SITE INVESTIGATION REPORT
Volume 1 of 2
(Text, Tables and Figures)

For the

Spaulding Fibre Site
Tonawanda, New York

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Erie County Industrial Development Agency

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LIST OF ACRONYMS AND ABBREVIATIONS

AST	Above-ground storage tank
AOC	Area of Concern
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CWM	Chemical Waste Management
Committee	Spaulding Fibre Steering Committee
COPC	chemical of potential concern
CRA	Conestoga-Rovers and Associates
CSM	Conceptual Site Model
cy	cubic yard
DUSR	Data Usability Summary Report
EA	Qualitative Exposure Assessment
ECIDA	Erie County Industrial Development Agency
ERP	Environmental Restoration Program
GAC	Granular Activated Carbon
HASP	Health and Safety Plan
HSA	hollow stem auger
I.D.	inside diameter
IRM	interim remedial measure
LiRo	LiRo Engineers, Inc.
mg/kg	milligram per kilogram
ND	non-detect
NYSDEC	New York State Department of Environmental Conservation
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PID	photoionization detector
ppb	parts per billion
ppm	parts per million
ppt	parts per trillion
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Audit
RFI	RCRA Facility Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SCGs	Standards, Criteria, and Guidance
SIP	Site Investigation Plan
SI/RAR	Site Investigation and Remedial Alternatives Report
SPDES	State Pollutant Discharge Elimination System
Spaulding	Spaulding Fibre Site
SVOCs	Semi-volatile organic compounds
SWMU	Solid Waste Management Unit
TAGM	Technical and Administrative Guidance Memorandum
TAL	Target Analyte List
TCL	Target Compound List
USEPA	United Stated Environmental Protection Agency
UST	underground storage tank
VOCs	volatile organic compounds

1.0 INTRODUCTION

LiRo Engineers, Inc. (LiRo) is in contract agreement with the Erie County Industrial Development Agency (ECIDA) to provide a Site Investigation and Remedial Alternatives Report (SI/RAR) for the Spaulding Fibre Site (Spaulding) in Tonawanda, New York. The site location, 310 Wheeler Street in the City of Tonawanda, Erie County, New York, is shown on Figure 1-1. The property is bounded by Dodge and Enterprise Avenues and residential property to the north, Wheeler Street and a mix of commercial and residential properties to the east, Hackett Drive and commercial properties to the south, and Hinds Street and a mix of commercial and residential properties to the west.

Documents previously prepared by LiRo for this project include the Site Investigation Plan/ Standard Operation Procedures/ Quality Assurance Project Plan (collectively referred to as the Work Plan), the site Health and Safety Plan, and the Citizen Participation Plan. These three documents, which were approved by ECIDA and New York State Department of Environmental Conservation (NYSDEC) prior to the Site Investigation field work, define the scope of work, technical approach and procedures for conducting the field investigation. This SI report summarizes the results of sampling at the Spaulding Fibre Site.

1.1 Project Objectives

The Site Investigation was undertaken to fully characterize the Site chemical and physical conditions in order to support an evaluation of remedial alternatives and select a preferred alternative for site remediation. The objectives of the field testing program were to provide data sufficient to:

1. define the physical, geological, hydrological, chemical and environmental characteristics unique to the site;
2. determine the nature and extent of chemicals of concern, their transport, and potential fate;
3. develop standards, criteria, and guidance values (SCGs) for environmental media at the site;
4. evaluate potential pathways for human exposure to site contaminants;
5. develop and evaluate remedial action alternatives to be examined in the RAR;
6. prepare a Record of Decision; and

7. fulfill requirements of Federal and New York State Laws for environmental remediation programs.

1.2 Project and Report Organization

The Spaulding Fibre SI/RAR is being conducted under a NYSDEC Environmental Restoration Program (ERP) State Assistance Contract with the City of Tonawanda, Erie County and ECIDA. The Spaulding Fibre Steering Committee (Committee) is comprised by representatives of those three groups plus the Town of Tonawanda and Empire State Development Corporation. LiRo is under contract with ECIDA to plan and implement the SI/RAR. NYSDEC is responsible for oversight of the investigation as well as review and approval of project deliverables.

This Site Investigation Report is structured in accordance with NYSDEC DER-10 guidance and contains all required elements to support the RAR. This report contains 8 sections. Section 1 provides an overview of the project and scope. Section 2 presents site background and previous investigation information. Section 3 outlines the scope of work, details the site investigation program and identifies standards, criteria and guidance values for the site. Section 4 summarizes the geologic and hydrogeologic conditions at and near the site. Section 5 discusses the nature and extent of contamination. Section 6 presents the conceptual site model as determined during the site investigation. Section 7 presents the qualitative exposure assessment conducted for the site. Section 8 summarizes the conclusions of the site investigation program and provides recommendations.

2.0 BACKGROUND

2.1 Site Setting

The Spaulding Fibre site is located at 310 Wheeler Street in the City of Tonawanda, New York on approximately 46 acres of land. Approximately 20 acres of the site are developed with former plant buildings and structures (Figure 2-1). To facilitate the site investigation, three distinct operable units (OUs) were defined at the site. Operable Unit 5 (OU5) is the former parking lot on the east side of Wheeler Street, Operable Unit 6 (OU6) is the main plant operations area, and Operable Unit 7 (OU7) is the undeveloped western portion of the site. Operable Units OU1 – OU4 refer to waste disposal areas within OU6 which are being addressed by NYSDEC under their Superfund Program.

The site is located in a mixed land use district with commercial properties along Wheeler Street northeast of the site, industrial/commercial properties across Hackett Street to the southeast, residential properties along Dodge Avenue and Gibson Street to the northwest of the site, and commercial/residential properties across Hinds Street to the west.

The elevation at the site is approximately 600 feet above mean sea level and the ground at OU5 and OU7 slopes gently to the north-northeast. Surface drainage is through a series of swales and ditches (the configuration of which has changed over the years) and storm sewers. The Niagara River is approximately one mile north of the site. The Niagara River and municipal water treatment and supply systems provide potable water to residents and industry in the vicinity and downgradient of the Site. According to the City Water Department, the drilling of wells for potable water supply is prohibited within the City of Tonawanda limits.

2.2 Site Background and Previous Investigations

The following documents provided the most comprehensive source of site history and were the primary sources used to prepare this site background section:

Plant Decommissioning Final Report, Conestoga-Rovers and Associates, 1995.

RCRA Facility Investigation and Remedial Investigation, Spaulding Composites Company, Tonawanda, New York. Conestoga-Rovers and Associates, (Revised September) 1998.

Record of Decision and RCRA Statement of Basis, Spaulding Composites Site Operable Units Nos. 1 to 4, Tonawanda, Erie County, New York. NYSDEC, March 2003.

The site has an area of approximately 46 acres formerly used by Spaulding Composites Co., Inc. The Spaulding plant formerly consisted of 860,000 square feet of interconnected buildings and is surrounded by approximately 20 acres of vacant land. The former Spaulding facility operated from 1911 (as Tonawanda Plant Industrial Plastics Division) until 1992 with a substantial plant expansion in the 1920s. By the time of World War II, most of the present plant floor area had been constructed and facilities added. The plant was decommissioned in 1992 when operations ceased. Figure 2-1 shows the site building layout with construction dates for the various portions of the plant.

The first on-site environmental investigation noted in the documents was in 1978 when two monitoring wells were installed downgradient (north) and upgradient (south) of the Resin Drum Landfill. These wells were routinely sampled between 1978 and 1991 for total phenols and total chlorinated hydrocarbons along with site-specific parameters. Sporadic and unconfirmed levels of total phenols and other organic constituents have been identified in groundwater from these monitoring wells. Data were utilized as part of the Remedial Investigation/Feasibility Study for the Resin Drum Landfill which was performed.

Site-wide investigations/assessments began in the late 1980s when a Resource Conservation and Recovery Act (RCRA) Facility Audit (RFA) was performed at the facility by a United States Environmental Protection Agency (USEPA) contractor under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). The RFA Report identified 38 Solid Waste Management Units (SWMUs) and additional potential areas of concern (AOCs). Data on surface water, soil, and groundwater collected at the Site by NUS Corporation in April 1987 was summarized in the RFA report. Based on the results of the facility audit, it was recommended that a facility-wide investigation be performed.

The plant closed in 1992 and initially declared bankruptcy in 1993. Spaulding initiated decommissioning activities at the site in August 1992. The majority of these activities were completed from September 1992 to February 1993 with the remaining activities completed by mid-1995. These activities are documented in the Plant Decommissioning Final Report dated August 1995 and approved by the NYSDEC by letter dated August 30, 1995.

In early 1993 Spaulding constructed an on-site water treatment system to treat PCB-contaminants in water from a basement sump, the on-site K-Line storm sewer and other wastewaters generated on-site. Periodic sampling and analysis of influent and effluent water was conducted to ensure compliance with discharge limits to the storm sewer.

In December 1994, an on-site gas well was successfully plugged with no detectable leaks observed upon inspection a few weeks later. The other gas wells are reported to be successfully closed according to NYSDEC records.

In 1995, Spaulding drained and dismantled the Therminol Unit which had been used as a heat exchanger for the Spauldite sheet presses. PCB oil had been released to the ground outside this building during use. A focused investigation of this area to delineate the horizontal and vertical extent of PCB contamination in the subsurface soil around the Therminol Building was performed in 1995 and presented in an August 1996 report entitled: *PCB Soil Investigation Report, Therminol Building.* PCB-contaminated soil was later excavated by NYSDEC from this portion of the site as part of an Interim Remedial Measure (IRM).

Following the closure of the plant, Spaulding and NYSDEC entered into a RCRA Corrective Action Order on Consent for the performance of a RCRA Facility Investigation (RFI). As a result of this Order on Consent, investigations were performed to satisfy RCRA requirements for the closure/ decommissioning of the facility. In the early 1990s, Spaulding and NYSDEC also entered into an Order on Consent for the performance of a Remedial Investigation/Feasibility Study (RI/FS) of an on-site landfill previously used for the disposal of drums which contained waste resins. The investigations at the site were implemented by Spaulding's consultant, CRA, through the mid 1990s including a remedial investigation of the property in 1995. Table 2-1 provides a summary the SWMUs and AOCs identified during the RFI.

Using the RI data, potential remedial alternatives were identified, screened and evaluated in the report entitled*: Feasibility Study and Corrective Measures Study* dated December, 2000. The remedial alternatives were presented and discussed at a public meeting in 2002 and remedies for four identified operable units (OU1, OU2, OU3 and OU4) were subsequently detailed in a Record of Decision (ROD) (NYSDEC, March 2003). Spaulding, which had again declared bankruptcy, continued trying to sell the property in return for the remedial actions required by the ROD. Attempts by Spaulding to sell the facility failed and in 2003 the United States Bankruptcy Court approved a recovery plan for Spaulding. NYSDEC assumed responsibility for remediating OU1 through OU4 under the State Superfund Program.

A building demolition program was initiated in 2006 by the Spaulding Fibre Steering Committee, and approximately 400,000 square feet of former plant structures have been cleaned and demolished to the level of the floor slab. Most of the demolition work has taken place in the northern section of the plant.

2.2.1 Plant Operations

The former Spaulding facility operated from 1911 (as Tonawanda Plant Industrial Plastics Division) until 1992 and primarily produced two families of products - vulcanized fiber and composite laminates. Spaulding produced vulcanized fiber in its early history by treating paper (produced in an on-site paper mill) with zinc chloride solution. During this period, a substantial plant expansion occurred in the 1920s.

By the time of World War II, most of the present plant floor area had been constructed and facilities added to produce a second family of products – composite laminates. Spaulding produced these laminates by impregnating natural fibers with resins. This material was sold under the trade name Spauldite and many of the phenolic resins used in production were manufactured on-site. The primary raw chemicals used to produce the resins include: phenol, formaldehyde, aniline, cresylic acids, phthalates, methanol, ethanol, toluene, acetone, methylethyl ketone, benzene and ammonium hydroxide. The Spauldite manufacturing operation underwent an expansion in 1981. Plant operations were organized into the following four operating Departments: Paper Mill, Fibre Sheet, Fibre Tube, and Spauldite Sheet Departments.

Paper Mill Department

This department manufactured specialty papers from 100% cotton material or wood pulp. All wastewaters generated in the paper making process were neutralized by carbon dioxide gas injection to a pH range of between 6.5 and 9.5 and discharged through the I-Line sewer to the City of Tonawanda sewer system. Liquid sodium hydroxide (50%) was one of several hazardous substances used in the process. This material was stored in a 15,000 gallon steel underground storage tank (UST) and pumped directly to digesters inside the Paper Mill. Following processing in the digesters, processed materials were stored in large bins where sodium hydroxide solution was added. Drains from these bins were periodically obstructed and cleaned as necessary to prevent a backup of sodium hydroxide in the drainage trench which could have overflowed and potentially entered the environment.

Fibre Sheet and Fibre Tube Departments

Fibre Sheet and Fibre Tube were two product lines manufactured as vulcanized fibre. Vulcanized fibre was made by treating plies of paper with concentrated zinc chloride; laminating the treated plies; removing the zinc chloride from the composite by leaching; drying the completely leached laminate; and pressing the fibre in a colander to give the desired surface finish and thickness.

Spauldite Sheet Department

The Spauldite Sheet Department manufactured plastic laminates. Various substrates, paper, cloth or fiberglass were impregnated with thermoset resins then laminated under high temperature and pressure to form laminated sheets. The sheets were then trimmed and cut to specifications. Resins used (phenolic, epoxy and melamine) were either manufactured on-site or purchased and formulated to company specifications. Storage areas and manufacturing areas where the hazardous materials were used were located inside the plant building. Approximately 48 above-ground storage tanks (ASTs) and 2 reactors of varying sizes were used within the department for raw material storage or used as in-line process tanks and reactors. In these areas, phenol, aniline, phthalate esters, epoxies, and other hazardous materials including formaldehyde, creyslic acid, acetone, phenolic and epoxy resins, ammonium hydroxide, and various hardeners, accelerators and flame retardants were stored and used. In addition, sodium hydroxide solution was used for cleaning miscellaneous equipment. Solvents used in the greatest quantities in the resin operations were methanol and Spaulding solvent which was a 50%/50% mixture of toluene and methanol. Spaulding solvent was stored in a 15,000 gallon UST. Methanol was stored in a 15,000 gallon AST and two 15,000 gallon USTs. Both methanol and Spaulding solvent were pumped directly to the manufacturing areas through underground pipelines and later through above grade pipelines.

In the fall of 1992, Spaulding ceased manufacturing operations at the site and commenced decommissioning activities of the plant. Spaulding maintained a limited manpower staff at the Site to operate an on-site water treatment system and maintain the facility (e.g., lawn mowing and security).

CRA concluded that contamination of site soils and groundwater (in limited areas) resulted largely from bulk chemical and waste handling practices at the facility. These practices included:

- Historical leaks and spills. Seventeen incidents were reported from 1958 to 1994; 14 of which involved materials leaking or overflowing onto or into the ground or surface water.

- On-site waste disposal in pits excavated into native soils (Resin Drum and Laminant Dust Landfills)

- The use of settling ponds (4 settling lagoons have been located on-site) and

- Use of disposal pits within the plant buildings.

2.2.2 Chemical Releases and Disposal Practices

The following is a brief discussion of the most notable leaks and spills where cleanup efforts may not have completely remediated the impact areas. Details are provided in the 1998 CRA report.

Phenol Release to Storm Sewer: Historical documents obtained from NYSDEC files indicate that prior to 1958, phenol and colored process wastewaters were discharged into the storm sewers which flow to the Niagara River, consistent with practices at that time. In 1958, Spaulding began collecting these wastewaters for off-site treatment and ceased the phenolic/colored wastewater discharges to the Niagara River.

Oil Discharge to Niagara River: No. 4 polishing oil was discovered entering the Niagara River via the Gibson Street storm sewer (presumably K-Line) on May 22, 1986. The source was tracked back to a 15,000 gallon AST. Cleanup was completed over a five-day period.

Zinc Chloride Spill: A 6,000 gallon tank of zinc chloride released its contents into the concrete pit of the zinc chloride acid house on August 5, 1986. Approximately 150 gallons of zinc chloride overflowed the containment curbing and spilled into the discharge trench for the permitted F-Line storm sewer.

Solvent Spill: On November 20, 1987 approximately 1,400 gallons of solvent (50% methanol, 50% toluene) leaked into the ground. The solvent in the ground leached into a nearby sump connected to the Wheeler Street storm sewer. The storm sewers were vented and cleanup consisted of plugging the line exiting the sump and removing 1,000 cubic feet of contaminated soils and 2,800 gallons of contaminated groundwater.

Methanol Pipe Leak: An undetermined amount of methanol was released into the ground from an underground transfer pipe on April 4, 1989 along with 20 gallons of aniline oil. A total of 5,700 gallons of contaminated groundwater was collected and sent off-site for incineration. Thirty tons of contaminated soil was removed and landfilled at an approved off-site disposal facility.

Underground Methanol Pipe Leak: Approximately 20 to 55 gallons of methanol leaked into the ground on July 31, 1991 through an underground methanol suction line. Since no visual evidence of spilled material was evident during pipe excavation and repair, authorization was given by NYSDEC to backfill with excavated soils.

Non-PCB Oil Spill: Spillage of non-PCB oils occurred on October 10, 1989 from open-top drums to the blacktop surface of the drum storage pad. During cleanup, some oil washed into the K-Line sewer.

The following is a brief discussion of the major waste disposal areas on plant property that were historically used by Spaulding:

Resin Dust Landfill: In 1978, seven hundred and fifty drums of resin wastes were landfilled in an area 50 feet by 70 feet by 15 feet (deep) on the southeast portion of the Site. Chemicals potentially contained in the resin include: phenol, formaldehyde, di-n-butylphthalate, aniline oil, cresol, methanol, and toluene. The drum's liquid resins likely polymerized to a solid over time. The landfill was reportedly covered by a 4-foot thick clay cap and vegetated.

Laminant Dust Landfill: From 1977 to 1978 forty tons of fiberglass, asbestos, cellulose, and resin dusts were disposed of in a 25 feet by 70 feet by 15 feet (deep) landfill. The dusts were double-bagged in polyethylene bags. The landfill was covered by a clay cap and vegetated.

Settling Ponds: Four unlined lagoons excavated into native clay were used to collect wet grinding waste liquids and slurry from plastic laminate and vulcanized fibre grinding operations. Wastes were discharged into the lagoons where solids were allowed to settle and clarified water allowed to drain into the Site's storm sewer system. Grinding waste discharge consisted of resins (phenolic epoxy, melamine), cellulose, fiberglass, and asbestos. Underlying soils in each of the lagoons were reportedly excavated and backfilled with clean fill at the time of closure.

Plant Interior Disposal Pits: Two plant interior disposal areas were used. A 60 cy landfill for zinc chloride sludge and drummed lab chemicals, resin, and solvents was located beneath the plant floor in the Main Building. In 1985, the pit was excavated, backfilled and a new concrete floor poured over the pit. In 1977, approximately 500 cy of phenolic, epoxy, and melamine resin dusts and asbestos substrate dusts were landfilled inside the plant building (reportedly in the Fibre Building north of the Paper Storage building). This waste was reportedly placed within concrete walls and a concrete floor, then covered with concrete.

2.2.3 Plant Decommissioning

Spaulding initiated decommissioning activities at the site in August 1992. The majority of these activities were completed from September 1992 to February 1993 with the remaining activities completed by mid-1995. These activities are documented in the Plant Decommissioning Final Report dated August 1995 and approved by the NYSDEC by letter dated August 30, 1995. General decommissioning activities included the following:

- Incremental shutdown of all facility processes and equipment
- Utilization , sale, and/or removal/disposal of all unused inventory
- Inventory of all ASTs and USTs at the Site including identification of the contents of the tanks and an estimate of the quantity to be removed
- Removal and reclamation, sale, and/or disposal of liquid residual tank contents and tank cleaning including all appurtenances
- Inventory of all equipment on-site
- Draining and reclamation and/or disposal of all hydraulic fluids and fuels, if any, from all equipment
- Removal and reclamation, sale, and/or disposal of all miscellaneous flammable materials (i.e., paper, cloth, and oils) and, where appropriate and practicable, other miscellaneous combustible materials (i.e., loose pieces of wood, coal, and tires)
- Documentation of all decommissioning activities
- Health and safety monitoring
- Cutting service of all utilities to the plant facilities except minimal service required to operate the Main Office Building

- Securement of plant facilities
- Cleaning and removal of the asphalt tanks, the R1X tanks, brine tank, and the USTs and ASTs
- K-Line sewer cleaning and bypass sewer installation
- Draining, sale, and/or removal of all unused PCB and non-PCB transformers
- Capping of the gas well #1
- Removal of sections of the Therminol Unit which still contained PCBs
- Rerouting of some roof drains
- Consolidation and off-site disposal of drummed materials (i.e., maintenance chemicals, lab packs, etc.) and capacitors, and
- Removal of coal from the old boiler house.

2.2.4 **<u>RCRA Facility Closure and Remedial Investigation</u>**

Site investigations/assessments began at the site in the late 1980s when a RCRA facility audit was performed at the facility by a USEPA contractor. Following closure of the plant in 1992, Spaulding and NYSDEC entered into a RCRA Corrective Action Order on Consent for the performance of a RCRA Facility Investigation (RFI). As a result of this Order on Consent, various investigations were performed to satisfy RCRA requirements for the closure/decommissioning of the facility. In the early 1990s, Spaulding and NYSDEC also entered into an Order on Consent for the performance of a RI/FS of an on-site landfill previously used for the disposal of drums which contained waste resins. The investigations at the site were implemented by CRA through the 1990s. Results were presented in the *RCRA Facility Investigation and Remedial Investigation, Spaulding Composites Company, Tonawanda, New York*, Conestoga-Rovers and Associates, (Revised September) 1998. Additionally, a Supplemental RI/RCRA Facility Investigation Report was prepared in May 1999, and a Limited Groundwater Sampling Program Report in August 1999. Results of these investigations were used in the preparation of the NYSDEC ROD for the site dated March 2003. A summary on the extent of contamination as presented in the ROD is provided in Section 2.2.5.

The Facility RCRA Corrective Action Order on Consent identifies 38 SWMUs at the site. All of these SWMUs are considered to be inactive due to the shutdown of manufacturing operations at the Facility and past closure activities. Additionally, 10 AOCs were identified where hazardous waste and/or constituents are present, or suspected to be present as a result of a release from the Facility. The locations of the SWMUs and AOCs are shown on Plate 1. A summary of the SWMUs and AOCs from the RFI/RI is as follows.

SWMU 1 Container Storage Area (Resin Wastes) – No spills and releases to the environment were known to have occurred in this area. No visual evidence of releases in this area was noted during the RFA.

SWMU 2 Container Storage Area (Rag Shed) – No spills and releases to the environment were known to have occurred in this area. No evidence of releases in this area was noted during the RFA.

SWMU 3 Zinc Chloride Sludge Storage Area – No spills and releases to the environment were known to have occurred in this area. No evidence of releases in this area was noted during the RFA.

SWMU 4 Container Storage Area – No evidence of releases in this area was noted during the RFA.

SWMU 5 Container Storage Area (Empty Drum Storage Dock) – Stained soils were noted in this area during the RFA. A soil sample showed phenol at 910 ppm and di-n-butylphthalate at 240 ppm. A known spill of resin occurred in 1986.

SWMU 6 Container Storage Area (Solvent Waste) - No releases were known to have occurred in this area.

SWMU 7 Resin Drum Landfill – An investigation has been performed in this area of known contamination.

SWMU 8 Laminant Dust (Asbestos-Containing) Landfill – An investigation has been performed in this area of known contamination.

SWMU 9 Zinc Chloride Sludge and Drum Landfill – A 60 cy landfill for zinc chloride sludge and drummed lab chemicals, resin, and solvents was located beneath the plant floor. In 1985, the pit was excavated, backfilled and a new concrete floor poured over the pit.

SWMU 10 Resin Dust Landfill – in 1977, approximately 500 cy of phenolic, epoxy, and melamine resin dusts and asbestos substrate dusts were landfilled inside the plant building within concrete walls and a concrete floor.

SWMU 11, 12, 13, 14 Sludge Settling Ponds (Lagoons) – Four unlined lagoons were used to collect wet grinding waste liquids/slurry from plastic laminate and vulcanized fibre grinding operations. Spaulding claimed to have properly closed the lagoons, however, NYSDEC subsequently found PCBs at hazardous waste concentrations (i.e., >50 ppm) at SMWUs 11 and 12. SMWUs 13 and 14 are also contaminated and will be remediated under the NYSDEC Superfund program.

SWMU 15, 16, 17, 18 Vulcanized Fibre Leaching Tanks – The RFA did not find any evidence of a release to the environment from concrete containment pits in these areas where zinc chloride has been used. As part of plant decommissioning activities, the tanks and pits in these areas were decontaminated. Minimal damage to the concrete pits was noted during decommissioning.

SWMU 19 Evaporation System – Water and water vapor containing zinc was discharged from this area to the F-Line sewer. In 1987, high levels were detected in discharge to the F-Line. Zinc-contaminated water had leaked from a storage tank containment pit into an adjoining covered pit under the flooring, and into a tunnel leading to the F-Line sewer.

SWMU 20 Weak Water Storage Tanks – No evidence of past releases was found.

SWMU 21 Weak Water Treatment Plant – Any spills within the treatment plant would have been contained within the building. Should a release have occurred into the sewer line, it would have been easily detected.

SWMU 22 Reaction Waters Storage Tanks – Any leaks or releases from the tanks would have been contained within the concrete floor and secondary containment system of the room.

SWMU 23 Aboveground Storage Tank Farm – Material stored in the tanks exhibited the characteristic of ignitability and toxicity characteristic of lead and contained PCBs to 170 ppm. The tanks were surrounded by earthen berms. Twenty-two tons of soil within the berms was excavated following evidence of material leakage.

SWMU 24 Zinc Hydroxide Sludge Concrete Storage Tank – The potential for release in this area was considered minimal in the RFA Report.

SWMU 25 Paper Mill Wastewater Storage Tank – The release potential from the tank was considered minimal in the RFA Report.

SWMU 26 Paper Sludge Land Application Area – This area of known contamination was investigated as part of the RI.

SWMUs 27–34 Boilers and Incinerators – Boilers and incinerators, some of which have been removed from the site, burned a multitude of wastes from the site throughout the years of plant operations.

SWMU 35 Laboratory Waste Storage Area – Laboratory waste drums were placed on the top of the ground with no secondary containment system present.

SWMU 36 Aboveground/Underground Storage Tanks – Five USTs and two ASTs were used to store raw materials prior to their transfer to process tanks including: two 15,000 gallon methanol USTs, one 15,000 gallon 50% methanol/50% toluene mixture UST, one 15,000 gallon 50% sodium hydroxide solution UST, one 3,750 gallon UST formerly used to store benzene, and two 15,000 gallon ASTs used to store methanol and/or ethanol. During the operation period, spills, overflows, and pipe leaks may have occurred. The tanks were emptied, cleaned and removed during decommissioning.

SWMU 37 Spauldite Sump Area – Historic activities in this area lead to contamination with hydraulic oils and PCBs in the sump which formerly discharged to the K-Line storm sewer. The sump discharge was disconnected and the sump was cleaned and concrete walls and floors patched. A drain pipe was installed into the sump wall to drain any groundwater which collected on the basement floor. Groundwater and wash water from decontamination was collected in drums and analyzed for PCBs. Drums containing PCBs at 50 ppm or more were disposed of off-site as hazardous waste. Drums which contained PCBs at less than 50 ppm were stored on-site for treatment.

In early 1993, a Granular Activated Carbon (GAC) water treatment system was designed and constructed to treat the drummed non-hazardous waste water. It was designed to remove oils, if any, and PCBs to a discharge criteria of 65 parts per trillion (ppt), and discharged treated water to the Niagara River via the K-Line storm water outfall. The GAC treatment system treated approximately 600 55-gallon drums through 1993. In 1994 it was relocated and redesigned to allow for the collection, continuous treatment, and discharge of PCB-contaminated storm water/groundwater from an isolated section of the K-Line sewer, groundwater in the Spauldite Sheet Basement Sump area, and other remediation-related water.

SWMU 38 Theriminol Building Unit/Drain Tiles/Contaminated Soils – Because the Therminol Unit had not been operating properly, PCB oils were released to the ground outside the Therminol Building. Two soil samples collected adjacent to the building were found to contain 10,100 ppm and 13,900 ppm PCBs. Some migration of PCBs into the Spauldite Sheet Basement Sump and the K-Line sewer occurred. The K-Line sewer was cleaned of sediments in June 1993 and a section immediately adjacent to the Therminol Building and Spauldite Sheet Basement was isolated to allow for the collection and treatment of PCB-contaminated storm water. Untreated storm water discharged via the remaining sections of the K-Line sewer is monitored under terms of the RCRA Corrective Action Order on Consent.

AOC 39 and 44 Site Process Sewer System (K-Line, F-Line, I-Line) – The process sewer system consists of 3 distinct sewer lines (K-Line, F-Line, I-Line). The I-Line is a sanitary sewer line which discharged process water from the paper mill operations, under the terms and conditions of Spaulding's Town of Tonawanda Industrial Sewer Connection Permit No. 202, to the City of Tonawanda sanitary sewer system. These waters were eventually treated at the Town of Tonawanda Wastewater Treatment Facility. The I-Line received sanitary wastes, all wastewater generated by the Paper Mill operations, and some storm water from roof drains. Wastewaters from the Paper Mill were neutralized to a pH ranging from 5.5 to 9.5 prior to discharge to the I-Line. Discharge was routinely sampled and monitored. Hazardous substances other than those allowed in the industrial sewer permit were not known to have been released to the I-Line.

The K-Line and F-Line discharged both process water and storm water to the City of Tonawanda storm water sewer system under the terms and conditions of the plant State Pollutant Discharge Elimination System (SPDES) Permit No. NY0002364. The effluent from the K-Line and F-Line are eventually discharged to the Niagara River. The F-Line received cooling water from the zinc chloride evaporation system. Discharge from the F-Line was sampled weekly; sediments at the weir were sampled and analyzed for PCBs and were found to contain 2.6 ppm of Aroclor 1248.

The K-Line received process waters consisting of treated water from the Weak Water Treatment Plant; overflow from the raw water (from the Niagara River) reservoir; non-contact cooling water from the pump cooler, cooling rolls, resin coolers, and evaporator coolers; boiler water; and backwash and rinse water from the boiler softener system. PCBs found to be present in the K-Line sewer sediments in 1992 were Aroclor 1248 at 2 ppm in manhole MHD and at 1,030 ppm at the monitoring station. The source was believed to be from SWMU 37. Additional K-Line sediment sampling in 1992 in the entire K-Line showed the presence of PCBs to 1,065 ppm. NYSDEC approved the K-Line Sewer Cleaning Program and work was completed in June 1993.

The K-Line Monitoring Station is located at the discharge location (Outfall 003). Historic monitoring data showed that there have been minimal PCB impacts to the discharge water in sediment at the K-Line Monitoring Station. However, the RFA determined that due to the weir construction (e.g., 3-foot height), sediment deposition immediately upgradient of the weir may have occurred.

A small section of the K-Line believed to contain low levels of PCBs was isolated in October 1994. A buried bypass sewer was installed between manholes MHD and MHA-A. The K-Line sewer was isolated between manholes MHE and MHL. Between October 1994 and October 2004, water from this isolated K-Line sewer was collected and treated on-Site in the GAC treatment system and routinely sampled for PCBs.

AOC 40 Off-Site Storm Sewer – The off-Site storm sewer system consists of the City of Tonawanda storm sewer lines on Wheeler Street, Enterprise Street, and Gibson Street. These City storm sewers discharge to the Niagara River and received both storm water and process waters (K-Line and F-Line) from the Facility. No sediment was found during the sewer inspection to collect for sampling and analysis during the RFI.

AOC 41 Contaminated Sediments in the Niagara River – Potential impact from the Facility's discharges to the Niagara River sediments would be difficult to evaluate because of additional discharge sources.

AOC 42 Site Utility Bedding – Limited sampling and analysis of the utility beddings was performed during the RFI, the results of which indicated that utility beddings are not a contaminant migration pathway.

AOC 43 Site Storm Sewer System – Storm water is discharged through point source discharge outfalls (004 through 013). Low levels of PCBs were detected in 004 and 010 at 11 parts per billion (ppb) and 2 ppb, respectively. SWMU 13 may be the possible source of PCBs in Outfall 004.

AOC 45 Railroad Spur – Along a 385-foot length of track between the main plant building at the Paper Mill and the Rag Shed building were unloading pipe connections where phenol, formaldehyde, cresylic acid, methanol, and sodium hydroxide solution were unloaded from rail tank cars. It is possible that other chemicals were also unloaded in this area. It is suspected that leaks and/or spills onto the ground occurred during unloading operations. It appears that on the south end, sodium hydroxide liquor had leached in the Paper Mill concrete foundations and possibly saturated soils in and around the tracks.

AOC 46 Drum Storage Dock – It was reported in 1965 that drums of waste resin/solvent mixtures were dumped into the ground and mixed with fly ash.

AOC 47 Bulk Chemical Unloading Area – Spills and leaks of phenol, cresylic acid, cresylic acid type S, aniline, formaldehyde, dibutylphthalate, and phenolic resins likely occurred in this unloading area.

AOC 48 Transformer Explosion Area – Two explosions allegedly occurred in this area releasing PCBs to the surrounding area. Nearby storm sewer manhole MHD showed PCBs at 35 ppm in the sediments.

2.2.5 NYSDEC Record of Decision

The NYSDEC issued a Record of Decision (ROD) for the Site in March, 2003. Results of the RI and other investigations resulted in the defining of four operable units requiring remediation. The four operable units are as follows:

- OU1: Regulated Landfill Wastes
    - SWMU 7 Resin Drum Landfill
    - SWMU 8 Laminant Dust Landfill
- OU2: PCB-Contaminated Wastes
    - SWMU 11, 12, 13 Sludge Settling Ponds
    - SWMU 23 Former Tank Farm Area
    - SWMU 38 Therminol Building Area
    - AOC 48 Transformer Explosion Area
- OU3: Petroleum Contaminated Wastes

- SWMU 13 Former Grinding Oil Tank and Sludge Settling Pond (north)
- SWMU 36 Former Tank Farm Area

- OU4: Multiple Contaminant Wastes
  - SWMU 3 Zinc Chloride Sludge Container Storage Area
  - SWMU 5 Empty Drum Storage Dock
  - SWMU 14 Sludge Settling Pond
  - SWMU 26 Paper Sludge Land Application Area
  - SWMU 35 Lab Waste Storage Area
  - AOC 45 Rail Spur
  - AOC 46 Drum Storage Dock
  - AOC 47 Bulk Chemical Unloading Area.

In addition to monitoring and the potential imposition of deed restrictions, the following have been included in the selected remedy for the Site as detailed in the ROD:

- OU1 – Excavation and Disposal. Under the selected remedial action for this operable unit (OU), wastes associated with the Resin Drum and Laminant Dust Landfills, and contaminated sediments from the drainage ditch adjacent to the Resin Drum Landfill, will be excavated and disposed of at an appropriate offsite disposal facility. All excavated areas will be backfilled with clean soils and restored to grade. Excavations will be to contaminant levels consistent with the goal of meeting Technical and Administrative Guidance Memorandum (TAGM) 4046 cleanup objectives.

- OU2 – Excavation and Disposal. Under the selected remedial action for this OU, PCB contaminated soils associated with two Sludge Settling Ponds (SWMUs 11 and 12), a Former Tank Farm, the Therminol Building and a Former Transformer Explosion Area were excavated and disposed of at an appropriate disposal facility. This work was conducted by NYSDEC as an IRM. All excavated areas were backfilled with clean soil.

  During the IRM, a large portion of the K-line sewer was removed. Sediments in the portion of the sewer under the building were removed and disposed of with other contaminated soil from OU2.

- OU3 – In-Situ Bioremediation. Under the selected remedial action for this OU, volatile organic and petroleum contaminated soils associated with a Former Tank Farm and Grinding Oil Tank will be treated in-place by adding nutrients to stimulate biological activity that will degrade the contaminants. During design, a field test will be completed to evaluate the effectiveness of this alternative in remediating contaminated low permeability soils. During remediation, sampling and analysis of soil and groundwater will be conducted to evaluate the progress of the in-situ bioremediation program.

- OU4 – Excavation and Disposal. Under the selected remedial action for this OU, contaminated soils associated with the Lab Waste Storage Area, a Rail Spur, 2 Drum Storage Areas, a Bulk Chemical Unloading Area, a Zinc Chloride Sludge Container Storage Area, 2 Sludge Settling Ponds and the Paper Sludge Application Area will be excavated and disposed of at an appropriate offsite disposal facility. All excavated areas will be backfilled with clean soils and restored to grade. Excavations will be to contaminant levels consistent with the goal of meeting TAGM 4046 cleanup objectives.

The ROD identified contamination in soil, waste materials, sediments and groundwater as follows:

Soil

OU1 – Surface soils at OU1 are contaminated with toluene, phenol, cresols (2-methylphenol and 3&4-methylphenol), di-n-butylphthalate, aniline, PCBs and zinc at concentrations that exceed the SCGs. The primary contaminants in subsurface soils at OU1 are PCBs and zinc which were detected at concentrations up to 68 ppm and 544 ppm, respectively. The quantity of contaminated soil associated with this OU (approximately 200 cy) is small compared to the total quantity of waste material that must be remediated (approximately 2,500 cy).

OU2 – Surface and subsurface soils at OU2 were extensively contaminated with PCBs, with 83% of surface soil samples and 45% of subsurface soil samples containing PCBs at concentrations that exceed SCGs. PCB concentrations ranged from non-detect (ND) to 144,000 ppm. Surface soils at this OU are also contaminated with dichlorobenzene, toluene, ethylbenzene, and zinc at concentrations that exceed the SCGs. In addition to PCBs, trichlorobenzene, phenol, cresols, di-n-butylphthalate and zinc were also detected in subsurface soils at concentrations that exceed the SCGs.

OU3 – Surface soils at OU3 are not contaminated; however, an estimated 21,000 cy of subsurface soils at this OU are contaminated with benzene, toluene, ethanol, methanol and petroleum. Only the concentrations of benzene and toluene exceed the SCGs. SCGs were not available for ethanol, methanol and petroleum products.

OU4 – Surface soils at OU4 are contaminated with phenol, di-n-butylphthalate, aniline, PCBs and zinc at concentrations that exceed the SCGs. These contaminants are also detected in the subsurface soils of this OU at concentrations that exceed SCGs.

Waste Materials

The only waste materials encountered during the RI/RFI were drums in the Resin Drum Landfill and the bags of dust in the Laminant Dust Landfill. Contaminants detected include toluene, trichloroethene, phenols, cresols, di-n-butylphthalate, methanol, ethanol, aniline and zinc.

Sediments

Sediment samples from the drainage ditch adjacent to the Resin Drum Landfill revealed the presence of site-related contaminants above the SCGs including: phenol, cresols, di-n-butylphthalate, aniline, PCBs and zinc. Surface soil SCGs were utilized for ditch sediment as surface water in this ditch is intermittent, the ditch does not harbor an aquatic environment, and any exposures would be to site workers and trespassers through direct exposures.

PCB contaminated sediments were removed from the on-site K-Line storm sewer in June 1993. Sediments were not found in the off-site storm sewer along Gibson Street.

Surface Water

Surface water at the site occurs intermittently, primarily during rain events. Surface water samples from 9 outfalls and the drainage ditch immediately adjacent to the Resin Drum Landfill did not exceed any of the surface water SCGs. The exception is storm water that enters the on-site K-Line sewer which is contaminated with PCBs.

Groundwater

Twenty on-site monitoring wells were sampled on at least two occasions during the RI/RFI. Groundwater contamination was detected in only 3 of the wells, with the most significant contamination associated with the Rail Spur, an area where bulk chemicals were historically unloaded from rail tanker cars. Groundwater in this area is contaminated with benzene (2.8-3.2 ppb), toluene (24-32 ppb), xylenes (16–18 ppb), phenol (100,000-190,000 ppb), cresols (160,000-270,000 ppb), methanol (6,800 -10,000 ppb) and unknown hydrocarbons (25,000-26,000 ppb). Contamination was not detected in 2 downgradient wells along Wheeler Street, indicating that contaminants are not migrating off-site at this location.

Contamination of groundwater within the Resin Drum Landfill was also documented. Groundwater is significantly contaminated with tetrachloroethane (1,000 ppb), toluene (140,000 ppb), ethylbenzene (2,500 ppb), phenol (390,000 ppb), cresols (240,000 ppb), di-n-butylphthalate (570 ppb), aniline (370,000 ppb), ethanol (200,000 ppb), methanol (550,000 ppb) and zinc (5,720 ppb). Groundwater contamination was not detected in 6 shallow overburden wells that surround the landfill indicating that the silty clay soils at the site have prevented migration of contaminants from the landfill.

Concentrations of dichloroethene (below SCGs) were detected in 2 upper bedrock monitoring wells. Trichloroethene was also detected in 1 of these wells below SCGs.

3.0 SITE INVESTIGATION PROGRAM

3.1 Scope of Work

The Site Investigation (SI) was undertaken to fully characterize the Site chemical and physical conditions in order to develop a data set sufficient to identify all sources of site contamination, evaluate the mobility and transport mechanisms of the contamination, perform an exposure assessment, evaluate the extent to which site contaminants pose an unacceptable risk to human health or the environment, evaluate remedial alternatives to mitigate such risks, and select a preferred alternative for site remediation. The following sections detail the approach and rationale for the work elements conducted during the SI. The SI field sampling, air monitoring and equipment decontamination were conducted in accordance with the methods and protocols described in the Site Work Plans and the Site Health and Safety Plan.

The Site Investigation was performed in two phases: a preliminary investigation and a more fully-encompassing Site Investigation. To determine interior boring and test pit locations, LiRo completed a review of existing site analytical data, reviewed historic building processes and utility drawings, conducted site reconnaissance, and completed preliminary investigations. The reconnaissance work included a site walk-through with a former Spaulding employee to discuss chemical use and transport, building foundation construction, and potential sampling access points. Several follow-up reconnaissance visits were conducted either by LiRo or in concert with NYSDEC to evaluate specific sample point locations, sampling constraints posed by the building and methods to be employed. Based on discussions with NYSDEC, LiRo added several boring and test pit locations based on field observations (i.e., odors or elevated PID readings) of potential "hot spot" areas.

The sample locations are shown on Plate 1. Table 3-1 summarizes the SI sample identification numbers, sample intervals, soil sample characteristics (native or fill), fill thickness, PID readings, analysis performed, and subsurface notes such as void space.

3.2 Preliminary Site Investigations

Due to the size of the site and uncertainties discussed in the previous section, LiRo developed a Preliminary Investigation Plan (dated June 7, 2007) to generate screening level data to assist in the location of SI sample points. The preliminary investigation included a passive soil gas survey (generally within the building interior), preliminary soil sampling at seven of the soil gas locations, and a geophysical survey of outdoor areas that are not included in the Superfund OUs.

Results of the preliminary site investigations are discussed below. The Passive Soil Gas Survey Report (prepared by Beacon Environmental, Inc.) and the Geophysical Investigation Report (prepared by Golder Associates, Inc.) are included as Attachment 6 and Attachment 7, respectively.

3.2.1 Passive Soil Gas Survey

A passive soil gas survey was performed by LiRo personnel between June 18 and June 25, 2007 utilizing a Beacon Environmental Services, Inc. BESURE Sample Collection Kit™. Soil gas samples were collected to determine the presence, identity, and relative concentration of targeted contaminants in soil and/or groundwater at the site. Survey results were used to identify potential contaminant source areas for further investigation during the SI. A total of 95 soil gas probes were installed within the footprint of the building at locations shown on Figure 3-1. Samples were labeled P-1 through P-97; however, intended locations P-87 and P-96 were not sampled. The Beacon Passive Soil Gas Survey Report is included as Attachment 6.

Soil gas probes were installed at a depth of 2-1/2 feet below grade (except in instances where refusal occurred) using an electric hammer-drill. Each gas probe consisted of a sorbant cartridge in a glass vial which was placed in the probe hole in accordance with the manufacturer's installation instructions. The hole was then sealed at the ground surface to prevent ambient air interaction. The probes were allowed to reside for seven days at which time they were collected and sent to Beacon Environmental Services, Inc. Adsorbent cartridges from the samplers were thermally desorbed, then analyzed for VOCs by EPA Method 8260B (Modified).

A summary follows.

Fuel Related Compounds

Hot spots of benzene and BTEX were detected in the former Beater Room, in the Raw Materials Storage Area, and near the end of the K-Line sewer in the northern portion of the site. The Beater Room area is adjacent to the former tank farm. Elevated levels for these compounds were also detected in the northwest corner of the site and across a relatively wide swath through the central portion of the site main building and fibre building.

Hot spots of alkanes were detected in the pit to the north of the Grinding Pit in the eastern portion of the Site. This area was probably impacted by the railroad bedding as well as the grinding oil. Additional areas of relatively high alkane levels were generally found in locations where BTEX were also found to be relatively high.

Chlorinated Solvents

Hot spots of PCE and breakdown products were detected in the Boiler Houses. Elevated PCE and breakdown levels were also identified in association with the pits in the central portion of the building, near the grinding oil tank line, at the former incinerator and near an inlet to the K-Line sewer in the southern portion of the site.

A hotspot for 1,1,1-Trichloroethane was identified adjacent to the process pits near the western edge of the Fibre Building. This compound was also found at elevated levels at the Boiler Houses and the former incinerator.

PCBs

Biphenyl was detected near the Grinding Pit and railroad spur in the southeast portion of the site at the Machine Shop and west of the Therminol Building.

Chlorinated Fluorocarbons (CFCs)

Dichlorofluoromethane and trichlorofluoromethane were identified at the highest concentration in the Main Building pit area. Elevated concentrations were also observed at the Paper Storage building and the western Boiler House.

3.2.2 Preliminary Soil Sampling

LiRo collected seven shallow soil samples beneath the building slab folowing retrieval of the preliminary soil gas survey probes. Results of the preliminary soil sampling event are summarized in Table 3-2 and the sample locations are shown on Figure 3-1. The samples were collected from a depth of approximately 2.5 feet below the building floor slab. The samples were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), PCBs and metals. The results are incorporated into the soil contamination evaluation presented in Section 5.0.

3.2.3 Geophysical Survey

Golder Associates Inc. conducted a geophysical investigation at the site between July 9 and 16, 2007. The objective of the investigation was to delineate areas of the site containing metal debris, underground storage tanks, possible inorganic groundwater impacts, utility corridors, and subsurface features associated with changes in terrain conductivity. Golder Associate’s Geophysical Investigation Report is provided as Attachment 7.

A terrain conductivity meter (Geonics EM31-MKII) and a metal detector (Geonics EM61) were used for the investigation. The EM31 is an electromagnetic induction device well suited to mapping terrain conductivity and shallow buried metal objects. The EM61 metal detector is well suited for finding discrete metal objects such as USTs, drums and scrap metal within the upper 10 feet of the subsurface. Position information was obtained with a differentially corrected global positioning system. A Trimble PRO XR GPS satellite receiver system was used and differential corrections were supplied by a local Coast Guard beacon.

The site was divided into seven separate investigation areas as shown on Figure 1 of Attachment 7. At each investigation area, parallel EM31 transects were run approximately 6 feet apart. EM31 readings were recorded at approximately 1.6-foot intervals and reading locations were recorded using the backpack-mounted differential GPS receiver. EM31 results were processed in the field and examined for the presence of anomalous readings. Based on the results, portions of an area (Area A) were further examined on EM61 transects run at closer 3-foot intervals.

Investigation results were identified as anomalies according to the following four classifications:

1. linear anomaly (buried linear conductor i.e., utility, pipe, wire, etc.);

2. excavated/reworked soil, changes in fill material, geologic variations, impacted groundwater;

3. observation at the time of the fieldwork indicated these anomalies were due to surface fill consisting of a metalliferous, slag-like fill material; or

4. surface or buried metal objects.

Figures in Attachment 7 provide details of identified anomalous areas. Areas which were identified by the investigation as potentially containing buried objects were incorporated into the test pit program performed by LiRo and discussed in Section 3.7.1 of this report.

3.3 Soil Borings

Fifty-six SI soil borings were advanced to characterize soils and obtain samples for environmental analysis as detailed in Table 3-1. The soil borings were advanced by Buffalo Drilling, Inc. using equipment as described below. A LiRo geologist supervised the drilling, logged split spoon samples, screened for the presence of organic vapors, described soil conditions, and collected soil samples for laboratory analysis.

Exterior borings were advanced to native soil using a Hollow Stem Auger (HSA) drill rig with 2-inch split spoon samplers or a Geoprobe direct push machine with macrocore sampler. A low overhead clearance HSA drill rig with 2-inch split spoon samplers was used for most of the interior drilling work. Boring locations that were in basements or were otherwise inaccessible to a drill rig were advanced by using a pneumatic jackhammer to drive a split spoon sampler. Continuous samples (at 2-foot intervals for split spoons or 4-foot intervals for macrocore) were collected at each boring location. The macrocore and split spoon samples were screened for the presence of organic vapors using a photoionization detector (PID). Table 3-1 summarizes the boring details and PID screening results. Boring logs are provided in Attachment 3.

Soil samples were selected for laboratory analysis from fill or suspected contaminated material and apparent native material at each sample location. Each soil sample was described in the field and field screened for VOCs using the PID.

3.4 Monitoring Well Installation

Four monitoring wells (MW-16, MW-43, MW-59 and MW-59.1) were installed to enhance the existing monitoring well network (from previous site investigations) and to evaluate groundwater quality beneath the building. Locations for the new monitoring wells are shown on Plate 1, as are the locations of previously existing site monitoring wells. The monitoring wells were constructed using 2-inch (inside diameter), Schedule 40 PVC screens and riser and finished with a watertight cap and protective steel casing. Previous investigations had shown an area-wide water table in the native clayey silt soils at a depth of approximately 10 to 15 feet below ground surface and the SI overburden monitoring wells were completed at depths of 20 to 29 feet. At location 59, perched groundwater was observed and, therefore, LiRo installed a shallow monitoring well to a depth of 8 feet at that location. Monitoring well construction reports are provided in Attachment 3.

Water level measurements were obtained in new and existing overburden monitoring wells to measure groundwater levels for the determination of the direction of groundwater flow. Groundwater samples were collected from existing overburden and newly-installed monitoring wells. Each new well was developed following installation in accordance with procedures outlined in the investigation Work Plan. Well development and purge forms and observations (measurements of temperature, pH, specific conductance, and turbidity using a portable water quality analyzer) are provided in Attachment 4.

3.5 Sampling and Analysis

Soil and groundwater samples were collected into laboratory supplied, pre-cleaned sample jars and labeled with a unique sample identification code, packed in a cooler with ice, and shipped under chain-of-custody control to ChemTech of Mountainside, New Jersey, a New York State Certified Laboratory (ELAP Certification #11376). Sample bottle requirements, holding times, laboratory QC procedures and field QA sampling procedures are detailed in the QAPP portion of the Site Investigation Work Plan.

All soil and groundwater samples were analyzed for volatile organic compounds (VOCs) using USEPA Method 8260, semi-volatile organic compounds (SVOCs) using Method 8270, PCBs using Method 8082, TAL metals using Method 6010/7000 and cyanide using Method 9012. Based on previous analytical results and site history, sampling for site-specific compounds – formaldehyde, methanol and ethanol – was generally limited to locations in former process or storage areas for these chemicals. Previous site investigations had shown that pesticides were not a concern at the site, so only a limited number of confirmatory samples were collected for pesticide analysis.

Laboratory analytical data is provided in Attachment 1. A Data Usability Summary Report (DUSR) was prepared in accordance with NYSDEC guidelines and is provided in Attachment 5.

3.6 Test Pits

3.6.1 Exterior Test Pits

LiRo completed seventy exterior test pit excavations July 23, 2007 through July 25, 2007 as outlined in the Preliminary Exterior Test Pit Plan dated July 9, 2007. The objective of the exterior test pit program was to characterize soil conditions, determine the depth to native soil, and investigate anomalous areas identified by the geophysical investigation program.

The locations of the test pits were within the OU5, OU6, and OU7 target areas exterior to the building footprint and outside the NYSDEC remediation areas. In general, test pit locations were spaced on a 100-foot grid pattern as shown on Plate 1. Locations of the test pits are identified by the prefix TP and numbered TP-1 through TP-67. At three locations, TP-27, TP-40, and TP-66, a second test pit was excavated and identified as TP-27.1, TP-40.1, and TP-66.1, respectively.

A backhoe was used to conduct the test pit excavations. At each test pit location, the uppermost 6-inches of soil was segregated for re-use as final cover when backfilling. Test pits were generally excavated in one to three-foot lifts depending on observed soil conditions. LiRo's geologist screened the soil for the presence of organic vapors using a photoionization detector (PID), recorded field descriptions of the soil in the field log book, noted the presence, or absence, of water in the excavation, and prepared the Test Pit Logs. Soil samples were obtained for chemical analysis based on visual observations of the presence or absence of contamination. Following the collection of soil samples, the excavation was backfilled with material excavated from that location, and covered with the uppermost 6 inches of segregated soil. Test pit soil samples were collected and analyzed for chemical parameters as detailed in Table 3-1. Test pit logs are provided in Attachment 3.

3.6.2 Interior Test Pits

Thirty-eight test pits were excavated at locations within the building footprint. The locations are shown on Plate 1. Each test pit was installed by first penetrating the concrete floor slab using a pneumatic hammer attached to a backhoe. Each interior test pit was excavated using a backhoe to depths which generally ranged from 3 to 6 feet below the building slab surface, or until native soil (or a maximum depth of 8 feet) was reached. LiRo's supervising geologist screened soil from each test pit for the presence of organic vapors using the PID and recorded field descriptions of the soil. Typically, two soil samples were collected from each test pit for chemical analysis to characterize fill and underlying native soil. Test pit soil samples were collected and analyzed for chemical parameters as detailed in Table 3-1. Test pit logs are provided in Attachment 3.

3.7 Waste Characterization Sampling

Based on physical observations of coatings on building materials and sludges in pits, LiRo collected 9 waste characterization samples. The samples and analysis are described in Table 3-1.

3.8 Surface Soil Sampling

To aid in the evaluation of direct contact exposure risks of site contaminants by the New York State Department of Health (NYSDOH), surface soil samples (0" – 2") were collected at exterior boring locations (68, 69, 70, 71.1, 72, 73, 74 and 75) located in Operable Units 5, 6 and 7. In addition, the shallow composite sample SP-21 (composited from TP-66.1 and TP-67) is included in the surface soil results. The surface soil samples were analyzed for chemical parameters including TCL VOCs, SVOCS, PCBs, pesticides and TAL metals. The surface soil results are discussed in Section 5.1.4.

3.9 Ditch Sampling

During the investigation, samples were collected from the on-site ditch to evaluate the nature and extent of contamination identified during previous investigations. Soil samples were collected at locations 64, 65, 66, 67, 78, 79 and 83. The ditch soil samples were analyzed for chemical parameters including TCL VOCs, SVOCS, PCBs, pesticides and TAL metals. The ditch sampling results are presented in Section 5.1.5.

3.10 Asbestos

Two asbestos surveys were completed in order to locate and identify asbestos containing materials (ACM) that will be impacted during work related to the demolition of the former Spaulding Fibre Plant. Guidelines used for the asbestos surveys were established by the Environmental Protection Agency (EPA) in the Guidance for Controlling Asbestos Containing Materials in Buildings, Office of Pesticides and Toxic Substances, Doc 560/5-85-024, and 40 CFR Part 763, Asbestos Hazard Emergency Response Act (AHERA).

The first survey was conducted across the entire plant area and the results were documented by Paradigm Environmental Services, Inc. in a report dated November-December 2004. LiRo conducted additional asbestos survey work in the chemical bulk storage area and issued a report to ECIDA dated February 19, 2008.

A discussion of the results of the asbestos survey is presented in Section 5.4.

3.11 Surveying and Mapping

The locations of borings, monitoring wells, and test pits were surveyed for horizontal and vertical coordinates by a New York State licensed surveyors from William Schutt Associates (exterior test pits) and Foit-Albert Associates (all subsequent SI sample locations). The coordinates were referenced to the existing site survey that was prepared during previous site investigations. The surveyed sample location coordinates are summarized in Table 3-4.

3.12 Identification of Standards, Criteria and Guidance

Standards, Criteria and Guidance (SCGs) are cleanup standards, standards of control, and other substantive environmental protection requirements, criteria or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, or location. Guidance values include non-promulgated criteria and guidelines that are not legal requirements but should be considered if determined to be applicable to the

Site. SCGs are categorized as chemical-specific, location-specific, or action-specific. SCGs developed for the Site, and which are considered potentially applicable, are presented on Table 3-3.

Chemical-specific SCGs are based primarily on 6 NYCRR Part 375 Soil Cleanup Objectives for restricted residential and commercial use, or, where Part 375 cleanup objectives are listed as NC (No Criteria), utilizing the respective NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4046 soil cleanup guidance value. Analytical data from groundwater monitoring have been compared with Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values for Class GA Groundwater.

Hazardous waste characterization values are obtained from Resource Conservation and Recovery Act (RCRA) regulatory standards identified in the Code of Federal Regulation (CFR) Identification of Hazardous Wastes (40 CFR Part 261.24).

4.0 GEOLOGY AND HYDROGEOLOGY

4.1 Site Geology

The overburden of the region is primarily glacial in origin and consists of lake sediment deposits, sand and gravel deposits, and till. Based on previous site investigations, the site stratigraphy and hydrogeology have been well defined. Therefore, the SI borings were limited to the depth required to install overburden monitoring wells (29 feet or less). Consistent with previous investigations, fill and silty clay were the uppermost soil units observed during the SI. Descriptions of deeper overburden and bedrock are based on previous investigation work. The stratigraphic units are as follows:

- Fill: Within the building footprint, fill generally consists of a black angular sandy material ranging in thickness from one (1) to ten (10) feet. The fill thickness outside the building footprint typically ranges from 0 to 2 feet. Previous investigators have reported fill up to 17 feet thick, however. The exterior fill primarily consists of reworked silty clay with lesser amounts of sand and gravel. Concrete and brick fragments, crushed stone and cinders were encountered at several locations and at a lesser number of locations there were buttons mixed with cinders (button ash), wood debris and miscellaneous waste (i.e. plastic, litter, etc.) encountered, often mixed into the reworked silty clay.

- Glaciolacustrine silty clay: This unit consists primarily of reddish brown silty clay with thin interbeds containing sand/silt/clay. During the SI, this unit was observed in the field as characteristically dry to moist, however, the sandy layers were saturated locally. The sandy layers appeared to be discontinuous laterally. The thickness of this unit reportedly ranges from 36.4 to 45.8 feet thick across the site.

- Glacial till: This unit consists of dark reddish brown to gray, silty clay with abundant rock fragments and gravel. This unit reportedly ranges from 0 to 5 feet in thickness. The glacial till was not observed during the SI as the maximum boring depth was 29 feet below ground surface

- Bedrock at the site was identified as dolomitic shale and of the Camillus Formation. The depth to bedrock varies from 38.5 to 54.9 feet across the site and the uppermost bedrock consists of a 1.5 to 5-foot thick weathered zone. Below the weathered zone, numerous lightly to heavily-weathered shaly or gypsum-lined partings, rubble zones, and weathered gypsum and shale interbeds, along with weathered vertical fracturing, were recorded during the logging of the previous investigation bedrock well cores. The Camillus Formation is a relatively transmissive aquifer. Groundwater flow in the weathered bedrock appears to be northward to the Niagara River. Flow gradients below the weathered bedrock was undetermined due to the relatively flat nature of groundwater contours

To support the Remedial Alternatives Report, LiRo used the interior borings and test pits to determine the building floor slab construction and identify substructures (i.e., basements, crawl spaces, voids, etc.) to the extent possible. Therefore multiple subsurface sections were developed to show the substructure conditions. Figures 4-1 through 4-4 show the building floor construction observations and stratigraphy of the shallow underlying soils. Figure 4-5 shows the locations for the lines of section.

4.2 Site Hydrogeology

Groundwater elevation measurements recorded during the SI and more recent previous investigations are included in Table 4-1.

During the SI, perched groundwater was encountered within fill material at locations 58, 58.1 and 59 at a depth of four feet. Based on those observations, a shallow well was installed (MW-59) to evaluate the perched water quality. The water elevation at MW-59.1 was approximately 10 feet above the water table elevation measured in the companion overburden well MW-59.1.

The Site-wide groundwater table was observed in overburden wells at elevations ranging from 606 feet amsl to 586 feet amsl. In the southern portion of the site, the measured groundwater elevation was as little as two feet below the ground surface, however, physical soil observations generally showed unsaturated (dry to moist) soil to a depth of four feet or more. Figure 4-6 shows water table elevation contours for the site. The apparent groundwater flow direction is to the northeast and the observed horizontal hydraulic gradient is approximately 0.011 feet per foot. Previous investigation slug testing has shown very low hydraulic conductivity results (10^{-7}–10^{-8} cm/sec) for the glacial water bearing unit. As noted above much of the unit appears to be dry suggesting that groundwater primarily migrates through vertical cracks and sandy interbeds within the unit. Groundwater transmissivity and contaminant migration is expected to be extremely limited in the glacial unit.

The Camillus Shale Formation is part of a regional aquifer in the Erie-Niagara basin. Groundwater from this bedrock aquifer, however, is not utilized as a source of drinking water in the Tonawanda area because of naturally occurring high mineral content and the close proximity of the Niagara River, an important source of municipal drinking water throughout the Western New York area. Groundwater flow in the upper bedrock aquifer is to the north toward the Niagara River.

The Niagara River (NYSDEC Class "A" water body) is located approximately 1 mile north of the site. Two Mile Creek and Ellicott Creek (NYSDEC Class "C" water bodies) are located approximately one mile west and east of the site, respectively. Based on their distance and the site groundwater flow conditions discussed above, no impact to these water bodies could be expected from the site groundwater.

5.0 NATURE AND EXTENT OF CONTAMINATION

A discussion of the site Standards, Criteria and Guidance values (SCGs) is provided in Section 3.12 of this Report. Soil analytical data are compared to Soil Cleanup Objectives (SCOs) listed in 6 NYCRR Part 375. Screening of the data with respect to the SCOs is conducted using a tiered approach. The Part 375 Restricted-Residential SCOs are used for first level screening and Commercial SCOs are used for second level screening. NYSDEC TAGM # 4046 Recommended Soil Cleanup Objectives (RSCOs) are used for chemicals of concern for which SCOs are not listed in Part 375.

A discussion of the site data compared with applicable soil criteria is provided below for each OU. Because OU5 and OU7 showed very few exceedances, those two discussions are presented first followed by the discussion for OU6 which showed numerous exceedances.

A discussion of the groundwater analytical data follows the soil results. Groundwater data are compared to NYSDEC's TOGS 1.1.1 – Ambient Water Quality Standards and Guidance Values.

5.1 Soil Contamination

5.1.1 OU5 Soil Results

OU5 sampling included 22 test pits (TP-1 through TP-22) and 3 Geoprobe borings (71, 72, and 73). Sample locations are shown on Figure 5-1. No PID readings above background levels were detected at any OU5 sample location. In general, a 4 to 12-inch layer of brown sandy organic topsoil was found in the test pits across the area. Asphalt pavement and/or asphalt millings were encountered in test pits TP-1, TP-5, TP-6, TP-7, TP-12, TP-13, TP-14, and TP-15 in thicknesses of 10 to 18 inches. The presence of slag was observed in TP-14 and TP-15. Native glacial clay/silt was found from the bottom of the topsoil or asphalt fill to the bottom of the test pits which extended to a depth of 36 inches to 40 inches.

Seventeen OU5 soil samples were selected for chemical analysis. Exceedances of applicable criteria are summarized in Tables 5-1A and 5-1B and shown on Figure 5-1. Arsenic was detected in TP-13 (34.9 mg/Kg) and TP-15 (41.4 mg/Kg) at concentrations which exceeded the SCO for both Restricted-Residential (16 mg/Kg) and for Commercial (16 mg/Kg) land use. Subsequent Geoprobe sampling adjacent to TP-15 showed an arsenic concentration of only 9.9

mg/Kg in the shallow (0 ft to 2 ft depth) sample. Exceedances of SCOs for Restricted-Residential land use were detected at 71.1 for Benzo(a)pyrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene and Indeno(1,2,3-cd)pyrene. Exceedances of SCOs for Commercial land use were detected in TP-71.1 for Benzo(a)pyrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Chrysene, Dibenzo(a,h)anthracene and Indeno(1,2,3-cd)pyrene.

Low levels (relative to SCGs) of VOCs were also detected in OU5 soils. There were no pesticides or PCBs detected at OU5. A summary of the OU5 analytical data is provided in Attachment 1.

5.1.2 <u>OU7 Soil Results</u>

OU7 sampling included 24 test pits and 5 Geoprobe borings during the SI. In addition, NYSDEC completed 12 OU7 test pits in 2004 to evaluate soil for on-site reuse to backfill OU2 excavations. The sample locations are shown on Figures 5-2. No PID readings above background levels were detected at any OU7 sample location. A relatively thin (3 to 7 inches) layer of topsoil, consisting of either brown or dark brown sandy clay, clayey sand, organic clayey sand, or organic sand, is present across the majority of this area of the site. The topsoil overlies native reddish brown silty clay. Plastic bags were found in TP-40 between the depths of 4 to 16 inches within a sandy clay fill layer. The fill appeared to be clean (i.e., no unusual odors or coloring and no PID readings were evident) and extremely localized. TP-40.1 was advanced immediately north of TP-40 to a depth of 18 inches with no sign of fill material.

Nineteen SI soil samples and three NYSDEC (2006) soil samples were selected from OU7 for chemical analysis. Exceedances of applicable criteria are summarized in Tables 5-2 and 5-3. Criteria exceedances are shown on Figures 5-2 (Restricted-Residential SCO Exceedances) and 5-3 (Commercial SCO Exceedances). Several polycyclic aromatic hydrocarbon (PAH) compounds were detected in the composite sample SP-9 at levels which exceeded their Restricted-Residential SCOs. Sample SP-9 was a composite derived from test pits TP-31, TP-32 and TP-33 along the northern margin of OU7. The compounds in exceedance of SCOs were benzo(a)anthracene (1.5 mg/Kg), benzo(a)pyrene (1.3 mg/Kg), benzo(b)-fluoranthene (1.8 mg/Kg) and indeno(1,2,3-cd)pyrene (0.99 mg/Kg). Only benzo(a)pyrene also exceeded the Commercial SCOs.

Low levels (relative to SCGs) of VOCs and metals were also detected in OU7 soils. There were no pesticides or PCBs detected at OU7.

Based on the testing results, soil contamination is limited to the PAH exceedances in the northeast portion of OU7. A summary of the OU7 analytical data is provided in Attachment 1 and NYSDEC's 2004 OU7 sampling results are included in Attachment 2.

5.1.3 OU6 Soil Results

OU6 sampling for the SI included 79 soil samples from test pits and 96 samples from borings (either split-spoon samples or macrocore samples). In addition, LiRo collected 7 preliminary soil samples during the soil gas testing program and NYSDEC collected 3 sediment samples and 7 sludge samples in 2004. Sample locations are shown on Figure 5-4. Elevated PID readings (above background) were observed in SI screening results from 30 of the soil samples. The maximum observed PID levels were up to 350 ppm in direct soil screening and up to 1,400 ppm in headspace readings. PID screening results are listed in Table 3-1.

Fill material including sand, clay, slag, brick, rock, and concrete fragments was found across much of the building exterior at typical thickness of 0 to 2 feet. A relatively thin layer (generally less than 1 foot) of button ash was observed in areas southwest of the plant building. Fill beneath the building floors was generally characterized as black angular sandy soil ranging in thickness from 1 to 10 feet.

Exceedances of Part 375 Restricted-residential criteria are summarized in Table 5-4 and shown on Figure 5-4. The most common exceedances were for metals and PAHs, however, PCB exceedances were observed in six SI soil samples and in all of the NYSDEC sediment and sludge samples. Benzene exceedances were observed in three SI samples. PAH exceedances were observed for benzo(a)-anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)-fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene and pyrene. Metals exceedances were observed for arsenic, barium, cadmium, chromium, copper, lead, manganese, mercury, nickel and zinc. Cadmium and zinc showed the highest frequency of exceedance among the metals.

Exeedances of Part 375 Commercial criteria are summarized in Table 5-5 and shown on Figure 5-5. PAH exceedances were observed for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene. Metals exceedances were observed for arsenic, barium, cadmium, copper, lead, mercury, nickel and zinc. The SCOs for arsenic, barium, copper, nickel, zinc, PCBs, and benzo(a) pyrene are identical for Restricted-residential and Ccommercial land use, therefore, there was no change in exceedances for those chemicals. The analytes which exceeded Restricted-residential criteria but did not exceed Commercial criteria, are chromium, manganese, benzene, fluoranthene, phenanthrene and pyrene.

Exceedances of TAGM #4046 RSCOs for compounds which are not listed in Part 375, are summarized in Table 5-6 and shown on Figure 5-6. RSCO exceedances were observed for dimethyl phthalate (in 1 sample) and di-n-butylphthalate (in 8 samples). A summary of the OU6 analytical data is provided in Attachment 1 and NYSDEC's 2004 OU6 sampling results are included in Attachment 2.

OU6 Contaminant Distribution

The site contaminants that were observed at levels which exceed applicable site criteria include benzene, PAHs, di-n-butylphthalate, dimethyl phthalate, PCBs, and metals. Figure 5-7 shows the locations where exceedances were observed grouped by contaminant type. The vertical distribution of the exceedances is illustrated on Figure 5-8 as well as on the geologic cross sections (Figures 4-1 thru 4-4). Table 5-7 presents a summary of the number of exceedances and the maximum concentrations on a chemical-specific basis for OU6.

Benzene exceedances were observed only at locations 52 and 52.1 in the north-central portion of the building footprint. Based on the depth of the exceedances - in samples up to 21 feet below grade – and the proximity to OU4, the benzene contamination likely migrated from OU4 and is associated with the multiple contaminant wastes that comprise OU4.

PAH exceedances were relatively widespread across OU6 exterior areas. The exterior PAH exceedances were generally observed in the southwestern portion of OU6, along the railroad spur in the eastern portion of OU6 and near the northeastern boundary of the site. Building footprint locations with PAH exceedances were observed along the western margin of the Fibre Building (locations 18 and 58) and in the north-central area (locations 53 and 54). The highest and the only significantly elevated PAH concentrations were observed at location 4 (along the piping for the OU3 former grinding oil tank), location 58, location 85, and location P-60. The PAH exceedances were mostly limited to shallow soil (2 feet or less).

PCB exceedances were observed in shallow exterior soils near the southeast corner of the facility (locations 4 and 83) and in shallow soil/sediment of the drainage swale south of the plant building (location 67 and previous NYSDEC locations SD01- SD03). PCB exceedances were observed in soil beneath the building at locations 58 and 29 in the northwestern portion of the building and at an isolated location (76) in the central portion of the Main Building. During the OU2 IRM, NYSDEC excavated the exterior portion of the K-Line sewer near the former Saw Room and Press Room Buildings in the northwestern portion of the plant (see Figure 2-1). The excavation work was terminated at the building foundation line, however, NYSDEC observed oily sewer bedding soils extending beneath the building foundation beyond the limits of the excavation. Based on that observation and elevated PCB concentrations in Press Room basement sump sludge samples collected by NYSDEC (samples SumpA and SumpB), PCB contaminated K-Line sewer bedding is inferred to be present beneath the building. The K-line sewer depth is approximately 8 feet below the building floor slab in this portion of the site. NYSDEC sludge sampling results from the OU2 IRM are included in Attachment 2.

Di-n-butylphthalate exceedances of TAGM #4046 criteria were observed in the north-central building footprint area (locations 49, 52.1, 53 and 56), along the western margin of the Fibre Building footprint (locations 14 and 58), in the ditch southwest of the plant (location 67), and in the southeast exterior area near OU3 (locations 4 and 83). The depths for these contaminants were generally limited to less than 4 feet. Additionally, a low level exceedance for dimethyl phthalate (3 mg/kg) was detected in a shallow sample (0 to 1 feet) collected at Location 4.

Metals exceedances were widespread across exterior and interior portions of OU6. The metals contamination was typically confined to shallow soils at exterior sample locations. Interior samples showed deeper metals contamination beneath void spaces at locations 24, 25 and 32 near the acid house and at locations 17, 58.1 and 57 along the western margin of the Fibre Building.

5.1.4 <u>Surface Soil Results</u>

Surface soil samples were collected from 0 to 2 inches below ground surface from locations 68, 69, 70, 71.1, 72, 73, 74 and 75. Also included in the surface soil discussion is composite sample SP-21 comprised by grab samples collected at TP-66.1 and TP-67. The nine samples were analyzed for VOCs, SVOCs, PCBs, Pesticides and metals. Surface soil sampling results are summarized in Table 5-8.

Sample locations 71.1, 72 and 73 were collected in OU5. Exceedances of SCOs for Restricted-Residential land use were detected at 71.1 for Benzo(a)pyrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene and Indeno(1,2,3-cd)pyrene. Exceedances of SCOs for Commercial land use were detected in TP-71.1 for Benzo(a)pyrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Chrysene, Dibenzo(a,h)anthracene and Indeno(1,2,3-cd)pyrene. There were no exceedances of VOCs, Pesticides, PCBs or metals observed in samples 71.1, 72 and 73.

Samples SP-21, 74 and 75 were collected in OU6. Exceedances of SCOs for Restricted-Residential land use were detected in SP-21 (composite sample from TP-66.1 and TP-67) for Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc. Exceedances of SCOs for Commercial land use were detected in SP-21 for Arsenic, Barium, Cadmium, Copper, Mercury, Nickel and Zinc. There were no exceedances for VOCs, SVOCs, Pesticides or PCBs observed in samples SP-21, 74 and 75.

Sample locations 68, 69 and 70 were collected in OU-7. There were no SCO exceedances observed in OU-7 surface soil samples.

5.1.5 <u>Ditch Sampling Results</u>

Fourteen soil samples were collected from the ditch which borders the southern and western margins of OU-6 at intervals ranging from 0 to 8 feet below ground surface from locations 64, 65, 66, 67, 78, 79 and 83. In addition, NYSDEC collected three ditch samples (SD-01, SD-02 and SD-03) in 2004. The SI ditch sample results are included in the OU-6 data summary tables (Attachment 1) and the NYSDEC data are included in Attachment 2.

Because the ditch is only intermittently wet and harbors no aquatic environment, the results are compared to soil SCGs. Exceedances of Part 375 Restricted-residential criteria are included in Table 5-4 (along with the other OU-6 exceedances) and shown on Figure 5-4. Exceedances of SCOs for Restricted-Residential land use were detected in sample 66F for Benzo(a)pyrene, Benzo(a)anthracene and Indeno(1,2,3-cd)pyrene; in sample 67F for PCBs; in sample 79N for cadmium; and in sample 83F for cadmium and PCBs. SCO exceedances for PCBs were also observed in each of the three NYSDEC ditch samples.

Exeedances of Part 375 Commercial criteria are summarized in Table 5-5 and shown on Figure 5-5. Exceedances of SCOs for Commercial land use were observed in sample 66F for Benzo(a)pyrene, in sample 67F for PCBs and in sample 83F for PCBs. SCO exceedances for PCBs were also observed in each of the three NYSDEC ditch samples.

Exceedances of TAGM #4046 RSCOs for compounds which are not listed in Part 375, are summarized in Table 5-6 and shown on Figure 5-6. An exceedance of the RSCO for Di-n-butylphthlate was observed in sample 67F.

5.2 Groundwater Results

Groundwater analytical data are compared to NYSDEC's TOGS 1.1.1 – Ambient Water Quality Standards and Guidance Values. LiRo installed and sampled four overburden monitoring wells during the site investigation. In addition, LiRo sampled 13 existing (installed for previous site investigations) overburden wells.

Groundwater sampling results are summarized in Table 5-9 and shown on Figure 5-9. Exceedances for VOCs were observed at wells MW-16 (isomers of 1,2-dichloroethene and vinyl chloride) and MW-43 (acetone, butanone, and hexanone). Exceedances for SVOCs were observed at OW-B2 (bis(2-ethylhexyl)phthalate) and MW-43 (formaldehyde). Metals exceedances for iron, magnesium, manganese and sodium were observed in numerous wells however, this condition is not likely attributable to Spaulding Site contamination. Exceedances for other metals were observed at OW-B2 (antimony), OW-3 (selenium), Well A (antimony), MW-43 (lead, antimony), and MW-59 (arsenic, copper, lead, and thallium).

5.3 Waste Characterization Results

Waste characterization samples were collected from various building materials at the Site. The sampling included cured resin, wall block with resin coatings and floor concrete from the chemical bulk storage area. Pit sludge samples were collected from the grinding oil pit and the pit near the dryer room in the southern portion of the plant. LiRo also collected a sample of oil-stained concrete from the foundation for the former paper machine. The waste characterization sampling results are summarized in Table 5-10.

The cured resin, resin coated wall block and concrete samples from the bulk storage area were characterized as non-hazardous based on the testing results (Table 5-10). The cured resin sample showed significant concentrations of toluene and SVOCs. Based on the floor concrete and wall block samples, it appears that concrete debris from the bulk storage area will not be subjected to any land disposal restrictions.

The pit sludge and oily paper machine foundation concrete results (Table 5-10) showed only low levels of PCB in one sample.

5.4 Asbestos Survey Results

Widespread ACM were identified during the survey effort that will affect the building demolition approach and cost. The observed ACM include, but are not limited to, the following:

- Roof Vent Penetration Tar
- Window Glaze
- Wall Board
- Caulk.
- Roofing Paper
- Equipment Paper Wrap
- Tar Coating/Sealant
- Pipe Insulation
- Cloth Pipe Wrap
- Mud Pipe Joints
- Transite Electrical Panels
- Surplus Transite Siding Panels
- Door Caulk
- Floor Debris

The Steering Committee is currently evaluating future building demolition efforts and associated asbestos abatement that is required to conduct the building demolition in accordance with applicable codes, rules and regulations. If any building demolition is required to conduct future soil remedial activities, asbestos abatement may impact the remedial design and cost.

6.0 CONCEPTUAL SITE MODEL

The conceptual site model has been refined based on the results of the site investigations to better understand the occurrence, sources and potential transport of site contaminants. Another of the primary objectives of the SI was to better define the "subsurface" building construction to evaluate potential site impacts beneath the plant building. The investigation program was designed to identify potential releases through basements, sumps, utilities, process vats, etc., and to determine if contaminated materials (such as ash, wastes, etc.) were covered by subsequent plant additions. In addition, relatively large exterior areas (OU5, OU7 and portions of OU6 that are outside of the NYSDEC superfund OUs) were characterized during the SI.

OU5 and OU7 showed relatively low-level site contaminant impacts. Each of these OUs had localized exceedances of soil criteria. At OU5, the exceedances were for arsenic at two locations which is likely attributable to the character of the fill used to build and/or maintain the plant parking area on the east side of Wheeler Street. One OU5 surface soil sample adjacent to the parking lot showed elevated PAH concentrations likely related to the parking lot (i.e., leaking oil or asphalt sealer residuals). At OU7, slightly elevated PAH concentrations were identified in a composite soil sample from the northwestern portion of the site. Based on the low permeability of the underlying native soil, there is little potential for migration of the OU5 or OU7 soil contamination.

OU6 exterior testing showed several impacted areas which are attributed to different sources or causes. In the southwestern portion of OU6, shallow soil/sediment in the drainage ditch/swale showed impacts from PCBs, PAHs and di-n-butylphthalate. The ditch is relatively wide and water (when present in sufficient quantity) flows to the north and east. The impacted soil/sediment is likely a result of transport of contaminants from the resin drum landfill area. Button ash containing elevated levels of PAHs and metals was identified in several areas southwest of the plant building. Based on the relatively wide area and minimal observed thickness (less than one foot), the button ash was likely accumulated near the former incinerator and then periodically spread in nearby areas. Because of the low permeability of the underlying native soil, there is little potential for migration of button ash contaminants via leaching.

In the eastern exterior portion of OU6, localized higher-level soil contamination was evident at Location 4 adjacent to a pipeline which connected the interior grinding area to the exterior grinding oil storage tank. The Location 4 contamination is likely attributable to pipeline leakage at the building penetration. More widespread contamination – generally metals and/or PAHs -

was evident along the railroad spur, near the former boiler stack, and in the northeastern portion of the facility. The exceedances were generally limited to shallow soil and there is little potential for downward migration due to the low permeability of the underlying native soil.

Interior sampling locations showed contamination in shallow fill (i.e., fill immediately below the floor slab) beneath much of the plant facility. Soil below the eastern portion of original plant building (east of the zinc-chloride process areas) generally did not show contamination. The zinc-chloride process areas in the central and west-central portion of the plant showed sub-slab zinc exceedances that are likely attributable to percolating process solutions. In the northernmost portion of the plant, di-n-butylphthalate (a process chemical) contamination was observed in shallow sub-slab soil at several locations. The deeper soil contamination that was evident in soil beneath the laboratory basement level and at Location 52/52.1 (benzene exceedances) is likely attributable to migration from the adjacent State Superfund petroleum contaminated waste area OU4. Scattered sub-slab exceedances for PAHs and other metals (such as arsenic, barium, etc) are likely attributable to the characteristics of the fill used as the plant was expanded. Oily K-Line sewer bedding that is believed to be contaminated was visually observed by NYSDEC and PCB contamination was reported by NYSDEC in Press Room basement sumps. Based on that evidence, PCB-contaminated sewer bedding is inferred to be present beneath the K-Line sewer.

Isolated areas with organic compound groundwater contamination were observed near the resin drum landfill, near the former incinerator in the western portion of the Fibre Building and near the chemical unloading/outdoor bulk storage area. The groundwater contamination is primarily attributable to former plant operations and releases, rather than ongoing leaching of soil contaminants. Due to the very low permeability of the water bearing glacial unit, limited migration of contaminated groundwater is evident at the Site.

7.0 QUALITATIVE EXPOSURE ASSESSMENT

The qualitative human health exposure assessment (EA) presented in this section was prepared in accordance with the NYSDEC Environmental Restoration Program requirements and the Draft DER-10 Guidance Document (December, 2002). In particular, the EA will meet the requirements set forth in DER-10 Appendix 3B entitled "New York State Department of Health Qualitative Human Health Exposure Assessment".

The objective of the EA is to evaluate the presence of completed or potential exposure pathways in order to determine if site contamination poses an existing or potential hazard to current or future site users. The EA will identify the potential for human exposures, if any, associated with chemical constituents detected in soil, groundwater, and air at OU5, OU6, and OU7. The EA will address on-site and off-site receptors for current use, future site construction during redevelopment, and future use scenarios. The anticipated future use of the Site is for light industrial and commercial purposes.

The EA consists of five elements to document exposure pathways (listed below). An exposure pathway is complete when all five elements are documented; a potential exposure pathways exists when one or more of the elements is not documented.

- Identified contaminant sources, affected media, and chemicals of potential concern (COPCs) from site-specific data collected during site investigations;
- Identified contaminant release and transport mechanisms (e.g., vaporization, migration, etc.);
- Identified points of exposure for current and future site use (e.g., on-site soil, potable wells, etc.);
- Identified exposure routes (i.e., inhalation, ingestion, dermal contact); and
- Identified receptor population(s) (e.g., construction workers, future site workers).

Following the identification and documentation of the exposure pathways, the EA will recommend the need for mitigation and/or remedial measures to reduce potential exposures.

Contaminant Sources and COPCs

Site investigation data indicate that Spaulding's historic chemical use/storage, operations, spills and disposal practices within and outside of the building released contaminants to the surrounding environment. Residual affected media include soil and groundwater.

COPCs for soil and groundwater were identified based on exceedances of Site SCGs discussed in Sections 3.6 and 5.0 of this report. Consistent with the objectives of the SI, COPCs will be evaluated on an Operable Unit-specific basis. The COPCs for OU5, OU6 and OU7 are listed in Table 7-1.

Contaminant Release and Transport

Historic records, previous investigations and SI results indicate that site contaminants are localized at OU5 and OU7; and were released across a relatively wide area at OU6.

Arsenic and PAHs in soil are the COPCs identified at OU5. The arsenic appears to be attributable to the character of fill material used (likely for grading) at the plant parking lot and the PAHs are probably related to the parking lot (i.e., leaking oil or asphalt sealer residuals). At OU7, PAHs were observed in one composite soil sample from the northwestern area of the site. There was no evidence of significant filling in that portion of the site. Soils may have been impacted by re-grading. Based on the low permeability of the underlying native soil, there is little potential for leaching to groundwater at OU5 or OU7. The primary transport mechanism for the OU5/OU7 soil contamination is through wind.

OU6 contaminants were released through spreading of ash/incinerator residuals, process and/or waste water discharge to the sewer system, chemical spills or leakage, on-site lagoons and on-site landfill areas. The lagoons, landfill areas, and plant exterior chemical transfer/storage areas are primarily addressed by the NYSDEC Superfund program (OU1 – OU4), however, impacts from these releases are evident in OU6 soil and groundwater. OU6 contaminant sources and migration are discussed in Section 6.0 of this report. In general, soil contamination was attributed to Spreading of button ash, use of contaminated fill, K-line sewer bedding, percolation of zinc chloride in Fibre process areas, and migration from OU3/OU4. Groundwater impacts were localized and contaminant migration is anticipated to be limited in both soil and groundwater due to the low permeability of the native overburden soils.

Potentially Exposed Receptors

The previous and current use of the site is industrial. Future use of the Site, per the ECIDA, is for light industrial and commercial purposes. Future construction for redevelopment may occur.

Industrial use of the site was discontinued over a decade ago and no permanent or long-term workers are present. Personnel working intermittently at the site consist of construction workers associated with building demolition and workers associated with NYSDEC's Superfund Site Remediation Program.

The property is partially fenced, however, access can be obtained as the fencing and gates are not secure. There is a potential for trespassers. Residences are located in areas adjacent to the site.

Under the current use scenario, potentially exposed receptors include trespassers and nearby residents. On-site workers associated with the NYSDEC Superfund Site Remediation Program are not considered potentially exposed receptors due to the adherence of these workers to the established health and safety plans and procedures established for site remediation and site contaminants.

In the absence of remediation, potentially exposed receptors for future use scenarios are the same as those for the current use scenario and include trespassers and nearby residents. Site redevelopment is anticipated and construction workers during redevelopment would be potentially exposed receptors. Future industrial/commercial workers and trespassers, in the absence of remediation, would also be potentially exposed receptors for future use.

Currently, all residents nearby and downgradient of the site obtain their potable water from municipal sources which use the Niagara River located approximately one mile downgradient of the site. The drilling of wells for potable water supply is prohibited within the City of Tonawanda limits. Therefore, under the current and future use scenarios, there are no potentially exposed groundwater receptors at the site.

Exposure Pathways

Under the current use scenario, trespassers on the site would have a potentially complete pathway through dermal contact or ingestion of contaminated soil. Nearby residents could potentially be exposed through inhalation from wind dispersion of fugitive dust from the site to off-site areas.

Under the future use scenario, trespassers on the Site would have a potentially complete pathway through dermal contact and ingestion of contaminated soil. Nearby residents could potentially be exposed through inhalation of wind dispersion of fugitive dust from the site to off-site areas.

Future site redevelopment construction workers and industrial/commercial site workers would have a potentially complete pathway through dermal contact and ingestion of contaminated soil, and inhalation of volatile contaminants through soil vapor intrusion into future structures.

Under the current and future use scenarios, groundwater is not known to be used or anticipated to be used as a potable water supply, therefore the groundwater ingestion exposure pathway is considered incomplete. Future Site construction workers could potentially come into contact with contaminated groundwater.

Summary and Recommendations

The following completed potential exposure pathways have been identified for the site:

- Under the current and future use scenarios, exposure via inhalation of fugitive dust is considered a potentially complete exposure pathway for nearby residents.
- Under the future use scenarios, exposure via inhalation of soil vapor is considered a potentially complete exposure pathway for future construction workers and Site industrial/commercial workers.
- Under the current and future use scenarios, exposure via dermal contact and ingestion of soil is a potentially complete exposure pathway for trespassers.
- Under the future use scenario, exposure via dermal contact and ingestion of soil is a potentially complete exposure pathway for Site construction workers and industrial/commercial Site workers.
- Under the future use scenario, exposure via dermal contact or ingestion of contaminated groundwater is a potentially complete exposure pathway for Site construction workers.

Potential exposure pathways for future construction workers could be readily mitigated through appropriate health and safety measures implemented during construction activities. These measures might include organic vapor monitoring during excavation activities to limit exposure, protective clothing to limit dermal contact and training/good work practices to limit incidental ingestion. Remedial measures such as wetting and/or foaming the soil may be used to limit the generation of fugitive dust.

Remedial measures should be undertaken at the Site to mitigate exposure pathways associated with the remaining current and future use scenarios.

8.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the Site Investigations, limited areas of contaminated soil are present at OU5 and OU7. Based on Site hydrogeological conditions, soil contaminant levels and the absence of potable water wells, groundwater is not a medium of concern for OU5 and OU7.

OU6 soil contamination was relatively widespread (compared to OU5 and OU7) owing to a variety of contaminant sources. The affected OU6 areas are described as follows:

- Ditch soil/sediment in the southwestern portion of the exterior area
- Button ash that was spread over portions of the southwestern exterior area
- Contaminated exterior fill in the eastern portion of the site generally associated with the rail spur
- Apparent discharge from the pipe attached to the exterior grinding oil UST that was present in the southeastern portion of the site.
- Contaminated soil beneath the Fibre Building associated with historic leakage from the zinc chloride process pits
- Contaminated soil in the northernmost portion of the plant associated with historic di-n-butylphthalate use and migration from OU4
- Scattered metals and PAH contamination attributed to characteristics of the fill used beneath portions of the building.
- PCB contamination that is present in the Press Room basement sump sludge and inferred to be present in the K-line sewer bedding beneath the former Saw Room and Press Room Buildings in the northwestern portion of the plant

Localized areas of contaminated groundwater were observed at OU6. Site hydrogeological conditions and downgradient well sampling indicate little potential for offsite migration of Site contaminants in groundwater.

The results of the exposure assessment indicate completed exposure pathways for current and future site construction workers, current and future site trespassers, future site commercial or industrial workers, and current and future offsite receptors of fugitive dust. There was not a completed groundwater ingestion pathway, however, contact with contaminated groundwater for future site construction workers and vapor migration due to contaminated groundwater are recognized as completed exposure pathways.

Based on the Site contaminant levels and potential exposure pathways, soil remediation is warranted at the Site. LiRo recommends that soil remedial alternatives should be evaluated in accordance with ERP requirements to determine a remedial approach. Because NYSDEC Superfund Remediation work is pending for OU1, OU3 and OU4, it would be beneficial to develop common remediation objectives, establish remedial boundaries, and consider a coordinated approach (to the extent practicable) for the Site remediation.

Interim remedial measures have been proposed for removal of two transformers and hazardous materials which remain in the chemical bulk storage area. Removal of these materials will be required to conduct the site remediation, and early removal under an IRM will mitigate the potential for future uncontrolled releases of hazardous materials due to failure of supporting structures or due to demolition activities.

REFERENCES

Plant Decommissioning Final Report, Conestoga-Rovers and Associates, 1995.

RCRA Facility Investigation and Remedial Investigation, Spaulding Composites Company, Tonawanda, New York. Conestoga-Rovers and Associates, (Revised September) 1998.

Record of Decision and RCRA Statement of Basis, Spaulding Composites Site Operable Units Nos. 1 to 4, Tonawanda, Erie County, New York. NYSDEC, March 2003.

TABLES

Table 2-1
SWMU and AOC Summary
Spaulding Fibre Site Investigation

SWMU or AOC #	Description	Spill or Release	NYSDEC Area	Notes
SWMU 1	Container Storage Area	NSR		
SWMU 2	Container Storage Area	NSR		
SWMU 3	Zinc Chloride Sludge Container Storage Area		OU4	Immediate OU vicinity is outside the scope of this project.
SWMU 4	Container Storage Area	NSR		
SWMU 5	Container Storage Area		OU4	Immediate OU vicinity is outside the scope of this project.
SWMU 6	Container Storage Area	NSR		
SWMU 7	Resin Drum Landfill		OU1	Immediate OU vicinity is outside the scope of this project.
SWMU 8	Laminant Dust Landfill		OU1	Immediate OU vicinity is outside the scope of this project.
SWMU 9	Zinc Chloride Sludge and Drum Landfill	Landfill area		Area previously excavated
SWMU 10	Resin Dust Landfill	Landfill area		
SWMU 11	Sludge Settling Pond		OU2	Immediate OU vicinity is outside the scope of this project.
SWMU 12	Sludge Settling Pond		OU2	Immediate OU vicinity is outside the scope of this project.
SWMU 13	Sludge Settling Pond		OU2/OU3	Immediate OU vicinity is outside the scope of this project.
SWMU 14	Sludge Settling Pond		OU4	Immediate OU vicinity is outside the scope of this project.
SWMU 15	Vulcanized Fibre Tube Leaching Tanks	NSR		
SWMU 16	Vulcanized Fibre Tube Leaching Tanks	NSR		
SWMU 17	Vulcanized Fibre Sheet Leaching Tanks	NSR		
SWMU 18	Vulcanized Fibre Sheet Leaching Tanks	NSR		
SWMU 19	Evaporation System			Zinc-contaminated water leak

Notes:

SWMU – Solid Waste Management Unit; AOC – Area of Concern; OU – DEC Operable Unit
NSR - No spill and/or release (minimal potential or actual) as determined by CRA during the RFI.

SWMU or AOC #	Description	Spill or Release	NYSDEC Area	Notes
SWMU 20	Weak Water Storage Tank	NSR		
SWMU 21	Weak Water Treatment Plant	NSR		
SWMU 22	Reaction Water Storage Tanks	NSR		
SWMU 23	AST Farm		OU2	Immediate OU vicinity is outside the scope of this project.
SWMU 24	Zinc Chloride Sludge Concrete Pit	NSR		
SWMU 25	Paper Mill Waste Water Storage	NSR		
SWMU 26	Paper Sludge Land Application Area		OU4	Immediate OU vicinity is outside the scope of this project.
SWMU 27	Boiler			
SWMU 28	Boiler			
SWMU 29	Boiler			
SWMU 30	Boiler			
SWMU 31	Incinerator			
SWMU 32	Incinerator		OU4	Immediate OU vicinity is outside the scope of this project.
SWMU 33	Incinerator			
SWMU 34	Solvent Fume After-Burner			
SWMU 35	Laboratory Waste Storage Area		OU4	Immediate OU vicinity is outside the scope of this project.
SWMU 36	AST/UST Area		OU3	Immediate OU vicinity is outside the scope of this project.
SWMU 37	Spauldite Sump Area			PCBs present
SWMU 38	Thermal Destruction Unit / Drain Tiles / Contaminated Soils		OU2	Immediate OU vicinity is outside the scope of this project.

Notes:

SWMU – Solid Waste Management Unit; AOC – Area of Concern; OU – DEC Operable Unit
NSR - No spill and/or release (minimal potential or actual) as determined by CRA during the RFI.

Table 2-1
SWMU and AOC Summary
Spaulding Fibre Site Investigation

SWMU or AOC #	Description	Spill or Release	NYSDEC Area	Notes
AOC 39	Site Process Sewer System (K-Line and F-Line)			PCBs present
AOC 40	Offsite Storm Sewer			Off-site; outside the scope of this project.
AOC 41	Contaminated Sediments in Niagara River			Off-site; outside the scope of this project.
AOC 42	Site Utility Bedding			May not be a pathway
AOC 43	Site Storm Sewer System			PCBs present
AOC 44	Site Process Sewer System (I-Line)			PCBs present
AOC 45	Rail Spur		OU4	Immediate OU vicinity is outside the scope of this project.
AOC 46	Drum Storage Doc		OU4	Immediate OU vicinity is outside the scope of this project.
AOC 47	Bulk Chemical Unloading Area		OU4	Immediate OU vicinity is outside the scope of this project.
AOC 48	Transformer Explosion Area		OU2	Immediate OU vicinity is outside the scope of this project.

Notes:

SWMU – Solid Waste Management Unit; AOC – Area of Concern; OU – DEC Operable Unit
NSR - No spill and/or release (minimal potential or actual) as determined by CRA during the RFI.

TABLE 3-1
SUMMARY OF ENVIRONMENTAL SAMPLE COLLECTION
SPAULDING FIBRE SITE INVESTIGATION

Location ID	Sample Matrix	Sample Interval (ft) Top	Sample Interval (ft) Bottom	Fill Thickness (ft)	Sample Method	Analysis	PID (ppm)	Comments
Preliminary Investigation Soil Samples								
P-5	Soil	NA	NA	Not measured	Grab	VOC, SVOC, PCB, Metals/CN	NM	
P-40	Soil	NA	NA	Not measured	Grab	VOC, SVOC, PCB, Metals/CN	NM	
P-43	Soil	NA	NA	Not measured	Grab	VOC, SVOC, PCB, Metals/CN	NM	
P-44	Soil	NA	NA	Not measured	Grab	VOC, SVOC, PCB, Metals/CN	NM	
P-60	Soil	NA	NA	Not measured	Grab	VOC, SVOC, PCB, Metals/CN	NM	
P-61	Soil	NA	NA	Not measured	Grab	VOC, SVOC, PCB, Metals/CN	NM	
P-94	Soil	NA	NA	Not measured	Grab	VOC, SVOC, PCB, Metals/CN	NM	
Site Investigation Soil Samples								
1	Fill	1	2	3	TP	VOC, SVOC, PCB, Metals/CN	bg	
	Native	3	4			VOC, SVOC, PCB, Metals/CN	bg	
2	Fill	1	2	4	TP	VOC, SVOC, PCB, Metals/CN	bg	
	Native	4	5			VOC, SVOC, PCB, Metals/CN	bg	
3	Fill	1	2	3	TP	VOC, SVOC, PCB, Metals/CN	bg	
	Native	3	4			VOC, SVOC, PCB, Metals/CN	bg	
4	Fill	0	1	3	TP	VOC, SVOC, PCB, Metals/CN	bg	
	Fill	2	3			VOC, SVOC, PCB, Metals/CN	7	45 ppm head space
	Native	7	8			VOC, SVOC, PCB, Metals/CN	10	43 ppm head space
5	Native	6	8	5	HSA	VOC, SVOC, PCB/Pest, Metals/CN	24	
	Native	10	11			VOC, SVOC, PCB, Metals/CN	bg	
6	Native	2	3	0	TP	VOC, SVOC, PCB, Metals/CN	bg	
7	Fill	1	1.5	1.5	TP	VOC, SVOC, PCB, Metals/CN	bg	
	Native	2	3			VOC, SVOC, PCB, Metals/CN	bg	
8	Fill	1	2	2	TP	VOC, SVOC, PCB, Metals/CN	bg	
	Native	2	3			VOC, SVOC, PCB, Metals/CN	bg	
9	Native	2	3	2	TP	VOC, SVOC, PCB, Metals/CN	bg	
10	Native	4	6	2	HSA	VOC, SVOC, PCB, Metals/CN	bg	
	Native	8	12			VOC, SVOC, PCB, Metals/CN	bg	
11	Native	5	7	5	Jackhammer	VOC, SVOC, PCB, Metals/CN	3	
	Native	13	15			VOC, SVOC, PCB, Metals/CN	25	
12	Native	6	8	0	Jackhammer	VOC, SVOC, PCB, Metals/CN	bg	6' void space
	Native	14	16			VOC, SVOC, PCB, Metals/CN	180	1010 ppm head space
13	Native	2	3	0	TP	VOC, SVOC, PCB, Metals/CN	bg	
14	Fill	1	2	3	TP	VOC, SVOC, PCB, Metals/CN	5	
	Native	3	4			VOC, SVOC, PCB, Metals/CN	bg	
15	Native	1	2	1	TP	VOC, SVOC, PCB, Metals/CN	2	15 ppm head space
	Native	3	4			VOC, SVOC, PCB, Metals/CN	bg	
16	Fill	2	3	5	HSA	VOC, SVOC, PCB/Pest, Metals/CN	bg	
	Native	14	16			VOC, SVOC, PCB, Metals/CN	bg	
17	Fill	1	2	4	TP	VOC, SVOC, PCB, Metals/CN	bg	
	Native	4	5			VOC, SVOC, PCB, Metals/CN	bg	
	Native	5	6			VOC, SVOC, PCB, Metals/CN	bg	
17.1	Fill	5	6	5	TP	VOC, SVOC, PCB, Metals/CN	bg	
18	Fill	1	2	3	TP	VOC, SVOC, PCB, Metals/CN	bg	
	Native	3	5			VOC, SVOC, PCB, Metals/CN	bg	
	Native	6	7			VOC, SVOC, PCB, Metals/CN	15	260 ppm head space
19	Native	1	2	0	TP	VOC, SVOC, PCB, Metals/CN	bg	
	Native	2	3			VOC, SVOC, PCB, Metals/CN	bg	
20	Native	6	7	2	HSA	VOC, SVOC, PCB, Metals/CN	bg	
21	Native	3	5	4	Jackhammer	VOC, SVOC, PCB, Metals/CN	3	
	Native	13	15			VOC, SVOC, PCB, Metals/CN	1	
22	Fill	1	2	0	TP	VOC, SVOC, PCB, Metals/CN	bg	
	Native	2	3			VOC, SVOC, PCB, Metals/CN	bg	
23	Native	1	2	0	TP	VOC, SVOC, PCB, Metals/CN	bg	
24	Fill	7	9	2	Jackhammer	VOC, SVOC, PCB, Metals/CN	bg	4' void
	Native	11	13			VOC, SVOC, PCB, Metals/CN	bg	
25	Fill	7	9	4	Jackhammer	VOC, SVOC, PCB, Metals/CN	bg	7' void
	Native	11	13			VOC, SVOC, PCB, Metals/CN	bg	7' void
26	Native	1	2	0.5	TP	VOC, SVOC, PCB, Metals/CN	bg	
27	Fill	0	1	2	TP	VOC, SVOC, PCB, Metals/CN	bg	
	Native	2	3			VOC, SVOC, PCB, Metals/CN	bg	

Notes
+CHEM- Formaldehyde, Ethanol, Methanol;
TP- Test Pit; HSA- Hollow Stem Auger;
bg- background; GW- groundwater;
NA- Not Applicable;
NM- Not Measured

TABLE 3-1
SUMMARY OF ENVIRONMENTAL SAMPLE COLLECTION
SPAULDING FIBRE SITE INVESTIGATION

Location ID	Sample Matrix	Sample Interval (ft) Top	Bottom	Fill Thickness (ft)	Sample Method	Analysis	PID (ppm)	Comments
28	Fill	2	4	5	HSA	VOC, SVOC, PCB, Metals/CN	bg	
	Native	4	6			VOC, SVOC, PCB, Metals/CN	bg	
	Native	8	12			VOC, SVOC, PCB, Metals/CN	bg	
29	Fill	1	2	4	TP	VOC, SVOC, PCB, Metals/CN	bg	
	Native	4	5			VOC, SVOC, PCB, Metals/CN	bg	
30	Fill	2	4	6	HSA	VOC, SVOC, PCB/Pest, Metals/CN	bg	
	Native	6	8			VOC, SVOC, PCB, Metals/CN	bg	
31	Native	1	2	0	TP	VOC, SVOC, PCB, Metals/CN	bg	
32	Native	7	9	0	HSA	VOC, SVOC, PCB, Metals/CN	bg	7' void - Cistern
33	NO SAMPLE COLLECTED FOR ANALYSIS							9' void/7' water - boiler
33.1	NO SAMPLE COLLECTED FOR ANALYSIS							9' void/7' water - boiler
34	Fill	1	2	2	TP	VOC, SVOC, PCB, Metals/CN	bg	
	Native	4	5			VOC, SVOC, PCB, Metals/CN	bg	
35	Fill	4	6	8	HSA	VOC, SVOC, PCB/Pest, Metals/CN	bg	
	Native	10	12			VOC, SVOC, PCB, Metals/CN	bg	
36	Native	0	2	0	Jackhammer	VOC, SVOC, Metals/CN	bg	
	Native	2	4			VOC, SVOC, Metals/CN	bg	
37	Native	1	2	0	Jackhammer	VOC, SVOC, Metals/CN	bg	
	Native	2	3			VOC, SVOC, Metals/CN	bg	
38	Native	1	2		Jackhammer	VOC, SVOC, PCB, Metals/CN	bg	
	Native	2	3			VOC, SVOC, PCB, Metals/CN	bg	
39	Native	1	2	0	Jackhammer	VOC, SVOC, PCB, Metals/CN	bg	
	Native	2	3			VOC, SVOC, PCB, Metals/CN	bg	
40	Native	1	2	0	Jackhammer	VOC, SVOC, PCB, Metals/CN+CHEM	bg	
	Native	2	3			VOC, SVOC, PCB, Metals/CN+CHEM	bg	
41	Native	1	2	0	Jackhammer	VOC, SVOC, PCB, Metals/CN	20	
	Native	7	8			VOC, SVOC, Metals/CN	25	182 ppm head space
42	Native	1	2	0	Jackhammer	VOC, SVOC, Metals/CN	bg	
	Native	3	4			VOC, SVOC, Metals/CN	bg	
43	Native	13	15	0	HSA	VOC, SVOC, PCB, Metals/CN+CHEM	bg	
44	Native	1.5	3	0	TP	VOC, SVOC, PCB, Metals/CN	bg	
45	Fill	0.5	1	0.5	TP	VOC, SVOC, PCB, Metals/CN	bg	
	Native	2	3			VOC, SVOC, PCB, Metals/CN	bg	
46	Fill	0.5	1	0.5	TP	VOC, SVOC, PCB, Metals/CN	bg	
	Native	2	3			VOC, SVOC, PCB, Metals/CN	bg	
47	Fill	0.5	1	0.5	TP	VOC, SVOC, PCB, Metals/CN+CHEM	bg	black stained clay
	Native	3	4			VOC, SVOC, PCB, Metals/CN+CHEM	bg	
48	Native	1	1.5	0	TP	VOC, SVOC, PCB, Metals/CN	bg	
49	Fill	0	2	1	Jackhammer	VOC, SVOC, PCB, Metals/CN	bg	
	Native	2	4			VOC, SVOC, PCB, Metals/CN	bg	
50	Fill	0	2	1	Jackhammer	VOC, SVOC, PCB, Metals/CN	bg	
	Native	2	4			VOC, SVOC, PCB, Metals/CN	bg	
51	Fill	3	5	5	HSA	VOC, SVOC, PCB, Metals/CN	5	
	Native	13	15			VOC, SVOC, PCB, Metals/CN	40	
52	Native	5	7	6	Jackhammer	VOC, SVOC, PCB, Metals/CN+CHEM	20	
	Native	13	15			VOC, SVOC, PCB, Metals/CN+CHEM	350	1400 ppm head space
52.1	Fill	1	3	8	Jackhammer	VOC, SVOC, PCB/Pest, Metals/CN	12	333 ppm head space
	Native	19	21			VOC, SVOC, PCB, Metals/CN	32	555 ppm head space
53	Fill	0	4	4	Jackhammer	VOC, SVOC, PCB, Metals/CN+CHEM	bg	
	Native	4	6			VOC, SVOC, PCB, Metals/CN+CHEM	bg	
54	Fill	3	5	11	HSA	VOC, SVOC, PCB, Metals/CN	bg	
	Fill	9	11			VOC, SVOC, PCB, Metals/CN	250	1300 ppm head space
	Native	11	15			VOC, SVOC, PCB, Metals/CN	300	
55	Fill	0	2	2	Jackhammer	VOC, SVOC, PCB, Metals/CN+CHEM	bg	
	Native	4	6			VOC, SVOC, PCB, Metals/CN	bg	
56	Native	1	2	0	TP	VOC, SVOC, PCB, Metals/CN	bg	
	Native	2	3			VOC, SVOC, PCB, Metals/CN	bg	
57	Fill	2	4	4	HSA	VOC, SVOC, PCB, Metals/CN	bg	
	Native	4	6			VOC, SVOC, PCB, Metals/CN	bg	
	Native	9	11			VOC, SVOC, PCB, Metals/CN	36	600 ppm in head space
	Native	18	20			VOC, SVOC, PCB, Metals/CN	2	

Notes
+CHEM- Formaldehyde, Ethanol, Methanol;
TP- Test Pit; HSA- Hollow Stem Auger;
bg- background; GW- groundwater;
NA- Not Applicable;
NM- Not Measured

TABLE 3-1
SUMMARY OF ENVIRONMENTAL SAMPLE COLLECTION
SPAULDING FIBRE SITE INVESTIGATION

Location ID	Sample Matrix	Sample Interval (ft) Top	Bottom	Fill Thickness (ft)	Sample Method	Analysis	PID (ppm)	Comments
58	Fill	0	2	10	HSA	VOC, SVOC, PCB, Metals/CN	bg	
	Fill	4	6			VOC, SVOC, PCB, Metals/CN	60	3.5 feet slab depth
	Native	13	14			VOC, SVOC, PCB, Metals/CN	bg	
58.1	Fill	2	4	4	HSA	VOC, SVOC, PCB/Pest, Metals/CN	bg	
	Native	11	12			VOC, SVOC, PCB, Metals/CN	bg	
59	Native	4	5	4	HSA	VOC, SVOC, PCB, Metals/CN	bg	
59.1	Native	8	10	4	HSA	VOC, SVOC, PCB, Metals/CN	bg	
60	Fill	1	2	5+	TP	VOC, SVOC, PCB, Metals/CN+CHEM	bg	
	Fill	3	4			VOC, SVOC, PCB, Metals/CN+CHEM	bg	
61	Fill	1	2	4	TP	VOC, SVOC, PCB, Metals/CN+CHEM	bg	
	Native	4	5			VOC, SVOC, PCB, Metals/CN+CHEM	bg	
62	Fill	0	5.5	5.5+	Jackhammer	VOC, SVOC, PCB, Metals/CN	6.2	
62.1	Native	4	6	6+	Jackhammer	VOC, SVOC, PCB, Metals/CN	bg	
62.2	Fill	2	4	2	Jackhammer	VOC, SVOC, PCB, Metals/CN	bg	
	Native	4	6			VOC, SVOC, PCB, Metals/CN	bg	
62.3	Fill	0	4	5+	Jackhammer	VOC, SVOC, PCB, Metals/CN	bg	4.5 feet slab depth
63	Fill	1	2	2	TP	VOC, SVOC, PCB, Metals/CN	bg	
	Native	3	4			VOC, SVOC, PCB, Metals/CN	bg	
64	Fill	0	1	0	Geoprobe	VOC, SVOC, PCB, Metals/CN	bg	
	Native	3	4			VOC, SVOC, PCB, Metals/CN	bg	
65	Fill	0	1	0	Geoprobe	VOC, SVOC, PCB, Metals/CN	bg	
	Native	3	4			VOC, SVOC, PCB, Metals/CN	bg	
66	Fill	0	0.5	0.5	ATV HSA	VOC, SVOC, PCB, Metals/CN	bg	cinders in fill
	Native	6	8			VOC, SVOC, PCB, Metals/CN	bg	cinders in fill
67	Fill	0	0.5	0	ATV HSA	VOC, SVOC, PCB, Metals/CN	bg	
	Native	7	8			VOC, SVOC, PCB, Metals/CN	bg	
68	Fill	0	0.17	0	ATV HSA	VOC, SVOC, PCB/Pest, Metals/CN		
	Native	8	9			VOC, SVOC, Metals/CN	bg	
69	Fill	0	0.17	0	ATV HSA	VOC, SVOC, PCB/Pest, Metals/CN		
	Native	7	8			VOC, SVOC, Metals/CN	bg	
70	Fill	0	0.17	0	ATV HSA	VOC, SVOC, PCB/Pest, Metals/CN		
	Native	0	1			VOC, SVOC, Metals/CN	bg	
	Native	3	4			VOC, SVOC, Metals/CN	bg	
71	Fill	0	2	1.5	Geoprobe	VOC, SVOC, Metals/CN	bg	
	Native	4	5			VOC, SVOC, Metals/CN	bg	
71.1	Fill	0	0.17		grab	VOC, SVOC, PCB/Pest, Metals/CN		Offet due to pavement
72	Fill	0	0.17	2	Geoprobe	VOC, SVOC, PCB/Pest, Metals/CN		
	Fill	0	2			VOC, SVOC, Metals/CN	bg	
	Native	7	8			VOC, SVOC, Metals/CN	bg	
73	Fill	0	0.17	0	Geoprobe	VOC, SVOC, PCB/Pest, Metals/CN		
	Native	3	4			VOC, SVOC, Metals/CN	bg	
74	Fill	0	0.17	2	Geoprobe	VOC, SVOC, PCB/Pest, Metals/CN		
	Fill	0	2			VOC, SVOC, Metals/CN	bg	Clay cover
	Native	7	8			VOC, SVOC, Metals/CN	bg	Clay cover
75	Fill	0	0.17	0	Geoprobe	VOC, SVOC, PCB/Pest, Metals/CN		
	Fill	0	1			VOC, SVOC, Metals/CN	bg	
	Native	3	10			VOC, SVOC, Metals/CN	bg	
76	Fill	3	4	5+	TP	VOC, SVOC, PCB, Metals/CN	32	445 ppm head space/ slab @4.5'
77	Native	1	2	0	TP	VOC, SVOC, PCB, Metals/CN	bg	
	Native	2	3			VOC, SVOC, PCB, Metals/CN	bg	
78	Fill	0	1	0	Geoprobe	VOC, SVOC, PCB, Metals/CN	bg	
	Native	3	4			VOC, SVOC, PCB, Metals/CN	bg	
79	Fill	0	1	0	Geoprobe	VOC, SVOC, PCB, Metals/CN	bg	
	Native	3	4			VOC, SVOC, PCB, Metals/CN	bg	
80	Fill	0	2	2	ATV HSA	VOC, SVOC, PCB, Metals/CN	bg	bricks in fill
	Native	6	8			VOC, SVOC, PCB, Metals/CN	bg	
81	Fill	0	2	0	ATV HSA	VOC, SVOC, PCB, Metals/CN	bg	
	Native	4	6			VOC, SVOC, PCB, Metals/CN	bg	
82	Fill	0	2	0	ATV HSA	VOC, SVOC, PCB, Metals/CN	bg	
	Native	6	7			VOC, SVOC, PCB, Metals/CN	bg	

<u>Notes</u>
+CHEM- Formaldehyde, Ethanol, Methanol;
TP- Test Pit; HSA- Hollow Stem Auger;
bg- background; GW- groundwater;
NA- Not Applicable;
NM- Not Measured

TABLE 3-1
SUMMARY OF ENVIRONMENTAL SAMPLE COLLECTION
SPAULDING FIBRE SITE INVESTIGATION

Location ID	Sample Matrix	Sample Interval (ft)		Fill Thickness (ft)	Sample Method	Analysis	PID (ppm)	Comments
		Top	Bottom					
83	Fill	0	2	0	ATV HSA	VOC, SVOC, PCB, Metals/CN	bg	
	Native	4	6			VOC, SVOC, PCB, Metals/CN	bg	
84	Fill	1	2	2	TP	VOC, SVOC, PCB, Metals/CN	bg	
	Native	2	3			VOC, SVOC, PCB, Metals/CN	bg	
85	Fill	0	1	1	TP	VOC, SVOC, PCB, Metals/CN	bg	
	Native	2	3			VOC, SVOC, PCB, Metals/CN	bg	
86	Fill	1	2	2	TP	VOC, SVOC, PCB, Metals/CN	25	620 ppm head space
	Native	2	3			VOC, SVOC, PCB, Metals/CN	8	130 ppm head space
TP-1	Fill/Native Comp	0.5	3	1	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-1
TP-2	Native	0	3	0			bg	
TP-3	Native	0	3	0			bg	
TP-4	Native	0	3	0	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-2
TP-5	Fill/Native Comp	0	3	1			bg	
TP-6	Fill/Native Comp	0.5	3	1			bg	
TP-7	Fill/Native Comp	0.5	3	1	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-3
TP-8	Native	0	3	0			bg	
TP-9	Native	0	3	0			bg	
TP-10	Native	0	3	0	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-4
TP-11	Native	0	3	0			bg	
TP-12	Fill/Native Comp	0.5	3.5	1.5			bg	
TP-13	Fill	0.25	1	1	TP	VOC, SVOC, PCB/Pest, Metals/CN	bg	Asphalt millings
TP-13	Native	1	3	1	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-5
TP-14	Native	1	3	1			bg	
TP-15	Fill	0	1.5	1.5	TP	VOC, SVOC, PCB/Pest, Metals/CN	bg	Soil with slag
TP-16	Native	0	3	0	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-6
TP-17	Native	0	3	0			bg	
TP-18	Native	0	3	0			bg	
TP-19	Native	0	3	0	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-7
TP-20	Native	0	3	0			bg	
TP-21	Native	0	3	0			bg	
TP-22	Native	0	3	0			bg	
TP-23	Fill/Native Comp	0.25	3	0.75	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-8
TP-24	Fill/Native Comp	0.25	3	0.75			bg	
TP-25	Fill/Native Comp	0.25	3	1			bg	
TP-26	Fill/Native Comp	0.25	3	1			bg	
TP-27	Fill/Native Comp	0	5	4	TP	VOC, SVOC, PCB/Pest, Metals/CN	bg	Column Composite
TP-27.1	NO SAMPLE COLLECTED FOR ANALYSIS							
TP-28	Fill/Native Comp	0	3	1	TP	VOC, SVOC, PCB/Pest, Metals/CN	bg	Column Composite
TP-29	Native	0	3	0	TP	VOC, SVOC, PCB/Pest, Metals/CN	bg	Column Composite
TP-30	Native	2	3	2	TP	VOC, SVOC, PCB/Pest, Metals/CN	bg	stained clay
TP-27	Fill	0	4	4	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-22
TP-28	Fill	0	1	1			bg	
TP-29	Native	0	0.75	0			bg	
TP-30	Fill	0	2	2			bg	
TP-31	Native	0	3	0	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-9
TP-32	Native	0	3	0			bg	
TP-33	Native	0	3	0			bg	
TP-34	Native	0	3	0	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-10
TP-35	Native	0	3	0			bg	
TP-36	Native	0	3	0			bg	
TP-37	Native	0	3	0	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-11
TP-38	Native	0	3	0			bg	
TP-39	Native	0	3	0			bg	
TP-40	Fill/Native Comp	0	3	1.5	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-12
TP-41	Native	0	3	0			bg	
TP-42	Native	0	3	0			bg	
TP-40.1	NO SAMPLE COLLECTED FOR ANALYSIS							
TP-43	Native	0	3	0	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-13
TP-44	Native	0	3	0			bg	
TP-45	Native	0	3	0			bg	

Notes
+CHEM- Formaldehyde, Ethanol, Methanol;
TP- Test Pit; HSA- Hollow Stem Auger;
bg- background; GW- groundwater;
NA- Not Applicable;
NM- Not Measured

TABLE 3-1
SUMMARY OF ENVIRONMENTAL SAMPLE COLLECTION
SPAULDING FIBRE SITE INVESTIGATION

Location ID	Sample Matrix	Sample Interval (ft) Top	Bottom	Fill Thickness (ft)	Sample Method	Analysis	PID (ppm)	Comments
TP-46	Native	0	3	0	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-14
TP-47	Native	0	3	0			bg	
TP-48	Native	0	3	0			bg	
TP-49	Native	0	3	0	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-15
TP-50	Native	0	3	0			bg	
TP-51	Native	0	3	0			bg	
TP-52	Native	0	3	0	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-16
TP-53	Native	0	3	0			bg	
TP-54	Native	0	3	0	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-17
TP-55	Native	0	3	0			bg	
TP-56	Native	0	3	0			bg	
TP-57	Native	0	3	0	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-18
TP-58	Native	0	3	0			bg	
TP-59	Native	1	3	0.75			bg	
TP-59	Fill	0.25	0.75	0.75	TP	VOC, SVOC, PCB/Pest, Metals/CN	bg	Button ash and slag
TP-60	Native	0	3	0	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-19
TP-61	Native	0	3	0			bg	
TP-62	Native	0	3	0			bg	
TP-63	Fill/Native Comp	0	3	1.25	TP Composite	VOC, SVOC, PCB/Pest, Metals/CN	2.7	Composited into Sample SP-20
TP-64	Native	0	3	0			1.5	
TP-65	Fill	0	1.25	1.25	TP	VOC, SVOC, PCB/Pest, Metals/CN	bg	Button ash and slag
TP-66	NO SAMPLE COLLECTED FOR ANALYSIS							
TP-66.1	Fill	0	0.75	0.75	TP	VOC, SVOC, PCB/Pest, Metals/CN	bg	Composited into Sample SP-21
TP-67	Fill	0	0.5	0.5	TP		bg	
Site Investigation Building Material Samples								
SC-1	wall block	NA	NA	NA	chip	TCLP, RCRA, formald, phenolics	NM	
SC-2/2A	cured resin	NA	NA	NA	chip	TCLP, RCRA, VOC, SVOC	NM	
SC-3	wall block	NA	NA	NA	chip	VOC, SVOC	NM	
SC-4	floor slab	NA	NA	NA	chip	TCLP, RCRA, VOC, SVOC	NM	
SC-5	sludge	NA	NA	NA	grab	Metals, PCBs	NM	
SC-6	sludge	NA	NA	NA	grab	Metals, PCBs	NM	
SC-7	sludge	NA	NA	NA	grab	Metals, PCBs	NM	
SC-8	floor slab	NA	NA	NA	composite	SVOC	NM	
SC-9	floor slab	NA	NA	NA	composite	TCLP metals, TCLP SVOC, SVOC	NM	
Site Investigation Groundwater Samples								
OW-A1	Groundwater	NA	NA	NA	GW	VOC, SVOC, PCB, Metals/CN	NM	
OW-B2	Groundwater	NA	NA	NA	GW	VOC, SVOC, PCB, Metals/CN	NM	
OW-1	Groundwater	NA	NA	NA	GW	VOC, SVOC, PCB, Metals/CN	NM	
OW-2	Groundwater	NA	NA	NA	GW	VOC, SVOC, PCB, Metals/CN	NM	
OW-3	Groundwater	NA	NA	NA	GW	VOC, SVOC, PCB, Metals/CN	NM	
OW-4	Groundwater	NA	NA	NA	GW	VOC, SVOC, PCB, Metals/CN	NM	
OW-6	Groundwater	NA	NA	NA	GW	VOC, SVOC, PCB, Metals/CN	NM	
OW-10	Groundwater	NA	NA	NA	GW	VOC, SVOC, PCB, Metals/CN, +Chem	NM	
OW-12	Groundwater	NA	NA	NA	GW	VOC, SVOC, PCB, Metals/CN	NM	
MW-16	Groundwater	NA	NA	NA	GW	VOC, SVOC, PCB, Metals/CN	NM	
MW-43	Groundwater	NA	NA	NA	GW	VOC, SVOC, PCB, Metals/CN, +Chem	NM	
MW-59	Groundwater	NA	NA	NA	GW	VOC, SVOC, PCB, Metals/CN	NM	
MW-59.1	Groundwater	NA	NA	NA	GW	VOC, SVOC, PCB, Metals/CN	NM	
MW-A	Groundwater	NA	NA	NA	GW	VOC, SVOC, PCB, Metals/CN	NM	
MW-B	Groundwater	NA	NA	NA	GW	VOC, SVOC, PCB, Metals/CN	NM	

Notes
+CHEM- Formaldehyde, Ethanol, Methanol;
TP- Test Pit; HSA- Hollow Stem Auger;
bg- background; GW- groundwater;
NA- Not Applicable;
NM- Not Measured

TABLE 3-2
PRELIMINARY SOIL SAMPLE RESULTS
SPAULDING FIBRE SITE INVESTIGATION
PAGE 1 OF 1

Sample Identification	NYSDEC	NYSDEC	NYSDEC	P-5	P-40	P-43	P-44	P-60	P-61	P-94
Date Sampled	Part 375	Part 375	TAGM	6/27/2007	6/27/2007	6/27/2007	6/27/2007	6/27/2007	6/27/2007	6/27/2007
Sample Depth (ft bgs)	Restricted	Commercial	Value	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Compound	Residential									
VOCs	Concentration in mg/kg			Concentration in mg/kg						
Acetone	100	500	NS	ND	ND	ND	ND	ND	0.3	ND
Methylene Chloride	100	500	NS	0.021	ND	ND	ND	ND	ND	ND
m/p Xylenes	NS	NS	1200	ND	ND	ND	ND	ND	0.016	ND
Tetrachloroethene	19	150	NS	ND	ND	ND	ND	ND	0.014	ND
Toluene	100	500	NS	0.016	ND	ND	ND	ND	ND	ND
SVOCs	Concentration in mg/kg			Concentration in mg/kg						
2,4-Dimethylphenol	NS	NS	NS	ND	ND	ND	ND	ND	0.18	ND
2-Methylnaphthalene	NS	NS	36.4	0.12	ND	ND	ND	2.8	ND	ND
4-Methylphenol	100	500	NS	ND	ND	0.079	ND	ND	0.31	ND
Anthracene	100	500	NS	ND	ND	ND	ND	19	ND	0.34
Benzo[a]pyrene	1	1	NS	0.22	ND	0.12	ND	**39**	ND	0.53
Benzo[g,h,i]perylene	100	500	NS	0.18	ND	0.091	ND	24	ND	0.34
Benzo[a]anthracene	1	5.6	NS	0.18	ND	0.14	ND	**41**	ND	0.59
Benzo[b]fluoranthene	1	5.6	NS	0.32	ND	0.18	ND	**50**	ND	0.74
Benzo[k]fluoranthene	3.9	56	NS	ND	ND	ND	ND	**18**	ND	0.21
bis(2-Ethylhexyl)phthalate	NS	NS	50	ND	0.8	0.15	ND	ND	ND	ND
Carbazole	NS	NS	NS	ND	ND	ND	ND	9.9	ND	0.18
Chrysene	3.9	56	NS	0.2	ND	0.15	ND	**38**	ND	0.57
Di-n-butylphthalate	NS	NS	8.1	ND	2.1	1.4	ND	2.8	ND	0.3
Dibenzofuran	59	350	NS	ND	ND	ND	ND	5.5	ND	ND
Dibenzo(a,h)anthracene	0.33	0.56	NS	ND	ND	ND	ND	**2.4**	ND	ND
Fluorene	100	500	NS	ND	ND	ND	ND	9.3	ND	0.1
Fluoranthene	100	500	NS	0.25	ND	0.33	ND	10	ND	1.2
Indeno(1,2,3-cd)pyrene	0.5	5.6	NS	0.15	ND	0.089	ND	**24**	ND	0.37
Naphthalene	100	500	NS	0.1	ND	ND	ND	5.1	ND	ND
Phenanthrene	100	500	NS	0.2	ND	0.26	ND	71	ND	0.94
Phenol	100	500	NS	ND	ND	0.2	ND	ND	ND	ND
Pyrene	100	500	NS	0.24	ND	0.27	ND	82	ND	1.1
PCBs	Concentration in mg/kg			Concentration in mg/kg						
Aroclor 1254	1	1	NS	ND	0.63	ND	ND	ND	ND	ND
Metals	Concentration in mg/kg			Concentration in mg/kg						
Aluminum	NS	NS	NS	5700	3860	5700	19600	15300	20000	17700
Arsenic	16	16	NS	5.86	3.21	4.57	3.98	**132**	3.72	5.06
Barium	400	400	NS	47.1	31.7	38.8	104	237	100	200
Beryllium	72	590	NS	0.287	0.22	0.366	0.985	1.43	1.03	0.879
Cadmium	4.3	9.3	NS	0.519	0.149	0.276	**7.23**	2.23	**10.5**	1.97
Calcium	NS	NS	NS	14500	170000	20700	7690	26000	5710	15500
Chromium	110	400	NS	25.4	8.78	19.5	28	36.4	27.6	42.2
Cobalt	NS	NS	NS	6.59	3.16	3.57	13.5	8.13	14.3	21.2
Copper	270	270	NS	258	26.7	73.5	67.9	**569**	80.3	342
Iron	NS	NS	NS	49100	9930	26300	29100	27800	31300	53700
Lead	400	1000	NS	44.2	12.5	22.1	89.6	178	110	434
Magnesium	NS	NS	NS	2790	26800	5720	6590	12400	7760	10600
Manganese	2000	10000	NS	821	360	**2330**	530	428	364	678
Mercury	0.81	2.8	NS	ND	0.036	0.01	0.043	**5.3**	0.016	0.03
Nickel	310	310	NS	222	50.5	452	74	296	80.5	59
Potassium	NS	NS	NS	995	1430	808	2590	2260	2280	2280
Selenium	180	1500	NS	ND	ND	ND	ND	4.7	0.499	ND
Silver	180	1500	NS	0.269	ND	ND	ND	ND	ND	0.91
Sodium	NS	NS	NS	153	431	177	14900	1370	30800	712
Thallium	NS	NS	NS	ND	ND	ND	ND	ND	2.77	ND
Vanadium	NS	NS	NS	25.6	9.61	9.7	38.8	31.4	40.2	35.9
Zinc	10000	10000	NS	196	666	170	**42700**	1610	**73700**	1800

Notes:

ND = Not detected above laboratory MDL

NS = No standard

Bold = Result exceeds 6 NYCRR Part 375 Restricted-Residential Objective

Shaded = Result exceeds 6 NYCRR Part 375 Commercial Objective

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TABLE 3-3
POTENTIALLY APPLICABLE STANDARDS, CRITERIA AND GUIDANCE
SPAULDING FIBRE SITE INVESTIGATION

Division/ Agency	Title	Standard or Guidance	Requirements
DAR/ NYSDEC	Air Guide 1 – Guidelines for the Control of Toxic Ambient Air Contaminants	G	▪ Control of toxic air contaminants ▪ Screening analysis for ambient air impacts ▪ Toxicity classifications ▪ Ambient standards – short term/annual
DAR/ NYSDEC	6 NYCRR Part 200 (200.6) – General Provisions	S	▪ Prohibits contravention of Ambient Air Quality Standards or causes of air pollution
DAR/ NYSDEC	6 NYCRR Part 201 - Permits & Certificates	S	▪ Prohibits construction/operation without a permit/certificate
DAR/ NYSDEC	6 NYCRR Part 211 (211.1) – General Prohibitions	S	▪ Prohibits emissions which are injurious to human, plant, or animal life, or causes a nuisance
DAR/ NYSDEC	6 NYCRR Part 212 – General Process Emission Sources	S	▪ Establishes control requirements
DAR/ NYSDEC	6 NYCRR Part 257 – Air Quality Standards	S	▪ Applicable air quality standards
DER/ NYSDEC	TAGM HWR-89-4031 Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites	G	▪ Dust suppression during Interim Remedial Measures/Remedial Actions
DER/ NYSDEC	TAGM HWR-92-4030 Selection of Remedial Actions at Inactive Hazardous Waste Sites	G	▪ Remedy selection criteria/evaluations
DER/ NYSDEC	TAGM HWR-92-4042 Interim Remedial Measures	G	▪ Define and track Interim Remedial Measures (IRMs)
DER/ NYSDEC	TAGM 4046 – Determination of Soil Cleanup Objectives and Levels	G	▪ Soil Cleanup Objectives
DER/ NYSDEC	6 NYCRR Part 375 – Inactive Hazardous Waste Disposal Site Remediation Program	S	▪ Remedial program requirements ▪ Private party programs; state funded programs; state assistance to municipalities ▪ Soil Cleanup Objectives
DFW/ NYSDEC	Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites (FWIA)	G	▪ Habitat assessments ▪ Contaminant impact assessments ▪ Ecological effects of remedies ▪ Remedial requirements ▪ Monitoring ▪ Checklist
DOW/ NYSDEC	Analytical Services Protocols (ASP)	G	▪ Analytical procedures

Division/ Agency	Title	Standard or Guidance	Requirements
DOW/ NYSDEC	TOGS 1.1.2 – Groundwater Effluent Limitations	G	▪ Guidance for developing effluent limitations
DOW/ NYSDEC	TOGS 1.1.1 – Ambient Water Quality Standards and Guidance Values	G	▪ Compilation of ambient water quality standards and guidance values
DOW/ NYSDEC	TOGS 1.2.1 – Industrial SPDES Permit Drafting Strategy for Surface Waters	G	▪ Guidance for developing effluent and monitoring limits for point source releases to surface water
DOW/ NYSDEC	TOGS 1.3.8 – New Discharges to Publicly Owned Treatment Works	G	▪ Limits on new or changed discharges to POTWs; strict requirements regarding bioaccumulative and persistent substances; plus other considerations
DOW/ NYSDEC	6 NYCRR Part 702-15(a), (b), (c), (d) & (e)	S	▪ Empowers NYSDEC to apply and enforce guidance where there is no promulgated standard
DOW/ NYSDEC	6 NYCRR Part 700-705 – NYSDEC Water Quality Regulations for Surface Waters and Groundwater	S	▪ 700 – Definitions, Samples and Tests; ▪ 701 – Classifications for Surface Waters and Groundwaters; ▪ 702 – Derivation and Use of Standards and Guidance Values; ▪ 703 – Surface Water and Groundwater Quality Standards and Groundwater Effluent Standards
DOW/ NYSDEC	6 NYCRR Part 750-757 – Implementation of NPDES Program in NYS	S	▪ Regulations regarding the SPDES program
DSHM/ NYSDEC	6 NYCRR Part 364 – Waste Transporter Permits	S	▪ Regulates collection, transport, and delivery of regulated waste
DSHM/ NYSDEC	6 NYCRR Part 360 – Solid Waste Management Facilities	S	▪ Solid waste management facility requirements; landfill closures; construction & demolition (C&D) landfill requirements; used oil; medical waste; etc.
DSHM/ NYSDEC	6 NYCRR Part 370 – Hazardous Waste Management System: General	S	▪ Definitions and terms and general standards applicable to Parts 370-374 and 376
DSHM/ NYSDEC	6 NYCRR Part 371 – Identification and Listing of Hazardous Wastes	S	▪ Hazardous waste determinations ▪ Hazardous waste characterization values
DSHM/ NYSDEC	6 NYCRR Part 372 – Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities	S	▪ Manifest system and record keeping; certain management standards

Division/ Agency	Title	Standard or Guidance	Requirements
DSHM/ NYSDEC	6 NYCRR Part 376 – Land Disposal Restrictions	S	▪ Identifies hazardous waste restricted from land disposal
DSHM/ NYSDEC	6 NYCRR Subpart 373-1 – Hazardous Waste Treatment, Storage and Disposal Facility Permitting Requirements	S	▪ Hazardous waste permitting requirements; includes substantive requirements
DSHM/ NYSDEC	6 NYCRR Subpart 373-2 – Final Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities	S	▪ Hazardous waste management standards such as contingency plans; releases from SWMUs; closure/post closure; container management; tank management; surface impoundments; waste piles; landfills; incinerators; etc.
DSHM/ NYSDEC	6 NYCRR subpart 373-3 – Interim Status Standards for Owners and Operators of Hazardous Waste Facilities	S	▪ Similar to 373-2
OSHA/ PESH	29 CFR Part 1910.120; Hazardous Waste Operations and Emergency Response	S	▪ Health and safety
USEPA	40 CFR Part 261 – Hazardous Waste Management System; Definition of Solid Waste; Toxicity Characteristic; Final Rule; Response to Court Order Vacating Regulatory Provisions	S	▪ Hazardous waste determinations ▪ Hazardous waste characterization values

TABLE 3-4
SAMPLE LOCATION SURVEY COORDINATES
SPAULDING FIBRE SITE INVESTIGATION

Location ID	Northing	Easting	Surface Elevation (feet amsl)	Top of Riser Elevation (feet amsl)
1	9903.64	4404.2005	600.4813	
2	9972.9661	4447.5644	600.5414	
3	10048.73	4578.0149	600.3992	
4	10003.8279	4642.4253	598.842	
5	10092.0625	4549.4971	600.3806	
6	10191.3858	4532.3864	600.4019	
6	10451.0298	3614.1884	600.293	
7	10331.1869	4483.8813	596.6886	
8	10325.5667	4352.75	600.2402	
9	10461.0761	4301.4951	599.9846	
10	10063.148	4411.2437	600.2645	
11	10138.2434	4399.635	600.4528	
12	10145.4174	4284.6042	600.4891	
13	10076.2323	4231.0224	600.2901	
14	10042.1617	4140.7107	600.524	
15	9956.3993	4011.4227	600.7157	
16	10104.2427	4085.6014	600.29	600.13
17	10170.9814	4020.1528	600.2347	
17.1	10180.2779	4035.502	600.2038	
18	10245.1662	3982.6487	600.2987	
19	10146.1655	4179.8585	600.2986	
20	10238.9059	4145.9653	600.2367	
21	10181.6927	4211.8231	600.4219	
22	10237.8087	4254.9296	595.826	
23	10166.9036	4298.2044	595.933	
24	10379.1937	4183.1707	600.4442	
25	10406.9973	4222.8398	600.4191	
26	10392.9127	3983.3457	596.9615	
27	10387.1346	4075.9057	597.5969	
28	10424.4652	3872.4412	600.0309	
29	10543.2843	3886.0578	600.3266	
30	10496.8817	3985.6111	600.3104	
31	10550.9107	4048.385	594.6649	
32	10482.5771	4138.3709	600.4166	
33	10553.9112	4148.6509	594.3707	
33.1	10577.0054	4139.9253	594.3551	
34	10541.1177	4236.4985	596.2877	
35	10633.4034	4275.4303	600.4328	
36	10645.8564	4147.559	588.7238	
37	10657.9105	4082.907	588.5874	
39	10664.5012	4051.3223	588.3818	
40	10731.6675	4007.9919	588.5257	
41	10791.1563	4102.5859	588.4053	
42	10758.8618	4140.9954	588.1294	
43	10823.2427	4149.459	588.39	592.74
44	10679.1599	4297.8267	592.6242	

Notes:
- Survey cooridnates are referenced to existing site survey
  prepared during previous site investigations.
- amsl = above mean sea level

TABLE 3-4
SAMPLE LOCATION SURVEY COORDINATES
SPAULDING FIBRE SITE INVESTIGATION

Location ID	Northing	Easting	Surface Elevation (feet amsl)	Top of Riser Elevation (feet amsl)
45	10735.016	4408.1962	592.4879	
46	10825.0718	4306.1548	592.341	
47	10912.5442	4136.8794	592.4652	
48	11002.8677	4201.4047	592.3276	
49	10690.2894	3993.5532	588.347	
50	10732.9554	3959.5379	588.3425	
51	10584.2599	3943.0043	600.1845	
52	10675.3157	3876.1175	600.3306	
52.1	10657.066	3879.3094	600.3354	
53	10653.337	3814.3098	600.2643	
54	10594.2296	3814.7837	600.3815	
55	10644.8639	3710.5594	600.2039	
56	10572.8226	3732.6262	600.083	
57	10484.7149	3790.6354	600.2617	
58	10414.5184	3845.5918	599.8816	
58.1	10406.888	3834.6486	600.2808	
59	10396.3663	3752.7745	600.18	600.03
59.1	10393.1447	3747.351	600.18	599.79
61	10539.1159	3581.7476	600.2313	
62	10305.17	3581.1761	600.104	
62.1	10297.6176	3580.8445	600.1245	
62.2	10344.1808	3551.6263	600.2291	
62.3	10477.4995	3553.4387	600.1657	
63	10366.806	3504.2475	599.6726	
64	10448.2281	3413.7362	596.8724	
65	10025.9805	3911.9949	600.1939	
66	9644.2974	4257.2018	603.5026	
67	9593.8055	4358.1219	600.206	
68	9444.987	3901.6876	610.1532	
69	9822.2579	3762.9132	606.2849	
70	10277.7816	3276.2271	603.6715	
71	10619.0344	4699.9469	591.887	
72	10518.0448	4997.3377	591.041	
73	10234.2409	4870.781	597.7543	
74	10957.8694	3861.3607	593.6926	
75	11080.0672	4087.5518	591.6633	
76	10315.4314	4223.1908	600.3734	
77	10489.7229	3860.1488	600.0847	
78	10325.9073	3472.4458	597.477	
79	10261.1336	3573.2829	597.9558	
80	10193.9085	3775.2451	598.9866	
81	9842.6771	4733.359	498.33	
82	9811.8816	4790.3284	597.9983	
83	9899.8898	4756.582	596.589	
84	9943.4109	4847.7485	598.959	
85	9744.8906	4207.8882	604.4521	

Notes:
- Survey cooridnates are referenced to existing site survey prepared during previous site investigations.
- amsl = above mean sea level

TABLE 3-4
SAMPLE LOCATION SURVEY COORDINATES
SPAULDING FIBRE SITE INVESTIGATION

Location ID	Northing	Easting	Surface Elevation (feet amsl)	Top of Riser Elevation (feet amsl)
86	11019.125	4066.0912	592.6162	
TP 1	9156.04	10127.61	590.86	
TP 2	9160.95	10230.46	589.85	
TP 3	9150.44	10335.31	588.52	
TP 4	9055.58	10336.06	589.84	
TP 5	9054.92	10231.17	590.96	
TP 6	9055.90	10128.46	591.92	
TP 7	8962.28	10129.13	592.80	
TP 8	8960.68	10234.12	591.66	
TP 9	8961.89	10336.82	590.78	
TP 10	8854.59	10337.71	592.42	
TP 11	8853.70	10234.94	593.25	
TP 12	8858.70	10129.98	593.98	
TP 13	8760.28	10130.77	595.44	
TP 14	8761.12	10235.76	594.67	
TP 15	8761.92	10338.36	594.02	
TP 16	8665.17	10335.97	594.92	
TP 17	8664.41	10236.43	596.33	
TP 18	8663.54	10131.55	596.37	
TP 19	8556.45	10132.40	597.15	
TP 20	8557.35	10237.34	596.43	
TP 21	8481.12	10176.08	596.53	
TP 22	8432.24	10087.79	596.96	
TP 23	8525.70	9932.01	598.70	
TP 24	8674.49	9978.71	597.99	
TP 25	8759.23	9929.69	597.92	
TP 26	8840.54	9989.81	596.56	
TP 27	9766.26	9954.34	591.92	
TP 28	9733.39	9852.95	592.72	
TP 29	9791.76	9742.44	592.31	
TP 30	9733.51	9630.42	593.75	
TP 31	9605.12	8959.21	599.05	
TP 32	9604.43	8867.11	601.55	
TP 33	9603.53	8760.96	603.89	
TP 34	9507.89	8761.73	604.94	
TP 35	9511.33	8861.23	601.97	
TP 36	9509.97	8958.83	599.86	
TP 37	8971.49	8985.73	605.15	
TP 38	8970.62	8878.06	606.91	
TP 39	8969.84	8782.04	609.88	
TP 40	8869.49	8786.24	610.04	
TP 41	8867.90	8878.82	607.93	
TP 42	8868.77	8986.52	606.18	
TP 43	8762.96	8987.39	607.32	
TP 44	8762.38	8879.71	608.74	
TP 45	8761.65	8783.60	610.21	

Notes:
- Survey cooridnates are referenced to existing site survey
  prepared during previous site investigations.
- amsl = above mean sea level

TABLE 3-4
SAMPLE LOCATION SURVEY COORDINATES
SPAULDING FIBRE SITE INVESTIGATION

Location ID	Northing	Easting	Surface Elevation (feet amsl)	Top of Riser Elevation (feet amsl)
TP 46	8664.66	8784.49	609.81	
TP 47	8665.50	8880.49	607.96	
TP 48	8674.47	8996.26	606.90	
TP 49	8567.12	8988.93	607.25	
TP 50	8556.22	8879.73	608.67	
TP 51	8568.50	8785.29	610.42	
TP 52	8465.94	8882.13	609.50	
TP 53	8466.81	8989.81	607.76	
TP 54	8352.96	9065.20	605.60	
TP 55	8388.89	9153.55	603.47	
TP 56	8337.28	9236.01	603.67	
TP 57	8438.37	9239.49	603.97	
TP 58	8487.76	9151.56	605.90	
TP 59	8447.23	9065.39	606.40	
TP 60	8548.17	9064.63	606.95	
TP 61	8595.11	9150.72	606.38	
TP 62	8540.52	9238.76	605.26	
TP 63	8649.09	9243.79	604.31	
TP 64	8647.65	9063.77	605.70	

Notes:
- Survey cooridnates are referenced to existing site survey prepared during previous site investigations.
- amsl = above mean sea level

TABLE 4-1
OVERBURDEN GROUNDWATER ELEVATIONS
SPAULDING FIBRE SITE INVESTIGATION

Monitoring Well ID	Date	Top of Casing Elevation (feet amsl)	Ground Elevation (feet amsl)	Depth to Water (feet)	Groundwater Elevation (feet amsl)	Comments
OW-1	12/18/98	605.16	602.50	11.60	593.56	
OW-2	12/18/98	604.35	602.40	8.51	595.84	
OW-3	12/18/98	604.32	601.70	8.12	596.20	
OW-4	12/18/98	603.90	602.00	8.68	595.22	
OW-6	12/18/98	601.58	599.20	8.07	593.51	
OW-7	12/18/98	596.67	597.00	4.71	591.96	
OW-8	12/18/98	595.98	596.00	8.58	587.40	
OW-9	12/18/98	593.12	591.10	10.23	582.89	
OW-10	12/18/98	595.96	593.90	13.05	582.91	
OW-11	12/18/98	602.61	599.90	10.32	592.29	
OW-12	12/18/98	610.76	608.80	14.22	596.54	
OW-A1	12/18/98	604.63	602.80	7.93	596.70	
OW-B2	12/18/98	602.24	600.40	6.52	595.72	
MWA	12/18/98	593.02	NS	11.64	581.38	
MWB	12/18/98	593.28	NS	7.91	585.37	
OW-1	12/13/07	605.16	602.50	4.54	600.62	
OW-2	12/19/07	604.35	602.40	4.34	600.01	
OW-3	12/19/07	604.32	601.70	5.66	598.66	
OW-4	12/18/07	603.90	602.00	5.86	598.04	
OW-6	12/18/07	601.58	599.20	6.87	594.71	
OW-7	12/18/07	well destroyed	597.00	NM	NM	well destroyed
OW-8	12/14/07	well destroyed	596.00	NM	NM	well destroyed
OW-9	12/14/07	593.12	591.10	7.25	585.87	
OW-10	12/14/07	595.96	593.90	7.45	588.51	
OW-11	12/14/07	well destroyed	599.90	NM	NM	well destroyed
OW-12	12/18/07	610.76	608.80	7.68	603.08	
OW-A1	12/19/07	604.63	602.80	5.23	599.40	
OW-B2	12/18/07	602.24	600.40	5.92	596.32	
MW-16	12/14/07	600.39	600.29	5.00	595.39	
MW-43	12/14/07	592.74	600.47	5.91	586.83	
MW-59	12/14/07	600.26	600.18	2.20	598.06	localized effects from surface water
MW-59.1	12/14/07	600.19	600.18	12.55	587.64	screen in deep overburden
MWA	02/07/08	593.02	NS	8.20	584.82	
MWB	02/07/08	593.28	NS	6.57	586.71	
OW-1	03/07/08	605.16	602.50	3.46	601.70	
OW-2	03/07/08	604.35	602.40	3.62	600.73	
OW-3	03/07/08	604.32	601.70	5.39	598.93	
OW-4	03/07/08	603.90	602.00	4.61	599.29	
OW-6	03/07/08	601.58	599.20	6.60	594.98	
OW-7	03/07/08	well destroyed	597.00	NM	NM	well destroyed
OW-8	03/07/08	well destroyed	596.00	NM	NM	well destroyed
OW-9	03/07/08	593.12	591.10	6.52	586.60	
OW-10	03/07/08	595.96	593.90	5.32	590.64	
OW-11	03/07/08	well destroyed	599.90	NM	NM	well destroyed
OW-12	03/07/08	610.76	608.80	4.68	606.08	
OW-A1	03/07/08	604.63	602.80	3.16	601.47	
OW-B2	03/07/08	602.24	600.40	5.23	597.01	
MW-16	03/07/08	600.39	600.29	NM	NM	well covered by ice
MW-43	03/07/08	592.74	600.47	5.50	587.24	
MW-59	03/07/08	600.26	600.18	NM	NM	well covered by ice
MW-59.1	03/07/08	600.19	600.18	NM	NM	well covered by ice

Notes:
amsl = above mean sea level
NM = not measured
NS = not surveyed
Elevations are based on NGVD 29 Vertical Datum
December 1998 measurements obtained from Supplemental RI prepared by Leader Environmental (May 1999)

Table 5-1A
Operable Unit 5
Restricted Residential Soil Cleanup Objective Exceedances

Sample ID	Contaminant	Concentration (mg/kg)	Criteria (mg/kg)
TP-13 (3"-12")	arsenic	34.9	16
TP-15 (0"-18")	arsenic	41.4	16
71.1 (0"-2")	Benzo(a)pyrene	47	1
	Benzo(a)anthracene	45	1
	Benzo(b)fluoranthene	68	1
	Benzo(k)fluoranthene	19	3.9
	Chrysene	59	3.9
	Dibenzo(a,h)anthracene	6.5	0.33
	Fluoranthene	110	100
	Indeno(1,2,3-cd)pyrene	26	0.5

Table 5-1B
Operable Unit 5
Commercial Soil Cleanup Objective Exceedances

Sample ID	Contaminant	Concentration (mg/kg)	Criteria (mg/kg)
TP-13 (3"-12")	arsenic	34.9	16
TP-15 (0"-18")	arsenic	41.4	16
71.1 (0"-2")	Benzo(a)pyrene	47	1
	Benzo(a)anthracene	45	5.6
	Benzo(b)fluoranthene	68	5.6
	Chrysene	59	56
	Dibenzo(a,h)anthracene	6.5	0.56
	Fluoranthene	110	100
	Indeno(1,2,3-cd)pyrene	26	5.6

Table 5-2
Operable Unit 7
Restricted Residential Soil Cleanup Objective Exceedances

Sample ID	Contaminant	Concentration (mg/kg)	Criteria (mg/kg)
SP-9	benzo(a)anthracene	1.5	1
	benzo(a)pyrene	1.3	1
	benzo(b)fluoranthene	1.8	1
	indeno[1,2,3-cd]pyrene	0.99	0.5

Table 5-3
Operable Unit 7
Commercial Soil Cleanup Objective Exceedances

Sample ID	Contaminant	Concentration (mg/kg)	Criteria (mg/kg)
SP-9	benzo(a)pyrene	1.3	1

Table 5-4
Operable Unit 6
Restricted Residential Soil Cleanup Objective Exceedances

Sample ID	Contaminant	Concentration (mg/kg)	Criteria (mg/kg)
1F (1-2)	barium	455	400
	chromium (total)	199	110*
2F (1-2)	barium	417	400
	chromium (total)	145	110*
2N (4-5)	barium	404	400
	chromium (total)	118	110*
4F (0-1)	benzo(a)anthracene	72	1
	benzo(a)pyrene	57	1
	benzo(b)fluoranthene	73	1
	benzo(k)fluoranthene	22	3.9
	chrysene	69	3.9
	dibenzo(a,h)anthracene	4.8	0.33
	fluoranthene	150	100
	indeno(1,2,3)cdpyrene	40	0.5
	phenanthrene	150	100
	pyrene	130	100
	arsenic	47	16
	barium	810	400
	cadmium	8.96	4.3
	chromium (total)	209	110*
	copper	770	270
	lead	1190	400
	Aroclor-1254	17	1
4F (2-3)	arsenic	34.9	16
7F (1-1.5)	benzo(a)anthracene	2.3	1
	benzo(a)pyrene	1.9	1
	benzo(b)fluoranthene	2.5	1
	indeno(1,2,3)cdpyrene	1	0.5
13N (2-3)	zinc	24100	10000
14F (1-2)	arsenic	23.2	16
	copper	301	270
	manganese	2050	2000
	zinc	19800	10000
14N (3-4)	zinc	39600	10000
17F (1-2)	manganese	2020	2000

Note:

*** 110 mg/kg criteria is for hexavalent chromium only**

Table 5-4
Operable Unit 6
Restricted Residential Soil Cleanup Objective Exceedances

Sample ID	Contaminant	Concentration (mg/kg)	Criteria (mg/kg)
17N (5-6)	manganese	2800	2000
18F (1-2)	benzo(a)pyrene	1.2	1
	benzo(b)fluoranthene	1.4	1
	indeno(1,2,3)cdpyrene	1.1	0.5
19N (1-2)	copper	351	270
	zinc	21400	10000
22F (1-2)	cadmium	5.63	4.3
	zinc	20900	10000
22N (2-3)	cadmium	43.3	4.3
	zinc	26700	10000
24N (7-9)	zinc	24100	10000
25F (7-9)	zinc	55300	10000
28N (4-6)	cadmium	5.44	4.3
29F (1-2)	cadmium	4.37	4.3
	Aroclor-1248	1.2	1
30F (2-4)	cadmium	8.64	4.3
32N (7-9)	cadmium	4.53	4.3
34F (1-2)	copper	496	270
	mercury	1.3	0.81
44N (1.5-3)	barium	404	400
51F (3-5)	cadmium	7.38	4.3
	lead	410	400
52N (5-7)	benzene	9.8	4.8
	arsenic	21.9	16
52N (13-15)	benzene	25	4.8
52.1F (19-21)	benzene	26	4.8

Note:

*** 110 mg/kg criteria is for hexavalent chromium only**

Table 5-4
Operable Unit 6
Restricted Residential Soil Cleanup Objective Exceedances

Sample ID	Contaminant	Concentration (mg/kg)	Criteria (mg/kg)
53F (0-4)	benzo(a)anthracene	3.2	1
	benzo(a)pyrene	3.2	1
	benzo(b)fluoranthene	4.1	1
	indeno(1,2,3)cdpyrene	2.1	0.5
54F (3-5)	benzo(a)anthracene	1.6	1
	benzo(a)pyrene	1.2	1
	benzo(b)fluoranthene	1.5	1
	indeno(1,2,3)cdpyrene	0.84	0.5
57F (2-4)	chromium (total)	216	110*
	manganese	3580	2000
57N (4-6)	cadmium	13.4	4.3
58F (0-2)	benzo(a)anthracene	18	1
	benzo(a)pyrene	14	1
	benzo(b)fluoranthene	18	1
	indeno(1,2,3)cdpyrene	7.9	0.5
	benzo(k)fluoranthene	6.1	3.9
	chrysene	16	3.9
	Aroclor-1248	2.2	1
58F (4-6)	copper	274	270
	zinc	11100	10000
58.1F (2-4)	cadmium	4.5	4.3
58.1N (11-12)	zinc	11000	10000
66F (0-0.5)	benzo(a)anthracene	1.8	1
	benzo(a)pyrene	1.5	1
	benzo(b)fluoranthene	1.9	1
	indeno(1,2,3)cdpyrene	0.81	0.5
67F (0-0.5)	Aroclor-1248	1.7	1
76F (3-4)	cadmium	12.8	4.3
	lead	481	400
	Aroclor-1248	2	1
77N (1-2)	zinc	23200	10000
79N (3-4)	cadmium	6.3	4.3
82F (0-2)	cadmium	4.88	4.3

Note:

*** 110 mg/kg criteria is for hexavalent chromium only**

Table 5-4
Operable Unit 6
Restricted Residential Soil Cleanup Objective Exceedances

Sample ID	Contaminant	Concentration (mg/kg)	Criteria (mg/kg)
83F (0-2)	Aroclor-1248	2.6	1
	cadmium	4.72	4.3
84F (1-2)	arsenic	51.7	16
85F (0-1)	benzo(a)anthracene	77	1
	benzo(a)pyrene	66	1
	benzo(b)fluoranthene	75	1
	benzo(k)fluoranthene	20	3.9
	chrysene	71	3.9
	dibenzo(a,h)anthracene	3.8	0.33
	fluoranthene	230	100
	indeno(1,2,3)cdpyrene	47	0.5
	phenanthrene	270	100
	pyrene	170	100
	barium	787	400
	cadmium	6.63	4.3
	copper	1950	270
	lead	653	400
	zinc	12600	10000
85N (2-3)	indeno(1,2,3)cd-pyrene	0.63	0.5
TP-27 (0"-60")	benzo(a)anthracene	2.1	1
	benzo(a)pyrene	1.8	1
	benzo(b)fluoranthene	2.4	1
	indeno[1,2,3-cd]pyrene	0.62	0.5
	cadmium	6.38	4.3
	copper	789	270
	lead	412	400
TP-28 (0"-36")	barium	636	400
TP-59 (2"-8")	benzo(a)anthracene	1.1	1
	benzo(a)pyrene	1.1	1
	benzo(b)fluoranthene	1.6	1
	indeno[1,2,3-cd]pyrene	0.84	0.5
	arsenic	216	16
	barium	1770	400
	cadmium	108	4.3
	chromium (total)	275	110*
	copper	37200	270
	lead	3440	400
	mercury	5.8	0.81
	nickel	324	310
	zinc	49000	10000

Note:

*** 110 mg/kg criteria is for hexavalent chromium only**

Table 5-4
Operable Unit 6
Restricted Residential Soil Cleanup Objective Exceedances

Sample ID	Contaminant	Concentration (mg/kg)	Criteria (mg/kg)
TP-65 (0"-16")	arsenic	32.7	16
	copper	1090	270
	lead	715	400
	mercury	3.6	0.81
	zinc	20700	10000
SP-18 (comp)	arsenic	18.3	16
SP-19 (comp)	copper	2020	270
	mercury	1	0.81
SP-21 (comp)	arsenic	26.1	16
	barium	686	400
	cadmium	229	4.3
	chromium (total)	115	110*
	copper	12700	270
	lead	941	400
	mercury	3.4	0.81
	nickel	457	310
	zinc	25000	10000
SP-22 (comp)	barium	1410	400
	copper	23600	270
P-43	manganese	2330	2000
P-44	cadmium	7.23	4.3
	zinc	42700	10000
P-60	benzo(a)anthracene	41	1
	benzo(a)pyrene	39	1
	benzo(b)fluoranthene	50	1
	benzo(k)fluoranthene	18	3.9
	chrysene	38	3.9
	dibenzo(a,h)anthracene	2.4	0.56
	indeno[1,2,3-cd]pyrene	24	0.5
	arsenic	132	16
	copper	569	270
	mercury	5.3	0.81
P-61	cadmium	10.5	4.3
	zinc	73700	10000
P-94	cadmium	7.23	4.3
	zinc	42500	10000

Note:

*** 110 mg/kg criteria is for hexavalent chromium only**

Table 5-4
Operable Unit 6
Restricted Residential Soil Cleanup Objective Exceedances

Sample ID	Contaminant	Concentration (mg/kg)	Criteria (mg/kg)
FD1	Aroclor-1248	84	1
FD2	Aroclor-1248	12	1
FD3	Aroclor-1248	5.3	1
FD4	Aroclor-1248	12	1
Sump A	Aroclor-1248	150	1
Sump B	Aroclor-1248	430	1
SD-01	Aroclor-1248	6.49	1
SD-02	Aroclor-1248	8.48	1
SD-03	Aroclor-1248	11.7	1

Note:

*** 110 mg/kg criteria is for hexavalent chromium only**

Table 5-5
Operable Unit 6
Commercial Soil Cleanup Objective Exceednaces

Sample ID	Contaminant	Concentration (mg/kg)	Criteria (mg/kg)
1F (1-2)	barium	455	400
2F (1-2)	barium	417	400
2N (4-5)	barium	404	400
4F (0-1)	benzo(a)anthracene	72	5.6
	benzo(a)pyrene	55	1
	benzo(b)fluoranthene	73	5.6
	chrysene	69	56
	dibenzo(a,h)anthracene	4.8	0.56
	indeno(1,2,3)cd-pyrene	34	5.6
	arsenic	47	16
	barium	810	400
	copper	770	270
	lead	1190	1000
	Aroclor 1254	17	1
4F (2-3)	arsenic	34.9	16
7F (1-1.5)	benzo(a)pyrene	1.9	1
13N (2-3)	zinc	24100	10000
14F (1-2)	arsenic	23.2	16
	copper	301	270
	zinc	19800	10000
14N (3-4)	zinc	39600	10000
18F (1-2)	benzo(a)pyrene	1.2	1
19N (1-2)	copper	351	270
	zinc	21400	10000
22F (1-2)	zinc	20900	10000
22N (2-3)	cadmium	43.3	9.3
	zinc	26700	10000
24N (7-9)	zinc	24100	10000
25F (7-9)	zinc	55300	10000
29F (1-2)	Aroclor-1248	1.2	1
34F (1-2)	copper	496	270

Note:

*** 110 mg/kg criteria is for hexavalent chromium only**

Table 5-5
Operable Unit 6
Commercial Soil Cleanup Objective Exceednaces

Sample ID	Contaminant	Concentration (mg/kg)	Criteria (mg/kg)
44N (1.5-3)	barium	404	400
52N (5-7)	arsenic	21.9	16
53F (0-4)	benzo(a)pyrene	3.2	1
54 F (3-5)	benzo(a)pyrene	1.2	1
57N (4-6)	cadmium	13.4	9.3
58F (0-2)	benzo(a)anthracene	18	5.6
	benzo(a)pyrene	14	1
	benzo(b)fluoranthene	18	5.6
	indeno(1,2,3)cd-pyrene	7.9	5.6
	Aroclor-1248	2.2	1
58F (4-6)	copper	274	270
	zinc	11100	10000
58.1N (11-12)	zinc	11000	10000
66F (0-0.5)	benzo(a)pyrene	1.5	1
67F (0-0.5)	Aroclor-1254	1.7	1
76F (3-4)	cadmium	12.8	9.3
	Aroclor-1248	2	1
77N (1-2)	zinc	23200	10000
83F (0-2)	Aroclor-1254	2.6	1
84F (1-2)	arsenic	51.7	16
85F (0-1)	benzo(a)anthracene	77	5.6
	benzo(a)pyrene	66	1
	benzo(b)fluoranthene	75	5.6
	indeno(1,2,3)cd-pyrene	47	5.6
	dibenzo(a,h)anthracene	3.8	0.56
	barium	787	400
	copper	1950	270
	zinc	12600	10000
TP-27 (0"-60")	benzo(a)pyrene	1.8	1
	copper	789	270
TP-28 (0"-36")	barium	636	400

Note:

*** 110 mg/kg criteria is for hexavalent chromium only**

Table 5-5
Operable Unit 6
Commercial Soil Cleanup Objective Exceednaces

Sample ID	Contaminant	Concentration (mg/kg)	Criteria (mg/kg)
TP-59 (2"-8")	benzo(a)pyrene	1.1	1
	arsenic	216	16
	barium	1770	400
	cadmium	108	9.3
	copper	37200	270
	lead	3440	1000
	mercury	5.8	2.8
	nickel	324	310
	zinc	49000	10000
TP-65 (0"-16")	arsenic	32.7	16
	copper	1090	270
	mercury	3.6	2.8
	zinc	20700	10000
SP-18 (comp)	arsenic	18.3	16
SP-19 (comp)	copper	2020	270
SP-21 (comp)	arsenic	26.1	16
	barium	686	400
	cadmium	229	9.3
	copper	12700	270
	mercury	3.4	2.8
	nickel	457	310
	zinc	25000	10000
P-44	zinc	42700	10000
P-60	benzo(a)anthracene	41	5.6
	benzo(a)pyrene	39	1
	benzo(b)fluoranthene	50	5.6
	benzo(k)fluoranthene	18	56
	chrysene	38	56
	dibenzo(a,h)anthracene	2.4	0.56
	indeno[1,2,3-cd]pyrene	24	5.6
	arsenic	132	16
	copper	569	270
	mercury	5.3	2.8
P-61	cadmium	10.5	9.3
	zinc	73700	10000
SP-22 (comp)	barium	1410	400
	copper	23600	270
FD1	Aroclor-1248	84	1
FD2	Aroclor-1248	12	1

Note:

*** 110 mg/kg criteria is for hexavalent chromium only**

Table 5-5
Operable Unit 6
Commercial Soil Cleanup Objective Exceednaces

Sample ID	Contaminant	Concentration (mg/kg)	Criteria (mg/kg)
FD3	Aroclor-1248	5.3	1
FD4	Aroclor-1248	12	1
Sump A	Aroclor-1248	150	1
Sump B	Aroclor-1248	430	1
SD-01	Aroclor-1248	6.49	1
SD-02	Aroclor-1248	8.48	1
SD-03	Aroclor-1248	11.7	1

Note:

*** 110 mg/kg criteria is for hexavalent chromium only**

Table 5-6
Operable Unit 6
TAGM #4046 Soil Cleanup Objective Exceedances

Sample ID	Contaminant	Concentration (mg/kg)	Criteria (mg/kg)
4F (0-1)	di-n-butylphthalate	260	8.1
	dimethyl phthalate	3	2
14F (1-2)	di-n-butylphthalate	8.3	8.1
49F (0-2)	di-n-butylphthalate	530	8.1
52.1F (1-3)	di-n-butylphthalate	9.6	8.1
53F (0-4)	di-n-butylphthalate	280	8.1
56N (1-2)	di-n-butylphthalate	50	8.1
58F (0-2)	di-n-butylphthalate	210	8.1
67F (0-0.5)	di-n-butylphthalate	230	8.1
83F (0-2)	di-n-butylphthalate	440	8.1

Table 5-7
Operable Unit 6
Summary of Exceedances

Analyte	Maximum Concentration (mg/kg)	Restricted-Residential Summary		Commercial Summary	
		Number of Exceedances	Soil Cleanup Objective (mg/kg)	Number of Exceedances	Soil Cleanup Objective (mg/kg)
Arsenic	216	10	16	10	16
Barium	1770	10	400	10	400
Cadmium	229	20	4.3	6	9.3
Chromium	275	7	110	0	400
Copper	37200	13	270	13	270
Lead	3440	8	400	2	1000
Manganese	3580	5	2000	0	10000
Mercury	5.8	6	0.81	4	2.8
Nickel	457	2	310	2	310
Zinc	73700	17	10000	17	10000
PCB	17	6	1	6	1
Benzene	26	3	4.8	0	44
Benzo(a)anthracene	77	10	1	4	5.6
benzo(a)pyrene	66	11	1	11	1
benzo(b)fluoranthene	75	11	1	4	5.6
benzo(k)fluoranthene	22	4	3.9	1	56
chrysene	71	4	3.9	2	56
dibenzo(a,h)anthracene	4.8	3	0.33	3	0.56
fluoranthene	230	2	100	0	500
indeno(1,2,3)cd-pyrene	47	12	0.5	4	5.6
phenanthrene	270	2	100	0	500
pyrene	170	2	100	0	500

TAGM #4046 Summary			
Analyte	Maximum Concentration (mg/kg)	Number of Exceedances	TAGM RSCO (mg/kg)
dimethyl phthalate	3	1	2
di-n-butylphthalate	530	8	8.1

Note:
RSCO = Recommended Soil Cleanup Objective

TABLE 5-8
SURFACE SOIL SAMPLE RESULTS
SPAULDING FIBRE SITE INVESTIGATION

Sample Identification	**NYSDEC Part 375 Restricted Residential**	**NYSDEC Part 375 Commercial**	**NYSDEC TAGM Value**	SP-21	68	69	70	71.1
Date Sampled				7/25/07	3/20/08	3/20/08	3/20/08	3/20/08
Sample Depth (in bgs)				Comp.	0-2"	0-2"	0-2"	0-2"
Compound				OU6	OU7	OU7	OU7	OU5
SVOCs	Concentration in mg/kg			Concentration in mg/kg				
2,4-Dimethylphenol	NS	NS	NS	ND	ND	ND	ND	ND
3+4-Methylphenols	NS	NS	0.9	ND	ND	ND	ND	ND
Acenaphthene	100	500	NS	ND	ND	ND	ND	3.7 J
Anthracene	100	500	NS	ND	ND	ND	ND	7.3 J
Benzo[a]pyrene	1	1	NS	ND	ND	ND	ND	**47**
Benzo[g,h,i]perylene	100	500	NS	ND	ND	ND	ND	25
Benzo[a]anthracene	1	5.6	NS	ND	ND	ND	ND	**45**
Benzo[b]fluoranthene	1	5.6	NS	0.063 J	ND	ND	ND	**68 D**
Benzo[k]fluoranthene	3.9	56	NS	ND	ND	ND	ND	**19**
bis(2-Ethylhexyl)phthalate	NS	NS	50	ND	ND	ND	ND	ND
Carbazole	NS	NS	NS	ND	ND	ND	ND	7.5 J
Chrysene	3.9	56	NS	0.16 J	ND	ND	ND	**59**
Di-n-butylphthalate	NS	NS	8.1	0.1 J	ND	ND	0.058	ND
Dibenzofuran	59	350	NS	ND	ND	ND	ND	1.5 J
Dibenzo(a,h)anthracene	0.33	0.56	NS	ND	ND	ND	ND	**6.5 J**
Fluorene	100	500	NS	ND	ND	ND	ND	3.5 J
Fluoranthene	100	500	NS	ND	ND	ND	ND	**110 D**
Indeno(1,2,3-cd)pyrene	0.5	5.6	NS	ND	ND	ND	ND	**26**
Phenanthrene	100	500	NS	ND	ND	ND	ND	70
Pyrene	100	500	NS	ND	ND	ND	ND	96 D
PCBs and Pesticides	Concentration in mg/kg			Concentration in mg/kg				
PCBs				0.28	ND	ND	ND	ND
Pesticides				ND	ND	ND	ND	ND
Metals	Concentration in mg/kg			Concentration in mg/kg				
Aluminum	NS	NS	NS	16900 J	14200	16500	14800	5920
Antimony	NS	NS	NS	ND	ND	ND	ND	ND
Arsenic	16	16	NS	**26.1**	5	8.3	7.1	11.8
Barium	400	400	NS	**686 J**	112	113	110	135
Beryllium	72	590	NS	0.196 J	0.74	0.92	0.81	1.1
Cadmium	4.3	9.3	NS	**229**	1.1	1.5	1.3	2.8
Calcium	NS	NS	NS	28200 J	7550	2680	2430	35500
Chromium	110	400	NS	**115 J**	20.6	28.8	21.4	26.8
Cobalt	NS	NS	NS	26.1	8.2	12.6	9.4	9.2
Copper	270	270	NS	**12700 D**	19.6	41.5	23	72.3
Iron	NS	NS	NS	33600 JD	22200	29200	23800	30500
Lead	400	1000	NS	**941 J**	27.1	52.8	38	172
Magnesium	NS	NS	NS	1250 J	5500	4200	3630	7130
Manganese	2000	10000	NS	1460 J	410	1060	547	702
Mercury	0.81	2.8	NS	**3.4**	0.03	0.077	0.058	0.093
Nickel	310	310	NS	**457 J**	20.7	26.4	22.1	36.1
Potassium	NS	NS	NS	369 J	2420	2120	1450	1000
Selenium	180	1500	NS	ND	2.3	2.4	2.4	5.2
Silver	180	1500	NS	13.9	ND	ND	ND	ND
Sodium	NS	NS	NS	7940	116 J	121 J	92.9 J	237
Thallium	NS	NS	NS	ND	ND	ND	ND	ND
Vanadium	NS	NS	NS	9.58 J	31.3	41.1	34.8	22.5
Zinc	10000	10000	NS	**25000 D**	94.9	307	120	406
Cyanide	27	27	NS	ND	ND	ND	ND	ND

Notes:
D = Diluted
J = Estimated Value
NA = Not Analyzed
ND or U = Not detected above laboratory MDL
NS = No standard
Bold = Result exceeds 6 NYCRR Part 375 Restricted-Residential Objective
Shaded = Result exceeds 6 NYCRR Part 375 Commercial Objective

TABLE 5-8
SURFACE SOIL SAMPLE RESULTS
SPAULDING FIBRE SITE INVESTIGATION

Sample Identification	NYSDEC	NYSDEC	NYSDEC	72	73	74	75
Date Sampled	Part 375	Part 375	TAGM	3/20/08	3/20/08	3/20/08	3/20/08
Sample Depth (in bgs)	Restricted	Commercial	Value	0-2"	0-2"	0-2"	0-2"
Compound	Residential			OU5	OU5	OU6	OU6
SVOCs	Concentration in mg/kg			Concentration in mg/kg			
2,4-Dimethylphenol	NS	NS	NS	ND	ND	ND	ND
3+4-Methylphenols	NS	NS	0.9	ND	ND	ND	ND
Acenaphthene	100	500	NS	ND	ND	ND	ND
Anthracene	100	500	NS	ND	ND	ND	ND
Benzo[a]pyrene	1	1	NS	0.06 J	ND	ND	0.099 J
Benzo[g,h,i]perylene	100	500	NS	ND	ND	ND	ND
Benzo[a]anthracene	1	5.6	NS	0.056 J	ND	ND	0.11 J
Benzo[b]fluoranthene	1	5.6	NS	0.089 J	ND	ND	0.13 J
Benzo[k]fluoranthene	3.9	56	NS	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	NS	NS	50	0.092 J	ND	0.05 J	0.12 J
Carbazole	NS	NS	NS	ND	ND	ND	ND
Chrysene	3.9	56	NS	0.068 J	ND	ND	0.11 J
Di-n-butylphthalate	NS	NS	8.1	0.09 J	ND	0.52	0.94 J
Dibenzofuran	59	350	NS	ND	ND	ND	ND
Dibenzo(a,h)anthracene	0.33	0.56	NS	ND	ND	ND	ND
Fluorene	100	500	NS	ND	ND	ND	ND
Fluoranthene	100	500	NS	0.14 J	ND	ND	0.19 J
Indeno(1,2,3-cd)pyrene	0.5	5.6	NS	ND	ND	ND	ND
Phenanthrene	100	500	NS	0.063 J	ND	ND	0.1 J
Pyrene	100	500	NS	0.110 J	ND	ND	0.19 J
PCBs and Pesticides	Concentration in mg/kg			Concentration in mg/kg			
PCBs				ND	ND	ND	ND
Pesticides				ND	ND	ND	ND
Metals	Concentration in mg/kg			Concentration in mg/kg			
Aluminum	NS	NS	NS	5600	14900	11500	5160
Antimony	NS	NS	NS	ND	ND	6.1	ND
Arsenic	16	16	NS	5.5	6.4	5.3	6.2
Barium	400	400	NS	77.7	72.5	106	159
Beryllium	72	590	NS	1	0.76	0.7	1.1
Cadmium	4.3	9.3	NS	1.5	1.5	2.1	3.3
Calcium	NS	NS	NS	7610	2760	30400	17400
Chromium	110	400	NS	14.9	22.8	19.4	14.9
Cobalt	NS	NS	NS	7.2	8.7	9.1	8.1
Copper	270	270	NS	38.5	31	93.8	112
Iron	NS	NS	NS	36700	26000	21500	34400
Lead	400	1000	NS	52.4	73.4	55.6	75.3
Magnesium	NS	NS	NS	2100	3950	13400	7490
Manganese	2000	10000	NS	262	319	493	396
Mercury	0.81	2.8	NS	0.054	0.059	0.098	0.161
Nickel	310	310	NS	15.8	21.6	30.8	19.1
Potassium	NS	NS	NS	849	1650	2700	807
Selenium	180	1500	NS	4.6	2.8	1.6	3.7
Silver	180	1500	NS	ND	ND	ND	ND
Sodium	NS	NS	NS	125	153	178	171
Thallium	NS	NS	NS	ND	ND	ND	ND
Vanadium	NS	NS	NS	22.3	37.8	27.5	18.8
Zinc	10000	10000	NS	104	150	466	651
Cyanide	27	27	NS	0.984	ND	ND	ND

Notes:
D = Diluted
J = Estimated Value
NA = Not Analyzed
ND or U = Not detected above laboratory MDL
NS = No standard
Bold = Result exceeds 6 NYCRR Part 375 Restricted-Residential Objective
Shaded = Result exceeds 6 NYCRR Part 375 Commercial Objective

TABLE 5-9
GROUNDWATER SAMPLING RESULTS
SPAULDING FIBRE SITE INVESTIGATION
PAGE 1 OF 1

Sample ID: Date Sampled:	NYSDEC Groundwater Quality Standards and Guidance Values June 1998 Ambient Water Quality Standards for Class GA Groundwater	OW-A1 12/19/2007	OW-B2 12/20/2007	OW-1 12/19/2007	OW-2 12/19/2007	OW-3 12/19/2007	OW-4 12/20/2007	OW-6 12/20/2007	OW-10 12/14/2007	OW-12 12/19/2007	MW-16 12/13/2007	MW-43 12/14/2007	MW-59 12/14/2007	MW-59.1 12/14/2007	MW-A 2/7/2008	MW-B 2/7/2008
VOCs (ug/L)	**Concentration in ug/L**	**Concentration in ug/L**														
Vinyl Chloride	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	**4.4 J**	ND	ND	ND	ND	ND
Acetone	50	ND	36	ND	ND	ND	ND	ND	ND	ND	12 J	**85 J**	ND	ND	ND	ND
Carbon Disulfide	60	ND	ND	1 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	**18**	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.2 J	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	**44**	ND	ND	ND	ND	ND
2-Butanone	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**60 J**	ND	ND	ND	ND
2-Hexanone	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**58 J**	ND	ND	ND	ND
Methanol (mg/L)	NE	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	ND	NA	NA	NA	NA
Ethanol (mg/L)	NE	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	ND	NA	NA	NA	NA
SVOCs (ug/L)	**Concentration in ug/L**	**Concentration in ug/L**														
Caprolactam	NE	ND	ND	ND	ND	ND	ND	ND	13 J	ND	ND	25	ND	3.1 J	ND	ND
Formaldehyde (ug/L)	8	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	**61 J**	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	5	ND	**21**	1.3 J	ND	1.8 J	2.9 J	1.7 J	1.7 J	ND	ND	ND	1.5 J	ND	1.5 J	ND
PCBs (ug/L)	**Concentration in ug/L**	**Concentration in ug/L**														
Total PCBs	0.09	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Metals (ug/L)	**Concentration in ug/L**	**Concentration in ug/L**														
Aluminum	NE	494	198	53.9	68.7	44.8 J	114	42.6 J	56.2	48.1 J	7210	22300	6220	3740	ND	17.2
Antimony	3	ND	**5.26 J**	ND	ND	ND	ND	ND	ND	ND	ND	**41.5**	ND	ND	**128**	ND
Arsenic	25	ND	ND	3.62 J	ND	ND	ND	9.04 J	4.88 J	ND	4.4 J	10	**72.1**	5.84 J	ND	ND
Barium	1000	62	56.1	6.91 J	25.3 J	153	30 J	506	13.5 J	13.6 J	97.3	204	27.3 J	44.3 J	ND	ND
Beryllium	3	0.93 J	0.82	0.86 J	0.88 J	0.87 J	0.91 J	0.73 J	ND	0.9 J	ND	ND	ND	ND	ND	ND
Cadmium	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Calcium	NE	56100	61100	58900	60900	158000	53200	22100	70300 J	20400	128000 J	163000 J	23600 J	131000 J	330000	160000
Chromium	50	1.53 J	2.95 J	ND	1.74 J	1.37 J	0.91 J	7.66	1.06 J	1.48 J	8.14	30	10.9	4.39 J	13.9	ND
Cobalt	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.8 J	18.9	1.97 J	1.54 J	17.8	ND
Copper	200	4.81 J	10	ND	ND	ND	ND	ND	0.84 J	ND	18.4	55.2	**685**	9.75 J	17.8	ND
Iron	300*	**565**	275	**1120**	**4660**	**3890**	**12600**	**1190**	**7280**	**2840**	**8290**	**28100**	**5950**	**4720**	**4410**	**1260**
Lead	25	ND	2.31 J	ND	ND	ND	ND	ND	ND	ND	8.94 J	**26**	**32**	ND	ND	ND
Magnesium	35000	29800	7390	**88500**	**43700**	**44300**	**139000**	**160000**	**156000**	**132000**	**249000**	**153000**	16400	**193000**	**1220000**	**255000**
Manganese	300*	20	215	84.1	93.2	**323**	133	43.4	83.8	15	**618**	**1280**	188	**561**	**439**	**640**
Mercury	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.2	ND	ND	ND
Nickel	NE	3.65 J	4.68 J	ND	4.36 J	3.38 J	ND	5.51 J	ND	3.52 J	6.42 J	42	8.94 J	4.92 J	10.3 J	8.59 J
Potassium	NE	1530 J	1020 J	3260	2540	6490	6000	3500	3830	6510	7450	20200	6890	11200	24400	10200
Selenium	10	6.03 J	3.51 J	6.23 J	5.96 J	**14.5**	5.77 J	ND	ND	3.14 J	ND	ND	4.29 J	ND	ND	ND
Silver	50	0.97 J	1.16 J	ND	ND	ND	ND	0.98 J	ND	0.66 J	ND	ND	5.44	ND	31.6	ND
Sodium	20000	8580	6150	**44500**	**20900**	9830	**49300**	**59000**	**37700 J**	**78900**	**75500 J**	**315000**	**863000 J**	**153000 J**	**347000**	**220000**
Thallium	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**4.43 J**	ND	ND	ND
Vanadium	NE	12.4 J	ND	ND	ND	ND	ND	2.25 J	ND	ND	10.5 J	39.1	14.3 J	4.78 J	17.0 J	ND
Zinc	300	66.9	167	30.2	50.4	49.6	62	23.4	14.6 J	33.5	110 J	235	130 J	40.1 J	23.2	30
Cyanide	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
* Standard for Sum of Iron and Manganese = 500 ug/L
ND = Not detected above laboratory MDL
NE = Not Established
B = Compound detected in method blank
D = Sample dilution
J = Estimated Value
Bold = Result exceeds NYSDEC groundwater standard

Table 5-10
Building Materials Waste Characterization Sampling Results
Spaulding Fibre Site Investigation

Sample ID: / Sample Description		SC-1 wall block chips	SC-2/2A cured resin	SC-3 wall block chips	SC-4 floor slab - pink chips	SC-8 concrete - stg area comp	SC-9 concrete - stg area comp
Parameter	**TCLP Hazardous Waste Regulatory Level (mg/L)**	**TCLP Analysis - Concentration in mg/L**					
Arsenic	5	0.0482 J	ND	NA	ND	NA	ND
Barium	100	0.345 J	0.5	NA	0.113 J	NA	0.418 J
Benzene	0.5	ND	ND	NA	ND	NA	NA
Cadmium	1	ND	ND	NA	ND	NA	0.0392 J
Carbon tetrachloride	0.5	ND	ND	NA	ND	NA	NA
Chlordane	0.03	ND	ND	NA	ND	NA	NA
Chlorobenzene	100	ND	ND	NA	ND	NA	NA
Chloroform	6	ND	ND	NA	ND	NA	NA
Chromium	5	0.0202 J	0.0175 J	NA	ND	NA	0.0676
o-Cresol (2-Methylphenol)	200	0.0073 J	0.056	NA	0.062 J	NA	ND
m&p-Cresol (3&4-Methylphenol)	200	0.031 J	0.15 D	NA	0.66 D	NA	0.008 J
Total Cresol (Total Methylphenol)	200	0.0383	0.216	NA	0.722	NA	NA
2,4-D	10	ND	ND	NA	ND	NA	NA
1,4-Dichlorobenzene	7.5	ND	ND	NA	ND	NA	ND
1,2-Dichloroethane	0.5	ND	ND	NA	ND	NA	NA
1,1-Dichloroethylene	0.7	ND	ND	NA	ND	NA	NA
2,4-Dinitrotoluene	0.13	ND	ND	NA	ND	NA	ND
Endrin	0.02	ND	ND	NA	ND	NA	NA
Heptachlor (and its epoxide)	0.008	ND	ND	NA	ND	NA	NA
Hexachlorobenzene	0.13	ND	ND	NA	ND	NA	ND
Hexachloro-1,3butadiene	0.5	ND	ND	NA	ND	NA	ND
Hexachloroethane	3	ND	ND	NA	ND	NA	ND
Lead	5	0.0482 J	0.385	NA	ND	NA	ND
Lindane	0.4	ND	ND	NA	ND	NA	NA
Mercury	0.2	ND	ND	NA	ND	NA	ND
Methoxychlor	10	ND	ND	NA	ND	NA	NA
Methyl ethyl ketone	200	ND	0.18	NA	ND	NA	NA
Nitrobenzene	2	ND	ND	NA	ND	NA	ND
Pentachlorphenol	100	ND	ND	NA	ND	NA	ND
Pyridine	5	ND	ND	NA	ND	NA	ND
Selenium	1	0.0547 J	0.0456 J	NA	ND	NA	ND
Silver	5	0.0218 J	0.0185 J	NA	ND	NA	0.0453 J
Tetrachloroethylene	0.5	ND	ND	NA	ND	NA	NA
Toxaphene	0.5	ND	ND	NA	ND	NA	NA
Trichloroethylene	0.5	ND	ND	NA	ND	NA	NA
2,4,5-Trichlorophenol	400	ND	ND	NA	ND	NA	ND
2,4,6-Trichlorophenol	2	ND	ND	NA	ND	NA	ND
2,4,5-TP (Silvex)	1	ND	ND	NA	ND	NA	NA
Vinyl chloride	0.2	ND	ND	NA	ND	NA	NA
Parameter	**Unit**						
pH	standard units	8.6	6.7	NA	11.3	NA	NA
Ignitability	ignit.	No	No	NA	No	NA	NA
Reactive Cyanide	mg/kg	<10	<10	NA	<10	NA	NA
Reactive Sulfide	mg/kg	<40	<40	NA	<40	NA	NA
VOCs		**Totals Analysis - Concentration in mg/kg**					
Acetone		NA	ND	ND	0.16	NA	NA
Methyl Acetate		NA	ND	0.014 J	ND	NA	NA
Tetrachloroethene		NA	ND	0.028	ND	NA	NA
Toluene		NA	4500 D	ND	0.028	NA	NA
SVOCs		**Totals Analysis - Concentration in mg/kg**					
Formaldehyde		1.69	NA	NA	NA	NA	NA
Phenol		NA	2000 D	4.7 D	0.36	0.17 J	0.1 J
Total Phenolics		583	NA	NA	NA	NA	NA
2,4-Dimethylphenol		NA	98	0.63	0.25 J	ND	ND
2-Methylphenol		NA	63	2	0.069 J	ND	ND
4-Chloroaniline		NA	ND	0.079 J	ND	ND	ND
3+4-Methylphenol		NA	220 D	2.4 JD	3.5 D	ND	ND
Acetophenone		NA	5.1 J	ND	ND	ND	ND
Benzo[a]anthracene		NA	ND	ND	0.1 J	ND	0.041 J
Benzo[a]pyrene		NA	ND	ND	0.087 J	ND	0.039 J
Benzo[b]fluoranthene		NA	ND	0.059 J	0.14 J	0.058 J	0.083 J
Benzo[g,h,i]perylene		NA	ND	ND	0.063 J	ND	ND
Benzo[k]fluoranthene		NA	17000 U	330 U	340 U	ND	0.045 J
Bis(2-ethylhexyl) Phthalate		NA	320 D	8.2 D	2.5 D	2.2	2.7
Butylbenzyl Phthalate		NA	6400 D	6.1 D	1.6	1.2	1.1
Chrysene		NA	ND	0.073 J	0.15 J	0.044 J	0.063 J
Di-n-Butyl Phthalate		NA	5000 D	200 D	170 D	ND	ND
Fluoranthene		NA	ND	0.19 J	0.33 JD	0.06 J	0.098 J
Indeno[1,2,3-cd]pyrene		NA	ND	ND	0.063 J	ND	0.041 J
Isophorone		NA	17000 U	330 U	340 U	ND	2.6
Phenanthrene		NA	ND	0.34	0.21 J	0.04 J	0.063 J
Pyrene		NA	ND	0.11 J	0.23 J	0.048 J	0.082 J

Notes:
J - Estimated Value; D - Sample Dilution
NA - Not Analyzed; ND - Not Detected

Table 5-10
Building Materials Waste Characterization Sampling Results
Spaulding Fibre Site Investigation

Sample ID: Sample Description	SC-5 sludge		SC-6 sludge		SC-7 oil stained conc.	
Metals	**Concentration in mg/kg**					
Aluminum	3380	D	22000		6140	D
Antimony	0.59	J	<0.34		<0.231	
Arsenic	3.34		7.16		5.08	
Barium	280	D	228		97.2	D
Beryllium	0.376	JD	1.66		0.273	
Cadmium	6.44		7.52		0.952	
Calcium	11600	D	16500		142000	D
Chromium (Total)	121	D	99.4		17.6	D
Cobalt	5.07		13.2		3.08	
Copper	979	D	429		355	D
Iron	15100	D	22900		9240	D
Lead	484	D	635		267	D
Magnesium	1670	D	7380		6450	D
Manganese	91.5	D	182		234	D
Mercury	0.162		0.021		0.092	
Nickel	19.4	D	23.7		9.96	
Potassium	318		2180		2030	
Selenium	82.8	D	0.842	J	4.78	JD
Silver	0.304	J	<0.18		<0.122	
Sodium	1760	D	932		474	
Thallium	<1.73		<1.89		<1.29	
Vanadium	19.4	D	35.1		14.6	D
Zinc	6620	D	2660		399	D
PCBs	**Concentration in mg/kg**					
Aroclor 1016	ND		ND		ND	
Aroclor 1221	ND		ND		ND	
Aroclor 1232	ND		ND		ND	
Aroclor 1242	0.21		ND		ND	
Aroclor 1248	ND		ND		ND	
Aroclor 1254	ND		ND		ND	
Aroclor 1260	ND		ND		ND	

Notes:
J - Estimated Value; D - Sample Dilution
NA - Not Analyzed; ND - Not Detected

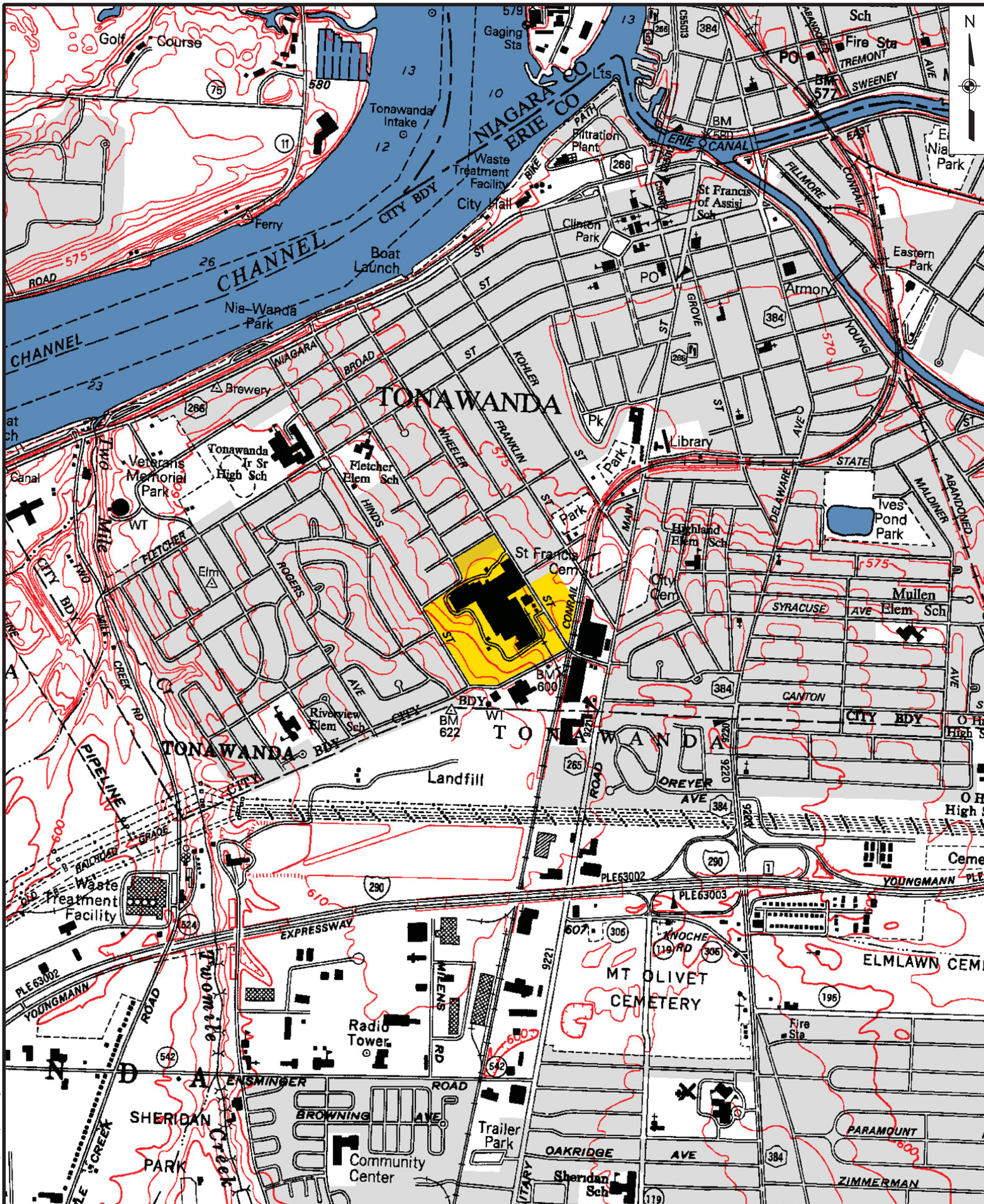
Table 7-1
Chemicals of Potential Concern
Spaulding Fibre Site Investigation Report

Operable Unit 5 Soil Contaminants
Arsenic
Benzo(a)pyrene
Benzo(a)anthracene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Chrysene
Dibenzo(a,h)anthracene
Fluoranthene
Indeno(1,2,3-cd)pyrene
Operable Unit 5 Groundwater Contaminants
No chemicals of potential concern were detected
Operable Unit 6 Soil Contaminants
Arsenic
Barium
Cadmium
Chromium
Copper
Lead
Manganese
Mercury
Nickel
Zinc
PCB
Benzene
benzo(a)anthracene
benzo(a)pyrene
benzo(b)fluoranthene
benzo(k)fluoranthene
chrysene
dibenzo(a,h)anthracene
fluoranthene
indeno(1,2,3)cd-pyrene
phenanthrene
pyrene
dimethyl phthalate
di-n-butylphthalate
Operable Unit 6 Groundwater Contaminants
2-Butanone
2-Hexanone
Acetone
cis-1,2-Dichloroethene
trans-1,2-Dichloroethene
Vinyl Chloride
Operable Unit 7 Soil Contaminants
benzo(a)anthracene
benzo(a)pyrene
benzo(b)fluoranthene
indeno[1,2,3-cd]pyrene
Operable Unit 7 Groundwater Contaminants
No chemicals of potential concern were detected

Note:
Detected groundwater metals concentrations are likely naturally occuring therefore they have been ommited from this table.

FIGURES

FIGURES



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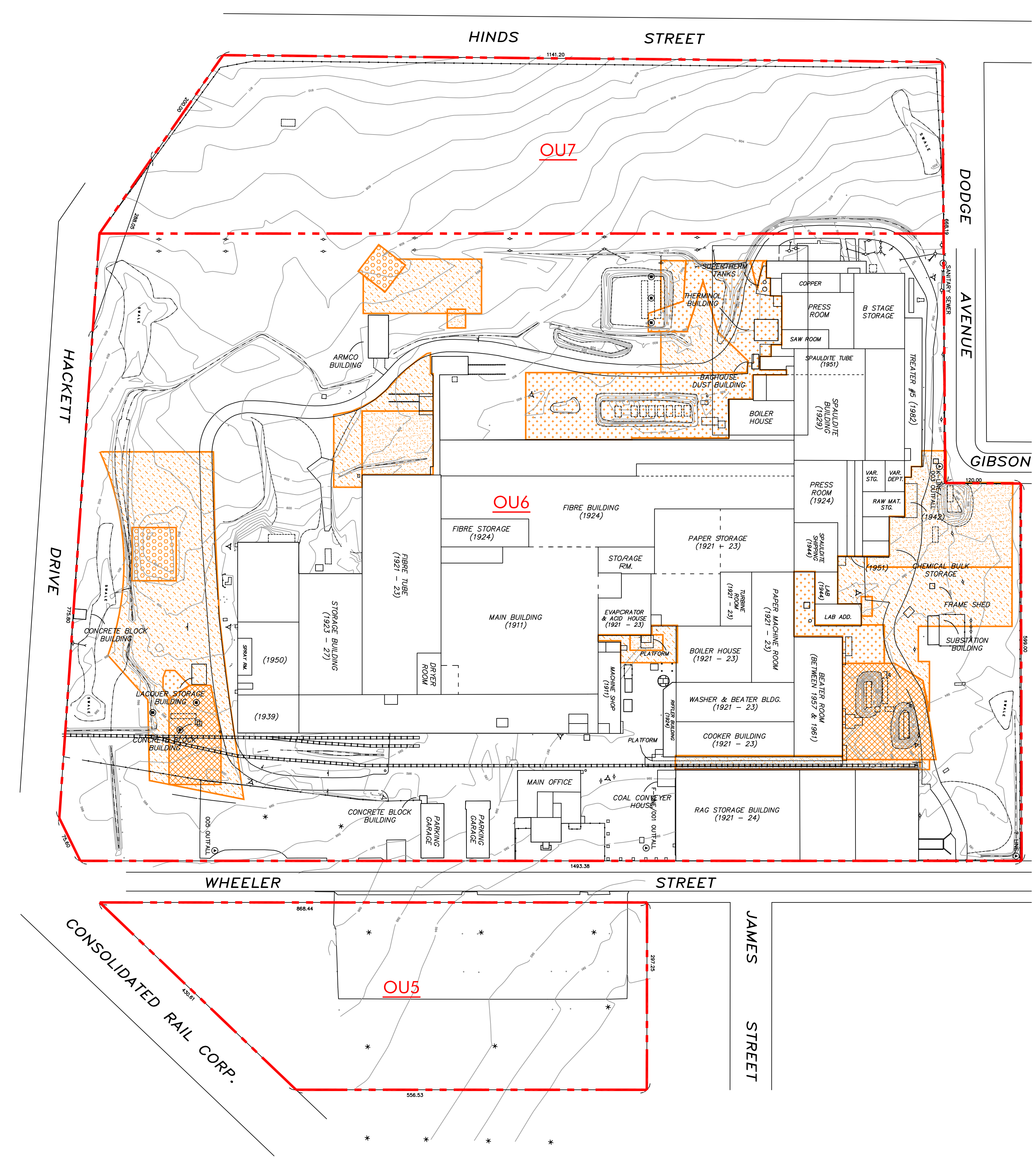
SPAULDING FIBRE SITE INVESTIGATION SITE LOCATION MAP

FIGURE NO.

1-1

J:\0725306A Spaulding\CAD\SI Report\Spaulding Site Loc.ai

REV-1



LEGEND

- OU1: REGULATED WASTES (STATE SUPERFUND–EXCLUDED FROM PROJECT SCOPE)
- OU2: PCB CONTAMINATED WASTES – IRM AREAS (STATE SUPERFUND–EXCLUDED FROM PROJECT SCOPE)
- OU3: PETROLEUM CONTAMINATED WASTES (STATE SUPERFUND–EXCLUDED FROM PROJECT SCOPE)
- OU4: MULTIPLE CONTAMINANT WASTES (STATE SUPERFUND–EXCLUDED FROM PROJECT SCOPE)
- EXPANDED AREA OF CONTAMINATED WASTES (STATE SUPERFUND–EXCLUDED FROM PROJECT SCOPE)
- PROPERTY LIMIT/AREA DEMARCATION

100 0 100
SCALE IN FEET

REV–1

J:\0725306A Spaulding\CAD\SI Report\Spaulding Site Building Plan Fig2-1.dwg, 3/5/2008 3:00:12 PM, ES

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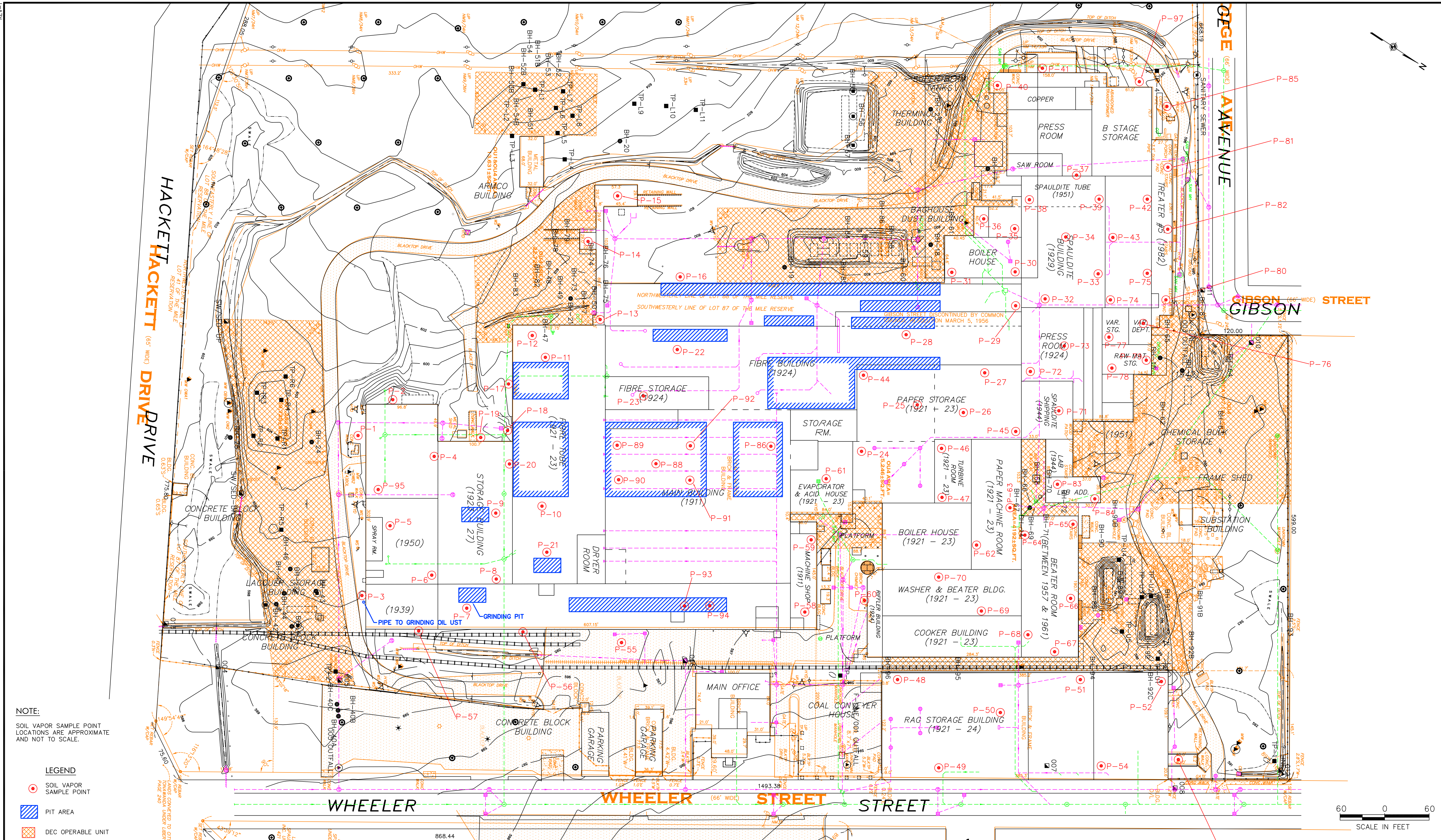
PROJ. ENG.:	CLIENT:	JOB TITLE AND LOCATION:	LIRO JOB NO.: 07–25–306A
DESIGNED BY:	ECIDA (FOR THE SPAULDING FIBRE COMITTEE)	SPAULDING FIBRE SITE INVESTIGATION	SHEET OF
CHECKED BY:		DRAWING TITLE:	FIGURE NO.
DRAWN BY:	DATE: MARCH 2008 / SCALE: AS SHOWN	SITE BUILDING PLAN	2-1



NOTE:
SOIL VAPOR SAMPLE POINT LOCATIONS ARE APPROXIMATE AND NOT TO SCALE.

LEGEND
- SOIL VAPOR SAMPLE POINT
- PIT AREA
- DEC OPERABLE UNIT

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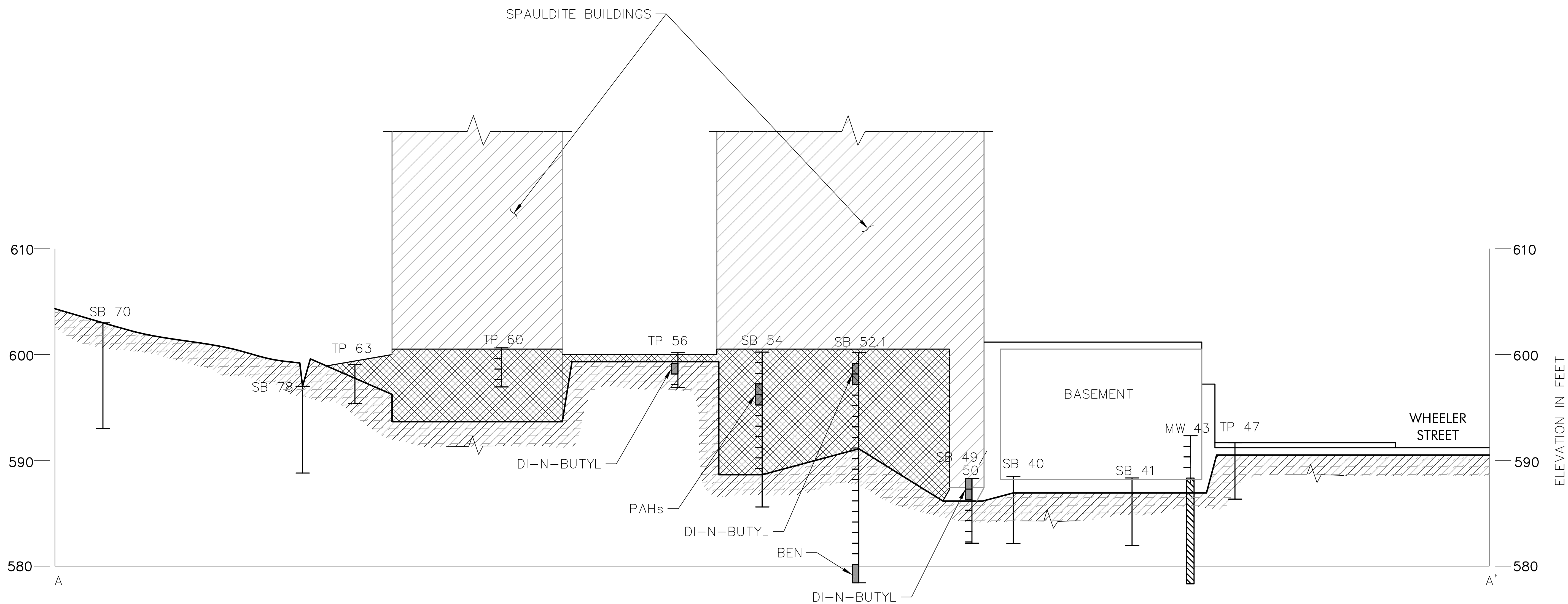
CLIENT:
DATE: MAY 2007
SCALE: NOT TO SCALE
JOB TITLE AND LOCATION: SPAULDING FIBRE SITE INVESTIGATION
DRAWING TITLE: SOIL GAS SURVEY AND PRELIMINARY SOIL SAMPLE LOCATIONS
LIRO JOB NO.: 07-25-306A
SHEET OF
FIGURE NO. 3-1

REV-1



LEGEND

MW-6 MONITORING WELL ID

WELL SCREEN INTERVAL OF MONITORING WELL

FILL

CLAY/SILT

BEN = BENZENE

PAHs = POLYAROMATIC HYDROCARBONS

MET = METALS (SEVERAL)

DI-N-BUTYL = DI-N-BUTYLPHTHALATE

MN = MANGANESE

SECTION A-A'

DEPTH INDICATOR (1 FOOT INTERVALS)

SURFACE

EXCEEDANCE OF APPLICABLE GUIDANCE CRITERIA (PART 375 RESTRICTED - RESIDENTIAL OR TAGM #4046) FOR NOTED COMPOUND(S)

50 0 50

HORIZONTAL SCALE IN FEET

5 0 5

VERTICAL SCALE IN FEET

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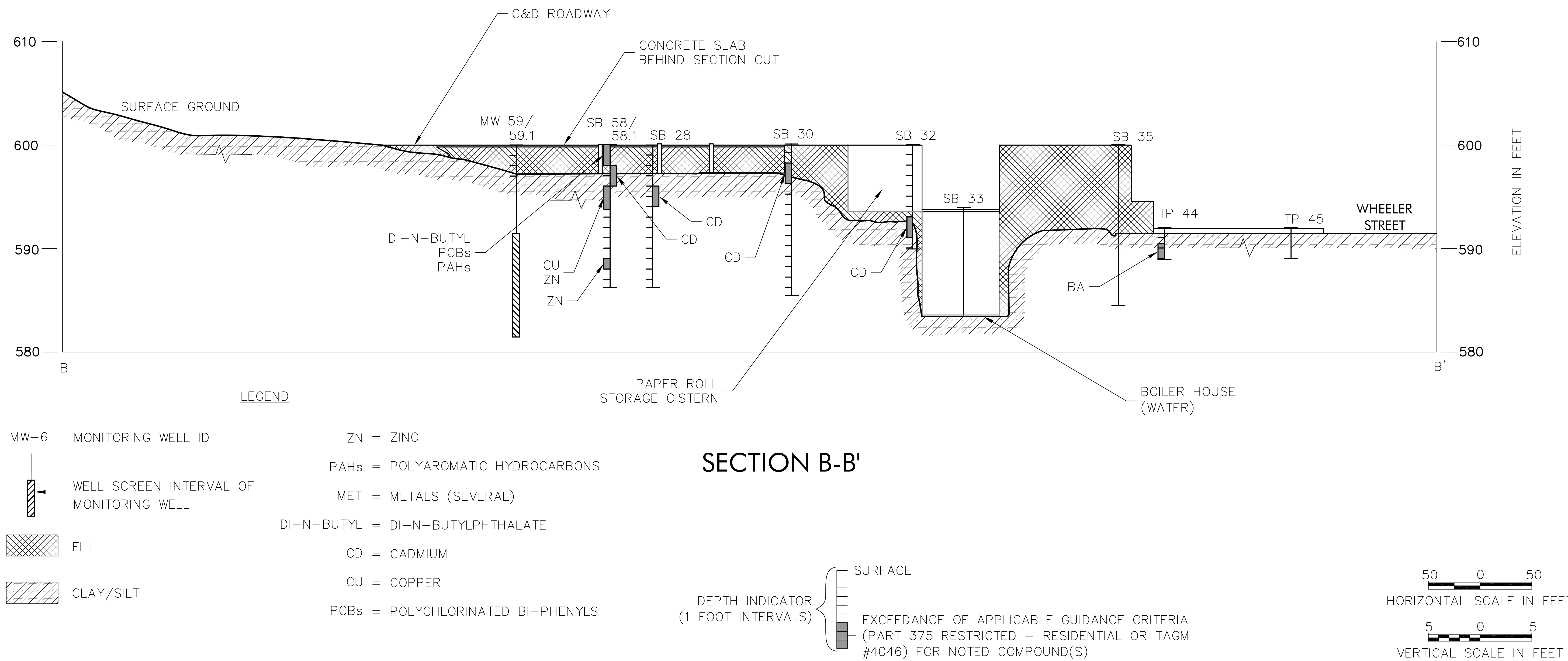
DATE:	JANUARY 2008
SCALE:	AS SHOWN
JOB TITLE AND LOCATION:	SPAULDING FIBRE SITE INVESTIGATION
DRAWING TITLE:	SECTION A-A'
LIRO JOB NO.:	07-25-306A
SHEET OF	1 4
FIGURE NO.	4-1



SECTION B-B'

WARNING
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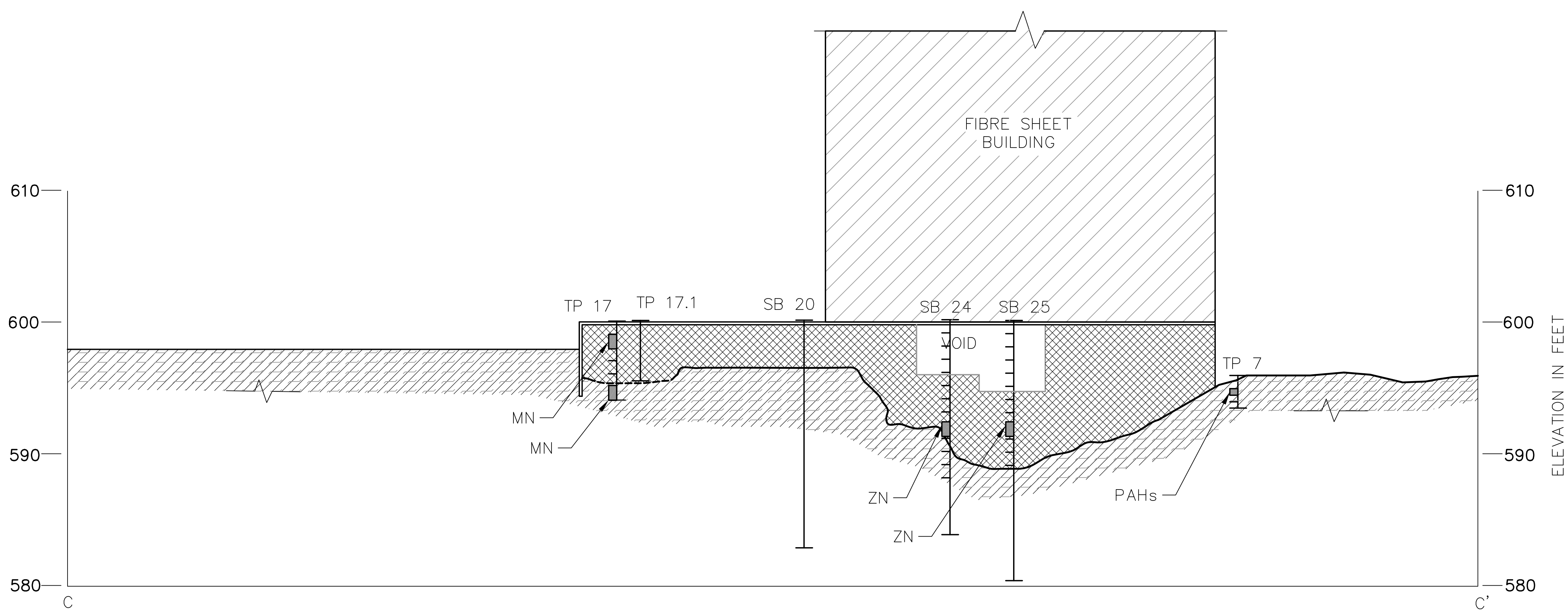
DATE:	JANUARY 2008
SCALE:	AS SHOWN
JOB TITLE AND LOCATION:	SPAULDING FIBRE SITE INVESTIGATION
DRAWING TITLE:	SECTION B-B'
LIRO JOB NO.:	07-25-306A
SHEET OF	2 4
FIGURE NO.	4-2

REV-1

REV-1



SECTION C-C'

LEGEND

FILL

CLAY/SILT

-------- ESTIMATED LIMIT

ZN = ZINC

PAHs = POLYAROMATIC HYDROCARBONS

MN = MANGANESE

DEPTH INDICATOR (1 FOOT INTERVALS)

SURFACE

EXCEEDANCE OF APPLICABLE GUIDANCE CRITERIA (PART 375 RESTRICTED – RESIDENTIAL OR TAGM #4046) FOR NOTED COMPOUND(S)

50 0 50
HORIZONTAL SCALE IN FEET

5 0 5
VERTICAL SCALE IN FEET

WARNING

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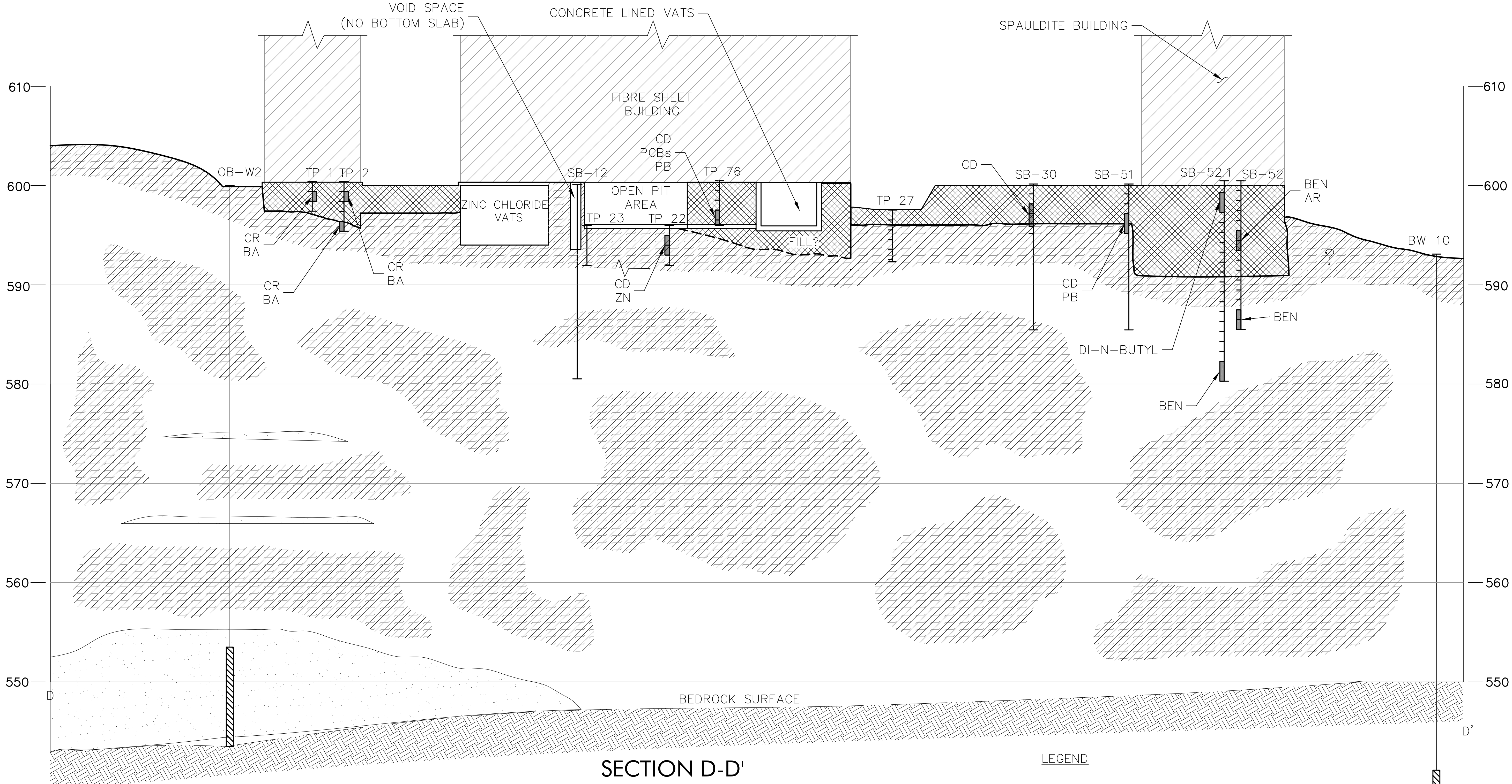
SCALE:	AS SHOWN
JOB TITLE AND LOCATION:	SPAULDING FIBRE SITE INVESTIGATION
DRAWING TITLE:	SECTION C-C'
LIRO JOB NO.:	07-25-306A
SHEET OF	3 4
FIGURE NO.	4-3



SECTION D-D'

50 0 50

HORIZONTAL SCALE IN FEET

5 0 5

VERTICAL SCALE IN FEET

DEPTH INDICATOR (1 FOOT INTERVALS) — SURFACE

EXCEEDANCE OF APPLICABLE GUIDANCE CRITERIA (PART 375 RESTRICTED – RESIDENTIAL OR TAGM #4046) FOR NOTED COMPOUND(S)

LEGEND

FILL

CLAY/SILT

BEDROCK

SAND

BW SCREEN

-------- INFERRED LIMIT

PAHs = POLYAROMATIC HYDROCARBONS

CD = CADMIUM

BA = BARIUM

PCBs = POLYCHLORINATED BI-PHENYLS

CR = CHROMIUM (TOTAL)

AR = ARSENIC

PB = LEAD

BEN = BENZENE

NO.	DATE	DESCRIPTION
REVISIONS		

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DATE:	MAY 2008
SCALE:	AS SHOWN
JOB TITLE AND LOCATION:	SPAULDING FIBRE SITE INVESTIGATION
DRAWING TITLE:	SECTION D-D'
LIRO JOB NO.:	07-25-306A
SHEET OF	4 4
FIGURE NO.	4-4

LEGEND

- PREVIOUS DEC TEST PIT LOCATION
- PREVIOUS SLUDGE SAMPLE LOCATION
- PREVIOUS SEDIMENT SAMPLE LOCATION
- LIRO NOVEMBER 2007 TEST PIT LOCATION
- LIRO SOIL BORING (HSA) LOCATION
- LIRO SOIL BORING (JACKHAMMER) LOCATION
- LIRO SOIL BORING (GEOPROBE) LOCATION
- LIRO MONITORING WELL LOCATION
- LIRO JUNE 2007 TEST PIT LOCATION
- LIRO SOIL VAPOR SAMPLE POINT
- SWMU
- AOC
- PREVIOUS RI OVERBURDEN WELL LOCATION
- PREVIOUS RI BEDROCK WELL LOCATION
- PREVIOUS RI TEST PIT LOCATION
- PREVIOUS RI SOIL BORING LOCATION
- PREVIOUS RI GW/SEDIMENT SAMPLE POINT
- PIT AREA
- OU1: REGULATED WASTES (STATE SUPERFUND–EXCLUDED FROM PROJECT SCOPE)
- OU2: PCB CONTAMINATED WASTES – IRM AREAS (STATE SUPERFUND–EXCLUDED FROM PROJECT SCOPE)
- OU3: PETROLEUM CONTAMINATED WASTES (STATE SUPERFUND–EXCLUDED FROM PROJECT SCOPE)
- OU4: MULTIPLE CONTAMINANT WASTES (STATE SUPERFUND–EXCLUDED FROM PROJECT SCOPE)
- EXPANDED AREA OF CONTAMINATED WASTES (STATE SUPERFUND–EXCLUDED FROM PROJECT SCOPE)
- DEMOLISHED TO MAIN FLOOR LEVEL

100 0 100
SCALE IN FEET

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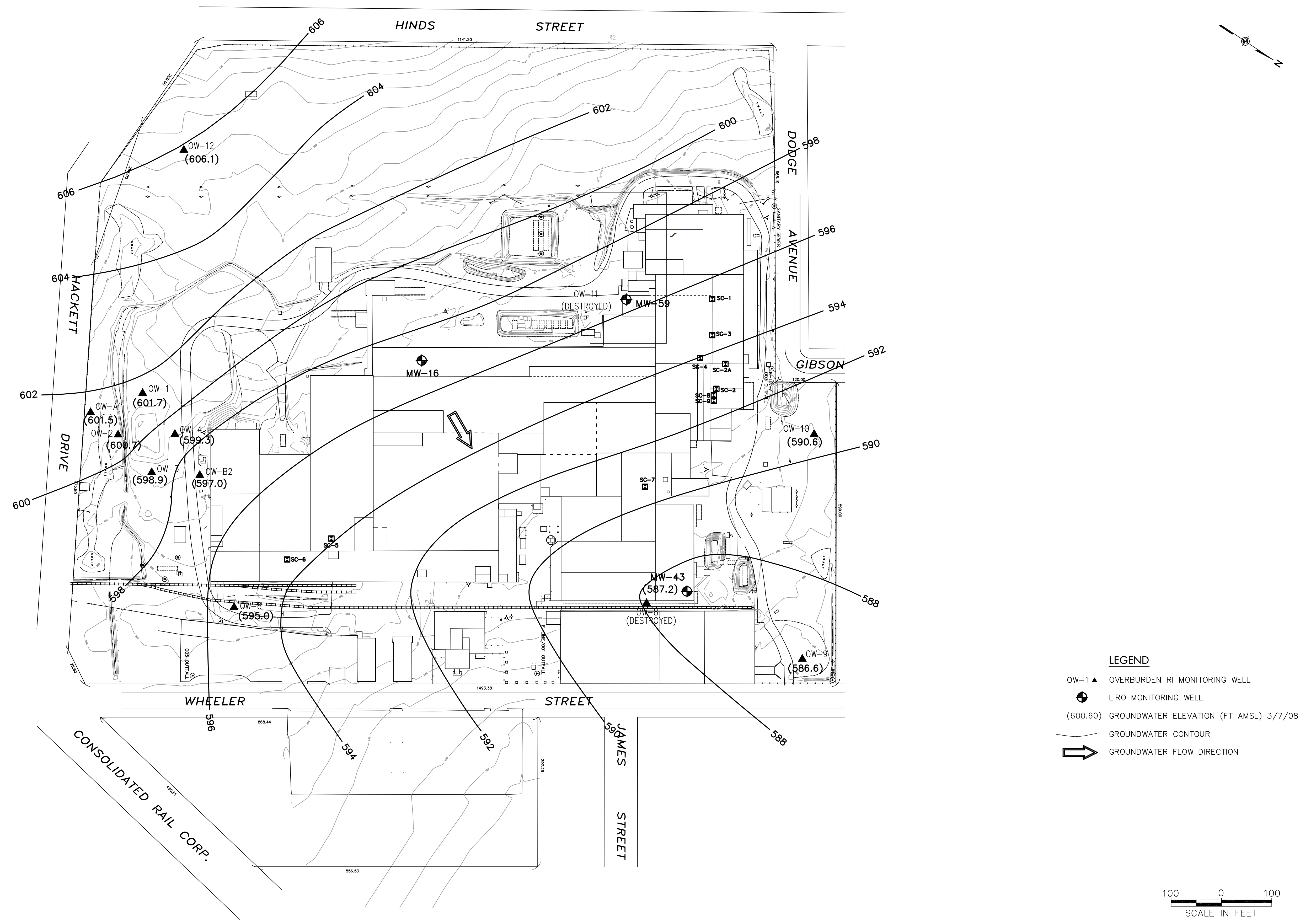
DESIGNED BY:			SHEET OF
CHECKED BY:		DRAWING TITLE: CROSS-SECTION LOCATION PLAN	FIGURE NO. 4-5
DRAWN BY:	DATE: MARCH 2008 — SCALE: AS SHOWN		

REV-1

J:\07253064 Spaulding\CAD\SI Report\Spaulding Cross Section.dwg, 3/6/2008 1:16:38 PM, ES

REV-1



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NO.	DATE	DESCRIPTION
REVISIONS		

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PROJ. ENG.: AMM
DESIGNED BY:
CHECKED BY:
DRAWN BY: ES

CLIENT:
ECIDA
(FOR THE SPAULDING FIBRE COMITTEE)

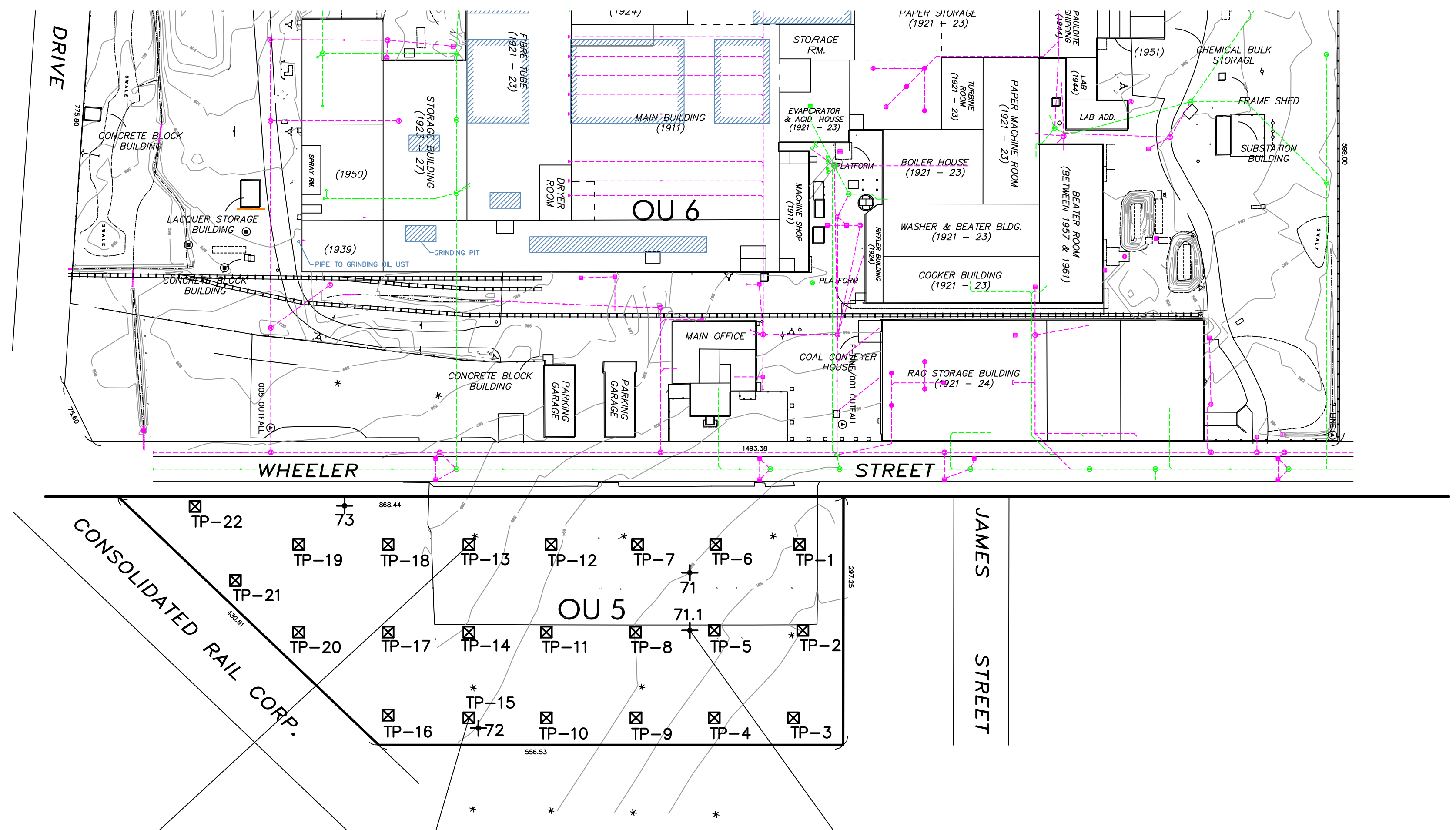
DATE: MARCH 2008
SCALE: AS SHOWN

JOB TITLE AND LOCATION: SPAULDING FIBRE SITE INVESTIGATION

DRAWING TITLE: OVERBURDEN GROUNDWATER CONTOURS

LIRO JOB NO.: 07-25-306A
SHEET 1 OF 1
FIGURE NO. 4-6

REV-1



TP-13 (3"-12")		
arsenic	34.9	16

TP-15 (0"-18")		
arsenic	41.4	16

71.1 (0"-2")		
Benzo(a)pyrene	47	1
Benzo(a)anthracene	45	1
Benzo(b)fluoranthene	68	1
Benzo(k)fluoranthene	19	3.9
Chrysene	59	3.9
Dibenzo(a,h)anthracene	6.5	0.33
Fluoranthene*	110*	100
Indeno(1,2,3-cd)pyrene	26	0.5

*Fluoranthene exceeds Restricted-Residential SCO only

LEGEND

- ⊠ LIRO TEST PIT LOCATION
- ◎ LIRO DRILL (HSA) LOCATION
- ⊡ LIRO JACKHAMMER LOCATION
- + LIRO GEOPROBE LOCATION
- LIRO MONITORING WELL LOCATION
- ▲ PREVIOUS RI OVERBURDEN WELL LOCATION
- PREVIOUS RI BEDROCK WELL LOCATION

18F (1-2)		
2-methylphenol	0.25	0.1

SAMPLE I.D.
GUIDANCE CRITERIA (mg/kg)
DETECTED CONC. (mg/kg)
CONTAMINANT

100 0 100
SCALE IN FEET

NOTE: LISTED SCG IS RESTRICTED-RESIDENTIAL USE CRITERIA

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NO.	DATE	DESCRIPTION

REVISIONS

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Buffalo, New York

PROJ. ENG.:
DESIGNED BY:
CHECKED BY:
DRAWN BY:

CLIENT:
ECIDA
(FOR THE SPAULDING FIBRE COMITTEE)

DATE: MARCH 2008
SCALE: AS SHOWN

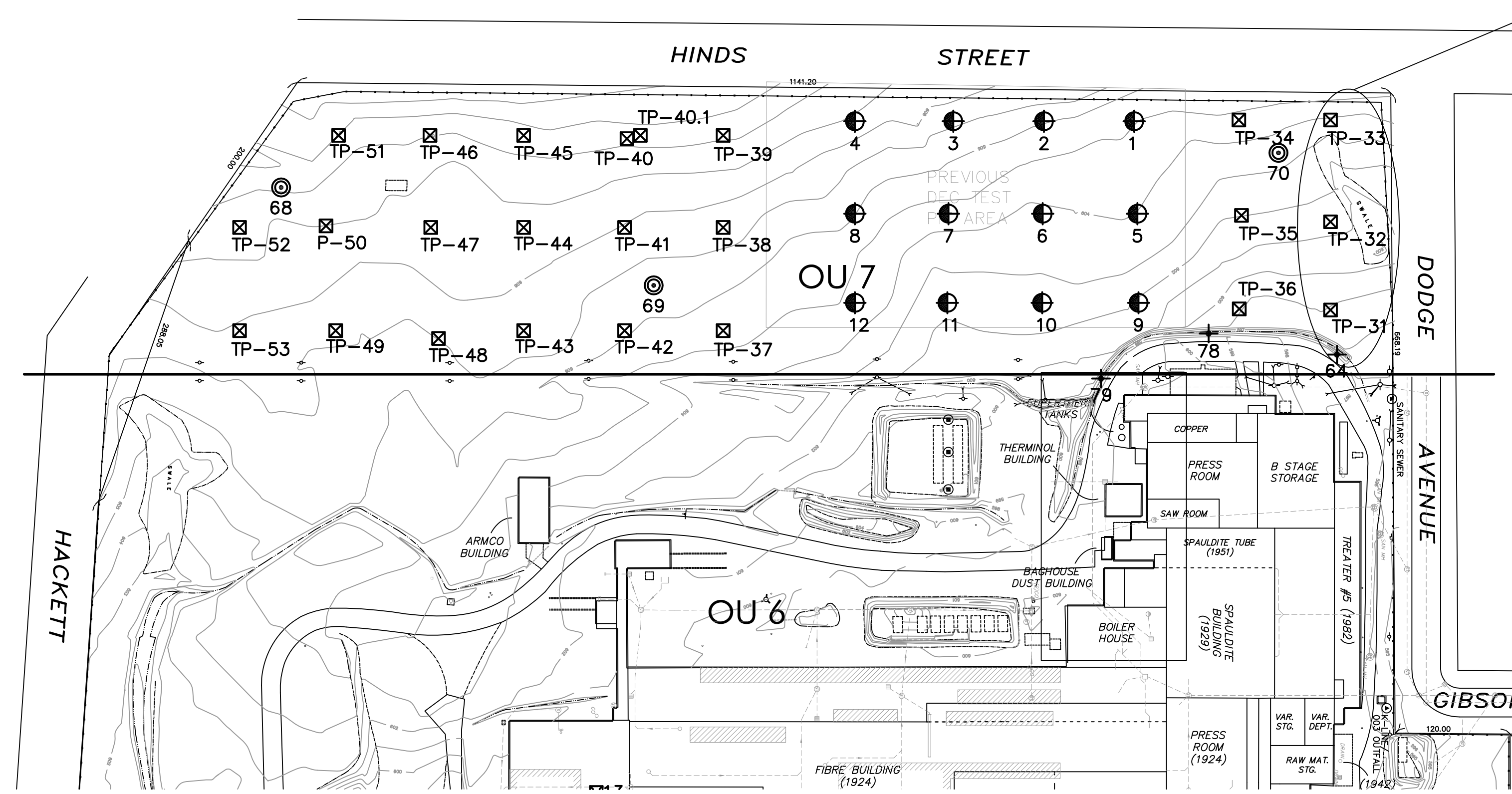
JOB TITLE AND LOCATION:
SPAULDING FIBRE SITE INVESTIGATION

DRAWING TITLE:
RESTRICTED-RESIDENTIAL AND COMMERCIAL EXCEEDANCES OPERABLE UNIT 5

LIRO JOB NO.: 07-25-306A
SHEET OF
FIGURE NO. 5-1

REV-1

SP-9 (comp TP-31, TP-32, TP-33)		
benzo(a)anthracene	1.5	1
benzo(a)pyrene	1.3	1
benzo(b)fluoranthene	1.8	1
indeneo[1,2,3-cd]pyrene	0.99	0.5



LEGEND

- PREVIOUS DEC TEST PIT LOCATION
- LIRO TEST PIT LOCATION
- LIRO DRILL (HSA) LOCATION
- LIRO JACKHAMMER LOCATION
- LIRO GEOPROBE LOCATION
- LIRO MONITORING WELL LOCATION
- PREVIOUS RI OVERBURDEN WELL LOCATION
- PREVIOUS RI BEDROCK WELL LOCATION

18F (1-2)		
2-methylphenol	0.25	0.1

SAMPLE I.D.
GUIDANCE CRITERIA (mg/kg)
DETECTED CONC. (mg/kg)
CONTAMINANT

* 110 mg/kg CRITERIA IS FOR HEXAVALENT CHROMIUM

100 0 100
SCALE IN FEET

WARNING
IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN THOSE WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

NO.	DATE	DESCRIPTION

REVISIONS

LiRo Engineers, Inc.
690 Delaware Ave.
Buffalo, New York

PROJ. ENG.:
DESIGNED BY:
CHECKED BY:
DRAWN BY:

CLIENT:
ECIDA
(FOR THE SPAULDING FIBRE COMITTEE)

DATE: MARCH 2008
SCALE: AS SHOWN

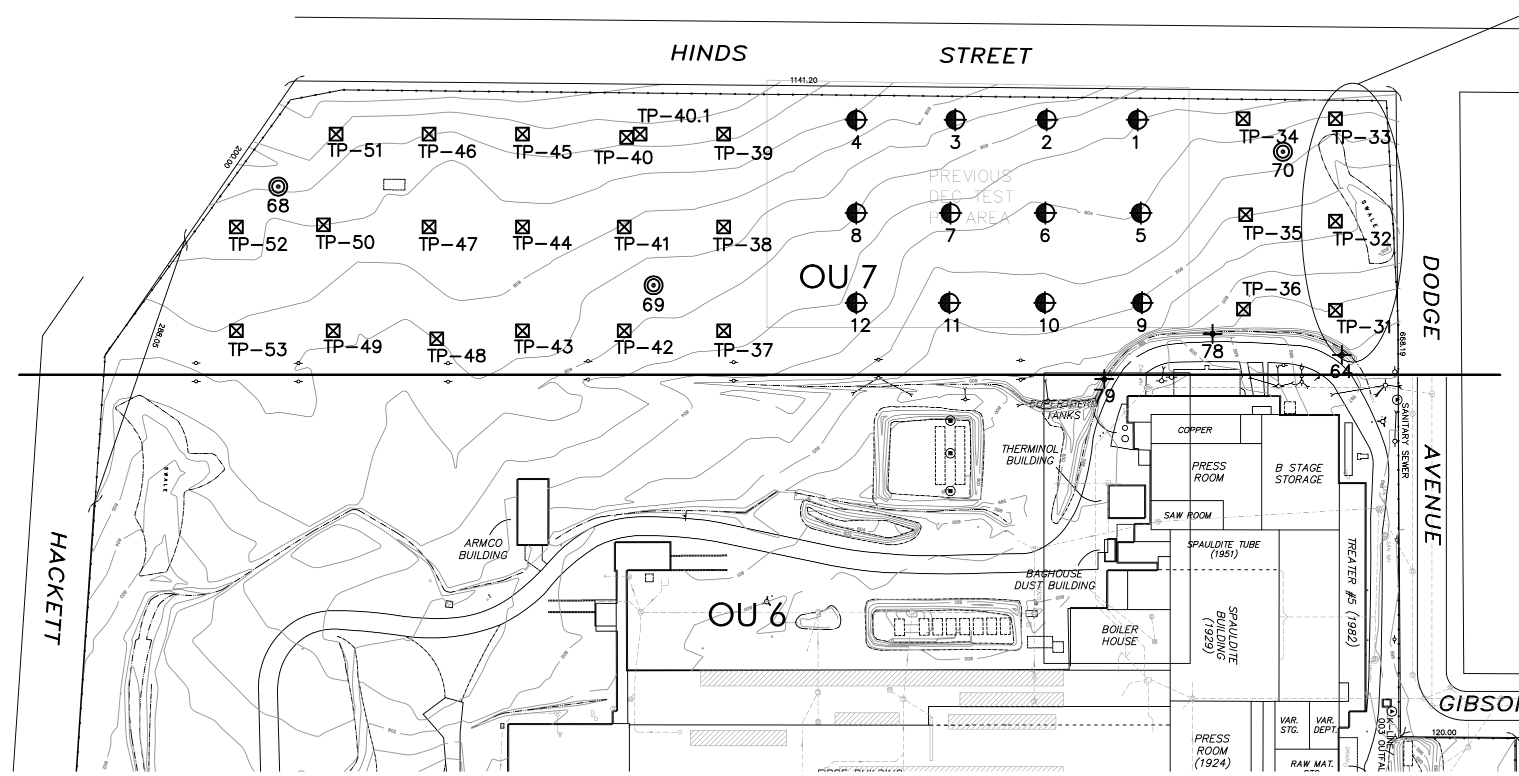
JOB TITLE AND LOCATION:
SPAULDING FIBRE SITE INVESTIGATION

DRAWING TITLE:
RESTRICTED-RESIDENTIAL EXCEEDANCES
OPERABLE UNIT 7

LIRO JOB NO.: 07-25-306A
SHEET OF
FIGURE NO. 5-2

REV-1

SP-9 (comp TP-31, TP-32, TP-33)		
benzo(a)pyrene	1.3	1



LEGEND

- PREVIOUS DEC TEST PIT LOCATION
- LIRO TEST PIT LOCATION
- LIRO DRILL (HSA) LOCATION
- LIRO JACKHAMMER LOCATION
- LIRO GEOPROBE LOCATION
- LIRO MONITORING WELL LOCATION
- PREVIOUS RI OVERBURDEN WELL LOCATION
- PREVIOUS RI BEDROCK WELL LOCATION

18F (1-2)		
2-methylphenol	0.25	0.1

SAMPLE I.D.
GUIDANCE CRITERIA (mg/kg)
DETECTED CONC. (mg/kg)
CONTAMINANT

100 0 100
SCALE IN FEET

* 110 mg/kg CRITERIA IS FOR HEXAVALENT CHROMIUM

NO.	DATE	DESCRIPTION

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SPAULDING FIBRE SITE INVESTIGATION

DRAWING TITLE:
COMMERCIAL EXCEEDANCES
OPERABLE UNIT 7

LIRO JOB NO.: 07-25-306A
SHEET OF
FIGURE NO. 5-3

SP-18 (comp TP-57, TP-58, TP-59)		
arsenic	18.3	16

66F (0-0.5)		
benzo(a)anthracene	1.8	1
benzo(a)pyrene	1.5	1
benzo(b)fluoranthene	1.9	1
indeno(1,2,3)cdpyrene	0.81	0.5

85F (0-1)		
benzo(a)anthracene	77	1
benzo(a)pyrene	66	1
benzo(b)fluoranthene	75	1
benzo(k)fluoranthene	20	3.9
chrysene	71	3.9
dibenzo(a,h)anthracene	3.8	0.33
fluoranthene	230	100
indeno(1,2,3)cdpyrene	47	0.5
phenanthrene	270	100
pyrene	170	100
barium	787	400
cadmium	6.63	4.3
copper	1950	270
lead	653	400
zinc	12600	10000
85N (2-3)		
indeno(1,2,3)cd-pyrene	0.63	0.5

67F (0-0.5)		
Aroclor-1248	1.7	1

SP-21 (comp TP-66.1, TP-67)		
arsenic	26.1	16
barium	686	400
cadmium	229	4.3
chromium (total)	115	110*
copper	12700	270
lead	941	400
mercury	3.4	0.81
nickel	457	310
zinc	25000	10000

1F (1-2)		
barium	455	400
chromium (total)	199	110*

2F (1-2)		
barium	417	400
chromium (total)	145	110*
2N (4-5)		
barium	404	400
chromium (total)	118	110*

83F (0-2)		
Aroclor-1248	2.6	1
cadmium	4.72	4.3

4F (0-1)		
benzo(a)anthracene	72	1
benzo(a)pyrene	57	1
benzo(b)fluoranthene	73	1
benzo(k)fluoranthene	22	3.9
chrysene	69	3.9
dibenzo(a,h)anthracene	4.8	0.33
fluoranthene	150	100
indeno(1,2,3)cdpyrene	40	0.5
phenanthrene	150	100
pyrene	130	100
arsenic	47	16
barium	810	400
cadmium	8.96	4.3
chromium (total)	209	110*
copper	770	270
lead	1190	400
Arocor 1254	17	1
4F (2-3)		
arsenic	34.9	16

TP-59 (2"-8")		
benzo(a)anthracene	1.1	1
benzo(a)pyrene	1.1	1
benzo(b)fluoranthene	1.6	1
indeno[1,2,3-cd]pyrene	0.84	0.5
arsenic	216	16
barium	1770	400
cadmium	108	4.3
chromium (total)	275	110*
copper	37200	270
lead	3440	400
mercury	5.8	0.81
nickel	324	310
zinc	49000	10000

14F (1-2)		
arsenic	23.2	16
copper	301	270
manganese	2050	2000
zinc	19800	10000
14N (3-4)		
zinc	39600	10000

SP-19 (comp TP-60, TP-61, TP-62)		
copper	2020	270
mercury	1	0.81

TP-65 (0"-16")		
arsenic	32.7	16
copper	1090	270
lead	715	400
mercury	3.6	0.81
zinc	20700	10000

19N (1-2)		
copper	351	270
zinc	21400	10000

79N (3-4)		
cadmium	6.3	4.3

NYSDEC PCB Sampling Results	
Sludge Sample Location	Conc.
Sump A	150
Sump B	430
OSE-1	19
FD1	84
FD2	12
FD3	5.3
FD4	12

18F (1-2)		
benzo(a)pyrene	1.2	1
benzo(b)fluoranthene	1.4	1
indeno(1,2,3)cdpyrene	1.1	0.5

58.1F (2-4)		
cadmium	4.5	4.3
58.1N (11-12)		
zinc	11000	10000

58F (0-2)		
benzo(a)anthracene	18	1
benzo(a)pyrene	14	1
benzo(b)fluoranthene	18	1
indeno(1,2,3)cdpyrene	7.9	0.5
benzo(k)fluoranthene	6.1	3.9
chrysene	16	3.9
Aroclor-1248	2.2	1
58F (4-6)		
copper	274	270
zinc	11100	10000

P-43		
manganese	2330	2000

57F (2-4)		
chromium (total)	216	110*
maganese	3580	2000
57N (4-6)		
cadmium	13.4	4.3

28N (4-6)		
cadmium	5.44	4.3

77N (1-2)		
zinc	23200	10000

54F (3-5)		
benzo(a)anthracene	1.6	1
benzo(a)pyrene	1.2	1
benzo(b)fluoranthene	1.5	1

53F (0-4)		
benzo(a)anthracene	3.2	1
benzo(a)pyrene	3.2	1
benzo(b)fluoranthene	4.1	1
indeno(1,2,3)cdpyrene	2.1	0.5

29F (1-2)		
cadmium	4.37	4.3
Aroclor-1248	1.2	1

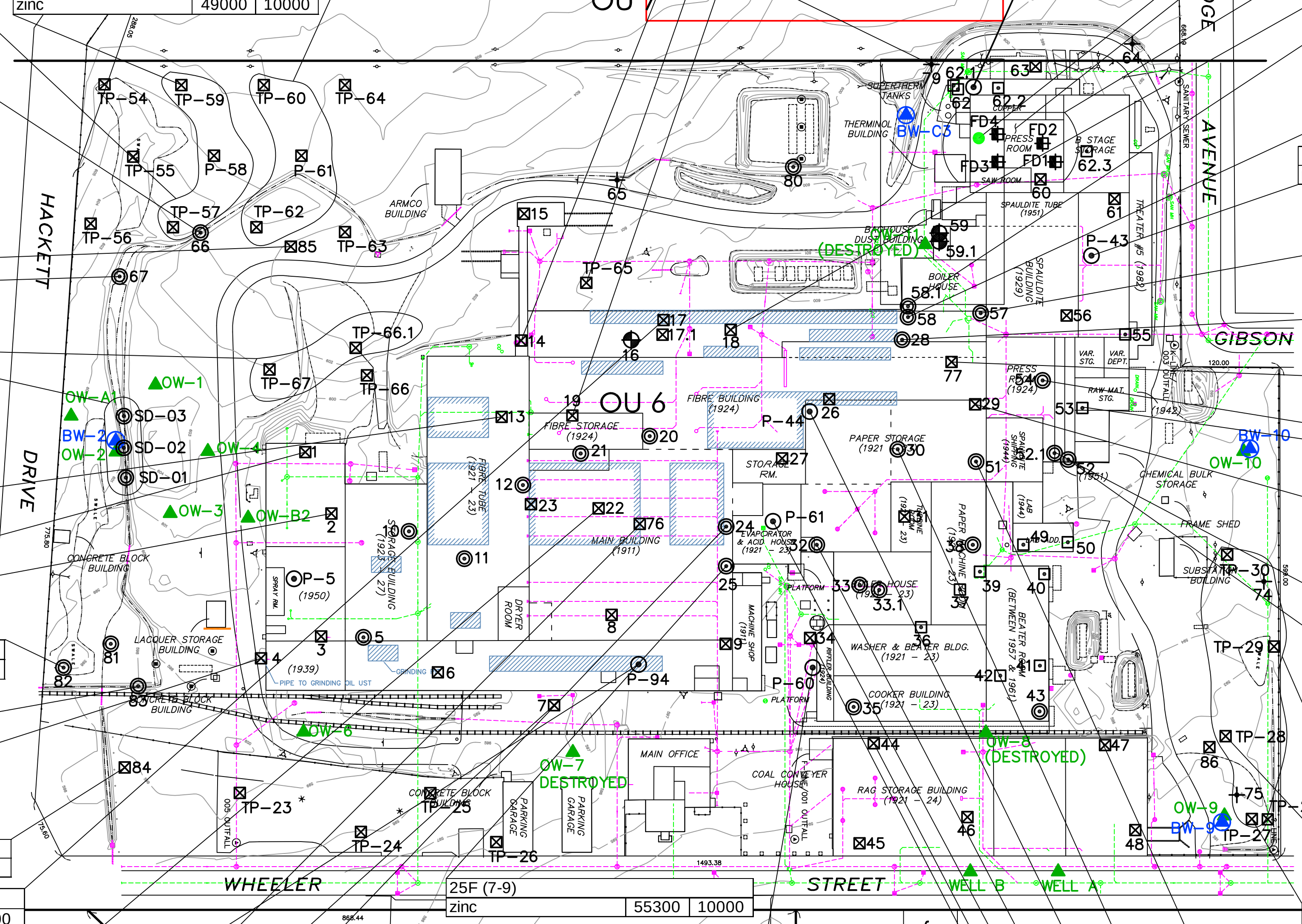
52.1F (19-21)		
benzene	26	4.8

52N (5-7)		
benzene	9.8	4.8
arsenic	21.9	16
52N (13-15)		
benzene	25	4.8

SP-22 (comp TP-27,TP-28,TP-29,TP-30)		
barium	1410	400
copper	23600	270

TP-28 (0"-36")		
barium	636	400

TP-27 (0"-60")		
benzo(a)anthracene	2.1	1
benzo(a)pyrene	1.8	1
benzo(b)fluoranthene	2.4	1
indeno'1,2,3-cd]pyrene	0.62	0.5
cadmium	6.38	4.3
copper	789	270
lead	412	400



NYSDEC PCB Sampling Results	
Sediment Sample Loc.	Conc.
SD-01	6.49
SD-02	8.48
SD-03	11.7

13N (2-3)		
zinc	24100	10000

82F (0-2)		
cadmium	4.88	4.3

84F (1-2)		
arsenic	51.7	16

17F (1-2)		
manganese	2020	2000
17N (5-6)		
manganese	2800	2000

22F (1-2)		
cadmium	5.63	4.3
zinc	20900	10000
22N (2-3)		
cadmium	43.3	4.3
zinc	26700	10000

76F (3-4)		
cadmium	12.8	4.3
lead	481	400
Aroclor-1248	2	1

25F (7-9)		
zinc	55300	10000

24N (7-9)		
zinc	24100	10000

P-94		
cadmium	7.23	4.3
zinc	42,500	10,000

7F (1-1.5)		
benzo(a)anthracene	2.3	1
benzo(a)pyrene	1.9	1
benzo(b)fluoranthene	2.5	1
indeno[1,2,3-cd]pyrene	1	0.5

P-60		
benzo(a)anthracene	41	1
benzo(a)pyrene	39	1
benzo(b)fluoranthene	50	1
benzo(k)fluoranthene	18	3.9
chrysene	38	3.9
dibenzo(a,h)anthracene	2.4	0.56
indeno[1,2,3-cd]pyrene	24	0.5
arsenic	132	16
copper	569	270
mercury	5.3	0.81

34F (1-2)		
copper	496	270
mercury	1.3	0.81

44N (1.5-3)		
barium	404	400

P-61		
cadmium	10.5	4.3
zinc	73700	10000

32N (7-9)		
cadmium	4.53	4.3

51F (3-5)		
cadmium	7.38	4.3
lead	410	400

30F (2-4)		
cadmium	8.64	4.3

P-44		
cadmium	7.23	4.3
zinc	42700	10000

LEGEND

- LIRO PRELIMINARY SAMPLE LOCATION
- LIRO TEST PIT LOCATION
- LIRO DRILL (HSA) LOCATION
- LIRO JACKHAMMER LOCATION
- LIRO GEOPROBE LOCATION
- LIRO MONITORING WELL LOCATION
- PREVIOUS RI OVERBURDEN WELL LOCATION
- PREVIOUS RI BEDROCK WELL LOCATION
- PREVIOUS SEDIMENT SAMPLE LOCATIONS
- PREVIOUS SLUDGE SAMPLE LOCATIONS

18F (1-2)		
2-methylphenol	0.25	0.1

SAMPLE I.D.
GUIDANCE CRITERIA (mg/kg)
DETECTED CONC. (mg/kg)
CONTAMINANT

* 110 mg/kg CRITERIA IS FOR HEXAVALENT CHROMIUM

100 0 100
SCALE IN FEET

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NO.	DATE	DESCRIPTION

REVISIONS

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Buffalo, New York

PROJ. ENG.:
DESIGNED BY:
CHECKED BY:
DRAWN BY:

CLIENT:
ECIDA
(FOR THE SPAULDING FIBRE COMITTEE)

DATE: MAY 2008
SCALE: AS SHOWN

JOB TITLE AND LOCATION:
SPAULDING FIBRE SITE INVESTIGATION

DRAWING TITLE:
RESTRICTED-RESIDENTIAL EXCEEDANCES
OPERABLE UNIT 6

LIRO JOB NO.: 07-25-306A
SHEET OF
FIGURE NO. 5-4

REV-1

REV-1

TP-59 (2"-8")		
benzo(a)pyrene	1.1	1
arsenic	216	16
barium	1770	400
cadmium	108	9.3
copper	37200	270
lead	3440	1000
mercury	5.8	2.8
nickel	324	310
zinc	49000	10000

85F (0-1)		
benzo(a)anthracene	77	5.6
benzo(a)pyrene	66	1
benzo(b)fluoranthene	75	5.6
indeno(1,2,3)cd-pyrene	47	5.6
dibenzo(a,h)anthracene	3.8	0.56
barium	787	400
copper	1950	270
zinc	12600	10000

66F (0-0.5)		
benzo(a)pyrene	1.5	1

67F (0-0.5)		
Aroclor-1254	1.7	1

13N (2-3)		
zinc	24100	10000

SP-21 (comp TP-66.1, TP-67)		
arsenic	26.1	16
barium	686	400
cadmium	229	9.3
copper	12700	270
mercury	3.4	2.8
nickel	457	310
zinc	25000	10000

NYSDEC PCB Sampling Results	
Sediment Sample Loc.	Conc.
SD-01	6.49
SD-02	8.48
SD-03	11.7

1F (1-2)		
barium	455	400

2F (1-2)		
barium	417	400
2N (4-5)		
barium	404	400

83F (0-2)		
Aroclor-1254	2.6	1

4F (0-1)		
benzo(a)anthracene	72	5.6
benzo(a)pyrene	55	1
benzo(b)fluoranthene	73	5.6
chrysene	69	56
dibenz(a,h)anthracene	4.8	0.56
indeno(1,2,3)cd-pyrene	34	5.6
arsenic	47	16
barium	810	400
copper	770	270
lead	1190	1000
Aroclor 1254	17	1
4F (2-3)		
arsenic	34.9	16

14F (1-2)		
arsenic	23.2	16
copper	301	270
zinc	19800	10000
14N (3-4)		
zinc	39600	10000

SP-18 (comp TP-57, TP-58, TP-59)		
arsenic	18.3	16

SP-19 (comp TP-60, TP-61, TP-62)		
copper	2020	270

TP-65 (0"-16")		
arsenic	32.7	16
copper	1090	270
mercury	3.6	2.8
zinc	20700	10000

19N (1-2)		
copper	351	270
zinc	21400	10000

18F (1-2)		
benzo(a)pyrene	1.2	1

58.1N (11-12)		
zinc	11000	10000

NYSDEC PCB Sampling Results	
Sludge Sample Location	Conc.
Sump A	150
Sump B	430
OSE-1	19
FD1	84
FD2	12
FD3	5.3
FD4	12

58F (0-2)		
benzo(a)anthracene	18	5.6
benzo(a)pyrene	14	1
benzo(b)fluoranthene	18	5.6
indeno(1,2,3)cd-pyrene	7.9	5.6
Aroclor-1248	2.2	1
58F (4-6)		
copper	274	270
zinc	11100	10000

57N (4-6)		
cadmium	13.4	9.3

P-44		
zinc	42700	10000

77N (1-2)		
zinc	23200	10000

54 F (3-5)		
benzo(a)pyrene	1.2	1

29F (1-2)		
Aroclor-1248	1.2	1

53F (0-4)		
benzo(a)pyrene	3.2	1

52N (5-7)		
arsenic	21.9	16

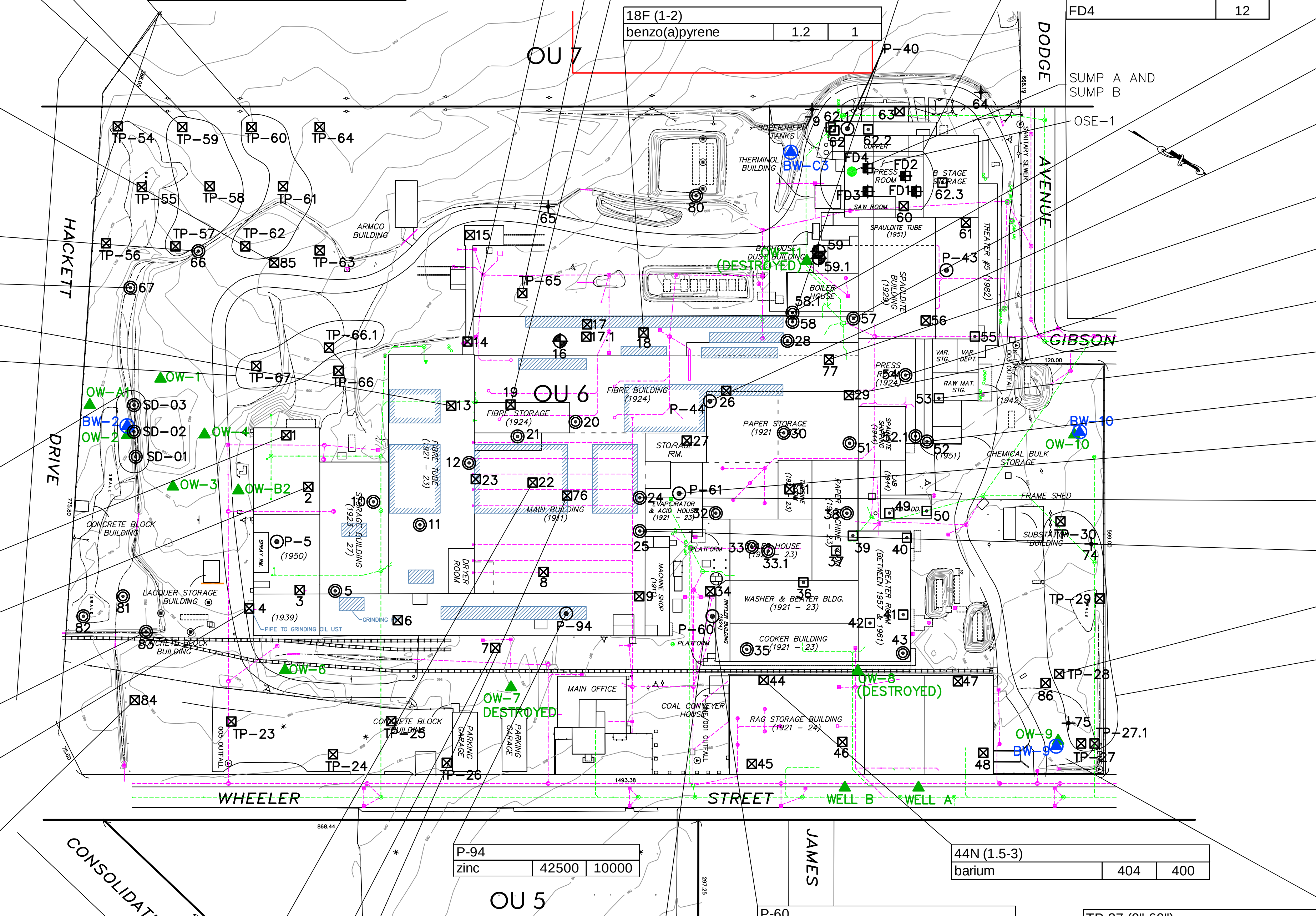
P-61		
cadmium	10.5	9.3
zinc	73700	10000

24N (7-9)		
zinc	24100	10000

25F (7-9)		
zinc	55300	10000

TP-28 (0"-36")		
barium	636	400

SP-22 (comp TP-27,TP-28,TP-29,TP-30)		
barium	1410	400
copper	23600	270



84F (1-2)		
arsenic	51.7	16

22F (1-2)		
zinc	20900	10000
22N (2-3)		
cadmium	43.3	9.3
zinc	26700	10000

P-94		
zinc	42500	10000

34F (1-2)		
copper	496	270

76F (3-4)		
cadmium	12.8	9.3
Aroclor-1248	2	1

7F (1-1.5)		
benzo(a)pyrene	1.9	1

44N (1.5-3)		
barium	404	400

P-60		
benzo(a)anthracene	41	5.6
benzo(a)pyrene	39	1
benzo(b)fluoranthene	50	5.6
benzo(k)fluoranthene	18	56
chrysene	38	56
dibenzo(a,h)anthracene	2.4	0.56
indeno[1,2,3-cd]pyrene	24	5.6
arsenic	132	16
copper	569	270
mercury	5.3	2.8

TP-27 (0"-60")		
benzo(a)pyrene	1.8	1
copper	789	270

LEGEND

- LIRO PRELIMINARY SAMPLE LOCATION
- LIRO TEST PIT LOCATION
- LIRO DRILL (HSA) LOCATION
- LIRO JACKHAMMER LOCATION
- LIRO GEOPROBE LOCATION
- LIRO MONITORING WELL LOCATION
- PREVIOUS RI OVERBURDEN WELL LOCATION
- PREVIOUS RI BEDROCK WELL LOCATION
- PREVIOUS SEDIMENT SAMPLE LOCATION
- PREVIOUS SLUDGE SAMPLE LOCATION

18F (1-2)		
2-methylphenol	0.25	0.1

SAMPLE I.D.
GUIDANCE CRITERIA (mg/kg)
DETECTED CONC. (mg/kg)
CONTAMINANT

* 110 mg/kg CRITERIA IS FOR HEXAVALENT CHROMIUM

100 0 100
SCALE IN FEET

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SPAULDING FIBRE SITE INVESTIGATION

DRAWING TITLE:
COMMERCIAL EXCEEDANCES
OPERABLE UNIT 6

LIRO JOB NO.: 07-25-306A
SHEET OF
FIGURE NO. 5-5

J:\0725306A Spaulding\CAD\SI Report\Spaulding OU6 RC.dwg, 5/14/2008 1:05:25 PM, ES

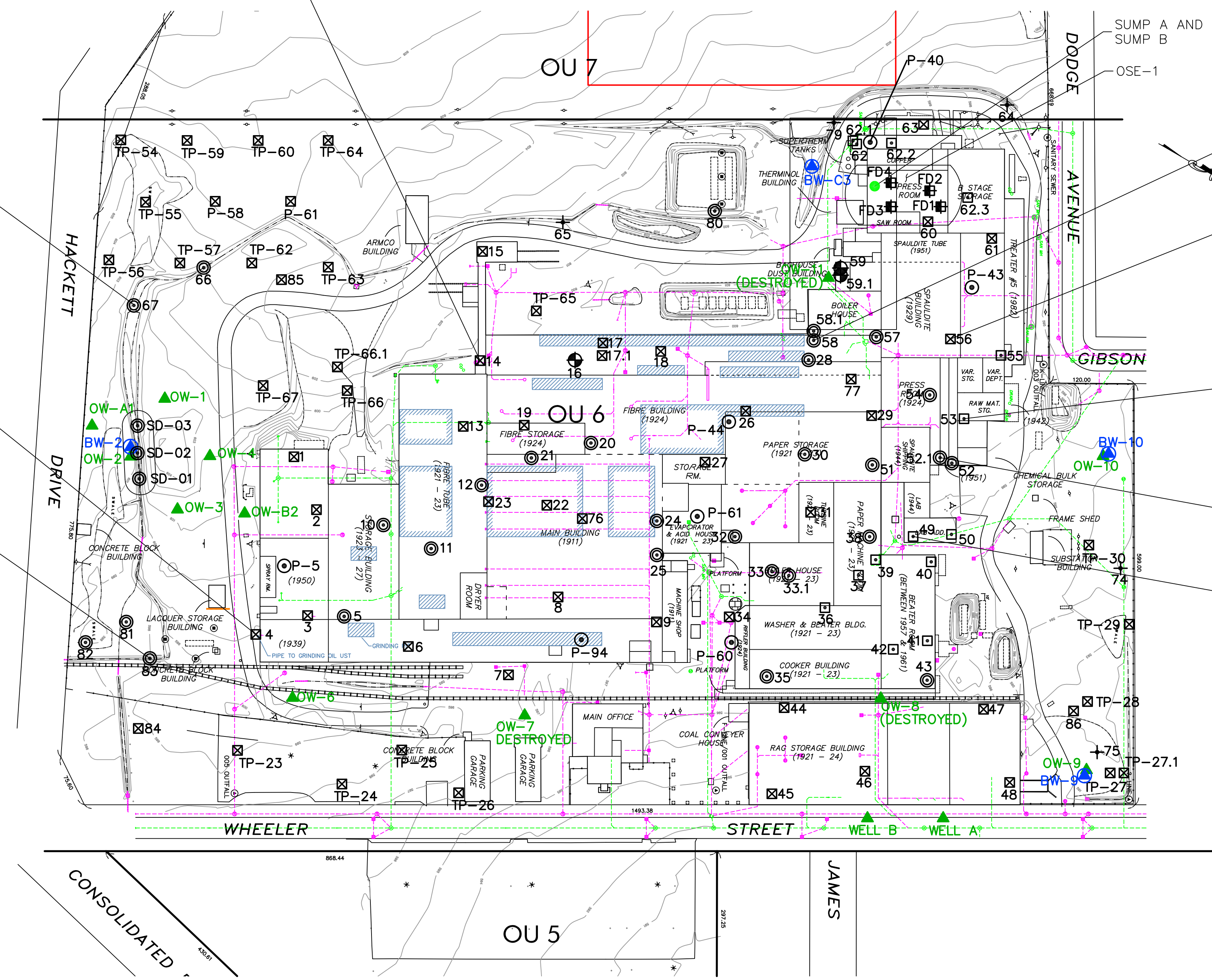
REV-1

14F (1-2)		
di-n-butylphthalate	8.3	8.1

67F (0-0.5)		
di-n-butylphthalate	230	8.1

4F (0-1)		
di-n-butylphthalate	260	8.1
dimethyl phthalate	3	2

83F (0-2)		
di-n-butylphthalate	440	8.1



58F (0-2)		
di-n-butylphthalate	210	8.1

56N (1-2)		
di-n-butylphthalate	50	8.1

53F (2-4)		
di-n-butylphthalate	280	8.1

52.1F (1-3)		
di-n-butylphthalate	9.6	8.1

49F (0-2)		
di-n-butylphthalate	530	8.1

LEGEND

- LIRO PRELIMINARY SAMPLE LOCATION
- LIRO TEST PIT LOCATION
- LIRO DRILL (HSA) LOCATION
- LIRO JACKHAMMER LOCATION
- LIRO GEOPROBE LOCATION
- LIRO MONITORING WELL LOCATION
- PREVIOUS RI OVERBURDEN WELL LOCATION
- PREVIOUS RI BEDROCK WELL LOCATION
- PREVIOUS SEDIMENT SAMPLE LOCATION
- PREVIOUS SLUDGE SAMPLE LOCATION

18F (1–2)		
2–methylphenol	0.25	0.1

SAMPLE I.D.
GUIDANCE CRITERIA (mg/kg)
DETECTED CONC. (mg/kg)
CONTAMINANT
* 110 mg/kg CRITERIA IS FOR HEXAVALENT CHROMIUM

100 0 100
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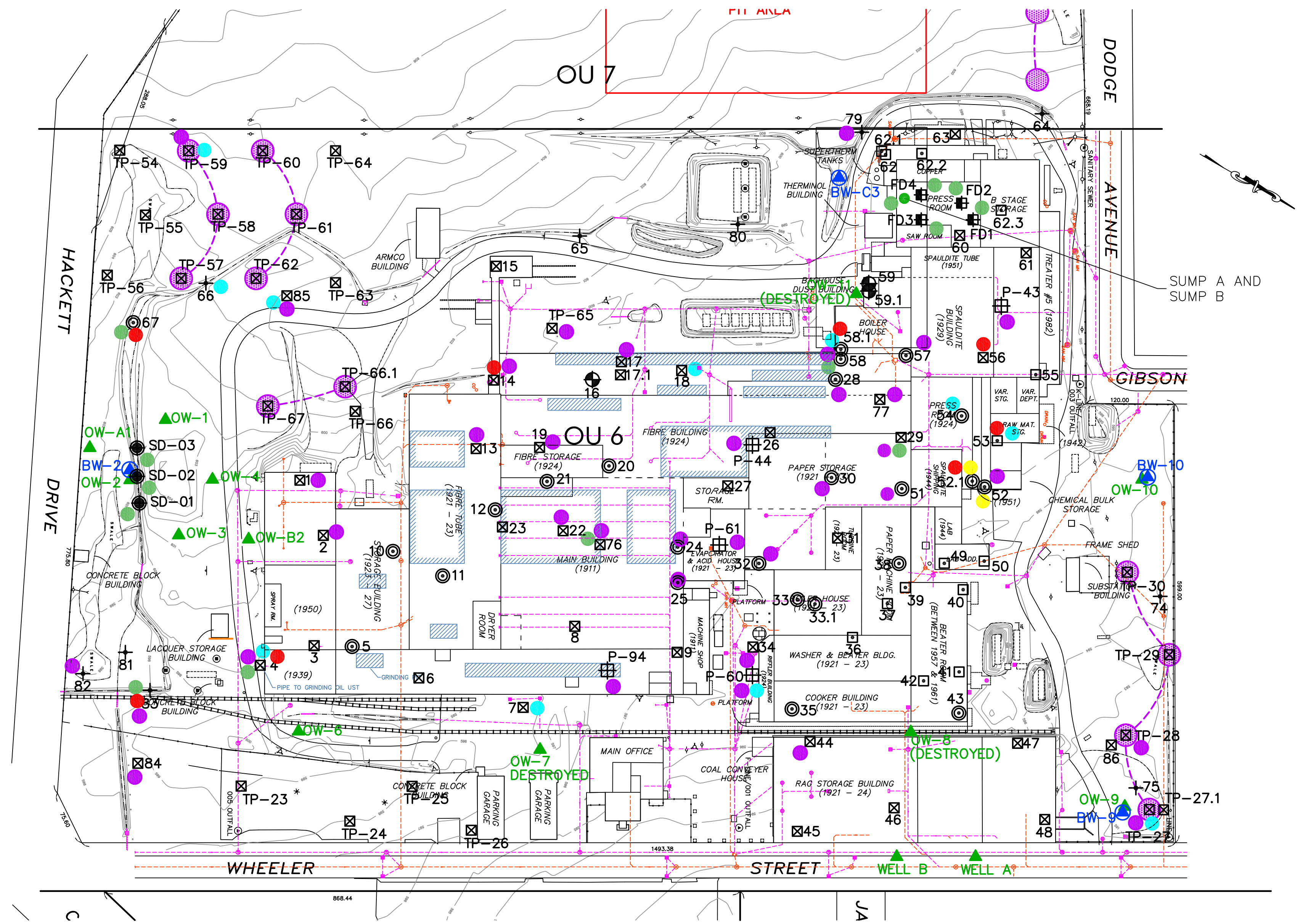
SCALE: AS SHOWN

JOB TITLE AND LOCATION:
SPAULDING FIBRE SITE INVESTIGATION

DRAWING TITLE:
TAGM 4046 EXCEEDANCES
OPERABLE UNIT 6

LIRO JOB NO.: 07-25-306A
SHEET OF
FIGURE NO. 5-6

REV-1



LEGEND

- LIRO TEST PIT LOCATION
- LIRO DRILL (HSA) LOCATION
- LIRO JACKHAMMER LOCATION
- LIRO GEOPROBE LOCATION
- LIRO MONITORING WELL LOCATION
- PREVIOUS RI OVERBURDEN WELL LOCATION
- PREVIOUS RI BEDROCK WELL LOCATION
- PREVIOUS SEDIMENT SAMPLE LOCATION
- PREVIOUS SLUDGE SAMPLE LOCATION
- LIRO PRELIMINARY SOIL SAMPLE LOCATION
- METALS EXCEEDANCE
- PAH's EXCEEDANCE
- PCB's EXCEEDANCE
- TAGM SVOC's EXCEEDANCE
- BENZENE EXCEEDANCE
- COMPOSITE SAMPLE METALS EXCEEDANCE

100 0 100
SCALE IN FEET

WARNING

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NO.	DATE	DESCRIPTION

REVISIONS

LiRo Engineers, Inc.
690 Delaware Ave.
Buffalo, New York

PROJ. ENG.:
DESIGNED BY:
CHECKED BY:
DRAWN BY:

CLIENT:

ECIDA

(FOR THE SPAULDING FIBRE COMITTEE)

DATE: MAY 2008

SCALE: AS SHOWN

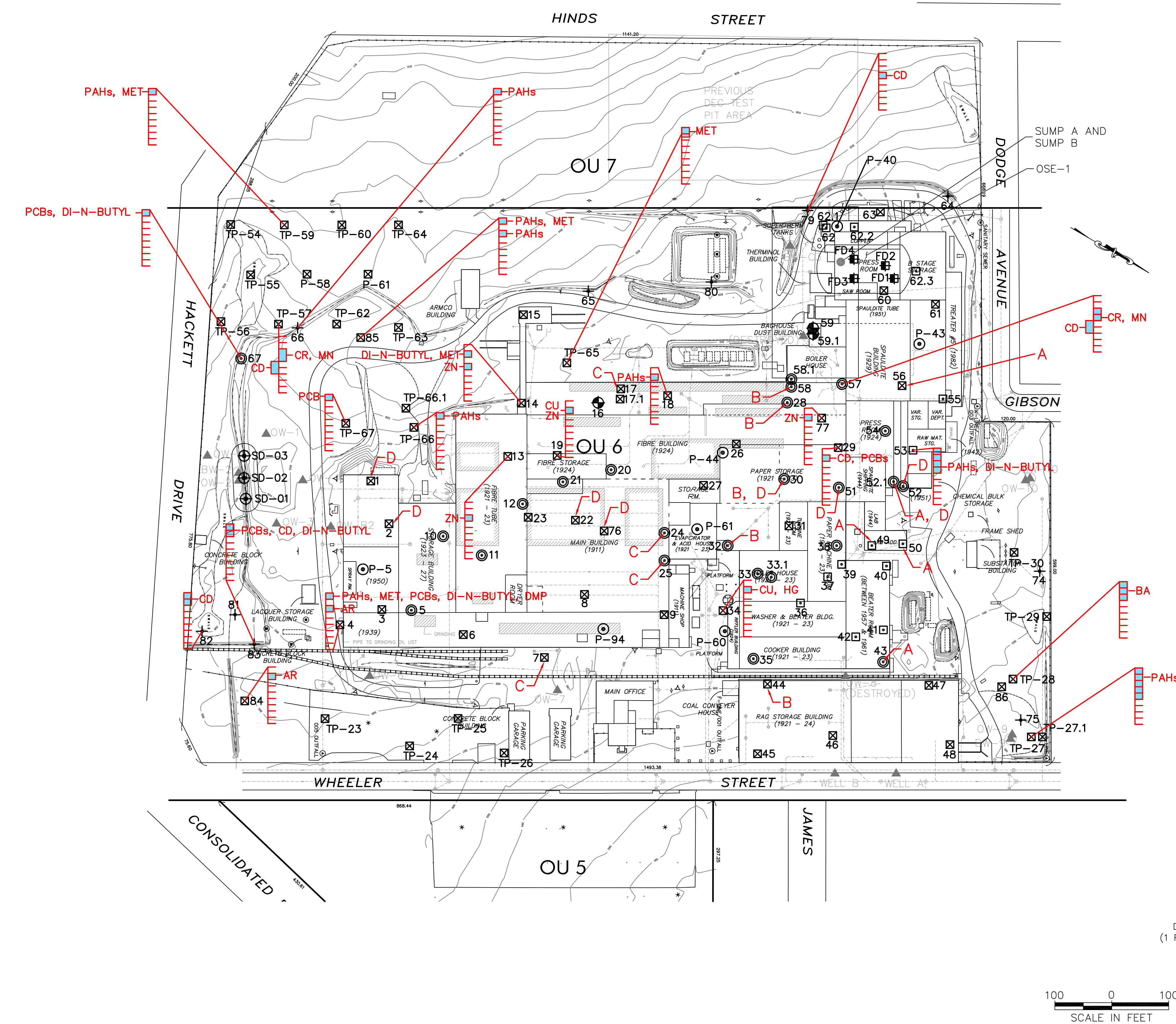
JOB TITLE AND LOCATION: SPAULDING FIBRE SITE INVESTIGATION

DRAWING TITLE: OPERABLE UNIT 6 CONTAMINANT DISTRIBUTION

LIRO JOB NO.: 07-25-306A

SHEET OF

FIGURE NO. 5-7



LEGEND

- LIRO PRELIMINARY SAMPLE LOCATION
- LIRO TEST PIT LOCATION
- LIRO DRILL (HSA) LOCATION
- LIRO JACKHAMMER LOCATION
- LIRO GEOPROBE LOCATION
- LIRO MONITORING WELL LOCATION
- PREVIOUS RI OVERBURDEN WELL LOCATION
- PREVIOUS RI BEDROCK WELL LOCATION
- PREVIOUS SEDIMENT SAMPLE LOCATION
- PREVIOUS SLUDGE SAMPLE LOCATION

PAHs = POLYAROMATIC HYDROCARBONS
MET = METALS (SEVERAL)
CD = CADMIUM
CU = COPPER
PCBs = POLYCHLORINATED BI-PHENYLS
HG = MERCURY
ZN = ZINC
CR = CHROMIUM (TOTAL)
MN = MANGANESE
AR = ARSENIC
BA = BARIUM
DI-N-BUTYL = DI-N-BUTYLPHTHALATE
DMP = DIMETHYL PHTHALATE
BEN = BENZENE

A = EXCEEDANCES DETAILED ON SECTION A-A' (FIGURE 4-1)
B = EXCEEDANCES DETAILED ON SECTION B-B' (FIGURE 4-2)
C = EXCEEDANCES DETAILED ON SECTION C-C' (FIGURE 4-3)
D = EXCEEDANCES DETAILED ON SECTION D-D' (FIGURE 4-4)

DEPTH INDICATOR (1 FOOT INTERVALS)
SURFACE
EXCEEDANCE OF APPLICABLE GUIDANCE CRITERIA (PART 375 RESTRICTED – RESIDENTIAL OR TAGM #4046) FOR NOTED COMPOUND(S)

NO.	DATE	DESCRIPTION

REVISIONS

LiRo Engineers, Inc.
690 Delaware Ave.
Buffalo, New York

PROJ. ENG.:
DESIGNED BY:
CHECKED BY:
DRAWN BY:

CLIENT: **ECIDA**
(FOR THE SPAULDING FIBRE COMITTEE)

DATE: FEBRUARY 2008
SCALE: AS SHOWN

JOB TITLE AND LOCATION: SPAULDING FIBRE SITE INVESTIGATION

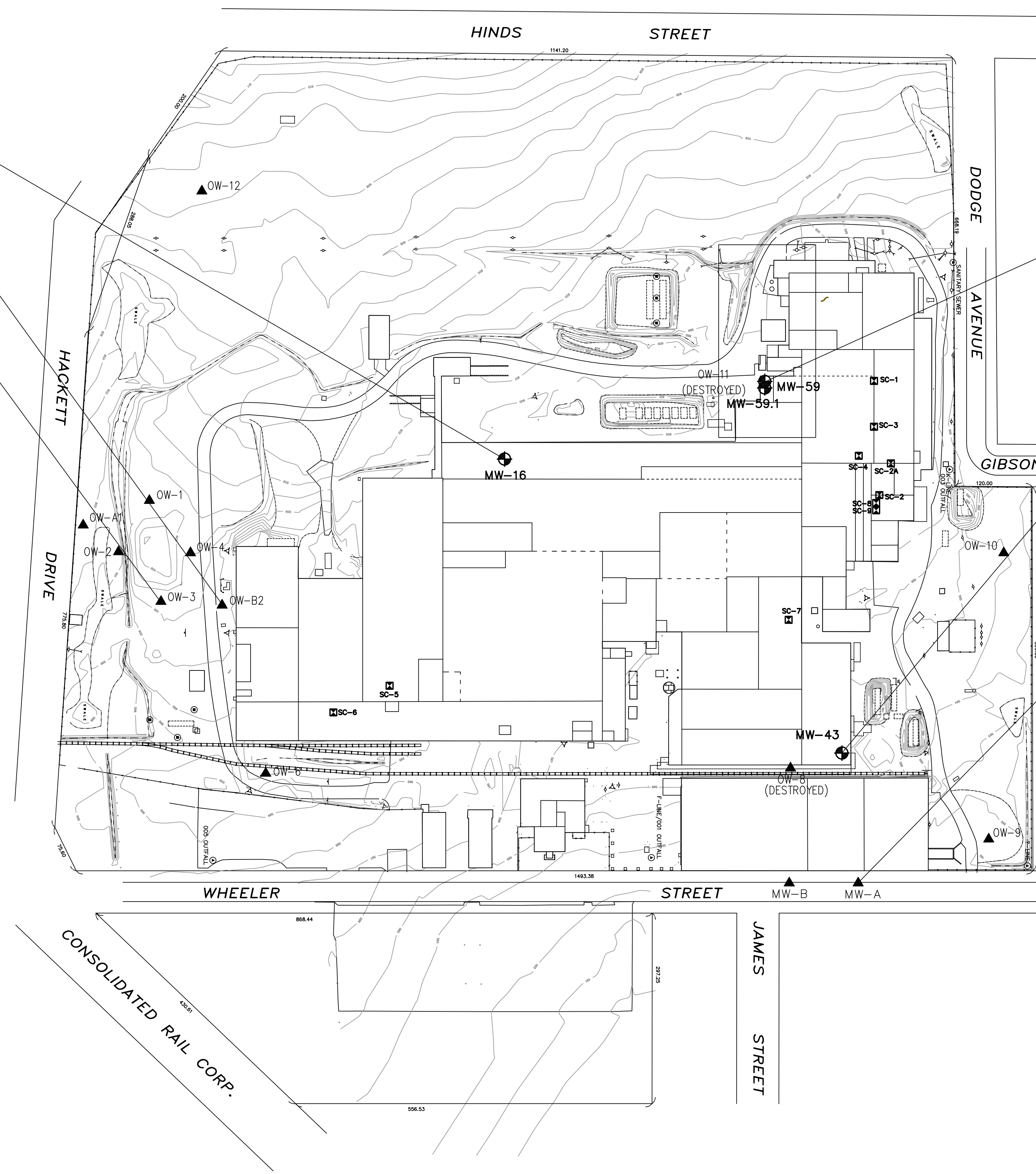
DRAWING TITLE: VERTICAL DISTRIBUTION OF CONTAMINANTS

LIRO JOB NO.: 07-25-306A
SHEET OF
FIGURE NO. 5-8

MW-16		
vinyl chloride	4.4	2
trans- 1,2-Dichloroethene	18	5
cis- 1,2-Dichloroethene	44	5

OW-B2		
Bis (2-Ethylhexyl) phthalate	21	5
Antimony	5.26	3

OW-3		
Selenium	14.5	10



MW-59		
Arsenic	72.1	25
Lead	32	25
Thallium	4.43	4

MW-43		
Acetone	85	50
2-Butanone	60	50
2-Hexanone	58	50
Formaldehyde	61	8
Antimony	41.5	3
Lead	26	25

MW-A		
Antimony	128	3

LEGEND

OW-1 ▲ OVERBURDEN RI MONITORING WELL

LIRO MONITORING WELL

OW-3		
IRON	565	300

SAMPLE I.D.
GUIDANCE CRITERIA (ug/L)
DETECTED CONC. (ug/L)
CONTAMINANT

100 0 100
SCALE IN FEET

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NO.	DATE	DESCRIPTION

REVISIONS

LiRo Engineers, Inc.
690 Delaware Ave.
Buffalo, New York

PROJ. ENG.: AMM
DESIGNED BY:
CHECKED BY:
DRAWN BY: ES

CLIENT: **ECIDA**
(FOR THE SPAULDING FIBRE COMITTEE)

DATE: MAY 2008
SCALE: AS SHOWN

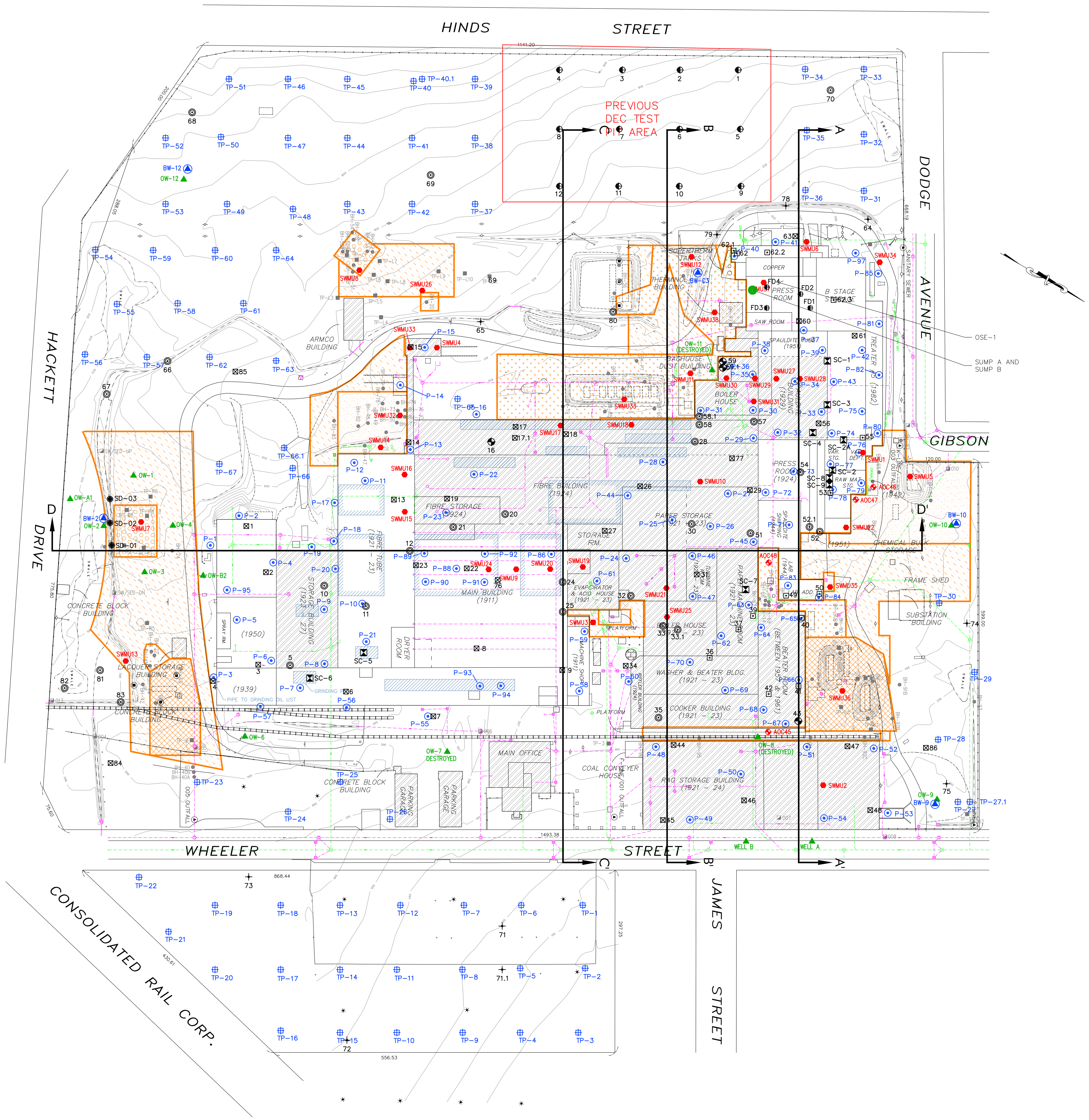
JOB TITLE AND LOCATION: SPAULDING FIBRE SITE INVESTIGATION AND REMEDIAL ALTERNATIVES REPORT

DRAWING TITLE: NYSDEC GROUNDWATER QUALITY EXCEEDANCES

LIRO JOB NO.: 07-25-306A
SHEET 1 OF 1
FIGURE NO. 5-9

REV-1

SWMU or AOC#	Description
SWMU 1	Container Storage Area
SWMU 2	Container Storage Area
SWMU 3	Zinc Chloride Sludge Container Storage Area
SWMU 4	Container Storage Area
SWMU 5	Container Storage Area
SWMU 6	Container Storage Area
SWMU 7	Resin Drum Landfill
SWMU 8	Laminant Dust Landfill
SWMU 9	Zinc Chloride Sludge and Drum Landfill
SWMU 10	Resin Dust Landfill
SWMU 11	Sludge Settling Pond
SWMU 12	Sludge Settling Pond
SWMU 13	Sludge Settling Pond
SWMU 14	Sludge Settling Pond
SWMU 15	Vulcanized Fibre Tube Leaching Tanks
SWMU 16	Vulcanized Fibre Tube Leaching Tanks
SWMU 17	Vulcanized Fibre Sheet Leaching Tanks
SWMU 18	Vulcanized Fibre Sheet Leaching Tanks
SWMU 19	Evaporation System
SWMU 20	Weak Water Storage Tank
SWMU 21	Weak Water Treatment Plant
SWMU 22	Reaction Water Storage Tanks
SWMU 23	AST Farm
SWMU 24	Zinc Chloride Sludge Concrete Pit
SWMU 25	Paper Mill Waste Water Storage
SWMU 26	Paper Sludge Land Application Area
SWMU 27	Boiler
SWMU 28	Boiler
SWMU 29	Boiler
SWMU 30	Boiler
SWMU 31	Incinerator
SWMU 32	Incinerator
SWMU 33	Incinerator
SWMU 34	Solvent Fume After-Burner
SWMU 35	Laboratory Waste Storage Area
SWMU 36	AST/UST Area
SWMU 37	Spauldite Sump Area
SWMU 38	Thermal Destruction Unit / Drain Tiles / Contaminated
AOC 39	Site Process Sewer System (K-Line and F-Line)
AOC 40	Offsite Storm Sewer
AOC 41	Contaminated Sediments in Niagara River
AOC 42	Site Utility Bedding
AOC 43	Site Storm Sewer System
AOC 44	Site Process Sewer System (I-Line)
AOC 45	Rail Spur
AOC 46	Drum Storage Doc
AOC 47	Bulk Chemical Unloading Area
AOC 48	Transformer Explosion Area



LEGEND

- PREVIOUS DEC TEST PIT LOCATION
- PREVIOUS SLUDGE SAMPLE LOCATION
- PREVIOUS SEDIMENT SAMPLE LOCATION
- LIRO NOVEMBER 2007 TEST PIT LOCATION
- LIRO SOIL BORING (HSA) LOCATION
- LIRO SOIL BORING (JACKHAMMER) LOCATION
- LIRO SOIL BORING (GEOPROBE) LOCATION
- LIRO MONITORING WELL LOCATION
- LIRO JUNE 2007 TEST PIT LOCATION
- LIRO SOIL VAPOR SAMPLE POINT
- LIRO WASTE CHARACTERIZATION SAMPLE LOCATION
- SWMU
- AOC
- PREVIOUS RI OVERBURDEN WELL LOCATION
- PREVIOUS RI BEDROCK WELL LOCATION
- PREVIOUS RI TEST PIT LOCATION
- PREVIOUS RI SOIL BORING LOCATION
- PREVIOUS RI GW/SEDIMENT SAMPLE POINT
- PIT AREA
- OU1: REGULATED WASTES (STATE SUPERFUND-EXCLUDED FROM PROJECT SCOPE)
- OU2: PCB CONTAMINATED WASTES - IRM AREAS (STATE SUPERFUND-EXCLUDED FROM PROJECT SCOPE)
- OU3: PETROLEUM CONTAMINATED WASTES (STATE SUPERFUND-EXCLUDED FROM PROJECT SCOPE)
- OU4: MULTIPLE CONTAMINANT WASTES (STATE SUPERFUND-EXCLUDED FROM PROJECT SCOPE)
- EXPANDED AREA OF CONTAMINATED WASTES (STATE SUPERFUND-EXCLUDED FROM PROJECT SCOPE)
- DEMOLISHED TO MAIN FLOOR LEVEL

100 0 100
SCALE IN FEET

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NO.	DATE	DESCRIPTION

REVISIONS

LiRo Engineers, Inc.
690 Delaware Ave.
Buffalo, New York

PROJ. ENG.:	CLIENT: ECIDA (FOR THE SPAULDING FIBRE COMITTEE)	JOB TITLE AND LOCATION: SPAULDING FIBRE SITE INVESTIGATION
DESIGNED BY:		LIRO JOB NO.: 07-25-306A
CHECKED BY:		SHEET OF
DRAWN BY:	DATE: MARCH 2008	SCALE: AS SHOWN
	DRAWING TITLE: SI SAMPLE LOCATION PLAN	PLATE NO. 1