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Paul C. Rizzo Associates, Inc.
CONSULTANTS

Field Sampling Plan

Remedial Investigation/Feasibility Study

Sharon Transformer Plant Site
Sharon, Pennsylvania

Westinghouse Electric Corporation
Pittsburgh, Pennsylvania

Revision 4

AR301339

FIELD SAMPLING PLAN

REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

PROJECT NO. 90-680
AUGUST 3, 1992

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FIELD SAMPLING PLAN

REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

1.0 INTRODUCTION

1.1 BACKGROUND

Presented herein is a program of field investigation and sampling and laboratory analysis for the Phase I RI/FS investigation at the Sharon Transformer Plant Site. This Field Sampling Plan (FSP) has been prepared as part of the submittals required by the Consent Order and Agreement (Consent Order) of September 21, 1988 between Westinghouse and PADER and is consistent with guidelines cited in the Consent Order. Companion documents include the RI/FS Work Plan, Quality Assurance Project Plan (QAPP) and the project Health and Safety Plan.

1.2 FORMAT

Section 2.0 provides site background data related to plant history and operation, previous environmental investigations, previous remedial activities, and site geology and hydrogeology. A thorough discussion of available data from previous environmental studies related to the site is presented in Section 3.0. An evaluation of available data is provided in Section 4.0. A discussion and evaluation of the Remedial Investigation/Feasibility Study (RI/FS) data requirements is provided in Section 5.0. This evaluation includes an examination of environmental pathways and receptors, potential remedial alternatives, and an evaluation of data requirements for the identified source areas on the site. Also, an evaluation of contaminant characteristics, pathways and receptors, potential remedial alternatives, and data gaps is provided. The proposed Phase I field sampling program is presented in Section 6.0.

2.0 SITE BACKGROUND DATA

The purpose of this section is to provide background data on the site characteristics, plant history, plant operations, plant processes, surface water discharges, sanitary sewers, drainage, and chemical usage. Within this framework, subsequent sections addressing data from previous investigations can be evaluated regarding nature and extent of contamination, potential pathways for migration, threat to public health and environment, remedial alternatives, and identification of additional data requirements to satisfy the objectives of the RI/FS process as defined by the EPA Guidelines and the Consent Order.

The site background data was developed through a comprehensive review of information obtained from Westinghouse. This information was generally in the form of previous studies and data collected for permit applications, internally commissioned environmental studies, and investigations performed in response to an Administrative Order. In addition, a site survey was performed and interviews conducted with current and former Westinghouse employees. Finally, the State Historic Preservation Office, local historical societies, and museums were contacted in an effort to obtain pertinent information regarding site usage predating the Westinghouse ownership transfer of 1922.

The previous environmental investigations which serve as the basis for the background data are described in Section 2.5 and Tables 2-1 and 2-2 of the Work Plan.

2.1 SITE CHARACTERISTICS

The site geology and hydrogeology have been the subject of several investigations. This synopsis of the site setting is based on a review of these studies.

2.1.1 Site Geology

The Sharon Transformer Plant is located on unconsolidated deposits of Holocene and Pliestocene Age which overlie an unconformable bedrock surface of Mississippian Age (Schiner and Kimmel, 1976). The unconsolidated deposits overlying bedrock vary from about 30 to 100 feet thick and consist of alluvial and glacial deposits. The alluvial

deposits consist of gravel, sand, silt, and clay-sized particles which were sorted and deposited by the Shenango River. These alluvial deposits also include some localized glacial outwash gravels. The alluvial deposits are found under the entire plant site in thicknesses ranging from a few to more than 30 feet.

Beneath the more recently-deposited alluvium is a section of glacial sediments. The glacial section was deposited during the Pliestocene glacial epoch when ice sheets moved repeatedly over northwestern Pennsylvania depositing large amounts of glacial drift. The site is located on relatively thick deposits of glacial till laid down in the Shenango River Valley. The glacial till units consist of unstratified, heterogeneous mixtures of clay, silt, sand, gravel, and boulders. The glacial deposits overlie an unconformable surface on the Sharpsville Sandstone and Orangeville Shale Formations of the Cuyahoga Group. The Sharpsville Sandstone consists of alternating layers of very fine-grained sandstone, siltstone, and shale, while the Orangeville Shale Formation comprises dark gray shale with interbedded siltstone. The Berea Sandstone Formation underlies the Orangeville Shale and consists of a gray fine- to medium-grained sandstone with some shale layers.

2.1.2 Site Hydrogeology

Based on the subsurface studies performed at the site, Westinghouse and its consultants postulate that the Sharon Transformer Plant overlies an unconfined alluvial aquifer and confined bedrock aquifers. The alluvial aquifer occurs in the gravel, sand, silt, and clays deposited in the Shenango River Valley as either glacial outwash and/or alluvium. The bedrock aquifers are under confined conditions due primarily to the presence of overlying, low-permeability glacial till deposits.

An alternate concept postulated by the PADER differs in that the glacial till may not effectively inhibit communication between the unconsolidated and bedrock water bearing zones. The hydrogeologic units are described in the following sections.

2.1.2.1 Alluvium

Groundwater levels in the monitoring wells installed in the alluvium range from 3 to 18 feet below the surface. Data relative to the extent and character of the alluvial aquifer is provided in the Comprehensive Subsurface Study (Rizzo, 1986).

Two general flow patterns are apparent in the alluvial zone. The potentiometric surface contours dip to the west at the north end of the site indicating that groundwater flow in the alluvium is directly toward the Shenango River. From the middle of the site to the south, the contours gradually swing around, indicating flow to the southwest.

The unconfined alluvium receives most of its recharge from downward percolation of local precipitation. Consequently, overall recharge is low within the boundaries of the site as the site is under roof and either paved with asphalt or concrete (high runoff).

2.1.2.2 Glacial Till

Glacial till is present beneath the entire site separating the unconfined alluvium zone from the underlying bedrock zone. Based on its dense nature (blow counts generally in excess of 100) and high percentage of fine material (greater than 50 percent), it is the opinion of Westinghouse and its consultants that the till exhibits low permeability.

The glacial till of the Shenango River Basin is a major hydrogeologic unit acting to inhibit communication between the water-bearing alluvium and bedrock units. Till underlying the site may act to isolate the bedrock aquifer from the overlying water table aquifer. More extensive data can be found in the Comprehensive Subsurface Study (Rizzo, 1986).

2.1.2.3 Bedrock

Water within the bedrock zone is believed to be transmitted through fractures (Schiner & Kimmel, 1976). Apparent flow in the bedrock zone, as interpreted from existing water level data, from the approximate middle of the site and north is generally west towards the Shenango River. To the south, the flow is more south and southwest. At the time of

measurement, the contours in the southern sector of the plant indicated an apparent cone of depression to the west of the site. The Grafo Colloids Company, located to the west of the south end of the plant, reportedly operated an active well in this general area.

Additional data relative to the bedrock at the site are provided in the Comprehensive Subsurface Study (Rizzo, 1986).

2.1.3 Local Groundwater Usage

Sharon, Farrell, Sharpsville, and the small communities in the immediate vicinity currently receive their public water supplies from the Shenango River.

Both the unconsolidated deposits and bedrock formations which underlie the plant are potential sources of potable water in the region although no such usage of these deposits in the site vicinity is known.

For non-potable usage, the Sharpsville Sandstone and Berea Sandstone are the major aquifers utilized in the Sharon area. The Orangeville Shale Formation is used to a lesser extent.

2.1.4 Surface Water Drainage

Surface water drainage at the plant is generally collected by site sewers and conducted to the Shenango River, as discussed in Section 3.1. Along the west side of the plant, some surface water may flow toward the Sawhill Plant and Shenango River, although it is more likely that most of this runoff merely infiltrates, as slopes are very flat until a point west of the railroad tracks which run along the west side of the site.

Some surface runoff in the area of the remediated moat may move toward the Sawhill Plant and the Shenango River, but gradients are such that this water most likely infiltrates into the ground well before it reaches the river. Since the remediation of the moat, there does not appear to be any significant surface drainage toward Pine Run.

2.2 SITE DEVELOPMENT HISTORY

The plant site was purchased by Westinghouse in 1922 from Savage Arms Corporation, a manufacturer of military weapons. This purchase included the original structures of the A, B, C, and F Buildings, a coal-fired powerhouse, and an office building (Figures 2-1, 2-2, and 2-3). As previously noted, a literature search has been performed in an attempt to obtain pertinent information regarding chemical usage during the Savage Arms tenure. The literature search did not yield useful information in this regard.

Since 1922 the site has been used by Westinghouse primarily for the manufacture of transformers and transformer components. Major expansions in the 1920s, 1940s, and 1950s, increased the floor space to over two million square feet. Then, beginning in the 1970s, a series of building demolitions occurred. The E, J, R, and S Buildings and parts of the A and B Buildings were razed. These demolition projects were the result of declining transformer markets and excess production capacity worldwide. In 1985, the plant was shut down. A materials and manufacturing laboratory, employing approximately 40 people, was kept in operation by Westinghouse and then by ABB until 1991. This laboratory was located in part of the former accounting office in the Middle Sector of the plant. The North Sector was purchased by the Sawhill Tubular Division of Cyclops Corporation in 1986 and is currently in use as part of its pipe manufacturing plant. In April 1989, the portions of the A and B Buildings not razed were sold to Ultimate Technology, Inc. The Y Building was sold approximately two years after plant shut down.

2.3 PLANT OPERATIONS HISTORY

Prior to its shutdown, for a period of over 60 years, the plant produced distribution transformers, power transformers, and related electrical apparatus. The distribution transformers included both pole-type and pad-mounted distribution transformers; the power transformers included a wide range of small, medium, and larger power transformers. In addition, the related electrical apparatus included reactors, regulators, rectifiers, and mobile transformers.

Raw materials were generally received at the southern end of the plant and the manufacturing processes progressed as the product moved through the plant to the north. The bulk of the manufacturing, assembly, and testing took place in the Middle Sector with final packaging and shipment operations being performed in the North Sector.

The primary materials in both the transformers and the related electrical apparatus were essentially the same. These materials included:

- Silicon steel for the cores,
- Copper or aluminum for the coils,
- Paper or varnish for insulation,
- Carbon steel for the tanks, and
- Oil, silicone, or Inerteen dielectric fluids for liquid-cooled designs.

Some of the designs, however, did not use liquid dielectric fluids. Instead, these dry-type designs were cooled with a pressurized gas, convected air, or forced air. In addition, some of the very small transformers involved the use of molded rubber and/or other encapsulating solids.

Most of the liquid-cooled designs (approximately 98 percent) were filled with transformer oil, which is a highly refined mineral oil. A small percentage (approximately 2 percent) of the liquid-cooled designs, however, were filled with either a silicone fluid or Inerteen. The latter is a registered trademark of Westinghouse for a special dielectric fluid. This fluid is nonflammable and was either undiluted polychlorinated biphenyls (PCBs) or a mixture of PCBs and trichlorobenzene. The manufacturer of Inerteen used the trade name "Aroclor" in conjunction with a four-digit number to identify different blends of PCB compounds.

The use of Inerteen was first introduced at the Sharon Transformer Plant in 1936. This type of Inerteen consisted of a 60/40 mixture of Aroclor 1260 and trichlorobenzene. The next type of Inerteen, introduced in January 1965, was a 70/30 mixture of Aroclor 1254 and trichlorobenzene. The last type of Inerteen, introduced in January 1968, was Aroclor 1242, which was not mixed with trichlorobenzene. Then, at the end of 1976, the plant discontinued all use of Inerteen--none of which was ever produced by Westinghouse and all of which was purchased from the manufacturer.

In addition to PCBs, transformer oil, and trichlorobenzene, several other chemicals are known to have been used at the site. These include six volatile organic compounds:

- Ethyl Acetate,
- Methyl Ethyl Ketone,
- Toluene,
- Xylene,
- Trichloroethylene, and
- 1,1,1-Trichloroethane.

The latter two were used in metal cleaning and degreasing operations at several locations on the site. Metal cleaning was also accomplished by acid or phosphatizing-bath processes. Leftover material from these processes was piped to the neutralization facility where it was treated. Other materials which were used at the site included paints, varnishes, various small quantities of flammable liquids and cyanide.

2.4 PLANT PROCESSES HISTORY

In order to evaluate the nature and extent of potential contamination, it is necessary to first understand the processes used at the plant and the network of drainage systems which existed during the time these processes were operational. With this understanding in mind, a review of the existing data from previous investigations (Section 3.0) can serve as a model of what is known and what additional data may be required to accurately identify current site conditions for assessment of threats to public health and the environment and practical remediation alternatives.

The primary plant operations with some potential for contamination of the environment are those associated with transformer oil, e.g., filling, testing, impregnation of coil windings; copper bright dip and metal cleaning operations; and the powerhouse systems. Each process is described herein. It should be noted that the discussions of these processes represent the best available record and describe site operations in the sixties, seventies, and early eighties. Wherever older, reliable information was available, it has been incorporated into these descriptions. These data represent a best effort to accurately describe the manufacturing processes utilized at the site and truly represent a sound basis

of chemical usage during the time the plant was in operation. As stated in Section 2.2, the manufacturing operations were closed in 1985. Furthermore, substantial remedial efforts have been implemented by Westinghouse. A description of these remedial efforts is provided in Section 2.6 and Tables 2-3 and 2-4 of the Work Plan.

Obviously, the processes and discharge descriptions of Sections 2.4 through 2.7 are not representative of current conditions. The current status of each source area is provided in Section 2.8.

2.4.1 Transformer Oil

The manufacturing processes (filling and testing transformers, impregnation of coil windings) at the Sharon Plant resulted in the generation of waste transformer oil. Five plant process sumps collected the transformer oil from the various manufacturing areas and discharged it to an underground storage tank. The sumps also collected and discharged water generated from such sources as steam condensate, condenser drains, water leaks, and floor washdowns. Totalizer flow meters were added to the discharge of each sump in the spring of 1983 to monitor flows from the respective sump areas. A location map of the five sumps and the oil/water separator system is shown on Figure 2-4. A process schematic is shown on Figure 2-5.

2.4.1.1 Sump Operation

The H-80 Test Floor Sump was located near the transformer testing area shown on Figure 2-4. Transformer oil had entered the sump from the test floor area as a result of oil spillage during transformer testing. Transformer oil and water were pumped to underground Storage Tank No. 1. Flow records indicated flow from this area ranged from 800 to 2,500 gpd with an average flow rate of 1,500 gpd.

The Vapotherm Sump was located near the south end of the H-Building, as shown on Figure 2-4. The Vapotherm process was utilized to impregnate transformer coil windings with transformer oil. Coil windings used in transformers were placed in the Vapotherm tank and heated solvent introduced into the tank to remove moisture from the coils. After a predetermined length of time, the solvent was drained from the tank and pumped back to

the solvent storage tank as shown on Figure 2-6. Transformer oil immediately replaced the solvent in the impregnating tank to fill the voids in the coil. Oil from this process was returned to the oil house used process oil storage tank as shown on Figure 2-5. The coil windings were then removed from the tank and allowed to drain. The transformer oil drained from the coil windings was collected in the Vapotherm Sump which is then pumped to underground Storage Holding Tank No. 1 as shown on Figure 2-5. Flow records indicate quantities of transformer oil pumped from the Vapotherm Sump ranged from 600 to 2,300 gpd.

The oil house sump, as shown on Figure 2-5, was located in the oil house basement and collected oil from any piping leaks and/or spillage. Oil entered the sump from floor drains in the oil house basement and from oil piping trenches located outside and immediately adjacent to the oil storage tank area. The sump also received stormwater runoff which collected in the oil pipe trench. The oil house sump discharged to underground Storage Tank No. 1. Flow records indicate the average dry weather flow from this sump ranged from 3 to 573 gpd. Flow from this sump would increase during wet weather due to stormwater runoff.

The hot oil spray sump was located in the transformer filling area as shown on Figure 2-4. Heated oil was circulated through a transformer to remove additional moisture from within the transformer body prior to testing. Oil was collected in the sump as a result of spillage occurring during filling, or from pipe or pump seal leakage. Flow records indicate the quantities of oil pumped from this sump ranged from 30 to 560 gpd. The hot oil spray sump discharged to underground Storage Tank No. 1.

The HT-60 sump was located adjacent to a vacuum chamber formerly used for impregnating coil windings with transformer oil as shown on Figure 2-4. The process used in this area was essentially the same as that of the Vapotherm process, except steam rather than solvent was used to heat the coils. Any oil collected in the sump was a result of pipe or pump seal leakage. Flow from the sump ranged from 0 to 160 gpd. The HT-60 Sump discharged to underground Storage Tank No. 1.

2.4.1.2 Oil/Water Separator Operation

A schematic of the process flows to and from the oil/water separator is shown on Figure 2-5. Wastes from the five process sumps were pumped to underground Storage Tank No. 1 where they were then pumped at a constant rate to the oil/water separator. The oil/water separator was designed to route influent flows through a series of baffles to a clean chamber for water overflow. Its effective volume was slightly over 10,000 gallons, resulting in a hydraulic detention time ranging from approximately 40 to 125 hours, based on average metered sump flow data.

Water from the separator discharged by gravity to a plant storm sewer which discharged to the north hot well of the powerhouse recirculated cooling water system (Section 2.4.4). A location plan of the oil/water separator, the plant storm sewer system, and the north hot well is shown on Figure 2-4.

Oil discharged by gravity from the oil/water separator to underground Storage Tank No. 2. Oil discharged to the underground storage tank at an average daily rate of 150 gpd (based on plant oil disposal records). Prior to disposal, the oil was tested for total PCB concentration. Oil with a total PCB concentration of less than 50 ppm was sold to and removed by a scrap oil dealer. Oil with a total PCB concentration of 50 ppm or greater was pumped to underground Storage Tank No. 3 or 4 and ultimately removed from the tanks and disposed of in accordance with applicable state and federal regulations.

2.4.2 Neutralization System

The neutralization system, as shown on Figure 2-4, was located at the north end of the F-Building and served to neutralize wastes generated by a copper bright dip operation, located in R-T Building, and two metal cleaning operations located in Z-Building.

The neutralization system consisted of oil/water separation, pH adjustment, polymer addition, and clarification. A schematic of the neutralization system is presented on Figure 2-7.

2.4.2.1 Copper Bright Dip Operation

The purpose of the bright dip operation was to brighten copper products by dipping the metal parts in nitric acid. The copper items were then dipped into three separate water rinses prior to removal. The water rinses were flushed with potable plant water controlled by pH sensing devices, with the wastewater overflow from each rinse draining to a common sump. Fumes from the nitric acid tank were collected by an air scrubber system. Nitric acid (HNO_3) was stripped from the air by passing the air through a water spray. Caustic soda (NaOH) was then added to the resultant acid-water mixture forming a sodium nitrate ($NaNO_3$) solution which drained to the rinse water overflow sump. Wastewater from this sump was pumped to the neutralization system oil/water separator.

2.4.2.2 Metal Cleaning Operation

The metal cleaning operation consisted of two processes, designated by Westinghouse as the Z-8 metal cleaning operation and the ZPL metal cleaning operation.

The Z-8 cleaning consisted of an alkali cleaner (Detrex PEC-1 and water) dip followed by a heated water rinse, a zinc phosphate coating dip, (Detrex-733-S, water and Detrex FE-2) and a second heated water rinse. Detrex PEC-1 is a 50 percent (volume) sodium hydroxide (NaOH) compound containing gluconate and phosphate. Detrex 733-S is an acidic zinc phosphate solution containing nickel and trace amounts of nitrite ion and phosphoric acid. Detrex FE-2 is a detergent used during the processing. The water rinses were flushed by potable plant water running at a constant flow rate during process operation. This displacement of rinse water constituted the wastewater generated, which flowed by gravity to a metal cleaning wastewater sump.

The ZPL cleaning operation consisted of an alkali cleaner (Detrex PEC-1 and water) dip followed by two heated water rinses. The water rinses were flushed by potable plant water at a constant rate during process operation. This displacement of rinse water constituted the wastewater generated which flowed by gravity to a metal cleaning wastewater sump.

Wastewaters from these two metal cleaning sumps were pumped to the neutralization system oil/water separator.

2.4.2.3 Neutralization Treatment System Operation

The first step of the neutralization process occurred when the low pH (2-3) bright dip wastewater was combined with the high pH (11-12) metal cleaning wastewater in the oil/water separator. The combined wastewater then flowed into the first of two, 27,000 gallon interconnected underground storage tanks. Here caustic soda (NaOH) or sulfuric acid (H_2SO_4) was manually added as needed to maintain a nearly neutral pH. Quantities of caustic soda or sulfuric acid were determined based on influent pH readings taken each day the process was operating from each of the underground storage tanks. Air line mixers in each storage tank maintained turbulence to minimize settling out of particulates in the tank.

A variable speed pump, operated at a constant rate of 25 gpm, pumped the neutralized wastewater out of the two interconnected storage tanks to a clarifier (22,000 gallon working capacity). A polymer, Magnifloc 581 C, provided by American Cyanamid, was injected in-line approximately 20 feet prior to the wastewater entrance to the clarifier. The polymer was fed at a rate of 0.7 gallons per hour, and the turbulence within the 20 feet of piping prior to the clarifier serves as the method for flash mixing the polymer and wastewater.

Wastewater entered from the top at the center of the clarifier into a flow equalizing box. Settleable solids settled to a sludge collector from which a scraper system transferred the sludge to a sludge tank located at the base of the clarifier. Periodic sludge removal was accomplished from this tank.

Clarified effluent discharged via an inboard weir trough, to a discharge box, and ultimately flowed to the Clark Street storm sewer. This discharge box was the monitoring point for NPDES Outfall 007. Effluent at this outfall was monitored weekly (as stipulated in the NPDES permit) for zinc, iron, copper, hexavalent chromium, total chromium, phosphorus, ammonia, total suspended solids, and pH.

2.4.3 Powerhouse Flyash Handling System and Sump Discharges

The powerhouse facility at the Sharon Plant produced steam used for plant heating and process operations. There were four boilers located in the powerhouse.

The powerhouse, through its coal burning operations and subsequent flyash handling system, generated a water/flyash mixture that was treated to remove suspended solids prior to discharge. The treatment system consisted of a Lamella type gravity settler (located outside just south of the powerhouse) with flocculant addition and sludge removal capabilities. Settler effluent discharged through the south cistern located behind (west) the powerhouse to the moat. Settled sludge was stored in a sludge hopper (located behind the powerhouse) for disposal. This sludge hopper was reportedly cleaned every two months and the sludge removed by a contractor.

Four sumps, the coal room sump, the powerhouse sump, the cable trench sump, and the fire room sump were located in the powerhouse. The coal room and powerhouse sumps, located in the basement of the powerhouse, discharged through the settling tank and south cistern to the moat. The cable trench sump was located in the basement of the powerhouse and collected any groundwater that may have entered the electrical cable trenches between the powerhouse and adjacent buildings. The fire room sump discharged through the north cistern prior to discharge to the moat. A schematic of the flyash handling system and sumps is shown on Figure 2-8.

2.4.3.1 Flyash Handling System Operation

The flyash handling system consisted of a steam vacuum line, primary and secondary cyclones (ash collection), a water mist air scrubber, and a Lamella type gravity settler. Bottom ash resulting from the coal burning process was manually removed from the boilers to ash collection pits in the basement of the powerhouse. When sufficient quantities were collected, the ash was transported under vacuum through a primary and

secondary cyclone. High pressure steam was utilized to create a vacuum to draw the flyash through the cyclones. The cyclones removed the heavier flyash particles. The air, which was being transported with the flyash, was scrubbed utilizing a water spray prior to discharge. The water/flyash mixture was discharged to a Lamella type gravity settler for solids removal.

The flyash transport system, which results in a water/flyash discharge to the Lamella settler, was operated on an as-needed basis. The transport system was started manually via a steam vacuum switch. In addition, a valve was opened manually to allow plant potable water to flow to the wet air scrubber.

The Lamella settler had a design flow rate of 80 gpm and a TSS loading range of between 220 pounds/day (1900 ppm) and 320 pounds/day (2800 ppm). A flocculant was added to enhance solids removal, as was an ionic polymer (Superfloc 208), which was added at a rate of 0.3 gallons per day.

The water discharged from the Lamella flowed through a cistern before discharging to the moat. Solids (5 to 10 percent solids) were pumped from the Lamella to a sludge hopper for final disposal.

2.4.3.2 Sump Operation

Four sumps discharged from the basement area of the powerhouse; the coal room sump, the powerhouse sump, the cable trench sump, and the fire room sump. The coal room sump was located in the coal crushing room in the southeast corner of the powerhouse basement. The sump had approximate dimensions of 3' x 6.5' x 5' and received flow from steam condensate lines, basement floor drains, including a floor drain located in the coal receiving area and floor drains located near the west end of a pipe tunnel. The pipe tunnel contained piping which passed between the powerhouse, the H-Building, and the A-B Building. The coal receiving area was partially open to the environment and consequently resulted in the discharge of minor amounts of stormwater to the coal room sump.

The powerhouse sump was located in the southwest corner of the powerhouse basement. The sump had approximate dimensions of 3' x 4' x 4' and received flow from boiler blowdown, water softener backwash and downspouts. Boiler blowdown operated continuously during boiler operation. Flow records from the powerhouse sump indicated that the amount of water discharged by the boiler blowdown operation was between 2,500 and 4,000 gallons per day.

Water softener backwash also discharged to the powerhouse sump. Potable plant water was passed through a water softener prior to boiler use to reduce calcium and magnesium concentrations. The softener filter media was regenerated by backflowing (to remove calcium and magnesium) the media with a high concentration salt solution. The backwash operation occurred on the average every other day, for a period of 20 to 30 minutes. Backwash flow rate was 35 gallons per minute resulting in a discharge of between 700 gallons and 1,000 gallons every other day.

The cable trench sump was located in the northeast corner of the powerhouse structure. Water collected in this sump was pumped to a catch basin on the east side of the powerhouse, and then discharged to the north hot well.

The fire room sump intermittently collected water from a sink drain located in the fire room and seal water used by the fire room pumps. The sump pump discharged to a downspout which drained to the north cistern. The overflow from this cistern discharged to the moat.

2.4.4 Powerhouse Recirculated Cooling Water System

The Westinghouse facility had three independent non-contact cooling water systems; the powerhouse cooling water system, the H-Building cooling water system, and the Z-Building cooling water system. The purpose of the cooling water system was to meet plant non-contact cooling water demands, while minimizing water consumption. The systems provided water to plant equipment, such as vacuum pumps, air conditioners, etc. Two of these systems, the H and Z Building cooling water systems, were closed loop systems and have no direct discharges to plant or city storm water systems.

The powerhouse recirculating cooling water system was constructed in 1963 by Westinghouse in an attempt to reduce the daily water consumption at the plant. A location plan of this system is shown on Figure 2-4. The system was an open loop system and was comprised of a north and south hot well, a cold well, a cooling water tower, pumps, filter, and piping. System supply piping is shown on Figure 2-9. The system utilized existing storm sewers to return water to the north and south hot wells. This was deemed advantageous for two reasons: 1) the need for return water piping would be eliminated, thereby reducing system construction costs; and 2) during storm events water would enter the system thereby reducing the need for and cost of makeup water. Overflows were included in both the north and south hot wells in the event that more water entered the system than was required to meet cooling needs during a storm. A schematic of the open loop recirculated water system is shown as Figure 2-10.

Supply water sources for the powerhouse recirculated cooling water system included storm water as makeup water, in addition to plant potable water supplied from the city water supply, and water effluent from an oil/water separator.

Return water to the recirculating cooling water system was comprised primarily of the recirculated water; however, due to variations in demand and anticipated system losses, additional makeup water was necessary. This makeup water consisted of storm water during wet weather and potable plant water during dry weather. In addition, the water effluent from the oil/water separator was received by the system, constituting a fraction of the system makeup water.

The combined recirculated and makeup water (return water) recirculated through the system, which consisted of two hot wells, cold well, a cooling tower, filter, pumps, and pipelines. The north and south hot wells accepted the return water and pumped the water to the 3,000 gpm capacity cooling tower. From the cooling tower, the chilled water flowed by gravity to a cold well where the water was stored until demand increased from the cold well, the water was pumped as needed by two, 1,500 gpm turbine pumps through a filter. This filter removed suspended solids and the cooling water was then utilized where required.

The recirculated cooling water system provided three locations for system overflow; one each at the north and south hot wells, and one at the cold well. These overflows served to prevent system overload during a rainfall event, or a filter backwash operation sequence where return water supply exceeded the recirculated cooling water system capacity or demand.

The north hot well overflow discharged excess return water to an 18-inch storm sewer which ultimately discharged through the recirculated cooling water system interceptor to the Shenango River. The north hot well accepted return water from cooling water process return lines, storm water from roof and yard drains, catch basins and water effluent from the oil/water separator. Cold well overflow water, and filter backwash water discharged directly to the north hot well overflow. The discharge point at the overflow is permitted as NPDES 006 discharge.

The south hot well overflow was designed to discharge excess quantities of return water directly to the moat. This discharge was regulated by the NPDES 003 monitoring location in the moat. The south hot well accepted process return water and storm water from roof, yard, drains, and catch basins.

At the time of preparation of this document (July 1992) the powerhouse is being razed.

2.4.5 Cyanide Usage and Treatment

Cyanide is known to have been used at four locations at the site. These are discussed in the following paragraphs. Cyanide wastes were processed at the treatment plant adjacent to the E Building and at a dedicated cyanide destruction incinerator.

Cyanide was used on the second floor of the I Building for hardening of metals (dies, etc). As far as is known, the cyanide was brought to this area in metal containers as "carburizing salt," which contains sodium cyanide. Waste products are also thought to have been removed in containers. This was a limited scale operation and it is unlikely that any contamination remains from this process.

Cyanide was also used in plating operations. One location where this occurred was the "A-40" Area. The "A-40" Area was first located on a balcony in the B Building. Subsequently this operation was moved to the RT Building. It is not known how the cyanide got to or from the B Building location. Details of operation at the RT Building have not been confirmed, but it appears that cyanide salts were brought in granular or lump form and that any wastes were physically transported in a dedicated mobile tank to the treatment plant, which is discussed in the following paragraph.

Metal plating (cadmium, copper, silver, gold) was performed in the R Building. As part of the plating operations, there were rinses in acid, alkali, and cyanide baths. The wastes from these operations were piped across the E Building to a waste treatment facility which was subsequently modified and became known as the neutralization facility. Apparently, the fresh cyanide solutions were mixed either in the R Building or in the treatment plant. In the treatment plant there were two 27,000-gallon underground vaults. One of these was the reservoir for returning cyanide rinse waste water. The other was lined with acid-resistant brick and was used in the neutralization of rinse waters from plating operations. Additional parts of the cyanide treatment system included a 600-gallon concentrated cyanide tank, two 6,500-gallon cyanide reactor tanks, and a 22,000-gallon settling tank.

From 1970 through 1975, cyanide wastes generated by the treatment plant were burned with waste oil in an incinerator near the Inerteen storage area. The cyanide wastes were piped from the treatment facility to a tank near the incinerator. Subsequently, the R and E Buildings were torn down and cyanide use ended. The incinerator and associated tank, the 600-gallon concentrated cyanide tank, and the two 6,500-gallon reactor tanks were scrapped and removed from the site. The settling tank was moved and along with the underground 27,000-gallon tanks incorporated into the neutralization facility, where acid and alkali wastes continued to be treated until the plant was shut down.

2.4.6 Powerhouse Incinerator

A waste burner was located near the powerhouse between 1924 and the early 1950s. A waste heat boiler was a part of this operation. Reportedly, it was used to burn wastepaper and wood-type materials.

2.5 PLANT SURFACE WATER DISCHARGES

All Sharon Plant discharges, including treated process wastewater and plant storm water, entered one of four storm water interceptors for conveyance to the Shenango River. The interceptors will be referred as follows:

- Wishart Court Interceptor (WC),
- Franklin Street Interceptor (FS),
- Recirculated Cooling Water System Interceptor (RCWS), and
- Clark Street Interceptor (CS).

There were seven primary gravity drainage systems tributary to these four interceptors. Those drainage systems included:

- Sewers tributary to the Clark Street Interceptor from north of Clark Street;
- Sewers tributary to the Clark Street Interceptor from south of Clark Street;
- Sewers tributary to the Recirculated Cooling Water System Interceptor via the north hot well;
- Sewers tributary to the Recirculated Cooling Water System Interceptor via the south hot well;
- Sewers tributary to Wishart Court Interceptor via the moat above NPDES Discharge Point 003;
- Sewers tributary to the Wishart Court Interceptor below NPDES Discharge Point 003; and
- Sewers tributary to the Franklin Street Interceptor.

Mapping of the plant storm sewer systems, treated process wastewater discharge locations, and the four storm water interceptors is included on Figure 2-4. Plant storm system mapping was prepared from mapping obtained from Westinghouse and verified (where possible) by field reconnaissance.

The Wishart Court Interceptor received storm water runoff from the A-B-C Building roof leaders, floor drains and catch basins, and from three sumps located in the powerhouse. The interceptor also received treated process wastewater from the powerhouse flyash handling system via the moat above Discharge Monitoring Point 003. The powerhouse flyash handling system and sumps are discussed in detail in Section 2.4.3.

The Franklin Street Interceptor received storm water from Y-Building roof leaders and floor drains.

The Recirculated Cooling Water System Interceptor received storm water runoff from roof leaders and floor drains in the southern half of the F, F-H, H, and T Buildings, non-contact cooling water from the powerhouse recirculated cooling water system, treated process wastewater from the oil/water separator, and storm water runoff collected in a sump in the powerhouse basement. The recirculated cooling water system discharge, which drained by gravity to the south hot well, is discussed in detail in Section 2.4.4. A detailed discussion of the discharge from the oil/water separator can be found in Section 2.4.1.2.

The Clark Street Interceptor received storm water from roof leaders in the F, F-H, H, and T Buildings which are located south of Clark Street, and W-50, R-T, and Z Buildings, which are located north of Clark Street. Storm water was also received from catch basins and trench drains along Clark Street, and possibly from French drains from the T and Z Buildings. Non-contact cooling water was received from two test transformer heat exchangers and a vacuum pump cooling system in the high voltage test area and from various welding, brazing, and hydraulic equipment operations. Treated process wastewater also enters the interceptor from the neutralization facility. The neutralization facility is discussed in detail in Section 2.4.2.

2.6 SANITARY SEWERS

Sanitary wastes (from toilets, showers, sinks, etc.) of the Sharon Plant discharged into the City of Sharon Municipal Sanitary Sewer System. Plant sanitary sewers collected sanitary waste from within the plant and discharged to municipal sewers located in Wishart Court, Sharpsville Avenue, and Clark Street. The municipal sanitary sewers located in Wishart Court and Sharpsville Avenue received sanitary waste from A-B-C Buildings, the powerhouse and the south end of F, F-H, H, and T Buildings. The municipal sanitary sewer located in Clark Street received sanitary waste from the center and north end of the F, F-H, H, and T Buildings, W-50 Building, R-T Building, and Z Building. The plant sanitary sewer system and points of discharge into the municipal system are shown on Figure 2-11.

No cross connections were located between the plant sanitary and plant storm sewer systems. One sanitary relief point (overflow) existed within the A-B Building near Column 39A and discharged directly to the moat.

Sanitary wastewater discharged from the C-Building and the south end of the A-Building via a 12-inch sewer lateral and entered the municipal sanitary sewer located along Wishart Court. A second 12-inch lateral collected sanitary wastewater from the center and north end of the A-B Buildings, the powerhouse, the engineering and accounting offices, the I-Building, and south sections of the F, F-H, and H Buildings. This lateral discharged to the sanitary sewer on Sharpsville Avenue and ultimately to the sanitary sewer located along Wishart Court. An 18-inch relief sewer from this lateral directed sanitary wastewater which could not be handled by the 12-inch lateral to the moat. A third 12-inch lateral collected sanitary wastewater from the remaining portions of the F, F-H, H, and T Buildings and discharged to the Clark Street Municipal Sanitary Sewer. In addition, seven laterals (four-inch to eight-inch) discharged sanitary wastewater, collected from the High Voltage Test Lab, W-50, R-T and Z Buildings, to the Clark Street Municipal Sanitary Sewer.

2.7 THE MOAT

The moat is located west of A-B-C Buildings and east of Y Building. The moat was a drainage ditch, approximately 1,200 feet long and six to ten feet wide, flowing in a north to south direction. The moat discharged to a 36-inch concrete pipe (Wishart Court Interceptor), which ultimately discharged into the Shenango River. The former moat location is shown on Figure 2-11A.

As mentioned as many as twenty-six pipes discharged to the moat from its east bank upstream of NPDES Monitoring Location 003. A description of each pipe and the sources contributing flow is provided in Table 2-1, while the discharge points are shown on Figure 2-4. The basis for these data is dated to 1983. Since that time, the moat has been remediated as described in Section 2.6 and Tables 2-3 and 2-4 of the Work Plan.

2.8 CHEMICAL USE AREAS

The natural setting of the site, the history of the facility, the manufacturing processes employed, and the discharge and drainage systems have been described in previous subsections. In addition, a discussion of the remediation efforts undertaken by Westinghouse has been provided in Tables 2-3 and 2-4 of the Work Plan to enable the reviewer to understand how the site has been historically used as well as the current status.

Section 3.0 of this FSP summarizes existing data with respect to chemical constituents found in the surface water, groundwater, soils, air, and buildings. In an effort to facilitate review of these data with respect to chemical usage at the site, a series of tables and figures have been prepared to serve as a concise summary of the use areas and their status. The tables describe each area, identify possible contaminants, and identify current status. The figures locate each area. Each sector of the site is addressed separately.

For the South Sector, 22 areas are identified on Figure 2-12 and described in Table 2-2. For the Middle Sector, the use areas are identified on Figure 2-13 and described in Table 2-3. For the North Sector, the use areas are identified on Figure 2-14 and described in Table 2-4.

3.0 SUMMARY AND EVALUATION OF EXISTING DATA

Numerous studies, inspections, sampling programs and remediation projects have occurred at and in the vicinity of the Sharon Transformer Plant Site. The discussion herein focuses on available data from the site, which covers the period from 1975 through 1988. Generally, studies of surface water discharges are the most plentiful of the existing data. Polychlorinated biphenyls (PCBs) were the sole or primary Contaminant of Interest (COI) of every report not related to National Pollutant Discharge Elimination System (NPDES) monitored discharges. In the following sections, data from previous studies are summarized by environmental medium (e.g., surface water, groundwater, soil, air, and buildings).

3.1 SURFACE WATER

3.1.1 NPDES Permitted Outfalls

The NPDES self-monitoring program is the cornerstone of industrial waste discharge studies for surface water. There were sixteen discharge monitoring points identified in the interim NPDES permit issued to Westinghouse on June 29, 1981. A revised NPDES permit application was filed on November 22, 1988 and is discussed in Section 3.1.2. Table 3-1 lists the historically permitted discharge points and plant tributaries to each of the discharge points. Figure 3-1 identifies the locations of these points. Table 3-2 identifies historical effluent parameters and discharge limits for each outfall.

Total suspended solids (TSS) were a required analytical parameter at all permitted outfalls, and oil and grease (O&G) analyses were required at all outfalls except Outfall 007. Outfall 007 discharges, which consisted of waste waters from the metal cleaning operation and the copper bright dip operation, were subjected to chemical analyses appropriate to metal plating/finishing operations. Routine PCB analyses were required only at Outfalls 003 and 006.

Outfalls 003 and 006 and their tributaries from the plant were the focus of all surface water discharge investigations, as indicated in Tables 3-3 and 3-4.

3.1.1.1 Outfall 003

The location of Outfall 003 was near the center of the new 36-inch sewer line installed along the remediated moat . The moat, as described in Section 2.7, was a drainage ditch approximately 1,200 feet long and six to ten feet wide, which also served as a secondary clarification process for the fly ash cistern discharge. Fly ash and other components of the power generation process were identified as potentially significant PCB discharge sources to the moat in sampling performed by PADER (1982) and O'Brien and Gere (1983b).

The PCB loading in the flow from Outfall 003 was approximately 0.0040 pounds/day based on the data from O'Brien and Gere (1983a). PCB concentrations from the early 1980s to 1987 (Figures 3-2 and 3-3) indicate a peak in 1983 at approximately 12 ug/l. This has subsequently dropped to 1.0 ug/l or lower. The peak in the measurements corresponds to a period when the demolition of buildings was occurring in the South Sector.

O'Brien and Gere (1983b) recommended that remediation of the moat be undertaken to mitigate PCB transport to surface water and groundwater. Remediation was initiated in January 1984 by O.H. Materials (OHM). Residual waste was removed from powerhouse sumps, and the sump surfaces were cleaned (OHM, 1984b). Following a November 1984 discovery of PCBs from the powerhouse sump in the moat, extensive sampling and analyses were conducted prior to discharge of non-PCB water (260,000 gallons) to the Shenango River (OHM, 1985). Another 470,000 gallons of water was treated and discharged during excavation of the moat and spill areas by OHM in 1986 (OHM, 1987). Also during the 1986 remediation work, Outfall 006 was eliminated and the Outfall 006 was piped to Outfall 003. This is the only current NPDES monitoring point on site (see Section 3.1.3).

3.1.1.2 Outfall 006

Outfall 006 (Figure 3-1) was a part of the Recirculated Cooling Water System (RCWS) north hot well, as described in Section 2.4.4. From the north hot well, the water re-entered the RCWS through the cooling system or was discharged to the Shenango River

via an 18-inch storm sewer up until 1986. Flows from Outfall 006 now discharge to the new 36-inch sewer which connects to the Wishart Court Interceptor.

Historical data (from the early 1980s) for PCB concentrations in discharges from Outfall 006 are shown on Figures 3-4 and 3-5. As indicated on the figure, PCB concentrations ranged from less than 1.0 to 2.2 ug/l during the period 1981 to 1986 when demolition of site buildings and remediation of the moat was taking place. Since early 1986, PCB concentrations have been 1.0 ug/l or lower.

Studies performed by Havens and Emerson (1980a), Duncan, Lagnese and Associates (1982), and O'Brien and Gere (1983b) indicate that the oil/water separator was not consistently operated to achieve levels of PCBs below the detection limit in the effluent nor NPDES discharge limits for oil and grease and total suspended solids. PCB concentrations in flows from the RCWS through Outfall 006 (O'Brien and Gere, 1983b) are summarized in Table 3-5. This table lists inflows from various sources to the sewers which drain the site. PCB concentrations and total PCBs in these flows are provided for dry weather conditions and dry/wet conditions. As indicated in the table, the PCB loading was approximately 0.00050 pounds/day at an average concentration of 1.2 ug/l.

On January 11, 1984, an estimated maximum volume of 6,750 gallons of a mixture of transformer oil and a petroleum distillate became contaminated with PCBs after flowing out of an underground tank in the area of Outfall 006. Extensive sampling, analyses, and remediation were performed by O.H. Materials. Approximately one million gallons of RCWS water was treated for removal of PCBs and oil and grease (OHM, 1984a).

3.1.1.3 Outfall 007

Outfall 007 was the point at which neutralization plant effluent discharged to the Clark Street Sewer. Required chemical analyses for Outfall 007 were: zinc, iron, copper, hexavalent chromium, total chromium, phosphorous and ammonia-nitrogen. No analyses for cyanide were performed, although cyanide plating bath solutions were processed prior to 1975 (Westinghouse, 1975). O'Brien and Gere (1983b) reported that the neutralization

system did not effectively remove copper, zinc, phosphorus, or PCBs. However, with the termination of the operation and shutdown of the plant, the intermittent discharges of these substances above water quality limits at Outfall 007 have been eliminated.

3.1.1.4 Outfall 204

Routine PCB analyses were performed at this outfall, which received water from floor drains and downspouts associated with the Y Building. However, there is no record of PCBs having ever been detected, and Outfall 204 was not identified as a point-source discharge for PCBs in NPDES discharge monitoring reports or by O'Brien and Gere (1983b).

3.1.2 NPDES Permitted Outfalls (1988)

A revised NPDES permit application for the Sharon Transformer Plant Site was filed by Westinghouse on November 22, 1988. That application reflects site activities since plant operations ceased and several remediation activities were implemented. In that permit application, nine outfalls are indicated. These are:

- 001
- 002
- 003
- 104
- 204
- 304
- 013
- 006
- 009

In the permit application, Westinghouse requested that Outfalls 006 and 009 be dropped. The outflows from Outfall 006 are now piped to Outfall 003 and Outfall 009 (which received flows from Outfalls 109, 209, and 309) no longer has any discharges. PCB concentrations in flows at Outfalls 003 and 006 for the period September 1987 to August 1988 are provided in Table 3-6 and 3-7, respectively. Detection of PCBs was infrequent and only one value exceeds 1.0 ug/l.

3.1.3 Current NPDES Program

Outfall 003 is now the only NPDES monitoring point for the facility. The parameters are PCBs (total), flow, oil and grease, and pH. Updated monitoring results will be included in the RI/FS report.

3.1.4 Storm Sewers

There are three sewers which drain the site. These are the Wishart Court Interceptor, the Clark Street Sewer, and the Franklin Street Sewer, as shown on Figure 3-6. The Wishart Court Interceptor and Clark Street Sewer were sampled for both sediment and water. The Franklin Street Sewer was sampled for water only. Sampling of these sewers is discussed in the following paragraphs.

3.1.4.1 Wishart Court

As part of their evaluation of the moat, O'Brien and Gere (1983a) obtained a sediment sample from the East Silver Street manhole of the Wishart Court Interceptor. This sample contained 2.4 ppm total PCBs by dry weight. The location from which the sample was obtained is shown on Figure 3-7.

Plant PCB discharges to the Wishart Court Interceptor for dry and wet weather conditions in the 1983 study period are summarized in Table 3-5.

3.1.4.2 Clark Street

Site discharges to the Clark Street Sewer were not monitored for PCBs as part of the NPDES. PCBs were detected at the Clark Street Sewer by the EPA (0.32 ug/l in water discharge) and Westinghouse in 1975 (split sample analysis - 0.46/0.41 ug/l) (Westinghouse, 1976). A PADER January 4, 1980 "sample of oil scum held at outfall of (Clark Street) sewer by high water in river" was reported to have concentrations of 75 mg/l Aroclor 1242 and 32 mg/l Aroclor 1260 (PADER, 1980a). The locations from which the samples were obtained are shown on Figures 2-11A, B, and C.

In 1983, 10 of 11 instantaneous wet weather plant discharges to the Clark Street Sewer were found to be above the detection limit (0.10 ug/l) for PCBs. Concentrations and calculated PCB loadings via the Clark Street Sewer are listed in Table 3-5.

Additional sampling of water and sediment in storm sewers intercepting the Clark Street Sewer was performed by SRW Associates (1985) as part of their environmental assessment of the North Sector of the plant. The sampling points are shown on Figure 3-8, and the results of sample analysis are provided in Table 3-8. As flow proceeded from the origin of the storm sewer (north of the Z Building) to the Clark Street Sewer, sediment sample concentrations generally increased about 25 mg/kg to a maximum value of 100 mg/kg of PCBs at Sampling Point SD-10. SD-10 was the last sampling point before the storm sewer intercepted the Clark Street Sewer.

The most recent sampling of the Clark Street Sewer was in January 1988 by PADER (PADER, 1988a). One sample was obtained from a drum of oily sludge collected from the Clark Street Sewer discharge. The PADER reports the source of this sludge as material collected by a skimmer boom located at the discharge. The sludge sample was ND for PCBs but the "oil phase" of the sample had a concentration of 15.0 mg/kg of Aroclor 1260.

3.1.4.3 Franklin Street

No PCB discharges to the Franklin Street Sewer were identified by O'Brien and Gere in 1983 (Table 3-5). There is no record of any subsequent sampling of sediment or water at the Franklin Street Sewer.

3.1.4.4 Sharon Sewage Treatment Plant

The city of Sharon Sewage Treatment Plant (STP) sludge was reported as having total PCBs ranging from 12 to 25 mg/kg based on sampling conducted by PADER in 1977 (PADER, 1978).

3.1.5 Shenango River

3.1.5.1 Water

For sampling performed on June 17, 1980, Havens and Emerson (1980b) reported PCB concentrations in the Shenango River between Sharpsville and Wheaton as ranging from trace levels to 1.90 ug/l at nine stations (Figure 3-9). The results are provided in Table 3-9. Samples collected on February 9, 1988 (PADER, 1988a) at the Shenango Valley Water Company intake were ND for PCBs in the raw water, treated water, filter backwash water, and filter backwash sludge.

3.1.5.2 Fish

Sample results of up to 5.2 mg/kg Aroclor 1242 were reported by PADER for 1979 samples (PADER, 1979). Fish collected from the Shenango Lake contained PCBs.

Fish samples were collected by PADER from three locations in the Shenango River in 1980. The highest total PCB concentration was 315 ug/kg (PADER, 1980b).

Fish samples collected on June 1, 1988 by PADER (1988b) at three locations on the Shenango River. A description of the locations and analytical results are provided in Table 3-10. Aroclor 1260 was observed in six of seven samples.

Between July 28, 1988 and August 4, 1988 seven stations along the Shenango River were sampled by PADER (1988c). Of the twelve total samples collected, three were ND for PCBs. Aroclor 1260 was identified in all nine of the PCB-contaminated fish, while Aroclor 1242 was identified in two samples. A description of the sampling locations and analytical results are presented in Table 3-11.

3.1.5.3 Sediment

Sampling performed in 1980 (Havens and Emerson, 1980b) yielded 2.0 and 4.6 mg/kg total PCBs in sediment near the Clark Street Sewer outfall. Other river sediment samples were below 1.0 mg/kg of total PCBs.

Sediment samples obtained by PADER from three locations in the Shenango River in 1980 ranged from ND to 380 ug/kg of Aroclor 1260 (PADER, 1980b).

Sampling of Shenango River sediment was performed by NUS as part of the Field Investigation Team (FIT) effort in November 1985. NUS reported concentrations of Aroclors 1221, 1232, 1016, 1242, 1248, 1254, and 1260 at all six river sediment sampling points (NUS, 1986). The results are provided in Table 3-12. Sample locations are shown on Figure 3-10.

3.2 GROUNDWATER

3.2.1 Rizzo Associates' Site Investigation

The only site investigation in which monitoring wells were installed and samples were obtained for analysis was the Rizzo Associates' subsurface study in 1985 and 1986 (Rizzo, 1986). Four wells previously installed by O'Brien and Gere were used only for observation of groundwater levels. There are few details of the O'Brien and Gere wells available, but it is thought that they are standpipes and extend just below the water surface in the alluvium. The locations of these wells are indicated on Figure 3-11.

Forty-seven monitoring wells were installed as part of the Paul C. Rizzo Associates' site investigation. The South Sector of the plant had 16 wells (denoted as S-series); the Middle (main) Sector had 19 wells (denoted as M-series); and the North Sector had 11 wells (denoted as N-series). There was also a well (denoted as R-1) on Westinghouse property located between the Sawhill property and the Shenango River. Sampling of groundwater from monitoring wells occurred primarily in April and May 1986. More than 100 water samples for laboratory analysis were obtained from the monitoring wells.

Groundwater samples were tested for the following analytes:

- PCBs,
- 1,2,4-Trichlorobenzene,
- Ethyl Acetate,

- Methyl Ethyl Ketone,
- Toluene,
- 1,1,1-Trichloroethane,
- Trichloroethylene,
- Total Xylenes,
- Oil and Grease, and
- Chlorides.

PCBs, 1,2,4-trichlorobenzene, and oil and grease were the most frequently detected analytes. Trichloroethylene, toluene, and 1,1,1-trichloroethane were detected sporadically. Ethyl acetate, methyl ethyl ketone, and total xylenes were never detected in groundwater samples although methyl ethyl ketone was found in a heavier-than-water phase in Well M-10. Most of the detection of analytes was from well samples from the west side of the Middle Sector of the plant.

Very low concentrations of PCBs were detected in Monitoring Wells M-4B, M-9, M-11B, N-2B, and R-1 during the first round of monitoring well sampling. Most of the samples from these bedrock wells were ND for PCBs in the second round of sampling. A third-round sample from Well M-4B was ND for PCBs. It was not unexpected that some PCBs would be detected in the early rounds of sampling, because PCBs have a higher specific gravity than water and because some migration of contaminants in a boring is possible with even the most careful procedures.

Trichlorobenzene was detected at 210 ug/l in Well M-11B in the first round of monitoring well sampling, but was not detected in the same well in the second round. Toluene was detected in the first round of sampling in Well N-6B at 7.3 ug/l, but was not detected in two subsequent sampling rounds.

The following areas of the site (Figure 3-11) were identified as having elevated concentrations of detectable analytes:

- **AREA 1**

  Well S-4 had floating oil containing 110 mg/kg (Aroclor 1260) PCBs. 1,2,4-trichlorobenzene was detected at a concentration of 280 ug/l in a water-phase sample from the well.

  No analytes other than oil and grease were detected in Well S-6. A sample of perched water obtained during the drilling was found to have a concentration of 1,300 ug/l of PCBs.

- **AREA 2**

  Trichloroethylene was detected in Well S-10 at 1,700 ug/l. 1,2,4-trichlorobenzene was detected in Well S-12 at 3,500 ug/l.

- **AREA 3**

  Well M-2 had floating oil containing PCBs. An analysis of an oil sample indicated 38,000 mg/kg of Aroclor 1260. The PCB concentration in a water phase sample obtained at the same time was 100 ug/l of Aroclor 1260.

- **AREA 4**

  Well M-7 had floating oil containing PCBs. An analysis of an oil sample indicated 80,000 mg/kg of Aroclor 1242. PCBs were detected in a water phase sample from the well (1,300 ug/l of Aroclor 1242). Other monitoring wells had total PCB concentrations (Aroclors 1242 and 1254) as follows:

- M-1	14 ug/l
- M-5	8.5 ug/l
- M-11A	1,160 ug/l

  Trichlorobenzene was detected at the following concentrations:

- M-1	2,800 ug/l
- M-5	2,700 ug/l
- M-7	81 ug/l
- M-11A	1,000 ug/l

- **AREA 5**

  Well M-10 had floating oil containing PCBs and a heavier-than-water liquid with concentrations of PCBs and 1,2,4-trichlorobenzene. Methyl ethyl ketone was also detected in the heavier-than-water liquid. Total PCB concentration in the floating oil was 208,000 mg/kg (Aroclors 1242 and 1254). Concentrations in the heavier-than-water liquid were:

- Aroclor 1242	380,000,000 ug/l
- Aroclor 1254	550,000,000 ug/l
- 1,2,4-trichlorobenzene	380,000,000 ug/l
- Methyl ethyl ketone	67,000,000 ug/l

  PCBs were detected in water phase samples from Wells M-10 and M-12 at 12,500 and 67 ug/l, respectively. 1,2,4-trichlorobenzene concentrations were 11,000 and 190 ug/l for water-phase samples from Wells M-10 and M-12, respectively.

- **AREA 6**

  PCBs at 72 ug/l (Aroclors 1242 and 1254) and 1,2,4-trichlorobenzene at 4,300 ug/l were detected in Well M-15.

- **AREA 7**

  PCBs were detected at 17 ug/l (Aroclors 1242 and 1254) in Well M-17. 1,2,4-trichlorobenzene was detected at 480 ug/l and trichloroethylene was detected at 1,800 ug/l.

The concentrations of PCBs and 1,2,4-trichlorobenzene detected in the second round of well sampling in the Paul C. Rizzo Associates' site investigation are provided on Figures 3-12 and 3-13. Some additional isolated occurrences of analyte detection are noted in detail in the Rizzo Associates Report (1986).

3.2.2 SRW Investigation at the Sawhill Tubular Division Plant

A July 20, 1983 acidic, aqueous discharge (pH = 1.7) to the Clark Street Sewer from the Sawhill Tubular Division Plant of the Cyclops Corporation was traced to floor leakage in the pickling area. PADER subsequently ordered Cyclops to perform a groundwater evaluation for pH, total iron, total zinc, sulfate, and PCBs. SRW Associates, Inc., was contracted to perform the evaluation (SRW, 1984).

Seventeen groundwater monitoring wells were installed at the Sawhill Plant Site. Four of these wells (MW-3A, MW-14, MW-15, and MW-16) were located along the east boundary of the Sawhill property in a downgradient position from the Middle Sector of the Westinghouse site. The plan locations of monitoring wells on the Sawhill property are shown on Figure 3-12. Four groundwater samples were collected from each of the seventeen wells.

Of the PCB analyses, only Monitoring Well MW-14 had detectable levels of PCB (Aroclor 1260) in all four sampling rounds. Concentrations of PCB Aroclor 1260 ranged from 0.2 ug/l to 4.9 ug/l. Samples from Wells MW-6, and MW-7 showed levels of Aroclor 1254 at less than 1.0 ug/l on a single occasion. Well MW-17A had 1.9 ug/l of Aroclor 1242 on one occasion. These wells were all screened in the alluvium.

An inch to inch and one half oil layer was observed in Well MW-14. Analysis of the oil yielded the following results:

AROCLOR	CONCENTRATION (mg/kg)
1242	125
1248	75
1260	2,000

3.3 SOILS AND SEDIMENT

3.3.1 Moat Area Investigations

PADER conducted flyash and moat sediment sampling in May and June of 1982. Moat sediments sampled 30 feet from the flyash decant discharge were reported to contain 12,000 mg/kg of Aroclor 1254 (PADER, 1982). Based on the May and June 1982 analyses, Westinghouse was requested to perform moat sediment sampling and other soil sampling in areas of previous oil or solvent spills (PADER, 1983a).

In January 1983, O'Brien and Gere was contracted by Westinghouse to comply with PADER's request by sampling sediments at six transects of the moat. Fourteen samples were obtained, and analysis confirmed that flyash in the moat had elevated PCB concentrations and that PCB contamination extended at least six inches into the native soil.

In March 1983, PADER also collected moat soil samples. PADER obtained one sample from the moat bottom (no plan location specified) and one sample from the west side near the Grafo Colloids Company (PADER, 1983b).

The analytical results for the PADER sample from the moat bottom were as follows:

AROCLOR	CONCENTRATION (mg/kg)
1242	38
1254	270
1260	100

The following results were obtained for the sample from the west side of the moat:

AROCLOR	CONCENTRATION (mg/kg)
1242	26
1254	120
1260	50

Moat soil sampling was performed in May and June 1983 by O'Brien and Gere. Twenty-eight soil borings along the six moat transects yielded 79 samples. Samples were obtained at several depths from each boring to characterize vertical extent of PCB concentration.

The results of the sampling program identified the presence of flyash in the bottom of the moat along its entire length to a depth ranging from 0.5 to 6.0 feet. Reported PCB concentrations in the flyash ranged from 250 to 750 mg/kg, dry weight. The sampling program further identified PCBs at levels exceeding 50 mg/kg at relatively shallow depths (generally less than three to four feet) in the moat.

In addition to the moat soil sampling program, samples were obtained from nine additional borings (O'Brien and Gere, 1983a). Six borings were located near the Grafo Colloids Building and three borings were located northwest of the moat (Figure 3-14). Analytical results from the moat sampling plus the additional borings are provided in Table 3-13.

A January 1984 spill of approximately 6,750 gallons of a petroleum distillate mixture occurred within 100 feet of Borings R-10, R-11, and R-12. The moat and spill areas (i.e., area around Borings R-9, R-10, R-11, and R-12) were remediated in 1986 (OHM, 1987).

3.3.2 SRW Investigation of the North Sector

As a prerequisite for the sale of buildings and land in the North Sector to Universal Cyclops Corporation, Westinghouse and SRW Associates conducted an environmental assessment in September 1985. Clement Associates (1985) evaluated the data obtained and postulated a risk assessment based on PCB exposure.

Four shallow soil borings were hand augered along the railroad tracks between the W-50 and R-T Buildings. These were designated as RR-1 through RR-4, and their locations are shown on Figure 3-15. The boring depths ranged from 1.0 to 1.5 feet. Results of analysis for PCBs are provided in Table 3-14. PCB concentrations ranged from 32 to 180 mg/kg (Aroclor 1260).

SRW Associates collected 28 surface soil samples from the same general area in the parking lot and adjacent to the railroad tracks. SRW Associates also obtained eight scrape samples of an area identified as the zone of probable PCB contamination. The locations of the surface soil and scrape samples are also shown on Figure 3-15. Results of the analyses are provided in Table 3-15.

3.3.3 Rizzo Associates' Site Investigation

The Rizzo Associates' field investigation was initiated in October 1985 with soil sampling following removal of five underground oil tanks (Rizzo, 1986). The drilling of borings and installation of monitoring wells began in November 1985 and continued to March 1986. Soil samples were obtained from borings during this period and were delivered to a laboratory for analysis. The field sampling program concluded in August 1986 with soil sampling following removal of the solvent tanks, dump tank, and gasoline tank. A total of 22 soil samples were obtained from excavations following removal of underground tanks. The tank locations are shown on Figure 3-16.

Soil samples from beneath the five underground oil tanks initially indicated levels of PCB concentrations greater than 50 mg/kg. This material was excavated. Subsequent sampling showed no concentrations above 4.6 mg/kg. The pit from which the tanks were removed was backfilled with clean soil and capped with concrete.

Soil samples were obtained from opposite ends of each of the two solvent tanks. Results of laboratory analysis indicate four samples and a field duplicate contained PCBs at concentrations greater than 50 mg/kg. Oil and grease were detected in all of the samples analyzed. The excavation for the solvent tanks currently remains open.

Soil samples were obtained following removal of the dump tanks. Analytical results detected five analytes. The excavation was subsequently backfilled with clean soil and capped with concrete.

Samples were obtained following removal of the gasoline tank. Analytical results indicated PCBs greater than 50 mg/kg at the north end of the tank. Toluene and total xylenes were also found at this end of the tank. The soil samples containing

concentrations of gasoline constituents were taken from areas corresponding to observed holes in the tank. Contaminated material was removed and the excavation has been backfilled with clean soil.

Thirty-nine borings were drilled as part of the site investigation. The South Sector of the plant had 13 borings (denoted as S-series); the Middle (main) Sector had 18 borings (denoted as M-series); and the North Sector had seven borings (denoted as N-series). A boring (R-1) was also placed on Westinghouse property between the plant and the Shenango River. Two hundred and two soil samples from borings were submitted for laboratory analysis. These samples were analyzed for the following:

- PCBs,
- 1,2,4-Trichlorobenzene,
- Ethyl Acetate,
- Methyl Ethyl Ketone,
- Toluene,
- 1,1,1-Trichloroethane,
- Trichloroethylene,
- Total Xylenes, and
- Oil and Grease.

The results of the soil sampling and analysis are summarized for each of seven identified areas of analyte concentrations (Figure 3-11) in the following paragraphs. Sixteen soil samples were found to have total PCB concentrations greater than or equal to 50 mg/kg. Two soil samples had concentrations of 1,2,4-trichlorobenzene in excess of 10 mg/kg. Oil and grease was frequently observed in the South and Middle Sectors of the site. The remaining analytes were detected sporadically and never in concentrations exceeding 1.0 mg/kg. The results are:

- **AREA 1**

  Neither PCBs nor 1,2,4-trichlorobenzene were identified in soil samples from Borings S-4 and S-6.

- **AREA 2**

  PCBs were detected (18 and 8.0 mg/kg) in Borings S-10 and S-12. No 1,2,4-trichlorobenzene was detected in either boring.

- **AREA 3**

  The highest PCB concentration in a soil sample from Boring M-2 was 260 mg/kg. No 1,2,4-trichlorobenzene was detected in soil samples from Boring M-2.

- **AREA 4**

  PCBs were detected at 240 mg/kg (Aroclor 1260) and 2,200 mg/kg (Aroclor 1254) in Boring M-1. Two samples from Boring M-7 had concentrations ranging from 68 mg/kg (Aroclor 1242) to 83 mg/kg (Aroclors 1242 and 1260). 1,2,4-trichlorobenzene was detected at 93 mg/kg in one soil sample from Boring M-1.

- **AREA 5**

  Soil samples from Borings M-10 and M-12 with concentrations exceeding 50 mg/kg are as follows:

BORING/DEPTH (FEET)	CONCENTRATION (MG/KG)	AROCLOR
M-10/13	560	1254
M-10/41	1,500	1242
M-10/41	1,700	1254
M-12/9	71	1242
M-12/9	72	1260
M-12/31	240	1254
M-12/35	4,500	1242
M-12/35	13,000	1254

- **AREA 6**

  PCBs were detected at a maximum concentration of 28 mg/kg in Boring M-15. No 1,2,4-trichlorobenzene was detected in soil samples from Boring M-15.

- **AREA 7**

  PCBs were detected at the following concentrations in Boring M-17:

DEPTH (feet)	CONCENTRATION (mg/kg)	AROCLOR
5	510	1260
36	250/350	1254
42	46	1242
42	67	1254

  No 1,2,4-trichlorobenzene was detected in soil samples from this boring.

PCB concentrations of soil samples from borings at the site are shown in plan and elevation on Figures 3-17 and 3-18, respectively.

3.3.4 Off-Site Investigations

In May 1984, SRW Associates obtained 17 soil samples from borings drilled during their groundwater monitoring program for the Sawhill Tubular Plant. Three auger samples appeared to be stained with oil and were analyzed for PCBs. The results were as follows (SRW, 1984):

BORINGS	AUGER SAMPLE DEPTH (feet)	TOTAL PCBs (mg/kg)
MW-7	10 to 12	ND
MW-14	7 to 9	1.2 (Aroclor 1260)
MW-17A	6 to 7	ND

In January and April 1988, PADER conducted surface soil sampling for PCBs and pesticides in areas surrounding the Sharon Transformer Plant Site (PADER, 1988a). Twenty-two off-site soil samples and three near-site soil samples from the January sampling trip (Figures 3-19 and 3-20) were submitted for analysis. Thirteen soil samples

were taken in the Harrison Street and 4th Avenue area in April 1988. This area was the site of the sample with the highest off-site concentration of PCBs in January (7.6 mg/kg). April sample results ranged from ND to 3.9 mg/kg of PCBs.

Of the 22 off-site soil samples collected by PADER in January 1988, 15 samples were ND for PCBs; 6 samples exhibited concentrations ranging from trace to 2.3 mg/kg PCBs; and 1 sample (Harrison Street and 4th Avenue) was reported to have concentrations of 7.6 mg/kg of PCBs and 48 mg/kg of chlordane.

The three near-site samples (Figure 3-19) designated 024, 025, and 026, were reported to have total PCB concentrations of 39 mg/kg, 12 mg/kg, and ND, respectively.

The results for the PADER samples are summarized in Table 3-16.

3.4 AIR

3.4.1 Industrial Hygiene Surveys

Air sampling for PCBs, benzene, butyl acetate, ethyl acetate, methyl ethyl ketone, toluene, and xylene was conducted by the National Institute for Occupational Safety and Health (NIOSH) in 1977 as part of an "industry wide" study of industries using PCBs (NIOSH, 1977).

Twenty personal and six area air samples were collected for analysis of Aroclor 1242. The personal air samples ranged from a concentration of 9.5 ug/m^3 to 69.7 ug/m^3 while the area air samples ranged from 28.4 ug/m^3 to 56.7 ug/m^3. The 1977 Occupational Safety and Health Administration (OSHA) Standard was 1.0 ug/m^3 for Aroclor 1242.

Two personal air samples were collected for solvent analysis. One sample had a xylene concentration of 0.17 ppm and a toluene concentration of 0.60 ppm. The other sample, which was saturated, had a toluene concentration of 77.7 ppm. Benzene, butyl acetate, ethyl acetate, and methyl ethyl ketone were not detected. The OSHA standard for toluene was 200 ppm.

Another industrial hygiene monitoring program was conducted in 1986 (Rizzo, 1986) as part of the subsurface study conducted by Paul C. Rizzo Associates. At the time of this study, the manufacturing operations had been shut down and only the Materials and Manufacturing Technology Laboratory investigative and remedial programs were occurring at the site. Two samples were analyzed for PCBs and volatile organics (ethyl acetate, methyl ethyl ketone, toluene, 1,1,1-trichloroethane, trichloroethylene, and total xylenes); 13 samples were analyzed for PCBs; and six samples were analyzed for volatile organics.

PCBs were not detected in any sample. The detection limit ranged from 0.010 to 0.10 milligrams per cubic meter. Samples analyzed for volatile organics were ND at a detection limit of 0.050 ppm.

3.4.2 SRW Investigation of the Plant North Sector

As part of the environmental assessment of the buildings and property in the North Sector (Section 3.3.2), four indoor air samples were analyzed for total dust, inhalable dust, and total PCBs. PCBs were ND in all four samples (SRW, 1985).

3.5 BUILDINGS

3.5.1 South Sector

In 1982 to 1983, Westinghouse and its contractors performed extensive sampling during the demolition activities associated with the A, B, and C Buildings to determine PCB levels in material from the buildings. Samples were taken of floor sweepings, floor surfaces, concrete flooring, roofing materials, roof wood, beam and column surfaces, underside roof paint, rubble, and dust and air within the building (CHMR, 1987).

PCBs were found to be present in all materials tested and had penetrated short distances into porous surfaces such as concrete floors.

In 1983, top and bottom sections from seven concrete cores taken in the Y Building were analyzed by Westinghouse for PCBs (Westinghouse, 1984). Results from the top section

of the cores--defined as the limit of oil penetration into the concrete (generally one inch or less) ranged from ND (less than 1.0 mg/kg) to 250 mg/kg, while all samples from the bottom section were ND (Table 3-17).

3.5.2 Middle Sector

In 1985, wipe samples were taken from the top surface of machinery and equipment in the H and T Buildings in the Middle Sector where usage of PCBs was highest (CHMR, 1987).

The results showed individual PCB concentrations ranging from 1.5 to 210 ug/100 cm^2.

3.5.3 North Sector

In 1985, a study of PCB levels in several buildings in the North Sector of the plant was undertaken as part of the environmental assessment performed for Sawhill Tubular Division of Cyclops Corporation.

This study included scrape and wipe samples. Sampling was conducted in localized areas of the Z and R-T Building that were most likely to contain PCBs based on visual observations of oil stains, grease or dust. This sampling protocol was adopted because it would yield a worst-case scenario of potential future worker exposure to PCBs.

Nine scrape samples were taken in the Z Building and three wipe samples were taken in the R-T Building. Dusty and greasy surfaces from floors, platforms, ceilings, and equipment were intentionally sampled to locate worst-case levels (Clement, 1985). Sampling indicated that PCB-contaminated dust had settled on horizontal surfaces. The concentration of PCBs in these samples ranged from 1.3 to 190 mg/kg (Table 3-18).

Wipe samples were taken on vertical surfaces throughout the Z and R-T Buildings. Areas of one square foot were marked off and wiped with a hexane soaked rag. PCBs ranged from ND (less than 1.0) to 26 ug total PCBs/ft^2 (Table 3-19).

4.0 DATA EVALUATION

Section 2.0 of the FSP describes the setting of the site, the history of the facility, the nature of the operations, and the discharge and drainage systems of the plant. This framework encompasses the potential primary sources of contaminants and the more plausible pathways for contamination to enter the environment at the site and the potential for migration off site.

Section 3.0 of this FSP describes the results associated with contamination both on and off site obtained from sampling and investigative programs dating back to 1975. The next step in the development of the FSP is to evaluate the analytical data in a general sense and attempt to correlate what is known about the nature and extent of contamination to use of the contaminants. Direct correlation between detection and use/storage areas in itself is a useful tool in assessing migration, risk and subsequently remedial alternatives and the need for additional data. Absence of correlation in essence implies that the mere presence of contaminants may be considered a secondary source and subsequent assessment of migration, risk, remedial alternatives, and data needs will be considered accordingly.

In this section, the data of Section 3.0 will be evaluated in both a general sense and with respect to the use/storage information of Section 2.0.

4.1 DATA PERTAINING TO SITE CHARACTERISTICS

The general site stratigraphy is defined. The data from over 70 soil borings and/or monitoring wells is sufficient to characterize the local stratigraphy as being alluvial deposits over glacial till over bedrock. Furthermore, the findings are consistent with regional geologic interpretations available in the literature.

From a hydrogeologic standpoint, the characteristics of groundwater flow have been studied through a series of 50 on-site monitoring and/or observation wells and 18 immediately downgradient off-site monitoring wells. There is a water bearing zone in the alluvium and a water bearing zone in the bedrock with flows generally to the west and southwest toward the Shenango River. Additional specific data regarding in situ permeability may be required to screen potential remedial technologies and to develop and screen remedial alternatives.

4.2 SITE AND PLANT HISTORY

The information gathered and reported herein regarding the historic ownership of the facility and the processes and chemical use at the facility is based on a review of Westinghouse files and whatever could be learned from long-term Sharon Plant personnel both active and retired. Considering the plant was used for transformer production since 1922, even an employee with 40 years service represents a more than 25-year data gap.

4.3 NATURE AND EXTENT OF CONTAMINATION

An objective of the FSP is to characterize the nature and extent of contamination such that informed decisions can be made as to the level of risk presented by the site and the appropriate types of remedial response. All of the soil and groundwater investigations performed to date have been the result of a concern with PCBs. Consequently, the other primary contaminants identified from previous investigations, i.e., 1,2,4-trichlorobenzene, methyl ethyl ketone, toluene, xylene, trichloroethylene, and 1,1,1-trichloroethane may not be considered sufficient to serve as COI for the RI/FS process. The FSP through the implementation of the Phase IA and Phase IB sampling events was designed to identify the COI for the RI/FS.

The extent of contamination for those constituents previously studied may be summarized as follows by medium:

- **SURFACE WATER DISCHARGE/SHENANGO RIVER DATA**
  - Discharges of Aroclors 1242, 1254, and 1260 were detected in Westinghouse NPDES Outfalls 003 and 006 and the Clark Street Sewer prior to 1987 at levels over 1.0 ppb.
  - PCBs, particularly Aroclor 1260, were detected in sampled Shenango River Fish (carp, smallmouth bass, rock bass, largemouth bass).

- **GROUNDWATER**
  - Elevated levels of detectable analytes were found in seven areas of the plant as shown on Figure 3-9. Two areas fall within the South Sector, five in the Middle Sector and none in the North Sector.
  - PCB, 1,2,4-trichlorobenzene and oil and grease were the most frequently detected analytes.
  - NAPL were found in one well in the South Sector and three wells in the Middle Sector.
  - PCB Aroclor 1260 was detected off site at one monitoring well downgradient from the Middle Sector of the Westinghouse plant. PCB Aroclors 1242 and 1254 were detected in three other off-site wells in the same general area on single occasions. Finally, PCB Aroclor 1242 was detected in the initial sampling of one well between the plant and the Shenango River.
- **SOIL AND SEDIMENT**
  - Levels of detectable analytes were found in soil samples which correspond to six of the seven groundwater areas noted on Figure 3-9. Soil samples from one of the South Sector groundwater areas was ND.
  - Oil and grease were frequently observed in the South and Middle Sectors.
  - PCBs were detected in sediment samples taken from the East Silver Street manhole of the Wishart Court Interceptor and the Clark Street Sewer.
  - Soils underlying tanks which were excavated were found to have levels of contamination. These were remediated.
  - PADER collected and analyzed 22 off-site surface soil samples, 15 of which were ND for PCB.

- **AIR**
  - Samples taken during plant operations had detectable concentrations of PCBs, xylene, and toluene.
  - Samples taken since plant operations have ceased have all been ND for PCB.

4.4 CORRELATION TO USAGE AREAS

Chemical usage areas were summarized in Tables 2-2, 2-3, and 2-4 and depicted on Figures 2-13, 2-14, and 2-15. A correlation of these data with the data provided from previous studies can be made through a comparison of the aforementioned figures and Figures 3-12, 3-13, and 3-17. This comparison indicates the location of constituents detected in soil and groundwater correlate well with chemical use and storage, particularly in those cases where the usage or storage was in direct contact with a natural medium such as the case of underground tanks or along the railroad tracks. Consequently, the subjective risk assignments of Tables 2-2, 2-3, and 2-4, which are based on the nature of the chemical usage and available data, are credible and represent Westinghouse's current assessment of the situation.

For example, a plant vault may have been judged to have negligible risk because it is currently empty and because storage was above a concrete floor where leakage would have been observed. Similarly, a PCB usage area could have been judged to pose a negligible risk because samples from borings and wells located nearby were ND for PCB.

In light of the above, each source area has been re-evaluated on the basis of the data described in Section 3.0, and 14 areas have been judged, in the opinion of Westinghouse and its consultants, to have greater than negligible risk. These are summarized in Table 4-1 where, for each identified area, the possible contaminants, pathways of migration, subjective evaluation of risk to public health, potential remedial alternatives, and data requirements are provided.

5.0 RI/FS DATA REQUIREMENTS

Available site data have been presented in Section 3.0 including site source areas of contamination. These data were evaluated in Section 4.0. In this section the characteristics of the contaminants known to be present are discussed as well as the environmental pathways from the site and the potential receptors. Potential remedial alternatives are discussed and data gaps are identified for consideration during Phase I of the RI/FS.

5.1 CONTAMINANT CHARACTERISTICS

The primary contaminants identified from previous investigations of the site are:

- PCBs,
- Oil,
- 1,2,4-Trichlorobenzene,
- Trichloroethylene, and
- 1,1,1-Trichloroethane.

Characteristics of the compounds identified above are provided in the following paragraphs. It should be noted that the characteristics discussed do not address potential environmental effects. These environmental effects will be addressed for all COI after they have been identified in Phase I.

5.1.1 PCBs

Polychlorinated Biphenyls (PCBs) are chlorinated hydrocarbons which have been used as dielectric fluids in transformers. PCBs are designated by Aroclor number--higher numbers indicating a greater degree of chlorination. PCBs, as encountered at the site, are usually associated with a carrier such as mineral oil or trichlorobenzene. PCBs have a very low vapor pressure and low solubility in water. PCBs adsorb onto soils, and thus mobility of

PCBs is highly dependent on solvent carriers. It is reported that prolonged exposure to elevated concentrations of PCBs can cause liver damage, but no statistically significant link to cancer in humans has been found. PCBs can also cause dermatological symptoms which disappear if contact ceases.

While the USEPA has stated that PCBs, as a class, are probable human carcinogens, there are recent reviews of studies that have been performed on specific PCB mixtures with respect to their carcinogenicity. Specifically, an August 1987 review performed by the Division of Interdisciplinary Toxicology of the University of Arkansas (Harbison, James, and Roberts; 1987) for the Scientific Advisory Panel of the State of California made the following findings for specific PCB mixtures:

- Aroclor 1260 - There is sufficient evidence of limited human relevance for the carcinogenicity of Aroclor 1260 in animals. The human evidence for carcinogenicity of this compound is inadequate.

- Aroclor 1254 - There is inadequate evidence for the carcinogenicity of Aroclor 1254 in animals. The human evidence for carcinogenicity is negative but inadequate.

- Aroclor 1248 - There is no evidence/insufficient evidence for the carcinogenicity of Aroclor 1248 in animals. The human evidence for carcinogenicity is negative but inadequate.

- Aroclor 1242 - There is either no evidence or insufficient evidence for the carcinogenicity of Aroclor 1242 in animals. The human evidence for carcinogenicity is negative but inadequate.

5.1.2 1,2,4-Trichlorobenzene

Chlorinated benzenes are a group of cyclic aromatic compounds in which one to six hydrogen atoms of a benzene ring have been replaced by up to six chlorine substitutes. Physical properties include low water solubility, low flammability, moderate to high

octanol/water partition coefficients, and low to moderate vapor pressures. They are chemically unreactive and exist as liquids or solids at environmental conditions. Typical applications are as solvents or electrical equipment insulators.

Chlorobenzenes have an intermediate to high potential for adsorption onto soils. Once adsorbed, their movement is dependent on soil type and the nature of any solvent or leachate present. In the absence of a solvent, transport into adjacent soil and the atmosphere is likely to result from vapor phase diffusion.

Human exposure to 1,2,4-trichlorobenzene at three to five ppm causes eye and respiratory irritation. The only other data on human exposure are individual case reports of a plastic anemia of persons exposed occupationally or domestically.

5.1.3 Trichloroethylene

Trichloroethylene is widely used as an industrial solvent in degreasing and extraction processes. Trichloroethylene is very soluble in water, and adsorption to soil is relatively low. Bioaccumulation of trichloroethylene is low, and there is no evidence for significant accumulation in human tissue.

Overexposure to elevated levels of trichloroethylene vapor produces central nervous system depression resulting in mental confusion, incoordination and insomnia in humans. Low and high doses of trichloroethylene fed to mice resulted in increased incidence of hepatocellular carcinomas. In the same study, rats showed no significant increase in cancer incidence under comparable experimental procedures (National Cancer Institute, 1977).

5.1.4 1,1,1-Trichloroethane

1,1,1-trichloroethane has wide usage as an industrial solvent since it has many of the solvent and volatility characteristics of carbon tetrachloride. The compound is very soluble in water and adsorption to soil is low. Bioaccumulation is thought not to be an important transport mechanism.

Overexposure to high levels of 1,1,1-trichloroethane vapor produces central nervous system depression.

5.2 PATHWAYS AND RECEPTORS

For the source areas identified at the site (Table 4-1), two primary potential environmental pathways have been identified. These are 1) surface water runoff through the storm sewers which drain the site, and 2) movement of groundwater in the alluvium toward the Shenango River. The possibility of direct contact with potential contaminants is somewhat limited as most of the source material is located in the subsurface and access to the site is limited. There is limited potential for migration of contaminants in the air. Air monitoring of the site has never indicated detectable levels of contaminants known to be present on the site.

The storm sewers which drain the site discharge to the Shenango River, thus potential receptors will be linked to ingestion of river water or consumption of fish from the river. Similarly, groundwater flow in the alluvium is toward the Shenango River. There is no conclusive evidence that groundwater contamination at the site has reached the bedrock aquifers which underlie the glacial till, as the most recent samples from all bedrock monitoring wells were ND for the analytes known to be present at the site. There are no known wells in the alluvium in the area downgradient from the site.

Potential receptors include individuals who may ingest contaminated soils, sediment, or river water; consume fish caught in the river; come into direct contact with contaminated surface water, soils, or sediment; or breathe contaminated air. Aquatic and terrestrial biota may also be considered potential environmental receptors.

5.3 POTENTIAL REMEDIAL ALTERNATIVES

5.3.1 ARARs And To Be Considered (TBC) Information

The Consent Order requires the use of CERCLA guidance documents which state that the selected remedy which will be utilized to remediate the site be consistent with applicable or relevant and appropriate requirements (ARARs). These requirements can be broken down into three categories:

- Location Specific,
- Action Specific, and
- Chemical Specific.

The most relevant of these types of ARARs for purposes of assessing remedial alternatives, are chemical specific ARARs. Potential chemical specific ARARs may include Maximum Contaminant Levels (MCLs), and certain state standards. In addition, compliance with certain requirements of the NPDES process under the Clean Water Act and Pennsylvania's Clean Streams Law may be considerations for certain remedial alternatives.

It is noted that a preliminary identification of potential ARARs and TBC information at this stage will assist in initially identifying remedial alternatives and is useful for initiating communications with the support agency to facilitate the identification of ARARs. Furthermore, early identification of potential ARARs will allow better planning of field activities. At the same time, it is recognized that because of the iterative nature of the RI/FS process, ARAR identification continues throughout the RI/FS as a better understanding is gained of site conditions, site contaminants, and remedial action alternatives. Consequently, during the feasibility study process, the ARARs applicable to each alternative will be determined. The potential requirements for compliance with the ARARs will be assessed along with cost, risk, etc., in the evaluation process.

A preliminary list of ARARs is provided in Table 5-1. A preliminary list of TBC criteria is provided in Table 5-2. The tabulation of laws and regulations provided in Table 5-3 will be considered in the development of ARARs.

5.3.2 Preliminary Remedial Action Objectives

Preliminary remedial action objectives have been identified to eliminate the risk to human health and the environment based on the information known about the identified source areas at the site (Table 4-1). These objectives are:

- Reduce the potential for surface movement of contaminants.
- Remove/Isolate concentrated subsurface source area contaminants.
- Reduce the potential for groundwater migration of contaminants.

5.3.3 Preliminary Remedial Action Alternatives

Based on the information known about the site, some remedial alternatives appear to have application to the site (Table 4-1). These are discussed in the following paragraphs. A comprehensive evaluation of remedial alternatives will be performed as part of the FS.

5.3.3.1 Cap/Cover

This approach might be used in areas where contamination is present in surface soils. As most of the site is paved, this would only apply to a limited portion of the site.

5.3.3.2 Removal/Disposal

This remedial measure would be employed in areas where contaminants lie near the surface. It could be an alternative to cap/cover, as discussed above.

5.3.3.3 Recovery/Treatment

Recovery/Treatment appears to have application at many of the source areas identified at the site. This approach might be employed for floating and heavier-than-water materials encountered in several areas of the site. Treatment in these cases might involve off-site incineration.

Recovery/Treatment could also be employed in areas where degreasers have been detected at the site. This would most likely involve installation of recovery wells and installation of air strippers to remove any volatile organics.

5.3.3.4 Slurry Wall

To reduce the potential for migration of contaminants in groundwater, a slurry wall might be constructed in the alluvium and keyed into the glacial till which underlies the site. This alternative may comprise a series of walls if discrete source areas are confirmed.

5.3.3.5 No-Action Alternative

In some cases no remedial action may be required and monitoring of site conditions may be sufficient.

5.4 DATA GAPS

Data requirements for each identified source area at the site have been discussed in Section 4.4. However, a substantial body of data from the site already exists, as described in Sections 2.0 and 3.0.

It is the intent of Westinghouse to perform the RI/FS using a phased approach. Thus, the early portion of the project will be directed toward providing the most essential data based on the current knowledge of the site. The data gaps which should be filled in the first phase of the RI/FS are discussed in the following paragraphs.

5.4.1 Determination of COI

All previous analyses of samples from the site have been for a limited list of parameters comprising PCBs and other compounds for which site usage was known. Samples should be obtained from identified areas of contamination or from downgradient monitoring wells, and TCL analysis should be performed on these samples. COI will be identified from the results of these analyses.

5.4.2 Collection of Existing Data Relative to Contaminant Pathways

Available data relative to aquifer performance tests and recovery wells downgradient from the site will be obtained. Available construction details and performance data for the Grafo Colloids bedrock well will also be obtained. Additional data on the sewers which receive drainage from the site will be gathered, if available.

5.4.3 Evaluation of Surface Contamination

5.4.3.1 West Embankment - South Sector

The embankment east of the remediated moat has surface soils which appear to be contaminated. Surface sampling should be performed in this area to allow an evaluation of the levels of any COI which may be present.

5.4.3.2 West Side of Middle Sector

Subsurface contamination has been identified in this area but no surface sampling has been performed. Samples from this area should be analyzed for COI.

5.4.4 Evaluation of Contamination in Alluvium

Additional monitoring wells should be installed in the alluvium downgradient from the areas where contaminants have already been detected. COI analysis should be performed on samples from the wells.

5.4.5 Evaluation of Conditions Along Contaminant Pathways

Samples for COI analysis should be obtained from the sewers which drain the site and from the Shenango River near the sewer outfalls.

5.4.6 Additional Investigations

As noted in Section 5.4, Westinghouse intends to perform the RI/FS in a phased approach. Upon completion of Phase I, the data analyses will serve as the basis for the subsequent investigation phases either as part of the RI/FS, as interim remedial measures, or part of remedial design. The development of these additional investigation phases will include the following studies at the appropriate time:

- A study of the impact of the site on sewers, the Shenango River, and Pine Run. The study will include at least an evaluation of surface water, sediment, and biota for site-related compounds upstream of, adjacent to, and downstream of the site.

- An ecological evaluation and description of the aquatic and terrestrial biological communities in the site vicinity. The study will be conducted as a prelude to preparing an endangerment assessment. Part of the endangerment assessment will include an identification of potential (biological) receptors and potentially affected ecosystems, wetlands and floodplains delineation, identification of the potential toxicity and impacts of site-related compounds, and fate of site-related compounds (i.e., bioaccumulation and biomagnification).

- A detailed analysis and description of the potential target human population in the site vicinity. The study will be conducted as a prelude to preparing an endangerment assessment. The demographics of the population in the site vicinity will be determined. Uses and frequency of use of the Shenango River adjacent to and downstream of the site will be determined. Potentially sensitive subpopulations which may be at a greater risk than the general public will be studied.

- Additional borings (and analysis of solid and aqueous samples) within and beyond the areas of contamination.

- Pilot floating oil recovery program (interim measure).

- Aquifer testing, permeability and porosity measurements.

- Collection of empirical data for parameters (i.e., fractional organic carbon content, adsorption coefficients, etc.). The data will be collected for each appropriate subsurface unit in support of potential modeling efforts.

- An assessment of potential site impact on human welfare. The study will be performed through consideration of historic and archaeological sites; wild, scenic or recreational rivers; park and forest land; game lands and refuges; wetlands and mineral resource areas.

5.5 DATA QUALITY OBJECTIVES

Data quality objectives are provided in Section 4.0 of the QAPP.

6.0 PHASE I FIELD SAMPLING PROGRAM

To provide data to fill the identified data gaps and to meet the objectives of the RI/FS, the field sampling program presented in this section has been developed. Phase I of this program is detailed herein. A Phase II investigation may be undertaken once the Phase I data have been obtained and analyzed. The scope of any subsequent phases of the RI/FS will be detailed in separate sampling plans.

The Phase I field investigation has been divided into two parts. Phase IA includes measurement of water surface and non-aqueous fluid levels, obtaining samples for Target Compound List (TCL) analysis, and collecting data relative to nearby wells and sewers. For this investigation, TCL analysis shall be considered to include analysis for total recoverable petroleum hydrocarbons. In this phase, the COI will be defined. Phase IB includes monitoring well installation and sampling for COI analysis, as well as surface soil, sewer, and river sediment sampling for COI analysis.

6.1 PHASE IA

6.1.1 Monitoring of Water and Non-Aqueous Fluid Levels in New and Existing Wells

Water levels in new and existing monitoring wells associated with the site investigation will be measured on a quarterly basis for the duration of the RI. An interface-type probe will be used to determine if any non-aqueous liquids are present.

6.1.2 Sampling of Existing Monitoring Wells for TCL Analysis

Because of the extensive sampling and analysis already performed at the site, areas where contaminants are present are already known and have been demonstrated to correlate with chemical use, storage, and transfer areas. In Phase IA water samples will be obtained from some wells in or downgradient from these areas for TCL analysis. The wells proposed for sampling for TCL analysis are:

- S-5,
- S-12,
- M-5,
- M-11-A,
- M-16,
- N-1, and
- N-6-A.

In addition, a sample of floating oil will be obtained from Wells S-4 and M-2 and a sample of heavier-than-water liquid will be obtained from Well M-10 for TCL analysis. Non-aqueous phase liquids will be analyzed for dioxins and furans. If these compounds are detected, EPA Method 8280 will be employed to determine if 2,3,7,8-TCDD is present. The locations of the wells indicated above are shown on Figure 6-1.

6.1.3 Surface Soil Sampling for TCL Analysis

One soil sample from the embankment east of the moat will be obtained for TCL analysis. The sample will be selected on the basis of a visual appearance of contamination. A surface soil sample from the tank farm area (near Well M-11) will also be obtained for TCL analysis on the same basis. The TCL analysis for these samples will include analysis for dioxins and furans. If these compounds are detected, EPA Method 8280 will be employed to determine if 2,3,7,8-TCDD is present. The results of analysis of these samples along with the results from analysis of the well samples described previously will be used to establish COI parameters for the site.

6.1.4 Collection of Well Data

Recovery wells have reportedly been installed at the Sawhill Tubular Division plant located to the west of the site. These wells were installed as part of a remediation program at that site. An aquifer performance test was reportedly performed during this effort. As part of the RI/FS existing available data related to the aquifer performance test and any additional data related to the operation of the recovery wells will be obtained and reviewed.

Also, PADER will be contacted to solicit any additional information related to a reported production well owned by the Grafo Colloids Company. The desired data include the formation screened, details of construction, and pumping rate.

6.1.5 Collection of Sewer Data

Additional data will be obtained relative to the current condition of storm sewers which drain the site. Specifically, the sewer which received flows from the north hot well (Outfall 006) will be investigated. Although the Outfall 006 flows have been rerouted to a newly constructed sewer which connects to the Wishart Court Interceptor, the old sewer line remains in place and may provide a pathway for site contaminants. Also, the sources of inflow to the drainage ditch which feeds the Franklin Street Sewer will be determined.

The locations of storm sewers which currently or formerly received inflows from the site are shown on Figure 3-6. The extent of site sewer lines and underground product lines will be evaluated to determine if they provide potential migration pathways from the site. The results of any Infiltration and Inflow (I/I) studies on the Sharon sanitary sewers will be obtained, if available.

6.1.6 Preparation of Site Topographic Map

A topographic map of the site will be prepared. The area of coverage will include all the land surface between the plant and the Shenango River. The contour interval will be two feet.

6.1.7 Collection of Data for Drain Along Sharpsville Avenue

Design and/or construction drawings for the drain installed along Sharpsville Avenue will be obtained to determine the effect of this drain on groundwater levels in the alluvium.

6.1.8 Study of the Impact of the Site on Storm Sewers, the Shenango River, and Pine Run

A study of stream flow and sedimentation patterns, including sewer sediment deposition areas, will be conducted. Aerial photographs and other historical data will be utilized to the extent possible. Information from the RI being performed at the River Road Site will also be reviewed with respect to the Shenango River. A reconnaissance will be made in the vicinity of site discharges to Pine Run and the Shenango River. The objective of this study will be to determine potential sampling points for subsequent phases of the investigation.

6.1.9 Summary of Phase IA Sampling and Analysis

As of the time issuance of this Field Sampling Plan Revision 4 (July 1992), Phase IA sampling and analysis have been completed. The samples collected for analysis in Phase IA are listed in Table 6-1. The results of the Phase IA sampling and analysis program are summarized in Appendix A.

6.2 PHASE IB

6.2.1 Installation and Sampling of Monitoring Wells

To determine if contaminants in the alluvium have migrated from the site, monitoring wells will be installed to the west of the site. Four locations for new wells will be near monitoring wells which were previously installed on the Sawhill property. These existing wells are MW-3A, MW-14, MW-15, and MW-16 (Figure 6-1). Available well construction data for these wells are provided in Table 6-2. Because the existing wells apparently screen the lower fill and upper alluvium, new wells will be installed adjacent to the existing wells. The new monitoring wells will be screened over the full thickness of the alluvium. Samples obtained from the new wells will be analyzed for COI parameters.

Two additional monitoring well locations are proposed west of the Conrail tracks directly opposite site Monitoring Wells S-2 and S-5 and Wells S-8 and S-10 (Figure 6-1). These wells will be screened over the full thickness of the alluvium. Laboratory analysis will be for COI parameters.

The borings in which the monitoring wells are installed will be sampled with a split-barrel sampler and the samples will be logged. Soil samples will be selected for laboratory analysis (COI parameters) based on screening criteria defined in the QAPP (Section 5.2.1).

Phase IB well installations will be intended to monitor both the top of the saturated alluvium and the alluvium till interface. Where the alluvium is approximately 20-feet thick or greater, a pair of wells will be installed with one intended to monitor the top portion of the saturated alluvium and one intended to monitor the bottom of the saturated alluvium._Samples will also be collected from each monitoring well installed during the Comprehensive Subsurface Study (Rizzo, 1986), and these samples will be analyzed for COI parameters. The COI for Phase IB groundwater samples are listed in Tables 6-3 and 6-4.

6.2.2 Surface Soil Sampling for COI Analysis

Six soil samples will be obtained from the embankment east of the moat and spill areas for COI analysis. Approximate plan locations of these samples are indicated on Figure 6-2. The sample located farthest to the northwest will be from some stained soil previously identified by PADER.

Six soil samples will be obtained from the area between the Middle Sector and the Conrail tracks (Figure 6-3). These samples will be composited into two samples which will be analyzed for COI parameters. The COI for Phase IB surface soil samples are listed in Table 6-3.

6.2.3 Sewer Sampling

These are three sewer lines which currently receive surface drainage from the site. These are:

- Clark Street Sewer,
- Franklin Street Sewer, and
- Wishart Court Interceptor.

The sewer lines are shown on Figure 3-6.

A sediment and water sample will be obtained at the upstream and downstream end of each sewer line. The upstream end will be the point at which site contaminants are most likely to enter the sewer. The downstream end will be the point at which the sewer discharges to the Shenango River.

The water and sediment samples will be analyzed for COI parameters. The COI for Phase IB surface water and sediment are listed in Table 6-3.

6.2.4 River Sediment Sampling

River sediment samples will be obtained at the discharge points for the three sewers which currently drain the site and at the discharge point for the sewer which formerly received flows from Outfall 006. Sediment samples will be obtained at depth intervals of three to nine inches and 15 to 21 inches. The sediment samples will be analyzed for COI parameters. The COI for river sediments are shown in Table 6-3.

6.3 Summary Of Phase IB Sampling And Analysis

As indicated in Tables 6-3 and 6-4, Phase IB COI analysis will be performed on an estimated 111 samples: approximately 8 soil samples from borings, 65 samples from monitoring wells, 8 surface soil samples, 6 water samples from sewers, 6 sediment samples from sewers, and 8 sediment samples from the Shenango River.

Four subsurface soil samples from the moat area will also be analyzed for TCL/TAL parameters as part of the Phase IB investigation.

TABLES

TABLES

TABLE 2-1

HISTORICAL PLANT DISCHARGES TO MOAT

POINT NUMBER(1)	SIZE AND MATERIAL	DISTANCE NORTH FROM 003 FLUME(2) (feet)	FLOW CONTRIBUTOR
WC4	12" Concrete	175	A-B Building Downspouts and Floor Drains
WC5	10" Cast Iron	20	B-Building Downspouts
WC6	6" Cast Iron	40	B-Building - Unknown Location
WC7	6" Tile	41	B-Building - Unknown Location
WC8	18" Tile	63	B-Building - Sanitary Sewer Overflow
WC9	4" Cast Iron	92	B-Building - Unknown Location
WC10	18" Tile	150	A-B Building Downspouts, Floor Drains and Yard Drain
WC11	1" Steel	155	B-Building - Unknown Location
WC12	8" Tile	168	B-Building - Unknown Location
WC13	12" Cast Iron	224	B-Building - Unknown Location
WC14	6" Cast Iron	295	B-Building - Former Vacuum Pump Drain
WC15	4" Cast Iron	296	B-Building - Unknown Location
WC16	6" Tile	384	B-Building - Storm Sewer Overflow Relief From Downspouts, Floor Drains
WC17	15" Concrete	495	B-Building - Storm Sewer Overflow Relief From Downspouts, Floor Drains
WC18	6" Tile	510	B-Building - Unknown Location
WC19	24" Concrete	625	South Hot Well Overflow From Downspouts, Floor Drains, Cooling Water and Yard Drains

TABLE 2-1
(Continued)

POINT NUMBER(1)	SIZE AND MATERIAL	DISTANCE NORTH FROM 003 FLUME(2) (feet)	FLOW CONTRIBUTOR
WC20	4" Tile	668	Form S-Building - Unknown Location
WC21	10" Asbestos Concrete	755	Powerhouse - Unknown Location
WC22	6" Tile	756	Powerhouse - Downspouts
WC23	8" Tile	764	Powerhouse - Trench Drain
WC24	6" Tile	796	Powerhouse - Downspouts
WC25	10" Concrete	815	Powerhouse - Unknown Location
WC26	6" Cast Iron	855	Powerhouse - Unknown Location
WC27	6" Cast Iron	856	Powerhouse - Unknown Location
WC28	Size Unknown (End of Pipe Buried)	860	South Cistern Discharge From Powerhouse Sumps, Lamella Discharge and Sprinkler Tank Overflow
WC29	12" Tile	893	Powerhouse - Unknown Location
WC30	12" Cast Iron	895	North Cistern Overflow From Fire Room Sump

1. See Figure 2-4.
2. Distance measured was 175 feet south of 003 flume.

TABLE 2-2

HISTORICAL AREAS OF CHEMICAL USE AND STORAGE
SOUTH SECTOR

AREA NUMBER[1]	DESCRIPTION	POSSIBLE CONTAMINANTS	STATUS	POTENTIAL RISK[2]
1	Paint Vault	Metals, Solvents	Empty	Negligible, paints and solvents were stored on racks and/or shelves above concrete floor.
2	PCB Use Area, Y-Building	PCBs, Trichlorobenzene	Building Empty	Negligible, only minor levels of contaminants found in Boring/Well S-8.
3	Moat	PCBs, Trichlorobenzene	Remediated	Negligible, moat has been remediated.
4	West Embankment	PCBs	Access Restricted	Low, potential transport is limited and access to area is restricted.
5	Powerhouse	PCBs, Trichlorobenzene	Remediated	Low, trichlorobenzene detected in Well S-12.
6	Chemical Storage Area	Solvents	Building Razed	Negligible, chemicals were in new containers on concrete floor.
7	Degreaser Use Area	Solvents	Building Razed	Low, leakage may have occurred. Trichloroethylene has been detected downgradient in Well S-10.
8	Vacuum Impregnating Gum Tank	Gum, Solvents	Removed, Building Razed	Negligible, material was highly viscous.
9	Buried Inerteen Tank	PCBs, Solvents, Oil	Inground, Filled with Grout Slurry	Negligible contents immobilized, no PCBs, trichlorobenzene, or other solvents detected in soil or water sample from Boring/Well S-7.

TABLE 2-2
(Continued)

AREA NUMBER[1]	DESCRIPTION	POSSIBLE CONTAMINANTS	STATUS	POTENTIAL RISK[2]
10	Paint Vault	Metals, Solvents	Empty	Negligible, paints and solvents were stored on racks and/or shelves above concrete floor.
11	Drum Storage Area	Unknown	Empty	Low, potential leakage of stored materials.
12	Varnish Dip Tank	Solvents	Removed	Negligible, on second floor of building, leakage would have been easily detected.
13	Storage Tank	Unknown	Removed	Negligible, no chemical tanks known in this part of site.
14	Rack Storage Area	Various Chemicals	Empty	Negligible, storage was temporary on racks above floor.
15	Varnish Dip Tank and Dump Tank	Solvents	Removed	Negligible, varnish coating in tanks would make leakage unlikely, spills would have been on floor and would have been observed and cleaned up.
16	Buried Oil Tank	PCBs, Solvents, Oil	Inground, Filled with Grout Slurry	Negligible, contents immobilized, no PCBs, trichlorobenzene, or other solvents detected in soil or water sample from Boring/Well S-7.
17	Varnish Dip Tank	Solvents	Removed	Negligible, varnish coating in tank would make leakage unlikely. Spills would have been on concrete floor and would have been observed and cleaned up.

TABLE 2-2
(Continued)

AREA NUMBER[1]	DESCRIPTION	POSSIBLE CONTAMINANTS	STATUS	POTENTIAL RISK[2]
18	Varnish Dip Tank	Solvents	Removed	Negligible, varnish coating in tank would make leakage unlikely. Spills would have been on concrete floor and would have been observed and cleaned up.
19	Varnish Dip Tank	Solvents	Removed	Negligible, varnish coating in tank would make leakage unlikely. Spills would have been on concrete floor and would have been observed and cleaned up.
20	PCB Use Area	PCBs, Trichlorobenzene	Building Razed	Low, PCBs detected in Well S-6.
21	Paint Vault	Metals, Solvents	Empty	Negligible, paints and solvents were stored on racks and/or shelves above concrete floor.
22	PCB Use Area	PCBs, Trichlorobenzene	Building Empty	Low, PCBs and trichlorobenzene found in floating oil and groundwater.

1. See Figure 2-13 for plan locations of areas.
2. Risk evaluation is subjective, is based on results of previous analyses which were for analytes associated with the site, and represent Westinghouse's opinion.

TABLE 2-3

HISTORICAL AREAS OF CHEMICAL USE AND STORAGE
MIDDLE SECTOR

AREA NUMBER[1]	DESCRIPTION	POSSIBLE CONTAMINANTS	STATUS	POTENTIAL RISK[3]
1	Railroad tracks	PCBs, Trichlorobenzene	Tracks Removed	Low, PCBs and trichlorobenzene were detected in Borings/Wells M-1 and M-5.
2	Impregnating Tanks	Solvents	Removed	Negligible, material in tanks was highly viscous.
3	Tank Farm Area	PCBs, Oil, Trichlorobenzene, Cyanide	Five oil tanks removed, two filled with sand, one Inerteen tank removed, all plant equipment removed	Low to medium, PCBs and trichlorobenzene were detected in borings/wells in the vicinity. Floating oil and a heavier-than-water liquid was also detected.
4	Neutralization Facility	Metals, Cyanide	Not Operational, Cyanide Tanks Removed	Low, presence of metals and cyanide unknown.
5	Degreaser/Cleaner Area	Metals, Solvents, Acid	Building Razed	Low, leakage may have occurred. Trichloroethylene was detected in nearby Wells M-16 and M-17.
6	Paint Vault	Metals, Solvents, Phosphatizers	Removed	Negligible, materials were stored on racks and/or shelves above concrete floor.
7	Rack Storage Area	Various Chemicals	Removed	Negligible, storage was temporary on racks above floor.

TABLE 2-3
(Continued)

AREA NUMBER[1]	DESCRIPTION	POSSIBLE CONTAMINANTS	STATUS	POTENTIAL RISK[3]
8	Paint Vault	Metals, Solvents	Empty	Negligible, paints and solvents were stored on racks and/or shelves above concrete floor.
9	Dump Tank Area	PCBs, Trichlorobenzene	Tanks Removed, Excavation Backfilled with Clean Soil	Negligible, only low levels of analytes detected in excavation.
10	Solvent Tank Area	PCBs	Tanks Removed Excavation Open	Low, PCBs were detected in soil under tanks and in floating oil in downgradient Well M-2.
11	Flammable Liquids Storage Vault	Solvents	Empty	Negligible, materials were stored on racks sand/or shelves above concrete floor.
12	Varnish Dip Tank	Solvents	Removed	Negligible, varnish coating in tank would make leakage unlikely. Spills would have been on concrete floor and would have been observed and cleaned up.
13	PCB Use Area	PCBs, Trichlorobenzene	Building Empty	Negligible, no significant detection of analytes in adjacent Boring/Well M-6.
14	H-80 Pit	PCBs, Trichlorobenzene	Pit Cleaned Out	Negligible, no significant detection of analytes in downgradient Boring/Well M-13.

TABLE 2-3
(Continued)

AREA NUMBER[1]	DESCRIPTION	POSSIBLE CONTAMINANTS	STATUS	POTENTIAL RISK[3]
15	PCB Use Area	PCBs, Trichlorobenzene	Building Empty	Low, PCBs and trichlorobenzene were detected in downgradient Boring/Well M-15
16	Gasoline Tank Area	Toluene, Xylenes	Tank Removed, Excavation Backfilled with Clean Soil	Negligible, no significant detection of analytes in tank excavation.
17	Paint Vault	Metals, Solvents	Empty	Negligible, paints and solvents were stored on racks and/or shelves above concrete floor.
18	Chemical Storage Area	Various Chemicals	Active[2]	Negligible, chemical are in new containers and are stored in trays to catch any leakage.
19	Paint Vault	Metals, Solvents	Active[2]	Negligible, paints and solvents are stored on shelves above concrete floor.
20	Silicon Varnish Storage Tank	Solvents	Removed	Negligible, varnish coating in tanks would make leakage unlikely. Spills would have been on concrete floor and would have been observed and cleaned up.
21	Varnish Storage Tank	Solvents	Empty	Negligible, varnish coating in tanks would make leakage unlikely. Spills would have been on concrete floor and would have been observed and cleaned up.

TABLE 2-3
(Continued)

AREA NUMBER[1]	DESCRIPTION	POSSIBLE CONTAMINANTS	STATUS	POTENTIAL RISK[3]
22	Dump Tank	Solvents	Empty	Negligible, varnish coating in tanks would make leakage unlikely. Spills would have been on concrete floor and would have been observed and cleaned up. Dump tank was only used in emergency situations.
23	Varnish Dip Tank	Solvents	Empty	Negligible, varnish coating in tanks would make leakage unlikely. Spills would have been on concrete floor and would have been observed and cleaned up.
24	Flammable Liquid Storage Vault	Solvents	Empty	Negligible, materials were stored on racks and/or shelves above concrete floor.
25	PCB Use Area	PCBs, Trichlorobenzene	Building Empty	Negligible, no significant detection of analytes in downgradient Boring/Well M-8
26	PCB Use Area	PCBs, Trichlorobenzene	Building Empty	Negligible, no significant detection of analytes in downgradient Boring/Well M-14.
27	Paint Vault	Metals, Solvents	Empty	Negligible, materials were stored on racks and/or shelves above concrete floor.

1. See Figure 2-14 for plan location of areas.
2. These facilities are part of Westinghouse Materials and Manufacturing Technology Laboratory which is still in operation.
3. Risk evaluation is subjective, is based on results of previous analyses which were for analytes associated with the site, and represent Westinghouse's opinion.

TABLE 2-4

HISTORICAL AREAS OF CHEMICAL USE AND STORAGE
NORTH SECTOR

AREA NUMBER[1]	DESCRIPTION	POSSIBLE CONTAMINANTS	STATUS	POTENTIAL RISK[2]
1	Battery Storage Area	Metals, Acid	Empty	Negligible, leaking batteries were disposed of.
2	Steam Cleaning Pit	Oil, Grease	Removed	Negligible, cleaning operation was for removing oil and grease.
3	Degreaser Use Area	Solvents	Removed	Low, leakage may have occurred. 1,1,1-trichloroethane has been detected downgradient in Well N-1.
4	Sump	Metals, Acid	Cleaned	Negligible, sump drained to neutralization plant. Metallic composition primarily copper.
5	Varnish Dip Tank	Solvents	Removed	Negligible, varnish coating in tank would make leakage unlikely. Spills would have been on concrete floor and would have been observed and cleaned up.
6	Paint Storage Area	Metals, Solvents	Removed	Negligible, storage was on shelves above concrete floor.
7	Paint Storage Area	Metals, Solvents	Removed	Negligible, storage was on shelves above concrete floor.
8	Paint Vault	Metals, Solvents	Empty	Negligible, paints and solvents were stored on racks and/or shelves above concrete floor.

TABLE 2-4
(Continued)

AREA NUMBER[1]	DESCRIPTION	POSSIBLE CONTAMINANTS	STATUS	POTENTIAL RISK[2]
9	Phosphatizing Tank	Metals, Phosphates	Removed	Negligible, metals were of low toxicity. Phosphates drained to sump and then to neutralization plant.
10	Surface Soil	PCBs	Access Restricted	Low, transport is limited and access to area restricted to Sawhill employees.

1. See Figure 2-15 for plan location of areas.
2. Risk evaluation is subjective, is based on results of previous analyses which were for analytes associated with the site, and represent Westinghouse's opinion.

TABLE 3-1

PLANT TRIBUTARIES TO HISTORICAL NPDES OUTFALLS

NPDES PERMIT NO.	PIPE NO.	UPSTREAM SOURCES	DISCHARGE LOCATION
001	N/A	Yard Drains Floor Drains Down Spouts	Wishart St. Storm Sewer To Pine Run to Shenango River
002	N/A	Down Spouts	36-inch Storm Sewer to Pine Run to Shenango River
003	1	Down Spouts Pit Drain	36-inch Storm Sewer to Pine Run to Shenango River
	2	Unknown	
	3	Unknown	
	4	Floor Drains (A/B Building)	
	5	Unknown	
	6	Yard Drains Floor Drains Down Spouts	
	7	Capped Water Line (Leaking)	
	8	Unknown	
	9	Unknown	
	10	Drain (B Building)	
	11	Former Vacuum Pump	
	12	Storm Relief Down Spouts Floor Drains	
	13	Storm Relief Down Spouts Floor Drains	
	14	Unknown	
	15	S. Hotwell Overflow Yard Drains Down Spouts Air Conditioners Cooling Water	
	16	Down Spout (abandoned)	
	17	Unknown	
	18	Coal Bin Drain	
	19	Yard Drain (trench)	

TABLE 3-1
(Continued)

NPDES PERMIT NO.	PIPE NO.	UPSTREAM SOURCES	DISCHARGE LOCATION
003 Cont'd	20	Coal Crusher Sump Overflow	
	21	Powerhouse Sump Overflow	
	22	Unknown	
	23	Overflow from River Water Cistern (Plugged)	
	24	Fly Ash Cistern Discharge	
	25	Unknown	
	26	Unknown	
104	N/A	Down Spouts	Ditch to Storm Sewer to Shenango River
204	N/A	Floor Drains Down Spouts	Ditch to Storm Sewer to Shenango River
304	N/A	Yard Drain Down Spouts	Ditch to Storm Sewer to Shenango River
005	N/A	French Drain (Z Bldg)	Clark Street Storm Sewer
006	27	Floor Drains Down Spouts Oil/Water Separator Cooling Water Air Conditioner	Shenango River or Recirculated Cooling Water System
	28	Floor Drains Yard Drains Down Spouts Air Conditioners Cooling Water	Shenango River or Recirculated Cooling Water System
	29	Cold Well Overflow Recirculator Water Pump Backwash	Shenango River
007	N/A	Metal Cleaning Operation Copper D.P. Operation	Clark Street Storm Sewer

TABLE 3-1
(Continued)

NPDES PERMIT NO.	PIPE NO.	UPSTREAM SOURCES	DISCHARGE LOCATION
008	N/A	Cooling Water Air Conditioners Down Spouts Floor Drains	Clark Street Storm Sewer
109	N/A	Non-Contact Cooling Water Down Spouts Floor Drains	Clark Street Storm Sewer
209	N/A	Transformer Cooling Water	Clark Street Storm Sewer
309	N/A	Transformer Cooling Water	Clark Street Storm Sewer
010		Cooling Water Maintenance Bldg., Oil/Water Separator Yard Drains Down Spout	Clark Street Storm Sewer
012		Cooling Water Down Spout Floor Drains	Clark Street Storm Sewer
013		Cooling Water Down Spouts Floor Drains	Clark Street Storm Sewer

TABLE 3-2

HISTORICAL NPDES PERMIT DISCHARGE LIMITS(1)

PERMITTED OUTFALL NUMBER	EFFLUENT CHARACTERISTICS (lbs/day)	DISCHARGE LIMITS MONTHLY AVERAGE	DAILY MAXIMUM	MONTHLY AVERAGE (mg/l)	DAILY MAXIMUM (mg/l)	INSTANT MAXIMUM (mg/l)
001	Flow	N/A	N/A	N/A	N/A	N/A
	TSS	N/A	N/A	N/A	N/A	N/A
	O&G	N/A	N/A	N/A	N/A	N/A
	pH	N/A	N/A	N/A	N/A	N/A
002	Flow	N/A	N/A	N/A	N/A	N/A
	TSS	N/A	N/A	N/A	N/A	N/A
	O&G	N/A	N/A	N/A	N/A	N/A
	pH	N/A	N/A	N/A	N/A	N/A
003	Flow	N/A	N/A	N/A	N/A	N/A
	TSS	N/A	N/A	N/A	N/A	N/A
	O&G	N/A	N/A	N/A	N/A	N/A
	Temperature	N/A	N/A	N/A	N/A	110°F
	PCB	N/A	N/A	N/A	N/A	ND (ug/l)
	pH	N/A	N/A	N/A	N/A	6-9
104	Flow	N/A	N/A	N/A	N/A	N/A
	TSS	N/A	N/A	N/A	N/A	N/A
	O&G	N/A	N/A	N/A	N/A	N/A
	pH	N/A	N/A	N/A	N/A	6-9
204	Flow	N/A	N/A	N/A	N/A	N/A
	TSS	N/A	N/A	N/A	N/A	N/A
	O&G	N/A	N/A	N/A	N/A	N/A
	Temperature	N/A	N/A	N/A	N/A	110°F
	PCB	N/A	N/A	N/A	N/A	ND (ug/l)
	pH	N/A	N/A	N/A	N/A	6-9
304	Flow	N/A	N/A	N/A	N/A	N/A
	TSS	N/A	N/A	N/A	N/A	N/A
	O&G	N/A	N/A	N/A	N/A	N/A
	pH	N/A	N/A	N/A	N/A	6-9
005	Flow	N/A	N/A	N/A	N/A	N/A
	TSS	N/A	N/A	N/A	N/A	N/A
	O&G	N/A	N/A	N/A	N/A	N/A
	pH	N/A	N/A	N/A	N/A	6-9

TABLE 3-2
(Continued)

PERMITTED OUTFALL NUMBER	EFFLUENT CHARACTERISTICS (lbs/day)	DISCHARGE LIMITS MONTHLY AVERAGE	DAILY MAXIMUM	MONTHLY AVERAGE (mg/l)	DAILY MAXIMUM (mg/l)	INSTANT MAXIMUM (mg/l)
006	Flow	N/A	N/A	N/A	N/A	N/A
	TSS	1.25	2.50	--	--	2.0
	O&G	0.630	1.25	--	--	1.0
	Temperature	N/A	N/A	N/A	N/A	110°F
	PCB	--	--	N/A	N/A	ND (ug/l)
	pH	N/A	N/A	N/A	N/A	6-9
007	Flow	N/A	N/A	--	--	--
	TSS	6.02	12.04	20	--	40
	Zinc	0.15	0.30	0.5	--	2.5
	Iron	0.30	0.60	1.0	--	2.0
	Copper	0.15	0.30	0.5	--	1.0
	Hex. CHMR.	0.015	0.029	0.05	--	0.25
	Tot. CHMR.	0.15	0.30	0.5	--	1.0
	Phosph.	0.30	0.60	1.0	--	2.0
	NH_3 - N	N/A	N/A	N/A	--	N/A
	pH	N/A	N/A	N/A	--	6-9
008	Flow	N/A	N/A	N/A	N/A	N/A
	TSS	N/A	N/A	N/A	N/A	N/A
	O&G	N/A	N/A	N/A	N/A	N/A
	Temp.	N/A	N/A	N/A	N/A	110°F
	pH	N/A	N/A	N/A	N/A	6-9
109 209 309	Flow	N/A	N/A	N/A	N/A	N/A
	TSS	N/A	N/A	N/A	N/A	N/A
	O&G	N/A	N/A	N/A	N/A	N/A
	Temp.	N/A	N/A	N/A	N/A	110°F
	pH	N/A	N/A	N/A	N/A	6-9
010	Flow	N/A	N/A	N/A	N/A	N/A
	TSS	N/A	N/A	N/A	N/A	N/A
	O&G	N/A	N/A	N/A	N/A	N/A
	Temp.	N/A	N/A	N/A	N/A	110°F
	pH	N/A	N/A	N/A	N/A	6-9
012	Flow	N/A	N/A	N/A	N/A	N/A
	TSS	N/A	N/A	N/A	N/A	N/A
	O&G	N/A	N/A	N/A	N/A	N/A
	Temp.	N/A	N/A	N/A	N/A	110°F
	pH	N/A	N/A	N/A	N/A	6-9

TABLE 3-2
(Continued)

PERMITTED OUTFALL NUMBER	EFFLUENT CHARACTERISTICS (lbs/day)	DISCHARGE LIMITS MONTHLY AVERAGE	DAILY MAXIMUM	MONTHLY AVERAGE (mg/l)	DAILY MAXIMUM (mg/l)	INSTANT MAXIMUM (mg/l)
013	Flow	N/A	N/A	N/A	N/A	N/A
	TSS	N/A	N/A	N/A	N/A	N/A
	O&G	N/A	N/A	N/A	N/A	N/A
	Temp.	N/A	N/A	N/A	N/A	110°F
	pH	N/A	N/A	N/A	N/A	6-9

1. Reference: O'Brien and Gere, 1983a.
2. The permit limits shown in this table were established in a permit which was dated June 29, 1981.
3. It is believed that "N/A" and "--" indicate "not applicable." However, these are not absolutely defined on the permit.
4. ND = Not Detected

TABLE 3-3

PREVIOUS DISCHARGE INVESTIGATIONS

OUTFALL	DEC. 1975 (EPA)	MAY 1979 (PADER)	SEPT. 1979 (PADER)	JAN. 1980 (PADER)	APRIL 1982 (DLA)	MAY 1982 (PADER)	MARCH-MAY, 1983 (O'Brien and Gere)	JAN. 1988 (PADER)
001	X						X	
002	X						X	
003	X	X	X	X		X	X	
104							X	
204						X		
304								
005							X	
006	X	X	X	X	X	X	X	
007	X					X	X	
008	X						X	
109							X	
209							X	
309							X	
010	X					X	X	
012	X						X	
013	X					X	X	
Clark St. Sewer	X			X			X	X
Wishart Court Inter.							X	
Franklin St. Sewer							X	

1. DLA = Duncan, Lagnese and Associates

TABLE 3-4

INVESTIGATIONS OF PLANT TRIBUTARIES TO OUTFALLS

OUTFALL-DISCHARGE LOCATION	MAY 1979 (PADER)	SEPT. 1979 (PADER)	1979 (H AND E)	APRIL 1982 (DLA)	JUNE 1982 (PADER AND WESTINGHOUSE)	MARCH 1983 (O'BRIEN AND GERE)	SEPT. 1985 (SRW)
003-Moat		X					
Coal Crusher Sump						X	
Powerhouse Sump						X	
Flyash Cistern					X	X	
Coal, Coal Handling					X	X	
Other Sources	X						
006-Recirculating							
Water System or							
Shenango River							
Oil/Water Separator			X	X		X	
Clark Street Sewer							
Neutralization Plant						X	
Storm Sewers							X

1. H and E = Havens and Emerson
2. DLA = Duncan, Lagnese and Associates
3. SRW = SRW Associates, Inc.

TABLE 3-5

HISTORICAL PLANT PCB DISCHARGES[1]

INTERCEPTOR	DISCHARGE LOCATION DESCRIPTION	DRY WEATHER CONTRIBUTION			INSTANTANEOUS DRY/WET WEATHER CONTRIBUTIONS		
		FLOW[2,3] (gpd)	PCB CONCENTRATION[3] (ug/l)	PCB LOADING[3] (lb/day x 10^{-3})	FLOW[2] (gpd)	PCB CONCENTRATION (ug/l)	PCB LOADING[3] (lb/day x 10^{-3})
Wishart Court	WC1-001	0	0	0	12,200	0.1	0.01
	WC3-002	0	0	0	4,000	<0.1	0
Moat	WC-10	(2,200)[4]	(0.9)[4]	(0.02)[4]	23,800	1.9	0.38
	WC-15	(0)	(0)	(0)	4,300	14.6	0.53
	WC-29	(0)	(0)	(0)	720	0.6	0.004
	WC-28 Lamella	(5,000)	(0)	(0)	5,000	0	0
003	003	42,000	11.5	4.03	34,800	--	4.01
	Subtotal	42,000[5]	11.5	4.03[5]	84,820	7.0	4.934[5]
Franklin Street	FS1-104	0	0	0	7,500	<0.1	0
	FS2-204	0	0	0	0	0	0
	FS3-304	0	0	0	5,500	--	0
	Subtotal	0	0	0	13,000	0	0
Recirculated Cooling Water System	No. Hotwell Overflow	72,000	0.2	0.12	74,000	0.2	0.12
	Filter Backwash	6,000	5.7	0.29	12,000	5.7	0.57
	RCWS5 Oil/Water Separator[6]	3,000	3.7	0.09	4,000	5.3	0.18
	Subtotal	81,000	0.7	0.50	90,000	1.2	0.87

TABLE 3-5
(Continued)

INTERCEPTOR	DISCHARGE LOCATION DESCRIPTION	DRY WEATHER CONTRIBUTION			INSTANTANEOUS DRY/WET WEATHER CONTRIBUTIONS		
		FLOW[2,3]	PCB CONCENTRATION[3]	PCB LOADING[3]	FLOW[2]	PCB CONCENTRATION	PCB LOADING[3]
		(gpd)	(ug/l)	(lb/day x 10^{-3})	(gpd)	(ug/l)	(lb/day x 10^{-3})
Clark Street	CS2 (12" line from (catch basin)	0	0	0	2,160	5.5	0.100
	CS3-007	6,500	0.4	0.022	6,500	0.5	0.027
	CS4-013	2,700	3.0	0.068	207,000	16.9	29.20
	CS5 (15" line from W-50 Building)	0	0	0	28,800	64.8	15.57
	CS6-006	0	0	0	57,600	0.8	0.385
	CS7 (24" spur in downstream manhole)	350	0.2	0.001	350	0.2	0.001
	CS9-010	1,800	0.3	0.005	13,200	1.2	0.132
	CS13	1,500	0.1	0.001	1,500	0.6	0.008
	CS14-012	2,500	0.1	0.002	43,200	0.5	0.180
	CS15-005	100	1.1	0.001	100	2.2	0.002
	CS16 French drain T-Building	6,100	0	0	6,500	<0.1	0
	Subtotal	22,000	0.55	0.10	367,000	14.7	45.605
	TOTAL	145,000	3.8	4.63	554,820	11.0	51.409

1. Information shown does not include flow or concentration data from:
   - Catch basins at south end of W-50 and R-T Buildings (8" line).
   - Downspouts from R-T Building (8" line).
   - Downspouts and floor drains at H.V. Test Lab (8" line).
   - Trench drain west of H.V. Test Lab (10" line).

   These are discharges to the 42" Clark Street Sewer for which data is not available due to their inaccessible location. Discharges from these locations occur only during storm events.

TABLE 3-5
(Continued)

2. Flow measurements shown are instantaneous flow rate measurements.
3. Flow rates and PCB concentrations reported in this table represent the average of measured values where more than one data point existed.
4. Numbers in parentheses are not added into totals.
5. Dry weather contribution to Wishart Court was calculated using data from the 003 monitoring station downstream of the moat discharges. Moat discharges WC-10, WC-15, WC-29, and WC-28 Lamella were used to calculate the instantaneous dry and wet weather contribution since wet weather data was not available for the 003 monitoring station.
6. Dry weather conditions for 003 monitoring point was adjusted to reflect dry weather contribution of tributary moat discharges WC-10, WC-15, WC-29, and WC-28 Lamella.

TABLE 3-6

AVERAGE[1] HISTORICAL PCB CONCENTRATIONS (ug/l)
OUTFALL 003

MONTH/ YEAR		PCB-1016[2]	PCB-1221[2]	PCB-1232[2]	PCB-1242[2]	PCB-1248[2]	PCB-1254[3]	PCB-1260[3]
Sept. 87	1)	ND	ND	ND	ND	ND	ND	ND
	2)	ND	ND	ND	0.90	ND	ND	ND
Oct. 87	1)	ND	ND	ND	ND	0.55	ND	ND
	2)	ND	ND	ND	ND	ND	ND	ND
Nov. 87	1)	ND	ND	ND	ND	ND	ND	ND
	2)	ND	ND	ND	0.83	ND	ND	ND
Dec. 87	1)	ND	ND	ND	0.51	ND	ND	ND
	2)	ND	ND	ND	ND	ND	ND	ND
Jan. 88	1)	ND	ND	ND	0.60	ND	ND	ND
	2)	ND	ND	ND	0.61	ND	ND	ND
Feb. 88	1)	ND	ND	ND	ND	ND	ND	ND
	2)	ND	ND	ND	ND	ND	ND	ND
Mar. 88	1)	ND	ND	ND	ND	0.74	ND	ND
	2)	ND	ND	ND	ND	0.59	ND	ND
Apr. 88	1)	ND	ND	ND	ND	0.77	ND	ND
	2)	ND	ND	ND	ND	0.53	ND	ND
May 88	1)	ND	ND	ND	ND	ND	ND	ND
	2)	ND	ND	ND	ND	0.51	ND	ND
Jun. 88	1)	ND	ND	ND	<0.97	ND	ND	ND
	2)	ND	ND	ND	ND	0.58	ND	ND

TABLE 3-6
(Continued)

MONTH/ YEAR		PCB-1016[2]	PCB-1221[2]	PCB-1232[2]	PCB-1242[2]	PCB-1248[2]	PCB-1254[3]	PCB-1260[3]
Jul. 88	1)	ND	ND	ND	ND	<0.53	ND	ND
	2)	ND	ND	ND	ND	ND	ND	ND
Aug. 88	1)	ND	ND	ND	ND	ND	ND	ND
	2)	ND	ND	ND	ND	ND	ND	ND

1. Two sets of data are obtained each month. Each value reported is the average of three samples taken 15 minutes apart.
2. Detection Limit = 0.5 ug/l.
3. Detection Limit = 1.0 ug/l.

TABLE 3-7

AVERAGE HISTORICAL PCB CONCENTRATIONS (ug/l)
OUTFALL 006

MONTH/ YEAR		PCB-1016(1)	PCB-1221(1)	PCB-1232(1)	PCB-1242(1)	PCB-1248(1)	PCB-1254(2)	PCB-1260(2)
Sept. 87	1)	ND	ND	ND	<0.51	ND	ND	ND
	2)	ND	ND	ND	1.2	ND	ND	ND
Oct. 87	1)	ND	ND	ND	ND	ND	ND	ND
	2)	ND	ND	ND	ND	ND	ND	ND
Nov. 87	1)	ND	ND	ND	ND	ND	ND	ND
	2)	ND	ND	ND	ND	ND	ND	ND
Dec. 87	1)	ND	ND	ND	0.78	ND	ND	ND
	2)	ND	ND	ND	ND	ND	ND	ND
Jan. 88	1)	ND	ND	ND	<0.55	ND	ND	ND
	2)	ND	ND	ND	ND	ND	ND	ND
Feb. 88	1)	ND	ND	ND	ND	ND	ND	ND
	2)	ND	ND	ND	ND	ND	ND	ND
Mar. 88	1)	ND	ND	ND	ND	ND	ND	ND
	2)	ND	ND	ND	ND	ND	ND	ND
Apr. 88	1)	ND	ND	ND	ND	ND	ND	ND
	2)	ND	ND	ND	ND	ND	ND	ND
May 88	1)	ND	ND	ND	ND	ND	ND	ND
	2)	ND	ND	ND	ND	ND	ND	ND
Jun. 88	1)	ND	ND	ND	ND	ND	ND	ND
	2)	ND	ND	ND	ND	ND	ND	ND

TABLE 3-7
(Continued)

MONTH/ YEAR		PCB-1016[1]	PCB-1221[1]	PCB-1232[1]	PCB-1242[1]	PCB-1248[1]	PCB-1254[2]	PCB-1260[2]
Jul. 88	1)	ND	ND	ND	<0.67	ND	ND	ND
	2)	ND	ND	ND	ND	ND	ND	ND
Aug. 88	1)	ND	ND	ND	ND	ND	ND	ND
	2)	ND	ND	ND	ND	ND	ND	ND

1. Detection Limit = 0.5 ug/l.
2. Detection Limit = 1.0 ug/l.

TABLE 3-8

RESULTS OF ANALYSIS OF
NORTH SECTOR STORM SEWER SEDIMENT, 1985

STORM SEWER SEDIMENT SAMPLES	LOCATION RELATIVE TO CLARK STREET SEWER (1)	PCBs (mg/kg)
SD-10	275 feet from Clark St. Sewer	100
SD-7	575 feet from Clark St. Sewer	80
SD-8	755 feet from Clark St. Sewer	22
SD-6	1,080 feet from Clark St. Sewer	31
SD-5	1,290 feet from Clark St. Sewer	21
SD-4	1,450 feet from Clark St. Sewer	16
SD-3	1,490 feet from Clark St. Sewer	17
SD-1	1,590 feet from Clark St. Sewer	27
SD-2	1,650 feet from Clark St. Sewer	23
SD-9	Catch basin in railyard (segregated from main storm sewer)	26

1. Sampling was performed by SRW Associates.
2. Sampling locations are shown on Figure 3-8.

TABLE 3-9

RESULTS FROM PCB ANALYSIS
OF SHENANGO RIVER WATER, 1980

STATION		PCBS			
NUMBER	LOCATION	1242 (ug/l)	1260 (ug/l)	TOTAL (ug/l)	PCB LOADING (lb/day)
1	Bridge below Shenango Dam	0.08	0.05	0.13	0.19
2	Bridge below Sharpsville waterworks	0.07	0.06	0.13	0.19
3	Above Clark Street	0.29	0.19	0.48	0.70
-	Clark Street Sewer	1.60	0.28	1.88	--
4	Below Clark Street	0.47	1.43	1.90	2.77
5	At Shenango Valley Water Company	SAMPLES LOST (2)			
6	Below Shenango Valley Water Company	0.31	0.80	1.11	1.62
7	Above Route 62 Bridge	0.11	0.23	0.34	0.49
8	Above Council Avenue Bridge	0.26	0.80	1.06	1.54
9	Above Pulaski Bridge	0.93	0.33	1.26	1.83

1. Samples were obtained June 17, 1980 by Havens and Emerson.
2. Flow at Shenango Dam was 270 cfs.

TABLE 3-10

RESULTS FROM FISH SAMPLING
OF SHENANGO RIVER, JUNE 1988

SAMPLE NO.	SAMPLE LOCATION	SPECIES COLLECTED	CONTAMINANTS	CONCENTRATION (ug/kg)
0622165	Below Shenango Dam at Sharpsville	Bluegill	Aroclor 1260	130
			pp' DDE(2)	12
0622166	Below Shenango Dam at Sharpsville	Carp	Aroclor 1260	510
			pp' DDE	60
			Chlordane	110
0622164	Below Shenango Dam at Sharpsville	Smallmouth Bass	pp' DDE	10
0622162	Near PA Route 518 (above Pine Run)	Smallmouth Bass	Aroclor 1260	560
			pp' DDE	13
			Chlordane	45
0622161	Near PA Route 518 (above Pine Run)	Carp	Aroclor 1260	1500
			pp' DDE	57
			Chlordane	530
0622160	Below Pine Run	Smallmouth Bass	Aroclor 1260	550
			pp' DDE	13
			Chlordane	63
0622159	Below Pine Run	Carp	Aroclor 1260	1700
			pp' DDE	67
			Chlordane	470

1. Fish samples were collected by PADER.
2. pp' DDE is a decay product of DDT.

TABLE 3-11

RESULTS FROM FISH SAMPLING
OF SHENANGO RIVER, JULY-AUGUST 1988

SAMPLE NUMBER	STATION LOCATION	SPECIES COLLECTED	CONTAMINANTS FOUND	CONC. (ug/kg)
0622190	Ohio St. Bridge (Station 3)	White Sucker	PCB - 1260	200
0622191	Ohio St. Bridge (Station 3)	Carp	PCB - 1260	1300
			Chlordane	460
0622192	Route 208 Bridge @ Pulaski (Station 6)	Carp	PCB - 1260	660
			Chlordane	270
0622193	Shenango Reservoir (Station 1)	Smallmouth Bass	PCBs	ND
			DDE	(est.) 15
0622194	Shenango Reservoir (Station 1)	Carp	PCB - 1260	220
			DDE	57
0622195	Above W. PA Water Co. @ New Castle (Station 7)	B. Crappie & Pumpkinseed	PCBs	ND
			Pesticides	ND
0622197	Above W. PA Water Co. @ New Castle (Station 7)	Carp	PCB - 1242	300
			PCB - 1260	1000
			Chlordane	430
0622198	Route 718 Bridge @ Wheatland (Station 4)	Carp	PCB - 1242	360
			PCB - 1260	930
			Chlordane	360
0622199	R.R. Bridge near mouth (Station 8)	Carp	PCBs	ND
			Pesticides	ND
0622200	R.R. Bridge near mouth (Station 8)	Smallmouth Bass & Rock Bass	PCB - 1260	2200
			Chlordane	740
0914071	Downstream Sharon STP (Station 2)	Carp	PCB - 1260	2500
			Chlordane	600
0914072	Downstream Sharon STP (Station 2)	Largemouth Bass	PCB - 1260	1400
			Chlordane	240

1. Fish samples were collected by PADER during the period 7/28/88 to 8/4/88.
2. Fish tissue samples analyzed were skinless fillets.
3. ND = Not Detected.
4. No sample was collected at Station 5 (above West Middlesex STP).

TABLE 3-12

RESULTS OF PCB ANALYSIS
OF SHENANGO RIVER SEDIMENT, 1985

SAMPLE LOCATIONS	AROCLOR (ug/kg)							
	1221	1232	1016	1242	1248	1254	1260	TOTALS
Upstream	4.0	4.0	2.5	2.5	2.5	4.0	81	100
Clark Street	20	20	13	13	13	30	190	299
006	100	100	63	63	63	100	16,000	16,500
004	20	20	13	13	13	30	20	129
003	20	20	13	13	13	30	20	129
003	50	50	31	31	31	50	50	293
Downstream	20	20	12	13	13	30	1,200	1,309

1. Sampling was performed by NUS Corporation Field Investigation Team (FIT).
2. Locations are shown on Figure 3-10.

TABLE 3-13

MOAT SOIL SAMPLING RESULTS, 1983

TRANSECT 1

BORING	DEPTH INTERVAL (feet)	PCB CONC. (mg/kg)
A	2-3	ND
	5.8-6.0	ND
B	0-2	210.4
	2-4	53.3
	4-6	9.4
	10-12	2.2
C	1-2	ND
	9.5-10	ND
E	0-2	30.3
	8-10	ND
F	0-2	266.9
	4-6	71.1
	6-8	1.3
	8-10	1.5

TRANSECT 2

BORING	DEPTH INTERVAL (feet)	PCB CONC. (mg/kg)
A	2-3	ND
	8.5-9.0	ND
B	0-2	ND
	2-4	ND
	13-14	ND
C	0-2	6.9
	2-4	ND
	12-14	2.7
E	0-1	33.2
	12-14	2.9
F	0-2	4847.0
	2-4	3.1
	18-19	ND

TABLE 3-13
(Continued)

TRANSECT 3

BORING	DEPTH INTERVAL (feet)	PCB CONC. (mg/kg)
A	0-1.5	69.6
	2.5-3.5	ND
	8.5	ND
B	1-2	24.7
	12-14	ND
C	1-2	ND
	4-6	ND
	12-14	ND
D	0-2	14.5
E	0-2	14.0
	12-14	ND
F	0.5-2	485.5
	2-4	372.1
	4-6	258.8
	10-12	23.0
	12-14	29.0
	14-15	7.4
	20-22	2.6

TRANSECT 4

BORING	DEPTH INTERVAL (feet)	PCB CONC. (mg/kg)
A	2-3.5	221.0
	9.2-10	55.6
B	2-3	23.5
	10-12	ND
C	0.5-1.2	9.3
	12-14	ND
D	0-2	79.5

TABLE 3-13
(Continued)

TRANSECT 4
(Continued)

BORING	DEPTH INTERVAL (feet)	PCB CONC. (mg/kg)
E	0-2	306.3
	2-3	ND
	5-6	ND
	6-7	ND
	10-12	ND
F	3-4	1.6
	20-22	ND

TRANSECT 6

BORING	DEPTH INTERVAL (feet)	PCB CONC. (mg/kg)
A	0-3	670.8
	3-4	3.03
	9.5-10	1.7
B	2-3	ND
	9-10	ND
C	0-2	14.7
	9-10	ND
E	0-2	10.0
	9-10	ND
F	0-2	33.8
	22-24	ND

TRANSECT 7

BORING	DEPTH INTERVAL (feet)	PCB CONC. (mg/kg)
A	0-2	1.6
	14-16	ND

TABLE 3-13
(Continued)

TRANSECT 7
(Continued)

BORING	DEPTH INTERVAL (feet)	PCB CONC. (mg/kg)
B	0-1	240.6
	1-2	ND
	2-4	ND
	4-6	ND
	8-10	ND
C	0-1	11.4
	8-10	ND

ADDITIONAL BORINGS

BORING	DEPTH INTERVAL (feet)	PCB CONC. (mg/kg)
R-1	0-1	ND
R-2	0-2	2.9
R-3	0-1	2.3
R-4	0-1.5	ND
R-5	0-1	15.0
	1-2	2.2
	6-8	ND
R-9	0-2	55.2
R-10	0-1.7	226.2
R-11	0-1.5	ND
R-12	0-.75	13.0
	0.75-2	154.0

1. ND = Not Detected
2. Samples were obtained as part of a site investigation performed by O'Brien and Gere in early 1983. Locations are shown on Figure 3-14.
3. Analysis was for PCBs only.

TABLE 3-14

RESULTS FROM PCB ANALYSIS
OF SAMPLES FROM NORTH SECTOR BORINGS, 1985

BORING	PCB CONCENTRATION (mg/kg)	AROCLOR
RR-1	84	1260
RR-2	180	1260
RR-3	115	1260
RR-4	32	1260

1. Sampling was performed by SRW Associates.
2. Locations are shown on Figure 3-15.

TABLE 3-15

RESULTS FROM PCB ANALYSIS OF
NORTH SECTOR SURFACE SOIL SAMPLES, 1985

SAMPLE NUMBER	DEPTH (feet)	LOCATION	DESCRIPTION	CONC. (mg/kg)	SOURCE AROCLOR
S-1	Not Sampled				
S-2	Not Sampled				
S-3	0.0 - 1.0	62'E of Corner of Z Building, 20'N of Z Building	Gray slag and large gravel	6.0/5.2	1260
S-4	0.0 - 1.0	18' NW of Corner of Z Building just inside fence	Brown sand, slag and gravel	20/20	1260
S-5	Not Sampled				
S-6	0.0 - 0.8	40' N of #1 (from north) Crane Support, 4' W of fence	Black slag and large stones	3.2	1260
S-7	Not Sampled				
S-8	0.0 - 1.0	5' S of #2 (from north) Crane Support, 4' W of fence	Black slag and large stones into brown sand and slag	<1.0	
S-9	0.0 - 1.0	7' N of #4 (from north) Crane Support at center of support	Black cinders	<1.0	
S-10	0.0 - 1.0	30' W of Z Building, 31' N of door	Black slag and cinders into light brown sand	2.1	1260
S-11	0.0 - 0.8	Mid-distance between #7 and #8 (from north) Crane Supports, 3' W of tracks	Black into brown slag, large gravel	11	1260
S-12	0.0 - 1.0	2' W of #9 (from north) Crane Support	Black slag and cinders, into orange-brown sand, some gravel	9.6	1260

TABLE 3-15
(Continued)

SAMPLE NUMBER	DEPTH (feet)	LOCATION	DESCRIPTION	CONC. (mg/kg)	SOURCE AROCLOR
S-13	0.0 - 1.0	8' N of #10 (from north) Crane Support at center of support	Black cinders into brown slag	3.5	1260
S-14	0.0 - 0.1	17' W of Z Building, 77' S of door	Black gravel, oily and fine sand or slag	<1.0	
S-15	0.8 - 1.1 (cleared of 0.8 clean railroad gravel)	Mid-distance between #12 and #13 (from north) Crane Supports, 27' W of fence	Black sand, slag and gravel, oily	3.3	1260
S-16	0.0 - 1.0	3/4 distance from #12 and #13 (from north) Crane Supports, 4' W of fence	Black slag, sand and gravel	4.0	1260
S-17	0.0 - 0.2	Out from door 22' W of Z Building	Rusty brown slag over concrete	28	1260
S-18	0.0 - 0.8	5' N of #15 (from north) Crane Support	Black cinders into brown slag	1.6	1260
S-19	0.5 - 1.5 (cleared 0.5 clean rail-road gravel	16' W of fence at #17 (from north) Crane Support	2" black slag into brown sand and gravel	1.4	1260
S-20	0.0 - 1.2	10' W of fence at #17 (from north) Crane Support	Black sand and slag, some gravel	35	1260
S-21	0.0 - 0.8	42' S of west side of railroad gate	2" asphalt, 4" large stone into black and dark gray slag	73	1260
S-22	0.5 - 1.0 cleared 0.5 large stone	33' N of NE corner of shed	Gray slag	180 42	1242 1260

TABLE 3-15
(Continued)

SAMPLE NUMBER	DEPTH (feet)	LOCATION	DESCRIPTION	CONC. (mg/kg)	SOURCE AROCLOR
S-23		Duplicate of S-22		330 95	1242 1260
S-24	0.0 - 1.0	50' S of Z Building extension, 48' W of Z Building	Dark brown slag and cinders	17	1260
S-25	Surface Scrape (1' x 2' area)	Inside W-50 Building between #3 and #4 Column from NW corner of building near loading dock (10' E of W wall)	Black dirt and fine slag	1600 150	1242 1260
S-26	Surface Scrape (1' x 2' area)	Inside W-50 Building 5' N of #6 Column from SE corner of building, 4' E	Brown slag, oily	58 51	1242 1260
S-27	Surface Scrape (2' x 3' area)	Inside W-50 Building 8' W of #2 Column from S end of building	Black slag with some metal pieces	230 190	1242 1260
S-28	0.0 - 0.5	14' W and 1' S of SW corner of shed on W side of W-50 Building	Asphalt over slag, stone, and concrete	20/21	1260
S-29	0.0 - 0.8	68' N and 25' W of NW corner of shed on W side of W-50 Building	Asphalt over slag and stone	7.1/7.2	1260
S-30	0.0 - 0.9	7' W and 12' S of NW corner of W-50 Building	Asphalt over stone and gray slag	30	1260
S-31	0.0 - 1.0	23' N and 17' E of SE corner of shed	Gray slag and gravel	45	1260
SC-1		Roadway just west of 5th Crane Support	Top 1/2" of gray granulated slag	5.3 1.5	1248 1260
Lab Duplicate				5.6 1.3	1248 1260

TABLE 3-15
(Continued)

SAMPLE NUMBER	DEPTH (feet)	LOCATION	DESCRIPTION	CONC. (mg/kg)	SOURCE AROCLOR
SC-2		Grassy area between tracks in roadway	Top 1" of black slag and gravel, some soil	65	1260
SC-3		Grassy area between tracks in roadway	Top 1" of black slag and gravel, some soil	120 470	1242 1260
SC-4		In roadway between tracks near NW corner of W-50 Building	Scraping of black cemented or hardened slag	19 68	1242 1260
SC-5		In roadway between tracks near 2nd S NW corner of W-50 Building	Top 1/2" of slag, sand, and soil	64/71	1260
SC-6		In roadway between W-50 and R-T Buildings	Asphalt	5.7 33	1242 1260
SC-7		In roadway between W-50 and R-T Buildings	Broken, weathered asphalt	5.9 11	1242 1260
SC-8		In roadway west of Z Building	Loose materials; asphalt, black silt and slag	59 41	1242 1260

1. For locations see Figure 3-15.

TABLE 3-16

RESULTS OF ANALYSIS OF
PADER SURFACE SOIL SAMPLES, 1988

SAMPLE NUMBER	AROCLOR 1248[1] (mg/kg)	AROCLOR 1260[2] (mg/kg)
001	ND	ND
002	ND	ND
003	ND	1.4 (est.)
004	ND	ND
005	ND	2.2
006	ND	ND
007	ND	ND
008	ND	ND
011	ND	ND
012	ND	ND
013[2]	ND	7.6
014	ND	ND
015	ND	ND
016	ND	2.3
017	ND	ND
018	ND	2.3
019[3]	ND	1.9 (est.)
020	ND	ND
021	ND[4]	ND[4]
021 oil	ND[4]	1.5[4]
022	ND	1.2 (est.)
023[5]	ND	1.2 (est.)
024[6]	28	11
025[7]	ND	12
026	ND[8]	ND[8]
027	ND	ND
028	ND	Possible Trace
029	ND	ND
030	ND	ND

1. Detection limits is 2.0 mg/kg unless otherwise noted.
2. Chlordane at 48 mg/kg was also detected.
3. Sample 019 is a duplicate of 018.
4. Detection limit = 10 mg/kg
5. Sample 023 is a duplicate of 022.
6. May also have contained Aroclor 1254.
7. Other organics may be present.
8. Detection limit = 20 mg/kg.

TABLE 3-17

Y BUILDING CONCRETE CORE SAMPLES[1]

SAMPLE NUMBER	SAMPLE THICKNESS TOP/BOTTOM (inches)	PCB (mg/kg)
33	1.0/4.5	4.0/<1.0
35	1.0/4.5	3.0/<1.0
38	1.0/5.5	4.0/<1.0
39	1.0/5.5	4.0/<1.0
41	1.0/4.0	69/<1.0
44	1.25/6.0	250/<1.0
46	0.75/5.0	<1.0/<1.0

1. Core diameters were 4.0 inches.

TABLE 3-18

RESULTS OF ANALYSIS OF
NORTH SECTOR SCRAPE SAMPLES, 1985

NUMBER	LOCATION	DESCRIPTION	CONC. (mg/kg)	SOURCE AROCLOR
SC-9	Wooden roof of small inside office of Z-Building near Columns 53 and 54	Greasy dark gray dust	19	1260
SC-10	Glass windows and I-beam on east wall of Z-Building between Columns 68 and 69	Black oily dust	20	1260
SC-11	Floor of Z-Building in Center Bay near Columns 52 and 52A	Gray dust with some small visible paint chips	27 160	1242 1260
SC-12	Floor of Z-Building in West Bay near Column 38	Gray dust with some small visible paint chips	72/84	1260
SC-13	Window sills in south end of RT-Building	Black greasy dust and dirt	11	1260
SC-14	Floor of transformer support deck in R-T Building near Columns 5 and 6	Black greasy dust	2.5 30	1242 1260
SC-15	Floor of RT-Building near Column 14	Gray dust and paint chips	8.0 47	1242 1260
SC-16	Not Sampled			
SC-17	From top surface of large crane in West Bay of Z-Building	Black greasy dust	23 120	1242 1260
SC-18	Not Sampled			
SC-19	Floor of Z-Building near base of Column 18	Black dirt and debris	1.8 7.8	1242 1260

TABLE 3-18
(Continued)

NUMBER	LOCATION	DESCRIPTION	CONC. (mg/kg)	SOURCE AROCLOR
SC-20	Floor of Z-Building near base of Column 41	Black dirt and debris	1.3 7.9	1242 1260
SC-21 SC-22	Floor of platform in Z-Building near Column 28 and between Columns K and L	Black greasy dirt	190 160	1260 1260

TABLE 3-19

RESULTS OF ANALYSIS OF
NORTH SECTOR WIPE SAMPLES, 1985

NUMBER	LOCATION	DESCRIPTION	TOTAL PCBS[1] (ug)	SOURCE AROCLOR
W-1	East wall of Z-Building at Column 31	Painted concrete wall, visibly dirty	2.8	1260
W-2	West wall of Z-Building near Column 3	Painted concrete block visibly dirty	1.4	1260
W-3	North wall of Z-Building near center Column 67	Wall of glass windows visibly dirt	1.9 9.5	1242 1260
W-4	West wall of Z-Building near Column 50	Metal wall, some visible dirt	<1.0	--
W-5	Floor of Z-Building near center Column 63	Concrete floor visually clean after paint removal	2.0	1260
W-6	North wall of Z-Building near center Column 67 (duplicate of W-3)	Wall of glass windows visibly dirty	2.5	1260
W-7	Near ceiling of Z-Building near Column 50	Bottom (horizontal) surface of painted metal conduit box	<1.0	--
W-8	Blank	Waved gauze in air	<1.0	--
W-9	Ceiling of old Z-Building near Column 23	Painted metal ceiling, light dirt visible	<1.0	--
W-10	West wall of Z-Building near ceiling at Column 23	Wall of glass windows, moderately dirty	1.6	1260
W-11	East wall of Z-Building near ceiling at Column 50	Wall of glass windows, very dirty	3.2 23	1242 1260
W-12	Ceiling of Z-Building at middle of East Bay at Column 50	Painted metal ceiling, light dirt	3.5	1260
W-13	Door on west side of Z-Building near Column 41	Wooden door, light dust	4.4	1260

TABLE 3-19
(Continued)

NUMBER	LOCATION	DESCRIPTION	TOTAL PCBS[1] (ug)	SOURCE AROCLOR
W-14	West side of Column 59 in Z-Building	Metal column, light dust	<1.0	--
W-15	Floor in R-T Building (south end) (duplicates)	Painted concrete floor prior to paint removal	11	1260
W-16			4.7	1260
W-17	West wall of R-T Building (south end)	Painted concrete blocks, moderately dirty	1.5	1260
W-18	Floor of R-T Building near Column 14	Concrete floor visually clean after paint removal	3.7	1260
W-19	North wall of R-T Building near garage door	Glass window, light to moderately dirty	<1.0	--

1. Wipe samples were taken from a one square foot area.

TABLE 4-1

EVALUATION OF DATA REQUIREMENTS

SECTOR	FIGURE NO.	AREA NO.	SOURCE AREA NAME	POSSIBLE CONTAMINANTS	PATHWAYS	RISK TO PUBLIC HEALTH[4]	POTENTIAL REMEDIAL ALTERNATIVES[1,2]	DATA REQUIREMENTS TO DETERMINE THREAT TO PUBLIC HEALTH, WELFARE AND ENVIRONMENT	ADDITIONAL DATA REQUIREMENTS TO EVALUATE REMEDIAL ALTERNATIVES[3]
South	3-1	4	West Embankment	PCBs	Surface Water	Low	Removal/Disposal Cap/Cover	Nature and extent of contamination	None
	3-1	5	Powerhouse	PCBs, Trichlorobenzene	Groundwater	Low	Recovery/Treatment	Nature and extent of contamination	Permeability
	3-1	7	Degreaser Use Area B-Building (razed)	Trichloroethylene	Groundwater	Low	Recovery/Treatment	Nature and extent of contamination	Permeability
	3-1	11	Drum Storage Area	Unknown	Groundwater Surface Water	Low	Recovery/Treatment Removal/Disposal	Nature and extent of contamination, if any	Permeability
	3-1	20	PCB Use Area, A-Building (razed)	PCBs Trichlorobenzene	Groundwater	Low	Recovery/Treatment	Nature and extent of contamination	Permeability
	3-1	22	PCB Use Area, A-Building	PCBs Trichlorobenzene	Groundwater	Low	Recovery/Treatment	Nature and extent of contamination	Permeability
Middle	3-2	1	Railroad Tracks	PCBs Trichlorobenzene	Groundwater	Low	Recovery/Treatment Slurry Wall	Nature and extent of contamination	Permeability
	3-2	3	Tank Farm Area	PCBs Trichlorobenzene Methyl Ethyl Ketone Cyanide	Groundwater	Low	Recovery/Treatment Slurry Wall	Nature and extent of contamination	Permeability

TABLE 4-1
(Continued)

SECTOR	FIGURE NO.	AREA NO.	SOURCE AREA NAME	POSSIBLE CONTAMINANTS	PATHWAYS	RISK TO PUBLIC HEALTH[4]	POTENTIAL REMEDIAL ALTERNATIVES[1,2]	DATA REQUIREMENTS TO DETERMINE THREAT TO PUBLIC HEALTH, WELFARE AND ENVIRONMENT	ADDITIONAL DATA REQUIREMENTS TO EVALUATE REMEDIAL ALTERNATIVES[3]
Middle	3-2	4	Neutralization Facility	Metals Cyanide	Groundwater	Low	Removal/Disposal Slurry Wall	Presence, nature, and extent of contamination	None
	3-2	5	Degreaser Use Area	Metals, Trichloroethylene	Groundwater	Low	Recovery/Treatment	Nature and extent of contamination	Permeability
	3-2	10	Solvent Tank Area	PCBs	Groundwater	Low	Recovery/Treatment Slurry Wall	Nature and extent of contamination	Permeability
	3-2	15	PCB Use Area	PCBs, Trichlorobenzene	Groundwater	Low	Recovery/Treatment	Nature and extent of contamination	Permeability
North	3-3	3	Degreaser Use Area	Metals 1,1,1-Trichloroethane	Groundwater	Low	Recovery/Treatment	Nature and extent of contamination	Permeability
	3-3	10	Surface Soil	PCBs	Surface Water	Low	Removal/Disposal Cap/Cover	None	None

The no-action alternative, which includes monitoring, is considered to be a potential remedial alternative for each source area indicated in this table.
It is recognized that treatment could include a wide range of activities such as on-site incineration, in-situ treatment and/or stabilization, air stripping, oil/water separation, sewer cleaning, etc. These potential treatment technologies will be addressed along with other potentially applicable technologies in the FS.
Bench and/or pilot scale treatability testing may be required as part of the evaluation of some remedial alternatives.
Westinghouse opinion.

TABLE 5-1

PRELIMINARY LIST OF ARARS

I. Section 14.2 of the Public Health Service Act as amended by the Safe Drinking Water Act, as amended, [42 U.S.C. 300(f)].

A. Maximum Contaminant Levels (for all sources of drinking water exposure) (40 CFR 141.11-141.16).
B. Maximum Contaminant Level Goals (40 CFR 141.50-141.51, 50 FR 46936).

II. Clean Water Act, as amended, (33 U.S.C. 1251).

A. Requirements established pursuant to Sections 301, 302, 303 (including state water quality standards), 304, 306, 307 (including federal pretreatment requirements for discharge into a publicly owned treatment works), 308, 402, 403 and 404 of the Clean Water Act (33 CFR Parts 320-329, 40 CFR Parts 122, 123, 125, 131, 230, 231, 233, 400-469).
B. Available Federal Water Quality Criteria documents as listed at 45 FR 79318, November 28, 1980; 49 FR 5831, February 15, 1984; 50 FR 30784, July 29, 1985; 51 FR 8012, March 7, 1986; 51 FR 22978, June 28, 1986; 51 FR 43665, December 3, 1986; 52 FR 6213, March 2, 1987.

III. 40 CFR Part 761; Manufacturing, Processing, Distribution in Commerce, and Use of PCBs and PCB Items (40 CFR 761.20-761.30); Markings of PCBs and PCB Items (40 CFR 761.40-761.45).

IV. Clean Air Act (42 U.S.C. 7401).

A. National Primary and Secondary Ambient Air Quality Standards (40 CFR Part 50).
B. National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61). See also 40 CFR 427.110-427.116, 763.

V. OSHA Requirements

A. Occupation Safety and Health Standards (General Industry Standards) (29 CFR Part 1910).
B. The Health and Safety Standards for Employees Engaged in Hazardous Waste Operations (29 CFR 1910.120).

VI. Requirements of authorized (Subtitle C of RCRA) state hazardous waste programs.

VII. Approved state NPDES programs under the Clean Water Act.

VIII. State Water Quality Standards.

IX. State Air Toxics Regulations.

TABLE 5-2

PRELIMINARY LIST OF TBC CRITERIA

I. Federal criteria, advisories, and procedures.

- A. Health Effects Assessments (HEAs) and Proposed HEAs ["Health Effects Assessment for (Specific Chemical to be identified upon finalization of COI)"], EECAO, USEPA, 1985.
- B. PCB Spill Cleanup Policy (52 FR 10688, April 2, 1987).
- C. EPA's Ground Water Protection Strategy.
- D. Guidance of Remedial Actions for Contaminated Ground Water at Superfund Sites (Draft, October 1986) establishes criteria for the use of background concentrations and ACLs.
- E. Superfund Public Health Evaluation Manual.
- F. TSCA health data.
- G. TSCA chemical advisories.
- H. Health Advisories, EPA Office of Water.

II. USEPA Office of Water Guidance Documents.

- A. 304(g) Guidance Document on Revised Pretreatment Guidelines (3 volumes).
- B. Developing Requirements for Direct and Indirect Discharges of CERCLA Wastewater (1987).

III. NPDES Best Management Practices Guidance Manual (June 1981).

IV. Ground Water/UIC Guidance Documents.

- A. Designation of a USDW.
- B. Elements of Aquifer Identification.
- C. Definition of Major Facilities.
- D. Corrective Action Requirements.

V. Clean Water Act Guidance Documents.

LIST OF TBC LAWS

Program	Federal		State		Roles of Federal and State Governments
	Statute	Regulation	Statute	Regulation	
Water Pollution	33 U.S.C §1251	40 C.F.R. Parts 100-149 and 400-471	35 P.S. §691.1 et seq. 35 P.S. §751.1 et seq.	25 pa. Code, Chapter(s) 92 Chapter(s) 71, 73 Chapter(s) 94, 95	Federal Government's role in water pollution is almost exclusively oversight when NPDES permits have been delegated to a state as they have in PA. PA administers permit program for direct discharges and in conjunction with local government administers septic tank program.
Air Pollution	42 U S C §7401 et seq	40 C F R Parts 50-87	35 P.S. §4001 et seq	25 Pa. Code, Chapter(s) 127, 143 Chapter(s) 122, 124	Federal Government adopts National Ambient Standards, certain New Source Standards, and certain Hazardous Waste Standards and acts in major oversight role of State activities. PA develops state implementation plan to meet federal ambient standards and issues permits for point sources. Federal government retains some enforcement authority but major authority exercised by State.
Mining	30 U.S C §1201 et seq	30 C.F R Parts 761-955	52 P.S §1396 et seq 52 P.S. §1406.1 et seq.	25 Pa Code, Chapter(s) 86-90	State has been delegated authority to implement mining law with the Department of Interior playing oversight role.
Waste Management (Hazardous Waste except Superfund)	42 U S C §6901 et seq 15 U S C §2601 et seq.	40 C F R Parts 240-280 40 C.F R Parts 702-799	35 P.S §6018 101 et seq	25 Pa Code, Chapter(s) 75-76	State implements RCRA after federal delegation. Pennsylvania has been delegated most but not all of federal RCRA. State implements independent program for other portions of solid waste management not covered by federal law.
Drinking Water	42 U S C §300f-300j	40 C F R Parts 141-147	35 P S §750 1 et seq.	25 Pa Code, Chapter(s) 109	State implements program after federal delegation. Federal role in Pennsylvania is largely oversight.
Superfund	42 U S C §9601 et seq	40 C.F.R Parts 380, 306	35 P.S §6020.101 et seq.	Regulations in development	Federal superfund almost exclusively implemented by federal government. State plays limited support role. State statute created an independent state program.
Wetlands Protection	33 U S C §404 33 U S C §401	33 C F R Parts 320-330	32 P S §693 1 et seq 35 P S §691 1 et seq	25 Pa Code, Chapter(s) 105	Both state and federal permits are required to fill wetlands.
General Environmental Impact Analysis	42 U.S.C §4321		Pa. Const. Art 1, §27	Self executing	Federal government is required under NEPA to develop environmental impact statement for federal actions. Constitution requires that state and local government comply with environmental provision of constitution.
Flood Plain Management	42 U S C §4001	44 C.F.R Part 60	32 P.S §679 101 et seq	25 Pa Code, Chapter(s) 106 16 Pa Code, Chapter(s) 38	State law requires that municipalities pass regulations that comply with federal law
Dam Safety & Encroachment	33 U S C §404	33 C F R Parts 320, 330	32 P S §693 1 et seq	25 Pa Code, Chapter(s) 105	Army Corps of Engineers issues "404" permits in wetlands. Pennsylvania independent authority

TABLE 5-3
(Continued)

Program	Federal		State		Roles of Federal and State Governments
	Statute	Regulation	Statute	Regulation	
Oil and Gas Management	--	--	58 P.S §601.101et seq. 58 P.S. §501.et seq. 58 P.S. §471.et seq.	25 Pa. Code. Chapter(s) 78, 79	No express federal program except to the extent ground-water regulated under other federal statutes.
Stormwater	33 U.S.C §402	40 C.F.R. §122.21	32 P.S. §680.1et seq.	25 Pa. Code. Chapter(s) 111	Federal permits not required until 10/1/92 but federal government or the Commonwealth can require if stormwater creates pollution. State law requires municipalities to prepare stormwater management plans.

CONSTRUCTION DATA FOR EXISTING WELLS
INSTALLED ON SAWHILL PROPERTY

MONITORING WELL	STATIC (DTW)	REPORTED TOTAL DEPTH	TOTAL DEPTH (10-12-91)	WELL DIAMETER	LOCKED/ UNLOCKED	BORING LOG	INSTALL DIAGRAM	COMMENTS
MW-1A	–	50.00	–	2"	UNLOCKED	SUMMARIZED	NO	DAMAGED AND INACCESSIBLE.
MW-2	–	18.00	–	2"	UNLOCKED	SUMMARIZED	NO	DAMAGED AND INACCESSIBLE.
MW-3A	6.05	18.00	18.42	2"	UNLOCKED	SUMMARIZED	NO	LOCKING COVER ABLE TO BE REMOVED.
MW-4	–	18.00	–	2"	UNLOCKED	SUMMARIZED	NO	DAMAGED AND INACCESSIBLE.
MW-5	–	43.5	–	2"	UNLOCKED	SUMMARIZED	NO	DAMAGED AND INACCESSIBLE.
MW-6	9.41	21.00	10.45	2"	UNLOCKED	SUMMARIZED	NO	WELL MAY BE FILLED WITH SILT.
MW-7	12.60	20.00	21.45	2"	UNLOCKED	SUMMARIZED	NO	WELL UNLOCKED, APPROXIMATELY 6" OF OIL IN WELL.
MW-8	12.28	21.00	20.95	2"	LOCKED	SUMMARIZED	NO	WELL IS SECURE.
MW-9	13.00	50.00	49.35	2"	LOCKED	SUMMARIZED	NO	WELL IS SECURE.
MW-10	12.15	20.00	21.00	2"	LOCKED	SUMMARIZED	NO	WELL IS SECURE.
MW-11	13.45	20.50	22.05	2"	LOCKED	SUMMARIZED	NO	WELL IS SECURE.
MW-12	–	25.00	–	2"	UNLOCKED	SUMMARIZED	NO	WELL NOT FOUND, REPORTED ON AS DESTROYED.
MW-13	5.15	18.00	19.15	2"	UNLOCKED	SUMMARIZED	NO	WELL WAS UNLOCKED
MW-14	–	18.00	–	2"	UNLOCKED	SUMMARIZED	NO	DAMAGED AND INACCESSIBLE.
MW-15	–	18.00	–	2"	UNLOCKED	SUMMARIZED	NO	DAMAGED AND INACCESSIBLE.
MW-16	16.12	24.00	25.50	2"	UNLOCKED	SUMMARIZED	NO	WELL IS SECURE.
MW-17A	9.07	19.00	19.25	2"	UNLOCKED	SUMMARIZED	NO	WELL WAS UNLOCKED.

NOTE: DEPTH TO WATER AND TOTAL DEPTH MEASUREMENTS WERE NOT ACQUIRED IN WELLS THAT WERE DAMAGED OR DESTROYED. MW-17A, MW-1A, AND MW-2 WERE DESTROYED PRIOR TO THE JUNE 1992 PHASE IB SAMPLING ROUND.

TABLE 6-2

SUMMARY OF PHASE IA TCL ANALYSIS

- **GROUNDWATER**

  Wells S-5, S-12, M-5, M-11A, M-16, N-1, and N-6A.

- **SURFACE SOIL**

  One sample from embankment east of moat and one sample from tank farm area.

- **FLOATING OIL**

  One sample each from Wells S-4 an M-2.

TABLE 6-3

PHASE IB COMPOUNDS OF INTEREST

CATEGORY A (Basic Site-Wide COI)

VOLATILES:

1,2-dichlorobenzene
1,3-dichlorobenzene
1,4-dichlorobenzene
Chlorobenzene
Benzene
Methyl ethyl ketone
Toluene
1,1,1-trichloroethane
1,1-dichloroethane
Trichloroethene
1,1-dichloroethene
Total xylenes

SEMIVOLATILES:

1,2,4-trichlorobenzene

PCBS:

PCB-1242
PCB-1254
PCB-1260

TPH

CATEGORY B (Selected Groundwater Samples)

Category A parameters plus Total + Filtered Mn

CATEGORY C (Basic COI for Groundwater in Middle Sector)

Category A parameters plus CN

CATEGORY D (Selected Groundwater in Middle Sector)

Category A parameters plus Total + Filtered Mn and CN

CATEGORY E (Off-Site Groundwater)

TCL/TAL:
- Volatiles
- Semivolatiles
- PCBs
- TPH
- Metals (Total + Filtered)
- CN

CATEGORY F (Oil)

PCBs
Dioxins/Furans (selected wells)

CATEGORY G (Site-Wide Soil + Sediment)

Category A parameters plus lead

CATEGORY H (Soil - Middle Sector)

Category A parameters plus lead and CN

CATEGORY I (Selected Oil Stained Soils)

Appropriate Category (G or H parameters) plus Dioxin/Furans

CATEGORY J (Soil - Moat)

Same as Category E parameters (total metals only)

CATEGORY K (Surface Water)

Same as Category G (total lead only)

The COI category for each sample should be clearly indicated to the laboratory.

TABLE 6-4

PHASE 1B SAMPLING - JUNE/JULY 1992
WESTINGHOUSE - SHARON
FORMER TRANSFORMER PLANT

GROUNDWATER SAMPLES
(in order of sampling)

SAMPLE NUMBER	COI (1) CATEGORY
N-7B	A
N-6B	A
N-5	A
N-2B	A
N-1	B
N-3B	A
N-3A	A
S-1B	A
S-1A	A
S-11	A
M-18	C
M-8	C
S-3	A
S-5	B
S-6	A
S-7	A
S-8B	A
S-8A	A
S-9	A
S-10	B
S-11	A
S-12R	B
S-13	A
M-6	C
M-9	C
M-14	C
M-4A	C
M-11B	C
M-16	C
S-2A	A
S-2B	A
N-7A	A

SAMPLE NUMBER	COI CATEGORY
OS-1B	E
OS-1A	E
OS-2B	E
OS-2A	E
OS-3B	E
PS-3A	E
OS-4B	E
R-1	E
OS-4A	E
OS-5B	E
OS-5A	E
MW-3B	E
MW-3A	E
MW-15B	E
MW-15A	E
MW-14B	E
MW-14A	E
MW-16B	E
MW-16A	E
PW-1	E
M-4B	C
M-5	D
M-1	D
M-13	C
M-17	D
M-12	D
MW-7	E
M-15	D
S-4	B
M-11A	D
M-2	C
M-7	D
M-10	D

TABLE 6-4 (continued)

SOIL SAMPLES

SAMPLE NUMBER	COI (1) CATEGORY
SS-1	G
SS-2	G
SS-3	G
SS-4	G
SS-5	G
SS-6	G
SS-7 (2)	H

SAMPLE NUMBER	COI CATEGORY
SS-8 (2)	H
TS2C	J
TS4C	J
TS4E	J
TS4F	J
TS6B	J
TS6F	J

SURFACE WATER SAMPLES

SAMPLE NUMBER	COI (1) CATEGORY
SW-5	K
SW-6	K
SW-7	K

SAMPLE NUMBER	COI CATEGORY
SW-8	K
SW-9	K
SW-10	K

SEDIMENT SAMPLES

SAMPLE NUMBER	COI (1) CATEGORY
SD-1A	G
SD-1B	G
SD-2A	G
SD-2B	G
SD-3A	G
SD-3B	G
SD-4A	G

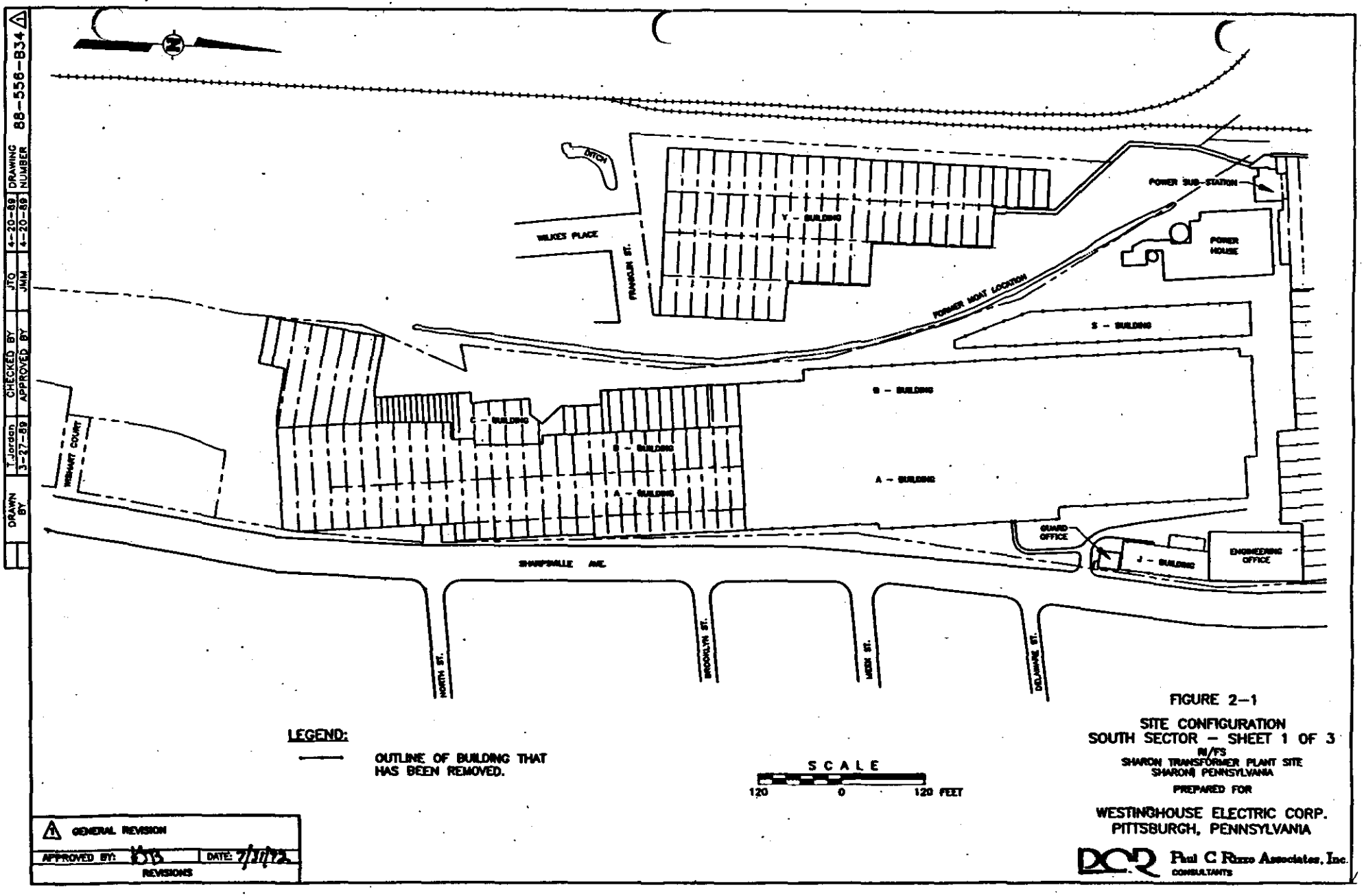
SAMPLE NUMBER	COI CATEGORY
SD-4B	G
SD-5	G
SD-6	G
SD-7	G
SD-8	G
SD-9	G
SD-10	G

NOTE: (1) Reference to Table 6-3 for Compounds of Interest delineation.
(2) Soil Samples SS-7 and SS-8 are composite samples.

FIGURES

[redacted]

FIGURES



LEGEND:

——— OUTLINE OF BUILDING THAT HAS BEEN REMOVED.

SCALE

120 0 120 FEET

FIGURE 2-1

SITE CONFIGURATION
SOUTH SECTOR - SHEET 1 OF 3
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
PREPARED FOR
WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

Paul C Rizzo Associates, Inc.
CONSULTANTS

GENERAL REVISION	
APPROVED BY:	DATE: 7/31/92
REVISIONS	

AR301479

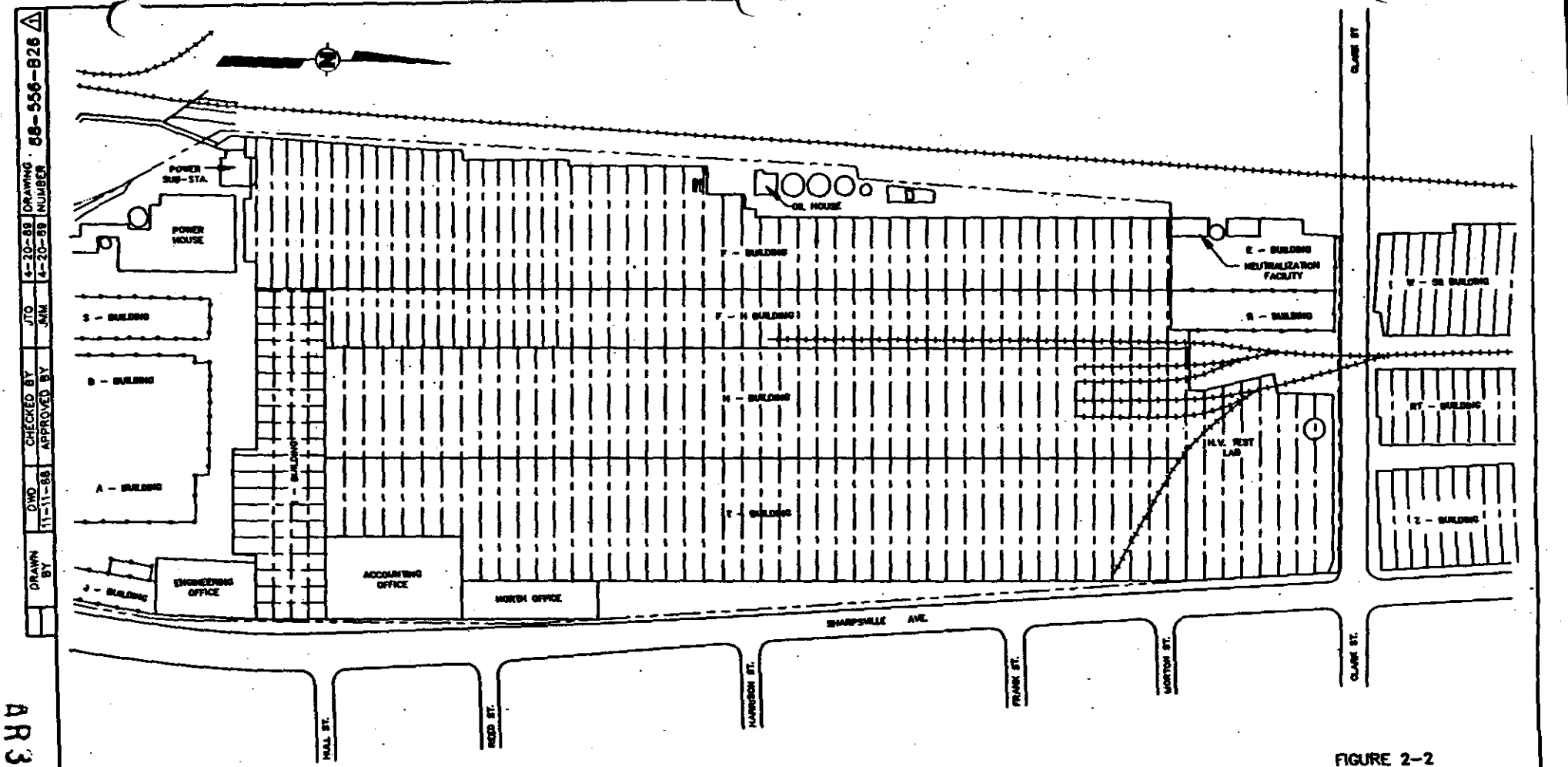


FIGURE 2-2

SITE CONFIGURATION
MIDDLE SECTOR - SHEET 2 OF 3
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
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AR301480

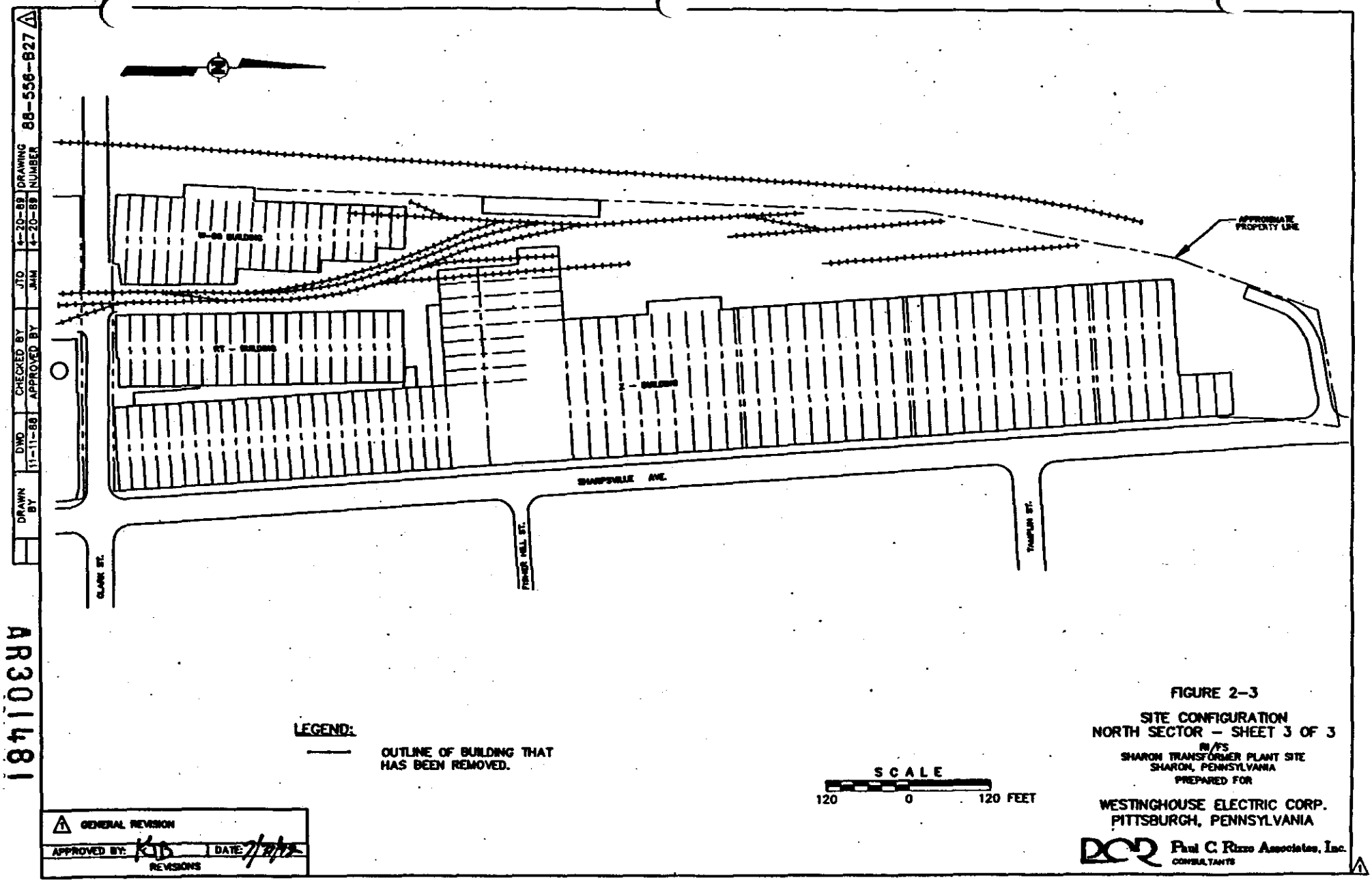

FIGURE 2-3

SITE CONFIGURATION
NORTH SECTOR – SHEET 3 OF 3
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
PREPARED FOR

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PITTSBURGH, PENNSYLVANIA

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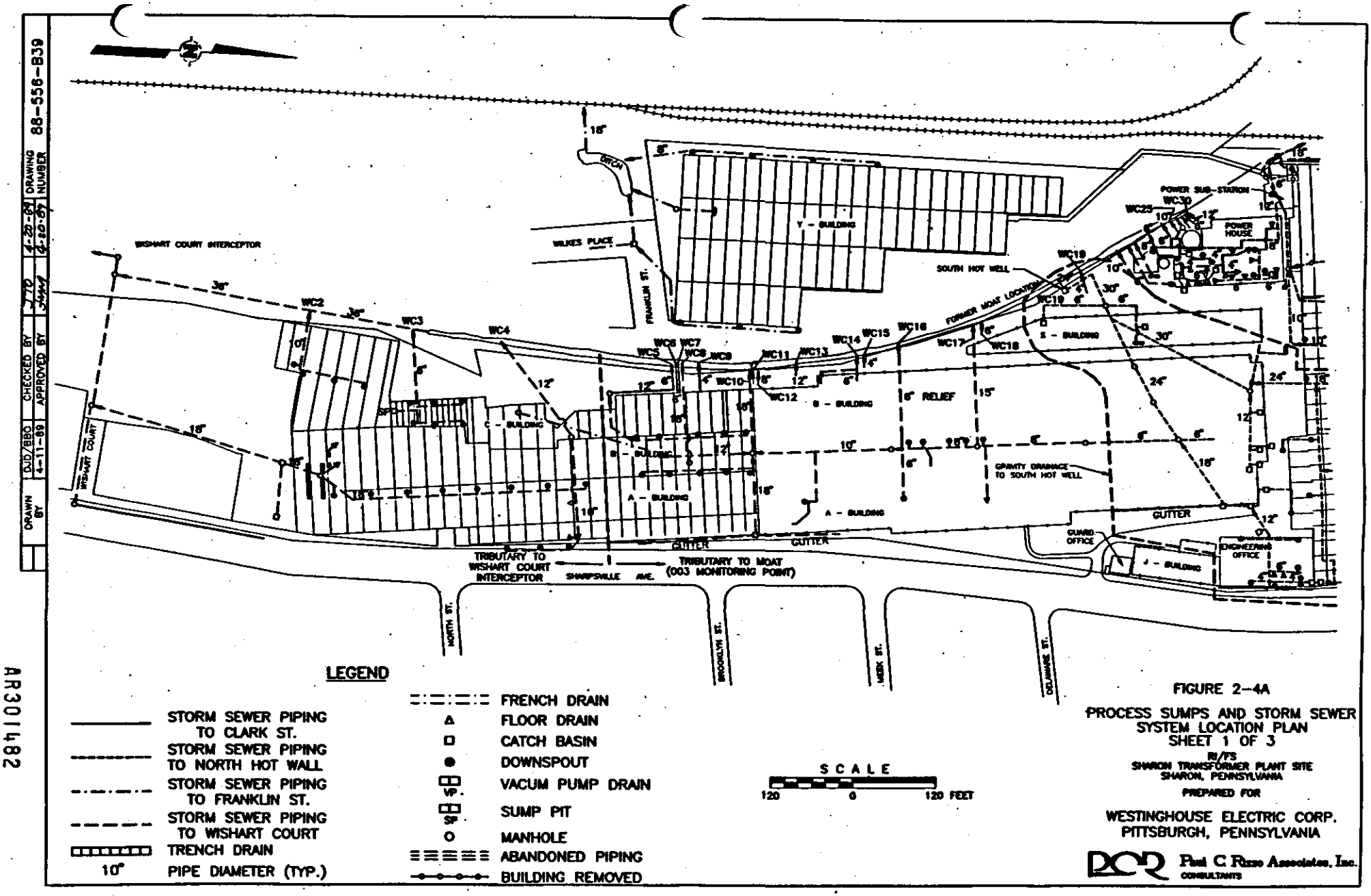

DRAWN BY | DJD/BBO 4-11-89 | CHECKED BY | APPROVED BY | 4-22-89 | 4-20-89 | DRAWING NUMBER 88-556-B39

LEGEND

- STORM SEWER PIPING TO CLARK ST.
- STORM SEWER PIPING TO NORTH HOT WALL
- STORM SEWER PIPING TO FRANKLIN ST.
- STORM SEWER PIPING TO WISHART COURT
- TRENCH DRAIN
- 10" PIPE DIAMETER (TYP.)
- FRENCH DRAIN
- FLOOR DRAIN
- CATCH BASIN
- DOWNSPOUT
- VP. VACUM PUMP DRAIN
- SP. SUMP PIT
- MANHOLE
- ABANDONED PIPING
- BUILDING REMOVED

SCALE
120 0 120 FEET

FIGURE 2-4A
PROCESS SUMPS AND STORM SEWER SYSTEM LOCATION PLAN
SHEET 1 OF 3
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
PREPARED FOR
WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
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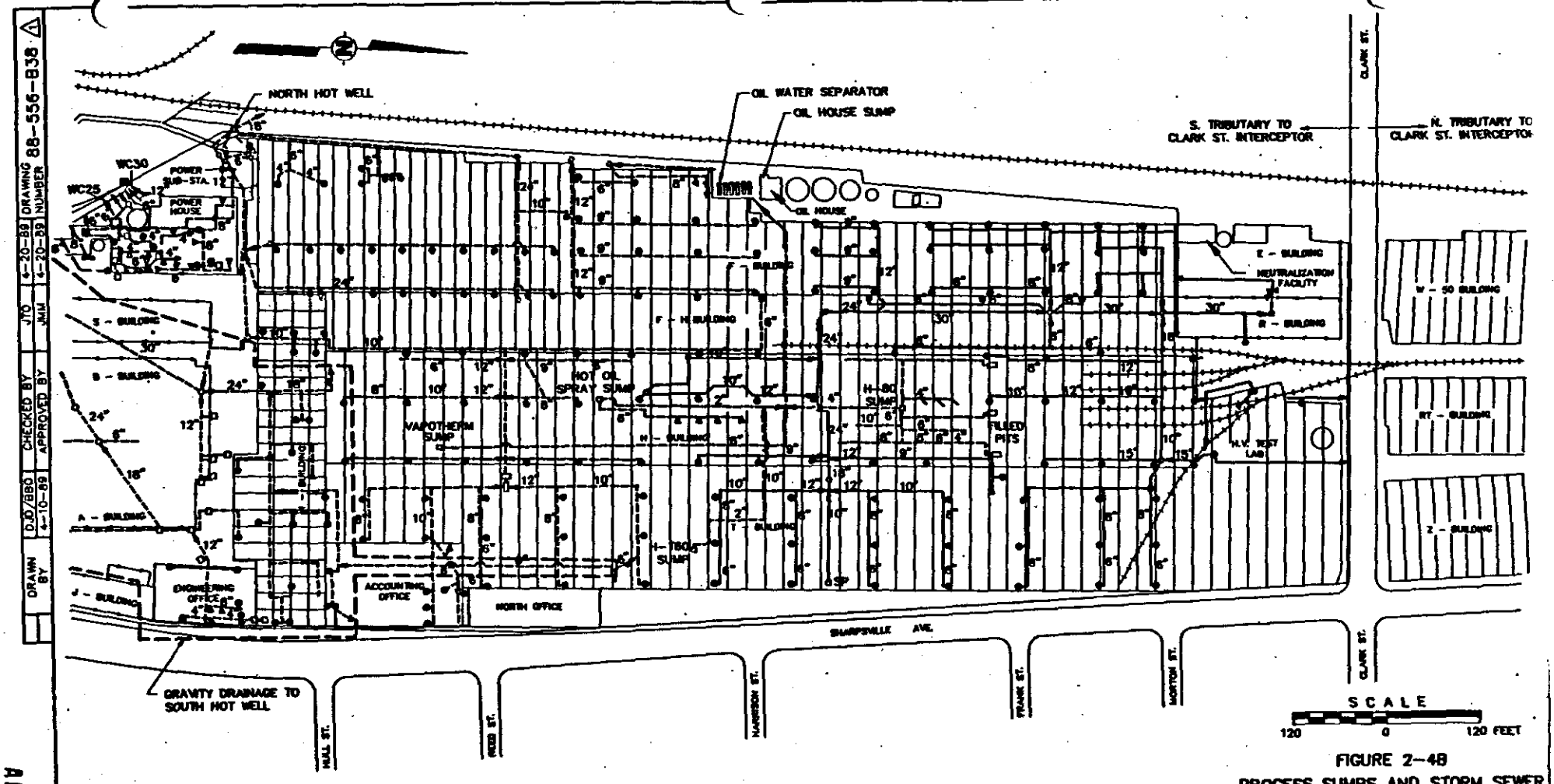

LEGEND

STORM SEWER PIPING TO CLARK ST.	CATCH BASIN
PROCESS SEWER PIPING TO NORTH HOT WELL	DOWNSPOUT
TRENCH DRAIN	VP VACUUM PUMP DRAIN
10" PIPE DIAMETER (TYP.)	SP SUMP PIT
FLOOR DRAIN	MANHOLE
	BUILDING REMOVED

DRAWING NUMBER	DRAWN BY	CHECKED BY	APPROVED BY
88-556-838	DJB/BBB 4-10-89	JTO 4-20-89	JMM 4-20-89

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APPROVED BY: KAB DATE: 7/11/89
REVISIONS

FIGURE 2-4B
PROCESS SUMPS AND STORM SEWER SYSTEM LOCATION PLAN
SHEET 2 OF 3
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
PREPARED FOR
WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA
Paul C. Rizzo Associates, Inc. CONSULTANTS

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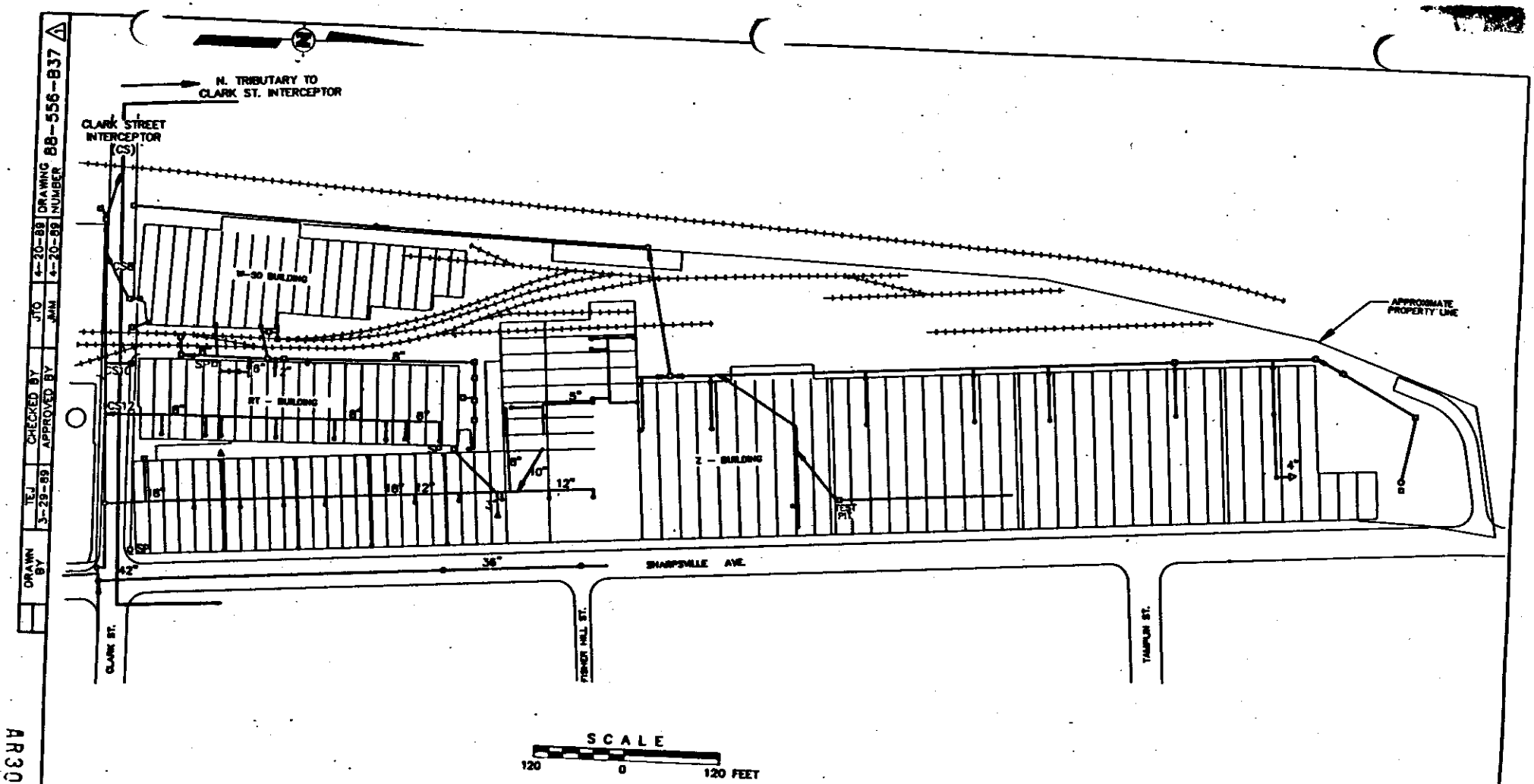

DRAWN BY: TEJ 3-29-89
CHECKED BY: JTO 4-20-89
APPROVED BY: JMM 4-20-89
DRAWING NUMBER 88-556-B37

LEGEND

- STORM SEWER PIPING TO CLARK ST.
- 10" PIPE DIAMETER (TYP.)
- FLOOR DRAIN
- CATCH BASIN
- DOWNSPOUT
- VP VACUUM PUMP DRAIN
- SP SUMP PIT
- MANHOLE
- BUILDING REMOVED

GENERAL REVISION
APPROVED BY: DATE: 8/1/2
REVISIONS

FIGURE 2-4C
PROCESS SUMPS AND STORM SEWER SYSTEM LOCATION PLAN
SHEET 3 OF 3

R/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

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PITTSBURGH, PENNSYLVANIA

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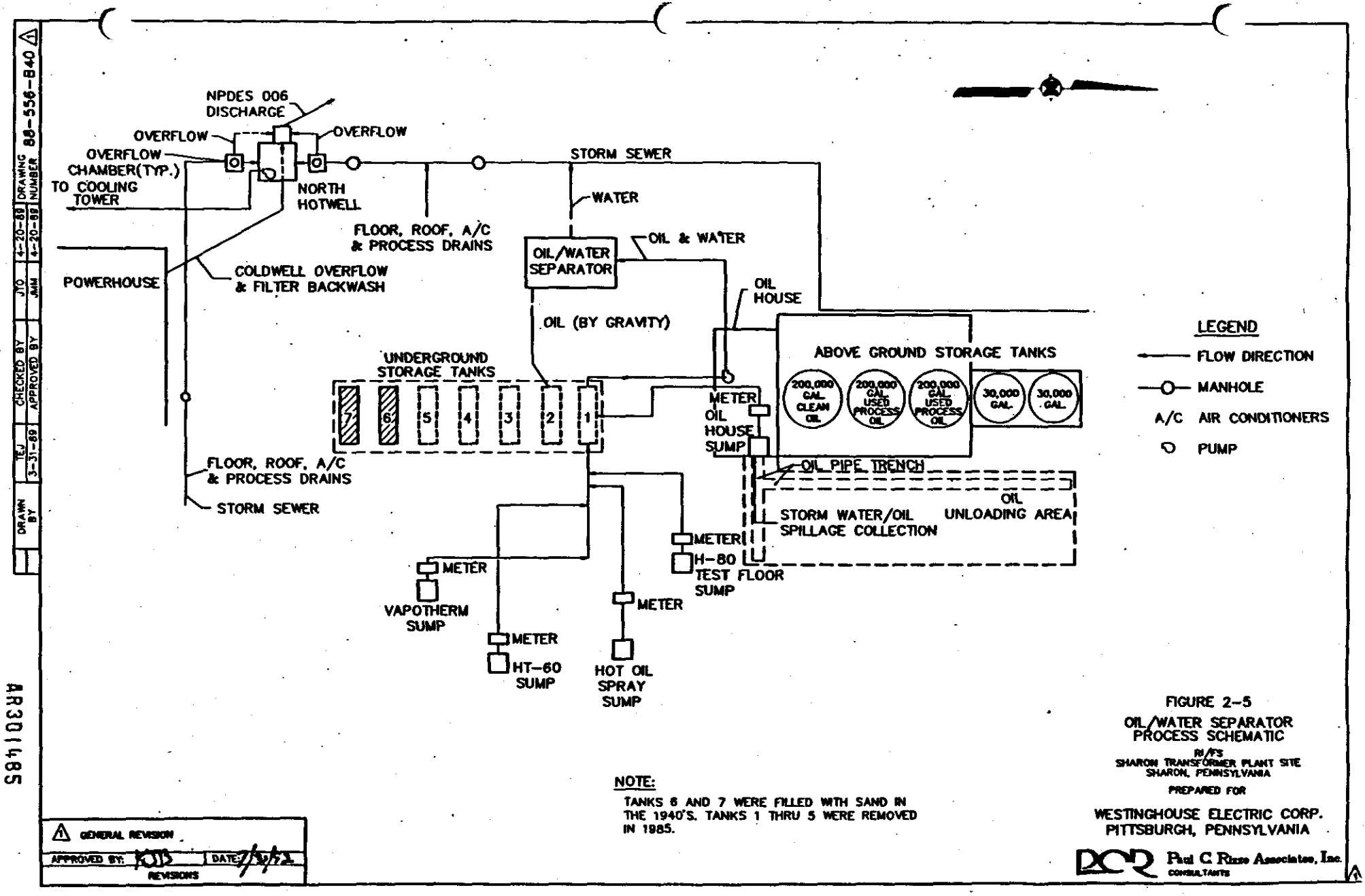

NOTE:

TANKS 6 AND 7 WERE FILLED WITH SAND IN THE 1940'S. TANKS 1 THRU 5 WERE REMOVED IN 1985.

FIGURE 2-5

OIL/WATER SEPARATOR PROCESS SCHEMATIC

RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

Paul C Rizzo Associates, Inc.
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⚠ GENERAL REVISION
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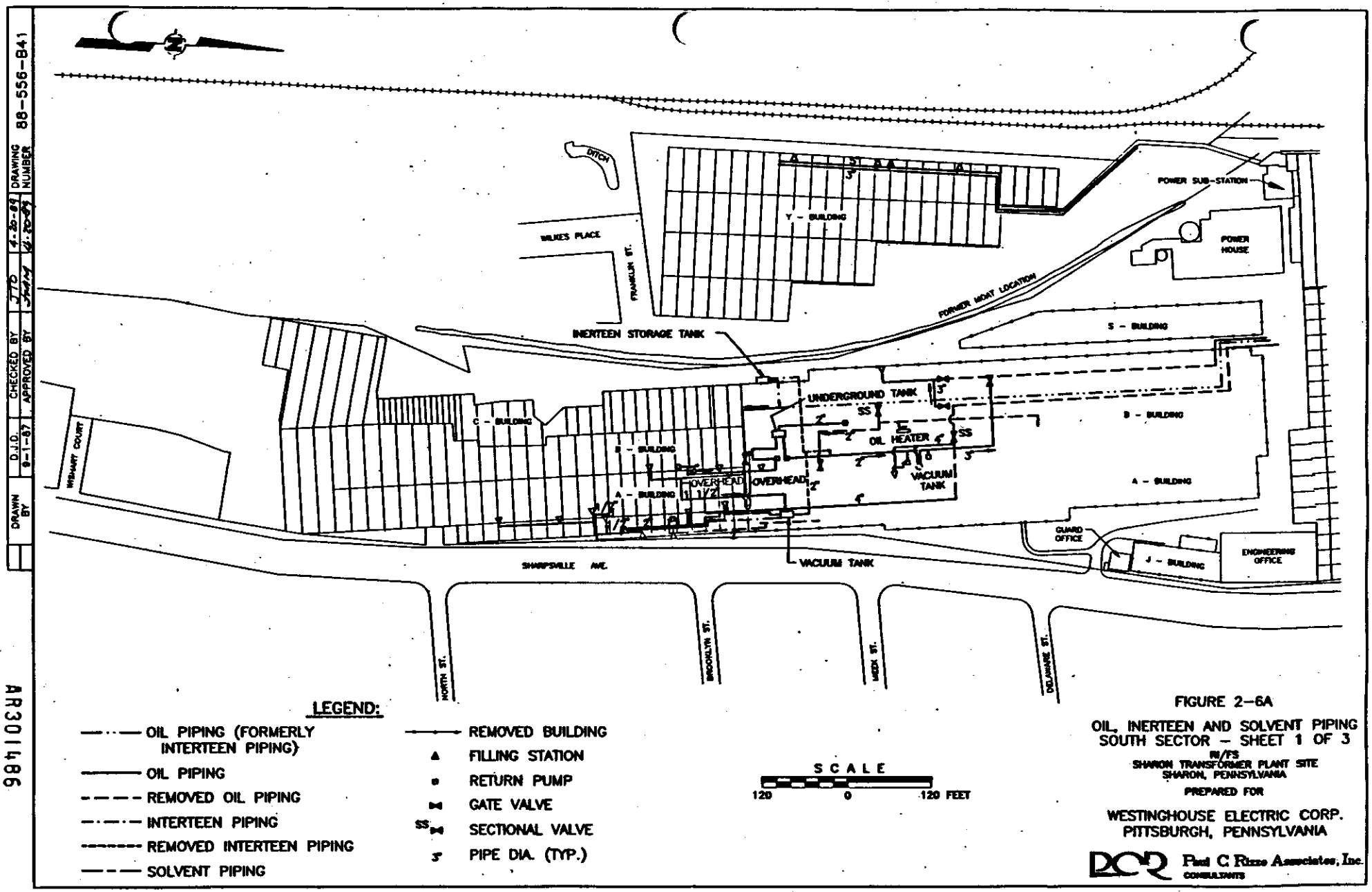

FIGURE 2-6A

OIL, INERTEEN AND SOLVENT PIPING SOUTH SECTOR - SHEET 1 OF 3

RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

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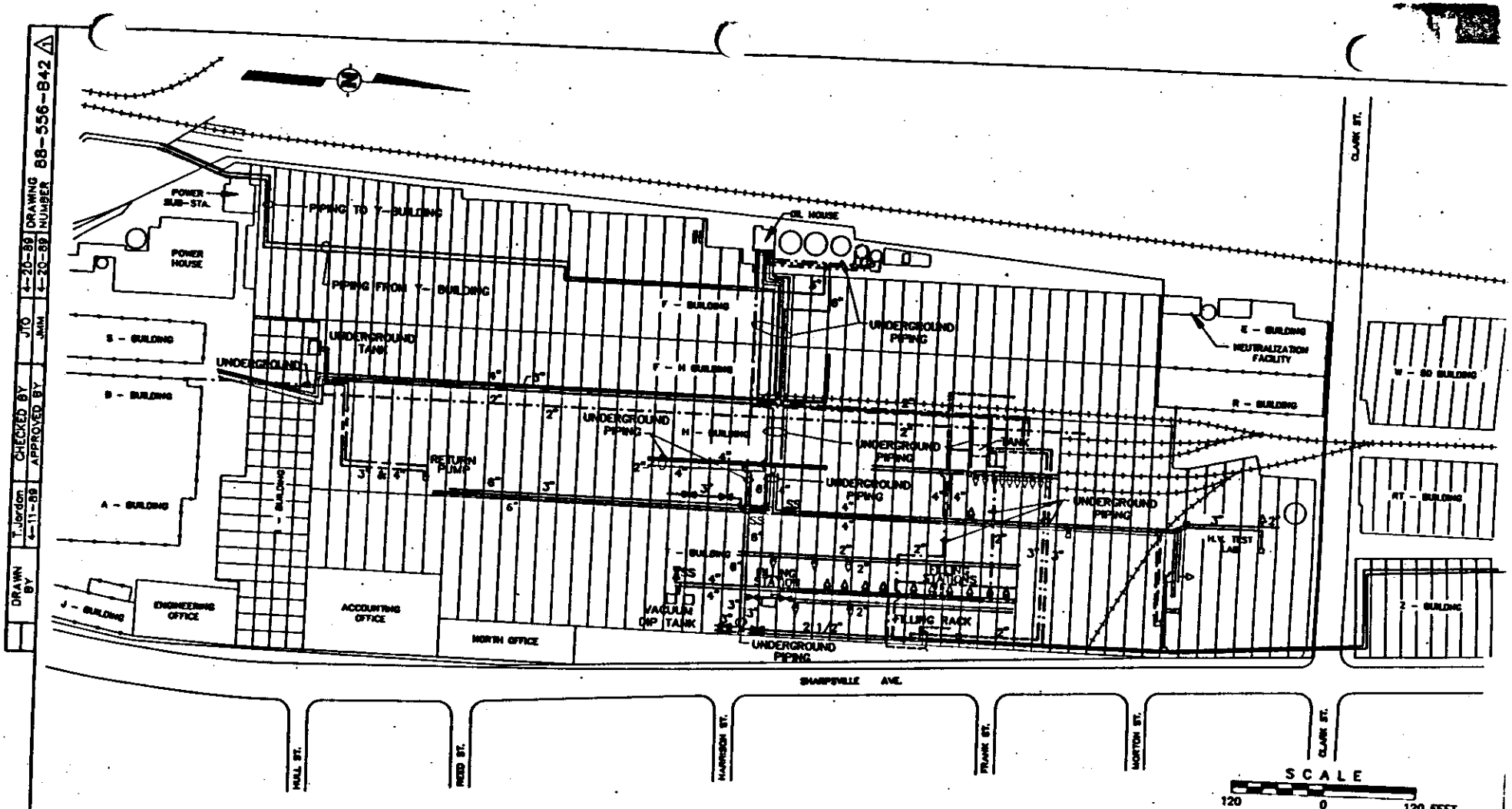

LEGEND:

- OIL PIPING (FORMERLY INERTEEN PIPING)
- OIL PIPING
- REMOVED OIL PIPING
- INERTEEN PIPING
- REMOVED INERTEEN PIPING
- SOLVENT PIPING
- REMOVED BUILDING
- FILLING STATION
- RETURN PUMP
- GATE VALVE
- SECTIONAL VALVE
- PIPE DIA. (TYP.)

⚠ GENERAL REVISION

APPROVED BY: [illegible] DATE: 7/8/93

REVISIONS

FIGURE 2-6B

OIL, INERTEEN & SOLVENT PIPING
MIDDLE SECTOR - SHEET 2 OF 3

RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
CONSULTANTS

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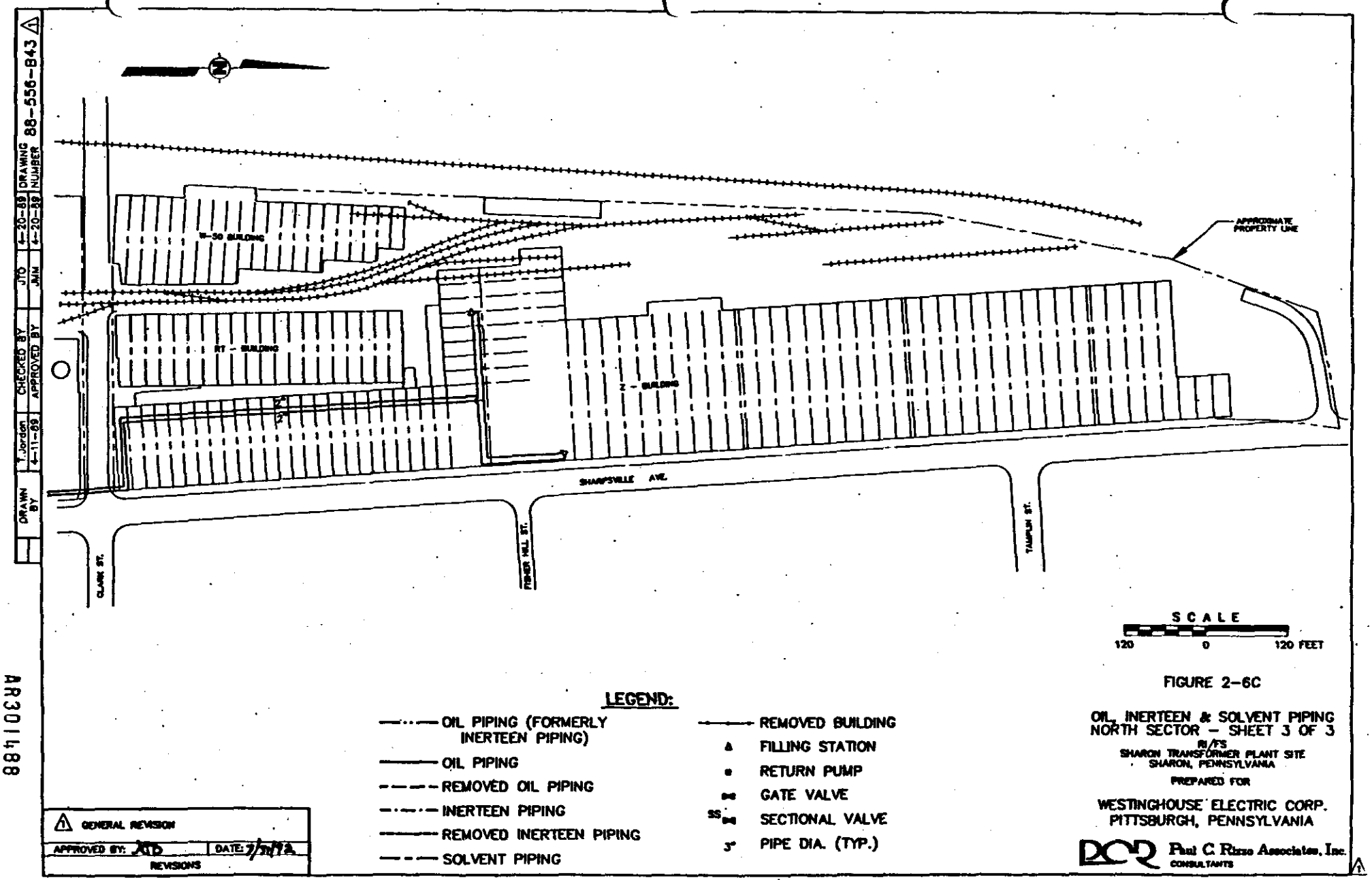

FIGURE 2-6C

OIL, INERTEEN & SOLVENT PIPING
NORTH SECTOR - SHEET 3 OF 3
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
PREPARED FOR
WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

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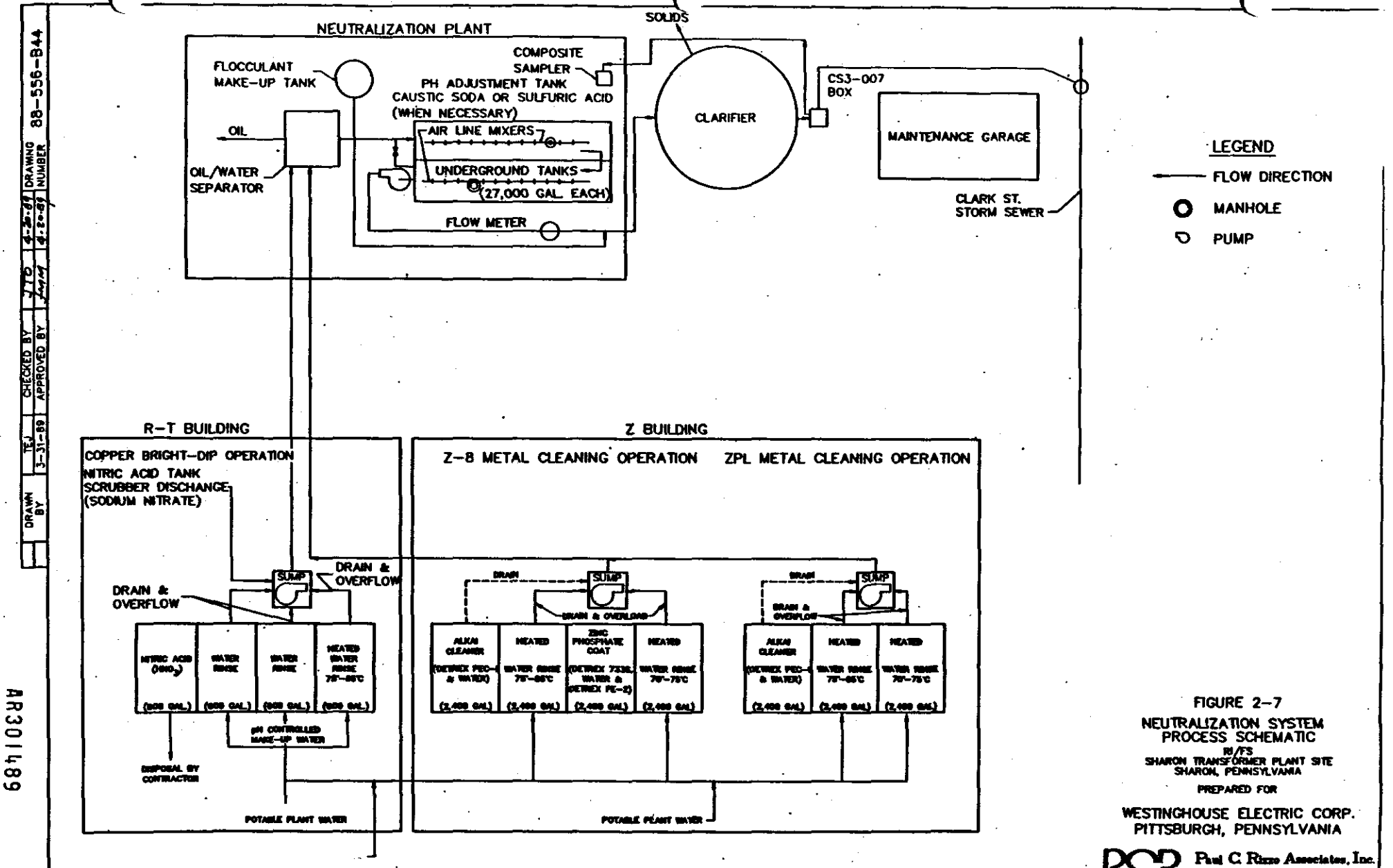

DRAWN BY TEJ 3-31-89
CHECKED BY
APPROVED BY
DRAWING NUMBER 88-556-B44

FIGURE 2-7
NEUTRALIZATION SYSTEM PROCESS SCHEMATIC
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
PREPARED FOR
WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
CONSULTANTS

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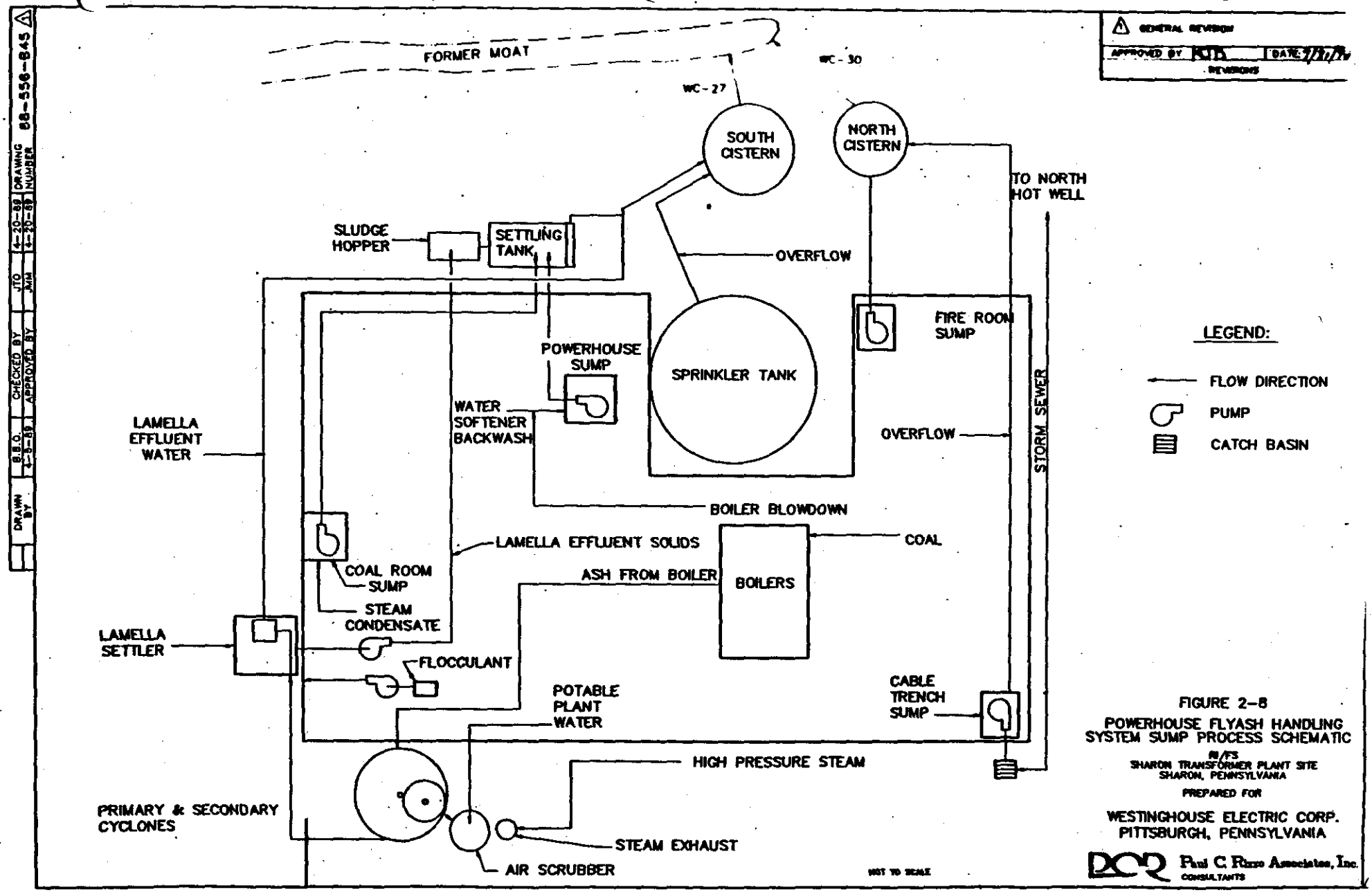

FIGURE 2-8

POWERHOUSE FLYASH HANDLING SYSTEM SUMP PROCESS SCHEMATIC

RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
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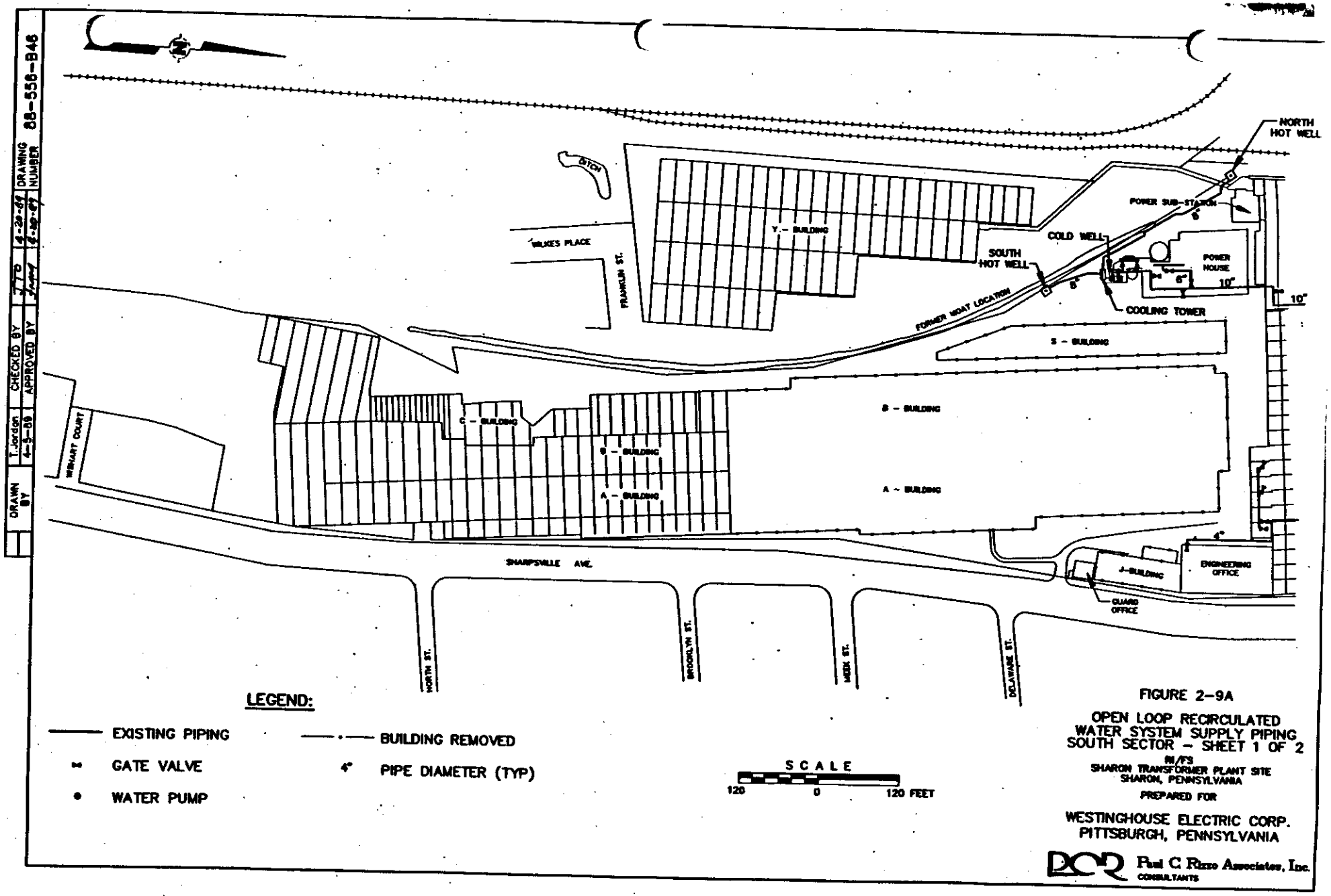
DRAWING NUMBER 88-556-B46
4-20-88
4-19-88
CHECKED BY
APPROVED BY
T. Jordan 4-5-88
DRAWN BY
NORTH HOT WELL
DITCH
WILKES PLACE
FRANKLIN ST.
Y - BUILDING
SOUTH HOT WELL
COLD WELL
POWER SUB-STATION
POWER HOUSE
FORMER BOAT LOCATION
COOLING TOWER
S - BUILDING
B - BUILDING
C - BUILDING
D - BUILDING
A - BUILDING
WEHART COURT
SHARPSVILLE AVE.
J-BUILDING
ENGINEERING OFFICE
GUARD OFFICE
NORTH ST.
BROOKLYN ST.
MAIN ST.
DELAWARE ST.
LEGEND:
EXISTING PIPING
BUILDING REMOVED
GATE VALVE
4" PIPE DIAMETER (TYP)
WATER PUMP
SCALE
120 0 120 FEET
FIGURE 2-9A
OPEN LOOP RECIRCULATED WATER SYSTEM SUPPLY PIPING SOUTH SECTOR - SHEET 1 OF 2
W/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
PREPARED FOR
WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA
Paul C. Rizzo Associates, Inc.
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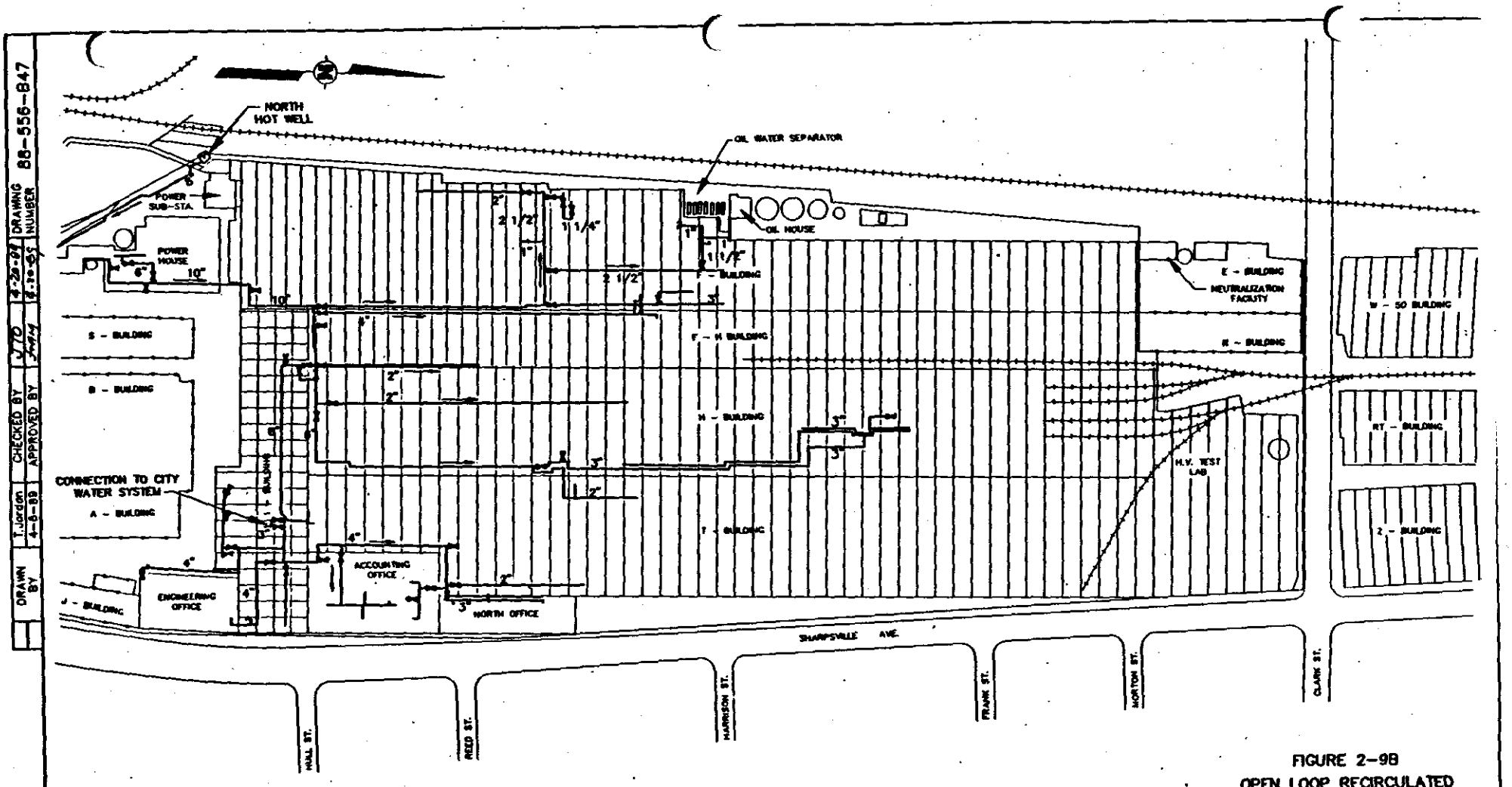

LEGEND:

——— EXISTING PIPING

——·—— BUILDING REMOVED

GATE VALVE

4" PIPE DIAMETER (TYP)

WATER PUMP

SCALE

120 0 120 FEET

FIGURE 2-9B

OPEN LOOP RECIRCULATED WATER SYSTEM SUPPLY PIPING MIDDLE SECTOR – SHEET 2 OF 2

RI/FS

SHARON TRANSFORMER PLANT SITE

SHARON, PENNSYLVANIA

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.

PITTSBURGH, PENNSYLVANIA

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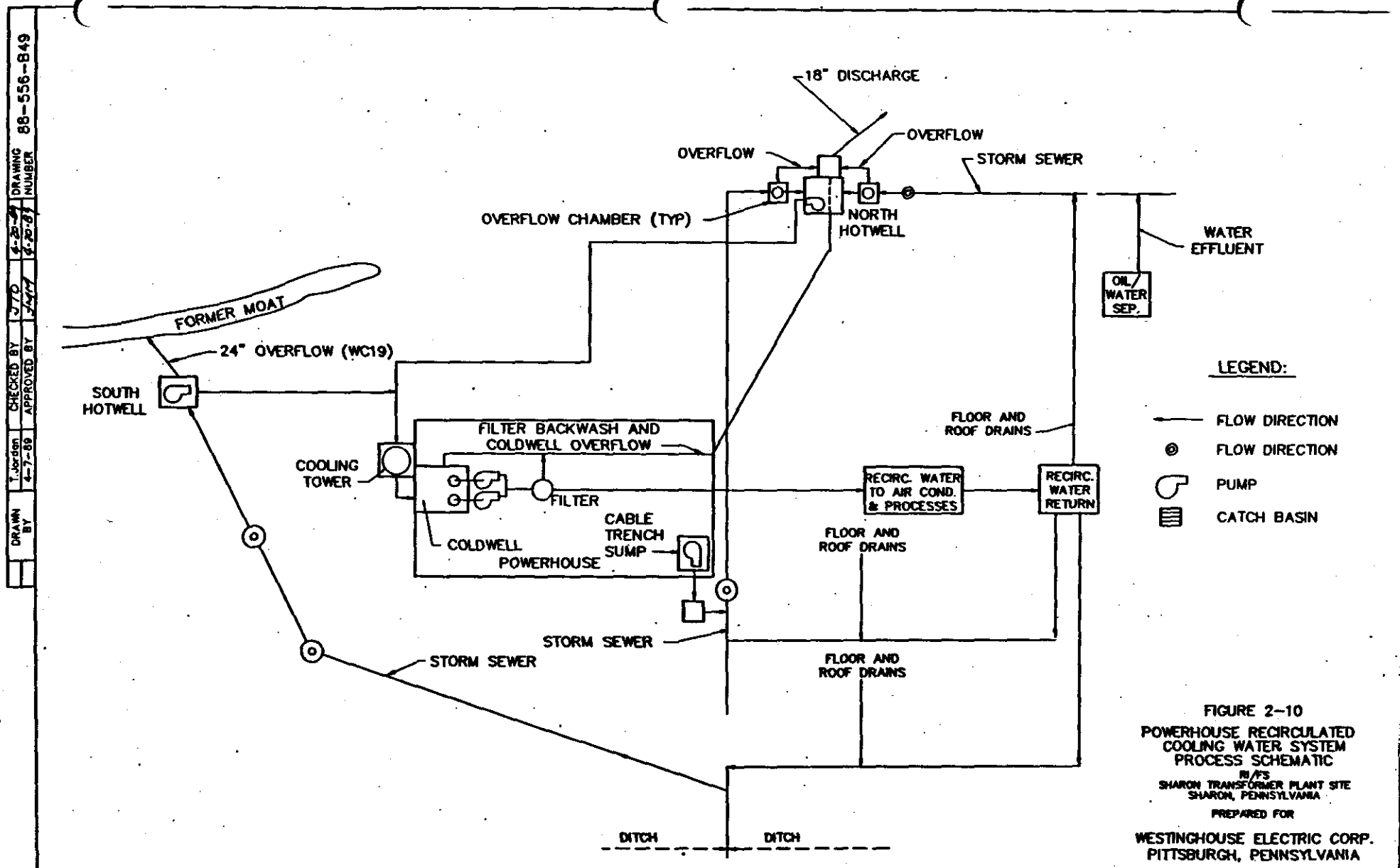

FIGURE 2-10
POWERHOUSE RECIRCULATED COOLING WATER SYSTEM PROCESS SCHEMATIC
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
PREPARED FOR
WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

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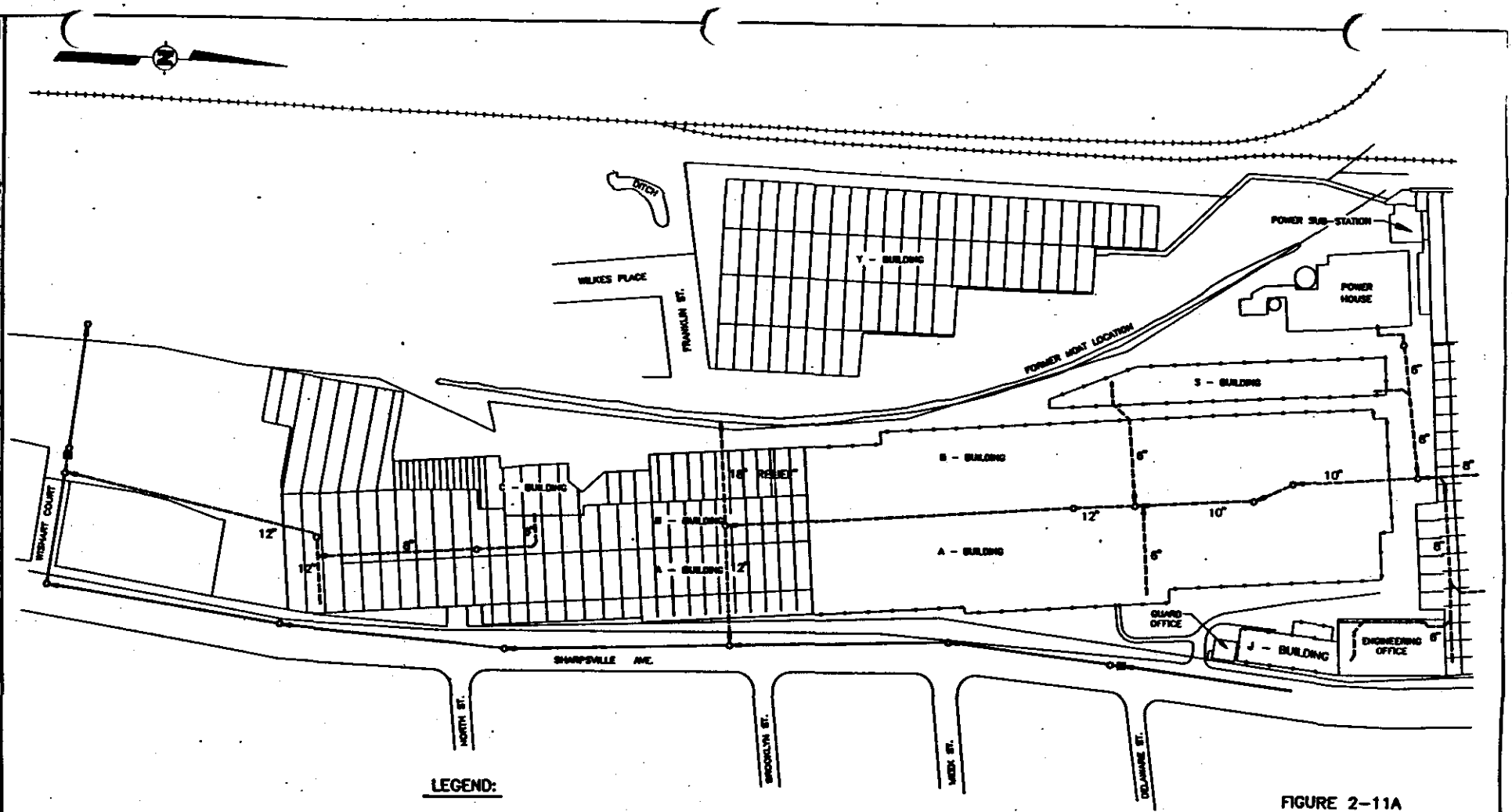

LEGEND:

- MUNICIPAL SEWERS
- PLANT SEWERS
- DIRECTION OF FLOW
- BUILDING REMOVED
- FLOOR DRAIN
- MANHOLE
- PIPE DIAMETER (TYP)
- SAMPLE LOCATIONS

SCALE
120 0 120 FEET

FIGURE 2-11A
SANITARY SEWER SYSTEM
SOUTH SECTOR – SHEET 1 OF 3

RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

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CHECKED BY	JTO	4-20-89
APPROVED BY	JNM	4-20-89

DRAWING NUMBER 88-556-B51

⚠ GENERAL REVISION
APPROVED BY: KTA DATE: 7/1/92
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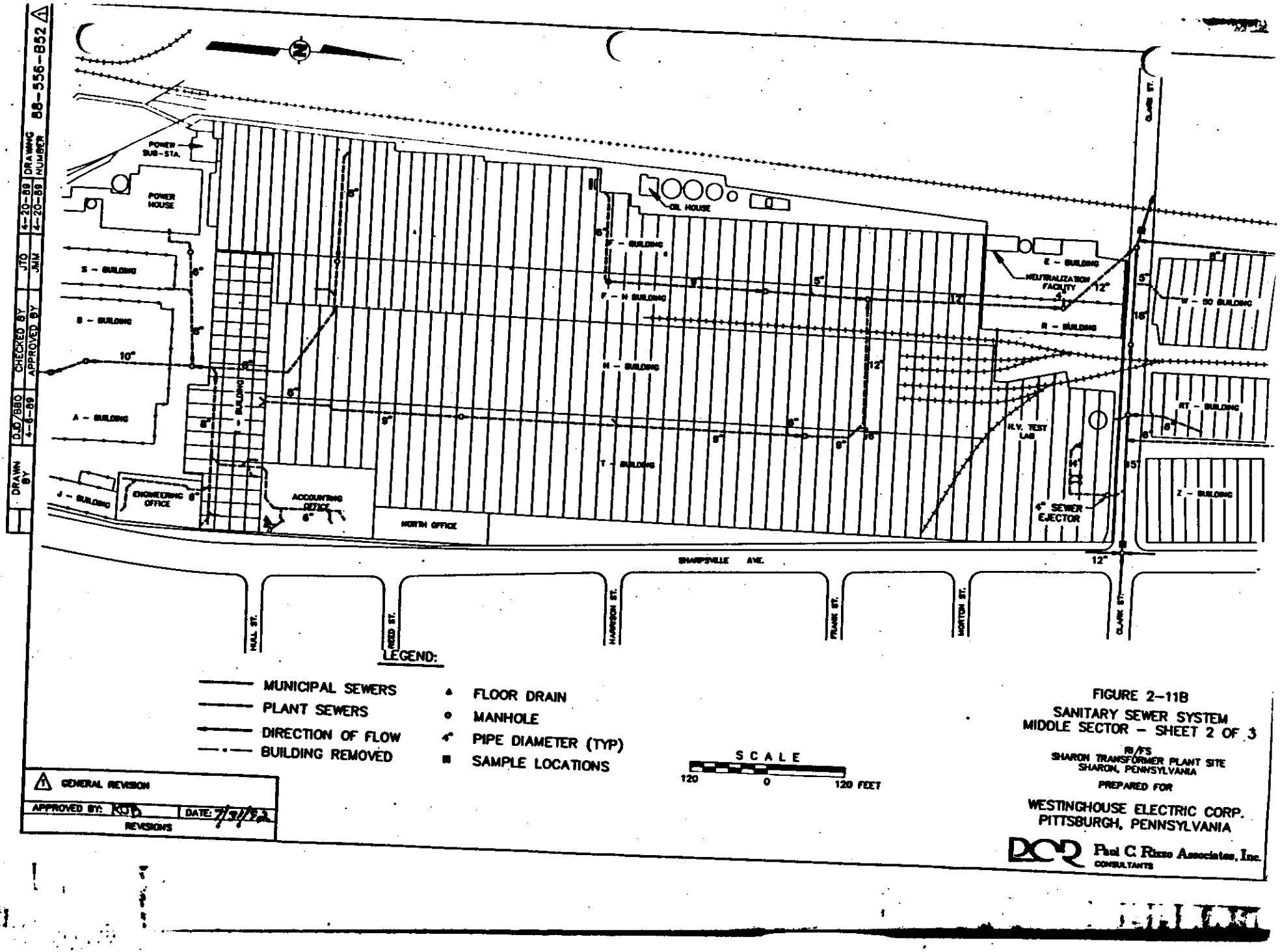

FIGURE 2-11B
SANITARY SEWER SYSTEM
MIDDLE SECTOR - SHEET 2 OF 3

RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

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PITTSBURGH, PENNSYLVANIA

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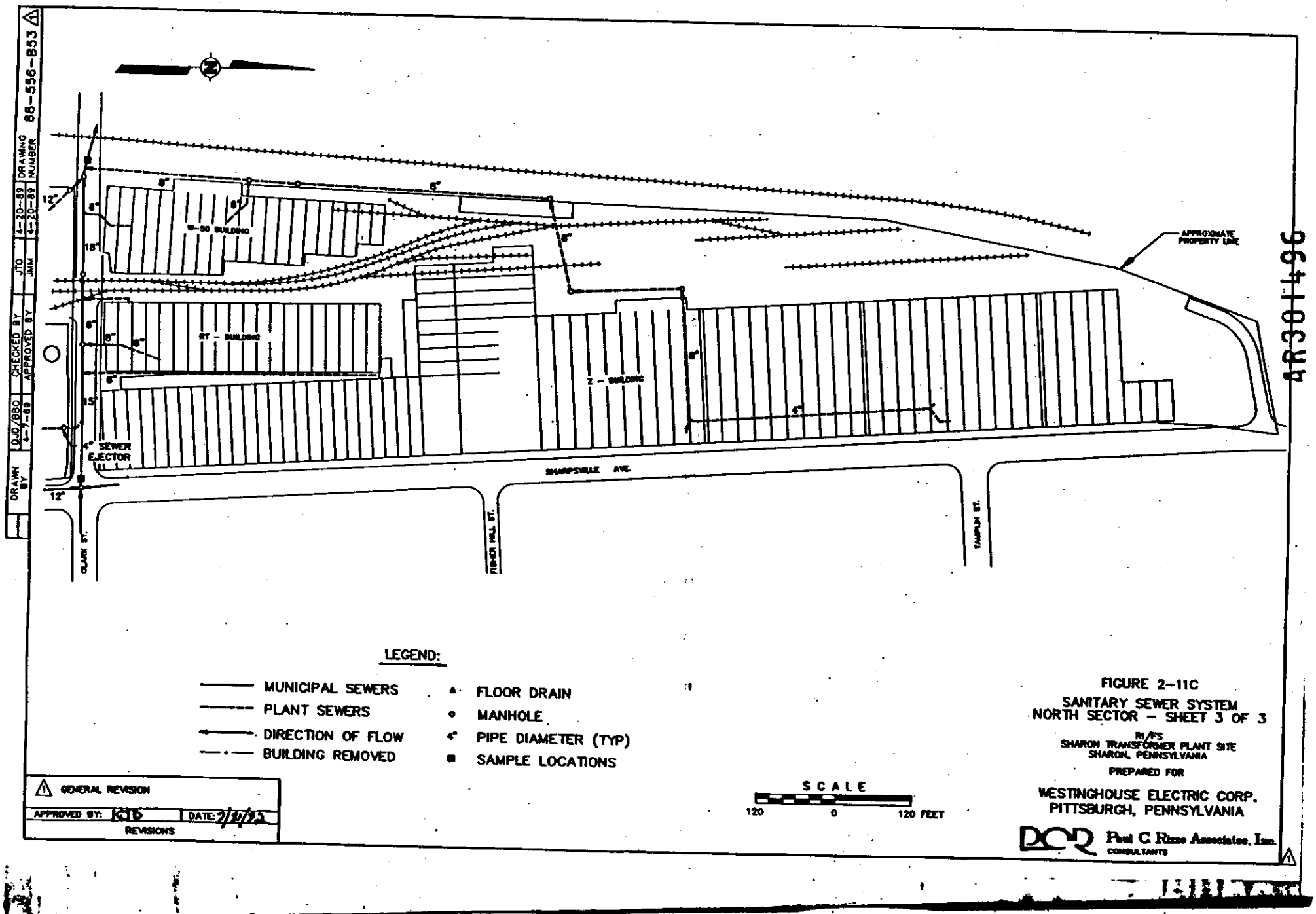

FIGURE 2-11C
SANITARY SEWER SYSTEM
NORTH SECTOR - SHEET 3 OF 3

RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
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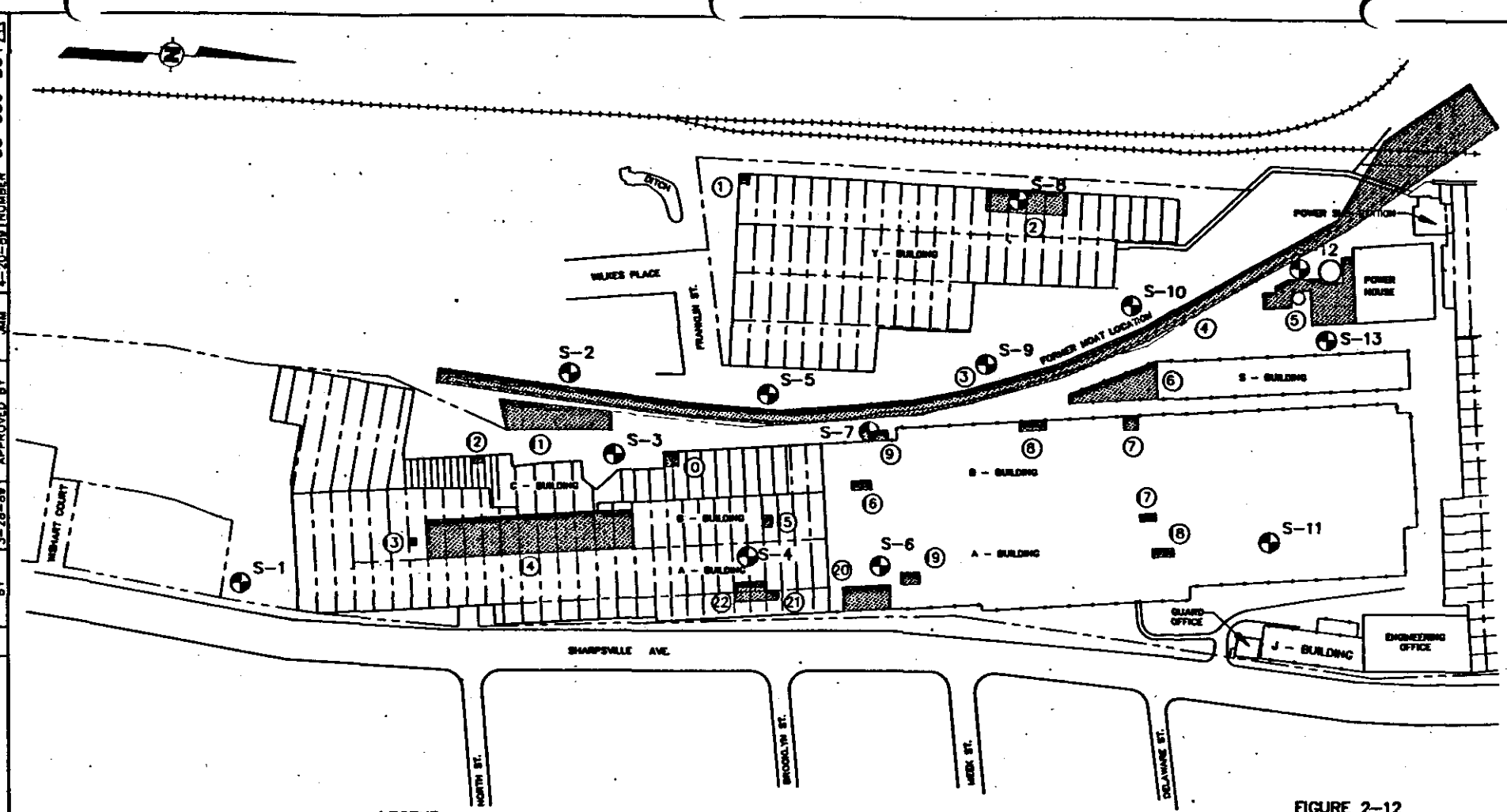

LEGEND:

⑧ CHEMICAL USE OR STORAGE AREA (SEE TABLE 2-2)

S-11 BORING/WELL LOCATION

SCALE

120 0 120 FEET

NOTES:

1. AREAS INDICATED ARE APPROXIMATE IN DIMENSION AND LOCATION.
2. AREA 3 (MOAT) IS AN AREA WHERE COI WERE DETECTED. CHEMICALS WERE NOT USED OR STORED IN THIS AREA.

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REVISIONS	

FIGURE 2-12

AREAS OF CHEMICAL USE AND STORAGE IN SOUTH SECTOR

RI/FS

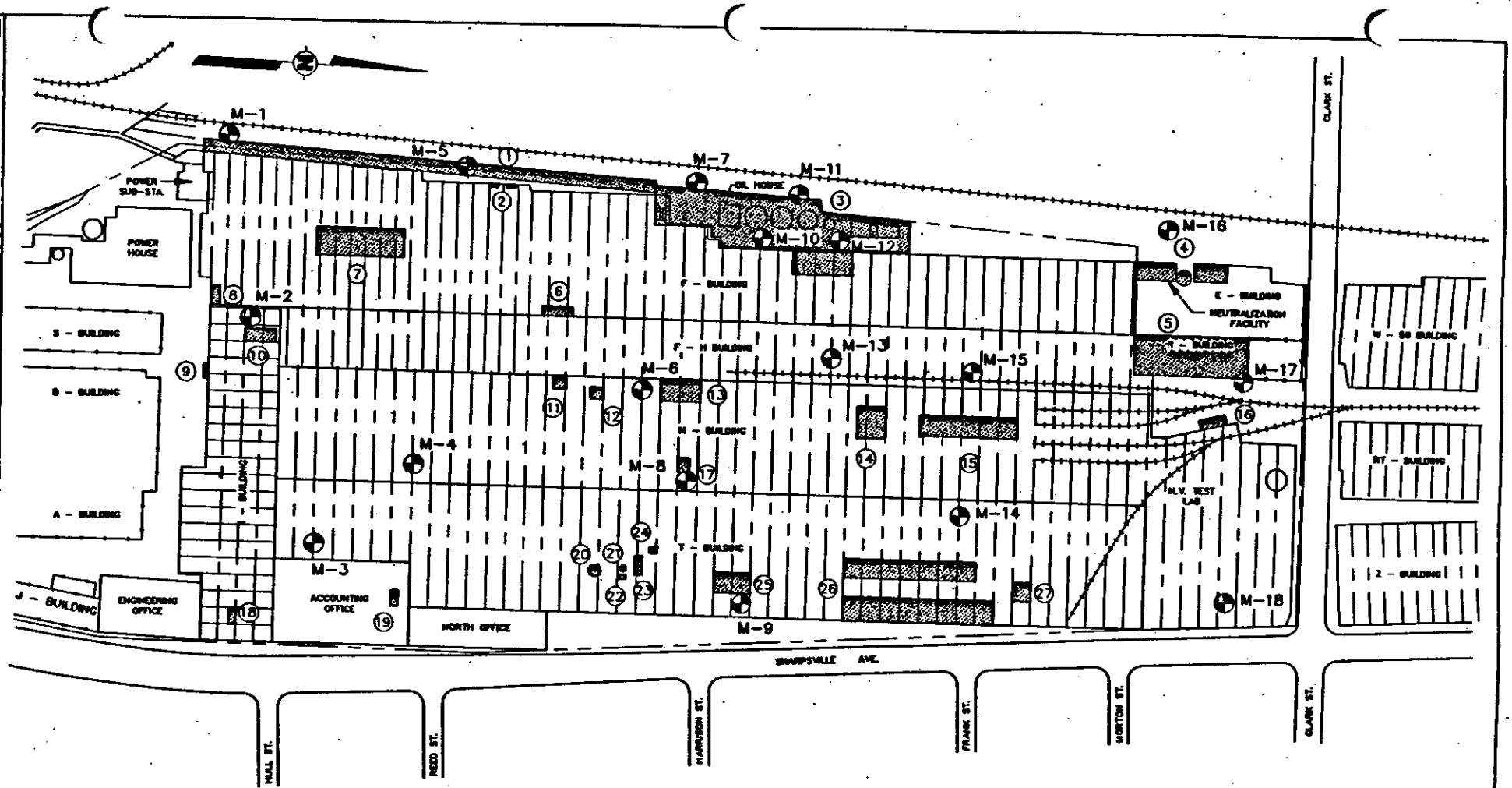
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
CONSULTANTS

AR301497



LEGEND:

⑧ CHEMICAL USE OR STORAGE AREA (SEE TABLE 2-3)

M-6 BORING/WELL LOCATION

NOTE:

AREAS INDICATED ARE APPROXIMATE IN DIMENSION AND LOCATION.

SCALE

120 0 120 FEET

FIGURE 2-13

AREAS OF CHEMICAL USE AND STORAGE IN MIDDLE SECTOR

RI/FS

SHARON TRANSFORMER PLANT SITE

SHARON, PENNSYLVANIA

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.

PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.

CONSULTANTS

DRAWN BY	CHECKED BY	DRAWING NUMBER
PRH 3-28-89	APPROVED BY: JMM 4-20-89	JTO 4-20-89 88-556-B55

⚠ GENERAL REVISION

APPROVED BY: KTS DATE: 7/19/89

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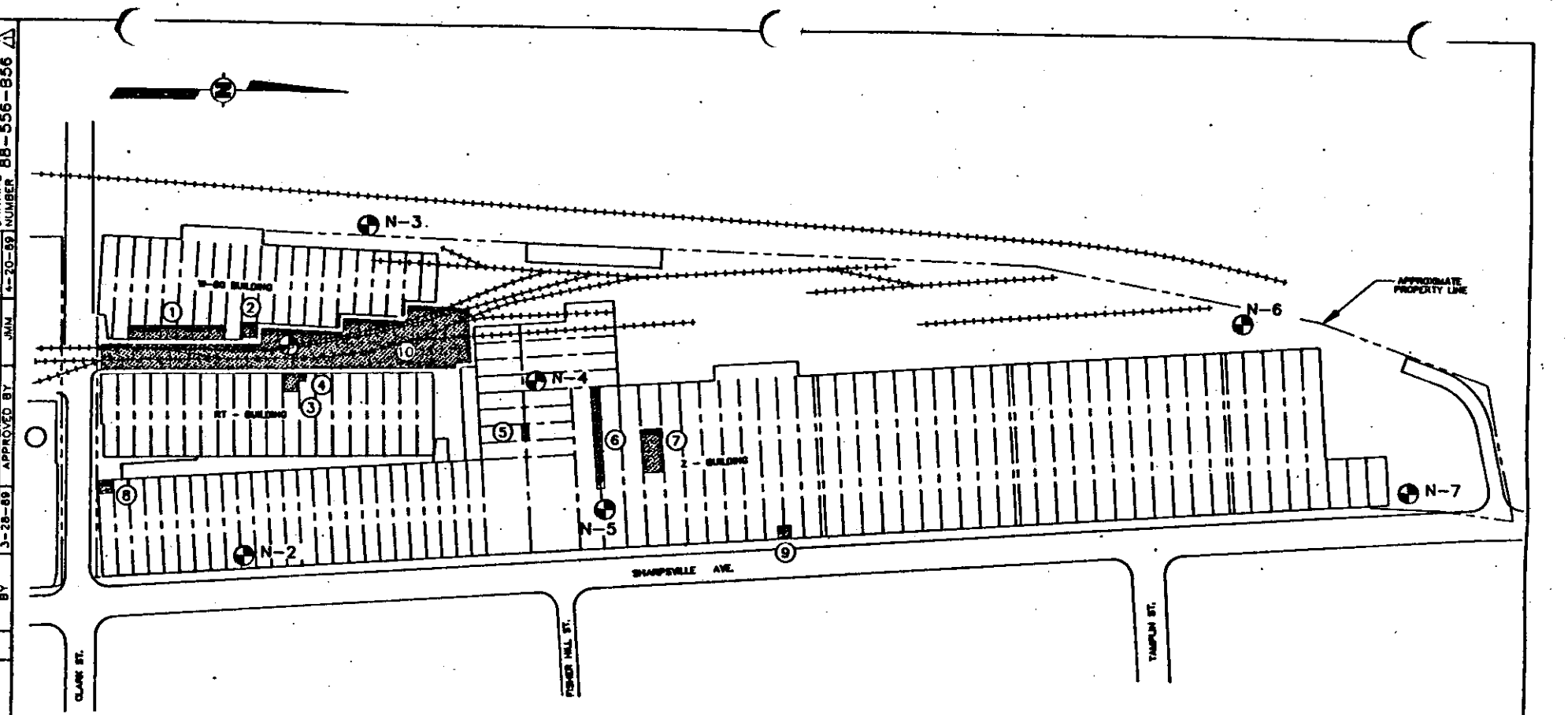
AR301498



LEGEND:

⑧ CHEMICAL USE OR STORAGE AREA (SEE TABLE 2-4)

N-6 BORING/WELL LOCATION

NOTES:

1. AREAS INDICATED ARE APPROXIMATE IN DIMENSION AND LOCATION.
2. AREA 10 IS AN AREA WHERE COI WERE MEASURED. IT IS NOT AN AREA OF CHEMICAL USE OR STORAGE.

SCALE

120 0 120 FEET

FIGURE 2-14

AREAS OF CHEMICAL USE AND STORAGE IN NORTH SECTOR

RI/FS

SHARON TRANSFORMER PLANT SITE

SHARON, PENNSYLVANIA

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.

PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.

CONSULTANTS

1 GENERAL REVISION

APPROVED BY: KJD DATE: 7/19/89

REVISIONS

DRAWN BY: PRM 3-28-89 CHECKED BY: APPROVED BY: JMM 4-20-89 DRAWING NUMBER 88-556-856 1 4-20-89

AR301499

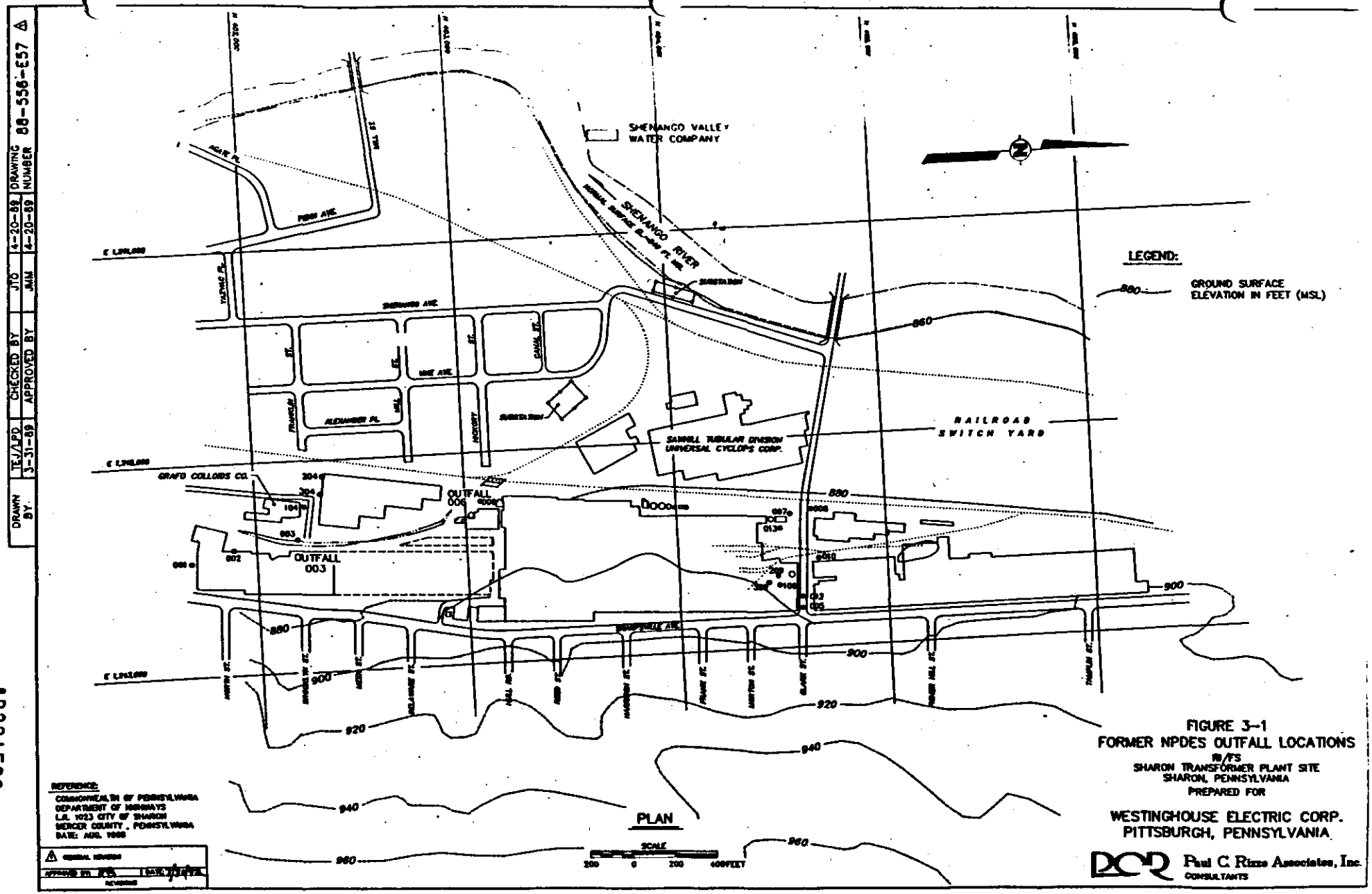


FIGURE 3-1
FORMER NPDES OUTFALL LOCATIONS
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
PREPARED FOR
WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

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AR301500

DRAWN BY		DRAWING NUMBER
	3-28-89	88-556-A14
CHECKED BY	JTO	4-20-89
APPROVED BY	JHH	4-20-89

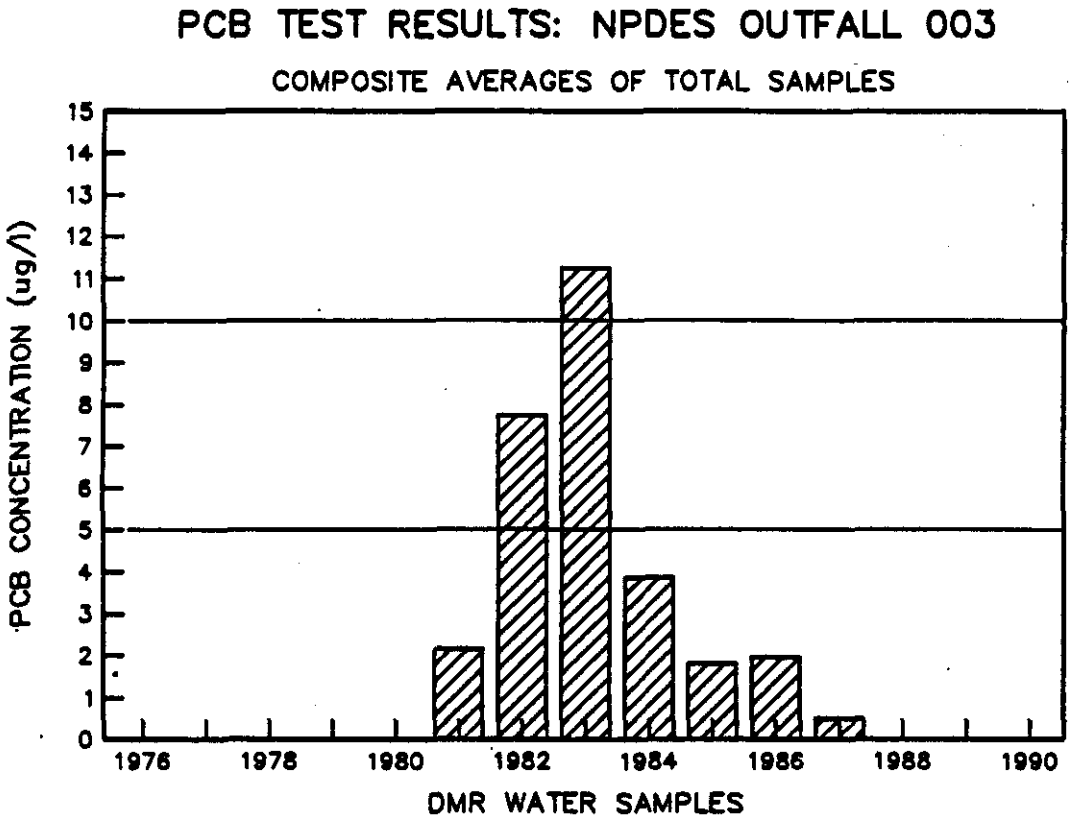

FIGURE 3-2

YEARLY PCB RESULTS
NPDES OUTFALL 003
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

PREPARED FOR

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PITTSBURGH, PENNSYLVANIA

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DRAWN BY | 3-
CHECKED BY | JJD
APPROVED BY | JMH
4-20-87
4-20-87
DRAWING NUMBER 88-A15

PCB TEST RESULTS: NPDES OUTFALL 003

COMPOSITE AVERAGE OF MONTHLY SAMPLES

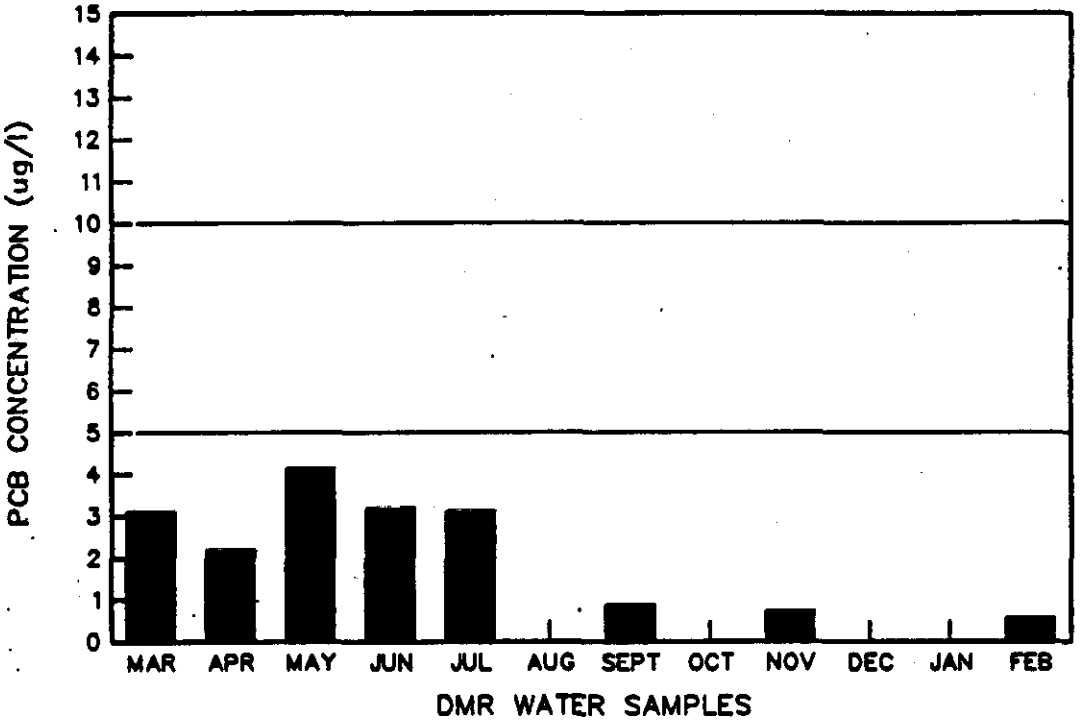

FIGURE 3-3

PCB RESULTS MARCH 1986 TO FEBRUARY 1987
NPDES OUTFALL 003

RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

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DRAWN BY		DRAWING NUMBER 88-556-A16
	3-28-89	4-20-89
CHECKED BY	TTD	4-20-89
APPROVED BY	JMM	

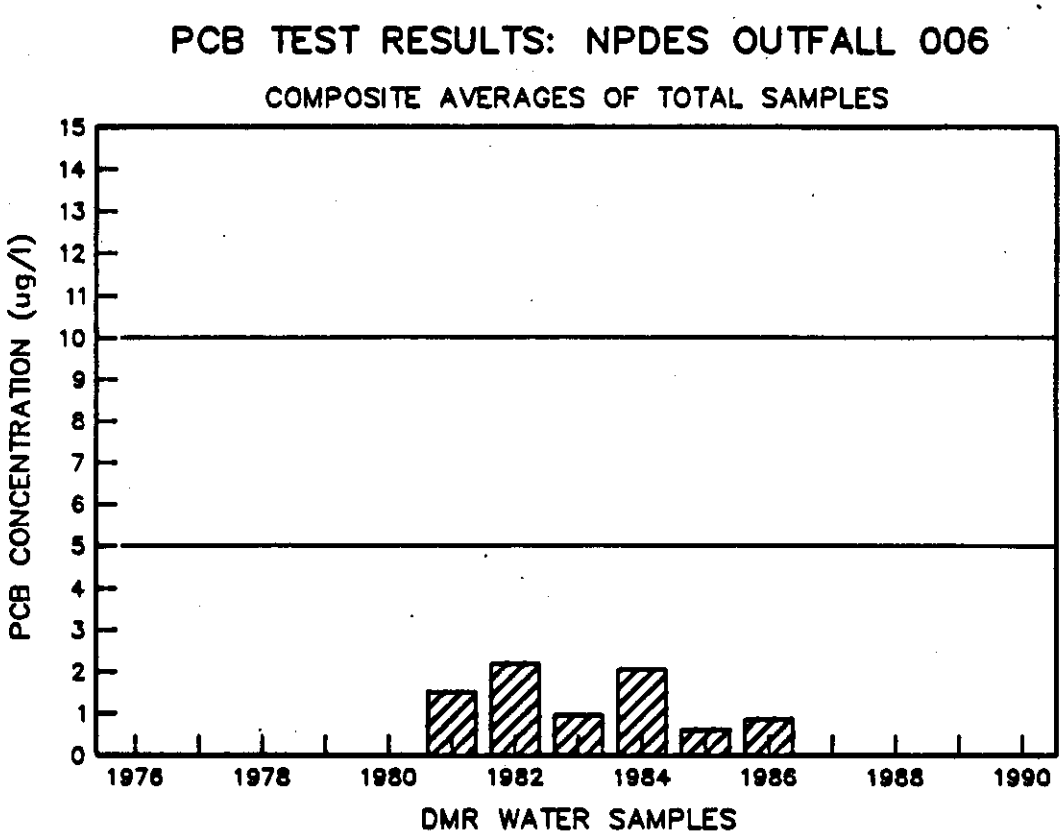

FIGURE 3-4

YEARLY PCB RESULTS
NPDES OUTFALL 006

RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

PREPARED FOR

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CONSULTANTS

AR301503

DRAWN BY		DRAWING NUMBER	88-556-A17
PRH	CHECKED BY	JTD	4-20-89
3-28-89	APPROVED BY	JTD	4-20-89

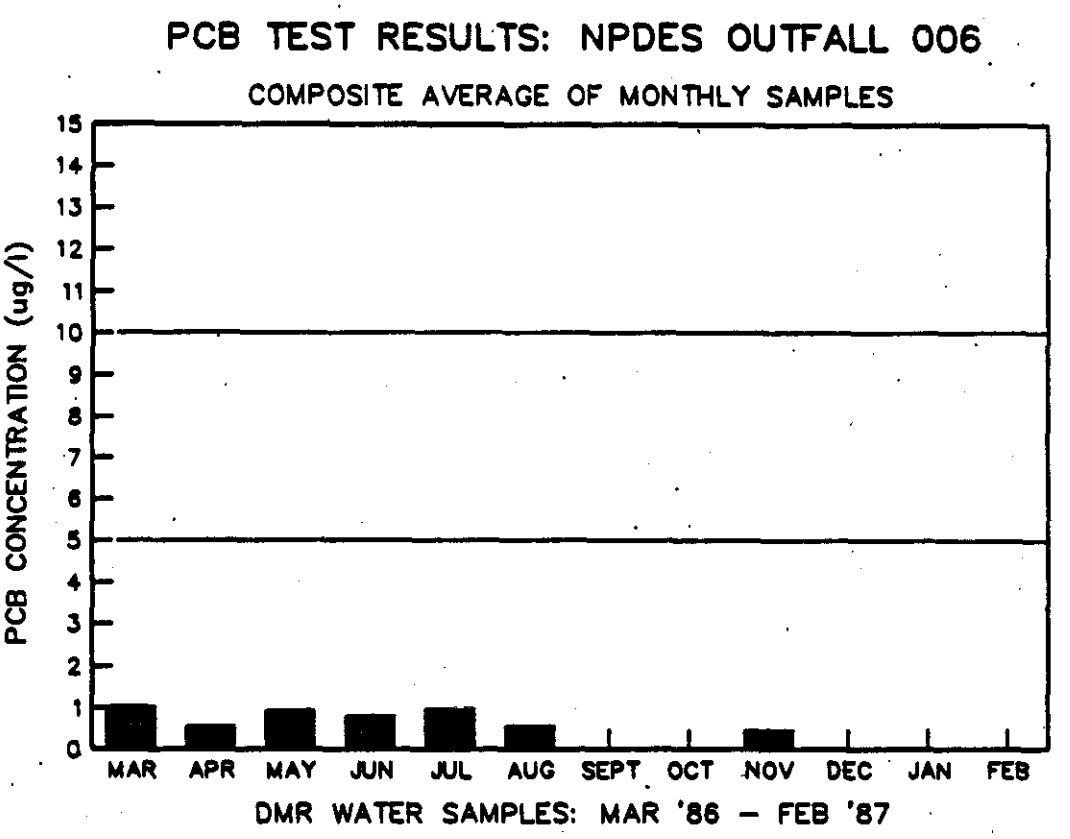

FIGURE 3-5

PCB RESULTS MARCH 1986 TO FEBRUARY 1987
NPDES OUTFALL 006

RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

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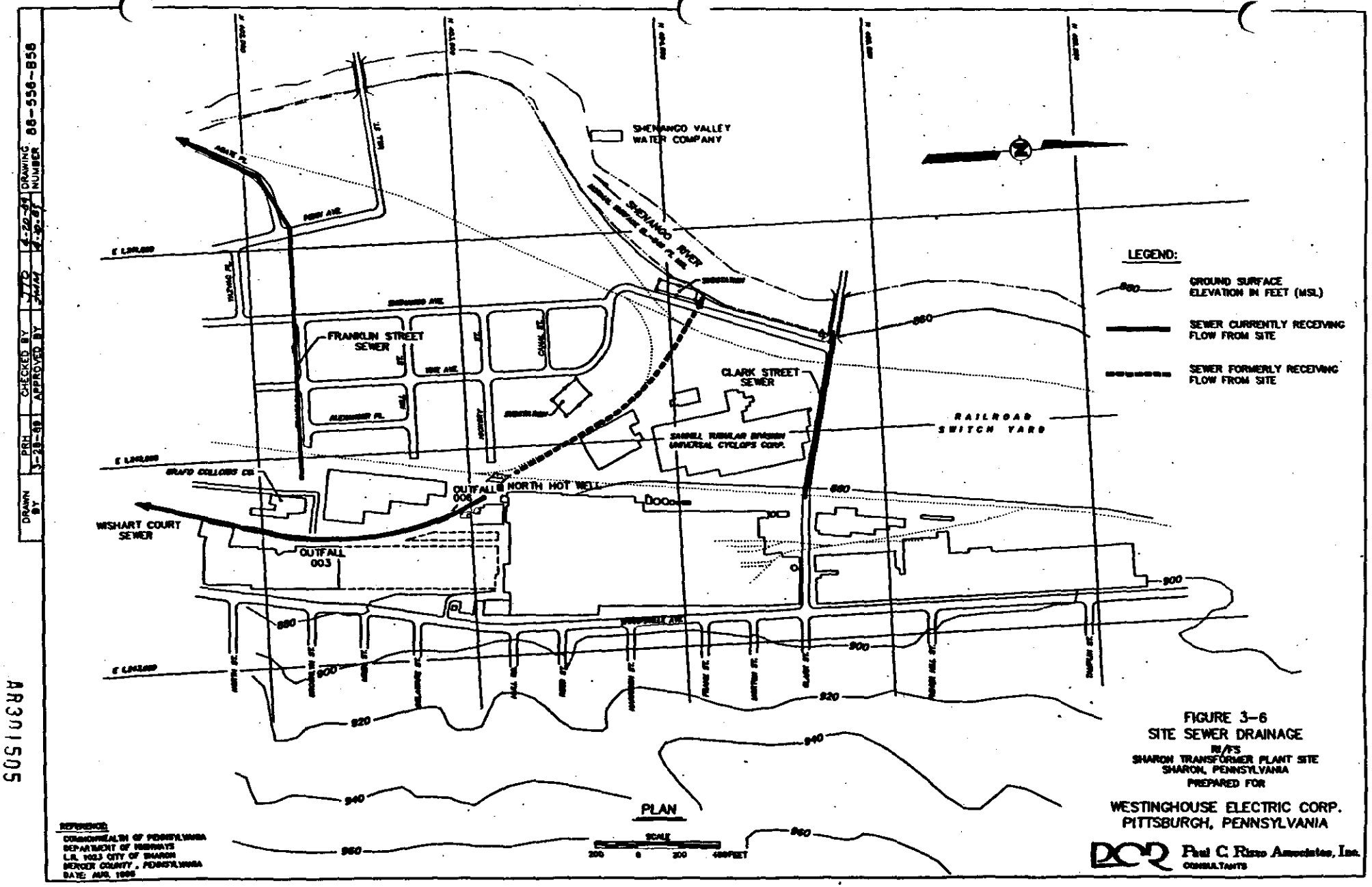

FIGURE 3-6
SITE SEWER DRAINAGE
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
PREPARED FOR
WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

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AR301505

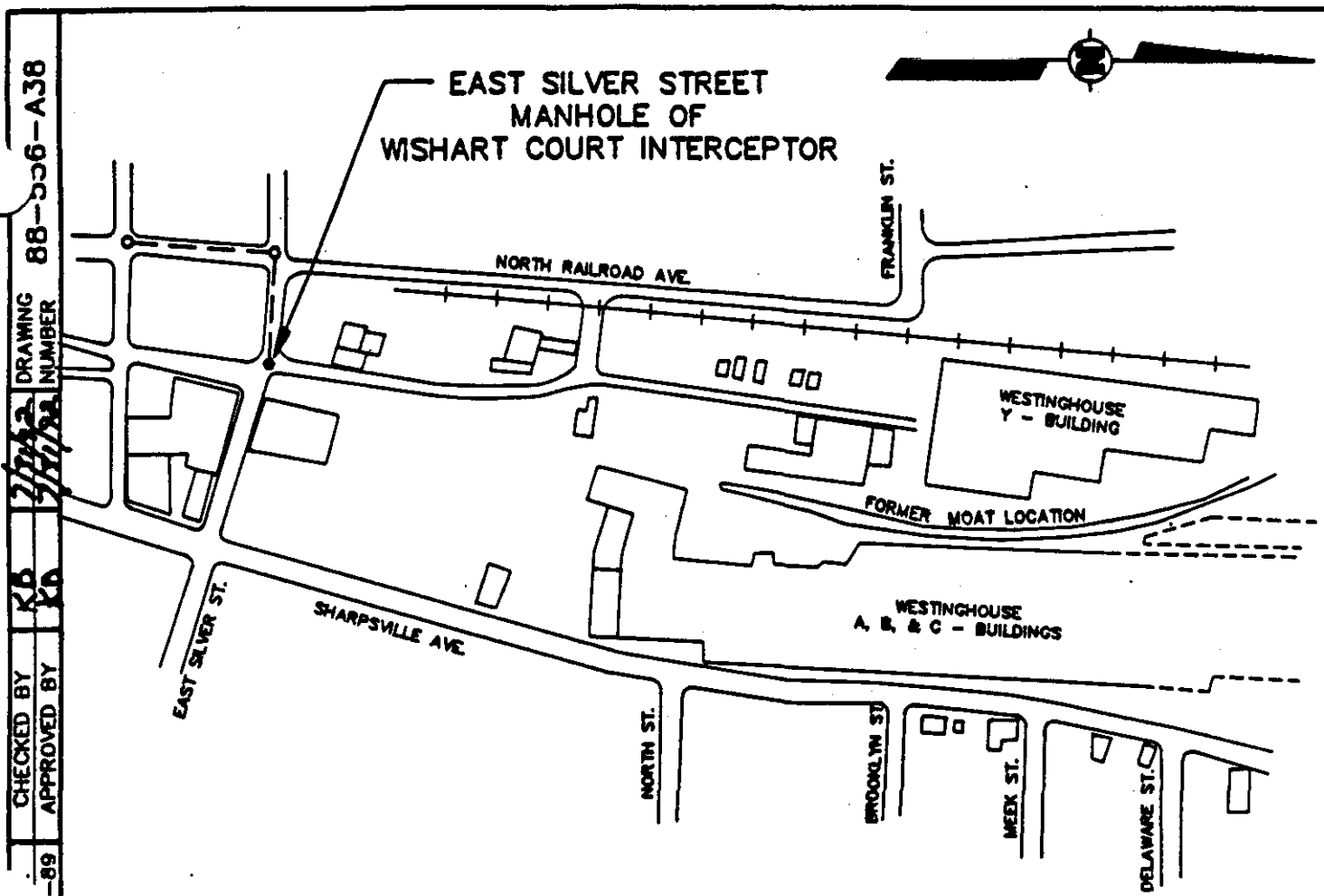

FIGURE 3-7

LOCATION OF EAST SILVER STREET
MANHOLE SAMPLING POINT

RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

PREPARED FOR

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PITTSBURGH, PENNSYLVANIA

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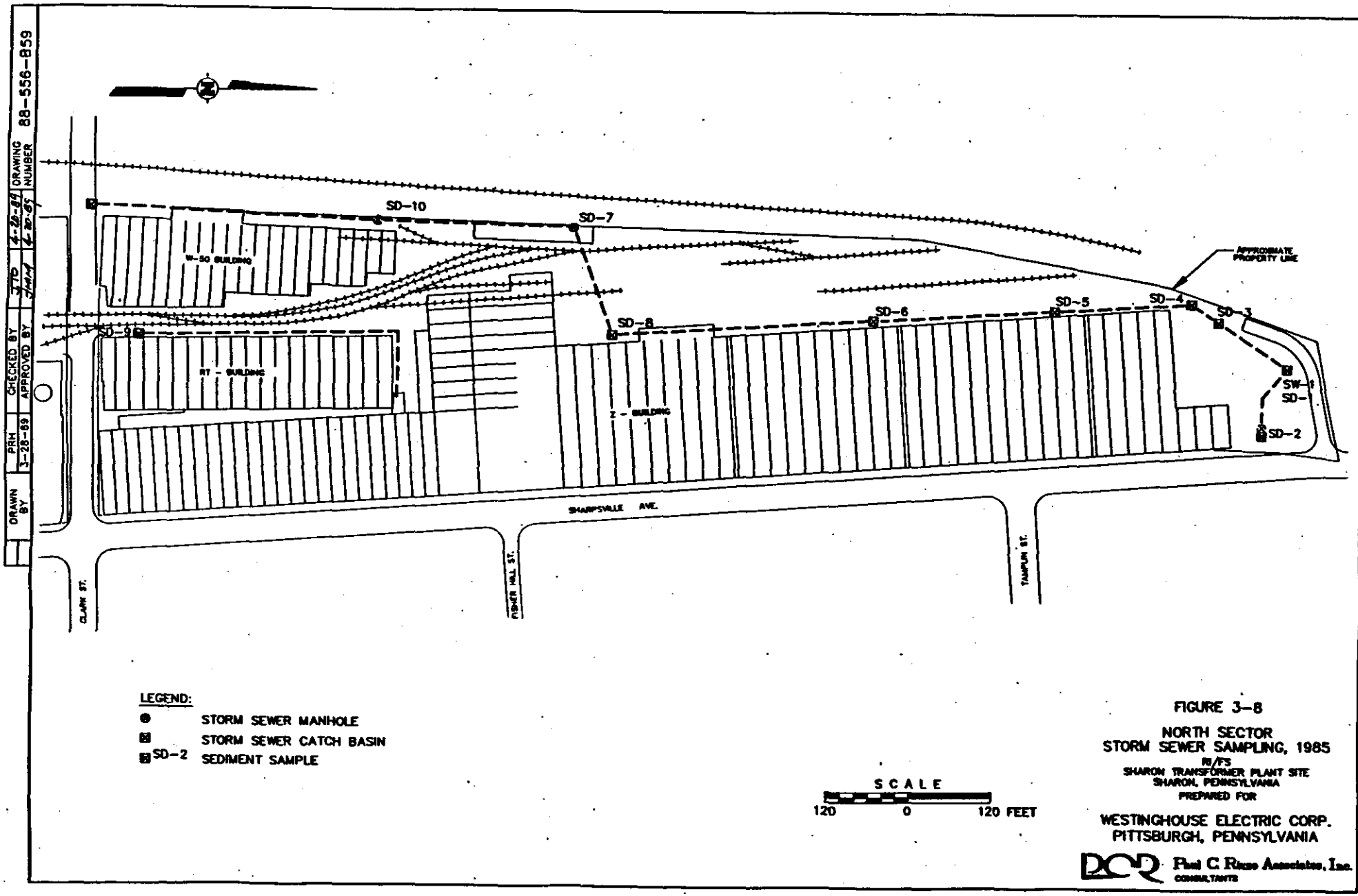
DRAWING NUMBER 88-556-859
4-20-84
4-20-85
CHECKED BY
APPROVED BY
PRH 3-28-89
DRAWN BY
SD-10
SD-7
SD-8
SD-9
SD-6
SD-5
SD-4
SD-3
SD-2
SW-1
SD-1
APPROXIMATE PROPERTY LINE
W-SO BUILDING
RT - BUILDING
Z - BUILDING
SHARPSVILLE AVE.
CLARK ST.
FISHER HILL ST.
TAMPLIN ST.
LEGEND:
STORM SEWER MANHOLE
STORM SEWER CATCH BASIN
SD-2 SEDIMENT SAMPLE
SCALE
120 0 120 FEET
FIGURE 3-8
NORTH SECTOR
STORM SEWER SAMPLING, 1985
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
PREPARED FOR
WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA
Paul C. Rizzo Associates, Inc.
CONSULTANTS

AR301507

DRAWN BY	JH	3-28-89
CHECKED BY	JTD	4-20-89
APPROVED BY	[illegible]	4-20-89
DRAWING NUMBER	88-556-A18	

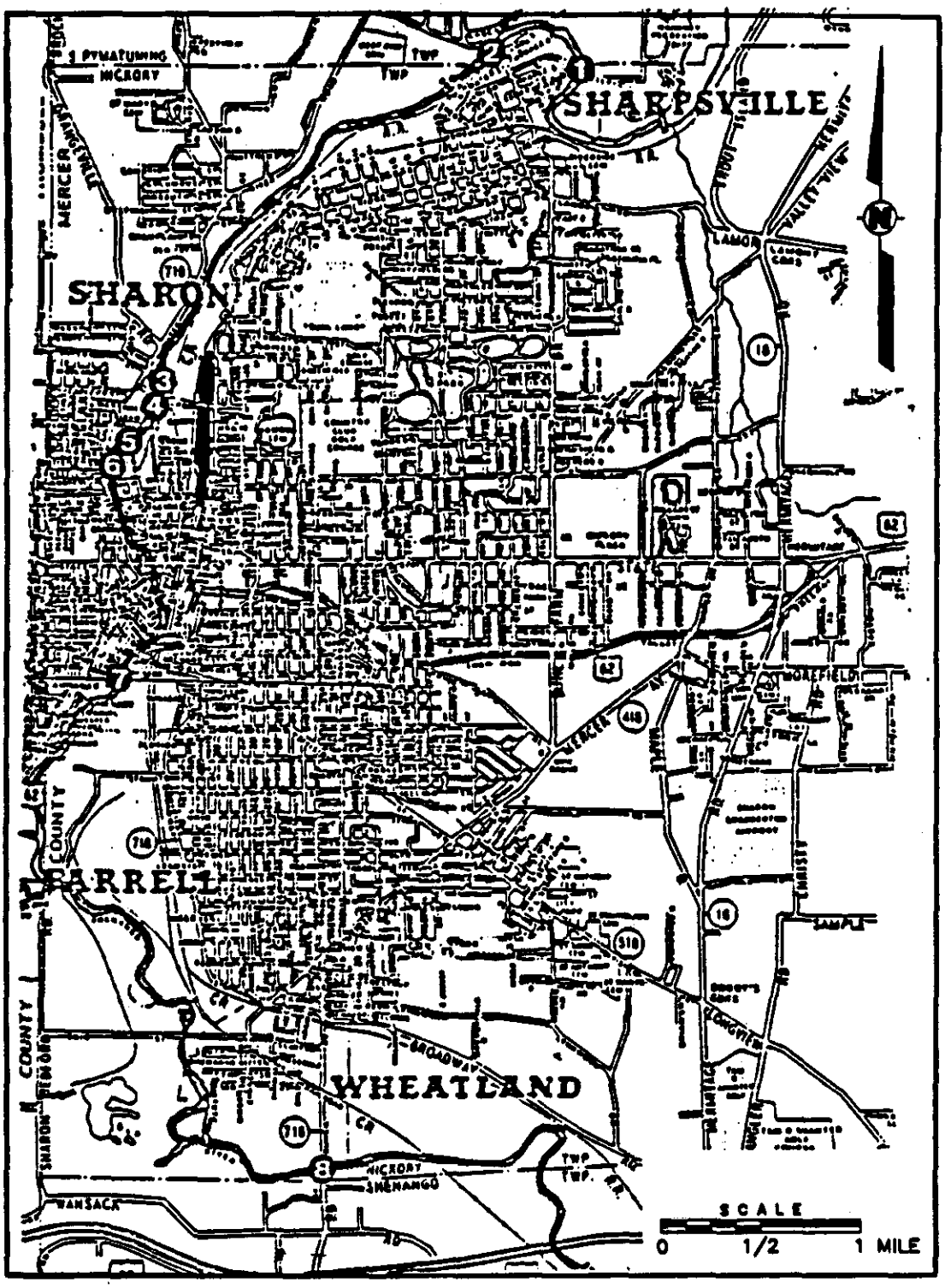

FIGURE 3-9

SHENANGO RIVER SAMPLING LOCATIONS

RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
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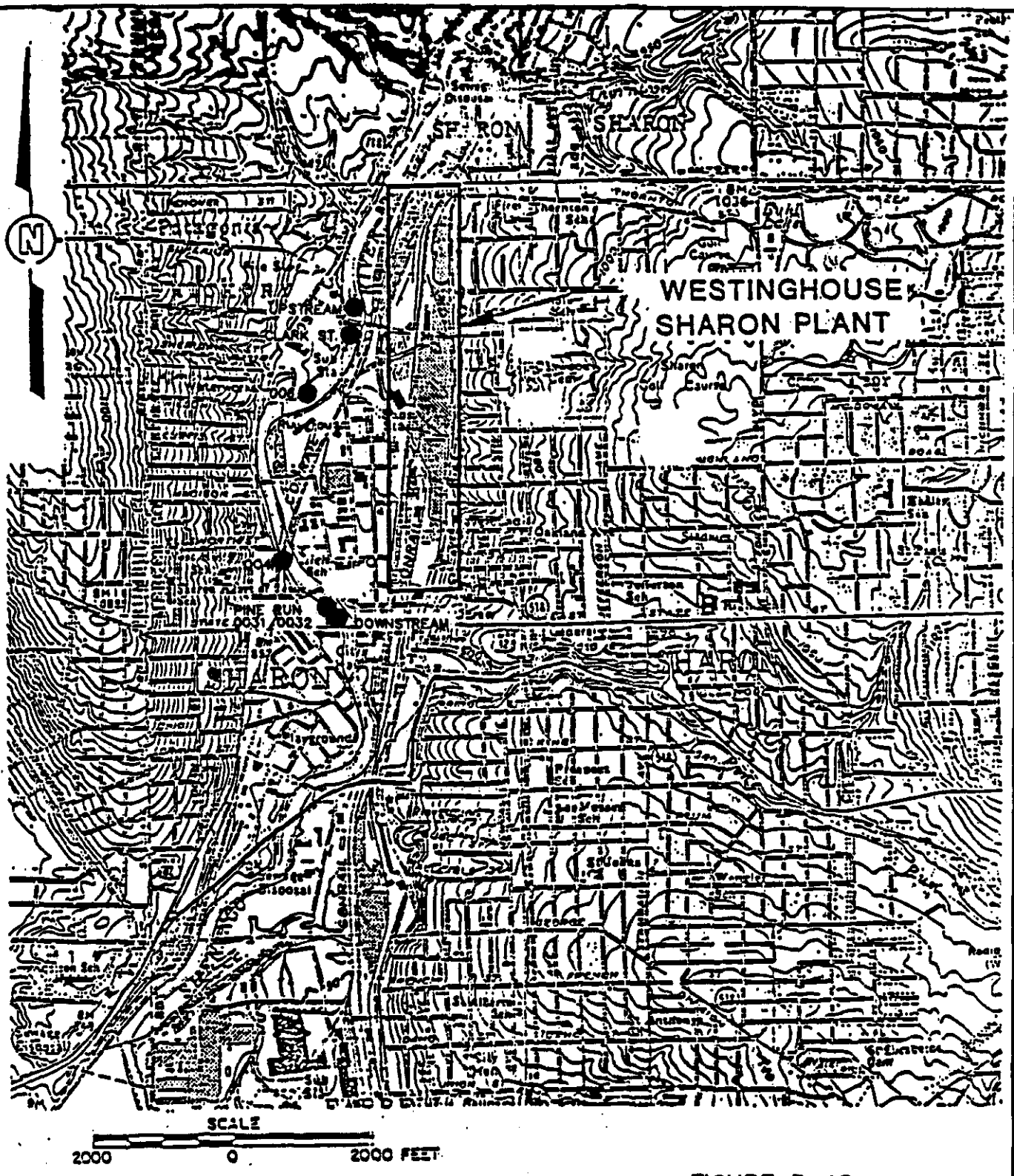

DRAWN BY		
	4-11-89	
CHECKED BY	APPROVED BY	DRAWING NUMBER
JTD	[illegible]	4-20-89
[illegible]	[illegible]	6-20-89

88-556-A21

FIGURE 3-10
EPA FIT SEDIMENT
SAMPLING LOCATIONS, 1985
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

REFERENCE:
U.S.G.S. 7.5' SERIES TOPOGRAPHIC MAP
ORANGEVILLE & SHARON WEST, OHIO
SHARON EAST & SHARPSVILLE, PENNA.
PHOTOREVISED 1979 & 1981

Paul C. Rizzo Associates, Inc.
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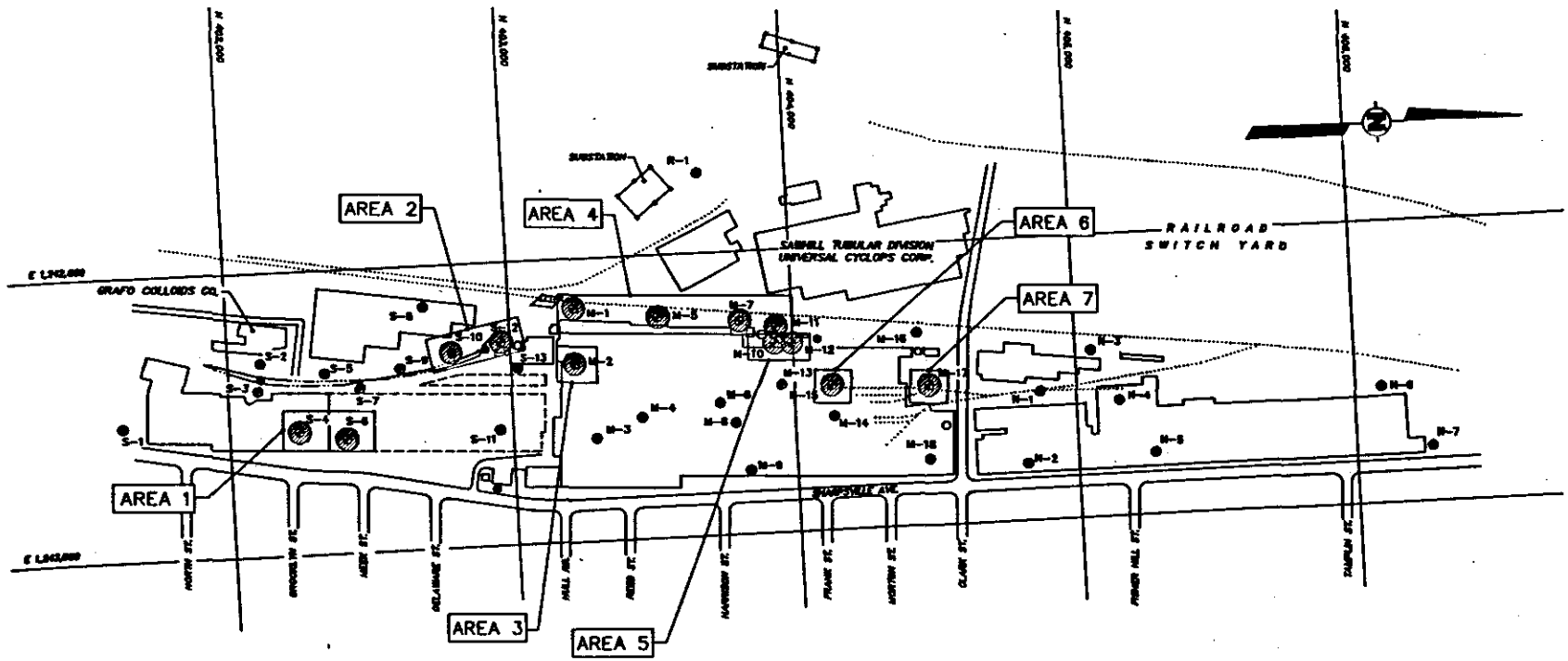


PLAN

SCALE
200 0 200 400 FEET

LEGEND:

- RAILROAD TRACKS
- S-4 BORING LOCATION
- BORINGS/WELLS WITH HIGHEST CONCENTRATIONS OF DETECTABLE ANALYTES
- AREAS WITH HIGHEST CONCENTRATIONS OF DETECTABLE ANALYTES
- O'BRIEN AND GERE WELL

REFERENCE:
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF HIGHWAYS
L.R. 1023 CITY OF SHARON
MERCER COUNTY, PENNSYLVANIA
DATE: AUG. 1988

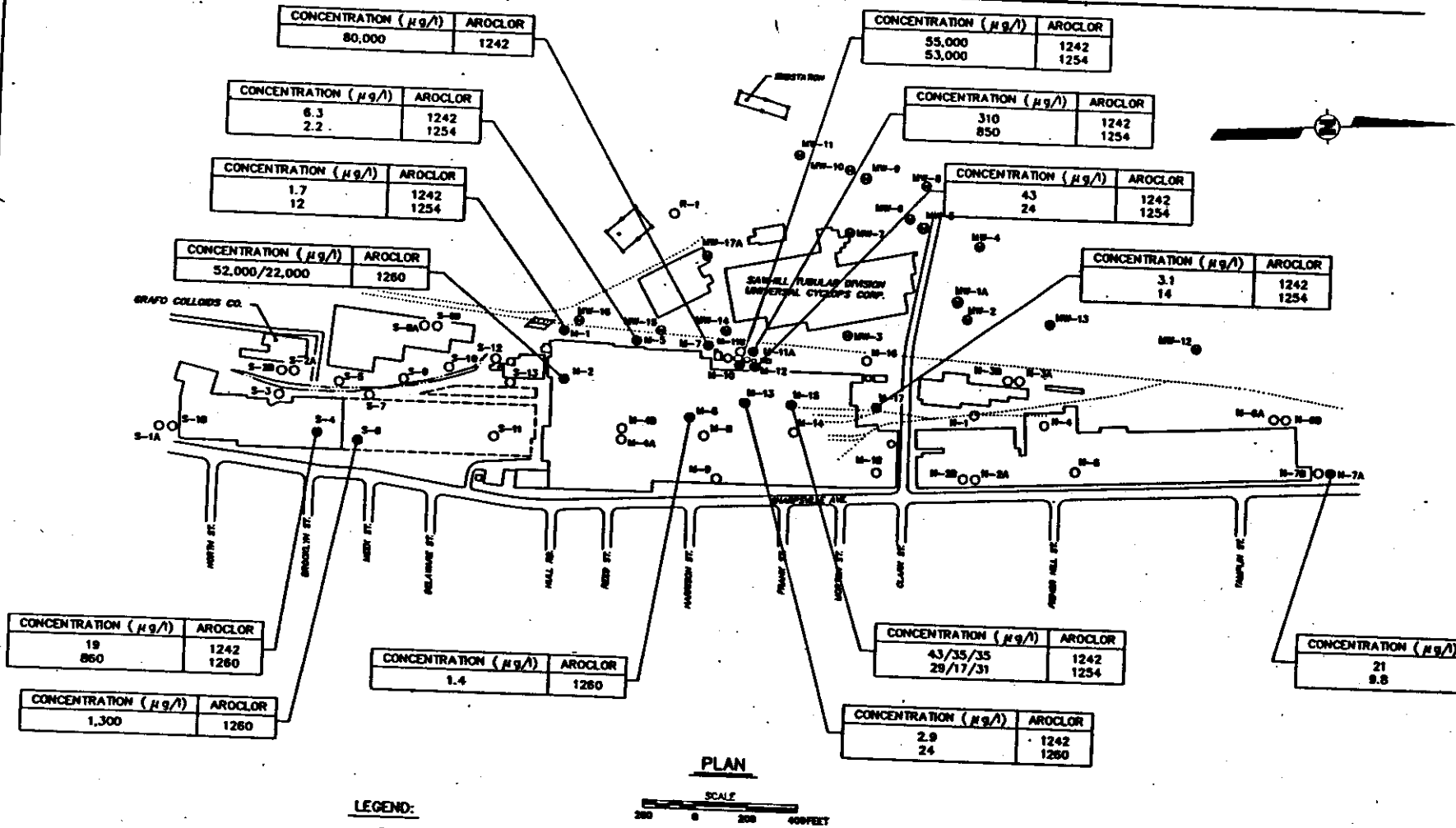
FIGURE 3-11
IDENTIFIED AREAS FOR RI INVESTIGATION
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
PREPARED FOR
WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
CONSULTANTS

DRAWN BY	PRH	3-28-89
CHECKED BY		
APPROVED BY		
JTO	JMM	4-20-89 / 4-20-89

DRAWING NUMBER 88-556-860

AR901510



PLAN

SCALE
200 0 200 400 FEET

LEGEND:

- RAILROAD TRACKS
- S-4 ● PCBs DETECTED IN MONITORING WELL SAMPLES.
- S-6 ○ PCBs NOT DETECTED IN MONITORING WELL SAMPLES.
- ● SAWHILL SHALLOW MONITORING WELL
- ● SAWHILL DEEP MONITORING WELL

NOTES:

1. CONCENTRATIONS REPORTED ARE FROM SECOND SAMPLING ROUND (MAY 1986) WITH EXCEPTION OF WELLS M-4B AND N-7A. THE SAMPLES FROM THESE WELLS WERE OBTAINED IN JULY 1986.
2. SAMPLE AT S-6 WAS OBTAINED DURING DRILLING PRIOR TO WELL INSTALLATION.
3. A FIELD DUPLICATE WAS OBTAINED AT MONITORING WELL M-15.
4. DETECTION LIMIT WAS 1.0 µg/l

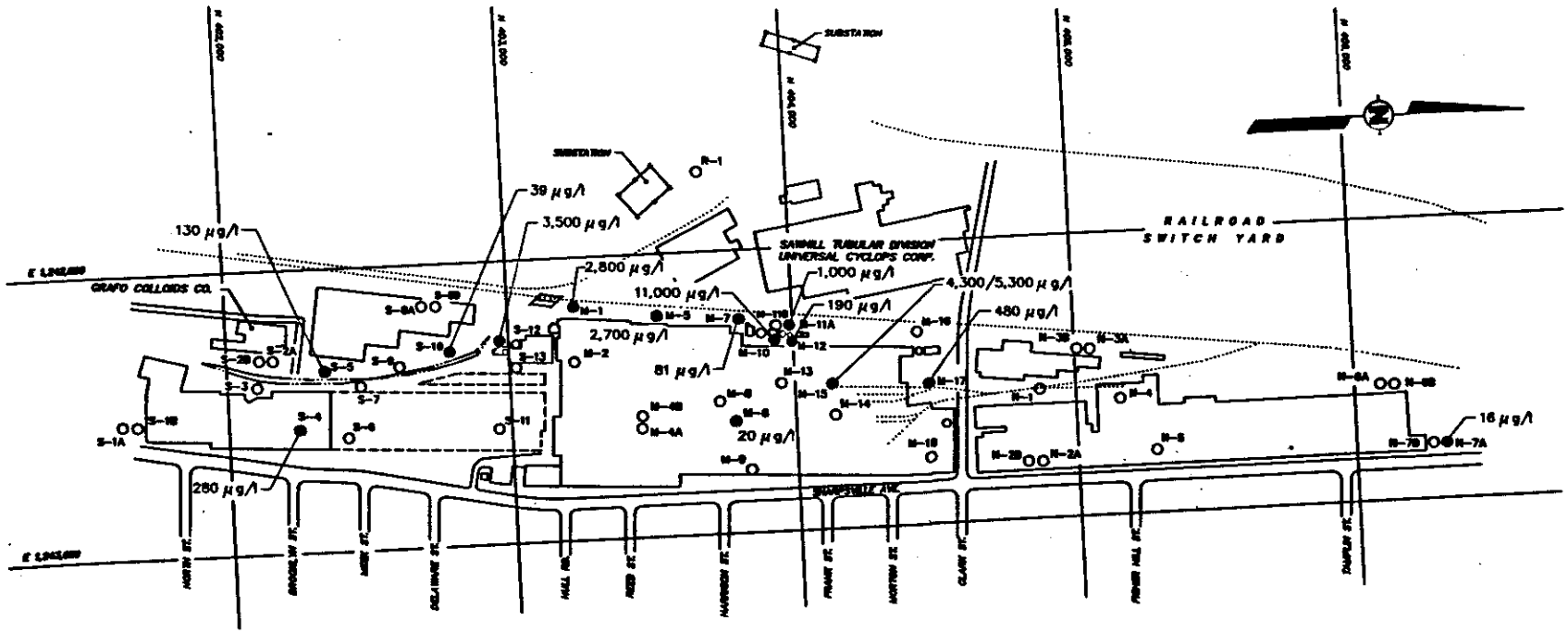
REFERENCE:
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF HIGHWAYS
L.R. 1023 CITY OF SHARON
MERCER COUNTY, PENNSYLVANIA
DATE: AUG. 1966

FIGURE 3-12
DETECTION OF PCBs
IN MONITORING WELL SAMPLES, 1986
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
PREPARED FOR
WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
CONSULTANTS

AR301511

DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
PRH 3-29-89	4-29-89	4-29-89	88-556-B62



PLAN

SCALE
200 0 200 400 FEET

LEGEND:

- RAILROAD TRACKS
- S-4 ● 1,2,4-TRICHLOROBENZENE DETECTED IN MONITORING WELL SAMPLES.
- S-7 ○ 1,2,4-TRICHLOROBENZENE NOT DETECTED IN MONITORING WELL SAMPLES

NOTES:

1. CONCENTRATIONS REPORTED ARE FROM SECOND SAMPLING ROUND (MAY 1988) WITH THE EXCEPTION OF WELL M-7A. THE SAMPLE FROM THIS WELL WAS OBTAINED IN JULY 1988.
2. DETECTION LIMIT WAS 10 µg/l
3. A FIELD DUPLICATE WAS OBTAINED AT MONITORING WELL M-15.

REFERENCE:
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF HIGHWAYS
L.R. 1023 CITY OF SHARON
MERCER COUNTY, PENNSYLVANIA
DATE: AUG. 1988

FIGURE 3-13

DETECTION OF 1,2,4-TRICHLOROBENZENE IN MONITORING WELL SAMPLES, 1988

RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

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CONSULTANTS

AR301512

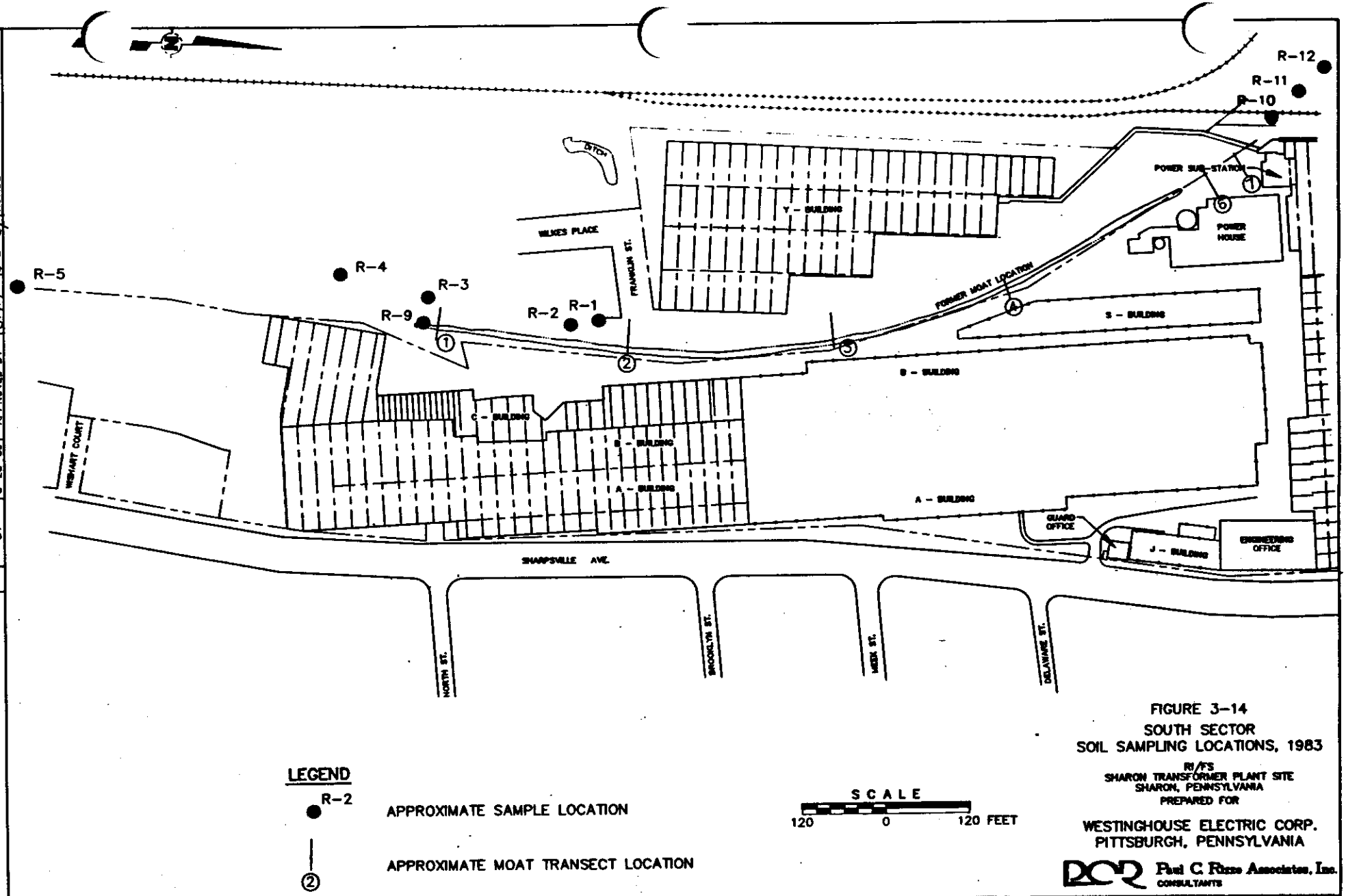


FIGURE 3-14
SOUTH SECTOR
SOIL SAMPLING LOCATIONS, 1983

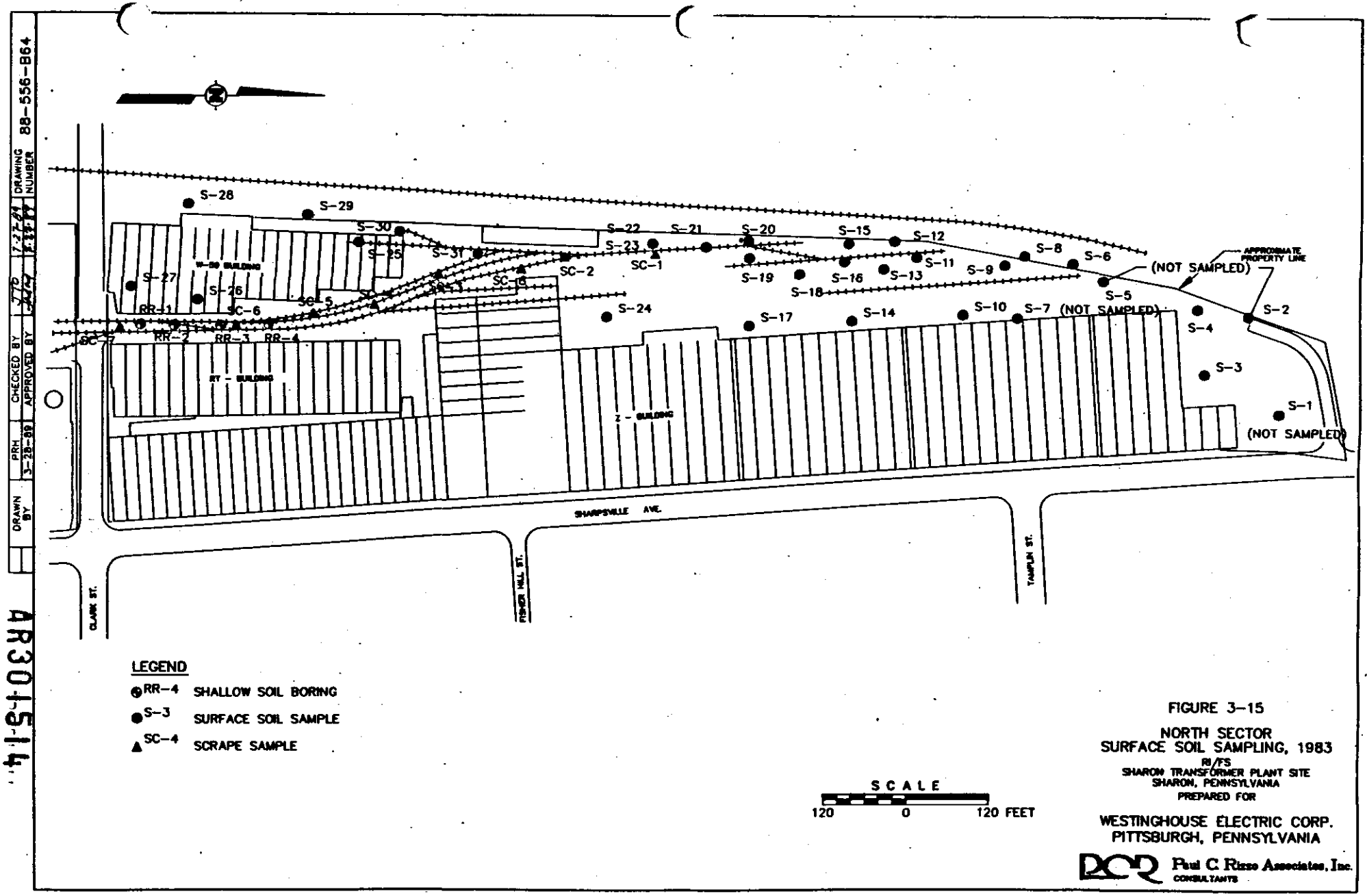
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

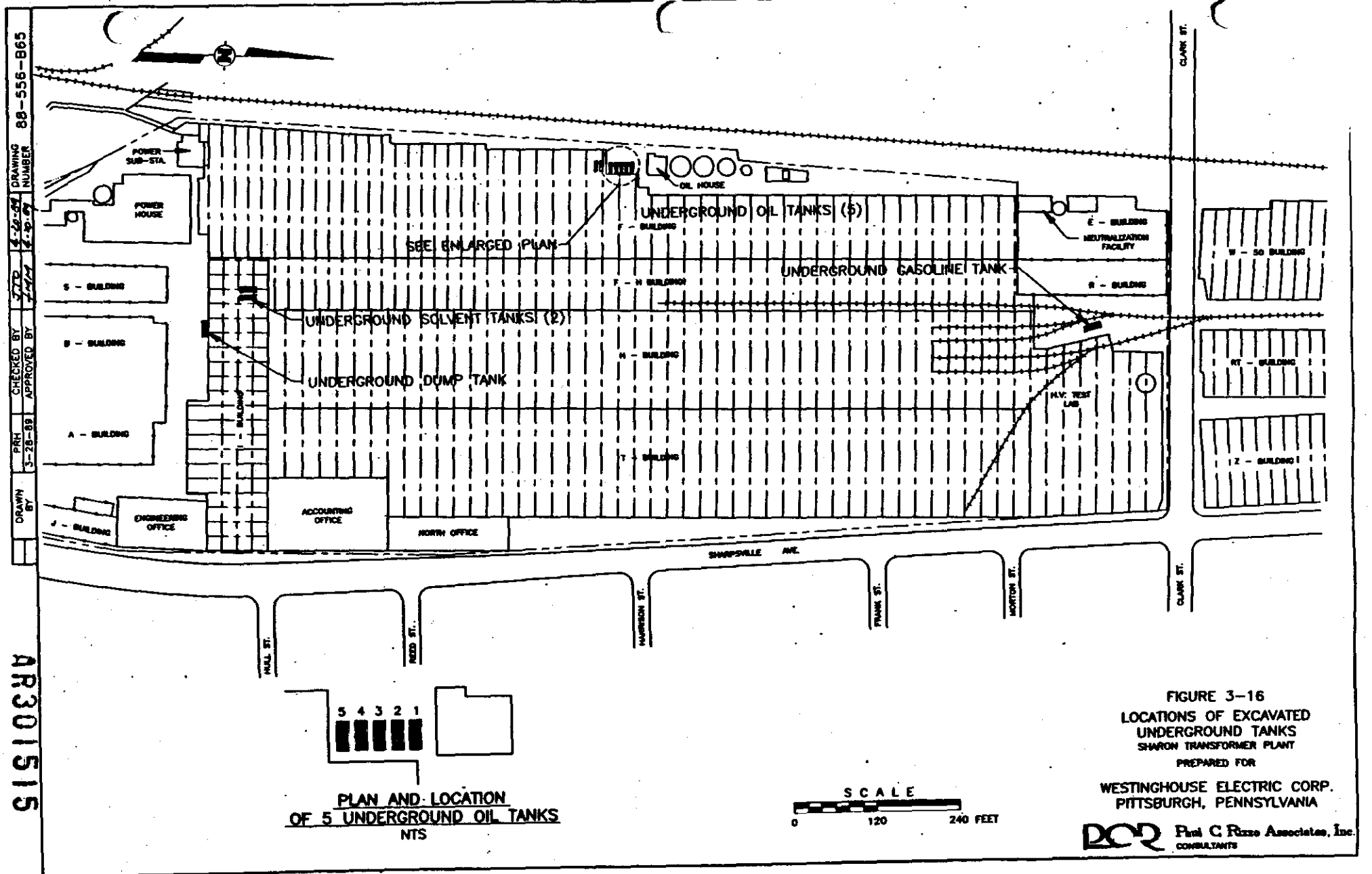
Paul C Rizzo Associates, Inc.
CONSULTANTS

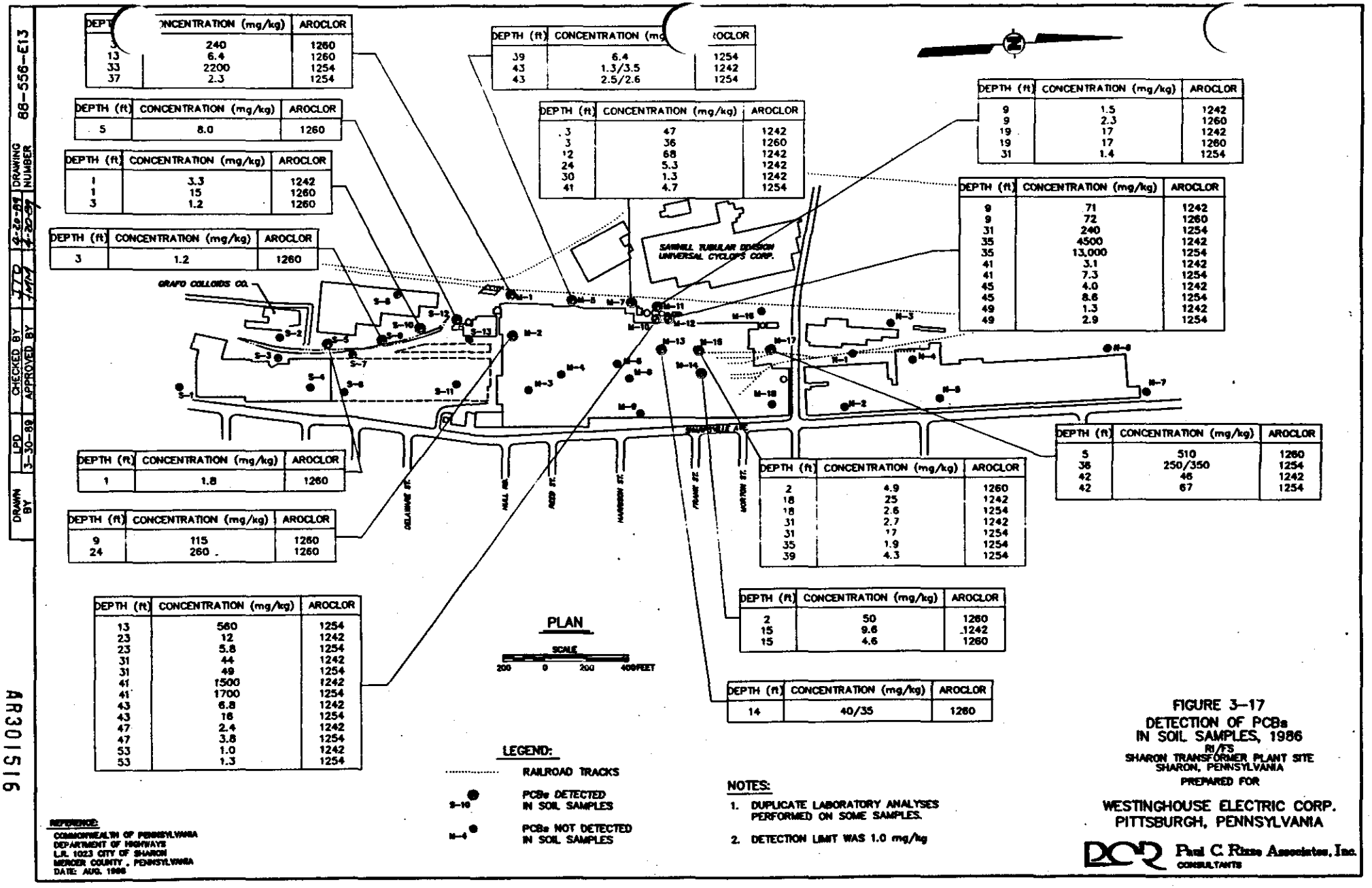
DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
PRH 3-28-88	JTD 4-20-88	JTD 4-20-88	88-556-B63

AR301513


DRAWING NUMBER 88-556-B64
DRAWN BY PRH 3-28-88
CHECKED BY
APPROVED BY
S-28
S-29
S-30
S-25
S-31
S-27
S-26
S-22
S-21
S-20
S-15
S-12
S-23
S-11
S-8
S-6
S-19
S-16
S-13
S-9
S-18
S-5
(NOT SAMPLED)
APPROXIMATE PROPERTY LINE
S-2
S-24
S-17
S-14
S-10
S-7 (NOT SAMPLED)
S-4
S-3
S-1
(NOT SAMPLED)
SC-1
SC-2
SC-3
SC-4
SC-5
SC-6
SC-7
RR-1
RR-2
RR-3
RR-4
W-50 BUILDING
RT - BUILDING
Z - BUILDING
SHARPSVILLE AVE.
CLARK ST.
FISHER HILL ST.
TAMPLIN ST.
LEGEND
RR-4 SHALLOW SOIL BORING
S-3 SURFACE SOIL SAMPLE
SC-4 SCRAPE SAMPLE
SCALE
120 0 120 FEET
FIGURE 3-15
NORTH SECTOR
SURFACE SOIL SAMPLING, 1983
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
PREPARED FOR
WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA
Paul C Rizzo Associates, Inc.
CONSULTANTS

AR301514


DRAWING NUMBER 88-556-B65
CHECKED BY
APPROVED BY
DRAWN BY PRH 3-28-89
POWER SUB-STA.
POWER HOUSE
OIL HOUSE
UNDERGROUND OIL TANKS (5)
SEE ENLARGED PLAN
UNDERGROUND GASOLINE TANK
UNDERGROUND SOLVENT TANKS (2)
UNDERGROUND DUMP TANK
S - BUILDING
B - BUILDING
A - BUILDING
J - BUILDING
ENGINEERING OFFICE
ACCOUNTING OFFICE
NORTH OFFICE
H - BUILDING
T - BUILDING
E - BUILDING
NEUTRALIZATION FACILITY
R - BUILDING
W - 30 BUILDING
RT - BUILDING
IZ - BUILDING
H.V. TEST LAB
CLARK ST.
SHARPSVILLE AVE.
HULL ST.
REED ST.
HARRISON ST.
FRANK ST.
MORTON ST.
CLARK ST.
5 4 3 2 1
PLAN AND LOCATION OF 5 UNDERGROUND OIL TANKS
NTS
SCALE
0 120 240 FEET
FIGURE 3-16
LOCATIONS OF EXCAVATED UNDERGROUND TANKS
SHARON TRANSFORMER PLANT
PREPARED FOR
WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA
Paul C. Rizzo Associates, Inc.
CONSULTANTS



DEPTH (ft)	CONCENTRATION (mg/kg)	AROCLOR
3	240	1260
13	6.4	1260
33	2200	1254
37	2.3	1254

DEPTH (ft)	CONCENTRATION (mg/kg)	AROCLOR
5	8.0	1260

DEPTH (ft)	CONCENTRATION (mg/kg)	AROCLOR
1	3.3	1242
1	15	1260
3	1.2	1260

DEPTH (ft)	CONCENTRATION (mg/kg)	AROCLOR
3	1.2	1260

DEPTH (ft)	CONCENTRATION (mg/kg)	AROCLOR
1	1.8	1260

DEPTH (ft)	CONCENTRATION (mg/kg)	AROCLOR
9	115	1260
24	260	1260

DEPTH (ft)	CONCENTRATION (mg/kg)	AROCLOR
13	560	1254
23	12	1242
23	5.8	1254
31	44	1242
31	49	1254
41	1500	1242
41	1700	1254
43	6.8	1242
43	16	1254
47	2.4	1242
47	3.8	1254
53	1.0	1242
53	1.3	1254

DEPTH (ft)	CONCENTRATION (mg/kg)	AROCLOR
39	6.4	1254
43	1.3/3.5	1242
43	2.5/2.6	1254

DEPTH (ft)	CONCENTRATION (mg/kg)	AROCLOR
3	47	1242
3	36	1260
12	68	1242
24	5.3	1242
30	1.3	1242
41	4.7	1254

DEPTH (ft)	CONCENTRATION (mg/kg)	AROCLOR
2	4.9	1260
18	25	1242
18	2.6	1254
31	2.7	1242
31	17	1254
35	1.9	1254
39	4.3	1254

DEPTH (ft)	CONCENTRATION (mg/kg)	AROCLOR
2	50	1260
15	9.6	1242
15	4.6	1260

DEPTH (ft)	CONCENTRATION (mg/kg)	AROCLOR
14	40/35	1260

DEPTH (ft)	CONCENTRATION (mg/kg)	AROCLOR
9	1.5	1242
9	2.3	1260
19	17	1242
19	17	1260
31	1.4	1254

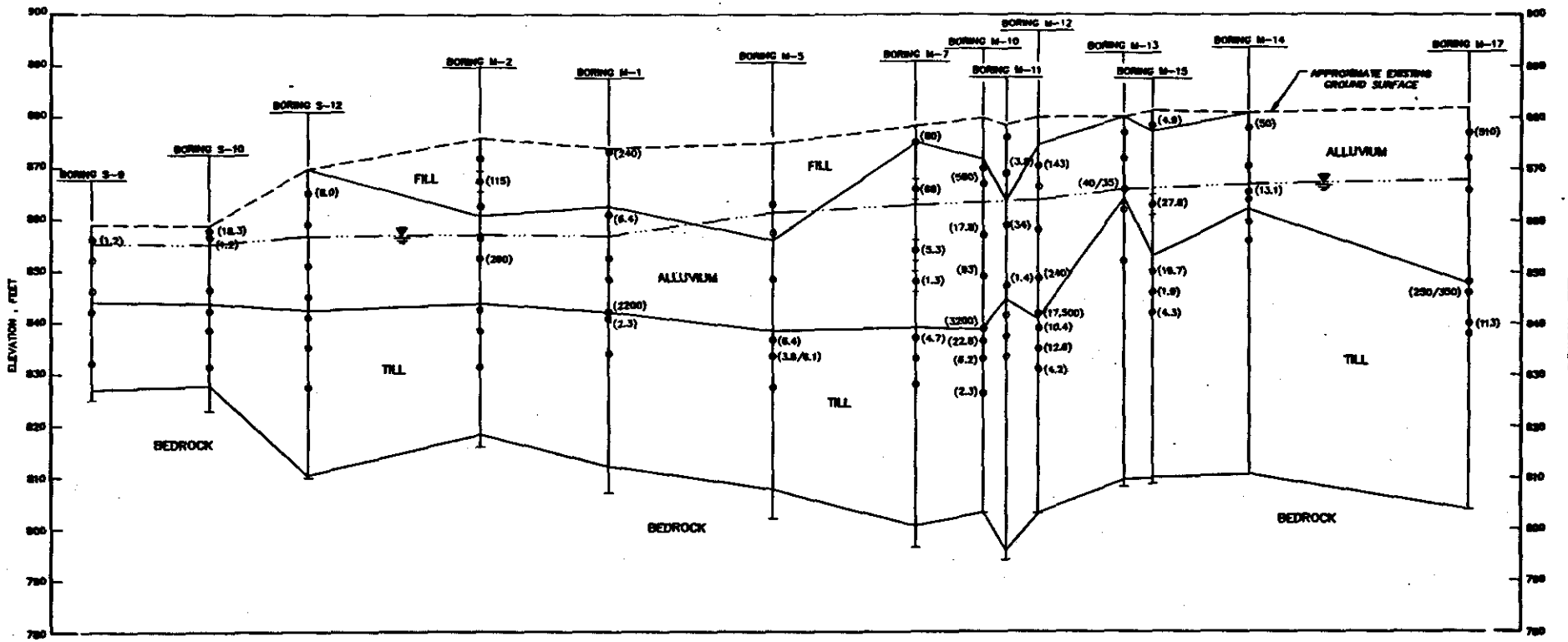
DEPTH (ft)	CONCENTRATION (mg/kg)	AROCLOR
9	71	1242
9	72	1260
31	240	1254
35	4500	1242
35	13,000	1254
41	3.1	1242
41	7.3	1254
45	4.0	1242
45	8.6	1254
49	1.3	1242
49	2.9	1254

DEPTH (ft)	CONCENTRATION (mg/kg)	AROCLOR
5	510	1260
36	250/350	1254
42	46	1242
42	67	1254

FIGURE 3-17
DETECTION OF PCBs IN SOIL SAMPLES, 1986
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
PREPARED FOR
WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
CONSULTANTS

AR301516



CROSS SECTION

VERTICAL SCALE 0 10 20 30 FEET

HORIZONTAL SCALE 0 60 120 240 FEET

THE BORING LOGS AND RELATED INFORMATION DEPICT SUBSURFACE CONDITIONS ONLY AT THE SPECIFIC LOCATIONS AND DATES INDICATED. SOIL CONDITIONS AND WATER LEVELS AT OTHER LOCATIONS MAY DIFFER FROM CONDITIONS OCCURRING AT THESE BORING LOCATIONS. ALSO THE PASSAGE OF TIME MAY RESULT IN A CHANGE IN THE CONDITIONS AT THESE BORING LOCATIONS.

THE DEPTH AND THICKNESS OF THE SUBSURFACE STRATA INDICATED ON THE SECTIONS WERE GENERALIZED FROM AND INTERPOLATED BETWEEN THE TEST BORINGS. INFORMATION ON ACTUAL SUBSURFACE CONDITIONS EXISTS ONLY AT THE LOCATION OF THE TEST BORINGS AND IT IS POSSIBLE THAT SUBSURFACE CONDITIONS BETWEEN THE TEST BORINGS MAY VARY FROM THOSE INDICATED.

LEGEND:

- ○ PCBs NOT DETECTED
- ● PCBs DETECTED AT CONCENTRATION INDICATED (mg/kg)
- SAMPLE OBTAINED BETWEEN LIMITS INDICATED.
- —·—·— POTENTIOMETRIC SURFACE IN ALLUVIUM AQUIFER

NOTES:

1. GROUNDWATER LEVELS ARE FOR APRIL 29, 1986.
2. PCB CONCENTRATIONS INDICATED ARE THE SUM OF ALL AROCLORS.
3. NOT ALL BORINGS WITH POSITIVE RESULTS FOR PCBs IN SOIL SAMPLES ARE SHOWN IN THIS FIGURE.

FIGURE 3-18
CROSS SECTION
DETECTION OF PCBs
IN SOIL SAMPLES
AT SELECTED LOCATIONS, 1986

RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
CONSULTANTS

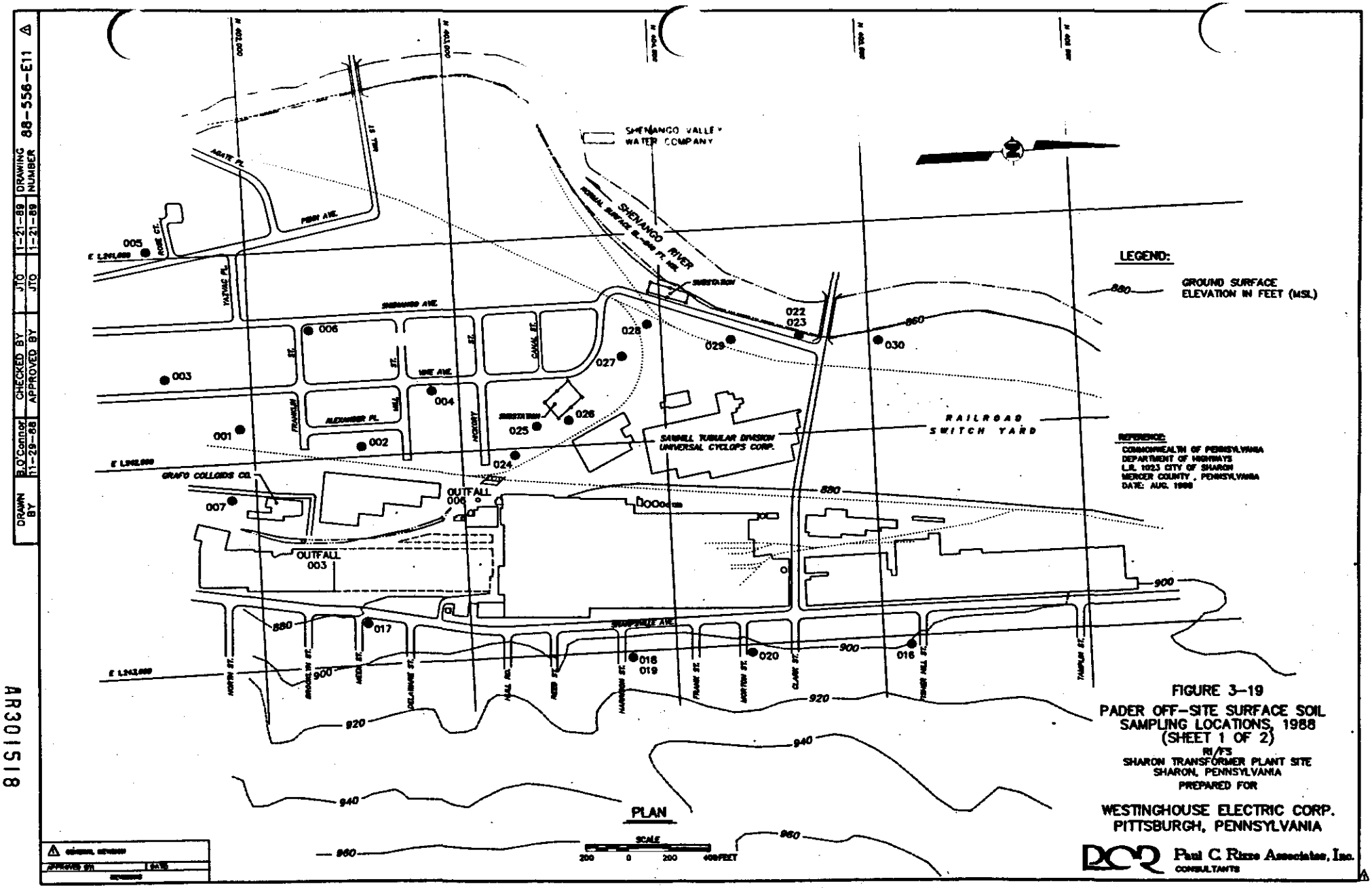


FIGURE 3-19
PADER OFF-SITE SURFACE SOIL SAMPLING LOCATIONS, 1988 (SHEET 1 OF 2)
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
PREPARED FOR
WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

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AR301518

DRAWN BY				
	3-28-89			
CHECKED BY		JTO	7-27-89	DRAWING NUMBER
APPROVED BY		JMM	7-27-89	88-556-A19

REFERENCE

U.S.G.S. 7.5' SERIES TOPOGRAPHIC MAP
ORANGEVILLE & SHARON WEST, OHIO
SHARON EAST & SHARPSVILLE, PENNA.
PHOTOREVISED 1979 & 1981

FIGURE 3-20
PADER OFF-SITE SURFACE SOIL
SAMPLING LOCATIONS, 1988
(SHEET 2 OF 2)

RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

1	GENERAL REVISION
APPROVED BY:	DATE:
REVISIONS	

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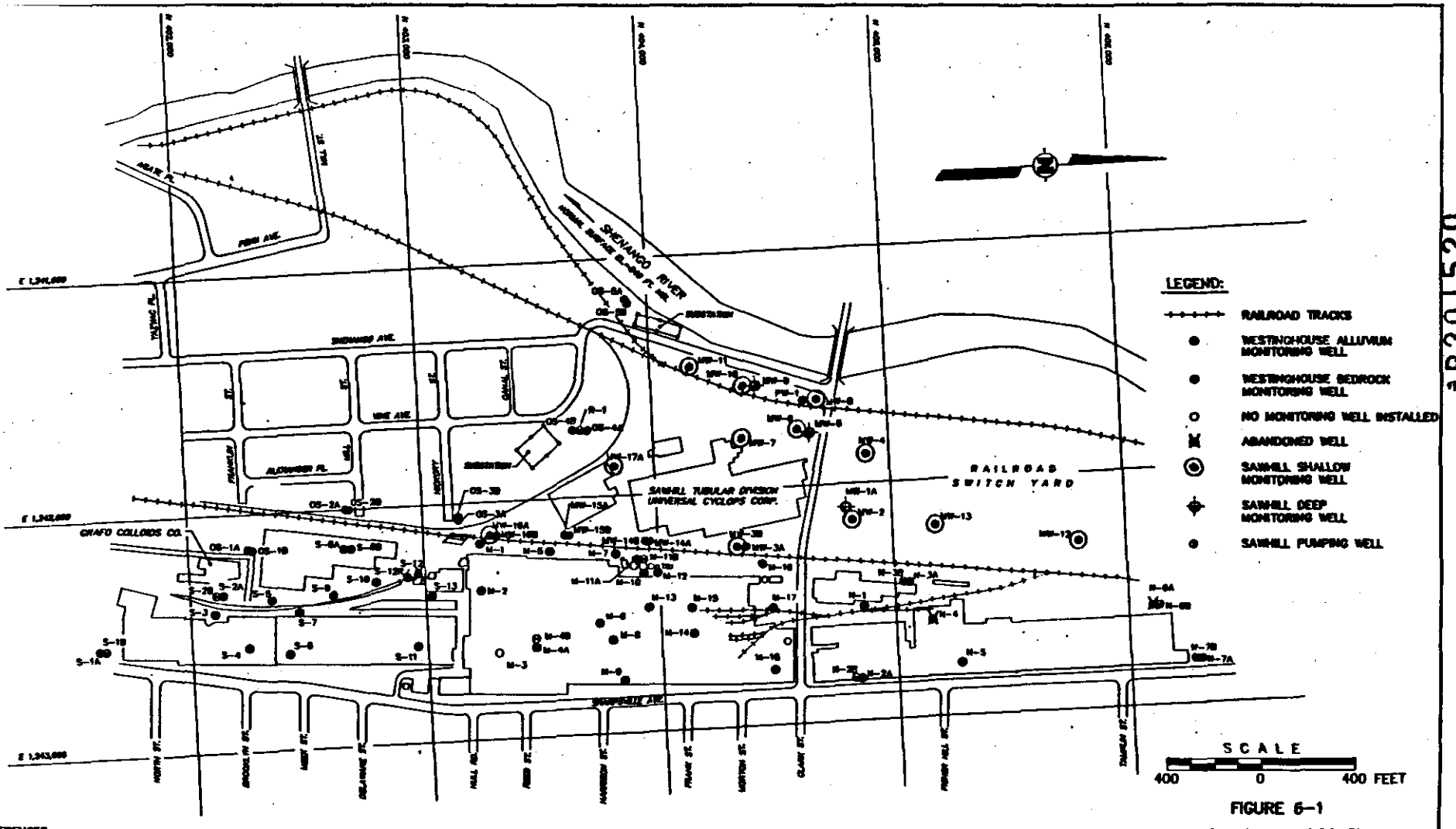
1

AR301519



PLAN

REFERENCES:

1. COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF HIGHWAYS L.R. 1023 CITY OF SHARON MERCER COUNTY, PENNSYLVANIA DATE: AUG. 1966
2. LOCATIONS OF SAWHILL WELLS WERE TAKEN FROM DRAWING NO. 83316-M2, DATED 6-15-64 PREPARED BY BY SRW ASSOCIATES INC. FOR THE SAWHILL TUBULAR DIVISION, CYCLOPS CORPORATION

NOTE:

LOCATION OF MONITORING WELLS ARE APPROXIMATE.

FIGURE 6-1

MONITORING WELL LOCATIONS

SHARON TRANSFORMER PLANT

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP. PITTSBURGH, PENNSYLVANIA

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90-860-827 NUMBER

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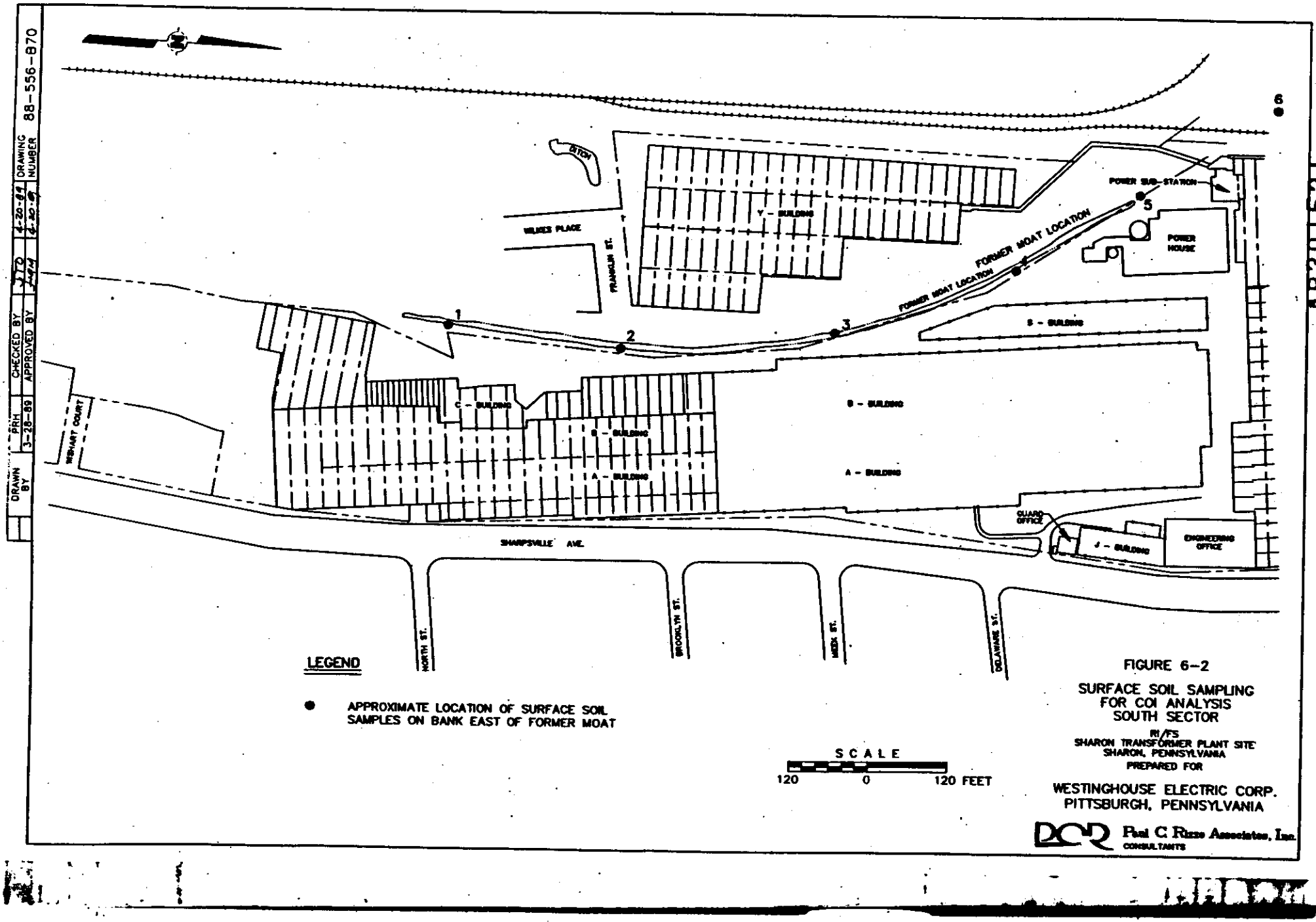
DRAWN BY
PRH
3-28-89
CHECKED BY
APPROVED BY
4-28-89
DRAWING NUMBER
88-556-870
DITCH
WILKES PLACE
FRANKLIN ST.
Y - BUILDING
POWER SUB-STATION
POWER HOUSE
FORMER MOAT LOCATION
FORMER MOAT LOCATION
S - BUILDING
C - BUILDING
B - BUILDING
B - BUILDING
A - BUILDING
A - BUILDING
WEHART COURT
GUARD OFFICE
J - BUILDING
ENGINEERING OFFICE
SHARPSVILLE AVE.
NORTH ST.
BROOKLYN ST.
MEEK ST.
DELAWARE ST.
1
2
3
5
6
LEGEND
APPROXIMATE LOCATION OF SURFACE SOIL SAMPLES ON BANK EAST OF FORMER MOAT
SCALE
120 0 120 FEET
FIGURE 6-2
SURFACE SOIL SAMPLING FOR COI ANALYSIS SOUTH SECTOR
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
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PITTSBURGH, PENNSYLVANIA
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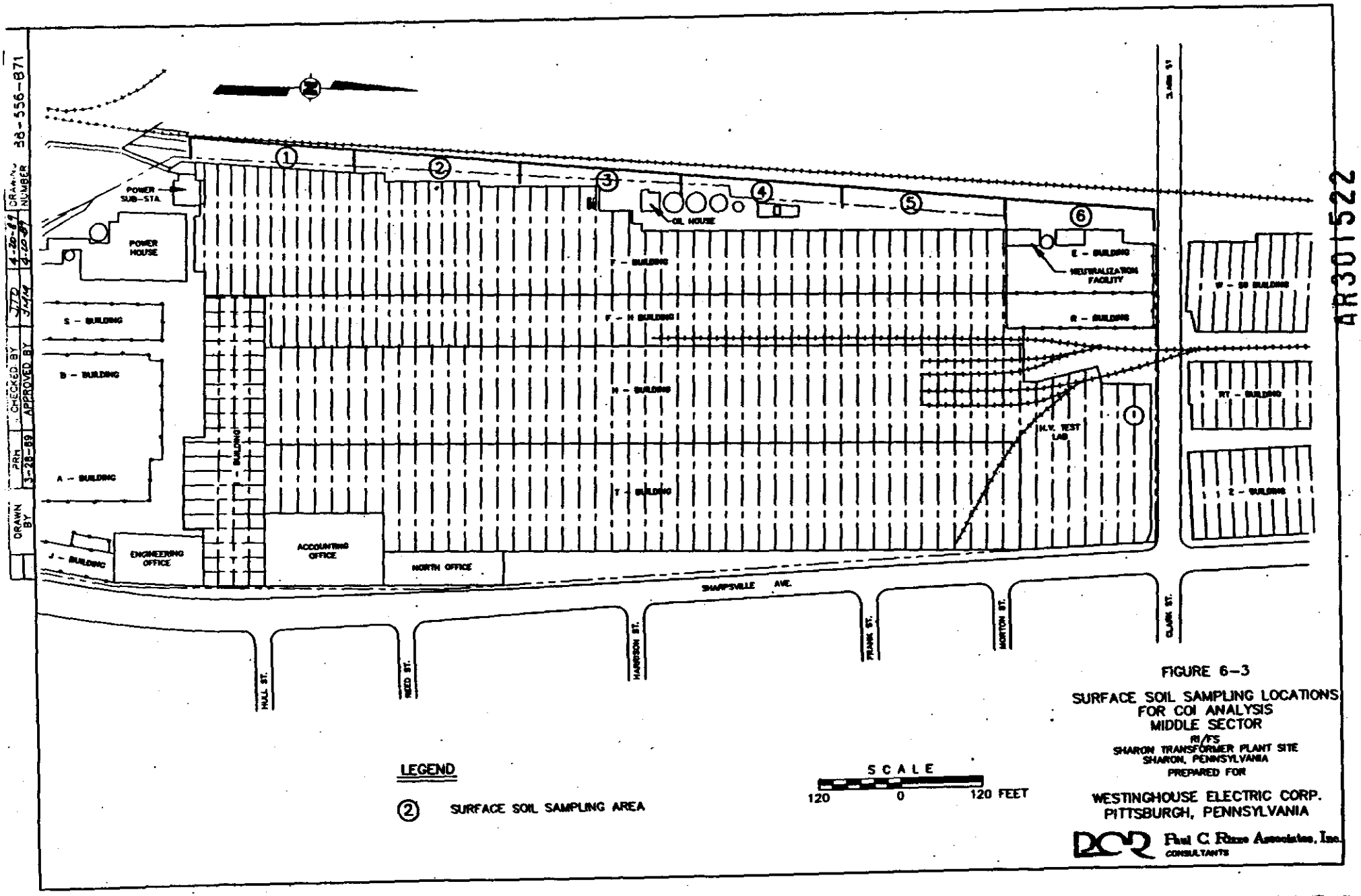
4R301521


DRAWING NUMBER 38-556-871
DRAWN BY PRH 3-28-89
CHECKED BY JTD 4-20-89
APPROVED BY JHH 4-20-89
POWER SUB-STA.
POWER HOUSE
S - BUILDING
B - BUILDING
A - BUILDING
J - BUILDING
ENGINEERING OFFICE
ACCOUNTING OFFICE
NORTH OFFICE
OIL HOUSE
T - BUILDING
F - H BUILDING
M - BUILDING
T - BUILDING
E - BUILDING
NEUTRALIZATION FACILITY
R - BUILDING
H.V. TEST LAB
W - 50 BUILDING
RT - BUILDING
Z - BUILDING
SHARPSVILLE AVE.
HULL ST.
REED ST.
HARRISON ST.
FRANK ST.
MORTON ST.
CLARK ST.
LEGEND
② SURFACE SOIL SAMPLING AREA
SCALE
120 0 120 FEET
FIGURE 6-3
SURFACE SOIL SAMPLING LOCATIONS FOR COI ANALYSIS MIDDLE SECTOR
RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA
PREPARED FOR
WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA
Paul C. Rizzo Associates, Inc.
CONSULTANTS

APPENDIX A

APPENDIX A

RESULTS OF PHASE IA SAMPLING AND ANALYSIS PROGRAM

TABLE 1

ANALYTES DETECTED IN MONITORING WELL SAMPLES

			MONITORING WELL						
ANALYTE	MATRIX	UNITS	S-5	S-12	M-5	M-11A	M-16	M-1	M-6A
1,2,4-trichlorobenzene	GW	ug/l	16	1900	53	1700	1.9	<10	<10
1,2-dichlorobenzene	GW	ug/l	<10	200	<10	120	<10	<10	<10
1,3-dichlorobenzene	GW	ug/l	50	210	130	750	<10	<10	<10
1,4-dichlorobenzene	GW	ug/l	13	97	31	1100	<10	<10	<10
chlorobenzene	GW	ug/l	8.0	180	250	1300	<5.0	<5.0	<5.0
benzene	GW	ug/l	<5.0	33	<5.0	120	<5.0	<5.0	<5.0
PCB-1260	GW	ug/l	1.1	<1.0	<10	<10000	<1.0	<1.0	<1.0
PCB-1254	GW	ug/l	<1.0	8.7	680	39000	1.4	<1.0	<1.0
PCB-1242	GW	ug/l	<1.0	<1.0	11	20000	<1.0	<1.0	<1.0
trichloroethene	GW	ug/l	<5.0	<5.0	<5.0	<50	8.0	<5.0	<5.0
1,1-dichloroethene	GW	ug/l	<5.0	<5.0	<5.0	<50	<5.0	11	<5.0
1,1,1-trichloroethane	GW	ug/l	<5.0	<5.0	<5.0	<50	<5.0	320	<5.0
1,1-dichloroethane	GW	ug/l	<5.0	<5.0	<5.0	<50	<5.0	180	<5.0
petroleum hydrocarbons	GW	mg/l	<0.8	2.0	2.3	100	1.9	<0.8	<0.8

Notes

1. All analytes in table proposed for COI.

TABLE 2

ANALYTES DETECTED IN SURFACE SOIL SAMPLES

ANALYTE	MATRIX	UNITS	SAMPLE SS-01	SAMPLE SS-02
anthracene	soil	mg/kg	0.9	<2.0
benz(a)anthracene	soil	mg/kg	5.0	2.4
benzo(k)fluoranthene	soil	mg/kg	3.9	<2.0
benzo(ghi)perylene	soil	mg/kg	3.0	<2.0
benzo(a)pyrene	soil	mg/kg	5.6	2.5
chrysene	soil	mg/kg	6.9	3.4
fluoranthene	soil	mg/kg	13	5.6
indeno(1,2,3-cd)pyrene	soil	mg/kg	3.0	<2.0
phenanthrene	soil	mg/kg	4.0	<2.0
pyrene	soil	mg/kg	8.1	<2.0
phenol	soil	mg/kg	1.0	<2.0
PCB-1254	soil	mg/kg	320	380
petroleum hydrocarbons	soil	mg/kg	900	430
cyanide	soil	mg/kg	NA	1.8

Notes

1. Sample SS-01 was obtained from moat bank on 3-23-90.
2. Sample SS-02 was obtained west of tank farm on 3-22-90.
3. Sample SS-01 not analyzed for cyanide.
4. Cyanide proposed as COI in areas of usage.

TABLE 3

ANALYTES DETECTED IN OIL SAMPLES

ANALYTE	MATRIX	UNITS	MONITORING WELL S-4	M-2	M-10
PCB-1242	oil	mg/kg	<100	<10000	86000
PCB-1254	oil	mg/kg	<100	<10000	77000
PCB-1260	oil	mg/kg	105	40000	<10000

TABLE 4

DIOXINS AND FURANS IN SAMPLE SS-01

ANALYTE	CONCENTRATION (ug/kg)
2378-TCDD	0.0036
12378-PeCDD	0.0107
123478-HxCDD	0.0181
123678-HxCDD	0.0466
123789-HxCDD	0.0538
1234678-HpCDD	0.958
OCDD	8.52
2378-TCDF	0.681
12378-PeCDF	0.0991
23478-PeCDF	0.328
123478-HxCDF	0.739
123678-HxCDF	0.196
234678-HxCDF	0.115
123789-HxCDF	0.006
1234678-HpCDF	0.613
1234789-HpCDF	0.210
OCDF	2.2
TOTAL TCDD	0.286
TOTAL PeCDD	0.104
TOTAL HxCDD	0.528
TOTAL HpCDD	1.82
TOTAL TCDF	3.07
TOTAL PeCDF	2.23
TOTAL HxCDF	2.79
TOTAL HpCDF	1.52

Total equivalent concentration of 2378-TCDD 0.39 ug/kg

Note

1. Based upon available literatute 2378-TCDD is the isomer of concern. The risk posed by other isomers of dioxin and dibenzofurans has been related to the toxicity of 2378-TCDD. While Westinghouse believes that the EPA has used a very conservative approach in relating the toxicity of these isomers to 2378-TCDD and that they overstate the risk associated with this sampling, Westinghouse has used the document, EPA/625/3-89/016, March 1989, "Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and -Dibenzofurans(CDDs and CDFs) and 1989 Update" to relate the toxicities of the various dioxins and dibenzofuran isomers.

TABLE 5

DIOXINS AND FURANS IN SAMPLE SS-02

ANALYTE	CONCENTRATION (ug/kg)
2378-TCDD	0.0046
12378-PeCDD	0.0237
123478-HxCDD	0.0572
123678-HxCDD	0.16
123789-HxCDD	0.14
1234678-HpCDD	3.69
OCDD	21
2378-TCDF	1.43
12378-PeCDF	0.0884
23478-PeCDF	0.665
123478-HxCDF	0.621
123678-HxCDF	0.213
234678-HxCDF	0.125
123789-HxCDF	0.0069
1234678-HpCDF	1.29
1234789-HpCDF	0.224
OCDF	6.37
TOTAL TCDD	0.0289
TOTAL PeCDD	0.0103
TOTAL HxCDD	1.06
TOTAL HpCDD	6.36
TOTAL TCDF	2.21
TOTAL PeCDF	3.46
TOTAL HxCDF	3.8
TOTAL HpCDF	4.19

Total equivalent concentration of 2378-TCDD 0.71 ug/kg

Note

1. Based upon available literature 2378-TCDD is the isomer of concern. The risk posed by other isomers of dioxin and dibenzofurans has been related to the toxicity of 2378-TCDD. While Westinghouse believes that the EPA has used a very conservative approach in relating the toxicity of these isomers to 2378-TCDD and that they overstate the risk associated with this sampling, Westinghouse has used the document, EPA/625/3-89/016, March 1989, "Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and -Dibenzofurans(CDDs and CDFs) and 1989 Update" to relate the toxicities of the various dioxins and dibenzofuran isomers.

TABLE 6

DIOXINS AND FURANS IN OIL FROM WELL S-4

ANALYTE	CONCENTRATION (ug/kg)
2378-TCDD	0.0094
12378-PeCDD	0.007
123478-HxCDD	0.0028
123678-HxCDD	0.0168
123789-HxCDD	0.0087
1234678-HpCDD	0.584
OCDD	5.72
2378-TCDF	0.0163
12378-PeCDF	0.0066
23478-PeCDF	0.0167
123478-HxCDF	0.288
123678-HxCDF	0.0425
234678-HxCDF	0.0132
123789-HxCDF	ND
1234678-HpCDF	0.234
1234789-HpCDF	0.204
OCDF	2.52
TOTAL TCDD	0.0301
TOTAL PeCDD	0.0834
TOTAL HxCDD	0.185
TOTAL HpCDD	1.06
TOTAL TCDF	0.0561
TOTAL PeCDF	0.179
TOTAL HxCDF	0.629
TOTAL HpCDF	0.445

Total equivalent concentration of 2378-TCDD 0.08 ug/kg

Note

1. Based upon available literature 2378-TCDD is the isomer of concern. The risk posed by other isomers of dioxin and dibenzofurans has been related to the toxicity of 2378-TCDD. While Westinghouse believes that the EPA has used a very conservative approach in relating the toxicity of these isomers to 2378-TCDD and that they overstate the risk associated with this sampling, Westinghouse has used the document, EPA/625/3-89/016, March 1989, "Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and -Dibenzofurans(CDDs and CDFs) and 1989 Update" to relate the toxicities of the various dioxins and dibenzofuran isomers.

TABLE 7

DIOXINS AND FURANS IN OIL FROM WELL M-2

ANALYTE	CONCENTRATION (ug/kg)
2378-TCDD	0.0169
12378-PeCDD	0.0094
123478-HxCDD	ND
123678-HxCDD	0.12
123789-HxCDD	0.0576
1234678-HpCDD	5.79
OCDD	56.73
2378-TCDF	6.87
12378-PeCDF	2.66
23478-PeCDF	6.32
123478-HxCDF	44.21
123678-HxCDF	10.34
234678-HxCDF	4.82
123789-HxCDF	0.394
1234678-HpCDF	40.37
1234789-HpCDF	59.67
OCDF	300.24
TOTAL TCDD	0.162
TOTAL PeCDD	0.0573
TOTAL HxCDD	0.916
TOTAL HpCDD	10.06
TOTAL TCDF	35.43
TOTAL PeCDF	64.89
TOTAL HxCDF	55.09
TOTAL HpCDF	156.65

Total equivalent concentration of 2378-TCDD 11.41 ug/kg

Note

1. Based upon available literature 2378-TCDD is the isomer of concern. The risk posed by other isomers of dioxin and dibenzofurans has been related to the toxicity of 2378-TCDD. While Westinghouse believes that the EPA has used a very conservative approach in relating the toxicity of these isomers to 2378-TCDD and that they overstate the risk associated with this sampling, Westinghouse has used the document, EPA/625/3-89/016, March 1989, "Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and -Dibenzofurans(CDDs and CDFs) and 1989 Update" to relate the toxicities of the various dioxins and dibenzofuran isomers.

TABLE 8

DIOXINS AND FURANS IN OIL FROM WELL M-10

ANALYTE	CONCENTRATION (ug/kg)
2378-TCDD	ND
12378-PeCDD	ND
123478-HxCDD	ND
123678-HxCDD	0.0208
123789-HxCDD	ND
1234678-HpCDD	0.207
OCDD	1.94
2378-TCDF	41.41
12378-PeCDF	3.66
23478-PeCDF	26.44
123478-HxCDF	60.58
123678-HxCDF	16.61
234678-HxCDF	31.52
123789-HxCDF	31.31
1234678-HpCDF	19.35
1234789-HpCDF	30.68
OCDF	79.29
TOTAL TCDD	0.0224
TOTAL PeCDD	.0291*
TOTAL HxCDD	0.234
TOTAL HpCDD	0.207
TOTAL TCDF	117.48
TOTAL PeCDF	135.19
TOTAL HxCDF	212.57
TOTAL HpCDF	87.68

Total equivalent concentration of 2378-TCDD 32.13 ug/kg

1. Asterisk(*) indicates "Estimated Maximum Possible Concentration"

Note

1. Based upon available literature 2378-TCDD is the isomer of concern. The risk posed by other isomers of dioxin and dibenzofurans has been related to the toxicity of 2378-TCDD. While Westinghouse believes that the EPA has used a very conservative approach in relating the toxicity of these isomers to 2378-TCDD and that they overstate the risk associated with this sampling, Westinghouse has used the document, EPA/625/3-89/016, March 1989, "Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and -Dibenzofurans(CDDs and CDFs) and 1989 Update" to relate the toxicities of the various dioxins and dibenzofuran isomers.

TABLE 9

METALS CONCENTRATIONS IN GROUNDWATER SAMPLES

			MONITORING WELL						
ANALYTE	MATRIX	UNITS	S-5	S-12	M-5	M-11A	M-16	M-1	M-6A
aluminum	gw	mg/l	0.2	0.06	0.04	0.08	0.07	<0.04	0.1
antimony	gw	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
arsenic	gw	mg/l	0.004	0.008	0.013	0.01	<0.002	<0.002	0.002
barium	gw	mg/l	0.08	0.17	0.33	0.26	0.3	<0.002	0.08
beryllium	gw	mg/l	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
cadmium	gw	mg/l	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
chromium	gw	mg/l	<0.006	0.007	0.006	<0.006	<0.006	<0.006	<0.006
cobalt	gw	mg/l	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005
copper	gw	mg/l	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
iron	gw	mg/l	0.04	10	17	2	0.12	0.17	0.006
lead	gw	mg/l	<0.1	<0.005	<0.005	<0.005	<0.005	<0.005	<0.1
magnesium	gw	mg/l	17	30	16	21	8.9	5.3	24
manganese	gw	mg/l	2.4	5.1	7	6.3	0.25	3.2	0.43
mercury	gw	mg/l	<0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
nickel	gw	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
potassium	gw	mg/l	20	3.6	3.9	2.9	5.4	1.5	20
selenium	gw	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.002	<0.01
silver	gw	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01
sodium	gw	mg/l	52	200	18	31	52	51	40
thallium	gw	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.1
vanadium	gw	mg/l	<0.007	0.08	0.06	0.07	0.03	0.01	<0.007
zinc	gw	mg/l	<0.05	<0.05	<0.05	0.05	0.06	<0.05	<0.05

TABLE 10

METALS CONCENTRATIONS IN SOIL SAMPLES

			SOIL SAMPLE	
ANALYTE	MATRIX	UNITS	SS-01	SS-02
aluminum	soil	mg/kg	10000	11000
antimony	soil	mg/kg	<20	<20
arsenic	soil	mg/kg	26	29
barium	soil	mg/kg	120	240
beryllium	soil	mg/kg	1.3	1.8
cadmium	soil	mg/kg	6.8	21
chromium	soil	mg/kg	45	320
cobalt	soil	mg/kg	9.3	31
copper	soil	mg/kg	80	260
iron	soil	mg/kg	38000	60000
lead	soil	mg/kg	3200	900
magnesium	soil	mg/kg	2700	4600
manganese	soil	mg/kg	930	1800
mercury	soil	mg/kg	0.27	1.4
nickel	soil	mg/kg	22	92
potassium	soil	mg/kg	730	810
selenium	soil	mg/kg	<2.0	<5.0
silver	soil	mg/kg	<1.0	<1.9
sodium	soil	mg/kg	190	270
thallium	soil	mg/kg	<10	<10
vanadium	soil	mg/kg	<700	<700
zinc	soil	mg/kg	3200	3100

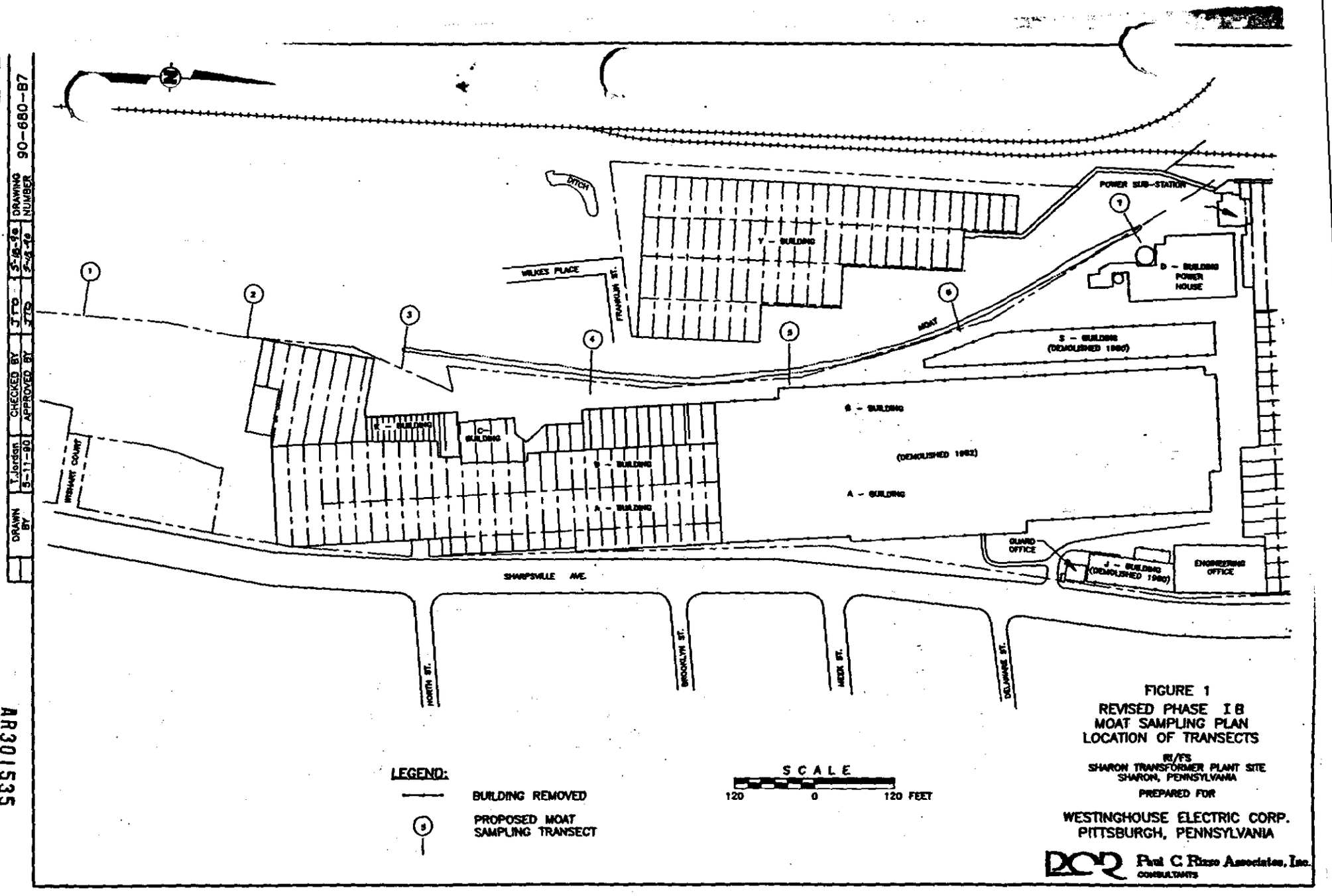


FIGURE 1
REVISED PHASE I B
MOAT SAMPLING PLAN
LOCATION OF TRANSECTS

RI/FS
SHARON TRANSFORMER PLANT SITE
SHARON, PENNSYLVANIA

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

Paul C Rizzo Associates, Inc.
CONSULTANTS

AR301535

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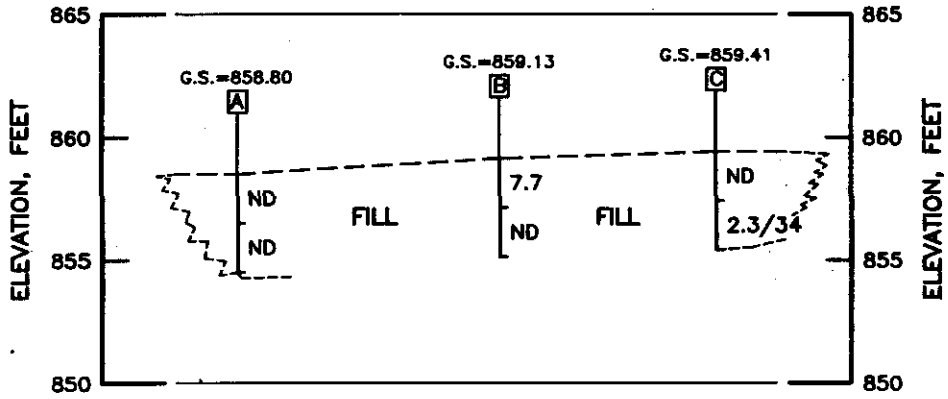
		APPROVED BY			



(LOOKING NORTH)

VERTICAL SCALE
5 0 5 FEET

HORIZONTAL SCALE
10 0 10 FEET

LEGEND:

B — SAMPLING LOCATIONS

NOTES:

1. CONCENTRATIONS ARE IN mg/kg (ppm) FOR ARACLOR 1260, EXCEPT AS NOTED.
2. SAMPLES TAKEN AT 2 FOOT INTERVALS, EXCEPT AS NOTED.

FIGURE 2
RESULTS OF PCB ANALYSIS FOR
MOAT TRANSECT 1

SHARON TRANSFORMER PLANT

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

Paul C Rizzo Associates, Inc.
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AR301536

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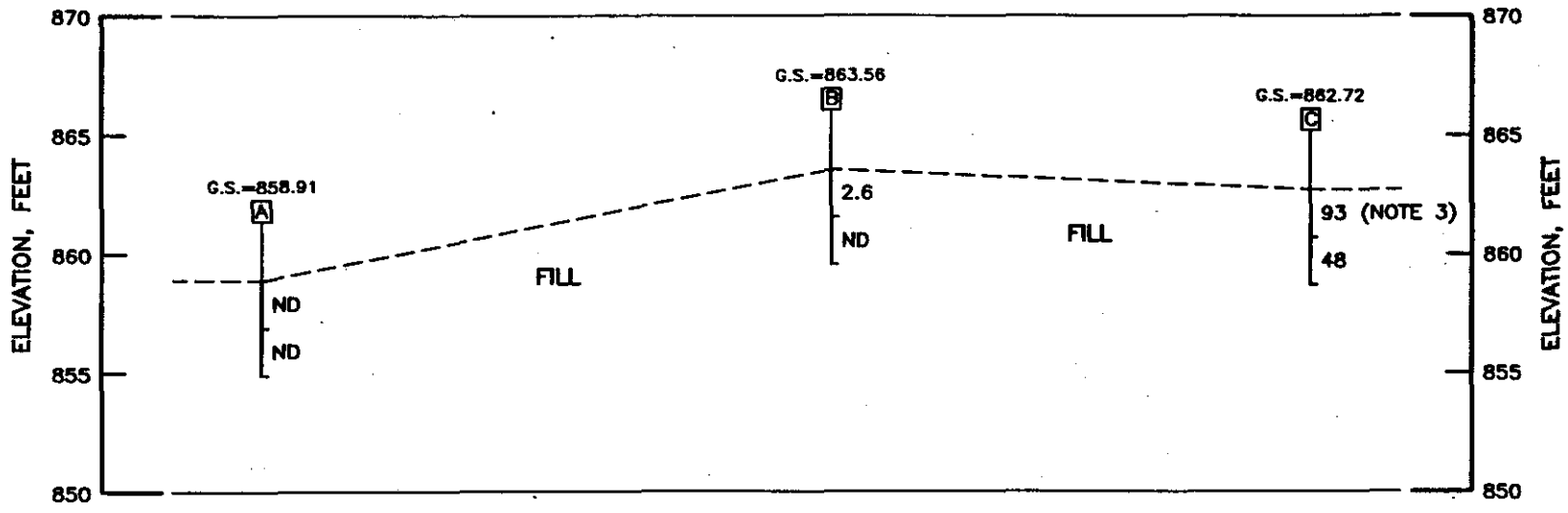


VERTICAL SCALE
5 0 5 FEET

HORIZONTAL SCALE
10 0 10 FEET

LEGEND:

B — SAMPLING LOCATIONS

NOTES:

1. CONCENTRATIONS ARE IN mg/kg (ppm) FOR ARACLOR 1260, EXCEPT AS NOTED.
2. SAMPLES TAKEN AT 2 FOOT INTERVALS, EXCEPT AS NOTED.
3. ARACLOR 1254.

FIGURE 3
RESULTS OF PCB ANALYSIS FOR
MOAT TRANSECT 2

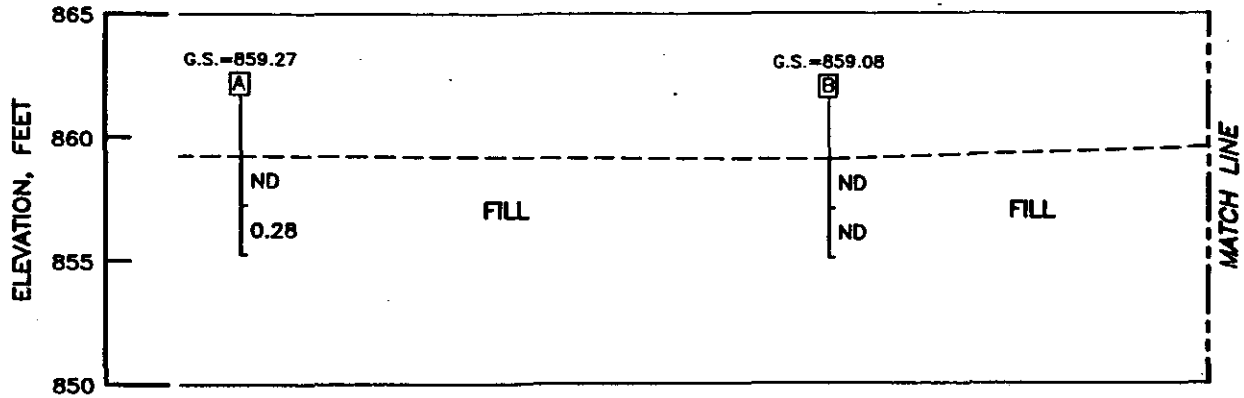
SHARON TRANSFORMER PLANT

PREPARED FOR

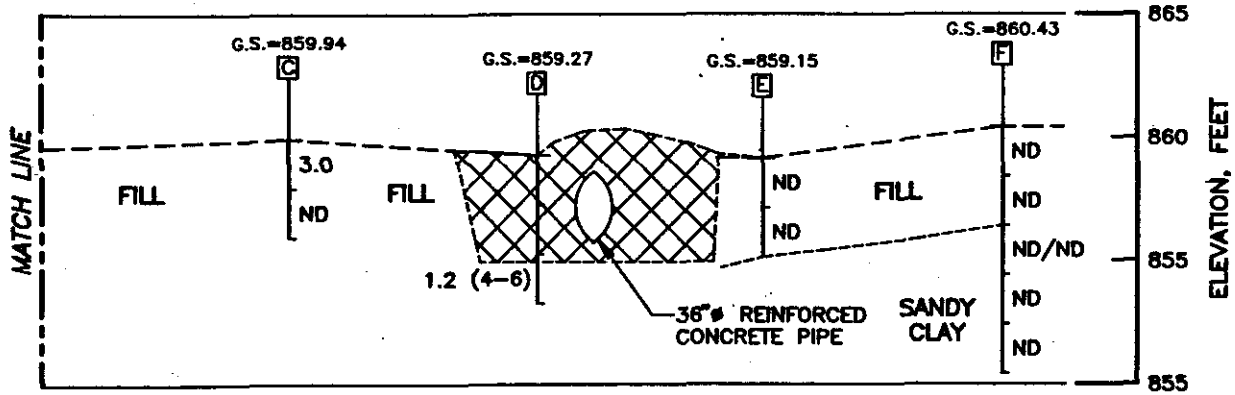
WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

Paul C Rizzo Associates, Inc.
CONSULTANTS

AR301537



(LOOKING NORTH)



(LOOKING NORTH, CONTINUED)

LEGEND:

B — SAMPLING LOCATIONS

FILL PLACED BY O.H. MATERIALS

NOTES:

1. CONCENTRATIONS ARE IN mg/kg (ppm) FOR ARACLOR 1260, EXCEPT AS NOTED.
2. SAMPLES TAKEN AT 2 FOOT INTERVALS, EXCEPT AS NOTED.

VERTICAL SCALE
5 0 5 FEET

HORIZONTAL SCALE
10 0 10 FEET

FIGURE 4
RESULTS OF PCB ANALYSIS FOR
MOAT TRANSECT 3

SHARON TRANSFORMER PLANT

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
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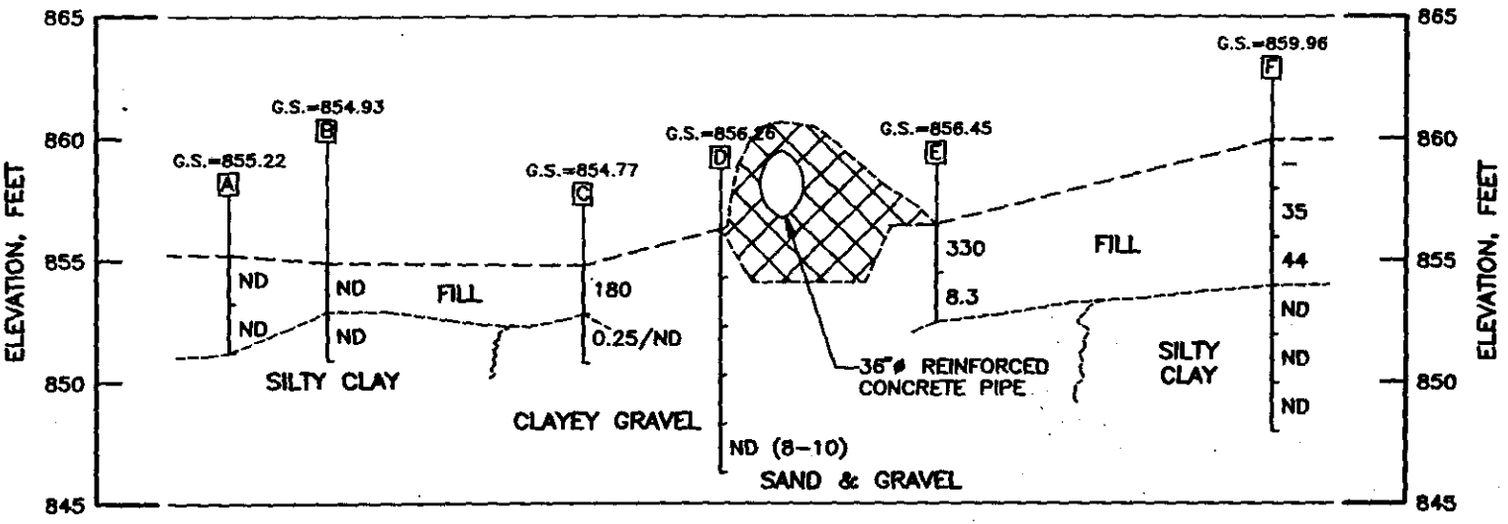

(LOOKING NORTH)

LEGEND:

B — SAMPLING LOCATIONS

FILL PLACED BY O.H. MATERIALS

NOTES:

1. CONCENTRATIONS ARE IN mg/kg (ppm) FOR ARACLOR 1260, EXCEPT AS NOTED.
2. SAMPLES TAKEN AT 2 FOOT INTERVALS, EXCEPT AS NOTED.

VERTICAL SCALE
5 0 5 FEET

HORIZONTAL SCALE
10 0 10 FEET

FIGURE 5
RESULTS OF PCB ANALYSIS FOR MOAT TRANSECT 4

SHARON TRANSFORMER PLANT

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

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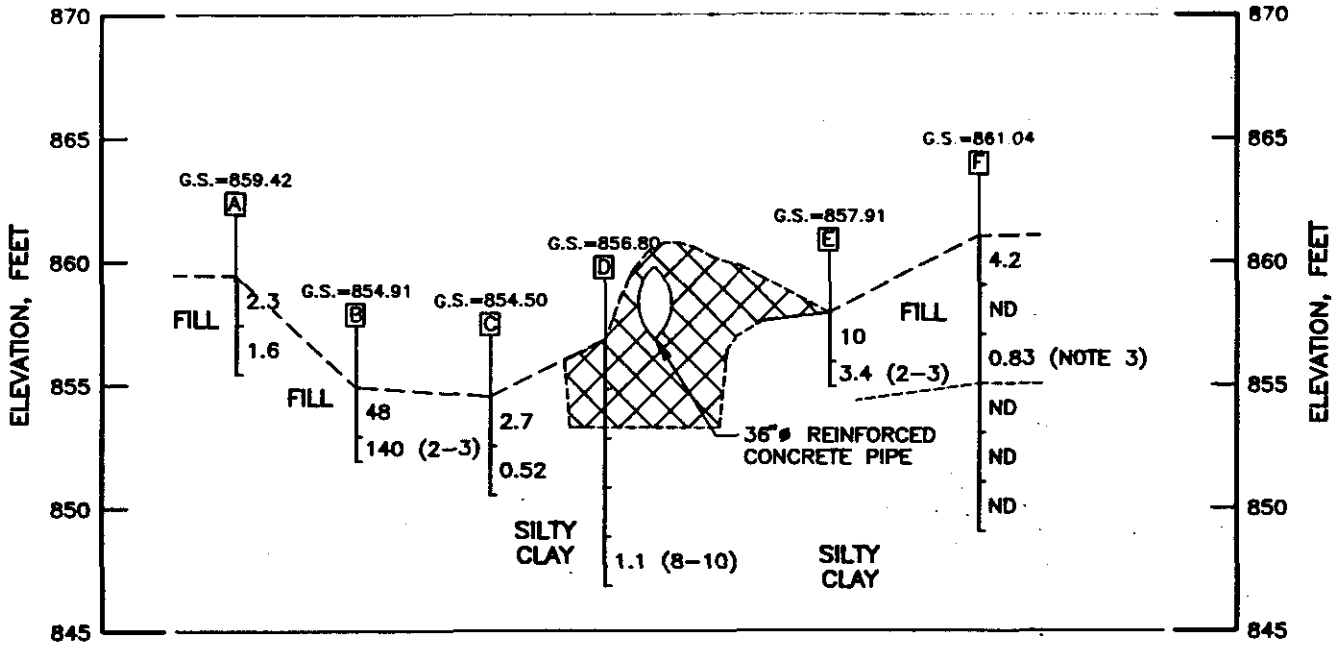

(LOOKING NORTH)

LEGEND:

B — SAMPLING LOCATIONS

FILL PLACED BY O.H. MATERIALS

NOTES:

1. CONCENTRATIONS ARE IN mg/kg (ppm) FOR ARACLOR 1260, EXCEPT AS NOTED.
2. SAMPLES TAKEN AT 2 FOOT INTERVALS, EXCEPT AS NOTED.
3. ARACLOR 1254.

VERTICAL SCALE
5 0 5 FEET

HORIZONTAL SCALE
10 0 10 FEET

FIGURE 6
RESULTS OF PCB ANALYSIS FOR MOAT TRANSECT 5

SHARON TRANSFORMER PLANT

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

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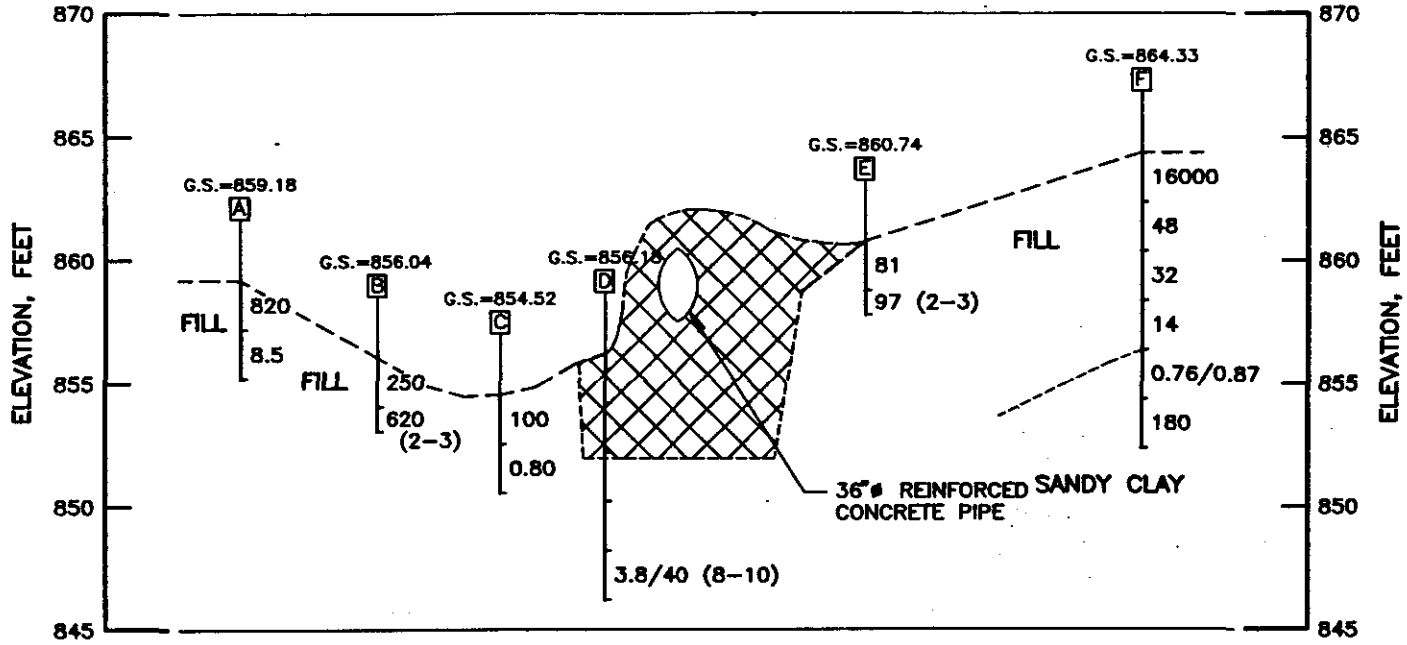

(LOOKING NORTH)

LEGEND:

B — SAMPLING LOCATIONS

FILL PLACED BY O.H. MATERIALS

NOTES:

1. CONCENTRATIONS ARE IN mg/kg (ppm) FOR ARACLOR 1260, EXCEPT AS NOTED.
2. SAMPLES TAKEN AT 2 FOOT INTERVALS, EXCEPT AS NOTED.

VERTICAL SCALE
5 0 5 FEET

HORIZONTAL SCALE
10 0 10 FEET

FIGURE 7
RESULTS OF PCB ANALYSIS FOR
MOAT TRANSECT 6

SHARON TRANSFORMER PLANT

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.
PITTSBURGH, PENNSYLVANIA

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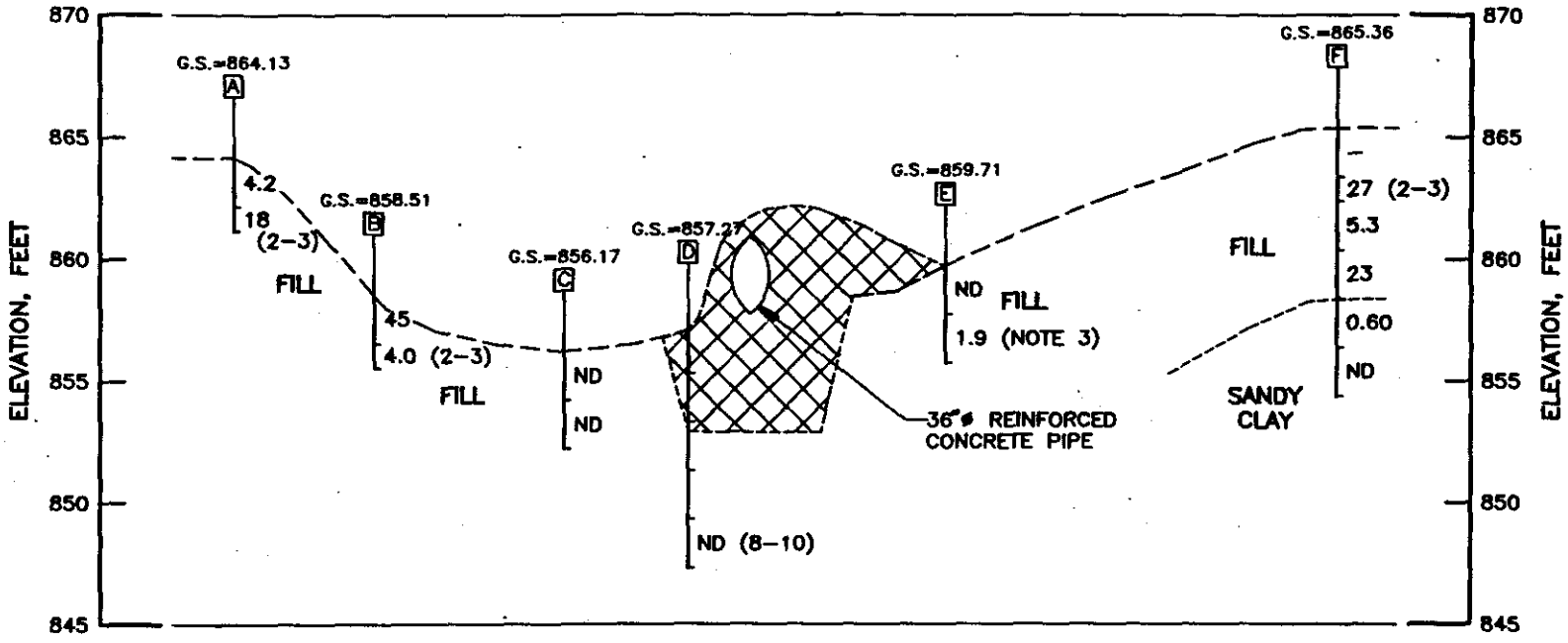

(LOOKING NORTH)

LEGEND:

B — SAMPLING LOCATIONS

FILL PLACED BY O.H. MATERIALS

NOTES:

1. CONCENTRATIONS ARE IN mg/kg (ppm) FOR ARACLOR 1260, EXCEPT AS NOTED.
2. SAMPLES TAKEN AT 2 FOOT INTERVALS, EXCEPT AS NOTED.
3. ARACLOR 1254.

VERTICAL SCALE
5 0 5 FEET

HORIZONTAL SCALE
10 0 10 FEET

FIGURE 8
RESULTS OF PCB ANALYSIS FOR MOAT TRANSECT 7

SHARON TRANSFORMER PLANT

PREPARED FOR

WESTINGHOUSE ELECTRIC CORP.
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