-8 | 2-Chlorophenol | 60000 U |
| 541-73-1 | 1, 3-Dichlorobenzene | 30000 U |
| 106-46-7 | 1, 4-Dichlorobenzene | 30000 U |
| 100-51-6 | Benzyl Alcohol | 30000 U |
| 95-50-1 | 1, 2-Dichlorobenzene | 30000 U |
| 95-48-7 | 2-Methylphenol | 60000 U |
| 39638-32-9 | bis(2-chloroisopropyl)Ether | 30000 U |
| 106-44-5 | 4-Methylphenol | 60000 U |
| 621-64-7 | N-Nitroso-Di-n-Propylamine | 30000 U |
| 67-72-1 | Hexachloroethane | 30000 U |
| 98-95-3 | Nitrobenzene | 30000 U |
| 78-59-1 | Isophorone | 30000 U |
| 88-75-5 | 2-Nitrophenol | 60000 U |
| 105-67-9 | 2, 4-Dimethylphenol | 60000 U |
| 65-85-0 | Benzoic Acid | 60000 U |
| 111-91-1 | bis(-2-Chloroethoxy)Methane | 30000 U |
| 120-83-2 | 2, 4-Dichlorophenol | 60000 U |
| 120-82-1 | 1, 2, 4-Trichlorobenzene | 30000 U |
| 91-20-3 | Naphthalene | 30000 U |
| 106-47-8 | 4-Chloroaniline | 30000 U |
| 87-68-3 | Hexachlorobutadiene | 30000 U |
| 59-50-7 | 4-Chloro-3-Methylphenol | 60000 U |
| 91-57-6 | 2-Methylnaphthalene | 30000 U |
| 77-47-4 | Hexachlorocyclopentadiene | 30000 U |
| 88-06-2 | 2, 4, 6-Trichlorophenol | 60000 U |
| 95-95-4 | 2, 4, 5-Trichlorophenol | 60000 U |
| 91-58-7 | 2-Chloronaphthalene | 30000 U |
| 88-74-4 | 2-Nitroaniline | 30000 U |
| 131-11-3 | Dimethyl Phthalate | 30000 U |
| 208-96-8 | Acenaphthylene | 30000 U |
| 99-09-2 | 3-Nitroaniline | 30000 U |

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 83-32-9 | Acenaphthene | 30000 U |
| 51-28-5 | 2, 4-Dinitrophenol | 60000 U |
| 100-02-7 | 4-Nitrophenol | 60000 U |
| 132-64-9 | Dibenzofuran | 30000 U |
| 121-14-2 | 2, 4-Dinitrotoluene | 30000 U |
| 606-20-2 | 2, 6-Dinitrotoluene | 30000 U |
| 84-66-2 | Diethylphthalate | 30000 U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 30000 U |
| 86-73-7 | Fluorene | 30000 U |
| 100-01-6 | 4-Nitroaniline | 30000 U |
| 534-52-1 | 4, 6-Dinitro-2-Methylphenol | 60000 U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 30000 U |
| 101-55-3 | 4-Bromophenyl-phenylether | 30000 U |
| 118-74-1 | Hexachlorobenzene | 30000 U |
| 87-86-5 | Pentachlorophenol | 60000 U |
| 85-01-8 | Phenanthrene | 30000 U |
| 120-12-7 | Anthracene | 30000 U |
| 84-74-2 | Di-n-Butylphthalate (MM) | ~~30000 U~~ 34000 |
| 206-44-0 | Fluoranthene | 30000 U |
| 92-87-5 | Benzidine | 30000 U |
| 129-00-0 | Pyrene | 30000 U |
| 85-68-7 | Butylbenzylphthalate (MM) | ~~30000 U~~ 18000 |
| 91-94-1 | 3, 3'-Dichlorobenzidine | 30000 U |
| 56-55-3 | Benzo(a)Anthracene | 30000 U |
| 117-81-7 | bis(2-Ethylhexyl)Phthalate | 120000 |
| 218-01-9 | Chrysene | 30000 U |
| 117-84-0 | Di-n-Octyl Phthalate (MM) | ~~30000 U~~ 12000 |
| 205-99-2 | Benzo(b)Fluoranthene | 30000 U |
| 207-08-9 | Benzo(k)Fluoranthene | 30000 U |
| 50-32-8 | Benzo(a)Pyrene | 30000 U |
| 193-39-5 | Indeno(1, 2, 3-cd)Pyrene | 30000 U |
| 53-70-3 | Dibenz(a, h)Anthracene | 30000 U |
| 191-24-2 | Benzo(g, h, i)Perylene | 30000 U |

(1)-Cannot be separated from diphenylamine

Case No: 5507

Sample Number
BF592

# Organics Analysis Data Sheet
## (Page 3)

### Pesticide/PCBs

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 2/12/86

Date Analyzed: 3/29/86

Conc/Dil Factor: 10

| CAS Number | | ug/l or (ug/Kg) (Circle One) |
|---|---|---|
| 319-84-6 | Alpha-BHC | 36U |
| 319-85-7 | Beta-BHC | 36U |
| 319-86-8 | Delta-BHC | 130U |
| 58-89-9 | Gamma-BHC (Lindane) | 36U |
| 76-44-8 | Heptachlor | 72U |
| 309-00-2 | Aldrin | 72U |
| 1024-57-3 | Heptachlor Epoxide | 470U |
| 959-98-8 | Endosulfan I | 130U |
| 60-57-1 | Dieldrin | 190U |
| 72-55-9 | 4,4'-DDE | 150U |
| 72-20-8 | Endrin | 260U |
| 33213-65-9 | Endosulfan II | 150U |
| 72-54-8 | 4,4'-DDD | 36U |
| 7421-93-4 | Endrin Aldehyde | 430U |
| 1031-07-8 | Endosulfan Sulfate | 900U |
| 50-29-3 | 4,4'-DDT | 72U |
| 72-43-5 | Methoxychlor | 1100U |
| 53494-70-5 | Endrin Ketone | 1500U |
| 57-74-9 | Chlordane | 410U |
| 8001-35-2 | Toxaphene | 4110U |
| 12674-11-2 | Aroclor-1016 | >200U |
| 11104-28-2 | Aroclor-1221 | 1800U |
| 11141-16-5 | Aroclor-1232 | 210U |
| 53469-21-9 | Aroclor-1242 | 1500U |
| 12672-29-6 | Aroclor-1248 | 1100U |
| 11097-69-1 | Aroclor-1254 | 570U |
| 11096-82-5 | Aroclor-1260 | 600U |

$V_i$ = Volume of extract injected (ul)

$V_s$ = Volume of water extracted (ml)

$W_s$ = Weight of sample extracted (g)

$V_t$ = Volume of total extract (ul)

$V_s$ _____ or $W_s$ 30.81 ; $V_t$ 1000 $V_i$ 3

111

DFS12

# Organics Analysis Data Sheet
(Page 1)

Laboratory Name: ETC Corp. Case No: 5507

Lab Sample ID No: L1498V QC Report No: QV4400

Sample Matrix: Soil Contract No: 68-01-6766, 6788, 6789, 6790

Data Release Authorized By: C. Dwyer Date Sample Received: 2/6/86

## Volatile Compounds

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 2/13/86

Date Analyzed: 2/13/86

Conc/Dil Factor: 1 pH 7.1

Percent Moisture: (Not Decanted) 29.2

| CAS Number | | ug/l or (ug/Kg) (Circle One) |
|---|---|---|
| 74-87-3 | Chloromethane | 5.6 U |
| 74-83-9 | Bromomethane | 5.6 U |
| 75-01-4 | Vinyl Chloride | 5.6 U |
| 75-00-3 | Chloroethane | 5.6 U |
| 75-09-2 | Methylene Chloride | 20.8 B CO |
| 67-64-1 | Acetone | 180.0 B CO |
| 75-15-0 | Carbon Disulfide | 5.6 U |
| 75-35-4 | 1, 1-Dichloroethene | 5.6 U |
| 75-34-3 | 1, 1-Dichloroethane | 5.6 U |
| 156-60-5 | Trans-1, 2-Dichloroethene | 5.6 U |
| 67-66-3 | Chloroform | 5.6 U |
| 107-06-2 | 1, 2-Dichloroethane | 5.6 U |
| 78-93-3 | 2-Butanone | 110.0 CO |
| 71-55-6 | 1, 1, 1-Trichloroethane | 5.6 U |
| 56-23-5 | Carbon Tetrachloride | 5.6 U |
| 108-05-4 | Vinyl Acetate | 5.6 U |
| 75-27-4 | Bromodichloromethane | 5.6 U |

| CAS Number | | ug/l or (ug/Kg) (Circle One) |
|---|---|---|
| 78-87-5 | 1, 2-Dichloropropane | 5.6 U |
| 10061-02-6 | Trans-1, 3-Dichloropropene | 5.6 U |
| 79-01-6 | Trichloroethene | 5.6 U |
| 124-48-1 | Dibromochloromethane | 5.6 U |
| 79-00-5 | 1, 1, 2-Trichloroethane | 5.6 U |
| 71-43-2 | Benzene | 5.6 U |
| 10061-01-5 | cis-1, 3-Dichloropropene | 5.6 U |
| 110-75-8 | 2-Chloroethylvinylether | 5.6 U |
| 75-25-2 | Bromoform | 5.6 U |
| 108-10-1 | 4-Methyl-2-Pentanone | 5.6 U |
| 591-78-6 | 2-Hexanone | 5.6 U |
| 127-18-4 | Tetrachloroethene | 5.6 U |
| 79-34-5 | 1, 1, 2, 2-Tetrachloroethane | 5.6 U |
| 108-88-3 | Toluene | 50.0 CO |
| 108-90-7 | Chlorobenzene | 5.6 U |
| 100-41-4 | Ethylbenzene | 14.0 CO |
| 100-42-5 | Styrene | 12.0 CO |
| | Total Xylenes | 74.0 CO |

### Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

U — If the result is a value greater than or equal to the detection limit, report the value.

Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J — Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.

C — This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS.

B — This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other — Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

Case No: 3501

Sample Number: BF593

# Organics Analysis Data Sheet
(Page 2)

## Semivolatile Compounds

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 2-26-86

Date Analyzed: 3-5-86

Conc/Dil Factor: 1

Moisture (%) 29.2%

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 62-75-9 | N-Nitrosodimethylamine | 820 U |
| 108-95-2 | Phenol | 1600 U |
| 62-53-3 | Aniline | 820 U |
| 111-44-4 | bis(-2-Chloroethyl)Ether | 820 U |
| 95-57-8 | 2-Chlorophenol | 1600 U |
| 541-73-1 | 1, 3-Dichlorobenzene | 820 U |
| 106-46-7 | 1, 4-Dichlorobenzene | 820 U |
| 100-51-6 | Benzyl Alcohol | 820 U |
| 95-50-1 | 1, 2-Dichlorobenzene | 820 U |
| 95-48-7 | 2-Methylphenol | 1600 U |
| 39638-32-9 | bis(2-chloroisopropyl)Ether | 820 U |
| 106-44-5 | 4-Methylphenol | 1600 U |
| 621-64-7 | N-Nitroso-Di-n-Propylamine | 820 U |
| 67-72-1 | Hexachloroethane | 820 U |
| 98-95-3 | Nitrobenzene | 820 U |
| 78-59-1 | Isophorone | 820 U |
| 88-75-5 | 2-Nitrophenol | 1600 U |
| 105-67-9 | 2, 4-Dimethylphenol | 1600 U |
| 65-85-0 | Benzoic Acid | 1600 U |
| 111-91-1 | bis(-2-Chloroethoxy)Methane | 820 U |
| 120-83-2 | 2, 4-Dichlorophenol | 1600 U |
| 120-82-1 | 1, 2, 4-Trichlorobenzene | 220 J |
| 91-20-3 | Naphthalene | 310 J |
| 106-47-8 | 4-Chloroaniline | 820 U |
| 87-68-3 | Hexachlorobutadiene | 820 U |
| 59-50-7 | 4-Chloro-3-Methylphenol | 1600 U |
| 91-57-6 | 2-Methylnaphthalene | 120 J |
| 77-47-4 | Hexachlorocyclopentadiene | 820 U |
| 88-06-2 | 2, 4, 6-Trichlorophenol | 1600 U |
| 95-95-4 | 2, 4, 5-Trichlorophenol | 1600 U |
| 91-58-7 | 2-Chloronaphthalene | 820 U |
| 88-74-4 | 2-Nitroaniline | 820 U |
| 131-11-3 | Dimethyl Phthalate | 820 U |
| 208-96-8 | Acenaphthylene | 820 U |
| 99-09-2 | 3-Nitroaniline | 820 U |

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 83-32-9 | Acenaphthene | 820 U |
| 51-28-5 | 2, 4-Dinitrophenol | 1600 U |
| 100-02-7 | 4-Nitrophenol | 1600 U |
| 132-64-9 | Dibenzofuran | 820 U |
| 121-14-2 | 2, 4-Dinitrotoluene | 820 U |
| 606-20-2 | 2, 6-Dinitrotoluene | 820 U |
| 84-66-2 | Diethylphthalate | 820 U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 820 U |
| 86-73-7 | Fluorene | 820 U |
| 100-01-6 | 4-Nitroaniline | 820 U |
| 534-52-1 | 4, 6-Dinitro-2-Methylphenol | 1600 U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 820 U |
| 101-55-3 | 4-Bromophenyl-phenylether | 820 U |
| 118-74-1 | Hexachlorobenzene | 820 U |
| 87-86-5 | Pentachlorophenol | 1600 U |
| 85-01-8 | Phenanthrene | 200 J |
| 120-12-7 | Anthracene | 820 U |
| 84-74-2 | Di-n-Butylphthalate | 150 J |
| 206-44-0 | Fluoranthene | 310 J |
| 92-87-5 | Benzidine | 820 U |
| 129-00-0 | Pyrene | 300 J |
| 85-68-7 | Butylbenzylphthalate | 60 J |
| 91-94-1 | 3, 3'-Dichlorobenzidine | 820 U |
| 56-55-3 | Benzo(a)Anthracene | 820 U |
| 117-81-7 | bis(2-Ethylhexyl)Phthalate | 3800 B |
| 218-01-9 | Chrysene | 190 J |
| 117-84-0 | Di-n-Octyl Phthalate | 820 U |
| 205-99-2 | Benzo(b)Fluoranthene | 150 J |
| 207-08-9 | Benzo(k)Fluoranthene | 270 J |
| 50-32-8 | Benzo(a)Pyrene | 210 J |
| 193-39-5 | Indeno(1, 2, 3-cd)Pyrene | 820 U |
| 53-70-3 | Dibenz(a, h)Anthracene | 820 U |
| 191-24-2 | Benzo(g, h, i)Perylene | 820 U |

(1)-Cannot be separated from diphenylamine

Case No: 507

Sample Number: BFA593

# Organics Analysis Data Sheet
## (Page 3)

### Pesticide/PCBs

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 2/12/86

Date Analyzed: 3/29/86

Conc/Dil Factor: 1

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 319-84-6 | Alpha-BHC | 2.9 U |
| 319-85-7 | Beta-BHC | 2.9 U |
| 319-86-8 | Delta-BHC | 10 U |
| 58-89-9 | Gamma-BHC (Lindane) | 2.9 U |
| 76-44-8 | Heptachlor | 5.8 U |
| 309-00-2 | Aldrin | 5.8 U |
| 1024-57-3 | Heptachlor Epoxide | 38 U |
| 959-98-8 | Endosulfan I | 11 U |
| 60-57-1 | Dieldrin | 15 U |
| 72-55-9 | 4,4'-DDE | 1300 |
| 72-20-8 | Endrin | 21 U |
| 33213-65-9 | Endosulfan II | 12 U |
| 72-54-8 | 4,4'-DDD | 2.9 U |
| 7421-93-4 | Endrin Aldehyde | 34 U |
| 1031-07-8 | Endosulfan Sulfate | 72 U |
| 50-29-3 | 4,4'-DDT | 5.8 U |
| 72-43-5 | Methoxychlor | 89 U |
| 53494-70-5 | Endrin Ketone | 120 U |
| 57-74-9 | Chlordane | 33 U |
| 8001-35-2 | Toxaphene | 330 U |
| 12674-11-2 | Aroclor-1016 | 180 U |
| 11104-28-2 | Aroclor-1221 | 150 U |
| 11141-16-5 | Aroclor-1232 | 17 U |
| 53469-21-9 | Aroclor-1242 | 120 U |
| 12672-29-6 | Aroclor-1248 | 90 U |
| 11097-69-1 | Aroclor-1254 | 1900 ~~460~~ |
| 11096-82-5 | Aroclor-1260 | 48 U |

5 4/16/86

$V_i$ = Volume of extract injected (ul)

$V_s$ = Volume of water extracted (ml)

$W_s$ = Weight of sample extracted (g)

$V_t$ = Volume of total extract (ul)

$V_s$ _____ or $W_s$ .8U ; $V_t$ 1000 $V_i$ 3

150

Sample Number
BF583

# Organics Analysis Data Sheet
(Page 1)

Laboratory Name: ETC Corp.
Case No: 5507
Lab Sample ID No: 11690V
QC Report No: OV4372
Sample Matrix: WATER
Contract No: 68-01-6766, 6788, 6789, 6790
Data Release Authorized By: C. Dwyer
Date Sample Received: 2/6/86

## Volatile Compounds

Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 02-08-86
Date Analyzed: 02-08-86
Conc/Dil Factor: 1 pH
Percent Moisture: (Not Decanted)

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 74-87-3 | Chloromethane | 4.0U |
| 74-83-9 | Bromomethane | 4.0U |
| 75-01-4 | Vinyl Chloride | 4.0U |
| 75-00-3 | Chloroethane | 4.0U |
| 75-09-2 | Methylene Chloride | 2.1BJ |
| 67-64-1 | Acetone | 16B |
| 75-15-0 | Carbon Disulfide | 4.0U |
| 75-35-4 | 1, 1-Dichloroethene | 4.0U |
| 75-34-3 | 1, 1-Dichloroethane | 4.0U |
| 156-60-5 | Trans-1, 2-Dichloroethene | 4.0U |
| 67-66-3 | Chloroform | 4.0U |
| 107-06-2 | 1, 2-Dichloroethane | 4.0U |
| 78-93-3 | 2-Butanone | 4.0U |
| 71-55-6 | 1, 1, 1-Trichloroethane | 4.0U |
| 56-23-5 | Carbon Tetrachloride | 4.0U |
| 108-05-4 | Vinyl Acetate | 4.0U |
| 75-27-4 | Bromodichloromethane | 4.0U |

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 78-87-5 | 1, 2-Dichloropropane | 4.0U |
| 10061-02-6 | Trans-1, 3-Dichloropropene | 4.0U |
| 79-01-6 | Trichloroethene | 4.0U |
| 124-48-1 | Dibromochloromethane | 4.0U |
| 79-00-5 | 1, 1, 2-Trichloroethane | 4.0U |
| 71-43-2 | Benzene | 4.0U |
| 10061-01-5 | cis-1, 3-Dichloropropene | 4.0U |
| 110-75-8 | 2-Chloroethylvinylether | 4.0U |
| 75-25-2 | Bromoform | 4.0U |
| 108-10-1 | 4-Methyl-2-Pentanone | 4.0U |
| 591-78-6 | 2-Hexanone | 4.0U |
| 127-18-4 | Tetrachloroethene | 4.0U |
| 79-34-5 | 1, 1, 2, 2-Tetrachloroethane | 4.0U |
| 108-88-3 | Toluene | 4.0U |
| 108-90-7 | Chlorobenzene | 4.0U |
| 100-41-4 | Ethylbenzene | 4.0U |
| 100-42-5 | Styrene | 4.0U |
| | Total Xylenes | 1.4J |

### Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value — If the result is a value greater than or equal to the detection limit, report the value

U — Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U- Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample

J — Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J

C — This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS

B — This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

Other — Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report

Laboratory Name: ETC Corp.

Case No: 5507

Sample Number: BA583

# Organics Analysis Data Sheet
## (Page 2)

### Semivolatile Compounds

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 2/10/86

Date Analyzed: 2/11/86

Conc/Dil Factor: 1

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 62-75-9 | N-Nitrosodimethylamine | 20U |
| 108-95-2 | Phenol | 40U |
| 62-53-3 | Aniline | 20U |
| 111-44-4 | bis(-2-Chloroethyl)Ether | 20U |
| 95-57-8 | 2-Chlorophenol | 40U |
| 541-73-1 | 1, 3-Dichlorobenzene | 20U |
| 106-46-7 | 1, 4-Dichlorobenzene | 20U |
| 100-51-6 | Benzyl Alcohol | 20U |
| 95-50-1 | 1, 2-Dichlorobenzene | 20U |
| 95-48-7 | 2-Methylphenol | 40U |
| 39638-32-9 | bis(2-chloroisopropyl)Ether | 20U |
| 106-44-5 | 4-Methylphenol | 40U |
| 621-64-7 | N-Nitroso-Di-n-Propylamine | 20U |
| 67-72-1 | Hexachloroethane | 20U |
| 98-95-3 | Nitrobenzene | 20U |
| 78-59-1 | Isophorone | 20U |
| 88-75-5 | 2-Nitrophenol | 40U |
| 105-67-9 | 2, 4-Dimethylphenol | 40U |
| 65-85-0 | Benzoic Acid | 40U |
| 111-91-1 | bis(-2-Chloroethoxy)Methane | 20U |
| 120-83-2 | 2, 4-Dichlorophenol | 40U |
| 120-82-1 | 1, 2, 4-Trichlorobenzene | 20U |
| 91-20-3 | Naphthalene | 20U |
| 106-47-8 | 4-Chloroaniline | 20U |
| 87-68-3 | Hexachlorobutadiene | 20U |
| 59-50-7 | 4-Chloro-3-Methylphenol | 40U |
| 91-57-6 | 2-Methylnaphthalene | 20U |
| 77-47-4 | Hexachlorocyclopentadiene | 20U |
| 88-06-2 | 2, 4 6-Trichlorophenol | 40U |
| 95-95-4 | 2, 4, 5-Trichlorophenol | 40U |
| 91-58-7 | 2-Chloronaphthalene | 20U |
| 88-74-4 | 2-Nitroaniline | 20U |
| 131-11-3 | Dimethyl Phthalate | 20U |
| 208-96-8 | Acenaphthylene | 20U |
| 99-09-2 | 3-Nitroaniline | 20U |

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 83-32-9 | Acenaphthene | 20U |
| 51-28-5 | 2, 4-Dinitrophenol | 40U |
| 100-02-7 | 4-Nitrophenol | 40U |
| 132-64-9 | Dibenzofuran | 20U |
| 121-14-2 | 2, 4-Dinitrotoluene | 20U |
| 606-20-2 | 2, 6-Dinitrotoluene | 20U |
| 84-66-2 | Diethylphthalate | 20U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 20U |
| 86-73-7 | Fluorene | 20U |
| 100-01-6 | 4-Nitroaniline | 20U |
| 534-52-1 | 4, 6-Dinitro-2-Methylphenol | 40U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 20U |
| 101-55-3 | 4-Bromophenyl-phenylether | 20U |
| 118-74-1 | Hexachlorobenzene | 20U |
| 87-86-5 | Pentachlorophenol | 40U |
| 85-01-8 | Phenanthrene | 20U |
| 120-12-7 | Anthracene | 20U |
| 84-74-2 | Di-n-Butylphthalate | 20U |
| 206-44-0 | Fluoranthene | 20U |
| 92-87-5 | Benzidine | 20U |
| 129-00-0 | Pyrene | 20U |
| 85-68-7 | Butylbenzylphthalate | 20U |
| 91-94-1 | 3, 3'-Dichlorobenzidine | 20U |
| 56-55-3 | Benzo(a)Anthracene | 20U |
| 117-81-7 | bis(Z-Ethylhexyl)Phthalate | 20U |
| 218-01-9 | Chrysene | 20U |
| 117-84-0 | Di-n-Octyl Phthalate | 20U |
| 205-99-2 | Benzo(b)Fluoranthene | 20U |
| 207-08-9 | Benzo(k)Fluoranthene | 20U |
| 50-32-8 | Benzo(a)Pyrene | 20U |
| 193-39-5 | Indeno(1, 2, 3-cd)Pyrene | 20U |
| 53-70-3 | Dibenz(a, h)Anthracene | 20U |
| 191-24-2 | Benzo(g, h, i)Perylene | 20U |

(1)-Cannot be separated from diphenylamine

Labor... Case No: 5507

Sample Number BF583

# Organics Analysis Data Sheet (Page 3)

## Pesticide/PCBs

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 2/10/86

Date Analyzed: 3/26/86

Conc/(Dil) Factor: 1

| CAS Number | | (ug/l) or ug/Kg (Circle One) |
|---|---|---|
| 319-84-6 | Alpha-BHC | 0.017 u |
| 319-85-7 | Beta-BHC | 0.017 u |
| 319-86-8 | Delta-BHC | 0.062 u |
| 58-89-9 | Gamma-BHC (Lindane) | 0.017 u |
| 76-44-8 | Heptachlor | 0.035 u |
| 309-00-2 | Aldrin | 0.035 u |
| 1024-57-3 | Heptachlor Epoxide | 0.23 u |
| 959-98-8 | Endosulfan I | 0.063 u |
| 60-57-1 | Dieldrin | 0.090 u |
| 72-55-9 | 4,4'-DDE | 0.070 u |
| 72-20-8 | Endrin | 0.12 u |
| 33213-65-9 | Endosulfan II | 0.070 u |
| 72-54-8 | 4,4'-DDD | 0.017 u |
| 7421-93-4 | Endrin Aldehyde | 0.20 u |
| 1031-07-8 | Endosulfan Sulfate | 0.43 u |
| 50-29-3 | 4,4'-DDT | 0.035 u |
| 72-43-5 | Methoxychlor | 0.53 u |
| 53494-70-5 | Endrin Ketone | 0.70 u |
| 57-74-9 | Chlordane | 0.20 u |
| 8001-35-2 | Toxaphene | 2.0 u |
| 12674-11-2 | Aroclor-1016 | 1.1 u |
| 11104-28-2 | Aroclor-1221 | 0.87 u |
| 11141-16-5 | Aroclor-1232 | 0.10 u |
| 53469-21-9 | Aroclor-1242 | 0.73 u |
| 12672-29-6 | Aroclor-1248 | 0.53 u |
| 11097-69-1 | Aroclor-1254 | 0.27 u |
| 11096-82-5 | Aroclor-1260 | 0.29 u |

$V_i$ = Volume of extract injected (ul)

$V_s$ = Volume of water extracted (ml)

$W_s$ = Weight of sample extracted (g)

$V_t$ = Volume of total extract (ul)

$V_s$ 1000 or $W_s$ _____ ; $V_t$ 10,000 $V_i$ 3

Sample Number
BF584

# Organics Analysis Data Sheet
(Page 1)

Laboratory Name: ETC Corp.
Case No: 5507
Lab Sample ID No: L1491V
QC Report No: 04372
Sample Matrix: WATER
Contract No: 68-01-6766, 6788, 6789, 6790
Data Release Authorized By: C. Dunyon
Date Sample Received: 2/6/86

## Volatile Compounds

Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 2-8-86
Date Analyzed: 2-8-86
Conc/Dil Factor: 1 pH
Percent Moisture: (Not Decanted)

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 74-87-3 | Chloromethane | 4.0U |
| 74-83-9 | Bromomethane | 4.0U |
| 75-01-4 | Vinyl Chloride | 4.0U |
| 75-00-3 | Chloroethane | 4.0U |
| 75-09-2 | Methylene Chloride | 6.2B |
| 67-64-1 | Acetone | 30B |
| 75-15-0 | Carbon Disulfide | 4.0U |
| 75-35-4 | 1, 1-Dichloroethene | 4.0U |
| 75-34-3 | 1, 1-Dichloroethane | 4.0U |
| 156-60-5 | Trans-1, 2-Dichloroethene | 4.0U |
| 67-66-3 | Chloroform | 4.0U |
| 107-06-2 | 1, 2-Dichloroethane | 4.0U |
| 78-93-3 | 2-Butanone | 4.0U |
| 71-55-6 | 1, 1, 1-Trichloroethane | 4.0U |
| 56-23-5 | Carbon Tetrachloride | 4.0U |
| 108-05-4 | Vinyl Acetate | 4.0U |
| 75-27-4 | Bromodichloromethane | 4.0U |

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 78-87-5 | 1, 2-Dichloropropane | 4.0U |
| 10061-02-6 | Trans-1, 3-Dichloropropene | 4.0U |
| 79-01-6 | Trichloroethene | 4.0U |
| 124-48-1 | Dibromochloromethane | 4.0U |
| 79-00-5 | 1, 1, 2-Trichloroethane | 4.0U |
| 71-43-2 | Benzene | 4.0U |
| 10061-01-5 | cis-1, 3-Dichloropropene | 4.0U |
| 110-75-8 | 2-Chloroethylvinylether | 4.0U |
| 75-25-2 | Bromoform | 4.0U |
| 108-10-1 | 4-Methyl-2-Pentanone | 17.0 |
| 591-78-6 | 2-Hexanone | 6.3 |
| 127-18-4 | Tetrachloroethene | 4.0U |
| 79-34-5 | 1, 1, 2, 2-Tetrachloroethane | 4.0U |
| 108-88-3 | Toluene | 4.0U |
| 108-90-7 | Chlorobenzene | 4.0U |
| 100-41-4 | Ethylbenzene | 2.5J |
| 100-42-5 | Styrene | 4.0U |
| | Total Xylenes | 2.3J |

### Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

| | |
|---|---|
| Value | If the result is a value greater than or equal to the detection limit, report the value |
| U | Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample |
| J | Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J |
| C | This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS |
| B | This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action |
| Other | Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report |

Laboratory Name: ETC Corp.

Case No: 5507

Sample Number: BF582

# Organics Analysis Data Sheet
## (Page 2)

### Semivolatile Compounds

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 2/10/86

Date Analyzed: 2/11/86

Conc/Dil Factor: 1

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 62-75-9 | N-Nitrosodimethylamine | 20U |
| 108-95-2 | Phenol | 40U |
| 62-53-3 | Aniline | 20U |
| 111-44-4 | bis(-2-Chloroethyl)Ether | 20U |
| 95-57-8 | 2-Chlorophenol | 40U |
| 541-73-1 | 1, 3-Dichlorobenzene | 20U |
| 106-46-7 | 1, 4-Dichlorobenzene | 20U |
| 100-51-6 | Benzyl Alcohol | 20U |
| 95-50-1 | 1, 2-Dichlorobenzene | 20U |
| 95-48-7 | 2-Methylphenol | 40U |
| 39638-32-9 | bis(2-chloroisopropyl)Ether | 20U |
| 106-44-5 | 4-Methylphenol | 40U |
| 621-64-7 | N-Nitroso-Di-n-Propylamine | 20U |
| 67-72-1 | Hexachloroethane | 20U |
| 98-95-3 | Nitrobenzene | 20U |
| 78-59-1 | Isophorone | 20U |
| 88-75-5 | 2-Nitrophenol | 40U |
| 105-67-9 | 2, 4-Dimethylphenol | 40U |
| 65-85-0 | Benzoic Acid | 40U |
| 111-91-1 | bis(-2-Chloroethoxy)Methane | 20U |
| 120-83-2 | 2, 4-Dichlorophenol | 40U |
| 120-82-1 | 1, 2, 4-Trichlorobenzene | 20U |
| 91-20-3 | Naphthalene | 20U |
| 106-47-8 | 4-Chloroaniline | 20U |
| 87-68-3 | Hexachlorobutadiene | 20U |
| 59-50-7 | 4-Chloro-3-Methylphenol | 40U |
| 91-57-6 | 2-Methylnaphthalene | 20U |
| 77-47-4 | Hexachlorocyclopentadiene | 20U |
| 88-06-2 | 2, 4, 6-Trichlorophenol | 40U |
| 95-95-4 | 2, 4, 5-Trichlorophenol | 40U |
| 91-58-7 | 2-Chloronaphthalene | 20U |
| 88-74-4 | 2-Nitroaniline | 20U |
| 131-11-3 | Dimethyl Phthalate | 20U |
| 208-96-8 | Acenaphthylene | 20U |
| 99-09-2 | 3-Nitroaniline | 20U |

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 83-32-9 | Acenaphthene | 20U |
| 51-28-5 | 2, 4-Dinitrophenol | 40U |
| 100-02-7 | 4-Nitrophenol | 40U |
| 132-64-9 | Dibenzofuran | 20U |
| 121-14-2 | 2, 4-Dinitrotoluene | 20U |
| 606-20-2 | 2, 6-Dinitrotoluene | 20U |
| 84-66-2 | Diethylphthalate | 20U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 20U |
| 86-73-7 | Fluorene | 20U |
| 100-01-6 | 4-Nitroaniline | 20U |
| 534-52-1 | 4, 6-Dinitro-2-Methylphenol | 40U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 20U |
| 101-55-3 | 4-Bromophenyl-phenylether | 20U |
| 118-74-1 | Hexachlorobenzene | 20U |
| 87-86-5 | Pentachlorophenol | 40U |
| 85-01-8 | Phenanthrene | 20U |
| 120-12-7 | Anthracene | 20U |
| 84-74-2 | Di-n-Butylphthalate | 20U |
| 206-44-0 | Fluoranthene | 20U |
| 92-87-5 | Benzidine | 20U |
| 129-00-0 | Pyrene | 20U |
| 85-68-7 | Butylbenzylphthalate | 20U |
| 91-94-1 | 3, 3'-Dichlorobenzidine | 20U |
| 56-55-3 | Benzo(a)Anthracene | 20U |
| 117-81-7 | bis(2-Ethylhexyl)Phthalate | 20U |
| 218-01-9 | Chrysene | 20U |
| 117-84-0 | Di-n-Octyl Phthalate | 20U |
| 205-99-2 | Benzo(b)Fluoranthene | 20U |
| 207-08-9 | Benzo(k)Fluoranthene | 20U |
| 50-32-8 | Benzo(a)Pyrene | 20U |
| 193-39-5 | Indeno(1, 2, 3-cd)Pyrene | 20U |
| 53-70-3 | Dibenz(a, h)Anthracene | 20U |
| 191-24-2 | Benzo(g, h, i)Perylene | 20U |

(1)-Cannot be separated from diphenylamine

Laboratory Name: [illegible]

Case No: 5507

Sample Number: BF584

# Organics Analysis Data Sheet
(Page 3)

## Pesticide/PCBs

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 2/10/86

Date Analyzed: 3/26/86

Conc/(Dil) Factor: 1

| CAS Number | | (ug/l) or ug/Kg (Circle One) |
|---|---|---|
| 319-84-6 | Alpha-BHC | 0.017 u |
| 319-85-7 | Beta-BHC | 0.017 u |
| 319-86-8 | Delta-BHC | 0.062 u |
| 58-89-9 | Gamma-BHC (Lindane) | 0.017 u |
| 76-44-8 | Heptachlor | 0.035 u |
| 309-00-2 | Aldrin | 0.035 u |
| 1024-57-3 | Heptachlor Epoxide | 0.23 u |
| 959-98-8 | Endosulfan I | 0.063 u |
| 60-57-1 | Dieldrin | 0.090 u |
| 72-55-9 | 4,4'-DDE | 0.070 u |
| 72-20-8 | Endrin | 0.12 u |
| 33213-65-9 | Endosulfan II | 0.070 u |
| 72-54-8 | 4,4'-DDD | 0.017 u |
| 7421-93-4 | Endrin Aldehyde | 0.20 u |
| 1031-07-8 | Endosulfan Sulfate | 0.43 u |
| 50-29-3 | 4,4'-DDT | 0.035 u |
| 72-43-5 | Methoxychlor | 0.53 u |
| 53494-70-5 | Endrin Ketone | 0.70 u |
| 57-74-9 | Chlordane | 0.20 u |
| 8001-35-2 | Toxaphene | 2.0 u |
| 12674-11-2 | Aroclor-1016 | 1.1 u |
| 11104-28-2 | Aroclor-1221 | 0.87 u |
| 11141-16-5 | Aroclor-1232 | 0.10 u |
| 53469-21-9 | Aroclor-1242 | 0.73 u |
| 12672-29-6 | Aroclor-1248 | 0.53 u |
| 11097-69-1 | Aroclor-1254 | 0.27 u |
| 11096-82-5 | Aroclor-1260 | 0.29 u |

$V_i$ = Volume of extract injected (ul)

$V_s$ = Volume of water extracted (ml)

$W_s$ = Weight of sample extracted (g)

$V_t$ = Volume of total extract (ul)

$V_s$ 1000 or $W_s$ _____ ; $V_t$ 10,000 $V_i$ 3

Sample Number
BF585

# Organics Analysis Data Sheet
(Page 1)

Laboratory Name: ETC Corp. Case No: 5507
Lab Sample ID No: L1492V QC Report No: OV4372
Sample Matrix: WATER Contract No: 68-01-6766, 6788, 6789, 6790
Data Release Authorized By: R.F. Smith Date Sample Received: 2/6/86

## Volatile Compounds

Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 2/8/86
Date Analyzed: 2/8/86
Conc/Dil Factor: 1 pH
Percent Moisture: (Not Decanted)

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 74-87-3 | Chloromethane | 4.0U |
| 74-83-9 | Bromomethane | 4.0U |
| 75-01-4 | Vinyl Chloride | 4.0U |
| 75-00-3 | Chloroethane | 4.0U |
| 75-09-2 | Methylene Chloride | 115 |
| 67-64-1 | Acetone | 26B |
| 75-15-0 | Carbon Disulfide | 4.0U |
| 75-35-4 | 1, 1-Dichloroethene | 4.0U |
| 75-34-3 | 1, 1-Dichloroethane | 4.0U |
| 156-60-5 | Trans-1, 2-Dichloroethene | 4.0U |
| 67-66-3 | Chloroform | 4.0U |
| 107-06-2 | 1, 2-Dichloroethane | 4.0U |
| 78-93-3 | 2-Butanone | 4.0U |
| 71-55-6 | 1, 1, 1-Trichloroethane | 4.0U |
| 56-23-5 | Carbon Tetrachloride | 4.0U |
| 108-05-4 | Vinyl Acetate | 4.0U |
| 75-27-4 | Bromodichloromethane | 4.0U |

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 78-87-5 | 1, 2-Dichloropropane | 4.0U |
| 10061-02-6 | Trans-1, 3-Dichloropropene | 4.0U |
| 79-01-6 | Trichloroethene | 4.0U |
| 124-48-1 | Dibromochloromethane | 4.0U |
| 79-00-5 | 1, 1, 2-Trichloroethane | 4.0U |
| 71-43-2 | Benzene | 4.0U |
| 10061-01-5 | cis-1, 3-Dichloropropene | 4.0U |
| 110-75-8 | 2-Chloroethylvinylether | 4.0U |
| 75-25-2 | Bromoform | 4.0U |
| 108-10-1 | 4-Methyl-2-Pentanone | 5.7 |
| 591-78-6 | 2-Hexanone | 4.0U |
| 127-18-4 | Tetrachloroethene | 4.0U |
| 79-34-5 | 1, 1, 2, 2-Tetrachloroethane | 3.3J |
| 108-88-3 | Toluene | 1.5J |
| 108-90-7 | Chlorobenzene | 4.0U |
| 100-41-4 | Ethylbenzene | 4.0U |
| 100-42-5 | Styrene | 4.0U |
| | Total Xylenes | 2.7J |

### Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value — If the result is a value greater than or equal to the detection limit, report the value

U — Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample

J — Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J

C — This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS

B — This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

Other — Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report

Laboratory Name: ETC Corp.

Case No: 5507

Sample Number: BF585

## Organics Analysis Data Sheet
## (Page 2)

### Semivolatile Compounds

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 2/10/86

Date Analyzed: 2/11/86

Conc/Dil Factor: 1

| CAS Number | | (ug/l) or ug/Kg (Circle One) |
|---|---|---|
| 62-75-9 | N-Nitrosodimethylamine | 20U |
| 108-95-2 | Phenol | 40U |
| 62-53-3 | Aniline | 20U |
| 111-44-4 | bis(-2-Chloroethyl)Ether | 20U |
| 95-57-8 | 2-Chlorophenol | 40U |
| 541-73-1 | 1, 3-Dichlorobenzene | 20U |
| 106-46-7 | 1, 4-Dichlorobenzene | 20U |
| 100-51-6 | Benzyl Alcohol | 20U |
| 95-50-1 | 1, 2-Dichlorobenzene | 20U |
| 95-48-7 | 2-Methylphenol | 40U |
| 39638-32-9 | bis(2-chloroisopropyl)Ether | 20U |
| 106-44-5 | 4-Methylphenol | 40U |
| 621-64-7 | N-Nitroso-Di-n-Propylamine | 20U |
| 67-72-1 | Hexachloroethane | 20U |
| 98-95-3 | Nitrobenzene | 20U |
| 78-59-1 | Isophorone | 20U |
| 88-75-5 | 2-Nitrophenol | 40U |
| 105-67-9 | 2, 4-Dimethylphenol | 40U |
| 65-85-0 | Benzoic Acid | 40U |
| 111-91-1 | bis(-2-Chloroethoxy)Methane | 20U |
| 120-83-2 | 2, 4-Dichlorophenol | 40U |
| 120-82-1 | 1, 2, 4-Trichlorobenzene | 20U |
| 91-20-3 | Naphthalene | 20U |
| 106-47-8 | 4-Chloroaniline | 20U |
| 87-68-3 | Hexachlorobutadiene | 20U |
| 59-50-7 | 4-Chloro-3-Methylphenol | 40U |
| 91-57-6 | 2-Methylnaphthalene | 20U |
| 77-47-4 | Hexachlorocyclopentadiene | 20U |
| 88-06-2 | 2, 4, 6-Trichlorophenol | 40U |
| 95-95-4 | 2, 4, 5-Trichlorophenol | 40U |
| 91-58-7 | 2-Chloronaphthalene | 20U |
| 88-74-4 | 2-Nitroaniline | 20U |
| 131-11-3 | Dimethyl Phthalate | 20U |
| 208-96-8 | Acenaphthylene | 20U |
| 99-09-2 | 3-Nitroaniline | 20U |

| CAS Number | | (ug/l) ug/Kg (Circle One) |
|---|---|---|
| 83-32-9 | Acenaphthene | 20U |
| 51-28-5 | 2, 4-Dinitrophenol | 40U |
| 100-02-7 | 4-Nitrophenol | 40U |
| 132-64-9 | Dibenzofuran | 20U |
| 121-14-2 | 2, 4-Dinitrotoluene | 20U |
| 606-20-2 | 2, 6-Dinitrotoluene | 20U |
| 84-66-2 | Diethylphthalate | 20U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 20U |
| 86-73-7 | Fluorene | 20U |
| 100-01-6 | 4-Nitroaniline | 20U |
| 534-52-1 | 4, 6-Dinitro-2-Methylphenol | 40U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 20U |
| 101-55-3 | 4-Bromophenyl-phenylether | 20U |
| 118-74-1 | Hexachlorobenzene | 20U |
| 87-86-5 | Pentachlorophenol | 40U |
| 85-01-8 | Phenanthrene | 20U |
| 120-12-7 | Anthracene | 20U |
| 84-74-2 | Di-n-Butylphthalate | 20U |
| 206-44-0 | Fluoranthene | 20U |
| 92-87-5 | Benzidine | 20U |
| 129-00-0 | Pyrene | 20U |
| 85-68-7 | Butylbenzylphthalate | 20U |
| 91-94-1 | 3, 3'-Dichlorobenzidine | 20U |
| 56-55-3 | Benzo(a)Anthracene | 20U |
| 117-81-7 | bis(2-Ethylhexyl)Phthalate | 20U |
| 218-01-9 | Chrysene | 20U |
| 117-84-0 | Di-n-Octyl Phthalate | 20U |
| 205-99-2 | Benzo(b)Fluoranthene | 20U |
| 207-08-9 | Benzo(k)Fluoranthene | 20U |
| 50-32-8 | Benzo(a)Pyrene | 20U |
| 193-39-5 | Indeno(1, 2, 3-cd)Pyrene | 20U |
| 53-70-3 | Dibenz(a, h)Anthracene | 20U |
| 191-24-2 | Benzo(g, h, i)Perylene | 20U |

(1)-Cannot be separated from diphenylamine

Laboratory Name: [redacted]

Case No: 5507

Sample Number: BF585

# Organics Analysis Data Sheet
## (Page 3)

### Pesticide/PCBs

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 2/10/86

Date Analyzed: 3/26/86

Conc/(Dil) Factor: 1

| CAS Number | | (ug/l) or ug/Kg (Circle One) |
|---|---|---|
| 319-84-6 | Alpha-BHC | 0.017 U |
| 319-85-7 | Beta-BHC | 0.017 U |
| 319-86-8 | Delta-BHC | 0.060 U |
| 58-89-9 | Gamma-BHC (Lindane) | 0.017 U |
| 76-44-8 | Heptachlor | 0.035 U |
| 309-00-2 | Aldrin | 0.035 U |
| 1024-57-3 | Heptachlor Epoxide | 0.23 U |
| 959-98-8 | Endosulfan I | 0.063 U |
| 60-57-1 | Dieldrin | 0.090 U |
| 72-55-9 | 4,4'-DDE | 0.070 U |
| 72-20-8 | Endrin | 0.12 U |
| 33213-65-9 | Endosulfan II | 0.070 U |
| 72-54-8 | 4,4'-DDD | 0.017 U |
| 7421-93-4 | Endrin Aldehyde | 0.20 U |
| 1031-07-8 | Endosulfan Sulfate | 0.43 U |
| 50-29-3 | 4,4'-DDT | 0.035 U |
| 72-43-5 | Methoxychlor | 0.53 U |
| 53494-70-5 | Endrin Ketone | 0.70 U |
| 57-74-9 | Chlordane | 0.20 U |
| 8001-35-2 | Toxaphene | 2.0 U |
| 12674-11-2 | Aroclor-1016 | 1.1 U |
| 11104-28-2 | Aroclor-1221 | 0.87 U |
| 11141-16-5 | Aroclor-1232 | 0.10 U |
| 53469-21-9 | Aroclor-1242 | 0.73 U |
| 12672-29-6 | Aroclor-1248 | 0.53 U |
| 11097-69-1 | Aroclor-1254 | 0.27 U |
| 11096-82-5 | Aroclor-1260 | 0.29 U |

$V_i$ = Volume of extract injected (ul)

$V_s$ = Volume of water extracted (ml)

$W_s$ = Weight of sample extracted (g)

$V_t$ = Volume of total extract (ul)

$V_s$ 1000 or $W_s$ _____ ; $V_t$ 10,000 $V_i$ 3

Sample Number
BF 589

# Organics Analysis Data Sheet
(Page 1)

Laboratory Name: ETC Corp.
Case No: 5507
Lab Sample ID No: L1493
QC Report No: OV4372
Sample Matrix: WATER
Contract No: 68-01-6766, 6788, 6789, 6790
Data Release Authorized By: C. Dwyer
Date Sample Received: 2/6/86

## Volatile Compounds

Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 2-8-86
Date Analyzed: 2-8-86
Conc/Dil Factor: 1 pH
Percent Moisture: (Not Decanted)

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 74-87-3 | Chloromethane | 4.0U |
| 74-83-9 | Bromomethane | 4.0U |
| 75-01-4 | Vinyl Chloride | 4.0U |
| 75-00-3 | Chloroethane | 4.0U |
| 75-09-2 | Methylene Chloride | 38 |
| 67-64-1 | Acetone | 2088B |
| 75-15-0 | Carbon Disulfide | 4.0U |
| 75-35-4 | 1, 1-Dichloroethene | 2.4J |
| 75-34-3 | 1, 1-Dichloroethane | 4.0U |
| 156-60-5 | Trans-1, 2-Dichloroethene | 4.0U |
| 67-66-3 | Chloroform | 4.0U |
| 107-06-2 | 1, 2-Dichloroethane | 4.0U |
| 78-93-3 | 2-Butanone | 387J |
| 71-55-6 | 1, 1, 1-Trichloroethane | 3.6J |
| 56-23-5 | Carbon Tetrachloride | 4.0U |
| 108-05-4 | Vinyl Acetate | 4.0U |
| 75-27-4 | Bromodichloromethane | 4.0U |

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 78-87-5 | 1, 2-Dichloropropane | 4.0U |
| 10061-02-6 | Trans-1, 3-Dichloropropene | 4.0U |
| 79-01-6 | Trichloroethene | 4.0U |
| 124-48-1 | Dibromochloromethane | 4.0U |
| 79-00-5 | 1, 1, 2-Trichloroethane | 4.0U |
| 71-43-2 | Benzene | 4.0U |
| 10061-01-5 | cis-1, 3-Dichloropropene | 4.0U |
| 110-75-8 | 2-Chloroethylvinylether | 4.0U |
| 75-25-2 | Bromoform | 2.4J |
| 108-10-1 | 4-Methyl-2-Pentanone | 10U |
| 591-78-6 | 2-Hexanone | 6.3 |
| 127-18-4 | Tetrachloroethene | 4.0U |
| 79-34-5 | 1, 1, 2, 2-Tetrachloroethane | 5.9 |
| 108-88-3 | Toluene | 46 |
| 108-90-7 | Chlorobenzene | 4.0U |
| 100-41-4 | Ethylbenzene | 6. |
| 100-42-5 | Styrene | 4.0U |
| | Total Xylenes | 32 |

### Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

| | |
|---|---|
| Value | If the result is a value greater than or equal to the detection limit, report the value |
| U | Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample |
| J | Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J |
| C | This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS |
| B | This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action |
| Other | Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report |

Laboratory Name: ERC Corp.

Case No: 5507

Sample Number: BF589

# Organics Analysis Data Sheet
(Page 2)

## Semivolatile Compounds

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 2/10/86

Date Analyzed: 2/12/86

Conc/Dil Factor: 1

| CAS Number | | (ug/l) or ug/Kg (Circle One) |
|---|---|---|
| 62-75-9 | N-Nitrosodimethylamine | 20U |
| 108-95-2 | Phenol | 40U |
| 62-53-3 | Aniline | 20U |
| 111-44-4 | bis(-2-Chloroethyl)Ether | 20U |
| 95-57-8 | 2-Chlorophenol | 40U |
| 541-73-1 | 1, 3-Dichlorobenzene | 20U |
| 106-46-7 | 1, 4-Dichlorobenzene | 20U |
| 100-51-6 | Benzyl Alcohol | 20U |
| 95-50-1 | 1, 2-Dichlorobenzene | 20U |
| 95-48-7 | 2-Methylphenol | 40U |
| 39638-32-9 | bis(2-chloroisopropyl)Ether | 20U |
| 106-44-5 | 4-Methylphenol | 40U |
| 621-64-7 | N-Nitroso-Di-n-Propylamine | 20U |
| 67-72-1 | Hexachloroethane | 20U |
| 98-95-3 | Nitrobenzene | 20U |
| 78-59-1 | Isophorone | 20U |
| 88-75-5 | 2-Nitrophenol | 40U |
| 105-67-9 | 2, 4-Dimethylphenol | 40U |
| 65-85-0 | Benzoic Acid | 40U |
| 111-91-1 | bis(-2-Chloroethoxy)Methane | 20U |
| 120-83-2 | 2, 4-Dichlorophenol | 40U |
| 120-82-1 | 1, 2, 4-Trichlorobenzene | 20U |
| 91-20-3 | Naphthalene | 20U |
| 106-47-8 | 4-Chloroaniline | 20U |
| 87-68-3 | Hexachlorobutadiene | 20U |
| 59-50-7 | 4-Chloro-3-Methylphenol | 40U |
| 91-57-6 | 2-Methylnaphthalene | 20U |
| 77-47-4 | Hexachlorocyclopentadiene | 20U |
| 88-06-2 | 2, 4 6-Trichlorophenol | 40U |
| 95-95-4 | 2, 4, 5-Trichlorophenol | 40U |
| 91-58-7 | 2-Chloronaphthalene | 20U |
| 88-74-4 | 2-Nitroaniline | 20U |
| 131-11-3 | Dimethyl Phthalate | 20U |
| 208-96-8 | Acenaphthylene | 20U |
| 99-09-2 | 3-Nitroaniline | 20U |

| CAS Number | | (ug/l) ug/Kg (Circle One) |
|---|---|---|
| 83-32-9 | Acenaphthene | 20U |
| 51-28-5 | 2, 4-Dinitrophenol | 40U |
| 100-02-7 | 4-Nitrophenol | 40U |
| 132-64-9 | Dibenzofuran | 20U |
| 121-14-2 | 2, 4-Dinitrotoluene | 20U |
| 606-20-2 | 2, 6-Dinitrotoluene | 20U |
| 84-66-2 | Diethylphthalate | 20U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 20U |
| 86-73-7 | Fluorene | 20U |
| 100-01-6 | 4-Nitroaniline | 20U |
| 534-52-1 | 4, 6-Dinitro-2-Methylphenol | 40U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 20U |
| 101-55-3 | 4-Bromophenyl-phenylether | 20U |
| 118-74-1 | Hexachlorobenzene | 20U |
| 87-86-5 | Pentachlorophenol | 40U |
| 85-01-8 | Phenanthrene | 20U |
| 120-12-7 | Anthracene | 20U |
| 84-74-2 | Di-n-Butylphthalate | 20U |
| 206-44-0 | Fluoranthene | 20U |
| 92-87-5 | Benzidine | 20U |
| 129-00-0 | Pyrene | 20U |
| 85-68-7 | Butylbenzylphthalate | 20U |
| 91-94-1 | 3, 3'-Dichlorobenzidine | 20U |
| 56-55-3 | Benzo(a)Anthracene | 20U |
| 117-81-7 | bis(2-Ethylhexyl)Phthalate | 20U |
| 218-01-9 | Chrysene | 20U |
| 117-84-0 | Di-n-Octyl Phthalate | 20U |
| 205-99-2 | Benzo(b)Fluoranthene | 20U |
| 207-08-9 | Benzo(k)Fluoranthene | 20U |
| 50-32-8 | Benzo(a)Pyrene | 20U |
| 193-39-5 | Indeno(1, 2, 3-cd)Pyrene | 20U |
| 53-70-3 | Dibenz(a, h)Anthracene | 20U |
| 191-24-2 | Benzo(g, h, i)Perylene | 20U |

(1)-Cannot be seperated from diphenylamine

Laboratory Name: [illegible]

Case No: 5507

Sample Number: BF589

# Organics Analysis Data Sheet
## (Page 3)

### Pesticide/PCBs

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 2/10/86

Date Analyzed: 3/26/86

Conc/(Dil) Factor: 1

| CAS Number | | (ug/l) or ug/Kg (Circle One) |
|---|---|---|
| 319-84-6 | Alpha-BHC | 0.020 |
| 319-85-7 | Beta-BHC | 0.080 |
| 319-86-8 | Delta-BHC | 0.072 |
| 58-89-9 | Gamma-BHC (Lindane) | 0.020 |
| 76-44-8 | Heptachlor | 0.040 |
| 309-00-2 | Aldrin | 0.040 |
| 1024-57-3 | Heptachlor Epoxide | 0.26 |
| 959-98-8 | Endosulfan I | 0.073 |
| 60-57-1 | Dieldrin | 0.10 |
| 72-55-9 | 4,4'-DDE | 0.80 0.080 5x 1/2 |
| 72-20-8 | Endrin | 0.14 |
| 33213-65-9 | Endosulfan II | 0.80 0.080 5x 1/2 |
| 72-54-8 | 4,4'-DDD | 0.020 |
| 7421-93-4 | Endrin Aldehyde | 0.23 |
| 1031-07-8 | Endosulfan Sulfate | 0.49 |
| 50-29-3 | 4,4'-DDT | 0.040 |
| 72-43-5 | Methoxychlor | 0.61 |
| 53494-70-5 | Endrin Ketone | 0.80 |
| 57-74-9 | Chlordane | 0.23 |
| 8001-35-2 | Toxaphene | 2.3 |
| 12674-11-2 | Aroclor-1016 | 1.2 |
| 11104-28-2 | Aroclor-1221 | 1.0 |
| 11141-16-5 | Aroclor-1232 | 0.11 |
| 53469-21-9 | Aroclor-1242 | 0.84 |
| 12672-29-6 | Aroclor-1248 | 0.61 |
| 11097-69-1 | Aroclor-1254 | 0.31 |
| 11096-82-5 | Aroclor-1260 | 0.33 |

$V_i$ = Volume of extract injected (ul)

$V_s$ = Volume of water extracted (ml)

$W_s$ = Weight of sample extracted (g)

$V_t$ = Volume of total extract (ul)

$V_s$ 870 or $W_s$ _____ ; $V_t$ 10,000 $V_i$ 3

Sample Number
BF594

# Organics Analysis Data Sheet
(Page 1)

Laboratory Name: ETC Corp.
Case No: 5507
Lab Sample ID No: L1494V
QC Report No:
Sample Matrix: WATER
Contract No: 68-01-6766, 6788, 6789, 6790
Data Release Authorized By: C. Dwyer
Date Sample Received: 2/6/86

## Volatile Compounds

Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 2-8-86
Date Analyzed: 2-8-86
Conc/Dil Factor: 1 pH
Percent Moisture: (Not Decanted)

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 74-87-3 | Chloromethane | 4.0U |
| 74-83-9 | Bromomethane | 4.0U |
| 75-01-4 | Vinyl Chloride | 4.0U |
| 75-00-3 | Chloroethane | 4.0U |
| 75-09-2 | Methylene Chloride | 14 |
| 67-64-1 | Acetone | 66B |
| 75-15-0 | Carbon Disulfide | 4.0U |
| 75-35-4 | 1, 1-Dichloroethene | 4.0U |
| 75-34-3 | 1, 1-Dichloroethane | 4.0U |
| 156-60-5 | Trans-1, 2-Dichloroethene | 4.0U |
| 67-66-3 | Chloroform | 4.0U |
| 107-06-2 | 1, 2-Dichloroethane | 4.0U |
| 78-93-3 | 2-Butanone | ~~245~~ 22J |
| 71-55-6 | 1, 1, 1-Trichloroethane | 4.0U |
| 56-23-5 | Carbon Tetrachloride | 4.0U |
| 108-05-4 | Vinyl Acetate | 4.0U |
| 75-27-4 | Bromodichloromethane | 4.0U |

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 78-87-5 | 1, 2-Dichloropropane | 4.0U |
| 10061-02-6 | Trans-1, 3-Dichloropropene | 4.0U |
| 79-01-6 | Trichloroethene | 4.0U |
| 124-48-1 | Dibromochloromethane | 4.0U |
| 79-00-5 | 1, 1, 2-Trichloroethane | 4.0U |
| 71-43-2 | Benzene | 4.0U |
| 10061-01-5 | cis-1, 3-Dichloropropene | 4.0U |
| 110-75-8 | 2-Chloroethylvinylether | 4.0U |
| 75-25-2 | Bromoform | 4.0U |
| 108-10-1 | 4-Methyl-2-Pentanone | 3.7J |
| 591-78-6 | 2-Hexanone | 4.0U |
| 127-18-4 | Tetrachloroethene | 4.0U |
| 79-34-5 | 1, 1, 2, 2-Tetrachloroethane | 4.0U |
| 108-88-3 | Toluene | 4.0U |
| 108-90-7 | Chlorobenzene | 4.0U |
| 100-41-4 | Ethylbenzene | 4.0U |
| 100-42-5 | Styrene | 4.0U |
| | Total Xylenes | 4.0U |

**Data Reporting Qualifiers**

*For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.*

*Value* If the result is a value greater than or equal to the detection limit, report the value

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

*Other* Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report

Laboratory Name: ETC Corp.

Case No: 5507

Sample Number: BF594

# Organics Analysis Data Sheet
## (Page 2)

### Semivolatile Compounds

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 2/10/86

Date Analyzed: 2/12/86

Conc/Dil Factor: 1

| CAS Number | | ug/l or ug/Kg (Circle One) | |
|---|---|---|---|
| 62-75-9 | N-Nitrosodimethylamine | 20U | |
| 108-95-2 | Phenol | 8.7J ~~40U~~ | (NA) |
| 62-53-3 | Aniline | 20U | |
| 111-44-4 | bis(-2-Chloroethyl)Ether | 20U | |
| 95-57-8 | 2-Chlorophenol | 40U | |
| 541-73-1 | 1, 3-Dichlorobenzene | 20U | |
| 106-46-7 | 1, 4-Dichlorobenzene | 20U | |
| 100-51-6 | Benzyl Alcohol | 20U | |
| 95-50-1 | 1, 2-Dichlorobenzene | 20U | |
| 95-48-7 | 2-Methylphenol | 40U | |
| 39638-32-9 | bis(2-chloroisopropyl)Ether | 20U | |
| 106-44-5 | 4-Methylphenol | 20J ~~40U~~ | (NA) |
| 621-64-7 | N-Nitroso-Di-n-Propylamine | 20U | |
| 67-72-1 | Hexachloroethane | 20U | |
| 98-95-3 | Nitrobenzene | 20U | |
| 78-59-1 | Isophorone | 340 ~~200U~~ | (NA) |
| 88-75-5 | 2-Nitrophenol | 40U | |
| 105-67-9 | 2, 4-Dimethylphenol | 40U | |
| 65-85-0 | Benzoic Acid | 35J ~~40U~~ | (NA) |
| 111-91-1 | bis(-2-Chloroethoxy)Methane | 20U | |
| 120-83-2 | 2, 4-Dichlorophenol | 40U | |
| 120-82-1 | 1, 2, 4-Trichlorobenzene | 20U | |
| 91-20-3 | Naphthalene | 20U | |
| 106-47-8 | 4-Chloroaniline | 20U | |
| 87-68-3 | Hexachlorobutadiene | 20U | |
| 59-50-7 | 4-Chloro-3-Methylphenol | 40U | |
| 91-57-6 | 2-Methylnaphthalene | 17J ~~20U~~ | (NA) |
| 77-47-4 | Hexachlorocyclopentadiene | 20U | |
| 88-06-2 | 2, 4, 6-Trichlorophenol | 40U | |
| 95-95-4 | 2, 4, 5-Trichlorophenol | 40U | |
| 91-58-7 | 2-Chloronaphthalene | 20U | |
| 88-74-4 | 2-Nitroaniline | 20U | |
| 131-11-3 | Dimethyl Phthalate | 20U | |
| 208-96-8 | Acenaphthylene | 20U | |
| 99-09-2 | 3-Nitroaniline | 20U | |

| CAS Number | | ug/l or ug/Kg (Circle One) | |
|---|---|---|---|
| 83-32-9 | Acenaphthene | 20U | |
| 51-28-5 | 2, 4-Dinitrophenol | 40U | |
| 100-02-7 | 4-Nitrophenol | 40U | |
| 132-64-9 | Dibenzofuran | 20U | |
| 121-14-2 | 2, 4-Dinitrotoluene | 20U | |
| 606-20-2 | 2, 6-Dinitrotoluene | 20U | |
| 84-66-2 | Diethylphthalate | 20U | |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 20U | |
| 86-73-7 | Fluorene | 3.5J ~~20U~~ | (NA) |
| 100-01-6 | 4-Nitroaniline | 20U | |
| 534-52-1 | 4, 6-Dinitro-2-Methylphenol | 40U | |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 20U | |
| 101-55-3 | 4-Bromophenyl-phenylether | 20U | |
| 118-74-1 | Hexachlorobenzene | 20U | |
| 87-86-5 | Pentachlorophenol | 40U | |
| 85-01-8 | Phenanthrene | 20U | |
| 120-12-7 | Anthracene | 20U | |
| 84-74-2 | Di-n-Butylphthalate | 20U | |
| 206-44-0 | Fluoranthene | 20U | |
| 92-87-5 | Benzidine | 20U | |
| 129-00-0 | Pyrene | 20U | |
| 85-68-7 | Butylbenzylphthalate | 20U | |
| 91-94-1 | 3, 3'-Dichlorobenzidine | 20U | |
| 56-55-3 | Benzo(a)Anthracene | 20U | |
| 117-81-7 | bis(2-Ethylhexyl)Phthalate | 55 ~~20U~~ | (A) |
| 218-01-9 | Chrysene | 20U | |
| 117-84-0 | Di-n-Octyl Phthalate | 20U | |
| 205-99-2 | Benzo(b)Fluoranthene | 20U | |
| 207-08-9 | Benzo(k)Fluoranthene | 20U | |
| 50-32-8 | Benzo(a)Pyrene | 20U | |
| 193-39-5 | Indeno(1, 2, 3-cd)Pyrene | 20U | |
| 53-70-3 | Dibenz(a, h)Anthracene | 20U | |
| 191-24-2 | Benzo(g, h, i)Perylene | 20U | |

(1)-Cannot be separated from diphenylamine

Laboratory Name: _____

Case No: 5507

| Sample Number |
|---|
| 8F594 |

# Organics Analysis Data Sheet
## (Page 3)

### Pesticide/PCBs

Concentration: Low Medium (Circle One)

Date Extracted/Prepared: 2/10/86

Date Analyzed: ~~3/11/86~~ 4/11/86 RP

Conc/Dil Factor: 1

| CAS Number | | ug/l or ug/Kg (Circle One) |
|---|---|---|
| 319-84-6 | Alpha-BHC | 0.017µ |
| 319-85-7 | Beta-BHC | 0.017µ |
| 319-86-8 | Delta-BHC | 0.06µ |
| 58-89-9 | ~~Gamma-BHC (Lindane)~~ | ~~0.017µ~~ |
| 76-44-8 | ~~Heptachlor~~ | ~~0.03µ~~ |
| 309-00-2 | ~~Aldrin~~ | ~~0.03µ~~ |
| 1024-57-3 | Heptachlor Epoxide | 0.23µ |
| 959-98-8 | Endosulfan I | 0.06µ |
| 60-57-1 | Dieldrin | 0.09µ |
| 72-55-9 | 4, 4'-DDE | 0.07µ |
| 72-20-8 | Endrin | 0.12µ |
| 33213-65-9 | Endosulfan II | 0.03µ |
| 72-54-8 | 4, 4'-DDD | 0.017µ |
| 7421-93-4 | Endrin Aldehyde | 0.20µ |
| 1031-07-8 | Endosulfan Sulfate | 0.43µ |
| 50-29-3 | 4, 4'-DDT | 0.03µ |
| 72-43-5 | Methoxychlor | 0.53µ |
| 53494-70-5 | Endrin Ketone | 0.79µ |
| 57-74-9 | Chlordane | 0.20µ |
| 8001-35-2 | Toxaphene | 2.0µ |
| 12674-11-2 | ~~Aroclor-1016~~ | 1.1µ ~~0.29µ~~ W 4/12/86 |
| 11104-28-2 | Aroclor-1221 | 0.87µ |
| 11141-16-5 | Aroclor-1232 | 0.10µ |
| 53469-21-9 | Aroclor-1242 | 0.73µ |
| 12672-29-6 | Aroclor-1248 | 0.53µ |
| 11097-69-1 | Aroclor-1254 | 0.27µ |
| 11096-82-5 | ~~Aroclor-1260~~ | ~~0.29µ~~ |

$V_i$ = Volume of extract injected (ul)

$V_s$ = Volume of water extracted (ml)

$W_s$ = Weight of sample extracted (g)

$V_t$ = Volume of total extract (ul)

$V_s$ 1000 or $W_s$ _____ $V_t$ 10000 $V_i$ 3

REFERENCE # 15

TABLE 1

Sample Descriptions

Central Steel Drum

Newark, New Jersey

CASE #5507

| Sample ID Number | Organic Traffic Report # | Inorganic Traffic Report # | Date | Time (Hours) | Sample Type | Sample Location |
|---|---|---|---|---|---|---|
| S1 | BF590 | MBF433 | 2/05/86 | 1108 | Soil | Adjacent to conveyer belt in drain staging area. |
| S2 | BF591 | MBF434 | 2/05/86 | 1126 | Soil | Fifty feet from incinerator adjacent to conveyor belt. |
| S3 | BF592 | MBF435 | 2/05/86 | 1135 | Soil | Adjacent to manifest waste storage on south side of incinerator. |
| S4 | BF593 | MBF436 | 2/05/86 | 1555 | Soil | Adjacent to drainage ditch at southeast corne of property. |
| GW1 | BF583 | MBF426 | 2/05/86 | 1235 | Aqueous | Shallow well #102 by entrance. |
| GW2 | BF584 | MBF427 | 02/85/86 | 1400 | Aqueous | Deep well #202 by entrance. |
| GW3 | BF585 | MBF428 | 2/05/86 | 1545 | Aqueous | Deep well #204 at southeast corner of property. |
| SW1 | BF589 | MBF432 | 2/05/86 | 1500 | Aqueous | Surface water from drainage ditch at southeast corner of property. |
| Blank-1 | BF594 | MBF437 | 2/05/86 | N/A | Sample Blank | U.S. EPA Lab Edison, NJ. |

# INORGANIC DATA QUALIFIER

Footnotes:

NR - not required by contract at this time.

Form I:

Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (i.e., [10]. Indicate the analytical method used with P (for ICP/Flame AA) or F (for furnace).

U - Indicates elemant was analyzed for but not detected. Report with the detection limit value (e.g., 10U).

E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.

s - Indicates value determined by Method of Standard Addition.

R - Indicates spike sample recovery is not within control limits.

* - Indicates duplicate analysis in not within control limits.

\+ - Indicates the correlation coefficient for method of standard addition is less than 0.995

Form I A

GW-1

EPA Sample No. MBF426

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

Date 3/3/86

INORGANIC ANALYSIS DATA SHEET

LAB NAME JTC Environmental Cnslts. CASE NO. 5507

SOW NO. 784

LAB SAMPLE ID. NO. 72-3256 QC REPORT NO. 25C

Elements Identified and Measured

Concentration: Low ✓ Medium _____

Matrix: Water ✓ Soil _____ Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | Aluminum | 18040 ✓ | P | 13. | Magnesium | 58100 | P |
| 2. | Antimony | 59UR | P | 14. | Manganese | 3130 | P |
| 3. | Arsenic | ~~50 R~~ | F | 15. | Mercury | 36 | Cold.V. |
| 4. | Barium | 4210 | P | 16. | Nickel | 293 | P |
| 5. | Beryllium | 4.0U | P | 17. | Potassium | 32200 | A |
| 6. | Cadmium | 96 E | P | 18. | Selenium | ~~25UR~~ | F |
| 7. | Calcium | 234000 | P | 19. | Silver | 9.3U | P |
| 8. | Chromium | 877 E | P | 20. | Sodium | 203000 | P |
| 9. | Cobalt | 69 R | P | 21. | Thallium | 6.5UR | F |
| 10. | Copper | 12600 R | P | 22. | Tin | 2430 ER | P |
| 11. | Iron | 336000 | P | 23. | Vanadium | 101 | P |
| 12. | Lead | 32100 ✓ | P | 24. | Zinc | 15200 | P |

Cyanide NR Auto An Percent Solids (%) NR

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: _____

Lab Manager / _____

Form I B GWZ

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No. MBF427

Date 3/3/86

# INORGANIC ANALYSIS DATA SHEET

LAB NAME JTC Environmental Cnslts. CASE NO. 5507

SOW NO. 784

LAB SAMPLE ID. NO. 72-3257 QC REPORT NO. 25C

## Elements Identified and Measured

Concentration: Low ✓ Medium _____

Matrix: Water ✓ Soil _____ Sludge _____ Other _____

(ug/L) or mg/kg dry weight (Circle One)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | Aluminum | 132000 * | P | 13. | Magnesium | 777000 | P |
| 2. | Antimony | ~~590 R~~ | P | 14. | Manganese | 32000 | P |
| 3. | Arsenic | 50UR | F | 15. | Mercury | 0.44 | Cold.V. |
| 4. | Barium | 2290 | P | 16. | Nickel | 343 | P |
| 5. | Beryllium | 8 | P | 17. | Potassium | 204000 | A |
| 6. | Cadmium | 26 E | P | 18. | Selenium | ~~25UR~~ | F |
| 7. | Calcium | 1478000 | P | 19. | Silver | 9.3U | P |
| 8. | Chromium | 237 E | P | 20. | Sodium | 4,880,000 | P |
| 9. | Cobalt | 192 R | P | 21. | Thallium | 6.5UR | F |
| 10. | Copper | 501 R | P | 22. | Tin | 37U ER | P |
| 11. | Iron | 294000 | P | 23. | Vanadium | 361 | P |
| 12. | Lead | 474 * | P | 24. | Zinc | 1010 | P |

Cyanide NR Auto An Percent Solids (%) NR

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: _____

Lab Manager EP

GW3

Form I C

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MBF428

Date 3/4/86

INORGANIC ANALYSIS DATA SHEET

LAB NAME JTC Environmental Cnslts. CASE NO. 5507

SOW NO. 784

LAB SAMPLE ID. NO. 72-3258 QC REPORT NO. 25C

Elements Identified and Measured

Concentration: Low ✓ Medium _____

Matrix: Water ✓ Soil _____ Sludge _____ Other _____

(ug/L) or mg/kg dry weight (Circle One)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | Aluminum | 41700 * | P | 13. | Magnesium | 754000 | P |
| 2. | Antimony | 59 U R | P | 14. | Manganese | 1240 | P |
| 3. | Arsenic | ~~50 U R~~ | F | 15. | Mercury | 0.25 | Cold.V. |
| 4. | Barium | 572 | P | 16. | Nickel | 61 | P |
| 5. | Beryllium | 4.0 U | P | 17. | Potassium | 184000 | A |
| 6. | Cadmium | 219 E | P | 18. | Selenium | ~~2.5 U P~~ | F |
| 7. | Calcium | 255000 | P | 19. | Silver | 9.3 U | P |
| 8. | Chromium | 88 E | P | 20. | Sodium | 5900000 | P |
| 9. | Cobalt | 50 R | P | 21. | Thallium | 10 UR | F |
| 10. | Copper | 89 R | P | 22. | Tin | 37 U ER | P |
| 11. | Iron | 107000 | P | 23. | Vanadium | 165 | P |
| 12. | Lead | 101 A * | F | 24. | Zinc | 1880 | P |

Cyanide NR Auto An Percent Solids (%) NR

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: _____

Lab Manager EB

Form I D

SW-1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No. MBF432

Date 3/3/86

INORGANIC ANALYSIS DATA SHEET

LAB NAME JTC Environmental Cnslts. CASE NO. 5307

SOW NO. 784

LAB SAMPLE ID. NO. 72-3259 QC REPORT NO. 25C

Elements Identified and Measured

Concentration: Low ✓ Medium _____

Matrix: Water ✓ Soil _____ Sludge _____ Other _____

(ug/L) or mg/kg dry weight (Circle One)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | Aluminum | 3780 + | P | 13. | Magnesium | 19800 | P |
| 2. | Antimony | 59U R | P | 14. | Manganese | 540 | P |
| 3. | Arsenic | ~~50U R~~ | F | 15. | Mercury | 2.6 | Cold.V. |
| 4. | Barium | 1190 | P | 16. | Nickel | 84 | P |
| 5. | Beryllium | 4.0U | P | 17. | Potassium | 7360 | A |
| 6. | Cadmium | 24 E | P | 18. | Selenium | ~~5.0U R~~ | F |
| 7. | Calcium | 68900 | P | 19. | Silver | 15 | P |
| 8. | Chromium | 233 E | P | 20. | Sodium | 63400 | P |
| 9. | Cobalt | 41 R | P | 21. | Thallium | 6.5U R | F |
| 10. | Copper | 635 R | P | 22. | Tin | 96 E R | P |
| 11. | Iron | 21200 | P | 23. | Vanadium | 23 U | P |
| 12. | Lead | 2460 * | P | 24. | Zinc | 1490 | P |
| Cyanide | | NR | Auto An | Percent Solids (%) | | NR | |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: _____

Lab Manager EB

S1

Form I E

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MBF433

Date 3/4/86

# INORGANIC ANALYSIS DATA SHEET

LAB NAME JTC Environmental Cnslts. CASE NO. 5507

SOW NO. 784

LAB SAMPLE ID. NO. 72-3260 QC REPORT NO. 252

## Elements Identified and Measured

Concentration: Low ✓ Medium _____

Matrix: Water _____ Soil ✓ Sludge _____ Other _____

ug/L or (mg/kg) dry weight (Circle One)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | Aluminum | 7260 * | P | 13. | Magnesium | 4420 | P |
| 2. | Antimony | 45UR | P | 14. | Manganese | 716 | P |
| 3. | Arsenic | 11 | F | 15. | Mercury | 4.7 | Cold.V. |
| 4. | Barium | 3310 | P | 16. | Nickel | 110 | P |
| 5. | Beryllium | 3.0U | P | 17. | Potassium | 1340U | A |
| 6. | Cadmium | 115 R | P | 18. | Selenium | 19U R | F |
| 7. | Calcium | 19900 * | P | 19. | Silver | 7.1U R * | P |
| 8. | Chromium | 1110 | P | 20. | Sodium | 3810 | P |
| 9. | Cobalt | 53 | P | 21. | Thallium | 5.0U | F |
| 10. | Copper | 916 | P | 22. | Tin | 229 * | P |
| 11. | Iron | 120000 | P | 23. | Vanadium | [29] | P |
| 12. | Lead | 7070 * | P | 24. | Zinc | 3400 | P |
| Cyanide | | NR | Auto An | Percent Solids (%) | | 65.40 | |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: _____

Lab Manager _____

Form I F

S2

EPA Sample No. MBF434

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

Date 3/4/86

INORGANIC ANALYSIS DATA SHEET

LAB NAME JTC Environmental Cnslts. CASE NO. 5507

SOW NO. 784

LAB SAMPLE ID. NO. 72-3261 QC REPORT NO. 2SC

Elements Identified and Measured

Concentration: Low ✓ Medium ____

Matrix: Water ____ Soil ✓ Sludge ____ Other ____

ug/L or (mg/kg) dry weight (Circle One)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | Aluminum | 7070 * | P | 13. | Magnesium | [2830] | P |
| 2. | Antimony | 46.4 R | P | 14. | Manganese | 213 | P |
| 3. | Arsenic | 3.9 U | F | 15. | Mercury | 1.2 | Cold.V. |
| 4. | Barium | 647 | P | 16. | Nickel | 12.2 | P |
| 5. | Beryllium | 3.1 U | P | 17. | Potassium | 1370 U | A |
| 6. | Cadmium | 9.7 R | P | 18. | Selenium | 3.9 U R | F |
| 7. | Calcium | 18200 * | P | 19. | Silver | 1.3 U R * | P |
| 8. | Chromium | 136 | P | 20. | Sodium | 391 U | P |
| 9. | Cobalt | 12.9 | P | 21. | Thallium | 5.1 U | F |
| 10. | Copper | 125 | P | 22. | Tin | 178 * | P |
| 11. | Iron | 40900 | P | 23. | Vanadium | [20] | P |
| 12. | Lead | 104 | P | 24. | Zinc | 418 | P |

Cyanide NR Auto An Percent Solids (%) 63.65

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ____

Lab Manager ____

Form I H S4

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No. MBF436

Date 3/4/86

INORGANIC ANALYSIS DATA SHEET

LAB NAME JTC Environmental Cnslts. CASE NO. 5507

DAS NO. 784

SAS SAMPLE ID. NO. 72-3263 QC REPORT NO. 25C

Elements Identified and Measured

Concentration: Low ✓ Medium ____

Matrix: Water ____ Soil ✓ Sludge ____ Other ____

ug/L or (mg/kg) dry weight (Circle One)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | Aluminum | 9770 | P | 13. | Magnesium | 4420 | P |
| 2. | Antimony | 45U R | P | 14. | Manganese | 382 | P |
| 3. | Arsenic | 9.3 | F | 15. | Mercury | 2.2 | Cold.V. |
| 4. | Barium | 554 | P | 16. | Nickel | 54 | P |
| 5. | Beryllium | 3.1U | P | 17. | Potassium | 1360U | A |
| 6. | Cadmium | 1 R | P | 18. | Selenium | 3.9U R | F |
| 7. | Calcium | 4710 * | P | 19. | Silver | 7.2U R * | P |
| 8. | Chromium | 159 | P | 20. | Sodium | 3870U | P |
| 9. | Cobalt | [28] | P | 21. | Thallium | 6.3U 5.0U | F |
| 10. | Copper | 295 | P | 22. | Tin | 112 * | P |
| 11. | Iron | 53900 | P | 23. | Vanadium | [23] | P |
| 12. | Lead | 1030 | P | 24. | Zinc | 678 | P |

Cyanide NR Auto An Percent Solids (%) 64.35

Notes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ____

Lab Manager ____

Form I I

Blank

:. EPA Contract Laboratory Program
ıple Management Office
'. Box 818 - Alexandria, VA 22313
/557-2490 FTS: 8-557-2490

EPA Sample No.
MBF437

Date 3/4/86

INORGANIC ANALYSIS DATA SHEET

NAME JTC Environmental Cnslts. CASE NO. 5507

NO. 784

SAMPLE ID. NO. 72-3264 QC REPORT NO. 25C

Elements Identified and Measured

:entration: Low ✓ Medium _____

:ix: Water ✓ Soil ✓ field blank Sludge _____ Other _____

mb 3/4/86

(ug/L) or ~~mg/Kg~~ dry weight (Circle One)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Aluminum | 170U | P | 13. | Magnesium | 920U | P |
| Antimony | 59UR | P | 14. | Manganese | 12U | P |
| Arsenic | ~~6.5UR~~ | F | 15. | Mercury | 0.20U | Cold.V. |
| Barium | 29U | P | 16. | Nickel | 40U | P |
| Beryllium | 4.0U | P | 17. | Potassium | 1750U | A |
| Cadmium | 5.0U E | P | 18. | Selenium | ~~5.0U~~ R | F |
| Calcium | 1260U | P | 19. | Silver | 9.3U | P |
| Chromium | 9.4U E | P | 20. | Sodium | 4980U | P |
| Cobalt | 18UR | P | 21. | Thallium | 6.5UR | F |
| Copper | 21UR | P | 22. | Tin | 37U ER | P |
| Iron | 88U | P | 23. | Vanadium | 23U | P |
| Lead | 5.0U | F | 24. | Zinc | 38 | P |
| Ide | NR | Auto An | | Percent Solids (%) | NR | |

notes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

ents: _____

Lab Manager _____

REFERENCE #16

**NUS CORPORATION**
**SUPERFUND DIVISION**

**INTERNAL CORRESPONDENCE**
C-584-4-84-59

TO: STAFF

DATE: APRIL 17, 1984

FROM: JIM BROWN JB.

COPIES:

SUBJECT: GUIDELINES FOR PRIORITY POLLUTANT DATA EVALUATION OF INORGANICS IN SOIL/SEDIMENT*

| Element | Expected Range in Soils (parts per million)** |
|---|---|
| Aluminum | 100,000 - 800,000 |
| Chromium | 5 - 1,000 |
| Barium | 100 - 3,000 |
| Beryllium | 0.5 - 40 |
| Cadmium | 0.01 - 7 |
| Cobalt | 1 - 70 |
| Copper | 2 - 100 |
| Iron | 50,000 - 300,000 |
| Lead | 2 - 200 |
| Nickel | 10 - 1,000 |
| Manganese | 100 - 4,000 |
| Zinc | 10 - 300 |
| Boron | 1 - 20 |
| Vanadium | 20 - 500 |
| Arsenic | 1 - 50 |
| Antimony | -------- |
| Selenium | < 1 |
| Thallium | -------- |
| Mercury | 0.02 - 0.2 |
| Tin | < 5 |
| Silver | -------- |

* in "Soil Chemistry," Heinrich Bohn, 1979
USEPA, NYDEC & NJDEP have guidelines for soil management of organic wastes (sludges) that provide more detailed information on allowable loadings of potentially toxic inorganics in soil. If you have questions about inorganics, I will try to answer them.

**Units
Priority pollutants in soil and sediment are micrograms/kilogram (µg/kg).
Useful definitions/conversions are:
µg/kg = parts per billion = $10^{-9}$
mg/kg = parts per million = $10^{-6}$
1% (dry wt basis) = 10,000 ppm

JB:jls

Approved JB

NUS 064 56 1182

REFERENCE # 17

TABLE I

EPA Hazard Ranking System Waste Characteristics Values
(Toxicity/Persistence Matrix)

| Chemical/Compound | Ground Water and Surface Water Pathway Values | Air Pathway Values |
|---|---|---|
| Acenapthene | 9 | 3 |
| Acetaldehyde | 6 | 6 |
| Acetic Acid | 6 | 6 |
| Acetone | 6 | 6 |
| 2-Acetylaminoflourene | 18 | 9 |
| Aldrin | 18 | 9 |
| Ammonia | 9 | 9 |
| Aniline | 12 | 9 |
| Anthracene | 15 | 9 |
| Arsenic | 18 | 9 |
| Arsenic Acid | 18 | 9 |
| Arsenic Trioxide | 18 | 9 |
| Asbestos | 15 | 9 |
| Barium | 18 | 9 |
| Benzene | 12 | 9 |
| Benzidine | 18 | 9 |
| Benzoapyrene | 18 | 9 |
| Benzopyrene, NOS | 18 | 9 |
| Beryllium & Compounds NOS | 18 | 9 |
| Beryllium Dust, NOS | 18 | 9 |
| Bis (2-Chloroethyl) Ether | 15 | 9 |
| Bis (2-Ethylheryl Phthalate | 12 | 3 |
| Bromodichloromethane | 15 | 6 |
| Bromoform | 15 | 6 |
| Bromomethane | 15 | 9 |
| Cadmium | 18 | 9 |
| Carbon Tetrachloride | 18 | 9 |
| Chlordane | 18 | 9 |
| Chlorobenzene | 12 | 6 |
| Chloroform | 18 | 6 |
| 3-Chlorophenol | 12 | 6 |
| 4-Chlorophenol | 15 | 9 |
| 2-Chlorophenol | 12 | 6 |
| Chromium | 18 | 9 |
| Chromium, Hexavalent ($Cr^{+6}$) | 18 | 9 |

Table I (cont.)

| Chemical/Compound | Ground Water and Surface Water Pathway Values | Air Pathway Values |
|---|---|---|
| Chromium, Trivalent ($Cr^{+3}$) | 15 | 6 |
| Copper & Compounds, NOS | 18 | 9 |
| Creosote | 15 | 6 |
| Cresols | 9 | 6 |
| 4-Cresol | 12 | 9 |
| Cupric chloride | 18 | 9 |
| Cyanides (soluble salts), NOS | 12 | 9 |
| Cyclohexane | 12 | 6 |
| DDE | 18 | 9 |
| DDT | 18 | 9 |
| Diaminotoluene | 18 | 6 |
| Dibromochloromethane | 15 | 6 |
| 1, 2-Dibromo, 3-chloropropane | 18 | 9 |
| Di-N-Butyl-Phthalate | 18 | 6 |
| 1, 4-Dichlorobenzene | 15 | 6 |
| Dichlorobenzene, NOS | 18 | 6 |
| 1, 1-Dichloroethane | 12 | 6 |
| 1, 2-Dichloroethane | 12 | 9 |
| 1, 1-Dichloroethene | 15 | 9 |
| 1, 2-cis-Dichloro-ethylene | 12 | 3 |
| 1, 2-trans-Dichloro-ethylene | 12 | 3 |
| Dichloroethylene, NOS | 12 | 3 |
| 2, 4-Dichlorophenol | 18 | 6 |
| 2, 4-Dichlorophenoxyacetic Acid | 18 | 9 |
| Dicyclopentadiene | 18 | 9 |
| Dieldrin | 18 | 9 |
| 2, 4-Dinitrotoluene | 15 | 9 |
| Dioxin | 18 | 9 |
| Endosulfan | 18 | 9 |
| Endrin | 18 | 9 |
| Ethylbenzene | 9 | 6 |
| Ethylene Dibromide | 18 | 9 |
| Ethylene Glycol | 9 | 6 |
| Ethyl Ether | 15 | 3 |
| Ethylmethacrylate | 12 | 6 |

Table I (cont.)

| Chemical/Compound | Ground Water and Surface Water Pathway Values | Air Pathway Values |
|---|---|---|
| Fluorine | 18 | 9 |
| Formaldehyde | 9 | 9 |
| Formic Acid | 9 | 6 |
| Heptachlor | 18 | 9 |
| Hexachlorobenzene | 15 | 6 |
| Hexachlorobutadiene | 18 | 9 |
| Hexachlorocyclohexane, NOS | 18 | 9 |
| Hexachlorocyclopentadiene | 18 | 9 |
| Hydrochloric Acid | 9 | 6 |
| Hydrogen Sulfide | 18 | 9 |
| Indene | 12 | 6 |
| Iron & Compounds, NOS | 18 | 9 |
| Isophorone | 12 | 6 |
| Isopropyl Ether | 9 | 3 |
| Kelthane | 15 | 6 |
| Kepone | 18 | 9 |
| Lead | 18 | 9 |
| Lindane | 18 | 9 |
| Magnesium & Compounds, NOS | 15 | 6 |
| Manganese & Compounds, NOS | 18 | 9 |
| Mercury | 18 | 9 |
| Mercury Chloride | 18 | 9 |
| Methoxychlor | 15 | 6 |
| 4, 4-Methylene-Bis-(2-Chloroaniline) | 18 | 9 |
| Methylene Chloride | 12 | 6 |
| Methyl Ethyl Ketone | 6 | 6 |
| Methyl Isobutyl Ketone | 12 | 6 |
| 4-Methyl-2-Nitroaniline | 12 | 9 |
| Methyl Parathion | 9 | 9 |
| 2-Methylpyridine | 12 | 6 |
| Mirex | 18 | 9 |

Table I (cont.)

| Chemical/Compound | Ground Water and Surface Water Pathway Values | Air Pathway Values |
|---|---|---|
| Naphthalene | 9 | 6 |
| Nickel & Compounds, NOS | 18 | 9 |
| Nitric Acid | 9 | 9 |
| Nitroaniline, NOS | 18 | 9 |
| Nitrogen Compounds, NOS | 12 | 0 |
| Nitroguanidine | 12 | 9 |
| Nitrophenol, NOS | 15 | 9 |
| m-Nitrophenol | 15 | |
| o-Nitrophenol | 12 | |
| p-Nitrophenol | 15 | |
| Nitrosodiphenylamine | 12 | 6 |
| Parathion | 9 | 9 |
| Pentachlorophenol (PCP) | 18 | 9 |
| Pesticides, NOS | 18 | 9 |
| Phenanthrene | 15 | 9 |
| Phenol | 12 | 9 |
| Phosgene | 9 | 9 |
| Polybrominated Biphenyl (PBB), NOS | 18 | 9 |
| Polychlorinated Biphenyls (PCB), NOS | 18 | 9 |
| Potassium Chromate | 18 | 9 |
| Radium & Compounds, NOS | 18 | 9 |
| Radon & Compounds, NOS | 15 | 9 |
| RDX (Cyclonite) | 15 | |
| 2, 4-D, Salts & Esters | 18 | 9 |
| Selenium | 15 | 9 |
| Sevin (Carbaryl) | 18 | 9 |
| Sodium Cyanide | 12 | 9 |
| Styrene | 9 | 6 |
| Sulfate | 9 | 0 |
| Sulfuric Acid | 9 | 9 |
| 2, 4, 5-T | 18 | 9 |
| 1, 1, 2, 2-Tetrachloroethane | 18 | 9 |
| Tetrachloroethane, NOS | 18 | 9 |
| 1, 1, 2, 2-Tetrachloroethene | 12 | 6 |

Table I (cont.)

| Chemical/Compound | Ground Water and Surface Water Pathway Values | Air Pathway Values |
|---|---|---|
| Tetraethyl Lead | 18 | 9 |
| Tetrahydrofuran | 15 | 6 |
| Thorium & Compounds, NOS | 18 | 9 |
| Toluene | 9 | 6 |
| TNT | 12 | |
| Toxaphene | 18 | 9 |
| Tribromomethane | 18 | 9 |
| 1, 2, 4-Trichlorobenzene | 15 | 6 |
| 1, 3, 5-Trichlorobenzene | 15 | 6 |
| 1, 1, 1-Trichloroethane | 12 | 6 |
| 1, 1, 2-Trichloroethane | 15 | 6 |
| Trichloroethane, NOS | 15 | 6 |
| Trichloroethene | 12 | 6 |
| 1, 1, 1-Trichloropropane | 12 | 6 |
| 1, 1, 2-Trichloropropane | 12 | 6 |
| 1, 2, 2-Trichloropropane | 12 | 6 |
| 1, 2, 3-Trichloropropane | 15 | 9 |
| Uranium & Compounds, NOS | 18 | 9 |
| Varsol | 12 | 6 |
| Vinyl Chloride | 15 | 9 |
| Xylene | 9 | 6 |
| Zinc & Compounds, NOS | 18 | 9 |
| Zinc Cyanide | 18 | 9 |

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10007

DEC 2 1982

Joseph Rogalski
Assistant Director for Enforcement
Division of Waste Management
120 Route 156
Yardville, New Jersey 08620

Re: Central Steel Drum
RCRA ID No. NJD011482577

Dear Mr. Rogalski:

I am writing you to enlist the cooperation of the New Jersey Department of Environmental Protection in tackling the problem of hazardous waste contamination at the facility owned and operated by Central Steel Drum at 704 Doremus Avenue, Newark.

On March 19, 1982 EPA issued an administrative complaint to Central Steel Drum pursuant to the Resource Conservation and Recovery Act. (See enclosure.) The complaint sought remedial relief and a penalty of $38,800. Since then, EPA has met with the company and we are nearing agreement upon the wording of a Consent Agreement and Final Compliance Order. Initially EPA had included language in the agreement requiring Central Steel to "identify and remove all topsoil contaminated with hazardous waste (with particular attention to the northwest corner of the Respondant's facility (near the stream bed))". Since then, Bill Brown of NJDEP has arranged for the installation of three groundwater monitoring wells at the facility, and Al Iannuzzi has visited the site on February 3, 1982 and June 24, 1982. The company disposed of hazardous waste ash on the property in the past, and sampling has confirmed the presence of hazardous waste in the soil and adjoining polluted creek. A remedial program needs to be developed but it makes sense to await the results of groundwater sampling and the performance of any other sampling deemed appropriate.

EPA would like to conclude its enforcement action with the understanding that Central Steel will work with DEP to identify the extent of contamination and to develop a remedial program - the state has assumed the lead on the groundwater monitoring issue and has investigated soil contamination at the facility, so it seems sensible for DEP to take the lead in developing remedial steps. Developing a program for inclusion in EPA's settlement would delay negotiation of a settlement and possibly jeopardize our collection of a sizeable penalty. We would prefer to conclude a settlement addressing the problems noted in the Complaint issued to Central Steel

BBG000118

(with the exception of groundwater monitoring and eliminating contamination of the soil and creek). DEP would have to devote the resources to address these latter problems.

I have discussed this matter with George Smajda, and he appeared to be agreeable to this approach.

If you have any questions, I can be reached at (212) 264-4472.

Sincerely yours,

Willie Sawyer

William K. Sawyer
Attorney
General Enforcement Branch
Enforcement Division

Enclosure

ecology and environment, inc.
300 McGAW DRIVE, RARITAN CENTER, 2ND FLOOR, EDISON, NEW JERSEY 08837, TEL 201-225-6659
International Specialists in the Environmental Sciences

MEMORANDUM

TO: Fred N. Rubel, Chief - Hazard Response Branch, U.S. EPA

FROM: Danny L. Barney, TATL II

SUBJECT: Central Steel Drum Recyclers, Doremus Avenue, Newark, New Jersey

DATE: 18 September 1981

During the EPA/TAT response to a burning rail tank car of ethylene oxide in Newark, New Jersey on 28 July 1981, TAT member Dave Marlowe and I were asked by the Newark Fire Department (NFD) to conduct air monitoring at the nearby Circle Air Freight facility. Although the freight facility was upwind of te burning car, we conducted the test and did note above background readings with the HNU. We were then escorted by NFD 2nd Battalion Chief Nolan to the nearby Central Steel Drum Recyclers on Doremus Avenue.

The recycling facility was closed for the night, with (reportedly) only a night watchman present. The night watchman gave verbal permission for Marlowe and I to survey the facility, which consists of an incinerator, drum painting buildings, and open drum storage. The facility was extremely disreputable and housekeeping non-existant. HNU readings were 20 to 30 ppm in open areas and 50 to 100 at the entrance of the drum painting area. The site, which covers 5 to 10 acres is virtually covered with pools of oil and various chemicals. The area is all filled marsh and is not covered by concrete or asphalt. Along the back of the site, oil and chemicals were observed flowing into adjacent ditches and wetlands. The number of drums on the site is unknown, however, I would estimate the number to be in the tens of thousands, many of which are leaking.

The incinerator was decrepit and had no scrubber system. Material cleaned from the drums was being burned inside the incinerator.

Partially through the inspection, the night watchman paged Marlowe and I on a P.A. system, and asked us to report to the office. We were then told we had to leave immediately. The watchman at this point was very upset and gave every indication of being extremely frightened. At that time we departed the site.

There is very strong visual evidence to suggest flagrant violations of NPDES, RCRA, FWPCA, and CERCLA. Due to the nature of the site and the magnitude of the problem, I recommend that a joint inspection be made by EPA, NJDEP, and local and State health officials. I also strongly recommend that EPA attorneys become involved in the case prior to any inspection, and that they provide the inspectors with any available information concerning ownership of the site, previous violation history, and current site status.

BBG000120

C.S.D. Co. has their waste ash transported by Jonas Waste Removal located at Barkridge Road, Sewell, N.J. 08080 and it is disposed of at Geological Reclamation Operations and Waste Systems, Inc.(GROWS Inc.) located at Bordentown NewFord Mill Road in Morrisville, PA. 19067.

FINDINGS: Based upon information provided by company officials and a review of existing records.

Manifest System:

C.S.D. Co had an insufficient manifest system. The TSD facility certification form was not found along with the generator form. Parts of the manifest were not completely filled out(ie. DOT waste description was missing). In addition, manifests for shipments prior to January 1981 were not available on request. There were a total of 11 manifest out of a possible 17 shipments.

Inspection Schedule:

No written inspection plan was available upon request. No one is assigned the responsibility of checking the waste for signs of disturbance.

Personnel Training:

No documents indicating job descriptions, actual training or future training to be given to personnel were available upon request.

Contingency Plan:

No contingency plan was available. The emergency coordinator is the supervisor in the vicinity of the emergency.

Operating Record:

No operating records were available upon request. Information on the location waste analysis, and operating summary reports of the waste ash were not available.

Closure and Post-Closure Plan:

No plans were available on request.

Waste Analysis Plan:

CSD did not have their own waste analysis plan but, Mr. Adamson, the plant manager, showed us two waste analysis performed by GROWS Inc. on the ash pile CSD manifests as non-hazardous. (See Appendix C for a recent EP Toxicity waste analysis performed on the waste ash.)

Visual Inspection of Facility

Mr. Adamson conducted a tour of the facility operations. All members of the inspection team were present with the exception of Mike Skirka who stayed behind with the equipment that was brought to the facility.

En route to the incinerating portion of the facility we were conducted past machinery that was throwing particules into the air and obstructing our vision. In addition, "empty drums" were blocking the way and were immediately removed by Mr. Adamson. Also, the corridors were filled with sludge and particulate matter. Upon arriving at the incinerator, we found approximately three men, without respiratory protection, loading drums with Sherwin-Williams labels onto a conveyor belt leading into the incinerator. At this point fumes were coming from the incinerator and Ms. Morales informed Mr. Adamson that she could not stay at this point of the process for too long a period of time. As the drums with Sherwin-Williams labels entered the incinerator, a plume of grey smoke and combustion by-product was emitted from the incinerator. At this point Hank Wheat, who was operating an HNU photoionization analyzer (organic vapor detector) indicated to us that the meter had been fluctuating and was now reading off scale(over 2,000 ppm). Standard operating procedure required that we wear Self-Contained Breathing Apparatus(SCBA) protection so we immediately left the incineration area. While leaving the area, another darker plume and an acidic mist surrounded us. The incinerator operation came to a halt for lunch break and the plume and mists dispersed.

Mr. Adamson then took us to the sludge burning incinerator and showed us how the scraper system worked. He stated that the company was having problems with the sludge incinerator and that it was presently burning sludge at a temperature range of 2,000-2,600° F for 8 hours. The resultant ash is scraped out of the incinerator by hand and is accumulated on what appeared to be bare ground 15 feet away. The pile is offered no protection from the elements. The pile is reportedly transported from the facility every ten days in a 20 cubic yard container.

At this point it was noted by Ms. Morales and Mr. Wheat, that there were random open drums filled with sludge matter and also drums with more than an inch of an adhesive or resin material inside. Some drums were found laying on the ground in disarray with resinous material spilling from it.

The inspection team then started back to the office and, en route, noted what appeared to be a ditch on the southeastern part of the facility. When asked what it was, Mr. Adamson stated that it was a small creek and that he would provide us with the name when we returned to the office. The area around the ditch appeared to be disturbed and the ditch had a green color with an oily sheen to it. Upon arriving at the office, Mr. Adamson asked Mr. Fischer(the company Secretary who signed the notification form) the name of the creek and no one seemed to know.

This concluded the inspection.

DISCUSSION

CSD recycles "empty drums" and in the process a sludge is generated. This sludge is then burned in a sludge burning incinerator which turns the sludge into an ash. CSD does not perform waste analysis on their waste since they believe it to be non-hazardous after it is burned. A waste analysis was performed by GROWS Inc.'s outside independent laboratory, Ages Laboratory located in Potstown, PA. GROWS Inc. has a Retesting Policy that requires that a sample of waste be tested every year to insure that the waste they receive is the same as the initial shipment. The initial sample in this case was tested on July 8, 1980 and the retested sample was tested on July 16, 1981(Please note the date of letter in Appendix C.) The analysis performed on the waste ash sample include a test for EP Toxicity which showed the sample to be EP Toxic for lead. CSD is in violation for not manifesting their waste as hazardous and for not providing their own Waste Analysis Plan.

In a letter to Julio Morales-Sanchez, Director of Enforcement,(See Appendix A) CSD stated it did not file for a Part A permit since they do not take in materials for treatment nor do they store for more than 90 days. There seems to be confusion on their part since these elements are not the only criteria for falling within the jurisdiction of a TSD facility. This puts them in violation for treating hazardous waste without a TSD permit. It appears from the letter that CSD may have been in the computer system as having submitted a Part A application but, then deleted as a result of their letter to EPA.

There have been additional violation such as lack of Records Inspection, Facility Inspection and Contingency Plan. Also their waste pile and incinerator do not meet RCRA specifications.

RECOMMENDATIONS:

Enforcement action be taken.

Suggest that a sampling inspection be performed at the facility by both the Air and Water Sections of EPA for possible contamination of air, soil, groundwater and nearby creek.

Suggest that the Local Health Department be notified concerning health violations. OSHA was called and arrived at the facility on December 8th, 1981. They cited CSD for not having an adequate cover on one of their pulleys.

CSD has called in Environmental Consulting Testing located in Cherry Hill, N.J. to perform an environmental audit on the facility. It is recommended that EPA obtain their report on the site which should be ready in approximately two weeks.

Notify DEP of CSD's operations and possible violations.

## DIRECTORY TO APPENDIX

APPENDIX A: INITIAL SITE INFORMATION

APPENDIX B: SITE LOCATION AND DESCRIPTION

APPENDIX C: WASTE ANALYSIS REPORT

APPENDIX D: LIST OF COMPANIES AND CONTACTS

# APPENDIX A: INITIAL SITE INFORMATION

1/4/82

Mr. Howitz,

Enclosed you will find the Analysis performed by G.R.O.W.S. on a sample from a shipment of waste ash from Central Steel Drum Co. I hope this information is of use to you.

Sincerely,
Angela Morales

Central Steel Drum C

GEOLOGICAL RECLAMATION
OPERATIONS AND WASTE
SYSTEMS, INC. (G.R.O.W.S.)
A Division of Waste Resources Corporation

Bordentown and New Ford Mill Road, Morrisville, PA 19067
Phone: (215) 295-8114

November 6, 1981

Mr. Gerald Greenburg
Central Steel Drum Co.
704 Doremus Avenue
Newark, New Jersey 07105

Re: D-148 "Incinerator Residue"

Dear Sir:

Enclosed are the results of an analysis of a sample, of the above referenced waste material, generated by your company. This sample was obtained directly from a shipment of the subject waste stream, prior to disposal at G.R.O.W.S.

If the analytical results of certain parameters on the accompanying data sheet are circled, then they are considered to have been present in the sample of the waste, in concentrations excessive enough to warrant concern. Therefore, G.R.O.W.S., Inc. requests, in writing, a detailed explanation for the presence of these concentration levels or whether they are considered to be representative of the waste stream.

This explanation should be submitted to G.R.O.W.S. within thirty working days of the date on this letter. If we do not receive a response within the specified time period, disposal of this waste material, at G.R.O.W.S., may be terminated, with subsequent notice to the Pennsylvania Department of Environmental Resources.

If there are no parameters circled on the Retest Data Sheet, then the results were considered to be acceptable and no response from your company is required.

Please contact us if you have any questions.

Sincerely,

Samuel M. Lybrand

SML:ms

G.R.O.W.S., INC.

## G.R.O.W.S. RETEST DATA SHEET

GENERATOR CENTRAL STEEL DRUM

WASTE STREAM DESCRIPTION INCINERATOR RESIDUE

G.R.O.W.S. WASTE I.D. # D-148

HAZARDOUS WASTE STATUS NON HAZARDOUS

| PARAMETER | TOTAL (mg/kg) | EP TOXICITY LEACHATE (mg/l) |
|---|---|---|
| Chemical Oxygen Demand | | 1889 |
| Total Organic Demand | | 468 |
| Cyanide | | |
| Percent Solids | | |
| Phenols | | |
| pH | 8.9 | 5.3 |
| Arsenic | 2.86 | 0.004 |
| * Barium | 610.0 | 0.59 |
| Cadmium | 48.3 | 0.46 |
| Chromium | 870 | 0.022 |
| Copper | 6165 | 9.73 |
| Lead | 9000 | 27.9 |
| Mercury | 0.093 | <0.001 |
| Molybdenum | 922.0 | <0.01 |
| Nickel | 120.0 | 0.36 |
| Selenium | 0.093 | <0.001 |
| Silver | 0.083 | <0.009 |

*For future reference please provide the maximum concentration of this parameter which can be expected in the subject waste material.

**S&W WASTE** 115 JACOBUS AVENUE • SOUTH KEARNY, N. J. 07032
INCORPORATED 201-344-4004

# GENERATOR'S WASTE MATERIAL PROFILE SHEET

**GENERAL DIRECTIONS:** In order for us to determine whether we can lawfully, safely and environmentally transport, store, treat or dispose of your waste stream, we must ask certain information about your waste. All of the information we seek is necessary, for our purposes and yours. Be complete in your answers: if your response is "none," so indicate. Answers must be in ink or typewritten. Information you provide will be maintained in strictest confidence. Please make a copy of this form for your records, returning the original to the location indicated below.

---

THIS FORM AND ANY SUPPLEMENTAL MATERIAL MUST BE RETURNED TO:
S & W Waste, Inc.
53 Penn. Ave.
S. Kearny, N.J. 07032 EPA I.D. #: NJD 096865837

1. GENERATOR NAME AND ADDRESS: CENTRAL STEEL DRUM 704 DOREMUS AV NEWARK, N.J 07105
2. EPA I.D. NUMBER: NJ D011482577
3. COMPANY CONTACTS:
   BUSINESS: JERRY GREENBURG, ALAN FISHER
   TECHNICAL: LANCE GOLD
4. WASTE NAME: PAINT WASTE
5. PROCESS GENERATING WASTE:

6. PHYSICAL PROPERTIES OF THE WASTE
a) Physical state at 70°F: (SOLID) SEMI-SOLID LIQUID OTHER: SOLID 2-10% H2O
b) Viscosity at 70°F: LOW MEDIUM HIGH
c) Flash Point: ≤ 140 °F (Closed Cup) Open Cup
d) pH Range: 1-3 3-5 (5-7) 7-9 9-11 11-13 N.A.
e) Layering (for liquids only): (NONE) MULTILAYERED BILAYERED
f) Specific Weight: 1500# / YD³ (as # per unit)
g) BTU Value: N/A (solvents and oils only)
h) Vapor Pressure: N/A (for liquids only; in mm Hg at 70°F)
i) Is waste a pesticide or produced in a pesticide-manufacturing process?: NO
j) % Solids: 30
k) Does waste contain Polychlorinated Bi-phenyls (PCB'S)?: NO
l) Does waste contain chlorinated organic solvents?: NO
   If so, please list with approximate ranges:

m) Is the waste sulfonated?:
n) Characteristic color:
o) Characteristic odor:
p) Does waste contain cyanide or cyanide-producing compounds?:
q) Heavy Metal Information (include ranges in ppm)

| | TOTAL | EP TEST | | TOTAL | EP TEST |
|---|---|---|---|---|---|
| Ag | | | Hg | | |
| As | | | Ni | | |
| Ba | | | Pb | | > 5 PPM |
| Cd | | > 5 PPM | Se | | |
| Cr | | ✓ | Zn | | ✓ |
| Cu | | | | | |

7. ORGANIC COMPONENTS (with ppm or % ranges)

SOLVENTS ASSOCIATED WITH PAINT MANUFACTURING (e)
XYLENE, TOLUENE ETC. < 20%

8. OTHER COMPONENTS (with ppm or % ranges)

water 5 - 10%

9. HAZARDOUS COMPONENTS AND CHARACTERISTICS

A) Hazardous Properties (insert number codes; see back page)
toxicity ratings: Inhalation / Dermal / Oral /

B) NFPA Hazard Identification System:

Flammability

Health 1 2 0 Reactivity

Special Instructions

C) IS THIS WASTE A "HAZARDOUS MATERIAL" AS DEFINED BY REGULATIONS OF THE U.S. DEPARTMENT OF TRANSPORTATION PURSUANT TO THE HAZARDOUS MATERIALS TRANSPORTATION ACT? YES
(See 49 CFR 172.101 and 173 for "Hazardous Materials" list and characteristics )
If so, please complete the following:
1. Correct DOT Shipping Description: SOLID HAZARDOUS WASTE (PAINT RESIDUE)
2. Correct DOT Container:
3. Hazrd Class(es): ORM-E
4. Identification Number (from "Hazardous Materials" list): 9189
5. Placards required?: EXEMPT IN BULK

D) IS THIS WASTE A "HAZARDOUS WASTE" AS DEFINED BY THE REGULATIONS OF THE U.S. ENVIRONMENTAL PROTECTION AGENCY UNDER THE RESOURCE CONSERVATION AND RECOVERY ACT OF 1976? YES
If so, please complete the following:
1. Is the waste a listed "Hazardous Waste" under RCRA?: YES
2. Give the EPA Waste Type if applicable: D008
3. The listed description of the waste:
4. The hazard criteria for which the waste is listed:

| IGNITABLE | CORROSIVE | REACTIVE | TOXIC |
|---|---|---|---|
| D001 | D002 | D003 | D000 |

5. If the waste is not listed, what hazardous characteristics does it possess?:

E) DOES THIS WASTE STREAM CONTAIN ANY RADIOACTIVE, EXPLOSIVE, WATER-REACTIVE, AND/OR SHOCK-SENSITIVE MATERIALS?: NO

10. SHIPPING REQUIREMENTS

1. Indicate how the waste material is to be shipped:
drum ____ bulk ✓ other ____
2. Shipping frequency: quantity AS per NEEDED

3. Transportation equipment requirements: S&W WILL SUPPLY

4. Service/scheduling requirements: AS NEEDED

11. CERTIFICATION: I HEREBY CERTIFY THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED IN THIS AND ALL ATTACHED DOCUMENTS. BASED ON MY INQUIRY OF THOSE INDIVIDUALS RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THAT THE SUBMITTED INFORMATION IS TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND ABILITY.

X 7/92 X Sec Treas. [signature]
DATE TITLE SIGNATURE

12. CONFIDENTIALITY REQUEST: _____ REQUESTS THAT S & W WASTE, INC. AND ALL OTHER REGULATORY AGENCIES TO TREAT THE ABOVE INFORMATION, AND ALL OTHER SUPPLEMENTARY DATA PROVIDED, AS CONFIDENTIAL BUSINESS INFORMATION AND THE PROPERTY OF _____. ALSO, IT IS REQUESTED THAT THIS INFORMATION NOT BE DISCLOSED TO OTHERS EXCEPT AS REQUIRED BY LAW OR REGULATION.

BY: _____ _____ _____
DATE TITLE SIGNATURE

HAZARDOUS WASTE INVESTIGATION HW/EF 07-27

AI Inspector: Alphonse Iannuzzi Date: 2/3/82

Location: Central Steel Drum

St: 704 Doremus Ave.

Town: Newark

County: Essex

Property Owner:
Greenberg, Ratner & Baron
704-738 Doremus Avenue
Newark, NJ

Lot: 1 Block: 5074

Origin of Complaint:

Complaint: Follow-up of March 28, 1980 NOP

Findings:

On 2/3/82 Central Steel Drum (CSD) was investigated with Bill Brown, SWA Geologist, and Charlie Bazdlo, Newark City Engineering Department. Lance Gold, Plant Manager, and Dr. Fungaroli, from CSD's consulting company, AGES, were contacted.

Purpose

This investigation was a follow-up of a DEP issued NOP to CSD for disposing their incinerator ash on site. Bill Brown was present to determine the validity of CSD's consulting report and to pick adequate sampling points.

Sampling

Samples were not taken from parking lot covered with gravel where incinerator ash was dumped due to the ground being too frozen to dig. Two samples were taken along and in an unfrozen drainage ditch in the southeast section of the facility.

1. A sample of soil was taken from the east side of the drainage ditch bank approximately 6 inches under the water level, sample # AI 136A. This material consisted of a grey soil with yellow, blue and pink colors in it. Strong solvent odors were noted from this sample.

2. A second sample, AI 137A, was taken in the southeast drainage ditch prior to where it flows into a stream. This section was sampled due to it being a likely area where heavy metals would settle as a result of contaminated run-off. This sample was taken approximately 6 inches from the east bank and 6 inches under the water level. The sample consisted of a greyish soil which had strong solvent odors similar to those from sample AI 136A. Mr. Brown stated that this material appeared to be a dark grey soil mixed with ash and silt or clay. Sample data sheets for each sample and a diagram indicating where samples were taken is attached to report.

During sampling, due to raining during the inspection, contaminated run-off with an oily sheen was noted flowing into the drainage ditch from under the gravel on the parking lot. A heavy silver oil sheen was noted on most of the water surface in this ditch and the water had a greyish-red tint to it. The soils sampled appeared to be highly contaminated with material which was dumped

on site due to the discoloration and strong solvent odors. Outcropping from the drainage ditch banks contained old rusted drums, plastic material, wood, and various colored sludges (i.e., yellow, white, blue, etc.).

Observations - Youngstown Barrel & Drum truck

As noted in an EPA December 7, 1981 RCRA inspection report, a Youngstown Barrel & Drum truck (Youngstown, PA) was on site with approximately 60 drums that contained 4 inches or more material in them. Since CSD can only accept drums with one inch or less material in them, Mr. Gold stated that these drums were rejected by CSD. Mr. Gold stated that Environmental Consulting and Testing Service will handle legal ramifications of sending this material back to Youngstown (i.e., manifest). Two drums were checked on this truck and appeared to have a paint residue in them which this inspector approximated 2 to 3 inches.

Photographs

Housekeeping throughout the facility was very poor. The following include photographs (18) of such conditions:

1. Spillage of white sludge on soil in drum staging area in western section of facility.

2. Purple liquid, approximately 40' x 40', on soil also in staging area.

3. Multi-colored sludges on soil next to chain conveyor for incinerator in central section of lot.

4. Close up of spillage as described in #3.

5. Blue liquid on soil next to conveyor to incinerator in central section of lot.

6. Three full drums north of blasting building.

7. One full drum north of blasting building.

8. Two full drums next to blasting building on north side, one containing red and the other white sludge.

9. Incinerator putting out black smoke.

10. Full drum of black oily liquid and spill at its base on north side of blasting building. Mr. Gold stated that it is paint. Also noted in this areabut not photographed were four full 30 gallon drums containing a rusty metal substance and purple sludge.

11. Pink and white spills on soil and a full drum Mr. Brown is pointing to, east of the incinerator.

12. Drum spraying a red liquid from a leak onto soil, next to the incinerator.

13. Pile of incinerator ash stored on soil next to the incinerator. Mr. Gold stated that this material is stored in such a manner until Jonas Waste Removal, Sewell, NJ picks it up with a roll-off for disposal at GROWS landfill, PA.

14. Yellow and white solid material dumped in area next to drainage ditch where it empties into stream.

15. Stream bed containing garbage/sludges and sheen on stream near where sample #AI 137A was taken.

16. Drums in stream, southeast section of facility.

17. Purple soil near stream, southeast section of facility.

18. Contaminated run-off with sheen running from CSD property into stream, southwest section of property.

Synopsis

The previous photographs noted are an indication of the housekeeping problems at CSD. Other problems include:

1. Strong odors and thick black smoke emitted from the incinerator.

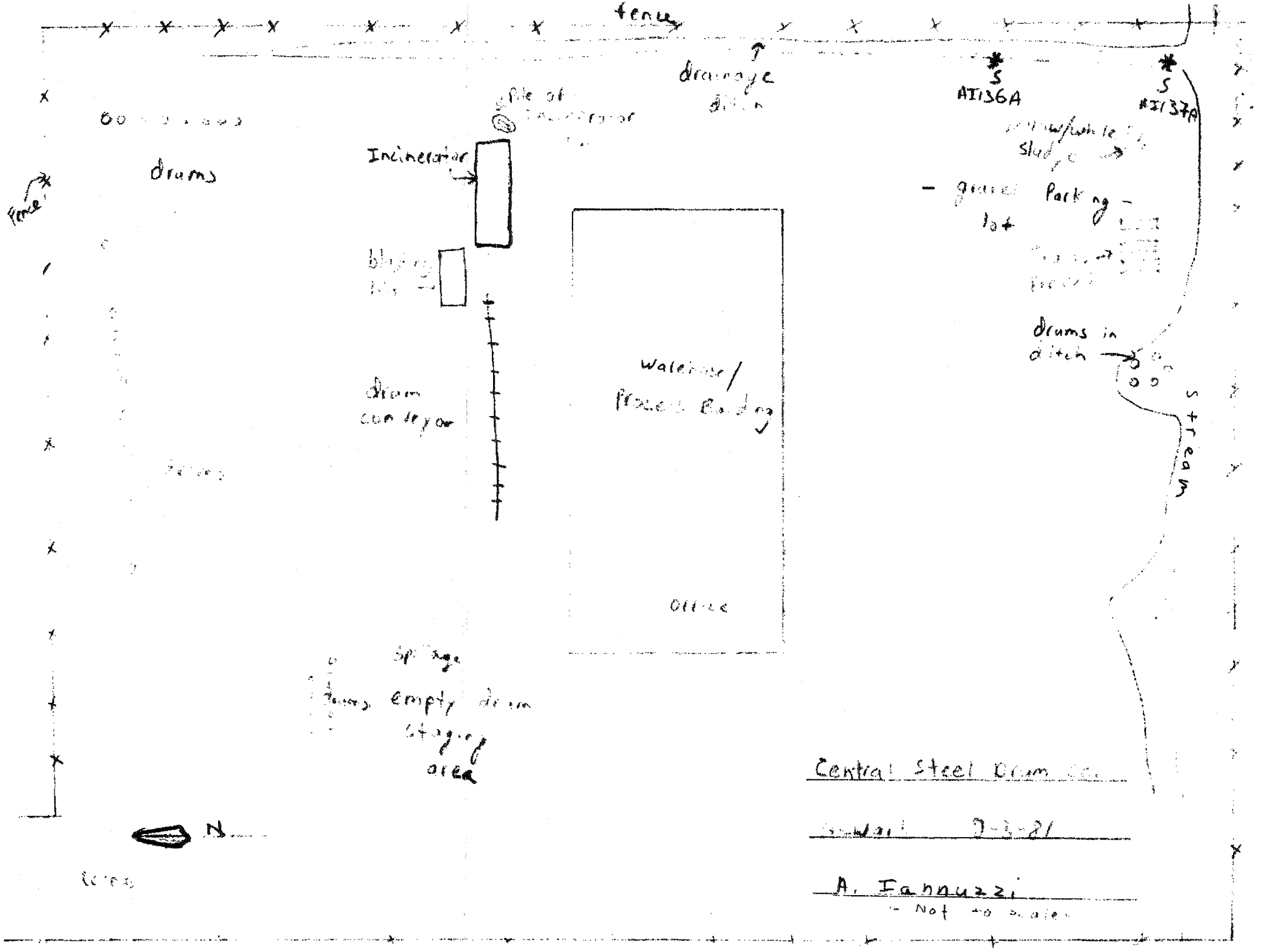
2. Contamination of soil, surface water, and groundwater from spillage.

3. Storage of approx. 20-30 full drums for more than 90 days. Mr. Gold stated that full drums were on site for several years and definitely since he started working 5 months ago.

4. Illegal waste storage pile (incinerator ash).

5. Illegal disposal of sludges dumped in areas sampled and spillage which was never cleaned up.

cc: Bill Brown, SWA
Angela Morales, EPA
William Saywer, EPA


fence
drainage ditch
S AI136A
S AI137A
Pile of incinerator
Incinerator
drums
fence
blading bin
drum conveyor
warehouse/ Process Building
office
gravel Parking lot
drums in ditch
stream
spillage
empty drum staging area
N
Central Steel Drum Co.
9-3-81
A. Iannuzzi
- Not to scale

# REMEDIAL INVESTIGATION WORKPLAN ADDENDUM FOR GROUNDWATER AND GROUNDWATER SCREENING SAMPLE RESULTS SUMMARY

CENTRAL STEEL DRUM FACILITY
843-871 DELANCY STREET
NEWARK, NEW JERSEY

*Prepared for*

City of Newark
Department of Engineering
920 Broad Street
Newark, New Jersey

June 1, 2004

Prepared by:
URS Corporation
201 Willowbrook Blvd.
Wayne, New Jersey 07470

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Table 1 Groundwater Screening Sample Analytical Results
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Figure 1 AOC-12 Groundwater Screening Sample Locations and Groundwater Analytical Results
Figure 2 Proposed Remedial Investigation Sample Locations

**Appendix**

Appendix A Well Construction Logs and Groundwater Sampling Data Sheets

This report provides a summary of the groundwater screening investigation conducted at the Central Steel Drum site in Newark, Essex County, New Jersey. The report includes a description of the groundwater screening investigation, the results of the groundwater screening investigation, and recommendations for additional remedial investigation activities at the site.

This Remedial Investigation Workplan Addendum is to be used in conjunction with the Remedial Investigation Workplan (URS, February 2001) and is a compilation of the Monitoring Well Groundwater Sampling Program (URS, November 26, 2001) and the Groundwater Screening Sample Results Summary (URS, September 30, 2003). This report also incorporates comments received from the New Jersey Department of Environmental Protection (NJDEP) on August 4, 2003 and URS' meeting with the NJDEP on May 19, 2004.

## 1.1 SITE DESCRIPTION

The Central Steel Drum site is located at 843-871 Delancy Street, Block 5074, Lot 1, Newark, New Jersey. The site is about 8.5 acres and is situated in a heavily industrial area of Newark just east of the New Jersey Turnpike and Newark International Airport. The site is adjacent to a Motiva Petroleum Storage facility, the City of Newark Police firing range, Suburban Propane, and other industrial facilities. Within 1.5 miles of the site are residential areas, the Passaic Valley Sewage Commission treatment facility, multiple-use industrial and commercial properties, and a commuter/freight railroad yard and rail lines.

Historically, there were numerous solid and liquid drum discharge locations throughout the site and ash waste disposal practices facilitated the broadcast of hazardous incinerator ash throughout the site. There is a shallow hydraulic gradient onsite, which can undergo gradient change during precipitation events, which result in surface water (primarily as puddles) and ground water interactions. These conditions, in conjunction with the age of the operational impacts to this area, dictated that a groundwater screening grid sampling approach be conducted to evaluate ground water concerns in this area.

This section presents a technical overview of the field activities performed and analytical results for the groundwater screening investigation.

The Remedial Investigation was conducted following procedures established by the New Jersey Department of Environmental Protection (NJDEP) guidance (e.g., Field Sampling Procedures Manual, May 1992) and in accordance with the NJDEP Technical Requirements for Site Remediation (February 3, 2003).

## 2.1 TECHNICAL OVERVIEW

The sampling included the collection of thirty-four groundwater screening samples of the shallow overburden zone using a grid approach. The borings were advanced to a depth ranging from 0.5 to 3.5 feet below ground surface (bgs).

Drilling Services were provided by M&R Soil Investigations, Inc. using a Geoprobe®, which advances a boring using the direct push method to collect soil samples. Two-inch diameter, four-foot long spoons with dedicated acetate liners were used to collect soil samples. Groundwater screening samples were collected through temporary monitoring wells. Test borings were conducted in accordance with the procedures outlined in the Remedial Investigation Workplan (URS, February 2001).

The borings and sampling program was conducted during the period from October 17 to 31, 2001. The sampling included the collection of thirty-four groundwater screening samples of the shallow overburden zone using a grid approach. The groundwater screening samples were between 1 to 3 feet below ground surface.

## 2.2 GROUNDWATER ANALYTICAL RESULTS SUMMARY

The thirty-four groundwater-screening samples (A12-HP-1 through A12-HP-26 and A12-HP-28 through A12-HP-35) were collected from temporary monitoring points and the samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), total petroleum hydrocarbons (TPH), and metals.

The results of the analyses of the groundwater screening samples are summarized below and presented in Table 1. Figure 1 shows the site plan with the locations of the groundwater screening samples and the groundwater screening sample analytical results above NJDEP criteria. The groundwater analytical results were compared to NJDEP Groundwater Quality Standards/Practical Quantitation Limits (GQS/PQL).

SVOCs, TPH, and PCBs were detected below the NJDEP GQS/PQL in all groundwater screening samples. Metal concentrations were detected above NJDEP GQS/PQL in all groundwater screening samples. Benzene was detected above NJDEP GQS/PQL in nine groundwater screening samples (HP-3, HP-6, HP-7, HP-9, HP-16, HP-17, HP-18, HP-23, and HP-34). Other VOCs were detected above NJDEP criteria in six groundwater screening samples (HP-11, HP-12, HP-15, HP-25, HP-30, and HP-35). Pesticides were detected above GQS in three groundwater screening samples (HP-12, HP-15, and HP-35).

## 2.3 HAZSITE DATABASE DELIVERABLE

The Site Remediation Program (SRP) has adopted a process for Electronic Data Interchange (EDI) to facilitate data integration and thereby help the SRP make more informed cleanup decisions, respond accurately to questions, improve the quality and timeliness of data review, and efficiently perform its mandated functions.

The Technical Requirements for Site Remediation (N.J.A.C. 7:26E) require electronic submittal of analytical results of environmental samples.

The groundwater analytical data collected during the investigation were processed and integrated into the NJDEP Hazsite Database format. A copy of the data files on diskette was attached in the Groundwater Screening Sample Results Summary (URS, September 30, 2003).

This section of the Addendum to the Central Steel Drum Facility Remedial Investigation Workplan, February 2001, describes the scope of work to conduct the monitoring well installation and groundwater sampling using the conventional groundwater sampling methods. The scope of work was developed in accordance with the NJDEP Field Sampling Procedures Manual, May 1992 and the Technical Requirements for Site Remediation, February 3, 2003.

### 3.1 AOC-12 GROUNDWATER

Historically, there were numerous solid and liquid drum discharge locations throughout the site. In addition, ash waste disposal practices facilitated the broadcast of hazardous incinerator ash throughout the site. Groundwater screening samples (A12-HP-1 through A12-HP-36) of the shallow overburden zone were collected using a grid approach in October 2001. The groundwater screening sample results, in conjunction with the soil boring samples collected for the AOCs, were used as screening data to aid in the placement of the permanent monitoring wells to be installed.

The proposed groundwater sampling at this AOC will include the following:

- The 8 existing monitoring wells installed by Environics in 1984 were inspected in October 2001 and determined to be not functional. Therefore, they will be abandoned in accordance with NJDEP protocol.
- 12 monitoring well couples (MW-1S/D through MW-12S/D) will be installed on the site. The monitoring well locations were based on the analytical results from the groundwater screening samples and the soil samples collected from each AOC, and the agreement reached during our meeting with the NJDEP on May 19, 2004.
- A clay layer is present beneath the site from 4 to 12 feet below ground surface (bgs) to 17 to 20 feet bgs. The clay layer acts as an aquitard. The deeper aquifer monitoring wells will be installed at the site to investigate the water-bearing zone beneath the clay layer. Permanent deep wells (approximately depths of 20 to 30 feet bgs) will be installed, with care taken not to contaminate the deeper zone.
- Groundwater sampling from the newly installed monitoring wells will be conducted during two events. The groundwater will be purged and collected using conventional groundwater sampling methods. The first round of groundwater samples will be analyzed for VOCs, SVOCs, PCBs, pesticides, chlorophenoxy herbicides, TPHC, and Priority Pollutant Metals. Based on the preliminary results of the soil and groundwater screening sample analytical results, URS proposes to analyze the second round of groundwater samples for VOCs, SVOCs, and metals, if the results of the first round of sampling are consistent with the preliminary results.

A summary of the sampling program is provided in Table 2. The monitoring well locations are shown in Figure 2.

## 4.1 MONITORING WELL INSTALLATION

The following sections describe the general procedures for monitoring well installation, the procedures for monitoring well reporting and well development.

### 4.1.1 General Procedures

Monitoring wells will be installed to determine the hydrogeologic characteristics of the shallow and deep aquifers and to allow samples of groundwater that are representative of the site to be collected. The drilling of the borings and the construction of the monitoring wells will be performed in accordance with the procedures outlined in the NJDEP Field Sampling Procedures Manual (May 1992). Before drilling, well permits for the installation of monitoring wells will be obtained from the NJDEP.

### 4.1.2 Installation of Wells

URS personnel will be on-site during the installation of the monitoring wells. A six-inch diameter borehole will be advanced. A two-inch diameter PVC screen with an appropriate slot size (most likely 0.01 inch slot) with a bottom cap and two-inch diameter PVC riser will be inserted into the borehole. Five feet of screen will be used for each monitoring well. The borehole diameter will be a minimum of 4 inches greater than the casing diameter. A filter pack of clean graded sand (#1 or less Morie sand) will be placed in the annulus between the screen and the wall of the borehole so that the filter pack does not extend more than five feet above the screen. A seal consisting of cement-bentonite will be placed on top of the filter pack using a tremie pipe placement procedure. The cement-bentonite seal within the well annulus will extend from the sandpack to the ground surface.

Stick-up protective casings will be used at the monitoring wells. Stick-up installations will be cement grouted around the top of the well and will include locking caps to prevent unauthorized entry into the well.

### 4.1.3 Monitoring Well Installation Report Preparation

A URS geologist will document monitoring well installation activities. Information about the monitoring well installations will be recorded on the monitoring well construction logs shown in Appendix A.

### 4.1.4 Well Development

The monitoring wells will be developed only after 24 hours from the time of installation to allow the grout for the protective casings to set. The wells will be developed using pumps (either centrifugal or inertial lift) and dedicated tubing. Each monitoring well will be developed until there is a turbid-free discharge or a maximum of one hour.

If there is no obvious contamination observed during drilling and well installation and the development water does not have an observable sheen or odor and the photoionization detector (PID) readings of the water remain at background levels, the development water will be

discharged to the ground surface and allowed to percolate back to the groundwater system where possible. If development water has signs of gross contamination, it will be collected in DOT approved (or equivalent) 55 gallon drums and stored at an on-site staging area designated by the City of Newark personnel. These suspected fluids will be analyzed to determine their toxicity characteristics. These fluids will then be disposed of in accordance with applicable federal, state and the City of Newark regulations.

## 4.2 GROUNDWATER SAMPLING PROCEDURE

Groundwater samples will be collected from each monitoring well in accordance with the NJDEP *Field Sampling Procedures Manual* (May 1992). Table 2 provides a summary of the groundwater sampling program.

### 4.2.1 Conventional Monitoring Well Purging

The 12 new monitoring wells will be sampled using conventional sampling methods. The depth to groundwater will be recorded to verify the volume of water in the casing before sampling. Three volumes of water will be evacuated from the monitoring wells using a peristaltic pump with dedicated disposable tubing. The purge rate will not exceed the development rate of the well. However, if the well recovery rate is very low, a reduced pumping rate will be used to purge as much water as possible. It is possible that yield of a well may be so low that pumping the well dry may be unavoidable; URS will take every reasonable precaution to prevent this. Purge water will be containerized in a graduated bucket for flow measurements and assessed for field parameters consisting of pH, temperature, specific conductivity, turbidity, and dissolved oxygen. In addition, the purge water will be screened for VOCs using a PID.

### 4.2.2 Conventional Groundwater Sampling

Wells will be sampled within two hours of well purging. In the instance where the well recovery rate is very low, recharge to provide adequate sampling volume may not be obtained within two hours of purging. In this case, the well will be given adequate time to recover before sampling but under no circumstances shall sampling occur more than 24 hours after purging. A peristaltic pump with dedicated disposable tubing will be used to collect the groundwater samples. Groundwater samples will be analyzed for VOCs, SVOCs, PCBs, pesticides, chlorophenoxy herbicides, TPHC, and Priority Pollutant Metals.

Measurements of pH, specific conductivity, turbidity, dissolved oxygen, and temperature will be made on the groundwater samples in the field. These measurements will be recorded on groundwater sampling data sheets (Appendix A).

A field blank will be prepared by pumping laboratory-supplied water through the peristaltic pump. This water will then be poured into the appropriate sample containers for analysis.

New Jersey Administrative Code, February 2003, Chapter 7:26E, Technical Requirements for Site Remediation.

New Jersey Department of Environmental Protection, May 1992, Field Sampling Procedures Manual.

URS Corporation, September 30, 2003, Central Steel Drum, Newark, NJ, Groundwater Screening Sample Results Summary.

URS Corporation, November 26, 2001, Central Steel Drum, Newark, NJ, Monitoring Well Groundwater Sampling Program.

URS Corporation, February 2001, Central Steel Drum, Newark, NJ, Remedial Investigation Workplan.

# Tables

# TABLES

**Table 1**
**Groundwater Screening Sample Analytical Results**

**Central Steel Drum Facility**
**843-871 Delancy Street, Newark**

| Sample ID / Lab ID / Sample Collection Date / Matrix / Depth to Groundwater (feet) | Units | NJDEP Groundwater Quality Criteria | HP-1 AB45846 10/31/2001 GW 2 | | | HP-2 AB45847 10/31/2001 GW 2 | | | HP-3 AB44878 10/18/2001 GW 2.3 | | | HP-4 AB45852 10/31/2001 GW 2.5 | | | HP-5 AB44879 10/17/2001 GW 2 | | | HP-6 AB45851 10/31/2001 GW 2 | | | HP-7 AB45845 10/31/2001 GW 2.3 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| **Volatile Organic Compounds** | | | | | | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/L | 30 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| 1,1,2,2,-Tetrachloroethane | ug/L | 1 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| 1,1,2-Trichloroethane | ug/L | 3 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| 1,1-Dichloroethane | ug/L | 50 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| 1,1-Dichloroethene | ug/L | 2 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| 1,2-Dichloroethane | ug/L | 2 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| 1,2-Dichloropropane | ug/L | 1 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| 2-Butanone | ug/L | 300 | 25 | -- | | 25 | -- | | 25 | -- | | 25 | -- | | 25 | -- | | 25 | -- | | 25 | -- | |
| 2-Hexanone | ug/L | NC | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- | |
| 4-Methyl-2-Pentanone | ug/L | 400 | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- | |
| Acetone | ug/L | 700 | 20 | -- | | 20 | -- | | | 24 | | | 40 | | 20 | -- | | | 26 | | | 19 | J |
| Benzene | ug/L | 1 | 1 | -- | | 1 | -- | | | 73 | | 1 | -- | | 1 | -- | | | 8.4 | | | 1.1 | |
| Bromodichloromethane | ug/L | 1 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Bromoform | ug/L | 4 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Bromomethane | ug/L | 10 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Carbon Disulfide | ug/L | NC | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Carbon Tetrachloride | ug/L | 2 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Chlorobenzene | ug/L | 50 | 5 | -- | | 5 | -- | | | 28 | | 5 | -- | | 5 | -- | | | 6.8 | | 5 | -- | |
| Chloroethane | ug/L | NC | 5 | -- | | | 9.7 | | | 1.3 | J | 5 | -- | | 5 | -- | | 5 | -- | | | 2.4 | J |
| Chloroform | ug/L | 6 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Chloromethane | ug/L | 30 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Cis-1,2-Dichloroethene | ug/L | 70 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| 1,3-Dichloropropene (cis and trans) | ug/L | 0.2 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Dibromochloromethane | ug/L | 10 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Ethylbenzene | ug/L | 700 | 1 | -- | | 1 | -- | | | 20 | | 1 | -- | | 1 | -- | | | 1.4 | | | 2.1 | |
| Methylene chloride | ug/L | 3 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Xylenes (total) | ug/L | 1000 | 1 | -- | | 1 | -- | | | 113 | | 1 | -- | | 1 | -- | | | 6.6 | | | 18.9 | |
| Styrene | ug/L | 100 | 1 | -- | | 1 | -- | | 1 | -- | | 1 | -- | | 1 | -- | | 1 | -- | | 1 | -- | |
| Tetrachloroethene | ug/L | 1 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Toluene | ug/L | 1000 | 1 | -- | | | 1.3 | | | 14 | | 1 | -- | | 1 | -- | | | 2.8 | | | 1.8 | |
| Trans-1,2-Dichloroethene | ug/L | 100 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Trichloroethene | ug/L | 1 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Vinyl chloride | ug/L | 5 | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Tentatively Identified Compounds (TICs) Total | ug/L | NC | | 51.4 | J | | -- | | | 368 | J | | 11 | J | | 23 | J | | 233.1 | J | | 64.4 | J |
| | | | | | | | | | | | | | | | | | | | | | | | |
| **Semi-volatile Organic Compounds** | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | ug/L | 9 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 1,2-Dichlorobenzene | ug/L | 600 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 1,3-Dichlorobenzene | ug/L | 600 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 1,4-Dichlorobenzene | ug/L | 75 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2,4,5,-Trichlorophenol | ug/L | 700 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2,4,6-Trichlorophenol | ug/L | 20 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2,4,-Dichlorophenol | ug/L | 20 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2,4-Dimethylphenol | ug/L | 100 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2,4-Dinitrophenol | ug/L | 40 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2,4 & 2,6-Dinitrotoluene (mixture) | ug/L | 10 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2-Chloronaphthalene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |

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**Groundwater Screening Sample Analytical Results**

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| Sample ID<br>Lab ID<br>Sample Collection Date<br>Matrix<br>Depth to Groundwater (feet) | Units | NJDEP Groundwater Quality Criteria | HP-1<br>AB45846<br>10/31/2001<br>GW<br>2 | | | HP-2<br>AB45847<br>10/31/2001<br>GW<br>2 | | | HP-3<br>AB44878<br>10/18/2001<br>GW<br>2.3 | | | HP-4<br>AB45852<br>10/31/2001<br>GW<br>2.5 | | | HP-5<br>AB44879<br>10/17/2001<br>GW<br>2 | | | HP-6<br>AB45851<br>10/31/2001<br>GW<br>2 | | | HP-7<br>AB45845<br>10/31/2001<br>GW<br>2.3 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| 2-Chlorophenol | ug/L | 40 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2-Methylnaphthalene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 1.2 | J |
| 2-Methylphenol | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2-Nitroaniline | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2-Nitrophenol | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 3 & 4-Methylphenol | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 3,3'-Dichlorobenzidine | ug/L | 60 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 3-Nitroaniline | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4,6-Dinitro-2-methylphenol | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4-Bromophenyl-phenylether | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4-Chloro-3-methylphenol | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4-Chloroaniline | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4-Chlorophenyl-phenylether | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4-Nitroaniline | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4-Nitrophenol | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Acenaphthene | ug/L | 400 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 8.1 | J |
| Acenaphthylene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Anthracene | ug/L | 2000 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 3.2 | J |
| Benzo(a)anthracene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Benzo(a)pyrene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Benzo(b)fluoranthene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Benzo(g,h,i)perylene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Benzo(k)fluoranthene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Bis(2-Chloroethoxy)methane | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Bis(2-Chloroethyl)ether | ug/L | 10 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Bis(2-Chloroisopropyl)ether | ug/L | 300 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Bis(2-Ethylhexyl)phthalate | ug/L | 30 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Butylbenzylphthalate | ug/L | 100 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Carbazole | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 14 | |
| Chrysene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Dibenzo(a,h)Anthracene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Dibenzofuran | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 6.7 | J |
| Diethylphthalate | ug/L | 5000 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Dimethylphthalate | ug/L | NC | 10 | -- | | 10 | -- | | | 2.7 | J | | 1.3 | J | | 2.3 | J | | 2 | J | | 4.5 | J |
| Di-n-butylphthalate | ug/L | 900 | 10 | -- | | 10 | -- | | | 1.5 | JB | | 1.3 | J | | 2.3 | JB | | 1.8 | J | 10 | -- | |
| Di-n-octylphthalate | ug/L | 100 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Fluoranthene | ug/L | 300 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 3.6 | J |
| Fluorene | ug/L | 300 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 8.6 | J |
| Hexachlorobenzene | ug/L | 10 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Hexachlorobutadiene | ug/L | 1 | 10 | -- | | 10 | -- | | 10 | -- | | 20 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Hexachlorocyclopentadiene | ug/L | 50 | 20 | -- | | 20 | -- | | 20 | -- | | 10 | -- | | 20 | -- | | 20 | -- | | 20 | -- | |
| Hexachloroethane | ug/L | 10 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Indeno(1,2,3-cd)pyrene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Isophorone | ug/L | 100 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Naphthalene | ug/L | 300 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 1.3 | J | | 2.7 | J |
| Nitrobenzene | ug/L | 10 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| N-Nitroso-Di-N-propylamine | ug/L | 20 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| N-Nitrosodiphenylamine | ug/L | 20 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q |
| Pentachlorophenol | ug/L | 1 | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- |
| Phenanthrene | ug/L | NC | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | | 19 |
| Phenol | ug/L | 4000 | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- |
| Pyrene | ug/L | 200 | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | | 2.6 J |
| Tentatively Identified Compounds (TICs) Total | ug/L | NC | | -- | | -- | | -- | | 24 J | | 109 J | | 89 | | 58 J |
| | | | | | | | | | | | | | | | | |
| PCBs | | | | | | | | | | | | | | | | |
| Aroclor-1016 | ug/L | NC | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- |
| Aroclor-1221 | ug/L | NC | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- |
| Aroclor-1232 | ug/L | NC | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- |
| Aroclor-1242 | ug/L | NC | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- |
| Aroclor-1248 | ug/L | NC | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- |
| Aroclor-1254 | ug/L | NC | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- |
| Aroclor-1260 | ug/L | NC | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- |
| Total PCBs | ug/L | 0.5 | | -- | | -- | | -- | | -- | | -- | | -- | | -- |
| | | | | | | | | | | | | | | | | |
| Pesticides | | | | | | | | | | | | | | | | |
| Aldrin | ug/L | 0.04 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Alpha-BHC | ug/L | 0.02 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Beta-BHC | ug/L | 0.2 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Chlordane | ug/L | 0.5 | 0.2 | -- | 0.2 | -- | 0.2 | -- | 0.2 | -- | 0.2 | -- | 0.2 | -- | 0.2 | -- |
| Delta-BHC | ug/L | NC | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Dieldrin | ug/L | 0.03 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Endosulfan I | ug/L | 0.4 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Endosulfan II | ug/L | 0.4 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Endosulfan Sulfate | ug/L | 0.4 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Endrin | ug/L | 2 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Endrin Aldehyde | ug/L | NC | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Endrin Ketone | ug/L | NC | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Gamma-BHC | ug/L | 0.2 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Heptachlor | ug/L | 0.4 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Heptachlor Epoxide | ug/L | 0.2 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Methoxychlor | ug/L | 40 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| P,P'-DDD | ug/L | 0.1 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| P,P'-DDE | ug/L | 0.1 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| P,P'-DDT | ug/L | 0.1 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Toxaphene | ug/L | 3 | 1 | -- | 1 | -- | 1 | -- | 1 | -- | 1 | -- | 1 | -- | 1 | -- |
| | | | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | ug/L | None Noticeable | 1.1 | -- | | 1.1 | 1.2 | -- | 1.1 | -- | 1.2 | -- | | 2.5 | 1 | -- |
| | | | | | | | | | | | | | | | | |
| Inorganic Compounds | | | | | | | | | | | | | | | | |
| Aluminum | ug/L | 200 | | 190000 | | 200000 | | 220000 | | 120000 | | 100000 | | 8400 | | 39000 |
| Antimony | ug/L | 20 | 15 | -- | 15 | -- | | 470 | 15 | -- | | 110 | | 65 | | 28 |
| Arsenic | ug/L | 8 | | 520 | | 410 | | 940 | | 300 | | 860 | | 69 | | 160 |
| Barium | ug/L | 2000 | | 23000 | | 32000 | | 47000 | | 8900 | | 1600 | | 2200 | | 6400 |
| Beryllium | ug/L | 20 | | 17 | 15 | -- | 15 | -- | 15 | -- | 15 | -- | 15 | -- | 15 | -- |
| Cadmium | ug/L | 4 | | 240 | | 700 | | 340 | | 85 | | 47 | | 58 | | 59 |
| Calcium | ug/L | NC | | 1400000 | | 350000 | | 670000 | | 250000 | | 290000 | | 120000 | | 160000 |

**Table 1**
**Groundwater Screening Sample Analytical Results**

**Central Steel Drum Facility**
**843-871 Delancy Street, Newark**

| Sample ID / Lab ID / Sample Collection Date / Matrix / Depth to Groundwater (feet) | Units | NJDEP Groundwater Quality Criteria | HP-8 AB44877 10/17/2001 GW 2.5 | | HP-9 AB44882 10/17/2001 GW 1.9 | | HP-10 AB44881 10/18/2001 GW 2.8 | | HP-11 AB45293 10/24/2001 GW 2.8 | | HP-12 AB45291 10/24/2001 GW 1 | | HP-13 AB45736 10/30/2001 GW 2.5 | | HP-14 AB44874 10/18/2001 GW 2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q |
| **Volatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/L | 30 | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| 1,1,2,2,-Tetrachlororethane | ug/L | 1 | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| 1,1,2-Trichloroethane | ug/L | 3 | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| 1,1-Dichloroethane | ug/L | 50 | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| 1,1-Dichloroethene | ug/L | 2 | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| 1,2-Dichloroethane | ug/L | 2 | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| 1,2-Dichloropropane | ug/L | 1 | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| 2-Butanone | ug/L | 300 | 25 | -- | 25 | -- | 25 | -- | 25 | -- | 25 | -- | 25 | -- | 25 | -- |
| 2-Hexanone | ug/L | NC | 20 | -- | 20 | -- | 20 | -- | 20 | -- | 20 | -- | 20 | -- | 20 | -- |
| 4-Methyl-2-Pentanone | ug/L | 400 | 20 | -- | 20 | -- | 20 | -- | 20 | -- | 20 | -- | 20 | -- | 20 | -- |
| Acetone | ug/L | 700 | | 23 | | 20 | | 85 | | 24 | | 23 | 20 | -- | 20 | -- |
| Benzene | ug/L | 1 | 1 | -- | | 1.2 | 1 | -- | | 2.3 | 1 | 3.5 | 1 | -- | 1 | -- |
| Bromodichloromethane | ug/L | 1 | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Bromoform | ug/L | 4 | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Bromomethane | ug/L | 10 | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Carbon Disulfide | ug/L | NC | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Carbon Tetrachloride | ug/L | 2 | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Chlorobenzene | ug/L | 50 | 5 | -- | 5 | 1.4 J | 5 | -- | | 1.1 J | 5 | -- | 5 | -- | 5 | -- |
| Chloroethane | ug/L | NC | | 9.7 | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Chloroform | ug/L | 6 | 5 | -- | 5 | -- | 5 | -- | | 5.4 | 5 | -- | 5 | -- | 5 | -- |
| Chloromethane | ug/L | 30 | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Cis-1,2-Dichloroethene | ug/L | 70 | 5 | -- | 5 | -- | 5 | -- | 5 | 10 | 5 | -- | 5 | -- | 5 | -- |
| 1,3-Dichloropropene (cis and trans) | ug/L | 0.2 | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Dibromochloromethane | ug/L | 10 | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Ethylbenzene | ug/L | 700 | 1 | -- | | 2.5 | 1 | -- | 1 | 4 | | 1.3 | 1 | -- | 1 | -- |
| Methylene chloride | ug/L | 3 | 5 | -- | | 2 JB | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Xylenes (total) | ug/L | 1000 | 1 | -- | | 30.5 | 1 | -- | | 16.4 | | 3.2 J | 1 | -- | 1 | -- |
| Styrene | ug/L | 100 | 1 | -- | 1 | -- | 1 | -- | 1 | -- | 1 | -- | 1 | -- | 1 | -- |
| Tetrachloroethene | ug/L | 1 | 5 | -- | 5 | -- | 5 | -- | | 2.5 J | 5 | -- | 5 | -- | 5 | -- |
| Toluene | ug/L | 1000 | 1 | -- | | 1.2 | 1 | -- | | 26 | | 1.2 | 1 | -- | 1 | -- |
| Trans-1,2-Dichloroethene | ug/L | 100 | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Trichloroethene | ug/L | 1 | 5 | -- | 5 | -- | 5 | -- | | 1.1 J | 5 | -- | 5 | -- | 5 | -- |
| Vinyl chloride | ug/L | 5 | 5 | -- | 5 | -- | 5 | -- | | 3.8 J | 5 | -- | 5 | -- | 5 | -- |
| Tentatively Identified Compounds (TICs) Total | ug/L | NC | | -- | | 10.7 | | 3.1 J | | 87.8 J | | 354 J | | 23 J | | 28.9 J |
| | | | | | | | | | | | | | | | | |
| **Semi-volatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | ug/L | 9 | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 50 | -- | 10 | -- | 10 | -- |
| 1,2-Dichlorobenzene | ug/L | 600 | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 50 | -- | 10 | -- | 10 | -- |
| 1,3-Dichlorobenzene | ug/L | 600 | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 50 | -- | 10 | -- | 10 | -- |
| 1,4-Dichlorobenzene | ug/L | 75 | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 50 | -- | 10 | -- | 10 | -- |
| 2,4,5,-Trichlorophenol | ug/L | 700 | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 50 | -- | 10 | -- | 10 | -- |
| 2,4,6-Trichlorophenol | ug/L | 20 | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 50 | -- | 10 | -- | 10 | -- |
| 2,4,-Dichlorophenol | ug/L | 20 | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 50 | -- | 10 | -- | 10 | -- |
| 2,4-Dimethylphenol | ug/L | 100 | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 50 | -- | 10 | -- | 10 | -- |
| 2,4-Dinitrophenol | ug/L | 40 | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 50 | -- | 10 | -- | 10 | -- |
| 2,4 & 2,6-Dinitrotoluene (mixture) | ug/L | 10 | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 50 | -- | 10 | -- | 10 | -- |
| 2-Chloronaphthalene | ug/L | NC | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 50 | -- | 10 | -- | 10 | -- |

**Table 1**
**Groundwater Screening Sample Analytical Results**

**Central Steel Drum Facility**
**843-871 Delancy Street, Newark**

| Sample ID / Lab ID / Sample Collection Date / Matrix / Depth to Groundwater (feet) | Units | NJDEP Groundwater Quality Criteria | HP-8 AB44877 10/17/2001 GW 2.5 | | | HP-9 AB44882 10/17/2001 GW 1.9 | | | HP-10 AB44881 10/18/2001 GW 2.8 | | | HP-11 AB45293 10/24/2001 GW 2.8 | | | HP-12 AB45291 10/24/2001 GW 1 | | | HP-13 AB45736 10/30/2001 GW 2.5 | | | HP-14 AB44874 10/18/2001 GW 2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| Pentachlorophenol | ug/L | 1 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 50 | -- | | 10 | -- | | 10 | -- | |
| Phenanthrene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 50 | -- | | 10 | -- | | 10 | -- | |
| Phenol | ug/L | 4000 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 50 | -- | | 10 | -- | | 10 | -- | |
| Pyrene | ug/L | 200 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 50 | -- | | 10 | -- | | 10 | -- | |
| Tentatively Identified Compounds (TICs) Total | ug/L | NC | | 158.1 | J | | 137.2 | J | | 120.3 | J | | 299.1 | J | | 60317 | | | 31 | J | | 224.8 | J |
| | | | | | | | | | | | | | | | | | | | | | | | |
| PCBs | | | | | | | | | | | | | | | | | | | | | | | |
| Aroclor-1016 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | |
| Aroclor-1221 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | |
| Aroclor-1232 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | |
| Aroclor-1242 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | |
| Aroclor-1248 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | |
| Aroclor-1254 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | |
| Aroclor-1260 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | |
| Total PCBs | ug/L | 0.5 | | -- | | | -- | | | -- | | | -- | | 0.5 | -- | | 0.5 | -- | | | -- | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| Pesticides | | | | | | | | | | | | | | | | | | | | | | | |
| Aldrin | ug/L | 0.04 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Alpha-BHC | ug/L | 0.02 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Beta-BHC | ug/L | 0.2 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Chlordane | ug/L | 0.5 | 0.2 | -- | | 0.2 | -- | | 0.2 | -- | | 0.2 | -- | | | 0.55 | | 0.2 | -- | | 0.2 | -- | |
| Delta-BHC | ug/L | NC | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Dieldrin | ug/L | 0.03 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Endosulfan I | ug/L | 0.4 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Endosulfan II | ug/L | 0.4 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Endosulfan Sulfate | ug/L | 0.4 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Endrin | ug/L | 2 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Endrin Aldehyde | ug/L | NC | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Endrin Ketone | ug/L | NC | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Gamma-BHC | ug/L | 0.2 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Heptachlor | ug/L | 0.4 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Heptachlor Epoxide | ug/L | 0.2 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Methoxychlor | ug/L | 40 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| P,P'-DDD | ug/L | 0.1 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | | 0.23 | | 0.1 | -- | | 0.1 | -- | |
| P,P'-DDE | ug/L | 0.1 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | | 0.1 | | 0.1 | -- | | 0.1 | -- | |
| P,P'-DDT | ug/L | 0.1 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | | 0.64 | | 0.1 | -- | | 0.1 | -- | |
| Toxaphene | ug/L | 3 | 1 | -- | | 1 | -- | | 1 | -- | | 1 | -- | | 1 | -- | | 1 | -- | | 1 | -- | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | ug/L | None Noticeable | 1.1 | -- | | 1.1 | -- | | 1.1 | -- | | 1.1 | -- | | | 430 | | | 1.6 | | 1.1 | 17 | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| Inorganic Compounds | | | | | | | | | | | | | | | | | | | | | | | |
| Aluminum | ug/L | 200 | | 120000 | | | 140000 | | | 150000 | | | 56000 | | | 67000 | | | 37000 | | | 160000 | |
| Antimony | ug/L | 20 | | 200 | | | 380 | | | 130 | | | 310 | | | 140 | | | 31 | | | 120 | |
| Arsenic | ug/L | 8 | | 320 | | | 570 | | | 560 | | | 230 | | | 260 | | | 230 | | | 640 | |
| Barium | ug/L | 2000 | | 16000 | | | 36000 | | | 23000 | | | 7100 | | | 6000 | | | 3000 | | | 16000 | |
| Beryllium | ug/L | 20 | 15 | -- | | 15 | -- | | 15 | -- | | 15 | -- | | 15 | -- | | 15 | -- | | 15 | -- | |
| Cadmium | ug/L | 4 | | 110 | | | 270 | | | 95 | | | 29 | | | 15 | | | 47 | | | 280 | |
| Calcium | ug/L | NC | | 310000 | | | 190000 | | | 310000 | | | 140000 | | | 120000 | | | 140000 | | | 250000 | |

**Table 1**
**Groundwater Screening Sample Analytical Results**

**Central Steel Drum Facility**
**843-871 Delancy Street, Newark**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Matrix<br>Depth to Groundwater (feet) | Units | NJDEP Groundwater Quality Criteria | HP-8<br>AB44877<br>10/17/2001<br>GW<br>2.5 | | | HP-9<br>AB44882<br>10/17/2001<br>GW<br>1.9 | | | HP-10<br>AB44881<br>10/18/2001<br>GW<br>2.8 | | | HP-11<br>AB45293<br>10/24/2001<br>GW<br>2.8 | | | HP-12<br>AB45291<br>10/24/2001<br>GW<br>1 | | | HP-13<br>AB45736<br>10/30/2001<br>GW<br>2.5 | | | HP-14<br>AB44874<br>10/18/2001<br>GW<br>2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| Chromium | ug/L | 100 | | 1700 | | | 25000 | | | 8700 | | | 23000 | | | 15000 | | | 3200 | | | 12000 | |
| Cobalt | ug/L | NC | | 170 | | | 390 | | | 170 | | | 120 | | | 93 | | | 80 | | | 180 | |
| Copper | ug/L | 1000 | | 9400 | | | 16000 | | | 23000 | | | 8700 | | | 2000 | | | 1800 | | | 26000 | |
| Iron | ug/L | 300 | | 470000 | | | 790000 | | | 340000 | | | 170000 | | | 160000 | | | 180000 | | | 340000 | |
| Lead | ug/L | 10 | | 30000 | | | 44000 | | | 44000 | | | 20000 | | | 13000 | | | 5900 | | | 34000 | |
| Magnesium | ug/L | NC | | 63000 | | | 150000 | | | 71000 | | | 35000 | | | 85000 | | | 63000 | | | 79000 | |
| Manganese | ug/L | 50 | | 4900 | | | 4400 | | | 4300 | | | 2700 | | | 1700 | | | 1800 | | | 5100 | |
| Mercury | ug/L | 2 | | 49 | | | 13 | | | 48 | | 14 | 320 | | | 14 | | | 12 | | 0.7 | -- | |
| Nickel | ug/L | 100 | | 700 | | | 2800 | | | 1200 | | | 290 | | | 270 | | | 220 | | | 610 | |
| Potassium | ug/L | NC | | 26000 | | | 15000 | | | 27000 | | | 18000 | | | 12000 | | | 32000 | | | 38000 | |
| Selenium | ug/L | 50 | 40 | -- | | 40 | -- | | 40 | -- | | | 68 | | | 68 | | | 62 | | 40 | -- | |
| Silver | ug/L | NC | 20 | -- | | 20 | -- | | 20 | -- | | | 30 | | 20 | -- | | 20 | -- | | 20 | -- | |
| Sodium | ug/L | 50000 | | 68000 | | | 43000 | | | 56000 | | | 41000 | | | 23000 | | | 140000 | | | 87000 | |
| Thallium | ug/L | 10 | 10 | -- | | | 22 | | 10 | -- | | | 15 | | 10 | -- | | 10 | -- | | 10 | -- | |
| Vanadium | ug/L | NC | | 720 | | | 24000 | | | 700 | | | 530 | | | 590 | | | 330 | | | 790 | |
| Zinc | ug/L | 5000 | | 21000 | | | 18000 | | | 32000 | | | 6400 | | | 5600 | | | 3600 | | | 59000 | |

MDL Method Detection Limit
PAHs Polynuclear Aromatic Hydrocarbons
***BOLD*** analyte exceeds groundwater screening guidelines (8/8/99)
* indicates sample is a duplicate of previous sample
HP-27 was dry and not sampled

B Analyte is present in blank
J Estimated Value

NC No criteria established

NA Not analyzed
CONC Concentration
Q Qualifier
-- Not Detected

**Table 1**
**Groundwater Screening Sample Analytical Results**

**Central Steel Drum Facility**
**843-871 Delancy Street, Newark**

| Sample ID | Units | NJDEP | | HP-15 | | HP-16 | | HP-17 | | HP-18 | | HP-19 | | HP-20 | | HP-21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | | Groundwater | | AB44888 | | AB44889 | | AB45289 | | AB45295 | | AB45734 | | AB45737 | | AB45290 |
| Sample Collection Date | | Quality | | 10/18/2001 | | 10/18/2001 | | 10/24/2001 | | 10/24/2001 | | 10/30/2001 | | 10/30/2001 | | 10/24/2001 |
| Matrix | | Criteria | | GW | | GW | | GW | | GW | | GW | | GW | | GW |
| Depth to Groundwater (feet) | | | | 2 | | 2 | | 1.8 | | 2 | | 2.5 | | 2.5 | | 1.5 |
| | | | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q |
| **Volatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/L | 30 | 50 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| 1,1,2,2,-Tetrachlororethane | ug/L | 1 | 50 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| 1,1,2-Trichloroethane | ug/L | 3 | 50 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| 1,1-Dichloroethane | ug/L | 50 | 50 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| 1,1-Dichloroethene | ug/L | 2 | 50 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| 1,2-Dichloroethane | ug/L | 2 | 50 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| 1,2-Dichloropropane | ug/L | 1 | 50 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| 2-Butanone | ug/L | 300 | 250 | -- | 5 | -- | 25 | -- | | 27 | 25 | -- | 25 | -- | 25 | -- |
| 2-Hexanone | ug/L | NC | 200 | -- | 5 | -- | 20 | -- | 20 | -- | 20 | -- | 20 | -- | 20 | -- |
| 4-Methyl-2-Pentanone | ug/L | 400 | 200 | -- | 5 | -- | 20 | -- | 20 | -- | 20 | -- | 20 | -- | 20 | -- |
| Acetone | ug/L | 700 | 200 | -- | | 26 | 20 | 30 | | 110 | 20 | -- | | 21 | 20 | -- |
| Benzene | ug/L | 1 | | 44 | | 16 | 1 | 1.4 | | 1.1 | 1 | -- | 1 | -- | 1 | -- |
| Bromodichloromethane | ug/L | 1 | 50 | -- | 1 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Bromoform | ug/L | 4 | 50 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Bromomethane | ug/L | 10 | 50 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Carbon Disulfide | ug/L | NC | 50 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Carbon Tetrachloride | ug/L | 2 | 50 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Chlorobenzene | ug/L | 50 | | 440 | | 24 | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Chloroethane | ug/L | NC | 50 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Chloroform | ug/L | 6 | 50 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Chloromethane | ug/L | 30 | 50 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Cis-1,2-Dichloroethene | ug/L | 70 | 50 | -- | 5 | -- | 5 | -- | | 1.3 J | | 1.2 J | 5 | -- | 5 | -- |
| 1,3-Dichloropropene (cis and trans) | ug/L | 0.2 | 50 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Dibromochloromethane | ug/L | 10 | 50 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Ethylbenzene | ug/L | 700 | | 240 | | 1.9 | 1 | -- | | 3.3 | 1 | -- | 1 | -- | 1 | -- |
| Methylene chloride | ug/L | 3 | | 19 JB | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Xylenes (total) | ug/L | 1000 | | 1300 | 1 | 15.4 | 1 | -- | 1 | 9 | 1 | -- | 1 | -- | 1 | 1.3 J |
| Styrene | ug/L | 100 | 10 | -- | 1 | -- | 1 | -- | 1 | -- | 1 | -- | 1 | -- | 1 | -- |
| Tetrachloroethene | ug/L | 1 | 50 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Toluene | ug/L | 1000 | | 35 | | 7.4 | 1 | -- | | 14 | 1 | -- | 1 | -- | 1 | 1.5 |
| Trans-1,2-Dichloroethene | ug/L | 100 | 50 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Trichloroethene | ug/L | 1 | 50 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Vinyl chloride | ug/L | 5 | 50 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- | 5 | -- |
| Tentatively Identified Compounds (TICs) Total | ug/L | NC | | 115 J | | 201.9 J | | 33.6 J | | 79.2 J | | 25.7 J | | 81.5 J | | -- |
| | | | | | | | | | | | | | | | | |
| **Semi-volatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | ug/L | 9 | 10 | -- | 10 | | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- |
| 1,2-Dichlorobenzene | ug/L | 600 | | 25 | | 3.3 J | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- |
| 1,3-Dichlorobenzene | ug/L | 600 | | 6.4 J | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- |
| 1,4-Dichlorobenzene | ug/L | 75 | | 17 | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- |
| 2,4,5,-Trichlorophenol | ug/L | 700 | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- |
| 2,4,6-Trichlorophenol | ug/L | 20 | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- |
| 2,4,-Dichlorophenol | ug/L | 20 | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- |
| 2,4-Dimethylphenol | ug/L | 100 | | 45 | | 4.6 J | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- |
| 2,4-Dinitrophenol | ug/L | 40 | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- |
| 2,4 & 2,6-Dinitrotoluene (mixture) | ug/L | 10 | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- |
| 2-Chloronaphthalene | ug/L | NC | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- |

**Table 1**
**Groundwater Screening Sample Analytical Results**

**Central Steel Drum Facility**
**843-871 Delancy Street, Newark**

| Sample ID | Units | NJDEP | | HP-15 | | | HP-16 | | | HP-17 | | | HP-18 | | | HP-19 | | | HP-20 | | | HP-21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | | Groundwater | | AB44888 | | | AB44889 | | | AB45289 | | | AB45295 | | | AB45734 | | | AB45737 | | | AB45290 |
| Sample Collection Date | | Quality | | 10/18/2001 | | | 10/18/2001 | | | 10/24/2001 | | | 10/24/2001 | | | 10/30/2001 | | | 10/30/2001 | | | 10/24/2001 |
| Matrix | | Criteria | | GW | | | GW | | | GW | | | GW | | | GW | | | GW | | | GW |
| Depth to Groundwater (feet) | | | | 2 | | | 2 | | | 2.8 | | | 2 | | | 2.5 | | | 2.5 | | | 2.5 |
| | | | MDL | CONC | | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| 2-Chlorophenol | ug/L | 40 | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2-Methylnaphthalene | ug/L | NC | | 5.5 | | J | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2-Methylphenol | ug/L | NC | | 3.9 | | J | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2-Nitroaniline | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2-Nitrophenol | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 3 & 4-Methylphenol | ug/L | NC | | 7.6 | | J | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 3,3'-Dichlorobenzidine | ug/L | 60 | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 3-Nitroaniline | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4,6-Dinitro-2-methylphenol | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4-Bromophenyl-phenylether | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4-Chloro-3-methylphenol | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4-Chloroaniline | ug/L | NC | 10 | -- | | | | 9.9 | J | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4-Chlorophenyl-phenylether | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4-Nitroaniline | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4-Nitrophenol | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Acenaphthene | ug/L | 400 | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | | 7.3 | J | 10 | -- | | 10 | -- | |
| Acenaphthylene | ug/L | NC | | 5.2 | | J | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Anthracene | ug/L | 2000 | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 1.8 | J | 10 | -- | |
| Benzo(a)anthracene | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 2.8 | J | 10 | -- | |
| Benzo(a)pyrene | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 1.4 | J | 10 | -- | |
| Benzo(b)fluoranthene | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 1.9 | J | 10 | -- | |
| Benzo(g,h,i)perylene | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Benzo(k)fluoranthene | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Bis(2-Chloroethoxy)methane | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Bis(2-Chloroethyl)ether | ug/L | 10 | | 17 | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Bis(2-Chloroisopropyl)ether | ug/L | 300 | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Bis(2-Ethylhexyl)phthalate | ug/L | 30 | | 44 | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 3.7 | J | 10 | 3.9 | J |
| Butylbenzylphthalate | ug/L | 100 | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Carbazole | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Chrysene | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 2.9 | J | 10 | -- | |
| Dibenzo(a,h)Anthracene | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Dibenzofuran | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | | 2.7 | J | 10 | -- | | 10 | -- | |
| Diethylphthalate | ug/L | 5000 | | 1.9 | | JB | 10 | -- | | 10 | 1.2 | J | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Dimethylphthalate | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | | 2 | J | 10 | -- | | 10 | -- | | 10 | -- | |
| Di-n-butylphthalate | ug/L | 900 | | 13 | | B | | 2.6 | JB | 10 | 1.1 | JB | 10 | -- | | | 1.5 | JB | | 2 | JB | 10 | -- | |
| Di-n-octylphthalate | ug/L | 100 | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Fluoranthene | ug/L | 300 | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 4.4 | J | 10 | -- | |
| Fluorene | ug/L | 300 | | 1.6 | | J | 10 | -- | | 10 | -- | | 10 | -- | | | 2.5 | J | 10 | -- | | 10 | -- | |
| Hexachlorobenzene | ug/L | 10 | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Hexachlorobutadiene | ug/L | 1 | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Hexachlorocyclopentadiene | ug/L | 50 | 20 | -- | | | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- | |
| Hexachloroethane | ug/L | 10 | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Indeno(1,2,3-cd)pyrene | ug/L | NC | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Isophorone | ug/L | 100 | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Naphthalene | ug/L | 300 | | 11 | | | 10 | 1.8 | J | 10 | -- | | 10 | -- | | | 12 | | 10 | -- | | 10 | -- | |
| Nitrobenzene | ug/L | 10 | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| N-Nitroso-Di-N-propylamine | ug/L | 20 | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| N-Nitrosodiphenylamine | ug/L | 20 | 10 | -- | | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |

**Table 1**
**Groundwater Screening Sample Analytical Results**

**Central Steel Drum Facility**
**843-871 Delancy Street, Newark**

| Sample ID / Lab ID / Sample Collection Date / Matrix / Depth to Groundwater (feet) | Units | NJDEP Groundwater Quality Criteria | HP-15 AB44888 10/18/2001 GW 2 | | HP-16 AB44889 10/18/2001 GW 2 | | HP-17 AB45289 10/24/2001 GW 2.8 | | HP-18 AB45295 10/24/2001 GW 2 | | HP-19 AB45734 10/30/2001 GW 2.5 | | HP-20 AB45737 10/30/2001 GW 2.5 | | HP-21 AB45290 10/24/2001 GW 2.5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q |
| Pentachlorophenol | ug/L | 1 | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- |
| Phenanthrene | ug/L | NC | 10 | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | | 3.4 J | 10 | -- |
| Phenol | ug/L | 4000 | 10 | -- | 10 | -- | 10 | 3.5 J | 10 | -- | 10 | -- | 10 | -- | 10 | -- |
| Pyrene | ug/L | 200 | | -- | 10 | -- | 10 | -- | 10 | -- | 10 | -- | | 4.4 J | 10 | -- |
| Tentatively Identified Compounds (TICs) Total | ug/L | NC | | 2859 J | | 1224 J | | 405 J | | 211 J | | 21.1 J | | 1032 J | | 124 J |
| | | | | | | | | | | | | | | | | |
| PCBs | | | | | | | | | | | | | | | | |
| Aroclor-1016 | ug/L | NC | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- |
| Aroclor-1221 | ug/L | NC | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- |
| Aroclor-1232 | ug/L | NC | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- |
| Aroclor-1242 | ug/L | NC | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- |
| Aroclor-1248 | ug/L | NC | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- |
| Aroclor-1254 | ug/L | NC | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- |
| Aroclor-1260 | ug/L | NC | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- |
| Total PCBs | ug/L | 0.5 | 0.5 | -- | | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- | 0.5 | -- |
| | | | | | | | | | | | | | | | | |
| Pesticides | | | | | | | | | | | | | | | | |
| Aldrin | ug/L | 0.04 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Alpha-BHC | ug/L | 0.02 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Beta-BHC | ug/L | 0.2 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Chlordane | ug/L | 0.5 | 0.02 | -- | 0.2 | -- | 0.2 | -- | 0.2 | -- | 0.2 | -- | 0.2 | -- | 0.2 | -- |
| Delta-BHC | ug/L | NC | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Dieldrin | ug/L | 0.03 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Endosulfan I | ug/L | 0.4 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Endosulfan II | ug/L | 0.4 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Endosulfan Sulfate | ug/L | 0.4 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Endrin | ug/L | 2 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Endrin Aldehyde | ug/L | NC | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Endrin Ketone | ug/L | NC | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Gamma-BHC | ug/L | 0.2 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Heptachlor | ug/L | 0.4 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Heptachlor Epoxide | ug/L | 0.2 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Methoxychlor | ug/L | 40 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| P,P'-DDD | ug/L | 0.1 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| P,P'-DDE | ug/L | 0.1 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| P,P'-DDT | ug/L | 0.1 | | 0.26 | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- | 0.1 | -- |
| Toxaphene | ug/L | 3 | 1 | -- | 1 | -- | 1 | -- | 1 | -- | 1 | -- | 1 | -- | 1 | -- |
| | | | | | | | | | | | | | | | | |
| **Total Petroleum Hydrocarbons** | ug/L | None Noticeable | 1.1 | 9.2 | 1.1 | -- | 1.1 | -- | | NA | 1.1 | -- | 1.2 | 23 | 1.1 | -- |
| | | | | | | | | | | | | | | | | |
| **Inorganic Compounds** | | | | | | | | | | NA | | | | | | |
| Aluminum | ug/L | 200 | | 170000 | | 120000 | | 130000 | | | | 1500 | | 64000 | | 57000 |
| Antimony | ug/L | 20 | | 210 | | 128 | 15 | -- | | | 15 | -- | 15 | -- | | 39 |
| Arsenic | ug/L | 8 | | 750 | | 338 | | 280 | | | | 15 | | 210 | | 120 |
| Barium | ug/L | 2000 | | 39000 | | 20000 | | 9380 | | | | 1100 | | 4600 | | 5400 |
| Beryllium | ug/L | 20 | 15 | -- | 15 | -- | 15 | -- | | | 15 | -- | 15 | -- | 15 | -- |
| Cadmium | ug/L | 4 | | 260 | | 200 | | 18 | | | | 11 | | 32 | | 76 |
| Calcium | ug/L | NC | | 270000 | | 210000 | | 280000 | | | | 54000 | | 170000 | | 190000 |

**Table 1**
**Groundwater Screening Sample Analytical Results**

**Central Steel Drum Facility**
**843-871 Delancy Street, Newark**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Matrix<br>Depth to Groundwater (feet) | Units | NJDEP Groundwater Quality Criteria | HP-15<br>AB44888<br>10/18/2001<br>GW<br>2 | | | HP-16<br>AB44889<br>10/18/2001<br>GW<br>2 | | | HP-17<br>AB45289<br>10/24/2001<br>GW<br>2.8 | | | HP-18<br>AB45295<br>10/24/2001<br>GW<br>2 | | | HP-19<br>AB45734<br>10/30/2001<br>GW<br>2.5 | | | HP-20<br>AB45737<br>10/30/2001<br>GW<br>2.5 | | | HP-21<br>AB45290<br>10/24/2001<br>GW<br>2.5 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| Chromium | ug/L | 100 | | **12000** | | | **1200** | | | **190** | | | | | | **440** | | | **480** | | | **320** | |
| Cobalt | ug/L | NC | | 540 | | | 260 | | | 94 | | | | | 20 | -- | | | **100** | | | 170 | |
| Copper | ug/L | 1000 | | **35000** | | | **18000** | | | **6700** | | | | | | 150 | | | **10000** | | | **6400** | |
| Iron | ug/L | 300 | | **730000** | | | **590000** | | | **210000** | | | | | | **36000** | | | **200000** | | | **130000** | |
| Lead | ug/L | 10 | | **78000** | | | **40000** | | | **14000** | | | | | | **1100** | | | **15000** | | | **15000** | |
| Magnesium | ug/L | NC | | 110000 | | | 70000 | | | 35000 | | | | | | 36000 | | | 36000 | | | 18000 | |
| Manganese | ug/L | 50 | | **5300** | | | **5200** | | | **3200** | | | | | | **320** | | | **2300** | | | **1500** | |
| Mercury | ug/L | 2 | | **60** | | | **57** | | | **70** | | | | | 0.7 | -- | | | **18** | | | **35** | |
| Nickel | ug/L | 100 | | **2000** | | | **780** | | | **260** | | | | | | 59 | | | **320** | | | **300** | |
| Potassium | ug/L | NC | | 34000 | | | 34000 | | | 22000 | | | | | | 25000 | | | 170000 | | | 8000 | |
| Selenium | ug/L | 50 | 40 | -- | | 20 | -- | | | **72** | | | | | 40 | -- | | | **92** | | | **59** | |
| Silver | ug/L | NC | 20 | -- | | | 59 | | | 21 | | | | | 20 | -- | | 20 | -- | | | 37 | |
| Sodium | ug/L | 50000 | | 48000 | | | **86000** | | | 26000 | | | | | | **130000** | | | 42000 | | | 7800 | |
| Thallium | ug/L | 10 | | 15 | | 50 | -- | | 10 | -- | | | | | 10 | -- | | | **12** | | 10 | -- | |
| Vanadium | ug/L | NC | | 1200 | | | 580 | | | 350 | | | | | | 52 | | | 380 | | | 250 | |
| Zinc | ug/L | 5000 | | **66000** | | | **79000** | | | **9800** | | | | | | 1100 | | | **11000** | | | **14000** | |

MDL Method Detection Limit
PAHs Polynuclear Aromatic Hydrocarbons
***BOLD*** **analyte exceeds groundwater screening guidelines (8/8/99)**
*** indicates sample is a duplicate of previous sample**
HP-27 was dry and not sampled

B Analyte is present in blank
J Estimated Value

NC No criteria established

NA Not analyzed
CONC Concentration
Q Qualifier
-- Not Detected

**Table 1**
**Groundwater Screening Sample Analytical Results**

**Central Steel Drum Facility**
**843-871 Delancy Street, Newark**

| Sample ID / Lab ID / Sample Collection Date / Matrix / Depth to Groundwater (feet) | Units | NJDEP Groundwater Quality Criteria | HP-22 AB45292 10/24/2001 GW 1 | | | HP-23 AB44875 10/18/2001 GW 2 | | | HP-24 AB45850 10/31/2001 GW 2.5 | | | HP-25 AB45436 10/25/2001 GW 3 | | | HP-26 AB45434 10/25/2001 GW 3 | | | HP-28 AB45435 10/25/2001 GW 3 | | | HP-29 AB45849 10/31/2001 GW 2.5 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | COCNC | Q | MDL | COCN | Q | MDL | CONC | Q | MDL | CONC | Q |
| **Volatile Organic Compounds** | | | | | | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/L | 30 | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| 1,1,2,2,-Tetrachloroethane | ug/L | 1 | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| 1,1,2-Trichloroethane | ug/L | 3 | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| 1,1-Dichloroethane | ug/L | 50 | 5 | 1.6 | J | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| 1,1-Dichloroethene | ug/L | 2 | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| 1,2-Dichloroethane | ug/L | 2 | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| 1,2-Dichloropropane | ug/L | 1 | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| 2-Butanone | ug/L | 300 | 25 | -- | | 25 | -- | | | 19 | J | 100 | -- | | 25 | -- | | 25 | -- | | 25 | -- | |
| 2-Hexanone | ug/L | NC | 20 | -- | | 20 | -- | | 20 | -- | | 500 | -- | | 20 | -- | | 20 | -- | | 20 | -- | |
| 4-Methyl-2-Pentanone | ug/L | 400 | 20 | -- | | 20 | -- | | 20 | -- | | 400 | -- | | 20 | -- | | 20 | -- | | 20 | -- | |
| Acetone | ug/L | 700 | 20 | -- | | 20 | -- | | | 31 | | 400 | -- | | 20 | -- | | 20 | -- | | 20 | -- | |
| Benzene | ug/L | 1 | 1 | -- | | 1 | 2.7 | | 5 | -- | | 20 | 1500 | | 1 | -- | | 1 | -- | | 1 | -- | |
| Bromodichloromethane | ug/L | 1 | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Bromoform | ug/L | 4 | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Bromomethane | ug/L | 10 | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Carbon Disulfide | ug/L | NC | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Carbon Tetrachloride | ug/L | 2 | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Chlorobenzene | ug/L | 50 | 5 | -- | | 5 | 1.8 | J | 5 | -- | | 100 | -- | | 5 | -- | | 5 | 2.1 | J | 5 | -- | |
| Chloroethane | ug/L | NC | 5 | 10 | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Chloroform | ug/L | 6 | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Chloromethane | ug/L | 30 | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Cis-1,2-Dichloroethene | ug/L | 70 | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| 1,3-Dichloropropene (cis and trans) | ug/L | 0.2 | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Dibromochloromethane | ug/L | 10 | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Ethylbenzene | ug/L | 700 | 1 | -- | | 1 | -- | | 1 | -- | | 20 | 260 | | 1 | -- | | 1 | -- | | 1 | -- | |
| Methylene chloride | ug/L | 3 | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Xylenes (total) | ug/L | 1000 | 1 | -- | | 1 | -- | | 1 | -- | | 20 | 1530 | | 1 | -- | | 2 | 1.6 | J | 1 | -- | |
| Styrene | ug/L | 100 | 1 | -- | | 1 | -- | | 1 | -- | | 20 | -- | | 1 | -- | | 1 | -- | | 1 | -- | |
| Tetrachloroethene | ug/L | 1 | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Toluene | ug/L | 1000 | 1 | -- | | 1 | -- | | 5 | 1.7 | | 20 | 650 | | 1 | -- | | 1 | -- | | 1 | -- | |
| Trans-1,2-Dichloroethene | ug/L | 100 | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Trichloroethene | ug/L | 1 | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Vinyl chloride | ug/L | 5 | 5 | -- | | 5 | -- | | 5 | -- | | 100 | -- | | 5 | -- | | 5 | -- | | 5 | -- | |
| Tentatively Identified Compounds (TICs) Total | ug/L | NC | | -- | | | 78.3 | J | | 42.4 | J | | 2113 | J | | 6.3 | J | | 35.7 | J | | 7.8 | J |
| | | | | | | | | | | | | | | | | | | | | | | | |
| **Semi-volatile Organic Compounds** | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | ug/L | 9 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 1,2-Dichlorobenzene | ug/L | 600 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | 2.8 | J | 10 | -- | | 10 | -- | | 10 | -- | |
| 1,3-Dichlorobenzene | ug/L | 600 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 1,4-Dichlorobenzene | ug/L | 75 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2,4,5,-Trichlorophenol | ug/L | 700 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2,4,6-Trichlorophenol | ug/L | 20 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2,4,-Dichlorophenol | ug/L | 20 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2,4-Dimethylphenol | ug/L | 100 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2,4-Dinitrophenol | ug/L | 40 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2,4 & 2,6-Dinitrotoluene (mixture) | ug/L | 10 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2-Chloronaphthalene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |

**Table 1**
**Groundwater Screening Sample Analytical Results**

**Central Steel Drum Facility**
**843-871 Delancy Street, Newark**

| Sample ID | Units | NJDEP | HP-22 | | | HP-23 | | | HP-24 | | | HP-25 | | | HP-26 | | | HP-28 | | | HP-29 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | | Groundwater | AB45292 | | | AB44875 | | | AB45850 | | | AB45436 | | | AB45434 | | | AB45435 | | | AB45849 | | |
| Sample Collection Date | | Quality | 10/24/2001 | | | 10/18/2001 | | | 10/31/2001 | | | 10/25/2001 | | | 10/25/2001 | | | 10/25/2001 | | | 10/31/2001 | | |
| Matrix | | Criteria | GW | | | GW | | | GW | | | GW | | | GW | | | GW | | | GW | | |
| Depth to Groundwater (feet) | | | 1 | | | 2 | | | 2.5 | | | 3 | | | 3 | | | 3 | | | 2.5 | | |
| | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | COCNC | Q | MDL | COCN | Q | MDL | CONC | Q | MDL | CONC | Q |
| 2-Chlorophenol | ug/L | 40 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2-Methylnaphthalene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | 1.1 | J | 10 | -- | |
| 2-Methylphenol | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | 31 | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2-Nitroaniline | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 2-Nitrophenol | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 3 & 4-Methylphenol | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 3,3'-Dichlorobenzidine | ug/L | 60 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 3-Nitroaniline | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4,6-Dinitro-2-methylphenol | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4-Bromophenyl-phenylether | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4-Chloro-3-methylphenol | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4-Chloroaniline | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4-Chlorophenyl-phenylether | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4-Nitroaniline | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| 4-Nitrophenol | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Acenaphthene | ug/L | 400 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Acenaphthylene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Anthracene | ug/L | 2000 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | 4.1 | J | 10 | -- | | 10 | -- | | 10 | -- | |
| Benzo(a)anthracene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Benzo(a)pyrene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Benzo(b)fluoranthene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Benzo(g,h,i)perylene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Benzo(k)fluoranthene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Bis(2-Chloroethoxy)methane | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Bis(2-Chloroethyl)ether | ug/L | 10 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Bis(2-Chloroisopropyl)ether | ug/L | 300 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Bis(2-Ethylhexyl)phthalate | ug/L | 30 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Butylbenzylphthalate | ug/L | 100 | 10 | -- | | 10 | 6.9 | J | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Carbazole | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Chrysene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Dibenzo(a,h)Anthracene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Dibenzofuran | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Diethylphthalate | ug/L | 5000 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Dimethylphthalate | ug/L | NC | 10 | -- | | 10 | 7.1 | J | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Di-n-butylphthalate | ug/L | 900 | 10 | -- | | 10 | 1.1 | J | | 1.1 | J | 10 | -- | | 10 | 1 | J | 10 | -- | | | 1.2 | J |
| Di-n-octylphthalate | ug/L | 100 | 10 | -- | | 10 | 5.4 | J | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Fluoranthene | ug/L | 300 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Fluorene | ug/L | 300 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Hexachlorobenzene | ug/L | 10 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Hexachlorobutadiene | ug/L | 1 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Hexachlorocyclopentadiene | ug/L | 50 | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- | |
| Hexachloroethane | ug/L | 10 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Indeno(1,2,3-cd)pyrene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Isophorone | ug/L | 100 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Naphthalene | ug/L | 300 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | 2.7 | J | 10 | -- | | 10 | -- | | 10 | -- | |
| Nitrobenzene | ug/L | 10 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| N-Nitroso-Di-N-propylamine | ug/L | 20 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| N-Nitrosodiphenylamine | ug/L | 20 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |

Table 1
Groundwater Screening Sample Analytical Results

Central Steel Drum Facility
843-871 Delancy Street, Newark

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Matrix<br>Depth to Groundwater (feet) | Units | NJDEP Groundwater Quality Criteria | | HP-22<br>AB45292<br>10/24/2001<br>GW<br>1 | | | HP-23<br>AB44875<br>10/18/2001<br>GW<br>2 | | | HP-24<br>AB45850<br>10/31/2001<br>GW<br>2.5 | | | HP-25<br>AB45436<br>10/25/2001<br>GW<br>3 | | | HP-26<br>AB45434<br>10/25/2001<br>GW<br>3 | | | HP-28<br>AB45435<br>10/25/2001<br>GW<br>3 | | | HP-29<br>AB45849<br>10/31/2001<br>GW<br>2.5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | COCNC | Q | MDL | COCN | Q | MDL | CONC | Q | MDL | CONC | Q |
| Pentachlorophenol | ug/L | 1 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Phenanthrene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | 2.7 | J | 10 | -- | | 10 | -- | | 10 | -- | |
| Phenol | ug/L | 4000 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Pyrene | ug/L | 200 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Tentatively Identified Compounds (TICs) Total | ug/L | NC | | 179 | J | | 359.4 | J | | 15 | J | | 5537 | J | | 71 | JB | | 102 | J | | 25 | J |
| | | | | | | | | | | | | | | | | | | | | | | | |
| PCBs | | | | | | | | | | | | | | | | | | | | | | | |
| Aroclor-1016 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | |
| Aroclor-1221 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | |
| Aroclor-1232 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | |
| Aroclor-1242 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | |
| Aroclor-1248 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | |
| Aroclor-1254 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | |
| Aroclor-1260 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | | -- | | | -- | | | -- | | 0.5 | -- | | 0.5 | -- | |
| Total PCBs | ug/L | 0.5 | 0.5 | -- | | 0.5 | -- | | | | | | | | | -- | | | -- | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| Pesticides | | | | | | | | | | | | | | | | | | | | | | | |
| Aldrin | ug/L | 0.04 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Alpha-BHC | ug/L | 0.02 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Beta-BHC | ug/L | 0.2 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Chlordane | ug/L | 0.5 | 0.2 | -- | | 0.2 | -- | | 0.2 | -- | | 0.2 | -- | | 0.2 | -- | | 0.2 | -- | | 0.2 | -- | |
| Delta-BHC | ug/L | NC | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Dieldrin | ug/L | 0.03 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Endosulfan I | ug/L | 0.4 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Endosulfan II | ug/L | 0.4 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Endosulfan Sulfate | ug/L | 0.4 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Endrin | ug/L | 2 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Endrin Aldehyde | ug/L | NC | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Endrin Ketone | ug/L | NC | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Gamma-BHC | ug/L | 0.2 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Heptachlor | ug/L | 0.4 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Heptachlor Epoxide | ug/L | 0.2 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Methoxychlor | ug/L | 40 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| P,P'-DDD | ug/L | 0.1 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| P,P'-DDE | ug/L | 0.1 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| P,P'-DDT | ug/L | 0.1 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Toxaphene | ug/L | 3 | 1 | -- | | 1 | -- | | 1 | -- | | 1 | -- | | 1 | -- | | 1 | -- | | 1 | -- | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | ug/L | None Noticeable | 1.1 | -- | | 2.1 | -- | | 1.1 | 1.4 | | 1.1 | 1.9 | | 1.1 | 1.3 | | 1.1 | 2.3 | | | 5.5 | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| Inorganic Compounds | | | | | | | | | | | | | | | | | | | | | | | |
| Aluminum | ug/L | 200 | | 79000 | | | 58000 | | | 47000 | | | 31000 | | | 240000 | | | 71000 | | | 7700 | |
| Antimony | ug/L | 20 | 15 | -- | | | 50 | | | 55 | | | 190 | | | 210 | | 15 | -- | | | 17 | |
| Arsenic | ug/L | 8 | | 230 | | | 130 | | | 190 | | | 15 | | | 910 | | | 170 | | | 38 | |
| Barium | ug/L | 2000 | | 6800 | | | 7400 | | | 9500 | | | 21000 | | | 6500 | | | 7500 | | | 860 | |
| Beryllium | ug/L | 20 | 15 | -- | | 15 | -- | | 15 | -- | | 15 | -- | | 15 | -- | | 15 | -- | | 15 | -- | |
| Cadmium | ug/L | 4 | | 56 | | | 20 | | | 75 | | | 130 | | | 95 | | | 24 | | | 29 | |
| Calcium | ug/L | NC | | 190000 | | | 140000 | | | 130000 | | | 380000 | | | 230000 | | | 160000 | | | 110000 | |

**Table 1**
**Groundwater Screening Sample Analytical Results**

**Central Steel Drum Facility**
**843-871 Delancy Street, Newark**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Matrix<br>Depth to Groundwater (feet) | Units | NJDEP Groundwater Quality Criteria | HP-22<br>AB45292<br>10/24/2001<br>GW<br>1 | | | HP-23<br>AB44875<br>10/18/2001<br>GW<br>2 | | | HP-24<br>AB45850<br>10/31/2001<br>GW<br>2.5 | | | HP-25<br>AB45436<br>10/25/2001<br>GW<br>3 | | | HP-26<br>AB45434<br>10/25/2001<br>GW<br>3 | | | HP-28<br>AB45435<br>10/25/2001<br>GW<br>3 | | | HP-29<br>AB45849<br>10/31/2001<br>GW<br>2.5 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | COCNC | Q | MDL | COCN | Q | MDL | CONC | Q | MDL | CONC | Q |
| Chromium | ug/L | 100 | | **260** | | | **460** | | | 1300 | | | **2700** | | | **32000** | | | **530** | | | 1100 | |
| Cobalt | ug/L | NC | | 120 | | | 360 | | | 100 | | | 260 | | | 350 | | | 300 | | | 60 | |
| Copper | ug/L | 1000 | | **24000** | | | **1900** | | | **12000** | | | **2600** | | | **5600** | | | **4500** | | | 570 | |
| Iron | ug/L | 300 | | **240000** | | | **98000** | | | **240000** | | | **1100000** | | | **1500000** | | | **320000** | | | **75000** | |
| Lead | ug/L | 10 | | **19000** | | | **13000** | | | **19000** | | | **20000** | | | **11000** | | | **13000** | | | **2600** | |
| Magnesium | ug/L | NC | | 22000 | | | 33000 | | | 58000 | | | 130000 | | | 140000 | | | 28000 | | | 50000 | |
| Manganese | ug/L | 50 | | **2600** | | | **1700** | | | **2300** | | | **8500** | | | **8300** | | | **3400** | | | **1400** | |
| Mercury | ug/L | 2 | | **47** | | | 11 | | | **27** | | | **8.3** | | | **57** | | | **10** | | | 1.6 | |
| Nickel | ug/L | 100 | | **500** | | | **220** | | | **330** | | | **1200** | | | **1100** | | | **290** | | | **190** | |
| Potassium | ug/L | NC | | 22000 | | | 19000 | | | 22000 | | | 230000 | | | 61000 | | | 14000 | | | 20000 | |
| Selenium | ug/L | 50 | | **110** | | 40 | -- | | | **84** | | | **240** | | | **200** | | | **110** | | 40 | -- | |
| Silver | ug/L | NC | | **41** | | 20 | -- | | | 190 | | | 30 | | 20 | -- | | | 27 | | 20 | -- | |
| Sodium | ug/L | 50000 | | 22000 | | | 28000 | | | 62000 | | | **1900000** | | | **92000** | | | 17000 | | | **81000** | |
| Thallium | ug/L | 10 | 10 | -- | | 10 | -- | | | **12** | | | **10** | | | **31** | | 10 | -- | | 10 | -- | |
| Vanadium | ug/L | NC | | 400 | | | 230 | | | 340 | | | 170 | | | 2200 | | | 370 | | | 250 | |
| Zinc | ug/L | 5000 | | **20000** | | | **8300** | | | **16000** | | | **21000** | | | **7200** | | | **21000** | | | 1700 | |

MDL Method Detection Limit
PAHs Polynuclear Aromatic Hydrocarbons
***BOLD*** **analyte exceeds groundwater screening guidelines (8/8/99)**
*** Indicates sample is a duplicate of previous sample**
HP-27 was dry and not sampled

B Analyte is present in blank
J Estimated Value
NC No criteria established
NA Not analyzed
CONC Concentration
Q Qualifier
-- Not Detected

**Table 1**
**Groundwater Screening Sample Analytical Results**

**Central Steel Drum Facility**
**843-871 Delancy Street, Newark**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Matrix<br>Depth to Groundwater (feet) | Units | NJDEP Groundwater Quality Criteria | | HP-30<br>AB45848<br>10/31/2001<br>GW<br>2.5 | | | HP-31<br>AB45437<br>10/25/2001<br>GW<br>3 | | | HP-32<br>AB45440<br>10/25/2001<br>GW<br>3 | | | HP-33<br>AB45439<br>10/25/2001<br>GW<br>3 | | | HP-34<br>AB45732<br>10/03/2001<br>GW<br>2.5 | | | HP-35<br>AB45733<br>10/30/2001<br>GW<br>2.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC |
| **Volatile Organic Compounds** | | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/L | 30 | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| 1,1,2,2,-Tetrachloroethane | ug/L | 1 | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| 1,1,2-Trichloroethane | ug/L | 3 | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| 1,1-Dichloroethane | ug/L | 50 | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| 1,1-Dichloroethene | ug/L | 2 | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| 1,2-Dichloroethane | ug/L | 2 | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| 1,2-Dichloropropane | ug/L | 1 | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| 2-Butanone | ug/L | 300 | | 190 | J | 25 | -- | | 25 | -- | | 25 | -- | | 25 | -- | | 25 | -- |
| 2-Hexanone | ug/L | NC | 200 | -- | | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- |
| 4-Methyl-2-Pentanone | ug/L | 400 | | 980 | | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- |
| Acetone | ug/L | 700 | 200 | -- | | 20 | 23 | | 20 | 16 | J | 20 | -- | | 20 | -- | | 20 | -- |
| Benzene | ug/L | 1 | | 87 | | 1 | 1 | | 1 | -- | | 1 | -- | | | 2.1 | | | 48 |
| Bromodichloromethane | ug/L | 1 | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| Bromoform | ug/L | 4 | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| Bromomethane | ug/L | 10 | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| Carbon Disulfide | ug/L | NC | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| Carbon Tetrachloride | ug/L | 2 | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| Chlorobenzene | ug/L | 50 | | 19 | J | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | | 74 |
| Chloroethane | ug/L | NC | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| Chloroform | ug/L | 6 | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| Chloromethane | ug/L | 30 | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| Cis-1,2-Dichloroethene | ug/L | 70 | | 11 | J | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| 1,3-Dichloropropene (cis and trans) | ug/L | 0.2 | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| Dibromochloromethane | ug/L | 10 | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| Ethylbenzene | ug/L | 700 | | 400 | | 1 | -- | | 1 | -- | | 1 | -- | | 1 | -- | | 1 | 6.1 |
| Methylene chloride | ug/L | 3 | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | | -- |
| Xylenes (total) | ug/L | 1000 | | 1760 | | 1 | 3.3 | J | 1 | -- | | 1 | -- | | 1 | -- | | | 49.9 |
| Styrene | ug/L | 100 | 10 | -- | | 1 | -- | | 1 | -- | | 1 | -- | | 1 | -- | | 1 | -- |
| Tetrachloroethene | ug/L | 1 | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| Toluene | ug/L | 1000 | | 1900 | | 1 | 1.4 | | 1 | -- | | 1 | 1.5 | | 1 | -- | | | 2.7 |
| Trans-1,2-Dichloroethene | ug/L | 100 | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| Trichloroethene | ug/L | 1 | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| Vinyl chloride | ug/L | 5 | 50 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- | | 5 | -- |
| Tentatively Identified Compounds (TICs) Total | ug/L | NC | | 498 | J | | 8.8 | J | | -- | | | 54 | J | | 67.5 | J | | 203.9 |
| | | | | | | | | | | | | | | | | | | | |
| **Semi-volatile Organic Compounds** | | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | ug/L | 9 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 1,2-Dichlorobenzene | ug/L | 600 | | 2.2 | J | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 1.4 |
| 1,3-Dichlorobenzene | ug/L | 600 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 1,4-Dichlorobenzene | ug/L | 75 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 1.4 |
| 2,4,5,-Trichlorophenol | ug/L | 700 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 2,4,6-Trichlorophenol | ug/L | 20 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 2,4,-Dichlorophenol | ug/L | 20 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 2,4-Dimethylphenol | ug/L | 100 | | 17 | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 2,4-Dinitrophenol | ug/L | 40 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 2,4 & 2,6-Dinitrotoluene (mixture) | ug/L | 10 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 2-Chloronaphthalene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |

**Table 1**
**Groundwater Screening Sample Analytical Results**

**Central Steel Drum Facility**
**843-871 Delancy Street, Newark**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Matrix<br>Depth to Groundwater (feet) | Units | NJDEP Groundwater Quality Criteria | | HP-30<br>AB45848<br>10/31/2001<br>GW<br>2.5 | | | HP-31<br>AB45437<br>10/25/2001<br>GW<br>3 | | | HP-32<br>AB45440<br>10/25/2001<br>GW<br>3 | | | HP-33<br>AB45439<br>10/25/2001<br>GW<br>3 | | | HP-34<br>AB45732<br>10/03/2001<br>GW<br>2.5 | | | HP-35<br>AB45733<br>10/30/2001<br>GW<br>2.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC |
| 2-Chlorophenol | ug/L | 40 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 2-Methylnaphthalene | ug/L | NC | | 1.4 | J | 10 | -- | | 10 | -- | | 10 | -- | | | 4.6 | J | 10 | -- |
| 2-Methylphenol | ug/L | NC | | 22 | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 2-Nitroaniline | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 2-Nitrophenol | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 3 & 4-Methylphenol | ug/L | NC | | 49 | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 3,3'-Dichlorobenzidine | ug/L | 60 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 3-Nitroaniline | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 4,6-Dinitro-2-methylphenol | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 4-Bromophenyl-phenylether | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 4-Chloro-3-methylphenol | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 4-Chloroaniline | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 4-Chlorophenyl-phenylether | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 4-Nitroaniline | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| 4-Nitrophenol | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Acenaphthene | ug/L | 400 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 3.4 | J | 10 | -- |
| Acenaphthylene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 6.6 | J | 10 | -- |
| Anthracene | ug/L | 2000 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Benzo(a)anthracene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Benzo(a)pyrene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Benzo(b)fluoranthene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Benzo(g,h,i)perylene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Benzo(k)fluoranthene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Bis(2-Chloroethoxy)methane | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Bis(2-Chloroethyl)ether | ug/L | 10 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Bis(2-Chloroisopropyl)ether | ug/L | 300 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Bis(2-Ethylhexyl)phthalate | ug/L | 30 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | 3.4 | J | 10 | -- | | 10 | -- |
| Butylbenzylphthalate | ug/L | 100 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Carbazole | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 7.6 | J | 10 | -- |
| Chrysene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Dibenzo(a,h)Anthracene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Dibenzofuran | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 1.4 | J | 10 | -- |
| Diethylphthalate | ug/L | 5000 | | 19 | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Dimethylphthalate | ug/L | NC | | 3.3 | J | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Di-n-butylphthalate | ug/L | 900 | | 2.6 | J | 10 | 2.8 | J | 10 | 1.1 | JB | 10 | 2.3 | JB | | 1.5 | JB | | 1.5 |
| Di-n-octylphthalate | ug/L | 100 | 10 | -- | | 10 | 1.2 | J | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Fluoranthene | ug/L | 300 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Fluorene | ug/L | 300 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 2.5 | J | 10 | -- |
| Hexachlorobenzene | ug/L | 10 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Hexachlorobutadiene | ug/L | 1 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Hexachlorocyclopentadiene | ug/L | 50 | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- | | 20 | -- |
| Hexachloroethane | ug/L | 10 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Indeno(1,2,3-cd)pyrene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Isophorone | ug/L | 100 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 10 |
| Naphthalene | ug/L | 300 | | 8.8 | J | 10 | -- | | 10 | -- | | 10 | -- | | | 2.3 | J | | 7.3 |
| Nitrobenzene | ug/L | 10 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| N-Nitroso-Di-N-propylamine | ug/L | 20 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| N-Nitrosodiphenylamine | ug/L | 20 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |

**Table 1**
**Groundwater Screening Sample Analytical Results**

**Central Steel Drum Facility**
**843-871 Delancy Street, Newark**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Matrix<br>Depth to Groundwater (feet) | Units | NJDEP Groundwater Quality Criteria | | HP-30<br>AB45848<br>10/31/2001<br>GW<br>2.5 | | | HP-31<br>AB45437<br>10/25/2001<br>GW<br>3 | | | HP-32<br>AB45440<br>10/25/2001<br>GW<br>3 | | | HP-33<br>AB45439<br>10/25/2001<br>GW<br>3 | | | HP-34<br>AB45732<br>10/03/2001<br>GW<br>2.5 | | | HP-35<br>AB45733<br>10/30/2001<br>GW<br>2.5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | |
| Pentachlorophenol | ug/L | 1 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Phenanthrene | ug/L | NC | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 3.6 | J | 10 | -- | |
| Phenol | ug/L | 4000 | | 67 | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | | 1.3 | |
| Pyrene | ug/L | 200 | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- | |
| Tentatively Identified Compounds (TICs) Total | ug/L | NC | | 2187 | | | 155 | J | | -- | | | 214 | J | | 994.7 | J | | 356.4 | |
| | | | | | | | | | | | | | | | | | | | | |
| PCBs | | | | | | | | | | | | | | | | | | | | |
| Aroclor-1016 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | |
| Aroclor-1221 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | |
| Aroclor-1232 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | |
| Aroclor-1242 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | |
| Aroclor-1248 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | |
| Aroclor-1254 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | |
| Aroclor-1260 | ug/L | NC | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | | 0.5 | -- | |
| Total PCBs | ug/L | 0.5 | | -- | | | -- | | | -- | | | -- | | | -- | | | -- | |
| | | | | | | | | | | | | | | | | | | | | |
| Pesticides | | | | | | | | | | | | | | | | | | | | |
| Aldrin | ug/L | 0.04 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Alpha-BHC | ug/L | 0.02 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Beta-BHC | ug/L | 0.2 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Chlordane | ug/L | 0.5 | 0.2 | -- | | 0.2 | -- | | 0.2 | -- | | 0.2 | -- | | 0.2 | -- | | 0.2 | -- | |
| Delta-BHC | ug/L | NC | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Dieldrin | ug/L | 0.03 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Endosulfan I | ug/L | 0.4 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Endosulfan II | ug/L | 0.4 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Endosulfan Sulfate | ug/L | 0.4 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Endrin | ug/L | 2 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Endrin Aldehyde | ug/L | NC | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Endrin Ketone | ug/L | NC | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Gamma-BHC | ug/L | 0.2 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Heptachlor | ug/L | 0.4 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | | 0.3 | |
| Heptachlor Epoxide | ug/L | 0.2 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| Methoxychlor | ug/L | 40 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| P,P'-DDD | ug/L | 0.1 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| P,P'-DDE | ug/L | 0.1 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | |
| P,P'-DDT | ug/L | 0.1 | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | 0.1 | -- | | | 0.29 | |
| Toxaphene | ug/L | 3 | 1 | -- | | 1 | -- | | 1 | -- | | 1 | -- | | 1 | -- | | 1 | -- | |
| | | | | | | | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | ug/L | None Noticeable | | 9 | | 1.1 | 1.3 | | 1.1 | 2 | | 1.1 | 3.7 | | 1.1 | 4.2 | | 1.1 | 2.6 | |
| | | | | | | | | | | | | | | | | | | | | |
| Inorganic Compounds | | | | | | | | | | | | | | | | | | | | |
| Aluminum | ug/L | 200 | | 96000 | | | 77000 | | | 48000 | | | 150000 | | | 530 | | | 300 | |
| Antimony | ug/L | 20 | | 170 | | | 110 | | | 20 | | | 270 | | 15 | -- | | 15 | -- | |
| Arsenic | ug/L | 8 | | 230 | | | 120 | | | 210 | | | 500 | | | 9.3 | | 7.5 | -- | |
| Barium | ug/L | 2000 | | 11000 | | | 5800 | | | 3400 | | | 11000 | | | 2800 | | | 2900 | |
| Beryllium | ug/L | 20 | 15 | -- | | 15 | -- | | 15 | -- | | 15 | -- | | 15 | -- | | 15 | -- | |
| Cadmium | ug/L | 4 | | 150 | | | 230 | | | 39 | | | 260 | | | 3.9 | | | 4.4 | |
| Calcium | ug/L | NC | | 270000 | | | 140000 | | | 160000 | | | 190000 | | | 200000 | | | 190000 | |

**Table 1**
**Groundwater Screening Sample Analytical Results**

**Central Steel Drum Facility**
**843-871 Delancy Street, Newark**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Matrix<br>Depth to Groundwater (feet) | Units | NJDEP Groundwater Quality Criteria | | HP-30<br>AB45848<br>10/31/2001<br>GW<br>2.5 | | | HP-31<br>AB45437<br>10/25/2001<br>GW<br>3 | | | HP-32<br>AB45440<br>10/25/2001<br>GW<br>3 | | | HP-33<br>AB45439<br>10/25/2001<br>GW<br>3 | | | HP-34<br>AB45732<br>10/03/2001<br>GW<br>2.5 | | | HP-35<br>AB45733<br>10/30/2001<br>GW<br>2.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC |
| Chromium | ug/L | 100 | | 3700 | | | 9800 | | | 1700 | | | 5000 | | 50 | -- | | 50 | -- |
| Cobalt | ug/L | NC | | 430 | | | 330 | | | 93 | | | 370 | | 20 | -- | | 20 | -- |
| Copper | ug/L | 1000 | | 5600 | | | 4700 | | | 1600 | | | 7800 | | 50 | -- | | 50 | -- |
| Iron | ug/L | 300 | | 310000 | | | 1300000 | | | 310000 | | | 1200000 | | | 43000 | | | 44000 |
| Lead | ug/L | 10 | | 28000 | | | 18000 | | | 5600 | | | 36000 | | | 390 | | | 200 |
| Magnesium | ug/L | NC | | 63000 | | | 240000 | | | 66000 | | | 90000 | | | 47000 | | | 58000 |
| Manganese | ug/L | 50 | | 4500 | | | 7600 | | | 2800 | | | 5700 | | | 1500 | | | 640 |
| Mercury | ug/L | 2 | | 170 | | | 19 | | | 16 | | | 33 | | 0.7 | -- | | 0.7 | -- |
| Nickel | ug/L | 100 | | 410 | | | 1400 | | | 300 | | | 970 | | 50 | -- | | 50 | -- |
| Potassium | ug/L | NC | | 43000 | | | 11000 | | | 20000 | | | 51000 | | | 31000 | | | 34000 |
| Selenium | ug/L | 50 | | 130 | | | 260 | | | 100 | | | 190 | | 40 | -- | | 40 | -- |
| Silver | ug/L | NC | | 21 | | | 34 | | | 25 | | | 75 | | 20 | -- | | 20 | -- |
| Sodium | ug/L | 50000 | | 180000 | | | 280000 | | | 180000 | | | 210000 | | | 130000 | | | 140000 |
| Thallium | ug/L | 10 | | 11 | | | 22 | | 10 | -- | | 10 | -- | | 10 | -- | | 10 | -- |
| Vanadium | ug/L | NC | | 470 | | | 1500 | | | 460 | | | 930 | | 50 | -- | | 50 | -- |
| Zinc | ug/L | 5000 | | 13000 | | | 14000 | | | 6300 | | | 29000 | | | 280 | | | 150 |

MDL Method Detection Limit
PAHs Polynuclear Aromatic Hydrocarbons
***BOLD*** analyte exceeds groundwater screening guidelines (8/8/99)
* indicates sample is a duplicate of previous sample
HP-27 was dry and not sampled

B Analyte is present in blank
J Estimated Value

NC No criteria established

NA Not analyzed
CONC Concentration
Q Qualifier
-- Not Detected

# Table 2
## Summary of the Monitoring Well Groundwater Sampling Program

## Central Streel Drum Facility
## 843-871 Delancy Street, Newark

| AREA OF CONCERN | Location | Medium | Sample Depth (feet) | Analytical Parameters |
|---|---|---|---|---|
| AOC-12: Groundwater | MW-1 | groundwater | shallow water table | First Round - VOCs (Method 624), SVOCs (Method 625), Pesticides/PCBs (Method 608), chlorophenoxy herbicides (Method 8151), TPHC (Method 418.1) and Priority Pollutant Metals (Methods 200.7 and 245.1) |
| | MW-1D | groundwater | deep water table | |
| | MW-2 | groundwater | shallow water table | |
| | MW-2D | groundwater | deep water table | |
| | MW-3 | groundwater | shallow water table | |
| | MW-3D | groundwater | deep water table | |
| | MW-4 | groundwater | shallow water table | |
| | MW-4D | groundwater | deep water table | |
| | MW-5 | groundwater | shallow water table | |
| | MW-5D | groundwater | deep water table | |
| | MW-6 | groundwater | shallow water table | |
| | MW-6D | groundwater | deep water table | |
| | MW-7 | groundwater | shallow water table | |
| | MW-7D | groundwater | deep water table | |
| | MW-8 | groundwater | shallow water table | |
| | MW-8D | groundwater | deep water table | |
| | MW-9 | groundwater | shallow water table | Second Round - VOCs (Method 624), SVOCs (Method 625), and Priority Pollutant Metals (Methods 200.7 and 245.1) |
| | MW-9D | groundwater | deep water table | |
| | MW-10 | groundwater | shallow water table | |
| | MW-10D | groundwater | deep water table | |
| | MW-11 | groundwater | shallow water table | |
| | MW-11D | groundwater | deep water table | |
| | MW-12 | groundwater | shallow water table | |
| | MW-12D | groundwater | deep water table | |

# Figures

# FIGURES

**A12-HP-8**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **Inorganics** | | |
| Aluminum | 200 | [illegible] |
| Antimony | 20 | [illegible] |
| Arsenic | 8 | [illegible] |
| Barium | 2000 | [illegible] |
| Cadmium | 4 | 110 |
| Chromium | 100 | [illegible] |
| Copper | 1000 | [illegible] |
| Iron | 300 | [illegible] |
| Lead | 10 | [illegible] |
| Manganese | 50 | [illegible] |
| Mercury | 2 | [illegible] |
| Nickel | 100 | [illegible] |
| Sodium | 50000 | [illegible] |
| Zinc | 5000 | [illegible] |

**A12-HP-1**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **Inorganics** | | |
| Aluminum | 200 | **190000** |
| Arsenic | 8 | **520** |
| Barium | 2000 | **23000** |
| Cadmium | 4 | **240** |
| Chromium | 100 | **1800** |
| Copper | 1000 | **33000** |
| Iron | 300 | **1900000** |
| Lead | 10 | **160000** |
| Manganese | 50 | **11000** |
| Mercury | 2 | **240** |
| Nickel | 100 | **1700** |
| Selenium | 50 | **220** |
| Sodium | 50000 | **130000** |
| Thallium | 10 | **15** |
| Zinc | 5000 | **130000** |

**A12-HP-2**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **Inorganics** | | |
| Aluminum | 200 | **20000** |
| Arsenic | 8 | **410** |
| Barium | 2000 | **32000** |
| Cadmium | 4 | **700** |
| Chromium | 100 | **3700** |
| Copper | 1000 | **310000** |
| Iron | 300 | **3200000** |
| Lead | 10 | **260000** |
| Manganese | 50 | **11000** |
| Mercury | 2 | **89** |
| Nickel | 100 | **1700** |
| Selenium | 50 | **380** |
| Thallium | 10 | **11** |
| Zinc | 5000 | **250000** |

**A12-HP-5**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **Inorganics** | | |
| Aluminum | 200 | **100000** |
| Antimony | 20 | **110** |
| Arsenic | 8 | **860** |
| Cadmium | 4 | **47** |
| Chromium | 100 | **450** |
| Copper | 1000 | **8700** |
| Iron | 300 | **360000** |
| Lead | 10 | **32000** |
| Manganese | 50 | **3200** |
| Mercury | 2 | **30** |
| Nickel | 100 | **630** |
| Sodium | 50000 | **110000** |
| Zinc | 5000 | **21000** |

**A12-HP-3**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **VOCs** | | |
| Benzene | 1 | **73** |
| **Inorganics** | | |
| Aluminum | 200 | **220000** |
| Antimony | 20 | **470** |
| Arsenic | 8 | **940** |
| Barium | 2000 | **47000** |
| Cadmium | 4 | **340** |
| Chromium | 100 | **3500** |
| Copper | 1000 | **90000** |
| Lead | 10 | **170000** |
| Iron | 300 | **1700000** |
| Manganese | 50 | **11000** |
| Mercury | 2 | **220** |
| Nickel | 100 | **2200** |
| Zinc | 5000 | **140000** |

**A12-HP-6**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **VOCs** | | |
| Benzene | 1 | **8.4** |
| **Inorganics** | | |
| Aluminum | 200 | **8400** |
| Antimony | 20 | **65** |
| Arsenic | 8 | **69** |
| Barium | 2000 | **2200** |
| Cadmium | 4 | **58** |
| Chromium | 100 | **440** |
| Copper | 1000 | **7500** |
| Iron | 300 | **140000** |
| Lead | 10 | **9200** |
| Manganese | 50 | **1400** |
| Mercury | 2 | **8** |
| Nickel | 100 | **170** |
| Selenium | 50 | **53** |
| Sodium | 50000 | **54000** |
| Zinc | 5000 | **6800** |

**A12-HP-10**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **Inorganics** | | |
| Aluminum | 200 | **150000** |
| Antimony | 20 | **130** |
| Arsenic | 8 | **560** |
| Barium | 2000 | **23000** |
| Cadmium | 4 | **95** |
| Chromium | 100 | **8700** |
| Copper | 1000 | **23000** |
| Iron | 300 | **340000** |
| Lead | 10 | **44000** |
| Manganese | 50 | **4300** |
| Mercury | 2 | **48** |
| Nickel | 100 | **1200** |
| Sodium | 50000 | **56000** |
| Zinc | 5000 | **32000** |

**A12-HP-12**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **VOCs** | | |
| Benzene | 1 | **2.5** |
| **Pesticides** | | |
| Chlordane | 0.5 | **0.55** |
| P,P'-DDD | 0.1 | **0.23** |
| P,P'-DDT | 0.1 | **0.64** |
| **Inorganics** | | |
| Aluminum | 200 | **67000** |
| Antimony | 20 | **140** |
| Arsenic | 8 | **260** |
| Barium | 2000 | **6000** |
| Cadmium | 4 | **15** |
| Chromium | 100 | **15000** |
| Copper | 1000 | **2000** |
| Iron | 300 | **160000** |
| Lead | 10 | **13000** |
| Manganese | 50 | **1700** |
| Mercury | 2 | **14** |
| Nickel | 100 | **270** |
| Selenium | 50 | **68** |
| Zinc | 5000 | **5600** |

**A12-HP-16**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **VOCs** | | |
| Benzene | 1 | **16** |
| **Inorganics** | | |
| Aluminum | 200 | **120000** |
| Antimony | 20 | **120** |
| Arsenic | 8 | **330** |
| Barium | 2000 | **20000** |
| Cadmium | 4 | **200** |
| Chromium | 100 | **1200** |
| Copper | 1000 | **18000** |
| Iron | 300 | **590000** |
| Lead | 10 | **40000** |
| Manganese | 50 | **5200** |
| Mercury | 2 | **57** |
| Nickel | 100 | **780** |
| Sodium | 50000 | **86000** |
| Zinc | 5000 | **79000** |

**A12-HP-7**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **VOCs** | | |
| Benzene | 1 | [illegible] |
| **Inorganics** | | |
| Aluminum | 200 | [illegible] |
| Antimony | 20 | [illegible] |
| Arsenic | 8 | [illegible] |
| Barium | 2000 | [illegible] |
| Cadmium | 4 | [illegible] |
| Chromium | 100 | [illegible] |
| Copper | 1000 | [illegible] |
| Iron | 300 | [illegible] |
| Lead | 10 | [illegible] |
| Manganese | 50 | [illegible] |
| Mercury | 2 | [illegible] |
| Nickel | 100 | [illegible] |
| Selenium | 50 | [illegible] |
| Sodium | 50000 | [illegible] |
| Zinc | 5000 | [illegible] |

**A12-HP-4**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **Inorganics** | | |
| Aluminum | 200 | **120000** |
| Arsenic | 8 | **300** |
| Cadmium | 4 | **85** |
| Chromium | 100 | **3300** |
| Copper | 1000 | **7800** |
| Iron | 300 | **340000** |
| Lead | 10 | **37000** |
| Manganese | 50 | **6500** |
| Mercury | 2 | **51** |
| Nickel | 100 | **600** |
| Selenium | 50 | **120** |
| Sodium | 50000 | **140000** |
| Thallium | 10 | **21** |
| Zinc | 5000 | **16000** |

**A12-HP-9**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **VOCs** | | |
| Benzene | 1 | **1.2** |
| **Inorganics** | | |
| Aluminum | 200 | **140000** |
| Antimony | 20 | **380** |
| Arsenic | 8 | **570** |
| Barium | 2000 | **36000** |
| Cadmium | 4 | **270** |
| Chromium | 100 | **25000** |
| Copper | 1000 | **16000** |
| Iron | 300 | **790000** |
| Lead | 10 | **44000** |
| Manganese | 50 | **4400** |
| Mercury | 2 | **13** |
| Nickel | 100 | **2800** |
| Thallium | 10 | **22** |
| Zinc | 5000 | **18000** |

**A12-HP-11**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **VOCs** | | |
| Benzene | 1 | **2.3** |
| Tetrachloroethane | 1 | **2.5 J** |
| Trichloroethene | 1 | **1.1 J** |
| **Inorganics** | | |
| Aluminum | 200 | **56000** |
| Antimony | 20 | **310** |
| Arsenic | 8 | **230** |
| Barium | 2000 | **7100** |
| Cadmium | 4 | **29** |
| Chromium | 100 | **23000** |
| Copper | 1000 | **8700** |
| Iron | 300 | **170000** |
| Lead | 10 | **20000** |
| Manganese | 50 | **2700** |
| Mercury | 2 | **320** |
| Nickel | 100 | **290** |
| Selenium | 50 | **68** |
| Thallium | 10 | **15** |
| Zinc | 5000 | **6400** |

**A12-HP-14**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **Inorganics** | | |
| Aluminum | 200 | [illegible] |
| Antimony | 20 | [illegible] |
| Arsenic | 8 | [illegible] |
| Barium | 2000 | [illegible] |
| Cadmium | 4 | [illegible] |
| Chromium | 100 | [illegible] |
| Copper | 1000 | [illegible] |
| Iron | 300 | [illegible] |
| Lead | 10 | [illegible] |
| Manganese | 50 | [illegible] |
| Nickel | 100 | [illegible] |
| Sodium | 50000 | [illegible] |
| Zinc | 5000 | [illegible] |

**A12-HP-17**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **VOCs** | | |
| Benzene | 1 | **1.4** |
| **Inorganics** | | |
| Aluminum | 200 | **130000** |
| Arsenic | 8 | **280** |
| Barium | 2000 | **9300** |
| Cadmium | 4 | **18** |
| Chromium | 100 | **190** |
| Copper | 1000 | **6700** |
| Iron | 300 | **210000** |
| Lead | 10 | **14000** |
| Manganese | 50 | **3200** |
| Mercury | 2 | **70** |
| Nickel | 100 | **260** |
| Selenium | 50 | **72** |
| Zinc | 5000 | **9800** |

**A12-HP-18**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **VOCs** | | |
| Benzene | 1 | **1.1** |
| **Inorganics** | | |
| Aluminum | 200 | NA |
| Antimony | 20 | NA |
| Arsenic | 8 | NA |
| Barium | 2000 | NA |
| Beryllium | 20 | NA |
| Cadmium | 4 | NA |
| Chromium | 100 | NA |
| Copper | 1000 | NA |
| Iron | 300 | NA |
| Lead | 10 | NA |
| Manganese | 50 | NA |
| Mercury | 2 | NA |
| Nickel | 100 | NA |
| Selenium | 50 | NA |
| Sodium | 50000 | NA |
| Thallium | 10 | NA |
| Zinc | 5000 | NA |

**A12-HP-13**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **Inorganics** | | |
| Aluminum | 200 | **37000** |
| Antimony | 20 | **31** |
| Arsenic | 8 | **230** |
| Barium | 2000 | **3000** |
| Cadmium | 4 | **47** |
| Chromium | 100 | **3200** |
| Copper | 1000 | **1800** |
| Iron | 300 | **180000** |
| Lead | 10 | **5900** |
| Manganese | 50 | **1800** |
| Mercury | 2 | **12** |
| Nickel | 100 | **220** |
| Selenium | 50 | **62** |
| Sodium | 50000 | **140000** |

**A12-HP-23**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **VOCs** | | |
| Benzene | 1 | 2.7 |
| **Inorganics** | | |
| Aluminum | 200 | **58000** |
| Antimony | 20 | **50** |
| Arsenic | 8 | **130** |
| Barium | 2000 | **7400** |
| Cadmium | 4 | **20** |
| Chromium | 100 | **460** |
| Copper | 1000 | **1900** |
| Iron | 300 | **98000** |
| Lead | 10 | **13000** |
| Manganese | 50 | **1700** |
| Mercury | 2 | **11** |
| Nickel | 100 | **220** |
| Zinc | 5000 | **8300** |

**A12-HP-15**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **VOCs** | | |
| Benzene | 1 | **44** |
| Chlorobenzene | 50 | **440** |
| Methylene Chloride | 3 | **19 JB** |
| Xylenes | 1000 | **1300** |
| **Pesticides** | | |
| P,P'-DDT | 0.1 | **0.26** |
| **Inorganics** | | |
| Aluminum | 200 | **1700** |
| Antimony | 20 | **210** |
| Arsenic | 8 | **750** |
| Barium | 2000 | **39000** |
| Cadmium | 4 | **260** |
| Chromium | 100 | **1200** |
| Copper | 1000 | **35000** |
| Iron | 300 | **730000** |
| Lead | 10 | **78000** |
| Manganese | 50 | **5300** |
| Mercury | 2 | **60** |
| Nickel | 100 | **2000** |
| Sodium | 50000 | **86000** |
| Thallium | 10 | **15** |
| Zinc | 5000 | **66000** |

**A12-HP-19**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **Inorganics** | | |
| Aluminum | 200 | **1500** |
| Arsenic | 8 | **15** |
| Barium | 2000 | **1100** |
| Cadmium | 4 | **11** |
| Chromium | 100 | **440** |
| Iron | 300 | **36000** |
| Lead | 10 | **1100** |
| Manganese | 50 | **320** |
| Sodium | 50000 | **130000** |

**A12-HP-29**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **Inorganics** | | |
| Aluminum | 200 | **7700** |
| Antimony | 20 | **17** |
| Arsenic | 8 | **38** |
| Cadmium | 4 | **29** |
| Chromium | 100 | **1100** |
| Iron | 300 | **75000** |
| Lead | 10 | **2600** |
| Manganese | 50 | **1400** |
| Nickel | 100 | **190** |
| Sodium | 50000 | **81000** |

**A12-HP-24**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **Inorganics** | | |
| Aluminum | 200 | **47000** |
| Antimony | 20 | **55** |
| Arsenic | 8 | **190** |
| Barium | 2000 | **9500** |
| Cadmium | 4 | **75** |
| Chromium | 100 | **1300** |
| Copper | 1000 | **12000** |
| Iron | 300 | **240000** |
| Lead | 10 | **19000** |
| Manganese | 50 | **2300** |
| Mercury | 2 | **27** |
| Nickel | 100 | **330** |
| Selenium | 50 | **84** |
| Sodium | 50000 | **62000** |
| Thallium | 10 | **12** |
| Zinc | 5000 | **16000** |

**A12-HP-25**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **VOCs** | | |
| Benzene | 1 | **1500** |
| Xylenes (Total) | 1000 | **1530** |
| **Inorganics** | | |
| Aluminum | 200 | **31000** |
| Antimony | 20 | **190** |
| Arsenic | 8 | **15** |
| Barium | 2000 | **21000** |
| Cadmium | 4 | **130** |
| Chromium | 100 | **2700** |
| Copper | 1000 | **2600** |
| Iron | 300 | **1100000** |
| Lead | 10 | **20000** |
| Manganese | 50 | **8500** |
| Mercury | 2 | **8.3** |
| Nickel | 100 | **1200** |
| Selenium | 50 | **240** |
| Sodium | 50000 | **1900000** |
| Thallium | 10 | **10** |
| Zinc | 5000 | **21000** |

**A12-HP-22**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **Inorganics** | | |
| Aluminum | 200 | **79000** |
| Arsenic | 8 | **230** |
| Barium | 2000 | **6800** |
| Cadmium | 4 | **56** |
| Chromium | 100 | **260** |
| Copper | 1000 | **24000** |
| Iron | 300 | **240000** |
| Lead | 10 | **19000** |
| Manganese | 50 | **2600** |
| Mercury | 2 | **47** |
| Nickel | 100 | **500** |
| Selenium | 50 | **110** |
| Zinc | 5000 | **20000** |

**A12-HP-30**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **VOCs** | | |
| 4-Methyl-2-Pentanone | 400 | **980** |
| Benzene | 1 | **67** |
| Xylenes (total) | 1000 | **1760** |
| Toluene | 1000 | **1900** |
| **Inorganics** | | |
| Aluminum | 200 | **9600** |
| Antimony | 20 | **170** |
| Arsenic | 8 | **230** |
| Barium | 2000 | **11000** |
| Cadmium | 4 | **150** |
| Chromium | 100 | **3700** |
| Copper | 1000 | **5600** |
| Iron | 300 | **310000** |
| Lead | 10 | **28000** |
| Manganese | 50 | **4500** |
| Mercury | 2 | **170** |
| Nickel | 100 | **410** |
| Selenium | 50 | **130** |
| Sodium | 50000 | **180000** |
| Thallium | 10 | **11** |
| Zinc | 5000 | **13000** |

**A12-HP-20**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **Inorganics** | | |
| Aluminum | 200 | **64000** |
| Arsenic | 8 | **210** |
| Barium | 2000 | **4600** |
| Cadmium | 4 | **32** |
| Chromium | 100 | **480** |
| Copper | 1000 | **10000** |
| Iron | 300 | **200000** |
| Lead | 10 | **15000** |
| Manganese | 50 | **2300** |
| Mercury | 2 | **18** |
| Nickel | 100 | **320** |
| Selenium | 50 | **92** |
| Thallium | 10 | **12** |
| Zinc | 5000 | **11000** |

**A12-HP-26**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **Inorganics** | | |
| Aluminum | 200 | **240000** |
| Antimony | 20 | **210** |
| Arsenic | 8 | **910** |
| Barium | 2000 | **6500** |
| Cadmium | 4 | **95** |
| Chromium | 100 | **32000** |
| Copper | 1000 | **5600** |
| Iron | 300 | **1500000** |
| Lead | 10 | **11000** |
| Manganese | 50 | **8300** |
| Mercury | 2 | **57** |
| Nickel | 100 | **1100** |
| Selenium | 50 | **200** |
| Sodium | 50000 | **92000** |
| Thallium | 10 | **31** |
| Zinc | 5000 | **7200** |

**A12-HP-35**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **VOCs** | | |
| Benzene | 1 | **48** |
| Chlorobenzene | 50 | **74** |
| **Pesticides** | | |
| P,P'-DDT | 0.1 | **0.29** |
| **Inorganics** | | |
| Aluminum | 200 | **300** |
| Barium | 2000 | **2900** |
| Cadmium | 4 | **4.4** |
| Iron | 300 | **44000** |
| Lead | 10 | **200** |
| Manganese | 50 | **640** |
| Sodium | 50000 | **140000** |

**A12-HP-31**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **Inorganics** | | |
| Aluminum | 200 | **7700** |
| Antimony | 20 | **110** |
| Arsenic | 8 | **120** |
| Barium | 2000 | **5800** |
| Cadmium | 4 | **230** |
| Chromium | 100 | **9800** |
| Copper | 1000 | **4700** |
| Iron | 300 | **1300000** |
| Lead | 10 | **18000** |
| Manganese | 50 | **7600** |
| Mercury | 2 | **19** |
| Nickel | 100 | **1400** |
| Selenium | 50 | **260** |
| Sodium | 50000 | **280000** |
| Thallium | 10 | **22** |
| Zinc | 5000 | **14000** |

**A12-HP-21**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **Inorganics** | | |
| Aluminum | 200 | **5700** |
| Antimony | 20 | **39** |
| Arsenic | 8 | **120** |
| Barium | 2000 | **5400** |
| Cadmium | 4 | **76** |
| Chromium | 100 | **320** |
| Copper | 1000 | **6400** |
| Iron | 300 | **130000** |
| Lead | 10 | **15000** |
| Manganese | 50 | **1500** |
| Mercury | 2 | **35** |
| Nickel | 100 | **300** |
| Selenium | 50 | **59** |
| Zinc | 5000 | **14000** |

**A12-HP-32**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **Inorganics** | | |
| Aluminum | 200 | **48000** |
| Arsenic | 8 | **210** |
| Barium | 2000 | **2400** |
| Cadmium | 4 | **39** |
| Chromium | 100 | **1700** |
| Copper | 1000 | **1600** |
| Iron | 300 | **310000** |
| Lead | 10 | **5600** |
| Manganese | 50 | **2800** |
| Mercury | 2 | **16** |
| Nickel | 100 | **300** |
| Selenium | 50 | **100** |
| Sodium | 50000 | **180000** |
| Zinc | 5000 | **6300** |

**A12-HP-28**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **Inorganics** | | |
| Aluminum | 200 | **71000** |
| Arsenic | 8 | **170** |
| Barium | 2000 | **7500** |
| Cadmium | 4 | **24** |
| Chromium | 100 | **530** |
| Copper | 1000 | **4500** |
| Iron | 300 | **320000** |
| Lead | 10 | **13000** |
| Manganese | 50 | **3400** |
| Mercury | 2 | **10** |
| Nickel | 100 | **290** |
| Selenium | 50 | **110** |
| Zinc | 5000 | **21000** |

**A12-HP-33**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **Inorganics** | | |
| Aluminum | 200 | **150000** |
| Antimony | 20 | **270** |
| Arsenic | 8 | **500** |
| Barium | 2000 | **11000** |
| Cadmium | 4 | **260** |
| Chromium | 100 | **5000** |
| Copper | 1000 | **7800** |
| Iron | 300 | **1200000** |
| Lead | 10 | **36000** |
| Manganese | 50 | **5700** |
| Mercury | 2 | **33** |
| Nickel | 100 | **970** |
| Selenium | 50 | **190** |
| Sodium | 50000 | **210000** |
| Zinc | 5000 | **29000** |

**A12-HP-34**

| Groundwater Parameter | NJDEP Groundwater Quality Criteria (ug/L) | Result ug/L |
|---|---|---|
| **VOCs** | | |
| Benzene | 1 | **2.1** |
| **Inorganics** | | |
| Aluminum | 200 | **530** |
| Arsenic | 8 | **9.3** |
| Barium | 2000 | **2800** |
| Iron | 300 | **43000** |
| Lead | 10 | **390** |
| Manganese | 50 | **1500** |
| Sodium | 50000 | **130000** |

LEGEND:

⌖ TEMPORARY MONITORING WELL LOCATION

☐ EXISTING BUILDING

---- APPROXIMATE LOCATION OF THE DRAINAGE DITCH.

MAP SOURCE:
NJIT PRELIMINARY ASSESSMENT, 1998

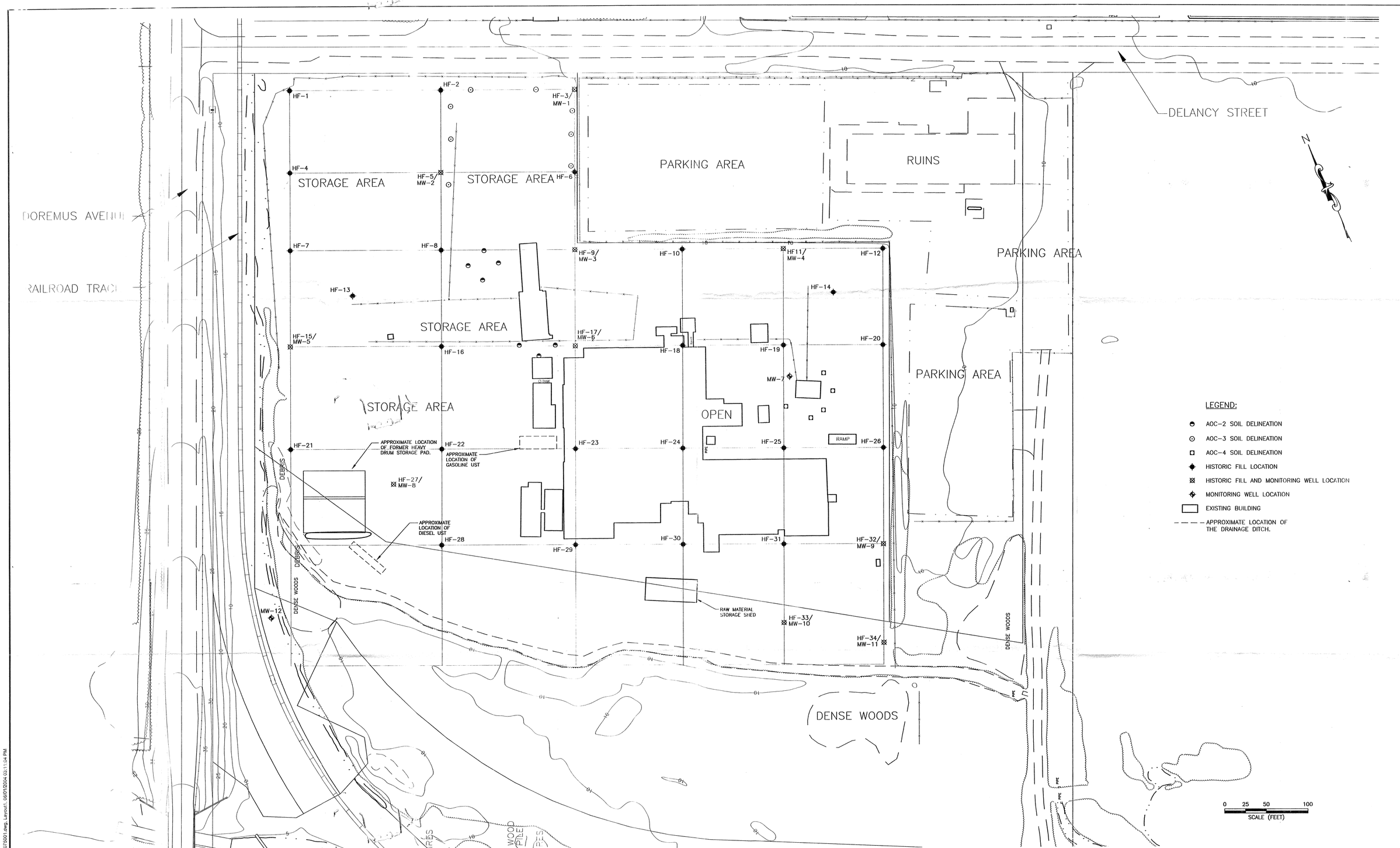
# AOC-12 GROUNDWATER SCREENING GRID SAMPLE LOCATIONS AND GROUNDWATER ANALYTICAL RESULTS CENTRAL STEEL DRUM SITE NEWARK, NEW JERSEY

URS

WAYNE, NEW JERSEY

| | | | |
|---|---|---|---|
| DR. BY ET | SCALE 1" = 50' | DWG. NO. 84075006 | PROJ. NO. 19684075 |
| CK'D. BY MA | DATE JAN. 4, 2002 | FIG. NO. 1 | |

K:\Cadd\19684075\STEEL DRUM\84075006.dwg, Layout1, 06/01/2004 03:21:05 PM




PROPOSED REMEDIAL INVESTIGATION
SAMPLE LOCATIONS
CENTRAL STEEL DRUM SITE
NEWARK, NEW JERSEY

URS
WAYNE, NEW JERSEY

| | | | |
|---|---|---|---|
| DR. BY ET | SCALE 1" = 50' | DWG. NO. 84075001 | PROJ. NO. 19684075 |
| CK'D. BY MA | DATE MAY 28, 2004 | FIG. NO. 2 | |

K:\Cadd\19684075\STEEL DRUM\84075001.dwg, Layout1, 06/01/2004 03:11:04 PM

# APPENDIX A

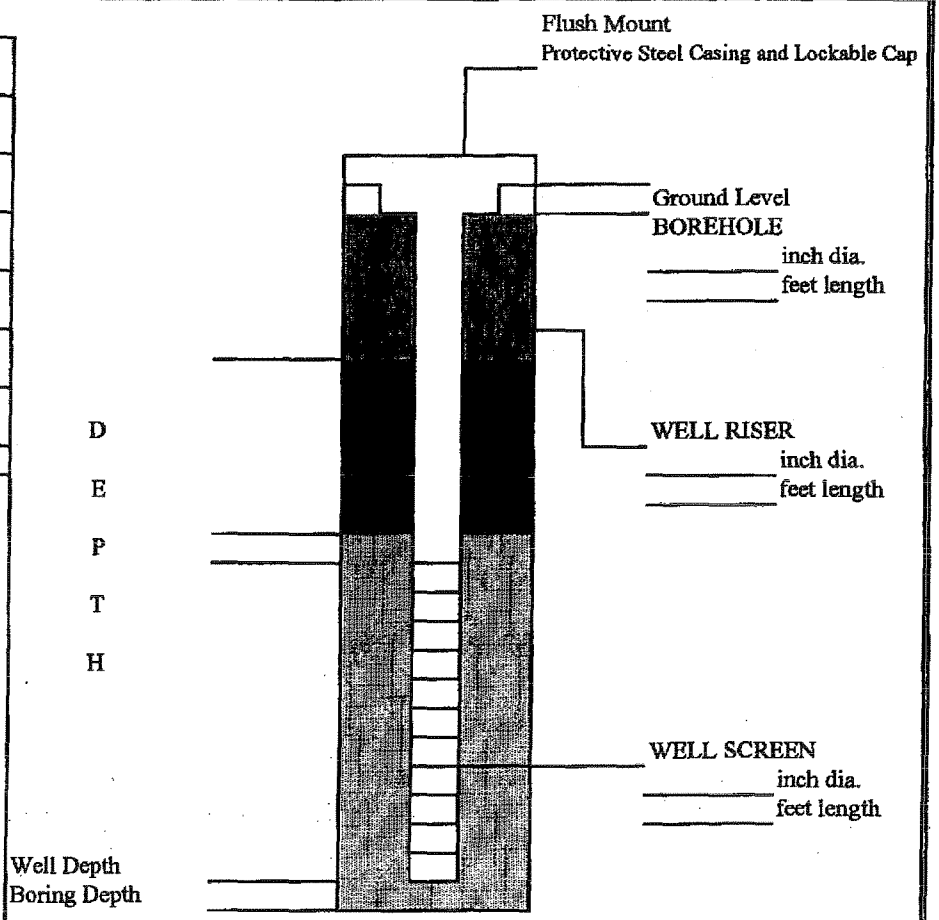
# Well Construction Logs and Groundwater Sampling Data Sheets Samples

# Appendix A

| DRILLING SUMMARY |
|---|
| Geologist: |
| Drilling Contractor: |
| Driller: |
| Rig Make/Model: |
| Date: |

| GEOLOGIC LOG | |
|---|---|
| Depth (ft.) | Lithology |
| | |

**WELL DESIGN**




NOT TO SCALE

| *CASING MATERIAL* | *SCREEN MATERIAL* | *FILTER MATERIAL* |
|---|---|---|
| Surface: | Type: | Type:<br>Setting: |
| Monitor: | Slot Size: | *SEAL MATERIAL*<br>Type:<br>Setting: |

*COMMENTS:*

*LEGEND*

- Cement/Bentonite Grout
- Bentonite Seal
- Silica Sandpack

| Client: | Location: | Project No.: |
|---|---|---|
| **URS CORPORATION** | **MONITORING WELL CONSTRUCTION DETAILS** | **WELL NUMBER:** |

# URS Greiner Woodward Clyde

## GROUNDWATER SAMPLING DATA SHEET

SITE NAME: _____ PROJECT NUMBER: _____

DATE: _____

WEATHER: _____

FIELD PERSONNEL: _____

MONITORING WELL NUMBER: _____ NJDEP PERMIT NUMBER: _____

### INITIAL DATA

Well Diameter _____ in.
Total Depth of Well: _____ ft
Depth to Water: _____ ft
Height of water Column: _____ ft

Gallons/Lin. Ft.: _____
Vol. of Water Column: _____ gallons
Min. Purge Volume: _____ gallons
Depth to Top of Screen _____ ft.

Ambient PID/FID Reading: _____ ppm
Wellbore PID/FID Reading: _____ ppm
LNAPL / DNAPL _____ ft

### PURGE DATA

Purge Method: Submersible electric pump and dedicated, disposable tubing.

| Purge Interval | Time | Depth to Water (ft) | Color | Clarity | Odor | Cum. Vol. (gals) | Temp (cent.) | pH pHu | Conductivity (ms/cm) | DO (mg/l) | Turbidity (NTUs) | Salinity (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Initial | | | | | | | | | | | | |
| First Volume | | | | | | | | | | | | |
| Sample | | | | | | | | | | | | |

Purge Start Time: _____ Purge Stop Time: _____ Elapsed Time: _____ Mins. Total Volume Purged _____ Gals.

Overall Average Purge Rate _____ Gals./Min.

### SAMPLING DATA

Sampling method: Pre-cleaned disposeable poly-bailer equipped with check valve and disposable polypropylene cord.

Start Time _____ Stop Time: _____ Elapsed Time: _____ minutes

### COMMENTS:

# REVISED
# SOIL REMEDIAL
# INVESTIGATION RESULTS
# SUMMARY REPORT

## CENTRAL STEEL DRUM FACILITY
## 843-871 DELANCY STREET
## NEWARK, NEW JERSEY

*Prepared for*

City of Newark
Department of Engineering
920 Broad Street
Newark, New Jersey

June 1, 2004

Prepared by:

URS Corporation
201 Willowbrook Blvd.
Wayne, New Jersey 07470

BBG000130

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| | |
|---|---|
| Appendix A | Boring Logs |

This report provides a summary of the remedial investigation conducted for the soil at the Central Steel Drum site in Newark, Essex County, New Jersey. The report includes a description of the soil investigation for each area of concern, the results of the soil investigation, and recommendations for further action at the site. This document has been prepared to expedite the review of the soil analytical results. A Remedial Investigation Report in accordance with the New Jersey Department of Environmental Protection (NJDEP) Technical Requirements for Site Remediation (February 3, 2003) will be prepared for the Site, which will include the information in this document.

This report has been revised based on the New Jersey Department of Environmental Protection's (NJDEP) comments dated August 4, 2003 and URS Corporation's (URS) meeting with the NJDEP on May 19, 2004. A list of the comments made by the NJDEP is summarized below:

- The reference to the NJDEP Technical Requirements for Site Remediation was revised to February 3, 2003.
- Clarification was made in AOC 3 – Abandoned Truck Trailer Area on field instruments and observations made.
- A sampling plan and sample location maps to address the vertical and horizontal soil delineation of VOCs, PCBs, and pesticides in AOC 2, AOC 3, and AOC 4 has been included in the Conclusions and Recommendations section and in Figures 13 through 15.
- A proposal to delineate the historic fill on the Site has been included in the Conclusions and Recommendations section and on Figure 16.
- As agreed upon in our meeting with the NJDEP on May 19, 2004, further support for engineering and institutional controls will be provided as part of the Remedial Action Workplan.

### *Site Description*

The Central Steel Drum site is located at 843-871 Delancy Street, Block 5074, Lot 1, Newark, New Jersey. The site is about 8.5 acres and is situated in a heavily industrial area of Newark just east of the New Jersey Turnpike and Newark International Airport. The site is adjacent to a Motiva Petroleum Storage facility, the City of Newark Police firing range, Suburban Propane, and other industrial facilities. Within 1.5 miles of the site are residential areas, the Passaic Valley Sewage Commission treatment facility, multiple-use industrial and commercial properties, and a commuter/freight railroad yard and rail lines.

This section presents a technical overview of the field activities performed and analytical results for the soil investigation. The fieldwork took place from October 17 to 31, 2001.

The Remedial Investigation was conducted following procedures established by NJDEP guidance (e.g., Field Sampling Procedures Manual, May 1992) and in accordance with the NJDEP Technical Requirements for Site Remediation (February 3, 2003).

M & R Soil Investigations conducted the subsurface drilling. A licensed driller using a truck mounted rig advanced borings at the site. Stratigraphic information at the boring locations was obtained by the collection of continuous 2-inch diameter, four-foot long acetate lined samplers. The soil samples were described, logged, and field screened for volatile organic compounds (VOCs) using a photoionization detector (PID). The soils were screened with a PID to provide a preliminary and qualitative assessment of potential contamination at the boring locations. The borings were advanced to a depth ranging from 0.5 to 3.5 feet below ground surface (bgs).

A URS Corporation (URS) geologist documented the drilling activities and prepared boring logs containing descriptions of the subsurface materials. The boring logs are attached in Appendix A.

The soil remedial investigation for the site consisted of 93 vertical borings advanced using a direct-push apparatus to evaluate any potential contamination from the former activities at the site. The borings were advanced continuously to the shallow water table, to depths of 1.5 feet to 4 feet.

The results of the analyses of the soil samples are summarized below and are presented in Table 1 through Table 10. A site plan with the locations of the soil and groundwater screening samples is provided as Figure 1. Figures 2 through 12 show the soil analytical results above NJDEP criteria. The soil analytical results were compared to NJDEP Residential and Nonresidential Direct Contact Soil Cleanup Criteria (R/NRDCSCC) and Impact to Groundwater Soil Cleanup Criteria (IGSCC).

### *AOC 1 – Heavy Drum Storage Pad*

This is the area where workers stored drums that contained over 1 inch of residue. Historically, drum contents were discarded in this area, including drums filled with unknown contents. This area is a concrete pad of sound integrity with a trench present in the concrete pad which likely was used to collect residue. Areas around the pad are unpaved and received surface water and storm water runoff which drained into the adjacent drainage ditch.

Twelve soil samples (A1-SS-1 through A1-SS-12) were collected around the concrete pad, to evaluate possible impacts from the disposal in the trench, and analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), chlorophenoxy herbicides, and metals.

Low levels of VOCs (benzene and chlorobenzene) were detected above NJDEP R/NRDCSCC and IGSCC at one sample location. SVOC concentrations of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene were above NJDEP R/NRDCSCC and IGSCC at four of the 12 sample locations. Low levels of pesticides (aldrin and dieldrin) were detected above NJDEP R/NRDCSCC and IGSCC in two of the 12 samples. Total PCBs were detected above NJDEP R/NRDCSCC and IGSCC in nine of the 12 samples. Metals were detected above NJDEP R/NRDCSCC and IGSCC at every sample location but one. The metals detected included antimony, arsenic, barium, cadmium, copper, lead, nickel, vanadium, and zinc. Soil Analytical Results for AOC 1 are shown on Table 1. Soil Analytical results that exceed NJDEP R/NRDCSCC and IGSCC are shown on Figure 2.

***AOC 2 – Drum Conveyor / De-Heading Shed***

This area was where drums were moved for processing. The drums were put on a conveyor that entered the de-heading shed where CSD removed the tops of the drums. Two sumps were present in this area and stained soil and residues from past operations were noted.

The soil sampling conducted at this AOC consisted of the following:

- Two soil samples (A2-SS-1 and A2-SS-2) in the sumps to evaluate impacts from any sludge from the drums that may have been directed to the sumps; and,
- Five soil samples (A2-SS-3 through A2-SS-7) in the vicinity of the former conveyor, two soil samples along the inactive conveyor (A2-SS-8 and 9) and two soil samples (A2-SS-10 and 11) located directly adjacent to the north and south sides of the de-heading shed.

The soil samples were analyzed for VOCs, SVOCs, pesticides, PCBs, and metals.

The VOC concentrations detected above NJDEP R/NRDCSCC and IGSCC at two of the eleven sample locations included benzene, chlorobenzene, cis-1,2-dichloroethene, ethylbenzene, methylene chloride, tetrachloroethene, trichloroethene, and total xylenes. The SVOC concentrations detected above NJDEP R/NRDCSCC and IGSCC at nine of the eleven sample locations were benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, chrysene, and indeno(1,2,3-cd)pyrene. Pesticide concentrations were detected above NJDEP R/NRDCSCC and IGSCC at four of the eleven sample locations; the compounds detected included aldrin, dieldrin, pp'-DDD, pp'-DDE, and pp'-DDT. Total PCBs were detected above NJDEP R/NRDCSCC and IGSCC in six of the eleven samples. Metals were detected above NJDEP R/NRDCSCC and IGSCC at every sample location. These metals included antimony, arsenic, barium, cadmium, copper, lead, vanadium, and zinc. Soil Analytical Results for AOC 2 are shown on Table 2. Soil Analytical results that exceed NJDEP R/NRDCSCC and IGSCC are shown on Figure 3.

*AOC 3 – Abandoned Truck Trailer Area*

The abandoned truck trailer area is the northern portion of the site where truck trailers were parked, many of which contained unprocessed drums. This area was potentially impacted by miscellaneous spills in the past which have been subsequently covered by gravel. In addition, this area has been used for drum storage.

The sampling for this AOC was focused on determining if a source of contamination in the soil is present. This sampling program consisted of the following:

- Geoprobe soil sampling on 50 foot centers with a total of 28 soil samples (A3-SS-1 through A3-SS-28). Samples were screened onsite for VOCs using a photoionization detector (PID);
- Based on the PID results and field observations (i.e., odor, staining), soil samples at 14 locations (A3-SS-4, A3-SS-6, A3-SS-7, A3-SS-10, A3-SS-11, A3-SS-13 through A3-SS-19, A3-SS-25, and A3-SS-27) were selected for analysis of VOCs, SVOCs, pesticides/PCBs, and metals to evaluate impacts from the abandoned truck trailer parking area.

The VOC concentrations detected above NJDEP R/NRDCSCC and IGSCC at 10 of the 28 sample locations included benzene, chlorobenzene, ethylbenzene, methylene chloride, tetrachloroethene, toluene, trichloroethene, and total xylenes. The SVOC concentrations detected above NJDEP R/NRDCSCC and IGSCC at every sample location; except one, were benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, butlybenzylphthalate, indeno(1,2,3-cd)pyrene, and napthalene. The pesticide concentrations detected above NJDEP R/NRDCSCC and IGSCC in 8 of the 28 samples were aldrin, dieldrin, pp'-DDE, and pp'-DDT. Total PCBs were detected above NJDEP R/NRDCSCC and IGSCC in 13 of the 14 samples. Metals were detected above NJDEP criteria at every sample location. These metals consisted of antimony, arsenic, barium, cadmium, copper, lead, nickel, vanadium, and zinc. Soil Analytical Results for AOC 3 are shown on Table 3. Soil Analytical results that exceed NJDEP R/NRDCSCC and IGSCC are shown on Figure 4.

*AOC 4 – Drum Flip Operation Area*

This is the area of the site where drums were flipped onto a conveyor prior to their incineration. Sludge material from the drums was allowed to spill onto the ground surface without containment. In addition, incinerator ash was stored in piles in this area. Since no containment was in place in this area, impacts to soil and groundwater were likely from the numerous spills that are believed to have occurred here.

Four soil samples (A4-SS-1 through A4-SS-4) were collected in the vicinity of the former operations to evaluate impacts from flipping the open top drum prior to incineration. These

samples were analyzed for VOCs, SVOCs, pesticides, PCBs, chlorophenoxy herbicides, and metals.

The VOC concentrations detected above NJDEP R/NRDCSCC and IGSCC at all four sample locations included 1,2-dichloroethane, benzene, ethylbenzene, tetrachloroethene, toluene, trichloroethene, and total xylenes. The SVOC concentrations detected above NJDEP R/NRDCSCC and IGSCC at every sample location were benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, bis(2-ethylhexyl)phthalate, and indeno(1,2,3-cd)pyrene. Pesticide concentrations were detected above NJDEP R/NRDCSCC and IGSCC in two of the four samples, the compounds were aldrin and pp'-DDT. PCBs were detected above NJDEP R/NRDCSCC and IGSCC in two of the four samples. Metals were detected above NJDEP criteria at every sample location. These metals included antimony, arsenic, barium, cadmium, copper, lead, vanadium, and zinc. Soil Analytical Results for AOC 4 are shown on Table 4. Soil Analytical Results that exceed NJDEP R/NRDCSCC and IGSCC are shown on Figure 5.

*AOC 5 – Incinerator Area*

The incinerator area was used for the incineration of the contents of the drums received at the site. A paved area is located to the north of the incinerator near the dust collectors. Just south of the incinerator area is a quenching sump, which was used for the spraying of water to remove excess residue from the drums. Water used in the quenching sump drained via a trough into a metal lined sump.

Ten soil samples (A5-SS-1 through A5-SS-10) were collected in the incinerator/drum flip area and analyzed for VOCs, SVOCs, pesticides, PCBs, chlorophenoxy herbicides, and metals.

The VOC concentrations detected above NJDEP R/NRDCSCC and IGSCC at eight of the 10 sample locations were 1,1-dichloroethene, benzene, chlorobenzene, ethylbenzene, methylene chloride, tetrachloroethene, toluene, trichloroethene, and total xylenes. The SVOC concentrations detected above NJDEP R/NRDCSCC and IGSCC at eight of the 10 sample locations were benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, di-n-octylphthalate, and indeno(1,2,3-cd)pyrene. Pesticide concentrations (aldrin and pp'-DDT) were detected above NJDEP R/NRDCSCC and IGSCC in four of the 10 samples. PCBs were detected above NJDEP R/NRDCSCC and IGSCC in seven of the 10 samples. Metals were detected above NJDEP R/NRDCSCC and IGSCC at every sample location. These metals consisted of antimony, arsenic, barium, cadmium, copper, lead, mercury, nickel, vanadium, and zinc. Dioxin was detected in three samples (A5-SS-6, 8 and 12) collected in AOC-5. Soil Analytical Results for AOC 5 are shown on Table 5 and Table 6. Soil Analytical results that exceed NJDEP R/NRDCSCC and IGSCC are shown on Figure 6.

*AOC 6 – Septic System*

A septic disposal system below the former office trailers was used by this facility for the discharge of sanitary waste prior to 1951. Since it is possible that chemicals could have been disposed in this septic system, sampling was conducted.

Two soil samples (A6-SS-1 and A6-SS-2) were collected around the septic tank and analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), chlorophenoxy herbicides, and metals.

All VOC and pesticide concentrations were below NJDEP R/NRDCSCC and IGSCC. Low levels of SVOC concentrations were detected above NJDEP R/NRDCSCC and IGSCC in one sample location. PCBs were detected above NJDEP R/NRDCSCC and IGSCC in one of the two samples. Inorganics (arsenic and lead) were detected above NJDEP R/NRDCSCC and IGSCC in both samples. Soil Analytical Results for AOC 6 are shown on Table 7. Soil Analytical results that exceed NJDEP R/NRDCSCC and IGSCC are shown on Figure 7.

*AOC 7 – 10,000 Gallon Gasoline and Diesel UST*

Two underground storage tanks (USTs) are at the site, a 10,000-gallon diesel fuel UST and a 10,000-gallon gasoline UST. The diesel tank is located near the pump island to the west of the site and the gasoline tank was noted immediately west of the main building. The tank contents were sampled, removed and disposed; and the tank was cleaned. The EPA anticipated removing and disposing the tanks. However, when the concrete pad and soil above the tank were removed, groundwater was encountered at a foot to a foot and a half below the ground surface. Rather than removing the tanks, the EPA abandoned the tanks in place. The tanks were filled with sand after unsuccessfully attempting to fill the tanks with cement. The tanks were covered with soil from the site. No soil samples were collected.

Six soil samples (A7-SS-1 through A7-SS-6) were collected around the former 10,000-gallon gasoline tank and analyzed for VOCs including xylene, MTBE, TBA and lead.

Six soil samples (A7-SS-9 through A7-SS-12) were collected around the former 10,000-gallon diesel tank and analyzed for TPHC. Two samples (A7-SS-10 and A7-SS-12) were also analyzed for VOCs in which the TPHC level exceeded 1000 ppm.

Only one sample had VOC concentrations (trichloroethene) detected above NJDEP criteria. Lead was detected above NJDEP R/NRDCSCC and IGSCC at ten sample locations.

Soil Analytical Results for AOC 7 are shown on Table 8. Soil Analytical Results that exceed NJDEP R/NRDCSCC and IGSCC are shown on Figure 8 and Figure 9.

*AOC 8 – Raw Material Storage Shed*

The raw material storage area was located in a small shed south of the main building. Materials stored in this building included paints and other chemicals in drums and small containers.

Five soil samples (A8-SS-1 through A8-SS-5) were collected to evaluate the impacts from storing raw materials in this area and analyzed for VOCs, SVOCs, pesticides, PCBs, and metals.

One sample had low levels of VOC concentrations above NJDEP R/NRDCSCC and IGSCC. These VOCs were cis-1,2-dichloroethene and trichloroethene. The SVOC concentrations detected above NJDEP R/NRDCSCC and IGSCC at four sample locations were benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene. The pesticide concentration above NJDEP R/NRDCSCC and IGSCC was dieldrin at A8-SS-2. PCB concentrations were below NJDEP R/NRDCSCC and IGSCC. Metals were detected above NJDEP R/NRDCSCC and IGSCC at every sample location. The metals detected were antimony, arsenic, barium, copper, lead, vanadium, and zinc. Soil Analytical Results for AOC 8 are shown on Table 9. Soil Analytical results that exceed NJDEP R/NRDCSCC and IGSCC are shown on Figure 10.

*AOC 9 – Main Building Area*

The main building area was used by CSD for finishing the drums that had been incinerated, sprayed with water and sand blasted. Indoor operations that were conducted included drum painting in three spray booths. Paint residues are present on the concrete floors of the building. A floor drain/trench system is located in the building. No details on the construction of the floor drain system are available.

Seven soil samples (A9-SS-1 through A9-SS-7) were collected beneath the interior trench and analyzed for VOCs, SVOCs, pesticides, PCBs, and metals.

No VOCs were detected in the seven soil samples. The SVOC concentrations detected above NJDEP R/NRDCSCC and IGSCC at seven sample locations were benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, and pyrene. Pesticides were not detected above NJDEP R/NRDCSCC and IGSCC. PCBs were not detected above NJDEP R/NRDCSCC and IGSCC in the seven samples. Metals (barium and lead) were detected above the NJDEP R/NRDCSCC and IGSCC at six sample locations. Soil Analytical Results for AOC 9 are shown on Table 10. Soil Analytical results that exceed NJDEP R/NRDCSCC and IGSCC are shown on Figure 11.

*AOC 10 – South Truck Trailer*

This area contained trailers that stored unprocessed drums. Drum handling and unloading was also conducted in this area. Gravel has been used to cover much of this area, which could hide potential impacts from past spills.

Sixteen soil samples (A10-SS-1 through A10-SS-16) were collected in a grid pattern in the gravel covered area and analyzed for VOCs, SVOCs, pesticides, PCBs, and metals.

Low levels of VOCs were detected above NJDEP R/NRDCSCC and IGSCC at three of the 16 sample locations. The VOC detections included 1,1-dichloroethene, benzene, chlorobenzene, ethylbenzene, methylene chloride, tetrachloroethene, toluene, trichloroethene, and total xylenes. The SVOC concentrations detected above NJDEP R/NRDCSCC and IGSCC at 11 of the 16 sample locations were benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene. The pesticide concentrations detected above NJDEP R/NRDCSCC and IGSCC found in four of the 16 samples were aldrin, dieldrin, pp'-DDD, and pp'-DDT. PCBs were detected above NJDEP R/NRDCSCC and IGSCC in six of the 16 samples. Metals were detected above NJDEP R/NRDCSCC and IGSCC at nine of the 16 of the sample locations. These metals consisted of antimony, arsenic, barium, cadmium, copper, lead, mercury, and zinc. Soil Analytical Results for AOC 10 are shown on Table 11. Soil Analytical results that exceed NJDEP SCC are shown on Figure 12.

*AOC 11 – Drainage Ditch*

The drainage ditch is at the southern boundary of the site and has most likely been impacted by previous operations. This ditch required an assessment to determine the impacts of such discharges on the surface water and sediment quality as well as detailed information on the ecological impacts of this ditch both onsite and to the surrounding environment.

Fifteen sediment samples were collected from eleven locations (A11-SED-1 through A11-SED-11) along the length of the ditch at the southern portion of the property.

The analytical results were compared to the NJDEP Sediment Screening Guidelines at the Lowest Effects Level. Most sediment samples had low levels of detected volatile organic compounds. All sediment samples had detected levels of SVOC, metals, pesticides and herbicides. Four samples collected from about 3 feet below the ditch bottom had detected levels of dioxins. All sediment analytical results are shown on Table 12 and 13. Sediment analytical results that exceed the NJDEP Sediment Quality Criteria are shown on Figure 3.

## HAZSITE Database Deliverable

The Site Remediation Program (SRP) has adopted a process for Electronic Data Interchange (EDI) to facilitate data integration and thereby help the SRP make more informed cleanup decisions, respond accurately to questions, improve the quality and timeliness of data review, and efficiently perform its mandated functions.

The Technical Requirements for Site Remediation (N.J.A.C. 7:26E) require electronic submittal of analytical results of environmental samples.

The field and analytical data collected during the investigation were processed and integrated into the NJDEP Hazsite Database format. A copy of the data files on diskette was attached in Appendix B of the Soil Remedial Investigation Results Summary Report (URS, May 1, 2003).

The following are preliminary recommendations for the NJDEP to review. A Remedial Action Selection Report and Remedial Action Workplan detailing the recommendations for soil and groundwater remediation will be developed after the remedial investigation is complete.

The proposed remedial actions for soils would likely include a limited soil hot spot removal action after the extent of contamination is determined (i.e., soil removal) and a combination of engineering controls (i.e., cap) and institutional controls (i.e., Deed Notice).

Vertical and horizontal soil delineation and soil removal are proposed for AOC-2, AOC-3, and AOC-4 where concentrations of VOCs, PCBs, and pesticides were detected above NJDEP criteria. The proposed field activities and rationale is attached in Table 14 and summarized below:

***AOC 2 – Drum Conveyor / De-Heading Shed***

Pesticides and PCBs were detected above NJDEP criteria in two samples in AOC-2 (A2-SS-9 and A2-SS-11). URS proposes to advance seven soil borings in AOC-2 to delineate the vertical and horizontal extent of soil contamination. Up to three analytical samples will be collected from each boring from the following intervals:

- Directly above the depth the previous sample being delineated was collected (using visual observations and PID readings),
- The depth where the previous sample being delineated was collected, and
- In the 6-inch interval above the shallow groundwater.

The soil samples will be analyzed for TCL VOC+10, pesticides, and PCBs, as required by the NJDEP in their comment letter dated August 4, 2003. The proposed sample locations are provided in Figure 14.

***AOC 3 – Abandoned Truck Trailer Area***

VOCs, pesticides, and PCBs were detected above NJDEP criteria in six samples in AOC-3 (A3-SS-6, A3-SS-7, A3-SS-10, A3-SS-11, A3-SS-15, and A3-SS-18). URS proposes to advance eight soil borings in AOC-3 to delineate the vertical and horizontal extent of soil contamination. Up to three analytical samples will be collected from each boring from the following intervals:

- Directly above the depth the previous sample being delineated was collected (using visual observations and PID readings),
- The depth where the previous sample being delineated was collected, and
- In the 6-inch interval above the shallow groundwater.

The soil samples will be analyzed for TCL VOC+10, pesticides, and PCBs, as required by the NJDEP in their comment letter dated August 4, 2003. The proposed sample locations are provided in Figure 15.

*AOC 4 – Drum Flip Operation Area*

VOCs, pesticides, and PCBs were detected above NJDEP criteria in two samples in AOC-4 (A4-SS-3 and A4-SS-4). URS proposes to advance five soil borings in AOC-4 to delineate the vertical and horizontal extent of soil contamination. Up to three analytical samples will be collected from each boring from the following intervals:

- Directly above the depth the previous sample being delineated was collected (using visual observations and PID readings),
- The depth where the previous sample being delineated was collected, and
- In the 6-inch interval above the shallow groundwater.

The soil samples will be analyzed for TCL VOC+10, pesticides, and PCBs, as required by the NJDEP in their comment letter dated August 4, 2003. The proposed sample locations are provided in Figure 16.

After vertical and horizontal soil delineation is completed, recommendations for remedial action (i.e., soil removal) will be provided for these AOCs as part of a remedial action workplan.

*AOC 11 – Drainage Ditch*

A Baseline Ecological Evaluation (BEE) will be conducted of the entire Central Steel Drum property in accordance with N.J.A.C. 7:26E-3.11. The ecological assessment will include a site-wide assessment of receptors and an evaluation of their potential impacts in accordance with the procedures and references approved by the NJDEP. The purpose of the BEE will be to determine the necessity of characterizing the nature and extent of ecological impacts to the area that are attributable to the site.

The Tier I Baseline Ecological Evaluation (BEE) will be qualitative in nature, based on sampling results that will be obtained during the Remedial Investigation and used to determine if further ecological sampling and evaluation will be required. The BEE will consist of the following three general tasks;

- evaluate the nature of contaminants and identification of contaminants of potential ecological concern (COPECs),
- identify environmentally sensitive areas (ESAs) within the CSD property and immediately adjacent to these properties, and

- identify potential contaminant migration pathways to any on-site and immediately adjacent ESAs that are associated with the former CSD.

Based on the results of the BEE, a site specific ecological risk assessment (ERA) may be needed to characterize the extent of contamination along migration pathways or within the ESAs on or adjacent to the site. The site specific ERA is not part of this scope of work. If the BEE indicates that an ERA is needed, the ERA will be conducted under a separate program in accordance with N.J.A.C. 7:26E-4.7 requirements and the US Environmental Protection Agency (EPA) guidance as described in "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments" (EPA, 1994). Other EPA guidance documents, including those referenced in N.J.A.C. 7:26E-4.7, will be incorporated as appropriate.

***Historic Fill***

The remaining AOCs exhibited low to high levels of metals, including antimony, arsenic, barium, cadmium, copper, lead, mercury, nickel, vanadium, and zinc, and low levels of SVOCs. Metals and SVOCs were detected throughout the Site at concentrations above the NJDEP criteria. These levels are likely a result of historic fill material brought to the Site which is characteristic in this area.

In accordance with N.J.A.C. 7:26E-4.6 (b), the remedial investigation of historic fill material will identify the location, vertical limits, and physical characteristics of the historic fill material. URS proposes to advance 34 soil borings (4 per acre) throughout the Site to delineate the vertical extent of historic fill material. The borings will be advanced through the fill material to native soil, approximately 12-15 feet. Based on field investigations conducted at the Site, the fill material will extend below the water table. One soil sample will be collected from each boring and analyzed for total petroleum hydrocarbons (TPH) and priority pollutants (PP) metals in all samples, and polynuclear aromatic hydrocarbons (PAH) and PCBs on 25 percent of the samples, biased to samples having the highest TPH levels. The proposed soil sample locations are provided in Figure 17.

Pursuant to our meeting with the NJDEP on May 19, 2004, the historic fill soil sampling, delineation soil sampling, and monitoring well installations (see Remedial Investigation Workplan Addendum, June 1, 2004) will be conducted during the same field event and their locations will be overlapped to minimize the total number of borings advanced at the Site. Therefore, the Proposed Soil and Groundwater Remedial Investigation Sample Locations are both shown on Figure 17.

In accordance with N.J.A.C. 7:26E-4.8 (c) 4i, stratigraphic logs will include a description of the fill type, any layering of the fill material, texture and size of materials, an assessment of fill homogeneity, field indicators of contamination, and field measurements of organic vapors using a PID.

Since the fill material is characteristic of this area, aerial photographs and historic USGS topographic maps will be used to verify that historic fill is site-wide and area-wide. Therefore, perimeter borings or test pits are not proposed.

***Radiological Assessment***

A radiological assessment will be completed by screening all split spoon soil samples and ambient air using a Victoreen 190 Radiation Monitor during the remedial investigation. If the screening reveals a concern, then a more complete Radiological Assessment will be completed in accordance with the New Jersey Radiation Protection Rules and Regulations (N.J.A.C. 7:28).

***Cover Material***

Cover material will likely be recommended in the Remedial Action Plan which would be protective of public health, safety, and the environment. The cover material would effectively limit human exposure to soil contaminants and limit the direct infiltration of rainwater and the subsequent dissolution of contaminants into the groundwater.

URS proposes the area be covered with 2 to 4 inches of crushed stone and an asphalt pavement surface.

***Deed Notice***

Upon approval of the Remedial Action Workplan, a draft Deed Notice as a remedial action for soils on the Site will be prepared.

The Deed Notice and biennial compliance monitoring is recommended which would also be protective of public health, safety and the environment. The Deed Notice would prevent future land use that could lead to accidental contact with the remaining soil contaminants. Biennial compliance monitoring would document that the integrity of the cover material has not been breached and that the cover material would remain in place as long as the contamination exists. Biennial research of the Deed Notice records at the Essex County Courthouse would document that the Deed Notice has been properly filed, that it remains on file, and that no subsequent notices have been filed to nullify the original Deed Notice.

# Tables

**Table 1**
**Area of Concern #1 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A1-SS-1<br>AB45749<br>10/30/2001<br>1.5<br>SOIL<br>CONC | Q | MDL | A1-SS-2<br>AB45750<br>10/30/2001<br>2.9<br>SOIL<br>CONC | Q | MDL | A1-SS-3<br>AB45751<br>10/30/2001<br>3.4<br>SOIL<br>CONC | Q | MDL | A1-SS-4<br>AB45752<br>10/30/2001<br>2.8<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| 1,1,2,2-Tetrachloroethane | mg/kg | 34 | 70 | 1 | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 4.9 | -- | | 4.3 | -- | | 4.6 | -- | | 3.9 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 3.9 | -- | | 3.4 | -- | | 3.7 | -- | | 3.1 | -- | |
| 4-Methyl-2-Pentanone | mg/kg | 1000 | 1000 | 50 | 3.9 | -- | | 3.4 | -- | | 3.7 | -- | | 3.1 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 3.9 | -- | | 3.4 | -- | | 3.7 | -- | | 3.1 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | | 1.40 | | | 0.45 | | 0.19 | -- | | 0.16 | -- | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | | 2.48 | | | 0.45 | J | 0.93 | -- | | 0.78 | -- | |
| Chloroethane | mg/kg | NC | NC | NC | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| Dibromochloromehtane | mg/kg | 110 | 1000 | 1 | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| 1,3-Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | | 29 | | | 0.36 | | | 0.49 | | 0.16 | -- | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| Styrene | mg/kg | 23 | 97 | 100 | 0.19 | -- | | 0.17 | -- | | 0.19 | -- | | 0.16 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| Toulene | mg/kg | 1000 | 1000 | 500 | | 28 | | | 0.52 | | | 1.1 | | 0.16 | -- | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 0.97 | -- | | 0.86 | -- | | 0.93 | -- | | 0.78 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | | 99 | | | 3.8 | | 0.93 | 2.36 | | 0.16 | -- | |
| TICs Total | mg/kg | NC | NC | NC | | 60.8 | | | 7.22 | | | 4.64 | | | -- | |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 219.2 | | | 12.8 | | | 8.59 | | | -- | |
| | | | | | | | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | | 0.13 | J | 2.1 | -- | | 0.43 | -- | | | 0.04 | J |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | | 0.18 | J | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 1,3-Dichlororbenzene | mg/kg | 5100 | 10000 | 100 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | | 0.099 | J | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 2,4-Dichlorophenol | mg/kg | 170 | 3100 | 10 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | | 0.088 | J | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | | 0.057 | J | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 2-Chlorphenol | mg/kg | 280 | 5200 | 10 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |

**Table 1**
**Area of Concern #1 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A1-SS-1<br>AB45749<br>10/30/2001<br>1.5<br>SOIL<br>CONC | Q | MDL | A1-SS-2<br>AB45750<br>10/30/2001<br>2.9<br>SOIL<br>CONC | Q | MDL | A1-SS-3<br>AB45751<br>10/30/2001<br>3.4<br>SOIL<br>CONC | Q | MDL | A1-SS-4<br>AB45752<br>10/30/2001<br>2.8<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | | 0.16 | J | | 0.92 | J | 0.43 | -- | | 0.39 | -- | |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | | 0.110 | J | | 0.24 | J | 0.43 | -- | | 0.39 | -- | |
| 2-Nitroaniline | mg/kg | NC | NC | NC | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | | 0.090 | J | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | | 0.053 | J | | 0.5 | J | 0.43 | -- | | 0.39 | -- | |
| Acenaphthylene | mg/kg | NC | NC | NC | 0.46 | -- | | 2.1 | -- | | | 0.13 | J | | 0.043 | J |
| Anthracene | mg/kg | 10000 | 10000 | 100 | | 0.087 | J | | 0.69 | J | | 0.061 | J | 0.39 | -- | |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | | 0.21 | J | | 1.6 | J | | 0.35 | J | | 0.16 | J |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | | 0.22 | J | | 1.4 | J | | 0.4 | J | | 0.18 | J |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | | 0.33 | J | | 2.3 | | | 0.51 | | | 0.26 | J |
| Benzo(g,h,I)perylene | mg/kg | NC | NC | NC | | 0.10 | J | | 0.62 | J | | 0.3 | J | | 0.13 | J |
| Benzo(k)fluouranthene | mg/kg | 0.9 | 4 | 500 | | 0.16 | J | | 1 | J | | 0.17 | J | | 0.1 | J |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| Bis(2-Etheyhexyl)phthalate | mg/kg | 49 | 210 | 100 | | 0.80 | | | 17 | | | 1.7 | | | 0.45 | |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | 0.46 | -- | | | 0.86 | J | 0.43 | -- | | 0.39 | -- | |
| Carbazole | mg/kg | NC | NC | NC | | 0.047 | J | | 0.34 | J | 0.43 | -- | | 0.39 | -- | |
| Chrysene | mg/kg | 9 | 40 | 500 | | 0.25 | J | | 2 | J | | 0.35 | J | | 0.19 | J |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| Dibenzofuran | mg/kg | NC | NC | NC | 0.46 | 0.055 | J | | 0.36 | J | 0.43 | -- | | 0.39 | -- | |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | | 0.27 | JB | | 0.48 | JB | 0.43 | 0.15 | JB | | 0.18 | JB |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | | 0.18 | J | | 0.36 | J | 0.43 | 0.06 | J | | 0.12 | J |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | | 0.43 | J | | 3.2 | | | 0.49 | | | 0.28 | J |
| Fluorene | mg/kg | 2300 | 10000 | 100 | | 0.051 | J | | 0.56 | J | 0.43 | -- | | 0.39 | -- | |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| Hexachlorocyclopentadiene | mg/kg | 400 | 7300 | 100 | 0.93 | -- | | 4.1 | -- | | 0.85 | -- | | 0.78 | -- | |
| Hexachloroethane | mg/kg | 6 | 100 | 100 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | | 0.092 | J | | 0.62 | J | | 0.26 | J | | 0.11 | J |
| Isophorone | mg/kg | 1100 | 10000 | 50 | 0.46 | -- | | | 0.94 | J | | 0.065 | J | | 0.14 | J |
| Naphthalene | mg/kg | 230 | 4200 | 100 | 0.46 | 0.38 | J | | 1.6 | J | | 0.049 | J | 0.39 | -- | |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 0.46 | -- | | 2.1 | -- | | 0.43 | -- | | 0.39 | -- | |
| Phenanthrene | mg/kg | NC | NC | NC | | 0.32 | J | | 2.9 | | | 0.15 | J | | 0.12 | J |
| Phenol | mg/kg | 10000 | 10000 | 50 | 0.46 | -- | | | 0.46 | J | 0.43 | -- | | 0.39 | -- | |

**Table 1**
**Area of Concern #1 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A1-SS-1<br>AB45749<br>10/30/2001<br>1.5<br>SOIL<br>CONC | Q | MDL | A1-SS-2<br>AB45750<br>10/30/2001<br>2.9<br>SOIL<br>CONC | Q | MDL | A1-SS-3<br>AB45751<br>10/30/2001<br>3.4<br>SOIL<br>CONC | Q | MDL | A1-SS-4<br>AB45752<br>10/30/2001<br>2.8<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pyrene | mg/kg | 1700 | 10000 | 100 | 0.46 | 0.38 | J | | 2.8 | | | 0.47 | | | 0.26 | J |
| TICs Total | mg/kg | NC | NC | NC | | 112.18 | | | 111.4 | | | 71.96 | | | 48.23 | |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 114.28 | | | 155.15 | | | 77.625 | | | 50.993 | |
| | | | | | | | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | 0.023 | -- | | | 0.086 | | | 0.0088 | | 0.02 | -- | |
| Alpha-BHC | mg/kg | NC | NC | NC | | 0.042 | | 0.021 | -- | | | 0.006 | | 0.02 | -- | |
| Beta-BHC | mg/kg | NC | NC | NC | 0.023 | -- | | | 0.041 | | | 0.038 | | | 0.052 | |
| Chlordane | mg/kg | NC | NC | NC | 0.046 | -- | | | 0.63 | | 0.0085 | -- | | 0.039 | -- | |
| Delta-BHC | mg/kg | NC | NC | NC | 0.023 | -- | | 0.021 | -- | | 0.0043 | -- | | 0.02 | -- | |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | 0.023 | -- | | | 0.15 | | 0.0043 | -- | | 0.02 | -- | |
| Endosulfan I | mg/kg | NC | NC | NC | 0.023 | -- | | 0.021 | -- | | 0.0043 | -- | | 0.02 | -- | |
| Endosulfan II | mg/kg | NC | NC | NC | 0.023 | -- | | 0.021 | -- | | 0.0043 | -- | | 0.02 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.023 | -- | | 0.021 | -- | | 0.0043 | -- | | 0.02 | -- | |
| Endrin | mg/kg | 17 | 310 | 50 | 0.023 | -- | | 0.021 | 0.2 | | | 0.022 | | 0.02 | -- | |
| Endrin Aldehyde | mg/kg | NC | NC | NC | | 0.03 | | 0.021 | -- | | 0.0043 | -- | | 0.02 | -- | |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.023 | -- | | 0.021 | -- | | 0.0043 | -- | | 0.02 | -- | |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.023 | -- | | | 0.075 | | 0.0043 | -- | | 0.02 | -- | |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.023 | -- | | 0.021 | -- | | 0.0043 | -- | | 0.02 | -- | |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.023 | -- | | | 0.021 | | 0.0043 | -- | | 0.02 | -- | |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | 0.023 | -- | | 0.021 | -- | | 0.0043 | -- | | 0.02 | -- | |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | | 0.61 | | | 0.69 | | | 0.051 | | | 0.065 | |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | | 0.15 | | 0.021 | 0.31 | | | 0.053 | | | 0.17 | |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | | 0.17 | | 0.021 | 0.81 | | | 0.073 | | | 0.064 | |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 0.23 | -- | | 0.21 | -- | | 0.043 | -- | | 0.2 | -- | |
| | | | | | | | | | | | | | | | | |
| **PCB 8082** | | | | | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 0.023 | -- | | 1 | -- | | 0.021 | -- | | 0.02 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | NC | 0.023 | -- | | 1 | -- | | 0.021 | -- | | 0.02 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | NC | 0.023 | -- | | 1 | -- | | 0.021 | -- | | 0.02 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | NC | 0.023 | -- | | 1 | -- | | 0.021 | -- | | | 0.29 | |
| Aroclor-1248 | mg/kg | NC | NC | NC | 0.023 | -- | | 1 | -- | | 0.021 | -- | | 0.02 | -- | |
| Aroclor-1254 | mg/kg | NC | NC | NC | 0.023 | -- | | 1 | -- | | 0.021 | -- | | 0.02 | -- | |
| Aroclor-1260 | mg/kg | NC | NC | NC | | 1.4 | | | 9.2 | | | 0.56 | | | 0.42 | |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | 1.4 | | | 9.2 | | | 0.56 | | | 0.71 | |
| | | | | | | | | | | | | | | | | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 335.885 | | | 180.163 | | | 87.0268 | | | 52.054 | |
| | | | | | | | | | | | | | | | | |
| **Inorganic Compounds** | | | | | | | | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | NC | | 6400 | | | 11000 | | | 18000 | | | 16000 | |
| Antimony | mg/kg | 14 | 340 | NC | | 96 | | | 130 | | | 25 | | | 11 | |
| Arsenic | mg/kg | 20 | 20 | NC | | 21 | | | 48 | | | 13 | | | 3.3 | |
| Barium | mg/kg | 700 | 47000 | NC | | 1200 | | | 480 | | | 260 | | | 170 | |
| Beryllium | mg/kg | 2 | 2 | NC | 0.83 | -- | | 0.74 | -- | | 0.77 | -- | | 0.71 | -- | |
| Cadmium | mg/kg | 39 | 100 | NC | | 120 | | | 14 | | | 7 | | | 1.2 | |
| Calcium | mg/kg | NC | NC | NC | | 29000 | | | 33000 | | | 31000 | | | 24000 | |
| Chromium | mg/kg | 120000 | NC | NC | | 650 | | | 510 | | | 2200 | | | 1100 | |
| Cobalt | mg/kg | NC | NC | NC | | 74 | | | 34 | | | 63 | | | 43 | |
| Copper | mg/kg | 600 | 600 | NC | | 1100 | | | 3700 | | | 270 | | | 54 | |
| Iron | mg/kg | NC | NC | NC | | 330000 | | | 44000 | | | 66000 | | | 39000 | |

**Table 1**
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**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A1-SS-1<br>AB45749<br>10/30/2001<br>1.5<br>SOIL<br>CONC | Q | MDL | A1-SS-2<br>AB45750<br>10/30/2001<br>2.9<br>SOIL<br>CONC | Q | MDL | A1-SS-3<br>AB45751<br>10/30/2001<br>3.4<br>SOIL<br>CONC | Q | MDL | A1-SS-4<br>AB45752<br>10/30/2001<br>2.8<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lead | mg/kg | 400 | 600 | NC | | 6400 | | | 28000 | | | 700 | | | 270 | |
| Magnesium | mg/kg | NC | NC | NC | | 6800 | | | 6400 | | | 29000 | | | 19000 | |
| Manganese | mg/kg | NC | NC | NC | | 1500 | | | 1400 | | | 490 | | | 270 | |
| Mercury | mg/kg | 14 | 270 | NC | | 0.51 | | | 1.8 | | | 0.4 | | 0.17 | -- | |
| Nickel | mg/kg | 250 | 2400 | NC | | 130 | | | 100 | | | 220 | | | 150 | |
| Potassium | mg/kg | NC | NC | NC | 350 | -- | | | 880 | | | 600 | | | 310 | |
| Selenium | mg/kg | 63 | 3100 | NC | 2.8 | -- | | | 8.2 | | 2.6 | -- | | | 3.1 | |
| Silver | mg/kg | 110 | 4100 | NC | 3.5 | -- | | 3.1 | -- | | 3.2 | -- | | 2.9 | -- | |
| Sodium | mg/kg | NC | NC | NC | 690 | -- | | | 890 | | 640 | -- | | 590 | -- | |
| Thallium | mg/kg | 2 | 2 | NC | 1.7 | -- | | 1.5 | -- | | 1.5 | -- | | 1.4 | -- | |
| Vanadium | mg/kg | 370 | 7100 | NC | | 22 | | | 130 | | | 320 | | | 250 | |
| Zinc | mg/kg | 1500 | 1500 | NC | | 6800 | | | 3400 | | | 600 | | | 300 | |
| | | | | | | | | | | | | | | | | |
| Chlorinated Herbicides | | | | | | | | | | | | | | | | |
| 2,4,5-T | mg/kg | NC | NC | NC | | 0.0088 | | 0.0049 | -- | | 0.0051 | -- | | 0.0047 | -- | |
| 2,4-D | mg/kg | NC | NC | NC | | 0.087 | | | 0.0077 | | | 0.055 | | 0.0047 | -- | |
| Dicamba | mg/kg | NC | NC | NC | | 0.2 | | 0.0049 | 0.012 | | | 0.015 | | 0.0047 | -- | |
| Silvex | mg/kg | NC | NC | NC | | 0.14 | | 0.0049 | -- | | 0.0051 | -- | | 0.0047 | -- | |
| | | | | | | | | | | | | | | | | |
| % Solids | | | | | | 72 | | | 81 | | | 78 | | | 85 | |

CONC Concentration
TIC Tentatively Identified Compounds
Q Qualifier
MDL Method Detection Limit
J Estimated Value
NC No criteria established
NA Not analyzed
R data rejected by validation
-- Not Detected
***BOLD*** analyte exceedes unrestricted use soil cleanup criteria (08/04/99)
* indicates sample is a duplicate of previous sample

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**Area of Concern #1 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A1-SS-5<br>AB45753<br>10/30/2001<br>2.0<br>Soil | | | A1-SS-6<br>AB45754<br>10/30/2001<br>3.0<br>Soil | | | A1-SS-7<br>AB45755<br>10/30/2001<br>1.5<br>Soil | | | A1-SS-8<br>AB45756<br>10/30/2001<br>2.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| **Volatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | -- | |
| 1,1,2,2-Tetrachlororethane | mg/kg | 34 | 70 | 1 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | | 0.28 | J |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 4.2 | -- | | 3.7 | -- | | 3.6 | -- | | 4.2 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 3.4 | -- | | 3 | -- | | 2.9 | -- | | 3.4 | -- | |
| 4-Methyl-2-Pentanone | mg/kg | 1000 | 1000 | 50 | 3.4 | -- | | 3 | -- | | | 2.7 | J | 3.4 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 3.4 | -- | | 3 | -- | | 2.9 | -- | | 3.4 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | 0.17 | -- | | 0.15 | -- | | | 0.79 | | 0.17 | -- | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | -- | |
| Chloroethane | mg/kg | NC | NC | NC | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | 0.64 | J |
| Dibromochloromehtane | mg/kg | 110 | 1000 | 1 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | -- | |
| 1,3-Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | 0.17 | -- | | 0.15 | -- | | | 7.8 | | | 2.9 | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | | 0.17 | J |
| Styrene | mg/kg | 23 | 97 | 100 | 0.17 | -- | | 0.15 | -- | | 0.14 | -- | | 0.17 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | -- | |
| Toulene | mg/kg | 1000 | 1000 | 500 | 0.17 | -- | | 0.15 | -- | | | 9.7 | | | 1.4 | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | | 0.34 | J |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 0.84 | -- | | 0.75 | -- | | 0.72 | -- | | 0.84 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | 0.17 | -- | | 0.15 | -- | | | 49 | | | 12.5 | |
| TICs Total | mg/kg | NC | NC | NC | | 1.77 | | | 1.6 | | | 18.08 | | | 8.87 | |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 1.67 | | | 1.6 | | | 88.07 | | | 27.1 | |
| | | | | | | | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | | 0.084 | J |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | | 0.11 | J |
| 1,3-Dichlororthenzene | mg/kg | 5100 | 10000 | 100 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | | 0.053 | J |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| 2,4-Dichlorophenol | mg/kg | 170 | 3100 | 10 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| 2-Chlorphenol | mg/kg | 280 | 5200 | 10 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |

Table 1
Area of Concern #1 Soil Analytical Results

Remedial Investigation Report
Central Steel Drum
Newark, New Jersey

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A1-SS-5<br>AB45753<br>10/30/2001<br>2.0<br>Soil | | | A1-SS-6<br>AB45754<br>10/30/2001<br>3.0<br>Soil | | | A1-SS-7<br>AB45755<br>10/30/2001<br>1.5<br>Soil | | | A1-SS-8<br>AB45756<br>10/30/2001<br>2.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | | 0.15 | J | 0.41 | -- | | | 0.33 | J | 0.45 | -- | |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| 2-Nitoaniline | mg/kg | NC | NC | NC | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | | 0.33 | J | | 0.053 | J | | 0.59 | | 0.45 | -- | |
| Acenaphthylene | mg/kg | NC | NC | NC | | 0.15 | J | | 0.041 | J | 0.42 | -- | | 0.45 | -- | |
| Anthracene | mg/kg | 10000 | 10000 | 100 | | 0.25 | J | | 0.091 | J | | 0.049 | J | | 0.11 | J |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | | 0.72 | | | 0.13 | J | | 0.084 | J | | 0.24 | J |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | | 0.75 | | | 0.11 | J | | 0.061 | J | | 0.26 | J |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | | 1.1 | | | 0.18 | J | | 0.11 | J | | 0.32 | J |
| Benzo(g,h,I)perylene | mg/kg | NC | NC | NC | | 0.45 | | | 0.081 | J | 0.42 | -- | | | 0.13 | J |
| Benzo(k)fluouranthene | mg/kg | 0.9 | 4 | 500 | | 0.37 | J | | 0.09 | J | 0.42 | -- | | | 0.1 | J |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| Bis(2-Etheyhexyl)phthalate | mg/kg | 49 | 210 | 100 | | 0.16 | J | | 0.88 | | | 1.7 | | | 1.8 | |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | 0.43 | -- | | 0.41 | -- | | | 0.29 | J | | 0.17 | J |
| Carbazole | mg/kg | NC | NC | NC | | 0.079 | J | 0.41 | -- | | | 0.25 | J | 0.45 | -- | |
| Chrysene | mg/kg | 9 | 40 | 500 | | 0.69 | | | 0.12 | J | | 0.074 | J | | 0.24 | J |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | | 0.044 | J | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| Dibenzofuran | mg/kg | NC | NC | NC | | 0.19 | J | 0.41 | -- | | | 0.2 | J | | 0.049 | J |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | | 0.063 | J |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | | 0.13 | JB | | 0.21 | JB | | 0.38 | JB | | 0.88 | B |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | | 0.044 | J | 0.41 | -- | | | 0.081 | J | | 1 | |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | | 1.6 | | | 0.24 | J | | 0.13 | J | | 0.3 | J |
| Fluorene | mg/kg | 2300 | 10000 | 100 | | 0.54 | | | 0.08 | J | | 0.23 | J | 0.45 | -- | |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| Hexachlororcyclopentadiene | mg/kg | 400 | 7300 | 100 | 0.87 | -- | | 0.81 | -- | | 0.84 | -- | | 0.9 | -- | |
| Hexachlororethane | mg/kg | 6 | 100 | 100 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | | 0.45 | | | 0.078 | J | 0.42 | -- | | | 0.083 | J |
| Isophorone | mg/kg | 1100 | 10000 | 50 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| Naphthalene | mg/kg | 230 | 4200 | 100 | | 0.16 | J | | 0.07 | J | | 0.65 | | | 0.064 | J |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 0.43 | -- | | 0.41 | -- | | 0.42 | -- | | 0.45 | -- | |
| Phenanthrene | mg/kg | NC | NC | NC | | 1.4 | | | 0.34 | J | | 0.35 | J | | 0.29 | J |
| Phenol | mg/kg | 10000 | 10000 | 50 | 0.43 | -- | | 0.41 | -- | | | 0.089 | J | 0.45 | -- | |

**Table 1**
**Area of Concern #1 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A1-SS-5<br>AB45753<br>10/30/2001<br>2.0<br>Soil | | | A1-SS-6<br>AB45754<br>10/30/2001<br>3.0<br>Soil | | | A1-SS-7<br>AB45755<br>10/30/2001<br>1.5<br>Soil | | | A1-SS-8<br>AB45756<br>10/30/2001<br>2.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 1.4 | | | 0.2 | J | | 0.12 | J | | 0.38 | J |
| TICs Total | mg/kg | NC | NC | NC | | 64.92 | | | 61.02 | | | 74.74 | J | | 63.42 | |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 76.077 | | | 64.014 | | | 80.508 | J | | 70.146 | |
| | | | | | | | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | 0.022 | -- | | 0.0041 | -- | | 0.0042 | -- | | 0.045 | -- | |
| Alpha-BHC | mg/kg | NC | NC | NC | 0.022 | -- | | 0.0041 | -- | | 0.0042 | -- | | 0.045 | -- | |
| Beta-BHC | mg/kg | NC | NC | NC | 0.022 | -- | | 0.0041 | -- | | 0.0042 | -- | | 0.045 | -- | |
| Chlordane | mg/kg | NC | NC | NC | | 0.23 | | 0.0041 | -- | | | 0.032 | | | 0.6 | |
| Delta-BHC | mg/kg | NC | NC | NC | 0.022 | -- | | 0.0041 | -- | | 0.0042 | -- | | 0.045 | -- | |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | 0.022 | -- | | 0.0041 | -- | | | 0.01 | | 0.045 | -- | |
| Endosulfan I | mg/kg | NC | NC | NC | 0.022 | -- | | 0.0041 | -- | | 0.0042 | -- | | 0.045 | -- | |
| Endosulfan II | mg/kg | NC | NC | NC | 0.022 | -- | | 0.0041 | -- | | 0.0042 | -- | | 0.045 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.022 | -- | | 0.0041 | -- | | | 0.0057 | | 0.045 | -- | |
| Endrin | mg/kg | 17 | 310 | 50 | 0.022 | -- | | 0.0041 | -- | | | 0.0094 | | 0.045 | -- | |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 0.022 | -- | | 0.0041 | -- | | | 0.015 | | 0.045 | -- | |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.022 | -- | | 0.0041 | -- | | 0.0042 | -- | | 0.045 | -- | |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.022 | -- | | 0.0041 | -- | | 0.0042 | -- | | 0.045 | -- | |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.022 | -- | | 0.0041 | -- | | 0.0042 | -- | | 0.045 | -- | |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.022 | -- | | 0.0041 | -- | | 0.0042 | -- | | 0.045 | -- | |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | 0.022 | -- | | 0.0041 | -- | | 0.0042 | -- | | 0.045 | -- | |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | | 0.05 | | 0.0041 | 0.0091 | | | 0.013 | | 0.045 | -- | |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | | 0.035 | | 0.0041 | 0.023 | | | 0.027 | | 0.045 | -- | |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | | 0.056 | | 0.0041 | -- | | | 0.014 | | | 0.14 | |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 0.22 | -- | | 0.0410 | -- | | 0.042 | -- | | 0.45 | -- | |
| | | | | | | | | | | | | | | | | |
| **PCB 8082** | | | | | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 0.022 | -- | | | 0.66 | | 0.021 | -- | | | 0.78 | |
| Aroclor-1221 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.02 | -- | | 0.021 | -- | | 0.023 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.02 | -- | | 0.021 | -- | | 0.023 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.02 | -- | | 0.021 | -- | | 0.023 | -- | |
| Aroclor-1248 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.02 | -- | | 0.021 | -- | | 0.023 | -- | |
| Aroclor-1254 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.02 | -- | | 0.021 | -- | | 0.023 | -- | |
| Aroclor-1260 | mg/kg | NC | NC | NC | | 0.083 | | | 0.4 | | 0.021 | -- | | | 0.95 | |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | 0.083 | | | 1.06 | | | -- | | | 1.73 | |
| | | | | | | | | | | | | | | | | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 78.201 | | | 66.7061 | | | 168.7041 | | | 99.716 | |
| | | | | | | | | | | | | | | | | |
| **Inorganic Compounds** | | | | | | | | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | NC | | 16000 | | | 6900 | | | 7100 | | | 7900 | |
| Antimony | mg/kg | 14 | 340 | NC | | 31 | | | 15 | | | 95 | | | 100 | |
| Arsenic | mg/kg | 20 | 20 | NC | 2.6 | -- | | | 4.6 | | | 16 | | | 36 | |
| Barium | mg/kg | 700 | 47000 | NC | | 190 | | | 190 | | | 1200 | | | 1700 | |
| Beryllium | mg/kg | 2 | 2 | NC | 0.78 | -- | | 0.73 | -- | | 0.76 | -- | | 0.81 | -- | |
| Cadmium | mg/kg | 39 | 100 | NC | | 2.4 | | | 2.3 | | | 65 | | | 49 | |
| Calcium | mg/kg | NC | NC | NC | | 56000 | | | 19000 | | | 25000 | | | 18000 | |
| Chromium | mg/kg | 120000 | NC | NC | | 4000 | | | 13000 | | | 900 | | | 1200 | |
| Cobalt | mg/kg | NC | NC | NC | | 110 | | | 44 | | | 70 | | | 63 | |
| Copper | mg/kg | 600 | 600 | NC | | 110 | | | 100 | | | 1100 | | | 650 | |
| Iron | mg/kg | NC | NC | NC | | 71000 | | | 57000 | | | 310000 | | | 130000 | |

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**Remedial Investigation Report**
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**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A1-SS-5<br>AB45753<br>10/30/2001<br>2.0<br>Soil<br>CONC Q | | A1-SS-6<br>AB45754<br>10/30/2001<br>3.0<br>Soil<br>CONC Q | | A1-SS-7<br>AB45755<br>10/30/2001<br>1.5<br>Soil<br>CONC Q | | A1-SS-8<br>AB45756<br>10/30/2001<br>2.5<br>Soil<br>CONC Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | | MDL | | MDL | | MDL | |
| Lead | mg/kg | 400 | 600 | NC | | 350 | | 520 | | 3200 | | 4600 |
| Magnesium | mg/kg | NC | NC | NC | | 5300 | | 17000 | | 15000 | | 4100 |
| Manganese | mg/kg | NC | NC | NC | | 520 | | 330 | | 2000 | | 1200 |
| Mercury | mg/kg | 14 | 270 | NC | | 0.56 | | 0.22 | 0.18 | -- | | 0.85 |
| Nickel | mg/kg | 250 | 2400 | NC | | 390 | | 150 | | 340 | | 220 |
| Potassium | mg/kg | NC | NC | NC | 320 | -- | 300 | -- | 320 | -- | 340 | -- |
| Selenium | mg/kg | 63 | 3100 | NC | 2.6 | -- | | 2.5 | 2.5 | -- | 2.7 | -- |
| Silver | mg/kg | 110 | 4100 | NC | 3.2 | -- | 3 | -- | | 4 | 3.4 | -- |
| Sodium | mg/kg | NC | NC | NC | | 660 | 610 | -- | | 770 | 680 | -- |
| Thallium | mg/kg | 2 | 2 | NC | 1.6 | -- | 1.5 | -- | 1.5 | -- | 1.6 | -- |
| Vanadium | mg/kg | 370 | 7100 | NC | | 810 | | 270 | | 190 | | 120 |
| Zinc | mg/kg | 1500 | 1500 | NC | | 480 | | 470 | | 2100 | | 5600 |
| | | | | | | | | | | | | |
| **Chlorinated Herbicides** | | | | | | | | | | | | |
| 2,4,5-T | mg/kg | NC | NC | NC | 0.0052 | -- | 0.0049 | -- | 0.0051 | -- | 0.0054 | -- |
| 2,4-D | mg/kg | NC | NC | NC | | 0.0095 | 0.0049 | -- | 0.0051 | -- | 0.0054 | -- |
| Dicamba | mg/kg | NC | NC | NC | 0.0052 | -- | 0.0049 | -- | 0.0051 | -- | 0.0054 | -- |
| Silvex | mg/kg | NC | NC | NC | 0.0052 | -- | 0.0049 | -- | 0.0051 | -- | 0.0054 | -- |
| | | | | | | | | | | | | |
| % Solids | | | | | | 77 | | 82 | | 79 | | 74 |

CONC Concentration
TIC Tentatively Identified Compounds
Q Qualifier
MDL Method Detection Limit
J Estimated Value
NC No criteria established
NA Not analyzed
R data rejected by validation
-- Not Detected
***BOLD*** analyte exceedes unrestricted use soil cleanup criteria (08/04/99)
* indicates sample is a duplicate of previous sample

**Table 1**
**Area of Concern #1 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A1-SS-9<br>AB45757<br>10/30/2001<br>2.5<br>Soil | | | A1-SS-10<br>AB45758<br>10/30/2001<br>3.0<br>Soil | | | A1-SS-11<br>AB45760<br>10/30/2001<br>2.7<br>Soil | | | A1-SS-12<br>AB45761<br>10/30/2001<br>2.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| **Volatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 0.66 | -- | | 0.84 | -- | | 0.9 | -- | | 0.85 | -- | |
| 1,1,2,2-Tetrachlororethane | mg/kg | 34 | 70 | 1 | 0.66 | -- | | 0.84 | -- | | 0.9 | -- | | 0.85 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 0.66 | -- | | 0.84 | -- | | 0.9 | -- | | 0.85 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 0.66 | -- | | 0.84 | -- | | 0.9 | -- | | 0.85 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 0.66 | -- | | 0.84 | -- | | 0.9 | -- | | 0.85 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 0.66 | -- | | 0.84 | -- | | 0.9 | -- | | 0.85 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 0.66 | -- | | 0.84 | -- | | 0.9 | -- | | 0.85 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 3.3 | -- | | 4.2 | -- | | 4.5 | -- | | 4.2 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 2.6 | -- | | 3.3 | -- | | 3.6 | -- | | 3.4 | -- | |
| 4-Methyl-2-Pentanone | mg/kg | 1000 | 1000 | 50 | 2.6 | -- | | 3.3 | -- | | 3.6 | -- | | 3.4 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 2.6 | -- | | 3.3 | -- | | 3.6 | -- | | 3.4 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | 0.13 | -- | | 0.17 | -- | | | 0.27 | | | 0.3 | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 0.66 | -- | | 0.84 | -- | | 0.9 | -- | | 0.85 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 0.66 | -- | | 0.84 | -- | | 0.9 | -- | | 0.85 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 0.66 | -- | | 0.84 | -- | | 0.9 | -- | | 0.85 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 0.66 | -- | | 0.84 | -- | | 0.9 | -- | | 0.85 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 0.66 | -- | | 0.84 | -- | | 0.9 | -- | | 0.85 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | 0.66 | -- | | 0.84 | -- | | 0.9 | -- | | | 0.38 | J |
| Chloroethane | mg/kg | NC | NC | NC | 0.66 | -- | | 0.84 | -- | | 0.9 | -- | | 0.85 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 0.66 | -- | | 0.84 | -- | | 0.9 | -- | | 0.85 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 0.66 | -- | | 0.84 | -- | | 0.9 | -- | | 0.85 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 0.66 | -- | | | 0.28 | J | 0.9 | -- | | 0.85 | -- | |
| Dibromochloromehtane | mg/kg | 110 | 1000 | 1 | 0.66 | -- | | 0.84 | -- | | 0.9 | -- | | 0.85 | -- | |
| 1,3-Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 0.66 | -- | | 0.84 | -- | | 0.9 | -- | | 0.85 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | 0.13 | -- | | 0.17 | -- | | | 0.66 | | | 0.52 | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 0.66 | -- | | 0.84 | -- | | 0.9 | -- | | 0.85 | -- | |
| Styrene | mg/kg | 23 | 97 | 100 | 0.13 | -- | | 0.17 | -- | | 0.18 | -- | | 0.17 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 0.66 | -- | | | 0.18 | J | | 0.19 | J | 0.85 | -- | |
| Toulene | mg/kg | 1000 | 1000 | 500 | 0.13 | -- | | | 0.43 | | | 1.6 | | | 1.1 | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 0.66 | -- | | | 0.21 | J | 0.9 | -- | | 0.85 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 0.66 | -- | | | 0.57 | J | | 0.54 | J | | 0.32 | J |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 0.66 | -- | | 0.84 | -- | | 0.9 | -- | | 0.85 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | 0.13 | -- | | | 1.09 | | | 4.3 | | | 3.4 | |
| TICs Total | mg/kg | NC | NC | NC | | 64.3 | | | 17.1 | | | 12.02 | | | 25.6 | |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 64.3 | | | 19.86 | | | 19.58 | | | 31.62 | |
| | | | | | | | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | 0.4 | -- | | 2.4 | -- | | | 0.29 | J | | 0.36 | J |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | 0.4 | -- | | | 0.46 | J | | 0.47 | J | | 0.82 | J |
| 1,3-Dichlororbenzene | mg/kg | 5100 | 10000 | 100 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | 0.4 | -- | | | 0.5 | J | 2 | -- | | | 0.29 | J |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| 2,4-Dichlorophenol | mg/kg | 170 | 3100 | 10 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| 2-Chlorphenol | mg/kg | 280 | 5200 | 10 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |

**Table 1**
**Area of Concern #1 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A1-SS-9<br>AB45757<br>10/30/2001<br>2.5<br>Soil | | | A1-SS-10<br>AB45758<br>10/30/2001<br>3.0<br>Soil | | | A1-SS-11<br>AB45760<br>10/30/2001<br>2.7<br>Soil | | | A1-SS-12<br>AB45761<br>10/30/2001<br>2.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | 0.4 | -- | | 2.4 | -- | | | 0.36 | J | | 0.34 | J |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| 2-Nitoaniline | mg/kg | NC | NC | NC | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | 0.4 | -- | | 2.4 | -- | | | 0.48 | J | | 0.87 | J |
| Acenaphthylene | mg/kg | NC | NC | NC | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| Anthracene | mg/kg | 10000 | 10000 | 100 | 0.4 | -- | | | 0.25 | J | | 0.44 | J | | 3.9 | |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | 0.4 | -- | | | 0.54 | J | | 0.74 | J | | 6.7 | |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | 0.4 | -- | | | 0.55 | J | | 0.84 | J | | 5 | |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | 0.4 | -- | | | 0.83 | J | | 1.1 | J | | 8.5 | |
| Benzo(g,h,I)perylene | mg/kg | NC | NC | NC | 0.4 | -- | | | 0.31 | J | | 0.35 | J | | 1.1 | J |
| Benzo(k)fluouranthene | mg/kg | 0.9 | 4 | 500 | 0.4 | -- | | | 0.38 | J | | 0.49 | J | | 3.7 | |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| Bis(2-Etheyhexyl)phthalate | mg/kg | 49 | 210 | 100 | | 0.094 | J | | 10 | | | 24 | | | 22 | |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | 0.4 | -- | | | 1.2 | J | | 5.7 | | | 1.9 | |
| Carbazole | mg/kg | NC | NC | NC | 0.4 | -- | | 2.4 | -- | | 2 | -- | | | 0.22 | J |
| Chrysene | mg/kg | 9 | 40 | 500 | 0.4 | -- | | | 0.54 | J | | 0.75 | J | | 6.1 | |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | | 0.19 | J |
| Dibenzofuran | mg/kg | NC | NC | NC | 0.4 | -- | | 2.4 | -- | | | 0.23 | J | | 0.43 | J |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.4 | -- | | 2.4 | -- | | | 0.44 | J | | 0.18 | J |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | | 0.19 | J |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | | 0.072 | JB | | 4 | B | | 8.48 | B | | 6.1 | B |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | 0.4 | -- | | | 7.5 | | | 11 | | | 16 | |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | 0.4 | -- | | | 0.85 | J | | 1 | J | | 13 | |
| Fluorene | mg/kg | 2300 | 10000 | 100 | 0.4 | -- | | 2.4 | -- | | | 0.32 | J | | 1.2 | J |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | | 0.15 | J |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| Hexachlorocyclopentadiene | mg/kg | 400 | 7300 | 100 | 0.79 | -- | | 4.8 | -- | | 3.9 | -- | | 2.8 | -- | |
| Hexachloroethane | mg/kg | 6 | 100 | 100 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | 0.4 | -- | | 2.4 | -- | | | 0.21 | J | | 1.2 | J |
| Isophorone | mg/kg | 1100 | 10000 | 50 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | | 0.38 | J |
| Naphthalene | mg/kg | 230 | 4200 | 100 | 0.4 | -- | | | 0.31 | J | | 1.2 | J | | 0.68 | J |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 0.4 | -- | | 2.4 | -- | | 2 | -- | | 1.4 | -- | |
| Phenanthrene | mg/kg | NC | NC | NC | 0.4 | -- | | | 0.73 | J | | 1.3 | J | | 9.3 | |
| Phenol | mg/kg | 10000 | 10000 | 50 | 0.4 | -- | | 2.4 | -- | | | 0.45 | J | | 0.92 | J |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 0.086 | J | | 0.88 | J | | 1.3 | J | | 14 | |
| TICs Total | mg/kg | NC | NC | NC | | 65.89 | J | | 114.4 | | | 171.3 | | | 167.4 | |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 66.142 | J | | 144.23 | | | 233.24 | | | 293.12 | |
| | | | | | | | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | 0.004 | -- | | | 0.062 | | | 0.22 | | 0.094 | -- | |
| Alpha-BHC | mg/kg | NC | NC | NC | 0.004 | -- | | | 0.16 | | | 0.088 | | 0.094 | -- | |
| Beta-BHC | mg/kg | NC | NC | NC | 0.004 | -- | | | 0.13 | | | 0.11 | | 0.094 | -- | |
| Chlordane | mg/kg | NC | NC | NC | 0.0079 | -- | | 0.095 | -- | | | 1.4 | | | 0.67 | |
| Delta-BHC | mg/kg | NC | NC | NC | 0.004 | -- | | 0.048 | -- | | 0.049 | -- | | 0.094 | -- | |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | 0.004 | -- | | 0.048 | -- | | | 0.18 | | 0.094 | -- | |
| Endosulfan I | mg/kg | NC | NC | NC | 0.004 | -- | | 0.048 | -- | | 0.049 | -- | | 0.094 | -- | |
| Endosulfan II | mg/kg | NC | NC | NC | 0.004 | -- | | 0.048 | -- | | 0.049 | -- | | 0.094 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.004 | -- | | 0.048 | -- | | 0.049 | -- | | 0.094 | -- | |
| Endrin | mg/kg | 17 | 310 | 50 | 0.004 | -- | | 0.048 | -- | | 0.049 | -- | | 0.094 | -- | |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 0.004 | -- | | 0.048 | -- | | 0.049 | -- | | 0.094 | -- | |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.004 | -- | | 0.048 | -- | | 0.049 | -- | | 0.094 | -- | |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.004 | -- | | 0.048 | -- | | 0.049 | -- | | 0.094 | -- | |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.004 | -- | | 0.048 | -- | | 0.049 | -- | | 0.094 | -- | |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.004 | -- | | 0.048 | -- | | 0.049 | -- | | 0.094 | -- | |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | 0.004 | -- | | 0.048 | -- | | 0.049 | -- | | 0.094 | -- | |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | 0.004 | -- | | | 0.21 | | 0.049 | -- | | 0.094 | -- | |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | 0.004 | -- | | | 0.085 | | | 0.11 | | | 0.22 | |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | 0.004 | -- | | | 0.23 | | | 0.62 | | | 0.34 | |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 0.04 | -- | | 0.48 | -- | | 0.49 | -- | | 0.94 | -- | |
| | | | | | | | | | | | | | | | | |
| **PCB 8082** | | | | | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 0.02 | -- | | 0.024 | -- | | 0.49 | -- | | | 0.6 | |
| Aroclor-1221 | mg/kg | NC | NC | NC | 0.02 | -- | | 0.024 | -- | | 0.49 | -- | | 0.023 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | NC | 0.02 | -- | | 0.024 | -- | | 0.49 | -- | | 0.023 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | NC | 0.02 | -- | | | 0.49 | | 0.49 | -- | | 0.023 | -- | |
| Aroclor-1248 | mg/kg | NC | NC | NC | 0.02 | -- | | 0.024 | -- | | 0.49 | -- | | 0.023 | -- | |
| Aroclor-1254 | mg/kg | NC | NC | NC | 0.02 | -- | | 0.024 | -- | | 0.49 | 6.2 | | 0.023 | -- | |
| Aroclor-1260 | mg/kg | NC | NC | NC | 0.02 | -- | | | 1.3 | | 0.49 | -- | | | 0.99 | |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | -- | | | 1.79 | | | 6.2 | | | 1.59 | |
| | | | | | | | | | | | | | | | | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 130.442 | | | 166.757 | | | 261.748 | | | 327.56 | |
| | | | | | | | | | | | | | | | | |
| **Inorganic Compounds** | | | | | | | | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | NC | | 9300 | | | 5200 | | | 6700 | | | 8400 | |
| Antimony | mg/kg | 14 | 340 | NC | 2.4 | -- | | | 118 | | | 200 | | | 110 | |
| Arsenic | mg/kg | 20 | 20 | NC | | 4.3 | | | 22 | | | 30 | | | 21 | |
| Barium | mg/kg | 700 | 47000 | NC | | 19 | | | 1300 | | | 1400 | | | 1100 | |
| Beryllium | mg/kg | 2 | 2 | NC | 0.71 | -- | | 0.86 | -- | | 0.88 | -- | | 0.85 | -- | |
| Cadmium | mg/kg | 39 | 100 | NC | 0.71 | -- | | | 49 | | | 85 | | | 59 | |
| Calcium | mg/kg | NC | NC | NC | 600 | -- | | | 24000 | | | 38000 | | | 34000 | |
| Chromium | mg/kg | 120000 | NC | NC | | 12 | | | 820 | | | 850 | | | 570 | |
| Cobalt | mg/kg | NC | NC | NC | | 5 | | | 71 | | | 75 | | | 54 | |
| Copper | mg/kg | 600 | 600 | NC | 6 | -- | | | 850 | | | 920 | | | 670 | |
| Iron | mg/kg | NC | NC | NC | | 9500 | | | 120000 | | | 240000 | | | 190000 | |

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**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A1-SS-9<br>AB45757<br>10/30/2001<br>2.5<br>Soil<br>CONC Q | | A1-SS-10<br>AB45758<br>10/30/2001<br>3.0<br>Soil<br>CONC Q | | A1-SS-11<br>AB45760<br>10/30/2001<br>2.7<br>Soil<br>CONC Q | | A1-SS-12<br>AB45761<br>10/30/2001<br>2.5<br>Soil<br>CONC Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | | MDL | | MDL | | MDL | |
| Lead | mg/kg | 400 | 600 | NC | | 7.3 | | 5400 | | 6800 | | 4100 |
| Magnesium | mg/kg | NC | NC | NC | | 610 | | 3600 | | 6700 | | 7600 |
| Manganese | mg/kg | NC | NC | NC | | 36 | | 1000 | | 1100 | | 970 |
| Mercury | mg/kg | 14 | 270 | NC | 0.17 | -- | | 2.5 | | 33 | | 5 |
| Nickel | mg/kg | 250 | 2400 | NC | | 9.5 | | 180 | | 240 | | 150 |
| Potassium | mg/kg | NC | NC | NC | 300 | -- | 360 | -- | 370 | -- | 350 | -- |
| Selenium | mg/kg | 63 | 3100 | NC | 2.4 | -- | 2.9 | -- | 2.9 | -- | 2.8 | -- |
| Silver | mg/kg | 110 | 4100 | NC | 3 | -- | 3.6 | -- | 3.7 | -- | 3.5 | -- |
| Sodium | mg/kg | NC | NC | NC | 600 | -- | 710 | -- | 740 | -- | 700 | -- |
| Thallium | mg/kg | 2 | 2 | NC | 1.4 | -- | 1.7 | -- | 1.8 | -- | 1.7 | -- |
| Vanadium | mg/kg | 370 | 7100 | NC | 12 | -- | | 68 | | 74 | | 61 |
| Zinc | mg/kg | 1500 | 1500 | NC | | 27 | | 5700 | | 6400 | | 4300 |
| | | | | | | | | | | | | |
| **Chlorinated Herbicides** | | | | | | | | | | | | |
| 2,4,5-T | mg/kg | NC | NC | NC | 0.0048 | -- | 0.0057 | -- | 0.0059 | -- | 0.0056 | -- |
| 2,4-D | mg/kg | NC | NC | NC | 0.0048 | -- | 0.0057 | -- | 0.0059 | 0.019 | 0.0056 | -- |
| Dicamba | mg/kg | NC | NC | NC | 0.0048 | -- | 0.0057 | -- | 0.0059 | -- | 0.0056 | -- |
| Silvex | mg/kg | NC | NC | NC | 0.0048 | -- | 0.0057 | -- | 0.0059 | -- | 0.0056 | -- |
| | | | | | | | | | | | | |
| % Solids | | | | | | 84 | | 70 | | 68 | | 71 |

CONC Concentration
TIC Tentatively Identified Compounds
Q Qualifier
MDL Method Detection Limit
J Estimated Value
NC No criteria established
NA Not analyzed
R data rejected by validation
-- Not Detected
***BOLD*** analyte exceedes unrestricted use soil cleanup criteria (08/04/99)
* indicates sample is a duplicate of previous sample

**Table 2**
**Area of Concern #2 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A2-SS-1<br>AB44850<br>10/18/2001<br>1.75<br>SOIL | | | A2-SS-2<br>AB44851<br>10/18/2001<br>1.0<br>SOIL | | | A2-SS-3<br>AB44852<br>10/18/2001<br>1.0<br>SOIL | | | A2-SS-4<br>AB44853<br>10/18/2001<br>1.0<br>SOIL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| **Volatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | | 0.49 | J | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| 1,1,2,2-Tetrachlororethane | mg/kg | 34 | 70 | 1 | 0.72 | -- | | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 0.72 | -- | | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 0.72 | 10 | | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 0.72 | -- | | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 0.72 | -- | | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 0.72 | -- | | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 3.6 | -- | | 4.1 | -- | | 3.1 | -- | | 30 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 2.9 | -- | | 3.3 | -- | | 2.5 | -- | | 24 | -- | |
| 4-Methyl-2-2Pentanone | mg/kg | 1000 | 1000 | 50 | 2.9 | -- | | 3.3 | -- | | 2.5 | -- | | 24 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 2.9 | -- | | 3.3 | -- | | 2.5 | -- | | 24 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | | 0.19 | | 0.16 | -- | | | 0.15 | | 1.2 | -- | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 0.72 | -- | | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 0.72 | -- | | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 0.72 | -- | | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 0.72 | -- | | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 0.72 | -- | | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | 0.72 | -- | | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| Chloroethane | mg/kg | NC | NC | NC | | 5.6 | | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 0.72 | -- | | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 0.72 | -- | | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 0.72 | -- | | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| Dibromochloromehtane | mg/kg | 110 | 1000 | 1 | 0.72 | -- | | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| Dichloroproene (cis and trans) | mg/kg | 4 | 5 | 1 | 0.72 | -- | | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | 0.14 | -- | | 0.16 | -- | | | 1.9 | | | 8.2 | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 0.72 | -- | | | 0.44 | J | | 0.38 | J | | 1.9 | J |
| Styrene | mg/kg | 23 | 97 | 100 | 0.14 | -- | | 0.16 | -- | | 0.62 | -- | | 1.2 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | | 0.31 | J | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| Toluene | mg/kg | 1000 | 1000 | 500 | | 1.3 | | 0.16 | -- | | | 6.5 | | | 460 | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 0.72 | -- | | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | | 0.16 | J | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 0.72 | -- | | 0.82 | -- | | 0.62 | -- | | 6 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | 0.29 | -- | | 0.33 | -- | | | 14.8 | | | 49 | |
| Total unknown compounds | mg/kg | NC | NC | NC | | 3.59 | J | | -- | | | 22.07 | J | | 135.4 | J |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 21.64 | J | | 0.44 | J | | 45.8 | J | | 654.5 | J |
| | | | | | | | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 1,3-Dichlororbenzene | mg/kg | 5100 | 10000 | 100 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |

**Table 2**
**Area of Concern #2 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A2-SS-1<br>AB44850<br>10/18/2001<br>1.75<br>SOIL<br>CONC | Q | MDL | A2-SS-2<br>AB44851<br>10/18/2001<br>1.0<br>SOIL<br>CONC | Q | MDL | A2-SS-3<br>AB44852<br>10/18/2001<br>1.0<br>SOIL<br>CONC | Q | MDL | A2-SS-4<br>AB44853<br>10/18/2001<br>1.0<br>SOIL<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 2-Chlorphenol | mg/kg | 280 | 5200 | 10 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 2-Nitoaniline | mg/kg | NC | NC | NC | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| Acenaphthylene | mg/kg | NC | NC | NC | | 1.2 | J | 2.3 | -- | | 8 | -- | | 40 | -- | |
| Anthracene | mg/kg | 10000 | 10000 | 100 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | | 0.58 | J | | 0.49 | J | 8 | -- | | 40 | -- | |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | | 0.57 | J | | 0.48 | J | 8 | -- | | 40 | -- | |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | | 1.3 | J | | 0.85 | J | 8 | -- | | 40 | -- | |
| Benzo(g,h,I)perylene | mg/kg | NC | NC | NC | | 5 | | | 0.53 | J | 8 | -- | | 40 | -- | |
| Benzo(k)fluouranthene | mg/kg | 0.9 | 4 | 500 | 4.8 | -- | | | 0.29 | J | 8 | -- | | 40 | -- | |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 4.8 | -- | | 2.3 | -- | | | 67 | | 40 | -- | |
| Bis(2-Ethcyhexyl)phthalate | mg/kg | 49 | 210 | 100 | 4.8 | -- | | | 14 | | | 10 | | | 460 | |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | 4.8 | -- | | | 2.7 | | 8 | -- | | | 21 | J |
| Carbazole | mg/kg | NC | NC | NC | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| Chrysene | mg/kg | 9 | 40 | 500 | | 1.7 | J | | 0.66 | J | 8 | -- | | 40 | -- | |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| Dibenzofuran | mg/kg | NC | NC | NC | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | 4.8 | -- | | | 1.8 | JB | 8 | -- | | | 23 | J |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | 4.8 | -- | | | 0.37 | J | 8 | -- | | 40 | -- | |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | 4.8 | -- | | | 0.41 | J | 8 | -- | | 40 | -- | |
| Fluorene | mg/kg | 2300 | 10000 | 100 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| Hexachlororcyclopentadiene | mg/kg | 400 | 7300 | 100 | 9.5 | -- | | 4.5 | -- | | 16 | -- | | 79 | -- | |
| Hexachlororethane | mg/kg | 6 | 100 | 100 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | | 2.2 | J | | 0.47 | J | 8 | -- | | 40 | -- | |
| Isophorone | mg/kg | 1100 | 10000 | 50 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |

**Table 2**
**Area of Concern #2 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A2-SS-1<br>AB44850<br>10/18/2001<br>1.75<br>SOIL<br>CONC | Q | MDL | A2-SS-2<br>AB44851<br>10/18/2001<br>1.0<br>SOIL<br>CONC | Q | MDL | A2-SS-3<br>AB44852<br>10/18/2001<br>1.0<br>SOIL<br>CONC | Q | MDL | A2-SS-4<br>AB44853<br>10/18/2001<br>1.0<br>SOIL<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | mg/kg | 230 | 4200 | 100 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 4.8 | -- | | 2.3 | -- | | 8 | -- | | 40 | -- | |
| Phenathrene | mg/kg | NC | NC | NC | 4.8 | -- | | | 0.33 | J | 8 | -- | | 40 | -- | |
| Phenol | mg/kg | 10000 | 10000 | 50 | 4.8 | -- | | | 3.5 | | 8 | -- | | 40 | -- | |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 3.2 | J | | 0.55 | J | 8 | -- | | 40 | -- | |
| Total Unknown Compounds | mg/kg | NC | NC | NC | | 1007 | J | | 161.2 | J | | 61 | J | | 22 | J |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 1022.75 | J | | 188.63 | J | | 138 | J | | 526 | J |
| | | | | | | | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | 0.02 | -- | | 0.0045 | -- | | | 0.13 | | | 3.5 | |
| Alpha-BHC | mg/kg | NC | NC | NC | 0.02 | -- | | 0.0045 | -- | | 0.08 | -- | | 0.4 | -- | |
| Beta-BHC | mg/kg | NC | NC | NC | 0.02 | -- | | 0.0045 | -- | | 0.08 | -- | | 0.4 | -- | |
| Chlordane | mg/kg | NC | NC | NC | 0.04 | -- | | | 0.13 | | 0.16 | -- | | 0.79 | -- | |
| Delta-BHC | mg/kg | NC | NC | NC | 0.02 | -- | | 0.0045 | -- | | 0.08 | -- | | 0.4 | -- | |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | 0.02 | -- | | 0.0045 | -- | | | 0.18 | | | 0.4 | |
| Endosulfan I | mg/kg | NC | NC | NC | 0.02 | -- | | 0.0045 | -- | | 0.08 | -- | | 0.4 | -- | |
| Endosulfan II | mg/kg | NC | NC | NC | 0.02 | -- | | 0.0045 | -- | | 0.08 | -- | | 0.4 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.02 | -- | | 0.0045 | -- | | 0.08 | -- | | 0.4 | -- | |
| Endrin | mg/kg | 17 | 310 | 50 | 0.02 | -- | | | 0.071 | | 0.08 | -- | | 0.4 | -- | |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 0.02 | -- | | 0.0045 | -- | | 0.08 | -- | | | 9.1 | |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.02 | -- | | 0.0045 | -- | | 0.08 | -- | | 0.4 | -- | |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.02 | -- | | 0.0045 | -- | | 0.08 | -- | | 0.4 | -- | |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.02 | -- | | 0.0045 | -- | | 0.08 | -- | | 0.4 | -- | |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.02 | -- | | 0.0045 | -- | | 0.08 | -- | | 0.4 | -- | |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | | 0.13 | | 0.0045 | -- | | 0.08 | -- | | 0.4 | -- | |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | | 0.049 | | 0.0045 | -- | | 0.08 | -- | | 0.4 | -- | |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | 0.02 | -- | | | 0.045 | | 0.08 | -- | | 0.4 | -- | |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | 0.02 | -- | | | 0.039 | | | 0.56 | | | 1.4 | |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 0.2 | -- | | 0.045 | -- | | 0.8 | -- | | 4 | -- | |
| | | | | | | | | | | | | | | | | |
| **PCB 8082** | | | | | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 0.099 | -- | | 0.023 | -- | | 0.4 | -- | | 2 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | NC | 0.099 | -- | | 0.023 | -- | | 0.4 | -- | | 2 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | NC | 0.099 | -- | | 0.023 | -- | | 0.4 | -- | | 2 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | NC | 0.099 | -- | | 0.023 | -- | | 0.4 | -- | | 2 | -- | |
| Aroclor-1248 | mg/kg | NC | NC | NC | 0.099 | -- | | 0.023 | -- | | 0.4 | -- | | 2 | -- | |
| Aroclor-1254 | mg/kg | NC | NC | NC | 0.099 | -- | | 0.023 | -- | | | 15 | | 2 | -- | |
| Aroclor-1260 | mg/kg | NC | NC | NC | 0.099 | -- | | 0.023 | -- | | 0.4 | -- | | | 14 | |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | -- | | | -- | | | 15 | | | 14 | |
| | | | | | | | | | | | | | | | | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 1045 | J | | 189 | J | | 200 | J | | 1209 | |
| | | | | | | | | | | | | | | | | |

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**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A2-SS-1<br>AB44850<br>10/18/2001<br>1.75<br>SOIL<br>CONC | Q | MDL | A2-SS-2<br>AB44851<br>10/18/2001<br>1.0<br>SOIL<br>CONC | Q | MDL | A2-SS-3<br>AB44852<br>10/18/2001<br>1.0<br>SOIL<br>CONC | Q | MDL | A2-SS-4<br>AB44853<br>10/18/2001<br>1.0<br>SOIL<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inorganic Compounds | | | | | | | | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | NC | | 2700 | | | 5500 | | | 9000 | | | 4900 | |
| Antimony | mg/kg | 14 | 340 | NC | | 12 | | | 46 | | | 54 | | | 53 | |
| Arsenic | mg/kg | 20 | 20 | NC | | 20 | | | 25 | | | 5.3 | | | 20 | |
| Barium | mg/kg | 700 | 47000 | NC | | 550 | | | 1100 | | | 830 | | | 1200 | |
| Beryllium | mg/kg | 2 | 2 | NC | 0.71 | -- | | 0.81 | -- | | 0.72 | -- | | 0.71 | -- | |
| Cadmium | mg/kg | 39 | 100 | NC | | 2.4 | | | 75 | | | 51 | | | 53 | |
| Calcium | mg/kg | NC | NC | NC | | 16000 | | | 21000 | | | 34000 | | | 9500 | |
| Chromium | mg/kg | 120000 | NC | NC | | 14 | | | 270 | | | 1200 | | | 910 | |
| Cobalt | mg/kg | NC | NC | NC | | 5.1 | | | 24 | | | 26 | | | 18 | |
| Copper | mg/kg | 600 | 600 | NC | | 350 | | | 620 | | | 450 | | | 1000 | |
| Iron | mg/kg | NC | NC | NC | | 20000 | | | 88000 | | | 33000 | | | 27000 | |
| Lead | mg/kg | 400 | 600 | NC | | 1300 | | | 2100 | | | 6800 | | | 4900 | |
| Magnesium | mg/kg | NC | NC | NC | | 2700 | | | 3700 | | | 5900 | | | 1900 | |
| Manganese | mg/kg | NC | NC | NC | | 220 | | | 540 | | | 350 | | | 240 | |
| Mercury | mg/kg | 14 | 270 | NC | | 1.2 | | | 11 | | | 3.1 | | | 3.3 | |
| Nickel | mg/kg | 250 | 2400 | NC | | 28 | | | 72 | | | 51 | | | 51 | |
| Potassium | mg/kg | NC | NC | NC | | 520 | | | 550 | | | 510 | | | 450 | |
| Selenium | mg/kg | 63 | 3100 | NC | 2.4 | -- | | | 3.1 | | 2.4 | -- | | | 6.7 | |
| Silver | mg/kg | 110 | 4100 | NC | 3 | -- | | | 4.8 | | 3 | -- | | 3 | -- | |
| Sodium | mg/kg | NC | NC | NC | 600 | -- | | 680 | -- | | | 840 | | 600 | -- | |
| Thallium | mg/kg | 2 | 2 | NC | 1.4 | -- | | 1.6 | -- | | 1.4 | -- | | 1.4 | -- | |
| Vanadium | mg/kg | 370 | 7100 | NC | | 16 | | | 24 | | | 76 | | | 58 | |
| Zinc | mg/kg | 1500 | 1500 | NC | | 1300 | | | 3600 | | | 1200 | | | 3200 | |
| | | | | | | | | | | | | | | | | |
| % Solids | | | | | | 84 | | | 74 | | | 83 | | | 84 | |

CONC Concentration
Q Qualifier
MDL Method Detection Limit
J Estimated Value
NC No criteria established
NA Not analyzed
R data rejected by validation
-- Not Detected
***BOLD*** analyte exceedes unrestricted use soil cleanup criteria (08/04/99)

**Table 2**
**Area of Concern #2 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A2-SS-5<br>AB44854<br>10/18/2001<br>1.0<br>SOIL<br>CONC | Q | MDL | A2-SS-6<br>AB44855<br>10/18/2001<br>1.5<br>SOIL<br>CONC | Q | MDL | A2-SS-7<br>AB44856<br>10/18/2001<br>1.0<br>SOIL<br>CONC | Q | MDL | A2-SS-8<br>AB44857<br>10/17/2001<br>2.0<br>SOIL<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 0.79 | -- | | 0.68 | -- | | 28 | -- | | 0.74 | -- | |
| 1,1,2,2-Tetrachlororethane | mg/kg | 34 | 70 | 1 | 0.79 | -- | | 0.68 | -- | | 28 | -- | | 0.74 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 0.79 | -- | | 0.68 | -- | | 28 | -- | | 0.74 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 0.79 | -- | | 0.68 | -- | | 28 | -- | | 0.74 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 0.79 | -- | | 0.68 | -- | | 28 | -- | | 0.74 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 0.79 | -- | | 0.68 | -- | | 28 | -- | | 0.74 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 0.79 | -- | | 0.68 | -- | | 28 | -- | | 0.74 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 3.9 | -- | | 3.4 | -- | | 140 | -- | | 3.7 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 3.1 | -- | | 2.7 | -- | | 110 | -- | | 3 | -- | |
| 4-Methyl-2-2Pentanone | mg/kg | 1000 | 1000 | 50 | 3.1 | -- | | 2.7 | -- | | 110 | -- | | 3 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 3.1 | -- | | 2.7 | -- | | 110 | -- | | 3 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | 0.16 | -- | | 0.14 | -- | | | 6.4 | | 0.15 | -- | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 0.79 | -- | | 0.68 | -- | | 28 | -- | | 0.74 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 0.79 | -- | | 0.68 | -- | | 28 | -- | | 0.74 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 0.79 | -- | | 0.68 | -- | | 28 | -- | | 0.74 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 0.79 | -- | | 0.68 | -- | | 28 | -- | | 0.74 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 0.79 | -- | | 0.68 | -- | | 28 | -- | | 0.74 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | 0.79 | -- | | 0.68 | -- | | | 110 | | 0.74 | -- | |
| Chloroethane | mg/kg | NC | NC | NC | 0.79 | -- | | 0.68 | -- | | 28 | -- | | 0.74 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 0.79 | -- | | 0.68 | -- | | 28 | -- | | 0.74 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 0.79 | -- | | 0.68 | -- | | 28 | -- | | 0.74 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 0.79 | -- | | 0.68 | -- | | 28 | -- | | 0.74 | -- | |
| Dibromochloromehtane | mg/kg | 110 | 1000 | 1 | 0.79 | -- | | 0.68 | -- | | 28 | -- | | 0.74 | -- | |
| Dichloroproene (cis and trans) | mg/kg | 4 | 5 | 1 | 0.79 | -- | | 0.68 | -- | | 28 | -- | | 0.74 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | 0.16 | -- | | | 0.55 | | | 95 | | 0.15 | -- | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 0.79 | -- | | | 0.3 | J | | 21 | J | 0.74 | -- | |
| Styrene | mg/kg | 23 | 97 | 100 | 0.16 | -- | | 0.14 | -- | | 5.6 | -- | | 0.15 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 0.79 | -- | | 0.68 | -- | | | 40 | | 0.74 | -- | |
| Toluene | mg/kg | 1000 | 1000 | 500 | | 0.5 | | | 2.8 | | | 320 | | 0.15 | -- | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 0.79 | -- | | 0.68 | -- | | 28 | -- | | 0.74 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 0.79 | -- | | 0.68 | -- | | | 13 | J | 0.74 | -- | |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 0.79 | -- | | 0.68 | -- | | 28 | -- | | 0.74 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | 0.16 | -- | | | 2.9 | | | 245 | | 0.15 | -- | |
| Total unknown compounds | mg/kg | NC | NC | NC | | -- | | | 4.8 | J | | 771 | J | | -- | |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 0.5 | | | 11.35 | J | | 1621.4 | J | | -- | |
| | | | | | | | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | 0.43 | -- | | 7.4 | -- | | | 0.12 | J | | 0.18 | J |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | 0.43 | -- | | 7.4 | -- | | | 6.7 | | 0.41 | -- | |
| 1,3-Dichlororbenzene | mg/kg | 5100 | 10000 | 100 | 0.43 | -- | | 7.4 | -- | | | 0.27 | J | 0.41 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | 0.43 | -- | | 7.4 | -- | | | 0.88 | | | 0.051 | J |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |

Table 2
Area of Concern #2 Soil Analytical Results

Remedial Investigation Report
Central Steel Drum
Newark, New Jersey

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A2-SS-5<br>AB44854<br>10/18/2001<br>1.0<br>SOIL<br>CONC | Q | MDL | A2-SS-6<br>AB44855<br>10/18/2001<br>1.5<br>SOIL<br>CONC | Q | MDL | A2-SS-7<br>AB44856<br>10/18/2001<br>1.0<br>SOIL<br>CONC | Q | MDL | A2-SS-8<br>AB44857<br>10/17/2001<br>2.0<br>SOIL<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 0.43 | -- | | 7.4 | -- | | | 0.37 | | 0.41 | -- | |
| 2-Chlorophenol | mg/kg | 280 | 5200 | 10 | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | 0.43 | -- | | | 2.3 | J | | 1.9 | | | 0.053 | J |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| 2-Nitoaniline | mg/kg | NC | NC | NC | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | 0.43 | -- | | 7.4 | -- | | | 0.19 | J | 0.41 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | 0.43 | -- | | | 3.2 | J | | 0.66 | | 0.41 | -- | |
| Acenaphthylene | mg/kg | NC | NC | NC | | 0.23 | J | | 3.5 | J | | 0.11 | J | | 0.1 | J |
| Anthracene | mg/kg | 10000 | 10000 | 100 | | 0.15 | J | | 6.8 | J | | 0.76 | | | 0.26 | J |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | | 1.1 | | | 8.3 | | | 0.95 | | | 3.4 | |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | | 1.2 | | | 7.4 | J | | 0.85 | | | 4 | |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | | 1.5 | | | 6.7 | J | | 1.2 | | | 5.9 | |
| Benzo(g,h,I)perylene | mg/kg | NC | NC | NC | | 1 | | | 6.6 | J | | 0.66 | | | 3.6 | |
| Benzo(k)fluouranthene | mg/kg | 0.9 | 4 | 500 | | 0.54 | | | 3.7 | J | | 0.35 | J | | 1.9 | |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| Bis(2-Etheyhexyl)phthalate | mg/kg | 49 | 210 | 100 | | 1.3 | | | 2.3 | J | | 7.3 | | | 2.8 | |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | | 0.084 | J | 7.4 | -- | | | 3 | | | 0.19 | J |
| Carbazole | mg/kg | NC | NC | NC | 0.43 | -- | | 7.4 | -- | | | 0.6 | | | 0.072 | J |
| Chrysene | mg/kg | 9 | 40 | 500 | | 1.1 | | | 14 | | | 0.91 | | | 3.9 | |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | | 0.1 | J | 7.4 | -- | | | 0.062 | J | | 0.33 | J |
| Dibenzofuran | mg/kg | NC | NC | NC | 0.43 | -- | | 7.4 | -- | | | 0.63 | | | 0.12 | J |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.43 | -- | | 7.4 | -- | | | 0.21 | J | 0.41 | -- | |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.43 | -- | | 7.4 | -- | | | 0.8 | | 0.41 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | | 0.13 | JB | 7.4 | -- | | | 2.4 | B | | 0.12 | J |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | | 0.063 | J | 7.4 | -- | | | 0.22 | J | | 0.067 | JB |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | | 1.1 | | | 12 | | | 1.9 | | | 2.9 | |
| Fluorene | mg/kg | 2300 | 10000 | 100 | 0.43 | -- | | | 4.6 | J | | 0.71 | | | 0.068 | J |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| Hexachlororcyclopentadiene | mg/kg | 400 | 7300 | 100 | 0.87 | -- | | 15 | -- | | 0.37 | -- | | 0.82 | -- | |
| Hexachlororethane | mg/kg | 6 | 100 | 100 | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | | 0.89 | | | 3.8 | J | | 0.57 | | | 3 | |
| Isophorone | mg/kg | 1100 | 10000 | 50 | 0.43 | -- | | 7.4 | -- | | | 0.44 | | | 0.07 | J |

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| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A2-SS-5<br>AB44854<br>10/18/2001<br>1.0<br>SOIL | | | A2-SS-6<br>AB44855<br>10/18/2001<br>1.5<br>SOIL | | | A2-SS-7<br>AB44856<br>10/18/2001<br>1.0<br>SOIL | | | A2-SS-8<br>AB44857<br>10/17/2001<br>2.0<br>SOIL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| Naphthalene | mg/kg | 230 | 4200 | 100 | | 0.083 | J | | 1.6 | J | | 1 | | | 0.44 | |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 0.43 | -- | | 7.4 | -- | | 0.37 | -- | | 0.41 | -- | |
| Phenanthrene | mg/kg | NC | NC | NC | | 0.37 | J | | 15 | | | 2.4 | | | 1.1 | |
| Phenol | mg/kg | 10000 | 10000 | 50 | 0.43 | -- | | 7.4 | -- | | | 0.49 | | | 0.091 | J |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 1.1 | | | 38 | | | 1.5 | | | 3.2 | |
| Total Unknown Compounds | mg/kg | NC | NC | NC | | 91.05 | J | | 847 | J | | 23.22 | J | | 207.33 | J |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 103.09 | J | | 986.8 | J | | 64.332 | J | | 245.242 | J |
| | | | | | | | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | 0.022 | -- | | 0.019 | -- | | 0.018 | -- | | 0.0041 | -- | |
| Alpha-BHC | mg/kg | NC | NC | NC | 0.022 | -- | | 0.019 | -- | | 0.018 | -- | | 0.0041 | -- | |
| Beta-BHC | mg/kg | NC | NC | NC | | 0.21 | | | 0.17 | | 0.018 | -- | | 0.0041 | -- | |
| Chlordane | mg/kg | NC | NC | NC | | 0.32 | | 0.037 | -- | | | 0.22 | | 0.0082 | -- | |
| Delta-BHC | mg/kg | NC | NC | NC | 0.022 | -- | | 0.019 | -- | | 0.018 | -- | | 0.0041 | -- | |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | 0.022 | -- | | 0.019 | -- | | 0.018 | -- | | | 0.0083 | |
| Endosulfan I | mg/kg | NC | NC | NC | 0.022 | -- | | 0.019 | -- | | 0.018 | -- | | 0.0041 | -- | |
| Endosulfan II | mg/kg | NC | NC | NC | 0.022 | -- | | 0.019 | -- | | 0.018 | -- | | 0.0041 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.022 | -- | | 0.019 | -- | | 0.018 | -- | | 0.0041 | -- | |
| Endrin | mg/kg | 17 | 310 | 50 | 0.022 | -- | | 0.019 | -- | | 0.018 | -- | | 0.0041 | -- | |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 0.022 | -- | | 0.019 | -- | | 0.018 | -- | | | 0.0093 | |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.022 | -- | | 0.019 | -- | | 0.018 | -- | | | 0.031 | |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.022 | -- | | 0.019 | -- | | | 0.043 | | 0.0041 | -- | |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.022 | -- | | 0.019 | -- | | 0.018 | -- | | 0.0041 | -- | |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.022 | -- | | 0.019 | -- | | 0.018 | -- | | 0.0041 | -- | |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | 0.022 | -- | | 0.019 | -- | | 0.018 | -- | | 0.0041 | -- | |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | | 0.11 | | | 0.24 | | 0.018 | -- | | | 0.047 | |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | | 0.058 | | | 0.22 | | | 0.073 | | | 0.03 | |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | | 0.093 | | 0.019 | -- | | | 0.2 | | | 0.061 | |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 0.22 | -- | | 0.19 | -- | | 0.18 | -- | | 0.041 | -- | |
| | | | | | | | | | | | | | | | | |
| **PCB 8082** | | | | | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.19 | -- | | | 0.51 | | 0.021 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.19 | -- | | 0.018 | -- | | 0.021 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.19 | -- | | 0.018 | -- | | 0.021 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.19 | -- | | 0.018 | -- | | 0.021 | -- | |
| Aroclor-1248 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.19 | -- | | 0.018 | -- | | 0.021 | -- | |
| Aroclor-1254 | mg/kg | NC | NC | NC | | 0.91 | | 0.19 | -- | | | 0.82 | | 0.021 | -- | |
| Aroclor-1260 | mg/kg | NC | NC | NC | 0.022 | -- | | | 2 | | 0.018 | -- | | 0.021 | -- | |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | 0.91 | | | 2 | | | 1.33 | | | -- | |
| | | | | | | | | | | | | | | | | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 105 | | | 1001 | J | | 1688 | J | | 245 | J |
| | | | | | | | | | | | | | | | | |

**Table 2**
**Area of Concern #2 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A2-SS-5<br>AB44854<br>10/18/2001<br>1.0<br>SOIL<br>CONC | Q | MDL | A2-SS-6<br>AB44855<br>10/18/2001<br>1.5<br>SOIL<br>CONC | Q | MDL | A2-SS-7<br>AB44856<br>10/18/2001<br>1.0<br>SOIL<br>CONC | Q | MDL | A2-SS-8<br>AB44857<br>10/17/2001<br>2.0<br>SOIL<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inorganic Compounds** | | | | | | | | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | NC | | 8800 | | | 3300 | | | 14000 | | | 4600 | |
| Antimony | mg/kg | 14 | 340 | NC | | 29 | | | 7.2 | | | 48 | | | 18 | |
| Arsenic | mg/kg | 20 | 20 | NC | | 10 | | | 5.3 | | | 8.2 | | | 26 | |
| Barium | mg/kg | 700 | 47000 | NC | | 510 | | | 180 | | | 490 | | | 780 | |
| Beryllium | mg/kg | 2 | 2 | NC | 0.78 | -- | | 0.67 | -- | | 0.66 | -- | | 0.74 | -- | |
| Cadmium | mg/kg | 39 | 100 | NC | | 5.6 | | | 6.6 | | | 18 | | | 4.1 | |
| Calcium | mg/kg | NC | NC | NC | | 32000 | | | 6400 | | | 12000 | | | 12000 | |
| Chromium | mg/kg | 120000 | NC | NC | | 2100 | | | 320 | | | 540 | | | 110 | |
| Cobalt | mg/kg | NC | NC | NC | | 53 | | | 11 | | | 61 | | | 12 | |
| Copper | mg/kg | 600 | 600 | NC | | 220 | | | 66 | | | 350 | | | 610 | |
| Iron | mg/kg | NC | NC | NC | | 72000 | | | 12000 | | | 48000 | | | 36000 | |
| Lead | mg/kg | 400 | 600 | NC | | 4100 | | | 560 | | | 2500 | | | 1800 | |
| Magnesium | mg/kg | NC | NC | NC | | 20000 | | | 2600 | | | 11000 | | | 2300 | |
| Manganese | mg/kg | NC | NC | NC | | 500 | | | 75 | | | 520 | | | 330 | |
| Mercury | mg/kg | 14 | 270 | NC | | 1 | | | 2.8 | | | 15 | | | 2.5 | |
| Nickel | mg/kg | 250 | 2400 | NC | | 190 | | | 39 | | | 150 | | | 42 | |
| Potassium | mg/kg | NC | NC | NC | 320 | -- | | | 280 | | | 630 | | | 440 | |
| Selenium | mg/kg | 63 | 3100 | NC | 2.6 | -- | | 2.2 | -- | | 2.2 | -- | | | 2.7 | |
| Silver | mg/kg | 110 | 4100 | NC | 3.2 | -- | | 2.8 | -- | | 2.7 | -- | | | 3.4 | |
| Sodium | mg/kg | NC | NC | NC | 650 | -- | | 560 | -- | | | 4600 | | 620 | -- | |
| Thallium | mg/kg | 2 | 2 | NC | 1.6 | -- | | 1.3 | -- | | 1.3 | -- | | 1.5 | -- | |
| Vanadium | mg/kg | 370 | 7100 | NC | | 380 | | | 79 | | | 64 | | | 54 | |
| Zinc | mg/kg | 1500 | 1500 | NC | | 640 | | | 270 | | | 990 | | | 1400 | |
| | | | | | | | | | | | | | | | | |
| % Solids | | | | | | 77 | | | 90 | | | 91 | | | 81 | |

CONC Concentration
Q Qualifier
MDL Method Detection Limit
J Estimated Value
NC No criteria established
NA Not analyzed
R data rejected by validation
-- Not Detected
***BOLD*** analyte exceedes unrestricted use soil cleanup criteria (08/04/99)

**Table 2**
**Area of Concern #2 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A2-SS-9<br>AB44858<br>10/18/2001<br>1.0<br>SOIL | | | A2-SS-10<br>AB44859<br>10/17/2001<br>2.3<br>SOIL | | | A2-SS-11<br>AB44860<br>10/18/2001<br>1.0<br>SOIL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| **Volatile Organic Compounds** | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 0.9 | -- | | 0.74 | -- | | 9.4 | -- | |
| 1,1,2,2-Tetrachlororethane | mg/kg | 34 | 70 | 1 | 0.9 | -- | | 0.74 | -- | | 9.4 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 0.9 | -- | | 0.74 | -- | | 9.4 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 0.9 | -- | | 0.74 | -- | | 9.4 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 0.9 | -- | | 0.74 | -- | | 9.4 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 0.9 | -- | | 0.74 | -- | | 9.4 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 0.9 | -- | | 0.74 | -- | | 9.4 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 4.5 | -- | | 3.7 | -- | | 47 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 3.6 | -- | | 3 | -- | | 38 | -- | |
| 4-Methyl-2-2Pentanone | mg/kg | 1000 | 1000 | 50 | 3.6 | -- | | 3 | -- | | 38 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 3.6 | -- | | 3 | -- | | 38 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | 0.18 | -- | | 0.15 | -- | | 1.9 | -- | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 0.9 | -- | | 0.74 | -- | | 9.4 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 0.9 | -- | | 0.74 | -- | | 9.4 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 0.9 | -- | | 0.74 | -- | | 9.4 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 0.9 | -- | | 0.74 | -- | | 9.4 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 0.9 | -- | | 0.74 | -- | | 9.4 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | | 2.2 | | 0.74 | -- | | | 31 | |
| Chloroethane | mg/kg | NC | NC | NC | 0.9 | -- | | 0.74 | -- | | 9.4 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 0.9 | -- | | 0.74 | -- | | 9.4 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 0.9 | -- | | 0.74 | -- | | 9.4 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 0.9 | -- | | 0.74 | -- | | | 3.3 | J |
| Dibromochloromehtane | mg/kg | 110 | 1000 | 1 | 0.9 | -- | | 0.74 | -- | | 9.4 | -- | |
| Dichloroproene (cis and trans) | mg/kg | 4 | 5 | 1 | 0.9 | -- | | 0.74 | -- | | 9.4 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | 0.18 | -- | | 0.15 | -- | | | 250 | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 0.9 | -- | | 0.74 | -- | | 9.4 | -- | |
| Styrene | mg/kg | 23 | 97 | 100 | 0.18 | -- | | 0.15 | -- | | 1.9 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 0.9 | -- | | 0.74 | -- | | | 2.7 | J |
| Toluene | mg/kg | 1000 | 1000 | 500 | 0.18 | -- | | 0.15 | -- | | | 180 | J |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 0.9 | -- | | 0.74 | -- | | 9.4 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 0.9 | -- | | 0.74 | -- | | | 1.9 | J |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 0.9 | -- | | 0.74 | -- | | 9.4 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | 0.18 | -- | | 0.15 | -- | | | 720 | |
| Total unknown compounds | mg/kg | NC | NC | NC | | 25.2 | J | | 2.58 | J | | 379 | J |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 27.4 | J | | 2.58 | J | | 1567.9 | J |
| | | | | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | 0.45 | -- | | 0.43 | -- | | | 0.44 | J |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | | 0.15 | J | 0.43 | -- | | | 0.14 | J |
| 1,3-Dichlororbenzene | mg/kg | 5100 | 10000 | 100 | | 0.18 | J | 0.43 | -- | | 0.84 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |

**Table 2**
**Area of Concern #2 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A2-SS-9<br>AB44858<br>10/18/2001<br>1.0<br>SOIL | | | A2-SS-10<br>AB44859<br>10/17/2001<br>2.3<br>SOIL | | | A2-SS-11<br>AB44860<br>10/18/2001<br>1.0<br>SOIL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| 2-Chlorphenol | mg/kg | 280 | 5200 | 10 | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | 0.45 | -- | | 0.43 | -- | | | 0.36 | J |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| 2-Nitoaniline | mg/kg | NC | NC | NC | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| Acenaphthylene | mg/kg | NC | NC | NC | 0.45 | -- | | | 0.055 | J | 0.84 | -- | |
| Anthracene | mg/kg | 10000 | 10000 | 100 | | 0.083 | J | | 0.054 | J | | 0.22 | J |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | | 1.4 | | | 0.052 | | | 0.29 | J |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | | 1.5 | | | 1.3 | | | 0.88 | |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | | 2.7 | | | 1.4 | | | 1.5 | |
| Benzo(g,h,I)perylene | mg/kg | NC | NC | NC | | 1.7 | | | 1.3 | | | 0.92 | |
| Benzo(k)fluouranthene | mg/kg | 0.9 | 4 | 500 | | 0.75 | | | 0.052 | | | 0.32 | J |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| Bis(2-Etheyhexyl)phthalate | mg/kg | 49 | 210 | 100 | | 3.9 | | | 0.13 | J | | 8.5 | |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | | 0.56 | | 0.43 | -- | | | 1.5 | |
| Carbazole | mg/kg | NC | NC | NC | 0.45 | -- | | 0.43 | -- | | | 0.088 | J |
| Chrysene | mg/kg | 9 | 40 | 500 | | 1.8 | | | 0.69 | | | 0.4 | J |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | | 0.16 | J | | 0.13 | J | 0.84 | -- | |
| Dibenzofuran | mg/kg | NC | NC | NC | | 0.074 | J | 0.43 | -- | | 0.84 | -- | |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | | 0.76 | B | | 0.072 | J | | 1.2 | B |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | | 0.39 | J | 0.43 | -- | | | 0.17 | J |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | | 1.8 | | | 0.3 | J | | 0.56 | J |
| Fluorene | mg/kg | 2300 | 10000 | 100 | | 0.079 | J | 0.43 | -- | | 0.84 | -- | |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | | 0.079 | J | 0.43 | -- | | 0.84 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| Hexachlororcyclopentadiene | mg/kg | 400 | 7300 | 100 | 0.9 | -- | | 0.85 | -- | | 1.7 | -- | |
| Hexachlororethane | mg/kg | 6 | 100 | 100 | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | | 1.5 | | | 1.1 | | | 0.78 | J |
| Isophorone | mg/kg | 1100 | 10000 | 50 | 0.45 | -- | | 0.43 | -- | | | 4.4 | |

**Table 2**
**Area of Concern #2 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A2-SS-9<br>AB44858<br>10/18/2001<br>1.0<br>SOIL<br>CONC | Q | MDL | A2-SS-10<br>AB44859<br>10/17/2001<br>2.3<br>SOIL<br>CONC | Q | MDL | A2-SS-11<br>AB44860<br>10/18/2001<br>1.0<br>SOIL<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | mg/kg | 230 | 4200 | 100 | 0.45 | -- | | | 0.053 | J | | 0.57 | J |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | | | | 0.43 | -- | | 0.84 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 0.45 | -- | | 0.43 | -- | | 0.84 | -- | |
| Phenathrene | mg/kg | NC | NC | NC | | 0.78 | | | 0.16 | J | | 0.42 | J |
| Phenol | mg/kg | 10000 | 10000 | 50 | | 0.063 | J | 0.43 | -- | | | 0.63 | J |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 1.5 | | | 0.36 | J | | 0.62 | J |
| Total Unknown Compounds | mg/kg | NC | NC | NC | | 93.05 | J | | 218.24 | J | | 143.9 | J |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 114.958 | J | | 225.448 | J | | 168.808 | J |
| | | | | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | | 38 | | 0.0043 | -- | | 2.1 | -- | |
| Alpha-BHC | mg/kg | NC | NC | NC | 2.3 | -- | | 0.0043 | -- | | 2.1 | -- | |
| Beta-BHC | mg/kg | NC | NC | NC | | 3.3 | | 0.0043 | -- | | 2.1 | -- | |
| Chlordane | mg/kg | NC | NC | NC | | 55 | | 0.0085 | -- | | 4.2 | -- | |
| Delta-BHC | mg/kg | NC | NC | NC | 2.3 | -- | | 0.0043 | -- | | 2.1 | -- | |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | | 14 | | 0.0043 | -- | | | 17 | |
| Endosulfan I | mg/kg | NC | NC | NC | 2.3 | -- | | 0.0043 | -- | | 2.1 | -- | |
| Endosulfan II | mg/kg | NC | NC | NC | 2.3 | -- | | 0.0043 | -- | | 2.1 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 2.3 | -- | | 0.0043 | -- | | 2.1 | -- | |
| Endrin | mg/kg | 17 | 310 | 50 | 2.3 | -- | | 0.0043 | -- | | 2.1 | -- | |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 2.3 | -- | | 0.0043 | -- | | 2.1 | -- | |
| Endrin Ketone | mg/kg | NC | NC | NC | 2.3 | -- | | 0.0043 | -- | | 2.1 | -- | |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 2.3 | -- | | 0.0043 | -- | | 2.1 | -- | |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 2.3 | -- | | 0.0043 | -- | | 2.1 | -- | |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 2.3 | -- | | 0.0043 | -- | | 2.1 | -- | |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | 2.3 | -- | | 0.0043 | -- | | 2.1 | -- | |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | | 13 | | 0.0043 | -- | | | 28 | |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | 2.3 | -- | | 0.0043 | -- | | | 5.4 | |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | | 12 | | 0.0043 | -- | | | 41 | |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 23 | -- | | 0.043 | -- | | 21 | -- | |
| | | | | | | | | | | | | | |
| **PCB 8082** | | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 11 | -- | | 0.021 | -- | | 42 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | NC | 11 | -- | | 0.021 | -- | | 42 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | NC | 11 | -- | | 0.021 | -- | | 42 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | NC | 11 | -- | | 0.021 | -- | | 42 | -- | |
| Aroclor-1248 | mg/kg | NC | NC | NC | 11 | -- | | 0.021 | -- | | 42 | -- | |
| Aroclor-1254 | mg/kg | NC | NC | NC | | 30 | | 0.021 | -- | | | 150 | |
| Aroclor-1260 | mg/kg | NC | NC | NC | 11 | | | 0.021 | -- | | 42 | -- | |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | 30 | | | -- | | | 150 | |
| | | | | | | | | | | | | | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 308 | J | | 228 | J | | 1978 | J |
| | | | | | | | | | | | | | |

Table 2
Area of Concern #2 Soil Analytical Results

Remedial Investigation Report
Central Steel Drum
Newark, New Jersey

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A2-SS-9<br>AB44858<br>10/18/2001<br>1.0<br>SOIL<br>CONC | Q | MDL | A2-SS-10<br>AB44859<br>10/17/2001<br>2.3<br>SOIL<br>CONC | Q | MDL | A2-SS-11<br>AB44860<br>10/18/2001<br>1.0<br>SOIL<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inorganic Compounds** | | | | | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | NC | | 4500 | | | 3000 | | | 7500 | |
| Antimony | mg/kg | 14 | 340 | NC | | 35 | | | 14 | | | 45 | |
| Arsenic | mg/kg | 20 | 20 | NC | | 28 | | | 40 | | | 16 | |
| Barium | mg/kg | 700 | 47000 | NC | | 610 | | | 580 | | | 970 | |
| Beryllium | mg/kg | 2 | 2 | NC | 0.081 | -- | | 0.77 | -- | | 0.76 | -- | |
| Cadmium | mg/kg | 39 | 100 | NC | | 15 | | | 2.2 | | | 48 | |
| Calcium | mg/kg | NC | NC | NC | | 4700 | | | 8500 | | | 24000 | |
| Chromium | mg/kg | 120000 | NC | NC | | 150 | | | 15 | | | 570 | |
| Cobalt | mg/kg | NC | NC | NC | | 10 | | | 12 | | | 35 | |
| Copper | mg/kg | 600 | 600 | NC | | 290 | | | 460 | | | 530 | |
| Iron | mg/kg | NC | NC | NC | | 38000 | | | 63000 | | | 120000 | |
| Lead | mg/kg | 400 | 600 | NC | | 1700 | | | 1500 | | | 2300 | |
| Magnesium | mg/kg | NC | NC | NC | | 1100 | | | 890 | | | 5600 | |
| Manganese | mg/kg | NC | NC | NC | | 240 | | | 300 | | | 880 | |
| Mercury | mg/kg | 14 | 270 | NC | | 2.3 | | | 3.7 | | | 2.7 | |
| Nickel | mg/kg | 250 | 2400 | NC | | 29 | | | 30 | | | 180 | |
| Potassium | mg/kg | NC | NC | NC | | 420 | | | 450 | | | 320 | |
| Selenium | mg/kg | 63 | 3100 | NC | | 3.1 | | 2.6 | -- | | 2.5 | -- | |
| Silver | mg/kg | 110 | 4100 | NC | 3.4 | -- | | 3.2 | -- | | 3.2 | -- | |
| Sodium | mg/kg | NC | NC | NC | 680 | -- | | 640 | -- | | | 670 | |
| Thallium | mg/kg | 2 | 2 | NC | 1.6 | -- | | 1.5 | -- | | 1.5 | -- | |
| Vanadium | mg/kg | 370 | 7100 | NC | | 30 | | | 20 | | | 56 | |
| Zinc | mg/kg | 1500 | 1500 | NC | | 1700 | | | 1600 | | | 1700 | |
| | | | | | | | | | | | | | |
| % Solids | | | | | | 74 | | | 78 | | | 79 | |

CONC Concentration
Q Qualifier
MDL Method Detection Limit
J Estimated Value
NC No criteria established
NA Not analyzed
R data rejected by validation
-- Not Detected
***BOLD*** analyte exceedes unrestricted use soil cleanup criteria (08/04/99)

**Table 3**
**Area of Concern #3 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A3-SS-4<br>AB44836<br>10/17/2001<br>2.0<br>Soil | | | A3-SS-6<br>AB44837<br>10/17/2001<br>2.0<br>Soil | | | A3-SS-7<br>AB44838<br>10/17/2001<br>1.0<br>Soil | | | A3-SS-10<br>AB44839<br>10/17/2001<br>1.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| **Volatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| 1,1,2,2-Tetrachlororethane | mg/kg | 34 | 70 | 1 | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 4.0 | -- | | 96 | -- | | 34 | -- | | 360 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 3.2 | -- | | 77 | -- | | 27 | -- | | 280 | -- | |
| 4-Methyl-2-2Pentanone | mg/kg | 1000 | 1000 | 50 | 3.2 | -- | | 77 | -- | | 27 | -- | | 2.8 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 3.2 | -- | | 77 | -- | | 27 | -- | | 280 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | | 8.5 | | | 7.8 | | 1.4 | -- | | 14 | -- | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | 0.81 | -- | | | 7.3 | J | | 19 | | | 24 | J |
| Chloroethane | mg/kg | NC | NC | NC | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| Dibromochloromethane | mg/kg | 110 | 1000 | 1 | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | | 2.8 | | | 220 | | | 29 | | | 1100 | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| Styrene | mg/kg | 23 | 97 | 100 | 0.16 | -- | | 3.8 | -- | | 1.4 | -- | | 14 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 0.81 | -- | | 19 | -- | | 6.8 | -- | | | 17 | J |
| Toluene | mg/kg | 1000 | 1000 | 500 | | 0.34 | | | 320 | | | 13 | | | 2000 | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 0.81 | -- | | 19 | -- | | 6.8 | -- | | 71 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | | 7.28 | | | 1660 | | | 205 | | | 5600 | |
| TICs Total | mg/kg | NC | NC | NC | | 73.40 | J | | 1315.0 | | | 516 | J | | 3760 | J |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 92.32 | | | 3530.1 | | | 782 | | | 12501 | J |
| | | | | | | | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | | 0.21 | J | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | | 0.23 | J | 9.0 | -- | J | 4.4 | -- | | | 41 | J |
| 1,3-Dichlororbenzene | mg/kg | 5100 | 10000 | 100 | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | 0.44 | -- | | | 1.5 | J | 4.4 | -- | | 120 | -- | |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 2,4-Dichlorophenol | mg/kg | 170 | 3100 | 10 | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |

**Table 3**
**Area of Concern #3 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A3-SS-4<br>AB44836<br>10/17/2001<br>2.0<br>Soil | | | A3-SS-6<br>AB44837<br>10/17/2001<br>2.0<br>Soil | | | A3-SS-7<br>AB44838<br>10/17/2001<br>1.0<br>Soil | | | A3-SS-10<br>AB44839<br>10/17/2001<br>1.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 2-Chlorphenol | mg/kg | 280 | 5200 | 10 | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | | 0.20 | J | | 2.6 | J | 4.4 | -- | | | 28 | J |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | | 0.22 | J | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 2-Nitroaniline | mg/kg | NC | NC | NC | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | | 0.10 | J | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | | 0.070 | J | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| Acenaphthylene | mg/kg | NC | NC | NC | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| Anthracene | mg/kg | 10000 | 10000 | 100 | | 0.068 | J | 9.0 | -- | | | 0.52 | J | 120 | -- | |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | | 0.29 | J | | 1.7 | J | | 2.4 | J | 120 | -- | |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | | 0.36 | J | | 1.6 | J | | 2.6 | J | 120 | -- | |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | | 0.46 | | | 2.6 | J | | 3.5 | J | | 14 | J |
| Benzo(g,h,I)perylene | mg/kg | NC | NC | NC | | 0.30 | J | | 1.2 | J | | 2.1 | J | 120 | -- | |
| Benzo(k)fluoranthene | mg/kg | 0.9 | 4 | 500 | | 0.14 | J | 9.0 | -- | | | 1.1 | J | 120 | -- | |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| Bis(2-Ethcyhexyl)phthalate | mg/kg | 49 | 210 | 100 | | 5.20 | | | 83 | | | 56 | | | 1200 | |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | | 0.47 | | | 2.5 | J | | 3.3 | J | | 14 | J |
| Carbazole | mg/kg | NC | NC | NC | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| Chrysene | mg/kg | 9 | 40 | 500 | 0.44 | 0.33 | J | | 1.9 | J | | 2.3 | J | 120 | -- | |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | 0.44 | -- | | 9.0 | -- | J | 4.4 | -- | | 120 | -- | |
| Dibenzofuran | mg/kg | NC | NC | NC | | 0.065 | J | 9.0 | | | 4.4 | -- | | 120 | -- | |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | | 0.084 | J | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | | 0.76 | | | 1.2 | J | | 1.9 | J | | 15 | J |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | | 0.11 | JB | | 4.2 | JB | | 1.2 | JB | | 26 | JB |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | | 0.48 | | | 3.1 | J | | 3.2 | J | | 29 | J |
| Fluorene | mg/kg | 2300 | 10000 | 100 | | 0.071 | J | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| Hexachlorocyclopentadiene | mg/kg | 400 | 7300 | 100 | 0.88 | -- | | 18.0 | -- | | 8.9 | -- | | 240 | -- | |

**Table 3**
**Area of Concern #3 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A3-SS-4<br>AB44836<br>10/17/2001<br>2.0<br>Soil | | | A3-SS-6<br>AB44837<br>10/17/2001<br>2.0<br>Soil | | | A3-SS-7<br>AB44838<br>10/17/2001<br>1.0<br>Soil | | | A3-SS-10<br>AB44839<br>10/17/2001<br>1.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| Hexachloroethane | mg/kg | 6 | 100 | 100 | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | | 0.25 | J | | 0.98 | J | | 1.8 | J | 120 | -- | |
| Isophorone | mg/kg | 1100 | 10000 | 50 | 0.44 | -- | | 9.0 | -- | | | 8.9 | | 120 | -- | |
| Naphthalene | mg/kg | 230 | 4200 | 100 | | 0.92 | | | 2.3 | J | | 1 | J | | 120 | |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 0.44 | -- | | 9.0 | -- | | 4.4 | -- | | 120 | -- | |
| Phenanthrene | mg/kg | NC | NC | NC | | 0.35 | J | | 2.4 | J | | 1.5 | J | | 21 | J |
| Phenol | mg/kg | 10000 | 10000 | 50 | | 0.14 | J | 9.0 | -- | | | 3.7 | J | 120 | -- | |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 0.46 | | | 2.9 | J | | 3.3 | J | | 21 | J |
| TICs Total | mg/kg | NC | NC | NC | | 173.60 | | | 722.2 | J | | 273.6 | J | | 7259 | J |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 185.94 | | | 837.88 | | | 373.92 | J | | 8788 | |
| | | | | | | | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | 0.0044 | -- | | 0.45 | -- | | 0.44 | -- | | 0.40 | -- | |
| Alpha-BHC | mg/kg | NC | NC | NC | | 0.015 | | 0.45 | -- | | 0.44 | -- | | 0.40 | -- | |
| Beta-BHC | mg/kg | NC | NC | NC | | 0.014 | | 0.45 | -- | | 0.44 | -- | | 0.40 | -- | |
| Chlordane | mg/kg | NC | NC | NC | | 0.046 | | 0.90 | -- | | | 3.9 | | | 4.4 | |
| Delta-BHC | mg/kg | NC | NC | NC | 0.0044 | -- | | 0.45 | -- | | 0.44 | -- | | 0.40 | -- | |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | 0.0044 | -- | | 0.45 | -- | | 0.44 | -- | | 0.40 | -- | |
| Endosulfan I | mg/kg | NC | NC | NC | 0.0044 | -- | | 0.45 | -- | | 0.44 | -- | | 0.40 | -- | |
| Endosulfan II | mg/kg | NC | NC | NC | 0.0044 | -- | | 0.45 | -- | | 0.44 | -- | | 0.40 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.0044 | -- | | 0.45 | -- | | 0.44 | -- | | 0.40 | -- | |
| Endrin | mg/kg | 17 | 310 | 50 | 0.0044 | -- | | 0.45 | -- | | 0.44 | -- | | 0.40 | -- | |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 0.0044 | -- | | 0.45 | -- | | 0.44 | -- | | 0.40 | -- | |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.0044 | -- | | 0.45 | -- | | 0.44 | -- | | 0.40 | -- | |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.0044 | -- | | 0.45 | -- | | 0.44 | -- | | 0.40 | -- | |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.0044 | -- | | 0.45 | -- | | 0.44 | -- | | 0.40 | -- | |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.0044 | -- | | 0.45 | -- | | 0.44 | -- | | 0.40 | -- | |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | 0.0044 | -- | | 0.45 | -- | | 0.44 | -- | | 0.40 | -- | |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | | 0.083 | | | 1.2 | | 0.44 | -- | | 0.40 | -- | |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | | 0.062 | | 0.45 | -- | | 0.44 | -- | | | 1.0 | |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | | 0.11 | | | 2.4 | | 0.44 | 4.3 | | | 7.3 | |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 0.044 | -- | | 4.5 | -- | | 4.4 | -- | | 4.0 | -- | |
| | | | | | | | | | | | | | | | | |
| **PCB 8082** | | | | | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 0.022 | -- | | | 3.1 | | 2.2 | -- | | | 11 | |
| Aroclor-1221 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.45 | -- | | 2.2 | -- | | 1.0 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.45 | -- | | 2.2 | -- | | 1.0 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.45 | -- | | 2.2 | -- | | 1.0 | -- | |
| Aroclor-1248 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.45 | -- | | 2.2 | -- | | 1.0 | -- | |
| Aroclor-1254 | mg/kg | NC | NC | NC | | 0.87 | | | 15 | | 2.2 | -- | | | 40 | |
| Aroclor-1260 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.45 | -- | | | 26 | | 1.0 | -- | |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | 0.87 | | | 18.1 | | | 26 | | | 51 | |
| | | | | | | | | | | | | | | | | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 279 | J | | 4390 | | | 1190 | | | 21353 | |
| | | | | | | | | | | | | | | | | |

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**Area of Concern #3 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A3-SS-4<br>AB44836<br>10/17/2001<br>2.0<br>Soil | | | A3-SS-6<br>AB44837<br>10/17/2001<br>2.0<br>Soil | | | A3-SS-7<br>AB44838<br>10/17/2001<br>1.0<br>Soil | | | A3-SS-10<br>AB44839<br>10/17/2001<br>1.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| **Inorganic Compounds** | | | | | | | | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | NC | | 6400 | | | 2700 | | | 4300 | | | 6700 | |
| Antimony | mg/kg | 14 | 340 | NC | | 71 | | | 32 | | | 51 | | | 150 | |
| Arsenic | mg/kg | 20 | 20 | NC | | 25 | | | 130 | | | 31 | | | 37 | |
| Barium | mg/kg | 700 | 47000 | NC | | 1300 | | | 350 | | | 1300 | | | 2400 | |
| Beryllium | mg/kg | 2 | 2 | NC | 0.79 | -- | | 0.81 | -- | | 0.8 | -- | | 0.72 | -- | |
| Cadmium | mg/kg | 39 | 100 | NC | | 80 | | | 7.9 | | | 21 | | | 110 | |
| Calcium | mg/kg | NC | NC | NC | | 39000 | | | 11000 | | | 16000 | | | 34000 | |
| Chromium | mg/kg | 120000 | NC | NC | | 490 | | | 22 | | | 320 | | | 730 | |
| Cobalt | mg/kg | NC | NC | NC | | 72 | | | 15 | | | 27 | | | 48 | |
| Copper | mg/kg | 600 | 600 | NC | | 1100 | | | 3200 | | | 830 | | | 880 | |
| Iron | mg/kg | NC | NC | NC | | 250000 | | | 160000 | | | 83000 | | | 170000 | |
| Lead | mg/kg | 400 | 600 | NC | | 6000 | | | 10000 | | | 7800 | | | 8500 | |
| Magnesium | mg/kg | NC | NC | NC | | 6700 | | | 730 | | | 2500 | | | 11000 | |
| Manganese | mg/kg | NC | NC | NC | | 1500 | | | 830 | | | 510 | | | 860 | |
| Mercury | mg/kg | 14 | 270 | NC | | 0.62 | | | 4.3 | | | 11 | | | 21 | |
| Nickel | mg/kg | 250 | 2400 | NC | | 240 | | | 31 | | | 58 | | | 230 | |
| Potassium | mg/kg | NC | NC | NC | 330 | -- | | 340 | -- | | | 540 | | | 540 | |
| Selenium | mg/kg | 63 | 3100 | NC | 2.6 | -- | | 2.7 | -- | | 2.7 | -- | | 2.4 | -- | |
| Silver | mg/kg | 110 | 4100 | NC | | 18 | | | 26 | | 3.3 | -- | | 3 | -- | |
| Sodium | mg/kg | NC | NC | NC | 660 | -- | | 680 | -- | | 670 | -- | | | 700 | |
| Thallium | mg/kg | 2 | 2 | NC | 1.6 | -- | | 1.6 | -- | | 1.6 | -- | | 1.4 | -- | |
| Vanadium | mg/kg | 370 | 7100 | NC | | 54 | | | 25 | | | 51 | | | 65 | |
| Zinc | mg/kg | 1500 | 1500 | NC | | 7900 | | | 1100 | | | 3800 | | | 8100 | |
| | | | | | | | | | | | | | | | | |
| % Solids | percent | NC | NC | NC | | 76 | | | 74 | | | 75 | | | 83 | |

NOTE: Samples from borings SS-1, 2, 3, 5, 8, 9 ,12, 20, 21, 22, 23, 24, 26, and 28 were not submitted for laboratory analyses.
CONC Concentration
TIC Tentatively Identified Compounds
J Estimated Value
Q Qualifier
MDL Method Detection Limit
NC No criteria established
NA Not analyzed
R data rejected by validation
-- Not Detected
***BOLD*** analyte exceedes unrestricted use soil cleanup criteria (08/04/99)
* indicates sample is a duplicate of previous sample

**Table 3**
**Area of Concern #3 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | A3-SS-11<br>AB44840<br>10/17/2001<br>2.0<br>Soil | | A3-SS-13<br>AB44841<br>10/17/2001<br>0.5<br>Soil | | A3-SS-14<br>AB44842<br>10/17/2001<br>1.5<br>Soil | | A3-SS-15<br>AB44843<br>10/17/2001<br>2.0<br>Soil | | A3-SS-16<br>AB44844<br>10/17/2001<br>1.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q |
| **Volatile Organic Compounds** | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| 1,1,2,2-Tetrachloroethane | mg/kg | 34 | 70 | 1 | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 89 | -- | 4.9 | -- | 9.9 | -- | 15 | -- | 4.6 | -- |
| 2-Hexanone | mg/kg | NC | NC | NC | 71 | -- | 3.9 | -- | 7.9 | -- | 12 | -- | 3.7 | -- |
| 4-Methyl-2-2Pentanone | mg/kg | 1000 | 1000 | 50 | 71 | -- | 3.9 | -- | 7.9 | -- | 12 | -- | 3.7 | -- |
| Acetone | mg/kg | 1000 | 1000 | 100 | 71 | -- | 3.9 | -- | 7.9 | -- | 12 | -- | 3.7 | -- |
| Benzene | mg/kg | 3 | 13 | 1 | | 18 | 0.2 | -- | | 3.9 | | 3.5 | 0.19 | -- |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| Bromoform | mg/kg | 86 | 370 | 1 | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| Carbon disulfide | mg/kg | NC | NC | NC | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | | 20 | 0.98 | -- | | 25 | | 12 | 0.93 | -- |
| Chloroethane | mg/kg | NC | NC | NC | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| Chloroform | mg/kg | 19 | 28 | 1 | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| Dibromochloromethane | mg/kg | 110 | 1000 | 1 | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | | 170 | 0.2 | -- | | 50 | | 9.3 | 0.19 | -- |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 18 | -- | 0.98 | -- | 2 | -- | | 0.69 J | 0.93 | -- |
| Styrene | mg/kg | 23 | 97 | 100 | 3.6 | -- | 0.2 | -- | 0.4 | -- | 0.58 | -- | 0.19 | -- |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| Toluene | mg/kg | 1000 | 1000 | 500 | | 59 | 0.2 | -- | | 44 | | 9 | 0.19 | -- |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 18 | -- | 0.98 | -- | 2 | -- | 2.9 | -- | 0.93 | -- |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | | 940 | 0.39 | -- | | 480 | | 53.4 | 0.37 | -- |
| TICs Total | mg/kg | NC | NC | NC | | 590 J | | 2.93 J | | 256 J | | 363 J | | -- |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 1797 | | 2.93 J | | 858.9 | | 450.89 | | -- |
| | | | | | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | 18 | -- | 0.44 | -- | 5.2 | -- | 4.1 | -- | 1.3 | -- |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | | 5.5 J | 0.44 | -- | | 1.8 J | 4.1 | -- | 1.3 | -- |
| 1,3-Dichlororbenzene | mg/kg | 5100 | 10000 | 100 | 18 | -- | 0.44 | -- | 5.2 | -- | 4.1 | -- | 1.3 | -- |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | | 4.6 J | 0.44 | -- | | 1.7 J | | 0.73 J | 1.3 | -- |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 18 | -- | 0.44 | -- | 5.2 | -- | 4.1 | -- | 1.3 | -- |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 18 | -- | 0.44 | -- | 5.2 | -- | 4.1 | -- | 1.3 | -- |
| 2,4-Dichlorophenol | mg/kg | 170 | 3100 | 10 | 18 | -- | 0.44 | -- | 5.2 | -- | 4.1 | -- | 1.3 | -- |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | 18 | -- | 0.44 | -- | 5.2 | -- | 4.1 | -- | 1.3 | -- |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 18 | -- | 0.44 | -- | 5.2 | -- | 4.1 | -- | 1.3 | -- |
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 18 | -- | 0.44 | -- | 5.2 | -- | 4.1 | -- | 1.3 | -- |

**Table 3**
**Area of Concern #3 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | A3-SS-11<br>AB44840<br>10/17/2001<br>2.0<br>Soil | | | A3-SS-13<br>AB44841<br>10/17/2001<br>0.5<br>Soil | | | A3-SS-14<br>AB44842<br>10/17/2001<br>1.5<br>Soil | | | A3-SS-15<br>AB44843<br>10/17/2001<br>2.0<br>Soil | | | A3-SS-16<br>AB44844<br>10/17/2001<br>1.5<br>Soil | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| 2-Chlorphenol | mg/kg | 280 | 5200 | 10 | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | | 6.1 | J | | 0.1 | J | | 1.7 | J | 4.1 | -- | | 1.3 | -- | |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| 2-Nitroaniline | mg/kg | NC | NC | NC | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | | 2.2 | J | | 0.078 | J | | 0.78 | J | 4.1 | -- | | 1.3 | -- | |
| Acenaphthylene | mg/kg | NC | NC | NC | 18 | -- | | | 0.25 | J | 5.2 | -- | | 4.1 | -- | | | 0.47 | J |
| Anthracene | mg/kg | 10000 | 10000 | 100 | 18 | -- | | | 0.42 | J | | 0.88 | J | 4.1 | -- | | | 0.72 | J |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | | 2.4 | J | | 2.8 | | | 6.5 | | | 1.6 | J | | 5.6 | |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | | 2 | J | | 3.8 | | | 6.5 | | | 1.7 | J | | 6.5 | |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | | 3.3 | J | | 5.2 | | | 8.5 | | | 2.4 | J | | 8.2 | |
| Benzo(g,h,I)perylene | mg/kg | NC | NC | NC | 18 | -- | | | 4 | | | 4.4 | J | | 1.3 | J | | 5.6 | |
| Benzo(k)fluouranthene | mg/kg | 0.9 | 4 | 500 | 18 | -- | | | 1.4 | | | 2.9 | J | | 0.73 | J | | 2.9 | |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| Bis(2-Etheyhexyl)phthalate | mg/kg | 49 | 210 | 100 | | 260 | | | 0.23 | J | | 63 | | | 33 | | | 1 | J |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| Carbazole | mg/kg | NC | NC | NC | 18 | -- | | | 0.17 | J | 5.2 | -- | | 4.1 | -- | | | 0.21 | J |
| Chrysene | mg/kg | 9 | 40 | 500 | | 2.5 | J | | 3 | | | 6.9 | | | 1.9 | J | | 5.3 | |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | 18 | -- | | | 0.38 | J | 5.2 | -- | | 4.1 | -- | | | 0.54 | J |
| Dibenzofuran | mg/kg | NC | NC | NC | 18 | -- | | | 0.13 | J | | 0.84 | J | 4.1 | -- | | | 0.19 | J |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 18 | -- | | 0.44 | -- | | 5.2 | -- | | | 0.53 | J | 1.3 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | | 39 | | | 0.076 | J | | 1.4 | J | 4.1 | -- | | 1.3 | -- | |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | | 7.1 | JB | 0.44 | -- | | | 2.7 | JB | | 0.44 | JB | 1.3 | -- | |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | | 5.7 | J | | 3.2 | | | 8.8 | | | 2 | J | | 6.1 | |
| Fluorene | mg/kg | 2300 | 10000 | 100 | | 2.1 | J | | 0.19 | J | | 0.96 | J | 4.1 | -- | | | 0.23 | J |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 18 | -- | | 0.44 | -- | | 5.2 | -- | | 4.1 | -- | | 1.3 | -- | |
| Hexachlorocyclopentadiene | mg/kg | 400 | 7300 | 100 | 36 | -- | | 0.88 | -- | | 10 | -- | | 8.2 | -- | | 2.6 | -- | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q |
| Hexachlororethane | mg/kg | 6 | 100 | 100 | 18 | -- | 0.44 | -- | 5.2 | -- | 4.1 | -- | 1.3 | -- |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | 18 | -- | | 3.2 | | 4 J | | 1.1 J | | 4.8 |
| Isophorone | mg/kg | 1100 | 10000 | 50 | | 4.8 J | 0.44 | -- | 5.2 | -- | 4.1 | -- | 1.3 | -- |
| Naphthalene | mg/kg | 230 | 4200 | 100 | | 16 J | | 0.22 J | | 3.8 J | | 0.79 J | | 0.45 J |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 18 | -- | 0.44 | -- | 5.2 | -- | 4.1 | -- | 1.3 | -- |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 18 | -- | 0.44 | -- | 5.2 | -- | 4.1 | -- | 1.3 | -- |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | | 9.8 J | 0.44 | -- | | 1.3 J | 4.1 | -- | 1.3 | -- |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 18 | -- | 0.44 | -- | 5.2 | -- | 4.1 | -- | 1.3 | -- |
| Phenanthrene | mg/kg | NC | NC | NC | | 7.2 J | | 1.4 | | 3.7 J | | 0.77 J | | 2.5 |
| Phenol | mg/kg | 10000 | 10000 | 50 | 18 | -- | 0.44 | -- | 5.2 | -- | 4.1 | -- | 1.3 | -- |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 5.8 J | | 2.7 | | 9 | | 2.3 J | | 6.6 |
| TICs Total | mg/kg | NC | NC | NC | | 1595 J | | 182.59 J | | 460.8 J | | 166.5 J | | 169.04 J |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 1981.1 | | 215.53 | | 602.86 | | 217.79 | | 226.95 J |
| | | | | | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | 0.45 | -- | 0.0044 | -- | 0.1 | -- | 0.41 | -- | 0.021 | -- |
| Alpha-BHC | mg/kg | NC | NC | NC | 0.45 | -- | | 0.011 | 0.1 | -- | 0.41 | -- | 0.021 | -- |
| Beta-BHC | mg/kg | NC | NC | NC | 0.45 | -- | 0.0044 | -- | 0.1 | -- | 0.41 | -- | 0.021 | -- |
| Chlordane | mg/kg | NC | NC | NC | 0.9 | -- | | 0.12 | 0.21 | -- | | 1.1 | 0.043 | -- |
| Delta-BHC | mg/kg | NC | NC | NC | 0.45 | -- | 0.0044 | -- | 0.1 | -- | 0.41 | -- | 0.021 | -- |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | 0.45 | -- | 0.0044 | -- | 0.1 | -- | | 1.9 | 0.021 | -- |
| Endosulfan I | mg/kg | NC | NC | NC | 0.45 | -- | 0.0044 | -- | 0.1 | -- | 0.41 | -- | 0.021 | -- |
| Endosulfan II | mg/kg | NC | NC | NC | 0.45 | -- | 0.0044 | -- | 0.1 | -- | 0.41 | -- | 0.021 | -- |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.45 | -- | 0.0044 | -- | 0.1 | -- | 0.41 | -- | 0.021 | -- |
| Endrin | mg/kg | 17 | 310 | 50 | 0.45 | -- | 0.0044 | -- | 0.1 | -- | 0.41 | -- | 0.021 | -- |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 0.45 | -- | 0.0044 | -- | 0.1 | -- | | 2.6 | 0.021 | -- |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.45 | -- | 0.0044 | -- | 0.1 | -- | 0.41 | -- | 0.021 | -- |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.45 | -- | 0.0044 | -- | 0.1 | -- | 0.41 | -- | 0.021 | -- |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.45 | -- | 0.0044 | -- | 0.1 | -- | 0.41 | -- | 0.021 | -- |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.45 | -- | 0.0044 | -- | 0.1 | -- | 0.41 | -- | 0.021 | -- |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | 0.45 | -- | 0.0044 | -- | 0.1 | -- | 0.41 | -- | 0.021 | -- |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | 0.45 | -- | | 0.087 | | 0.3 | 0.41 | -- | 0.021 | -- |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | 0.45 | -- | | 0.015 | 0.1 | -- | 0.41 | -- | 0.021 | -- |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | | 4.4 | | 0.031 | | 0.92 | | 5.6 | 0.021 | 0.045 |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 4.5 | -- | 0.044 | -- | 1 | -- | 4.1 | -- | 0.210 | -- |
| | | | | | | | | | | | | | | |
| **PCB 8082** | | | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 1.1 | -- | 0.022 | -- | 1.3 | -- | 10 | -- | | 0.12 |
| Aroclor-1221 | mg/kg | NC | NC | NC | 1.1 | -- | 0.022 | -- | 1.3 | -- | 10 | -- | 0.021 | -- |
| Aroclor-1232 | mg/kg | NC | NC | NC | 1.1 | -- | 0.022 | -- | 1.3 | -- | 10 | -- | 0.021 | -- |
| Aroclor-1242 | mg/kg | NC | NC | NC | 1.1 | -- | 0.022 | -- | 1.3 | -- | 10 | -- | 0.021 | -- |
| Aroclor-1248 | mg/kg | NC | NC | NC | 1.1 | -- | 0.022 | -- | 1.3 | -- | 10 | -- | 0.021 | -- |
| Aroclor-1254 | mg/kg | NC | NC | NC | | 24 | | 0.22 | | 5 | 10 | -- | | 0.57 |
| Aroclor-1260 | mg/kg | NC | NC | NC | 1.1 | -- | 0.022 | -- | 1.3 | -- | | 48 | 0.021 | -- |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | 24 | | 0.22 | | 5 | | 48 | | 0.69 |
| | | | | | | | | | | | | | | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 3807 J | | 219 J | | 1468 J | | 728 J | | 228 J |
| | | | | | | | | | | | | | | |

**Table 3**
**Area of Concern #3 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | A3-SS-11<br>AB44840<br>10/17/2001<br>2.0<br>Soil | | A3-SS-13<br>AB44841<br>10/17/2001<br>0.5<br>Soil | | A3-SS-14<br>AB44842<br>10/17/2001<br>1.5<br>Soil | | A3-SS-15<br>AB44843<br>10/17/2001<br>2.0<br>Soil | | A3-SS-16<br>AB44844<br>10/17/2001<br>1.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q | MDL | CONC Q |
| Inorganic Compounds | | | | | | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | NC | | 5800 | | 4100 | | 4300 | | 3000 | | 5000 |
| Antimony | mg/kg | 14 | 340 | NC | | 150 | | 11 | | 36 | | 29 | | 20 |
| Arsenic | mg/kg | 20 | 20 | NC | | 53 | | 27 | | 69 | | 20 | | 46 |
| Barium | mg/kg | 700 | 47000 | NC | | 2400 | | 680 | | 2100 | | 690 | | 1000 |
| Beryllium | mg/kg | 2 | 2 | NC | 0.81 | -- | 0.79 | -- | 0.94 | -- | 0.74 | -- | 0.77 | -- |
| Cadmium | mg/kg | 39 | 100 | NC | | 120 | | 2.5 | | 18 | | 11 | | 5.3 |
| Calcium | mg/kg | NC | NC | NC | | 36000 | | 27000 | | 20000 | | 6700 | | 13000 |
| Chromium | mg/kg | 120000 | NC | NC | | 890 | | 27 | | 130 | | 110 | | 54 |
| Cobalt | mg/kg | NC | NC | NC | | 76 | | 9 | | 21 | | 19 | | 11 |
| Copper | mg/kg | 600 | 600 | NC | | 1200 | | 500 | | 660 | | 430 | | 810 |
| Iron | mg/kg | NC | NC | NC | | 290000 | | 30000 | | 110000 | | 46000 | | 55000 |
| Lead | mg/kg | 400 | 600 | NC | | 8700 | | 1500 | | 3700 | | 5000 | | 2400 |
| Magnesium | mg/kg | NC | NC | NC | | 5600 | | 2000 | | 7000 | | 1400 | | 1900 |
| Manganese | mg/kg | NC | NC | NC | | 1900 | | 270 | | 620 | | 290 | | 430 |
| Mercury | mg/kg | 14 | 270 | NC | | 1.6 | | 3.5 | | 3.6 | | 2.4 | | 3 |
| Nickel | mg/kg | 250 | 2400 | NC | | 160 | | 40 | | 84 | | 95 | | 38 |
| Potassium | mg/kg | NC | NC | NC | 340 | -- | | 520 | 390 | -- | 310 | -- | | 600 |
| Selenium | mg/kg | 63 | 3100 | NC | 2.7 | -- | 2.6 | -- | 3.1 | -- | 2.5 | -- | 2.6 | -- |
| Silver | mg/kg | 110 | 4100 | NC | 3.4 | -- | 3.3 | -- | 3.9 | -- | 3.1 | -- | 3.2 | -- |
| Sodium | mg/kg | NC | NC | NC | 680 | -- | 660 | -- | 780 | -- | 620 | -- | 640 | -- |
| Thallium | mg/kg | 2 | 2 | NC | 1.6 | -- | 1.6 | -- | 1.9 | -- | 1.5 | -- | 1.5 | -- |
| Vanadium | mg/kg | 370 | 7100 | NC | | 46 | | 28 | | 57 | | 530 | | 33 |
| Zinc | mg/kg | 1500 | 1500 | NC | | 5000 | | 1400 | | 2300 | | 1400 | | 1800 |
| | | | | | | | | | | | | | | |
| **% Solids** | percent | NC | NC | NC | | 74 | | 76 | | 64 | | 81 | | 78 |

NOTE: Samples from borings SS-1, 2, 3, 5, 8, 9 ,12, 20, 21, 22, 23, 24, 26, and 28 were not submitted for laborator
CONC Concentration
TIC Tentatively Identified Compounds
J Estimated Value
Q Qualifier
MDL Method Detection Limit
NC No criteria established
NA Not analyzed
R data rejected by validation
-- Not Detected
***BOLD*** analyte exceedes unrestricted use soil cleanup criteria (08/04/99)
* indicates sample is a duplicate of previous sample

**Table 3**
**Area of Concern #3 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | A3-SS-17<br>AB44845<br>10/17/2001<br>1.25<br>Soil | | | A3-SS-18<br>AB44846<br>10/17/2001<br>0.75<br>Soil | | | A3-SS-19<br>AB44847<br>10/17/2001<br>1.6<br>Soil | | | A3-SS-25<br>AB44848<br>10/17/2001<br>1.5<br>Soil | | | A3-SS-27<br>AB44849<br>10/17/2001<br>2.0<br>Soil | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| **Volatile Organic Compounds** | | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | 53 | -- | | 0.66 | -- | |
| 1,1,2,2-Tetrachloroethane | mg/kg | 34 | 70 | 1 | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | 53 | -- | | 0.66 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | 53 | -- | | 0.66 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | 53 | -- | | 0.66 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | 53 | -- | | 0.66 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | 53 | -- | | 0.66 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | 53 | -- | | 0.66 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 3.7 | -- | | 7.6 | -- | | 4.4 | -- | | 260 | -- | | 3.3 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 2.9 | -- | | 6.1 | -- | | 3.5 | -- | | 210 | -- | | 2.6 | -- | |
| 4-Methyl-2-2Pentanone | mg/kg | 1000 | 1000 | 50 | 2.9 | -- | | 6.1 | -- | | 3.5 | -- | | 210 | -- | | 2.6 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 2.9 | -- | | 6.1 | -- | | 3.5 | -- | | 210 | -- | | 2.6 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | 0.15 | -- | | | 0.77 | | 0.18 | -- | | 11 | -- | | | 0.15 | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | 53 | -- | | 0.66 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | 53 | -- | | 0.66 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | 53 | -- | | 0.66 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | 53 | -- | | 0.66 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | 53 | -- | | 0.66 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | 0.73 | -- | | | 19.0 | | 0.88 | -- | | | 480 | | 0.66 | -- | |
| Chloroethane | mg/kg | NC | NC | NC | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | 53 | -- | | 0.66 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | 53 | -- | | 0.66 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | 53 | -- | | 0.66 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | 53 | -- | | 0.66 | -- | |
| Dibromochloromethane | mg/kg | 110 | 1000 | 1 | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | 53 | -- | | 0.66 | -- | |
| Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | 53 | -- | | 0.66 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | | 0.27 | | | 7.0 | | | 0.27 | | | 460 | | | 14.0 | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | | 99 | | 0.66 | -- | |
| Styrene | mg/kg | 23 | 97 | 100 | 0.15 | -- | | 1.5 | -- | | 0.18 | -- | | 11 | -- | | 0.13 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | | 49 | J | 0.66 | -- | |
| Toluene | mg/kg | 1000 | 1000 | 500 | 0.15 | -- | | | 6.3 | | | 0.24 | | | 910 | | | 0.99 | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | 53 | -- | | 0.66 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | | 120 | | 0.66 | -- | |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 0.73 | -- | | 1.5 | -- | | 0.88 | -- | | 53 | -- | | 0.66 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | | 0.16 | J | | 102.2 | | | 1.1 | | | 1340 | | | 76.0 | |
| TICs Total | mg/kg | NC | NC | NC | | -- | | | 169.6 | J | | 43.3 | J | | 2280 | J | | 2.91 | J |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 0.43 | J | | 304.87 | J | | 44.91 | J | | 5738 | | | 94.05 | J |
| | | | | | | | | | | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | | 11 | J | 1.9 | -- | |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | 4.2 | -- | | | 0.46 | J | | 0.24 | J | 16 | -- | | 1.9 | -- | |
| 1,3-Dichlorobenzene | mg/kg | 5100 | 10000 | 100 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 2,4-Dichlorophenol | mg/kg | 170 | 3100 | 10 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |

**Table 3**
**Area of Concern #3 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | A3-SS-17<br>AB44845<br>10/17/2001<br>1.25<br>Soil | | | A3-SS-18<br>AB44846<br>10/17/2001<br>0.75<br>Soil | | | A3-SS-19<br>AB44847<br>10/17/2001<br>1.6<br>Soil | | | A3-SS-25<br>AB44848<br>10/17/2001<br>1.5<br>Soil | | | A3-SS-27<br>AB44849<br>10/17/2001<br>2.0<br>Soil | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 2-Chlorophenol | mg/kg | 280 | 5200 | 10 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | 4.2 | -- | | | 1.1 | J | | 7.6 | | | 13 | J | 1.9 | -- | |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 2-Nitroaniline | mg/kg | NC | NC | NC | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | | 0.48 | J | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| Acenaphthylene | mg/kg | NC | NC | NC | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | | 0.29 | J |
| Anthracene | mg/kg | 10000 | 10000 | 100 | | 1.3 | J | | 0.55 | J | 1.4 | -- | | 16 | -- | | | 0.36 | J |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | | 3.3 | J | | 1.0 | J | | 0.83 | J | | 4.3 | J | | 1.1 | J |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | | 2.9 | J | | 1.4 | J | | 1.3 | J | | 4.4 | J | | 1.0 | J |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | | 4.3 | | | 2.0 | J | | 2.1 | | | 6.1 | J | | 1.2 | J |
| Benzo(g,h,I)perylene | mg/kg | NC | NC | NC | | 2.1 | J | | 1.1 | J | | 1.9 | | | 4 | J | | 0.67 | J |
| Benzo(k)fluoranthene | mg/kg | 0.9 | 4 | 500 | | 1.3 | J | | 0.49 | J | | 0.74 | J | 16 | -- | | | 0.46 | J |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| Bis(2-Ethexhexyl)phthalate | mg/kg | 49 | 210 | 100 | | 75 | | | 82 | | | 6.9 | | | 190 | | | 16.0 | |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | | 260 | E | | 3.7 | J | 1.4 | -- | | | 22 | | | 0.55 | J |
| Carbazole | mg/kg | NC | NC | NC | | 0.46 | J | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| Chrysene | mg/kg | 9 | 40 | 500 | | 2.9 | J | | 1.2 | J | | 1.2 | J | | 3.9 | J | | 1.1 | J |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| Dibenzofuran | mg/kg | NC | NC | NC | 4.2 | -- | | | 0.52 | J | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | | 1.6 | J | | 1.9 | J | 1.4 | -- | | | 9.9 | J | | 0.3 | J |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | | 11 | B | | 3.0 | JB | 1.4 | -- | | 16 | -- | | | 0.24 | JB |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | | 6.3 | | | 2.1 | J | | 0.96 | J | | 6.9 | J | | 2.4 | |
| Fluorene | mg/kg | 2300 | 10000 | 100 | | 0.48 | J | | 0.58 | J | | 0.26 | J | 16 | -- | | | 0.29 | J |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| Hexachlorocyclopentadiene | mg/kg | 400 | 7300 | 100 | 8.4 | -- | | 4.3 | -- | | 2.9 | -- | | 33 | -- | | 3.7 | -- | |

Table 3
Area of Concern #3 Soil Analytical Results

Remedial Investigation Report
Central Steel Drum
Newark, New Jersey

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A3-SS-17<br>AB44845<br>10/17/2001<br>1.25<br>Soil | | | A3-SS-18<br>AB44846<br>10/17/2001<br>0.75<br>Soil | | | A3-SS-19<br>AB44847<br>10/17/2001<br>1.6<br>Soil | | | A3-SS-25<br>AB44848<br>10/17/2001<br>1.5<br>Soil | | | A3-SS-27<br>AB44849<br>10/17/2001<br>2.0<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| Hexachloroethane | mg/kg | 6 | 100 | 100 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | | 1.9 | J | | 0.86 | J | | 1.6 | | | 3.3 | J | | 0.54 | J |
| Isophorone | mg/kg | 1100 | 10000 | 50 | | 1 | J | | 1.6 | J | 1.4 | -- | | | 2.6 | J | 1.9 | -- | |
| Naphthalene | mg/kg | 230 | 4200 | 100 | | 0.93 | J | | 2.8 | J | | 11 | | | 30 | | | 0.23 | J |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 4.2 | -- | | 4.3 | -- | | 1.4 | -- | | 16 | -- | | 1.9 | -- | |
| Phenanthrene | mg/kg | NC | NC | NC | | 5.1 | | | 2.5 | J | | 0.86 | J | | 5.7 | J | | 1.6 | J |
| Phenol | mg/kg | 10000 | 10000 | 50 | | 0.72 | J | | 0.89 | J | 1.4 | -- | | | 5.9 | J | 1.9 | -- | |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 5.4 | | | 2.0 | J | | 0.82 | J | | 7.3 | J | | 2.2 | |
| TICs Total | mg/kg | NC | NC | NC | | 203.1 | J | | 212.8 | J | | 318.7 | J | | 1520 | J | | 93.4 | J |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 591.57 | | | 326.55 | | | 357.01 | J | | 1850.3 | J | | 123.93 | J |
| | | | | | | | | | | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | 0.042 | -- | | 2.2 | -- | | | 0.16 | | 0.41 | -- | | 0.075 | -- | |
| Alpha-BHC | mg/kg | NC | NC | NC | 0.042 | -- | | 2.2 | -- | | 0.095 | -- | | 0.41 | -- | | 0.075 | -- | |
| Beta-BHC | mg/kg | NC | NC | NC | 0.042 | -- | | 2.2 | -- | | 0.095 | -- | | 0.41 | -- | | 0.075 | -- | |
| Chlordane | mg/kg | NC | NC | NC | | 0.84 | | 4.3 | -- | | 0.19 | -- | | | 2.7 | | 0.15 | -- | |
| Delta-BHC | mg/kg | NC | NC | NC | 0.042 | -- | | 2.2 | -- | | 0.095 | -- | | 0.41 | -- | | 0.075 | -- | |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | 0.042 | -- | | 2.2 | -- | | 0.095 | -- | | 0.41 | -- | | | 0.11 | |
| Endosulfan I | mg/kg | NC | NC | NC | 0.042 | -- | | 2.2 | -- | | 0.095 | -- | | 0.41 | -- | | 0.075 | -- | |
| Endosulfan II | mg/kg | NC | NC | NC | 0.042 | -- | | 2.2 | -- | | 0.095 | -- | | 0.41 | -- | | 0.075 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.042 | -- | | 2.2 | -- | | 0.095 | -- | | 0.41 | -- | | 0.075 | -- | |
| Endrin | mg/kg | 17 | 310 | 50 | | 0.086 | | 2.2 | -- | | 0.095 | -- | | 0.41 | -- | | 0.075 | -- | |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 0.042 | -- | | 2.2 | -- | | | 0.25 | | 0.41 | -- | | 0.075 | -- | |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.042 | -- | | 2.2 | -- | | 0.095 | -- | | 0.41 | -- | | 0.075 | -- | |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.042 | -- | | 2.2 | -- | | 0.095 | -- | | 0.41 | -- | | 0.075 | -- | |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.042 | -- | | 2.2 | -- | | 0.095 | -- | | 0.41 | -- | | 0.075 | -- | |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.042 | -- | | 2.2 | -- | | 0.095 | -- | | 0.41 | -- | | 0.075 | -- | |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | 0.042 | -- | | 2.2 | -- | | 0.095 | -- | | 0.41 | -- | | 0.075 | -- | |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | | 0.31 | | 2.2 | -- | | | 0.83 | | 0.41 | -- | | | 0.34 | |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | | 0.14 | | | 8.2 | | | 0.12 | | 0.41 | -- | | 0.075 | -- | |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | | 0.48 | | | 23 | | | 0.99 | | | 1.4 | | | 0.66 | |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 0.42 | -- | | 22 | -- | | 0.95 | -- | | 4.1 | -- | | 0.75 | -- | |
| | | | | | | | | | | | | | | | | | | | |
| **PCB 8082** | | | | | | | | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 0.42 | -- | | 43 | -- | | 0.48 | -- | | 0.41 | -- | | 0.19 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | NC | 0.42 | -- | | 43 | -- | | 0.48 | -- | | 0.41 | -- | | 0.19 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | NC | 0.42 | -- | | 43 | -- | | 0.48 | -- | | 0.41 | -- | | 0.19 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | NC | 0.42 | -- | | 43 | -- | | 0.48 | -- | | 0.41 | -- | | 0.19 | -- | |
| Aroclor-1248 | mg/kg | NC | NC | NC | 0.42 | -- | | 43 | -- | | 0.48 | -- | | 0.41 | -- | | 0.19 | -- | |
| Aroclor-1254 | mg/kg | NC | NC | NC | | 4.4 | | | 180 | | 0.48 | -- | | 0.41 | -- | | | 3.7 | |
| Aroclor-1260 | mg/kg | NC | NC | NC | 0.42 | -- | | 43 | -- | | | 7.7 | | | 9.5 | | 0.19 | -- | |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | 4.4 | | | 180 | | | 7.7 | | | 9.5 | | | 3.7 | |
| | | | | | | | | | | | | | | | | | | | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 598 | J | | 843 | J | | 412 | J | | 7602 | | | 223 | J |
| | | | | | | | | | | | | | | | | | | | |

**Table 3**
**Area of Concern #3 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A3-SS-17<br>AB44845<br>10/17/2001<br>1.25<br>Soil | | | A3-SS-18<br>AB44846<br>10/17/2001<br>0.75<br>Soil | | | A3-SS-19<br>AB44847<br>10/17/2001<br>1.6<br>Soil | | | A3-SS-25<br>AB44848<br>10/17/2001<br>1.5<br>Soil | | | A3-SS-27<br>AB44849<br>10/17/2001<br>2.0<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| **Inorganic Compounds** | | | | | | | | | | | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | NC | | 4300 | | | 7500 | | | 5100 | | | 4700 | | | 9000 | |
| Antimony | mg/kg | 14 | 340 | NC | | 150 | | | 160 | | | 27 | | | 68 | | | 41 | |
| Arsenic | mg/kg | 20 | 20 | NC | | 26 | | | 29 | | | 47 | | | 16 | | | 26 | |
| Barium | mg/kg | 700 | 47000 | NC | | 910 | | | 2600 | | | 770 | | | 1300 | | | 560 | |
| Beryllium | mg/kg | 2 | 2 | NC | 0.76 | -- | | 0.78 | -- | | 0.86 | -- | | 0.73 | -- | | 0.67 | -- | |
| Cadmium | mg/kg | 39 | 100 | NC | | 41 | | | 67 | | | 11 | | | 56 | | | 11 | |
| Calcium | mg/kg | NC | NC | NC | | 13000 | | | 22000 | | | 11000 | | | 15000 | | | 19000 | |
| Chromium | mg/kg | 120000 | NC | NC | | 330 | | | 610 | | | 270 | | | 660 | | | 360 | |
| Cobalt | mg/kg | NC | NC | NC | | 31 | | | 45 | | | 21 | | | 46 | | | 110 | |
| Copper | mg/kg | 600 | 600 | NC | | 600 | | | 1300 | | | 520 | | | 2800 | | | 610 | |
| Iron | mg/kg | NC | NC | NC | | 100000 | | | 130000 | | | 61000 | | | 120000 | | | 50000 | |
| Lead | mg/kg | 400 | 600 | NC | | 3100 | | | 6200 | | | 6100 | | | 3900 | | | 3800 | |
| Magnesium | mg/kg | NC | NC | NC | | 2200 | | | 4400 | | | 2300 | | | 2600 | | | 5600 | |
| Manganese | mg/kg | NC | NC | NC | | 790 | | | 770 | | | 460 | | | 640 | | | 590 | |
| Mercury | mg/kg | 14 | 270 | NC | | 8.9 | | | 3.7 | | | 2.6 | | | 3.2 | | | 2.5 | |
| Nickel | mg/kg | 250 | 2400 | NC | | 98 | | | 97 | | | 260 | | | 77 | | | 340 | |
| Potassium | mg/kg | NC | NC | NC | 320 | -- | | | 420 | | | 580 | | | 350 | | | 1200 | |
| Selenium | mg/kg | 63 | 3100 | NC | 2.5 | -- | | 2.6 | -- | | 2.9 | -- | | 2.4 | -- | | 2.2 | -- | |
| Silver | mg/kg | 110 | 4100 | NC | 3.2 | -- | | 3.2 | -- | | 3.6 | -- | | 3 | -- | | 2.8 | -- | |
| Sodium | mg/kg | NC | NC | NC | 630 | -- | | 650 | -- | | 710 | -- | | 610 | -- | | | 11000 | |
| Thallium | mg/kg | 2 | 2 | NC | 1.5 | -- | | 1.6 | -- | | 1.7 | -- | | 1.5 | -- | | 1.3 | -- | |
| Vanadium | mg/kg | 370 | 7100 | NC | | 34 | | | 40 | | | 30 | | | 24 | | | 72 | |
| Zinc | mg/kg | 1500 | 1500 | NC | | 2500 | | | 3300 | | | 2100 | | | 2300 | | | 860 | |
| | | | | | | | | | | | | | | | | | | | |
| **% Solids** | percent | NC | NC | NC | | 79 | | | 77 | | | 70 | | | 82 | | | 89 | |

**NOTE:** Samples from borings SS-1, 2, 3, 5, 8, 9 ,12, 20, 21, 22, 23, 24, 26, and 28 were not submitted for laboratory

CONC Concentration
TIC Tentatively Identified Compounds
J Estimated Value
Q Qualifier
MDL Method Detection Limit
NC No criteria established
NA Not analyzed
R data rejected by validation
-- Not Detected
***BOLD*** analyte exceedes unrestricted use soil cleanup criteria (08/04/99)
* indicates sample is a dupticate of previous sample

**Table 4**
**Area of Concern #4 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A4-SS-1<br>AB45743<br>10/24/2001<br>6"<br>Soil<br>CONC | Q | MDL | A4-SS-2<br>AB45280<br>10/24/2001<br>1'<br>Soil<br>CONC | Q | MDL | A4-SS-3<br>AB45281<br>10/24/2001<br>2'<br>Soil<br>CONC | Q | MDL | A4-SS-4<br>AB45282<br>10/24/2001<br>2'<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 0.88 | -- | | 0.78 | -- | | 1.8 | -- | | 15 | -- | |
| 1,1,2,2-Tetrachlororethane | mg/kg | 34 | 70 | 1 | 0.88 | -- | | 0.78 | -- | | 1.8 | -- | | 15 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 0.88 | -- | | 0.78 | -- | | 1.8 | -- | | 15 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 0.88 | -- | | 0.78 | -- | | 1.8 | -- | | 15 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 0.88 | -- | | 0.78 | -- | | 1.8 | -- | | 15 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 0.88 | -- | | 0.78 | -- | | 1.8 | -- | | | 5.6 | J |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 0.88 | -- | | 0.78 | -- | | 1.8 | -- | | 15 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 4.4 | -- | | | 7.8 | | 9.1 | -- | | 76 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 3.5 | -- | | 3.1 | -- | | 7.3 | -- | | 61 | -- | |
| 4-Methyl-2-2Pentanone | mg/kg | 1000 | 1000 | 50 | 3.5 | -- | | 3.1 | -- | | 7.3 | -- | | 61 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 3.5 | -- | | | 3.8 | | 7.3 | -- | | 61 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | | 1.8 | | | 4.6 | | 0.36 | -- | | 3.1 | -- | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 0.88 | -- | | 0.78 | -- | | 1.8 | -- | | 15 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 0.88 | -- | | 0.78 | -- | | 1.8 | -- | | 15 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 0.88 | -- | | 0.78 | -- | | 1.8 | -- | | 15 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 0.88 | -- | | 0.78 | -- | | 1.8 | -- | | 15 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 0.88 | -- | | 0.78 | -- | | 1.8 | -- | | 15 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | 0.88 | -- | | | 0.36 | J | | 0.69 | J | 15 | -- | |
| Chloroethane | mg/kg | NC | NC | NC | 0.88 | -- | | 0.78 | -- | | 1.8 | -- | | 15 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 0.88 | -- | | 0.78 | -- | | 1.8 | -- | | 15 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 0.88 | -- | | 0.78 | -- | | 1.8 | -- | | 15 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 0.88 | 0.74 | J | | 0.69 | J | 1.8 | -- | | 15 | -- | |
| Dibromochloromethane | mg/kg | 110 | 1000 | 1 | 0.88 | -- | | 0.78 | -- | | 1.8 | -- | | 15 | -- | |
| Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 0.88 | -- | | 0.78 | -- | | 1.8 | -- | | 15 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | | 7.4 | | | 3.8 | | | 15 | | 15 | 140 | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 0.88 | -- | | 0.78 | -- | | 1.8 | -- | | 15 | -- | |
| Styrene | mg/kg | 23 | 97 | 100 | 0.18 | -- | | 0.78 | -- | | | 5.1 | | 3.1 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 0.88 | 0.18 | J | | 0.47 | J | 1.8 | -- | | 15 | -- | |
| Toluene | mg/kg | 1000 | 1000 | 500 | | 13 | | | 40 | | | 33 | | | 1500 | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 0.88 | -- | | | 0.19 | J | 1.8 | -- | | 15 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 0.88 | 0.93 | | | 2.3 | | 1.8 | -- | | | 3.3 | J |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 0.88 | 1.1 | | 0.78 | -- | | 1.8 | -- | | 15 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | | 21.5 | | | 9.9 | | | 69 | | | 710 | |
| Total unknown compounds | mg/kg | NC | NC | NC | | 117.6 | J | | 110 | J | | 137.6 | J | | 882 | J |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 164.25 | J | | 183.91 | J | | 260.39 | J | | 3148.9 | J |
| | | | | | | | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | 0.42 | -- | | 2.1 | -- | | | 10 | J | 35 | -- | |
| 1,3-Dichlororbenzene | mg/kg | 5100 | 10000 | 100 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | 0.42 | -- | | | 0.71 | J | 90 | -- | | 35 | -- | |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| 2-Chlorphenol | mg/kg | 280 | 5200 | 10 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | | 3.9 | | | 1.7 | J | | 31 | J | | 19 | J |

**Table 4**
**Area of Concern #4 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A4-SS-1<br>AB45743<br>10/24/2001<br>6"<br>Soil<br>CONC | Q | MDL | A4-SS-2<br>AB45280<br>10/24/2001<br>1'<br>Soil<br>CONC | Q | MDL | A4-SS-3<br>AB45281<br>10/24/2001<br>2'<br>Soil<br>CONC | Q | MDL | A4-SS-4<br>AB45282<br>10/24/2001<br>2'<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| 2-Nitoaniline | mg/kg | NC | NC | NC | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | 0.42 | 0.43 | | | 1.1 | J | 90 | -- | | | 9.4 | J |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | 0.42 | 0.46 | | 2.1 | -- | | 90 | -- | | | 5.5 | J |
| Acenaphthylene | mg/kg | NC | NC | NC | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| Anthracene | mg/kg | 10000 | 10000 | 100 | 0.42 | 0.42 | J | | 0.28 | J | 90 | -- | | | 13 | J |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | | 0.92 | | | 1.8 | J | 90 | -- | | | 7 | J |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | | 1 | | | 2.2 | | 90 | -- | | | 4.9 | J |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | | 1.5 | | | 2.4 | | 90 | -- | | | 7 | J |
| Benzo(g,h,I)perylene | mg/kg | NC | NC | NC | | 0.57 | | | 1.8 | J | 90 | -- | | 35 | -- | |
| Benzo(k)fluouranthene | mg/kg | 0.9 | 4 | 500 | 0.42 | 0.5 | | | 0.67 | J | 90 | -- | | 35 | -- | |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| Bis(2-Etheyhexyl)phthalate | mg/kg | 49 | 210 | 100 | | 0.42 | J | 2.1 | -- | | | 580 | | | 380 | B |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | 0.42 | -- | | 2.1 | -- | | | 23 | J | | 25 | J |
| Carbazole | mg/kg | NC | NC | NC | 0.42 | -- | | 2.1 | -- | | 90 | -- | | | 10 | J |
| Chrysene | mg/kg | 9 | 40 | 500 | 0.42 | 0.91 | | | 2.4 | | 90 | -- | | | 8.7 | J |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | | 0.051 | J | 2.1 | -- | | 90 | -- | | 35 | -- | |
| Dibenzofuran | mg/kg | NC | NC | NC | | 0.4 | J | 2.1 | -- | | 90 | -- | | | 4.9 | J |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | | 0.16 | JB | | 0.31 | J | | 19 | J | | 200 | B |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | 0.42 | -- | | 2.1 | -- | | | 18 | J | | 8.2 | J |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | | 1.2 | | | 1.6 | J | | 10 | J | | 22 | J |
| Fluorene | mg/kg | 2300 | 10000 | 100 | | 0.39 | J | 2.1 | -- | | | 9.1 | J | | 10 | J |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| Hexachlororcyclopentadiene | mg/kg | 400 | 7300 | 100 | 0.42 | -- | | 4.2 | -- | | 180 | | | 71 | -- | |
| Hexachlororethane | mg/kg | 6 | 100 | 100 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | | 0.59 | | | 1.5 | J | 90 | -- | | 35 | -- | |
| Isophorone | mg/kg | 1100 | 10000 | 50 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| Naphthalene | mg/kg | 230 | 4200 | 100 | | 1.4 | | | 0.81 | J | | 24 | J | | 8.9 | J |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 0.42 | -- | | 2.1 | -- | | 90 | -- | | 35 | -- | |
| Phenanthrene | mg/kg | NC | NC | NC | | 2.6 | | | 1.2 | J | | 20 | J | | 43 | |
| Phenol | mg/kg | 10000 | 10000 | 50 | | 0.74 | | | 0.57 | J | 90 | -- | | | 9.1 | J |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 1.2 | | | 2.3 | | | 9.8 | J | | 17 | J |

**Table 4**
**Area of Concern #4 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A4-SS-1<br>AB45743<br>10/24/2001<br>6"<br>Soil<br>CONC | Q | MDL | A4-SS-2<br>AB45280<br>10/24/2001<br>1'<br>Soil<br>CONC | Q | MDL | A4-SS-3<br>AB45281<br>10/24/2001<br>2'<br>Soil<br>CONC | Q | MDL | A4-SS-4<br>AB45282<br>10/24/2001<br>2'<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Unknown Compounds | mg/kg | NC | NC | NC | | 103.6 | J | | 229 | J | | 2849 | J | | 1786 | J |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 123.361 | J | | 252.35 | J | | 3602.9 | J | | 2598.6 | J |
| | | | | | | | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | 0.0042 | -- | | 0.0042 | -- | | 0.23 | -- | | | 5.7 | |
| Alpha-BHC | mg/kg | NC | NC | NC | 0.0042 | -- | | 0.0042 | -- | | 0.23 | -- | | 0.39 | -- | |
| Beta-BHC | mg/kg | NC | NC | NC | | 0.1 | | 0.0042 | -- | | 0.23 | -- | | 0.39 | -- | |
| Chlordane | mg/kg | NC | NC | NC | 0.0084 | -- | | 0.0042 | -- | | | 2.4 | | 0.39 | -- | |
| Delta-BHC | mg/kg | NC | NC | NC | 0.0042 | -- | | 0.0042 | -- | | 0.23 | -- | | 0.39 | -- | |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | 0.0042 | -- | | 0.0042 | -- | | 0.23 | -- | | 0.39 | -- | |
| Endosulfan I | mg/kg | NC | NC | NC | 0.0042 | -- | | 0.0042 | -- | | 0.23 | -- | | 0.39 | -- | |
| Endosulfan II | mg/kg | NC | NC | NC | 0.0042 | -- | | 0.0042 | -- | | 0.23 | -- | | 0.39 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.0042 | -- | | 0.0042 | -- | | 0.23 | -- | | 0.39 | -- | |
| Endrin | mg/kg | 17 | 310 | 50 | 0.0042 | -- | | 0.0042 | -- | | 0.23 | -- | | 0.39 | -- | |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 0.0042 | -- | | 0.0042 | -- | | | 1.2 | | 0.39 | -- | |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.0042 | -- | | 0.0042 | -- | | 0.23 | -- | | 0.39 | -- | |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.0042 | -- | | 0.0042 | -- | | 0.23 | -- | | 0.39 | -- | |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.0042 | -- | | 0.0042 | -- | | 0.23 | -- | | 0.39 | -- | |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.0042 | -- | | 0.0042 | -- | | 0.23 | -- | | 0.39 | -- | |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | 0.0042 | -- | | | 0.074 | | 0.23 | -- | | 0.39 | -- | |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | | 0.034 | | | 0.032 | | | 0.64 | | 0.39 | -- | |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | | 0.04 | | 0.0042 | -- | | | 0.99 | | 0.39 | 0.91 | |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | | 0.012 | | 0.0042 | 0.014 | | | 4.9 | | 0.39 | 3.5 | |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 0.0420 | -- | | 0.042 | -- | | 2.3 | -- | | 3.9 | -- | |
| | | | | | | | | | | | | | | | | |
| **PCB 8082** | | | | | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 0.021 | -- | | 0.021 | -- | | 2.3 | -- | | 2 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | NC | 0.021 | -- | | 0.021 | -- | | 2.3 | -- | | 2 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | NC | 0.021 | -- | | 0.021 | -- | | 2.3 | -- | | 2 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | NC | 0.021 | -- | | 0.021 | -- | | 2.3 | -- | | 2 | -- | |
| Aroclor-1248 | mg/kg | NC | NC | NC | 0.021 | -- | | 0.021 | -- | | 2.3 | -- | | 2 | -- | |
| Aroclor-1254 | mg/kg | NC | NC | NC | 0.021 | -- | | 0.021 | -- | | 2.3 | -- | | | 36 | |
| Aroclor-1260 | mg/kg | NC | NC | NC | | 0.12 | | | 0.41 | | | 43 | | 2 | -- | |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | 0.12 | | | 0.41 | | | 43 | | | 36 | |
| | | | | | | | | | | | | | | | | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 287.917 | J | | 436.79 | J | | 3916.42 | J | | 5885.61 | J |
| | | | | | | | | | | | | | | | | |
| **Inorganic Compounds** | | | | | | | | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | NC | | 9600 | | | 7000 | | | 9200 | | | 9600 | |
| Antimony | mg/kg | 14 | 340 | NC | | 81 | | | 43 | | | 340 | | | 290 | |
| Arsenic | mg/kg | 20 | 20 | NC | | 14 | | | 29 | | | 24 | | | 18 | |
| Barium | mg/kg | 700 | 47000 | NC | | 670 | | | 830 | | | 1600 | | | 2000 | |
| Beryllium | mg/kg | 2 | 2 | NC | 0.76 | -- | | 0.75 | -- | | 0.081 | -- | | 0.71 | -- | |
| Cadmium | mg/kg | 39 | 100 | NC | | 8 | | | 14 | | | 130 | | | 75 | |
| Calcium | mg/kg | NC | NC | NC | | 28000 | | | 17000 | | | 36000 | | | 26000 | |
| Chromium | mg/kg | 120000 | NC | NC | | 4400 | | | 740 | | | 1200 | | | 1300 | |
| Cobalt | mg/kg | NC | NC | NC | | 66 | | | 49 | | | 75 | | | 75 | |
| Copper | mg/kg | 600 | 600 | NC | | 580 | | | 520 | | | 750 | | | 870 | |
| Iron | mg/kg | NC | NC | NC | | 130000 | | | 150000 | | | 75000 | | | 110000 | |
| Lead | mg/kg | 400 | 600 | NC | | 1200 | | | 1500 | | | 5100 | | | 6900 | |

Table 4
Area of Concern #4 Soil Analytical Results

Remedial Investigation Report
Central Steel Drum
Newark, New Jersey

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A4-SS-1<br>AB45743<br>10/24/2001<br>6"<br>Soil<br>CONC | Q | MDL | A4-SS-2<br>AB45280<br>10/24/2001<br>1'<br>Soil<br>CONC | Q | MDL | A4-SS-3<br>AB45281<br>10/24/2001<br>2'<br>Soil<br>CONC | Q | MDL | A4-SS-4<br>AB45282<br>10/24/2001<br>2'<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Magnesium | mg/kg | NC | NC | NC | | 26000 | | | 12000 | | | 9700 | | | 6800 | |
| Manganese | mg/kg | NC | NC | NC | | 700 | | | 660 | | | 670 | | | 660 | |
| Mercury | mg/kg | 14 | 270 | NC | | 1.3 | | | 0.98 | | | 4.8 | | | 3.8 | |
| Nickel | mg/kg | 250 | 2400 | NC | | 230 | | | 210 | | | 200 | | | 180 | |
| Potassium | mg/kg | NC | NC | NC | 320 | -- | | | 340 | | 340 | -- | | | 600 | |
| Selenium | mg/kg | 63 | 3100 | NC | 2.5 | -- | | 2.5 | -- | | | 5.9 | | 2.4 | -- | |
| Silver | mg/kg | 110 | 4100 | NC | 3.2 | -- | | 3.1 | -- | | | -- | | 2.9 | -- | |
| Sodium | mg/kg | NC | NC | NC | | 930 | | 630 | -- | | | -- | | | 890 | |
| Thallium | mg/kg | 2 | 2 | NC | 1.5 | -- | | 1.5 | -- | | | -- | | 1.4 | -- | |
| Vanadium | mg/kg | 370 | 7100 | NC | | 380 | | | 220 | | | 200 | | | 96 | |
| Zinc | mg/kg | 1500 | 1500 | NC | | 1100 | | | 1500 | | | 5800 | | | 4700 | |
| | | | | | | | | | | | | | | | | |
| Chlorinated Herbicides | | | | | | | | | | | | | | | | |
| 2,4,5-T | mg/kg | NC | NC | NC | 0.0051 | -- | | 0.005 | -- | | 0.0054 | -- | | | 0.035 | |
| 2,4-D | mg/kg | NC | NC | NC | | 0.07 | | 0.005 | -- | | | 0.04 | | 0.0047 | -- | |
| Dicamba | mg/kg | NC | NC | NC | | 0.041 | | 0.005 | -- | | | 0.17 | | 0.0047 | -- | |
| Silvex | mg/kg | NC | NC | NC | | 0.14 | | 0.005 | -- | | | 0.4 | | | 0.042 | |
| | | | | | | | | | | | | | | | | |
| % Solids | percent | | | | 79 | | | | 80 | | | 74 | | | 85 | |
| | | | | | | | | | | | | | | | | |

CONC Concentration
Q Qualifier
MDL Method Detection Limit
J Estimated Value
NC No criteria established
NA Not analyzed
R data rejected by validation
-- Not Detected
***BOLD*** analyte exceedes unrestricted use soil cleanup criteria (08/04/99)

**Table 5**
**Area of Concern #5 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A5-SS-1<br>AB44862<br>10/18/2001<br>1'<br>Soil<br>CONC | Q | MDL | A5-SS-2<br>AB44864<br>10/18/2001<br>1'<br>Soil<br>CONC | Q | MDL | A5-SS-3<br>AB44865<br>10/18/2001<br>1'<br>Soil<br>CONC | Q | MDL | A5-SS-4<br>AB44866<br>10/18/2001<br>1'<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 3.4 | -- | | 3.1 | -- | | 3 | -- | | 1.5 | -- | |
| 1,1,2,2-Tetrachlororethane | mg/kg | 34 | 70 | 1 | 3.4 | -- | | 3.1 | -- | | 3 | -- | | 1.5 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 3.4 | -- | | 3.1 | -- | | 3 | -- | | 1.5 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 3.4 | -- | | 3.1 | -- | | 3 | -- | | 1.5 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 3.4 | -- | | 3.1 | -- | | 3 | -- | | 1.5 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 3.4 | -- | | 3.1 | -- | | 3 | -- | | 1.5 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 3.4 | -- | | 3.1 | -- | | 3 | -- | | 1.5 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 17 | -- | | 15 | -- | | 15 | -- | | 7.5 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 14 | -- | | 12 | -- | | 12 | -- | | 6 | -- | |
| 4-Methyl-2-2Pentanone | mg/kg | 1000 | 1000 | 50 | 14 | -- | | 12 | -- | | 12 | -- | | 6 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 14 | -- | | 12 | -- | | 12 | -- | | 6 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | | 3.6 | | | 1.3 | | | 2 | | | 1.9 | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 3.4 | -- | | 3.1 | -- | | 3 | -- | | 1.5 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 3.4 | -- | | 3.1 | -- | | 3 | -- | | 1.5 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 3.4 | -- | | 3.1 | -- | | 3 | -- | | 1.5 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 3.4 | -- | | | 0.89 | J | 3 | -- | | 1.5 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 3.4 | -- | | 3.1 | -- | | 3 | -- | | 1.5 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | | 8.9 | | | 200 | | | 14 | | | 2.5 | |
| Chloroethane | mg/kg | NC | NC | NC | 3.4 | -- | | 3.1 | -- | | 3 | -- | | 1.5 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 3.4 | -- | | 3.1 | -- | | 3 | -- | | 1.5 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 3.4 | -- | | 3.1 | -- | | 3 | -- | | 1.5 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 3.4 | -- | | 3.1 | -- | | 3 | -- | | 1.5 | -- | |
| Dibromochloromehtane | mg/kg | 110 | 1000 | 1 | 3.4 | -- | | 3.1 | -- | | 3 | -- | | 1.5 | -- | |
| 1,3-Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 3.4 | -- | | 3.1 | -- | | 3 | -- | | 1.5 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | | 37 | | | 37 | | 3 | -- | | | 25 | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 3.4 | -- | | 3.1 | -- | | | 32 | | 1.5 | -- | |
| Styrene | mg/kg | 23 | 97 | 100 | | 8.8 | | 0.61 | -- | | 0.59 | -- | | 0.3 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 3.4 | -- | | 3.1 | -- | | 3 | -- | | 1.5 | -- | |
| Toluene | mg/kg | 1000 | 1000 | 500 | | 55 | | | 64 | | | 20 | | | 9.1 | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 3.4 | -- | | 3.1 | -- | | 3 | -- | | 0.3 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 3.4 | -- | | 3.1 | -- | | 3 | -- | | | 0.4 | J |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 3.4 | -- | | 3.1 | -- | | 3 | -- | | 1.5 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | | 184 | | | 173 | | | 158 | | | 172 | |
| TICs Total | mg/kg | NC | NC | NC | | 397 | J | | 290.3 | J | | 225 | J | | 262 | J |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 694.3 | J | | 766.49 | J | | 451 | J | | 472.9 | J |
| | | | | | | | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | 44 | -- | | 1.7 | -- | | | 3.2 | J | 17 | -- | |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | | 13 | J | | 0.86 | J | | 16 | | | 8.3 | J |
| 1,3-Dichlororbenzene | mg/kg | 5100 | 10000 | 100 | 44 | -- | | 1.7 | -- | | | 2.1 | J | 17 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | 44 | -- | | 1.7 | -- | | | 7.6 | | 17 | -- | |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| 2,4-Dichlorophenol | mg/kg | 170 | 3100 | 10 | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | 44 | -- | | | 5.9 | | | 7.9 | | 17 | -- | |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |

**Table 5**
**Area of Concern #5 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A5-SS-1<br>AB44862<br>10/18/2001<br>1'<br>Soil | | | A5-SS-2<br>AB44864<br>10/18/2001<br>1'<br>Soil | | | A5-SS-3<br>AB44865<br>10/18/2001<br>1'<br>Soil | | | A5-SS-4<br>AB44866<br>10/18/2001<br>1'<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| 2-Chlorphenol | mg/kg | 280 | 5200 | 10 | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | | 13 | J | | 6.8 | | | 6.6 | | 17 | -- | |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | | 15 | J | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| 2-Nitoaniline | mg/kg | NC | NC | NC | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | 44 | -- | | 1.7 | -- | | | 1.7 | J | 17 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | 44 | -- | | | 2.3 | | | 11 | | | 2.4 | J |
| Acenaphthylene | mg/kg | NC | NC | NC | 44 | -- | | 1.7 | -- | | | 4.2 | J | 17 | -- | |
| Anthracene | mg/kg | 10000 | 10000 | 100 | 44 | -- | | | 1.5 | J | | 13 | | | 4.3 | J |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | 44 | -- | | | 0.83 | J | | 13 | | | 4.2 | J |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | 44 | -- | | | 1 | J | | 13 | | | 5.4 | J |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | 44 | -- | | | 1.4 | J | | 16 | | | 6.8 | J |
| Benzo(g,h,I)perylene | mg/kg | NC | NC | NC | 44 | -- | | | 0.81 | J | | 13 | | | 3.8 | J |
| Benzo(k)fluoranthene | mg/kg | 0.9 | 4 | 500 | 44 | -- | | | 0.34 | J | | 5.8 | | | 1.8 | J |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| Bis(2-Ethcyhexyl)phthalate | mg/kg | 49 | 210 | 100 | | 480 | | | 11 | | | 5.5 | | | 87 | |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | | 20 | J | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| Carbazole | mg/kg | NC | NC | NC | 44 | -- | | 1.7 | -- | | | 20 | | 17 | -- | |
| Chrysene | mg/kg | 9 | 40 | 500 | 44 | -- | | 1.7 | 1.1 | J | | 15 | | | 6 | J |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | 44 | -- | | 1.7 | -- | | | 1.3 | J | 17 | -- | |
| Dibenzofuran | mg/kg | NC | NC | NC | 44 | -- | | 1.7 | -- | | | 5.4 | | 17 | -- | |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | | 99 | B | | 3.7 | B | | 0.98 | JB | | 12 | JB |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | | 320 | | 1.7 | -- | | 4.2 | -- | | | 10 | J |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | | 10 | J | | 1.8 | | | 22 | | | 13 | J |
| Fluorene | mg/kg | 2300 | 10000 | 100 | 44 | -- | | | 3 | | | 11 | | | 2.1 | J |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| Hexachlorocyclopentadiene | mg/kg | 400 | 7300 | 100 | 44 | -- | | 3.3 | -- | | 8.4 | -- | | 34 | -- | |
| Hexachloroethane | mg/kg | 6 | 100 | 100 | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | 44 | -- | | | 0.71 | J | | 11 | | | 1.9 | J |
| Isophorone | mg/kg | 1100 | 10000 | 50 | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| Naphthalene | mg/kg | 230 | 4200 | 100 | | 8.8 | J | | 3.1 | | | 16 | | | 1.8 | J |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 44 | -- | | 1.7 | -- | | 4.2 | -- | | 17 | -- | |

**Table 5**
**Area of Concern #5 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A5-SS-1<br>AB44862<br>10/18/2001<br>1'<br>Soil | | | A5-SS-2<br>AB44864<br>10/18/2001<br>1'<br>Soil | | | A5-SS-3<br>AB44865<br>10/18/2001<br>1'<br>Soil | | | A5-SS-4<br>AB44866<br>10/18/2001<br>1'<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| Phenanthrene | mg/kg | NC | NC | NC | | 22 | J | | 6.7 | | | 31 | | | 11 | J |
| Phenol | mg/kg | 10000 | 10000 | 50 | | 27 | J | | 0.27 | J | 4.2 | -- | | | 14 | J |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 8.3 | J | | 2.1 | | | 23 | | | 13 | J |
| TICs Total | mg/kg | NC | NC | NC | | 867 | J | | 267.8 | J | | 819.3 | J | | 1341 | J |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 1903.1 | J | | 323.02 | J | | 1115.58 | J | | 1549.8 | J |
| | | | | | | | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | 0.44 | -- | | 0.083 | -- | | 0.0042 | -- | | 0.43 | -- | |
| Alpha-BHC | mg/kg | NC | NC | NC | 0.44 | -- | | 0.083 | -- | | | 0.022 | | 0.43 | -- | |
| Beta-BHC | mg/kg | NC | NC | NC | 0.44 | -- | | 0.083 | -- | | 0.0042 | -- | | 0.43 | -- | |
| Chlordane | mg/kg | NC | NC | NC | 0.88 | -- | | 0.17 | -- | | 0.0084 | -- | | 0.85 | -- | |
| Delta-BHC | mg/kg | NC | NC | NC | 0.44 | -- | | 0.083 | -- | | 0.0042 | -- | | 0.43 | -- | |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | | 0.82 | | 0.083 | -- | | 0.0042 | -- | | 0.43 | -- | |
| Endosulfan I | mg/kg | NC | NC | NC | 0.44 | -- | | 0.083 | -- | | 0.0042 | -- | | 0.43 | -- | |
| Endosulfan II | mg/kg | NC | NC | NC | 0.44 | -- | | 0.083 | -- | | | 0.058 | | 0.43 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.44 | -- | | 0.083 | -- | | 0.0042 | -- | | 0.43 | -- | |
| Endrin | mg/kg | 17 | 310 | 50 | 0.44 | -- | | 0.083 | -- | | 0.0042 | -- | | 0.43 | -- | |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 0.44 | -- | | 0.083 | -- | | 0.0042 | -- | | 0.43 | -- | |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.44 | -- | | 0.083 | -- | | 0.0042 | -- | | 0.43 | -- | |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.44 | -- | | 0.083 | -- | | 0.0042 | -- | | 0.43 | -- | |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.44 | -- | | 0.083 | -- | | 0.0042 | -- | | 0.43 | -- | |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.44 | -- | | 0.083 | -- | | 0.0042 | -- | | 0.43 | -- | |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | 0.44 | -- | | 0.083 | -- | | 0.0042 | -- | | 0.43 | -- | |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | | 13 | | | 0.53 | | | 0.017 | | | 1.5 | |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | | 5.9 | | | 0.2 | | | 0.015 | | 0.43 | -- | |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | | 2 | | | 1 | | | 0.033 | | | 5.2 | |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 4.4 | -- | | 0.83 | -- | | 0.042 | -- | | 4.3 | -- | |
| | | | | | | | | | | | | | | | | |
| **PCB 8082** | | | | | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 2.2 | -- | | 0.1 | -- | | 0.021 | -- | | 4.3 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | NC | 2.2 | -- | | 0.1 | -- | | 0.021 | -- | | 4.3 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | NC | 2.2 | -- | | 0.1 | -- | | 0.021 | -- | | 4.3 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | NC | 2.2 | -- | | 0.1 | -- | | 0.021 | -- | | 4.3 | -- | |
| Aroclor-1248 | mg/kg | NC | NC | NC | 2.2 | -- | | 0.1 | -- | | 0.021 | -- | | 4.3 | -- | |
| Aroclor-1254 | mg/kg | NC | NC | NC | | 31 | | 0.1 | 7.2 | | | 0.24 | | 4.3 | 65 | |
| Aroclor-1260 | mg/kg | NC | NC | NC | 2.2 | -- | | 0.1 | -- | | 0.021 | -- | | 4.3 | -- | |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | 31 | | | 7.2 | | | 0.24 | | | 65 | |
| | | | | | | | | | | | | | | | | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 2650.12 | J | | 1098.44 | J | | 1566.965 | J | | 2094.4 | |
| | | | | | | | | | | | | | | | | |
| **Inorganic Compounds** | | | | | | | | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | NC | | 8300 | | | 6600 | | | 4100 | | | 13000 | |
| Antimony | mg/kg | 14 | 340 | NC | | 310 | | | 100 | | | 14 | | | 400 | |
| Arsenic | mg/kg | 20 | 20 | NC | | 25 | | | 30 | | | 16 | | | 29 | |
| Barium | mg/kg | 700 | 47000 | NC | | 5400 | | | 3100 | | | 820 | | | 2700 | |
| Beryllium | mg/kg | 2 | 2 | NC | 0.79 | -- | | 0.75 | -- | | 0.76 | -- | | 0.77 | -- | |
| Cadmium | mg/kg | 39 | 100 | NC | | 150 | | | 24 | | | 1.6 | | | 340 | |
| Calcium | mg/kg | NC | NC | NC | | 32000 | | | 16000 | | | 12000 | | | 69000 | |
| Chromium | mg/kg | 120000 | NC | NC | | 2000 | | | 900 | | | 540 | | | 2300 | |
| Cobalt | mg/kg | NC | NC | NC | | 68 | | | 28 | | | 16 | | | 97 | |

**Table 5**
**Area of Concern #5 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A5-SS-1<br>AB44862<br>10/18/2001<br>1'<br>Soil<br>CONC | Q | MDL | A5-SS-2<br>AB44864<br>10/18/2001<br>1'<br>Soil<br>CONC | Q | MDL | A5-SS-3<br>AB44865<br>10/18/2001<br>1'<br>Soil<br>CONC | Q | MDL | A5-SS-4<br>AB44866<br>10/18/2001<br>1'<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Copper | mg/kg | 600 | 600 | NC | | 1400 | | | 1300 | | | 300 | | | 3500 | |
| Iron | mg/kg | NC | NC | NC | | 120000 | | | 72000 | | | 23000 | | | 190000 | |
| Lead | mg/kg | 400 | 600 | NC | | 12000 | | | 5700 | | | 1100 | | | 12000 | |
| Magnesium | mg/kg | NC | NC | NC | | 6700 | | | 4800 | | | 3600 | | | 22000 | |
| Manganese | mg/kg | NC | NC | NC | | 1500 | | | 400 | | | 210 | | | 880 | |
| Mercury | mg/kg | 14 | 270 | NC | | 94 | | | 4.4 | | | 2.2 | | | 9.5 | |
| Nickel | mg/kg | 250 | 2400 | NC | | 220 | | | 220 | | | 52 | | | 300 | |
| Potassium | mg/kg | NC | NC | NC | 330 | -- | | | 650 | | | 410 | | 320 | -- | |
| Selenium | mg/kg | 63 | 3100 | NC | 2.6 | -- | | 2.5 | -- | | 2.5 | -- | | | 13 | |
| Silver | mg/kg | 110 | 4100 | NC | 3.3 | -- | | 3.1 | -- | | 3.2 | -- | | | 16 | |
| Sodium | mg/kg | NC | NC | NC | | 800 | | | 880 | | 630 | -- | | | 930 | |
| Thallium | mg/kg | 2 | 2 | NC | 1.6 | -- | | 1.5 | -- | | 1.5 | -- | | 1.5 | -- | |
| Vanadium | mg/kg | 370 | 7100 | NC | | 86 | | | 59 | | | 93 | | | 410 | |
| Zinc | mg/kg | 1500 | 1500 | NC | | 8000 | | | 8000 | | | 1400 | | | 15000 | |
| | | | | | | | | | | | | | | | | |
| **Chlorinated Herbicides** | | | | | | | | | | | | | | | | |
| 2,4,5-T | mg/kg | NC | NC | NC | 0.53 | -- | | 0.005 | -- | | 0.0051 | -- | | | 0.016 | |
| 2,4-D | mg/kg | NC | NC | NC | 0.53 | -- | | 0.005 | -- | | 0.0051 | -- | | 0.0051 | -- | |
| Dicamba | mg/kg | NC | NC | NC | 0.53 | -- | | 0.005 | -- | | 0.0051 | -- | | 0.0051 | -- | |
| Silvex | mg/kg | NC | NC | NC | 0.53 | -- | | 0.005 | -- | | 0.0051 | -- | | 0.0051 | -- | |
| | | | | | | | | | | | | | | | | |

CONC Concentration
TIC Tentatively Identified Compounds
J Estimated Value
Q Qualifier
MDL Method Detection Limit
NC No criteria established
pg/g=picagram per gram=parts per trillion
NA Not analyzed
R data rejected by validation
-- Not Detected
***BOLD*** analyte exceedes unrestricted use soil cleanup criteria (08/04/99)
* indicates sample is a duplicate of previous sample

**Table 5**
**Area of Concern #5 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A5-SS-5<br>AB44867<br>10/18/2001<br>1'<br>Soil | | | A5-SS-6<br>AB44872<br>10/18/2001<br>1.5'<br>Soil | | | A5-SS-7<br>AB44868<br>10/18/2001<br>2'<br>Soil | | | A5-SS-8<br>AB44873<br>10/18/2001<br>1'<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| **Volatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| 1,1,2,2-Tetrachloroethane | mg/kg | 34 | 70 | 1 | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 20 | -- | | 16 | -- | | 3.6 | -- | | 4 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 16 | -- | | 13 | -- | | 2.9 | -- | | 3.2 | -- | |
| 4-Methyl-2-2Pentanone | mg/kg | 1000 | 1000 | 50 | 16 | -- | | 13 | -- | | 2.9 | -- | | 3.2 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 16 | -- | | 13 | -- | | 2.9 | -- | | 3.2 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | | 3.3 | | | 0.97 | | 0.15 | -- | | | 0.2 | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | | 1.1 | J | | 9.8 | | 0.73 | -- | | | 1.1 | |
| Chloroethane | mg/kg | NC | NC | NC | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| Dibromochloromethane | mg/kg | 110 | 1000 | 1 | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| 1,3-Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | | 69 | | | 21 | | | 0.23 | | | 1.3 | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| Styrene | mg/kg | 23 | 97 | 100 | | 60 | | 0.65 | -- | | 0.15 | -- | | 0.16 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| Toluene | mg/kg | 1000 | 1000 | 500 | | 87 | | | 7.3 | | | 1.6 | | | 2.2 | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 4.1 | -- | | 3.2 | -- | | 0.73 | -- | | 0.79 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | | 180 | | | 86 | | | 1.42 | | | 2.49 | |
| TICs Total | mg/kg | NC | NC | NC | | 340 | J | | 163.9 | J | | 0.51 | J | | 114 | J |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 740.4 | J | | 288.97 | J | | 3.76 | J | | 121.29 | J |
| | | | | | | | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | | 7.8 | J | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | | 7.3 | J | | 0.83 | J | 2.4 | -- | | 7.8 | -- | |
| 1,3-Dichlororbenzene | mg/kg | 5100 | 10000 | 100 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| 2,4-Dichlorophenol | mg/kg | 170 | 3100 | 10 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | 26 | -- | | | 0.53 | J | 2.4 | -- | | 7.8 | -- | |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |

**Table 5**
**Area of Concern #5 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A5-SS-5<br>AB44867<br>10/18/2001<br>1'<br>Soil | | | A5-SS-6<br>AB44872<br>10/18/2001<br>1.5'<br>Soil | | | A5-SS-7<br>AB44868<br>10/18/2001<br>2'<br>Soil | | | A5-SS-8<br>AB44873<br>10/18/2001<br>1'<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| 2-Chlorophenol | mg/kg | 280 | 5200 | 10 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | | 11 | J | | 0.22 | J | | 1 | J | 7.8 | 1.4 | J |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| 2-Nitoaniline | mg/kg | NC | NC | NC | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | 26 | -- | | 1.2 | -- | | | 0.85 | J | 7.8 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | | 12 | J | | 0.36 | J | | 1.5 | J | 7.8 | -- | |
| Acenaphthylene | mg/kg | NC | NC | NC | 26 | -- | | 1.2 | -- | | | 1.1 | J | 7.8 | -- | |
| Anthracene | mg/kg | 10000 | 10000 | 100 | | 12 | J | | 0.77 | J | | 2 | J | 7.8 | -- | |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | | 5.9 | J | | 0.71 | J | | 3.6 | | 7.8 | -- | |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | | 4.4 | J | | 0.75 | J | | 2.6 | | 7.8 | -- | |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | | 4.7 | J | | 0.96 | J | | 3.4 | | 7.8 | -- | |
| Benzo(g,h,i)perylene | mg/kg | NC | NC | NC | | 2.8 | J | | 0.62 | J | | 1.7 | J | 7.8 | -- | |
| Benzo(k)fluoranthene | mg/kg | 0.9 | 4 | 500 | 26 | -- | | | 0.40 | J | | 1.4 | J | 7.8 | -- | |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| Bis(2-Ethcyhexyl)phthalate | mg/kg | 49 | 210 | 100 | | 170 | | | 9.4 | | | 4.2 | | 7.8 | 45 | |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | | 8.5 | J | | 0.25 | J | 2.4 | -- | | 7.8 | -- | |
| Carbazole | mg/kg | NC | NC | NC | | 5.9 | J | | 0.29 | J | 2.4 | -- | | 7.8 | -- | |
| Chrysene | mg/kg | 9 | 40 | 500 | | 7.8 | J | | 0.86 | J | | 4.4 | | 7.8 | -- | |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| Dibenzofuran | mg/kg | NC | NC | NC | | 7.4 | J | | 0.19 | J | | 0.87 | J | 7.8 | -- | |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | | 19 | JB | | 0.23 | JB | | 0.93 | J | 7.8 | -- | |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | | 47 | | | 0.19 | J | 2.4 | -- | | 7.8 | -- | |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | | 22 | J | | 1.3 | | | 0.44 | J | | 1.8 | J |
| Fluorene | mg/kg | 2300 | 10000 | 100 | | 12 | J | | 0.38 | J | | 2.3 | J | 7.8 | -- | |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| Hexachlorocyclopentadiene | mg/kg | 400 | 7300 | 100 | 53 | -- | | 2.4 | -- | | 2.4 | -- | | 16 | -- | |
| Hexachloroethane | mg/kg | 6 | 100 | 100 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | 26 | -- | | | 0.51 | J | | 1.2 | J | 7.8 | -- | |
| Isophorone | mg/kg | 1100 | 10000 | 50 | | 5.3 | J | | 0.80 | J | | 1.1 | J | 7.8 | -- | |
| Naphthalene | mg/kg | 230 | 4200 | 100 | | 14 | J | | 0.75 | J | | 0.99 | J | 7.8 | -- | |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 26 | -- | | 1.2 | -- | | 2.4 | -- | | 7.8 | -- | |

**Table 5**
**Area of Concern #5 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A5-SS-5<br>AB44867<br>10/18/2001<br>1'<br>Soil<br>CONC | Q | MDL | A5-SS-6<br>AB44872<br>10/18/2001<br>1.5'<br>Soil<br>CONC | Q | MDL | A5-SS-7<br>AB44868<br>10/18/2001<br>2'<br>Soil<br>CONC | Q | MDL | A5-SS-8<br>AB44873<br>10/18/2001<br>1'<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenathrene | mg/kg | NC | NC | NC | | 45 | | | 1.9 | | | 7.4 | | | 2.7 | J |
| Phenol | mg/kg | 10000 | 10000 | 50 | 26 | -- | | | 0.23 | J | | 1.3 | J | 7.8 | -- | |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 18 | J | | 1.2 | J | | 6.5 | | | 1.8 | J |
| TICs Total | mg/kg | NC | NC | NC | | 2871 | | | 101.96 | J | | 472 | J | | 164 | J |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 3320.8 | J | | 125.39 | J | | 522.78 | J | | 216.7 | J |
| | | | | | | | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | | 0.38 | | 0.16 | -- | | 0.02 | -- | | 0.0039 | -- | |
| Alpha-BHC | mg/kg | NC | NC | NC | 0.18 | -- | | 0.16 | -- | | 0.02 | -- | | 0.0039 | -- | |
| Beta-BHC | mg/kg | NC | NC | NC | 0.18 | -- | | 0.16 | -- | | 0.02 | -- | | 0.0039 | -- | |
| Chlordane | mg/kg | NC | NC | NC | 0.35 | -- | | 0.32 | -- | | | 0.25 | | | 0.036 | |
| Delta-BHC | mg/kg | NC | NC | NC | 0.18 | -- | | 0.16 | -- | | 0.02 | -- | | 0.0039 | -- | |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | 0.18 | -- | | 0.16 | -- | | 0.02 | -- | | 0.0039 | -- | |
| Endosulfan I | mg/kg | NC | NC | NC | 0.18 | -- | | 0.16 | -- | | 0.02 | -- | | 0.0039 | -- | |
| Endosulfan II | mg/kg | NC | NC | NC | 0.18 | -- | | 0.16 | -- | | 0.02 | -- | | 0.0039 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.18 | -- | | 0.16 | -- | | 0.02 | -- | | 0.0039 | -- | |
| Endrin | mg/kg | 17 | 310 | 50 | 0.18 | -- | | 0.16 | -- | | 0.02 | -- | | 0.0039 | -- | |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 0.18 | -- | | 0.16 | -- | | 0.02 | -- | | 0.0039 | -- | |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.18 | -- | | 0.16 | -- | | 0.02 | -- | | 0.0039 | -- | |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.18 | -- | | 0.16 | -- | | 0.02 | -- | | 0.0039 | -- | |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.18 | -- | | 0.16 | -- | | 0.02 | -- | | 0.0039 | -- | |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.18 | -- | | 0.16 | -- | | 0.02 | -- | | 0.0039 | -- | |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | 0.18 | -- | | 0.16 | -- | | | 0.16 | | 0.0039 | -- | |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | | 0.55 | | | 1.2 | | | 0.13 | | 0.0039 | -- | |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | | 0.52 | | | 0.44 | | | 0.056 | | | 0.024 | |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | | 2 | | | 2.5 | | | 0.083 | | | 0.035 | |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 1.8 | -- | | 1.6 | -- | | 0.2 | -- | | 0.039 | -- | |
| | | | | | | | | | | | | | | | | |
| **PCB 8082** | | | | | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | | 22 | | 2.0 | -- | | 0.02 | -- | | 0.019 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | NC | 2.2 | -- | | 2.0 | -- | | 0.02 | -- | | 0.019 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | NC | 2.2 | -- | | 2.0 | -- | | 0.02 | -- | | 0.019 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | NC | 2.2 | -- | | 2.0 | -- | | 0.02 | -- | | 0.019 | -- | |
| Aroclor-1248 | mg/kg | NC | NC | NC | 2.2 | -- | | 2.0 | -- | | 0.02 | -- | | 0.019 | -- | |
| Aroclor-1254 | mg/kg | NC | NC | NC | | 26 | | | 24 | | 0.02 | -- | | 0.019 | -- | |
| Aroclor-1260 | mg/kg | NC | NC | NC | 2.2 | -- | | 2.0 | -- | | | 0.62 | | | 0.27 | |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | 48 | | | 24 | | | 0.62 | | | 0.27 | |
| | | | | | | | | | | | | | | | | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 4112.65 | J | | 442.5 | J | | 527.839 | J | | 338.355 | J |
| | | | | | | | | | | | | | | | | |
| **Inorganic Compounds** | | | | | | | | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | NC | | 13000 | | | 8000 | | | 6500 | | | 1700 | |
| Antimony | mg/kg | 14 | 340 | NC | | 84 | | | 35 | | | 44 | | | 98 | |
| Arsenic | mg/kg | 20 | 20 | NC | | 23 | | | 17 | | | 13 | | | 16 | |
| Barium | mg/kg | 700 | 47000 | NC | | 4300 | | | 540 | | | 820 | | | 640 | |
| Beryllium | mg/kg | 2 | 2 | NC | 0.79 | -- | | 0.71 | -- | | 0.72 | -- | | 0.7 | -- | |
| Cadmium | mg/kg | 39 | 100 | NC | | 64 | | | 25 | | | 16 | | | 67 | |
| Calcium | mg/kg | NC | NC | NC | | 51000 | | | 14000 | | | 43000 | | | 8000 | |
| Chromium | mg/kg | 120000 | NC | NC | | 610 | | | 1200 | | | 220 | | | 360 | |
| Cobalt | mg/kg | NC | NC | NC | | 130 | | | 15 | | | 32 | | | 55 | |

**Table 5**
**Area of Concern #5 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A5-SS-5<br>AB44867<br>10/18/2001<br>1'<br>Soil<br>CONC Q | MDL | A5-SS-6<br>AB44872<br>10/18/2001<br>1.5'<br>Soil<br>CONC Q | MDL | A5-SS-7<br>AB44868<br>10/18/2001<br>2'<br>Soil<br>CONC Q | MDL | A5-SS-8<br>AB44873<br>10/18/2001<br>1'<br>Soil<br>CONC Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Copper | mg/kg | 600 | 600 | NC | | 680 | | 470 | | 300 | | 790 |
| Iron | mg/kg | NC | NC | NC | | 26000 | | 62000 | | 100000 | | 410000 |
| Lead | mg/kg | 400 | 600 | NC | | 9400 | | 2100 | | 1400 | | 2300 |
| Magnesium | mg/kg | NC | NC | NC | | 28000 | | 2500 | | 3000 | | 670 |
| Manganese | mg/kg | NC | NC | NC | | 260 | | 880 | | 520 | | 2500 |
| Mercury | mg/kg | 14 | 270 | NC | | 2 | | 0.6 | | 0.68 | 0.17 | -- |
| Nickel | mg/kg | 250 | 2400 | NC | | 830 | | 54 | | 61 | | 200 |
| Potassium | mg/kg | NC | NC | NC | | 780 | | 470 | | 710 | 290 | -- |
| Selenium | mg/kg | 63 | 3100 | NC | | 11 | 2.4 | -- | 2.4 | -- | 2.3 | -- |
| Silver | mg/kg | 110 | 4100 | NC | 3.3 | -- | 3 | -- | 3 | -- | 2.9 | -- |
| Sodium | mg/kg | NC | NC | NC | | 1500 | | 670 | 600 | -- | 580 | -- |
| Thallium | mg/kg | 2 | 2 | NC | 1.6 | -- | 1.4 | -- | 1.4 | -- | 1.4 | -- |
| Vanadium | mg/kg | 370 | 7100 | NC | | 99 | | 45 | | 36 | 12 | -- |
| Zinc | mg/kg | 1500 | 1500 | NC | | 10000 | | 1500 | | 1200 | | 1600 |
| | | | | | | | | | | | | |
| **Chlorinated Herbicides** | | | | | | | | | | | | |
| 2,4,5-T | mg/kg | NC | NC | NC | | 0.055 | 0.0048 | -- | 0.0048 | -- | 0.0047 | -- |
| 2,4-D | mg/kg | NC | NC | NC | | 0.016 | 0.0048 | -- | | 0.014 | 0.0047 | -- |
| Dicamba | mg/kg | NC | NC | NC | 0.0053 | -- | 0.0048 | -- | 0.0048 | -- | | 0.027 |
| Silvex | mg/kg | NC | NC | NC | | 0.16 | 0.0048 | -- | 0.0048 | -- | 0.0047 | -- |
| | | | | | | | | | | | | |

CONC Concentration
TIC Tentatively Identified Compounds
J Estimated Value
Q Qualifier
MDL Method Detection Limit
NC No criteria established
pg/g=picagram per gram=parts per trillion
NA Not analyzed
R data rejected by validation
-- Not Detected
***BOLD*** analyte exceedes unrestricted use soil cleanup criteria (08/04/99)
* indicates sample is a duplicate of previous sample

**Table 5**
**Area of Concern #5 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A5-SS-9<br>AB44869<br>10/18/2001<br>1'<br>Soil | | | A5-SS-10<br>AB44870<br>10/18/2001<br>1'<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q |
| **Volatile Organic Compounds** | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 0.68 | -- | | 0.7 | -- | |
| 1,1,2,2-Tetrachlororethane | mg/kg | 34 | 70 | 1 | 0.68 | -- | | 0.7 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 0.68 | -- | | 0.7 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 0.68 | -- | | 0.7 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 0.68 | -- | | 0.7 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 0.68 | -- | | 0.7 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 0.68 | -- | | 0.7 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 3.4 | -- | | 3.5 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 2.7 | -- | | 2.8 | -- | |
| 4-Methyl-2-2Pentanone | mg/kg | 1000 | 1000 | 50 | 2.7 | -- | | 2.8 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 2.7 | -- | | 2.8 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | 0.14 | -- | | 0.14 | -- | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 0.68 | -- | | 0.7 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 0.68 | -- | | 0.7 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 0.68 | -- | | 0.7 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 0.68 | -- | | 0.7 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 0.68 | -- | | 0.7 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | 0.68 | -- | | 0.7 | -- | |
| Chloroethane | mg/kg | NC | NC | NC | 0.68 | -- | | 0.7 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 0.68 | -- | | 0.7 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 0.68 | -- | | 0.7 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 0.68 | -- | | 0.7 | -- | |
| Dibromochloromehtane | mg/kg | 110 | 1000 | 1 | 0.68 | -- | | 0.7 | -- | |
| 1,3-Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 0.68 | -- | | 0.7 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | | 0.67 | | | 0.37 | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 0.68 | -- | | 0.7 | -- | |
| Styrene | mg/kg | 23 | 97 | 100 | 0.14 | -- | | 0.14 | -- | |
| Tetrachlorocthene | mg/kg | 4 | 6 | 1 | 0.68 | -- | | 0.7 | -- | |
| Toluene | mg/kg | 1000 | 1000 | 500 | | 2 | | | 1.6 | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 0.68 | -- | | 0.7 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 0.68 | -- | | 0.7 | -- | |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 0.68 | -- | | 0.7 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | | 4.8 | | | 2.44 | |
| TICs Total | mg/kg | NC | NC | NC | | 3.77 | J | | 0.58 | J |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 11.24 | J | | 4.99 | J |
| | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | 1.1 | -- | | 0.4 | -- | |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | 1.1 | -- | | 0.4 | -- | |
| 1,3-Dichlororbenzene | mg/kg | 5100 | 10000 | 100 | 1.1 | -- | | 0.4 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | 1.1 | -- | | 0.4 | -- | |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 1.1 | -- | | 0.4 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 1.1 | -- | | 0.4 | -- | |
| 2,4-Dichlorophenol | mg/kg | 170 | 3100 | 10 | 1.1 | -- | | 0.4 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | 1.1 | -- | | 0.4 | -- | |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 1.1 | -- | | 0.4 | -- | |
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 1.1 | -- | | 0.4 | -- | |

Table 5
Area of Concern #5 Soil Analytical Results

Remedial Investigation Report
Central Steel Drum
Newark, New Jersey

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A5-SS-9<br>AB44869<br>10/18/2001<br>1'<br>Soil | | | A5-SS-10<br>AB44870<br>10/18/2001<br>1'<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 1.1 | -- | | 0.4 | -- | |
| 2-Chlorphenol | mg/kg | 280 | 5200 | 10 | 1.1 | -- | | 0.4 | -- | |
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | 1.1 | -- | | 0.4 | -- | |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | 1.1 | -- | | 0.4 | -- | |
| 2-Nitoaniline | mg/kg | NC | NC | NC | 1.1 | -- | | 0.4 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 1.1 | -- | | 0.4 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | 1.1 | -- | | 0.4 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 1.1 | -- | | 0.4 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 1.1 | -- | | 0.4 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 1.1 | -- | | 0.4 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 1.1 | -- | | 0.4 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 1.1 | -- | | 0.4 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 1.1 | -- | | 0.4 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 1.1 | -- | | 0.4 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 1.1 | -- | | 0.4 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 1.1 | -- | | 0.4 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | 1.1 | -- | | 0.4 | -- | |
| Acenaphthylene | mg/kg | NC | NC | NC | 1.1 | -- | | 0.4 | -- | |
| Anthracene | mg/kg | 10000 | 10000 | 100 | 1.1 | -- | | 0.4 | -- | |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | | 0.2 | J | 0.4 | -- | |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | | 0.27 | J | | 0.062 | J |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | | 0.46 | J | | 0.11 | J |
| Benzo(g,h,I)perylene | mg/kg | NC | NC | NC | | 0.4 | J | | 0.088 | J |
| Benzo(k)fluouranthene | mg/kg | 0.9 | 4 | 500 | 1.1 | -- | | 0.4 | -- | |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 1.1 | -- | | 0.4 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 1.1 | -- | | 0.4 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 1.1 | -- | | 0.4 | -- | |
| Bis(2-Etheyhexyl)phthalate | mg/kg | 49 | 210 | 100 | | 8.7 | | | 1 | |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | | 0.69 | J | | 0.44 | |
| Carbazole | mg/kg | NC | NC | NC | 1.1 | -- | | 0.4 | -- | |
| Chrysene | mg/kg | 9 | 40 | 500 | | 0.26 | J | 0.4 | -- | |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | 1.1 | -- | | 0.4 | -- | |
| Dibenzofuran | mg/kg | NC | NC | NC | 1.1 | -- | | 0.4 | -- | |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | 1.1 | -- | | 0.4 | -- | |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 1.1 | -- | | 0.4 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | | 0.75 | JB | | 0.15 | JB |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | | 0.34 | J | | 0.052 | J |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | | 0.27 | J | | 0.058 | J |
| Fluorene | mg/kg | 2300 | 10000 | 100 | 1.1 | -- | | 0.4 | -- | |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 1.1 | -- | | 0.4 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 1.1 | -- | | 0.4 | -- | |
| Hexachlororcyclopentadiene | mg/kg | 400 | 7300 | 100 | 1.1 | -- | | 0.79 | -- | |
| Hexachlororethane | mg/kg | 6 | 100 | 100 | 1.1 | -- | | 0.4 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | | 0.29 | J | | 0.067 | J |
| Isophorone | mg/kg | 1100 | 10000 | 50 | | 0.49 | J | 0.4 | -- | |
| Naphthalene | mg/kg | 230 | 4200 | 100 | | 0.19 | J | | 0.054 | J |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 1.1 | -- | | 0.4 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 1.1 | -- | | 0.4 | -- | |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | 1.1 | -- | | 0.4 | -- | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 1.1 | -- | | 0.4 | -- | |

**Table 5**
**Area of Concern #5 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A5-SS-9<br>AB44869<br>10/18/2001<br>1'<br>Soil | | | A5-SS-10<br>AB44870<br>10/18/2001<br>1'<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q |
| Phenathrene | mg/kg | NC | NC | NC | | 0.23 | J | | 0.06 | J |
| Phenol | mg/kg | 10000 | 10000 | 50 | | 0.8 | J | | 0.055 | J |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 0.31 | J | | 0.053 | J |
| TICs Total | mg/kg | NC | NC | NC | | 92.24 | J | | 49.38 | J |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 106.89 | J | | 51.629 | J |
| | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | 0.019 | -- | | 0.004 | -- | |
| Alpha-BHC | mg/kg | NC | NC | NC | | 0.022 | | 0.004 | -- | |
| Beta-BHC | mg/kg | NC | NC | NC | 0.019 | -- | | 0.004 | -- | |
| Chlordane | mg/kg | NC | NC | NC | | 0.21 | | | 0.078 | |
| Delta-BHC | mg/kg | NC | NC | NC | 0.019 | -- | | 0.004 | -- | |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | | 0.026 | | 0.004 | -- | |
| Endosulfan I | mg/kg | NC | NC | NC | 0.019 | -- | | 0.004 | -- | |
| Endosulfan II | mg/kg | NC | NC | NC | 0.019 | -- | | 0.004 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.019 | -- | | 0.004 | -- | |
| Endrin | mg/kg | 17 | 310 | 50 | 0.019 | -- | | | 0.023 | |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 0.019 | -- | | 0.004 | -- | |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.019 | -- | | 0.004 | -- | |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.019 | -- | | | 0.012 | |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.019 | -- | | | 0.0097 | |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.019 | -- | | 0.004 | -- | |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | 0.019 | -- | | 0.004 | -- | |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | 0.019 | 0.042 | | 0.004 | -- | |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | 0.019 | 0.049 | | | 0.022 | |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | 0.019 | 0.15 | | | 0.11 | |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 0.19 | -- | | 0.04 | -- | |
| | | | | | | | | | | |
| **PCB 8082** | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 0.019 | -- | | 0.02 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | NC | 0.019 | -- | | 0.02 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | NC | 0.019 | -- | | 0.02 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | NC | 0.019 | -- | | 0.02 | -- | |
| Aroclor-1248 | mg/kg | NC | NC | NC | 0.019 | -- | | 0.02 | -- | |
| Aroclor-1254 | mg/kg | NC | NC | NC | 0.019 | -- | | 0.02 | -- | |
| Aroclor-1260 | mg/kg | NC | NC | NC | | 1.4 | | 0.02 | -- | |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | 1.4 | | | -- | |
| | | | | | | | | | | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 120.029 | J | | 56.8737 | J |
| | | | | | | | | | | |
| **Inorganic Campounds** | | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | NC | | 12000 | | | 14000 | |
| Antimony | mg/kg | 14 | 340 | NC | | 100 | | | 150 | |
| Arsenic | mg/kg | 20 | 20 | NC | | 15 | | | 9.9 | |
| Barium | mg/kg | 700 | 47000 | NC | | 1500 | | | 2000 | |
| Beryllium | mg/kg | 2 | 2 | NC | 0.68 | -- | | 0.71 | -- | |
| Cadmium | mg/kg | 39 | 100 | NC | | 34 | | | 40 | |
| Calcium | mg/kg | NC | NC | NC | | 22000 | | | 33000 | |
| Chromium | mg/kg | 120000 | NC | NC | | 520 | | | 870 | |
| Cobalt | mg/kg | NC | NC | NC | | 58 | | | 61 | |

**Table 5**
**Area of Concern #8 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A5-SS-9<br>AB44869<br>10/18/2001<br>1'<br>Soil | | | A5-SS-10<br>AB44870<br>10/18/2001<br>1'<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q |
| Copper | mg/kg | 600 | 600 | NC | | 660 | | | 960 | |
| Iron | mg/kg | NC | NC | NC | | 170000 | | | 96000 | |
| Lead | mg/kg | 400 | 600 | NC | | 3400 | | | 6600 | |
| Magnesium | mg/kg | NC | NC | NC | | 8100 | | | 7100 | |
| Manganese | mg/kg | NC | NC | NC | | 1000 | | | 690 | |
| Mercury | mg/kg | 14 | 270 | NC | | 0.88 | | | 0.75 | |
| Nickel | mg/kg | 250 | 2400 | NC | | 160 | | | 150 | |
| Potassium | mg/kg | NC | NC | NC | | 540 | | | 600 | |
| Selenium | mg/kg | 63 | 3100 | NC | | -- | | 2.4 | -- | |
| Silver | mg/kg | 110 | 4100 | NC | | -- | | 3 | -- | |
| Sodium | mg/kg | NC | NC | NC | | 1100 | | | 1600 | |
| Thallium | mg/kg | 2 | 2 | NC | | -- | | 1.4 | -- | |
| Vanadium | mg/kg | 370 | 7100 | NC | | 45 | | | 36 | |
| Zinc | mg/kg | 1500 | 1500 | NC | | 2700 | | | 2500 | |
| | | | | | | | | | | |
| **Chlorinated Herbicides** | | | | | | | | | | |
| 2,4,5-T | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.0048 | -- | |
| 2,4-D | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.0048 | -- | |
| Dicamba | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.0048 | -- | |
| Silvex | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.0048 | -- | |
| | | | | | | | | | | |

CONC Concentration
TIC Tentatively Identified Compounds
J Estimated Value
Q Qualifier
MDL Method Detection Limit
NC No criteria established
pg/g=picagram per gram=parts per trillion
NA Not analyzed
R data rejected by validation
-- Not Detected
***BOLD*** analyte exceedes unrestricted use soil cleanup criteria (08/04/99)
* indicates sample is a duplicate of previous sample

# Table 6
# AOC 5 Dioxin Analytical Results
# Remedial Investigation Report
# Central Streel Drum
# Newark, New Jersey

| Dioxins/Furans | | | | |
|---|---|---|---|---|
| 1,2,3,4,6,7,8,9-Octachlorodibenzodioxin | pg/g | **67000** | **3800** | **8500** |
| 1,2,3,4,6,7,8,9-Octachlorodibenzofuran | pg/g | 3800 | 95 | 2400 |
| 1,2,3,4,6,7,8-Heptachlorodibenzodioxin | pg/g | 8300 | 160 | 8700 |
| 1,2,3,4,6,7,8-Heptachlorodibenzofuran | pg/g | 1200 | 30 | 790 |
| 1,2,3,4,7,8,9-Heptachlorodibenzofuran | pg/g | 71 | 2.5 | 51 |
| 1,2,3,4,7,8-Hexachlorodibenzofuran | pg/g | 120 | 9.3 | 100 |
| 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin | pg/g | 24 | 1.2 | 17 |
| 1,2,3,6,7,8-Hexachlorodibenzofuran | pg/g | 28 | 3 | 27 |
| 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin | pg/g | 250 | 5.3 | 170 |
| 1,2,3,7,8,9-Hexachlorodibenzofuran | pg/g | 3 | 0.47 -- | 34 |
| 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin | pg/g | 110 | 3.1 | 53 |
| 1,2,3,7,8-Pentachlorodibenzofuran | pg/g | 18 | 2.9 | 19 |
| 1,2,3,7,8-Pentachlorodibenzo-p-dioxin | pg/g | 13 | 0.94 | 9 |
| 2,3,4,6,7,8-Hexachlorodibenzofuran | pg/g | 38 | 4.3 | 24 |
| 2,3,4,7,8-Pentachlorodibenzofuran | pg/g | 28 | 6.6 | 42 |
| 2,3,7,8-Tetrachlorodibenzofuran | pg/g | 48 | 10 | 75 |
| 2,3,7,8-Tetrachlorodibenzo-p-dioxin | pg/g | 60 | 0.77 | 19 |

Notes:
pg/g=picograms per gram=parts per trillion
MDL=minimum detection limit
Q=qualifier

**Table 7**
**Area of Concern #6 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A6-SS-1<br>AB45268<br>10/24/2001<br>1.5'<br>SOIL | | | A6-SS-2<br>AB45269<br>10/24/2001<br>1.5'<br>SOIL | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q |
| **Volatile Organic Compounds** | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 0.74 | -- | | 0.61 | -- | |
| 1,1,2,2-Tetrachlororethane | mg/kg | 34 | 70 | 1 | 0.74 | -- | | 0.61 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 0.74 | -- | | 0.61 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 0.74 | -- | | 0.61 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 0.74 | -- | | 0.61 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 0.74 | -- | | 0.61 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 0.74 | -- | | 0.61 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 3.7 | -- | | 3.1 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 3 | -- | | 2.4 | -- | |
| 4-Methyl-2-2Pentanone | mg/kg | 1000 | 1000 | 50 | 3 | -- | | 2.4 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 3 | -- | | 2.4 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | 0.15 | -- | | 0.12 | -- | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 0.74 | -- | | 0.61 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 0.74 | -- | | 0.61 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 0.74 | -- | | 0.61 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 0.74 | -- | | 0.61 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 0.74 | -- | | 0.61 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | 0.74 | -- | | 0.61 | -- | |
| Chloroethane | mg/kg | NC | NC | NC | 0.74 | -- | | 0.61 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 0.74 | -- | | 0.61 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 0.74 | -- | | 0.61 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 0.74 | -- | | 0.61 | -- | |
| Dibromochloromebtane | mg/kg | 110 | 1000 | 1 | 0.74 | -- | | 0.61 | -- | |
| Dichloroprocne (cis and trans) | mg/kg | 4 | 5 | 1 | 0.74 | -- | | 0.61 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | 0.15 | -- | | 0.12 | -- | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 0.74 | -- | | 0.61 | -- | |
| Styrene | mg/kg | 23 | 97 | 100 | 0.15 | -- | | 0.12 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 0.74 | -- | | 0.61 | -- | |
| Touene | mg/kg | 1000 | 1000 | 500 | 0.15 | -- | | | 0.34 | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 0.74 | -- | | 0.61 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 0.74 | -- | | 0.61 | -- | |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 0.74 | -- | | 0.61 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | 0.15 | -- | | 0.12 | -- | |
| Total unknown compounds | mg/kg | NC | NC | NC | | 1.24 | J | | 15 | J |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 1.24 | J | | 15.34 | J |
| | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | 0.45 | -- | | | 0.062 | J |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | 0.45 | -- | | 0.35 | -- | |
| 1,3-Dichlororbenzene | mg/kg | 5100 | 10000 | 100 | 0.45 | -- | | 0.35 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | 0.45 | -- | | 0.35 | -- | |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 0.45 | -- | | 0.35 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 0.45 | -- | | 0.35 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | 0.45 | -- | | 0.35 | -- | |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 0.45 | -- | | 0.35 | -- | |

**Table 7**
**Area of Concern #6 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A6-SS-1<br>AB45268<br>10/24/2001<br>1.5'<br>SOIL<br>CONC | Q | MDL | A6-SS-2<br>AB45269<br>10/24/2001<br>1.5'<br>SOIL<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 0.45 | -- | | 0.35 | -- | |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 0.45 | -- | | 0.35 | -- | |
| 2-Chlorophenol | mg/kg | 280 | 5200 | 10 | 0.45 | -- | | 0.35 | -- | |
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | 0.45 | -- | | | 0.044 | J |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | 0.45 | -- | | 0.35 | -- | |
| 2-Nitroaniline | mg/kg | NC | NC | NC | 0.45 | -- | | 0.35 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 0.45 | -- | | 0.35 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | 0.45 | -- | | 0.35 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 0.45 | -- | | 0.35 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 0.45 | -- | | 0.35 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 0.45 | -- | | 0.35 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 0.45 | -- | | 0.35 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 0.45 | -- | | 0.35 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 0.45 | -- | | 0.35 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 0.45 | -- | | 0.35 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 0.45 | -- | | 0.35 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 0.45 | -- | | 0.35 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | 0.45 | -- | | 0.35 | -- | |
| Acenaphthylene | mg/kg | NC | NC | NC | 0.45 | -- | | 0.35 | -- | |
| Anthracene | mg/kg | 10000 | 10000 | 100 | | 0.18 | J | 0.35 | -- | |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | | 1.3 | | | 0.065 | J |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | | 1.3 | | | 0.071 | J |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | | 1.7 | | | 0.17 | J |
| Benzo(g,h,I)perylene | mg/kg | NC | NC | NC | | 0.38 | J | | 0.051 | J |
| Benzo(k)fluouranthene | mg/kg | 0.9 | 4 | 500 | | 0.55 | | | 0.056 | J |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 0.45 | -- | | 0.35 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 0.45 | -- | | 0.35 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 0.45 | -- | | 0.35 | -- | |
| Bis(2-Etheyhexyl)phthalate | mg/kg | 49 | 210 | 100 | | 0.058 | J | | 2.5 | |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | 0.45 | -- | | | 0.28 | J |
| Carbazole | mg/kg | NC | NC | NC | 0.45 | -- | | 0.35 | -- | |
| Chrysene | mg/kg | 9 | 40 | 500 | | 1.1 | | | 0.071 | J |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | | 0.053 | J | 0.35 | -- | |
| Dibenzofuran | mg/kg | NC | NC | NC | 0.45 | -- | | 0.35 | -- | |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.45 | -- | | 0.35 | -- | |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.45 | -- | | 0.35 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | | 0.048 | J | 0.35 | 0.18 | J |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | 0.45 | -- | | 0.35 | 0.18 | J |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | | 1.5 | | 0.35 | 0.11 | J |
| Fluorene | mg/kg | 2300 | 10000 | 100 | 0.45 | -- | | 0.35 | -- | |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 0.45 | -- | | 0.35 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 0.45 | -- | | 0.35 | -- | |
| Hexachlorocyclopentadiene | mg/kg | 400 | 7300 | 100 | 0.45 | -- | | 0.7 | -- | |
| Hexachloroethane | mg/kg | 6 | 100 | 100 | 0.45 | -- | | 0.35 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | | 0.41 | J | | 0.042 | J |
| Isophorone | mg/kg | 1100 | 10000 | 50 | 0.45 | -- | | | 0.19 | J |
| Naphthalene | mg/kg | 230 | 4200 | 100 | | 0.046 | J | | 0.045 | J |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 0.45 | -- | | 0.35 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 0.45 | -- | | 0.35 | -- | |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | 0.45 | -- | | 0.35 | -- | |

**Table 7**
**Area of Concern #6 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A6-SS-1<br>AB45268<br>10/24/2001<br>1.5'<br>SOIL<br>CONC | Q | | A6-SS-2<br>AB45269<br>10/24/2001<br>1.5'<br>SOIL<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | | | MDL | | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 0.45 | -- | | 0.35 | -- | |
| Phenanthrene | mg/kg | NC | NC | NC | 0.45 | 0.61 | | | 0.11 | J |
| Phenol | mg/kg | 10000 | 10000 | 50 | 0.45 | -- | | | 0.11 | J |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 1.4 | | | 0.11 | J |
| Total Unknown Compounds | mg/kg | NC | NC | NC | | 74.05 | J | | 39.25 | J |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 84.685 | J | | 43.697 | J |
| | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | 0.0045 | -- | | 0.07 | -- | |
| Alpha-BHC | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.07 | -- | |
| Beta-BHC | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.07 | -- | |
| Chlordane | mg/kg | NC | NC | NC | 0.0090 | -- | | | 0.67 | |
| Delta-BHC | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.07 | -- | |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | 0.0045 | -- | | 0.07 | -- | |
| Endosulfan I | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.07 | -- | |
| Endosulfan II | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.07 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.07 | -- | |
| Endrin | mg/kg | 17 | 310 | 50 | 0.0045 | -- | | 0.07 | -- | |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.07 | -- | |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.07 | -- | |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.0045 | -- | | 0.07 | -- | |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.0045 | -- | | 0.07 | -- | |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.07 | -- | |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | 0.0045 | 0.13 | | 0.07 | -- | |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | 0.0045 | -- | | 0.07 | -- | |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | 0.0045 | -- | | | 0.12 | |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | 0.0045 | -- | | | 0.4 | |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 0.0450 | -- | | 0.7 | -- | |
| | | | | | | | | | | |
| **PCB 8082** | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 0.023 | -- | | 0.018 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | NC | 0.023 | -- | | 0.018 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | NC | 0.023 | -- | | 0.018 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | NC | 0.023 | -- | | 0.018 | -- | |
| Aroclor-1248 | mg/kg | NC | NC | NC | 0.023 | -- | | 0.018 | -- | |
| Aroclor-1254 | mg/kg | NC | NC | NC | 0.023 | -- | | 0.018 | -- | |
| Aroclor-1260 | mg/kg | NC | NC | NC | 0.023 | -- | | | 1.1 | |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | -- | | | 1.1 | |
| | | | | | | | | | | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 86.055 | J | | 61.327 | J |
| | | | | | | | | | | |

Table 7
Area of Concern #6 Soil Analytical Results

Remedial Investigation Report
Central Steel Drum
Newark, New Jersey

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A6-SS-1<br>AB45268<br>10/24/2001<br>1.5'<br>SOIL<br>CONC Q | MDL | A6-SS-2<br>AB45269<br>10/24/2001<br>1.5'<br>SOIL<br>CONC Q |
|---|---|---|---|---|---|---|---|---|
| Inorganic Compounds | | | | | | | | |
| Aluminum | mg/kg | NC | NC | NC | | 5400 | | 9500 |
| Antimony | mg/kg | 14 | 340 | NC | | 10 | | 48 |
| Arsenic | mg/kg | 20 | 20 | NC | | 22 | | 4.6 |
| Barium | mg/kg | 700 | 47000 | NC | | 360 | | 270 |
| Beryllium | mg/kg | 2 | 2 | NC | 0.81 | -- | 0.63 | -- |
| Cadmium | mg/kg | 39 | 100 | NC | 0.81 | -- | | 5.7 |
| Calcium | mg/kg | NC | NC | NC | | 2600 | | 16000 |
| Chromium | mg/kg | 120000 | NC | NC | | 440 | | 180 |
| Cobalt | mg/kg | NC | NC | NC | | 8.1 | | 20 |
| Copper | mg/kg | 600 | 600 | NC | | 290 | | 210 |
| Iron | mg/kg | NC | NC | NC | | 17000 | | 44000 |
| Lead | mg/kg | 400 | 600 | NC | | 630 | | 870 |
| Magnesium | mg/kg | NC | NC | NC | | 1600 | | 8600 |
| Manganese | mg/kg | NC | NC | NC | | 190 | | 450 |
| Mercury | mg/kg | 14 | 270 | NC | | 1.8 | | 1 |
| Nickel | mg/kg | 250 | 2400 | NC | | 24 | | 54 |
| Potassium | mg/kg | NC | NC | NC | | 620 | 260 | -- |
| Selenium | mg/kg | 63 | 3100 | NC | | 3.1 | 2.1 | -- |
| Silver | mg/kg | 110 | 4100 | NC | 3.4 | -- | 2.6 | -- |
| Sodium | mg/kg | NC | NC | NC | 680 | -- | | 670 |
| Thallium | mg/kg | 2 | 2 | NC | 1.6 | -- | 1.3 | -- |
| Vanadium | mg/kg | 370 | 7100 | NC | | 28 | | 62 |
| Zinc | mg/kg | 1500 | 1500 | NC | | 340 | | 500 |
| | | | | | | | | |
| % Solids | | | | | | 74 | | 95 |

CONC Concentration
J Estimated Value
Q Qualifier
MDL Method Detection Limit
NC No criteria established
NA Not analyzed
R data rejected by validation
-- Not Detected
***BOLD*** analyte exceedes unrestricted use soil cleanup criteria (08/04/99)

Table 8
Area of Concern #7

Remedial Investigation Report
Central Steel Drum
Newark, New Jersey

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A7-SS-1<br>AB45283<br>10/24/2001<br>1.25<br>Soil<br>CONC | Q | MDL | A7-SS-2<br>AB45284<br>10/24/2001<br>2.25<br>Soil<br>CONC | Q | MDL | A7-SS-3<br>AB45285<br>10/24/2001<br>2.0<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds** | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| 1,1,2,2-Tetrachloroethane | mg/kg | 34 | 70 | 1 | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 3.2 | -- | | 3.9 | -- | | 3.1 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 2.6 | -- | | 3.1 | -- | | 2.5 | -- | |
| 4-Methyl-2-Pentanone | mg/kg | 1000 | 1000 | 50 | 2.6 | -- | | 3.1 | -- | | 2.5 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 2.6 | -- | | 3.1 | -- | | 2.5 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | | 0.89 | | 0.16 | -- | | 0.12 | -- | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| Chloroethane | mg/kg | NC | NC | NC | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| 1,3-Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| Dibromochloromethane | mg/kg | 110 | 1000 | 1 | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | | 3.2 | | | 0.31 | | 0.12 | -- | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | | 0.42 | JB | 0.78 | -- | | 0.62 | -- | |
| Methyl-t-butyl-ether | mg/kg | NC | NC | NC | 0.13 | -- | | 0.16 | -- | | 0.12 | -- | |
| Styrene | mg/kg | 23 | 97 | 100 | 0.13 | -- | | 0.16 | -- | | 0.12 | -- | |
| t-Butyl Alcohol | mg/kg | NC | NC | NC | 1.3 | -- | | 1.6 | -- | | 1.2 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| Toluene | mg/kg | 1000 | 1000 | 500 | | 1.5 | | | 1.6 | | 0.12 | -- | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 0.65 | -- | | | 0.2 | J | 0.62 | -- | |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 0.65 | -- | | 0.78 | -- | | 0.62 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | | 6.81 | | | 2.3 | | 0.12 | -- | |
| TICs Total | mg/kg | NC | NC | NC | | 113.1 | | | 1.04 | | | 0.59 | |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 125.92 | | | 5.45 | | | 0.59 | |
| | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | 10000 | 10000 | NC | | NA | | | NA | | | NA | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 125.92 | | | 5.45 | | | 0.59 | |
| | | | | | | | | | | | | | |
| Lead | mg/kg | 400 | 600 | NC | | 22 | | | 1000 | | | 120 | |
| | | | | | | | | | | | | | |
| % Solids | percent | | | | | 93 | | | 74 | | | 85 | |

CONC Concentration
TICs Tentatively Identified Compounds
Q Qualifier
MDL Method Detection Limit
J Estimated Value

NC No criteria established
NA Not analyzed
-- Not Detected
*BOLD* analyte exceedes unrestricted use soil cleanup criteria (08/04/99)

Table 8
Area of Concern #7

Remedial Investigation Report
Central Steel Drum
Newark, New Jersey

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A7-SS-4<br>AB45286<br>10/24/2001<br>2.0<br>Soil<br>CONC | Q | MDL | A7-SS-5<br>AB45287<br>10/24/2001<br>2.25<br>Soil<br>CONC | Q | MDL | A7-SS-6<br>AB45288<br>10/24/2001<br>2.0<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds** | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 0.77 | -- | | 0.65 | -- | | | 0.18 | J |
| 1,1,2,2-Tetrachloroethane | mg/kg | 34 | 70 | 1 | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 3.8 | -- | | 3.2 | -- | | 3.4 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 3.1 | -- | | 2.6 | -- | | 2.7 | -- | |
| 4-Methyl-2-Pentanone | mg/kg | 1000 | 1000 | 50 | 3.1 | -- | | 2.6 | -- | | 2.7 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 3.1 | -- | | 2.6 | -- | | 2.7 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | 0.15 | -- | | 0.13 | -- | | 0.13 | -- | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| Chloroethane | mg/kg | NC | NC | NC | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| 1,3-Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| Dibromochloromethane | mg/kg | 110 | 1000 | 1 | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | 0.15 | -- | | 0.13 | -- | | 0.13 | -- | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| Methyl-t-butyl-ether | mg/kg | NC | NC | NC | 0.15 | -- | | 0.13 | -- | | 0.13 | -- | |
| Styrene | mg/kg | 23 | 97 | 100 | 0.15 | -- | | 0.13 | -- | | 0.13 | -- | |
| t-Butyl Alcohol | mg/kg | NC | NC | NC | 1.5 | -- | | 1.3 | -- | | 1.3 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| Toluene | mg/kg | 1000 | 1000 | 500 | 0.15 | -- | | 0.13 | -- | | | 0.38 | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 0.77 | -- | | 0.65 | -- | | | 1.2 | |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 0.77 | -- | | 0.65 | -- | | 0.67 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | 0.15 | -- | | 0.13 | -- | | | 0.8 | |
| TICs Total | mg/kg | NC | NC | NC | | 1.97 | | | 2.29 | | | 1.96 | |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 1.97 | | | 2.29 | | | 4.52 | |
| | | | | | | | | | | | | | |
| **Total Petroleum Hydrocarbons** | mg/kg | 10000 | 10000 | NC | | NA | | | NA | | | NA | |
| **Total Organic Compounds** | mg/kg | 10000 | 10000 | NC | | 1.97 | | | 2.29 | | | 4.52 | |
| | | | | | | | | | | | | | |
| Lead | mg/kg | 400 | 600 | NC | | 940 | | | 470 | | | 730 | |
| | | | | | | | | | | | | | |
| % Solids | percent | | | | | 77 | | | 85 | | | 92 | |

CONC Concentration
TICs Tentatively Identified Compounds
Q Qualifier
MDL Method Detection Limit
J Estimated Value

NC No criteria established
NA Not analyzed
-- Not Detected
***BOLD*** analyte exceedes unrestricted use soil cleanup criteria (08/04/99)

Table 8
Area of Concern #7

Remedial Investigation Report
Central Steel Drum
Newark, New Jersey

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A7-SS-7<br>AB45836<br>10/31/2001<br>2.5<br>Soil | | | A7-SS-8<br>AB45837<br>10/31/2001<br>2.3<br>Soil | | | A7-SS-9<br>AB45838<br>10/31/2001<br>2.3<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| **Volatile Organic Compounds** | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | | NA | | | NA | | | NA | |
| 1,1,2,2-Tetrachlororethane | mg/kg | 34 | 70 | 1 | | NA | | | NA | | | NA | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | | NA | | | NA | | | NA | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | | NA | | | NA | | | NA | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | | NA | | | NA | | | NA | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | | NA | | | NA | | | NA | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | | NA | | | NA | | | NA | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | | NA | | | NA | | | NA | |
| 2-Hexanone | mg/kg | NC | NC | NC | | NA | | | NA | | | NA | |
| 4-Methyl-2-Pentanone | mg/kg | 1000 | 1000 | 50 | | NA | | | NA | | | NA | |
| Acetone | mg/kg | 1000 | 1000 | 100 | | NA | | | NA | | | NA | |
| Benzene | mg/kg | 3 | 13 | 1 | | NA | | | NA | | | NA | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | | NA | | | NA | | | NA | |
| Bromoform | mg/kg | 86 | 370 | 1 | | NA | | | NA | | | NA | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | | NA | | | NA | | | NA | |
| Carbon disulfide | mg/kg | NC | NC | NC | | NA | | | NA | | | NA | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | | NA | | | NA | | | NA | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | | NA | | | NA | | | NA | |
| Chloroethane | mg/kg | NC | NC | NC | | NA | | | NA | | | NA | |
| Chloroform | mg/kg | 19 | 28 | 1 | | NA | | | NA | | | NA | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | | NA | | | NA | | | NA | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | | NA | | | NA | | | NA | |
| 1,3-Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | | NA | | | NA | | | NA | |
| Dibromochloromethane | mg/kg | 110 | 1000 | 1 | | NA | | | NA | | | NA | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | | NA | | | NA | | | NA | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | | NA | | | NA | | | NA | |
| Methyl-t-butyl-ether | mg/kg | NC | NC | NC | | NA | | | NA | | | NA | |
| Styrene | mg/kg | 23 | 97 | 100 | | NA | | | NA | | | NA | |
| t-Butyl Alcohol | mg/kg | NC | NC | NC | | NA | | | NA | | | NA | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | | NA | | | NA | | | NA | |
| Toluene | mg/kg | 1000 | 1000 | 500 | | NA | | | NA | | | NA | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | | NA | | | NA | | | NA | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | | NA | | | NA | | | NA | |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | | NA | | | NA | | | NA | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | | NA | | | NA | | | NA | |
| TICs Total | mg/kg | NC | NC | NC | | NA | | | NA | | | NA | |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | NA | | | NA | | | NA | |
| | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | 10000 | 10000 | NC | 46 | -- | | 45 | -- | | 44 | -- | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | NA | | | NA | | | NA | |
| | | | | | | | | | | | | | |
| Lead | mg/kg | 400 | 600 | NC | | NA | | | NA | | | NA | |
| | | | | | | | | | | | | | |
| % Solids | percent | | | | | 74 | | | 76 | | | 78 | |

CONC Concentration
TICs Tentatively Identified Compounds
Q Qualifier
MDL Method Detection Limit
J Estimated Value

NC No criteria established
NA Not analyzed
-- Not Detected
*BOLD* analyte exceeds unrestricted use soil cleanup criteria (08/04/99)

Table 8
Area of Concern #7

Remedial Investigation Report
Central Steel Drum
Newark, New Jersey

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A7-SS-10<br>AB45839<br>10/31/2001<br>2.5<br>Soil | | | A7-SS-11<br>AB45840<br>10/31/2001<br>3.0<br>Soil | | | A7-SS-12<br>AB45841<br>10/31/2001<br>2.7<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| **Volatile Organic Compounds** | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 0.83 | -- | | | NA | | 0.84 | -- | |
| 1,1,2,2-Tetrachloroethane | mg/kg | 34 | 70 | 1 | 0.83 | -- | | | NA | | 0.84 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 0.83 | -- | | | NA | | 0.84 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 0.83 | -- | | | NA | | 0.84 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 0.83 | -- | | | NA | | 0.84 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 0.83 | -- | | | NA | | 0.84 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 0.83 | -- | | | NA | | 0.84 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 4.1 | -- | | | NA | | 4.2 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 3.3 | -- | | | NA | | 3.4 | -- | |
| 4-Methyl-2-Pentanone | mg/kg | 1000 | 1000 | 50 | 3.3 | -- | | | NA | | 3.4 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 3.3 | -- | | | NA | | 3.4 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | 0.17 | -- | | | NA | | 0.17 | -- | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 0.83 | -- | | | NA | | 0.84 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 0.83 | -- | | | NA | | 0.84 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 0.83 | -- | | | NA | | 0.84 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 0.83 | -- | | | NA | | 0.84 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 0.83 | -- | | | NA | | 0.84 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | 0.83 | -- | | | NA | | 0.84 | -- | |
| Chloroethane | mg/kg | NC | NC | NC | 0.83 | -- | | | NA | | 0.84 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 0.83 | -- | | | NA | | 0.84 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 0.83 | -- | | | NA | | 0.84 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 0.83 | -- | | | NA | | 0.84 | -- | |
| 1,3-Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 0.83 | -- | | | NA | | 0.84 | -- | |
| Dibromochloromethane | mg/kg | 110 | 1000 | 1 | 0.83 | -- | | | NA | | 0.84 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | 0.17 | -- | | | NA | | 0.17 | -- | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 0.83 | -- | | | NA | | 0.84 | -- | |
| Methyl-t-butyl-ether | mg/kg | NC | NC | NC | | NA | | | NA | | | NA | |
| Styrene | mg/kg | 23 | 97 | 100 | 0.17 | -- | | | NA | | 0.17 | -- | |
| t-Butyl Alcohol | mg/kg | NC | NC | NC | | NA | | | NA | | | NA | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 0.83 | -- | | | NA | | 0.84 | -- | |
| Toluene | mg/kg | 1000 | 1000 | 500 | 0.17 | -- | | | NA | | 0.17 | -- | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 0.83 | -- | | | NA | | 0.84 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 0.83 | -- | | | NA | | 0.84 | -- | |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 0.83 | -- | | | NA | | 0.84 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | | 0.37 | | | NA | | 0.17 | -- | |
| TICs Total | mg/kg | NC | NC | NC | | 194 | | | NA | | | 48.2 | |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 194.37 | | | NA | | | 48.2 | |
| | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | 10000 | 10000 | NC | | 12000 | | | 69 | | | 280 | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 194.37 | | | NA | | | 48.2 | |
| | | | | | | | | | | | | | |
| Lead | mg/kg | 400 | 600 | NC | | NA | | | NA | | | NA | |
| | | | | | | | | | | | | | |
| % Solids | percent | | | | | 75 | | | 69 | | | 72 | |

CONC Concentration
TICs Tentatively Identified Compounds
Q Qualifier
MDL Method Detection Limit
J Estimated Value

NC No criteria established
NA Not analyzed
-- Not Detected
*BOLD* analyte exceeds unrestricted use soil cleanup criteria (08/04/99)

**Table 9**
**Area of Concern #8 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A8-SS-1<br>AB45263<br>10/24/2001<br>1.5<br>Soil | | | A8-SS-2<br>AB45264<br>10/24/2001<br>1.5<br>Soil | | | A8-SS-3<br>AB45265<br>10/24/2001<br>1.0<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| **Volatile Organic Compounds** | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| 1,1,2,2-Tetrachloroethane | mg/kg | 34 | 70 | 1 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 4 | -- | | 3.8 | -- | | 3.5 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 3.2 | -- | | 3.0 | -- | | 2.8 | -- | |
| 4-Methyl-2-2Pentanone | mg/kg | 1000 | 1000 | 50 | 3.2 | -- | | 3.0 | -- | | 2.8 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 3.2 | -- | | 3.0 | -- | | 2.8 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | 0.16 | -- | | 0.15 | -- | | 0.14 | -- | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| Chloroethane | mg/kg | NC | NC | NC | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| Dibromochloromehtane | mg/kg | 110 | 1000 | 1 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | 0.16 | -- | | 0.15 | -- | | | 2 | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| Styrene | mg/kg | 23 | 97 | 100 | 0.16 | -- | | 0.15 | -- | | 0.14 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| Toluene | mg/kg | 1000 | 1000 | 500 | | 0.4 | | | 0.16 | | | 0.55 | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 0.8 | -- | | 0.76 | -- | | 0.7 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | | 0.33 | | 0.3 | -- | | | 9.6 | |
| TICs Total | mg/kg | NC | NC | NC | | 33.3 | J | | 2.81 | J | | 9.76 | J |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 34.03 | J | | 2.97 | J | | 21.91 | J |
| | | | | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | 0.38 | -- | | 1.3 | -- | | | 0.11 | J |
| 1,3-Dichlorotbenzene | mg/kg | 5100 | 10000 | 100 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | 0.38 | -- | | 1.3 | -- | | | 0.044 | J |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |

**Table 9**
**Area of Concern #8 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A8-SS-1<br>AB45263<br>10/24/2001<br>1.5<br>Soil | | | A8-SS-2<br>AB45264<br>10/24/2001<br>1.5<br>Soil | | | A8-SS-3<br>AB45265<br>10/24/2001<br>1.0<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| 2-Chlorphenol | mg/kg | 280 | 5200 | 10 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | | 0.048 | J | | 0.28 | J | | 0.29 | J |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| 2-Nitoaniline | mg/kg | NC | NC | NC | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | | 0.096 | J | 1.3 | -- | | 0.41 | -- | |
| Acenaphthylene | mg/kg | NC | NC | NC | | 0.079 | J | | 0.22 | J | | 0.043 | J |
| Anthracene | mg/kg | 10000 | 10000 | 100 | | 0.42 | | | 0.15 | J | | 0.073 | J |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | | 2.6 | | | 0.35 | J | | 0.93 | |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | | 2.6 | | | 0.38 | J | | 1.2 | |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | | 3.9 | | | 0.84 | J | | 1.6 | |
| Benzo(g,h,I)perylene | mg/kg | NC | NC | NC | | 0.77 | | | 0.29 | J | | 0.052 | |
| Benzo(k)fluoxanthene | mg/kg | 0.9 | 4 | 500 | | 1.2 | | | 0.43 | J | | 0.75 | |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| Bis(2-Ethexhexyl)phthalate | mg/kg | 49 | 210 | 100 | | 1.1 | | | 1.4 | | | 0.78 | |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| Carbazole | mg/kg | NC | NC | NC | | 0.064 | J | 1.3 | -- | | 0.41 | -- | |
| Chrysene | mg/kg | 9 | 40 | 500 | | 2.4 | | | 0.4 | J | | 0.96 | |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | | 0.14 | J | 1.3 | -- | | | 0.06 | J |
| Dibenzofuran | mg/kg | NC | NC | NC | | 0.072 | J | 1.3 | -- | | | 0.059 | J |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | | 0.061 | J | 1.3 | -- | | | 0.08 | J |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | | 3.3 | | | 0.29 | J | | 0.77 | |
| Fluorene | mg/kg | 2300 | 10000 | 100 | | 0.12 | J | 1.3 | -- | | | 0.059 | J |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| Hexachlorocyclopentadiene | mg/kg | 400 | 7300 | 100 | 0.77 | -- | | 2.7 | -- | | 0.81 | -- | |
| Hexachloroethane | mg/kg | 6 | 100 | 100 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | | 0.85 | | | 0.28 | J | | 0.54 | |
| Isophorone | mg/kg | 1100 | 10000 | 50 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |

**Table 9**
**Area of Concern #8 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A8-SS-1<br>AB45263<br>10/24/2001<br>1.5<br>Soil | | | A8-SS-2<br>AB45264<br>10/24/2001<br>1.5<br>Soil | | | A8-SS-3<br>AB45265<br>10/24/2001<br>1.0<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| Naphthalene | mg/kg | 230 | 4200 | 100 | | 0.15 | J | | 0.17 | J | | 0.89 | |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| Phenanthrene | mg/kg | NC | NC | NC | | 1.4 | | | 0.28 | J | | 0.39 | J |
| Phenol | mg/kg | 10000 | 10000 | 50 | 0.38 | -- | | 1.3 | -- | | 0.41 | -- | |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 3.7 | | | 0.63 | J | | 0.77 | |
| TICs Total | mg/kg | NC | NC | NC | | 52.87 | J | | 35.15 | J | | 63.15 | J |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 77.94 | J | | 41.54 | J | | 73.6 | J |
| | | | | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | 0.019 | -- | | 0.022 | -- | | 0.0041 | -- | |
| Alpha-BHC | mg/kg | NC | NC | NC | 0.019 | -- | | | 0.12 | | 0.0041 | -- | |
| Beta-BHC | mg/kg | NC | NC | NC | 0.019 | -- | | | 0.2 | | | 0.011 | |
| Chlordane | mg/kg | NC | NC | NC | | 0.13 | | | 0.13 | | 0.0081 | -- | |
| Delta-BHC | mg/kg | NC | NC | NC | 0.019 | -- | | 0.022 | -- | | 0.0041 | -- | |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | 0.019 | -- | | | 0.096 | | 0.0041 | 0.0054 | |
| Endosulfan I | mg/kg | NC | NC | NC | 0.019 | -- | | 0.022 | -- | | 0.0041 | -- | |
| Endosulfan II | mg/kg | NC | NC | NC | 0.019 | -- | | 0.022 | -- | | 0.0041 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.019 | -- | | 0.022 | -- | | 0.0041 | -- | |
| Endrin | mg/kg | 17 | 310 | 50 | 0.019 | -- | | 0.022 | -- | | 0.0041 | -- | |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 0.019 | -- | | 0.022 | -- | | 0.0041 | -- | |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.019 | -- | | 0.022 | -- | | 0.0041 | -- | |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.019 | -- | | 0.022 | -- | | 0.0041 | -- | |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.019 | -- | | 0.022 | -- | | 0.0041 | -- | |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.019 | -- | | 0.022 | -- | | 0.0041 | -- | |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | 0.019 | -- | | | 0.032 | | 0.0041 | -- | |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | | 0.035 | | | 0.095 | | 0.0041 | -- | |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | | 0.036 | | | 0.055 | | | 0.018 | |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | 0.019 | -- | | | 0.057 | | | 0.013 | |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 0.190 | -- | | 0.22 | -- | | 0.041 | -- | |
| | | | | | | | | | | | | | |
| **PCB 8082** | | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 0.019 | -- | | 0.022 | -- | | 0.02 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | NC | 0.019 | -- | | 0.022 | -- | | 0.02 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | NC | 0.019 | -- | | 0.022 | -- | | 0.02 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | NC | 0.019 | -- | | 0.022 | -- | | 0.02 | -- | |
| Aroclor-1248 | mg/kg | NC | NC | NC | 0.019 | -- | | 0.022 | -- | | 0.02 | -- | |
| Aroclor-1254 | mg/kg | NC | NC | NC | 0.019 | -- | | 0.022 | -- | | 0.02 | -- | |
| Aroclor-1260 | mg/kg | NC | NC | NC | | 0.47 | | | 0.43 | | | 0.16 | |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | 0.47 | | | 0.43 | | | 0.16 | |
| | | | | | | | | | | | | | |
| **Total Organic Compounds** | mg/kg | 10000 | 10000 | NC | | 113 | J | | 46 | J | | 96 | |
| | | | | | | | | | | | | | |
| **Inorganic Compounds** | | | | | | | | | | | | | |

Table 9
Area of Concern #8 Soil Analytical Results

Remedial Investigation Report
Central Steel Drum
Newark, New Jersey

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A8-SS-1<br>AB45263<br>10/24/2001<br>1.5<br>Soil | | | A8-SS-2<br>AB45264<br>10/24/2001<br>1.5<br>Soil | | | A8-SS-3<br>AB45265<br>10/24/2001<br>1.0<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| Aluminum | mg/kg | NC | NC | NC | | 3900 | | | 5600 | | | 9100 | |
| Antimony | mg/kg | 14 | 340 | NC | | 13 | | | 25 | | | 33 | |
| Arsenic | mg/kg | 20 | 20 | NC | | 13 | | | 26 | | | 14 | |
| Barium | mg/kg | 700 | 47000 | NC | | 400 | | | 1200 | | | 480 | |
| Beryllium | mg/kg | 2 | 2 | NC | 0.69 | -- | | 0.8 | -- | | 0.73 | -- | |
| Cadmium | mg/kg | 39 | 100 | NC | 0.69 | -- | | | 6.9 | | | 1.8 | |
| Calcium | mg/kg | NC | NC | NC | | 5800 | | | 2200 | | | 26000 | |
| Chromium | mg/kg | 120000 | NC | NC | | 53 | | | 300 | | | 1700 | |
| Cobalt | mg/kg | NC | NC | NC | | 23 | | | 76 | | | 54 | |
| Copper | mg/kg | 600 | 600 | NC | | 790 | | | 220 | | | 270 | |
| Iron | mg/kg | NC | NC | NC | | 27000 | | | 22000 | | | 44000 | |
| Lead | mg/kg | 400 | 600 | NC | | 1900 | | | 1500 | | | 1400 | |
| Magnesium | mg/kg | NC | NC | NC | | 1700 | | | 2100 | | | 21000 | |
| Manganese | mg/kg | NC | NC | NC | | 260 | | | 170 | | | 420 | |
| Mercury | mg/kg | 14 | 270 | NC | | 2.3 | | | 4.1 | | | 1.7 | |
| Nickel | mg/kg | 250 | 2400 | NC | | 40 | | | 26 | | | 190 | |
| Potassium | mg/kg | NC | NC | NC | | 360 | | | 730 | | | 390 | |
| Selenium | mg/kg | 63 | 3100 | NC | | 3.3 | | | 4 | | 2.4 | -- | |
| Silver | mg/kg | 110 | 4100 | NC | 2.9 | -- | | 3.3 | -- | | 3 | -- | |
| Sodium | mg/kg | NC | NC | NC | 570 | -- | | 670 | -- | | 610 | -- | |
| Thallium | mg/kg | 2 | 2 | NC | 1.4 | -- | | 1.6 | -- | | 1.5 | -- | |
| Vanadium | mg/kg | 370 | 7100 | NC | | 24 | | | 43 | | | 350 | |
| Zinc | mg/kg | 1500 | 1500 | NC | | 760 | | | 970 | | | 930 | |
| | | | | | | | | | | | | | |
| % Solids | % | NC | NC | NC | | 87 | | | 75 | | | 82 | |

CONC Concentration
B
Q Qualifier
MDL Method Detection Limit
J Estimated Value
NC No criteria established
NA Not analyzed
TIC Tentatively Identified Compounds
R data rejected by validation
-- Not Detected
***BOLD*** analyte exceedes unrestricted use soil cleanup criteria (08/04/99)
* indicates sample is a duplicate of previous sample

**Table 9**
**Area of Concern #8 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | AS-SS-4<br>AB45266<br>10/24/2001<br>2.25<br>Soil | | | AS-SS-5<br>AB45267<br>10/24/2001<br>1.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q |
| **Volatile Organic Compounds** | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 0.77 | -- | | 0.75 | -- | |
| 1,1,2,2-Tetrachloroethane | mg/kg | 34 | 70 | 1 | 0.77 | -- | | 0.75 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 0.77 | -- | | 0.75 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 0.77 | -- | | 0.75 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 0.77 | -- | | 0.75 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 0.77 | -- | | 0.75 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 0.77 | -- | | 0.75 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 3.9 | -- | | | 8.3 | |
| 2-Hexanone | mg/kg | NC | NC | NC | 3.1 | -- | | 3 | -- | |
| 4-Methyl-2-2Pentanone | mg/kg | 1000 | 1000 | 50 | 3.1 | -- | | 3 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 3.1 | -- | | | 3.3 | |
| Benzene | mg/kg | 3 | 13 | 1 | 0.15 | -- | | | 0.4 | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 0.77 | -- | | 0.75 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 0.77 | -- | | 0.75 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 0.77 | -- | | 0.75 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 0.77 | -- | | 0.75 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 0.77 | -- | | 0.75 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | | 0.54 | J | 0.75 | -- | |
| Chloroethane | mg/kg | NC | NC | NC | 0.77 | -- | | 0.75 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 0.77 | -- | | 0.75 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 0.77 | -- | | 0.75 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 0.77 | -- | | | 1.1 | |
| Dibromochloromehtane | mg/kg | 110 | 1000 | 1 | 0.77 | -- | | 0.75 | -- | |
| Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 0.77 | -- | | 0.75 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | 0.15 | -- | | 0.15 | -- | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 0.77 | -- | | 0.75 | -- | |
| Styrene | mg/kg | 23 | 97 | 100 | 0.15 | -- | | 0.15 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 0.77 | -- | | 0.75 | -- | |
| Toluene | mg/kg | 1000 | 1000 | 500 | 0.15 | -- | | | 0.38 | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 0.77 | -- | | 0.75 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 0.77 | -- | | | 3 | |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 0.77 | -- | | | 0.24 | J |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | 0.15 | -- | | | 0.55 | |
| TICs Total | mg/kg | NC | NC | NC | | 1.78 | J | | 29.1 | J |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 2.32 | J | | 46.37 | |
| | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | 0.44 | -- | | 1.4 | -- | |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | 0.44 | -- | | 1.4 | -- | |
| 1,3-Dichlorobenzene | mg/kg | 5100 | 10000 | 100 | 0.44 | -- | | 1.4 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | 0.44 | -- | | 1.4 | -- | |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 0.44 | -- | | 1.4 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 0.44 | -- | | 1.4 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | 0.44 | -- | | 1.4 | -- | |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 0.44 | -- | | 1.4 | -- | |

**Table 9**
**Area of Concern #8 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | AB-SS-4<br>AB45266<br>10/24/2001<br>2.25<br>Soil<br>CONC | Q | MDL | AB-SS-5<br>AB45267<br>10/24/2001<br>1.5<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 0.44 | -- | | 1.4 | -- | |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 0.44 | -- | | 1.4 | -- | |
| 2-Chlorphenol | mg/kg | 280 | 5200 | 10 | 0.44 | -- | | 1.4 | -- | |
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | | 0.066 | J | | 0.26 | J |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | 0.44 | -- | | 1.4 | -- | |
| 2-Nitoaniline | mg/kg | NC | NC | NC | 0.44 | -- | | 1.4 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 0.44 | -- | | 1.4 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | 0.44 | -- | | 1.4 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 0.44 | -- | | 1.4 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 0.44 | -- | | 1.4 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 0.44 | -- | | 1.4 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 0.44 | -- | | 1.4 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 0.44 | -- | | 1.4 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 0.44 | -- | | 1.4 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 0.44 | -- | | 1.4 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 0.44 | -- | | 1.4 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 0.44 | -- | | 1.4 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | 0.44 | -- | | 1.4 | -- | |
| Acenaphthylene | mg/kg | NC | NC | NC | | 0.76 | | | 0.15 | J |
| Anthracene | mg/kg | 10000 | 10000 | 100 | | 0.31 | J | | 0.17 | J |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | | 1.8 | | | 0.65 | J |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | | 2.1 | | | 0.51 | J |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | | 2 | | | 0.96 | J |
| Benzo(g,h,I)perylene | mg/kg | NC | NC | NC | | 1.2 | | | 0.37 | J |
| Benzo(k)fluoranthene | mg/kg | 0.9 | 4 | 500 | | 0.81 | | | 0.3 | J |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 0.44 | -- | | 1.4 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 0.44 | -- | | 1.4 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 0.44 | -- | | 1.4 | -- | |
| Bis(2-Ethexhexyl)phthalate | mg/kg | 49 | 210 | 100 | | 0.28 | J | | 0.7 | J |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | 0.44 | -- | | 1.4 | -- | |
| Carbazole | mg/kg | NC | NC | NC | 0.44 | -- | | | 0.53 | J |
| Chrysene | mg/kg | 9 | 40 | 500 | | 2.1 | | | 0.86 | J |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | | 0.15 | J | 1.4 | -- | |
| Dibenzofuran | mg/kg | NC | NC | NC | 0.44 | -- | | 1.4 | -- | |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.44 | -- | | 1.4 | -- | |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.44 | -- | | 1.4 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | | 0.074 | J | 1.4 | -- | |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | | -- | | 1.4 | -- | |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | | 1.4 | | 1.4 | -- | |
| Fluorene | mg/kg | 2300 | 10000 | 100 | | 0.1 | J | 1.4 | -- | |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 0.44 | -- | | 1.4 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 0.44 | -- | | 1.4 | -- | |
| Hexachlorocyclopentadiene | mg/kg | 400 | 7300 | 100 | 0.89 | -- | | 2.7 | -- | |
| Hexachloroethane | mg/kg | 6 | 100 | 100 | 0.44 | -- | | 1.4 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | | 1.1 | | | 0.32 | J |
| Isophorone | mg/kg | 1100 | 10000 | 50 | 0.44 | -- | | 1.4 | -- | |

**Table 9**
**Area of Concern #8 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A8-SS-4<br>AB45266<br>10/24/2001<br>2.25<br>Soil | | | A8-SS-5<br>AB45267<br>10/24/2001<br>1.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q |
| Naphthalene | mg/kg | 230 | 4200 | 100 | | 0.093 | J | | 0.22 | J |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 0.44 | -- | | 1.4 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 0.44 | -- | | 1.4 | -- | |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | 0.44 | -- | | 1.4 | -- | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 0.44 | -- | | 1.4 | -- | |
| Phenanthrene | mg/kg | NC | NC | NC | | 0.6 | | | 0.64 | J |
| Phenol | mg/kg | 10000 | 10000 | 50 | 0.44 | -- | | 1.4 | -- | |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 1.8 | | | 1 | J |
| TICs Total | mg/kg | NC | NC | NC | | 120.47 | J | | 208.8 | J |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 137.213 | J | | 216.44 | J |
| | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | 0.0044 | -- | | 0.0460 | -- | |
| Alpha-BHC | mg/kg | NC | NC | NC | 0.0044 | -- | | 0.0460 | -- | |
| Beta-BHC | mg/kg | NC | NC | NC | | 0.012 | | 0.0460 | -- | |
| Chlordane | mg/kg | NC | NC | NC | | 0.034 | | 0.0091 | -- | |
| Delta-BHC | mg/kg | NC | NC | NC | 0.0044 | -- | | 0.0460 | -- | |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | 0.0044 | -- | | 0.0460 | -- | |
| Endosulfan I | mg/kg | NC | NC | NC | 0.0044 | -- | | 0.0460 | -- | |
| Endosulfan II | mg/kg | NC | NC | NC | 0.0044 | -- | | 0.0460 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.0044 | -- | | 0.0460 | -- | |
| Endrin | mg/kg | 17 | 310 | 50 | 0.0044 | -- | | 0.0460 | -- | |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 0.0044 | -- | | 0.0460 | -- | |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.0044 | -- | | 0.0460 | -- | |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.0044 | -- | | 0.0460 | -- | |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.0044 | -- | | 0.0460 | -- | |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.0044 | -- | | 0.0460 | -- | |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | 0.0044 | -- | | 0.0460 | -- | |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | 0.0044 | 0.034 | | | 0.071 | |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | | 0.006 | | | 0.055 | |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | | 0.0091 | | 0.0046 | -- | |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 0.044 | -- | | 0.4600 | -- | |
| | | | | | | | | | | |
| **PCB 8082** | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.023 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.023 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.023 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.023 | -- | |
| Aroclor-1248 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.023 | -- | |
| Aroclor-1254 | mg/kg | NC | NC | NC | 0.022 | -- | | 0.023 | -- | |
| Aroclor-1260 | mg/kg | NC | NC | NC | 0.022 | -- | | | 0.24 | |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | 0 | | | 0.24 | |
| | | | | | | | | | | |
| **Total Organic Compounds** | mg/kg | 10000 | 10000 | NC | | 140 | | | 263 | |
| | | | | | | | | | | |
| **Inorganic Compounds** | | | | | | | | | | |

**Table 9**
**Area of Concern #8 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | AB-SS-4<br>AB45266<br>10/24/2001<br>2.25<br>Soil | | | AB-SS-5<br>AB45267<br>10/24/2001<br>1.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q |
| Aluminum | mg/kg | NC | NC | NC | | 4600 | | | 12000 | |
| Antimony | mg/kg | 14 | 340 | NC | | 16 | | | 57 | |
| Arsenic | mg/kg | 20 | 20 | NC | | 33 | | | 35 | |
| Barium | mg/kg | 700 | 47000 | NC | | 580 | | | 2600 | |
| Beryllium | mg/kg | 2 | 2 | NC | 0.8 | – | | 0.82 | – | |
| Cadmium | mg/kg | 39 | 100 | NC | 0.8 | – | | | 11 | |
| Calcium | mg/kg | NC | NC | NC | | 5600 | | | 31000 | |
| Chromium | mg/kg | 120000 | NC | NC | | 1000 | | | 1700 | |
| Cobalt | mg/kg | NC | NC | NC | | 11 | | | 250 | |
| Copper | mg/kg | 600 | 600 | NC | | 260 | | | 280 | |
| Iron | mg/kg | NC | NC | NC | | 38000 | | | 75000 | |
| Lead | mg/kg | 400 | 600 | NC | | 1000 | | | 2800 | |
| Magnesium | mg/kg | NC | NC | NC | | 1800 | | | 31000 | |
| Manganese | mg/kg | NC | NC | NC | | 270 | | | 660 | |
| Mercury | mg/kg | 14 | 270 | NC | | 1.9 | | | 1.1 | |
| Nickel | mg/kg | 250 | 2400 | NC | | 29 | | | 250 | |
| Potassium | mg/kg | NC | NC | NC | | 590 | | | 510 | |
| Selenium | mg/kg | 63 | 3100 | NC | | 3.7 | | 2.7 | – | |
| Silver | mg/kg | 110 | 4100 | NC | 3.3 | – | | 3.4 | – | |
| Sodium | mg/kg | NC | NC | NC | 670 | – | | | 930 | |
| Thallium | mg/kg | 2 | 2 | NC | 1.6 | – | | 1.6 | – | |
| Vanadium | mg/kg | 370 | 7100 | NC | | 54 | | | 450 | |
| Zinc | mg/kg | 1500 | 1500 | NC | | 1100 | | | 1900 | |
| | | | | | | | | | | |
| % Solids | % | NC | NC | NC | | 75 | | | 73 | |

CONC Concentration
E
Q Qualifier
MDL Method Detection Limit
J Estimated Value
NC No criteria established
NA Not analyzed
TIC Tentatively Identified Compounds
R data rejected by validation
– Not Detected
***BOLD*** analyte exceedes unrestricted use soil cleanup criteria (08/04/99)
* indicates sample is a duplicate of previous sample

**Table 10**
**Area of Concern #9 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | A9-SS-1<br>AB45270<br>10/24/2001<br>1.0<br>Soil | | | A9-SS-2<br>AB45271<br>10/24/2001<br>2.0<br>Soil | | | A9-SS-3<br>AB45272<br>10/24/2001<br>2.75<br>Soil | | | A9-SS-4<br>AB45273<br>10/24/2001<br>2.25<br>Soil | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| **Volatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| 1,1,2,2-Tetrachlororethane | mg/kg | 34 | 70 | 1 | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 0.83 | -- | | 0.78 | -- | | 0.93 | 0.34 | J | 0.91 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 4.1 | -- | | 3.9 | -- | | 4.7 | -- | | 4.5 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 3.3 | -- | | 3.1 | -- | | 3.7 | -- | | 3.6 | -- | |
| 4-Methyl-2-2Pentanone | mg/kg | 1000 | 1000 | 50 | 3.3 | -- | | 3.1 | -- | | 3.7 | -- | | 3.6 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 3.3 | -- | | 3.1 | -- | | 3.7 | -- | | 3.6 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | 0.17 | -- | | 0.16 | -- | | 0.19 | -- | | 0.18 | -- | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| Chloroethane | mg/kg | NC | NC | NC | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| Dibromochloromehtane | mg/kg | 110 | 1000 | 1 | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | 0.17 | -- | | 0.16 | -- | | 0.19 | -- | | 0.18 | -- | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 0.83 | -- | | | 0.21 | JB | | 0.46 | JB | 0.91 | -- | |
| Styrene | mg/kg | 23 | 97 | 100 | 0.17 | -- | | 0.16 | -- | | 0.19 | -- | | 0.18 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| Toluene | mg/kg | 1000 | 1000 | 500 | 0.17 | -- | | 0.16 | -- | | 0.19 | -- | | 0.18 | -- | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| Trans-1,3-Dichloropropene | mg/kg | NC | NC | NC | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 0.83 | -- | | 0.78 | -- | | 0.93 | -- | | 0.91 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | 0.33 | -- | | 0.31 | -- | | 0.37 | -- | | 0.36 | -- | |
| TICs Total | mg/kg | NC | NC | NC | | 0.52 | J | | 1.07 | J | | 0.7 | J | | 1.3 | J |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 0.52 | J | | 1.28 | JB | | 1.5 | JB | | 1.3 | J |
| | | | | | | | | | | | | | | | | |

**Table 10**
**Area of Concern #9 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A9-SS-1<br>AB45270<br>10/24/2001<br>1.0<br>Soil | | | A9-SS-2<br>AB45271<br>10/24/2001<br>2.0<br>Soil | | | A9-SS-3<br>AB45272<br>10/24/2001<br>2.75<br>Soil | | | A9-SS-4<br>AB45273<br>10/24/2001<br>2.25<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 1,3-Dichlororbenzene | mg/kg | 5100 | 10000 | 100 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 2,4-Dichlorophenol | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 2-Chlorphenol | mg/kg | 280 | 5200 | 10 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | | 0.098 | J | | 0.069 | J | | 0.045 | J | 0.48 | -- | |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 2-Nitoanilina | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | 0.4 | -- | | | 0.044 | J | 0.44 | -- | | 0.48 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | 0.4 | -- | | | 0.049 | J | | 0.048 | J | 0.48 | -- | |
| Acenaphthylene | mg/kg | NC | NC | NC | | 0.047 | J | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| Anthracene | mg/kg | 10000 | 10000 | 100 | | 0.17 | J | | 0.27 | J | | 0.22 | J | | 0.11 | J |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | | 1.6 | | | 1.9 | | | 1.3 | | | 0.74 | |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | | 1.9 | | | 1.7 | | | 1.3 | | | 0.83 | |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | | 3.4 | | | 2.8 | | | 2 | | | 0.93 | |
| Benzo(g,h,I)perylene | mg/kg | NC | NC | NC | | 0.54 | | | 0.5 | | | 0.38 | J | | 0.6 | |
| Benzo(k)fluouranthene | mg/kg | 0.9 | 4 | 500 | | 0.82 | | | 0.82 | | | 0.68 | | | 0.38 | J |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| Bis(2-Ethexhexyl)phthalate | mg/kg | 49 | 210 | 100 | 0.4 | -- | | | 0.049 | J | | 0.045 | J | 0.48 | -- | |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| Carbazole | mg/kg | NC | NC | NC | | 0.054 | J | | 0.069 | J | | 0.058 | J | 0.48 | -- | |
| Chrysene | mg/kg | 9 | 40 | 500 | | 1.8 | | | 1.6 | | | 1.2 | | | 0.75 | |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | | 0.082 | J | | 0.087 | J | | 0.056 | J | | 0.05 | J |
| Dibenzofuran | mg/kg | NC | NC | NC | | 0.082 | J | | 0.1 | J | | 0.077 | J | 0.48 | -- | |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | 0.4 | -- | | | 0.07 | J | 0.44 | -- | | | 0.064 | J |

Table 10
Area of Concern #9 Soil Analytical Results

Remedial Investigation Report
Central Steel Drum
Newark, New Jersey

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A9-SS-1<br>AB45270<br>10/24/2001<br>1.0<br>Soil | | | A9-SS-2<br>AB45271<br>10/24/2001<br>2.0<br>Soil | | | A9-SS-3<br>AB45272<br>10/24/2001<br>2.75<br>Soil | | | A9-SS-4<br>AB45273<br>10/24/2001<br>2.25<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | | 2.3 | | | 2.3 | | | 1.9 | | | 0.83 | |
| Fluorene | mg/kg | 2300 | 10000 | 100 | 0.4 | -- | | | 0.083 | J | | 0.052 | J | 0.48 | -- | |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| Hexachlorocyclopentadiene | mg/kg | 400 | 7300 | 100 | 0.8 | -- | | 0.84 | -- | | 0.89 | -- | | 0.97 | -- | |
| Hexachloroethane | mg/kg | 6 | 100 | 100 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | | 0.6 | | | 0.53 | | | 0.4 | J | | 0.53 | |
| Isophorone | mg/kg | 1100 | 10000 | 50 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| Naphthalene | mg/kg | 230 | 4200 | 100 | | 0.44 | | | 0.38 | J | | 0.26 | J | | 0.13 | J |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| Phenanthrene | mg/kg | NC | NC | NC | | 0.71 | | | 1.1 | | | 0.91 | | | 0.44 | J |
| Phenol | mg/kg | 10000 | 10000 | 50 | 0.4 | -- | | 0.42 | -- | | 0.44 | -- | | 0.48 | -- | |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 2.4 | | | 2.2 | | | 1.7 | | | 0.85 | |
| TICs Total | mg/kg | NC | NC | NC | | 69.81 | J | | 80.15 | J | | 76.17 | J | | 109.6 | J |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 86.853 | J | | 96.87 | J | | 88.801 | J | | 116.834 | J |
| | | | | | | | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | 0.004 | -- | | 0.0042 | -- | | 0.0044 | -- | | 0.0048 | -- | |
| Alpha-BHC | mg/kg | NC | NC | NC | 0.004 | -- | | 0.0042 | -- | | 0.0044 | -- | | 0.0048 | -- | |
| Beta-BHC | mg/kg | NC | NC | NC | 0.004 | -- | | 0.0042 | -- | | 0.0044 | -- | | 0.0048 | -- | |
| Chlordane | mg/kg | NC | NC | NC | 0.008 | -- | | 0.0084 | -- | | 0.0089 | -- | | 0.0097 | -- | |
| Delta-BHC | mg/kg | NC | NC | NC | 0.004 | -- | | 0.0042 | -- | | 0.0044 | -- | | 0.0048 | -- | |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | 0.004 | -- | | 0.0042 | -- | | 0.0044 | -- | | 0.0048 | -- | |
| Endosulfan I | mg/kg | NC | NC | NC | 0.004 | -- | | 0.0042 | -- | | 0.0044 | -- | | 0.0048 | -- | |
| Endosulfan II | mg/kg | NC | NC | NC | 0.004 | -- | | 0.0042 | -- | | 0.0044 | -- | | 0.0048 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.004 | -- | | 0.0042 | -- | | 0.0044 | -- | | 0.0048 | -- | |
| Endrin | mg/kg | 17 | 310 | 50 | 0.004 | -- | | 0.0042 | -- | | 0.0044 | -- | | 0.0048 | -- | |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 0.004 | -- | | 0.0042 | -- | | 0.0044 | -- | | 0.0048 | -- | |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.004 | -- | | 0.0042 | -- | | 0.0044 | -- | | 0.0048 | -- | |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.004 | -- | | 0.0042 | -- | | 0.0044 | -- | | 0.0048 | -- | |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.004 | -- | | 0.0042 | -- | | 0.0044 | -- | | 0.0048 | -- | |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.004 | -- | | 0.0042 | -- | | 0.0044 | -- | | 0.0048 | -- | |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | | 0.047 | | | 0.093 | | 0.0044 | -- | | 0.0048 | -- | |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | 0.004 | -- | | 0.0042 | -- | | 0.0044 | -- | | 0.0048 | -- | |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | 0.004 | -- | | 0.0042 | -- | | 0.0044 | -- | | 0.0048 | -- | |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | 0.004 | -- | | 0.0042 | -- | | 0.0044 | -- | | 0.0048 | -- | |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 0.04 | -- | | 0.042 | -- | | 0.044 | -- | | 0.048 | -- | |
| | | | | | | | | | | | | | | | | |
| **PCB 8082** | | | | | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 0.02 | -- | | 0.021 | -- | | 0.022 | -- | | 0.024 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | NC | 0.02 | -- | | 0.021 | -- | | 0.022 | -- | | 0.024 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | NC | 0.02 | -- | | 0.021 | -- | | 0.022 | -- | | 0.024 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | NC | 0.02 | -- | | 0.021 | -- | | 0.022 | -- | | 0.024 | -- | |

**Table 10**
**Area of Concern #9 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A9-SS-1<br>AB45270<br>10/24/2001<br>1.0<br>Soil | | | A9-SS-2<br>AB45271<br>10/24/2001<br>2.0<br>Soil | | | A9-SS-3<br>AB45272<br>10/24/2001<br>2.75<br>Soil | | | A9-SS-4<br>AB45273<br>10/24/2001<br>2.25<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| Aroclor-1248 | mg/kg | NC | NC | NC | 0.02 | -- | | 0.021 | -- | | 0.022 | -- | | 0.024 | -- | |
| Aroclor-1254 | mg/kg | NC | NC | NC | 0.02 | -- | | 0.021 | -- | | 0.022 | -- | | 0.024 | -- | |
| Aroclor-1260 | mg/kg | NC | NC | NC | 0.02 | -- | | 0.021 | -- | | 0.022 | -- | | 0.024 | -- | |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | -- | | | -- | | | -- | | | -- | |
| | | | | | | | | | | | | | | | | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 87 | J | | 98 | J | | 90 | J | | 118 | J |
| | | | | | | | | | | | | | | | | |
| **Inorganic Compounds** | | | | | | | | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | NC | | 3400 | | | 2800 | | | 2100 | | | 3100 | |
| Antimony | mg/kg | 14 | 340 | NC | | 5.9 | | | 13 | | | 6.8 | | | 3.3 | |
| Arsenic | mg/kg | 20 | 20 | NC | | 20 | | | 17 | | | 8.4 | | | 3.7 | |
| Barium | mg/kg | 700 | 47000 | NC | | 260 | | | 330 | | | 250 | | | 250 | |
| Beryllium | mg/kg | 2 | 2 | NC | 0.72 | -- | | 0.76 | -- | | 0.8 | -- | | 0.87 | -- | |
| Cadmium | mg/kg | 39 | 100 | NC | 0.72 | -- | | 0.76 | -- | | 0.8 | -- | | 0.87 | -- | |
| Calcium | mg/kg | NC | NC | NC | | 8200 | | | 4800 | | | 14000 | | | 7100 | |
| Chromium | mg/kg | 120000 | NC | NC | | 13 | | | 12 | | | 7.6 | | | 23 | |
| Cobalt | mg/kg | NC | NC | NC | | 6.2 | | | 5.8 | | | 4.9 | | | 4.3 | |
| Copper | mg/kg | 600 | 600 | NC | | 180 | | | 480 | | | 520 | | | 760 | |
| Iron | mg/kg | NC | NC | NC | | 27000 | | | 20000 | | | 9400 | | | 6400 | |
| Lead | mg/kg | 400 | 600 | NC | | **500** | | | **1400** | | | **450** | | | **420** | |
| Magnesium | mg/kg | NC | NC | NC | | 1100 | | | 720 | | 670 | -- | | 720 | -- | |
| Manganese | mg/kg | NC | NC | NC | | 240 | | | 160 | | | 87 | | | 96 | |
| Mercury | mg/kg | 14 | 270 | NC | | 2.1 | | | 2.3 | | | 0.89 | | | 1.3 | |
| Nickel | mg/kg | 250 | 2400 | NC | | 18 | | | 19 | | | 15 | | | 22 | |
| Potassium | mg/kg | NC | NC | NC | | 740 | | | 510 | | | 360 | | | 370 | |
| Selenium | mg/kg | 63 | 3100 | NC | | 2.8 | | | 4.1 | | | 3 | | 2.9 | -- | |
| Silver | mg/kg | 110 | 4100 | NC | 3 | -- | | 3.2 | -- | | 3.3 | -- | | 3.6 | -- | |
| Sodium | mg/kg | NC | NC | NC | 600 | -- | | 630 | -- | | 670 | -- | | 720 | -- | |
| Thallium | mg/kg | 2 | 2 | NC | 1.4 | -- | | 1.5 | -- | | 1.6 | -- | | 1.7 | -- | |
| Vanadium | mg/kg | 370 | 7100 | NC | | 14 | | | 18 | | | 18 | | 14 | -- | |
| Zinc | mg/kg | 1500 | 1500 | NC | | 490 | | | 670 | | | 450 | | | 250 | |
| | | | | | | | | | | | | | | | | |
| % Solids | % | NC | NC | NC | | 83 | | | 79 | | | 75 | | | 69 | |

CONC Concentration
TIC Tentatively Identified Compound
Q Qualifier
MDL Method Detection Limit
J Estimated Value
NC No criteria established
NA Not analyzed
R data rejected by validation
-- Not Detected
*BOLD* analyte exceedes unrestricted use soil cleanup criteria (08/04/99)
* indicates sample is a duplicate of previous sample

**Table 10**
**Area of Concern #9 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A9-SS-5<br>AB45274<br>10/24/2001<br>0.6<br>Soil<br>CONC | Q | MDL | A9-SS-6<br>AB45275<br>10/24/2001<br>2.5<br>Soil<br>CONC | Q | MDL | A9-SS-7<br>AB45276<br>10/24/2001<br>1.0<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds** | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| 1,1,2,2-Tetrachloroethane | mg/kg | 34 | 70 | 1 | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 4.4 | -- | | 3.9 | -- | | 4.8 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 3.5 | -- | | 3.1 | -- | | 3.9 | -- | |
| 4-Methyl-2-2Pentanone | mg/kg | 1000 | 1000 | 50 | 3.5 | -- | | 3.1 | -- | | 3.9 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 3.5 | -- | | 3.1 | -- | | 3.9 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | 0.17 | -- | | 0.15 | -- | | 0.19 | -- | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| Chloroethane | mg/kg | NC | NC | NC | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| Dibromochloromehtane | mg/kg | 110 | 1000 | 1 | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | 0.17 | -- | | | 0.47 | | 0.19 | -- | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | | 0.27 | JB | 0.78 | -- | | 0.96 | -- | |
| Styrene | mg/kg | 23 | 97 | 100 | 0.17 | -- | | 0.16 | -- | | 0.19 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| Toluene | mg/kg | 1000 | 1000 | 500 | | 0.2 | | 0.16 | -- | | | 0.3 | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| Trans-1,3-Dichloropropene | mg/kg | NC | NC | NC | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 0.87 | -- | | 0.78 | -- | | 0.96 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | 0.17 | -- | | | 2.69 | | | 0.37 | J |
| TICs Total | mg/kg | NC | NC | NC | | 5.56 | J | | 11.27 | J | 0.96 | 186 | J |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 6.03 | J | | 14.43 | J | 0.96 | 186.67 | J |
| | | | | | | | | | | | | | |

**Table 10**
**Area of Concern #9 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A9-SS-5<br>AB45274<br>10/24/2001<br>0.6<br>Soil | | | A9-SS-6<br>AB45275<br>10/24/2001<br>2.5<br>Soil | | | A9-SS-7<br>AB45276<br>10/24/2001<br>1.0<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 1,3-Dichlorobenzene | mg/kg | 5100 | 10000 | 100 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 2,4-Dichlorophenol | mg/kg | NC | NC | NC | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 2-Chlorophenol | mg/kg | 280 | 5200 | 10 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | 45 | -- | | | 0.058 | J | 0.47 | -- | |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 2-Nitoaniline | mg/kg | NC | NC | NC | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | 45 | -- | | | 0.056 | J | 0.47 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 45 | -- | | | 0.11 | J | 0.47 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 4-Nitroanilins | mg/kg | NC | NC | NC | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | | 11 | J | 0.46 | -- | | | 0.17 | J |
| Acenaphthylene | mg/kg | NC | NC | NC | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| Anthracene | mg/kg | 10000 | 10000 | 100 | | 53 | | | 0.079 | J | | 0.1 | J |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | | 190 | | | 0.96 | | | 0.38 | J |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | | 130 | | | 0.92 | | | 0.28 | J |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | | 110 | | | 1.5 | | | 0.51 | |
| Benzo(g,h,I)perylene | mg/kg | NC | NC | NC | | 52 | | | 0.2 | J | | 0.19 | J |
| Benzo(k)fluouranthene | mg/kg | 0.9 | 4 | 500 | | 28 | J | | 0.42 | J | | 0.26 | J |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| Bis(2-Ethoyhexyl)phthalate | mg/kg | 49 | 210 | 100 | 45 | -- | | | 0.79 | | 0.47 | -- | |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| Carbazole | mg/kg | NC | NC | NC | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| Chrysene | mg/kg | 9 | 40 | 500 | | 210 | | | 0.81 | | | 0.51 | |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| Dibenzofuran | mg/kg | NC | NC | NC | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | 45 | -- | | | 0.085 | J | 0.47 | -- | |

**Table 10**
**Area of Concern #9 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A9-SS-5<br>AB45274<br>10/24/2001<br>0.6<br>Soil | | | A9-SS-6<br>AB45275<br>10/24/2001<br>2.5<br>Soil | | | A9-SS-7<br>AB45276<br>10/24/2001<br>1.0<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | | 220 | | | 1.1 | | | 0.92 | |
| Fluorene | mg/kg | 2300 | 10000 | 100 | | 11 | J | | 0.082 | J | | 0.24 | J |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| Hexachlorocyclopentadiene | mg/kg | 400 | 7300 | 100 | 90 | -- | | 0.93 | -- | | 0.47 | -- | |
| Hexachloroethane | mg/kg | 6 | 100 | 100 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | | 40 | J | | 0.23 | J | | 0.22 | J |
| Isophorone | mg/kg | 1100 | 10000 | 50 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| Naphthalene | mg/kg | 230 | 4200 | 100 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| N-Nitrosodiphanylamine | mg/kg | 140 | 600 | 100 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| Phenanthrene | mg/kg | NC | NC | NC | | 200 | | | 0.23 | J | | 0.67 | |
| Phenol | mg/kg | 10000 | 10000 | 50 | 45 | -- | | 0.46 | -- | | 0.47 | -- | |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 390 | | | 1 | | | 0.53 | |
| TICs Total | mg/kg | NC | NC | NC | | 1760 | J | | 76.28 | J | | 38.89 | J |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 3405 | J | | 84.91 | J | | 43.87 | J |
| | | | | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | 0.0045 | -- | | 0.0046 | -- | | 0.0047 | -- | |
| Alpha-BHC | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.0046 | -- | | 0.0047 | -- | |
| Beta-BHC | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.0046 | -- | | 0.0047 | -- | |
| Chlordane | mg/kg | NC | NC | NC | 0.0045 | 0.7 | | | 0.034 | | 0.0047 | -- | |
| Delta-BHC | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.0046 | -- | | 0.0047 | -- | |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | 0.0045 | -- | | 0.0046 | -- | | 0.0047 | -- | |
| Endosulfan I | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.0046 | -- | | 0.0047 | -- | |
| Endosulfan II | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.0046 | -- | | 0.0047 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.0046 | -- | | 0.0047 | -- | |
| Endrin | mg/kg | 17 | 310 | 50 | 0.0045 | -- | | 0.0046 | -- | | 0.0047 | -- | |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.0046 | -- | | 0.0047 | -- | |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.0045 | -- | | 0.0046 | -- | | 0.0047 | -- | |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.0045 | -- | | 0.0046 | -- | | 0.0047 | -- | |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.0045 | -- | | 0.0046 | -- | | 0.0047 | -- | |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.0045 | -- | | | 0.0078 | | 0.0047 | -- | |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | 0.0045 | -- | | 0.0045 | -- | | 0.0047 | -- | |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | 0.0045 | 0.11 | | | 0.11 | | 0.0047 | -- | |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | 0.0045 | -- | | | 0.054 | | 0.0047 | -- | |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | 0.0045 | 0.13 | | | 0.016 | | 0.0047 | -- | |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 0.045 | -- | | 0.046 | -- | | 0.047 | -- | |
| | | | | | | | | | | | | | |
| PCB 8082 | | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 0.023 | -- | | 0.023 | -- | | 0.12 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | NC | 0.023 | -- | | 0.023 | -- | | 0.12 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | NC | 0.023 | -- | | 0.023 | -- | | 0.12 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | NC | 0.023 | -- | | 0.023 | -- | | 0.12 | -- | |

**Table 10**
**Area of Concern #9 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A9-SS-5<br>AB45274<br>10/24/2001<br>0.6<br>Soil | | | A9-SS-6<br>AB45275<br>10/24/2001<br>2.5<br>Soil | | | A9-SS-7<br>AB45276<br>10/24/2001<br>1.0<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| Aroclor-1248 | mg/kg | NC | NC | NC | 0.023 | -- | | 0.023 | -- | | 0.12 | -- | |
| Aroclor-1254 | mg/kg | NC | NC | NC | 0.023 | -- | | 0.023 | -- | | 0.12 | -- | |
| Aroclor-1260 | mg/kg | NC | NC | NC | 0.023 | -- | | | 0.22 | | 0.12 | -- | |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | 0 | | | 0.22 | | | -- | |
| | | | | | | | | | | | | | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 3412 | J | | 100 | J | | 231 | J |
| | | | | | | | | | | | | | |
| **Inorganic Compounds** | | | | | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | NC | | 6500 | | | 4300 | | | 3000 | |
| Antimony | mg/kg | 14 | 340 | NC | 2.7 | -- | | 2.8 | -- | | | 3.9 | |
| Arsenic | mg/kg | 20 | 20 | NC | | 8.8 | | | 8.2 | | | 9.4 | |
| Barium | mg/kg | 700 | 47000 | NC | | 930 | | | 220 | | | 200 | |
| Beryllium | mg/kg | 2 | 2 | NC | 0.81 | -- | | 0.83 | -- | | 0.85 | -- | |
| Cadmium | mg/kg | 39 | 100 | NC | 0.81 | -- | | 0.83 | -- | | 0.85 | -- | |
| Calcium | mg/kg | NC | NC | NC | | 33000 | | | 8900 | | | 25000 | |
| Chromium | mg/kg | 120000 | NC | NC | | 17 | | | 17 | | | 9.1 | |
| Cobalt | mg/kg | NC | NC | NC | | 5.1 | | | 11 | | 3.5 | -- | |
| Copper | mg/kg | 600 | 600 | NC | | 140 | | | 160 | | | 110 | |
| Iron | mg/kg | NC | NC | NC | | 12000 | | | 7400 | | | 11000 | |
| Lead | mg/kg | 400 | 600 | NC | | 1500 | | | 290 | | | 470 | |
| Magnesium | mg/kg | NC | NC | NC | | 1900 | | | 850 | | | 2800 | |
| Manganese | mg/kg | NC | NC | NC | | 210 | | | 76 | | | 150 | |
| Mercury | mg/kg | 14 | 270 | NC | | 0.84 | | | 0.93 | | | 1.7 | |
| Nickel | mg/kg | 250 | 2400 | NC | | 13 | | | 31 | | | 10 | |
| Potassium | mg/kg | NC | NC | NC | | 610 | | | 420 | | | 560 | |
| Selenium | mg/kg | 63 | 3100 | NC | 2.7 | -- | | 2.8 | -- | | 2.8 | -- | |
| Silver | mg/kg | 110 | 4100 | NC | 3.4 | -- | | 3.5 | -- | | 3.5 | -- | |
| Sodium | mg/kg | NC | NC | NC | 680 | -- | | 690 | -- | | 700 | -- | |
| Thallium | mg/kg | 2 | 2 | NC | 1.6 | -- | | 1.7 | -- | | 1.7 | -- | |
| Vanadium | mg/kg | 370 | 7100 | NC | | 19 | | | 26 | | 14 | -- | |
| Zinc | mg/kg | 1500 | 1500 | NC | | 400 | | | 480 | | | 650 | |
| | | | | | | | | | | | | | |
| % Solids | % | NC | NC | NC | | 74 | | | 72 | | | 71 | |

CONC Concentration
TIC Tentatively Identified Compound
Q Qualifier
MDL Method Detection Limit
J Estimated Value
NC No criteria established
NA Not analyzed
R data rejected by validation
-- Not Detected
***BOLD*** analyte exceedes unrestricted use soil cleanup criteria (08/04/99)
* indicates sample is a duplicate of previous sample

**Table 11**
**Area of Concern # 10 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A10-SS-1<br>AB45451<br>10/25/2001<br>2<br>Soil<br>CONC | Q | MDL | A10-SS-2<br>AB45452<br>10/25/2001<br>1.5<br>Soil<br>CONC | Q | MDL | A10-SS-3<br>AB45453<br>10/25/2001<br>3<br>Soil<br>CONC | Q | MDL | A10-SS-4<br>AB45454<br>10/25/2001<br>1.5<br>Soil<br>CONC | Q | MDL | A10-SS-5<br>AB45455<br>10/25/2001<br>2.5<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds** | | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| 1,1,2,2-Tetrachlororethane | mg/kg | 34 | 70 | 1 | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 3.8 | -- | | 4.7 | -- | | 3.4 | -- | | 4.3 | -- | | 4.6 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 3 | -- | | 3.7 | -- | | 2.7 | -- | | 3.4 | -- | | 3.7 | -- | |
| 4-Methyl-2-2Pentanone | mg/kg | 1000 | 1000 | 50 | 3 | -- | | 3.7 | -- | | 2.7 | -- | | 3.4 | -- | | 3.7 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 3 | -- | | 3.7 | -- | | 2.7 | -- | | 3.4 | -- | | 3.7 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | 0.15 | -- | | 0.19 | -- | | 0.14 | -- | | 0.17 | -- | | 0.18 | -- | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| Chloroethane | mg/kg | NC | NC | NC | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| Dibromochloromethane | mg/kg | 110 | 1000 | 1 | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | 0.15 | -- | | 0.19 | -- | | 0.14 | -- | | 0.17 | -- | | 0.18 | -- | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | | 0.4 | J | | 1.2 | | | 0.33 | J | | 0.39 | J | 0.92 | -- | |
| Styrene | mg/kg | 23 | 97 | 100 | 0.15 | -- | | 0.19 | -- | | 0.14 | -- | | 0.17 | -- | | 0.18 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| Toluene | mg/kg | 1000 | 1000 | 500 | 0.15 | -- | | 0.19 | -- | | 0.14 | -- | | 0.17 | -- | | | 0.32 | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| Trans-1,3-Dichloropropene | mg/kg | NC | NC | NC | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 0.76 | -- | | 0.93 | -- | | 0.69 | -- | | 0.85 | -- | | 0.92 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | | 0.15 | J | 0.37 | -- | | 0.27 | -- | | 0.34 | -- | | 0.37 | -- | |
| TICs Total | mg/kg | NC | NC | NC | | 0.95 | J | | 0 | | | 1.75 | J | | 1.77 | J | | 3.3 | J |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 1.5 | | | 1.2 | | | 2.08 | | | 2.16 | | | 3.62 | |
| | | | | | | | | | | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | | 0.086 | J | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | | 0.42 | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 1,3-Dichlororbenzene | mg/kg | 5100 | 10000 | 100 | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | | 0.055 | J | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 2,4-Dichlorophenol | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | | 0.15 | J | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 2-Chlorphenol | mg/kg | 280 | 5200 | 10 | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |

**Table 11**
**Area of Concern # 10 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID / Lab ID / Sample Collection Date / Depth (ft bgs) / Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | A10-SS-1 AB45451 10/25/2001 2 Soil | | | A10-SS-2 AB45452 10/25/2001 1.5 Soil | | | A10-SS-3 AB45453 10/25/2001 3 Soil | | | A10-SS-4 AB45454 10/25/2001 1.5 Soil | | | A10-SS-5 AB45455 10/25/2001 1.5 Soil | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | | 0.12 | J | | 0.075 | J | | 0.082 | J | | 0.094 | J | | 0.1 | J |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | | 0.16 | J | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 2-Nitroaniline | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | | 0.2 | J | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | 0.4 | -- | | | 0.13 | J | | 0.04 | J | | 0.042 | J | | 0.11 | J |
| Acenaphthylene | mg/kg | NC | NC | NC | 0.4 | -- | | | 0.21 | J | | 0.18 | J | | 0.22 | J | | 0.43 | J |
| Anthracene | mg/kg | 10000 | 10000 | 100 | | 0.051 | J | | 0.45 | | | 0.095 | J | | 0.15 | J | | 0.38 | J |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | | 0.067 | J | | 0.82 | | | 0.43 | | | 0.72 | | | 1.8 | |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | | 0.047 | J | | 0.84 | | | 0.5 | | | 0.7 | | | 1.7 | |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | | 0.095 | J | | 1.1 | | | 0.67 | | | 1.1 | | | 2.4 | |
| Benzo(g,h,I)perylene | mg/kg | NC | NC | NC | | 0.046 | J | | 0.28 | J | | 0.17 | J | | 0.22 | J | | 0.53 | |
| Benzo(k)fluoranthene | mg/kg | 0.9 | 4 | 500 | | 0.045 | J | | 0.45 | | | 0.32 | J | | 0.4 | J | | 0.87 | |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| Bis(2-Etheyhexyl)phthalate | mg/kg | 49 | 210 | 100 | | 1.8 | | | 0.35 | J | | 0.11 | J | | 0.15 | J | | 0.13 | J |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | | 0.25 | J | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| Carbazole | mg/kg | NC | NC | NC | 0.4 | -- | | | 0.069 | J | 0.39 | -- | | | 0.041 | J | | 0.047 | J |
| Chrysene | mg/kg | 9 | 40 | 500 | | 0.077 | J | | 0.82 | | | 0.53 | | | 0.74 | | | 1.8 | |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | 0.4 | -- | | | 0.048 | J | 0.39 | -- | | | 0.048 | J | | 0.11 | J |
| Dibenzofuran | mg/kg | NC | NC | NC | 0.4 | -- | | | 0.11 | J | 0.39 | -- | | | 0.055 | J | | 0.061 | J |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | | 0.17 | J | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | | 0.076 | J | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | | 1.3 | B | | 0.1 | JB | | 0.074 | JB | | 0.069 | JB | | 0.087 | JB |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | | 3 | | | 0.19 | J | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | | 0.16 | J | | 1.6 | | | 0.46 | | | 0.94 | | | 2.3 | |
| Fluorene | mg/kg | 2300 | 10000 | 100 | | 0.055 | J | | 0.23 | J | | 0.068 | J | | 0.063 | J | | 1.3 | J |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| Hexachlorocyclopentadiene | mg/kg | 400 | 7300 | 100 | 0.8 | -- | | 0.84 | -- | | 0.78 | -- | | 0.81 | -- | | 0.93 | -- | |
| Hexachloroethane | mg/kg | 6 | 100 | 100 | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | 0.4 | -- | | | 0.28 | J | | 0.17 | J | | 0.23 | J | | 0.54 | |
| Isophorone | mg/kg | 1100 | 10000 | 50 | | 0.31 | J | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| Naphthalene | mg/kg | 230 | 4200 | 100 | | 0.32 | J | | 0.061 | J | | 0.11 | J | | 0.093 | J | | 0.15 | J |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 0.4 | -- | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| Phenathrene | mg/kg | NC | NC | NC | | 0.21 | J | | 1.5 | | | 0.29 | J | | 0.53 | | | 1.1 | |
| Phenol | mg/kg | 10000 | 10000 | 50 | | 0.61 | | 0.42 | -- | | 0.39 | -- | | 0.41 | -- | | 0.46 | -- | |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 0.15 | J | | 1.5 | | | 0.5 | | | 0.97 | | | 2.2 | |

**Table 11**
**Area of Concern # 10 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A10-SS-1<br>AB45451<br>10/25/2001<br>2<br>Soil<br>CONC | Q | MDL | A10-SS-2<br>AB45452<br>10/25/2001<br>1.5<br>Soil<br>CONC | Q | MDL | A10-SS-3<br>AB45453<br>10/25/2001<br>3<br>Soil<br>CONC | Q | MDL | A10-SS-4<br>AB45454<br>10/25/2001<br>1.5<br>Soil<br>CONC | Q | MDL | A10-SS-5<br>AB45455<br>10/25/2001<br>2.5<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TICs Total | mg/kg | NC | NC | NC | | 148.4 | J | | 114.24 | J | | 122.77 | J | | 110.02 | J | | 162.46 | J |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 158.43 | | | 125.453 | | | 127.569 | | | 117.595 | | | 180.605 | |
| | | | | | | | | | | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | 0.004 | -- | | 0.0042 | -- | | 0.0039 | -- | | 0.0041 | -- | | 0.0046 | -- | |
| Alpha-BHC | mg/kg | NC | NC | NC | 0.004 | -- | | 0.0042 | -- | | 0.0039 | -- | | 0.0041 | -- | | 0.0046 | -- | |
| Beta-BHC | mg/kg | NC | NC | NC | 0.004 | -- | | 0.0042 | -- | | 0.0039 | -- | | 0.0041 | -- | | 0.0046 | -- | |
| Chlordane | mg/kg | NC | NC | NC | 0.008 | -- | | 0.0084 | -- | | 0.0039 | -- | | 0.0041 | -- | | 0.0093 | -- | |
| Delta-BHC | mg/kg | NC | NC | NC | 0.004 | -- | | 0.0042 | -- | | 0.0039 | -- | | 0.0041 | -- | | 0.0046 | -- | |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | 0.004 | -- | | 0.0042 | -- | | 0.0039 | -- | | 0.0041 | -- | | 0.0046 | -- | |
| Endosulfan I | mg/kg | NC | NC | NC | 0.004 | -- | | 0.0042 | -- | | 0.0039 | -- | | 0.0041 | -- | | 0.0046 | -- | |
| Endosulfan II | mg/kg | NC | NC | NC | 0.004 | -- | | 0.0042 | -- | | 0.0039 | -- | | 0.0041 | -- | | 0.0046 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.004 | -- | | 0.0042 | -- | | 0.0039 | -- | | 0.0041 | -- | | 0.0046 | -- | |
| Endrin | mg/kg | 17 | 310 | 50 | 0.004 | -- | | 0.0042 | -- | | 0.0039 | -- | | 0.0041 | -- | | 0.0046 | -- | |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 0.004 | -- | | 0.0042 | -- | | 0.0039 | -- | | 0.0041 | -- | | 0.0046 | -- | |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.004 | -- | | | 0.0052 | | 0.0039 | -- | | 0.0041 | -- | | 0.0046 | -- | |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.004 | -- | | 0.0042 | -- | | 0.0039 | -- | | 0.0041 | -- | | 0.0046 | -- | |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.004 | -- | | 0.0042 | -- | | 0.0039 | -- | | 0.0041 | -- | | 0.0046 | -- | |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.004 | -- | | 0.0042 | -- | | 0.0039 | -- | | 0.0041 | -- | | 0.0046 | -- | |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | 0.004 | -- | | | 0.026 | | 0.0039 | -- | | 0.0041 | -- | | 0.0046 | -- | |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | 0.004 | -- | | | 0.0051 | | 0.0039 | -- | | | 0.02 | | | 0.04 | |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | 0.004 | -- | | 0.0042 | -- | | 0.0039 | -- | | 0.0041 | -- | | | 0.0076 | |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | 0.004 | -- | | | 0.0069 | | 0.0039 | -- | | 0.0041 | -- | | 0.0046 | -- | |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 0.04 | -- | | 0.042 | -- | | 0.039 | -- | | 0.041 | -- | | 0.046 | -- | |
| | | | | | | | | | | | | | | | | | | | |
| **PCB 8082** | | | | | | | | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 0.02 | -- | | 0.021 | -- | | 0.019 | -- | | 0.02 | -- | | 0.023 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | NC | 0.02 | -- | | 0.021 | -- | | 0.019 | -- | | 0.02 | -- | | 0.023 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | NC | 0.02 | -- | | 0.021 | -- | | 0.019 | -- | | 0.02 | -- | | 0.023 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | NC | 0.02 | -- | | 0.021 | -- | | 0.019 | -- | | 0.02 | -- | | 0.023 | -- | |
| Aroclor-1248 | mg/kg | NC | NC | NC | 0.02 | -- | | 0.021 | -- | | 0.019 | -- | | 0.02 | -- | | 0.023 | -- | |
| Aroclor-1254 | mg/kg | NC | NC | NC | 0.02 | -- | | | 0.088 | | 0.019 | -- | | 0.02 | -- | | 0.023 | -- | |
| Aroclor-1260 | mg/kg | NC | NC | NC | 0.02 | -- | | 0.021 | -- | | 0.019 | -- | | | 0.058 | | | 0.042 | |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | 0 | | | 0.088 | | | 0 | | | 0.058 | | | 0.042 | |
| | | | | | | | | | | | | | | | | | | | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 159.93 | | | 127 | | | 130 | | | 120 | | | 184 | |
| | | | | | | | | | | | | | | | | | | | |
| **Inorganic Compounds** | | | | | | | | | | | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | NC | | 1800 | | | 3100 | | | 1600 | | | 4000 | | | 3300 | |
| Antimony | mg/kg | 14 | 340 | NC | | 18 | | | 5.7 | | | 5.7 | | | 3 | | | 23 | |
| Arsenic | mg/kg | 20 | 20 | NC | | 6.5 | | | 16 | | | 2.9 | | | 8.8 | | | 25 | |
| Barium | mg/kg | 700 | 47000 | NC | | 440 | | | 150 | | | 42 | | | 510 | | | 290 | |
| Beryllium | mg/kg | 2 | 2 | NC | 0.72 | -- | | 0.76 | -- | | 0.7 | -- | | 0.73 | -- | | 0.83 | -- | |
| Cadmium | mg/kg | 39 | 100 | NC | | 10 | | 0.76 | -- | | 0.7 | -- | | | 45 | | | 8.7 | |
| Calcium | mg/kg | NC | NC | NC | | 5,700 | | | 1200 | | 580 | -- | | | 4800 | | | 6300 | |
| Chromium | mg/kg | 120000 | NC | NC | | 150 | | | 160 | | | 790 | | | 320 | | | 240 | |
| Cobalt | mg/kg | NC | NC | NC | | 17 | | | 5.9 | | 2.9 | -- | | | 4 | | | 20 | |
| Copper | mg/kg | 600 | 600 | NC | | 200 | | | 100 | | | 28 | | | 36 | | | 390 | |
| Iron | mg/kg | NC | NC | NC | | 84000 | | | 10000 | | | 4400 | | | 11000 | | | 110000 | |
| Lead | mg/kg | 400 | 600 | NC | | 810 | | | 180 | | | 45 | | | 140 | | | 1200 | |
| Magnesium | mg/kg | NC | NC | NC | | 1700 | | | 1200 | | 580 | -- | | | 1400 | | | 2200 | |

Table 11
Area of Concern # 10 Soil Analytical Results

Remedial Investigation Report
Central Steel Drum
Newark, New Jersey

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A10-SS-1<br>AB45451<br>10/25/2001<br>2<br>Soil | | | A10-SS-2<br>AB45452<br>10/25/2001<br>1.5<br>Soil | | | A10-SS-3<br>AB45453<br>10/25/2001<br>3<br>Soil | | | A10-SS-4<br>AB45454<br>10/25/2001<br>1.5<br>Soil | | | A10-SS-5<br>AB45455<br>10/25/2001<br>2.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| Manganese | mg/kg | NC | NC | NC | | 740 | | | 120 | | | 45 | | | 580 | | | 860 | |
| Mercury | mg/kg | 14 | 270 | NC | 0.17 | -- | | | 0.43 | | | 0.23 | | | 0.52 | | | 0.41 | |
| Nickel | mg/kg | 250 | 2400 | NC | | 50 | | | 17 | | 5.8 | -- | | | 20 | | | 160 | |
| Potassium | mg/kg | NC | NC | NC | 300 | -- | | | 370 | | 290 | -- | | | 470 | | | 390 | |
| Selenium | mg/kg | 63 | 3100 | NC | 2.4 | -- | | | 4.4 | | 2.3 | -- | | | 2.6 | | 2.8 | -- | |
| Silver | mg/kg | 110 | 4100 | NC | 3 | -- | | 3.2 | -- | | 2.9 | -- | | 3 | -- | | 3.5 | -- | |
| Sodium | mg/kg | NC | NC | NC | 600 | -- | | 630 | -- | | 580 | -- | | 610 | -- | | 690 | -- | |
| Thallium | mg/kg | 2 | 2 | NC | 1.4 | -- | | 1.5 | -- | | 1.4 | -- | | 105 | -- | | 1.7 | -- | |
| Vanadium | mg/kg | 370 | 7100 | NC | 12 | -- | | 13 | -- | | | 17 | | | 20 | | | 26 | |
| Zinc | mg/kg | 1500 | 1500 | NC | | 750 | | | 400 | | | 18 | | | 320 | | | 1300 | |
| | | | | | | | | | | | | | | | | | | | |
| % Solids | % | NC | NC | NC | | 83 | | | 79 | | | 86 | | | 82 | | | 72 | |

CONC Concentration
TIC Tentatively Identified Compound
E
Q Qualifier
MDL Method Detection Limit
J Estimated Value
NC No criteria established
NA Not analyzed
R data rejected by validation
-- Not Detected
***BOLD*** analyte exceeds unrestricted use soil cleanup criteria (08/04/99)
* indicates sample is a duplicate of previous sample

Table 11
Area of Concern # 10 Soil Analytical Results

Remedial Investigation Report
Central Steel Drum
Newark, New Jersey

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A10-SS-6<br>AB45456<br>10/25/2001<br>3.5<br>Soil | | | A10-SS-7<br>AB45457<br>10/25/2001<br>2<br>Soil | | | A10-SS-8<br>AB45458<br>10/25/2001<br>1.5<br>Soil | | | A10-SS-9<br>AB45459<br>10/25/2001<br>3<br>Soil | | | A10-SS-10<br>AB45460<br>10/25/2001<br>2.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| **Volatile Organic Compounds** | | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 17 | -- | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| 1,1,2,2-Tetrachloroethane | mg/kg | 34 | 70 | 1 | 17 | -- | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 17 | -- | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 17 | -- | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 17 | -- | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 17 | -- | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 17 | -- | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 84 | -- | | 3.8 | -- | | 4.2 | -- | | 4.1 | -- | | 5.7 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 67 | -- | | 3 | -- | | 3.4 | -- | | 3.3 | -- | | 4.5 | -- | |
| 4-Methyl-2-2Pentanone | mg/kg | 1000 | 1000 | 50 | 67 | -- | | 3 | -- | | 3.4 | -- | | 3.3 | -- | | 4.5 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 67 | -- | | 3 | -- | | 3.4 | -- | | 3.3 | -- | | 4.5 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | | 13 | | 0.15 | -- | | | 0.41 | | 0.17 | -- | | 0.23 | -- | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 17 | -- | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 17 | -- | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 17 | -- | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 17 | -- | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 17 | -- | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | | 19 | | 0.76 | -- | | | 0.21 | J | 0.83 | -- | | 1.1 | -- | |
| Chloroethane | mg/kg | NC | NC | NC | 17 | -- | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 17 | -- | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 17 | -- | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | | 77 | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 17 | -- | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| Dibromochloromethane | mg/kg | 110 | 1000 | 1 | 17 | -- | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | | 110 | | 0.15 | -- | | | 2.5 | | 0.17 | -- | | 0.23 | -- | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 17 | -- | | | 0.42 | J | 0.84 | -- | | | 0.9 | | | 0.44 | J |
| Styrene | mg/kg | 23 | 97 | 100 | 3.4 | -- | | 0.15 | -- | | 0.17 | -- | | 0.17 | -- | | 0.23 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 17 | -- | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| Toluene | mg/kg | 1000 | 1000 | 500 | | 440 | | | 0.18 | | | 1.6 | | 0.17 | -- | | | 0.29 | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 17 | -- | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| Trans-1,3-Dichloropropene | mg/kg | NC | NC | NC | 17 | -- | | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | | 7.7 | J | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | | 3.7 | J | 0.76 | -- | | 0.84 | -- | | 0.83 | -- | | 1.1 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | | 480 | | 0.3 | -- | | | 15.2 | | 0.33 | -- | | 0.45 | -- | |
| TICs Total | mg/kg | NC | NC | NC | | 1520 | J | | 0 | | | 9.2 | J | | 0 | | | 2.4 | J |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 2670 | | | 1 | | | 29 | | | 1 | | | 3 | |
| | | | | | | | | | | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | | 2.3 | J | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | | 35 | | 0.44 | -- | | | 1.4 | J | 2 | -- | | 0.49 | -- | |
| 1,3-Dichlorobenzene | mg/kg | 5100 | 10000 | 100 | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | | 3 | J | 0.44 | -- | | | 1.5 | J | 2 | -- | | 0.49 | -- | |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 2,4-Dichlorophenol | mg/kg | NC | NC | NC | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | | 4 | J | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 2-Chlorophenol | mg/kg | 280 | 5200 | 10 | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |

**Table 11**
**Area of Concern # 10 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A10-SS-6<br>AB45456<br>10/25/2001<br>3.5<br>Soil | | | A10-SS-7<br>AB45457<br>10/25/2001<br>2<br>Soil | | | A10-SS-8<br>AB45458<br>10/25/2001<br>1.5<br>Soil | | | A10-SS-9<br>AB45459<br>10/25/2001<br>3<br>Soil | | | A10-SS-10<br>AB45460<br>10/25/2001<br>2.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | | 4 | J | | 0.088 | J | | 2.2 | J | | 0.94 | J | | 0.13 | J |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 2-Nitroaniline | mg/kg | NC | NC | NC | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | | 17 | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | | 0.97 | J | | 0.058 | J | | 1.1 | J | | 3.1 | | | 0.078 | J |
| Acenaphthylene | mg/kg | NC | NC | NC | 8.1 | -- | | | 0.56 | | 9.3 | -- | | | 0.6 | J | | 0.53 | |
| Anthracene | mg/kg | 10000 | 10000 | 100 | | 1.2 | J | | 0.24 | J | | 2 | J | | 9.5 | | | 0.25 | J |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | | 2.8 | J | | 1.1 | | | 3.7 | J | | 13 | | | 1.1 | |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | | 2.6 | J | | 1.4 | | | 3.6 | J | | 12 | | | 1.3 | |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | | 4 | J | | 1.8 | | | 4.5 | J | | 14 | | | 1.7 | |
| Benzo(g,h,i)perylene | mg/kg | NC | NC | NC | | 0.99 | J | | 0.51 | | | 2.2 | J | | 5.5 | | | 0.37 | J |
| Benzo(k)fluoranthene | mg/kg | 0.9 | 4 | 500 | | 1.7 | J | | 0.82 | | | 1.9 | J | | 6.5 | | | 0.58 | |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| Bis(2-Ethexhexyl)phthalate | mg/kg | 49 | 210 | 100 | | 68 | B | | 0.059 | JB | | 150 | B | | 2.1 | B | | 0.057 | JB |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | | 2.6 | J | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| Carbazole | mg/kg | NC | NC | NC | | 0.92 | J | 0.44 | -- | | 9.3 | -- | | | 1.6 | J | 0.49 | -- | |
| Chrysene | mg/kg | 9 | 40 | 500 | | 2.7 | J | | 1.3 | | | 3.9 | J | | 12 | | | 1.2 | |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | 8.1 | -- | | | 0.11 | J | 9.3 | -- | | | 0.76 | J | | 0.077 | J |
| Dibenzofuran | mg/kg | NC | NC | NC | | 0.84 | J | 0.44 | -- | | 9.3 | -- | | | 2.5 | | 0.49 | -- | |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | | 22 | | | 0.06 | J | | 1.9 | J | 2 | -- | | | 0.052 | J |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | | 19 | | 0.44 | -- | | | 4.8 | J | 2 | -- | | 0.49 | -- | |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | | 5.5 | J | | 1.2 | | | 7.8 | J | | 30 | | | 0.95 | |
| Fluorene | mg/kg | 2300 | 10000 | 100 | | 1.3 | J | | 0.054 | J | | 1.4 | J | | 5.1 | | | 0.11 | J |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| Hexachlorocyclopentadiene | mg/kg | 400 | 7300 | 100 | 16 | -- | | 0.89 | -- | | 19 | -- | | 4 | -- | | 0.98 | -- | |
| Hexachloroethane | mg/kg | 6 | 100 | 100 | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | 8.1 | -- | | | 0.54 | | | 2 | J | | 5.7 | | | 0.38 | J |
| Isophorone | mg/kg | 1100 | 10000 | 50 | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| Naphthalene | mg/kg | 230 | 4200 | 100 | | 5.7 | J | | 0.094 | J | | 3.3 | J | | 0.75 | J | | 0.11 | J |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 8.1 | -- | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| Phenanthrene | mg/kg | NC | NC | NC | | 5.7 | J | | 0.54 | | | 7.6 | J | | 29 | | | 0.57 | |
| Phenol | mg/kg | 10000 | 10000 | 50 | | 8.4 | | 0.44 | -- | | 9.3 | -- | | 2 | -- | | 0.49 | -- | |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 5.2 | J | | 1.3 | | | 7 | J | 2 | 23 | | | 1.2 | |

**Table 11**
**Area of Concern # 10 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A10-SS-6<br>AB45456<br>10/25/2001<br>3.5<br>Soil | | | A10-SS-7<br>AB45457<br>10/25/2001<br>2<br>Soil | | | A10-SS-8<br>AB45458<br>10/25/2001<br>1.5<br>Soil | | | A10-SS-9<br>AB45459<br>10/25/2001<br>3<br>Soil | | | A10-SS-10<br>AB45460<br>10/25/2001<br>2.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| TICs Total | mg/kg | NC | NC | NC | | 974 | J | | 131.65 | J | | 439.5 | J | | 149.58 | J | | 125.95 | J |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 1201 | | | 143 | | | 653 | | | 327 | | | 137 | |
| | | | | | | | | | | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | 0.041 | -- | | 0.0044 | -- | | | **0.17** | | 0.04 | -- | | 0.0049 | -- | |
| Alpha-BHC | mg/kg | NC | NC | NC | 0.041 | -- | | 0.0044 | -- | | 0.093 | -- | | 0.04 | -- | | 0.0049 | -- | |
| Beta-BHC | mg/kg | NC | NC | NC | | 0.25 | | 0.0044 | -- | | 0.093 | -- | | 0.04 | -- | | 0.0049 | -- | |
| Chlordane | mg/kg | NC | NC | NC | 0.081 | -- | | 0.0044 | -- | | | 1.2 | | 0.08 | -- | | 0.0098 | -- | |
| Delta-BHC | mg/kg | NC | NC | NC | 0.041 | -- | | 0.0044 | -- | | | 0.17 | | 0.04 | -- | | 0.0049 | -- | |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | | **0.14** | | 0.0044 | -- | | | **0.17** | | 0.04 | -- | | | 0.0085 | |
| Endosulfan I | mg/kg | NC | NC | NC | 0.041 | -- | | 0.0044 | -- | | 0.093 | -- | | 0.04 | -- | | 0.0049 | -- | |
| Endosulfan II | mg/kg | NC | NC | NC | 0.041 | -- | | 0.0044 | -- | | 0.093 | -- | | 0.04 | -- | | 0.0049 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.041 | -- | | 0.0044 | -- | | 0.093 | -- | | 0.04 | -- | | 0.0049 | -- | |
| Endrin | mg/kg | 17 | 310 | 50 | | 0.18 | | 0.0044 | -- | | | 0.68 | | 0.04 | -- | | 0.0049 | -- | |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 0.014 | -- | | 0.0044 | -- | | | 0.7 | | | 0.065 | | 0.0049 | -- | |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.041 | -- | | | 0.012 | | 0.093 | -- | | | 0.085 | | | 0.0063 | |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.041 | -- | | 0.0044 | -- | | 0.093 | -- | | 0.04 | -- | | 0.0049 | -- | |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.041 | -- | | 0.0044 | -- | | 0.093 | -- | | 0.04 | -- | | 0.0049 | -- | |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.041 | -- | | 0.0044 | -- | | | 0.14 | | 0.04 | -- | | 0.0049 | -- | |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | 0.041 | -- | | 0.0044 | -- | | 0.093 | -- | | | 1.5 | | | 0.059 | |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | | 0.61 | | | 0.0072 | | | 0.77 | | | 0.26 | | | 0.016 | |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | 0.041 | -- | | 0.0044 | -- | | | 0.87 | | | 0.16 | | 0.0049 | -- | |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | | 1.1 | | | 0.0051 | | | 1.3 | | | 0.084 | | | 0.013 | |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 0.41 | -- | | 0.044 | -- | | 0.93 | -- | | 0.4 | -- | | 0.049 | -- | |
| | | | | | | | | | | | | | | | | | | | |
| **PCB 8082** | | | | | | | | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 0.41 | -- | | 0.022 | -- | | 4.6 | -- | | 0.1 | -- | | 0.025 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | NC | 0.41 | -- | | 0.022 | -- | | 4.6 | -- | | 0.1 | -- | | 0.025 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | NC | | 21 | | 0.022 | -- | | 4.6 | -- | | 0.1 | -- | | 0.025 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | NC | 0.41 | -- | | 0.022 | -- | | 4.6 | -- | | 0.1 | -- | | 0.025 | -- | |
| Aroclor-1248 | mg/kg | NC | NC | NC | 0.41 | -- | | 0.022 | -- | | 4.6 | -- | | 0.1 | -- | | 0.025 | -- | |
| Aroclor-1254 | mg/kg | NC | NC | NC | | 14 | | 0.022 | -- | | 4.6 | -- | | 0.1 | -- | | 0.025 | -- | |
| Aroclor-1260 | mg/kg | NC | NC | NC | 0.41 | -- | | 0.022 | -- | | | 80 | | | 1.7 | | | 0.24 | |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | **35** | | | 0 | | | **80** | | | **1.7** | | | 0.24 | |
| | | | | | | | | | | | | | | | | | | | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | **3909** | | | 144 | | | 769 | | | 332 | | | 140 | |
| | | | | | | | | | | | | | | | | | | | |
| **Inorganic Compounds** | | | | | | | | | | | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | NC | | 5500 | | | 4200 | | | 4600 | | | 3000 | | | 9400 | |
| Antimony | mg/kg | 14 | 340 | NC | | **61** | | | 3 | | | **66** | | | 2.4 | | | 4.9 | |
| Arsenic | mg/kg | 20 | 20 | NC | | 17 | | | 13 | | | 12 | | | 6.1 | | | **53** | |
| Barium | mg/kg | 700 | 47000 | NC | | **1000** | | | 77 | | | 540 | | | 40 | | | 200 | |
| Beryllium | mg/kg | 2 | 2 | NC | 0.73 | -- | | 0.8 | -- | | 0.83 | -- | | 0.72 | -- | | 0.88 | -- | |
| Cadmium | mg/kg | 39 | 100 | NC | | **93** | | 0.8 | -- | | | 32 | | 0.72 | -- | | 0.88 | -- | |
| Calcium | mg/kg | NC | NC | NC | | 35000 | | | 780 | | | 35000 | | | 640 | | | 1700 | |
| Chromium | mg/kg | 120000 | NC | NC | | 830 | | | 60 | | | 790 | | | 120 | | | 250 | |
| Cobalt | mg/kg | NC | NC | NC | | 34 | | 3.3 | -- | | | 29 | | | 4.3 | | | 6.2 | |
| Copper | mg/kg | 600 | 600 | NC | | **830** | | | 54 | | | 420 | | | 88 | | | 190 | |
| Iron | mg/kg | NC | NC | NC | | 67000 | | | 11000 | | | 60000 | | | 8200 | | | 28000 | |
| Lead | mg/kg | 400 | 600 | NC | | **4900** | | | 95 | | | **2800** | | | 110 | | | **420** | |
| Magnesium | mg/kg | NC | NC | NC | | 8300 | | | 1700 | | | 4500 | | | 1100 | | | 3300 | |

**Table 11**
**Area of Concern # 10 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A10-SS-6<br>AB45456<br>10/25/2001<br>3.5<br>Soil<br>CONC | Q | MDL | A10-SS-7<br>AB45457<br>10/25/2001<br>2<br>Soil<br>CONC | Q | MDL | A10-SS-8<br>AB45458<br>10/25/2001<br>1.5<br>Soil<br>CONC | Q | MDL | A10-SS-9<br>AB45459<br>10/25/2001<br>3<br>Soil<br>CONC | Q | MDL | A10-SS-10<br>AB45460<br>10/25/2001<br>2.5<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Manganese | mg/kg | NC | NC | NC | | 430 | | | 81 | | | 450 | | | 97 | | | 200 | |
| Mercury | mg/kg | 14 | 270 | NC | | 15 | | | 0.79 | | | 2.9 | | | 0.59 | | | 2.4 | |
| Nickel | mg/kg | 250 | 2400 | NC | | 120 | | | 9.7 | | | 97 | | | 9.4 | | | 17 | |
| Potassium | mg/kg | NC | NC | NC | | 390 | | | 570 | | 350 | -- | | | 300 | | | 1300 | |
| Selenium | mg/kg | 63 | 3100 | NC | | 8.6 | | 2.7 | -- | | | 4.9 | | | 2.4 | | | 4.2 | |
| Silver | mg/kg | 110 | 4100 | NC | 3 | -- | | 3.3 | -- | | 3.5 | -- | | 3 | -- | | 3.7 | -- | |
| Sodium | mg/kg | NC | NC | NC | | 1,200 | | 670 | -- | | 690 | -- | | 600 | -- | | 740 | -- | |
| Thallium | mg/kg | 2 | 2 | NC | 1.5 | -- | | 1.6 | -- | | 1.7 | -- | | 1.4 | -- | | 1.8 | -- | |
| Vanadium | mg/kg | 370 | 7100 | NC | | 130 | | 13 | -- | | | 130 | | 12 | -- | | | 31 | |
| Zinc | mg/kg | 1500 | 1500 | NC | | 4400 | | | 42 | | | 1600 | | | 120 | | | 93 | |
| | | | | | | | | | | | | | | | | | | | |
| **% Solids** | % | NC | NC | NC | | 82 | | | 75 | | | 72 | | | 83 | | | 68 | |

CONC Concentration
TIC Tentatively Identified Compound
B
Q Qualifier
MDL Method Detection Limit
J Estimated Value
NC No criteria established
NA Not analyzed
R data rejected by validation
-- Not Detected
***BOLD*** analyte exceeds unrestricted use soil cleanup criteria (08/04/99)
* indicates sample is a duplicate of previous sample

**Table 11**
**Area of Concern # 10 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A10-SS-11<br>AB45461<br>10/25/2001<br>2.5<br>Soil | | | A10-SS-12<br>AB45462<br>10/25/2001<br>1.5<br>Soil | | | A10-SS-13<br>AB45463<br>10/25/2001<br>3.5<br>Soil | | | A10-SS-14<br>AB45464<br>10/25/2001<br>3<br>Soil | | | A10-SS-15<br>AB45466<br>10/25/2001<br>1.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| **Volatile Organic Compounds** | | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| 1,1,2,2-Tetrachloroethane | mg/kg | 34 | 70 | 1 | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 170 | -- | | 3.6 | -- | | 4.5 | -- | | 3.7 | -- | | 3.9 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 140 | -- | | 2.9 | -- | | 3.6 | -- | | 3 | -- | | 3.1 | -- | |
| 4-Methyl-2-2Pentanone | mg/kg | 1000 | 1000 | 50 | 140 | -- | | 2.9 | -- | | 3.6 | -- | | 3 | -- | | 3.1 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 140 | -- | | 2.9 | -- | | 3.6 | -- | | 3 | -- | | 3.1 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | | 42 | | 0.14 | -- | | 0.18 | -- | | 0.15 | -- | | 0.16 | -- | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | | 29 | J | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| Chloroethane | mg/kg | NC | NC | NC | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | | 33 | J | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| Dibromochloromethane | mg/kg | 110 | 1000 | 1 | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | | 830 | | 0.14 | -- | | 0.18 | -- | | 0.15 | -- | | 0.16 | -- | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 34 | -- | | | 0.2 | J | | 0.88 | J | | 0.7 | J | 0.78 | -- | |
| Styrene | mg/kg | 23 | 97 | 100 | 6.9 | -- | | 0.14 | -- | | 0.18 | -- | | 0.15 | -- | | 0.16 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| Toluene | mg/kg | 1000 | 1000 | 500 | | 2600 | | | 1.1 | | | 0.38 | | 0.15 | -- | | 0.16 | -- | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| Trans-1,3-Dichloropropene | mg/kg | NC | NC | NC | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 34 | -- | | 0.72 | -- | | 0.89 | -- | | 0.74 | -- | | 0.78 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | | 3900 | | | 2.27 | | 0.36 | -- | | 0.3 | -- | | 0.31 | -- | |
| TICs Total | mg/kg | NC | NC | NC | | 4280 | J | | 0 | | | 20.4 | J | | 0 | | | 0 | |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 11714 | | | 4 | | | 22 | | | 1 | | | 0 | |
| | | | | | | | | | | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | | 14 | J | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | | 70 | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 1,3-Dichlorobenzene | mg/kg | 5100 | 10000 | 100 | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | | 9.5 | J | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 2,4-Dichlorophenol | mg/kg | NC | NC | NC | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | | 19 | J | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 2-Chlorophenol | mg/kg | 280 | 5200 | 10 | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |

**Table 11**
**Area of Concern # 10 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A10-SS-11<br>AB45461<br>10/25/2001<br>2.5<br>Soil | | | A10-SS-12<br>AB45462<br>10/25/2001<br>1.5<br>Soil | | | A10-SS-13<br>AB45463<br>10/25/2001<br>3.5<br>Soil | | | A10-SS-14<br>AB45464<br>10/25/2001<br>3<br>Soil | | | A10-SS-15<br>AB45466<br>10/25/2001<br>1.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | | 19 | J | | 0.053 | J | | 0.26 | J | | 0.064 | J | | 0.07 | J |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 2-Nitroaniline | mg/kg | NC | NC | NC | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | | 62 | | 0.43 | -- | | | 0.045 | J | 0.4 | -- | | 0.43 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | | 13 | J | 0.43 | -- | | | 0.22 | J | | 0.084 | J | | 0.051 | J |
| Acenaphthylene | mg/kg | NC | NC | NC | 35 | -- | | | 0.065 | J | | 1.4 | | | 0.3 | J | | 0.13 | J |
| Anthracene | mg/kg | 10000 | 10000 | 100 | | 15 | J | | 0.083 | J | | 0.77 | | | 0.21 | J | | 0.12 | J |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | | 6.8 | J | | 0.21 | J | | 2.9 | | | 0.7 | | | 0.47 | |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | | 4.3 | J | | 0.22 | J | | 3.1 | | | 0.74 | | | 0.45 | |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | | 5.6 | J | | 0.31 | J | | 3.9 | | | 1.1 | | | 0.55 | |
| Benzo(g,h,I)perylene | mg/kg | NC | NC | NC | 35 | -- | | | 0.21 | J | | 1 | | | 0.25 | J | | 0.16 | J |
| Benzo(k)fluoranthene | mg/kg | 0.9 | 4 | 500 | 35 | -- | | | 0.077 | J | | 1.6 | | | 0.39 | J | | 0.27 | J |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| Bis(2-Ethexhexyl)phthalate | mg/kg | 49 | 210 | 100 | | 240 | B | | 1.7 | | | 0.058 | JB | 0.4 | -- | | | 0.15 | JB |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | | 16 | J | | 0.12 | J | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| Carbazole | mg/kg | NC | NC | NC | | 6.1 | J | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| Chrysene | mg/kg | 9 | 40 | 500 | | 6.7 | J | | 0.25 | J | | 2.8 | | | 0.8 | | | 0.44 | |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | 35 | -- | | 0.43 | -- | | | 0.21 | J | | 0.057 | J | 0.43 | -- | |
| Dibenzofuran | mg/kg | NC | NC | NC | | 6.8 | J | 0.43 | -- | | | 0.14 | J | 0.4 | -- | | 0.43 | -- | |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | | 110 | | | 3.6 | | | 0.055 | J | | 0.062 | J | | 0.075 | J |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | | 290 | | | 0.35 | J | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | | 23 | J | | 0.27 | J | | 2.3 | | | 0.59 | | | 0.57 | |
| Fluorene | mg/kg | 2300 | 10000 | 100 | | 12 | J | 0.43 | -- | | | 0.14 | J | | 0.058 | J | | 0.054 | J |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| Hexachlorocyclopentadiene | mg/kg | 400 | 7300 | 100 | 70 | -- | | 0.85 | -- | | 0.89 | -- | | 0.79 | -- | | 0.87 | -- | |
| Hexachloroethane | mg/kg | 6 | 100 | 100 | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | 35 | -- | | | 0.16 | J | | 1 | | | 0.27 | J | | 0.17 | J |
| Isophorone | mg/kg | 1100 | 10000 | 50 | 35 | -- | | | 0.22 | J | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| Naphthalene | mg/kg | 230 | 4200 | 100 | | 32 | J | | 0.11 | J | | 0.3 | J | | 0.075 | J | | 0.11 | J |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 35 | -- | | 0.43 | -- | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| Phenanthrene | mg/kg | NC | NC | NC | | 41 | | | 0.18 | J | | 1.5 | | | 0.22 | J | | 0.41 | J |
| Phenol | mg/kg | 10000 | 10000 | 50 | | 20 | J | | 0.73 | | 0.44 | -- | | 0.4 | -- | | 0.43 | -- | |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 17 | J | | 0.27 | J | | 3.4 | | | 0.87 | | | 0.58 | |

**Table 11**
**Area of Concern # 10 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A10-SS-11<br>AB45461<br>10/25/2001<br>2.5<br>Soil<br>CONC Q | | A10-SS-12<br>AB45462<br>10/25/2001<br>1.5<br>Soil<br>CONC Q | | A10-SS-13<br>AB45463<br>10/25/2001<br>3.5<br>Soil<br>CONC Q | | A10-SS-14<br>AB45464<br>10/25/2001<br>3<br>Soil<br>CONC Q | | A10-SS-15<br>AB45466<br>10/25/2001<br>1.5<br>Soil<br>CONC Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | | MDL | | MDL | | MDL | | MDL | |
| TICs Total | mg/kg | NC | NC | NC | | 4251 J | | 194.42 J | | 108.65 J | | 82.97 J | | 125.47 J |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 5310 | | 204 | | 136 | | 90 | | 130 |
| | | | | | | | | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | | 0.63 | 0.021 | -- | 0.0044 | -- | 0.004 | -- | 0.022 | -- |
| Alpha-BHC | mg/kg | NC | NC | NC | 0.22 | -- | 0.021 | -- | 0.0044 | -- | 0.004 | -- | 0.022 | -- |
| Beta-BHC | mg/kg | NC | NC | NC | | 0.58 | 0.021 | -- | 0.0044 | -- | 0.004 | -- | | 0.038 |
| Chlordane | mg/kg | NC | NC | NC | 0.44 | -- | 0.043 | -- | | 0.047 | | 0.011 | 0.043 | -- |
| Delta-BHC | mg/kg | NC | NC | NC | 0.22 | -- | 0.021 | -- | 0.0044 | -- | 0.004 | -- | 0.022 | -- |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | | 0.68 | | 0.023 | 0.0044 | -- | 0.004 | -- | 0.022 | -- |
| Endosulfan I | mg/kg | NC | NC | NC | 0.22 | -- | 0.021 | -- | 0.0044 | -- | 0.004 | -- | 0.022 | -- |
| Endosulfan II | mg/kg | NC | NC | NC | 0.22 | -- | 0.021 | -- | | 0.01 | 0.004 | -- | 0.022 | -- |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.22 | -- | 0.021 | -- | 0.0044 | -- | 0.004 | -- | 0.022 | -- |
| Endrin | mg/kg | 17 | 310 | 50 | 0.22 | -- | 0.021 | -- | 0.0044 | -- | 0.004 | -- | 0.022 | -- |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 0.22 | -- | 0.021 | -- | 0.0044 | -- | 0.004 | -- | | 0.046 |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.22 | -- | 0.021 | -- | | 0.021 | 0.004 | -- | 0.022 | -- |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.22 | -- | 0.021 | -- | 0.0044 | -- | 0.004 | -- | 0.022 | -- |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.22 | -- | 0.021 | -- | 0.0044 | -- | 0.004 | -- | 0.022 | -- |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.22 | -- | 0.021 | -- | 0.0044 | -- | 0.004 | -- | 0.022 | -- |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | 0.22 | -- | 0.021 | -- | 0.0044 | -- | 0.004 | -- | 0.022 | -- |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | | 3.2 | 0.021 | -- | | 0.017 | | 0.007 | | 0.2 |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | | 0.62 | | 0.13 | 0.0044 | -- | 0.004 | -- | | 0.087 |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | | 2.6 | 0.021 | -- | | 0.0056 | 0.004 | -- | | 0.052 |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | 2.2 | -- | 0.21 | -- | 0.044 | -- | 0.04 | -- | 0.22 | -- |
| | | | | | | | | | | | | | | |
| **PCB 8082** | | | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 0.44 | -- | 0.021 | -- | 0.022 | -- | 0.02 | -- | 0.022 | -- |
| Aroclor-1221 | mg/kg | NC | NC | NC | 0.44 | -- | 0.021 | -- | 0.022 | -- | 0.02 | -- | 0.022 | -- |
| Aroclor-1232 | mg/kg | NC | NC | NC | 0.44 | -- | 0.021 | -- | 0.022 | -- | 0.02 | -- | 0.022 | -- |
| Aroclor-1242 | mg/kg | NC | NC | NC | | 3.1 | 0.021 | -- | 0.022 | -- | 0.02 | -- | 0.022 | -- |
| Aroclor-1248 | mg/kg | NC | NC | NC | 0.44 | -- | 0.021 | -- | 0.022 | -- | 0.02 | -- | 0.022 | -- |
| Aroclor-1254 | mg/kg | NC | NC | NC | | 11 | 0.021 | -- | 0.022 | -- | 0.02 | -- | 0.022 | -- |
| Aroclor-1260 | mg/kg | NC | NC | NC | 0.44 | -- | | 0.86 | 0.022 | -- | 0.02 | -- | | 0.46 |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | 14.1 | | 0.86 | | 0 | | 0 | | 0.46 |
| | | | | | | | | | | | | | | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 17846 | | 208 | | 158 | | 91 | | 131 |
| | | | | | | | | | | | | | | |
| **Inorganic Compounds** | | | | | | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | NC | | 5100 | | 8500 | | 5400 | | 3400 | | 7100 |
| Antimony | mg/kg | 14 | 340 | NC | | 180 | | 10 | | 5.3 | | 4.2 | | 9.6 |
| Arsenic | mg/kg | 20 | 20 | NC | | 24 | | 6.4 | | 30 | | 16 | | 11 |
| Barium | mg/kg | 700 | 47000 | NC | | 2600 | | 140 | | 170 | | 110 | | 170 |
| Beryllium | mg/kg | 2 | 2 | NC | 0.79 | -- | 0.77 | -- | 0.8 | -- | 0.71 | -- | 0.78 | -- |
| Cadmium | mg/kg | 39 | 100 | NC | | 220 | | 3.40 | 0.8 | -- | 0.71 | -- | | 1.8 |
| Calcium | mg/kg | NC | NC | NC | | 56000 | | 17000 | | 1300 | | 830 | | 12000 |
| Chromium | mg/kg | 120000 | NC | NC | | 930 | | 760 | | 240 | | 46 | | 800 |
| Cobalt | mg/kg | NC | NC | NC | | 77 | | 44 | 3.3 | -- | 3 | -- | | 31 |
| Copper | mg/kg | 600 | 600 | NC | | 1800 | | 140 | | 160 | | 46 | | 100 |
| Iron | mg/kg | NC | NC | NC | | 220000 | | 39000 | | 13000 | | 9700 | | 36000 |
| Lead | mg/kg | 400 | 600 | NC | | 9800 | | 370 | | 170 | | 110 | | 350 |
| Magnesium | mg/kg | NC | NC | NC | | 11000 | | 14000 | | 2000 | | 1400 | | 9300 |

**Table 11**
**Area of Concern # 10 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | | A10-SS-11<br>AB45461<br>10/25/2001<br>2.5<br>Soil | | | A10-SS-12<br>AB45462<br>10/25/2001<br>1.5<br>Soil | | | A10-SS-13<br>AB45463<br>10/25/2001<br>3.5<br>Soil | | | A10-SS-14<br>AB45464<br>10/25/2001<br>3<br>Soil | | | A10-SS-15<br>AB45466<br>10/25/2001<br>1.5<br>Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q | MDL | CONC | Q |
| Manganese | mg/kg | NC | NC | NC | | 1,100 | | | 340 | | | 100 | | | 68 | | | 320 | |
| Mercury | mg/kg | 14 | 270 | NC | | 4.6 | | | 0.82 | | | 1.8 | | | 0.63 | | | 0.42 | |
| Nickel | mg/kg | 250 | 2400 | NC | | 180 | | | 160 | | | 12 | | | 11 | | | 110 | |
| Potassium | mg/kg | NC | NC | NC | 330 | -- | | | 580 | | | 690 | | | 490 | | | 760 | |
| Selenium | mg/kg | 63 | 3100 | NC | 2.6 | -- | | 2.6 | -- | | 2.7 | -- | | 2.4 | -- | | 2.6 | -- | |
| Silver | mg/kg | 110 | 4100 | NC | 3.3 | -- | | 3.2 | -- | | 3.3 | -- | | 3 | -- | | 3.2 | -- | |
| Sodium | mg/kg | NC | NC | NC | | 940 | | 640 | -- | | 670 | -- | | 600 | -- | | 650 | -- | |
| Thallium | mg/kg | 2 | 2 | NC | 1.6 | -- | | 1.5 | -- | | 1.6 | -- | | 1.4 | -- | | 1.6 | -- | |
| Vanadium | mg/kg | 370 | 7100 | NC | | 98 | | | 290 | | | 20 | | 12 | -- | | | 210 | |
| Zinc | mg/kg | 1500 | 1500 | NC | | **5200** | | | 380 | | | 63 | | | 34 | | | 290 | |
| | | | | | | | | | | | | | | | | | | | |
| **% Solids** | % | NC | NC | NC | | 76 | | | 78 | | | 75 | | | 84 | | | 77 | |

CONC Concentration
TIC Tentatively Identified Compound
B
Q Qualifier
MDL Method Detection Limit
I Estimated Value
NC No criteria established
NA Not analyzed
R data rejected by validation
-- Not Detected
***BOLD*** analyte exceeds unrestricted use soil cleanup criteria (08/04/99)
* indicates sample is a duplicate of previous sample

**Table 11**
**Area of Concern # 10 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A10-SS-16<br>AB45466<br>10/25/2001<br>2.5<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds** | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 210 | 1000 | 50 | 0.81 | -- | |
| 1,1,2,2-Tetrachloroethane | mg/kg | 34 | 70 | 1 | 0.81 | -- | |
| 1,1,2-Trichloroethane | mg/kg | 22 | 420 | 1 | 0.81 | -- | |
| 1,1-Dichloroethane | mg/kg | 570 | 1000 | 10 | 0.81 | -- | |
| 1,1-Dichloroethene | mg/kg | 8 | 150 | 10 | 0.81 | -- | |
| 1,2-Dichloroethane | mg/kg | 6 | 24 | 1 | 0.81 | -- | |
| 1,2-Dichloropropane | mg/kg | 10 | 43 | NC | 0.81 | -- | |
| 2-Butanone | mg/kg | 1000 | 1000 | 50 | 4 | -- | |
| 2-Hexanone | mg/kg | NC | NC | NC | 3.2 | -- | |
| 4-Methyl-2-2Pentanone | mg/kg | 1000 | 1000 | 50 | 3.2 | -- | |
| Acetone | mg/kg | 1000 | 1000 | 100 | 3.2 | -- | |
| Benzene | mg/kg | 3 | 13 | 1 | 0.16 | -- | |
| Bromodichloromethane | mg/kg | 11 | 46 | 1 | 0.81 | -- | |
| Bromoform | mg/kg | 86 | 370 | 1 | 0.81 | -- | |
| Bromomethane | mg/kg | 79 | 1000 | 1 | 0.81 | -- | |
| Carbon disulfide | mg/kg | NC | NC | NC | 0.81 | -- | |
| Carbon tetrachloride | mg/kg | 2 | 4 | 1 | 0.81 | -- | |
| Chlorobenzene | mg/kg | 37 | 680 | 1 | 0.81 | -- | |
| Chloroethane | mg/kg | NC | NC | NC | 0.81 | -- | |
| Chloroform | mg/kg | 19 | 28 | 1 | 0.81 | -- | |
| Chloromethane | mg/kg | 520 | 1000 | 10 | 0.81 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | 79 | 1000 | 1 | 0.81 | -- | |
| Dichloropropene (cis and trans) | mg/kg | 4 | 5 | 1 | 0.81 | -- | |
| Dibromochloromethane | mg/kg | 110 | 1000 | 1 | 0.81 | -- | |
| Ethylbenzene | mg/kg | 1000 | 1000 | 100 | 0.16 | -- | |
| Methylene chloride | mg/kg | 49 | 210 | 1 | 0.81 | -- | |
| Styrene | mg/kg | 23 | 97 | 100 | 0.16 | -- | |
| Tetrachloroethene | mg/kg | 4 | 6 | 1 | 0.81 | -- | |
| Toluene | mg/kg | 1000 | 1000 | 500 | 0.16 | -- | |
| Trans-1,2-Dichloroethene | mg/kg | 1000 | 1000 | 50 | 0.81 | -- | |
| Trans-1,3-Dichloropropene | mg/kg | NC | NC | NC | 0.81 | -- | |
| Trichloroethene | mg/kg | 23 | 54 | 1 | 0.81 | -- | |
| Vinyl chloride | mg/kg | 2 | 7 | 10 | 0.81 | -- | |
| Xylenes (total) | mg/kg | 410 | 1000 | 67 | 0.32 | -- | |
| TICs Total | mg/kg | NC | NC | NC | | 2.09 | J |
| Total volatile organic compounds | mg/kg | 1000 | 1000 | NC | | 2 | |
| | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | 68 | 1200 | 100 | 0.44 | -- | |
| 1,2-Dichlorobenzene | mg/kg | 5100 | 10000 | 50 | | 0.054 | J |
| 1,3-Dichlorobenzene | mg/kg | 5100 | 10000 | 100 | 0.44 | -- | |
| 1,4-Dichlorobenzene | mg/kg | 570 | 10000 | 100 | 0.44 | -- | |
| 2,4,5-Trichlorophenol | mg/kg | 5600 | 10000 | 50 | 0.44 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | 62 | 270 | 10 | 0.44 | -- | |
| 2,4-Dichlorophenol | mg/kg | NC | NC | NC | 0.44 | -- | |
| 2,4-Dimethylphenol | mg/kg | 1100 | 10000 | 10 | 0.44 | -- | |
| 2,4-Dinitrophenol | mg/kg | 110 | 2100 | 10 | 0.44 | -- | |
| 2,4 & 2,6-Dinitrotoluene | mg/kg | 1 | 4 | 10 | 0.44 | -- | |
| 2-Chloronaphthalene | mg/kg | NC | NC | NC | 0.44 | -- | |
| 2-Chlorphenol | mg/kg | 280 | 5200 | 10 | 0.44 | -- | |

**Table 11**
**Area of Concern # 10 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A10-SS-16<br>AB45466<br>10/25/2001<br>2.5<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | mg/kg | NC | NC | NC | | 0.092 | J |
| 2-Methylphenol | mg/kg | 2800 | 10000 | NC | 0.44 | -- | |
| 2-Nitoaniline | mg/kg | NC | NC | NC | 0.44 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | NC | 0.44 | -- | |
| 3 & 4-Methylphenol | mg/kg | 2800 | 10000 | NC | | 0.11 | J |
| 3,3'-Dichlorobenzidine | mg/kg | 2 | 6 | 100 | 0.44 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | NC | 0.44 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | NC | 0.44 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | NC | 0.44 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | 10000 | 10000 | 100 | 0.44 | -- | |
| 4-Chloroaniline | mg/kg | 230 | 4200 | NC | 0.44 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | NC | 0.44 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | NC | 0.44 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | NC | 0.44 | -- | |
| Acenaphthene | mg/kg | 3400 | 10000 | 100 | 0.44 | -- | |
| Acenaphthylene | mg/kg | NC | NC | NC | | 0.15 | J |
| Anthracene | mg/kg | 10000 | 10000 | 100 | | 0.098 | J |
| Benzo(a)anthracene | mg/kg | 0.9 | 4 | 500 | | 0.36 | J |
| Benzo(a)pyrene | mg/kg | 0.66 | 0.66 | 100 | | 0.42 | J |
| Benzo(b)fluoranthene | mg/kg | 0.9 | 4 | 50 | | 0.76 | |
| Benzo(g,h,I)perylene | mg/kg | NC | NC | NC | | 0.15 | J |
| Benzo(k)fluouranthene | mg/kg | 0.9 | 4 | 500 | | 0.4 | J |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | NC | 0.44 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | 0.66 | 3 | 10 | 0.44 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | 2300 | 10000 | 10 | 0.44 | -- | |
| Bis(2-Ethoyhexyl)phthalate | mg/kg | 49 | 210 | 100 | | 1.1 | B |
| Butylbenzylphthalate | mg/kg | 1100 | 10000 | 100 | 0.44 | -- | |
| Carbazole | mg/kg | NC | NC | NC | 0.44 | -- | |
| Chrysene | mg/kg | 9 | 40 | 500 | | 0.41 | J |
| Dibenzo(a,h)anthracene | mg/kg | 0.66 | 0.66 | 100 | 0.44 | -- | |
| Dibenzofuran | mg/kg | NC | NC | NC | | 0.052 | J |
| Diethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.44 | -- | |
| Dimethylphthalate | mg/kg | 10000 | 10000 | 50 | 0.44 | -- | |
| Di-n-butylphthalate | mg/kg | 5700 | 10000 | 100 | | 0.25 | J |
| Di-n-octylphthalate | mg/kg | 1100 | 10000 | 100 | 0.44 | -- | |
| Fluoranthene | mg/kg | 2300 | 10000 | 100 | | 0.39 | J |
| Fluorene | mg/kg | 2300 | 10000 | 100 | 0.44 | -- | |
| Hexachlorobenzene | mg/kg | 0.66 | 2 | 100 | 0.44 | -- | |
| Hexachlorobutadiene | mg/kg | 1 | 21 | 100 | 0.44 | -- | |
| Hexachlorocyclopentadiene | mg/kg | 400 | 7300 | 100 | 0.89 | -- | |
| Hexachloroethane | mg/kg | 6 | 100 | 100 | 0.44 | -- | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.9 | 4 | 500 | | 0.15 | J |
| Isophorone | mg/kg | 1100 | 10000 | 50 | | 0.052 | J |
| Naphthalene | mg/kg | 230 | 4200 | 100 | | 0.082 | J |
| Nitrobenzene | mg/kg | 28 | 520 | 10 | 0.44 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | 0.66 | 0.66 | 10 | 0.44 | -- | |
| N-Nitrosodiphenylamine | mg/kg | 140 | 600 | 100 | 0.44 | -- | |
| Pentachlorophenol | mg/kg | 6 | 24 | 100 | 0.44 | -- | |
| Phenathrene | mg/kg | NC | NC | NC | | 0.23 | J |
| Phenol | mg/kg | 10000 | 10000 | 50 | | 0.1 | J |
| Pyrene | mg/kg | 1700 | 10000 | 100 | | 0.63 | |

**Table 11**
**Area of Concern # 10 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A10-SS-16<br>AB45466<br>10/25/2001<br>2.5<br>Soil<br>CONC | Q |
|---|---|---|---|---|---|---|---|
| TICs Total | mg/kg | NC | NC | NC | | 141.36 | J |
| Total Semivolatile Organic Compounds | mg/kg | NC | NC | NC | | 147 | |
| | | | | | | | |
| **Organochlorine Pesticides 8081** | | | | | | | |
| Aldrin | mg/kg | 0.04 | 0.17 | 50 | 0.022 | -- | |
| Alpha-BHC | mg/kg | NC | NC | NC | 0.022 | -- | |
| Beta-BHC | mg/kg | NC | NC | NC | 0.022 | -- | |
| Chlordane | mg/kg | NC | NC | NC | 0.044 | -- | |
| Delta-BHC | mg/kg | NC | NC | NC | 0.022 | -- | |
| Dieldrin | mg/kg | 0.042 | 0.18 | 50 | | **0.076** | |
| Endosulfan I | mg/kg | NC | NC | NC | 0.022 | -- | |
| Endosulfan II | mg/kg | NC | NC | NC | 0.022 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | NC | 0.022 | -- | |
| Endrin | mg/kg | 17 | 310 | 50 | | 0.091 | |
| Endrin Aldehyde | mg/kg | NC | NC | NC | 0.022 | -- | |
| Endrin Ketone | mg/kg | NC | NC | NC | 0.022 | -- | |
| Gamma-BHC | mg/kg | 0.52 | 2.2 | 50 | 0.022 | -- | |
| Heptachlor | mg/kg | 0.15 | 0.65 | 50 | 0.022 | -- | |
| Heptachlor Epoxide | mg/kg | NC | NC | NC | 0.022 | -- | |
| Methoxychlor | mg/kg | 280 | 5200 | 50 | 0.022 | -- | |
| P,P'-DDD | mg/kg | 3 | 12 | 50 | | 0.22 | |
| P,P'-DDE | mg/kg | 2 | 9 | 50 | | 0.16 | |
| P,P'-DDT | mg/kg | 2 | 9 | 500 | | 0.48 | |
| Toxaphene | mg/kg | 0.1 | 0.2 | 50 | **0.22** | -- | |
| | | | | | | | |
| **PCB 8082** | | | | | | | |
| Aroclor-1016 | mg/kg | NC | NC | NC | 0.022 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | NC | 0.022 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | NC | 0.022 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | NC | 0.022 | -- | |
| Aroclor-1248 | mg/kg | NC | NC | NC | 0.022 | -- | |
| Aroclor-1254 | mg/kg | NC | NC | NC | 0.022 | -- | |
| Aroclor-1260 | mg/kg | NC | NC | NC | | 1.1 | |
| Total PCBs | mg/kg | 0.49 | 2 | 50 | | 1.1 | |
| | | | | | | | |
| Total Organic Compounds | mg/kg | 10000 | 10000 | NC | | 152 | |
| | | | | | | | |
| **Inorganic Compounds** | | | | | | | |
| Aluminum | mg/kg | NC | NC | NC | | 4700 | |
| Antimony | mg/kg | 14 | 340 | NC | | 13 | |
| Arsenic | mg/kg | 20 | 20 | NC | | 11 | |
| Barium | mg/kg | 700 | 47000 | NC | | 220 | |
| Beryllium | mg/kg | 2 | 2 | NC | 0.8 | -- | |
| Cadmium | mg/kg | 39 | 100 | NC | | 5.4 | |
| Calcium | mg/kg | NC | NC | NC | | 5700 | |
| Chromium | mg/kg | 120000 | NC | NC | | 570 | |
| Cobalt | mg/kg | NC | NC | NC | | 22 | |
| Copper | mg/kg | 600 | 600 | NC | | 140 | |
| Iron | mg/kg | NC | NC | NC | | 53000 | |
| Lead | mg/kg | 400 | 600 | NC | | **610** | |
| Magnesium | mg/kg | NC | NC | NC | | 3900 | |

**Table 11**
**Area of Concern # 10 Soil Analytical Results**

**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample ID<br>Lab ID<br>Sample Collection Date<br>Depth (ft bgs)<br>Matrix | Units | Residential Direct Contact Soil Cleanup Criteria | Non Residential Direct Contact Soil Cleanup Criteria | Impact to Groundwater Soil Cleanup Criteria | MDL | A10-SS-16<br>AB45466<br>10/25/2001<br>2.5<br>Soil<br>CONC Q |
|---|---|---|---|---|---|---|
| Manganese | mg/kg | NC | NC | NC | | 700 |
| Mercury | mg/kg | 14 | 270 | NC | | 0.5 |
| Nickel | mg/kg | 250 | 2400 | NC | | 120 |
| Potassium | mg/kg | NC | NC | NC | 330 | -- |
| Selenium | mg/kg | 63 | 3100 | NC | 2.7 | -- |
| Silver | mg/kg | 110 | 4100 | NC | 3.3 | -- |
| Sodium | mg/kg | NC | NC | NC | 670 | -- |
| Thallium | mg/kg | 2 | 2 | NC | 1.6 | -- |
| Vanadium | mg/kg | 370 | 7100 | NC | | 140 |
| Zinc | mg/kg | 1500 | 1500 | NC | | 490 |
| | | | | | | |
| % Solids | % | NC | NC | NC | | 75 |

CONC Concentration
TIC Tentatively Identified Compound
B
Q Qualifier
MDL Method Detection Limit
J Estimated Value
NC No criteria established
NA Not analyzed
R data rejected by validation
-- Not Detected
***BOLD*** analyte exceeds unrestricted use soil cleanup criteria (08/04/99)
* indicates sample is a duplicate of previous sample

**Table 12**
**AOC-11 Sediment Analytical Results**
**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds** | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| 1,1,2,2,-Tetrachloroethane | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| 1,1,2-Trichloroethane | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| 1,1-Dichloroethane | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| 1,1-Dichloroethene | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| 1,2-Dichloroethane | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| 1,2-Dichloropropane | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| 2-Butanone | mg/kg | NC | NC | 11 | -- | | 9.4 | -- | | 10 | -- |
| 2-Hexanone | mg/kg | NC | NC | 8.7 | -- | | 7.5 | -- | | 8.2 | -- |
| 4-Methyl-2-Pentanone | mg/kg | NC | NC | 8.7 | -- | | 7.5 | -- | | 8.2 | -- |
| Acetone | mg/kg | NC | NC | 8.7 | -- | | 7.5 | -- | | 8.2 | -- |
| Benzene | mg/kg | 0.34 | NC | 0.44 | -- | | 0.38 | -- | | 0.41 | -- |
| Bromodichloromethane | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| Bromoform | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| Bromomethane | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| Carbon Disulfide | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| Carbon Tetrachloride | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| Chlorobenzene | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| Chloroethane | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| Chloroform | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| Chloromethane | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| Cis-1,2-Dichloroethene | mg/kg | NC | NC | | 0.59 | J | 1.9 | -- | | 2.1 | -- |
| Cis-1,3-Dichloropropene | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| Dibromochloromethane | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| Ethylbenzene | mg/kg | 1.4 | NC | 0.44 | -- | | 0.38 | -- | | 0.41 | -- |
| Methylene chloride | mg/kg | NC | NC | | 0.61 | JB | 1.9 | -- | | 2.1 | -- |
| Styrene | mg/kg | NC | NC | 0.44 | -- | | 0.38 | -- | | 0.41 | -- |
| Tetrachloroethene | mg/kg | 0.45 | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| Toluene | mg/kg | 2.5 | NC | | 0.83 | | 1.9 | 0.82 | | 0.41 | -- |
| Trans-1,2-Dichloroethene | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| Trans-1,3-Dichloropropene | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| Trichloroethene | mg/kg | 1.6 | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| Vinyl chloride | mg/kg | NC | NC | 2.2 | -- | | 1.9 | -- | | 2.1 | -- |
| Xylenes (total) | mg/kg | 0.12 | NC | | 0.67 | J | | 0.76 | | 0.41 | -- |
| TICs Total | mg/kg | NC | NC | | 8.9 | | | 5.6 | | | 0 |
| Total Volatile Organic Compounds | mg/kg | | | | 11.6 | | | 7.18 | | | 0 |
| | | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | NC | NC | | 0.5 | J | | 0.62 | J | | 0.13 J |
| 1,2-Dichlorobenzene | mg/kg | NC | NC | | 0.23 | J | | 0.22 | J | 1.2 | -- |
| 1,3-Dichlorobenzene | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| 1,4-Dichlorobenzene | mg/kg | NC | NC | | 0.15 | J | | 0.12 | J | 1.2 | -- |
| 2,4,5,-Trichlorophenol | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| 2,4,6-Trichlorophenol | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| 2,4,-Dichlorophenol | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| 2,4-Dimethylphenol | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| 2,4-Dinitrophenol | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| 2,4-Dinitrotoluene | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| 2,6-Dinitrotoluene | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| 2-Chloronaphthalene | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| 2-Chlorophenol | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| 2-Methylnaphthalene | mg/kg | 0.070 | NC | | 0.37 | J | | 0.43 | J | | 0.15 J |
| 2-Methylphenol | mg/kg | NC | NC | 1.3 | -- | | | 0.13 | J | 1.2 | -- |
| 2-Nitroaniline | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| 2-Nitrophenol | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| 3 & 4-Methylphenol | mg/kg | NC | NC | 1.3 | -- | | | 0.32 | J | 1.2 | -- |
| 3,3'-Dichlorobenzidine | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| 3-Nitroaniline | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| 4-Chloro-3-methylphenol | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| 4-Chloroaniline | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| 4-Nitroaniline | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| 4-Nitrophenol | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| Acenaphthene (1) | mg/kg | 0.016 | NC | 1.3 | | | | 0.31 | J | 1.2 | |
| Acenaphthylene (1) | mg/kg | 0.044 | NC | | 0.16 | J | | 0.26 | J | 1.2 | |
| Anthracene (1) | mg/kg | 0.220 | 370 | | 0.22 | J | | 0.59 | J | 1.2 | -- |
| Benzo(a)anthracene (1) | mg/kg | 0.320 | 1480 | | 0.37 | J | | 1.7 | | | 0.2 J |
| Benzo(a)pyrene (1) | mg/kg | 0.370 | 1440 | | 0.65 | J | | 1.9 | | | 0.28 J |
| Benzo(b)fluoranthene (1) | mg/kg | NC | NC | | 1.2 | J | | 3.2 | | | 0.57 J |
| Benzo(g,h,I)perylene (1) | mg/kg | 0.170 | 320 | | 0.32 | J | | 0.74 | J | | 0.14 J |
| Benzo(k)fluoranthene (1) | mg/kg | 0.24 | 1340 | | 0.47 | J | | 1.2 | | | 0.35 J |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| Bis(2-Chloroethyl)ether | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| Bis(2-Chloroisopropyl)ether | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- |
| Bis(2-Ethylhexyl)phthalate | mg/kg | NC | NC | | 15 | B | | 15 | B | | 9.6 B |
| Butylbenzylphthalate | mg/kg | NC | NC | | 4.2 | | | 3.4 | | | 0.34 J |
| Carbazole | mg/kg | NC | NC | 1.3 | -- | | | 0.14 | J | 1.2 | -- |
| Chrysene (1) | mg/kg | 0.340 | 460 | | 0.46 | J | | 1.5 | | | 0.25 J |

**Table 12**
**AOC-11 Sediment Analytical Results**
**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dibenzo(a,h)Anthracene (1) | mg/kg | 0.060 | 130 | 1.3 | | | 1.0 | | | 1.2 | |
| Dibenzofuran | mg/kg | NC | NC | 1.3 | -- | | | 0.23 | J | 1.2 | -- |
| Diethylphthalate | mg/kg | NC | NC | | 0.18 | J | | 0.2 | J | 1.2 | -- |
| Dimethylphthalate | mg/kg | NC | NC | | 0.23 | J | | 0.14 | J | 1.2 | -- |
| Di-n-butylphthalate | mg/kg | NC | NC | | 2.1 | B | | 1.6 | B | | 0.71 | JB |
| Di-n-octylphthalate | mg/kg | NC | NC | | 0.85 | J | | 1.4 | | | 0.31 | J |
| Fluoranthene (1) | mg/kg | 0.750 | 1020 | | 0.76 | J | | 2.7 | | | 0.38 | J |
| Fluorene (1) | mg/kg | 0.190 | 160 | | 0.17 | J | | 0.41 | J | 1.2 | | |
| Hexachlorobenzene | mg/kg | 0.020 | 24 | 1.3 | -- | | 1.0 | -- | | 1.2 | -- | |
| Hexachlorobutadiene | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- | |
| Hexachlorocyclopentadiene | mg/kg | NC | NC | 2.7 | -- | | 2 | -- | | 2.4 | -- | |
| Hexachloroethane | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- | |
| Indeno(1,2,3-cd)pyrene (1) | mg/kg | 0.200 | 320 | | 0.3 | J | | 0.7 | J | | 0.14 | J |
| Isophorone | mg/kg | NC | NC | | 0.55 | J | | 1.7 | | | 0.28 | J |
| Naphthalene (1) | mg/kg | 0.16 | NC | | 0.57 | J | | 0.67 | J | | 0.19 | J |
| Nitrobenzene | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- | |
| N-Nitrosodiphenylamine | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- | |
| Pentachlorophenol | mg/kg | NC | NC | 1.3 | -- | | 1.0 | -- | | 1.2 | -- | |
| Phenanthrene (1) | mg/kg | 0.560 | 950 | | 0.64 | J | | 1.9 | | | 0.3 | J |
| Phenol | mg/kg | NC | NC | | 1.1 | J | | 2.6 | | | 0.32 | J |
| Pyrene (1) | mg/kg | 0.490 | 850 | | 0.69 | J | | 2.6 | | | 0.36 | J |
| Total PAHs | mg/kg | 4 | 10000 | | 6.76 | | | 19.79 | | | 2.86 | |
| TICs Total | mg/kg | | | | 328.9 | | | 213.8 | | | 298.8 | |
| Total Semivolatile Organic Compounds | mg/kg | | | | 361.34 | | | 262.43 | | | 313.70 | |
| | | | | | | | | | | | | |
| Organochlorine Pesticides | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.002 | 8 | 0.067 | -- | | | 0.11 | | 0.06 | -- | |
| Alpha-BHC | mg/kg | 0.006 | 10 | 0.067 | -- | | 0.051 | -- | | 0.06 | -- | |
| Beta-BHC | mg/kg | 0.005 | 21 | 0.067 | -- | | 0.051 | -- | | 0.06 | -- | |
| Chlordane | mg/kg | 0.007 | 6 | | 1.8 | | | 1.9 | | | 0.38 | |
| Delta-BHC | mg/kg | NC | NC | 0.067 | -- | | 0.051 | -- | | 0.06 | -- | |
| Dieldrin | mg/kg | 0.002 | 91 | | 0.21 | | | 0.22 | | | 0.11 | |
| Endosulfan I | mg/kg | NC | NC | 0.067 | -- | | 0.051 | -- | | 0.06 | -- | |
| Endosulfan II | mg/kg | NC | NC | 0.067 | -- | | 0.051 | -- | | 0.06 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | 0.067 | -- | | 0.051 | -- | | 0.06 | -- | |
| Endrin | mg/kg | 0.003 | 130 | | 0.58 | | | 0.41 | | | 0.17 | |
| Endrin Aldehyde | mg/kg | NC | NC | | 0.094 | | | 0.23 | | 0.06 | -- | |
| Endrin Ketone | mg/kg | NC | NC | 0.067 | -- | | 0.051 | -- | | 0.06 | -- | |
| Gamma-BHC | mg/kg | 0.003 | 1 | 0.067 | -- | | 0.051 | -- | | 0.06 | -- | |
| Heptachlor | mg/kg | NC | NC | 0.067 | -- | | 0.051 | -- | | 0.06 | -- | |
| Heptachlor Epoxide | mg/kg | 0.005 | 5 | 0.067 | -- | | 0.051 | -- | | 0.06 | -- | |
| Methoxychlor | mg/kg | NC | NC | 0.067 | -- | | 0.051 | -- | | 0.06 | -- | |
| P,P'-DDD | mg/kg | 0.008 | 6 | 0.067 | -- | | 0.051 | -- | | 0.06 | -- | |
| P,P'-DDE | mg/kg | 0.005 | 19 | | 0.42 | | | 0.83 | | | 0.12 | |
| P,P'-DDT | mg/kg | 0.008 | 71 | | 0.54 | | | 1.4 | | | 0.47 | |
| Toxaphene | mg/kg | NC | NC | 0.67 | -- | | 0.51 | -- | | 0.6 | -- | |
| | | | | | | | | | | | | |
| PCBs | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | 0.007 | 53 | 0.67 | -- | | 1 | -- | | 0.06 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | 0.67 | -- | | 1 | -- | | 0.06 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | 0.67 | -- | | 1 | -- | | 0.06 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | 0.67 | -- | | 1 | -- | | 0.06 | -- | |
| Aroclor-1248 | mg/kg | 0.30 | 150 | 0.67 | -- | | 1 | -- | | 0.06 | -- | |
| Aroclor-1254 | mg/kg | 0.060 | 34 | | 13 | | 1 | -- | | 0.06 | -- | |
| Aroclor-1260 | mg/kg | 0.005 | 24 | 0.67 | -- | | | 16 | | | 2.7 | |
| Total PCBs | mg/kg | 0.070 | 530 | | 13 | | | 16 | | | 2.7 | |
| | | | | | | | | | | | | |
| Total Organic Carbon | mg/kg | NC | NC | | 120000 | | | 90000 | | | 71000 | |
| | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | | 140 | -- | | 100 | -- | | 120 | -- | |
| | | | | | | | | | | | | |

**Table 12**
**AOC-11 Sediment Analytical Results**
**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Inorganic Compounds** | | | | | | | | |
| Aluminum | mg/kg | NC | NC | 7800 | | 8600 | | 5400 |
| Antimony | mg/kg | NC | NC | 180 | | 200 | | 70 |
| Arsenic | mg/kg | 6 | 33 | 35 | | 29 | | 14 |
| Barium | mg/kg | NC | NC | 1500 | | 1900 | | 530 |
| Beryllium | mg/kg | NC | NC | 2.4 | -- | 1.8 | -- | 2.1 | -- |
| Cadmium | mg/kg | 0.6 | 10 | 48 | | 49 | | 15 |
| Calcium | mg/kg | NC | NC | 14000 | | 25000 | | 6900 |
| Chromium | mg/kg | 26 | 110 | 530 | | 630 | | 270 |
| Cobalt | mg/kg | NC | NC | 50 | | 43 | | 29 |
| Copper | mg/kg | 16 | 110 | 750 | | 1100 | | 350 |
| Iron | mg/kg | NC | NC | 110000 | | 190000 | | 57000 |
| Lead | mg/kg | 31 | 250 | 3700 | | 5000 | | 1600 |
| Magnesium | mg/kg | NC | NC | 3800 | | 4800 | | 2600 |
| Manganese | mg/kg | NC | NC | 810 | | 1300 | | 360 |
| Mercury | mg/kg | 0.2 | 2 | 8.9 | | 12 | | 4.3 |
| Nickel | mg/kg | 16 | 75 | 91 | | 91 | | 49 |
| Potassium | mg/kg | NC | NC | 1000 | -- | 890 | | 890 | -- |
| Selenium | mg/kg | NC | NC | 10 | | 6.1 | -- | 7.1 | -- |
| Silver | mg/kg | 1 | NC | 10 | -- | 7.6 | -- | 8.9 | -- |
| Sodium | mg/kg | NC | NC | 2000 | -- | 1500 | -- | 1800 | -- |
| Thallium | mg/kg | NC | NC | 4.8 | -- | 3.6 | -- | 4.3 | -- |
| Vanadium | mg/kg | NC | NC | 61 | | 74 | | 39 |
| Zinc | mg/kg | 120 | 820 | 2900 | | 3200 | | 1200 |
| | | | | | | | | |
| **Chlorinated Herbicides** | | | | | | | | |
| 2,4,5-T | mg/kg | NC | NC | 0.016 | -- | 0.012 | -- | 0.014 | -- |
| 2,4-D | mg/kg | NC | NC | 0.016 | -- | 0.026 | | 0.052 |
| Dicamba | mg/kg | NC | NC | 0.016 | -- | 0.065 | | 0.014 | -- |
| Silvex | mg/kg | NC | NC | 0.016 | -- | 0.13 | | 0.014 | -- |
| | | | | | | | | |
| **% Solids** | percent | NC | NC | 25 | | 33 | | 28 |
| | | | | | | | | |
| **pH** | units | NC | NC | 7.5 | | 7.2 | | 7.9 |

**Notes:**
(1) Compound is a Polynuclear Aromatic Hydrocarbon (PAH)
B Analyte is present in blank
TIC Tentatively Identified Compound
J Estimated Value
NC No criteria established
NA Not analyzed
CONC Concentration
Q Qualifier
-- Not Detected
MDL Method Detection Limit
PAHs Polynuclear Aromatic Hydrocarbons
***BOLD*** analyte exceeds sediment screening guidelines, lowest effect level (11/98)
* indicates sample is a duplicate of previous sample

** samples were analyzed for Dioxins/Furans and are reported in a separate Table.

**Table 12**
**AOC-11 Sediment Analytical Results**
**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| Sample Location and Date | Units | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds** | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| 1,1,2,2,-Tetrachloroethane | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| 1,1,2-Trichloroethane | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| 1,1-Dichloroethane | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| 1,1-Dichloroethene | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| 1,2-Dichloroethane | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| 1,2-Dichloropropane | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| 2-Butanone | mg/kg | NC | NC | 910 | -- | 6.6 | -- | 9.9 | -- |
| 2-Hexanone | mg/kg | NC | NC | 730 | -- | 5.3 | -- | 7.9 | -- |
| 4-Methyl-2-Pentanone | mg/kg | NC | NC | 730 | -- | 5.3 | -- | 7.9 | -- |
| Acetone | mg/kg | NC | NC | 730 | -- | 5.3 | -- | 7.9 | -- |
| Benzene | mg/kg | 0.34 | NC | 36 | -- | 0.26 | -- | 0.4 | -- |
| Bromodichloromethane | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| Bromoform | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| Bromomethane | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| Carbon Disulfide | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| Carbon Tetrachloride | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| Chlorobenzene | mg/kg | NC | NC | | 49 J | 1.3 | -- | 2 | -- |
| Chloroethane | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| Chloroform | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| Chloromethane | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| Cis-1,2-Dichloroethene | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| Cis-1,3-Dichloropropene | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| Dibromochloromethane | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| Ethylbenzene | mg/kg | 1.4 | NC | | 700 | | 1.0 | 0.4 | -- |
| Methylene chloride | mg/kg | NC | NC | | 38 J | 1.3 | -- | 2 | -- |
| Styrene | mg/kg | NC | NC | | 690 | 0.26 | -- | 0.4 | -- |
| Tetrachloroethene | mg/kg | 0.45 | NC | | 52 J | | 0.35 J | 2 | -- |
| Toluene | mg/kg | 2.5 | NC | | 12,000 | | 1.8 | 0.4 | -- |
| Trans-1,2-Dichloroethene | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| Trans-1,3-Dichloropropene | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| Trichloroethene | mg/kg | 1.6 | NC | | 86 J | 1.3 | -- | 2 | -- |
| Vinyl chloride | mg/kg | NC | NC | 180 | -- | 1.3 | -- | 2 | -- |
| Xylenes (total) | mg/kg | 0.12 | NC | | 3,560 | | 8 | | 3.8 |
| TICs Total | mg/kg | NC | NC | | 3,880 | | 19.35 | | 21.1 |
| Total Volatile Organic Compounds | mg/kg | | | | 21055 | | 30.5 | | 24.9 |
| | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | NC | NC | | 2.0 J | | 0.53 J | 3.4 | -- |
| 1,2-Dichlorobenzene | mg/kg | NC | NC | | 2.1 J | | 0.17 J | 3.4 | -- |
| 1,3-Dichlorobenzene | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 1,4-Dichlorobenzene | mg/kg | NC | NC | | 1.7 J | 1.6 | -- | 3.4 | -- |
| 2,4,5,-Trichlorophenol | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 2,4,6-Trichlorophenol | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 2,4,-Dichlorophenol | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 2,4-Dimethylphenol | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 2,4-Dinitrophenol | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 2,4-Dinitrotoluene | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 2,6-Dinitrotoluene | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 2-Chloronaphthalene | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 2-Chlorophenol | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 2-Methylnaphthalene | mg/kg | 0.070 | NC | | 2.4 J | | 0.44 J | | 0.47 J |
| 2-Methylphenol | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 2-Nitroaniline | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 2-Nitrophenol | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 3 & 4-Methylphenol | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 3,3'-Dichlorobenzidine | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 3-Nitroaniline | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 4-Chloro-3-methylphenol | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 4-Chloroaniline | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 4-Nitroaniline | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| 4-Nitrophenol | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| Acenaphthene (1) | mg/kg | 0.016 | NC | 10 | | 1.6 | | 3.4 | |
| Acenaphthylene (1) | mg/kg | 0.044 | NC | 10 | | | 0.36 J | 3.4 | |
| Anthracene (1) | mg/kg | 0.220 | 370 | 10 | -- | | 0.28 J | 3.4 | |
| Benzo(a)anthracene (1) | mg/kg | 0.320 | 1480 | 10 | | | 0.65 J | | 0.52 J |
| Benzo(a)pyrene (1) | mg/kg | 0.370 | 1440 | 10 | | | 0.92 J | | 0.83 J |
| Benzo(b)fluoranthene (1) | mg/kg | NC | NC | 10 | | | 1.4 J | | 1.7 J |
| Benzo(g,h,i)perylene (1) | mg/kg | 0.170 | 320 | 10 | | | 0.44 J | | 0.41 J |
| Benzo(k)fluoranthene (1) | mg/kg | 0.24 | 1340 | 10 | | | 0.59 J | | 0.89 J |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| Bis(2-Chloroethyl)ether | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| Bis(2-Chloroisopropyl)ether | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| Bis(2-Ethylhexyl)phthalate | mg/kg | NC | NC | | 69 | | 12 B | 3.4 | 16 B |
| Butylbenzylphthalate | mg/kg | NC | NC | | 7.9 J | | 1.8 | | 0.89 J |
| Carbazole | mg/kg | NC | NC | 10 | -- | 1.6 | -- | 3.4 | -- |
| Chrysene (1) | mg/kg | 0.340 | 460 | 10 | | | 0.86 J | | 0.82 J |

**Table 12**
**AOC-11 Sediment Analytical Results**
**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dibenzo(a,h)Anthracene (1) | mg/kg | 0.060 | 130 | 10 | | | 1.6 | | | 3.4 | | |
| Dibenzofuran | mg/kg | NC | NC | 10 | -- | | 1.6 | -- | | 3.4 | -- | |
| Diethylphthalate | mg/kg | NC | NC | 10 | -- | | 1.6 | -- | | 3.4 | -- | |
| Dimethylphthalate | mg/kg | NC | NC | 10 | -- | | 1.6 | -- | | 3.4 | -- | |
| Di-n-butylphthalate | mg/kg | NC | NC | | 3.3 | JB | | 1.4 | JB | | 1 | JB |
| Di-n-octylphthalate | mg/kg | NC | NC | 10 | -- | | | 0.39 | J | 3.4 | -- | |
| Fluoranthene (1) | mg/kg | 0.750 | 1020 | | 1.5 | J | | 0.99 | J | | 0.9 | J |
| Fluorene (1) | mg/kg | 0.190 | 160 | 10 | | | 1.6 | | | 3.4 | | |
| Hexachlorobenzene | mg/kg | 0.020 | 24 | 10 | -- | | 1.6 | -- | | 3.4 | -- | |
| Hexachlorobutadiene | mg/kg | NC | NC | 10 | -- | | 1.6 | -- | | 3.4 | -- | |
| Hexachlorocyclopentadiene | mg/kg | NC | NC | 20 | -- | | 1.6 | -- | | 6.9 | -- | |
| Hexachloroethane | mg/kg | NC | NC | 10 | -- | | 1.6 | -- | | 3.4 | -- | |
| Indeno(1,2,3-cd)pyrene (1) | mg/kg | 0.200 | 320 | 10 | | | | 0.42 | J | | 0.35 | J |
| Isophorone | mg/kg | NC | NC | | 6.2 | J | | 2.1 | | 3.4 | -- | |
| Naphthalene (1) | mg/kg | 0.16 | NC | | 3.9 | J | | 0.53 | J | | 0.81 | J |
| Nitrobenzene | mg/kg | NC | NC | 10 | -- | | 1.6 | -- | | 3.4 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | NC | NC | 10 | -- | | 1.6 | -- | | 3.4 | -- | |
| N-Nitrosodiphenylamine | mg/kg | NC | NC | 10 | -- | | 1.6 | -- | | 3.4 | -- | |
| Pentachlorophenol | mg/kg | NC | NC | 10 | -- | | 1.6 | -- | | 3.4 | -- | |
| Phenanthrene (1) | mg/kg | 0.560 | 950 | | 1.5 | J | | 0.77 | J | | 0.76 | J |
| Phenol | mg/kg | NC | NC | | 2.9 | J | | 1.1 | J | | 1.3 | J |
| Pyrene (1) | mg/kg | 0.490 | 850 | | 1.4 | J | | 0.94 | J | | 1.3 | J |
| Total PAHs | mg/kg | 4 | 10000 | | 8.30 | | | 7.36 | | | 7.95 | |
| TICs Total | mg/kg | | | | 296.2 | | | 265.3 | | | 593.3 | |
| Total Semivolatile Organic Compounds | mg/kg | | | | 400.00 | | | 294.38 | | | 622.25 | |
| | | | | | | | | | | | | |
| **Organochlorine Pesticides** | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.002 | 8 | 0.51 | -- | | | 0.07 | | | 0.2 | |
| Alpha-BHC | mg/kg | 0.006 | 10 | 0.51 | -- | | 0.04 | -- | | 0.057 | -- | |
| Beta-BHC | mg/kg | 0.005 | 21 | 0.51 | -- | | 0.04 | -- | | 0.057 | -- | |
| Chlordane | mg/kg | 0.007 | 6 | | 7.8 | | | 0.3 | | 0.11 | -- | |
| Delta-BHC | mg/kg | NC | NC | 0.51 | -- | | 0.04 | -- | | 0.057 | -- | |
| Dieldrin | mg/kg | 0.002 | 91 | | 0.69 | | | 0.25 | | | 0.24 | |
| Endosulfan I | mg/kg | NC | NC | 0.51 | -- | | 0.04 | -- | | 0.057 | -- | |
| Endosulfan II | mg/kg | NC | NC | 0.51 | -- | | 0.04 | -- | | 0.057 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | 0.51 | -- | | 0.04 | -- | | 0.057 | -- | |
| Endrin | mg/kg | 0.003 | 130 | 0.51 | -- | | | 0.17 | | 0.057 | -- | |
| Endrin Aldehyde | mg/kg | NC | NC | 0.51 | -- | | | 0.066 | | | 0.067 | |
| Endrin Ketone | mg/kg | NC | NC | 0.51 | -- | | 0.04 | -- | | 0.057 | -- | |
| Gamma-BHC | mg/kg | 0.003 | 1 | 0.51 | -- | | 0.04 | -- | | 0.057 | -- | |
| Heptachlor | mg/kg | NC | NC | 0.51 | -- | | 0.04 | -- | | 0.057 | -- | |
| Heptachlor Epoxide | mg/kg | 0.005 | 5 | 0.51 | -- | | 0.04 | -- | | 0.057 | -- | |
| Methoxychlor | mg/kg | NC | NC | 0.51 | -- | | 0.04 | -- | | 0.057 | -- | |
| P,P'-DDD | mg/kg | 0.008 | 6 | 0.51 | -- | | 0.04 | -- | | | 0.9 | |
| P,P'-DDE | mg/kg | 0.005 | 19 | | 4.6 | | | 0.51 | | | 0.39 | |
| P,P'-DDT | mg/kg | 0.008 | 71 | | 2.0 | | | 0.95 | | | 1.4 | |
| Toxaphene | mg/kg | NC | NC | 0.51 | -- | | 0.4 | -- | | 0.57 | -- | |
| | | | | | | | | | | | | |
| **PCBs** | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | 0.007 | 53 | 0.25 | -- | | 0.4 | -- | | 0.57 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | 0.25 | -- | | 0.4 | -- | | 0.57 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | 0.25 | -- | | 0.4 | -- | | 0.57 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | 0.25 | -- | | 0.4 | -- | | 0.57 | -- | |
| Aroclor-1248 | mg/kg | 0.30 | 150 | 0.25 | -- | | 0.4 | -- | | 0.57 | -- | |
| Aroclor-1254 | mg/kg | 0.060 | 34 | 0.25 | -- | | | 12 | | | 26 | |
| Aroclor-1260 | mg/kg | 0.005 | 24 | | 9.5 | | 0.4 | -- | | 0.57 | -- | |
| Total PCBs | mg/kg | 0.070 | 530 | | 9.5 | | | 12 | | | 26 | |
| | | | | | | | | | | | | |
| **Total Organic Carbon** | mg/kg | NC | NC | | 49,000 | | | 69000 | | | 71000 | |
| | | | | | | | | | | | | |
| **Total Petroleum Hydrocarbons** | mg/kg | | | | | | 81 | -- | | 120 | -- | |
| | | | | | | | | | | | | |

**Table 12**
**AOC-11 Sediment Analytical Results**
**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inorganic Compounds** | | | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | | 4,300 | | 8400 | | | | 14000 |
| Antimony | mg/kg | NC | NC | | 250 | | 130 | | 6.9 | | -- |
| Arsenic | mg/kg | 6 | 33 | | 19 | | 21 | | | | 47 |
| Barium | mg/kg | NC | NC | | 1,000 | | 1300 | | | | 72 |
| Beryllium | mg/kg | NC | NC | 0.91 | -- | 1.4 | -- | | 2.1 | | -- |
| Cadmium | mg/kg | 0.6 | 10 | | 77 | | 38 | | 2.1 | | -- |
| Calcium | mg/kg | NC | NC | | 10,000 | | 18000 | | 1700 | | -- |
| Chromium | mg/kg | 26 | 110 | | 380 | | 580 | | | | 92 |
| Cobalt | mg/kg | NC | NC | | 54 | | 99 | | 8.6 | | -- |
| Copper | mg/kg | 16 | 110 | | 690 | | 500 | | | | 21 |
| Iron | mg/kg | NC | NC | | 84,000 | | 130000 | | | | 50000 |
| Lead | mg/kg | 31 | 250 | | 4,400 | | 4400 | | | | 110 |
| Magnesium | mg/kg | NC | NC | | 2,100 | | 4100 | | | | 1900 |
| Manganese | mg/kg | NC | NC | | 1,000 | | 950 | | | | 240 |
| Mercury | mg/kg | 0.2 | 2 | | 4.4 | | 3.9 | | | | 6.5 |
| Nickel | mg/kg | 16 | 75 | | 150 | | 84 | | 17 | | -- |
| Potassium | mg/kg | NC | NC | | 420 | | 1000 | | | | 3400 |
| Selenium | mg/kg | NC | NC | 3 | -- | | 6.5 | | 6.9 | | -- |
| Silver | mg/kg | 1 | NC | 3.8 | -- | 6 | -- | | 8.6 | | -- |
| Sodium | mg/kg | NC | NC | 760 | -- | 1200 | -- | | 1700 | | -- |
| Thallium | mg/kg | NC | NC | 1.8 | -- | 2.9 | -- | | 4.1 | | -- |
| Vanadium | mg/kg | NC | NC | 15 | -- | | 48 | | | | 110 |
| Zinc | mg/kg | 120 | 820 | | 2,000 | | 2300 | | | | 79 |
| | | | | | | | | | | | |
| **Chlorinated Herbicides** | | | | | | | | | | | |
| 2,4,5-T | mg/kg | NC | NC | 0.0061 | -- | 0.0095 | -- | | 0.014 | | -- |
| 2,4-D | mg/kg | NC | NC | | 0.10 | | 0.28 | | | | 0.05 |
| Dicamba | mg/kg | NC | NC | | 0.16 | | 0.12 | | | | 0.024 |
| Silvex | mg/kg | NC | NC | 0.0061 | -- | 0.0095 | -- | | | | 0.26 |
| | | | | | | | | | | | |
| **% Solids** | percent | NC | NC | | 66 | | 42 | | | | 29 |
| | | | | | | | | | | | |
| **pH** | units | NC | NC | | 7.1 | | 7.5 | | | | 7.2 |

Notes:
(1) Compound is a Polynuclear Aromatic Hydrocarbon (PAH)
B Analyte is present in blank
TIC Tentatively Identified Compound
J Estimated Value
NC No criteria established
NA Not analyzed
CONC Concentration
Q Qualifier
-- Not Detected
MDL Method Detection Limit
PAHs Polynuclear Aromatic Hydrocarbons
***BOLD*** analyte exceeds sediment screening guidelines, lowest effect level (11/98)
* indicates sample is a duplicate of previous sample

** samples were analyzed for Dioxins/Furans and are reported in a separate Table.

**Table 12**
**AOC-11 Sediment Analytical Results**
**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds** | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| 1,1,2,2,-Tetrachloroethane | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| 1,1,2-Trichloroethane | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| 1,1-Dichloroethane | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| 1,1-Dichloroethene | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| 1,2-Dichloroethane | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| 1,2-Dichloropropane | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| 2-Butanone | mg/kg | NC | NC | 5.2 | -- | | 8.9 | -- | | 14 | -- |
| 2-Hexanone | mg/kg | NC | NC | 4.2 | -- | | 7.1 | -- | | 12 | -- |
| 4-Methyl-2-Pentanone | mg/kg | NC | NC | 4.2 | -- | | 7.1 | -- | | 12 | -- |
| Acetone | mg/kg | NC | NC | 4.2 | -- | | 7.1 | -- | | 12 | -- |
| Benzene | mg/kg | 0.34 | NC | 0.21 | -- | | 0.35 | -- | | 0.58 | -- |
| Bromodichloromethane | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| Bromoform | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| Bromomethane | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| Carbon Disulfide | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| Carbon Tetrachloride | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| Chlorobenzene | mg/kg | NC | NC | 1.0 | -- | | | 0.69 | J | 2.9 | -- |
| Chloroethane | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| Chloroform | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| Chloromethane | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| Cis-1,2-Dichloroethene | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| Cis-1,3-Dichloropropene | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| Dibromochloromethane | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| Ethylbenzene | mg/kg | 1.4 | NC | 0.21 | -- | | | 0.72 | | 0.58 | -- |
| Methylene chloride | mg/kg | NC | NC | 1.0 | -- | | | 0.91 | JB | 2.9 | -- |
| Styrene | mg/kg | NC | NC | 0.21 | -- | | 0.35 | -- | | 0.58 | -- |
| Tetrachloroethene | mg/kg | 0.45 | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| Toluene | mg/kg | 2.5 | NC | 0.21 | -- | | | 1.4 | | 0.58 | -- |
| Trans-1,2-Dichloroethene | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| Trans-1,3-Dichloropropene | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| Trichloroethene | mg/kg | 1.6 | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| Vinyl chloride | mg/kg | NC | NC | 1.0 | -- | | 1.8 | -- | | 2.9 | -- |
| Xylenes (total) | mg/kg | 0.12 | NC | | 0.52 | | | 5.4 | | 0.58 | -- |
| TICs Total | mg/kg | NC | NC | | 8.68 | | | 7.7 | | | -- |
| Total Volatile Organic Compounds | mg/kg | | | | 9.2 | | | 16.82 | | | 0 |
| | | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | NC | NC | 0.49 | -- | | | 0.34 | J | 1.7 | -- |
| 1,2-Dichlorobenzene | mg/kg | NC | NC | 0.49 | -- | | | 0.12 | J | 1.7 | -- |
| 1,3-Dichlorobenzene | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 1,4-Dichlorobenzene | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 2,4,5,-Trichlorophenol | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 2,4,6-Trichlorophenol | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 2,4,-Dichlorophenol | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 2,4-Dimethylphenol | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 2,4-Dinitrophenol | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 2,4-Dinitrotoluene | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 2,6-Dinitrotoluene | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 2-Chloronaphthalene | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 2-Chlorophenol | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 2-Methylnaphthalene | mg/kg | 0.070 | NC | | 0.24 | J | | 0.49 | J | 1.7 | -- |
| 2-Methylphenol | mg/kg | NC | NC | 0.49 | -- | | | 0.12 | J | 1.7 | -- |
| 2-Nitroaniline | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 2-Nitrophenol | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 3 & 4-Methylphenol | mg/kg | NC | NC | 0.49 | -- | | | 0.34 | J | 1.7 | -- |
| 3,3'-Dichlorobenzidine | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 3-Nitroaniline | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 4-Chloro-3-methylphenol | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 4-Chloroaniline | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 4-Nitroaniline | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| 4-Nitrophenol | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| Acenaphthene (1) | mg/kg | 0.016 | NC | 0.49 | | | | 0.13 | J | 1.7 | |
| Acenaphthylene (1) | mg/kg | 0.044 | NC | | 0.38 | J | | 0.31 | J | 1.7 | |
| Anthracene (1) | mg/kg | 0.220 | 370 | | 0.20 | J | | 0.37 | J | 1.7 | |
| Benzo(a)anthracene (1) | mg/kg | 0.320 | 1480 | | 0.29 | J | | 1.1 | | 1.7 | |
| Benzo(a)pyrene (1) | mg/kg | 0.370 | 1440 | | 0.33 | J | | 1.4 | | 1.7 | |
| Benzo(b)fluoranthene (1) | mg/kg | NC | NC | | 0.66 | | | 2.2 | | | 0.4 J |
| Benzo(g,h,I)perylene (1) | mg/kg | 0.170 | 320 | | 0.97 | | | 0.59 | J | 1.7 | |
| Benzo(k)fluoranthene (1) | mg/kg | 0.24 | 1340 | | 0.36 | J | | 1.1 | | 1.7 | |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| Bis(2-Chloroethyl)ether | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| Bis(2-Chloroisopropyl)ether | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- |
| Bis(2-Ethylhexyl)phthalate | mg/kg | NC | NC | | 0.69 | | | 8.3 | B | | 8.7 B |
| Butylbenzylphthalate | mg/kg | NC | NC | 0.49 | -- | | | 0.81 | J | 1.7 | -- |
| Carbazole | mg/kg | NC | NC | 0.49 | -- | | | 0.16 | J | 1.7 | -- |
| Chrysene (1) | mg/kg | 0.340 | 460 | | 0.57 | | | 1.3 | | | 0.17 J |

**Table 12**
**AOC-11 Sediment Analytical Results**
**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dibenzo(a,h)Anthracene (1) | mg/kg | 0.060 | 130 | 0.49 | | | 1.1 | | | 1.7 | |
| Dibenzofuran | mg/kg | NC | NC | | 0.11 | J | | 0.21 | J | 1.7 | -- |
| Diethylphthalate | mg/kg | NC | NC | 0.49 | -- | | | 0.12 | J | 1.7 | -- |
| Dimethylphthalate | mg/kg | NC | NC | | 0.14 | J | 1.1 | -- | | 1.7 | -- |
| Di-n-butlyphthalate | mg/kg | NC | NC | | 0.094 | JB | | 1.4 | B | | 0.75 | JB |
| Di-n-octylphthalate | mg/kg | NC | NC | 0.49 | -- | | | 0.85 | J | 1.7 | -- | |
| Fluoranthene (1) | mg/kg | 0.750 | 1020 | | 0.14 | J | | 2.3 | | | 0.31 | J |
| Fluorene (1) | mg/kg | 0.190 | 160 | | 0.18 | J | | 0.16 | J | 1.7 | | |
| Hexachlorobenzene | mg/kg | 0.020 | 24 | 0.49 | -- | | 1.1 | -- | | 1.7 | -- | |
| Hexachlorobutadiene | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- | |
| Hexachlorocyclopentadiene | mg/kg | NC | NC | 0.98 | -- | | 2.2 | -- | | 3.3 | -- | |
| Hexachloroethane | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- | |
| Indeno(1,2,3-cd)pyrene (1) | mg/kg | 0.200 | 320 | | 0.70 | | | 0.59 | J | 1.7 | | |
| Isophorone | mg/kg | NC | NC | 0.49 | -- | | | 1.5 | | 1.7 | -- | |
| Naphthalene (1) | mg/kg | 0.16 | NC | | 0.49 | | | 0.78 | J | 1.7 | | |
| Nitrobenzene | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- | |
| N-Nitrosodiphenylamine | mg/kg | NC | NC | 0.49 | -- | | 1.1 | -- | | 1.7 | -- | |
| Pentachlorophenol | mg/kg | NC | NC | | 0.11 | J | 1.1 | -- | | 1.7 | -- | |
| Phenanthrene (1) | mg/kg | 0.560 | 950 | | 0.54 | | | 1.3 | | | 0.18 | J |
| Phenol | mg/kg | NC | NC | | 0.074 | J | | 0.67 | J | 1.7 | -- | |
| Pyrene (1) | mg/kg | 0.490 | 850 | | 0.47 | J | | 1.9 | | | 0.34 | J |
| Total PAHs | mg/kg | 4 | 10000 | | 5.22 | | | 12.76 | | | 1.23 | |
| TICs Total | mg/kg | | | | 76.92 | | | 243.8 | | | 380.4 | |
| Total Semivolatile Organic Compounds | mg/kg | | | | 83.76 | | | 274.76 | | | 391.25 | |
| | | | | | | | | | | | | |
| **Organochlorine Pesticides** | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.002 | 8 | 0.098 | -- | | | 0.29 | | 0.17 | -- | |
| Alpha-BHC | mg/kg | 0.006 | 10 | 0.098 | -- | | 0.27 | -- | | 0.17 | -- | |
| Beta-BHC | mg/kg | 0.005 | 21 | 0.098 | -- | | 0.27 | -- | | 0.17 | -- | |
| Chlordane | mg/kg | 0.007 | 6 | | 0.85 | | | 1.2 | | | 2.7 | |
| Delta-BHC | mg/kg | NC | NC | 0.098 | -- | | 0.27 | -- | | 0.17 | -- | |
| Dieldrin | mg/kg | 0.002 | 91 | | 0.47 | | | 1.1 | | 0.17 | -- | |
| Endosulfan I | mg/kg | NC | NC | 0.098 | -- | | 0.27 | -- | | 0.17 | -- | |
| Endosulfan II | mg/kg | NC | NC | 0.098 | -- | | 0.27 | -- | | 0.17 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | 0.098 | -- | | 0.27 | -- | | 0.17 | -- | |
| Endrin | mg/kg | 0.003 | 130 | | 0.55 | | 0.27 | -- | | 0.17 | -- | |
| Endrin Aldehyde | mg/kg | NC | NC | 0.098 | -- | | | 0.84 | | 0.17 | -- | |
| Endrin Ketone | mg/kg | NC | NC | 0.098 | -- | | 0.27 | -- | | 0.17 | -- | |
| Gamma-BHC | mg/kg | 0.003 | 1 | 0.098 | -- | | 0.27 | -- | | 0.17 | -- | |
| Heptachlor | mg/kg | NC | NC | 0.098 | -- | | 0.27 | -- | | 0.17 | -- | |
| Heptachlor Epoxide | mg/kg | 0.005 | 5 | 0.098 | -- | | 0.27 | -- | | 0.17 | -- | |
| Methoxychlor | mg/kg | NC | NC | 0.098 | -- | | 0.27 | -- | | 0.17 | -- | |
| P,P'-DDD | mg/kg | 0.008 | 6 | 0.098 | -- | | 0.27 | -- | | 0.17 | -- | |
| P,P'-DDE | mg/kg | 0.005 | 19 | | 0.19 | | 0.27 | -- | | 0.17 | -- | |
| P,P'-DDT | mg/kg | 0.008 | 71 | | 0.70 | | | 3.4 | | | 0.57 | |
| Toxaphene | mg/kg | NC | NC | 0.098 | -- | | 2.7 | -- | | 1.7 | -- | |
| | | | | | | | | | | | | |
| **PCBs** | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | 0.007 | 53 | 0.49 | -- | | 2.7 | -- | | 0.083 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | 0.49 | -- | | 2.7 | -- | | 0.083 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | 0.49 | -- | | 2.7 | -- | | 0.083 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | 0.49 | -- | | 2.7 | -- | | 0.083 | -- | |
| Aroclor-1248 | mg/kg | 0.30 | 150 | 0.49 | -- | | 2.7 | -- | | 0.083 | -- | |
| Aroclor-1254 | mg/kg | 0.060 | 34 | 0.49 | -- | | 2.7 | -- | | | 6.1 | |
| Aroclor-1260 | mg/kg | 0.005 | 24 | | 7.9 | | | 40 | | 0.083 | -- | |
| Total PCBs | mg/kg | 0.070 | 530 | | 7.9 | | | 40 | | | 6.1 | |
| | | | | | | | | | | | | |
| **Total Organic Carbon** | mg/kg | NC | NC | | 66,000 | | | 120000 | | | 16000 | |
| | | | | | | | | | | | | |
| **Total Petroleum Hydrocarbons** | mg/kg | | | | NA | | 110 | -- | | 170 | -- | |
| | | | | | | | | | | | | |

**Table 12**
**AOC-11 Sediment Analytical Results**
**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Inorganic Compounds** | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | | 6,400 | | 8600 | | 4900 |
| Antimony | mg/kg | NC | NC | | 340 | | 160 | | 33 |
| Arsenic | mg/kg | 6 | 33 | | 66 | | 24 | 10 | -- |
| Barium | mg/kg | NC | NC | | 6,300 | | 1400 | | 240 |
| Beryllium | mg/kg | NC | NC | 0.88 | -- | 1.9 | -- | 3 | -- |
| Cadmium | mg/kg | 0.6 | 10 | | 54 | | 38 | | 7.2 |
| Calcium | mg/kg | NC | NC | | 42,000 | | 12000 | | 26000 |
| Chromium | mg/kg | 26 | 110 | | 820 | | 560 | | 140 |
| Cobalt | mg/kg | NC | NC | | 2,400 | | 43 | | 14 |
| Copper | mg/kg | 16 | 110 | | 410 | | 740 | | 200 |
| Iron | mg/kg | NC | NC | | 110,000 | | 100000 | | 28000 |
| Lead | mg/kg | 31 | 250 | | 12,000 | | 4200 | | 820 |
| Magnesium | mg/kg | NC | NC | | 4,300 | | 4800 | | 3600 |
| Manganese | mg/kg | NC | NC | | 1,100 | | 640 | | 180 |
| Mercury | mg/kg | 0.2 | 2 | | 0.61 | | 12 | | 1.8 |
| Nickel | mg/kg | 16 | 75 | | 110 | | 110 | | 41 |
| Potassium | mg/kg | NC | NC | | 740 | 810 | -- | 1200 | -- |
| Selenium | mg/kg | NC | NC | 2.9 | -- | | 7.9 | 10 | -- |
| Silver | mg/kg | 1 | NC | 3.7 | -- | 8.1 | -- | 12 | -- |
| Sodium | mg/kg | NC | NC | 740 | -- | 1600 | -- | 2500 | -- |
| Thallium | mg/kg | NC | NC | | 2.9 | 3.9 | -- | 6 | -- |
| Vanadium | mg/kg | NC | NC | | 71 | | 73 | 50 | -- |
| Zinc | mg/kg | 120 | 820 | | 31,000 | | 2700 | | 730 |
| | | | | | | | | | |
| **Chlorinated Herbicides** | | | | | | | | | |
| 2,4,5-T | mg/kg | NC | NC | 0.0059 | -- | 0.013 | -- | 0.02 | -- |
| 2,4-D | mg/kg | NC | NC | 0.0059 | -- | | 0.03 | | 0.6 |
| Dicamba | mg/kg | NC | NC | | 0.063 | 0.013 | -- | 0.02 | -- |
| Silvex | mg/kg | NC | NC | | 0.16 | | 0.037 | 0.02 | -- |
| | | | | | | | | | |
| **% Solids** | percent | NC | NC | | 68 | | 31 | | 20 |
| | | | | | | | | | |
| **pH** | units | NC | NC | | 7.1 | | 7.8 | | 7.2 |

**Notes:**
(1) Compound is a Polynuclear Aromatic Hydrocarbon (PAH)
B Analyte is present in blank
TIC Tentatively Identified Compound
J Estimated Value
NC No criteria established
NA Not analyzed
CONC Concentration
Q Qualifier
-- Not Detected
MDL Method Detection Limit
PAHs Polynuclear Aromatic Hydrocarbons
***BOLD*** analyte exceeds sediment screening guidelines, lowest effect level (11/98)
* indicates sample is a duplicate of previous sample

** samples were analyzed for Dioxins/Furans and are reported in a separate Table.

**Table 12**
**AOC-11 Sediment Analytical Results**
**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds** | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| 1,1,2,2,-Tetrachloroethane | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| 1,1,2-Trichloroethane | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| 1,1-Dichloroethane | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| 1,1-Dichloroethene | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| 1,2-Dichloroethane | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| 1,2-Dichloropropane | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| 2-Butanone | mg/kg | NC | NC | 3.5 | -- | | 16 | -- | 7.9 | -- | |
| 2-Hexanone | mg/kg | NC | NC | 2.8 | -- | | 13 | -- | 6.3 | -- | |
| 4-Methyl-2-Pentanone | mg/kg | NC | NC | | 2.7 | J | 13 | -- | 6.3 | -- | |
| Acetone | mg/kg | NC | NC | 2.8 | -- | | 13 | -- | 6.3 | -- | |
| Benzene | mg/kg | 0.34 | NC | | 0.17 | | 0.63 | -- | 0.32 | -- | |
| Bromodichloromethane | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| Bromoform | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| Bromomethane | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| Carbon Disulfide | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| Carbon Tetrachloride | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| Chlorobenzene | mg/kg | NC | NC | | 6.7 | | 3.2 | -- | 1.6 | -- | |
| Chloroethane | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| Chloroform | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| Chloromethane | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| Cis-1,3-Dichloropropene | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| Dibromochloromethane | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| Ethylbenzene | mg/kg | 1.4 | NC | | 0.37 | | 0.63 | -- | 0.32 | -- | |
| Methylene chloride | mg/kg | NC | NC | 0.70 | -- | | | 0.95 | JB | 0.56 | JB |
| Styrene | mg/kg | NC | NC | 0.14 | -- | | 0.63 | -- | 0.32 | -- | |
| Tetrachloroethene | mg/kg | 0.45 | NC | | 0.37 | J | | 0.64 | J | 1.6 | -- | |
| Toluene | mg/kg | 2.5 | NC | | 2.9 | | 0.63 | -- | | 0.5 | |
| Trans-1,2-Dichloroethene | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| Trans-1,3-Dichloropropene | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| Trichloroethene | mg/kg | 1.6 | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| Vinyl chloride | mg/kg | NC | NC | 0.70 | -- | | 3.2 | -- | 1.6 | -- | |
| Xylenes (total) | mg/kg | 0.12 | NC | | 2.99 | | 0.63 | -- | | 0.36 | J |
| TICs Total | mg/kg | NC | NC | | 5.65 | | | 70.3 | | 5.2 | |
| Total Volatile Organic Compounds | mg/kg | | | | 21.85 | | | 71.89 | | 6.62 | |
| | | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 1,2-Dichlorobenzene | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 1,3-Dichlorobenzene | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 1,4-Dichlorobenzene | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 2,4,5,-Trichlorophenol | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 2,4,-Dichlorophenol | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 2,4-Dimethylphenol | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | | 1.5 | J |
| 2,4-Dinitrophenol | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 2,4-Dinitrotoluene | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 2,6-Dinitrotoluene | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 2-Chloronaphthalene | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 2-Chlorophenol | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.6 | -- | |
| 2-Methylnaphthalene | mg/kg | 0.070 | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 2-Methylphenol | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | | 0.52 | J |
| 2-Nitroaniline | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 3 & 4-Methylphenol | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | | 1.9 | J |
| 3,3'-Dichlorobenzidine | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 4-Chloroaniline | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.6 | | |
| 4-Nitroaniline | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | 4.5 | -- | |
| Acenaphthene (1) | mg/kg | 0.016 | NC | 8.8 | | | | 0.25 | J | 4.5 | | |
| Acenaphthylene (1) | mg/kg | 0.044 | NC | 8.8 | | | 1.8 | | | 4.5 | | |
| Anthracene (1) | mg/kg | 0.220 | 370 | 8.8 | | | | 0.2 | J | | 0.79 | J |
| Benzo(a)anthracene (1) | mg/kg | 0.320 | 1480 | 8.8 | | | | 0.27 | J | | 1.5 | J |
| Benzo(a)pyrene (1) | mg/kg | 0.370 | 1440 | 8.8 | | | | 0.29 | J | | 2.1 | J |
| Benzo(b)fluoranthene (1) | mg/kg | NC | NC | | 1.1 | J | | 0.53 | J | | 2.8 | J |
| Benzo(g,h,i)perylene (1) | mg/kg | 0.170 | 320 | 8.8 | | | 1.8 | | | | 0.81 | J |
| Benzo(k)fluoranthene (1) | mg/kg | 0.24 | 1340 | 8.8 | | | | 0.3 | J | | 1.6 | J |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | | 4.5 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | | 4.5 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | | 4.5 | -- | |
| Bis(2-Ethylhexyl)phthalate | mg/kg | NC | NC | | 100 | | | 5 | B | | 18 | B |
| Butylbenzylphthalate | mg/kg | NC | NC | | 1.1 | J | | 0.23 | J | | 2.8 | J |
| Carbazole | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | | 4.5 | -- | |
| Chrysene (1) | mg/kg | 0.340 | 460 | 8.8 | | | | 0.34 | J | | 1.7 | J |

**Table 12**
**AOC-11 Sediment Analytical Results**
**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dibenzo(a,h)Anthracene (1) | mg/kg | 0.060 | 130 | 8.8 | | | 1.8 | | | 4.5 | |
| Dibenzofuran | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | | 4.5 | -- |
| Diethylphthalate | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | | 4.5 | -- |
| Dimethylphthalate | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | | | 0.5 | J |
| Di-n-butylphthalate | mg/kg | NC | NC | | 9.2 | B | | 0.75 | JB | | 3.2 | JB |
| Di-n-octylphthalate | mg/kg | NC | NC | 8.8 | -- | | | 0.29 | J | | 5.3 | |
| Fluoranthene (1) | mg/kg | 0.750 | 1020 | | 1.2 | J | | 0.61 | J | | 3.3 | J |
| Fluorene (1) | mg/kg | 0.190 | 160 | 8.8 | | | | 0.2 | J | 4.5 | | |
| Hexachlorobenzene | mg/kg | 0.020 | 24 | 8.8 | -- | | 1.8 | -- | | | 0.5 | J |
| Hexachlorobutadiene | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | | 4.5 | -- | |
| Hexachlorocyclopentadiene | mg/kg | NC | NC | 18 | -- | | 3.5 | -- | | 9 | | |
| Hexachloroethane | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | | 4.5 | | |
| Indeno(1,2,3-cd)pyrene (1) | mg/kg | 0.200 | 320 | 8.8 | | | 1.8 | | | | 0.74 | J |
| Isophorone | mg/kg | NC | NC | | 0.89 | J | 1.8 | -- | | | 1.9 | J |
| Naphthalene (1) | mg/kg | 0.16 | NC | 8.8 | | | 1.8 | | | | 0.5 | J |
| Nitrobenzene | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | | | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | | 4.5 | -- | |
| N-Nitrosodiphenylamine | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | | 4.5 | -- | |
| Pentachlorophenol | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | | 4.5 | | |
| Phenanthrene (1) | mg/kg | 0.560 | 950 | 8.8 | | | | 0.39 | J | | 2.1 | J |
| Phenol | mg/kg | NC | NC | 8.8 | -- | | 1.8 | -- | | | 34 | |
| Pyrene (1) | mg/kg | 0.490 | 850 | | 1.1 | J | | 0.61 | J | | 2.7 | J |
| Total PAHs | mg/kg | 4 | 10000 | | 3.40 | | | 3.18 | | | 16.65 | |
| TICs Total | mg/kg | | | | 189.9 | | | 459.8 | J | | 275.20 | |
| Total Semivolatile Organic Compounds | mg/kg | | | | 304.49 | | | 470.06 | J | | 365.96 | |
| | | | | | | | | | | | | |
| **Organochlorine Pesticides** | | | | | | | | | | | | |
| Aldrin | mg/kg | 0.002 | 8 | | 0.14 | | 0.018 | -- | | | 0.21 | |
| Alpha-BHC | mg/kg | 0.006 | 10 | 0.044 | -- | | 0.018 | -- | | 0.045 | -- | |
| Beta-BHC | mg/kg | 0.005 | 21 | 0.044 | -- | | 0.018 | -- | | 0.045 | -- | |
| Chlordane | mg/kg | 0.007 | 6 | | 0.72 | | 0.035 | -- | | | 1.7 | |
| Delta-BHC | mg/kg | NC | NC | 0.044 | -- | | 0.018 | -- | | 0.045 | -- | |
| Dieldrin | mg/kg | 0.002 | 91 | | 0.38 | | 0.018 | -- | | | 0.47 | |
| Endosulfan I | mg/kg | NC | NC | 0.044 | -- | | 0.018 | -- | | 0.045 | -- | |
| Endosulfan II | mg/kg | NC | NC | 0.044 | -- | | 0.018 | -- | | 0.045 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | 0.044 | -- | | 0.018 | -- | | 0.045 | -- | |
| Endrin | mg/kg | 0.003 | 130 | | 0.69 | | | 0.072 | | | 1.5 | |
| Endrin Aldehyde | mg/kg | NC | NC | | 0.064 | | 0.018 | -- | | | 0.2 | |
| Endrin Ketone | mg/kg | NC | NC | 0.044 | -- | | 0.018 | -- | | 0.045 | -- | |
| Gamma-BHC | mg/kg | 0.003 | 1 | 0.044 | -- | | | 0.097 | | 0.045 | -- | |
| Heptachlor | mg/kg | NC | NC | 0.044 | -- | | 0.018 | -- | | 0.045 | -- | |
| Heptachlor Epoxide | mg/kg | 0.005 | 5 | 0.044 | -- | | 0.018 | -- | | | 0.049 | |
| Methoxychlor | mg/kg | NC | NC | 0.044 | -- | | 0.018 | -- | | 0.045 | -- | |
| P,P'-DDD | mg/kg | 0.008 | 6 | 0.044 | -- | | | 0.22 | | 0.045 | -- | |
| P,P'-DDE | mg/kg | 0.005 | 19 | | 0.37 | | | 0.14 | | | 1.1 | |
| P,P'-DDT | mg/kg | 0.008 | 71 | | 0.81 | | | 0.35 | | | 1.8 | |
| Toxaphene | mg/kg | NC | NC | 0.44 | -- | | 0.18 | -- | | 0.45 | -- | |
| | | | | | | | | | | | | |
| **PCBs** | | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | 0.007 | 53 | 0.44 | -- | | 0.088 | -- | | 0.9 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | 0.44 | -- | | 0.088 | -- | | 0.9 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | 0.44 | -- | | 0.088 | -- | | 0.9 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | 0.44 | -- | | 0.088 | -- | | 0.9 | -- | |
| Aroclor-1248 | mg/kg | 0.30 | 150 | 0.44 | -- | | 0.088 | -- | | 0.9 | -- | |
| Aroclor-1254 | mg/kg | 0.060 | 34 | 0.44 | -- | | | 4.3 | | 0.9 | -- | |
| Aroclor-1260 | mg/kg | 0.005 | 24 | | 6.7 | | 0.088 | | | | 23 | |
| Total PCBs | mg/kg | 0.070 | 530 | | 6.7 | | | 4.3 | | | 23 | |
| | | | | | | | | | | | | |
| Total Organic Carbon | mg/kg | NC | NC | | 15,000 | | | 64000 | | | 75000 | |
| | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | | | | | 180 | -- | | 92 | -- | |
| | | | | | | | | | | | | |

**Table 12**
**AOC-11 Sediment Analytical Results**
**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Inorganic Compounds** | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | | 6,800 | | 5800 | | 12000 |
| Antimony | mg/kg | NC | NC | | 45 | | 36 | | 67 |
| Arsenic | mg/kg | 6 | 33 | | 11 | 11 | -- | | 11 |
| Barium | mg/kg | NC | NC | | 510 | | 210 | | 610 |
| Beryllium | mg/kg | NC | NC | 0.79 | -- | 3.2 | -- | 1.6 | -- |
| Cadmium | mg/kg | 0.6 | 10 | | 16 | | 15 | | 30 |
| Calcium | mg/kg | NC | NC | | 12,000 | | 7000 | | 9600 |
| Chromium | mg/kg | 26 | 110 | | 440 | | 240 | | 530 |
| Cobalt | mg/kg | NC | NC | | 37 | | 14 | | 35 |
| Copper | mg/kg | 16 | 110 | | 330 | | 340 | | 440 |
| Iron | mg/kg | NC | NC | | 53,000 | | 32000 | | 79000 |
| Lead | mg/kg | 31 | 250 | | 1,500 | | 970 | | 2300 |
| Magnesium | mg/kg | NC | NC | | 6,100 | | 4100 | | 8300 |
| Manganese | mg/kg | NC | NC | | 470 | | 170 | | 480 |
| Mercury | mg/kg | 0.2 | 2 | | 1.9 | | 1.8 | | 3.9 |
| Nickel | mg/kg | 16 | 75 | | 96 | | 50 | | 98 |
| Potassium | mg/kg | NC | NC | | 360 | 1300 | -- | 680 | -- |
| Selenium | mg/kg | NC | NC | | 4.1 | 11 | -- | | 6.4 |
| Silver | mg/kg | 1 | NC | 3.3 | -- | 13 | -- | 6.8 | -- |
| Sodium | mg/kg | NC | NC | 660 | -- | 2600 | -- | 1400 | -- |
| Thallium | mg/kg | NC | NC | 1.6 | -- | 6.3 | -- | 3.2 | -- |
| Vanadium | mg/kg | NC | NC | | 120 | | 58 | | 100 |
| Zinc | mg/kg | 120 | 820 | | 1,400 | | 1100 | | 1600 |
| | | | | | | | | | |
| **Chlorinated Herbicides** | | | | | | | | | |
| 2,4,5-T | mg/kg | NC | NC | 0.0053 | -- | 0.021 | -- | 0.011 | -- |
| 2,4-D | mg/kg | NC | NC | 0.0053 | -- | 0.021 | 0.18 | | 0.036 |
| Dicamba | mg/kg | NC | NC | 0.0053 | -- | 0.021 | -- | 0.011 | -- |
| Silvex | mg/kg | NC | NC | 0.0053 | -- | 0.021 | -- | 0.011 | -- |
| | | | | | | | | | |
| **% Solids** | percent | NC | NC | | 76 | | 19 | | 37 |
| | | | | | | | | | |
| **pH** | units | NC | NC | | 7.7 | | 7.4 | | 7.3 |

**Notes:**
(1) Compound is a Polynuclear Aromatic Hydrocarbon (PAH)
B Analyte is present in blank
TIC Tentatively Identified Compound
J Estimated Value
NC No criteria established
NA Not analyzed
CONC Concentration
Q Qualifier
-- Not Detected
MDL Method Detection Limit
PAHs Polynuclear Aromatic Hydrocarbons
***BOLD*** analyte exceeds sediment screening guidelines, lowest effect level (11/98)
* indicates sample is a duplicate of previous sample

** samples were analyzed for Dioxins/Furans and are reported in a separate Table.

**Table 12**
**AOC-11 Sediment Analytical Results**
**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds** | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| 1,1,2,2,-Tetrachloroethane | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| 1,1,2-Trichloroethane | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| 1,1-Dichloroethane | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| 1,1-Dichloroethene | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| 1,2-Dichloroethane | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| 1,2-Dichloropropane | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| 2-Butanone | mg/kg | NC | NC | 5.3 | -- | | 10 | -- | | 4.8 | -- | |
| 2-Hexanone | mg/kg | NC | NC | 4.2 | -- | | 8.1 | -- | | 3.9 | -- | |
| 4-Methyl-2-Pentanone | mg/kg | NC | NC | 4.2 | -- | | 8.1 | -- | | 3.9 | -- | |
| Acetone | mg/kg | NC | NC | 4.2 | -- | | 8.1 | -- | | 3.9 | -- | |
| Benzene | mg/kg | 0.34 | NC | 0.21 | -- | | 0.41 | -- | | 0.19 | -- | |
| Bromodichloromethane | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| Bromoform | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| Bromomethane | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| Carbon Disulfide | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| Carbon Tetrachloride | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| Chlorobenzene | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| Chloroethane | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| Chloroform | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| Chloromethane | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| Cis-1,3-Dichloropropene | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| Dibromochloromethane | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| Ethylbenzene | mg/kg | 1.4 | NC | 0.21 | -- | | 0.41 | -- | | 0.19 | -- | |
| Methylene chloride | mg/kg | NC | NC | 1.1 | -- | | | 0.48 | J | 0.97 | -- | |
| Styrene | mg/kg | NC | NC | 0.21 | -- | | 0.41 | -- | | 0.19 | -- | |
| Tetrachloroethene | mg/kg | 0.45 | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| Toluene | mg/kg | 2.5 | NC | 0.21 | -- | | 0.41 | -- | | 0.19 | -- | |
| Trans-1,2-Dichloroethene | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| Trans-1,3-Dichloropropene | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| Trichloroethene | mg/kg | 1.6 | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| Vinyl chloride | mg/kg | NC | NC | 1.1 | -- | | 2 | -- | | 0.97 | -- | |
| Xylenes (total) | mg/kg | 0.12 | NC | 0.21 | -- | | 0.41 | -- | | | 0.42 | |
| TICs Total | mg/kg | NC | NC | | 0.76 | | | 230.6 | | | 0 | |
| Total Volatile Organic Compounds | mg/kg | | | | 0.76 | | | 231.08 | | | 0.42 | |
| | | | | | | | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | NC | NC | 0.53 | -- | | 1.2 | 0.14 | J | | 0.077 | J |
| 1,2-Dichlorobenzene | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 1,3-Dichlorobenzene | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 1,4-Dichlorobenzene | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 2,4,5,-Trichlorophenol | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 2,4,-Dichlorophenol | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 2,4-Dimethylphenol | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 2,4-Dinitrophenol | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 2,4-Dinitrotoluene | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 2,6-Dinitrotoluene | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 2-Chloronaphthalene | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 2-Chlorophenol | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 2-Methylnaphthalene | mg/kg | 0.070 | NC | | 0.087 | J | | 0.17 | J | | 0.06 | J |
| 2-Methylphenol | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 2-Nitroaniline | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 3 & 4-Methylphenol | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 4-Chloroaniline | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| Acenaphthene (1) | mg/kg | 0.016 | NC | | 0.059 | J | | 0.15 | J | | 0.12 | J |
| Acenaphthylene (1) | mg/kg | 0.044 | NC | | 0.27 | J | | 0.2 | J | | 0.062 | J |
| Anthracene (1) | mg/kg | 0.220 | 370 | | 0.19 | J | | 0.31 | J | | 0.27 | J |
| Benzo(a)anthracene (1) | mg/kg | 0.320 | 1480 | | 0.78 | | | 0.98 | | | 0.56 | |
| Benzo(a)pyrene (1) | mg/kg | 0.370 | 1440 | | 0.67 | | | 1.2 | | | 0.58 | |
| Benzo(b)fluoranthene (1) | mg/kg | NC | NC | | 1.1 | | | 2 | | | 0.94 | |
| Benzo(g,h,i)perylene (1) | mg/kg | 0.170 | 320 | | 0.17 | J | | 0.55 | J | | 0.17 | J |
| Benzo(k)fluoranthene (1) | mg/kg | 0.24 | 1340 | | 0.37 | J | | 1.3 | | | 0.36 | J |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| Bis(2-Chloroisopropyl)ether | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- | |
| Bis(2-Ethylhexyl)phthalate | mg/kg | NC | NC | | 0.21 | J | | 8 | B | | 3.5 | B |
| Butylbenzylphthalate | mg/kg | NC | NC | | 0.071 | J | | 1.4 | | | 0.38 | J |
| Carbazole | mg/kg | NC | NC | 0.53 | -- | | | 0.19 | J | | 0.11 | J |
| Chrysene (1) | mg/kg | 0.340 | 460 | | 0.67 | | | 1.1 | J | | 0.68 | |

**Table 12**
**AOC-11 Sediment Analytical Results**
**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dibenzo(a,h)Anthracene (1) | mg/kg | 0.060 | 130 | 0.53 | | | 1.2 | | | 0.54 | |
| Dibenzofuran | mg/kg | NC | NC | 0.53 | -- | | | 0.13 | J | 0.076 | J |
| Diethylphthalate | mg/kg | NC | NC | 0.53 | -- | | | 0.18 | J | 0.11 | J |
| Dimethylphthalate | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- |
| Di-n-butylphthalate | mg/kg | NC | NC | | 0.15 | JB | | 2.5 | B | 1.2 | B |
| Di-n-octylphthalate | mg/kg | NC | NC | 0.53 | -- | | | 0.88 | J | 2.3 | |
| Fluoranthene (1) | mg/kg | 0.750 | 1020 | | 0.69 | | | 2.1 | | 1.3 | |
| Fluorene (1) | mg/kg | 0.190 | 160 | | 0.062 | J | | 0.21 | J | 0.12 | J |
| Hexachlorobenzene | mg/kg | 0.020 | 24 | 0.53 | -- | | | 0.18 | J | 0.17 | J |
| Hexachlorobutadiene | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- |
| Hexachlorocyclopentadiene | mg/kg | NC | NC | 1.1 | -- | | 2.4 | -- | | 1.1 | -- |
| Hexachloroethane | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- |
| Indeno(1,2,3-cd)pyrene (1) | mg/kg | 0.200 | 320 | | 0.17 | J | | 0.52 | J | 0.17 | J |
| Isophorone | mg/kg | NC | NC | 0.53 | -- | | | 0.47 | J | 0.087 | J |
| Naphthalene (1) | mg/kg | 0.16 | NC | | 0.14 | J | | 0.17 | J | 0.069 | J |
| Nitrobenzene | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- |
| N-Nitroso-Di-N-propylamine | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- |
| N-Nitrosodiphenylamine | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.54 | -- |
| Pentachlorophenol | mg/kg | NC | NC | 0.53 | -- | | 1.2 | -- | | 0.055 | J |
| Phenanthrene (1) | mg/kg | 0.560 | 950 | | 0.24 | J | | 1.4 | | 1 | |
| Phenol | mg/kg | NC | NC | 0.53 | -- | | | 4.8 | | 0.35 | J |
| Pyrene (1) | mg/kg | 0.490 | 850 | | 0.95 | | | 1.9 | | 1.1 | |
| Total PAHs | mg/kg | 4 | 10000 | | 4.89 | | | 11.70 | | 5.99 | |
| TICs Total | mg/kg | | | | 105.02 | | | 230.6 | | 76.41 | |
| Total Semivolatile Organic Compounds | mg/kg | | | | 111.29 | | | 263.73 | | 92.39 | |
| | | | | | | | | | | | |
| **Organochlorine Pesticides** | | | | | | | | | | | |
| Aldrin | mg/kg | 0.002 | 8 | 0.005 | -- | | 0.6 | -- | | 0.14 | |
| Alpha-BHC | mg/kg | 0.006 | 10 | 0.0053 | -- | | 0.6 | -- | | 0.054 | -- |
| Beta-BHC | mg/kg | 0.005 | 21 | 0.005 | -- | | 0.6 | -- | | 0.054 | -- |
| Chlordane | mg/kg | 0.007 | 6 | | 0.055 | | | 2.7 | | 0.11 | -- |
| Delta-BHC | mg/kg | NC | NC | 0.0053 | -- | | 0.6 | -- | | 0.054 | -- |
| Dieldrin | mg/kg | 0.002 | 91 | | 0.025 | | | 0.64 | | 0.24 | |
| Endosulfan I | mg/kg | NC | NC | 0.0053 | -- | | 0.6 | -- | | 0.054 | -- |
| Endosulfan II | mg/kg | NC | NC | 0.0053 | -- | | 0.6 | -- | | 0.054 | -- |
| Endosulfan Sulfate | mg/kg | NC | NC | 0.0053 | -- | | 0.6 | -- | | 0.054 | -- |
| Endrin | mg/kg | 0.003 | 130 | 0.0053 | -- | | 0.6 | -- | | 0.054 | -- |
| Endrin Aldehyde | mg/kg | NC | NC | | 0.033 | | 0.6 | -- | | 0.054 | -- |
| Endrin Ketone | mg/kg | NC | NC | 0.0053 | -- | | 0.6 | -- | | 0.054 | -- |
| Gamma-BHC | mg/kg | 0.003 | 1 | 0.0053 | -- | | 0.6 | -- | | 0.054 | -- |
| Heptachlor | mg/kg | NC | NC | 0.0053 | -- | | 0.6 | -- | | 0.054 | -- |
| Heptachlor Epoxide | mg/kg | 0.005 | 5 | 0.0053 | -- | | 0.6 | -- | | 0.054 | -- |
| Methoxychlor | mg/kg | NC | NC | 0.0053 | -- | | 0.6 | -- | | 0.054 | -- |
| P,P'-DDD | mg/kg | 0.008 | 6 | | 0.19 | | 0.6 | -- | | 0.054 | -- |
| P,P'-DDE | mg/kg | 0.005 | 19 | | 0.11 | | 0.6 | -- | | 0.24 | |
| P,P'-DDT | mg/kg | 0.008 | 71 | | 0.087 | | | 1.7 | | 1.4 | |
| Toxaphene | mg/kg | NC | NC | 0.0053 | -- | | 6 | -- | | 0.54 | -- |
| | | | | | | | | | | | |
| **PCBs** | | | | | | | | | | | |
| Aroclor-1016 | mg/kg | 0.007 | 53 | 0.026 | -- | | 0.6 | -- | | 1.3 | -- |
| Aroclor-1221 | mg/kg | NC | NC | 0.026 | -- | | 0.6 | -- | | 1.3 | -- |
| Aroclor-1232 | mg/kg | NC | NC | 0.026 | -- | | 0.6 | -- | | 1.3 | -- |
| Aroclor-1242 | mg/kg | NC | NC | 0.026 | -- | | 0.6 | -- | | 1.3 | -- |
| Aroclor-1248 | mg/kg | 0.30 | 150 | 0.026 | -- | | 0.6 | -- | | 1.3 | -- |
| Aroclor-1254 | mg/kg | 0.060 | 34 | 0.026 | -- | | 0.6 | -- | | 1.3 | 29 |
| Aroclor-1260 | mg/kg | 0.005 | 24 | | 0.61 | | | 14 | | 1.3 | -- |
| Total PCBs | mg/kg | 0.070 | 530 | | 0.61 | | | 14 | | | 29 |
| | | | | | | | | | | | |
| Total Organic Carbon | mg/kg | NC | NC | | 52,000 | | | 48000 | | | 29000 |
| | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | | | | | 120 | -- | | 55 | -- |
| | | | | | | | | | | | |

**Table 12**
**AOC-11 Sediment Analytical Results**
**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Inorganic Compounds** | | | | | | | | | | |
| Aluminum | mg/kg | NC | NC | | 14,000 | | 8700 | | 5100 | |
| Antimony | mg/kg | NC | NC | | 14 | | 58 | | 30 | |
| Arsenic | mg/kg | 6 | 33 | | 46 | | 13 | | 6.6 | |
| Barium | mg/kg | NC | NC | | 350 | | 510 | | 340 | |
| Beryllium | mg/kg | NC | NC | 0.95 | -- | 2.1 | -- | 0.97 | -- | |
| Cadmium | mg/kg | 0.6 | 10 | | 5.7 | | 38 | | 180 | |
| Calcium | mg/kg | NC | NC | | 29,000 | | 35000 | | 3800 | |
| Chromium | mg/kg | 26 | 110 | | 1,300 | | 390 | | 150 | |
| Cobalt | mg/kg | NC | NC | | 61 | | 34 | | 17 | |
| Copper | mg/kg | 16 | 110 | | 180 | | 440 | | 180 | |
| Iron | mg/kg | NC | NC | | 74,000 | | 90000 | | 31000 | |
| Lead | mg/kg | 31 | 250 | | 640 | | 2200 | | 1400 | |
| Magnesium | mg/kg | NC | NC | | 17,000 | | 6600 | | 2100 | |
| Manganese | mg/kg | NC | NC | | 620 | | 660 | | 190 | |
| Mercury | mg/kg | 0.2 | 2 | | 0.66 | | 4.5 | | 1.5 | |
| Nickel | mg/kg | 16 | 75 | | 260 | | 77 | | 46 | |
| Potassium | mg/kg | NC | NC | | 770 | 890 | -- | 400 | -- | |
| Selenium | mg/kg | NC | NC | | 4.9 | | 7.9 | | 8.9 | |
| Silver | mg/kg | 1 | NC | 4 | -- | 8.9 | -- | 4 | -- | |
| Sodium | mg/kg | NC | NC | 790 | -- | 1800 | -- | 810 | -- | |
| Thallium | mg/kg | NC | NC | 1.9 | -- | 4.3 | -- | 1.9 | -- | |
| Vanadium | mg/kg | NC | NC | | 560 | | 84 | | 36 | |
| Zinc | mg/kg | 120 | 820 | | 670 | | 2100 | | 830 | |
| | | | | | | | | | | |
| **Chlorinated Herbicides** | | | | | | | | | | |
| 2,4,5-T | mg/kg | NC | NC | 0.0063 | -- | 0.014 | -- | 0.0065 | -- | |
| 2,4-D | mg/kg | NC | NC | 0.0063 | -- | 0.014 | -- | 0.0065 | -- | |
| Dicamba | mg/kg | NC | NC | | 0.020 | 0.014 | -- | 0.0065 | -- | |
| Silvex | mg/kg | NC | NC | | 0.060 | 0.014 | -- | 0.0065 | -- | |
| | | | | | | | | | | |
| % Solids | percent | NC | NC | | 63 | | 28 | | 62 | |
| | | | | | | | | | | |
| pH | units | NC | NC | | 6.7 | | 7.6 | | 7.4 | |

**Notes:**
(1) Compound is a Polynuclear Aromatic Hydrocarbon (PAH)
B Analyte is present in blank
TIC Tentatively Identified Compound
J Estimated Value
NC No criteria established
NA Not analyzed
CONC Concentration
Q Qualifier
-- Not Detected
MDL Method Detection Limit
PAHs Polynuclear Aromatic Hydrocarbons
***BOLD*** analyte exceeds sediment screening guidelines, lowest effect level (11/98)
* indicates sample is a duplicate of previous sample

** samples were analyzed for Dioxins/Furans and are reported in a separate Table.

**Table 12**
**AOC-11 Sediment Analytical Results**
**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds** | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | NC | NC | 2.4 | -- | |
| 1,1,2,2,-Tetrachlororethane | mg/kg | NC | NC | 2.4 | -- | |
| 1,1,2-Trichloroethane | mg/kg | NC | NC | 2.4 | -- | |
| 1,1-Dichloroethane | mg/kg | NC | NC | 2.4 | -- | |
| 1,1-Dichloroethene | mg/kg | NC | NC | 2.4 | -- | |
| 1,2-Dichloroethane | mg/kg | NC | NC | 2.4 | -- | |
| 1,2-Dichloropropane | mg/kg | NC | NC | 2.4 | -- | |
| 2-Butanone | mg/kg | NC | NC | 12 | -- | |
| 2-Hexanone | mg/kg | NC | NC | 9.6 | -- | |
| 4-Methyl-2-Pentanone | mg/kg | NC | NC | 9.6 | -- | |
| Acetone | mg/kg | NC | NC | 9.6 | -- | |
| Benzene | mg/kg | 0.34 | NC | 0.48 | -- | |
| Bromodichloromethane | mg/kg | NC | NC | 2.4 | -- | |
| Bromoform | mg/kg | NC | NC | 2.4 | -- | |
| Bromomethane | mg/kg | NC | NC | 2.4 | -- | |
| Carbon Disulfide | mg/kg | NC | NC | 2.4 | -- | |
| Carbon Tetrachloride | mg/kg | NC | NC | 2.4 | -- | |
| Chlorobenzene | mg/kg | NC | NC | 2.4 | -- | |
| Chloroethane | mg/kg | NC | NC | 2.4 | -- | |
| Chloroform | mg/kg | NC | NC | 2.4 | -- | |
| Chloromethane | mg/kg | NC | NC | 2.4 | -- | |
| Cis-1,2-Dichloroethene | mg/kg | NC | NC | 2.4 | -- | |
| Cis-1,3-Dichloropropene | mg/kg | NC | NC | 2.4 | -- | |
| Dibromochloromethane | mg/kg | NC | NC | 2.4 | -- | |
| Ethylbenzene | mg/kg | 1.4 | NC | 0.48 | | |
| Methylene chloride | mg/kg | NC | NC | | 0.55 | JB |
| Styrene | mg/kg | NC | NC | 0.48 | -- | |
| Tetrachloroethene | mg/kg | 0.45 | NC | 2.4 | -- | |
| Toluene | mg/kg | 2.5 | NC | | 1 | |
| Trans-1,2-Dichloroethene | mg/kg | NC | NC | 2.4 | -- | |
| Trans-1,3-Dichloropropene | mg/kg | NC | NC | 2.4 | -- | |
| Trichloroethene | mg/kg | 1.6 | NC | 2.4 | -- | |
| Vinyl chloride | mg/kg | NC | NC | 2.4 | -- | |
| Xylenes (total) | mg/kg | 0.12 | NC | | 1 | |
| TICs Total | mg/kg | NC | NC | | 9.4 | |
| Total Volatile Organic Compounds | mg/kg | | | | 11.95 | |
| | | | | | | |
| **Semivolatile Organic Compounds** | | | | | | |
| 1,2,4-Trichlorobenzene | mg/kg | NC | NC | 7.4 | -- | |
| 1,2-Dichlorobenzene | mg/kg | NC | NC | 7.4 | -- | |
| 1,3-Dichlorobenzene | mg/kg | NC | NC | 7.4 | -- | |
| 1,4-Dichlorobenzene | mg/kg | NC | NC | 7.4 | -- | |
| 2,4,5,-Trichlorophenol | mg/kg | NC | NC | 7.4 | -- | |
| 2,4,6-Trichlorophenol | mg/kg | NC | NC | 7.4 | -- | |
| 2,4,-Dichlorophenol | mg/kg | NC | NC | 7.4 | -- | |
| 2,4-Dimethylphenol | mg/kg | NC | NC | 7.4 | -- | |
| 2,4-Dinitrophenol | mg/kg | NC | NC | 7.4 | -- | |
| 2,4-Dinitrotoluene | mg/kg | NC | NC | 7.4 | -- | |
| 2,6-Dinitrotoluene | mg/kg | NC | NC | 7.4 | -- | |
| 2-Chloronaphthalene | mg/kg | NC | NC | 7.4 | -- | |
| 2-Chlorophenol | mg/kg | NC | NC | 7.4 | -- | |
| 2-Methylnaphthalene | mg/kg | 0.070 | NC | 7.4 | -- | |
| 2-Methylphenol | mg/kg | NC | NC | 7.4 | -- | |
| 2-Nitroaniline | mg/kg | NC | NC | 7.4 | -- | |
| 2-Nitrophenol | mg/kg | NC | NC | 7.4 | -- | |
| 3 & 4-Methylphenol | mg/kg | NC | NC | 7.4 | -- | |
| 3,3'-Dichlorobenzidine | mg/kg | NC | NC | 7.4 | -- | |
| 3-Nitroaniline | mg/kg | NC | NC | 7.4 | -- | |
| 4,6-Dinitro-2-methylphenol | mg/kg | NC | NC | 7.4 | -- | |
| 4-Bromophenyl-phenylether | mg/kg | NC | NC | 7.4 | -- | |
| 4-Chloro-3-methylphenol | mg/kg | NC | NC | 7.4 | -- | |
| 4-Chloroaniline | mg/kg | NC | NC | 7.4 | -- | |
| 4-Chlorophenyl-phenylether | mg/kg | NC | NC | 7.4 | -- | |
| 4-Nitroaniline | mg/kg | NC | NC | 7.4 | -- | |
| 4-Nitrophenol | mg/kg | NC | NC | 7.4 | -- | |
| Acenaphthene (1) | mg/kg | 0.016 | NC | 7.4 | | |
| Acenaphthylene (1) | mg/kg | 0.044 | NC | 7.4 | | |
| Anthracene (1) | mg/kg | 0.220 | 370 | 7.4 | | |
| Benzo(a)anthracene (1) | mg/kg | 0.320 | 1480 | | 0.8 | J |
| Benzo(a)pyrene (1) | mg/kg | 0.370 | 1440 | | 1.3 | J |
| Benzo(b)fluoranthene (1) | mg/kg | NC | NC | | 2.2 | J |
| Benzo(g,h,I)perylene (1) | mg/kg | 0.170 | 320 | | 1 | J |
| Benzo(k)fluoranthene (1) | mg/kg | 0.24 | 1340 | | 1.5 | J |
| Bis(2-Chloroethoxy)methane | mg/kg | NC | NC | 7.4 | -- | |
| Bis(2-Chloroethyl)ether | mg/kg | NC | NC | 7.4 | -- | |
| Bis(2-Chloroisopropyf)ether | mg/kg | NC | NC | 7.4 | -- | |
| Bis(2-Ethylhexyl)phthalate | mg/kg | NC | NC | | 91 | B |
| Butylbenzylphthalate | mg/kg | NC | NC | | 5.9 | J |
| Carbazole | mg/kg | NC | NC | 7.4 | -- | |
| Chrysene (1) | mg/kg | 0.340 | 460 | | 1 | J |

**Table 12**
**AOC-11 Sediment Analytical Results**
**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| | | | | | | |
|---|---|---|---|---|---|---|
| Dibenzo(a,h)Anthracene (1) | mg/kg | 0.060 | 130 | 7.4 | | |
| Dibenzofuran | mg/kg | NC | NC | 7.4 | -- | |
| Diethylphthalate | mg/kg | NC | NC | 7.4 | -- | |
| Dimethylphthalate | mg/kg | NC | NC | 7.4 | -- | |
| Di-n-butlyphthalate | mg/kg | NC | NC | | 3.4 | JB |
| Di-n-octylphthalate | mg/kg | NC | NC | | 4 | JB |
| Fluoranthene (1) | mg/kg | 0.750 | 1020 | | 1.3 | J |
| Fluorene (1) | mg/kg | 0.190 | 160 | 7.4 | | |
| Hexachlorobenzene | mg/kg | 0.020 | 24 | 7.4 | -- | |
| Hexachlorobutadiene | mg/kg | NC | NC | 7.4 | -- | |
| Hexachlorocyclopentadiene | mg/kg | NC | NC | 15 | | |
| Hexachloroethane | mg/kg | NC | NC | 7.4 | -- | |
| Indeno(1,2,3-cd)pyrene (1) | mg/kg | 0.200 | 320 | | 1.1 | J |
| Isophorone | mg/kg | NC | NC | | 0.99 | J |
| Naphthalene (1) | mg/kg | 0.16 | NC | 7.4 | | |
| Nitrobenzene | mg/kg | NC | NC | 7.4 | -- | |
| N-Nitroso-Di-N-propylamine | mg/kg | NC | NC | 7.4 | -- | |
| N-Nitrosodiphenylamine | mg/kg | NC | NC | 7.4 | -- | |
| Pentachlorophenol | mg/kg | NC | NC | 7.4 | -- | |
| Phenanthrene (1) | mg/kg | 0.560 | 950 | | 1.4 | J |
| Phenol | mg/kg | NC | NC | | 2.1 | J |
| Pyrene (1) | mg/kg | 0.490 | 850 | | 1.7 | J |
| Total PAHs | mg/kg | 4 | 10000 | | 11.50 | |
| TICs Total | mg/kg | | | | 594.1 | |
| Total Semivolatile Organic Compounds | mg/kg | | | | 714.79 | |
| | | | | | | |
| **Organochlorine Pesticides** | | | | | | |
| Aldrin | mg/kg | 0.002 | 8 | 0.062 | -- | |
| Alpha-BHC | mg/kg | 0.006 | 10 | 0.062 | -- | |
| Beta-BHC | mg/kg | 0.005 | 21 | 0.062 | -- | |
| Chlordane | mg/kg | 0.007 | 6 | | 1.2 | |
| Delta-BHC | mg/kg | NC | NC | 0.062 | -- | |
| Dieldrin | mg/kg | 0.002 | 91 | | 0.15 | |
| Endosulfan I | mg/kg | NC | NC | 0.062 | -- | |
| Endosulfan II | mg/kg | NC | NC | 0.062 | -- | |
| Endosulfan Sulfate | mg/kg | NC | NC | 0.062 | -- | |
| Endrin | mg/kg | 0.003 | 130 | | 0.39 | |
| Endrin Aldehyde | mg/kg | NC | NC | 0.062 | -- | |
| Endrin Ketone | mg/kg | NC | NC | 0.062 | -- | |
| Gamma-BHC | mg/kg | 0.003 | 1 | 0.062 | -- | |
| Heptachlor | mg/kg | NC | NC | 0.062 | -- | |
| Heptachlor Epoxide | mg/kg | 0.005 | 5 | 0.062 | -- | |
| Methoxychlor | mg/kg | NC | NC | 0.062 | -- | |
| P,P'-DDD | mg/kg | 0.008 | 6 | 0.062 | -- | |
| P,P'-DDE | mg/kg | 0.005 | 19 | | 0.2 | |
| P,P'-DDT | mg/kg | 0.008 | 71 | | 0.63 | |
| Toxaphene | mg/kg | NC | NC | 0.62 | -- | |
| | | | | | | |
| **PCBs** | | | | | | |
| Aroclor-1016 | mg/kg | 0.007 | 53 | 0.62 | -- | |
| Aroclor-1221 | mg/kg | NC | NC | 0.62 | -- | |
| Aroclor-1232 | mg/kg | NC | NC | 0.62 | -- | |
| Aroclor-1242 | mg/kg | NC | NC | 0.62 | -- | |
| Aroclor-1248 | mg/kg | 0.30 | 150 | 0.62 | -- | |
| Aroclor-1254 | mg/kg | 0.060 | 34 | 0.62 | -- | |
| Aroclor-1260 | mg/kg | 0.005 | 24 | | 3.7 | |
| Total PCBs | mg/kg | 0.070 | 530 | | 3.7 | |
| | | | | | | |
| **Total Organic Carbon** | mg/kg | NC | NC | | 72000 | |
| | | | | | | |
| **Total Petroleum Hydrocarbons** | mg/kg | | | 130 | -- | |
| | | | | | | |

**Table 12**
**AOC-11 Sediment Analytical Results**
**Remedial Investigation Report**
**Central Steel Drum**
**Newark, New Jersey**

| | | | | |
|---|---|---|---|---|
| **Inorganic Compounds** | | | | |
| Aluminum | mg/kg | NC | NC | 5200 |
| Antimony | mg/kg | NC | NC | 140 |
| Arsenic | mg/kg | 6 | 33 | **19** |
| Barium | mg/kg | NC | NC | 1000 |
| Beryllium | mg/kg | NC | NC | 2.2 -- |
| Cadmium | mg/kg | 0.6 | 10 | **59** |
| Calcium | mg/kg | NC | NC | 16000 |
| Chromium | mg/kg | 26 | 110 | **380** |
| Cobalt | mg/kg | NC | NC | 35 |
| Copper | mg/kg | 16 | 110 | **580** |
| Iron | mg/kg | NC | NC | 79000 |
| Lead | mg/kg | 31 | 250 | **3100** |
| Magnesium | mg/kg | NC | NC | 3000 |
| Manganese | mg/kg | NC | NC | 610 |
| Mercury | mg/kg | 0.2 | 2 | 7.2 |
| Nickel | mg/kg | 16 | 75 | 74 |
| Potassium | mg/kg | NC | NC | 930 -- |
| Selenium | mg/kg | NC | NC | 9.6 |
| Silver | mg/kg | 1 | NC | 9.3 -- |
| Sodium | mg/kg | NC | NC | 1900 -- |
| Thallium | mg/kg | NC | NC | 4.4 -- |
| Vanadium | mg/kg | NC | NC | 43 |
| Zinc | mg/kg | 120 | 820 | **2300** |
| | | | | |
| **Chlorinated Herbicides** | | | | |
| 2,4,,5-T | mg/kg | NC | NC | 0.015 -- |
| 2,4-D | mg/kg | NC | NC | 0.026 |
| Dicamba | mg/kg | NC | NC | 0.044 |
| Silvex | mg/kg | NC | NC | 0.076 |
| | | | | |
| % Solids | percent | NC | NC | 27 |
| | | | | |
| pH | units | NC | NC | 7.4 |

**Notes:**
(1) Compound is a Polynuclear Aromatic Hydrocarbon (PAH)
B Analyte is present in blank
TIC Tentatively Identified Compound
J Estimated Value
NC No criteria established
NA Not analyzed
CONC Concentration
Q Qualifier
-- Not Detected
MDL Method Detection Limit
PAHs Polynuclear Aromatic Hydrocarbons
***BOLD*** analyte exceeds sediment screening guidelines, lowest effect level (11/98)
* indicates sample is a duplicate of previous sample

** samples were analyzed for Dioxins/Furans and are reported in a separate Table

# Table 13
# AOC 11 Dioxin Analytical Results
# Remedial Investigation Report
# Central Steel Drum
# Newark, New Jersey

| | | | | |
|---|---|---|---|---|
| **Dioxins/Furans** | | | | |
| 1,2,3,4,6,7,8,9-Octachlorodibenzodioxin | pg/g | 44000 | 28000 | 130000 |
| 1,2,3,4,6,7,8,9-Octachlorodibenzofuran | pg/g | 2500 | 1900 | 7900 |
| 1,2,3,4,6,7,8-Heptachlorodibenzodioxin | pg/g | 4100 | 3100 | 9600 |
| 1,2,3,4,6,7,8-Heptachlorodibenzofuran | pg/g | 1600 | 1500 | 2900 |
| 1,2,3,4,7,8,9-Heptachlorodibenzofuran | pg/g | 130 | 120 | 290 |
| 1,2,3,4,7,8-Hexachlorodibenzofuran | pg/g | 430 | 350 | 690 |
| 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin | pg/g | 46 | 37 | 82 |
| 1,2,3,6,7,8-Hexachlorodibenzofuran | pg/g | 160 | 110 | 200 |
| 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin | pg/g | 170 | 130 | 280 |
| 1,2,3,7,8,9-Hexachlorodibenzofuran | pg/g | 12 | 7.2 | 7.4 |
| 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin | pg/g | 140 | 110 | 210 |
| 1,2,3,7,8-Pentachlorodibenzofuran | pg/g | 96 | 62 | 89 |
| 1,2,3,7,8-Pentachlorodibenzo-p-dioxin | pg/g | 35 | 27 | 47 |
| 2,3,4,6,7,8-Hexachlorodibenzofuran | pg/g | 240 | 150 | 300 |
| 2,3,4,7,8-Pentachlorodibenzofuran | pg/g | 240 | 170 | 280 |
| 2,3,7,8-Tetrachlorodibenzofuran | pg/g | 440 | 280 | 450 |
| 2,3,7,8-Tetrachlorodibenzo-p-dioxin | pg/g | 130 | 66 | 84 |

Notes:
pg/g=picograms per gram=parts per trillion

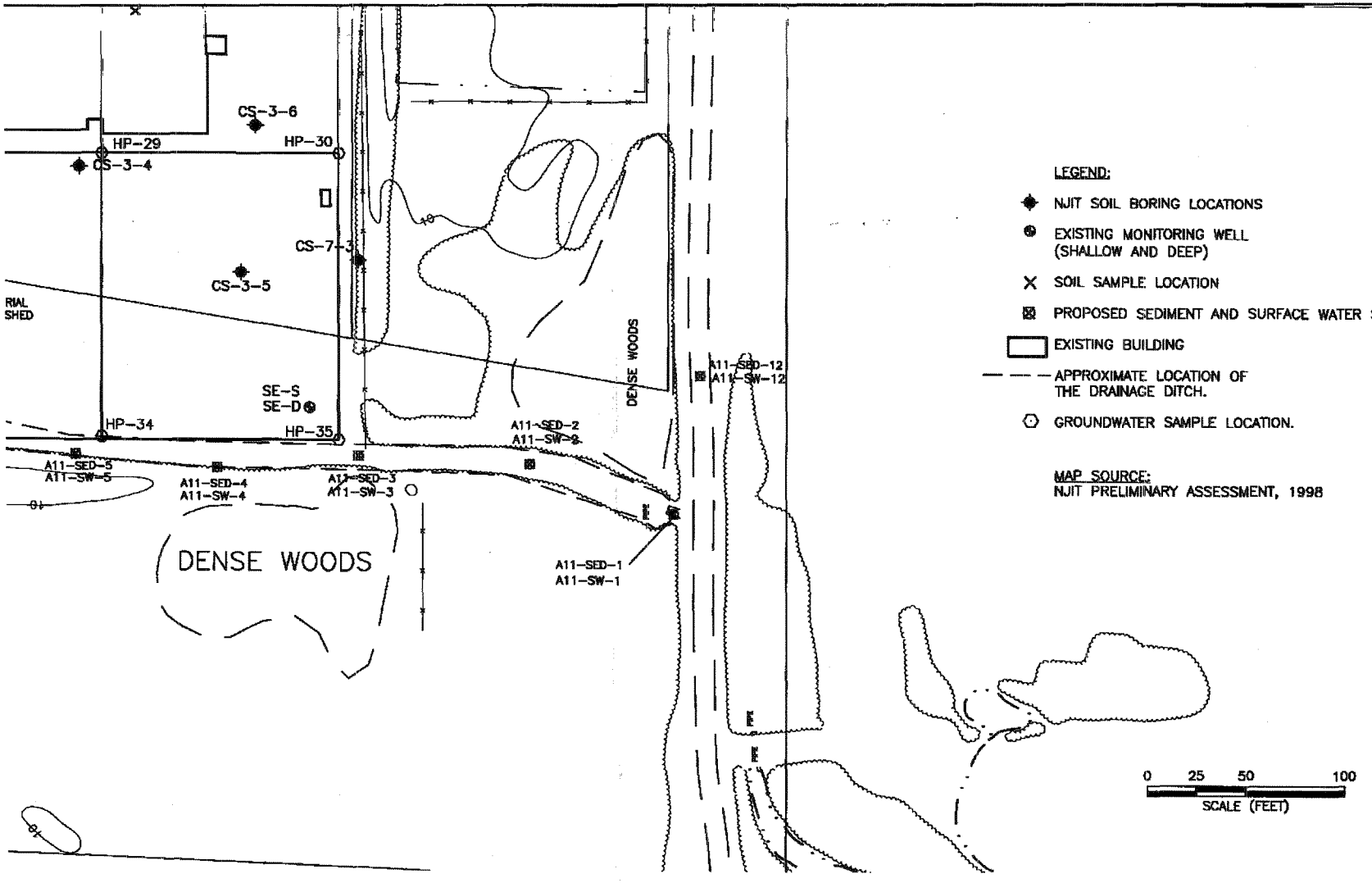
**Table 14**
**Proposed Field Activities and Rationale**

**Remedial Investigation Report**
**Central Steel Drum Site**
**843-871 Delancy Street, Newark**

| Area of Concern | Location Identification | Matrix | Rationale | Environmental Sampling Depth | Analytical Parameters and Analytical Method | Estimated Completion Depth (below grade) | Completion |
|---|---|---|---|---|---|---|---|
| AOC-2 | A2-SS-13 through A2-SS-19 | Soil | Soil delineation of the former Drum Conveyor/De-Heading Shed | Depth of water table | VOCs (Method 8260B) and Pesticides/PCBs (Method 8082) | 2-3 ft | Abandon/tremie grout |
| AOC-3 | A3-SS-29 through A3-SS-38 | Soil | Soil delineation in the abandoned truck trailer area | Depth of water table | VOCs (Method 8260B) and Pesticides/PCBs (Method 8082) | 2-3 ft | Abandon/tremie grout |
| AOC-4 | A4-SS-5 through A4-SS-9 | Soil | Soil delineation of the drum flip operation area | Depth of water table | VOCs (Method 8260B) and Pesticides/PCBs (Method 8082) | 2-3 ft | Abandon/tremie grout |
| Site Wide | HF-SS-1 through HF-SS-34 | Soil | Vertical delineation of historic fill material | Depth of native soil | TPH (Method 418.1)and PP Metals (Method 200.8) and 25% PCBs (Method 8082) and PAH (Method 8270C) | 12-15 feet | Abandon/tremie grout |

# Figures

# FIGURES

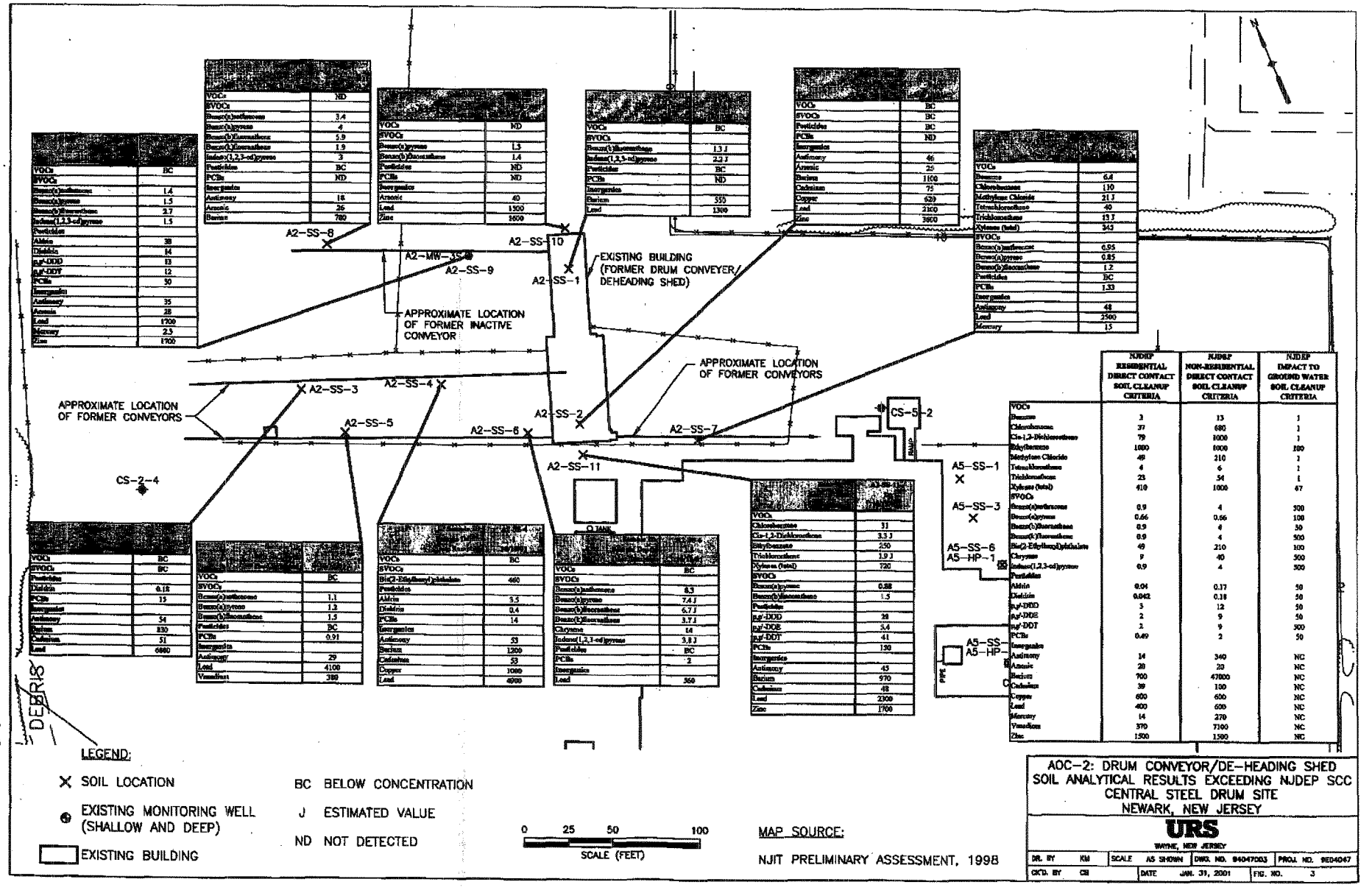



# SOIL AND GROUNDWATER SCREENING SAMPLE LOCATIONS
# HYDROPUNCH GRID SAMPLE LOCATIONS
# CENTRAL DRUM SITE
# NEWARK, NEW JERSEY

URS

WAYNE, NEW JERSEY

| DR. BY | ET | SCALE | 1" = 50' | DWG. NO. | 84075007 | PROJ. NO. | 19684075 |
|---|---|---|---|---|---|---|---|




| | NJDEP RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA | NJDEP NON-RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA | NJDEP IMPACT TO GROUND WATER SOIL CLEANUP CRITERIA |
|---|---|---|---|
| VOCs | | | |
| Benzene | 3 | 13 | 1 |
| Chlorobenzene | 37 | 680 | 1 |
| Cis-1,2-Dichloroethene | 78 | 1000 | 1 |
| Ethylbenzene | 1000 | 6000 | 100 |
| Methylene Chloride | 49 | 210 | 1 |
| Tetrachloroethene | 4 | 6 | 1 |
| Trichloroethene | 23 | 54 | 1 |
| Xylenes (total) | 410 | 1000 | 67 |
| SVOCs | | | |
| Benzo(a)anthracene | 0.9 | 4 | 500 |
| Benzo(a)pyrene | 0.66 | 0.66 | 100 |
| Benzo(b)fluoranthene | 0.9 | 4 | 50 |
| Benzo(k)fluoranthene | 0.9 | 4 | 500 |
| Bis(2-Ethylhexyl)phthalate | 49 | 210 | 100 |
| Chrysene | 9 | 40 | 500 |
| Indeno(1,2,3-cd)pyrene | 0.9 | 4 | 500 |
| Pesticides | | | |
| Aldrin | 0.04 | 0.17 | 50 |
| Dieldrin | 0.042 | 0.18 | 50 |
| o,p'-DDD | 3 | 12 | 50 |
| o,p'-DDE | 2 | 9 | 50 |
| o,p'-DDT | 2 | 9 | 500 |
| PCBs | 0.49 | 2 | 50 |
| Inorganics | | | |
| Antimony | 14 | 340 | NC |
| Arsenic | 20 | 20 | NC |
| Barium | 700 | 47000 | NC |
| Cadmium | 39 | 100 | NC |
| Copper | 600 | 600 | NC |
| Lead | 400 | 600 | NC |
| Mercury | 14 | 270 | NC |
| Vanadium | 970 | 7100 | NC |
| Zinc | 1500 | 1500 | NC |

AOC-2: DRUM CONVEYOR/DE-HEADING SHED
SOIL ANALYTICAL RESULTS EXCEEDING NJDEP SCC
CENTRAL STEEL DRUM SITE
NEWARK, NEW JERSEY

URS
WAYNE, NEW JERSEY

| | | | | | |
|---|---|---|---|---|---|
| DR. BY | KM | SCALE | AS SHOWN | DWG. NO. 94047003 | PROJ. NO. 9ED4047 |
| CKD. BY | CS | DATE | JAN. 31, 2001 | FIG. NO. | 3 |

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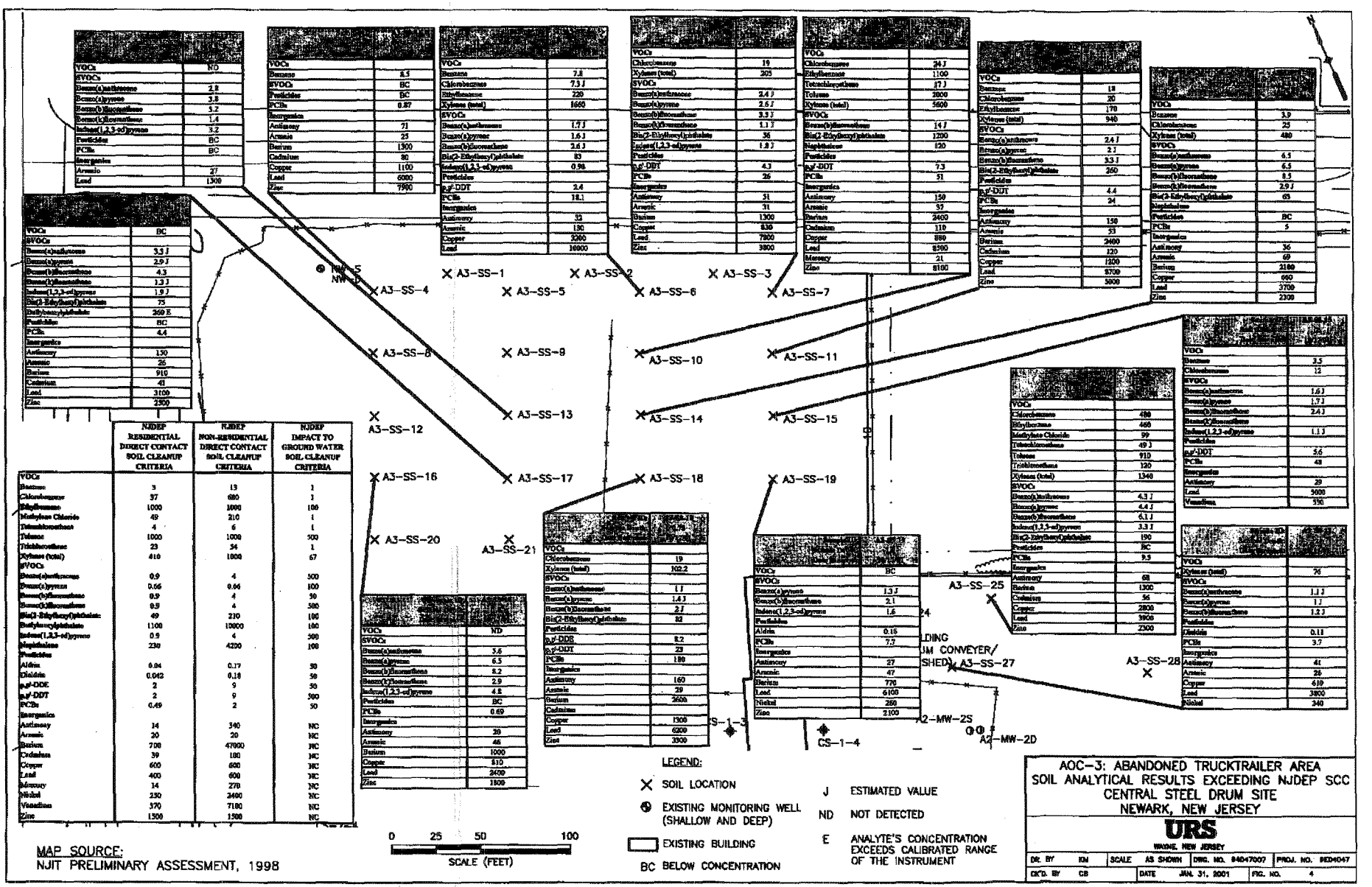


| | NJDEP RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA | NJDEP NON-RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA | NJDEP IMPACT TO GROUND WATER SOIL CLEANUP CRITERIA |
|---|---|---|---|
| VOCs | | | |
| Benzene | 3 | 13 | 1 |
| Chlorobenzene | 97 | 680 | 1 |
| Ethylbenzene | 1000 | 1000 | 100 |
| Methylene Chloride | 49 | 210 | 1 |
| Tetrachloroethene | 4 | 6 | 1 |
| Toluene | 1000 | 1000 | 500 |
| Trichloroethene | 23 | 34 | 1 |
| Xylenes (total) | 410 | 1000 | 67 |
| SVOCs | | | |
| Benzo(a)anthracene | 0.9 | 4 | 500 |
| Benzo(a)pyrene | 0.66 | 0.66 | 100 |
| Benzo(b)fluoranthene | 0.9 | 4 | 50 |
| Benzo(k)fluoranthene | 0.9 | 4 | 500 |
| Bis(2-Ethylhexyl)phthalate | 49 | 210 | 100 |
| Butylbenzylphthalate | 1100 | 10000 | 100 |
| Indeno(1,2,3-cd)pyrene | 0.9 | 4 | 500 |
| Naphthalene | 230 | 4200 | 100 |
| Pesticides | | | |
| Aldrin | 0.04 | 0.17 | 50 |
| Dieldrin | 0.042 | 0.18 | 50 |
| p,p'-DDE | 2 | 9 | 50 |
| p,p'-DDT | 2 | 9 | 500 |
| PCBs | 0.49 | 2 | 50 |
| Inorganics | | | |
| Antimony | 14 | 340 | NC |
| Arsenic | 20 | 20 | NC |
| Barium | 700 | 47000 | NC |
| Cadmium | 39 | 100 | NC |
| Copper | 600 | 600 | NC |
| Lead | 400 | 600 | NC |
| Mercury | 14 | 270 | NC |
| Nickel | 230 | 2400 | NC |
| Vanadium | 370 | 7100 | NC |
| Zinc | 1500 | 1500 | NC |

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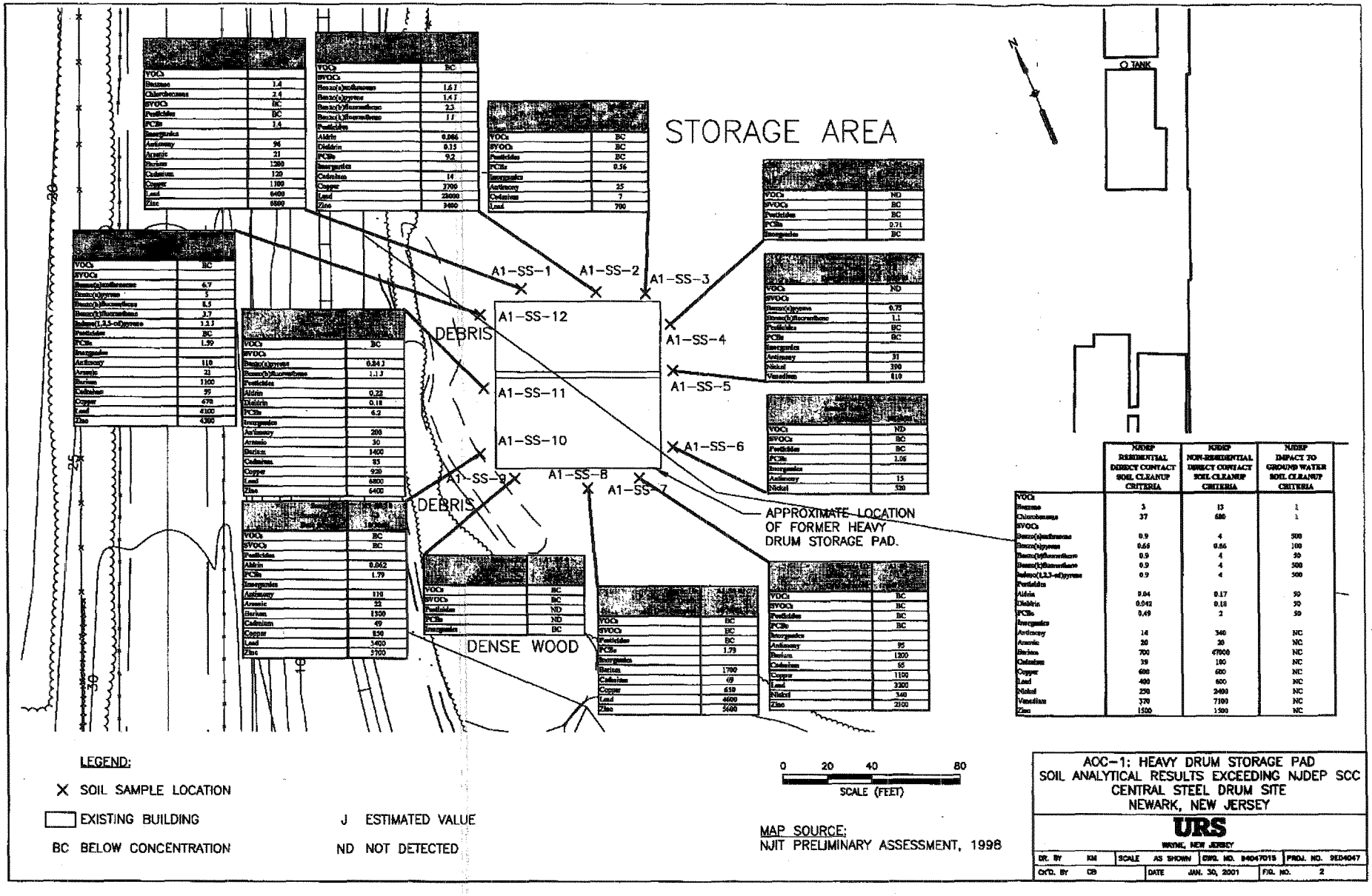


| | NJDEP RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA | NJDEP NON-RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA | NJDEP IMPACT TO GROUND WATER SOIL CLEANUP CRITERIA |
|---|---|---|---|
| VOCs | | | |
| Benzene | 3 | 13 | 1 |
| Chlorobenzene | 37 | 680 | 1 |
| SVOCs | | | |
| Benzo(a)anthracene | 0.9 | 4 | 500 |
| Benzo(a)pyrene | 0.66 | 0.66 | 100 |
| Benzo(b)fluoranthene | 0.9 | 4 | 50 |
| Benzo(k)fluoranthene | 0.9 | 4 | 500 |
| Indeno(1,2,3-cd)pyrene | 0.9 | 4 | 500 |
| Pesticides | | | |
| Aldrin | 0.04 | 0.17 | 50 |
| Dieldrin | 0.042 | 0.18 | 50 |
| PCBs | 0.49 | 2 | 50 |
| Inorganics | | | |
| Antimony | 14 | 340 | NC |
| Arsenic | 20 | 20 | NC |
| Barium | 700 | 47000 | NC |
| Cadmium | 39 | 100 | NC |
| Copper | 600 | 600 | NC |
| Lead | 400 | 600 | NC |
| Nickel | 250 | 2400 | NC |
| Vanadium | 370 | 7100 | NC |
| Zinc | 1500 | 1500 | NC |

LEGEND:

X SOIL SAMPLE LOCATION

EXISTING BUILDING

BC BELOW CONCENTRATION

J ESTIMATED VALUE

ND NOT DETECTED

MAP SOURCE:
NJIT PRELIMINARY ASSESSMENT, 1998

AOC-1: HEAVY DRUM STORAGE PAD
SOIL ANALYTICAL RESULTS EXCEEDING NJDEP SCC
CENTRAL STEEL DRUM SITE
NEWARK, NEW JERSEY

URS
WAYNE, NEW JERSEY

| DR. BY | KM | SCALE | AS SHOWN | DWG. NO. 84047015 | PROJ. NO. 9ED4047 |
|---|---|---|---|---|---|
| CK'D. BY | CB | | DATE JAN. 30, 2001 | FIG. NO. | 2 |

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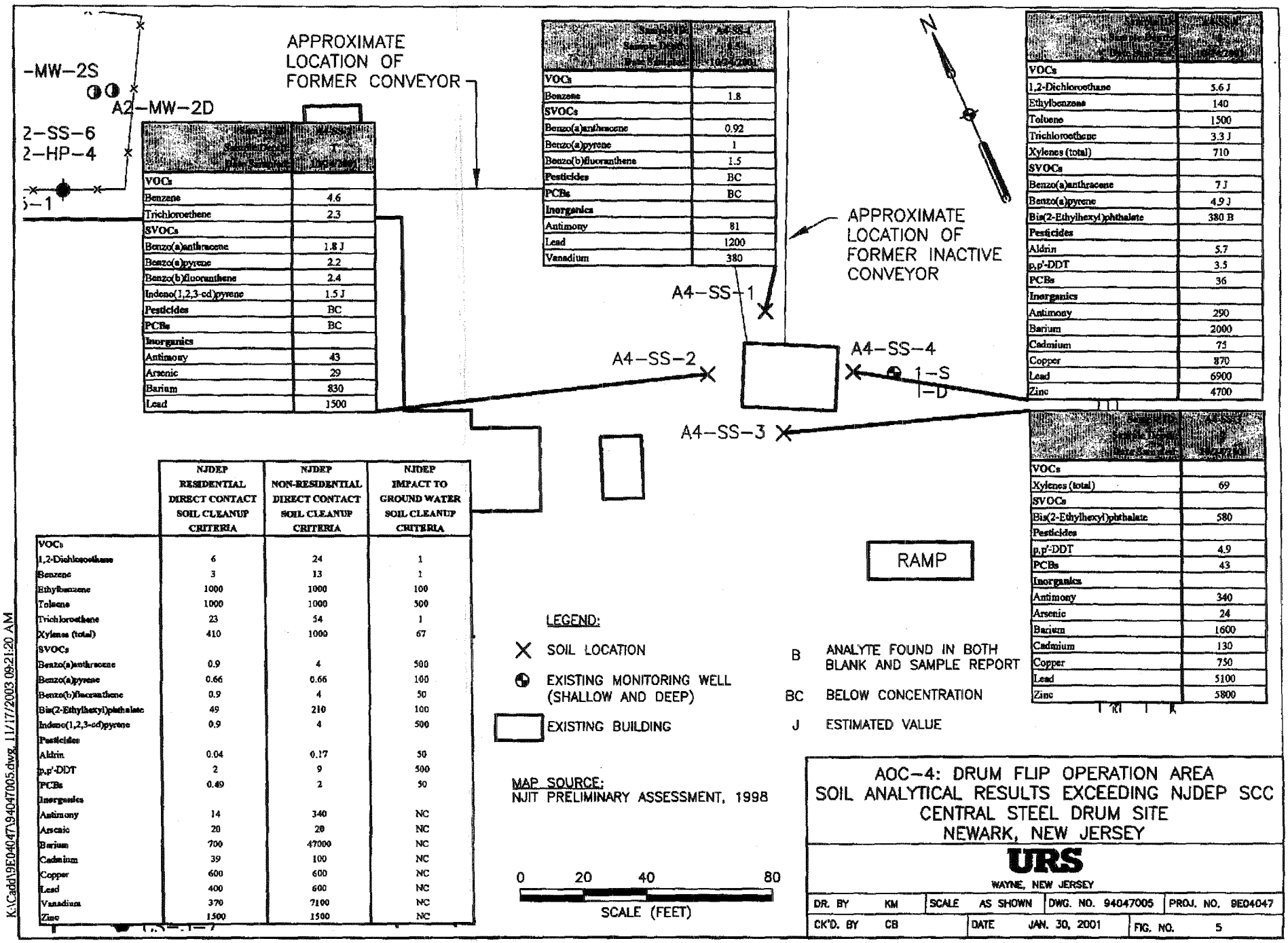


| | |
|---|---|
| VOCs | |
| Benzene | 4.6 |
| Trichloroethene | 2.3 |
| SVOCs | |
| Benzo(a)anthracene | 1.8 J |
| Benzo(a)pyrene | 2.2 |
| Benzo(b)fluoranthene | 2.4 |
| Indeno(1,2,3-cd)pyrene | 1.5 J |
| Pesticides | BC |
| PCBs | BC |
| Inorganics | |
| Antimony | 43 |
| Arsenic | 29 |
| Barium | 830 |
| Lead | 1500 |

| | |
|---|---|
| VOCs | |
| Benzene | 1.8 |
| SVOCs | |
| Benzo(a)anthracene | 0.92 |
| Benzo(a)pyrene | 1 |
| Benzo(b)fluoranthene | 1.5 |
| Pesticides | BC |
| PCBs | BC |
| Inorganics | |
| Antimony | 81 |
| Lead | 1200 |
| Vanadium | 380 |

| | |
|---|---|
| VOCs | |
| 1,2-Dichloroethane | 5.6 J |
| Ethylbenzene | 140 |
| Toluene | 1500 |
| Trichloroethene | 3.3 J |
| Xylenes (total) | 710 |
| SVOCs | |
| Benzo(a)anthracene | 7 J |
| Benzo(a)pyrene | 4.9 J |
| Bis(2-Ethylhexyl)phthalate | 380 B |
| Pesticides | |
| Aldrin | 5.7 |
| p,p'-DDT | 3.5 |
| PCBs | 36 |
| Inorganics | |
| Antimony | 290 |
| Barium | 2000 |
| Cadmium | 75 |
| Copper | 870 |
| Lead | 6900 |
| Zinc | 4700 |

| | |
|---|---|
| VOCs | |
| Xylenes (total) | 69 |
| SVOCs | |
| Bis(2-Ethylhexyl)phthalate | 580 |
| Pesticides | |
| p,p'-DDT | 4.9 |
| PCBs | 43 |
| Inorganics | |
| Antimony | 340 |
| Arsenic | 24 |
| Barium | 1600 |
| Cadmium | 130 |
| Copper | 750 |
| Lead | 5100 |
| Zinc | 5800 |

| | NJDEP RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA | NJDEP NON-RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA | NJDEP IMPACT TO GROUND WATER SOIL CLEANUP CRITERIA |
|---|---|---|---|
| VOCs | | | |
| 1,2-Dichloroethane | 6 | 24 | 1 |
| Benzene | 3 | 13 | 1 |
| Ethylbenzene | 1000 | 1000 | 100 |
| Toluene | 1000 | 1000 | 500 |
| Trichloroethene | 23 | 54 | 1 |
| Xylenes (total) | 410 | 1000 | 67 |
| SVOCs | | | |
| Benzo(a)anthracene | 0.9 | 4 | 500 |
| Benzo(a)pyrene | 0.66 | 0.66 | 100 |
| Benzo(b)fluoranthene | 0.9 | 4 | 50 |
| Bis(2-Ethylhexyl)phthalate | 49 | 210 | 100 |
| Indeno(1,2,3-cd)pyrene | 0.9 | 4 | 500 |
| Pesticides | | | |
| Aldrin | 0.04 | 0.17 | 50 |
| p,p'-DDT | 2 | 9 | 500 |
| PCBs | 0.49 | 2 | 50 |
| Inorganics | | | |
| Antimony | 14 | 340 | NC |
| Arsenic | 20 | 20 | NC |
| Barium | 700 | 47000 | NC |
| Cadmium | 39 | 100 | NC |
| Copper | 600 | 600 | NC |
| Lead | 400 | 600 | NC |
| Vanadium | 370 | 7100 | NC |
| Zinc | 1500 | 1500 | NC |

LEGEND:

- X — SOIL LOCATION
- EXISTING MONITORING WELL (SHALLOW AND DEEP)
- EXISTING BUILDING

- B — ANALYTE FOUND IN BOTH BLANK AND SAMPLE REPORT
- BC — BELOW CONCENTRATION
- J — ESTIMATED VALUE

MAP SOURCE:
NJIT PRELIMINARY ASSESSMENT, 1998

0 20 40 80
SCALE (FEET)

# AOC-4: DRUM FLIP OPERATION AREA
# SOIL ANALYTICAL RESULTS EXCEEDING NJDEP SCC
# CENTRAL STEEL DRUM SITE
# NEWARK, NEW JERSEY

URS
WAYNE, NEW JERSEY

| | | | | | |
|---|---|---|---|---|---|
| DR. BY | KM | SCALE | AS SHOWN | DWG. NO. 94047005 | PROJ. NO. 9E04047 |
| CK'D. BY | CB | | DATE JAN. 30, 2001 | FIG. NO. | 5 |

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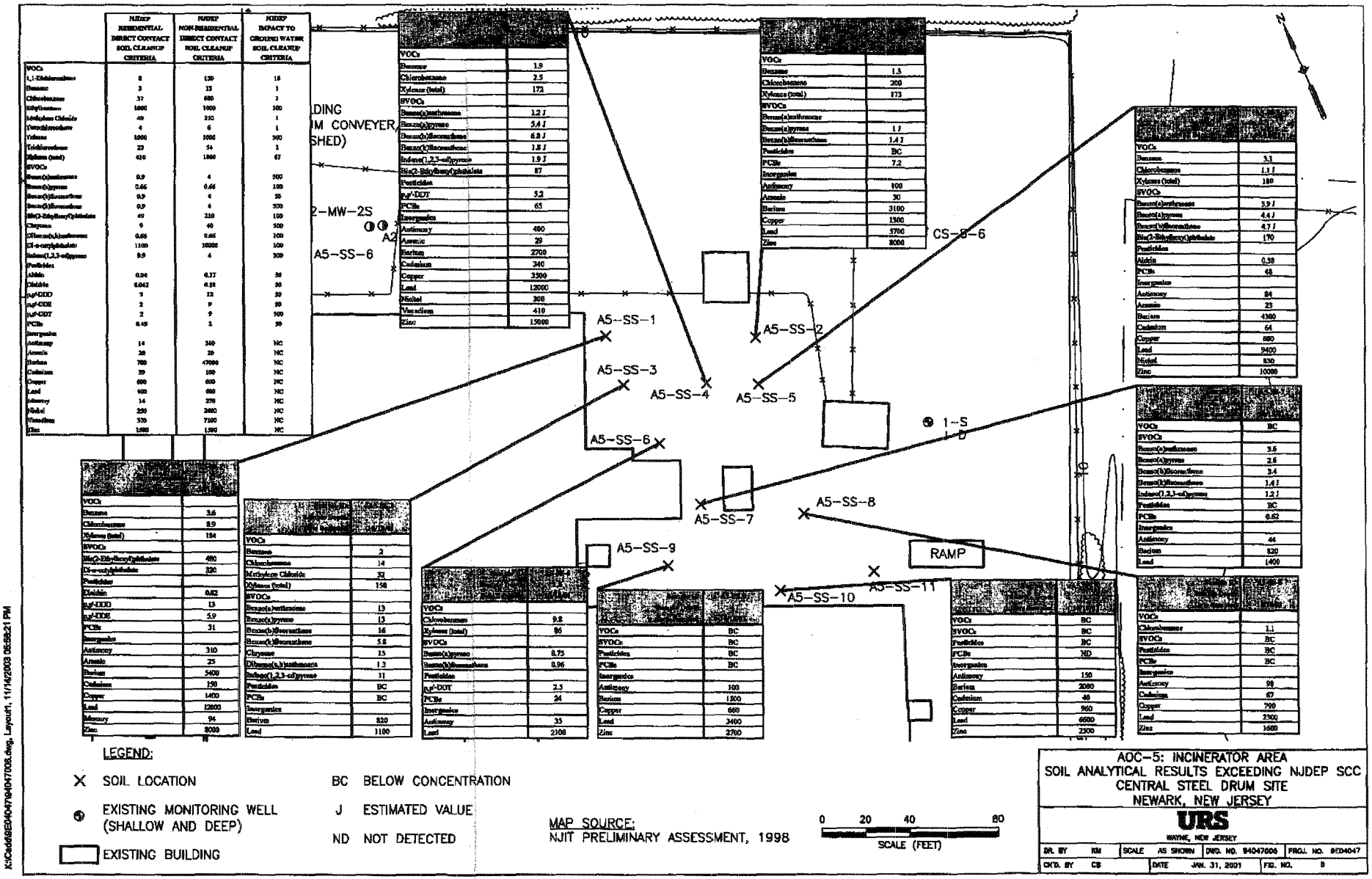
NJDEP RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA
NJDEP NON-RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA
NJDEP IMPACT TO GROUND WATER SOIL CLEANUP CRITERIA
VOCs
1,1-Dichloroethene 2 130 10
Benzene 3 33 1
Chlorobenzene 37 680 1
Ethylbenzene 1000 1000 100
Methylene Chloride 49 210 1
Tetrachloroethene 4 6 1
Toluene 1000 1000 500
Trichloroethene 23 54 1
Xylenes (total) 410 1000 67
SVOCs
Benzo(a)anthracene 0.9 4 500
Benzo(a)pyrene 0.66 0.66 100
Benzo(b)fluoranthene 0.9 4 50
Benzo(k)fluoranthene 0.9 4 500
Bis(2-Ethylhexyl)phthalate 49 210 100
Chrysene 9 40 500
Dibenzo(a,h)anthracene 0.66 0.66 100
Di-n-octylphthalate 1100 10000 100
Indeno(1,2,3-cd)pyrene 0.9 4 500
Pesticides
Aldrin 0.04 0.17 50
Dieldrin 0.042 0.18 50
4,4'-DDD 3 12 50
4,4'-DDE 2 9 50
4,4'-DDT 2 9 500
PCBs 0.49 2 50
Inorganics
Antimony 14 340 NC
Arsenic 20 20 NC
Barium 700 47000 NC
Cadmium 39 100 NC
Copper 600 600 NC
Lead 400 400 NC
Mercury 14 270 NC
Nickel 250 2400 NC
Vanadium 370 7100 NC
Zinc 1500 1500 NC
LDING
M CONVEYER
SHED)
2-MW-2S
A2
A5-SS-6
VOCs
Benzene 1.9
Chlorobenzene 2.5
Xylenes (total) 173
SVOCs
Benzo(a)anthracene 1.2 J
Benzo(a)pyrene 5.4 J
Benzo(b)fluoranthene 6.8 J
Benzo(k)fluoranthene 1.8 J
Indeno(1,2,3-cd)pyrene 1.9 J
Bis(2-Ethylhexyl)phthalate 87
Pesticides
4,4'-DDT 5.2
PCBs 65
Inorganics
Antimony 480
Arsenic 29
Barium 2700
Cadmium 340
Copper 3500
Lead 12000
Nickel 300
Vanadium 410
Zinc 15000
VOCs
Benzene 1.3
Chlorobenzene 200
Xylenes (total) 573
SVOCs
Benzo(a)anthracene
Benzo(a)pyrene 1.7
Benzo(b)fluoranthene 1.4 J
Pesticides BC
PCBs 7.2
Inorganics
Antimony 100
Arsenic 30
Barium 3100
Copper 1500
Lead 5700
Zinc 8000
CS-B-6
VOCs
Benzene 3.3
Chlorobenzene 1.3 J
Xylenes (total) 180
SVOCs
Benzo(a)anthracene 3.9 J
Benzo(a)pyrene 4.4 J
Benzo(b)fluoranthene 4.7 J
Bis(2-Ethylhexyl)phthalate 170
Pesticides
Aldrin 0.38
PCBs 48
Inorganics
Antimony 84
Arsenic 23
Barium 4300
Cadmium 64
Copper 680
Lead 9400
Nickel 830
Zinc 10000
A5-SS-1
A5-SS-2
A5-SS-3
A5-SS-4
A5-SS-5
A5-SS-6
A5-SS-7
A5-SS-8
A5-SS-9
A5-SS-10
A5-SS-11
1-S
1-D
VOCs
Benzene 3.6
Chlorobenzene 8.9
Xylenes (total) 184
SVOCs
Bis(2-Ethylhexyl)phthalate 480
Di-n-octylphthalate 220
Pesticides
Dieldrin 0.82
4,4'-DDD 13
4,4'-DDE 5.9
PCBs 31
Inorganics
Antimony 310
Arsenic 25
Barium 5400
Cadmium 190
Copper 1400
Lead 12800
Mercury 94
Zinc 8000
VOCs
Benzene 2
Chlorobenzene 14
Methylene Chloride 32
Xylenes (total) 158
SVOCs
Benzo(a)anthracene 13
Benzo(a)pyrene 13
Benzo(b)fluoranthene 16
Benzo(k)fluoranthene 5.8
Chrysene 15
Dibenzo(a,h)anthracene 1.3
Indeno(1,2,3-cd)pyrene 11
Pesticides BC
PCBs BC
Inorganics
Barium 820
Lead 1100
VOCs
Chlorobenzene 9.8
Xylenes (total) 86
SVOCs
Benzo(a)pyrene 0.75
Benzo(b)fluoranthene 0.96
Pesticides
4,4'-DDT 2.3
PCBs 24
Inorganics
Antimony 35
Lead 2100
VOCs BC
SVOCs BC
Pesticides BC
PCBs BC
Inorganics
Antimony 100
Barium 1500
Copper 660
Lead 3400
Zinc 2700
VOCs BC
SVOCs BC
Pesticides BC
PCBs ND
Inorganics
Antimony 150
Barium 2000
Cadmium 46
Copper 960
Lead 6600
Zinc 2300
VOCs
Chlorobenzene 1.1
SVOCs BC
Pesticides BC
PCBs BC
Inorganics
Antimony 98
Cadmium 67
Copper 700
Lead 2300
Zinc 1600
VOCs BC
SVOCs
Benzo(a)anthracene 3.6
Benzo(a)pyrene 2.6
Benzo(b)fluoranthene 3.4
Benzo(k)fluoranthene 1.4 J
Indeno(1,2,3-cd)pyrene 1.2 J
Pesticides BC
PCBs 0.62
Inorganics
Antimony 44
Barium 820
Lead 1400
RAMP
LEGEND:
SOIL LOCATION
EXISTING MONITORING WELL (SHALLOW AND DEEP)
EXISTING BUILDING
BC BELOW CONCENTRATION
J ESTIMATED VALUE
ND NOT DETECTED
MAP SOURCE:
NJIT PRELIMINARY ASSESSMENT, 1998
0 20 40 80
SCALE (FEET)
AOC-5: INCINERATOR AREA
SOIL ANALYTICAL RESULTS EXCEEDING NJDEP SCC
CENTRAL STEEL DRUM SITE
NEWARK, NEW JERSEY
URS
WAYNE, NEW JERSEY
DR. BY RM
SCALE AS SHOWN
DWG. NO. 94047008
PROJ. NO. 9ED4047
CKD. BY CS
DATE JAN. 31, 2003
FIG. NO. 8
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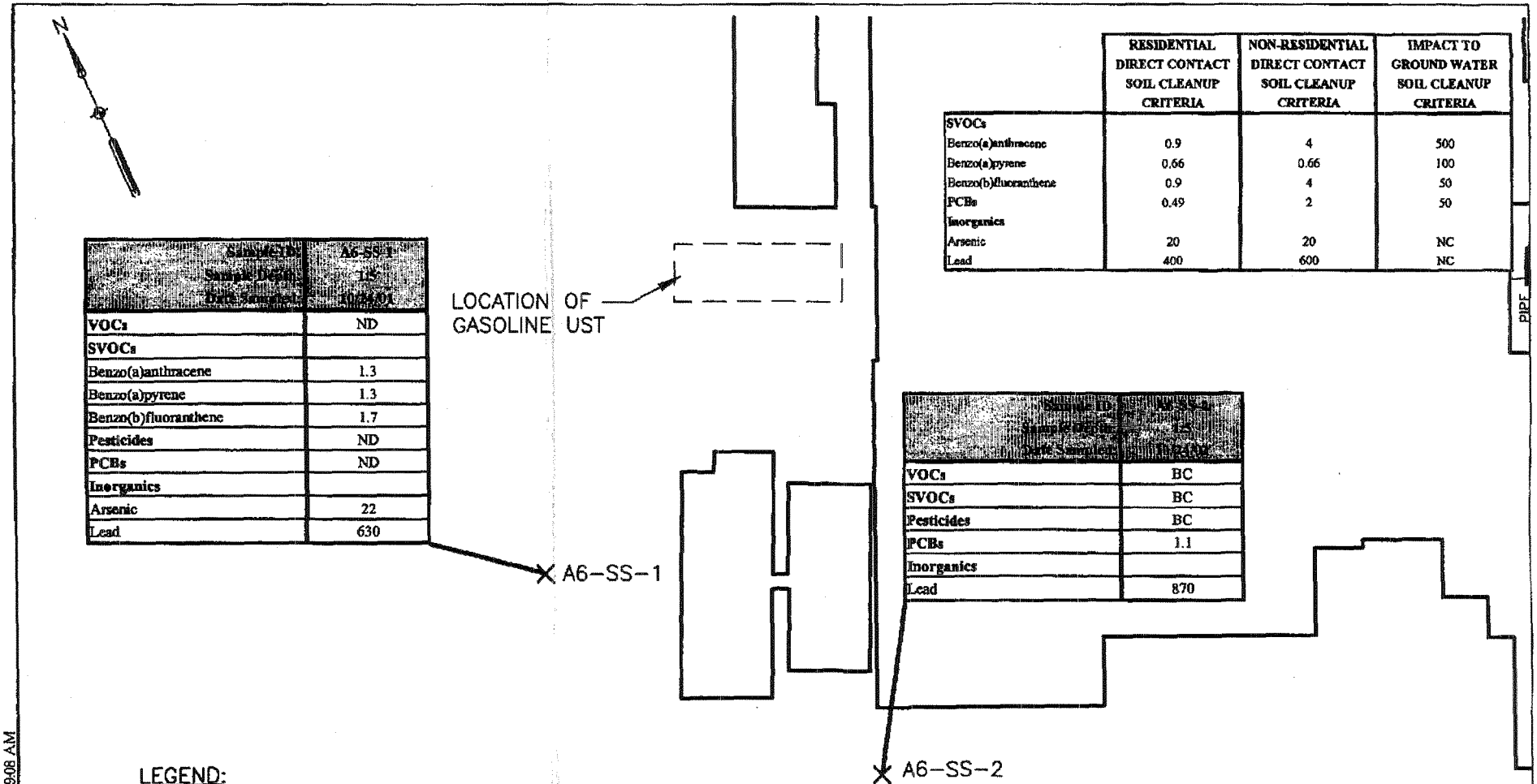


| Sample ID / Sample Depth / Date Sampled | A6-SS-1 1.5' 10/24/01 |
|---|---|
| **VOCs** | ND |
| **SVOCs** | |
| Benzo(a)anthracene | 1.3 |
| Benzo(a)pyrene | 1.3 |
| Benzo(b)fluoranthene | 1.7 |
| **Pesticides** | ND |
| **PCBs** | ND |
| **Inorganics** | |
| Arsenic | 22 |
| Lead | 630 |

| Sample ID / Sample Depth / Date Sampled | A6-SS-2 1.5' 10/24/01 |
|---|---|
| **VOCs** | BC |
| **SVOCs** | BC |
| **Pesticides** | BC |
| **PCBs** | 1.1 |
| **Inorganics** | |
| Lead | 870 |

| | RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA | NON-RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA | IMPACT TO GROUND WATER SOIL CLEANUP CRITERIA |
|---|---|---|---|
| **SVOCs** | | | |
| Benzo(a)anthracene | 0.9 | 4 | 500 |
| Benzo(a)pyrene | 0.66 | 0.66 | 100 |
| Benzo(b)fluoranthene | 0.9 | 4 | 50 |
| PCBs | 0.49 | 2 | 50 |
| **Inorganics** | | | |
| Arsenic | 20 | 20 | NC |
| Lead | 400 | 600 | NC |

LEGEND:

X SOIL SAMPLE LOCATION

EXISTING BUILDING

BC BELOW CONCENTRATION

ND NOT DETECTED

MAP SOURCE:
NJIT PRELIMINARY ASSESSMENT, 1998

0 20 40 80
SCALE (FEET)

# AOC-6: SEPTIC SYSTEM
# SOIL ANALYTICAL RESULTS EXCEEDING NJDEP SCC
# CENTRAL STEEL DRUM SITE
# NEWARK, NEW JERSEY

URS
WAYNE, NEW JERSEY

| | | | | | |
|---|---|---|---|---|---|
| DR. BY | KM | SCALE | AS SHOWN | DWG. NO. 94047009 | PROJ. NO. 9E04047 |
| CK'D. BY | CB | DATE | JAN. 31, 2001 | FIG. NO. | 7 |

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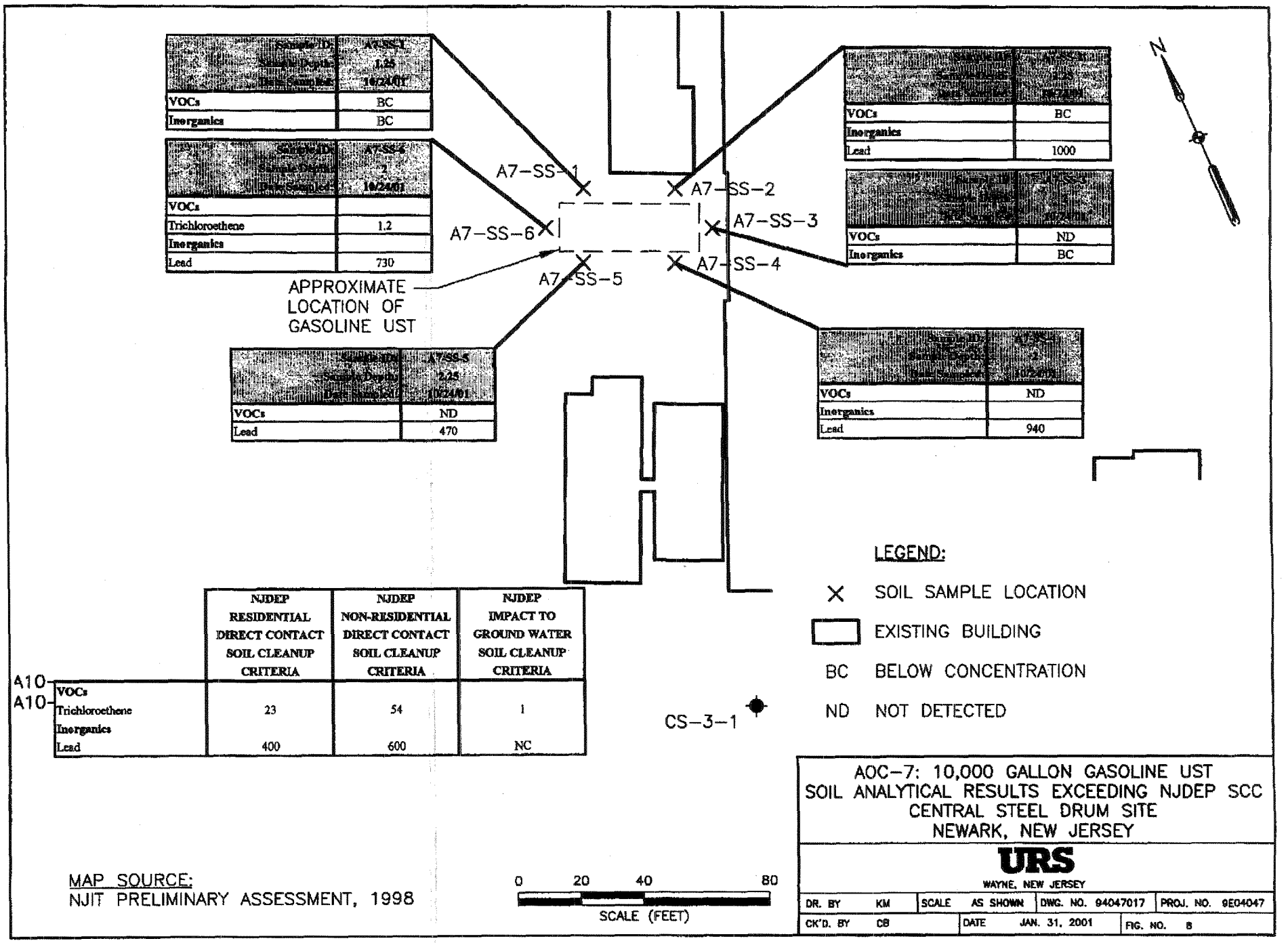


| | NJDEP RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA | NJDEP NON-RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA | NJDEP IMPACT TO GROUND WATER SOIL CLEANUP CRITERIA |
|---|---|---|---|
| VOCs | | | |
| Trichloroethene | 23 | 54 | 1 |
| Inorganics | | | |
| Lead | 400 | 600 | NC |

MAP SOURCE:
NJIT PRELIMINARY ASSESSMENT, 1998

AOC-7: 10,000 GALLON GASOLINE UST
SOIL ANALYTICAL RESULTS EXCEEDING NJDEP SCC
CENTRAL STEEL DRUM SITE
NEWARK, NEW JERSEY

URS
WAYNE, NEW JERSEY

| | | | | | |
|---|---|---|---|---|---|
| DR. BY | KM | SCALE | AS SHOWN | DWG. NO. 94047017 | PROJ. NO. 9E04047 |
| CK'D. BY | CB | DATE | JAN. 31, 2001 | FIG. NO. | 8 |

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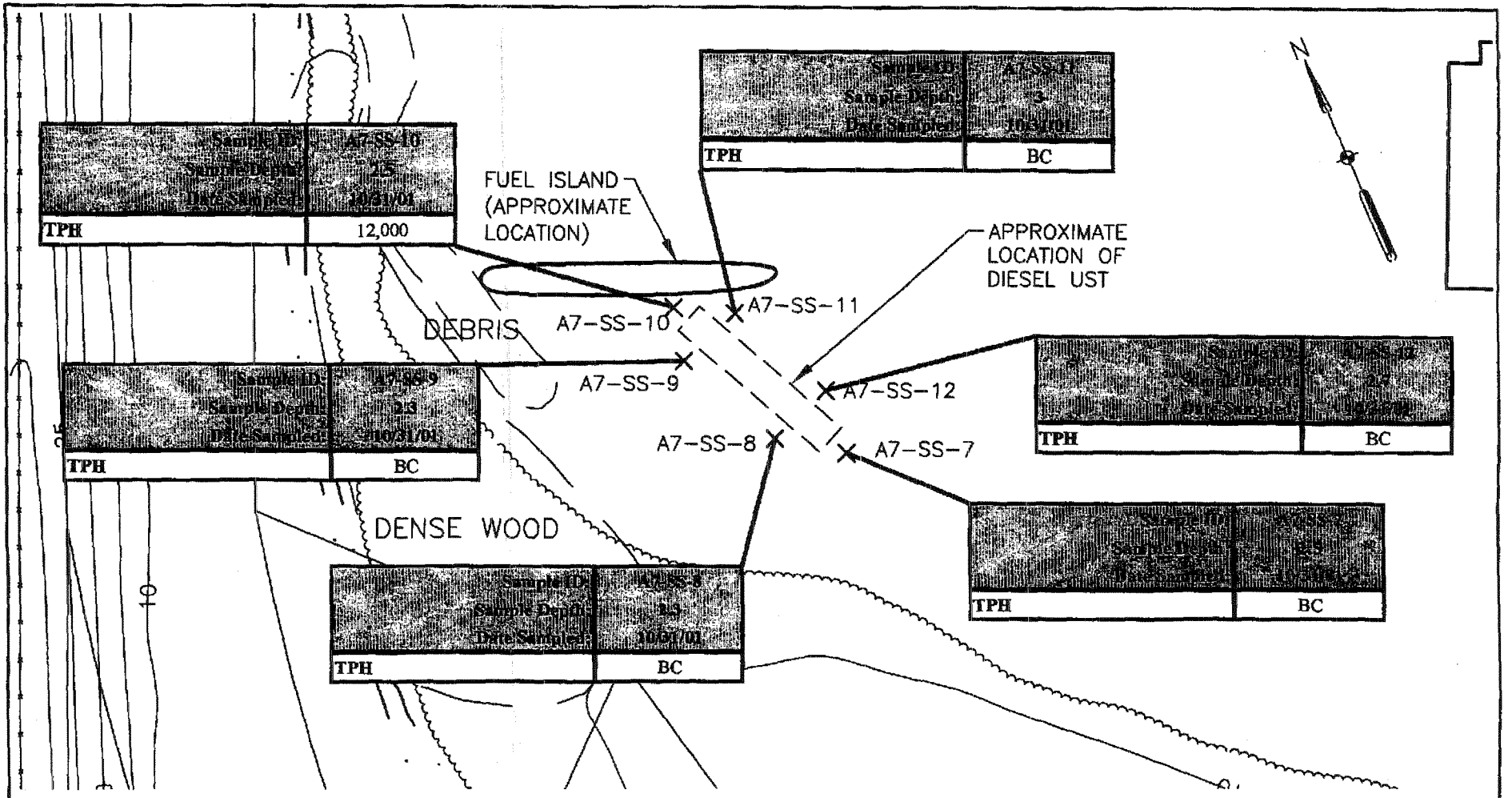


LEGEND:

X SOIL SAMPLE LOCATION

MAP SOURCE:
NJIT PRELIMINARY ASSESSMENT, 1998

AOC-7: 10,000-GALLON DIESEL UST
SOIL ANALYTICAL RESULTS EXCEEDING NJDEP SCC
CENTRAL STEEL DRUM SITE
NEWARK, NEW JERSEY

URS
WAYNE, NEW JERSEY

| | | | | | |
|---|---|---|---|---|---|
| DR. BY | km | SCALE | AS SHOWN | DWG. NO. 84075001 | PROJ. NO. 9E04047 |
| CK'D. BY | CB | DATE | APRIL 21, 2003 | FIG. NO. | 9 |

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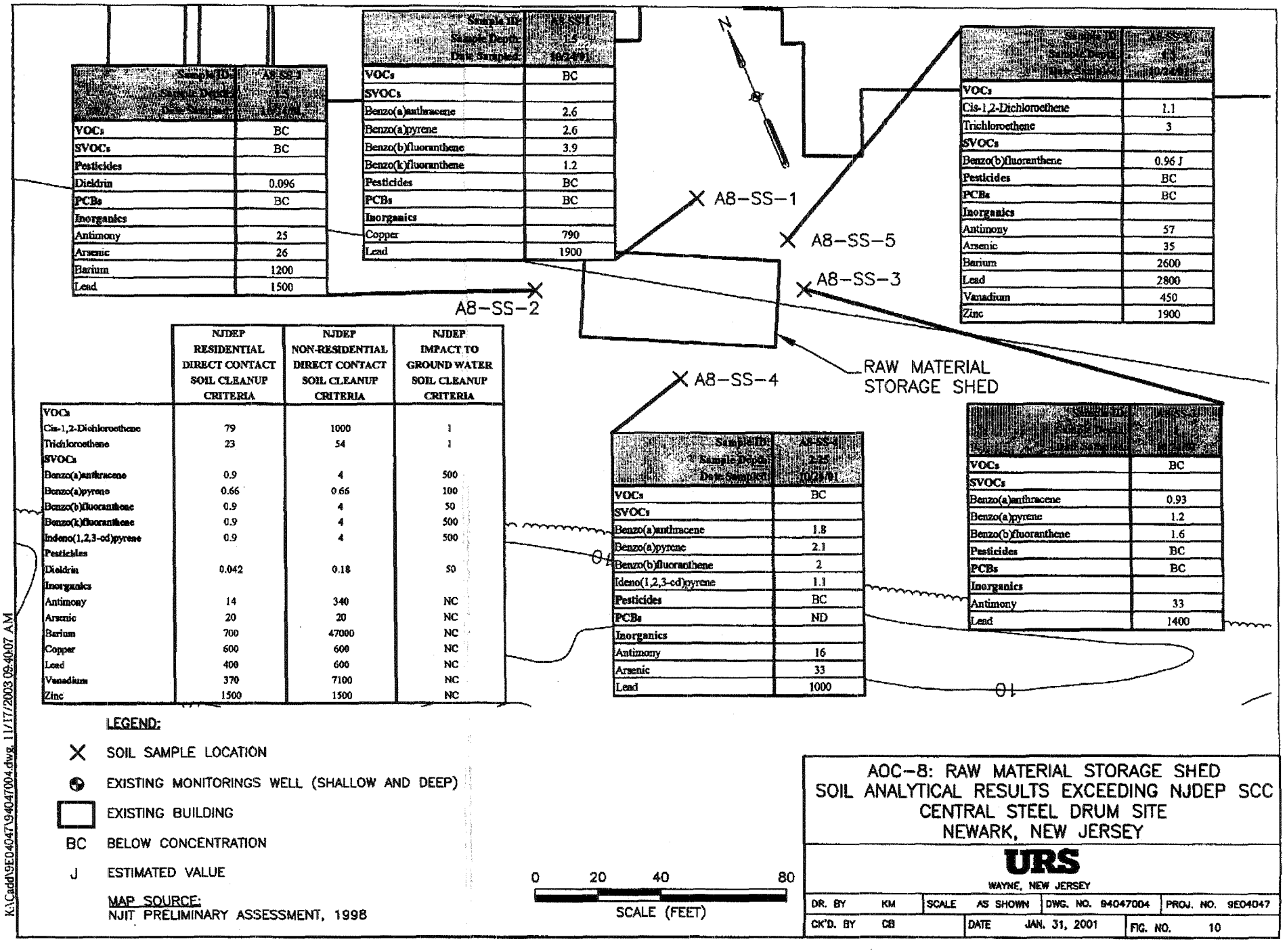


| Sample ID: | A8-SS-1 |
|---|---|
| Sample Depth: | 1.5 |
| Date Sampled: | 10/24/01 |
| VOCs | BC |
| SVOCs | BC |
| Pesticides | |
| Dieldrin | 0.096 |
| PCBs | BC |
| Inorganics | |
| Antimony | 25 |
| Arsenic | 26 |
| Barium | 1200 |
| Lead | 1500 |

| Sample ID: | A8-SS-2 |
|---|---|
| Sample Depth: | 1.5 |
| Date Sampled: | 10/24/01 |
| VOCs | BC |
| SVOCs | |
| Benzo(a)anthracene | 2.6 |
| Benzo(a)pyrene | 2.6 |
| Benzo(b)fluoranthene | 3.9 |
| Benzo(k)fluoranthene | 1.2 |
| Pesticides | BC |
| PCBs | BC |
| Inorganics | |
| Copper | 790 |
| Lead | 1900 |

| Sample ID: | A8-SS-3 |
|---|---|
| Sample Depth: | 0.5 |
| Date Sampled: | 10/24/01 |
| VOCs | |
| Cis-1,2-Dichloroethene | 1.1 |
| Trichloroethene | 3 |
| SVOCs | |
| Benzo(b)fluoranthene | 0.96 J |
| Pesticides | BC |
| PCBs | BC |
| Inorganics | |
| Antimony | 57 |
| Arsenic | 35 |
| Barium | 2600 |
| Lead | 2800 |
| Vanadium | 450 |
| Zinc | 1900 |

| Sample ID: | A8-SS-4 |
|---|---|
| Sample Depth: | 2.25 |
| Date Sampled: | 10/24/01 |
| VOCs | BC |
| SVOCs | |
| Benzo(a)anthracene | 1.8 |
| Benzo(a)pyrene | 2.1 |
| Benzo(b)fluoranthene | 2 |
| Ideno(1,2,3-cd)pyrene | 1.1 |
| Pesticides | BC |
| PCBs | ND |
| Inorganics | |
| Antimony | 16 |
| Arsenic | 33 |
| Lead | 1000 |

| Sample ID: | A8-SS-5 |
|---|---|
| Sample Depth: | 0.5 |
| Date Sampled: | 10/24/01 |
| VOCs | BC |
| SVOCs | |
| Benzo(a)anthracene | 0.93 |
| Benzo(a)pyrene | 1.2 |
| Benzo(b)fluoranthene | 1.6 |
| Pesticides | BC |
| PCBs | BC |
| Inorganics | |
| Antimony | 33 |
| Lead | 1400 |

| | NJDEP RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA | NJDEP NON-RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA | NJDEP IMPACT TO GROUND WATER SOIL CLEANUP CRITERIA |
|---|---|---|---|
| VOCs | | | |
| Cis-1,2-Dichloroethene | 79 | 1000 | 1 |
| Trichloroethene | 23 | 54 | 1 |
| SVOCs | | | |
| Benzo(a)anthracene | 0.9 | 4 | 500 |
| Benzo(a)pyrene | 0.66 | 0.66 | 100 |
| Benzo(b)fluoranthene | 0.9 | 4 | 50 |
| Benzo(k)fluoranthene | 0.9 | 4 | 500 |
| Indeno(1,2,3-cd)pyrene | 0.9 | 4 | 500 |
| Pesticides | | | |
| Dieldrin | 0.042 | 0.18 | 50 |
| Inorganics | | | |
| Antimony | 14 | 340 | NC |
| Arsenic | 20 | 20 | NC |
| Barium | 700 | 47000 | NC |
| Copper | 600 | 600 | NC |
| Lead | 400 | 600 | NC |
| Vanadium | 370 | 7100 | NC |
| Zinc | 1500 | 1500 | NC |

LEGEND:

- X SOIL SAMPLE LOCATION
- EXISTING MONITORINGS WELL (SHALLOW AND DEEP)
- EXISTING BUILDING
- BC BELOW CONCENTRATION
- J ESTIMATED VALUE

MAP SOURCE:
NJIT PRELIMINARY ASSESSMENT, 1998

# AOC-8: RAW MATERIAL STORAGE SHED
# SOIL ANALYTICAL RESULTS EXCEEDING NJDEP SCC
# CENTRAL STEEL DRUM SITE
# NEWARK, NEW JERSEY

URS
WAYNE, NEW JERSEY

| | | | | | |
|---|---|---|---|---|---|
| DR. BY | KM | SCALE | AS SHOWN | DWG. NO. 94047004 | PROJ. NO. 9E04047 |
| CK'D. BY | CB | DATE | JAN. 31, 2001 | FIG. NO. | 10 |

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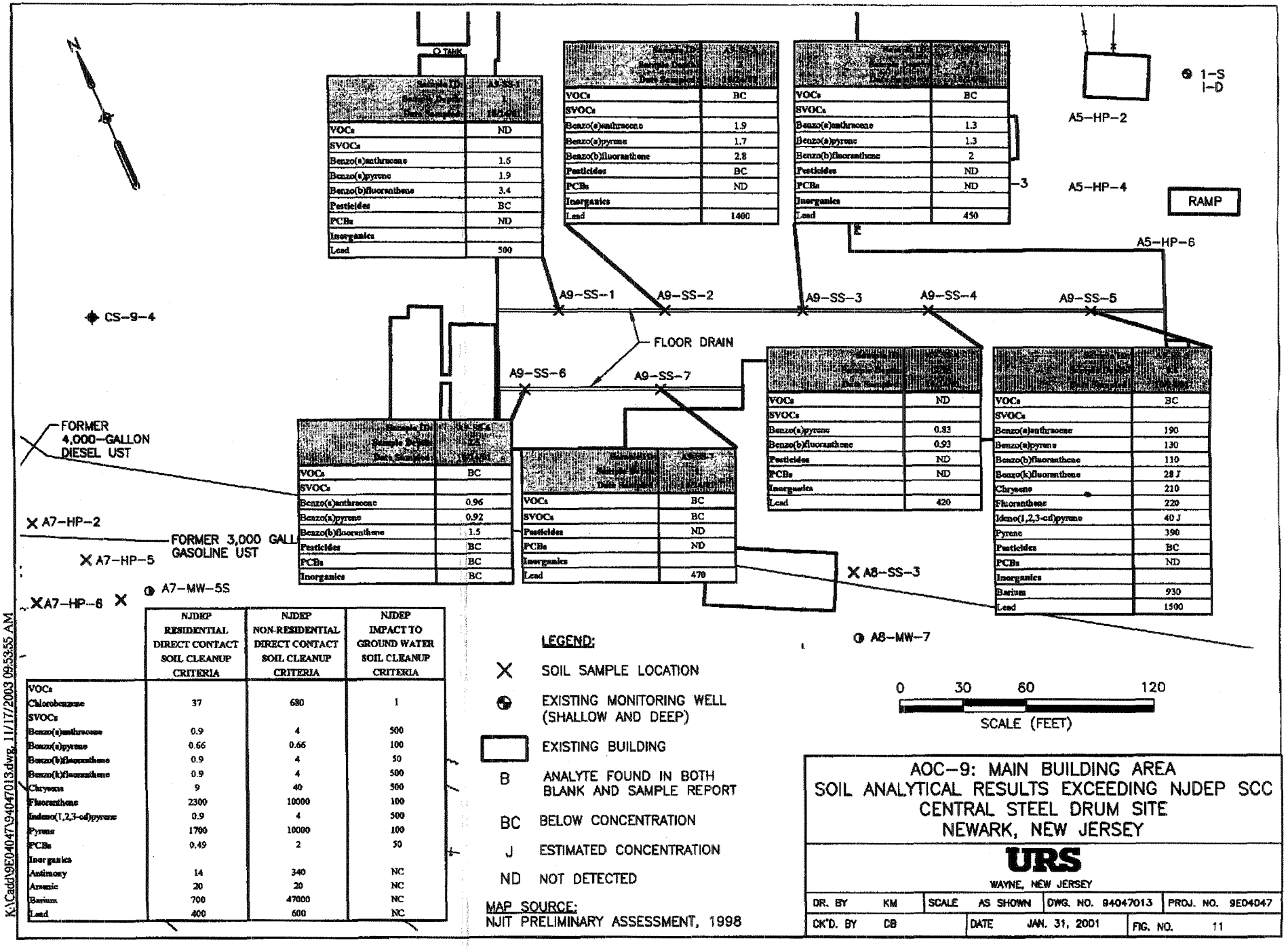



| | NJDEP RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA | NJDEP NON-RESIDENTIAL DIRECT CONTACT SOIL CLEANUP CRITERIA | NJDEP IMPACT TO GROUND WATER SOIL CLEANUP CRITERIA |
|---|---|---|---|
| VOCs | | | |
| Chlorobenzene | 37 | 680 | 1 |
| SVOCs | | | |
| Benzo(a)anthracene | 0.9 | 4 | 500 |
| Benzo(a)pyrene | 0.66 | 0.66 | 100 |
| Benzo(b)fluoranthene | 0.9 | 4 | 50 |
| Benzo(k)fluoranthene | 0.9 | 4 | 500 |
| Chrysene | 9 | 40 | 500 |
| Fluoranthene | 2300 | 10000 | 100 |
| Indeno(1,2,3-cd)pyrene | 0.9 | 4 | 500 |
| Pyrene | 1700 | 10000 | 100 |
| PCBs | 0.49 | 2 | 50 |
| Inorganics | | | |
| Antimony | 14 | 340 | NC |
| Arsenic | 20 | 20 | NC |
| Barium | 700 | 47000 | NC |
| Lead | 400 | 600 | NC |

LEGEND:

- X — SOIL SAMPLE LOCATION
- ◓ — EXISTING MONITORING WELL (SHALLOW AND DEEP)
- ▭ — EXISTING BUILDING
- B — ANALYTE FOUND IN BOTH BLANK AND SAMPLE REPORT
- BC — BELOW CONCENTRATION
- J — ESTIMATED CONCENTRATION
- ND — NOT DETECTED

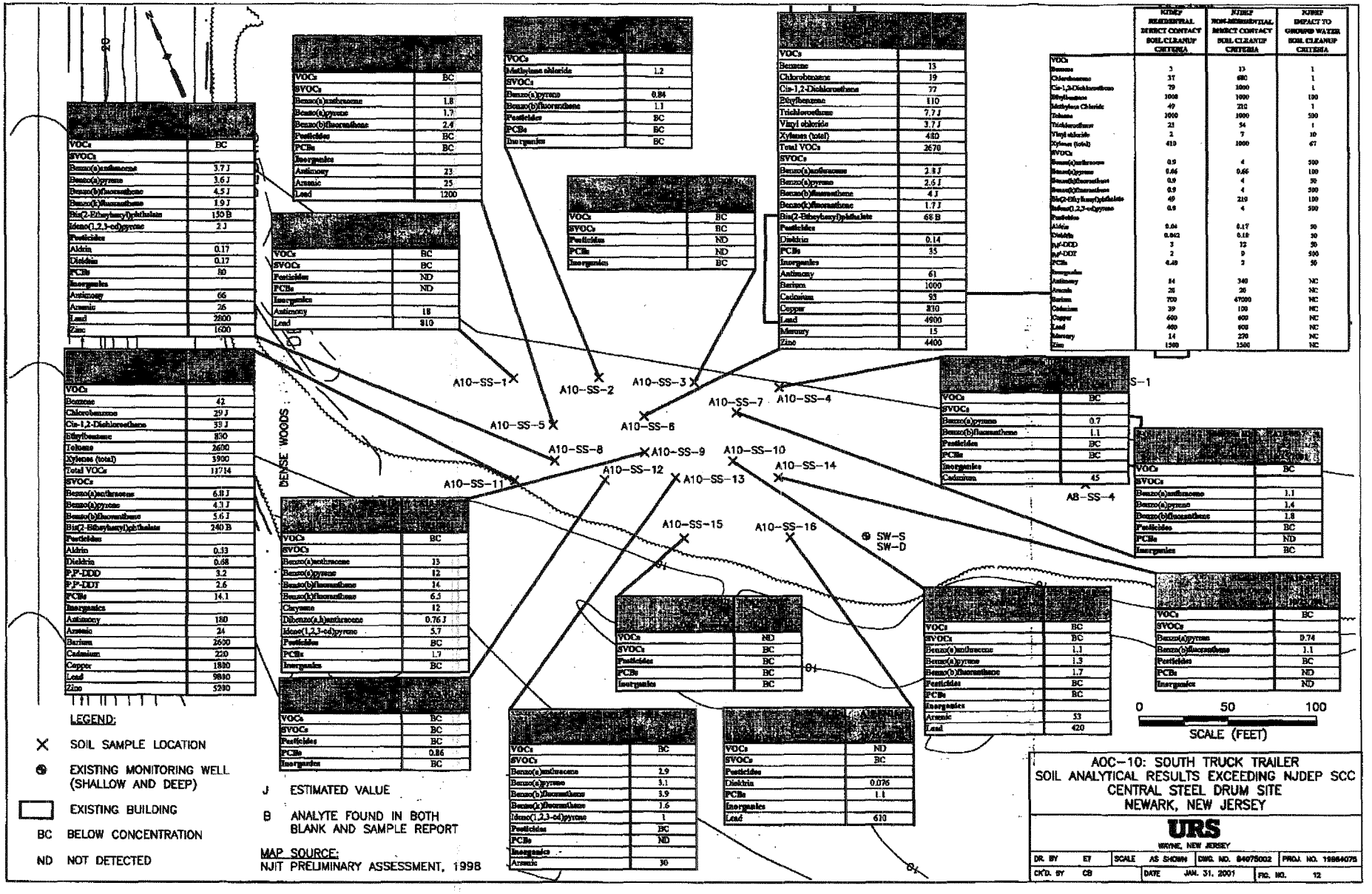
MAP SOURCE:
NJIT PRELIMINARY ASSESSMENT, 1998

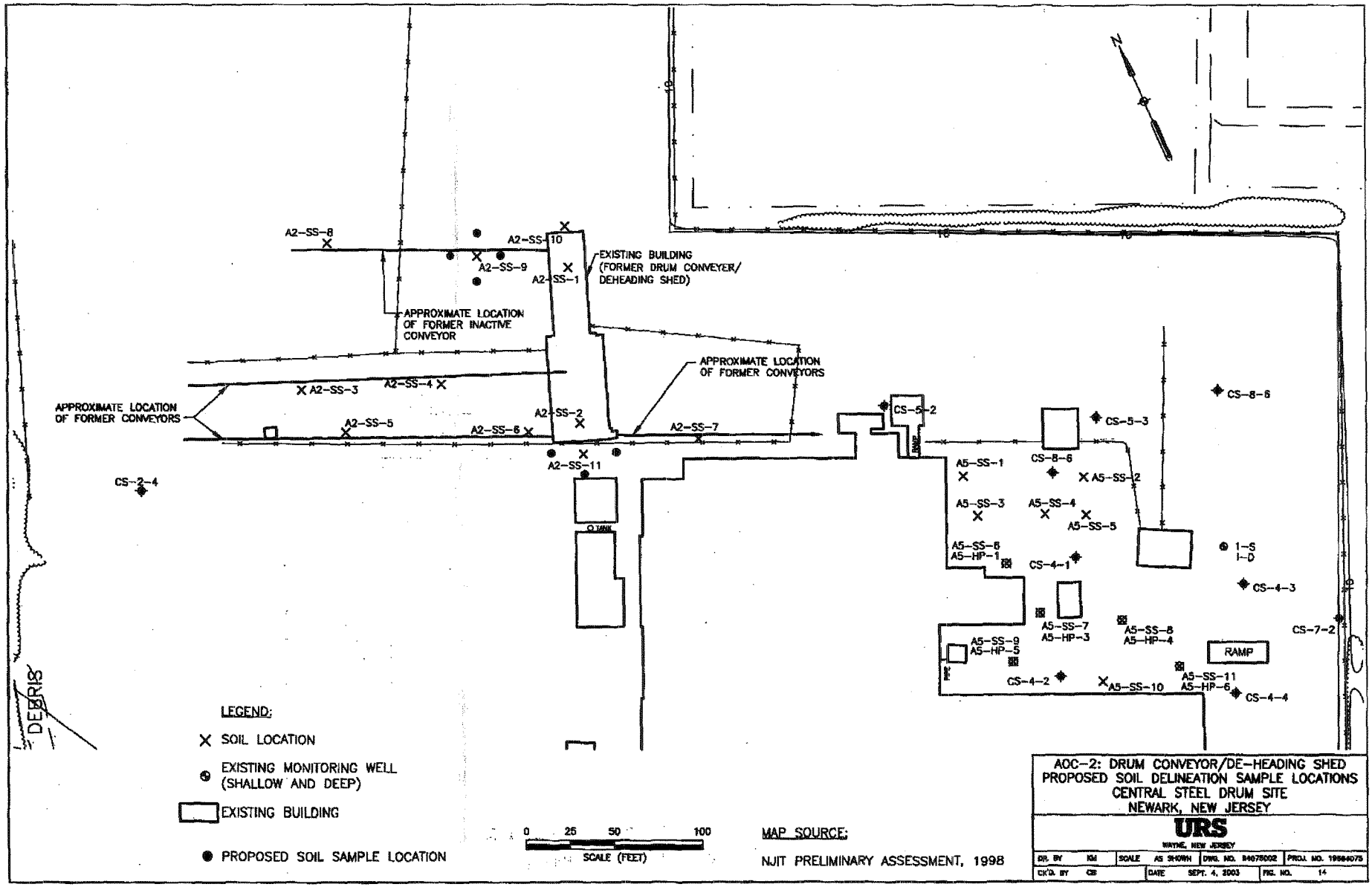
# AOC-9: MAIN BUILDING AREA
# SOIL ANALYTICAL RESULTS EXCEEDING NJDEP SCC
# CENTRAL STEEL DRUM SITE
# NEWARK, NEW JERSEY

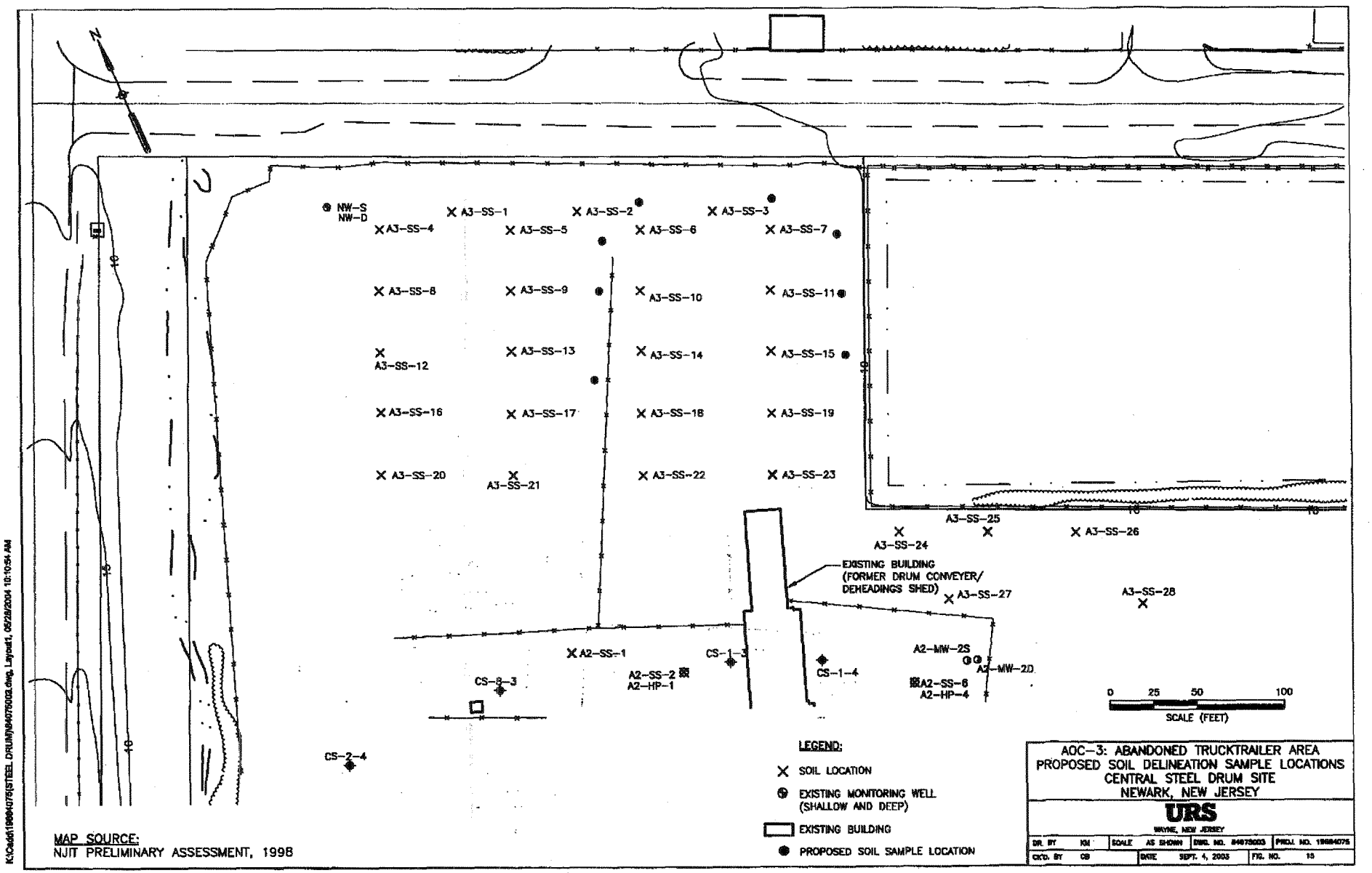
URS
WAYNE, NEW JERSEY

| | | | | | |
|---|---|---|---|---|---|
| DR. BY | KM | SCALE | AS SHOWN | DWG. NO. 94047013 | PROJ. NO. 9E04047 |
| CK'D. BY | CB | DATE | JAN. 31, 2001 | FIG. NO. | 11 |

K:\Cadd\9E04047\94047013.dwg, 11/17/2003 09:53:55 AM


A10-SS-1
A10-SS-2
A10-SS-3
A10-SS-4
A10-SS-5
A10-SS-6
A10-SS-7
A10-SS-8
A10-SS-9
A10-SS-10
A10-SS-11
A10-SS-12
A10-SS-13
A10-SS-14
A10-SS-15
A10-SS-16
A8-SS-4
SW-S
SW-D
DENSE WOODS
LEGEND:
SOIL SAMPLE LOCATION
EXISTING MONITORING WELL (SHALLOW AND DEEP)
EXISTING BUILDING
BC BELOW CONCENTRATION
ND NOT DETECTED
J ESTIMATED VALUE
B ANALYTE FOUND IN BOTH BLANK AND SAMPLE REPORT
MAP SOURCE:
NJIT PRELIMINARY ASSESSMENT, 1998
0 50 100
SCALE (FEET)
AOC-10: SOUTH TRUCK TRAILER
SOIL ANALYTICAL RESULTS EXCEEDING NJDEP SCC
CENTRAL STEEL DRUM SITE
NEWARK, NEW JERSEY
URS
WAYNE, NEW JERSEY
DR. BY EY
SCALE AS SHOWN
DWG. NO. 84075002
PROJ. NO. 19864075
CK'D. BY CB
DATE JAN. 31, 2001
FIG. NO. 12


A2-SS-8
A2-SS-10
A2-SS-9
A2-SS-1
EXISTING BUILDING
(FORMER DRUM CONVEYER/
DEHEADING SHED)
APPROXIMATE LOCATION
OF FORMER INACTIVE
CONVEYOR
APPROXIMATE LOCATION
OF FORMER CONVEYORS
A2-SS-3
A2-SS-4
APPROXIMATE LOCATION
OF FORMER CONVEYORS
A2-SS-5
A2-SS-6
A2-SS-2
A2-SS-7
A2-SS-11
CS-2-4
CS-5-2
CS-5-3
CS-8-6
CS-8-6
RAMP
A5-SS-1
A5-SS-2
A5-SS-3
A5-SS-4
A5-SS-5
A5-SS-6
A5-HP-1
CS-4-1
1-S
1-D
CS-4-3
A5-SS-7
A5-HP-3
A5-SS-8
A5-HP-4
CS-7-2
A5-SS-9
A5-HP-5
RAMP
CS-4-2
A5-SS-10
A5-SS-11
A5-HP-6
CS-4-4
DEBRIS
LEGEND:
SOIL LOCATION
EXISTING MONITORING WELL
(SHALLOW AND DEEP)
EXISTING BUILDING
PROPOSED SOIL SAMPLE LOCATION
0
25
50
100
SCALE (FEET)
MAP SOURCE:
NJIT PRELIMINARY ASSESSMENT, 1998
AOC-2: DRUM CONVEYOR/DE-HEADING SHED
PROPOSED SOIL DELINEATION SAMPLE LOCATIONS
CENTRAL STEEL DRUM SITE
NEWARK, NEW JERSEY
URS
WAYNE, NEW JERSEY
DR. BY
SCALE AS SHOWN
DWG. NO. 84075002
PROJ. NO. 19984075
CK'D. BY
DATE SEPT. 4, 2003
FIG. NO. 14

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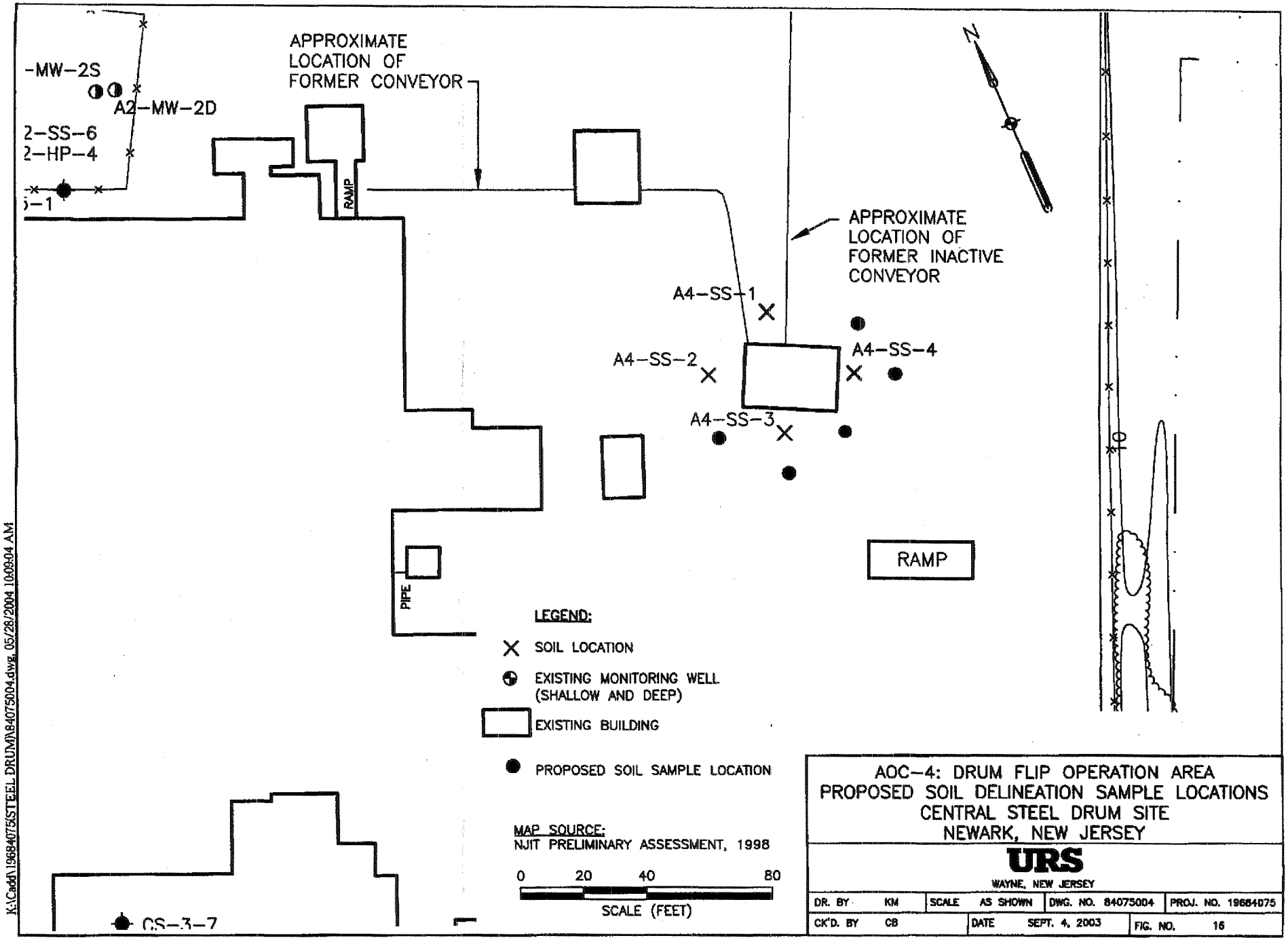


AOC-4: DRUM FLIP OPERATION AREA
PROPOSED SOIL DELINEATION SAMPLE LOCATIONS
CENTRAL STEEL DRUM SITE
NEWARK, NEW JERSEY

URS
WAYNE, NEW JERSEY

| | | | | | |
|---|---|---|---|---|---|
| DR. BY | KM | SCALE | AS SHOWN | DWG. NO. 84075004 | PROJ. NO. 19684075 |
| CK'D. BY | CB | DATE | SEPT. 4, 2003 | FIG. NO. | 16 |

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[CONFIDENTIAL: ATTORNEY-CLIENT PRIVILEGED]

# DIVISION OF LAW
# HAZARDOUS SITE LITIGATION SECTION
## SOL REFERRAL

| I. ADMINISTRATIVE |
|---|

| REMEDIAL PRIORITY SCORE: 486.04 |
|---|

| | |
|---|---|
| SITE NAME: Central Steel Drum Company | STREET ADDRESS: 704-738 Doremus Avenue and 843-871 Delancy Street |
| BLOCK(S):5074 LOT(S): 1 | MUNICIPALITY: Newark City<br>COUNTY: Essex |
| JOB CODE: G140RU00 | CSL NO.: NJD011482577 |
| DEP COST RECOVERY CONTACT: Mark Pedersen<br>TELEPHONE NO.: 609-292-1928 | DEP REMEDIATION CONTACT: James P. De Noble<br>TELEPHONE NO: (609)777-4101. |
| IS THIS A SUPERFUND SITE? YES X NO | EPA CONTACT:<br>TELEPHONE NO.: |

| II. SITE SUMMARY (AOC sheets may be supplemented for this section, provided they address the following three Sub- Sections) |
|---|

**SITE DESCRIPTION:** The site is about 8.5 acres and is situated in an industrial area of Newark just east of the New Jersey turnpike and Newark International Airport. The site is situated on a refuse-filled marshland. The nearest residential area is 1.5 miles west of the site in the Ironbound District of Newark. The site is adjacent to a Texaco Petroleum Storage Facility, the City of Newark Police Firing Range, and within a mile of the Passaic Valley Sewage Commission treatment facility. Proximate to the site are are multiple-use industries and commercial properties and a commuter/freight railroad yard and rail lines. On the south end of the property is an existing wetland where drums were observed in the past. Also a tidal influenced drainage ditch in the wetland empties into Newark Bay. It is believed that wastes were discharged into this ditch. Site drainage, including stormwater is directed via the drainage ditch system to Newark Bay. To the west, parallel to Doremus Avenue are railroad tracks. The facility operations have been shut-down since 1994. The site, other than the main building, is now vacant land covered with gravel and weeds. The site contains one main building which was previously several buildings which are now interconnected. The one story production building remains standing but is in disrepair. It consists of external masonry walls with a metal roof. The building is in deteriorated condition and the roof leaks. All utilities have been turned off. The building is unsecured and there is evidence vandalism, dumping and public entry, including use by homeless individuals. There are drains throughout the building.

From 1902 to 1922 the site was occupied by a Landfilling operation. From 1922 until 1951 the site was occupied by a number of Ink manufacturing concerns. The most recent facility on-site prior to Central steel drum was Interchemical Coorporation. The owners of Central Steel Drums bought the property over in 1951 and continued to operate until 1994. Central Steel Drum (CSD) was engaged in the recycling of 55-gallon steel drums. CSD received used drums, many still containing wastes from various industries including food, material from the paint industry, adhesives, inks, flammable liquids, water reactive materials, paints and sandy materials. CSD processed approximately 3,000 thirty and fifty-five gallon drums per day and received daily used drum shipments of varying quantities. CSD refinished the drums by putting them through a process line. The drum processing activities were a major contribution to the contamination of the site. At the beginning of the refinishing process the drums were flipped over and the contents dumped directly on the ground. (Note that the Department has video tapes of this activity). CSD's regular business practice was to accept drums with up to 1 inch of residue. However, Department inspections revealed CSD's acceptance of partially and completely full drums. As such, CSD'S emptying and transfer operations resulted in the dumping and spilling of thousands of gallons of drum residues daily. The inverted drums were put on a conveyor line and moved through a drum incinerator where the residue inside the drum was burned at 2,000° F. During the process a residue sludge was generated and accumulated by a scraper belt into an open bin. Excess sludge was also stored in open drums. The bin and drums containing this sludge were further incinerated in a sludge incinerator which exposed the sludge to temperatures between 2,000°-2,600° F for 8 hours. The resultant bottom ash was accumulated in piles 4 to 5 feet high and 15 feet in diameter. Some of the ash was transported off-site, but much of the bottom ash was broadcast throughout the to fill potholes and wet areas. Prior to commencement of removal activities, thousands of drums, many in deteriorating condition and some still containing wastes were left on-site between facility shut down in 1994 and removal action commencing in 1997. Some of the drums were stored directly on the ground, while others were stored in abandoned truck trailers. On site there was also an abandoned septic system. Also a 4,000-gallon diesel fuel underground storage tank (UST) and a 3,000-gallon UST were removed during the USEPA removal action. There is an indication that both tanks had discharged to the subsurface. In addition, there is a second UST that has not been located at this time. During remedial investigation activities an attempt to locate this UST will be done with ground penetrating radar.

**ENVIRONMENTAL CONCERNS:** The facility was constructed on poor quality refuse fill ranging in depth from 4 to 12 feet. A clay layer extends from the base of the fill to a depth of 17 to 20 feet. Ground water is reported in the fill layer at shallow depths (1 to 2 feet below ground level). This results in a perched water condition within the refuse fill material above the clay layer. Thus the facility was prone to frequent flooding following precipitation episodes. This environmental condition allowed dumped materials to distribute throughout the site and towards the Newark Bay. Adding to this the filling activities with the bottom ash has caused a ubiquitous soil contamination condition on site. While removal action, described below in the remediation section, removed surficial contamination soil contamination is still widespread. In June of 1998, New Jersey Institute of Technology (NJIT) conducted a site investigation. The site soils are impacted by various pesticides including chlordane and aldrin , total petroleum hydrocarbons, polynuclear aromatic hydrocarbons, phthalates, and PCBs. Site soils are also impacted by lead, arsenic, antimony, cadmium, copper, and zinc. Surface waters and sediments. Early investigations detected surface water contamination in the drainage ditches, primarily lead and halogenated and non-halogenated volatile organic compounds. Early ground water investigations (around 1985) revealed arsenic, barium, cadmium, chromium, copper, lead, mercury, and zinc above the New jersey Ground water quality Standards. Aside from metals, Base Neutral and Acid Extractable compounds and volatile organic compounds were observed. While the site impacted from the drum recycling activities, the most heavily impacted areas include the location where the drums were flipped over before incineration, the incinerator areas (where ash piles stood for long periods of time) the abandoned truck areas (where numerous leaking drums were stores), the septic system, and the locations of the former and possibly existing Usts.

**REMEDIATION STATUS:** In 1994, following air pollution violations involving the incinerator, the site was abandoned by the facility owners. Remaining at the abandoned facility were thousands of deteriorated drums many of which contained various hazardous materials. Drums were inside and outside the building. In addition to the drums roll-offs containing ash and paint sludge were present, as well as piles of incinerator ash. Areas of visibly contaminated soils. Because the area posed both a health hazard and a fire hazard, during the week of June 2, 1997, USEPA conducted a detailed inventory of the materials abandoned at the site. The action included mapping, chemical label identification, and numbering of drums. On July 8, 1997, the removal actions were approved with actual removal actions commencing in October 1997. The removal action was completed by January of 1998. The removal actions included:

- Stabilization and staging of containers on site;
- Removal of ash piles, roll-offs, and areas of acutely contaminated soil.
- Sampling, and conducting analysis of wastes, classification, and preparing waste streams for shipment;
- Removing asbestos contaminated materials from the building and from debris piles;
- Removal of the located abandoned USTs.
- Transportation and disposal of the drums, surficial wastes, excavated USTs, and visibly impacted soils.

There has been no other remediation on site since the removal action. Originally the responsible party retained a consulting firm under the requirements of a Judicial Consent Order. The activities pursuant to that document did not get past the drafting of a remedial investigation work plan. During June 1998, NJIT conducted a site investigation, which revealed the site to be highly impacted by PCBs and a variety of pesticides, metals, and base neutral compounds. The City of Newark took the property over the abandoned site due to tax default, and signed an MOA with the Department on June 12, 1998 to complete a remedial investigation of the site in order to determine if remediation was feasible and if the site can be re-used for commercial purposes. At this time The Department has under review the third iteration of this work plan.

**III. ENFORCEMENT SUMMARY**

There is a long enforcement history of this site, up to the site's abandonment in 1994. In October 1993, council to the owners of CSD prepared an extensive summary of all known violations prior to submittal of the remedial investigation Work Plan pursuant to the Judicial Consent Order. There were twenty six (26) Administrative Orders and Notices of Civil Administrative Penalty Assessment. Descriptions of these violations are attached. In addition to these, the following violations and enforcement actions are noted:

On March 28, 1980, the Department issued a Notice of Prosecution to CSD for illegal waste disposal practices and assessed CSD a penalty of $2,000 for illegal disposal practices. CSD never complied with the Notice of prosecution.

On December 7, 1981, the USEPA an inspection of the site. USEPA noted there was visible evidence of violations of RCRA, CERCLA, and NPDES. On March 19, 1982, USEPA issued a Complaint and Compliance Order to CSD. The order stated that CSD had violated Sections 3002 and 3004 of RCRA. The detailed list of principle violations are itemized in Paragraph 13 of the July 23, 1991 Directive and Notice to Insurers. A copy of this Directive is attached.

On August 23, 1983, the Department issued a Notice of Violation (NOV) to CSD for failure to submit its annual generator report pursuant to the Solid Waste Management Act, N.J.S.A13:1E-1. CSD never complied with this NOV.

On November 25, 1983, USEPA entered into a Consent Agreement and Final Compliance Order with CSD for violations of Section 3002 and 3004 of RCRA. The Final Compliance Order charged that CSD used the site to treat, store and dispose of hazardous wastes. The Order further charged that the sludge incineration process was a method of illegally disposing of hazardous waste. Nine stipulations of the compliance order were required of CSD. These stipulations are itemized in Paragraph 21 of the July 23, 1991 Directive and Notice to Insurers.

On April 24, 1987, CSD was issued two NOVs for violation of the Spill Compensation and Control Act, specifically for the discharge of hazardous substances in violation of NJSA58:10-23.11(c)and for failure to notify the Department of the said discharge.

On April 30, 1990, the Department issued another two NOVs to CSD for violations observed during an April 25, 1990 site inspection, involving the Solid Waste Management Rules and the SPCC act. Details of these NOVs are provided In Paragraph 37 of the said Directive.

On September 21, 1990, the Department issued An NOV to CSD for violations observed during an August 14, 1990 site inspection. Details of this NOV are provided in Paragraph 43 of the said Directive.

On November 7, 1990 the Department issued an NOV to CSD for violations observed during a Department inspection on August 29, 1990. Details of this NOV are in Paragraph 44 of the said Directive. Finally A Judicial Consent Order between the Department and CSD was signed on January 7, 1993. The JCO details all Air Pollution Control Act violations charged to CSD. The JCO also summarizes the long list of waste management violations, including discharge of pollutants to soil and ground water. A copy of the JCO is attached.

| ENFORCEMENT DOCUMENTS | YES | NO |
|---|---|---|
| SPILL FUND LIEN(S) FILED? | | |
| DIRECTIVE(S) **Yes** | | |
| FIELD DIRECTIVE(S) **Yes** | | |
| ADMINISTRATIVE CONSENT ORDER **Yes** | | |
| REMEDIATION AGREEMENT **No** | | |
| ADMINISTRATIVE ORDER **Yes** | | |
| NOTICE OF CIVIL ADMINISTRATIVE PENALTY **Yes** | | |
| NOTICE OF VIOLATION **Yes** | | |
| **OTHER** *(SPECIFY)* **Numerous APCA violations.** | | |

| REMEDIATION | YES | NO |
|---|---|---|
| COMPLETE/IMPLEMENT INVESTIGATION | | |
| COMPLETE/IMPLEMENT REMEDIAL ACTION | | |
| COMPLETE/IMPLEMENT OPERATION AND MAINTENANCE | | |
| NATURAL RESOURCE DAMAGE | | |
| INCREASE REMEDIAL FUNDING SOURCE | | |
| **REGULATORY COMPLIANCE (UST)** | | |
| UPGRADE | | |
| MONITORING | | |
| CLOSURE | | |
| **FINANCIAL** | | |
| PAST COST | | |
| FUTURE COST | | |
| PENALTIES | | |

OTHER (*Specify*):

**BRIEFLY DESCRIBE EACH REQUESTED ACTIVITY:**

**VII. OTHER**

**BRIEFLY DESCRIBE ANY OTHER ITEMS OF CONCERN:** The MOA only goes through the Rem Investigation. Should Newark determine the site can not be remediated or remediation is cost prohibitive, the site will remain as a highl;y contaminated p of land possible impacting nearby Newark Bay.

**RESPONSIBLE PARTY SUMMARY** The responsible parties are summarized in detail i Findings section of the JCO. Some of the addresses are available, but conside time has passed since the JCO and the addresses may be obsolete. The sit purchased from Interchemical Corporation in 1952 by Bessie Baron, Mollie Ratne Dorothy Greenberg. On April 30, 1965, these parties incorporated Dore Realty Com Inc. and transferred the ownership of the facility to the Dore Reality with thems as principals. On July 26, 1966, Bessie Baron, Dorothy Greenberg, Mollie Ra Gertrude Greenberg, and Abbie Greenberg purchased the site from Dore Realit dissolved Dore Reality. On September 3, 1968, Bessie Baron, Mollie Ratner and Doro Greenberg bought out Abbie and Gertrude Greenberg's shares of the site, and retained full ownership of the company until it went defunct in 1994.

The last known addresses of the principals of CSD were:

Dorothy Greenberg, C/O
Deborah L. Greenberg, Esq.
Friedman & Greenberg
4601 Sheridan Avenue, Suite 306
Hollywood, Florida 33021

Jane Ratner-Matson
25 Hardscrabble Hill Road
Chappaqua, New York 20584

Bessie Baron
4701 Martinique Drive
Coconut Creek, Florida 33066

Marian Ratner-Abrams
4324 Troost Avenue
Studio City, California 91604.

The City of Newark is now investigation the site for possible remediation unde voluntary cleanup program. The City has been receiving grant money for activities via the Hazardous Discharge Site Remediation Fund. Newark plans to de the site as a function of the Brownfields redevelopment initiative. The Pr manager representing Newark for the CSD site is:

Paul Butler
Engineer for the City of Newark
920 Broad Street
Newark, New Jersey 07102 (973)-733- 7994.

**VI. DOL REPRESENTATION REQUESTED**
***(Below select all appropriate as supported in section II,III & IV above)***

**IV. NATURAL RESOURCE DAMAGES** Damage to wetlands, and sediments and tidal surface waters discharging to Newark Bay has occurred.

| HAS ANY NATURAL RESOURCE BEEN IMPACTED? | ONRD CONTACT: |
|---|---|
| X YES NO | TELEPHONE NO.: |

| NATURAL RESOURCE IMPACTED | | YES | NO |
|---|---|---|---|
| GROUND WATER | Yes | | |
| SURFACE WATER | Yes | | |
| WETLANDS | Yes | | |
| PINELANDS | No | | |
| OTHER *(SPECIFY)* | | | |

**V. RESPONSIBLE PARTIES**

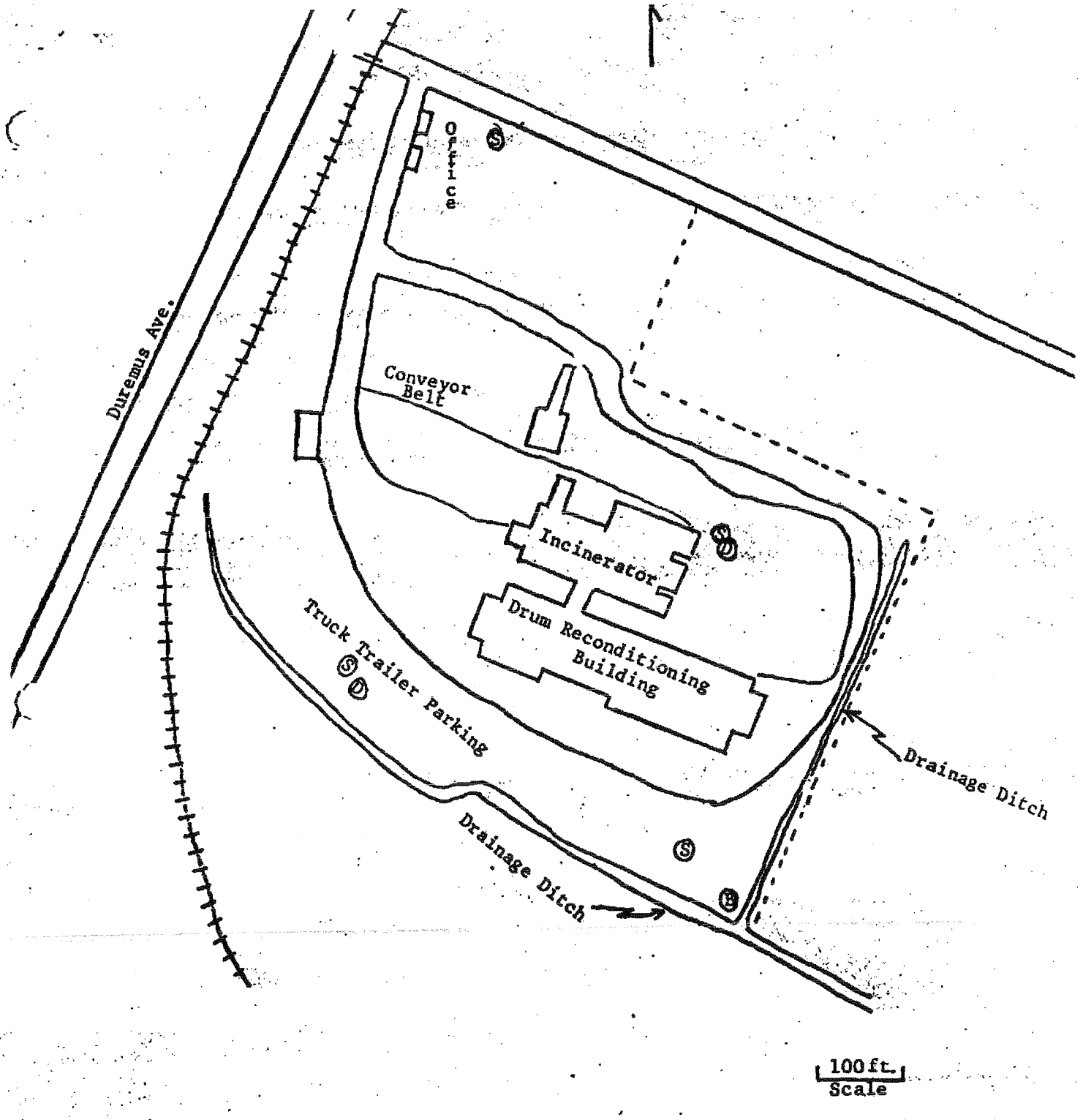
**SITE DESCRIPTION:** The site is about 8.5 acres in size and is situated in a heavily industrial area of Newark just east of the New Jersey Turnpike and Newark International Airport. The area is characterized as as industrial , built up land that is within a massive transportation complex composed of highways, railroads, and airport. The closest residential area is about 1.3 miles northwest of the site. The site is adjacent to a Texaco Petroleum Storage Facility, the City of Newark Police Firing range and some other small industrial facilities. Within 1.5 miles of the site is the Passaic Valley Sewage Commission treatment facility, multiple industrial and commercial properties and a commuter/freight railroad yard and rail lines. On the south end of the property is an existing wetland where some drum dumping occurred in the past. The west side borders railroad tracks which parallel Doremus Avenue, and the northern portion of the site parallels Delancey Street. To the southeast is a tidal influenced drainage ditch which empties into Newark Bay. A second drainage ditch is located to the east of the site. This drainage ditch feeds into the southern drainage ditch.

Prior to 1902 there was no known use of the site. Between 1902 and 1922 the site was used for landfilling purposes. Between 1922 and 1951 the site was occupied by a series of ink manufacturing companies. Prior to December 28, 1951 the site was occupied by a facility of the Interchemical Corporation, now know as Inmont Chemical Corporation. Manufacture of inks and other chemicals may have taken place at this facility. From 1951 to 1994 the site was occupied by the Central Steel Drum Company. Central Steel Drum (CSD) was engaged in the re-manufacture of 55-gallon drums. Used drums, many still containing hazardous substances were received in the course of daily shipments. CSD processed approximately 3,000 thirty and fifty gallon drums per day and received daily shipments of drums for processing. Not all drums were processed the same day, and many drums in broken or leaking condition on the ground or in abandoned truck trailers. Approximately 30% of incoming drums contained material from the paint industry, 30 to 40 % contained materials from the food industry, and the remaining 30 to 40% contained miscellaneous residues such as adhesives, inks and sandy material.

CSD refinished the drums by putting them through a process line beginning with the direct dumping of the drum's contents on the ground. Once emptied of the gross amount of residual material the drums were run on a conveyor line upside down and moved through a drum incinerator where the residue inside the drum was burned at roughly 2,000° F. During the process a sludge was generated and was accumulated by a scraper belt into an open bin. Sludge not removed by the scrapers were removed by hand an put into drums. The drum and bin contents were then put into a sludge incinerator were they were heated to a temperature range of 2,000°-2,600° for eight hours.. The resultant ash was subsequently accumulated in piles with no protection from wind or rain erosion. The piles were up to five feet high and 15 feet in diameter. Waste bottom ash from the incinerator as well as sludge ash were broadcast throughout the site to fill potholes or as fill material in the wet areas near the drainage ditch. During the course of operations there were several fires and explosions which took place, in some instances the fires and explosions spread to the adjacent Texaco facility.The site ceased operations in 1994. During the week of June 2, 1997, USEPA conducted a detailed inventory of the materials abandoned at the site, which included thousands of drums many of which contained hazardous materials. The USEPA approved a removal action by a hired contractor in July of 1997. The removal action began in October of 1997, and included stabilization and staging of containers on site, removal of ash piles and obviously contaminated soils, and sampling and characterization of wastes on site, removal of asbestos materials and debris. Drum staging activities were completed by November 26, 1997 and the entire removal action was completed by January of 1998. The property was taken over by the City of Newark in 1997 and Newark signed an MOA in 1997 to remediate the remaining soil, sediment and groundwater contamination with plans for future commercial development.

*Revised April 9, 2001*

Video tapes of the plant operations prior to its closing are available in the archieved file. Photographs of the site just after it was abandoned but before removal action




Central Steel Drum Co.
704 Duremus Ave.
Newark, NJ

(S) Recommended locations for shallow monitor wells

(D) Recommended locations for deep monitor wells

(B) Auger Boring made during Site Inspection

State of New Jersey

Christine Todd Whitman
*Governor*

Department of Environmental Protection

Robert C. Shinn, Jr.
*Commissioner*

Division of Publicly Funded Site Remediation
Bureau of Environmental Evaluation and Risk Assessment
P.O. Box 413
Trenton, New Jersey 08625-0413
Phone: (609) 633-7413
Fax: (609) 292-0848

RECEIVED
SEP 22 1999

# MEMORANDUM

**TO:** James P. DeNoble, Case Manager, BFCM

**FROM:** Allan S. Motter, Technical Coordinator, BEERA/EES-1 09/22/99

**RE:** Central Steel Drum/Newark MOA, Newark, NJ
Remedial Investigation Workplan
(Referral dated 08/25/99 – transferred to A. Motter 09/09/99)

BEERA has reviewed the above referenced Remedial Investigation Workplan (RIWP). The report is conditionally acceptable. BEERA's comments follow a background summary, which is provided below per the case transfer to the above referenced technical coordinator. The information contained in the background summary is derived primarily from the case file and the RIWP.

**Background Summary:**

The Central Steel Drum Site is an 8.5 acre site consisting of a former drum reconditioning facility located on the corner of Doremus Avenue and Delancy Street in Newark, NJ. Central Steel Drum operated the site as a drum reconditioning facility from 1951 until 1994, processing approximately 3,000 drums per day. Prior to 1951, the site was utilized as a pigment manufacturing factory. The City of Newark currently owns the site and has entered into an MOA under the Brownfields legislation.

The site contains wetlands on the south end of the property, railroad tracks on the western edge and a drainage ditch on the southeastern portion of the site, which discharges to the Newark Bay. The Central Steel Drum Site is currently abandoned and the majority of the site is covered by gravel and weeds. The site contains one large building, which consists of several interconnected smaller buildings. The building contains numerous drains and is currently in disrepair. An estimated 50,000 gallons of hazardous waste were abandoned on the site. The USEPA conducted drum and ash removal from June 1997 to January 1998.

The topography of the site is relatively flat with a drainage ditch to the east and south. Catch basins are located on the eastern portion of the site and reportedly discharge to the drainage ditch to the east of the site. The soils underlying the site consist of filled marshland with fill material documented from 1'- 3' below surface.

The site lies in the Piedmont Plateau subdivision of the Appalachian geographic province containing reddish-brown shale and siltstone of the Passaic Formation of the Brunswick Group. The Passaic Formation is highly fractured and is a source of water for parts of Essex County. Groundwater at the

site is found at a depth approximately 2'-3' with the deeper aquifer at a depth approximately 20'.

The site is located in an industrial area with the closest residential area approximately 1.3 miles to the northwest. The Newark Bay is located approximately 2,300' east of the site with wetlands extending from the site to the Newark Bay.

The Remedial Investigation Workplan was prepared by and submitted in response to the MOA. The following sections provide comments on the report.

**General Comments:**

All soil borings should be advanced at least to the depth of groundwater and field screened given the site history and the relative shallow depth of groundwater. Soil sample depth for all soil samples should be biased toward observed soil staining or discoloration, PID/FID readings and hydrocarbon odors in accordance with the Technical Requirements for Site Remediation 7:26E-3.4(a)2.

Each section contains recommendations regarding groundwater sampling locations and frequency. BEERA will defer comment on the groundwater sampling to Mr. Greg Bakeman, BGWPA.

A gasoline tank was reported to have been located in the central portion of the site, north of the septic system. Although the City of Newark mentions this tank under AOC-7, indicates the approximate location on figure 9 of the RIWP and indicates a single boring in that location (used to address the septic system), this underground storage tank (UST) is never adequately addressed. Therefore, the City of Newark should address this UST and associated piping in accordance with the Technical Requirements for Site Remediation N.J.A.C. 7:26E-3.9(a)3 and 5. It is recommended that this tank be listed as a separate AOC (i.e. AOC-7A).

The scales on figures 2 - 14 in the RIWP do not appear to be consistent. Objects, which are common to one or more figures, appear to be different sizes according to the different scales. The City of Newark should evaluate the scale on each of these figures in order to allow for a more accurate evaluation of sample point location requirements.

**Specific Comments:**

AOC-1:

This AOC consists of a Heavy Drum Storage Pad on the southwest portion of the site. This area consists of a concrete pad containing a trench. Drums containing more than 1" of product were stored on this pad and likely drained into the trough. Storm water runoff flows directly onto adjacent unpaved soils. Drums had been historically discarded in this area. Previous sampling in this area exhibited evidence of metals, PCBs, and pesticides.

The City of Newark proposes to collect five soil samples, three groundwater samples via hydropunch at the time of the soil sample collection and install two monitoring wells (one shallow and one deep) with two rounds of samples collected from the monitoring wells for this AOC. The location of the sample points is depicted on figure 4 of the RIWP. This proposal is conditionally acceptable.

The Technical Requirements for Site Remediation N.J.A.C. 7:26E-3.9(b)1 requires that all pads shall have a minimum of one sampling location per side adjacent to exposed soil for sides up to 30 feet long; for sides greater than 30 feet long, one additional sample location is required for each additional 30 feet of length. Each sampling point shall be located immediately adjacent to the pad and biased toward the expected location of greatest contamination. If a pad shows evidence of deterioration that may allow contaminant contact with the soil, or its surface has been modified (repaved), or aerial

photographs or site history indicate potential for previous discharges to the soil, soil samples beneath the pad shall be collected pursuant to N.J.A.C. (b)2ii.

According to the scale on figure 4 in the RIWP, this pad is approximately 125' wide by 150' long. Therefore a minimum of 18 sample points would be required. However, the scale on figure 4 in the RIWP appears to conflict with the scale on figures 2 and 3, which depict the entire site. The City of Newark should evaluate the scale on figure 4 in the RIWP and propose the appropriate number of sample points. At a minimum, all four sides of the pad should be sampled. The number of soil samples may be modified based on historical laboratory data available for this area.

**AOC-2:**

This AOC consists of a Drum Conveyor/De-Heading Shed on the central portion of the site. This area was utilized for processing drums, removing drum tops and displacing the contents into two sumps located in the area. This area exhibits evidence of stained soils and residues from past operations. Previous investigations in the area revealed metals, PCB, PAH, TPH and pesticide contamination.

The City of Newark proposes to collect 2 soil samples in the former sump areas (locations to be field determined) and 5 soil samples in the former conveyor area (in accordance with figure #5 of the RIWP) for this AOC. The soil samples are to be analyzed for VOCs, SVOCs, pesticides, PCBs and metals. In addition, the City of Newark proposes to collect 4 hydropunch groundwater samples and install three monitoring wells in the vicinity of the former inactive conveyor. No soil samples are proposed for the former inactive conveyor or the perimeter of the De-Heading Shed. This proposal is conditionally acceptable. The City of Newark should address the former inactive conveyor area with a minimum of 2 soil samples. One soil sample in the former inactive conveyor area may be coupled with the installation of the monitoring well cluster, which is proposed for this area. The City of Newark should additionally address the perimeter of the shed with additional soil samples in accordance with the Technical Requirements for Site Remediation N.J.A.C. 7:26E-3.9(b) storage and staging areas. The number of soil samples may be modified based on historical laboratory data available for this area.

AOC-3:

This AOC consists of an Abandoned Truck Trailer Area on the northern portion of the site. This area contained numerous truck trailers with unprocessed drums and was subsequently utilized for drum storage. The area exhibited evidence of spills and has since been covered with gravel. Historically, metals, TPH, PCBs, PAH and pesticides have been detected in this area.

The City of Newark proposes to collect 28 soil samples on an approximate 50 foot grid for this AOC. Sample depth will be to 2' to 4'. Based on field screening results, 10 of these samples will be analyzed for VOCs, SVOCs, pesticides, PCBs and metals. In addition, the City of Newark proposes to collect 10 hydropunch groundwater samples and install 4 monitoring wells in the Abandoned Truck Trailer Area. In accordance with the Technical Requirements for Site Remediation N.J.A.C. 7:26E-3.9(b)2ii, sampling frequency may be reduced from the one sample per 900 square feet for larger areas. Therefore the sampling frequency is acceptable; however, a minimum of fifty percent of the samples should be laboratory analyzed for the above parameters. All soil borings should be advanced at least to the depth of groundwater and field screened. Soil sample depth should be biased toward observed soil staining or discoloration, PID/FID readings and hydrocarbon odors in accordance with the Technical Requirements for Site Remediation 7:26E-3.4(a)2.

AOC-4:

This AOC consists of a Drum Flip Operation Area on the eastern portion of the site, adjacent to the incinerator. In this area, drums were flipped onto the conveyor prior to incineration. The drum contents were allowed to flow onto the unpaved ground surface unchecked. In addition, incinerator ash was also stored in this area. This area exhibited evidence of spillage and ash. Historically, metals, TPH, PCBs, PAH and pesticides have been detected in this area.

The City of Newark proposes to collect 4 soil samples for this AOC in accordance with figure 7 of the RIWP. Soil samples will be analyzed for VOCs, SVOCs, pesticides, PCBs and metals. In addition, the City of Newark proposes to collect 4 hydropunch groundwater samples. In accordance with the Technical Requirements for Site Remediation N.J.A.C. 7:26E-3.9(b)2ii, sampling frequency may be reduced from the one sample per 900 square feet for larger areas. Therefore the sampling frequency is acceptable.

AOC-5:

This AOC consists of an Incinerator Area on the eastern portion of the site. This area was utilized to incinerate the contents of the drums as a part of the drum reconditioning. The area contains a paved area to the north, adjacent to the dust collectors, and a quenching sump to the south. Historically, metals, PCBs and pesticides have been detected in this area.

The City of Newark proposes to collect 11 soil samples for this AOC in accordance with figure 8 of the RIWP. Soil samples will be analyzed for VOCs, SVOCs, pesticides, PCBs and metals. In addition, the City of Newark proposes to collect 5 hydropunch groundwater samples. This proposal is conditionally acceptable. The City of Newark should address the dust collection area with the soil sample collection. Given that this area was utilized for incineration, three surface soil samples should be additionally analyzed for dioxins via USEPA Method SW846-8290. These samples should be collected from the most visibly contaminated portion(s) of this area.

AOC-6:

This AOC consists of a Septic System on the south central portion of the site. This area was utilized for the disposal of sanitary wastes prior to 1951 and may have received chemical discharge. Historically, metals, PCBs, PAH and pesticides have been detected in this area.

The City of Newark proposes to collect 2 soil samples for this AOC in accordance with figure 9 of the RIWP. Soil samples will be analyzed for VOCs, SVOCs, pesticides, PCBs and metals. In addition, the City of Newark proposes to collect 2 hydropunch groundwater samples. This proposal is conditionally acceptable. In accordance with the Technical Requirements for Site Remediation N.J.A.C. 7:26E-3.9(e)3i and ii, a minimum of four borings should be installed in the disposal field and a minimum of one sludge/water sample collected from the septic tank.

AOC-7:

This AOC consists of two Fuel Storage Tanks on the southwestern portion of the site, adjacent to the Heavy Drum Storage Pad. One UST consisted of a 4,000 gallon diesel fuel tank while the second consisted of a 3,000 gallon gasoline tank. Both tanks were removed as part of the USEPA Emergency Response Action. This area also contains a pump island. Historically, metals, PCBs and pesticides have been detected in this area. Additionally, one gasoline UST is located in the central portion of the property, north of the septic system. The disposition of this tank is unknown.

The City of Newark proposes to collect no soil samples for this AOC, but rather address the two USTs via 9 hydropunch groundwater samples. In addition, the City of Newark proposes to install three

hydropunch groundwater samples in the vicinity of the gasoline UST in the central portion of the property. This proposal is unacceptable. The City of Newark should address these USTs, associated piping and pump islands in accordance with the Technical Requirements for Site Remediation N.J.A.C. 7:26E-3.9(a)3 and 5. The City of Newark should either document the USEPA's post excavation sample results and locations or delineate the area via soil sample collection.

AOC-8:

This AOC consists of a Raw Material Storage Shed Area on the southern portion of the site, immediately south of the building. This area was used to store paints and other chemicals in drums and other containers. Historically, metals, PCBs, PAH and pesticides have been detected in this area.

The City of Newark proposes to collect 4 soil samples for this AOC in accordance with figure 11 of the RIWP. Soil samples will be analyzed for VOCs, SVOCs, pesticides, PCBs and metals. In addition, the City of Newark proposes to collect 1 hydropunch groundwater sample. This proposal is acceptable.

AOC-9:

This AOC consists of the Main Building Area on the central portion of the site. This area was utilized to process the drums, which had been incinerated, sprayed with water and sand blasted. The building contains three paint booths and a floor drain/trough system; however, no plans are available for the drain/trough system. Historically, metals, PCBs and pesticides have been detected in this area.

The City of Newark proposes to collect 7 soil samples from the interior floor drain/trough system for this AOC in accordance with figure 12 of the RIWP. Soil samples will be analyzed for VOCs, SVOCs, pesticides, PCBs and metals. In addition, the City of Newark proposes to collect 4 hydropunch groundwater samples and install two groundwater monitoring well clusters. This proposal is conditionally acceptable. The City of Newark should address the floor drain outfalls in accordance with the Technical Requirements for Site Remediation N.J.A.C. 7:26E-3.9(d)1 and the perimeter of the building, particularly at the location of doors and roof drain outfalls via the soil sample collection.

AOC-10:

This AOC consists of the South Truck Trailer Area on the southern portion of the site. This area contained trailers with unprocessed drums. Drum handling and unloading was also conducted in the area. The area has been covered with gravel, which could conceal evidence of past spills. Historically, metals, PCBs, PAH and pesticides have been detected in this area.

The City of Newark proposes to collect 8 soil samples for this AOC in accordance with figure 13 of the RIWP. Soil samples will be analyzed for VOCs, SVOCs, pesticides, PCBs and metals. In addition, the City of Newark proposes to collect 4 hydropunch groundwater samples and install two groundwater monitoring wells in a cluster. This proposal is conditionally acceptable. The City of Newark should verify the scale of the sample location map (figure 13 of the RIWP) and the distance between sample points.

AOC-11:

This AOC consists of a Drainage Ditch on the southern and eastern boundaries of the site. This area receives runoff from the entire site and discharges to the Newark Bay. A drainage system leads from the incinerator to the eastern drainage ditch. Historically, metals, PCBs, PAH and pesticides have been detected in the soils in the eastern portion of this AOC. In addition, trace levels of metals and VOCs were detected in surface water in the eastern portion of this AOC.

The City of Newark proposes to collect 11 sediment and surface water samples in the southern ditch and 1 sediment and surface water sample in the eastern ditch for a total of 12 sample locations for this AOC in accordance with figure 14 of the RIWP. The text states that 14 sample locations at 100' intervals will be sampled; however, the figure only depicts 12 locations. Sediment samples will be analyzed for VOCs, SVOCs, pesticides, PCBs, metals, TOC, pH and grain size. Surface water samples will be analyzed for SVOCs, pesticides, PCBs and metals and will be sampled on two separate occasions including high and low water conditions. This proposal is conditionally acceptable. The City of Newark should collect samples at 14 locations as stated in the text, including additional points in the eastern ditch (100' grid) to assess the impact of the incinerator area on this portion of the AOC in accordance with the Technical Requirements for Site Remediation N.J.A.C. 7:26E-3.9(d)3 and 4. A minimum of four samples should be collected at depth based on sediment rates and site history. The City of Newark should propose the sample depth for the additional four samples. The sediment samples in the vicinity of the incinerator should be additionally analyzed for dioxins via USEPA Method SW846-8290. In addition, the surface water should also be analyzed for VOCs.

AOC-12:

This AOC consists of Historic Fill over the entire site. This site was constructed on filled marshland, which was further filled with incinerator ash in potholes and the southeastern ditch, over the history of the site operations. The site is currently covered with gravel making identification of areas filled with ash difficult.

The City of Newark proposes to collect 32 random soil samples for historic fill, not within previously defined AOCs. In addition, the City of Newark proposes to install 4 soil borings and collect soil samples from the perimeter of the site in areas not covered with fill material. Soil borings will be advanced to a depth of 5' to 10' until native soils, meadow mat or bedrock is encountered. Soil samples will be analyzed for VOCs, SVOCs, pesticides, PCBs and metals. This proposal is acceptable. The City of Newark should collect the soil samples from the increment with the most likely impact from the historic fill. Samples should be biased toward observed soil staining, PID/FID readings and hydrocarbon odors.

**Baseline Ecological Evaluation:**

The City of Newark proposes to conduct a Baseline Ecological Evaluation (BEE) in accordance with the Technical Requirements for Site Remediation N.J.A.C. 7:26E-3.11. The City of Newark will evaluate the on-site and off-site data obtained, the ecologically sensitive areas on-site and immediately off-site, and migration pathways to determine the potential need for additional ecological assessments. This proposal is acceptable.

c: Greg Bakeman (BGWPA)
Kevin Schick (BEERA)

4/21/95

# EXPEDITED REMOVAL ASSESSMENT CRITERIA

Site Name: Central Steel & Drum
Address (Street; Block; Lot; City; County; State; Zip Code): 704 Doremus Avenue, Block 5074, Lot 1, Newark, Essex County, NJ 07105
NRC Case #: N/A State Case #:
State Referral Date: 5/97 State Response Date: 5/9/97
State Investigator/Phone #: Joe Hoyle, 201-669-3955
EPA Investigation Date: 5/14-15/97 EPA Investigator(s): Margaret Chong

Instruments Used/background readings: HNU, OVA, CGI, Jerome, XRF - No significant readings except for the XRF which showed high levels of lead. (14,000 ppm)
Pending Actions (HAZCAT, Sampling, etc):
Access Agreement: Yes/No; Verbal: Yes/No; Written: Yes/No
Accompanied State of NJ. Property owned by the City of Newark

## I. STRIP MAP/DIRECTIONS TO SITE

NJ Turnpike to Exit 15E, make a right onto Doremus Avenue. Go all the way to Delancey Street, where Delancey and Doremus intersects. Facility is on the right after the RR tracks. Texaco is on the left opposite the facility.

EPA On-Scene Coordinator Greg DeAngelis (908) 906-6874

A. Physical Location
1. Type of Facility: Drum Reconditioner
i. current use: abandoned
ii. previous use(s): drum racyling, container shipping operation
2. Nature of Neighborhood: industrial, residential area begins 1.5 miles from the site.

B. Size
1. Size of Property: 8.5 acres
2. Number and Size of Buildings: one building approx. 200 x 500 ft.original Structures interconnected or added onto at a later date.
3. Building Construction Type (e.g., cinder block, wood, etc; roof, flooring type, etc.): metal and cinder block
4. Building Drains (& where they flow): drains located inside bldg. Unable To determine direction of flow. Too much debris inside bldg.
5. Fire Protection Systems: none.

C. Site Conditions
1. Condition of Buildings: Deteriorated.
2. Types of Building(s) Construction:
i. masonry w/ wood roof:
ii. masonry w/metal roof: yes
iii. wood:
iv. other:
3. Containment Structure(s) Condition: none
4. Property Condition/Characteristics (asphalt, crops, wetlands,etc): Property located on filled marshland. Wetlands located on the south and of the property. Pistol range, propane facility & RR Tracks at borders.
5. Security:
i. building: none
ii. property: none
iii. site occupancy: unoccupied
a. hours of occupancy:
b. abandoned (date): approx. 1994
iv. fences: entire property is fenced, except for the entrance.
v. condition of fences: fair
vi. evidence of public entry: construction debris dumping, graffiti
vii. Entry Access:
a. locked (name & phone to unlock): no gates
b. other means of access (open windows, etc): blocks of concrete Barricading entrance. Vehicles cannot enter facility.
6. Utilities (existing - on/off):
i. electric: off
ii. water: off
iii. other (e.g., gas, fire hydrants):
7. Underground Storage Tanks (Existing - On/Off/Unknown)
i. fuel: two USTs, capacities unknown. Diesel/water and kerosene/water
ii. chemical:
8. Migration Pathways:
i. storm sewers (distance):
ii. sanitary sewers (distance):
iii. others (distance):

## II. THREAT

A. Number and Type of Containers
1. Drums (>30 gal): approximately 500 drums, mostly incinerator ash
2. 5-30 gal containers: approximately 50
3. <5 gallon containers:
4. Tanks, Reactor Vessels, etc.: one hopper with paint material.
5. Other (ie, cylinders, explosives): 2 empty cylinders

B. Estimated Quantities
1. Suspected/estimated:
2. Verified:

C. Material Identification
1. Material Classification
   i. Oil: Diesel and kerosene in the two underground storage tanks
   ii. CERCLA hazardous substance(s): flammables, lead contamination, acid, Water reactives, paints
   iii. RCRA hazardous waste(s):
2. Method of Material Identification
   i. suspected:
      a. prior site information: yes
      b. container labels: yes
      c. other:
   ii. verified:
      a. field screening (method; e.g., DRI, hazcat): XRF, hazcatting
      b. analysis:
      c. other:

D. Condition of Containers and Materials
1. Stable: deteriorated
2. Discharge
   i. potential: yes
   ii. imminent:
   iii. actual: drums discovered in the wetlands located at the south end.

E. Potential Receptors
1. Human
   i. number of nearby residents & distances: 1.5 miles from site
   ii. number of nearby businesses & distances:
   iii. other (ie significant roadways/RR): RR tracks on west side of the Property
   iv. sensitive receptors: wetland on south end of property
2. Environmental
   i. Nearby Waterways
      a. name (& distance(s): onsite drainage feeds Newark Bay
      b. confluences (& distance(s)):
      c. water intakes (distance(s)):
   ii. Other (e.g., wetlands, etc.):

## III. SITE LEGAL STATUS

A. Current Status of Site Ownership: City of Newark, foreclosed on property On 10/1/96

B. Current Status of Site Operations: abandoned

C. Status of Site Cleanup(s): incinerator was dismantled.

1. Previous: Unknown

2. Present: Unknown

D. Past/Present Enforcement:

1. Local: Unknown

2. State: when facility was operating, $66,000 was collected for air Compliance violations

3. EPA: EPA issued a Consent agreement and Final Compliance on 11/25/83 for A number of RCRA violations and also required the facility to conduct an investigation of contamination and develop a remediation program under the direction of NJDEP. Monitoring wells were installed and sampling data was produced, then the case became inactive in 1985.

4. Other:

E. Suspected PRPs:

| | Name | Address | Phone |
|---|---|---|---|
| 1. | Dore Realty | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |

F. Site Sketch:

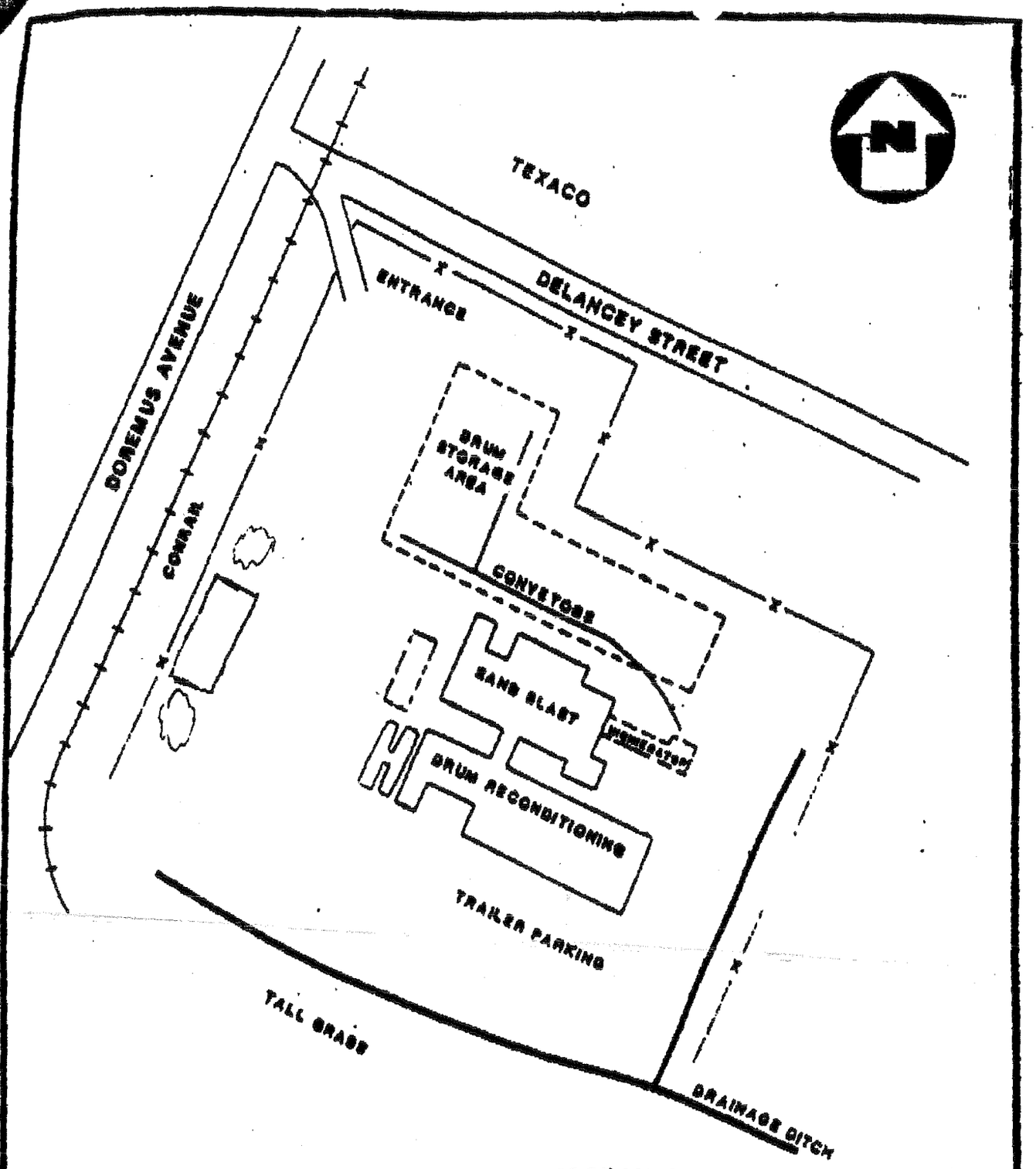
Attached

## IV. Additional Information

Title search was done by Susie Becker. Shows that the current owner is the City of Newark. According to NJDEP, the most recent owners was Dore Realty. Two of the pricipals are dead. The third one lives in NYC. I believe from the title search the three were Emmanuel Sacks, Leon Rosen and Nathan Blumberg. Unknown as to who is still alive.

Facility has a long history of incompliance with NJDEP.

Records were observed on site which show generators sending material to this facility. A site visit is planned with Susie Becker and Marissa Wiggett. There may be a connection with Container Drum located in Half Moon, NY. The name Greenburg appears at both sites.




Source: Halliburton NUS

(NOT TO SCALE)

| | | |
|---|---|---|
| WESTON Roy F. Weston, Inc. FEDERAL PROGRAMS DIVISION MANAGERS DESIGNERS/CONSULTANTS | EPA PM M. Chong | Central Steel Drum Newark, New Jersey |
| IN ASSOCIATION WITH RESOURCE APPLICATION, Inc. G.S. JOHNSON & MALHOTRA, P.C., R.E. SARRIERA ASSOCIATES, FRS ENVIRONMENTAL MANAGEMENT, AND ERS ENVIRONMENTAL SERVICES, INC. | START PM R. Moyl | Figure 2: Site Layout and Sampling Locations |

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
EDISON, NEW JERSEY 08837

MAY 13 1998

Mr. Robert Van Fossen
Assistant Director, Discharge Response Element
New Jersey Department of Environmental Protection
401 East State Street
Trenton, New Jersey 08625

Re: Central Steel Drum Site
704 Doremus Avenue
Newark, Essex County, New Jersey

Dear Mr. Van Fossen:

This is in reference to the removal request for the cleanup, removal and disposal of hazardous materials at the Central Steel Drum Site, Newark, Essex County, New Jersey. This letter serves to notify you that EPA has finished the removal as outlined in the Action Memorandum dated September 19, 1997.

This action included the identification, stabilization, segregation, removal and disposal of all hazardous wastes found at the property identified above. Wastes at the Site included drums of acids, caustics, ignitable liquids, reactives, and piles of incinerator ash and sandblasting wastes. All drums and piles of hazardous wastes were transported off-site to approved disposal facilities.

At the conclusion of EPA's site activities, control of the Site was returned to the City of Newark. The City was briefed on the actions taken at the Site. The City is planning to conduct soil sampling as part of their continuation of the Brownfields redevelopment initiative at this site.

BBG000154

This completes EPA's activities at this site in regards to this removal request. Should you need any additional information or have questions about this site, please contact Gregory B. DeAngelis at (732) 906-6874.

Sincerely yours,

Bruce Sprague, Chief
Response and Prevention Branch

cc: James Daloia, RPB-B
Michael VanItelle, ORC
Robert Swales, Newark OEM

**URS Greiner, Inc.**
Mack Centre II
One Mack Centre Drive
Paramus, New Jersey 07652-3909
Telephone: (201) 262-7000
Facsimile: (201) 262-9199
*Offices in Principal Cities Nationwide*

**URS Greiner**

December 15, 1997

DEC 16 1997

Mr. Estafan Posey
Bureau of State Case Management
Environmental Claims Administration
PO Box 028
401 E. State Street
Trenton, New Jersey 08625-0028

Re: Central Steel Drum Site, Newark, New Jersey
Grant Application

Dear Mr. Posey:

On behalf of the city of Newark, we are re-submitting the revised Grant Application under the Hazardous Discharge Site Remediation Fund for the Central Steel Drum Site in Newark, New Jersey. As per your request, we have changed the scope to a Remedial Investigation from the PA/SI and have revised the MOA page, the Scope of Services, and the cost of the project. The attached information should replace the respective pages in the existing grant application.

If there are any questions on this submittal, please contact me at (201)262-7000 x328.

Very truly yours,

**URS Greiner, Inc.**

Thomas R. Pisciotta
Project Manager

**ENC.**

# Scope of Work
# Central Steel Drum Site
# 843-871 Delancy Street, Newark
# Block 5074, Lot 1
# City of Newark, Department of Engineering

## 1.0 INTRODUCTION

This scope of work is prepared for the City of Newark, Department of Engineering for submission to the New Jersey Department of Environmental Protection as part of the Hazardous Discharge Site Remediation Fund Proposal. This scope addresses the completion of a Remedial Investigation (RI) for the redevelopment of the former Central Steel Drum Facility on Block 5074, Lot 1 at 843-871 Delancy Street in Newark. The overall goal of the project is to obtain sufficient information on the potential contamination issues to evaluate and select remedial options that can be implemented to develop this site under federal and state guidelines.

The scope of this project includes a Remedial Investigation to determine the nature and extent of contamination present in the soil and groundwater at each area of concern. The RI is scoped to comply with the New Jersey Department of Environmental Protection (NJDEP) Technical Requirements for Site Remediation (July 1997). The information obtained from the RI will be used to determine the scope of the remedial action required.

## 2.0 BACKGROUND INFORMATION

The City of Newark has acquired the former Central Steel Drum Facility on Block 5074, Lot 1 at 843-871 Delancy Street in Newark. The City of Newark Engineering Department is interested in redeveloping the property. The Scope of Work for this site is prepared in accordance with the New Jersey Technical Requirements for Site Remediation (Technical Requirements), N.J.A.C. 7:26E-1.1, et seq. (July, 1997). The following presents a summary of the background information available on the site which is followed by our technical approach for the RI.

### 2.1 Site Description

The Central Steel Drum site is located at 843-871 Doremus Avenue, Block 5074, Lot 1, Newark, New Jersey. The site is about 8.5 acres and is situated in a heavily industrial area of Newark just east of the New Jersey Turnpike and Newark International Airport. The site is adjacent to a Texaco Petroleum Storage facility, the City of Newark Police firing range, and other industrial facilities. Within 1.5 miles of the site are residential areas, the Passaic Valley Sewage Commission treatment facility, multiple-use industrial and commercial properties, and a commuter/freight railroad yard and rail lines.

On the south end of the property is an existing wetland where drums have been observed. To the west, parallel to Doremus Avenue, are railroad tracks. The site, other than the main building, is vacant land covered with gravel and weeds. On the southeastern part of the facility is a drainage ditch which empties into the Newark Bay.

The site has been used as a commercial dumping ground (evidenced by truck tires, construction, debris, etc). The property is partially fenced and there are no gates at the entrance. However, vehicles cannot enter the property since there are four large concrete blocks (approximately 3 feet high) barring entry.

The site contains one main building (previously several buildings that are now interconnected) which was used for drum reconditioning operations. This production building is one story and approximately 200 ft x 500 ft in size. It consists of external masonry walls with a metal roof. The building is in deteriorated condition and the roof leaks. All utilities have been turned off, so there is no fire suppression system available in the building. The building has been unsecured and there is evidence of vandalism, dumping, and public entry. There are drains in the building, that were hidden under the debris.

An estimated 50,000 gallons of hazardous wastes are abandoned throughout the various containers on site. During the week of June 2, 1997, the Environmental Protection Agency (EPA) conducted a detailed inventory of the materials abandoned at the site. Their action included mapping, chemical label identification, and the numbering of drums. The EPA is currently conducting removal actions and is in the process of properly disposing of the drums. .

Central Steel Drum received drums from various industries ranging from food to paint manufacturing. It's drum reconditioning operations involved incineration, sandblasting, and repainting. Approximately 50 percent of the drums received on-site contained acids, flammables, water reactive, paints, and other waste materials. The remaining 50 percent contained incinerator ash. Incinerator ash was once used as fill on the property. The main hazardous constituent in the ash is lead.

## 2.2 Site History

Before 1951, the site was used by an ink pigment manufacturer, which is now part of what is known as Inmont Chemical Corporation. From 1951 to 1994, the site was used by the Central Steel Drum Company. Central Steel Drum was a steel drum reconditioning company which accepted "empty drums" for processing. Central Steel Drum processed approximately 3,000 thirty and fifty-five gallon drums per day and received daily shipments of varying quantities. Not all shipments were processed the same day since certain grades of drums were in higher demand. Approximately 30% of incoming drums formerly contained material from the paint industry, 30-40% contained materials from the food industry, and the remaining 30-40% contained varying miscellaneous residues such as adhesives, inks, and sandy material.

Central Steel Drum refinished "empty drums" by putting them through a process line, part of which involved incineration, cleaning, and painting. Central Steel Drum claimed to operate a "dry process", where water was not a waste product but recycled. The water in this operation was used for cooling purposes associated with the incinerator.

At the beginning of the refinishing process, drums were turned upside down on a conveyer line and moved through the drum incinerator where the residue inside the drum was burned at 2,000°F. During the process, a sludge was generated and accumulated by a scraper belt into an open bin. Any sludge not removed by the scrapers was removed by hand and stored in open drums. The bin and any drums containing this sludge were then taken to the sludge incinerator that exposed the sludge to a temperature range of 2,000 - 2,600°F for 8 hours. The resultant ash was then scraped out by hand from the incinerator and accumulated in a pile 10 to 15 feet away. This pile was reportedly placed on a concrete slab with no containment or protection from wind or rain erosion. The pile was reported by EPA to be approximately 4 to 5 feet high and 15 feet in diameter.

Central Steel Drum had their waste ash transported by Jonas Waste Removal located at Barkridge Road, Sewell, N.J. 08080 and was disposed of at Geological Reclamation Operations and Waste Systems, Inc located at Bordentown New Ford Mill Road, Morrisville, PA. 19067. However, in the past, this waste ash was mixed with fill material and used to fill potholes at the facility or as fill material in the rear of the property near the drainage ditch.

## 2.3 Previous Investigations

NJDEP files contain analyses of the Central Steel Drum incinerator ash residue and solid waste material conducted by the following laboratories over the period 1980 - 1983:

- Applied Geotechnical and Environmental Services Corp (AGES)
- G.R.O.W.S. Inc
- S & W Waste Inc
- Townley Research and Consulting Inc

The following contaminants were detected in samples analyzed at the above facilities: cadmium, chromium, copper, lead, zinc, carbon tetrachloride, chloroform, toluene, trichloroethylene, tetrachloroethylene, xylene, and petroleum hydrocarbons. EP Toxicity analyses by GROWS Inc and S&W Waste showed the material to be toxic for lead.

A NJDEP inspection during 1983 included the collection of samples from various locations around the Central Steel Facility. Soil samples analyzed by the New Jersey Department of Health (NJDOH) Laboratory showed volatile organic compound (VOCs) contamination up to 44,885 ppb. A liquid sample from an auger hole showed VOC contamination of 1,400 ppb. Soil samples collected by NJDEP showed soil contamination with benzene, ethyl benzene, toluene, methylene chloride, 1,1,1-trichloroethane, trichloroethylene, and tetrachloroethylene, with total VOC concentrations on the order of 99,000 ppb.

In April 1985, Environics submitted a hydrogeologic assessment report to NJDEP. A total of 6 monitoring wells were installed at the site, 3 shallow wells (10 feet deep) and 3 deep wells (25 feet deep). Samples at each of the monitoring wells were collected in November 1985. The sampling results showed the following metals to be present in the groundwater beneath the facility at concentrations above NJDEP groundwater quality criteria: arsenic, barium, cadmium, chromium, copper, lead, mercury, and zinc. Aside from metals, base/neutral and acid extractable compounds (BNAs) and VOCs were also detected at concentrations up to 412 ppb and 150 ppb, respectively. The most significant VOCs were xylene (104 ppb) and toluene (21 ppb).

The site was sampled in 1986 by EPA's contractor NUS Corp as part of the Superfund Preliminary Assessment/Site Investigation (PA/SI) Program. Samples included 4 soil, 3 groundwater, and 1 surface water. The soil sample results showed the following metals to be detected above NJDEP Residential Soil Cleanup Criteria: barium, chromium, copper, lead, and zinc. Metals and VOCs were detected in groundwater and surface water samples but were below NJDEP Groundwater Criteria.

Soil samples were collected in the vicinity of the drum storage area, and in the southeast corner of the property near the drainage ditch. Metal contaminants detected in the groundwater were generally higher for monitoring wells located near the production building entrance, while volatile organic contamination was higher in samples collected from a monitoring well in the rear of the property near the drainage ditch. The surface water sample showed VOCs in the drainage ditch which leads to the Newark Bay.

In November 1994, the NJDEP conducted field activities at the Central Steel Drum facility. Two borings were advanced during the visit. The first boring was collected in the area adjacent to the quenching sump. The second test boring was performed in a location adjacent to the conveyor where visual evidence of staining was present. The NJDEP stated that it was evident from the two test borings that the subsurface had been impacted by the operations at Central Steel Drum.

During the week of June 2, 1997, EPA conducted a more detailed inventory of the materials abandoned at the site. This action included mapping, chemical label identification, and the numbering of drums. On July 8, 1997, the removal actions were approved with operations beginning in October 1997. Removal activities include:

- Stabilizing and staging containers on the site
- Removing areas of obvious contaminated soils and ash piles
- Sampling and conducting analysis of wastes
- Preparation of waste streams for shipment
- Removal of asbestos contaminated materials/debris as required to search for buried CERCLA hazardous waste
- Transportation and disposal of all hazardous wastes in accordance with EPA's CERCLA Off-site Disposal Policy
- Conduct thorough soil sampling to determine the extent of contaminated soil for the

possibility of removal under an additional removal action.

As of November 26, 1997, EPA completed the drum staging activities and are awaiting the results of the sampling to determine the final disposition of the drums.

## 3.0 TECHNICAL APPROACH

The following describes URS Greiner's (URSG) technical approach for the RI at the Central Steel Drum facility.

### 3.1 Remedial Investigation Work Plan

URSG will review available site records and files related to environmental or health and safety compliance issues to identify any potential past situations which may indicate site contamination. Any areas of potential contamination identified during the records review will be described on drawings of the properties. URSG will also perform a review of the operating and ownership history of the site. Other records that will be reviewed include: former environmental permits and associated monitoring records; copies of any regulatory agency reports; and other documents and records readily obtainable from regulatory agencies.

URSG personnel will conduct a visual inspection of the existing building/structures and exterior areas of the site. The visual inspections may include: areas of past operations; waste generation and handling areas; fuel, oil, and chemical management systems; wastewater discharge areas; solid waste handling/disposal practices, underground storage tanks (USTs), transformers, stained soil, dry wells/drainage systems; and other areas of potential environmental concern.

URSG will prepare a written Draft RI Workplan for the site in conformance with NJDEP's Technical Requirements (7:26E-4.2). Following a review of the Draft Report by the City, URSG will incorporate comments and prepare a Final RI Workplan that can be submitted by the City to NJDEP.

The RI Workplan will discuss each identified area of concern on the site and the work that is required to support a remedial action decision. The RI Workplan will contain the following:

- Historical information on the site including aerial photo interpretations, a description of past activities, etc.
- A description of physical features of the site including topography, wetlands, geology, hydrology, soils, etc.
- Descriptions of identified areas of concern and contaminants detected from previous investigations.

- A detailed description of proposed investigation activities for each area of concern.
- The proposed approach for the ecological analysis.
- A detailed schedule of RI activities.

A Quality Assurance Project Plan (QAPP) and a Health and Safety Plan (HASP) will also be prepared as part of this workplan. The QAPP will be prepared in accordance with requirements in the Technical Guidelines, detailed in 7:26E-2.2. The site-specific HASP will be prepared in accordance with 29 CFR Parts 1910 and 1926 of the Federal Occupational Safety and Health Administration (OSHA) regulations.

### 3.2 Remedial Investigation Tasks

Following the review of the RI Workplan by the City and NJDEP, URSG will conduct a RI to determine the nature and extent of any contaminants that are present above any of the applicable remediation standards (i.e., New Jersey Soil Cleanup Criteria, the Groundwater Quality Standards, Surface Water Criteria, etc).

The RI will be based on the information obtained in previous investigations and will include the sampling of soils, groundwater, surface water, and sediment in accordance with the criteria presented in the New Jersey Technical Requirements (July, 1997). The proposed RI Scope of Work presented below was developed by URSG based on visits to the site property, a review of information obtained from the City of Newark, the NJDEP, and the EPA, and on our experience at similar sites. A summary of the proposed testing is provided on Table 1. The final RI sampling program will be presented in the RI Workplan.

**AOC 1 - Heavy Drum Storage Pad**: This is the area where workers stored drums that contained over 1 inch of residue. A trench was present in the concrete pad which likely was used to collect residue. Areas around the pad are unpaved. The proposed sampling at this AOC will consist of 6 soil samples in the trench and areas around the pad to the drainage ditch (to a depth of 4 feet), 3 Hydropunch groundwater samples, construction of 2 monitoring wells in a cluster (total depth of 10 feet for the shallow well and 50 feet for the deep well) and sampling of the new wells on two events. Soil and well samples will be analyzed for VOCs, SVOCs, Pesticides/PCBs, and metals. Hydropunch samples will be analyzed for VOCs only.

**AOC 2 - Drum Conveyor/De-Heading Shed:** This area was where drums were moved for processing. Two sumps are present in this area as well as stained soil and residues from past operations. The proposed sampling at this AOC will consist of 2 soil samples in the sumps, 5 soil samples in the vicinity of the former conveyor, 4 Hydropunch groundwater samples, construction of two monitoring wells (total depth of 10 feet) and sampling of the wells. Soil and well samples will be analyzed for VOCs, SVOCs, Pesticides/PCBs, and metals. Hydropunch samples will be analyzed for VOCs only.

**AOC 3 - Abandoned Truck Trailer Area:** This is the northern portion of the site where truck trailers were parked, many of which contained unprocessed drums. This area was impacted by miscellaneous spills in the past which have subsequently covered by gravel. The sampling proposed for this AOC will be focused on determining if a source of contamination in the soil is present and if an impact to groundwater has occurred. Since there is no defined source of contamination at this AOC, a soil and groundwater screening program is recommended. This program will consist of geoprobe soil sampling on 50 foot centers with a total of 28 soil samples collected. Samples will be screened onsite for VOCs. Based on these results, soil samples at 10 locations will be selected for analysis of VOCs, SVOCs, Pesticides/PCBs, and metals. Groundwater samples will be collected with a Hydropunch at each location where an impact to soil was noted from the field screening. At this time, 10 Hydropunch samples are proposed to be collected and analyzed for VOCs and metals. Sampling in this AOC will also include the two existing wells sampled on two events for VOCs, SVOCs, Pesticides/PCBs, and metals.

**AOC 4 - Drum Flip Operation Area:** This is the area of the site where drums were flipped prior to their incineration. Since no containment was in place in this area, impacts to soil and groundwater are likely from the numerous spills that are believed to have occurred here. The proposed sampling at this AOC will consist of 4 soil samples in the vicinity of the former operations, and the construction of two monitoring wells in a cluster (total depth of 10 feet for the shallow well and 50 feet for the deep well) and sampling of the new and two existing wells on two events. Soil and well samples will be analyzed for VOCs, SVOCs, Pesticides/PCBs, and metals.

**AOC 5 - Incinerator Area:** This is the area used for the incineration of the contents of the drums received at the site. A paved area is located to the north of the incinerator near the dust collectors. Just south of the incinerator area is the quenching sump which was used for the spraying of water to remove excess residue from the drums. Water used in the quenching sump drained via a trough into a metal lined sump. The proposed sampling at this AOC will consist of 12 soil samples to a depth of 4 feet in a grid pattern in the incinerator/drum flip area. Soil samples will be analyzed for VOCs, SVOCs, Pesticides/PCBs, and metals. Up to six Hydropunch groundwater samples will be collected in the soil borings and analyzed for VOCs only. The construction of two monitoring wells in a cluster (total depth of 10 feet for the shallow well and 50 feet for the deep well) in the most contaminated area based on the soil and Hydropunch results, and the sampling of the wells on two events will also be conducted. The well samples will be analyzed for VOCs, SVOCs, Pesticides/PCBs, and metals.

**AOC 6- Septic System:** A septic disposal system below the former office trailers was used by this facility for the discharge of sanitary waste prior to 1951. Since it is possible that chemicals could have disposed in this septic system, sampling is required. The proposed sampling at this AOC will consist of 2 soil samples and two Hydropunch groundwater samples. Each of the soil samples will be analyzed for VOCs, SVOCs, Pesticides/PCBs, and metals. The Hydropunch groundwater samples will be analyzed for VOCs only.

**AOC 7 - Fuel Storage Tanks:** Two underground storage tanks (USTs), a 4,000 gallon diesel fuel UST and a 3,000 gallon gasoline UST, were present in the southwestern portion of the property and were recently removed under the USEPA emergency response action. Due to the age of the tanks (about 15 years), there is strong likelihood that a release occurred. The proposed sampling at this AOC will be determined when EPA releases their information from the November, 1997 removal action. At this time, it is expected that contamination delineation will be limited to groundwater only since EPA removed the visibly impacted soils. Six Hydropunch groundwater samples are proposed to be collected and analyzed for VOCs. One shallow monitoring well is proposed (total depth of 10 feet) with the samples analyzed for VOCs, SVOCs, Pesticides/PCBs, and metals.

**AOC 8 - Raw Material Storage Area:** The raw material storage area was located in a small shed south of the main building. Materials stored in this building included paints and other chemicals in drums and small containers. The proposed sampling at this AOC will include four soil samples analyzed for VOCs, SVOCs, Pesticides/PCBs, and metals. At one of the soil sample locations, a Hydropunch groundwater sample will be collected and analyzed for VOCs and metals.

**AOC 9 - Main Building Area:** Operations that were conducted in the main building included the painting of drums in three spray booths and sand blasting of drums. Paint residues are present on the concrete floors of the building and a trench is present outside the spray booths. The proposed sampling at this AOC will include 8 soil samples collected directly beneath the interior trench and analyzed for VOCs, SVOCs, Pesticides/PCBs, and metals, 4 chip samples of paint impacted areas analyzed for metals, and 4 Hydropunch samples beneath selected areas of the trench analyzed for VOCs and metals. In addition, existing wells SE-S1 and SE-D1 will be incorporated into the basewide groundwater sampling program with two rounds of sampling and analysis for VOCs, SVOCs, Pesticides/PCBs, and metals.

**AOC 10 - South Truck Trailer Area:** This area contained trailers that stored unprocessed drums. Gravel has been used to cover much of this area which could hide potential impacts from past spills. The proposed sampling at this AOC will include 12 soil samples collected in a grid pattern in the gravel covered area and analyzed for VOCs, SVOCs, Pesticides/PCBs, and metals; 6 Hydropunch groundwater samples analyzed for VOCs; and the construction of 2 monitoring wells in a cluster (total depth of 10 feet for the shallow well and 50 feet for the deep well). Samples will be collected form the new monitoring wells and the two existing wells (SW-S and SW-D) on two events and analyzed for VOCs, SVOCs, Pesticides/PCBs, and metals.

**AOC 11 - Drainage Ditch:** The drainage ditch present at the southern and eastern boundary of the site has most likely been impacted by previous operations. This ditch requires an assessment to determine the impacts of such discharges on the surface water and sediment quality as well as detailed information on the ecological impacts of this ditch both onsite and to the surrounding environment. The proposed sampling at this AOC will include 14 soil/sediment samples collected at 100 foot intervals along the ditch and analyzed for VOCs, SVOCs, Pesticides/PCBs, and metals. If surface water is present, a surface water sample will be collected in up to 7 of the locations and

analyzed for SVOCs, Pesticides/PCBs, and metals

### 3.3 Ecological Assessment

An ecological assessment will be conducted of the entire Central Steel Drum property in accordance with N.J.A.C. 7:26E-4.7. The ecological assessment will include a site-wide assessment of receptors and an evaluation of their potential impacts in accordance with the procedures and references approved by the NJDEP.

### 3.4 Remedial Investigation Report

A Remedial Investigation report will be prepared in accordance with N.J.A.C. 7:26E-4.8 and include the following: historical site information, the physical setting of the site, and a description of physical conditions at and in the vicinity of the site, a description of the work conducted, the quality assurance/quality control measures followed, soil boring information, laboratory analytical data, a discussion on the reliability of the laboratory data, the nature and extent of contamination present in each area of concern to the extent that can be determined from the data, a summary of the findings, and recommendations for additional sampling or remedial action. A draft and final RI report will be prepared.

### 3.5 Geographical Information System (GIS) Data Formatting

Site testing and analytical data generated from this RI shall be delivered in accordance with New Jersey Department of Environmental Protection and the City of Newark's GIS compatibility configurations; specifically: Microstation.DGN format; Oracle Export files software; NAD 1983 State Plane Coordinates; and 3/5 inch disks, 4 or 8 mm tape, or CD ROM files media (whichever the City requests).

TABLE 1

SUMMARY OF PROPOSED TESTING
REMEDIAL INVESTIGATION FOR THE FORMER CENTRAL STEEL DRUM SITE
843-871 DELANCY STREET, NEWARK, NEW JERSEY

| AREA OF CONCERN | MEDIA | PURPOSE & DESCRIPTION | ANALYSES |
|---|---|---|---|
| AOC 1 - HEAVY DRUM STORAGE PAD | SOIL | 6 Soil borings to the water table (est. 4 feet) to collect samples. | VOCs, SVOCs, Pesticides/PCBs, Metals |
| | WATER | 3 Hydropunch samples and 2 monitoring wells sampled on 2 events<br>Monitoring wells are in a cluster of a shallow well (10 feet) and a deep well (to 50 feet) | VOCs only (Hydropunch)<br>VOCs, SVOCs, Pesticides/PCBs, Metals (wells) |
| AOC 2 - DRUM CONVEYOR/DEHEADING SHED | SOIL | 7 Soil borings to the water table at 5 locations and 2 samples in the sumps. | VOCs, SVOCs, Pesticides/PCBs, Metals |
| | WATER | 4 Hydropunch samples and 2 monitoring wells (10 feet) sampled on 2 events | VOCs only (Hydropunch)<br>VOCs, SVOCs, Pesticides/PCBs, Metals (wells) |
| AOC 3 - ABANDONED TRUCK TRAILER AREA | SOIL | 10 Soil borings to the water table (est. 4 feet) based on screening results from 28 locations. | VOCs, SVOCs, Pesticides/PCBs, Metals |
| | WATER | 10 Hydropunch samples and sampling of 2 existing wells for 2 events. | VOCs and metals (Hydropunch)<br>VOCs, SVOCs, Pesticides/PCBs, Metals (wells) |
| AOC 4 - DRUM FLIP OPERATION AREA | SOIL | 4 Soil samples to the water table (est. 4 feet) | VOCs, SVOCs, Pesticides/PCBs, Metals |
| | WATER | 2 monitoring wells in a cluster, sampling of the new wells and 2 existing wells on 2 events<br>Monitoring wells are in a cluster of a shallow well (10 feet) and a deep well (to 50 feet) | VOCs, SVOCs, Pesticides/PCBs, Metals (wells) |
| AOC 5 - INCINERATOR AREA | SOIL | 12 Soil samples to the water table (est. 4 feet) | VOCs, SVOCs, Pesticides/PCBs, Metals |
| | WATER | 6 Hydropunch samples and 2 monitoring wells sampled on 2 events<br>Monitoring wells are in a cluster of a shallow well (10 feet) and a deep well (to 50 feet) | VOCs only (Hydropunch)<br>VOCs, SVOCs, Pesticides/PCBs, Metals (wells) |
| AOC 6 - SEPTIC SYSTEM | SOIL | 2 Soil samples to the water table (est. 4 feet) | VOCs, SVOCs, Pesticides/PCBs, Metals |
| | WATER | 2 Hydropunch samples | VOCs |
| AOC 7 - FUEL STORAGE TANKS | SOIL | Sampling conducted by EPA during removal activities. | |
| | WATER | 6 Hydropunch samples and 1 monitoring well (10 feet) sampled on 2 events | VOCs only (Hydropunch)<br>VOCs, SVOCs, Pesticides/PCBs, Metals (wells) |
| AOC 8 - RAW MATERIAL STORAGE AREA | SOIL | 4 Soil samples to the water table (est. 4 feet) | VOCs, SVOCs, Pesticides/PCBs, Metals |
| | WATER | 1 Hydropunch sample<br>Sampling of 2 existing wells on 2 events | VOCs and metals |
| AOC 9 - MAIN BUILDING AREA | SOIL | 8 Soil samples to the water table (est. 4 feet)<br>4 Chip samples | VOCs, SVOCs, Pesticides/PCBs, Metals<br>Metals |
| | WATER | 4 Hydropunch samples | VOCs and metals<br>VOCs, SVOCs, Pesticides/PCBs, Metals |
| AOC 10 - SOUTH TRUCK TRAILER AREA | SOIL | 12 Soil samples to the water table (est. 4 feet) | VOCs, SVOCs, Pesticides/PCBs, Metals |
| | WATER | 6 Hydropunch, 2 monitoring wells in a cluster (10 and 50 feet)<br>sampling of the new wells and 2 existing wells on 2 events | VOCs only (Hydropunch)<br>VOCs, SVOCs, Pesticides/PCBs, Metals (wells) |
| AOC 11 - DRAINAGE DITCH | SOIL | 14 Soil/sediment samples | VOCs, SVOCs, Pesticides/PCBs, Metals |
| | WATER | Up to 7 surface water samples | SVOCs, Pesticides/PCBs, Metals |

AOC - AREA OF CONCERN
NJDEP - NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
VOCs - VOLATILE ORGANIC COMPOUNDS
SVOCs - SEMI-VOLATILE ORGANIC COMPOUNDS
TPHC - TOTAL PETROLEUM HYDROCARBONS
QA/QC - QUALITY ASSURANCE/QUALITY CONTROL

# APPENDIX 3

**COST PROPOSAL AND SCHEDULE**
**Central Steel Drum Site**
**843-871 Delancy Street, Newark**
**Block 5074, Lot 1**
**City of Newark, Department of Engineering**

Costs for the investigations at the Central Steel Drum Site, 843-871 Delancy Street, Newark, NJ, Block 5074, Lot 1 have been developed by URS Greiner, Inc. based on the scope of work outlined previously. The costs for this site are as follows:

| | |
|---|---|
| Remedial Investigation | $194,018 |
| NJDEP Oversight | 9,701 |
| **TOTAL** | **$203,719** |

Details on the cost proposal are provided on Tables 2, 3, and 4. The costs are based on conducting the drilling and sampling program on a continuous basis and submitting the samples to the laboratory on a standard four-week turnaround time.

The schedule for completing the scope of work is as follows:

| | |
|---|---|
| Completion of Draft RI Workplan: | 5 weeks after start of project |
| Review of Draft RI Workplan by NJDEP: | 4 weeks |
| Completion of Final RI Workplan: | 3 weeks after receipt of comments on Draft Workplan |
| Start of RI Field Activities: | 2 weeks after approval of RI Workplan |
| Completion of Field Activities: | 5 weeks after start of RI |
| Laboratory Analysis of Samples | 4 weeks after completion of field activities |
| Completion of Draft RI Report: | 6 weeks after receipt of laboratory data |
| Review of Draft RI Report by NJDEP: | 6 weeks |
| Completion of Final RI Report: | 3 weeks after receipt of comments on Draft Report |

# TABLE 2
## PROJECT COST PROPOSAL
## REMEDIAL INVESTIGATION FOR CENTRAL STEEL DRUM
## DELANCY STREET, NEWARK, NEW JERSEY

| | Project Officer | Project Manager | Scientist/ Engineer | Jr. Scientist Engineer | Clerical & CADD | Total Hours | Labor Cost |
|---|---|---|---|---|---|---|---|
| | P-4 | P-3 | P-2 | P-1 | T-3 | | |
| RI WORKPLAN (7:26E-4.2) | 4 | 20 | 40 | 120 | 30 | 214 | $11,550 |
| RI OF SOILS (7:26E-4.3) | | 8 | 8 | 90 | | 106 | $5,495 |
| RI OF GROUNDWATER (7:26E-4.3) | | 8 | 8 | 120 | | 136 | $6,920 |
| RI OF SURFACE WATER, ETC. (7:26E-4.6) | | 4 | 4 | 60 | | 68 | $3,460 |
| ECOLOGICAL EVAL. (7:26E-4.7) | 2 | 20 | 60 | 140 | 14 | 236 | $13,015 |
| RI REPORT (7:26E-4.8) | 4 | 40 | 120 | 160 | 48 | 372 | $21,030 |
| TOTAL | 10 | 100 | 240 | 690 | 92 | 1132 | $61,470 |

**Total Labor** **$61,470**

**Other Direct Costs**

| Office Costs | Rate | Quantity | Total Costs |
|---|---|---|---|
| Reproduction | $0.08 | 8000 | $640 |
| Overnight Mail | $15.00 | 4 | $60 |
| Overnight Package | $50.00 | 3 | $150 |
| Mail | $25.00 | 4 | $100 |
| | | | |
| | | | |
| | | | |
| Total Office Costs | | | $950 |

| Equipment & Material Costs | Total Costs |
|---|---|
| Equipment Purchases | $0 |
| Supplies | $750 |
| Equipment Rental | $4,200 |
| Trailer Rental | $2,400 |
| | |
| | |
| Total Equip. & Material Costs | $7,350 |

| Travel & Per Diem | Rate | Quantity | Total Costs |
|---|---|---|---|
| Rental Van (per day) | $76.00 | 16 | $1,216 |
| Rental Car (per day) | $48.00 | 0 | $0 |
| Tolls (/Day) | $2.00 | 16 | $32 |
| Food & Lodging | $76.00 | 0 | $0 |
| Mileage | $0.31 | 1800 | $558 |
| | | | |
| | | | |
| Total Travel Costs | | | $1,806 |

| Subcontractor Costs | Total Costs |
|---|---|
| Drilling (SEE TABLE 3) | $41,427 |
| Laboratory (SEE TABLE 4) | $78,015 |
| | |
| Surveying | $3,000 |
| | |
| | |
| | |
| Total Subcontractor Costs | $122,442 |

| | |
|---|---|
| TOTAL SUBCONTRACTORS/EXPENSES | $132,548 |
| TOTAL LABOR | $61,470 |
| TOTAL COSTS | $194,018 |

NJDEP Oversight Costs (5%) $9,701
Total Costs $203,719

**TABLE 3**
**DRILLING COSTS**
**REMEDIAL INVESTIGATION FOR CENTRAL STEEL DRUM**
**DELANCY STREET, NEWARK, NEW JERSEY**

| Item | Unit | Amount | Unit Cost | Cost |
|---|---|---|---|---|
| | | | | |
| **SOIL BORINGS** | | | | |
| Drilling - 4¼ HSA w/ cont. sampling | DAY | 5.0 | $1,800 | $9,000 |
| (65 borings to 4 feet) | | | | |
| mob/demob | EACH | 1 | $500 | $500 |
| **TOTAL SOIL BORINGS** | | | | **$9,500** |
| | | | | |
| **GROUNDWATER WELL CONSTRUCTION** | | | | |
| Drilling - 4¼ HSA w/ cont. sampling | DAY | 10 | $1,400 | $14,000 |
| (7 wells to 10 feet deep and 4 wells to 50 feet) | | | | |
| 2" PVC Screen | L.F. | 75 | $8 | $600 |
| 2" PVC Riser | L.F. | 200 | $5 | $1,000 |
| Sand Pack (Tremie) | L.F. | 12 | $50 | $600 |
| Bentonite Seal | L.F. | 12 | $50 | $600 |
| Cement/Bentonite Grout | L.F. | 12 | $30 | $360 |
| Concrete | L.F. | 11 | $12 | $132 |
| 3" Bumper Post | EACH | 22 | $40 | $880 |
| 3' x 3' Reinforced Concrete Pad | EACH | 11 | $250 | $2,750 |
| Master Locks | EACH | 11 | $10 | $110 |
| Protective Casings | EACH | 11 | $100 | $1,100 |
| Well Points | EACH | 0 | $200 | $0 |
| 55 gal. Drums | EACH | 16 | $45 | $720 |
| Permits | EACH | 11 | $25 | $275 |
| drum disposal | EACH | 16 | $550 | $8,800 |
| **TOTAL WELL CONSTRUCTION** | | | | **$31,927** |
| **TOTAL DRILLING COSTS** | | | | **$41,427** |

**TABLE 4**
**LABORATORY ANALYSES COSTS**
**REMEDIAL INVESTIGATION FOR CENTRAL STEEL DRUM**
**DELANCY STREET, NEWARK, NEW JERSEY**

| Item | Unit | Amount | Unit Cost | Cost |
|---|---|---|---|---|
| **SOIL SAMPLES (1)** | | | | |
| Volatile Organics (VOCs+10) | Soil | 79 | $125 | $9,875 |
| PP metals | Soil | 83 | $115 | $9,545 |
| BNA + 25 | Soil | 79 | $150 | $11,850 |
| TPHC - DRO | Soil | | $40 | $0 |
| Pesticides/PCBs | Soil | 79 | $115 | $9,085 |
| QA/QC SAMPLES (2) | Soil | 8 | $545 | $4,360 |
| **TOTAL - SOIL SAMPLES** | | | | **$44,715** |
| | | | | |
| **GROUNDWATER SAMPLES** | | | | |
| Volatile Organics (VOCs) | Water | 80 | $125 | $10,000 |
| PP Metals | Water | 35 | $115 | $4,025 |
| Pesticides/PCBs | Water | 35 | $115 | $14,025 |
| BNA + 25 | Water | 35 | $150 | $5,250 |
| QA/QC SAMPLES (2) | Water | 5 | $545 | $2,725 |
| **TOTAL - GROUNDWATER SAMPLES** | | | | **$33,300** |
| **TOTAL LABORATORY COSTS** | | | | **$78,015** |

NOTES:

1. Soil samples will be collected in accordance with the New Jersey Department of Environmental Protection Technical Requirements for Site Remediation (March 1997).

2. QA/QC samples will be collected in accordance with the Technical Requirements as follows:
   1 duplicate sample per 10
   1 matrix spike and matrix spike sample per 10
   1 field blank for the soil sample collection device only
   1 trip blank per 10 soil/water samples (VOCs only)

# STATE OF NEW JERSEY
# DIVISION OF LAW
# FACSIMILE TRANSMITTAL FORM

DATE 12-29-95

SEND TO: JERRY WEGAN - DEP FAX NO.: 633-1454

FROM: GLENN REYNOLDS

NUMBER OF PAGES (Including this transmittal sheet): 25

OFFICE NO.: 984-5189

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MESSAGE: REF: CENTRAL STEEL DRUM

BBG000156

103- DEED BARGAIN AND SALE (Covenant as to Grantor's Acts) INC TO IND OR CORP -- Plain Language ADC VST-1

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Prepared by: (Print signer's name below signature)

Brian J. Halligan

BRIAN J. HALLIGAN

# DEED

This Deed is made on October 26 1988

BETWEEN

Jane Ratner Mattson and Marian Ratner Abrams as co-executrices of the Last Will & Testament of Mollie Ratner, Deceased

whose address is 25 Hardscrabble Hill, Chappaqua, New York and 10810 Missouri Ave., Los Angeles, Ca., respectively referred to as the Grantor.

AND

Jane Ratner Mattson, Individual Co-Tenant and

Marian Ratner Abrams, Individual Co-Tenant

whose post office address is 25 Hardscrabble Hill, Chappaqua, N. Y. and 10810 Missouri Ave., Los Angeles, Ca., respectively referred to as the Grantee. The words "Grantor" and "Grantee" shall mean all Grantors and all Grantees listed above.

**Transfer of Ownership.** The Grantor grants and conveys (transfers ownership of) the property described below to the Grantee. This transfer is made for the sum of One Dollar ($1.00)

The Grantor acknowledges receipt of this money.

**Tax Map Reference.** (N.J.S.A. 46:15-2.1) Municipality of Newark
Block No. 5074 Lot No. 1 Account No.

☐ No property tax identification number is available on the date of this deed. (Check box if applicable.)

* an undivided 33 1/3 % in

**Property.** The property consists of the land and all the buildings and structures on the land in the City of Newark County of Essex and State of New Jersey. The legal description is:

SEE ATTACHED SCHEDULE A

JAN 11 2 55 PM '89

506 Ore 779

SCHEDULE A

BEGINNING at a pipe set in the easterly line of Bay Shore Connecting Railroad at its interesection with the southerly line of Delancy Street; and from thence running south 33 degrees 09 minutes 30 seconds west along said easterly line of Bay Shore Connecting Railroad 611.61 feet to another pipe set in said easterly line of Bay Shore Connecting Railroad, and to the center line of Jasper Creek; thence along said center line of Jasper Creek south 32 degrees 17 minutes 30 seconds east 107.77 feet to a pipe; thence south 39 degrees 18 minutes east 40.70 feet to a pipe, and land now or formerly belonging to Emily R. McGregor; thence along said land north 44 degrees 21 minutes east 100.50 feet to a pipe set at a corner in the last mentioned land; thence along the same south 49 degrees 32 minutes 30 seconds east 774.70 feet; more or less, to a pipe and certain land (consisting of approximately forty-five acres) hitherto conveyed by Internation Inks, Inc. to L. A. Ault, Trustee, by deed dated May 29, 1928, and recorded in the Office of the Register of the County of Essex on June 6, 1928; thence along said last mentioned land north 33 degrees 9 minutes 30 seconds east 677.88 feet to a pipe set in said southerly line of said Delancy Street at a point which is distant 923.33 feet on a course south 56 degrees 54 minutes 30 seconds east from the point of beginning; and thence along said southerly line of Delancy Street north 56 degrees 54 minutes 30 seconds west 923.33 feet to the easterly line of Bay Shore Connecting Railroad at the point of BEGINNING.

EXCEPTING, however, all that certain tract or parcel of land situate, lying and being in the City of Newark, in the County of Essex and State of New Jersey.

BEGINNING at a point in the easterly right-of-way line of the Bay Shore Connecting Railroad, said point being distant south 56 degrees 54 minutes 30 seconds east 50 feet from the intersection of the easterly line of Doremus Avenue and the southerly line of Delancy Street measured along said southerly line of Delancy Street, and south 33 degrees 09 minutes 30 seconds west 441.61 feet measured along said easterly right-of-way line of the Bay Shore Connecting Railroad; running thence south 33 degrees 09 minutes 30 seconds west still along said easterly right-of-way line of the Bay Shore Connecting Railroad 170 feet to a point; thence south 32 degrees 17 minutes 30 seconds east 107.77 feet to the point of intersection of lands formerly of Austen H. McGregor Estate, Inc.; thence south 39 degrees 18 minutes east along said lands fromerly of Austen H. McGregor Estate, Inc., 40.70 feet; thence north 44 degrees 21 minutes east 100.50 feet still along lands formerly of Austen H. McGregor Estate, Inc. to a point; thence north 20 degrees 59 minutes 34 seconds west 193.41 feet to the point of place of Beginning.

BEING the same premises conveyed by Dore RealtyCo., Inc. to Abbie Greenberg, Mollie Ratner, Dorothy Greenberg and Bessie Baron by deed dated July 22, 1966 and recorded on July 26, 1966 in the Office of the Register of Essex County at Deed Book 4183, Page 233.

BEING the same premises of which Abbie Greenberg and Gertrude Greenberg transferred their 25% interest thereof to Bessie Baron, Mollie Ratner and Dorothy Greenberg by Deed dated August 30, 1968 and recorded September 3, 1968 in the Office of the Essex County Register, Deed Book 4284, Page 883.

* AND EXCEPTING all that certain tract or parcel of land and premises hereinafter more particularly described, situate, lying and being in the City of Newark, in the County of Essex, as follows:

BEGINNING at a point in the south line of Delancy Street therein distant 388.35 feet easterly from the intersection of same and the east right-of-way line of the Bay Shore Connecting Railroad, said intersection being in the south line of Delancy Street therein distant 50.00 feet easterly from the intersection of the south line of Delancy Street and the east line of Doremus Avenue; thence along Delancy Street south 56 degrees 54 minutes 30 seconds East, 535.00 feet; thence 33 degrees 05 minutes 30 seconds West 677.88 feet; thence North 87 degrees 52 minutes 30 seconds West, 162.01 feet; thence North 33 degrees 05 minutes 30 seconds East, 452.44 feet; thence North 56 degrees 54 minutes 30 seconds West, 375.00 feet; thence North 33 degrees 05 minutes 30 seconds East, 200.00 feet to the south line of Delancy Street and point of beginning.

The above description is according to a survey made May 1, 1952, by Francis J. A. Hoare, Engineer and Surveyer, Newark, N. J.

Subject to any state of facts an accurate survey may show.

SUBJECT, however, to a certain easement granted to John Maneely Company by Philip Ruxton, Incorporated, a New York Corporation, by Indenture dated August 5, 1947, and recorded in the Register's Office of the County of Essex on August 13, 1947, in Deed Book K110 for said County on pages 66, 68, for a single tract connection to the Bay Shore Connecting Railroad in and over a certain right-of-way situate in the City of Newark, County of Essex, State of New Jersey and extending ten (10) feet on either side of the center line of said right-of-way, which center line is described as follows:

BEGINNING at a point in the easterly line of Bay Shore Connecting Railroad distant southerly ninety-three and ninety one-hundredths (93.90) feet from the intersection of the southerly line of Delancy Street with the easterly line of Bay Shore Connecting Railroad; thence northeasterly on a curve to the right with a radius of two hundred and eighty-seven and ninety one-hundredths (287.90) feet a distance of one hundred and one and nineteen one-hundredths (101.19) feet to a point in the southerly line of Delancy Street distant easterly thirty-six and thirty one-hundredths (36.30) feet from the intersection of the easterly line of Bay Shore Connection Railroad with the southerly line of Delancy Street.

**Promises by Grantor.** The Grantor promises that the Grantor has done no act to encumber the property. This promise is called a "covenant as to grantor's acts" (N.J.S.A. 46:4-6). This promise means that the Grantor has not allowed anyone else to obtain any legal rights which affect the property (such as by making a mortgage or allowing a judgment to be entered against the Grantor).

**Signatures.** The Grantor signs this Deed as of the date at the top of the first page.

Witnessed by: x [signature] x Jane Ratner Mattson (Seal)
Jane Ratner Mattson, Co-Executrix

x [signature]

x [signature]
Marian Ratner Abrams, Co-Executrix

CALIFORNIA
STATE OF ~~NEW JERSEY~~, COUNTY OF LOS ANGELES SS.:

I CERTIFY that on October 19, 1988,

Marian Ratner Abrams personally came before me and acknowledged under oath, to my satisfaction, that this person (or if more than one, each person):

(a) is named in and personally signed this Deed;
(b) signed, sealed and delivered this Deed as his or her act and deed; and
(c) made this Deed for $ 1.00 as the full and actual consideration paid or to be paid for the transfer of title. (Such consideration is defined in N.J.S.A. 46:15-5.)

x [signature]
Notary Public

OFFICIAL SEAL
Phillip J. Gomez
NOTARY PUBLIC-CALIFORNIA
PRINCIPAL OFFICE IN
LOS ANGELES COUNTY
My Commission Expires May 28, 1991

M5050R 788

1744

THIS AGREEMENT made this 15th day of September, 1968 by and between MOLLIE RATNER, residing at 135 Ocean Parkway, Brooklyn, New York, BESSIE BARON, residing at 1299 Wellington Avenue, West Englewood, New Jersey and DOROTHY GREENBERG, residing at 6131 La Gorce Drive, Miami Beach, Florida, (hereinafter sometimes called the "Wives") and their respective husbands, namely MURRAY RATNER, LEO BARON and JACK GREENBERG.

WITNESSETH:

WHEREAS the Wives are owners, as tenants in common, each having a one-third interest of the premises known as 704 Doremus Avenue, Newark, New Jersey, and

WHEREAS Dore Realty Co., Inc., the predecessor in title of the Wives, as landlord, entered into a written lease of the said property with Abbie Greenberg, as tenant, under date of June 6, 1966, thereafter assigned by Abbie Greenberg to Central Steel Drum Co., Inc., for a term of ten years at the net net annual rent of $42000 payable at the rate of $3500 monthly, with a right or privilege of renewal for an additional ten years at a net net rent of $36,000 per year payable at the rate of $3000 monthly, and

WHEREAS it is the intent and purpose of the parties hereto that they, and their heirs and successors in the event of the death of any of the parties hereto shall continue to receive said rents and income during the period of the said lease, and any aforesaid renewal thereof, and

WHEREAS the parties are desirous that no sale or dis-

position of the said real property, by partition or by any other means, shall be made by the parties during the term of the said lease or any renewal thereof,

NOW, THEREFORE, in consideration of the sum of One ($1.00) Dollar each to the other in hand paid and in consideration of the mutual promises herein contained, the parties agree as follows:

1. The parties hereby incorporate by reference, as their mutual agreement and understanding, the recitals hereinabove set forth.

2. The parties agree, for themselves, their heirs, successors and assigns, that during the term of the aforesaid lease of the premises described above, and during the term of any renewal thereof, they will not sell, assign or otherwise dispose of, by partition, sale or any other means, their respective interests in the said premises known as 704 Doremus Avenue, Newark, New Jersey.

3. The parties hereby waive, for the term or terms aforesaid, any and all rights which they, or any of them, may have to demand or sue for partition of the said premises or to institute any proceeding in law or equity which would divest the parties herein of their respective rights or interests as tenants in common of the aforesaid premises, or of their rights and interests in the rents and income of said premises.

4. This agreement may be modified, superseded or revoked only by a writing executed and acknowledged by all of the

parties hereto in the form required for recording deeds in the State of New Jersey.

5. This agreement, and all of the terms hereof shall be binding upon the parties hereto and upon their respective heirs, successors, executors, administrators and assigns.

IN WITNESS WHEREOF the parties have hereunto set their hands and seals all of the day and year first above written.

Mollie Ratner (L.S.)
MOLLIE RATNER

Bessie Baron (L.S.)
BESSIE BARON

Dorothy Greenberg (L.S.)
DOROTHY GREENBERG

Murray Ratner (L.S.)
MURRAY RATNER

Leo Baron (L.S.)
LEO BARON

Jack Greenberg (L.S.)
JACK GREENBERG

EXECUTION DATE = 1/7/93

RECEIVED
DIVISION OF FACILITY
WIDE ENFORCEMENT

JAN 19 12 47 PM '94

WATER & HAZARDOUS
WASTE ENFORCEMENT
METRO BUREAU

ROBERT J. DEL TUFO
Attorney General of New Jersey
Through: Steven J. Madonna,
Environmental Prosecutor
Attorney for Plaintiff, State of New Jersey
Department of Environmental Protection and Energy
R.J. Hughes Justice Complex
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Trenton, New Jersey 08625

By: STEVEN J. MADONNA
Assistant Attorney General
Environmental Prosecutor
(609) 292-3924

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MARTIN McHUGH
Deputy Attorneys General
Assistant State Environmental Prosecutors
(609) 292-1509

SUPERIOR COURT OF NEW JERSEY
LAW DIVISION - ESSEX COUNTY
DOCKET NO. C-152-91

| | |
|---|---|
| STATE OF NEW JERSEY, DEPARTMENT OF ENVIRONMENTAL PROTECTION,<br><br>Plaintiff,<br><br>v.<br><br>CENTRAL STEEL DRUM, DOROTHY GREENBURG, BESSIE BARON, JANE RATNER-MATTSON and MARIAN RATNER-ABRAMS,<br><br>Defendants. | Civil Action<br><br>JUDICIAL CONSENT ORDER BETWEEN THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ENERGY AND CENTRAL STEEL DRUM |

This Judicial Consent Order is entered into pursuant to the authority vested in the Commissioner of the New Jersey Department of Environmental Protection and Energy (hereinafter "NJDEPE" or the "Department") by N.J.S.A. 13:1D-1 et seq. and 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 Air Pollution Control Act of 1954, N.J.S.A. 26:2C-1 et seq., the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et seq. and duly delegated to the Assistant Directors for the Responsible Party Cleanup Element of the Division of Responsible Party Site Remediation and the Environmental Enforcement Element of the Division of Environmental Quality pursuant to N.J.S.A. 13:1B-4.

FINDINGS

1. Plaintiff, New Jersey Department of Environmental Protection and Energy ("Department," "DEPE" or "NJDEPE"), is a body corporate and politic of the State of New Jersey and the successor agency to the former New Jersey Department of Environmental Protection ("DEP"). It is authorized to supervise, monitor, permit, regulate and prohibit the discharge of hazardous substances and pollutants pursuant to the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et seq. and the Air Pollution Control Act, N.J.S.A. 26:2C-1 et seq. Furthermore, pursuant to the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq., the Department is given the responsibility to supervise and regulate solid and hazardous waste facilities and to adopt codes, rules and regulations concerning such activities. In order to enforce these statutes and regulations, the Department is authorized by N.J.S.A. 13:1E-9 to institute a summary action or proceeding pursuant to R. 4:67-1 et seq. in the Superior Court for injunctive relief and statutory penalties against any solid or hazardous waste disposal facility which is operated in violation of the Solid Waste Management Act, or in violation of a code or regulation promulgated thereto, N.J.A.C. 7:26-1 et seq. The court in such an action is authorized to proceed in a summary manner. N.J.S.A. 13:1E-9(d).

2. Defendants Dorothy Greenburg, Bessie Baron, Jane Ratner-Mattson and Marian Ratner-Abrams ("defendant owners") are the current owners of the Central Steel Drum facility located at 704 Doremus Avenue (Block 5074, Lot 1), Newark, Essex County, New Jersey, the property which is the subject matter of this litigation ("the site"). Dorothy Greenburg and Bessie Baron each have a 1/3 share in the ownership of the site, while Jane Ratner-Mattson and Marian Ratner-Abrams share a 1/3 share, which was willed to them by their late mother, Mollie Ratner.

3. Bessie Baron, Mollie Ratner, Dorothy Greenburg and Gertrude Greenburg purchased the site from Interchemical Corporation in 1952. On April 30, 1965, the aforementioned parties incorporated Dore Realty Company, Inc. and transferred the owner-

ship of the Subject site to that company, with themselves as the principals. On July 26, 1966, Bessie Baron, Dorothy Greenburg, Mollie Ratner, Gertrude Greenburg and Abbie Greenburg purchased the site from Dore Realty. Dore Realty dissolved on the same date, with the aforementioned parties signing the certificate of dissolution. On September 3, 1968, Bessie Baron, Mollie Ratner and Dorothy Greenburg bought Abbie and Gertrude Greenburg's shares of the site for $100,000, retaining full ownership of the site.

4. Defendant Central Steel Drum ("CSD") is a New Jersey corporation with its principal place of business located at 704 Doremus Avenue, Newark, New Jersey.

5. Defendant CSD has operated a drum reconditioning facility on the site since 1952. Since June 1966, CSD has leased the site first from Dore Realty Company, Inc. and then from defendant owners, Dore Realty's successor in interest.

6. Pursuant to the Air Pollution Control Act, N.J.S.A. 26:2C-1 et seq. ("APCA"), NJDEPE supervises and regulates the emission into the outdoor atmosphere of air pollutants which are or tend to be injurious to human health or welfare or would unreasonably interfere with the enjoyment of life or property. N.J.S.A. 26:2C-2.

7. The Department is authorized, pursuant to N.J.S.A. 26:2C-19a., to commence a civil action in the Superior Court for injunctive relief against any person who violates the provisions of the APCA, the regulations promulgated thereunder or an administrative order issued pursuant thereto. Pursuant to N.J.S.A. 26:2C-19a., this court may proceed in the action in a summary manner.

8. The APCA also empowers the Department to institute a civil action for the recovery of civil penalties for the violation of the APCA, regulations promulgated thereunder or administrative orders issued pursuant thereto. N.J.S.A. 26:2C-19d. Such civil penalties shall not exceed $10,000 for a first offense, $25,000 for a second offense and $50,000 for third and subsequent offenses. Id. "If the violation is of a continuing nature, each day during which the violation continues ... constitutes an additional, separate and distinct offense." Id. The above penalties may be recovered, with costs, in a summary manner pursuant to the Penalty Enforcement Law, N.J.S.A. 2A:58-1 et seq.

9. The APCA prohibits the construction, installation or alteration of any air pollution-creating equipment or apparatus for controlling such air pollution without first filing an application for, and receiving NJDEPE approval of, a permit. N.J.S.A. 26:2C-9.2a. Likewise, no new or altered equipment or control apparatus may be operated prior to NJDEPE approval of an operating certificate. N.J.S.A. 26:2C-9.2b.

10. The APCA regulations explicitly prohibit the operation of any equipment or control apparatus unless "[a]ll conditions and provisions of the permit and certificate are fulfilled; and [a]ll components connected or attached to, or serving the equipment and/or control apparatus are functioning properly and are in use in accordance with the permit and certificate." N.J.A.C. 7:27-8.3(e) 1 and 2.

11. Defendant CSD reconditions 55 gallon steel drums using a process of thermal oxidation in its Main Drum Tunnel to remove the residual contents and old decorative coatings from used drums. After preparing the steel, the drums are then coated with interior and exterior surface coatings.

12. Defendant CSD's Main Drum Tunnel and two associated afterburners were formerly permitted to operate in accordance with all provisions, conditions and emissions limitations of a Permit to Construct and Certificate to Operate ("P/Ct") No. 67438 issued by plaintiff DEPE to defendant CSD in 1982.

13. During 1987 and 1988, plaintiff NJDEPE issued several Administrative Orders and Notices of Civil Administrative Penalty Assessments ("AO/NOCAPAS") to defendant CSD for violations of the Air Pollution Control Act and various regulations promulgated thereunder occurring between 1986 and 1988.

14. Defendant CSD entered into an Administrative Consent Order ("ACO") with plaintiff NJDEPE effective on or about September 7, 1988 which settled all of the outstanding air pollution penalties, required CSD to cease its violations of air pollution regulations, to comply with its permit, and to take actions necessary to control or eliminate the emissions from its Main Drum Tunnel and two afterburners. As part of the ACO, CSD agreed to undertake these necessary actions pursuant to the compliance schedule set forth therein. The actions to be performed by CSD included designing a new exit afterburner, quench chamber, and deluge system; to obtain an approved P/ct for an entire upgraded air pollution control system ("the system") covering all processes at the site; and to install and commence operating the system.

15. On or about December 30, 1988, in accordance with the ACO, CSD submitted a Permit to Construct, Install or Alter Control Apparatus or Equipment and Certificate to Operate Control Apparatus on Equipment ("P/Ct") application to NJDEPE.

16. On or about February 6, 1989, NJDEPE notified CSD that its P/Ct application did not meet the basic requirements of an application and provided a list of questions that needed to be resolved before a decision to grant or deny the application could be made.

17. On or about March 10, 1989, plaintiff NJDEPE granted defendant CSD a 60 day extension of the March 1, 1989 deadline set forth in the compliance schedule of the ACO by which CSD had to obtain a permit to upgrade or replace its main drum tunnel.

18. On or about March 15, 1989, a meeting was held between CSD and NJDEPE at which CSD presented additional information concerning its P/Ct application to NJDEPE.

19. On or about May 9, 1989, plaintiff NJDEPE denied defendant CSD's permit application because NJDEPE made the determination that CSD submitted insufficient information to allow NJDEPE a complete review of the application.

20. On or about May 19, 1989, CSD submitted a request for an administrative hearing to contest the May 9, 1989 denial of its P/Ct application.

21. On or about October 17, 1989, CSD submitted a revised P/Ct application covering the main drum tunnel to NJDEPE.

22. On or about January 13, 1990, CSD submitted a request that the ACO compliance schedule dates be extended pursuant to the Force Majeure provisions of the ACO.

23. On or about March 2, 1990, NJDEPE notified CSD that it failed to comply with the notice requirements of the ACO's Force Majeure provision, and that it also failed to comply with the ACO's compliance schedule for obtaining the approved P/Ct and with the ACO's requirements for installing, debugging and commencing operation of the required new Main Drum Tunnel and associated equipment without the approved P/Ct. NJDEPE further notified CSD that the ACO was thus terminated based upon CSD's failure to comply with the terms set forth therein, and that the effective date of termination of the ACO was July 2, 1989, one day following the ACO's final compliance date.

24. On or about March 29, 1990, NJDEPE issued an Administrative Order of Revocation and Notice of Civil Administrative Penalty Assessment to CSD revoking its Certificate to Operate #67438 effective April 28, 1990, and advising that any operation of CSD's main drum tunnel incinerator after April 28, 1990, would constitute a violation of N.J.A.C. 7:27-8.1 et seq.

25. On or about April 17, 1990, CSD submitted a request for an administrative hearing to NJDEPE to challenge the revocation order and other alleged violations.

26. On or about April 27, 1990, CSD submitted a request to NJDEPE for a stay of the Administrative Order revoking the P/Ct for the main drum tunnel.

27. On or about May 30, 1990, NJDEPE advised CSD that its request for a stay of the revocation order was denied.

28. On or about June 12, 1990, NJDEPE advised CSD that its second P/Ct application for the main drum tunnel incinerator was denied on the basis that CSD had not demonstrated that the proposed equipment incorporated state-of-the-art air pollution control. NJDEPE further advised CSD that air quality monitoring and risk assessment would be required for any subsequent applications to demonstrate that the air quality effects would be acceptable after application of state-of-the-art air pollution control. On June 25, 1990, CSD submitted a third application containing a design for what CSD represented as a state-of-the-art incinerator. By letter of July 6, 1990 CSD urged expedited review of this third application.

29. On or about July 19, 1990, CSD proposed to submit an application to NJDEPE for an emergency permit and certificate to install and operate a reconditioned scrubber on its existing main drum tunnel incinerator as a means of controlling its fugitive emissions problem on an interim basis until it received NJDEPE approval to build a new state-of-the-art incinerator.

30. On August 2, 1990, CSD forwarded to NJDEPE an application for a permit and certificate to operate the reconditioned scrubber on the existing main drum tunnel incinerator. On or about August 3, 1990, NJDEPE advised CSD that it could not approve the installation of the proposed scrubber inasmuch as the existing system was in such poor physical condition that the interim scrubber would be of little or no benefit in protecting the environment.

31. Following the execution of the September 7, 1988 ACO, defendant CSD has been cited by plaintiff NJDEPE for numerous additional air pollution violations, including the following:

a. The Department issued seventeen (17) Administrative Orders and Notices of Civil Administrative Penalty Assessments and one (1) Administrative Order of Revocation and Notice of Civil Administrative Penalty Assessment to CSD for eighty-three (83) separate violations of N.J.A.C. 7:27-8.3(e)2, which provides that "no person shall use or cause to be used any equipment or control apparatus unless all components connected or attached to, or serving the equipment and/or control apparatus are functioning properly and are in use in accordance with the permit and certificate."

b. The Department issued six (6) Administrative Orders and Notices of Civil Administrative Penalty Assessments to CSD for seven (7) separate violations of

N.J.A.C. 7:27-11.3(d), which provides that "no person shall construct, install, use or cause to be used any common incinerator or any special incinerator which will result in odors being detectable by sense of smell in any area of human use or occupancy."

c. The Department issued four (4) Administrative Orders and Notices of Civil Administrative Penalty Assessments to CSD for six (6) separate violations of N.J.A.C. 7:27-11.3(c) which provides that "no person shall cause, suffer, allow, or permit the emission of particles of unburned waste or ash from any common incinerator or from any special incinerator which are individually large enough to be visible while suspended in the atmosphere."

d. The Department issued three (3) Administrative Orders and Notices of Civil Administrative Penalty Assessments to CSD for three (3) violations of N.J.A.C. 7:27-2.3(a) which provides that "no person shall cause, suffer, allow or permit the disposal of rubbish, garbage, or trade waste, or buildings or structures by open burning."

e. The Department issued three (3) Administrative Orders and Notices of Civil Administrative Penalty Assessments to CSD for three (3) violations of N.J.A.C. 7:27-5.2(a) which provides that "... no person shall cause, suffer, allow or permit to be emitted into the outdoor atmosphere substances in quantities which shall result in air pollution..."

f. The Department issued two (2) Administrative Orders and Notices of Civil Administrative Penalty Assessments to CSD for two (2) violations of N.J.A.C. 7:27-11.3(b) which provides that "... no person shall cause, suffer, allow or permit smoke from any incinerator the shade or appearance of which is darker than Number 1 of the Ringelmann Smoke Chart ... to be emitted into the open air; or ... exclusive of water vapor, of such opacity leaving a stack or chimney to a degree greater than the emission designated at Number 1 of the Ringelmann Smoke Chart."

g. The Department issued an Administrative Order and Notice of Civil Administrative Penalty Assessment to CSD for the violations of N.J.A.C. 7:27-8.3(b), which provides that "no person shall use or cause to be used any new or altered equipment or control

apparatus without first having obtained a certificate..."

h. The Department issued an Administrative Order and Notice of Civil Administrative Penalty Assessment to CSD for the violation of N.J.A.C. 7:27-11.2(a) which provides that "no person shall construct, install, use or cause to be used any existing or new incinerator unless such incinerator is of the multiple chamber type or of a type approved by the Department ..."

i. The Department issued an Administrative Order and Notice of Civil Administrative Penalty Assessment to CSD for the violation of N.J.A.C. 7:27-8.3(e)1, which provides that "no person shall use or cause to be used any equipment or control apparatus unless ... all conditions and provisions of the permit and certificate are fulfilled ..." and

j. The Department issued an Administrative Order and Notice of Civil Administrative Penalty Assessment to CSD for the violation of N.J.A.C. 7:27-8.3(a) and (b) which provide that "no person shall construct, install or alter any equipment or control apparatus without first having obtained a permit ..." and that "no person shall use or cause to be used any new or altered equipment or control apparatus without first having obtained a certificate..."

k. As a result of numerous investigations conducted by DEP during the period of December 1990 to the present, DEP issued Administrative Orders and Notices of Civil Administrative Penalty Assessments for violations of N.J.A.C. 7:27-8.3(e)2 on the following dates:

   1. January 15 and April 11, 1991 for fugitive particulates released from holes in the Main Drum Tunnel Incinerator.

   2. January 22, March 4 and 21, and May 8, 1991 for fugitive particulates released from the exit section of the Main Drum Tunnel Incinerator.

l. As a result of numerous investigations conducted by DEP during the period of December 1990 to the present, DEP issued Administrative Orders and Notices of Civil Administrative Penalty Assessments for violations of N.J.A.C. 7:27-11.3 on the following dates:

1. February 11, 1991 for permitting smoke from the Main Drum Tunnel incinerator the shade or appearance of which was darker than Number 1 of the Ringelmann Smoke Chart.

2. March 4 and April 11, 1991 for permitting particles of unburned waste or ash to be released from the Main Drum Incinerator of a size large enough to be visible while suspended in the atmosphere.

32. Following the March 29, 1990 revocation, CSD continued to operate without a valid Permit to Construct and Certificate to Operate.

33. The Department has conducted a dispersion modeling analysis of CSD's stack emissions and of the fugitive emissions from its drum tunnel which indicates that the continued operation of the CSD facility, even if operating in full compliance with all the conditions of its 1982 permit (which the above noted numerous violations indicate it is not), constitutes a clear risk of adverse health effects for those persons exposed to its emissions. CSD disputes the Department's determination.

34. CSD's operations at the site involve the reconditioning of drums used in the food, paint, adhesive and ink industries. It is estimated that there have been approximately 35,000 to 60,000 drums at the site at any one time. It is also estimated that at one time approximately 50,000 of the drums accepted at the site contain residues which are listed as hazardous substances pursuant to the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et seq., specifically, N.J.A.C. 7:1E-1 et seq. CSD reports that it accepts used drums which contain up to one (1) inch of residue of the former contents; however, inspections performed by the Department have revealed the presence of drums at the site containing more than one inch of residue, including partially and completely full drums. CSD's current reconditioning process includes emptying out as much of the residue in each drum as possible by flipping them upside down and then transporting the upended drums by chain conveyer through a main incinerator to burn out the residues which were left clinging to the inside of the upended drums as well as the paint that coated the surface of the drums. Following incineration, the drums are blasted by steel shot, painted and sold to numerous industries. CSD processes approximately 3,000 drums a day.

35. CSD's drum emptying operation occurs in a roofed, partially enclosed area. CSD "deheads" each of the drums by removing one of the ends of the drum to facilitate the emptying operation. The drums are then transported to the incinerator by the chain conveyor. At the head of the incinerator, each of the deheaded drums is flipped upside down for the purpose of dumping

out as much of the remaining contents as possible. The deheaded drums are then sent into the incinerator as described in paragraph 34. The drum residues from the flipped drums are dumped into a collection pit, forming a sludge, which is ultimately carried and dumped by a secondary conveyer onto a flat and unbermed concrete pad. The sludge piles up on the unbermed concrete pad and flows to the surrounding bare ground in an uncontrolled manner. The sludge dumped onto the unbermed concrete pad is uncovered, exposed to the elements and stored there by CSD for an undetermined amount of time. CSD eventually transfers the sludge from the unbermed concrete pad to roll-off containers for ultimate off-site disposal by various waste disposal companies. Prior to August 1990, CSD disposed of the sludge by shoveling it into a secondary incinerator (afterburner). This operation generated an ash. CSD ceased the secondary incinerator operation because CSD had allowed the secondary incinerator to deteriorate to such a condition that CSD could no longer operate this equipment effectively. CSD processes approximately 3,000 drums per day, and it is CSD's alleged business practice to accept drums containing up to one inch of residue. However, the Department's inspections have revealed CSD's acceptance of partially and completely full drums. As such, CSD's drum emptying and transfer operation results in the dumping, spilling and discharging of hundreds, if not thousands, of gallons of drum residues each day.

36. On March 29, 1978, Department representatives inspected the site and requested that a waste survey report be submitted to the Department by CSD to determine what types of wastes were being produced. Alan Fischer, President of CSD, indicated that the wastes being generated were paper, wood, ash and scrap metal. Mr. Fischer agreed to mail in a complete waste survey report for all the wastes generated at the site, but the Department has no record of CSD ever submitting the waste survey report.

37. On November 27, 1979, the Department conducted an inspection of the site in response to an anonymous complaint which was received indicating that CSD was burying waste at the back of the site. The inspector noted an area at the site where recent grading had been done. The Department performed a follow-up inspection on January 29, 1980, and Alan Fischer admitted that CSD used incinerator ash as fill in low areas of the site to prevent flooding. At that time, CSD was dumping approximately one 55-gallon drum of ash per day onto the ground as fill. The incinerator ash contained numerous hazardous substances and the placement of the ash on the ground, as fill or otherwise, resulted in the discharge of hazardous substances onto the lands and into the waters of the State of New Jersey.

38. On March 28, 1980, the Department issued a Notice of Prosecution to CSD for illegal waste disposal practices and assessed CSD a $2,000 penalty for the referenced violations. A prior NJDEPE investigation, conducted on January 29, 1980, dis-

closed that CSD was dumping incinerator ash at the site, in violation of the Solid Waste Management regulations, specifically, N.J.A.C. 7:26-2.2(b) and N.J.A.C. 7:26-2.2(c). Since the incinerator ash contained hazardous substances, it is the Department's determination that this method of disposal was a discharge of hazardous substances to the land, and caused the spread of the hazardous substances through the run-off of rainwater from the exposed ash piles, thereby resulting in the transport of hazardous substances from the ash piles to other parts of the site and the waters of the State. CSD was given the opportunity to settle this fine and comply with the requirements of the Notice of Prosecution, which included an order that CSD excavate and properly dispose of the incinerator ash at an authorized facility within thirty (30) days of receipt of said Notice. CSD never achieved settlement of, nor did they comply with, the Notice of Prosecution. To this date the unlawfully disposed incinerator ash remains at the site, which continually results in discharges from the run-off of contaminants onto the ground and waters of the State.

39. On December 7, 1981, the U.S. Environmental Protection Agency (hereinafter "EPA") performed an inspection of the site to determine whether CSD was violating the regulations of the Resource Conservation and Recovery Act ("RCRA"), Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA") or National Pollutant Discharge Elimination System ("NPDES"). EPA noted that there were a large number of drum spillages and chemicals and oily liquids were pooling on the ground. EPA concluded that there was strong visual evidence to suggest violations of RCRA, CERCLA and NPDES regulations and recommended that enforcement action be taken against CSD.

40. On February 2, 1982, the Department conducted an investigation of the site. The inspectors noted contamination of the soil and surface water from the spillage of drums. Twenty (20) to thirty (30) full drums were also noted on site categorizing CSD as a Treatment, Storage and Disposal (TSD) facility placing CSD in violation of RCRA for failure to obtain a RCRA TSD Permit required to store hazardous wastes.

41. On March 19, 1982, EPA issued a Complaint and Compliance Order to CSD. The Order stated that CSD had violated Sections 3002 and 3004 of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§6922 and 6924, and the regulations promulgated thereunder. The Order also gave CSD the opportunity to request a formal hearing to contest the charges. The principal violations cited included the following:

a) CSD was treating a hazardous waste, namely the sludge, without having obtained a hazardous waste permit.

b) CSD was disposing of hazardous wastes, namely the sludge and incinerator ash, on the ground without having obtained a hazardous waste permit.

c) CSD was storing a hazardous waste, namely the incinerator ash, in a pile on the ground without having obtained a hazardous waste permit.

d) CSD failed to comply with four regulatory standards established for hazardous waste generators.

e) CSD failed to comply with eight regulatory standards established for facilities that treat, store or dispose of hazardous wastes.

42. On April 28, 1982, CSD replied to the March 19, 1982 Complaint and Compliance Order denying all charges set forth in the aforementioned complaint.

43. On February 2, 1983, the Department conducted an investigation at the site. The Department inspector observed approximately 50 full unmarked drums on the ground in the drum storage area. A sample was taken from one of these drums and sent to a laboratory for analysis. The sample was found to contain concentrations of toluene (6,700 parts per million (ppm)) and 1,1,1 trichloromethane (208 ppm). The sample analysis also revealed that the drum contents were ignitable and therefore defined as ignitable wastes pursuant to the Solid Waste Management rules, N.J.A.C. 7:26-8.9(a)1. These same compounds were also found to be present as contaminants in the soil and surface water sampling subsequently performed at the site, thereby indicating a correlation between CSD's drum operations and the contamination present in the soil, groundwater and surface water at the site. These compounds are defined as "hazardous substances" pursuant to the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et seq. and the regulations promulgated pursuant thereto, N.J.A.C. 7:1E-1 et seq.

44. On February 15, 1983, the Department collected four (4) soil samples from different locations at the site. The sampling results revealed the following compounds in the soil: ethylbenzene (45,600 ppb), toluene (40,800 ppb), 1,1,1-trichloromethane (6,720 ppb), methylene chloride (2,680 ppb) and trichloroethylene (2,200 ppb). Several of these compounds were found in samples of incinerator ash generated at the site. Some of these compounds are included on a "List of Contaminants" submitted to the Department by CSD as part of a renewal application for its drum incinerator air permit. This "List of Contaminants" disclosed what materials CSD was processing through the drum incinerator. There is therefore a clear nexus between the compounds that CSD processed through the drum incinerator, the compounds found in the incinerator ash and the presence of these same compounds as con-

taminants in the soil, ground water and surface water samples taken at the site.

45. On May 24, 1983, the Department collected soil and surface water samples at the site. One water and two soil samples were collected at the site. The sampling results revealed concentrations of the following compounds in the soil; toluene (20,870 ppb), 1,1-dichloroethane (9,310 ppb), benzene (3,395 ppb), methylene chloride (3,240 ppb) and ethylbenzene (3,050 ppb). The sampling results revealed concentrations of the following compounds in the water; ethylbenzene (150 ppb) and xylene (560 ppb). Several of these compounds were found in samples of incinerator ash generated at the site, and on the "List of Contaminants" referenced in paragraph 44, thereby indicating a correlation between CSD's drum operations and the contamination present at the site.

46. On August 23, 1983, the Department issued a Notice of Violation to CSD for failure to submit its annual generator report pursuant to the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq. The Department directed CSD to submit the required generator report within 30 days of receipt of the Notice, but CSD never complied with the Notice of Violation.

47. On November 25, 1983, EPA entered into a Consent Agreement and Final Compliance Order with CSD for violations of Sections 3002 and 3004 of the Resource Conservation and Recovery Act, 42 U.S.C. §§6922 and 6924, and the regulations promulgated thereunder. This Consent Agreement was in settlement of the Compliance Order issued by EPA, as referenced in paragraphs 41 and 42. This Final Compliance Order charged that CSD used this Site to treat, store and dispose of hazardous wastes. This order also charged that the sludge burned in the incinerator by CSD was hazardous waste and that CSD was illegally disposing of the hazardous waste because CSD did not have a hazardous waste disposal permit. These charges were based on the EPA's December 7, 1981 inspection referenced in paragraph 39.

48. EPA's November 25, 1983 Consent Agreement and Final Compliance Order required CSD to adhere to nine (9) stipulations. Those stipulations were:

i. CSD shall not accept drums containing acute hazardous waste, as listed in 40 C.F.R. 261.33(e), or any container with more than one (1) inch of any other hazardous waste.

ii. CSD shall ensure that all incoming manifests are complete.

iii. CSD shall file an Exception Report for any hazardous waste shipments for which no completed manifest is

returned from the Treatment Storage or Disposal (TSD) facility.

iv. CSD shall submit a RCRA Part A application within ten (10) days of this Consent Agreement.

v. CSD shall comply with all interim standards, as defined by 40 C.F.R. part 265, within forty-five (45) days.

vi. CSD shall post the financial requirements, as defined in 40 C.F.R. 265.140 et seq. within sixty (60) days.

vii. Within sixty (60) days, CSD shall only generate hazardous waste, and shall not treat, store or dispose of any hazardous waste.

viii. CSD shall develop and implement a plan to identify the contaminated portions of the property and conduct sampling and analysis as necessary. CSD shall implement a program to decontaminate, control, contain, neutralize and/or remove any contaminants identified through the sampling and testing.

ix. CSD shall pay a Civil Penalty of $29,000.00.

49. In November, 1983, CSD submitted a Phase I proposal to the Department for a soil and ground water investigation study at the site as directed by the EPA Consent Agreement and Final Compliance Order referenced in paragraph 48. The proposal evaluated the possibility of drilling wells at four (4) separate locations at the site where samples would be taken continuously to identify soil type during the drilling. This proposal was developed to assess the conditions of the soil and ground water at the site. The proposal was slightly modified and approved by the Department in January, 1984.

50. In 1983, the Department received the results of incinerator ash samples from the site, collected by S&W Waste Inc., G.R.O.W.S. Landfill and Ages Corporation during the period of February 9, 1980, to May 4, 1983. These companies were contracted by CSD to dispose of CSD's incinerator ash. Annual samples of the generated waste were taken by the above named companies, pursuant to the Solid Waste Management rules, N.J.A.C. 7:26-9.4(b), and indicate that numerous hazardous substances were present in the incinerator ash.

51. Between January and May of 1984, test borings were performed and monitoring wells were installed at the site by CSD in accordance with the November 1983 Consent Agreement. In total, eight (8) wells were drilled on-site, formed in clusters of two

Well No. 202 and 150 ppb of TVO in Monitor Well No. 104.

c. Base-Neutral Extractables -- CSD's results indicate no contamination of Base-Neutral Extractable Compounds (hereinafter "Base-Neutral"). Samples analyzed by the Department indicated Base-Neutral contamination in Monitor Well Nos. 101 (max. = 92 ppb) and 102 (max. = 93 ppb).

d. Pesticide/PCB's -- CSD utilized an insufficiently sensitive analytical method and concluded that the PCB contamination in the ground water in all monitoring wells was below the minimum detection limit of 10 ppb associated with its methodology. The Department utilized a more sensitive analytical method and determined that a PCB (Aroclor 1254) concentration of 6.5 ppb was present in Monitor Well No. 101.

55. On February 6, 1986, EPA conducted an inspection of the site to further categorize what contaminants were present. EPA took four soil, three ground water and one surface water samples at different locations at the site. The results were submitted in a site inspection report dated July 25, 1986, and the results indicated the presence of many contaminants, including numerous hazardous substances. The presence of certain contaminants, including hazardous substances, in the ash indicates that such contaminants had been present in the residues in the drums which were incinerated to produce the ash. Those same contaminants in the drum residues are connected to the disposal of the contents in CSD's drum "flipping"/emptying operations: a clear nexus exists between the compounds present in the ash and the compounds detected as contaminants in the soil, ground water and surface water samples taken at the site. The results also showed that the main areas of contamination are related to the areas of high industrial activity at the site.

56. In a letter dated February 24, 1986, the Department required CSD to complete a NJPDES Discharge to Ground Water (DGW) Permit application for the discharges to ground water generated by the drum flipping (emptying) process upon entry to CSD's main incinerator and the transfer of the sludge to the then existing afterburner.

57. In a letter dated April 11, 1986, Alan Fischer of CSD denied that CSD's operations resulted in discharges of pollutants to ground water for the following reasons:

a. Only empty drums are accepted for reconditioning.

b. The drums are stored in a way in which rain water could not enter the drums.

c. Any residue that is spilled is caught on a pad and pumped back into the incinerator.

The Department's inspections, including, but not limited to, an inspection on March 22, 1983, disclosed full, or partially full, drums at the site and drums that were standing on end, "mired in liquid." In addition, CSD did not employ any mechanism which would successfully contain residues spilled from the drums during the emptying and transfer operations. Furthermore, such spills are considered discharges which require a valid NJPDES permit. Accordingly, CSD's drum flipping/emptying operations resulted in the continuous discharge of contaminants, including hazardous substances, to the lands and waters of the State.

58. In a letter dated March 6, 1987, CSD was directed by the Department to complete a NJPDES-DGW Permit Application within 30 days of receipt of said correspondence.

59. On July 8, 1987, the Department received a completed NJPDES-DGW Permit application from CSD.

60. On April 24, 1987, inspectors from the Department responded to a complaint of acrid odors permeating a nearby rail yard. The rail yard master stated that many of his workers had been complaining of "watery" eyes and "runny" noses, sore throats, tightness of their chests and that some workers had to go to the hospital because they inhaled vapors emanating from a stack at the CSD site. Upon entry to the CSD site, the DEP inspector noticed that heavy odors were rising from piles of smoldering ash located directly on the ground, although no fumes were coming from the incinerator. The inspector noted partially full drums, drums bearing hazardous waste labels, and drums marked with the word "POISON" at the site. Upon testing the air for volatile organics, the inspectors detected levels of 400 ppm for toluene. After a lengthy inspection, the inspectors issued the production manager, Edward Fischer, two Notices of Violation for violations of the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et seq., specifically for the discharge of hazardous substances in violation of N.J.S.A. 58:10-23.11(c) and for failure to notify the Department of said discharge in violation of N.J.S.A. 58:10-23.11(e).

61. On September 17, 1987, inspectors from the Department conducted an investigation of the operation of the site after reports of illegal air releases. The inspectors noted, apart from fugitive emissions, that there were pools of multi-colored liquids ponding near the incinerator and sludge burner.

62. In the air permit application for its drum reclamation furnace, which CSD submitted to the Department's Division of

Environmental Quality on or about October 16, 1989, CSD estimated that it processed 2,800 drums per day, and that the drums contained a total of 10,500 pounds of residues. The residues and their mixture into a sludge are the subject of the aforementioned drum emptying operations of CSD. Further, CSD disclosed the names of over one hundred chemical contaminants involved in its operations, and CSD identified the chemical composition of some of the types of drum residues that it handled. The total amount of the drum residues and the chemical composition of such residues CSD identified were as follows:

a. Water Base Adhesive and Solvent Base Adhesive Residues: An estimated 300 drums of these two types were processed each day with the drums containing a total of 900 pounds of residues. CSD disclosed information regarding the chemical composition of only four of the Water Base Adhesive type residues. These four residues contained the following hazardous substances:

1. Vinyl Acetate (Monomer)
2. Ammonium Bifluoride
3. Ammonium Hydroxide

CSD disclosed information regarding the chemical composition of only three of the Solvent Base Adhesive type residues. These three residues contained the following hazardous substances:

1. Phenol
2. Toluene
3. Benzene

b. Paint Residues: An estimated 1,000 drums from the paint industry were processed each day with the drums containing a total of 6,000 pounds of residues. CSD disclosed information regarding the chemical composition of only two of the Paint type residues. These two residues contained the following hazardous substances:

1. V.M. & P Naphthalene
2. Toluene
3. Xylene

63. On February 27, 1990, the Department conducted a RCRA inspection at the site. The inspection revealed many spills of multi-colored liquids on the ground in the drum storage area and in the vicinity of the drum incinerator, along with the storage of sludge and incinerator ash on an unbermed concrete pad where contaminants flow onto the ground in an uncontrolled manner. During this inspection the locations of an underground storage tank and

two (2) underground diesel fuel storage tanks were discovered. Since no information was available regarding these tanks, the inspector suggested that these tanks be included in any future site inspections. The Department inspector also noted instances of poor worker health and safety practices, such as a man standing in a collection pit filled with sludge wearing no protective gear except for rubber boots.

64. On April 30, 1990, the Department issued a Notice of Violation (hereinafter "NOV") to CSD for violations observed during an April 25, 1990 site inspection. The NOV addressed violations of the Solid Waste Management rules, N.J.A.C. 7:26-1 et seq., specifically, for failure to determine if a solid waste is hazardous, in violation of N.J.A.C. 7:26-8.5(a), for failure to mark stored containers with accumulation dates, in violation of N.J.A.C. 7:26-9.3(a)3 and for the acceptance and storage of hazardous waste, in violation of N.J.A.C. 7:26-9.2(a). A second NOV was issued during the aforementioned site inspection which addressed a violation of the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11, specifically for the discharge of a hazardous substance onto the ground in an uncontrolled manner, in violation of N.J.S.A. 58:10-23.11c. No penalty was assessed for these violations.

65. Many of the substances referred to above are defined as "hazardous substances" pursuant to the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et. seq.

66. These hazardous substances were discharged, and continue to be discharged, into the waters and onto the lands of the State of New Jersey in violation of the Spill Compensation and Control Act, specifically N.J.S.A. 58:10-23.11c.

67. On May 3, 1990, the Department conducted an additional inspection of the site. During this inspection, DEP inspectors observed a drum in very poor condition (rusted and deteriorated) which was discharging diesel fuel directly onto the ground from a hole in the bottom. This drum was located on a storage trailer in the drum storage area. During this inspection, DEP inspectors also observed workers in the drum cutting shed removing the tops off drums marked with paint labels. These workers did not wear respirators or any other protective gear while removing these drum tops, and they were constantly exposed to the concentrated vapors emanating from the drums. Additionally, it was observed that CSD was storing sludge on the unbermed concrete pad and drum residues were being spilled by CSD from drums onto the conveyor line; both of these practices caused an uncontrolled release of contaminants to the surrounding area.

68. On May 25, 1990, DEP conducted an additional inspection of the site. DEP inspectors observed numerous areas of the site where there were pools of multi-colored liquids on the ground,

visible oil spills behind the drum cutting shed and areas of contaminated soil throughout the drum storage area. During this inspection, DEP representatives observed workers loading drums onto the chain conveyor while such workers were standing in the middle of these pools of multi-colored liquids. These workers were not wearing any protective gear. Again, during this inspection, DEP representatives observed CSD storing sludge on the unbermed concrete pad and, at a separate location, CSD employees were observed spilling drum residues onto the secondary conveyor line which leads to the unbermed concrete pad. Both of these practices resulted in uncontrolled releases of contaminants to the surrounding area.

69. On June 20, 1990, the Department conducted another follow-up inspection at the site, wherein it was observed that there were numerous instances in the drum storage area of liquid spilling onto the ground from drums. Areas of discolored surface water were observed throughout the site, as well as large amounts of visibly contaminated soil on the ground. The inspection also revealed that residue from drums had coated all of the equipment in the vicinity of the drum incinerator, and that piles of sludge were deposited on an unbermed concrete pad directly adjacent to the drum incinerator. A volatile organic ("VO") compound detector was also utilized during the June 20th inspection. A VO level of 50 ppm was obtained from an area of exposed soil, a VO level of 70 ppm was obtained from a drum on the process line which contained greater than one inch of residue, and levels as high as 40 ppm were obtained inside a building on the site; each of these levels are recognized to be well above safe operational levels. To compound the problem, workers on the site were wearing no protective gear with the exception of some employees with paper face respirators, even though they were subject to full exposure to hazardous substances at any time.

70. On August 14, 1990, NJDEPE conducted another inspection of the site. The NJDEP inspector observed sludge, which was improperly deposited on the drum conveyor line, spontaneously burst into flames, posing a severe fire hazard to the surrounding area, where numerous drums were stacked, the contents of many of which were highly flammable. The NJDEPE inspector also noted contaminated soil, pools of green liquid on the ground and drum spillage throughout the site.

71. On August 29, 1990, DEP returned to the site and took samples of groundwater surface water, soil, sediments, drums, sludge and incinerator ash. The following is a partial summary of the sampling results:

a. Groundwater -- found to contain high concentrations of lead (maximum concentration = 307 parts per billion ("ppb"), zinc (max. = 1,070 ppb), chromium (max. = 76 ppb) and cadmium (max. = 127 ppb). These

substances are all hazardous substances within the meaning of the Spill Act and are pollutants pursuant to the Water Pollution Control Act.

b. Surface Water -- found to contain high concentrations of chromium (max. = 3,420 ppb), lead (max. = 31,200 ppb) and zinc (max. = 13,000 ppb). These substances are all hazardous substances within the meaning of the Spill Act and are pollutants pursuant to the Water Pollution Control Act.

c. Soil -- found to contain high concentrations of chromium (max = 2,940 parts per million ("ppm"), lead (max. = 13,100 ppm), zinc (max. = 3,030 ppm), toluene (max. = 570 ppm) and mercury (max. = 7.4 ppm). These substances are all hazardous substances within the meaning of the Spill Act and are pollutants pursuant to the Water Pollution Control Act.

d. Sediments -- found to contain high concentrations of barium (max. = 3,170 ppm), chromium (max. = 1,170 ppm), lead (max. = 9,080 ppm), zinc (max. = 4,760 ppm) and mercury (max. = 13 ppm). These substances are all hazardous substances within the meaning of the Spill Act and are pollutants pursuant to the Water Pollution Control Act.

e. Drums -- one sample taken from a drum containing greater then one (1) inch of residue, exhibited a flash point of 70°F, making it an ignitable waste pursuant to N.J.A.C. 7:26-8.9. The sample was also found to contain high concentration of toluene (max. = 400 ppm), a hazardous substance within the meaning of the Spill Act and are pollutants pursuant to the Water Pollution Control Act.

f. Sludge -- found to have high concentrations of toluene (max. = 870 ppm), ethylbenzene (max. = 100 ppm) and xylene (max. = 520 ppm), all hazardous substances within the meaning of the Spill Act and are pollutants pursuant to the Water Pollution Control Act.

72. On September 21, 1990, the Department issued an NOV to CSD for violations observed during a August 14, 1990 site inspection. The NOV addressed violations of the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et seq., specifically for the discharge of a hazardous substance to the lands and waters of the State in violation of N.J.S.A. 58:10-23.11c, and for failure to notify the Department of such discharge in violation of N.J.A.C. 7:1E-2.1(b). The NOV also addressed violations of the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq., and the regulations

promulgated thereunder, specifically for the failure to mark drums with accumulation dates and contents in violation of N.J.A.C. 7:26-9.3(a)3 and for the transfer and storage of a hazardous waste in a manner which causes an unauthorized discharge of pollutants to the lands and waters of the State in violation of N.J.A.C. 7:26-9.2(a)2.

73. On November 7, 1990, the Department issued an NOV to CSD for violations observed during an August 29, 1990 site inspection. The NOV addressed violations of the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq., specifically for the processing of a drum containing greater than one (1) inch of residue. The residue from this drum, which was en route to the incinerator, was sampled by DEP. The analysis revealed that the residue was a RCRA ignitable waste with a flash point of 70°F as described in paragraph 70 herein. The NOV cited CSD for its failure to obtain a detailed chemical analysis of a hazardous waste prior to treatment in violation of N.J.A.C. 7:26-9.4(b), with such treatment resulting in an uncontrolled discharge of pollutants onto the lands or into the waters of the State in violation of N.J.A.C. 7:26-9.2(a)2.

74. On May 9, 1990, the Department issued a Directive to CSD pursuant to the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et seq., directing the company to enter into an Administrative Consent Order which would provide NJDEPE oversight of CSD's performance of interim remedial measures and a remedial investigation and feasibility study. Negotiations for the Administrative Consent Order were unsuccessful and CSD filed an action against NJDEPE on November 15, 1990 seeking to compel NJDEP to review its plans for interim remedial measures and a remedial investigation without the executed Administrative Consent Order. The lawsuit was dismissed after NJDEPE withdrew the Directive without prejudice.

75. On June 6, 1991, the Department issued a second Directive and Notice to Insureds to defendants, pursuant to the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et seq., directing defendants to pay the Department the sum of $2,250,000 for a remedial investigation and feasibility study to be conducted by the Department at the Site.

76. Pursuant to N.J.S.A. 58:10-23.11c of the Spill Compensation and Control Act, the discharge of hazardous substances is prohibited unless a party is in compliance with a state or federal discharge permit. Pursuant to N.J.S.A. 58:10-23.11b, a "discharge" includes any intentional or unintentional action or omission resulting in the release, spill, leak, pumping, pouring, emitting, emptying or dumping of hazardous substances into the water or onto the lands of this State.

77. As more fully set forth above and below, each defendant in this suit has discharged hazardous substances or, pur-

suant to N.J.S.A. 58:10-23.11(g)(c), "is in any way responsible" for the discharge of hazardous substances at the site. These discharges have occurred in violation of the requirement of compliance with a State or federal permit.

78. Each day during which the aforesaid violations continue constitutes an additional, separate and distinct offense pursuant to N.J.S.A. 58:10- 23.11u(d).

79. Pursuant to N.J.S.A. 58:10-23.11u(b), plaintiff may seek injunctive relief in the Superior Court to prohibit and prevent the continuation of the violation or violations of the Spill Act by all of the defendants in this suit and the Court may proceed in a summary manner.

80. Based on these FINDINGS, the Department has determined that CSD has violated the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., specifically N.J.S.A. 58:10A-6, and the regulations promulgated pursuant thereto, N.J.A.C. 7:14A-1 et seq., specifically N.J.A.C. 7:14A-1.2(c); the Spill Compensation and Control Act, 58:10-23.11 et seq. and the regulations promulgated pursuant thereto, N.J.A.C. 7:1E-1.1 et seq.; and the Solid Waste Management Act N.J.S.A. 13:1E-1 et seq. and the regulations promulgated thereunder, N.J.A.C. 7:26-1.1 et seq. However, Central Steel Drum denies that it has committed any such violations.

81. To determine the nature and extent of the problem presented by the discharge of pollutants and/or hazardous substances at the site and to develop environmentally sound remedial actions, it is necessary to conduct a remedial investigation and feasibility study of remedial action alternatives (hereinafter "RI/FS") for the site. To correct the problems presented by the discharge, it is necessary to implement a remedial action plan.

82. To resolve this matter without the necessity for further litigation, CSD has agreed to conduct interim remedial measures, to conduct an RI/FS and to design and implement a remedial action alternative to remedy all pollution at the site, emanating from the site, or which has emanated from the site. By entering into this Judicial Consent Order, CSD makes no admission of fact, fault or liability for the alleged violations described in the findings herein above.

## ORDER

NOW THEREFORE IT IS HEREBY ORDERED AND AGREED THAT:

### I. Reimbursement of Prior Costs

83. Within thirty (30) calendar days after receipt from the Department of a written summary of all costs incurred by the Department to date, in connection with the investigation of, and

response to, the matters described in the FINDINGS hereinabove, including the costs associated with the preparation of this Judicial Consent Order, CSD shall submit to the Department a cashier's or certified check payable to the "Treasurer, State of New Jersey" for the full amount of the Department's oversight costs. Payment shall be submitted to the contact listed in paragraph 114 below.

## II. Remedial Investigation and Cleanup

### A. Interim Remedial Measures

84. Within forty-five (45) calendar days after receipt of the Department's written comments on the proposed IRM Work Plan dated June 1990, CSD shall modify the proposed IRM Work Plan to conform to the Department's comments and shall submit to the Department the modified IRM Work Plan and a IRM Budget Estimate describing the monies needed to implement the IRM Work Plan. The IRM Budget Estimate shall contain an itemization of CSD's estimated costs for completing the remedial activities detailed in the IRM Work Plan, including but not limited to, consultant and contractor expenses such as personnel cost/hour, materials, analytical costs, equipment charges, installation costs, document development, permit fees and disposal costs. These estimated costs shall not include CSD's own personnel expenses to assist the consultant or contractor in any of the activities undertaken pursuant to this JCO. The determination as to whether or not the modified IRM Work Plan, as resubmitted, conforms to the Department's comments and is otherwise acceptable to the Department shall be made solely by the Department in writing.

85. Within fourteen (14) calendar days after receipt of the Department's written comments on the IRM Budget Estimate, CSD shall modify the IRM Budget Estimate to conform to the Department's comments and shall submit to the Department the modified IRM Budget Estimate. Upon approval of the IRM Budget Estimate, the Department will transmit written notice to the trustee and CSD authorizing payments from the trust for the specific remedial costs detailed in the IRM Budget Estimate. Upon CSD's receipt of such notice, CSD shall implement the approved IRM Work Plan in accordance with the approved schedule therein.

### B. Remedial Investigation

86. Within forty-five (45) calendar days after receipt of the Department's written comments on the proposed RI Work Plan dated July 1990, CSD shall modify the proposed RI Work Plan to conform to the Department's comments and shall submit to the Department, the modified RI Work Plan and an RI Budget Estimate describing the monies needed to implement the RI Work Plan. The RI Budget Estimate shall contain an itemization of CSD's estimated costs for completing the remedial activities detailed in the RI

Work Plan, including, but not limited to, consultant and contractor expenses such as personnel cost/hour, materials, analytical costs, equipment charges, installation costs, document development, permit fees and disposal costs. These estimated costs shall not include CSD's own personnel expenses to assist the consultant in any of the activities undertaken pursuant to this JCO. The determination as to whether or not the modified RI Work Plan, as resubmitted, conforms to the Department's comments and is otherwise acceptable to the Department shall be made solely by the Department in writing.

87. Within fourteen (14) calendar days after receipt of the Department's written comments on the RI Budget Estimate, CSD shall modify the RI Budget Estimate to conform to the Department's comments and shall submit to the Department, the modified RI Budget Estimate. Upon approval of the RI Budget Estimate, the Department will transmit written notice to the trustee and CSD authorizing payments from the trust for the specific remedial costs detailed in the RI Budget Estimate. Upon CSD's receipt of such notice, CSD shall conduct the remedial investigation in accordance with the approved RI Work Plan and the schedule therein.

88. CSD shall submit to the Department a draft Remedial Investigation Report (hereinafter "RI Report") in accordance with Appendix B and the RI Work Plan and the schedule therein.

89. If upon review of the draft RI Report the Department determines that additional remedial investigation is required, CSD shall conduct additional remedial investigation as directed by the Department and submit a second draft RI Report.

90. Within thirty (30) calendar days after receipt of the Department's written comments on the draft or second draft (if applicable, pursuant to the preceding paragraph) RI Report, CSD shall modify the draft or second draft RI Report to conform to the Department's comments and shall submit the modified RI Report to the Department. The determination as to whether or not the modified RI Report, as resubmitted, conforms with the Department's comments and is otherwise acceptable by the Department shall be made solely by the Department in writing.

C. Feasibility Study

91. Within forty-five (45) calendar days after receipt of the Department's written final approval of the RI Report, or as otherwise directed by the Department, CSD shall submit to the Department a detailed draft Feasibility Study Work Plan (hereinafter, "FS Work Plan") in accordance with the scope of work set forth in Appendix E, which is attached hereto and made a part hereof.

92. Within thirty (30) calendar days after receipt of the Department's written comments on the draft FS Work Plan, CSD shall modify the draft FS Work Plan to conform to the Department's comments and shall submit to the Department the modified FS Work Plan and an FS Budget Estimate describing the monies needed to implement the FS Work Plan. The FS Budget Estimate shall contain an itemization of CSD's estimated costs for completing the remedial activities detailed in the FS [redacted] Work Plan, including, but not limited to, consultant and contractor expenses such as personnel cost/hour, materials, analytical costs, equipment charges, installation costs, document development, permit fees and disposal costs. These estimated costs shall not include CSD's own personnel expenses to assist the consultant or contractor in any of the activities undertaken pursuant to this JCO. The determination as to whether or not the modified FS Work Plan, as resubmitted, conforms to the Department's comments and is otherwise acceptable to the Department shall be made solely by the Department in writing.

93. Within fourteen (14) calendar days after receipt of the Department's written comments on the FS Budget Estimate, CSD shall modify the FS Budget Estimate to conform to the Department's comments and shall submit to the Department the modified FS Budget Estimate. Upon approval of the FS Budget Estimate, the Department will transmit written notice to the trustee and CSD authorizing payments from the trust for the specific remedial costs detailed in the FS Budget Estimate. Upon CSD's receipt of such notice, CSD shall conduct the feasibility study in accordance with the approved FS Work Plan in and the schedule therein.

94. CSD shall submit to the Department a draft Feasibility Study Report (hereinafter "FS Report") in accordance with Appendix E and the approved FS Work Plan and the schedule therein.

95. Within twenty-one (21) calendar days after receipt of the Department's written comments on the draft FS Report, CSD shall modify the draft FS Report to conform to the Department's comments and shall submit the modified FS Report to the Department. The determination as to whether or not the modified FS Report, as resubmitted, conforms to the Department's comments and is otherwise acceptable to the Department shall be made solely by the Department in writing.

D. Remedial Action

96. The Department will make the selection of the remedial action alternative based on the criteria set forth in Appendix E, Section I.D.

97. Within forty-five (45) calendar days after receipt of the Department's written notification of selection of a remedial action alternative, CSD shall submit to the Department a detailed

draft Remedial Action Plan in accordance with the scope of work set forth in Appendix F, which is attached hereto and made a part hereof.

98. Within thirty (30) calendar days after receipt of the Department's written comments on the draft Remedial Action Plan, which shall include deadlines for the completion of major milestones as determined by the Department, CSD shall modify the draft Remedial Action Plan to conform to the Department's comments and shall submit to the Department the modified Remedial Action Plan and an Remedial Action Budget Estimate describing the monies needed to implement the Remedial Action Plan. The Remedial Action Budget Estimate shall contain an itemization of CSD's estimated costs for completing the remedial activities detailed in the Remedial Action Plan, including, but not limited to, consultant and contractor expenses such as personnel cost/hour, materials, analytical costs, equipment charges, installation costs, document development, permit fees and disposal costs. These estimated costs shall not include CSD's own personnel expenses to assist the consultant in any of the activities undertaken pursuant to this JCO. The determination as to whether or not the modified Remedial Action Plan, as resubmitted, conforms to the Department's comments and is otherwise acceptable to the Department shall be made solely by the Department in writing.

99. Within fourteen (14) calendar days after receipt of the Department's written comments on the Remedial Action Budget Estimate, CSD shall modify the Remedial Action Budget Estimate to conform to the Department's comments and shall submit to the Department the modified Remedial Action Budget Estimate. Upon approval of the RA Budget Estimate, the Department will transmit written notice to the trustee and CSD authorizing payments from the trust for the specific remedial costs detailed in the RA Budget Estimate. Upon CSD's receipt of such notice and the Department's written final approval of the Remedial Action Plan, CSD shall implement the approved Remedial Action Plan in accordance with the schedule therein.

E. Additional Remedial Investigation and Remedial Action

100. If at any time prior to CSD's receipt of written notice from the Department pursuant to paragraph 152, the Department determines that the criteria set forth in Appendix E (Section I.D.) are not being achieved or that additional remedial investigation and/or remedial action is required to protect human health or the environment, CSD shall conduct such additional activities as directed by the Department and in accordance with this Judicial Consent Order.

F. Major Breaches Associated With Remedial Investigation and Cleanup

101. CSD's failure to comply with any of the following requirements and associated deadlines and schedules shall constitute a major breach of this JCO, and shall result in the immediate and permanent shutdown of CSD's operations:

1. Submission of a modified IRM Work Plan and Budget Estimate within the deadlines set forth herein.

2. Fulfillment of the requirements set forth in Appendix A, sec. I.

3. Submission of a modified RI Work Plan and Budget Estimate within the deadlines set forth herein.

4. Fulfillment of the requirements set forth in Appendix B, sec. I.

5. Submission of a draft RI Report within the deadlines set forth herein.

6. Submission of a modified RI Report and Budget Estimate with the deadlines set forth herein.

7. Fulfillment of the requirements set forth in Appendix E, sec. I.

8. Submission of a draft FS Work Plan within the deadlines set forth herein.

9. Submission of a modified FS Work Plan and Budget Estimate within the deadlines set forth herein.

10. Submission of a draft FS Report within the deadlines set forth herein.

11. Submission of a modified FS Report within the deadlines set forth herein.

12. Submission of a draft Remedial Action Plan within the deadlines set forth herein.

13. Submission of a modified Remedial Action Plan and Budget Estimate within the deadlines set forth herein.

14. Commencement of Remedial Action in accordance with the deadlines and schedule set forth in the Remedial Action Plan.

15. Failure to complete the Remedial Action Alternative set forth in the approved Remedial Action Plan.

16. Failure to submit complete project cost reviews pursuant to paragraph 107.

17. Failure to comply with the financial requirements set forth in paragraphs 116-119.

18. Failure to allow the Department or its authorized agents access to the site.

## III. Installation of New Incinerator And Corrective Action For Emissions from Existing Incinerator

102.(a) Within twelve (12) months of the execution of this JCO by the Department and CSD, CSD shall obtain and comply with a permit and certificate to operate CSD's new incinerator; immediately upon the commencement of operations of the new incinerator, CSD shall cease operating the existing incinerator. At the end of the twelve (12) month period, CSD shall dismantle the existing incinerator and remove it from the site in accordance with all applicable statutes, rules and local ordinances. CSD shall comply with the following schedule for the new incinerator:

Deadline = Jan. 1994

| | ITEM | TO BE COMPLETED BY |
|---|---|---|
| a. | Complete the engineering study of applicable air pollution control equipment associated with the new incinerator. | December 15, 1992 |
| b. | Submit to the Department a complete Permit to Construct and Certificate to Operate application(s) to the Department for review. | January 15, 1993 |
| c. | Obtain approved Permit(s) to Construct and Certificate(s) to Operate for the new incinerator with associated air pollution control equipment. | March 1, 1993, or within two weeks after the Department approves the Permit(s) to Construct and Certificate(s) to Operate, whichever comes later. |
| d. | Purchase air pollution control equipment in accordance with approved Permit(s) to Construct and Certificate(s) to Operate associated with the new incinerator. | March 15, 1993, or within two weeks after the Department approves the Permit(s) to Construct and Certificate(s) to Operate, whichever comes later. |
| e. | Install associated air pollution control equipment in accordance with approved Permit(s) to Construct and Certificate(s) to Operate the new incinerator. | December 31, 1993 |

102.(b) No later than six weeks after the execution of this JCO by the Department and CSD, CSD shall complete all necessary actions, including, but without limitation, repairs and modifications to the existing incinerator to eliminate fugitive emissions (which shall be defined as those air contaminants which are emitted through holes and leaks in CSD's drum tunnel and afterburners or which are emitted in other uncontrolled manners) from the Main Drum Tunnel and two (2) afterburners (Main and Exit) and to cease the violation of N.J.A.C. 7:27-8.3(e)2 and N.J.A.C. 7:27-11.3(b), (c) and (d). CSD shall inform the Department of all of the modifications that it undertakes, and shall submit all plans and related documents. However, any modifications to the existing incineration equipment which CSD may elect to undertake shall be undertaken at CSD's risk that the modifications may not achieve the elimination, on a continuing basis, of fugitive emissions from its existing equipment as required by this JCO. The Department will not approve any permit and certificate for CSD for any such modifications to CSD's existing incineration equipment; however, neither will the Department issue air pollution violations to CSD predicated solely on the basis that CSD's existing incineration equipment, as modified by CSD, lacks the necessary permits and certificates to operate.

103. Upon completion of the actions referenced in paragraph 102(b), CSD shall demonstrate to the Department that the existing incinerator can be operated, as modified, without producing fugitive emissions or violations of N.J.A.C. 7:27-11.3(b), (c) and (d). CSD shall not be permitted to continue operations until CSD has successfully demonstrated that it can meet this criteria.

104. In order to assist in the verification of the absence of fugitive emissions, CSD shall install, prior to the resumption of operations, a pressure gauge to monitor the maintenance of negative pressure within the existing incinerator. The pressure gauge shall be equipped with a recording device which will furnish a continuous record of pressure readings during the operation of the facility. The Department shall have access to the pressure gauge and the original recorded pressure readings at all times. Copies of the recorded pressure readings shall be submitted to the Department on a weekly basis. The pressure gauge shall measure the pressure inches by water gauge and shall be equipped with an audible and visible alarm device which shall alert CSD anytime negative pressure fails to be maintained within the existing incinerator. CSD shall use its best efforts to complete the above described actions in less than the six week period commencing with the execution of the JCO by CSD and the Department.

105. At any time during operations, should CSD fail to maintain a negative pressure in the existing incinerator, CSD shall immediately cease operating the chain conveyor and the transporta-

tion of drums into the incinerator in order to identify and correct the cause(s) of the lack of negative pressure; simultaneously upon the failure to maintain negative pressure, CSD shall notify the Department by telephone (during the period of 8 a.m. to 4 p.m. notification shall be to the NJDEPE Metro Bureau Field Office and at all other times, to the NJDEPE Hotline) of the loss of negative pressure and the resulting shutdown. Should CSD be unable to restore negative pressure within fifteen (15) minutes of the shutdown, CSD shall remove all drums within ten (10) feet of the head of incinerator on the conveyor line and shall complete the processing of the drums already inside the incinerator. At the completion of the processing of the drums in the incinerator, CSD shall cease operations and shall not resume operations until it has successfully restored negative pressure in the incinerator.

106. At any time during operations, should fugitive emissions be observed emanating from the existing incinerator, CSD shall immediately cease operating the chain conveyor and the transportation of drums into the incinerator in order to identify and correct the cause(s) of the fugitive emissions; simultaneously upon the observation of fugitive emissions, CSD shall notify the Department by telephone (during the period of 8 a.m. - 4 p.m. notification shall be to the NJDEPE Metro Bureau Field Office and at all other times, to the NJDEPE Hotline) of the observation of the fugitive emissions and the resulting shutdown. Should CSD be unable to eliminate fugitive emissions within fifteen (15) minutes of the shutdown, CSD shall remove all drums bound for the incinerator on the conveyor line and shall complete the processing of the drums in the incinerator. At the completion of the processing of the drums in the incinerator, CSD shall cease operations and shall not resume operations until it has successfully eliminated the fugitive emissions and the cause thereof and so informed the Department by telephone.

## IV. Periodic Progress Reports and Project Cost Reviews

107.(a) CSD shall submit to the Department and the Court quarterly progress reports and project cost reviews; the first submission shall be made on or before the 30th calendar day of the month following the first full quarter after the effective date of this Judicial Consent Order. Each submission thereafter shall be made on or before the 30th calendar day of the month following the quarter being reported. Each progress report shall detail the activities taken to comply with this Judicial Consent Order and each project cost review shall set forth the monies spent pursuant to this Judicial Consent Order. The Progress Report shall include the following:

a. Identification of site and reference to this Judicial Consent Order;

b. Identify specific requirements of this Judicial Consent Order (including the corresponding paragraph number or schedule) which were initiated during the reporting period;

c. Identify specific requirements of this Judicial Consent Order (including the corresponding paragraph number or schedule) which were initiated in a previous reporting period, which are still in progress and which will continue to be carried out during the next reporting period;

d. Identify specific requirements of this Judicial Consent Order (including the corresponding paragraph number or schedule) which were completed during this reporting period;

e. Identify specific requirements of this Judicial Consent Order (including the corresponding paragraph numbers or schedule) which should have been completed during the reporting period and were not;

f. Identify the specific requirements of this Judicial Consent Order (including the corresponding paragraph number or schedule) that will be initiated during the upcoming reporting period.

The Project Cost Review shall include the following:

a. A detailed summary comparing estimated to actual costs incurred by CSD in conjunction with the investigation and remediation of the Site during the preceding quarter;

b. A detailed summary of all monies spent since the time of the execution of the Judicial Consent Order;

c. The estimated cost of all future expenditures required to comply with the Judical Consent Order for each remaining quarter of the current trust set up pursuant to paragraphs 116-119;

d. An explanation of any deviations from the previous estimated cost of all future expenditures submitted by CSD.

107.(b) In the event CSD secures all of the funding for any of the trusts required pursuant to this ACO from a commercial lending institution, CSD shall provide the Department with year end financial statements prepared in accordance with guidelines established by the American Institute of Certified Public Accountants ("AICPA") for a review, documenting the results of CSD's operations during the year of each trust.

107.(c) If CSD secures any amount of funding for any trust from sources other than a commercial lending institution, CSD shall submit quarterly financial statements prepared in accordance with

guidelines established by the AICPA for a review, documenting the results of CSD's operations during each quarter of each trust for as long as the financing is being used, together with the quarterly project cost reviews required pursuant to paragraph 107(a). In addition, CSD shall submit year end audited financial statements for each trust, documenting the results of CSD's operations for the year for each trust, for any year the financing from a commercial lending institution is utilized.

V. Permits

108. This Judicial Consent Order shall not be construed to be a permit or in lieu of a permit for existing or former activities which require permits and for activities under taken by CSD at its risk pursuant to paragraph 102(b). This Judicial Consent Order shall not relieve CSD from obtaining and complying with all applicable Federal, State and local permits necessary for any future activities which CSD may need to carry out the obligations of this Judicial Consent Order except as provided in paragraph 102, above.

109. CSD shall submit complete applications for all Federal, State and local permits required to carry out the obligations of this Judicial Consent Order in accordance with the approved time schedules.

110. Within thirty (30) calendar days of receipt of written comments concerning any permit application to a Federal, State or local agency, or sooner if required by the permitting agency, CSD shall modify the permit application to conform to the agency's comments and resubmit the permit application to the agency. The determination as to whether or not the permit application, as resubmitted, conforms with the agency's comments or is otherwise acceptable to the agency shall be made solely by the agency in writing.

111. This Judicial Consent Order shall not preclude the Department from requiring that CSD apply for any permit or permit modification issued by the Department 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., the Air Pollution Control Act N.J.S.A. 26:2C-1 et seq. and/or any other statute for the matters covered herein. The terms and conditions of any such permit or permit modification shall not be preempted by the terms and conditions of this Judicial Consent Order even if the terms and conditions of any such permit or permit modification are more stringent than the terms and conditions of this Judicial Consent Order. To the extent that the terms and conditions of any such permit or permit modifications are substantially equivalent with the terms and conditions of this Judicial Consent Order, CSD waives any rights it may have to a hearing on such terms and conditions during any such permit process.

## VI. Project Coordination

112. CSD shall submit to the Department all documents required by this Judicial Consent Order, including correspondence relating to force majeure issues, by certified mail, return receipt requested or by hand delivery with an acknowledgement of receipt form to the person designated in Paragraph 114, below. The date that the Department executes the receipt or acknowledgement will be the date the Department uses to determine CSD's compliance with the requirements of this Judicial Consent Order and the applicability of the remedies available to the Department pursuant to this Judicial Consent Order.

113. Within seven (7) calendar days after the effective date of this Judicial Consent Order, CSD shall submit to the Department the name, title, address and telephone number of the individual who shall be the CSD contact for the Department for all matters concerning this Judicial Consent Order. The individuals identified in the following paragraph shall be the Department contacts for the CSD for all matters concerning this Judicial Consent Order.

114. CSD shall submit four (4) copies of all documents required by this Judicial Consent Order, unless otherwise directed by the Department, to:

Air Pollution Documents

New Jersey Department of Environmental Protection and Energy
Office of Enforcement Policy
Bureau of Enforcement Services
CN-027
401 E. State Street -Third Floor
Trenton, NJ 08625
Attention: Bureau Chief

Remedial Investigation/Feasibility and Remedial Action Documents

New Jersey Department of Environmental Protection and Energy
Bureau of State Case Management
Division of Responsible Party Site Remediation
401 East State Street - Fifth Floor
CN-028
Trenton, NJ 08625
Attention: Section Chief

115. CSD shall notify, both verbally and in writing, the contact person listed above at least two weeks prior to the initiation of any field activities.

VII. Financial Requirements

A. Financial Assurance

116. Financial assurance shall be maintained by CSD in the form of five (5) irrevocable fully funded trusts according to the schedule and in the manner and amounts set forth below. The funds deposited into each trust shall be used exclusively for the remediation activities undertaken during the period of each trust. Any funds remaining in a particular trust at the end of that trust's period shall be deposited into the next trust as an addition to the sum required by this JCO for the establishment of the new trust.

a. Trust No. 1

1. Within ninety (90) calendar days after the effective date of this JCO, CSD shall deposit into the first irrevocable fully funded trust funds in the amount of one hundred thirty-nine thousand dollars ($139,000.00). Written proof of such deposit shall be provided to the Department by the Trustee of the trust and CSD, as defined by Appendix G, within seven (7) calendar days after the deposit.

2. This paragraph shall apply only if CSD borrowed from private sources* either all or part of the funds which have been deposited into Trust No. 1: At the conclusion of the same 365 day period commencing with the date of the deposit in Subparagraph a.1, above, CSD shall be permitted to apply all or part of the net income from operations toward repayment of the loan(s) plus interest (subject to the limitations set forth in this subparagraph) provided that the net income from operations is equal to, or greater than, the amount of the loan(s) plus interest. In the event CSD's net income from operations is less than the amount of the loan plus interest, CSD may only apply the actual amount of the net income from operations toward repayment of the loan(s) plus interest. CSD shall be permitted to pay interest to those private sources at the rate of five and one-quarter per cent (5¼%) per annum, again subject to the limitations set forth herein.

b. Trust No. 2

1. Within three hundred sixty-five (365) calendar days after the deposit of funds into the first irrevocable fully funded trust, as set forth in Subparagraph a. 1, above, CSD shall deposit into the second irrevocable fully funded trust funds in the amount of two hundred ninety-one thousand dollars ($291,000.00). Written proof of such deposit shall be provided to



*See Rider A attached.

the Department by the Trustee of the trust and CSD, as defined by Appendix G, within seven (7) calendar days after the deposit.

2. This paragraph shall apply only if CSD borrowed from private sources, either all or part of the funds which have been deposited into Trust No. 2: At the conclusion of the same 365 day period commencing with the date of deposit in Subparagraph b.1, above, CSD shall be permitted to apply all or part of the net income from operations toward repayment of the loan(s) plus interest (subject to the limitations set forth in this subparagraph) provided that the net income from operations is equal to, or greater than, the amount of the loan(s) plus interest. In the event CSD's net income from operations is less than the amount of the loan plus interest, CSD may only apply the actual amount of the net income from operations toward repayment of the loan(s) plus interest. CSD shall be permitted to pay interest to the private sources at the rate of five and one-quarter per cent (5¼%) per annum, again subject to the limitations set forth herein.

c. Trust No. 3

1. Within three hundred sixty-five (365) calendar days after the deposit of funds into the second irrevocable fully funded trust, as set forth in Subparagraph b. 1, above, CSD shall deposit into the third irrevocable fully funded trust funds in the amount of two hundred seventy-six thousand dollars ($276,000.00). Written proof of such deposit shall be provided to the Department by the Trustee of the trust and CSD, as defined by Appendix G, within seven (7) calendar days after the deposit.

2. This paragraph shall apply only if CSD borrowed from private sources, either all or part of the funds which have been deposited into Trust No. 3: At the conclusion of the same 365 day period commencing with the date of the deposit in Subparagraph c.1, above, CSD shall be permitted to apply all or part of the net income from operations toward repayment of the loan(s) plus interest (subject to the limitations set forth in this subparagraph) provided that the net income from operations is equal to, or greater than, the amount of the loan(s) plus interest. In the event CSD's net income from operations is less than the amount of the loan plus interest, CSD may only apply the actual amount of the net income from operations toward repayment of the loan(s) plus interest. CSD shall be permitted to pay interest to those private sources at the rate of five and one-quarter per cent (5¼%) per annum, again subject to the limitations set forth herein.

d. Trust No. 4

1. Within three hundred sixty-five (365) calendar days after the deposit of funds into the third irrevocable fully funded trust, as set forth in Subparagraph c. 1, above, CSD

shall deposit into the fourth irrevocable fully funded trust funds in the amount of three hundred seven thousand dollars ($307,000.00). Written proof of such deposit shall be provided to the Department by the Trustee of the trust and CSD, as defined by Appendix G, within seven (7) calendar days after the deposit.

2. This paragraph shall apply only if CSD borrowed from private sources, either all or part of the funds which have been deposited into Trust No. 4: At the conclusion of the same 365 day period commencing with the date of deposit in Subparagraph d.1, above, CSD shall be permitted to apply all or part of the net income from operations toward repayment of the loan(s) plus interest (subject to the limitations set forth in this subparagraph) provided that the net income from operations is equal to, or greater than, the amount of the loan(s) plus interest. In the event CSD's net income from operations is less than the amount of the loan plus interest, CSD may only apply the actual amount of the net income from operations toward repayment of the loan(s) plus interest. CSD shall be permitted to pay interest to those private sources at the rate of five and one-quarter per cent (5¼%) per annum, again subject to the limitations set forth herein.

e. Trust No. 5

1. Within three hundred sixty-five (365) calendar days after the deposit of funds into the fourth irrevocable fully funded trust, as set forth in Subparagraph d. 1, above, CSD shall deposit into the fifth irrevocable fully funded trust funds in the amount of three hundred forty-nine thousand dollars ($349,000.00). Written proof of such deposit shall be provided to the Department by the Trustee of the trust and CSD, as defined by Appendix G, within seven (7) calendar days after the deposit.

2. This paragraph shall apply only if CSD borrowed from private sources, either all or part of the funds which have been deposited into Trust No. 5: At the conclusion of the same 365 day period commencing with the date of the deposit in Subparagraph e.1, above, CSD shall be permitted to apply all or part of the net income from operations toward repayment of the loan(s) plus interest (subject to the limitations set forth in this subparagraph) provided that the net income from operations is equal to, or greater than, the amount of the loan(s) plus interest. In the event CSD's net income from operations is less than the amount of the loan plus interest, CSD may only apply the actual amount of the net income from operations toward repayment of the loan(s) plus interest. CSD shall be permitted to pay interest to those private sources at the rate of five and one-quarter per cent (5¼%) per annum, again subject to the limitations set forth herein.

117. General Conditions for Irrevocable Fully Funded Trust

a. The trust instruments for five irrevocable fully funded trusts referred to in the preceding paragraph shall be identical in wording to the wording specified in Appendix H, which is attached hereto and made a part hereof;

b. The trustee shall be an entity which has the authority to act as a trustee and whose trust operations are regulated and examined by a Federal or New Jersey agency;

c. Each trust instrument must be accompanied by an executed certification of acknowledgement that is identical to the wording specified in Appendix H.

118. CSD shall establish and maintain the five fully funded irrevocable trusts until terminated by the written agreement of the Department, the trustee and CSD, or of the trustee and the Department if CSD ceases to exist. In the event the Department determines that CSD has failed to comply with the requirements and associated deadlines and schedules as provided in paragraph 101, the Department may proceed to draw on the trust that is currently in place, to complete the performance of the activities CSD was to perform during that trust period. Nothing in this JCO shall preclude the Department from conducting the remedial measures should paragraph 101 be invoked by the Department.

119. At any time, CSD may apply to the Department to substitute other financial assurances in a form, manner and amount acceptable to the Department.

B. Project Cost Review

120. At any time after CSD submits the first cost review pursuant to paragraph 107(a) or 107(b), CSD may make a written request to the Department for a reduction of the amount of CSD's upcoming financial assurance obligations set forth in Part VII of this JCO to reflect a demonstrated reduction in its estimate of the remaining costs of performing its obligations under this JCO. If the Department grants written approval of such a request, and reduces the amount of any of CSD's remaining financial assurance obligations set forth in Part VII of this JCO, CSD shall be obligated to satisfy the reduced amount of financial assurances set forth by the Department.

121. At any time after CSD submits the first cost review pursuant to the preceding paragraph, CSD may make a written request to the Department for a reduction of the amount of CSD's upcoming financial assurance obligations set forth in Part VII of this JCO on the basis of a demonstrated inability to satisfy all or part of CSD's remaining financial assurance obligations under this JCO. If the Department grants written approval of such a request, and reduces the amount of any of CSD's remaining financial assurance obligations set forth in Part VII of this JCO, CSD shall not be

relieved from performing any of its other obligations set forth in this JCO, including but not limited to the obligation to reimburse the Department for oversight costs pursuant to paragraph 122 herein.

C. Oversight Cost Reimbursement

122. Within thirty (30) calendar days after receipt from the Department of a written summary of all costs incurred in connection with its oversight functions of this Judicial Consent Order for a fiscal year, or any part thereof, CSD shall submit to the Department a cashier's or certified check payable to the "Treasurer, State of New Jersey" for the full amount of the Department's oversight costs.

VII. Force Majeure

123. If any event specified in the following paragraphs occurs which CSD believes or should believe will or may cause delay in the compliance or cause non-compliance with any provision of this JCO, CSD shall notify the Department in writing within seven (7) calendar days of the start of delay or knowledge of the anticipated delay, as appropriate, referencing this paragraph and describing the anticipated length of the delay, the precise cause or causes of the delay, any measures taken or to be taken to minimize the delay, and the time required to take any such measures to minimize the delay. CSD shall take all necessary action to prevent or minimize any such delay.

124. The Department will extend in writing the time for performance for a period no longer than the delay resulting from such circumstances as determined by the Department only if: (i) CSD has complied with the notice requirements of the preceding paragraph; (ii) that any delay or anticipated delay has been or will be caused by fire, flood, riot, strike or acts of God; and, (iii) CSD has taken all necessary action to prevent or minimize any such delay.

125. CSD shall have the burden of proving that any delay is caused by force majeure and that the length of any such delay is attributable to force majeure.

126. "Force Majeure" shall not include the following:

i. Delay in an interim requirement with respect to the attainment of subsequent requirements;

ii. Increases in the cost or expenses incurred by CSD in fulfilling the requirements of this JCO;

iii. Contractor's breach, unless CSD demonstrates that such breach falls within paragraph 124 above; and



OVERSIGHT COSTS = ¶122

iv. Failure to obtain access required to implement this JCO, unless denied by a court of competent jurisdiction.

VIII. Reservation of Rights

127. Nothing in this Judicial Consent Order shall preclude the Department from seeking civil or civil administrative penalties or any other legal or equitable relief against CSD for past and future violations of statutes and regulations which the Department has already alleged or may allege in the future.

128. This Judicial Consent Order shall not be construed to affect or waive the claims of federal or State natural resources trustees against CSD for damages for injury to, destruction of, or loss of natural resources.

129. The Department reserves the right to require CSD to take or arrange for the taking of any and all additional measures if the Department determines that such actions are necessary to protect human health or the environment. Nothing in this Judicial Consent Order shall constitute a waiver of any statutory right of the Department to require CSD to undertake such additional measures should the Department determine that such measures are necessary.

130(a). Nothing in this Judicial Consent Order shall preclude the Department from seeking civil penalties or any other legal or equitable relief against CSD for violations of this Judicial Consent Order. In any such action brought by the Department under this Judicial Consent Order for injunctive relief or civil penalties, CSD may raise, among other defenses, a defense that CSD failed to comply with a decision of the Department, made pursuant to this Judicial Consent Order, on the basis that the Department's decision was arbitrary, capricious or unreasonable. Although CSD may raise such defenses in any action initiated by the Department for penalties or injunctive relief under this JCO, CSD hereby agrees not to otherwise seek review of any decision made or to be made by the Department pursuant to this Judicial Consent Order, and under no circumstances shall CSD initiate any action or proceeding challenging any decision made or to be made by the Department pursuant to this Judicial Consent Order.

103(b). Nothing in this Judicial Consent Order shall preclude CSD, Dorothy Greenberg, Bessie Baron, Jane Ratner-Mattson and Marian Ratner-Abrams from pursuing any claim or crossclaim against any other party, except that all claims against NJDEPE arising from the Complaint are hereby dismissed with prejudice.

IX. General Provisions

131. CSD shall, in addition to any other obligation required by law, notify the Department contact identified in para-

graph 114 immediately upon knowledge of any condition posing an immediate threat to human health and the environment.

132. This JCO shall be binding, jointly and severally, on each signatory, its successors, assignees and any trustee in bankruptcy or receiver appointed pursuant to a proceeding in law or equity. No change in the ownership or corporate status of any signatory or of the facility or site shall alter signatory's responsibilities under this JCO.

133. CSD shall perform all work conducted pursuant to this Judicial Consent Order in accordance with prevailing professional standards.

134. CSD shall conduct all site operations in accordance with the Health and Safety plan developed for this site (as set forth in Appendix B). All site activities shall be conducted in accordance with all general industry (29 CFR 1910) and construction (29 CFR 1926) standards of the federal Occupational Safety and Health Administration (OSHA), U.S. Department of Labor, as well as any other State or municipal codes or ordinances that may apply. Special attention shall be given to compliance with those requirements set forth in OSHA's final rule entitled "Hazardous Waste Operations and Emergency Response", Section 1910.120 of Subpart H of 29 CFR (published March 6, 1989, Volume 54, Number 42, Federal Register or as amended).

135. In accordance with N.J.S.A. 45:8-45, all plans or specifications involving professional engineering, submitted pursuant to this Judicial Consent Order, shall be submitted affixed with the seal of a professional engineer licensed pursuant to the provisions of N.J.S.A. 45:8-1 et seq.

136. CSD shall conform all actions pursuant to this Judicial Consent Order with all applicable Federal, State, and local laws and regulations.

137. All appendices referenced in this Judicial Consent Order, as well as all reports, work plans and documents required under the terms of this Judicial Consent Order are, upon approval by the Department, incorporated into this Judicial Consent Order by reference and made a part hereof.

138. Each field activity to be conducted pursuant to this Judicial Consent Order shall be coordinated by an onsite professional with experience relative to the particular activity being conducted at the site each day, such as experience in the area of hydrogeology, geology, environmental controls, risk analysis, health and safety or soils.

139. Upon the receipt of a written request from the Department, CSD shall submit to the Department all data and infor-

mation, including technical records and contractual documents, concerning pollution at and/or emanating from the site, or which has emanated from the site, including raw sampling and monitor data, whether or not such data and information, including technical records and contractual documents, was developed pursuant to this Judicial Consent Order.

140. CSD shall preserve all potential evidentiary documentation found at the site until written approval is received from the Department to do otherwise, including without limitation, documents, bottles, boxes or other containers, and/or other physical materials that could lead to the establishment of the identity of any person which generated, treated, transported, stored or disposed of contaminants at or to the site.

141. CSD shall preserve, during the pendency of this JCO and for a minimum of ten (10) years after its termination, all data and information, including technical records, potential evidentiary documentation and contractual documents, in its possession or in the possession of their divisions, employees, agents, accountants, contractors, or attorneys which relate in any way to the contamination at the site, despite any document retention policy to the contrary. After this ten year period, CSD may make a written request to the Department to discard any such documents. Such a request shall be accompanied by a description of the documents involved, including the name of each document, date, name and title of the sender and receiver and a statement of contents. Upon receipt of written approval by the Department, CSD may discard only those documents that the Department does not require to be preserved for a longer period. Upon receipt of a written request by the Department, CSD shall submit to the Department all data and information, including technical records and contractual documents or copies of the same. CSD reserves whatever rights it may have, if any, to assert any privilege or a privilege regarding such data or information, however, CSD agrees not to assert confidentiality claims with respect to any data related to site conditions, sampling, or monitoring.

142. Obligations and penalties of the Judicial Consent Order are imposed pursuant to the police powers of the State of New Jersey for the enforcement of the law and the protection of the public health, safety and welfare and are not intended to constitute debt or debts which may be limited or discharged in a bankruptcy proceeding.

143. In addition to the Department's statutory and regulatory rights to enter and inspect, CSD shall allow the Department and its authorized representatives access to the site during normal business hours and all hours of operations in an emergency for the purpose of monitoring CSD compliance with this Judicial Consent Order and/or to perform any remedial activities CSD fails to perform as required by this Judicial Consent Order.

144. CSD shall not construe any informal advice, guidance, suggestions, or comments by the Department, or by persons acting on behalf of the Department, as relieving CSD of its obligation to obtain written approvals as required herein, unless the Department specifically relieves CSD of such obligations, in writing in accordance with the following paragraph.

145. No modification or waiver of this Judicial Consent Order shall be valid except by written amendment to this Judicial Consent Order duly executed by CSD and the Department, and approved by the Court.

146. In the event that the Department determines that a public meeting concerning the cleanup of the site is necessary at any time, CSD shall ensure that the CSD appropriate representative is prepared, available, and participates in such a meeting upon notification from the Department of the date, time and place of such meeting.

147. CSD agrees not to contest the terms or conditions of this Judicial Consent Order, except as to interpretation or application of such terms and conditions in any action brought by the Department to enforce the provisions of this Judicial Consent Order.

148. CSD shall provide a copy of this Judicial Consent Order to each contractor and subcontractor retained to perform the work required by this Judicial Consent Order and shall condition all contracts and subcontracts entered for the performance of such work upon compliance with the terms and conditions of this Judicial Consent Order. CSD shall be responsible to the Department for ensuring that their contractors and subcontractors perform the work herein in accordance with this Judicial Consent Order.

149. CSD shall give written notice of this Judicial Consent Order to any successor in interest no later than 90 calendar days prior to transfer of ownership of CSD facilities which are the subject of this Judicial Consent Order, and shall simultaneously verify to the Department that such notice has been given. This requirement shall be in addition to any other statutory or regulatory requirements arising from the transfer of ownership of CSD facilities.

150. CSD agrees not to bring an action or maintain any existing or future claim or demand upon any State funds, including the fund created by the New Jersey Spill Compensation Fund, N.J.S.A. 58:10-23.11i and the fund created by the Sanitary Landfill Facility Closure and Contingency Fund Act, N.J.S.A. 13:1E-100 et seq., for the cost of investigation and remediation or any other actions required by this Judicial Consent Order and for damages sustained by CSD or its successors and assigns as a result of contamination attributable to CSD or its predecessor's ownership

and/or operations at the Site. This provision shall be construed as a covenant not to sue or make any claim or demand; provided however, CSD does not release or waive any right it may have to seek damages from a third party for such costs or damages.

151. CSD agrees not to make any use of the Site or take any actions inconsistent with this Judicial Consent Order. CSD agrees to impose or where applicable, cooperate in securing, the imposition of such use and/or access restrictions regarding the Site as may be deemed necessary by the Department.

152. The requirements of this Judicial Consent Order shall be deemed satisfied upon the receipt by CSD of written notice from the Department that CSD has demonstrated, to the satisfaction of the Department, that the obligations imposed by this Judicial Consent Order have been completed by CSD.

153. CSD shall submit to the Department, along with the executed original Judicial Consent Order, the appropriate documentary evidence (such as a corporate resolution) that the signatory for CSD has the authority to bind CSD to the terms of this Judicial Consent Order.

154. This JCO represents the entire integrated agreement between the Department and CSD and supersedes all prior negotiations, representations or agreements, either written or oral, unless otherwise specifically provided herein.

155. CSD shall provide to the Department written notice of the dissolution of its corporate or partnership identity, the liquidation of the majority of its assets or the closure, termination or transfer of operations at least thirty (30) calendar days prior to such action. Upon such notice, CSD shall submit a cost review pursuant to paragraph 120 to the Department. CSD shall also provide written notice to the Department of a filing of a petition for bankruptcy no later than the first business day after such filing. This requirement shall be in addition to any other statutory requirements arising from the dissolution of corporate or partnership identity, the liquidation of the majority of assets, or the closure, termination or transfer of operations.

156. This Judicial Consent Order shall become effective upon its entry by the Court.

The undersigned hereby agree to the form and entry of the within Judicial Consent Order.

Date: _____

_____
MURRAY G. SIMON, J.S.C.

NEW JERSEY DEPARTMENT OF
ENVIRONMENTAL PROTECTION
AND ENERGY

Date: 1-7-93 By: _____
Ronald Corcory
Assistant Director
Responsible Party Cleanup
Element
Division of Responsible Party
Site Remediation

Date: January 7, 1993 By: _____
Donald Paterson
Assistant Director
Environmental Enforcement
Element
Division of Environmental
Quality

CENTRAL STEEL DRUM COMPANY

Date: January 4, 1993 By: _____
Name: GERALD GREENBERG
Vice-President

Title:

I Elizabeth C. Elsinger do so swear that on the 7th day of Jan. 1993 and in my presence Ronald J. Corcoran did affix her/his signature to this Administrative Consent Order.

Seal

Elizabeth C. Elsinger

Signature of Notary

I R. Joy Thomas do so swear that on the 7th day of Jan 1993 and in my presence Donald Pettus did affix her/his signature to this Administrative Consent Order.

Seal

R. Joy Thomas

Signature of Notary

R. JOY THOMAS
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires October 2, 1994

**RIDER A**

"Borrowed from private sources" as referenced in the following subparagraphs of this Paragraph 116 does not include lending institutions or entities, such as banks, savings and loan associations, factors or other corporations and/or associations in the business of making loans or advances based on accounts receivable, inventory, equipment and/or general intangibles.

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
JOHN FITCH PLAZA, CN027, TRENTON, N.J. 08625
Solid Waste Administration

GEORGE J. TYLER
DIRECTOR

March 28, 1980

Central Steel Drum
704 Doremus Avenue
Newark, NJ

Dear Sir:

Attached herewith is a Notice of Prosecution which indicates that you have violated the Rules of the Solid Waste Administration as determined by recent departmental investigations. The maximum statutory penalty provided by law for each violation is a fine of up to $3,000 per day and an injunctive order of the Superior Court.

This Notice of Prosecution constitutes an offer by the Department to amicably compromise its claim for the maximum penalties, an injunctive order and loss of operating authority through payment of the specified settlement sum. The offer of settlement shall not be construed to preclude the use of the alleged violations in support of other administrative actions or court orders.

If the settlement has not been received by the indicated date, this matter will be referred to the Attorney General with the recommendation that he seek maximum court relief as described above.

Any violations of the Rules of the Solid Waste Administration on dates and/or areas other than those cited in the attached Notice of Prosecution will be cause for additional prosecution.

Should you have any further questions regarding this matter, please feel free to contact Ronald Corcory at (609) 292-9877.

Very truly yours,

Ralph Pasceri

Ralph Pasceri
Chief
Bureau of Hazardous Waste

Attachment
CERTIFIED MAIL

*New Jersey Is An Equal Opportunity Employer*

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
JOHN FITCH PLAZA, CN027, TRENTON, N.J. 08625
SOLID WASTE ADMINISTRATION

GEORGE J. TYLER
DIRECTOR

NOTICE OF PROSECUTION

(CENTRAL STEEL DRUM )
(704 DOREMUS AVENUE,)
(NEWARK, NEW JERSEY )

Violations Occurred on Premises Known As:

Central Steel Drum, 704 Doremus Avenue, Block 5074, Lot 2, City of Newark, County of Essex

Dear Sir:

Investigation by this Department on January 29, 1980, disclosed violations of the New Jersey Administrative Code 7:26-1 et seq. The maximum penalty that may be levied for each violation is $3,000 per day.

Prosecution is being withheld until April 28, 1980 for settlement of a claim for a penalty against you in the amount of $2,000. Should you desire to settle your claim, payment must be made on or before this date by money order or check drawn to the order of the Treasurer, State of New Jersey.

N.J.A.C. 7:26-2.2(b) ($1,000) - The investigation disclosed that Central Steel Drum engaged in the disposal of solid waste, specifically chemical waste, on the above mentioned premises without having first obtained an approved registration statement from the Department.

N.J.A.C. 7:26-2.2(c) ($1,000) - The investigation disclosed that Central Steel Drum engaged in the disposal of solid waste, specifically chemical waste, on the above mentioned premises without having first submitted an engineering design and obtained approval of same from the Department.

FURTHERMORE, Central Steel Drum IS HEREBY ORDERED to:

1. Immediately cease all waste storage, processing and disposal activities.

2. Within 14 days of receipt of this Order, submit the following information to the Solid Waste Administration:

   a. Total number of containers, volumes and contents on-site;

b. Identify any materials buried on-site;

c. Identify any materials which have leaked or spilled from drums or other containers;

d. A schedule to excavate and remove all chemical waste from the site to an authorized special waste facility within 30 days of receipt of this Order; and

3. Within 30 days of receipt of this Order:

a. Excavate and remove all chemical waste from the above captioned property to an authorized special waste facility;

b. Excavate and remove all chemical materials which have leaked or spilled from containers of materials stored at the above location;

c. Repackage any container which fails to hold its contents so as to prevent any spillage.

4. All containers are to be properly labeled and all shipments of chemical waste materials are to be accompanied by the appropriately completed special waste manifest; and

5. All shipments of waste must be hauled by a properly registered collector/ hauler.

6. Notify the Solid Waste Administration within 24 hours before any specific time of any shipments.

Failure to comply with all of the requirements of this Notice of Prosecution and/or failure to make timely payment of penalties identified above will precipitate immediate referral of this matter to the Office of the Attorney General to seek maximum penalties allowed by law.

March 28, 1980
DATE

George J. Tyler

George J. Tyler, Director
Division of Environmental Quality

ARCADIS
*Infrastructure, environment, facilities*

ARCADIS U.S., Inc.
6 Terry Drive
Suite 300
Newtown
Pennsylvania 18940
Tel 267.685.1800
Fax 267.685.1801
www.arcadis-us.com

ENVIRONMENT

Stephen Kehayes
Office of Brownfield Reuse
New Jersey Department of Environmental Protection
Post Office Box 28
401 East State Street, 6th Floor
Trenton, New Jersey, 08625-0028

Subject:
Remediation Investigation Work Plan for the Former Central Steel Drum Site, 704 – 738 Doremus Ave., Newark, NJ

Date:
March 28, 2007

Contact:
Christopher Sharpe

Phone:
267.685.1800

Email:
Christopher.Sharpe@arcadis-us.com

Our ref:
NP000635.0002

Dear Mr. Kehayes:

On behalf of the City of Newark, ARCADIS is pleased to submit this Work Plan for additional soil investigation activities at the Former Central Steel Drum property located at 704 – 738 Doremus Ave., Newark, NJ (Site). Per the agreed-upon project communications structure, whereby all communication is to occur through the Office of Deputy Commissioner Adam Zellner, a copy of this work plan has been transmitted to Deputy Commissioner Zellner's office. The Work Plan has been developed to address the additional investigational activities requested by the NJDEP in its technical memoranda dated June 24, 2004 and April 11 2005.

(c) 610-952-1250

**Introduction**

This Remedial Investigation Work Plan (RIWP) describes the approach that will be taken to complete the investigation of environmental conditions at the Site. To develop a scope of work to address outstanding Site issues, ARCADIS reviewed correspondence between the prior site consultant (URS) and the New Jersey Department of Environmental Protection (NJDEP) over the period between February 2001 and June 2006. During this period, URS proposed (February 2001) and finalized (February 2005) a Scope of Work (SOW) to complete site characterization. NJDEP approved the URS SOW, which was then implemented, but believed additional elements of work would be required to fully characterize conditions at the Site. The current RIWP has been developed to address the remaining concerns of the NJDEP, with a goal of aggressive site redevelopment to restore the site to an active economic resource for the City of Newark (City). The deficiencies in the URS work plan and addendum identified by NJDEP have been tabulated and are provided

in attached **Table A-1**. This table also provides the general methodologies proposed to collect the required data, and indicates the location of that information in this RIWP

**Project Description**

The Site is a former industrial property that has been unused and vacant for the past 10-15 years. The goal of the investigation is to enable refinement of the approach to be taken to remediate the Site and permit the redevelopment, thereby enabling productive reuse of the Site.

**Project Team**

This work is being conducted as a joint effort between the NJDEP, which has been working to remediate this orphaned, contaminated Site since approximately 1985; the City of Newark, which presently holds the deed to the Site; and, Glopak Corporation, which seeks to expand their manufacturing operations within the City of Newark.

**Site Background**

The following sections describe the Site, and the work that has been conducted to date to characterize environmental conditions and to understand the nature and extent of contamination on the property..

**Site Description**

The Site lies within the East Ward of the City where redevelopment is presently a priority. Adjacent to a Conrail Right of Way (ROW), the site is particularly suited to a restoration of industrial use. **Figure 1** shows the location of the Site. A former industrial manufacturing facility along New Jersey's Chemical Row, the Site has been vacant since approximately 1994, though a number of structures remain in place on the property. The Site is separated from residential areas by a distance of about 1.5 miles, through which pass both the New Jersey Turnpike and US Highway 1.

**Site History**

Prior to 1951, the Site was used for ink pigment manufacturing, after which it was acquired by Central Steel Drum. The Site was operated by Central Steel Drum as a drum recycling and reconditioning facility between 1951 and 1994. Environmental

impacts were caused by a number of site operations, including drum cleaning, drum reconditioning, incineration of drum contents and disposal of incinerator ash.

Operations at the site ceased in 1994, and the facility has remained vacant and unused while surrounding properties have been restored to beneficial use. Title to the property is now held by the City, who is presently responsible for all Site investigation and remediation activities under the NJDEP Assistance Program. Site characterization activities have and will continue to be conducted with assistance from the Hazardous Discharge Site Remediation Fund (HDSRF), which was established in conjunction with the Industrial Site Recovery Act (ISRA) to provide funding to public entities (municipalities, counties, and redevelopment agencies), qualifying private entities (businesses, corporations, homeowners, etc.), and non-profit organizations for the investigation and/or remediation of a suspected or known discharge of a hazardous substance.

**Previous Site Investigations**

Previous Site Investigations have been performed on the behalf of the City between 1985 and 2004. The following paragraphs summarize the work that has been done through 2004.

The NJDEP became involved in the Site in approximately 1980 because of observed poor custodial and waste management practices. Several phases of investigation ensued. An investigation into overall groundwater quality began in 1985 with the installation of 4 monitoring well pairs. The wells indicated the presence of base neutral compounds, metals and Volatile Organic Compounds (VOC)s in groundwater. NJDEP was provided the results of this investigation (URS, June 1, 2004). Investigation into historical operations and waste handling practices led to the identification of twelve Areas of Concern (AOCs) at the Site. These AOCs are identified on **Figure 2**.

Removal activities authorized by the United States Environmental Protection Agency (USEPA) were conducted in 1997 to stabilize and remove hazardous wastes and chemicals, drums, and to close USTs in-place. In 2001, the City entered into a Memorandum of Agreement (MOA) with the NJDEP under the state brownfields legislation. A comprehensive remedial investigation was then authorized by the City of Newark and conducted by URS to characterize soil, groundwater and sediment conditions at the Site. The results of this investigation were documented in the June 2004, Revised Soil Remedial Investigation Results Summary Report (including

sediment sampling results) and the June 2004, Remedial Investigation Workplan Addendum for Groundwater and Groundwater Screening Sample Results Summary. In February and March 2005, URS submitted a Scope of Work for Remedial Investigation (addressing proposed additional investigative work for soil and groundwater), and an Addendum (Scope of Work for Remedial Investigation of the Drainage Ditch), respectively. Concurrent with the preparation of and following submission of these reports, NJDEP prepared technical memoranda to comment on the results of the investigation and proposed scope of work to make recommendations for modifying the scope of work for the next phase of investigation at the Site. The reports prepared by URS and the technical memoranda prepared by NJDEP, collectively, form the basis for this RIWP. **Table 2** provides a detailed listing of the documentation described above.

ARCADIS is working in cooperation with NJDEP to expedite remedial action and prepare the Site for productive reuse as an industrial facility. Site reuse will require the repair, rehabilitation, replacement, maintenance and/or reconstruction of the existing artificial and natural features present at the Site. Such features include but are not limited to buildings, infrastructure and parking areas. In an effort to meet redevelopment objectives, remedial work will focus first on soils, primarily, to prepare the Site for facilities construction. Remedial work addressing groundwater and the drainage ditch adjacent to the Site will be conducted in subsequent work efforts. Therefore, this RIWP addresses investigative work for soils only.

**Summary of Site Characterization to Date**

The investigations conducted to date have yielded the following information regarding Site conditions:

- Contamination related to site activities is limited to the zone above a thick clay unit which is generally located between 12 and 20 feet below ground surface (bgs) at the Site.
- The shallow (upper 20 -24 ft. bgs) subsurface materials are largely comprised of sand, silt and other coarse-grained sediments as follows:
    - 0-3 feet: Black granular and sandy fill material mixed with silt/clay;
    - 4-17 feet: Moist/wet, plastic, dark gray silt/clay with alternating silty-sand and organic units. Odors were noted during drilling; and,

- 20-24 feet: Dark gray silt and clay with alternating bands of red-brown silt and fine sand. Typically moist or wet approximately 20 feet bgs. (NJDEP, 11-07-03)

Details related to the extent of contamination and the estimated remedial effort required to restore the site to productive use are addressed in the following sections.

**Proposed Remedial Investigation Approach**

In late 2006, the City was approached by a group of parties having an intention to restore the Site to Productive use. The City, in support of this plan, entered into discussions with the interested parties in an attempt to remediate the site and restore it to productive use.

Meetings and conversations between the parties and the NJDEP identified a number of issues that must be addressed before the site can be returned to productive use. This work plan has been prepared to address those issues. All site characterization activities will be conducted in accordance with the New Jersey Technical Requirements for Site Remediation N.J.A.C. 7:26E.

The 2001 remedial investigation included collection of soil samples at the Site from 93 borings advanced to the shallow water table, which corresponded with total depths of 1.5 to 4 feet below ground surface (bgs). The locations of the borings were selected based on ten defined areas of concern (AOCs 1 – 10), where specific operations were reportedly conducted at the Site.[1] **Table 1** summarizes the operations historically conducted at AOCs 1 – 10. The analytical results of the soil sampling program indicated that soil at the Site is impacted with PCBs, VOCs, semi-volatile organic compounds (SVOCs), metals, and pesticides at levels above NJDEP criteria. Dioxins also were detected in soil samples collected at the Site, however, concentrations of dioxins in soil samples did not exceed the recommended criteria published in USEPA guidance as will be discussed below. Based on these results, URS proposed the following remedial actions:

< dioxin SCC 20 ppb

[1] AOCs 11 and 12 constitute the drainage ditch and groundwater, respectively, and are not addressed in this RIWP.

(a) Limited hot spot removal (i.e., soil excavation) for AOCs 2, 3 and 4 after the extent of impact is determined for these AOCs; and

(b) A Combination of engineering controls (i.e., cap) and institutional controls (i.e., Deed Notice) for the remaining areas where COCs were identified at levels above cleanup criteria.

To further develop this remedial action plan, URS proposed additional investigative work at the Site. Selected details from this proposed SOW are presented below:

(i) Soil delineation for selected hot spot locations associated with AOCs 2, 3 and 4. A total of 20 additional soil borings advanced to depths of 2 – 3 feet bgs were proposed. Proposed analytes included PCBs, VOCs and pesticides.

(ii) Vertical delineation of the extent of historic fill material through advancement of 34 soil borings site-wide to the depth of the underlying native soil, estimated at approximately 12 – 15 feet bgs. Elevated levels of metals and SVOCs were attributed to historic fill, which are believed to be characteristic of the area. Subsequent remedial actions to address these constituents in soils at the Site were therefore not proposed.

(iii) Six surface soil samples (0 – 0.5 feet bgs) collected near property boundaries to be analyzed for dioxins. The objective of additional soil sampling for dioxins was to evaluate the distribution of dioxins across the Site, assess the potential for off-site migration, and evaluate potential sources of impact, including a historical incinerator/smokestack area and the use of incinerator ash as backfill at the Site.

(iv) A radiological assessment completed by screening all split-spoon soil samples and ambient air using a Victoreen 190 Radiation Monitor.

ARCADIS has reviewed the results of the 2001 investigation and has developed a remedial action plan and supporting remedial investigation plan that are believed to be more comprehensive and more expeditious than the strategies previously proposed by URS. ARCADIS proposes the following remedial actions:

(A) Hot spot removal through soil excavation of expanded areas within AOCs 1 – 5 and 10, based on the presence of PCBs in soil at levels above the USEPA Toxic Substances Control Act (TSCA) non-residential, high-occupancy criteria (10 mg/kg) and/or the presence of VOCs in soil at levels above the NJDEP non-residential direct contact soil cleanup criteria (NRDCSCC, compound specific).[2]

< IGWSCC ?

(B) Implementation of an engineering control (i.e., cap) over all identified AOCs at the Site, covering both excavated and non-excavated areas. Consideration of an appropriate institutional control (i.e., Deed Notice) for the Site

(C) Consideration of chemical fixation of metals in soil to reduce leachability to groundwater. Chemical fixation, if implemented, would be applied prior to installation of an engineered cap over the surface of the Site.

< pilot or bench tests to determine effectiveness ?

To support the design of ARCADIS' remedial action plan, additional investigative work is required and is the basis for the work proposed in this RIWP as summarized below:

(1) Pre-excavation delineation, both horizontally and vertically, in all areas proposed for excavation based on the presence of elevated levels of PCBs and/or VOCs. Horizontal delineation (sidewall) sampling is proposed at a frequency of 1 sample per every 30 – 50 linear feet of excavation boundary and at each corner of the excavation. Vertical delineation sampling (excavation bottom) is proposed at a frequency of approximately 1 sample per every 2,500 square feet of excavation, to be collected only in areas where the excavation does not extend to the water table.

1/900 sq' w/in 2' of V

- for areas up to 300' in diameter

[2] Implicit in this remedial action is the assumption that radiological impacts and hazardous levels of dioxins are not found during subsequent remedial investigation. In the event that these substances are detected at levels of concern, the remedial strategy for the Site will be reassessed.

(2) Delineation of the extent of historic fill is not proposed. However, leachability of metals, which are pervasive throughout Site soils, will be evaluated through the synthetic precipitate leaching procedure (SPLP), proposed to be applied to approximately 9 soil samples.

(3) Similar to the sampling strategy proposed by URS for dioxins, 6 surface soil samples (0 – 0.5 feet bgs) will be collected near property boundaries and analyzed for dioxins. Up to nine additional surface soil samples, approximately 1 sample per acre, will be collected from areas in the interior of the Site for analysis of dioxins. Selection of sampling locations will be biased to areas where visual evidence suggests historical surface improvement/modification through backfilling, pothole repair, etc., as these activities reportedly involved the use of incinerator ash as backfill.

1 per acre ?
site ≈ 8.5 ac.

(4) A radiological survey consisting of a site-walk covering all walkable (i.e.,open, non-inundated) areas will be conducted to determine if radiological impacts are present, and if a more complete radiological assessment is required. The radiological survey will be conducted by a specialized radiological consultant.

Based upon recent Site visits, ARCADIS has determined that areas of the Site may contain wetlands. The ability to conduct remedial actions will be contingent on the removal of any restrictions that would prohibit access to designated remedial areas on the basis of the status of these areas as protected wetlands or waterfront areas. It is proposed that remedial actions at the Site will be conducted in a phased approach such that those areas that are not restricted from remedial or redevelopment activities will be addressed first. As additional areas of the Site are approved for remediation and redevelopment, work will proceed in these areas in subsequent phases of work. This RIWP addresses the next phase of investigative work for the Site as a whole, regardless of the estimated timing of availability of selected areas for remedial and redevelopment activities.

**Proposed Remedial Actions**

The proposed remedial action for the Site includes excavation of hot spot locations,[3] principally, those locations in which concentrations of PCBs were detected at concentrations above 10 mg/kg in soil samples, followed by capping of these areas. The rationale for this remediation strategy was developed upon analysis of the Site data in conjunction with applicable USEPA remediation criteria for PCBs.

The results of soil sampling conducted in October 2001 indicated that soils at the Site have been impacted by several constituents including: PCBs, VOCs, SVOCs, metals, pesticides, and dioxins. Upon reviewing the data, ARCADIS determined that the most significant constituents of concern (COCs) detected in soil samples at the Site were PCBs. PCBS were detected in Site soils at concentrations up to 180 mg/kg. Excluding metals, impacts of non-PCB constituents considered severe enough to elicit consideration for hot spot excavation generally coincided with sampling locations in which detected concentrations of PCBs warrant hot spot excavation. ARCADIS then designated a cleanup criteria for PCBs at the Site of 10 mg/kg, based upon criteria published by the USEPA for high occupancy areas covered with a cap (40CFR761, Section 61). In summary, areas where excavation is proposed on the Site have been determined through identification of sampling locations where elevated levels of PCBs were detected in corresponding soil samples.

As indicated above, elevated levels of VOCs, SVOCs, metals, and pesticides generally correspond with previously identified hot spot removal areas based on detected levels of PCBs. For those locations in which non-PCB constituents were present at elevated levels but hot spot excavation was not suggested for these areas pursuant to PCBs results, the need for hot spot excavation was evaluated individually. The following assumptions were implicit in evaluating potential hot spot locations for non-PCB constituents:

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[3] Excavation will be proposed only for soil above the water table, which is believed to be approximately 1 – 3 feet bgs. However, the type of cap implemented, the tendency for certain areas to be frequently (or continuously) inundated with water, and the likelihood of regrading the Site at elevated surface levels, all will need to be considered before excavation depths relative to the water table can be better understood.

X GW impacted?

- Pursuant to discussions with NJDEP, ARCADIS believes that, ultimately, a classification exception area (CEA) for groundwater will be established for the Site.

- A cap will be emplaced over all identified AOCs at the Site.

- The presence of SVOCs in soil samples is attributed to the composition of the historic fill for shallow soils at the Site, and is characteristic for the surrounding area.

- The presence of metals in soil samples is attributed to the composition of the historic fill for shallow soils at the Site, characteristic for the surrounding area, and potentially to historic copper and lead smelting facilities that operated in the Newark area.

The following criteria were used to screen-in additional hot spot excavation areas:

- VOCs: Hot spot removal areas were based upon exceedences of the respective NJDEP NRDCSCC. The Impact to groundwater criterion (IGW) for a substance was qualitatively evaluated by incorporating analysis of groundwater hydropunch sampling results for respective constituents at nearby sampling locations.

- Pesticides: Analytical results for pesticides were screened against the respective NRDSCC.

- SVOCs: Exceedences of the NRDCSCC for SVOCs were attributed to the composition of the historic fill at the Site. Analytical results for SVOCs were screened against IGW to assess whether significant releases from historic fill materials had occurred.

- Metals: The presence of metals in Site soils and potential remedial action for metals will be described below.

As a result of this evaluation, two additional sampling locations (A2-SS-7 and A3-SS-25) were identified as hot-spot locations, based on VOC levels detected in soil samples, and will require delineation and removal.

Analytical results indicated that elevated metals are pervasive throughout the historic fill that constitutes the shallow soils at the Site, as is characteristic for the general area surrounding the Site. Therefore, the presence of metals was not used as a factor in estimating hot spot excavation areas. Rather, ARCADIS is considering in-situ (in place) chemical fixation of metals that are present at potentially leachable concentrations. Further investigation is proposed in this RIWP to first evaluate the potential for metals in soils at the Site to leach to groundwater. Following analysis of the data, the applicability of a chemical fixation strategy can be assessed.

It is believed that incineration of residual drum contents during the drum reconditioning process likely resulted in the formation of dioxin compounds at the Site. However, an estimation of the quantities and significance of potential dioxin formation would require information about the quantities of chemicals (principally chlorinated compounds) that were subjected to incineration, which is not available. It is known that piles of incinerator ash were staged at the Site with no protection from wind or erosion, and the ash was used as backfill to make surface repairs and fill potholes at the Site.

Dioxins were detected in all soil samples collected from AOC-5, the incinerator area, during the 2001 investigation. However, concentrations of dioxins detected were 0.26, 0.21, and 0.01 parts per billion (ppb) toxicity equivalents (TEQs), all of which are at least one order of magnitude below the USEPA non-residential guidance criteria for dioxins of 5 – 20 ppb TEQs[4]. Given that hazardous levels of dioxins were not detected in soil samples collected from the incinerator area, the most conspicuous area of the Site where dioxins would be expected to be found, the results suggest that dioxin impacts at the Site may not be significant. However, additional sampling is required as proposed in this RIWP. If dioxins are found in Site soils at levels that exceed the recommended USEPA non-residential criteria for dioxins, then remedial action for those areas will be required, and likely will include further delineation, hot spot excavation, and capping.

Given the historical Site use and the resultant potential for site contamination by radioactive hazardous wastes through receipt of drums containing residual radioactive materials, NJDEP has requested that an appropriate radiological

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[4] USEPA. 1998. Memorandum: Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites. OSWER Directive 9200. 4-26. April 13.

assessment be conducted at the Site. To meet this requirement, ARCADIS will subcontract Radiological Assessment Services, Inc. (RASI), a specialized radiological consulting concern based in New Jersey, to conduct a radiological survey consisting of an instrumented site-walk to determine if significant radiological impacts exist at the Site and assess the need for a more complete radiological investigation.

In the event significant quantities of dioxins or radiological impacts are detected pursuant to the investigative work described in this RIWP, substantial modifications to the proposed remedial action plan and supporting investigative activities will be required. This RIWP is based on the premise that significant quantities of dioxins or radiological impacts are not found during the respective investigative activities described in this RIWP and, therefore, no further investigative work will be required to address the potential presence of these constituents at the Site.

**Pre-excavation Delineation Sampling**

Remedial action for soils at the Site will include excavation of hot spot areas and off-site disposal of this soil, from areas in which hazardous levels of PCBs, VOCs, and potentially other constituents have been detected. **Figures 3 through 5** depict the estimated excavation boundaries for the six currently proposed excavation areas (Excavation Areas A – F) derived from the results of the 2001 investigation. The horizontal and vertical extents of these excavation areas will be further clarified during the pre-excavation delineation soil sampling activities described below. The proposed pre-excavation delineation sampling is based on the requirements of N.J.A.C. 7:26E-6.4 and is designed to provide sufficient information to determine the extent of excavation required for removal of affected soil. Therefore, ARCADIS intends to use the delineation samples as confirmation samples (i.e., no post-excavation samples will be collected).

It is proposed that a minimum of one soil boring per excavation corner (approximate location), one soil boring per every 30-50 linear feet of excavation side wall, and one soil boring per every 2500 square feet of excavation bottom will be advanced. The New Jersey Technical Requirements for Site Remediation recommends a sampling frequency of 30 linear feet and 900 square feet for confirmation sampling of side walls and excavation bottoms, respectively. Consistent with N.J.A.C. 7:26 E-6.4, this sampling frequency may be reduced for excavations larger than 300 feet in perimeter, if sufficient documentation acceptable to NJDEP is provided in the remedial action progress report specifying why the reduced sampling frequency was

considered adequate. ARCADIS believes a reduced sample frequency of one sample per 30-50 linear feet of excavation side wall (including one boring per every excavation corner) and one sample per 2500 square feet of excavation bottom is adequate and appropriate for the Site for the following reasons:

- All excavation areas are encompassed within a perimeter of approximately 300 linear feet or more;
- Previous soil sampling exhibited good areal coverage and density with 93 borings advanced in previously defined AOCs ;
- A sidewall frequency of 1 boring per 30-50 linear feet allows sufficient delineation of all previously identified hot spot boring locations; and
- A vertical delineation sample frequency of 1 sample per 2500 square feet of excavation bottom is sufficient to allow vertical delineation of all previously identified hot spot locations.

**Figures A through F** indicate proposed horizontal and vertical pre-excavation delineation sampling locations for excavation areas A – F, including AOCs 1-5 and 10.

Direct-push methods will be utilized for advancing the borings to allow for collection of continuous soil cores. All horizontal delineation borings (sidewalls and corners) will be advanced to a depth of 2.5 feet bgs with three discrete soil samples collected from the following 6-inch depth intervals for each horizontal delineation boring: 0.0 – 0.5, 1.0 – 1.5, and 2.0 – 2.5 feet bgs.

All vertical delineation (excavation bottom) borings will be advanced to depths of approximately two feet below the depths of impact for the nearest hot spot borings. Two discrete soil samples will be collected from the following 6-inch depth intervals for each vertical delineation boring:

- The 6-inch interval that is at least 6 inches below the corresponding hot spot impact. For e.g., for a hot spot impact detected at a depth of 1.5 feet bgs, the first vertical delineation sample will be collected at the depth interval 2.0 – 2.5 feet bgs.

- The 6-inch interval that is one foot below the previous vertical delineation sample (i.e., 3.0 – 3.5 feet bgs for the example above).

The depth at which groundwater was encountered for each horizontal and vertical delineation boring will be recorded in the field. Groundwater at the Site reportedly occurs at depths of 1 – 3 feet bgs. However, some areas of the Site have recently been observed to be saturated at land surface. Soil samples will be collected from depth intervals as proposed above regardless of the apparent water level at each boring location. An appropriate remedial action work plan specifying the need for excavation below the water table, and associated dewatering, backfilling and regrading elevations, etc., will be developed, if necessary, once the data from the investigation have been collected and evaluated.

The soil samples will be submitted to a New Jersey certified laboratory for "fast track" (48-hour turnaround time) analyses of PCBs[5] to enable expedited re-mobilization to the Site. The soil samples will be analyzed in the following order:

- The shallowest soil samples collected from each boring will be analyzed first (i.e., samples from the 0 – 0.5 foot bgs depth intervals for the horizontal delineation samples and from the first 6-inch depth interval below the proximal hot spot impact depth for the vertical delineation samples).

- For samples in which PCBs are <u>not</u> detected at concentrations above 10 mg/kg (and VOCs are <u>not</u> detected above the respective NRDCSCC) for shallowest depth intervals, no further analyses will be conducted to characterize the samples collected from deeper intervals for the corresponding borings.

- For samples in which PCBs are detected at concentrations above 10 mg/kg (and VOCs are detected above the respective NRDSCC) for the shallowest depth intervals, additional "fast track" analyses will be requested from the laboratory for the samples collected from deeper intervals for these borings. The deeper samples will serve to vertically delineate the shallower impacts.

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[5] Samples from excavation areas C and F also will require analysis for VOCs.

For horizontal delineation borings in which concentrations of PCBs or VOCs are detected in surficial (0 – 0.5 ft. bgs) soil samples above the applicable criteria, an appropriate margin (based on detected levels) will be allocated beyond the previously identified excavation boundary and additional soil boring locations will be selected along this new, extended boundary. ARCADIS will mobilize to the Site again, advance soil borings, collect samples, and submit for laboratory analysis as described above. Similarly, deeper vertical delineation borings will be advanced, samples[6] collected, and submitted for laboratory analysis for those boring locations where additional vertical delineation is required. The same procedure will be followed until the horizontal and vertical extent of PCBs and VOCs impacts are determined for each excavation area.

Additionally, composite soil samples will likely be collected from borings from each of the excavation areas to complete waste classification sampling in advance of excavation work. Additional borings may be added for the purpose of delineating subsets of each excavation area in accordance with defined waste classifications (i.e., non-hazardous: 10 mg/kg < PCBs < 50 mg/kg; and, hazardous: PCBs> 50 mg/kg). These additional sampling locations will be within the defined excavation areas and are not shown on the respective figures. Waste classification sampling will be completed in accordance with the requirements of the selected disposal facility and the state in which it resides.

**Evaluation of Metals Leachability**

Further investigation is required to assess the respective concentrations above which specific metals are able to leach from Site soils into groundwater. It is proposed that up to nine additional soil samples will be collected from the pre-excavation delineation sampling locations and subjected to Synthetic Precipitate Leaching Procedure (SPLP) to assess metals leachability. To develop a correlation between metals concentrations in soil samples and metals concentration in leachate each soil sample will be subjected to separate analyses as follows:

- Analysis for metals in soil medium, and

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[6] Because the excavation is not expected to extend into the water table, the maximum sample depth will not exceed a depth coincident with the water table.

- SPLP applied to soil sample followed by analysis for metals in leachate medium.

The metals analyzed will include: antimony, arsenic, cadmium, chromium, lead mercury, and selenium. The sampling locations and depth intervals will approximately duplicate locations and depths sampled during the 2001 investigation. Sample locations and depths will be selected based on the analytical results in an effort to achieve an adequate distribution of detected metals concentrations, such that leachability of specific metals can be correlated with threshold soil concentrations. Following this investigation, the need for and the applicability of a chemical fixation treatment for metals in soils at the site can be assessed.

**Soil Sampling for Dioxins**

Soil samples collected from 3 locations in AOC 5, the incinerator area, indicated that dioxins are present in soils at the Site. However, the concentrations of dioxins detected in soil samples ranged from 0.01 to 0.26 ppb TEQs, which is below the USEPA recommended non-residential criterion for dioxins of 5 – 20 ppb TEQs. In the 2005 Scope of Work for Remedial Investigation, URS proposed collecting 6 additional surface soil samples (0 to 6 inches) near property boundaries to evaluate the distribution of dioxins across the Site, assess the potential for off-site migration, and to investigate a potential incinerator/smokestack source or use of incinerator ash as backfill for the distribution of these chemicals across the site. ARCADIS proposes to implement this sampling strategy for dioxins. Additionally ARCADIS will collect up to nine additional samples (a frequency of approximately one sample per acre) from areas within the Site proper where visual evidence indicates potential backfilling of potholes or other surface repair in which incinerator ash may have been used as fill. All soil samples, up to 15 total, will be collected from surface soils (i.e., the 0 to 6 inch interval) and submitted for laboratory analysis of dioxins. If hazardous levels of dioxins are found in Site soils, the need for additional delineation and remedial action will be evaluated and, if necessary, a separate Work Plan will be developed to address this issue.

**Radiological Assessment**

Given the previous use of the Site as a drums reconditioning facility, NJDEP requested that a radiological assessment be conducted at the Site. As a result, URS proposed using a radiological survey meter to screen discrete soil samples collected during delineation sampling subsequent to the 2001 investigation. Alternatively,

ARCADIS proposes that a radiological survey consisting of an instrumented site-walk, to be conducted by an experienced radiological technician will provide a safe, comprehensive, and appropriate response to address potential radiological impacts at the Site.

The radiological survey will be conducted by RASI and will consist of a site-walk of all open non-inundated areas utilizing a 2-inch by 2-inch sodium iodide detector (and equipped with a field survey meter) that will pass approximately 1 to 2 inches above land surface. The instrument will register gamma radiation sources located at depths of 0 – 6 inches bgs. The survey will be performed in a serpentine pattern, for both the Site and an area in the vicinity of the Site (to represent background conditions for the surrounding area). It is estimated that a scan rate of 0.5 meters per second will be used, (the standard for gamma emitters and may be adjusted based on site-specific conditions. It is believed that if radiological impacts exist at the Site, indications of these impacts will be detected in a survey of the surficial (0 – 6 inches) soil. Detections of radiological impacts that exceed 15 mrem/yr above or two times the levels detected in background areas will signal the need for a more complete radiological assessment.

**Quality Control and Quality Assurance**

Quality assurance and quality control (QA/QC) samples will used to provide control over the collection of soil samples and subsequent validation, review, and interpretation of generated analytical data. QA/QC samples will collected during investigation activities based on the following frequency:

- Field Duplicates: 1 per every 20 soil samples collected
- Matrix Spike/Matrix Spike Duplicates: 1 per every 20 soil samples collected
- Field Blanks: 1 per day of sampling
- Trip Blanks: 1 per storage cooler of samples

QA/QC samples will be analyzed for parameters consistent with the delineation samples in the area which they are being collected.

**AOC-by-AOC Delineation**

Pursuant to discussions with NJDEP, a comprehensive characterization of Site conditions must be evaluated on an AOC-by-AOC basis before an appropriate remedial action strategy can be considered. ARCADIS has reviewed the results of the 2001 investigation conducted by URS. The 93 soil sampling locations selected indicated good areal coverage of the Site for the designated areas where AOCs had been defined. Based on these results ARCADIS has identified 6 excavation areas (A – F) where hot spot removal is recommended based on PCBs or VOCs detections in these areas. These excavation areas will be further delineated through pre-excavation delineation sampling as described above under the ARCADIS scope of work Bullet item (3). It should be noted that URS had proposed 20 additional soil sampling locations to further delineate AOCs 2 – 4 (**Figure 1**). All of the delineation sampling locations proposed by URS are contained within or are located on the boundaries of the excavation areas proposed by ARCADIS. Additionally, AOCs 1, 5 and 10 include proposed excavation areas proposed and will be delineated accordingly. All AOCs (both excavated and non-excavated areas) at the Site will be capped. A summary of the pre-excavation delineation sampling is provided in **Table 3**.

ARCADIS believes that this RIWP will complete the required characterization for all AOCs at the Site. This RIWP both encompasses and augments those recommendations proposed by URS and will enable expedited remedial action to render the Site available for productive reuse as an industrial facility. ARCADIS has reviewed the issues raised in the technical memoranda prepared by NJDEP to respond to the scopes of work for additional investigation as proposed by URS. It is believed that this RIWP addresses all of these concerns. A response to the comments documented by NJDEP since URS' submission of the 2004 Revised Soil Remedial Investigation Results Summary Report will be provided to NJDEP under a separate cover. This response will document how ARCADIS' approach addresses the issues raised in the technical memoranda.

A summary of the proposed investigative activities for each AOC is provided below. Additional information and investigative work that is AOC-specific, also is introduced and explained in the following text:

**AOC-1: Heavy Drum Storage Pad**

Previous soil sampling of AOC-1 indicated comprehensive coverage surrounding the location of the former heavy drum storage pad. PCBs were not detected in any samples collected in the AOC at levels that exceeded the proposed designated cleanup criteria for PCBs of 10 mg/kg. However, as a conservative measure this area will be excavated, as indicated by Excavation Area A (**Figure 3**).

At soil sampling location A1-SS-2 the concentration of lead detected in the respective soil sample was 28,000 mg/kg. This is more than twice the concentration detected in any other soil sample for lead, which generally ranged from 500 – 12,000 mg/kg. ARCADIS proposes that A1-SS-2 will be the only location where hot spot removal will be conducted for lead. Therefore, the horizontal and vertical extent of this hot spot will be delineated in addition to the pre-excavation delineation sampling of Excavation Area A.

As part of the remedial action for AOC-1, an appropriately engineered cap will be emplaced over both the excavated and non-excavated areas of this AOC.

**AOC-2: Drum Conveyor / De-heading Shed**

Previous soil sampling of AOC-2 indicated comprehensive areal coverage of the former drum conveyor / de-heading shed (**Figure 4**). Pre-excavation delineation soil sampling will be conducted to horizontally and vertically delineate sampling locations A2-SS-3, A2-SS-4, A2-SS-9 and A2-SS-11 based on PCB impacts. Additional horizontal and vertical pre-excavation delineation will be required for sampling location A2-SS-7 based on a VOC impact at this location. Soil proposed to be excavated from AOC-2 corresponds with Excavation Areas B and C.

As part of the remedial action for AOC-2, an appropriately engineered cap will be emplaced over both the excavated and non-excavated areas of this AOC.

**AOC-3: Abandoned Truck Trailer Area**

Previous soil sampling of AOC-3 indicated comprehensive areal coverage of the abandoned truck trailer area. Pre-excavation delineation sampling will be conducted to horizontally and vertically delineate sampling locations A3-SS-6, A3-SS-7, A3-SS-10, A3-SS-11, A3-SS-15 and A3-SS-18 based on PCB impacts (**Figure 4**). Additional horizontal and vertical pre-excavation delineation will be required for

sampling location A3-SS-25 based on a VOC impact at this location. Soil proposed to be excavated from AOC-3 corresponds with Excavation Areas B and F.

As part of the remedial action for AOC-3, an appropriately engineered cap will be emplaced over both the excavated and non-excavated areas of this AOC.

**AOC-4: Drum Flip Operation Area**

Previous soil sampling of AOC-4 indicated comprehensive areal coverage of the former drum flip operation area. Pre-excavation delineation sampling will be conducted to horizontally and vertically delineate sampling locations A4-SS-3 and A4-SS-4 based on PCBs impacts (**Figure 5**). Soil proposed to be excavated from AOC-4 corresponds with Excavation Area D.

As part of the remedial action for AOC-4, an appropriately engineered cap will be emplaced over both the excavated and non-excavated areas of this AOC.

**AOC-5: Incinerator Area**

Previous soil sampling of AOC-5 indicated comprehensive areal coverage of the former incinerator area. Pre-excavation delineation sampling will be conducted to horizontally and vertically delineate sampling locations A5-SS-1, A5-SS-4, A5-SS-5 and A5-SS-6 based on PCBs impacts (**Figure 5**). Soil proposed to be excavated from AOC-5 corresponds with Excavation Area D.

Incineration operations historically conducted at the Site likely have resulted in the introduction of some dioxins compounds in Site soils. Dioxins were detected below the USEPA recommended non-residential guidance criteria in all 3 soil samples collected and analyzed for dioxins from locations in AOC-5. As part of the proposed dioxins sampling discussed above, three surficial soil samples (0 – 6 inches) will be collected from the area immediately surrounding AOC-5 extending outward to the proposed limits of the excavation. In the event dioxins are detected at hazardous levels in any of the three samples analyzed for dioxins, the remedial action plan for AOC-5 and the need for more extensive sampling for dioxins site-wide will be re-evaluated.

As part of the remedial action for AOC-5, an appropriately engineered cap will be emplaced over both the excavated and non-excavated areas of this AOC.

**AOC-6: Septic System**

Two locations were previously sampled in the former septic system area. Analytical results indicated no significant impacts, and therefore, excavation of soils and associated pre-excavation delineation sampling is not proposed for AOC-6.

As part of the remedial action for AOC-6, an appropriately engineered cap will be emplaced over this AOC.

**AOC-7: Fuel Storage Tanks**

Previous soil sampling of AOC-7 indicated comprehensive coverage surrounding the locations of both the gasoline and diesel 10,000 gallon USTs. Analytical results indicated no significant impacts, and therefore, excavation of soils and associated pre-excavation delineation sampling is not proposed. All residual contents were emptied from the tanks during the 1997 removal activities authorized by USEPA and the tanks were closed in place via filling with sand. The need to remove the tanks will be based on redevelopment plans for the Site and the proposed footprints of new building facilities. In the event redevelopment plans allow the tanks to remain in place, an appropriately engineered cap will be emplaced over the areas defined for this AOC.

**AOC-8: Raw Material Storage Area**

Previous soil sampling conducted for AOC-8, the former raw material storage area, indicated no significant impacts. However, a recent Site visit indicated drums are present at the Site approximately in the vicinity of this AOC. ARCADIS proposes additional soil sampling in the area of these drums with borings advanced to a depth of 2.5 feet bgs and soil samples collected at depths of 0 – 0.5, 1.0 – 1.5, and 2.0 – 2.5 feet bgs (**Figure 5**). Soil samples will be analyzed for PCBs, VOCs, pesticides, metals, and SVOCs. At least two boring locations will be selected biased to any visual evidence of soil staining. The drums will be removed as part of the remedial action for the Site. The need for excavation of soil from this AOC will be based on the results of the sampling proposed above. As part of the remedial action for AOC-8, an appropriately engineered cap will be emplaced in this area of the Site.

In the event drums (or any other visual evidence suggesting potential releases to Site soils) are encountered in other areas of the Site during the investigative activities

described in this RIWP, a similar sampling protocol as that described for AOC-8 will be conducted for these locations.

**AOC-9: Main Building Area**

Seven locations were previously sampled in the main building area. Analytical results indicated no significant impacts, and therefore, excavation of the soil beneath the building, and associated pre-excavation delineation sampling are not proposed for this AOC. An appropriately engineered cap (which may include the existing building foundation) will be designed to adequately cover the soils in this AOC as part of the remedial action for the Site.

**AOC-10: South Truck Trailer Area**

Previous soil sampling of AOC-10 indicated comprehensive areal coverage of the former south truck trailer area (**Figure 3**). Pre-excavation delineation sampling will be conducted to horizontally and vertically delineate sampling locations A10-SS-6 and A10-SS-8 based on PCBs impacts. PCBs also were detected above the designated cleanup criteria at sampling location A10-SS-11. However, this location corresponds with the edge of the drainage ditch and, therefore, will not be investigated as part of the scope of this RIWP (as discussed previously). Soil proposed to be excavated from AOC-10 corresponds with Excavation Area E.

As part of the remedial action for AOC-10, an appropriately engineered cap will be emplaced over both the excavated and non-excavated areas of this AOC.

It should be noted that AOC-10 is located outside of the defined property boundaries. The ability to conduct investigative or remedial activities in AOC-10 is contingent upon resolution of any identified ownership issues and the ability to obtain access agreements, if required.

## Reporting

The investigative activities proposed in this RIWP will be initiated following NJDEP approval of this RIWP. In the interest of expediting the path to site reuse, ARCADIS intends to keep the NJDEP apprised of the results of the investigation as the investigation proceeds. ARCADIS will remain in contact with the NJDEP by phone or email to provide routine project updates. Following completion of the investigation, the results of the activities will be documented in a report to NJDEP. In addition, a

remedial action strategy will be proposed in a Remedial Investigation Results and Remedial Action Work Plan report submitted to NJDEP.

Sincerely,

ARCADIS U.S., Inc.

Christopher Sharpe
Project Hydrogeologist

Copies:
Deputy Commissioner Adam Zellner
File

# TABLES

Table 1. Operations Conducted in AOCs
Glopak Corporation
Former Central Steel Drum Site, 704 - 738 Doremus Avenue, Newark, New Jersey

| AOC | Operations Conducted |
|---|---|
| AOC 1 - Heavy Drum Storage Pad | AOC 1 is the area where workers stored drums that contained over 1 inch of residue. Historically, drums were discarded in this area, including drums filled with unknown contents. This area is a concrete pad of sound integrity with a trench present in the concrete pad which likely was used to collect residue. Areas around the pad are unpaved and received surface water and storm water runoff that drained into adjacent drainage ditch. |
| AOC 2 - Drum Conveyor / De-Heading Shed | AOC 2 is an area where drums were moved for processing. The drums were put on a conveyor that entered the de-heading shed, where CSD removed the tops of the drums. Two sumps were present in the area and stained soil and residues from past operations are present. |
| AOC 3 - Abandoned Truck Trailer Area | AOC 3 is located in the northern portion of the site where truck trailers were parked, many of which contained unprocessed drums. This area was reportedly impacted by miscellaneous spills that were subsequently covered by gravel. In addition, this area was used for drum storage. |
| AOC 4 - Drum Flip Operation Area | AOC 4 is the area of the site is where drums were flipped on a conveyor prior to their incineration. Any residue present in the drums was allowed to spill onto the ground surface. In addition, incinerator ash was stored in piles in this area. No containment was in place in this area. |
| AOC 5 - Incinerator Area | The incinerator area was used for incineration of the contents of the drums received at the site. A paved area is located to the north of the incinerator near the dust collectors. Just south of the incinerator area is a quenching sump, which was used to spray water into the drums to remove excess residue. Water used in the quenching sump drained via a trough into a metal-lined sump. |
| AOC 6 - Septic System | A septic disposal system located below the former office trailers was in use at this facility for the discharge of sanitary waste prior to 1951. It is possible that chemicals could have been disposed in this septic system. |
| AOC 7 - Fuel Storage Tanks | Two underground storage tanks (USTs) are present at the site, a 10,000-gallon diesel fuel UST and a 10,000-gallon gasoline UST. The diesel tank is located near the pump island on the western side of the site and the gasoline tank is located immediately west of the main building. The tank contents were sampled and confirmed, removed and disposed. The tanks were then cleaned. EPA anticipated excavating the tanks. However, when the concrete pad above the tank and the top soil were removed, groundwater was encountered at 1.0 to 1.5 ft. below ground surface. Rather than removing the tanks, EPA abandoned the tanks in place. The tanks were filled with sand after unsuccessfully attempting to fill the tanks with cement. The tanks were covered with soil from the site. No soil samples were collected. |
| AOC 8 - Raw Material Storage Area | The raw material storage area was located in a small shed south of the main building. Materials stored in this building included paints and other chemicals that were stored in drums and small containers |

| AOC | Operations Conducted |
|---|---|
| AOC 9 - Main Building Area | The main building was used by CSD for completing reconditioning of drums that had been incinerated, sprayed with water and sand blasted. Indoor operations included drum painting (three spray booths). Paint residues are present on the concrete floors of the building. A floor drain/trench system is located in the building. No details of the floor drain system are available. |
| AOC 10 - South Truck Trailer Area | AOC 10 contained trailers that stored unprocessed drums. Drum handling and unloading also were conducted in this area. Gravel has been used to cover much of this area which could hide potential impacts from past spills. |

Table 2. Supporting RIWP Documentation
Glopak Corporation
Former Central Steel Drum Site, 704 - 738 Doremus Avenue, Newark, New Jersey

| Date | Author | Document |
|---|---|---|
| *2001* | | |
| Feb-01 | URS | Remedial Investigation Workplan |
| Oct-01 | URS | Soil, sediment and groundwater sampling conducted |
| *2003* | | |
| N/A | N/A | Soil Remedial Investigation Sample Analytical Results Summary Report |
| Jul-03 | Allan Motter, Technical Coordinator | Technical Memorandum re: Soil Remedial Investigation Results Summary Report |
| Sep-03 | URS | Groundwater Screening Sample Analytical Results Summary |
| Nov-03 | Greg Bakeman, Geologist | Technical Memorandum re: 9/30/2003 - Groundwater Screening Sample Analytical Results Summary |
| *2004* | | |
| Jun-04 | URS | Remedial Investigation Workplan Addendum for Groundwater and Groundwater Screening Sample Results Summary |
| Jun-04 | URS | Revised Soil Remedial Investigation Results Summary Report |
| Jun-04 | Allan Motter, Technical Coordinator | Technical Memorandum re: 6/1/2004 - Revised Soil Remedial Investigation Results Summary Report |
| *2005* | | |
| Feb-05 | URS | Scope of Work for Remedial Investigation |
| N/A | N/A | Addendum, Scope of Work for Remedial Investigation, Drainage Ditch |
| Apr-05 | Allan Motter, Technical Coordinator | Technical Memorandum re: 2/4/2005 - Scope of Work for Remedial Investigation 3/21/2005 - Addendum, Scope of Work for Remedial Investigation, Drainage Ditch |
| Jul-05 | Greg Bakeman, Geologist | Technical Memorandum re: 3/21/2005 - [Addendum], Scope of Work for Remedial Investigation, Drainage Ditch |
| *2006* | | |
| Jun-06 | URS | Response to NJDEP Comment Letter dated June 24, 2004 |

N/A - Document not available

Table 3. Proposed Excavation Areas and Delineation Sampling
Glopak Corporation
Former Central Steel Drum Site, 704 - 738 Doremus Avenue, Newark, New Jersey

| Excavation Area[1] | AOC[2] | Perimeter (ft) | Footprint (sq. ft.) | Horizontal Delineation Samples (sidewall and corners) | Vertical Delineation Samples (bottom of excavation) | Proposed Horizontal Delineation Frequency (per ft.)[3] | Proposed Vertical Delineation Frequency (per sq. ft.)[3] |
|---|---|---|---|---|---|---|---|
| A | 1 | 443 | 12,200 | 12 | 5 | 37 | 2,440 |
| B | 2 & 3 | 1,150 | 37,800 | 28 | 15 | 41 | 2,520 |
| C | 2 | 291 | 2,350 | 9 | 2 | 32 | 1,175 |
| D | 4 & 5 | 549 | 9,720 | 17 | 7 | 32 | 1,389 |
| E | 10 | 316 | 4,360 | 9 | 2 | 35 | 2,180 |
| F | 3 | 175 | 1,913 | 4 | 1 | 44 | 1,913 |

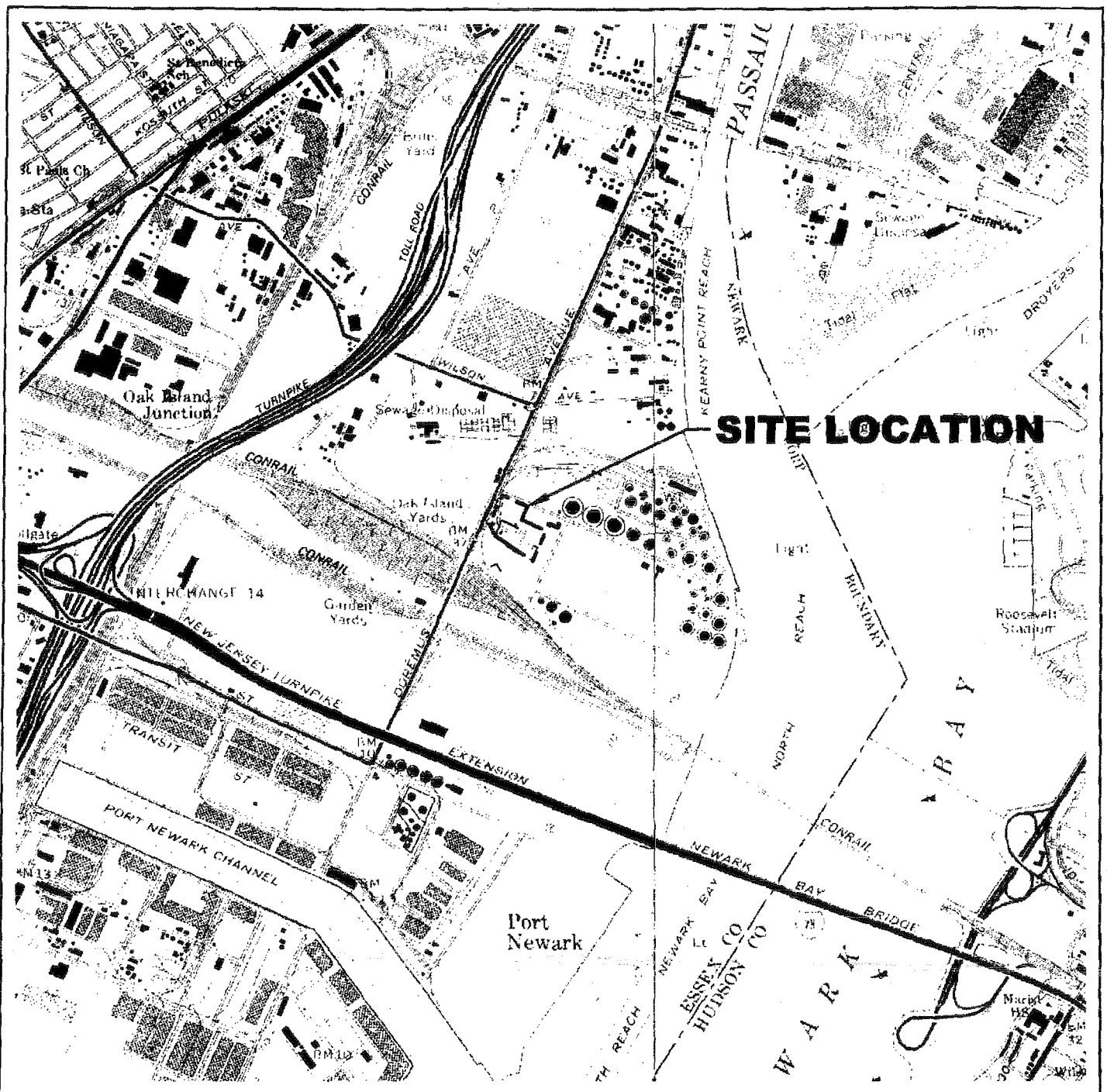
Notes:
AOC: Area of concern, as previously defined and approved by NJDEP

[1] All excavations will be capped.

[2] AOCs 6 - 9, no excavation, capping only. AOCs 11 and 12, drainage ditch and groundwater AOCs, respectively, addressed separately.

[3] Pre-excavation delineation sampling will be conducted until excavation areas are completely delineated horizontally and vertically (to the water table). Frequency is approximately 1 sample per 50 linear feet of sidewall (horizontal delineation) and approximately 1 sample per 2,500 square feet of area (vertical delineation). Per applicable NJ regulations post-excavation confirmation sampling will not be conducted.

# FIGURES




SCALE 1:24000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 5 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLE LOCATION

UTM GRID AND 1984 MAGNETIC NORTH

SOURCE: USGS 7.5 MIN. TOPOGRAPHICAL QUADRANGLE ELIZABETH, NJ (1981) AND JERSEY CITY, NJ (1981).

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| Project Director | M. HANSEN |
| Task Manager | C. SHARPE |
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GLOPAK CORPORATION
704 - 738 DOREMUS AVENUE SITE

# SITE LOCATION

NEWARK, NEW JERSEY

| | |
|---|---|
| Project Number | NP000635.0002 |
| Drawing Date | 21 MARCH, 2007 |
| Figure | 1 |

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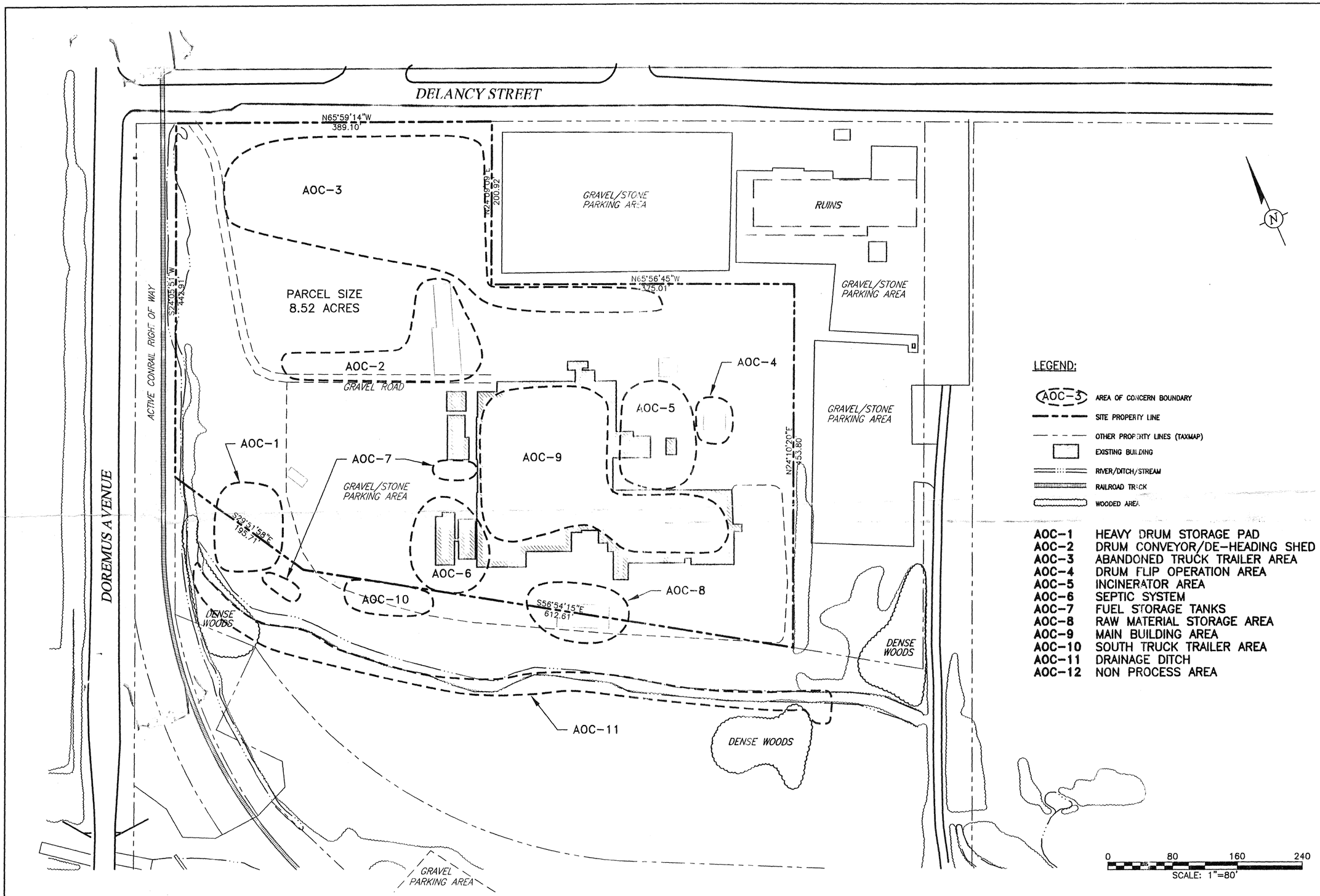


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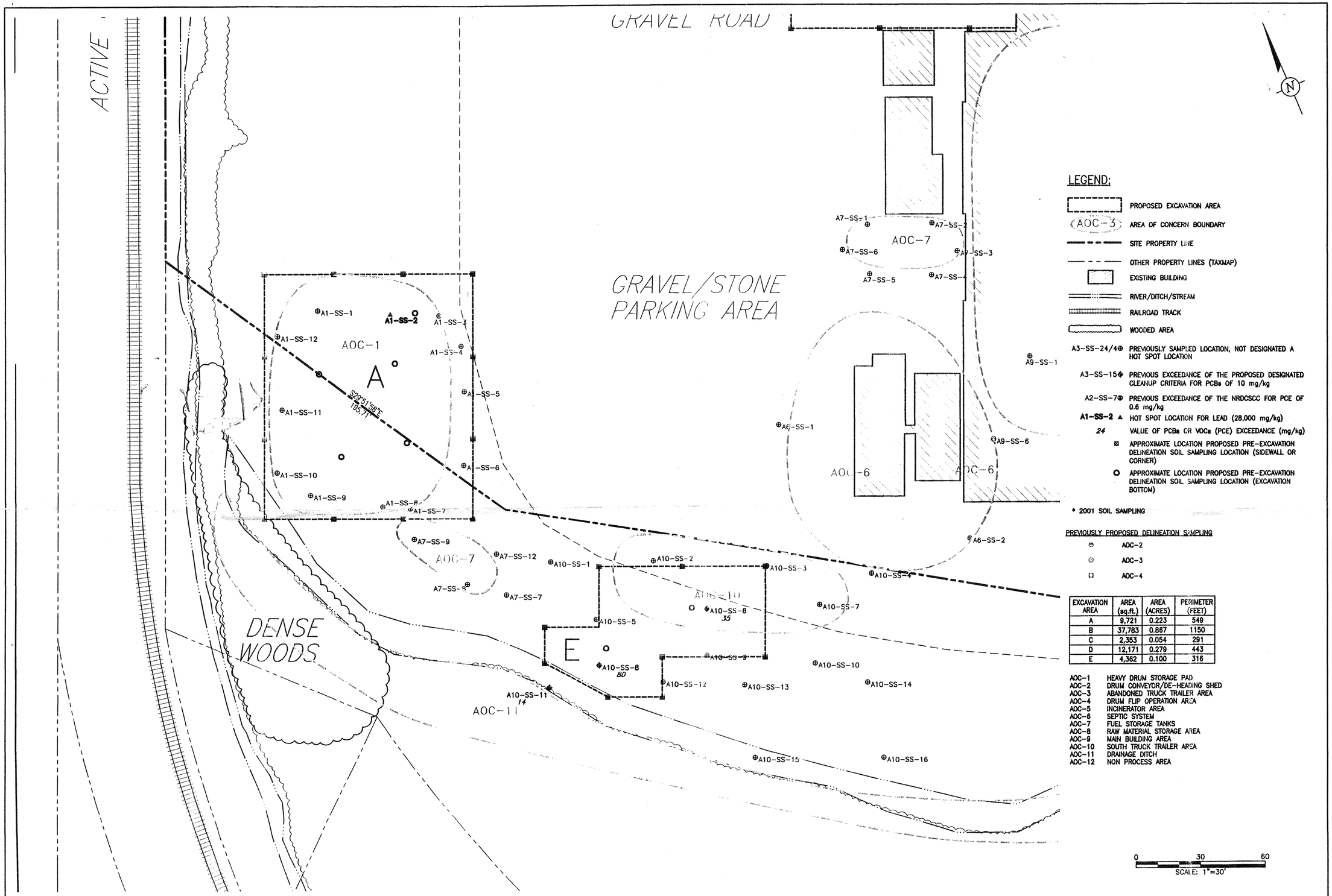
GLOPAK CORPORATION
704 - 738 DOREMUS AVENUE SITE

# SITE PLAN

NEWARK, NEW JERSEY

| | |
|---|---|
| Project Number | NP000635.0002 |
| Date | 21 MARCH, 2007 |
| Figure | 2 |




## LEGEND:

- PROPOSED EXCAVATION AREA
- (AOC-3) AREA OF CONCERN BOUNDARY
- SITE PROPERTY LINE
- OTHER PROPERTY LINES (TAXMAP)
- EXISTING BUILDING
- RIVER/DITCH/STREAM
- RAILROAD TRACK
- WOODED AREA
- A3-SS-24/4⊕ PREVIOUSLY SAMPLED LOCATION, NOT DESIGNATED A HOT SPOT LOCATION
- A3-SS-15◆ PREVIOUS EXCEEDANCE OF THE PROPOSED DESIGNATED CLEANUP CRITERIA FOR PCBs OF 10 mg/kg
- A2-SS-7⊕ PREVIOUS EXCEEDANCE OF THE NRDCSCC FOR PCE OF 0.6 mg/kg
- **A1-SS-2** ▲ HOT SPOT LOCATION FOR LEAD (28,000 mg/kg)
- *24* VALUE OF PCBs OR VOCs (PCE) EXCEEDANCE (mg/kg)
- ⊠ APPROXIMATE LOCATION PROPOSED PRE-EXCAVATION DELINEATION SOIL SAMPLING LOCATION (SIDEWALL OR CORNER)
- O APPROXIMATE LOCATION PROPOSED PRE-EXCAVATION DELINEATION SOIL SAMPLING LOCATION (EXCAVATION BOTTOM)

* 2001 SOIL SAMPLING

PREVIOUSLY PROPOSED DELINEATION SAMPLING

- AOC-2
- AOC-3
- AOC-4

| EXCAVATION AREA | AREA (sq.ft.) | AREA (ACRES) | PERIMETER (FEET) |
|---|---|---|---|
| A | 9,721 | 0.223 | 549 |
| B | 37,783 | 0.867 | 1150 |
| C | 2,353 | 0.054 | 291 |
| D | 12,171 | 0.279 | 443 |
| E | 4,362 | 0.100 | 316 |

AOC-1 HEAVY DRUM STORAGE PAD
AOC-2 DRUM CONVEYOR/DE-HEADING SHED
AOC-3 ABANDONED TRUCK TRAILER AREA
AOC-4 DRUM FLIP OPERATION AREA
AOC-5 INCINERATOR AREA
AOC-6 SEPTIC SYSTEM
AOC-7 FUEL STORAGE TANKS
AOC-8 RAW MATERIAL STORAGE AREA
AOC-9 MAIN BUILDING AREA
AOC-10 SOUTH TRUCK TRAILER AREA
AOC-11 DRAINAGE DITCH
AOC-12 NON PROCESS AREA

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GLOPAK CORPORATION
704 - 738 DOREMUS AVENUE SITE

# PROPOSED DELINEATION SOIL SAMPLING FOR PCBs (AOC-1, AOC-6, AOC-7 AOC-10 & AOC-11)

NEWARK, NEW JERSEY

| | |
|---|---|
| Project Number | NP000635.0002 |
| Date | 21 MARCH, 2007 |
| Figure | 3 |

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A3-SS-24/4

A3-SS-6
18

A3-SS-7
26

A3-SS-10
51

A3-SS-11
24

AOC-3

A3-SS-13

A3-SS-14

A3-SS-15
48

B

A3-SS-16

A3-SS-17

A3-SS-18
180

A3-SS-19

A2-SS-8

A2-SS-9
30

A2-SS-1

A2-SS-1

A3-SS-25
49

F

A3-SS-27

A2-SS-3
15

A2-SS-4
14

AOC-2

A2-SS-5

A2-SS-2

A2-SS-6

A2-SS-11
150

A2-SS-7
40

GRAVEL ROAD

AOC-9

GRA
PAR

LEGEND:

- PROPOSED EXCAVATION AREA
- AOC-3 — AREA OF CONCERN BOUNDARY
- SITE PROPERTY LINE
- OTHER PROPERTY LINES (TAXMAP)
- EXISTING BUILDING
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- WOODED AREA
- A3-SS-24/4⊕ — PREVIOUSLY SAMPLED LOCATION, NOT DESIGNATED A HOT SPOT LOCATION
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- 24 — VALUE OF PCBs OR VOCs (PCE) EXCEEDANCE (mg/kg)
- ⊠ — APPROXIMATE LOCATION PROPOSED PRE-EXCAVATION DELINEATION SOIL SAMPLING LOCATION (SIDEWALL OR CORNER)
- ○ — APPROXIMATE LOCATION PROPOSED PRE-EXCAVATION DELINEATION SOIL SAMPLING LOCATION (EXCAVATION BOTTOM)
- * 2001 SOIL SAMPLING

PREVIOUSLY PROPOSED DELINEATION SAMPLING

- AOC-2
- AOC-3
- AOC-4

| EXCAVATION AREA | AREA (sq.ft.) | AREA (ACRES) | PERIMETER (FEET) |
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AOC-8 RAW MATERIAL STORAGE AREA
AOC-9 MAIN BUILDING AREA
AOC-10 SOUTH TRUCK TRAILER AREA
AOC-11 DRAINAGE DITCH
AOC-12 NON PROCESS AREA

0 30 60
SCALE: 1"=30'

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GLOPAK CORPORATION
704 - 738 DOREMUS AVENUE SITE

# PROPOSED DELINEATION SOIL SAMPLING FOR PCBs (AOC-2 & AOC-3)

NEWARK, NEW JERSEY

| | |
|---|---|
| Project Number | NP000635.0002 |
| Date | 21 MARCH, 2007 |
| Figure | 4 |

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# ATTACHMENTS

Table A-1. NJDEP Comments and ARCADIS Responses, former Central Steel Drum Site, Newark, New Jersey.

| AOC No. | AOC Name | Comment Document Date | Essence of Comment | Means of Addressing Comment | Location Where Comment Addressed |
|---|---|---|---|---|---|
| 1 | Heavy Drum Storage Pad | 24-Jun-04 | Additional Delineation Sampling (VOCs, PCBs, and Pesticides) | Additional Delineation, Excavation (to be proposed upon completion of investigation) and Capping. | Page 18, AOC-by-AOC Delineation, AOC-1 Heavy Drum Storage Pad, Paragraph 2-3 (Figure 3). |
| 2 | Drum Conveyor/ Deheading Shed | 24-Jun-04 | Additional Delineation Sampling (VOCs and PCBs) | Additional Delineation, Excavation (to be proposed upon completion of investigation) and Capping. | Page 19, AOC-by-AOC Delineation, AOC-2 Drum Conveyor/ Deheading Shed, Paragraph 1-2. |
| | | 4/1/2005 | Request for Figure showing all exceedances. | Provided Figure showing exceedances, delineation samples and estimated extents of excavation. | Figure 4 |
| 3 | Abandoned Truck Trailer Area | 24-Jun-04 | Additional Delineation Sampling (VOCs and PCBs) | Additional Delineation, Excavation (to be proposed upon completion of investigation) and Capping. | Page 19, AOC-by-AOC Delineation, AOC-3 Abandoned Truck Trailer Area, Paragraph 1-2. |
| | | 4/1/2005 | Request for Figure showing all exceedances. | Provided Figure showing exceedances, delineation samples and estimated extents of excavation. | Figure 4 |
| 4 | Drum Flip Operation Area | 24-Jun-04 | Additional Delineation Sampling (VOCs and PCBs) | Additional Delineation, Excavation (to be proposed upon completion of investigation) and Capping. | Page 19, AOC-by-AOC Delineation, AOC-4 Drum Flip Operation Area, Paragraph 1-2. |
| | | 4/1/2005 | Request for Figure showing all exceedances. | Provided Figure showing exceedances, delineation samples and estimated extents of excavation. | Figure 5 |
| 5 | Incinerator Area | 24-Jun-04 | Additional Delineation Sampling (VOCs, PCBs, and Pesticides) | Additional Delineation, Excavation (to be proposed upon completion of investigation) and Capping. | Page 20, AOC-by-AOC Delineation, AOC-5 Incinerator Area, Paragraph 2-3 (Figure 3). |
| 6 | Septic System | 24-Jun-04 | Additional Delineation Sampling (PCBs) | Additional Delineation and excavation is not proposed, an appropriately engineered cap will be employed. | Page 20, AOC-by-AOC Delineation, AOC-6 Septic System, Paragraph 1-2 (Figure 3). |
| 7 | Fuel Storage Tanks | 24-Jun-04 | Additional Delineation Sampling (VOCs and TPH) | Additional Delineation and excavation is not proposed, an appropriately engineered cap will be employed. | Page 20-21, AOC-by-AOC Delineation, AOC-7 Fuel Storage Tanks, Paragraph 1-2 (Figure 3). |
| 8 | Raw Material Storage Area | 24-Jun-04 | Additional Delineation Sampling (VOCs and Pesticides) | Additional Delineation, Excavation (to be proposed upon completion of investigation) and Capping. | Page 21, AOC-by-AOC Delineation, AOC-8 Raw Material Storage Area, Paragraph 1-2 (Figure 5). |
| 9 | Main Building Area | | No comments | Additional Delineation and excavation is not proposed, an appropriately engineered cap will be employed. | Page 21, AOC-by-AOC Delineation, AOC-9 Main Building Area, Paragraph 1 (Figure 5). |
| 10 | South Truck Trailer Area | 24-Jun-04 | Additional Delineation Sampling (VOCs, PCBs, and Pesticides) | Additional Delineation, Excavation (to be proposed upon completion of investigation) and Capping. | Page 21-22, AOC-by-AOC Delineation, AOC-10 South Truck Trailer Area, Paragraph 1-2 (Figure 3). |
| 11 | Drainage Ditch | 24-Jun-04 | Additional screening against soil clean up criteria necessary. | Not essential to Site reuse. Will be addressed under separate cover. | To be addressed under separate cover |
| | | 4/1/2005 | Additional Delineation Sampling in the north-south direction. | | |
| 12 | Drinking Water | Administrative Order on Consent (AOC) for BES site # SDWA-03-2003-0301 | Design, construct, operate, and maintain facility in manner that provides drinking water with 1,4-dioxane concentrations below the established AOC concentration. Take action until establishment of said facility to provide an alternative drinking water supply, thereby preventing short term adverse impacts associated with the consumption of 1,4-dioxane impacted drinking water. | Relevant and appropriate to activities conducted. | The current AOC governs the evaluation of the selected remedy and establishes provisions for treatment of the drinking water supply. |