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MEMORANDUM

TO: Paul Doherty, EPA/START PO

FROM: Marc Schlebusch, EI, E & E/STM MS

THRU: Hieu Q. Vu, P.E., CHMM, E & E/START PM

DATE: October 13, 1998

SUBJECT: PRP Monitoring of Removal Activities at the Former Carter Carburetor Manufacturing Facility, 2800–2840 N. Spring Street, St. Louis, Missouri.

TDD: S07-9706-007
PAN: 0560CCRSXX
SSID: 07JJ
EPA/OSC: Betty Berry, EPA/SUPR

INTRODUCTION

The Ecology & Environment, Inc. (E & E), Superfund Technical Assessment and Response Team (START) was tasked by the United States Environmental Protection Agency (EPA) Region 7 Emergency Response and Removal (ER&R) program, under technical direction document (TDD) S07-9706-007, to assist the EPA on-scene coordinator (OSC) with monitoring of removal activities at the former Carter Carburetor manufacturing facility located at 2800 to 2840 North Spring Street in St. Louis, Missouri (see Figure A: Attachment 1). The removal activities consisted of demolition and disposal of polychlorinated biphenyl (PCB)-contaminated building materials. The removal was coordinated by the contractor for the potentially responsible party (PRP), ACF Industries, Inc. (ACF). ACF contracted with Shannon & Wilson, Inc. (S&W), for the removal work. S&W subcontracted Smith Environmental Services Inc. (SES), Environmental Restoration (ER), and Cardinal Environmental to conduct removal activities at the site. Specific elements of this task included documentation of site conditions and PRP-lead removal activities, providing photographic documentation, and collection of multimedia split samples from the PRP's

contractor. START was also tasked to prepare a letter report summarizing site activities upon completion of all site work.

BACKGROUND

The former Carter Carburetor facility manufactured carburetors and other equipment for gasoline- and diesel-powered equipment as early as the 1930's. Aluminum and zinc were die cast and machined into carburetor components. Those components were treated with protective coatings and assembled on site. Materials related to this manufacturing process may have included polymers and resins for coatings and metal treating solutions containing cyanide, lead, cadmium, chromium, and other metals. Materials relating to the manufacturing equipment included coolants, cutting fluids, lubricating oils, hydraulic oils, dielectric fluids from transformers, and asbestos.

Carter Carburetor and Carter Automotive Products were subsidiaries of ACF Industries, Inc. ACF acquired the site property prior to the 1930's. In 1985, ACF decommissioned the facility, and the equipment was dismantled and either shipped to other locations or sold. On April 26, 1985, the Land Reutilization Authority of St. Louis (LRA) accepted title of the property from ACF and sold the property to Hubert R. Thompson on the same day. Thompson was informed by the LRA that there was electrical equipment on site that contained PCB fluids. On October 29, 1991, the site was sold to George Moore, president of Carter Building Inc. (CBI), after Thompson had defaulted on the property loan (CBI has no relation to ACF Industries, Inc. or Carter Carburetor). Currently, CBI owns the west half and southeastern portion of the facility, and the St. Louis LRA owns the northeastern portion of the facility, which includes the former warehouse and die cast buildings. A site sketch of the facility can be found as Figure B in Attachment 1.

As part of the purchase agreement, Thompson was required to initiate actions to dispose of PCB-contaminated materials from the CBI portion of the building. A vaulted pump room near the center of the building that contained pumps, old boilers, and other equipment also contained electrical substation #1 (Figure B) and was a known area of PCB contamination. During the cleanup activity in this area, initiated by Thompson in 1989, contractors removed PCB transformers and a PCB-contaminated concrete transformer pad. Verification studies performed by Environmental Operations, Inc.; Environmental Science & Engineering, Inc.; and EPA personnel following those removal actions indicated that PCB contamination was still present in the pump room and also in areas located in the LRA's portions of the building.

Areas within the LRA property suspected of high levels of PCB contamination included the area around and below the transformers at substation #3, which is located on the second floor roof of the LRA building adjacent to the CBI property. Prior studies have indicated that this substation had leaked PCB-contaminated fluid down the wall onto the floor of the former south die cast (SDC) building of Carter Carburetor, now owned by LRA. Platform-mounted substation #4, near the northwest corner of the north die cast (NDC) building and southwest corner of the north parking lot (NPL) of the former Carter Carburetor facility, was also known to be contaminated with PCBs.

On November 16, 1993, the EPA Region 7 Technical Assistance Team (TAT), conducted limited sampling in areas that were known or suspected to be contaminated with PCBs. Samples indicated PCB concentrations as high as 180,000 milligrams per kilogram (mg/kg) in solids found outside of the NDC in the north parking lot and 410,000 micrograms per 100 square centimeters ($\mu g/100\ cm^2$) on surfaces inside of the die cast building. The TSCA cleanup criteria for PCB-contaminated material is 10 mg/kg for solid material and 10 $\mu g/100\ cm^2$ for high contact areas.

On March 15, 1994, TAT performed sampling activities to assess the potential for PCB exposure to personnel currently working in other areas of the CBI building and to further delineate the extent of contamination. Those samples indicated that the highest concentrations of PCBs were found in the NDC and SDC. PCB concentrations of 3,300 mg/kg were detected in solid residues on abandoned equipment mounting pads in the SDC and up to 136,000 $\mu g/100\ cm^2$ in wipe samples from stained areas of the floor in the NDC. Dust samples from the die cast buildings were also analyzed for total metals and indicated concentrations of lead, arsenic, and cadmium as high as 3,840 mg/kg, 21.0 mg/kg and 40.6 mg/kg, respectively. Also, during this investigation, TAT discovered that the former manufacturing facility may have used a fire-resistant hydraulic fluid in the die cast operations during the 1970's. This fluid, manufactured by Monsanto Chemical Company, was known by the brand name Pydraul and may have contained PCBs in the percent-concentration range to provide its fire-resistant qualities. A brass filler inlet, labeled Pydraul, was located on the outside wall of the die cast building along Grand Boulevard. An underground storage tank located in the north parking lot outside of the die cast building was also labeled Pydraul on the vent pipe. The Pydraul hydraulic fluid, in addition to the leaking transformers, was suspected to be the primary source of PCB contamination throughout the NDC, SDC, and NPL.

On June 26, 1995, TAT conducted a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Site Assessment at the Carter carburetor facility that focused on the NDC, SDC, the abandoned warehouse (WR) building to the south of the die cast buildings and the NPL. The samples

consisted of wipe samples from throughout the die cast building, concrete core samples from the inside floor, soil samples from below the inside floor and north parking lot, and wood chip samples from the roof trusses. The following conclusions were made from the sample results:

- All of the wipe samples collected from overhead steel pipes, vents, and structural members indicated PCB concentrations in excess of the Toxic Substance Control Act (TSCA) cleanup criteria of 10 μg/100 cm^2 for wipe samples. The highest result was 1,680 μg/100 cm^2.

- All of the wood chip samples collected from overhead trusses and roof boards indicated PCB concentrations in excess of the TSCA cleanup criteria of 10 mg/kg for solid samples. The highest result was 816 mg/kg.

- All of the concrete core samples showed visible staining from 0 to 1 inch below the surface and indicated PCB concentrations well above the TSCA cleanup criteria. One core sample indicated a PCB concentration of 1,270 mg/kg at 1 to 2 inches below the surface.

- Soil samples collected at 6 to 12 inches and 12 to 18 inches below stained asphalt in the north parking lot indicated PCB concentrations as high as 7,550 mg/kg and 52 mg/kg, respectively.

Based on the conclusions of the TAT Site Assessment report and other data, the EPA issued a Unilateral Administrative Order (UAO) to ACF Industries Inc., on July 30, 1996. The order required ACF to conduct removal actions to "abate an imminent and substantial endangerment to the public health, welfare or the environment that may be presented by the actual or threatened release of hazardous substances at and/or from the site." To comply with the UAO, ACF contracted Shannon and Wilson Construction Services, Inc. (S&W), to coordinate and oversee the removal activities. S&W subcontracted Smith Environmental Services Inc. (SES), Environmental Restoration (ER), and Cardinal Environmental to conduct the removal activities during various phases of the project.

S&W produced a Removal Action Work Plan (RAWP), Sampling and Analysis Plan (SAP), Site Safety Plan (SSP), and Standard Operating Procedures (SOP), Asbestos Abatement Work Plan, and Warehouse Floor Removal Work Plan for the removal activity (included in this report as attachments 2A, 2B, 2C, 2D, 2E, and 2F respectively). These documents were approved for use following review by the EPA and amendment by ACF. Amendments to the RAWP are included in the attachments.

SITE ACTIVITIES

Site activities began on June 23, 1997. S&W site project manager Russell Schwab and SES removal manager Jim Davis met on site with START team member Joe Davis to conduct an overview of the site

and project activities. The TSCA cleanup criteria of 10 mg/kg and 10 $\mu g/100\ cm^2$ were used as benchmarks during removal activities conducted at the site. Building debris, excavated soil, and drums containing material with PCB concentrations above 50 mg/kg were sent to a TSCA Subtitle landfill C located in Belleville, Michigan. Building debris, excavated soil, and drums containing material with PCB concentrations below 50 mg/kg but above 10 mg/kg was sent to a RCRA Subtitle D landfill in Granite City, Illinois. Drums containing PCB-containing transformers and ballast was sent to Trans-Cycle Industries, Inc, Pell City, Alabama for recycling or disposal. Recyclable steel was sent to Grossman Iron & Steel in St. Louis, Missouri. Removal activities conducted at the site are summarized in the following week-by-week account.

June 22-28, 1997

SES mobilized equipment to the site and set up work trailers. The command center was located in the lot south of the warehouse building. S&W initiated PCB air-monitoring activities throughout the site using personal sampling pumps with particulate air filter cartridges. The air samples, collected from each side of the site near the site perimeter, were obtained on a regular basis during the period of site removal activities.

S&W conducted characterization sampling in the north parking lot to identify the lateral and vertical extent of the contaminated areas for removal. The sampling team divided the parking lot into three exposure units as described in the Sampling and Analysis Plan (attachment 2B). Discrete samples of the asphalt pavement, the base rock under the pavement, and the first 6 inches of soil under the pavement material were collected from 15 cells within the exposure units. The results of these samples (and all other sampling at the site) are included in Table A (Attachment 3).

As requested by the OSC, START received split samples of approximately 15% of all the samples collected by S&W during the removal activities. All split samples were shipped by START with a chain of custody record to the contract laboratory, Specialized Assays Inc., Nashville, Tennessee (see Attachment 4 for laboratory results). Table B in Attachment 3 compares the S&W sample results with the duplicate results.

June 29-July 5, 1997

The SES removal crew began decontamination activities in the NDC. Decontamination was conducted to remove PCB-contamination from material so it could be disposed of as RCRA Subtitle D waste (< 50

mg/kg PCB). A floor sweeping machine and hand brooms were used to pick up dust and debris from the floor. The crew then used pressure washers to clean pipes, conduit, and roof trusses within the ceiling of the NDC. Waste water generated during the cleaning activity was allowed to accumulate in the floor sumps in the NDC where it was later pumped into a 21,000-gallon storage tank before being processed through a carbon filter and discharged to the city of St. Louis sewer system.

S&W awarded a contract to Cardinal Environmental Services for asbestos abatement work at the site (see Attachment 2E for the asbestos abatement work plan).

July 6–July 12, 1997

The SES crew completed the washing of the walls, ceiling, and steel infrastructure in the NDC. Following the wash down, the crew dismantled the piping and conduit from the ceiling and stacked it in a pile in the northwest corner of the NDC.

S&W collected three composite wood chip samples and four wipe samples from pipes and steel structural parts in the NDC. The sample results indicated PCB concentrations as high as 181.5 mg/kg in the wood chip samples and 614.4 mg/kg from piping.

July 13–July 19, 1997

The SES crew began washing ceilings and walls in the SDC. Following the wash down, the crew dismantled the piping and conduit from the ceiling and stacked it in a pile in the northwest corner of the SDC. SES test washed several areas of the roof structure in the NDC with several different solvents and cleaning products to determine the effectiveness of cleaning the steel for recycling. The areas were wipe sampled after each wash.

The transformer at substation #4 in the north parking lot was removed from its pad and set on plastic on the lot. The drums in the building were inventoried, staged, and sampled for waste profiling.

S&W collected composite masonry samples from the walls throughout the NDC and SDC to determine the disposal method for the demolition materials.

July 20–July 26, 1997

The SES crew worked on washing the floors in the NDC and SDC. The crew also began removing trash and debris from the offices in the warehouse. Several small PCB-containing transformers found in one of the offices in the warehouse were collected and staged with the drums for disposal.

Analytical results from the test washing in the NDC indicated that the steel was not sufficiently clean for recycling.

The asbestos abatement work began on the large furnaces in the SDC.

July 27–August 2, 1997

SES used the cleaning product "Less Than 10" to do the final cleaning of the floors in the NDC and SDC.

S&W collected composite masonry samples from the walls in the warehouse to determine the disposal method for the demolition materials. Wipe samples were collected from the samples in the NDC, SDC, and from the roofing materials.

August 3–August 9, 1997

SES continued to remove trash and debris from the offices in the warehouse. The material was sorted to locate potential PCB-containing material, such as capacitors and small transformers. The capacitor spill area in the warehouse was double washed and double solvent rinsed. Trees and debris were cleared from the north parking lot in preparation for excavation and sampling. Severing of utility connections between the site and the CBI building began.

Cardinal Environmental completed asbestos abatement activities on furnaces #2 and #3 in the south die cast building. Transite shingles from the gable end of the west end of SDC were removed.

Laclede Gas visited the site to arrange for permanent removal of the high-pressure gas tap. Plumbers worked to complete tap destruction for city water.

S&W sampled the walls and ceiling for the remainder of the SDC.

August 10–August 16, 1997

The SES crew cut pipes, ducts, and other physical connectors between the die cast buildings, warehouse, and CBI building in preparation for demolition. The crew also re-washed some of the walls in the die cast buildings where analytical results indicated PCB concentrations were still above 50 mg/kg.

Excavation activities were conducted in the west and center exposure units (V3 and V2) in the north parking lot. Verification samples were collected from the units following the excavation.

August 17–August 23, 1997

As part of the demolition permit, all water and gas lines had to be disconnected at the source mains. The St. Louis City Water District began the disconnection of the four water line taps, which included closing one lane of Grand Boulevard while workers excavated down to the water main connections.

Cardinal Environmental completed asbestos abatement in the die cast buildings. Exhaust duct compression fittings and some asbestos tiles were removed from two furnaces in the western end and southeastern end of the SDC. The furnace in the northeast end of the SDC was completely contained and removed as asbestos contaminated material (ACM). All ACM was stored on the NPL prior to being shipped for disposal.

August 24–August 30, 1997

The city of St. Louis continued to work on water tap destruction in Grand Boulevard. The SES crew re-excavated and sampled the middle verification unit in the NPL. The crew also pumped the first batch of treated water to the city of St. Louis wastewater treatment facility after receipt of supporting analytical data.

August 31–September 6, 1997

The city of St. Louis completed all work on water tap destructions in Grand Avenue. S&W continued work on acquiring permits from the city to complete demolition of the various buildings.

September 7–September 13, 1997

The SES crew began demolition of the warehouse building. The crew used a large track hoe with a grappling sheer attachment to cut the beams and structural members. Another large track hoe and front loader were used to pull down the walls and push the debris into segregated piles of steel and brick.

The asbestos-contaminated material from the die cast buildings was hauled off site for disposal at the Chain-of-Rocks landfill in Granite City, Illinois.

Additional security fencing was constructed along Grand Avenue where the warehouse had been demolished.

September 14–September 20, 1997

The SES crew completed demolition of the warehouse building. As specified in the Removal Action Work Plan, all soils and debris that were determined to contain PCB concentrations of 50 mg/kg or greater were transported off site to an approved recycling or disposal facility permitted under TSCA, Subtitle C. Soil and debris materials with PCB concentrations below 50 mg/kg were disposed of at a RCRA Subtitle D (non-hazardous) landfill as special waste. Approximately 1,200 tons of material from the warehouse building were hauled to the Chain-of-Rocks landfill as special waste.

Demolition of the SDC began. Sample results from the outer brick layer of the south wall indicated PCB concentrations less then 50 mg/kg. The crew used a backhoe to split the wall down the middle, pushing the interior of the wall which contained greater than 50 mg/kg PCB into the SDC and pulling the exterior of the wall onto the warehouse floor slab. The exterior wall material was stockpiled separately. A composite sample of the stockpiled material was collected to verify that it was below 50 mg/kg.

The transformer at substation #3 on the roof of the SDC was removed, placed on plastic, and prepared for transportation and disposal.

The SES crew began backfilling the second and third excavation units in the north parking lot with pug mill (a fine-grained, limestone material) upon receipt of sample results, which indicated that these units were below 10 mg/kg of PCBs.

September 21-September 27, 1997

The SES crew continued demolition activities and segregation of materials on the SDC. Fourteen staged drums containing small PCB ballasts, PCB transformers, sludge/liquid were transported to Trans-Cycle Industries, Inc., located in Pell City, Alabama for recycling for disposal. Four drums containing PCB-contaminated material from cleanup activities was transported to the TSCA Subtitle C landfill in Belleville, Michigan for disposal. Twelve drums of containing trash, metal shavings, and grease were transported to the RCRA Subtitle D landfill for disposal. Wastewater in four drums was treated on site. One empty drum did not require disposal.

September 28-October 4, 1997

Most of the demolition materials from the warehouse were shipped off the site. Demolition continued at the north and south die cast buildings. Construction of a chain link fence was begun along Grand Avenue to restrict access to the site once the buildings were razed. TSCA Subtitle C waste was sent to EQ in Belleville, Michigan. Special wastes were sent to the Chain-of-Rocks Disposal Facility in Granite City, Illinois.

October 5-October 11, 1997

Demolition of the die cast buildings was finished. Segregation of demolition debris and cutting of steel continued. Several additional truck loads of PCB-contaminated debris were shipped off site to the Subtitle C facility in Michigan. Crews excavated the third and final soil exposure unit in the NPL. Construction of the chain link fence along Grand Avenue was finished.

October 12-18, 1997

Loading and shipping of demolition debris to either a Subtitle C or Subtitle D landfill continued.

S&W sampled the final verification unit in the NPL. Results from sampling indicated that the unit had PCB concentrations greater than 10 mg/kg. The unit was re-sampled to determine the extent of additional excavation required. A sample of the stockpiled debris from Section 4 of the NDC walls and the eastern third of the NDC roof was collected.

October 19-25, 1997

Loading and shipping of demolition debris to either the Subtitle C or Subtitle D landfill continued. SES finished cutting steel and started cleanup of demolition debris around the site.

START sampled below the concrete floor of the die cast buildings. Results for the subsurface sampling are included in Table C (Attachment 3).

October 26-November 1, 1997

Loading and shipping of demolition debris to either the Subtitle C or Subtitle D landfills continued. Remaining asbestos debris contaminated with PCBs was shipped to the Subtitle C facility in Michigan. Cleanup of demolition debris around the site continued. Verification unit #1 in the NPL was re-excavated and sampled.

November 2-8, 1997

Loading and shipping of demolition debris to the Subtitle C landfill continued. Knee-walls in the die cast buildings were broken off to ensure that they would not protrude above final grade. Verification unit #1 in the NPL was re-excavated and sampled. Cleanup of demolition debris around the site continued. Cleaning of sumps in die cast buildings commenced.

November 9-15, 1997

Loading and shipping of demolition debris and excavated soil to the Subtitle C landfill continued. Concrete from knee-walls was loaded and shipped to the Subtitle D landfill. Compressed gas cylinders were shipped off the site.

SES continued cleanup of demolition debris from around the site. Cleaning of sumps in die cast buildings continued. The surfaces of the die cast buildings were prepared for application of epoxy (Carboline 890). SES removed the roof from the basement in the warehouse, washed it with "Less Than 10" solvent, and sampled the debris. SES began to close the openings from the die cast buildings into the CBI building with concrete blocks and mortar.

November 16-22, 1997

Loading and shipping of demolition debris and excavated soil to the Subtitle C landfill continued. The last loads of special waste were loaded and shipped to the Chain-of-Rocks Subtitle D landfill. Mixed waste, light bulbs, and drums of HTA compound were shipped off site.

SES finished closing the openings into the CBI building. SES finished cleaning sumps in NDC. Cleaning of the floor and sumps in the SDC continued. The NDC area was coated with epoxy. SES began backfilling the NPL, NDC, and basement with limestone screenings (also referred to as pug mill). SES began treating water collected from the sumps in the die cast buildings.

S&W ceased collecting on site background air monitoring samples.

November 23-29, 1997

SES finished cleaning the SDC floors and sumps. SES finished applying the epoxy to the SDC. Backfilling of the NPL, die cast buildings, and basement of the warehouse continued.

November 30-December 6, 1997

The last hazardous debris was loaded and shipped to the Subtitle C landfill in Michigan. SES finished backfilling the NPL, die cast building area, and basement of the warehouse. Treatment of decontamination water was completed. Demobilization of equipment and trailers on the site commenced. The security service was discontinued.

S&W sampled the warehouse floor slab. Results indicated that the concentrations of PCBs were as high as 85 mg/kg.

December 7-13, 1997

SES finished repairing broken windows in the CBI building. The remainder of the equipment on site was demobilized. Tanks containing treated decontamination water remained, pending results from samples.

March 8-14, 1998

S&W conducted sampling of the concrete floor of the warehouse area.

Synopsis

An emergency removal was conducted to address high levels of PCB contamination at the former Carter Carburetor facility. Removal activities included asbestos abatement, removal of PCB-containing transformers and ballast, demolition of building structures, and excavation of PCB-contaminated soil. Fourteen staged drums containing small PCB ballasts, PCB transformers, sludge/liquid were transported to Trans-Cycle Industries, Inc., located in Pell City, Alabama, for recycling for disposal. Four drums containing PCB-contaminated material from cleanup activities was transported to the TSCA Subtitle C landfill in Belleville, Michigan for disposal. Twelve drums of containing trash, metal shavings, and grease were transported to the Chain-of-Rocks RCRA Subtitle D landfill in Granite City, Illinois for disposal. Wastewater in four drums was treated on site.

Asbestos abatement was conducted in the die cast buildings prior to demolition. Asbestos-containing material was disposed of at the Chain-of-Rocks landfill in Granite City, Illinois. Pipes, duct work, steel structures, and concrete were washed and rinsed with a proprietary cleaning solution prior to disposal. The die cast building and warehouse structures were demolished. A total of 2,044 tons of debris was removed from the die cast buildings. Approximately half of this amount, 1,028 tons, was transported to the TSCA Subtitle C landfill in Michigan for disposal. The remainder, 1,016 tons, was transported to the Chain-of-Rocks RCRA Subtitle D landfill for disposal. The concrete floor and sub-grade walls of the die cast building were left in place, washed, rinsed, and double coated with Carboline 890 epoxy.

The warehouse structure and a portion of the warehouse floor were demolished. Approximately 770 tons of debris from the warehouse demolition was transported to the Chain-of-Rocks landfill for disposal. The portion of the north parking lot where a PCB transformer had leaked onto the surface was excavated. A total of 1,100 tons of excavated soil from the north parking lot was transported to the TSCA Subtitle C landfill in Michigan for disposal.

The sub-grade area of the die cast buildings, north parking lot area, and a portion of the warehouse excavation was backfilled with pug mill, graded, and compacted. The warehouse floor remained and was sampled for potential removal activities at a later date.

FOLLOWUP ACTIVITIES

Sampling of the remaining concrete pad of the former warehouse area by S&W in January and March 1998 indicated concentrations of PCBs above TSCA cleanup criteria. S&W prepared a Warehouse Floor

Removal Work Plan (Attachment 2F). The work plan was reviewed by EPA and subsequently approved. Environmental Restoration (ER) was subcontracted for the removal. Debris having PCB concentrations between 50 mg/kg and 10 mg/kg, was disposed of as special waste at a RCRA Subtitle D landfill in either Bridgeton, Missouri or Milam. Illinois. Debris having PCB concentrations greater than 50 mg/kg, was bagged and shipped for disposal as a hazardous waste to a TSCA Subtitle C landfill in Belleville, Michigan. The following is a week-by-week description of the warehouse floor removal activities.

May 30–June 6, 1998

ER awaited approval from the city of St. Louis for a demolition permit. A track hoe and loader were mobilized to the site.

June 7–13, 1998

ER began removal of the warehouse floor. Special waste debris was loaded and shipped to the Bridgeton landfill. Some debris considered hazardous was bagged for shipment to a Subtitle C landfill. Knee-walls protruding above the backfill area of the NDC and SDC were removed to below grade with the aid of a jackhammer attached to the loader.

During removal of the warehouse floor, three 30-gallon buried underground storage tanks (USTs) and one UST thought to contain between 250 and 500 gallons were discovered. The 250- to 500-gallon UST was later determined to be a 100-gallon UST. The three 30-gallon USTs were in a line approximately 25 to 30 feet apart. The larger UST was located approximately 20 feet north of the line of smaller USTs. S&W collected oil-like fluid from one of the 30-gallon USTs and from the 250- to 500-gallon UST. PCBs were not detected in the oil-like fluid of either UST. The fluid in the 30-gallon USTs was thought to be hydraulic oil. The fluid in the larger UST was thought to be motor oil or fuel oil. S&W used peristaltic pumps to empty the three 30-gallon tanks into 55-gallon drums.

S&W conducted confirmation sampling of the excavated areas. Preliminary results indicated that the underlying soil of the concrete pad was contaminated with PCBs above TSCA cleanup criteria. Samples of the soil surrounding the USTs were collected and submitted for total petroleum hydrocarbon analysis.

Heavy rains produced standing water on the fill area of the SDC near the CBI building. Tom Kerr, owner of the CBI building, said water was entering the building through the openings that had been closed

off. S&W stated that holes in the openings would be fixed. In addition, a site walk through revealed that epoxy was peeling off the concrete on an exposed portion of concrete in the die cast backfill area.

June 14–20, 1998

Verification sampling of excavated areas continued. S&W collected a composite sample of the soil underneath and around the USTs to characterize the material for disposal. Sample results indicated that two areas of the original excavation would require additional excavation.

June 28–July 4, 1998

S&W applied for soil disposal permits and prepared for removal of discovered USTs.

July 5–11, 1998

The USTs were excavated, opened, and cleaned. Damaged brick around the closed doorways that led from the former die cast buildings into the CBI building were repaired.

July 12–18, 1998

ER excavated additional soil from areas that were determined to be above the TSCA cleanup criteria. The portion above 50 mg/kg PCBs was loaded and sent to the previously described Subtitle C landfill in Michigan. Soil below 50 mg/kg was loaded and shipped to the Bridgeton landfill for disposal.

Soil surrounding the USTs was excavated, loaded, and shipped along with the steel from the USTs to the Bridgeton landfill. An additional UST was discovered during re-excavation in area V5. This tank was emptied into a 55-gallon drum. The UST was crushed and sent to the Bridgeton landfill.

S&W performed verification sampling after re-excavation was completed. Activities at the Carter Carburetor site ceased until verification results were received.

July 19–25, 1998

S&W received verification results for re-excavated areas. All excavation units have passed site cleanup levels of 10 mg/kg PCBs.

August 2-8, 1998

The excavated areas were backfilled with coarse gravel and graded. One 55-gallon drum filled with oil sludge from the discovered USTs remained on site.

August 9-22, 1998

Safety-Kleen removed the drum with sludge from the waste oil tank.

Synopsis

The concrete floor of the warehouse was sampled by Shannon and Wilson (contractor for ACF) after demolition of the warehouse structure. Analytical results indicated that the concrete floor was above the TSCA cleanup criteria of 10 mg/kg. Shannon and Wilson subcontracted Environmental Restoration for the removal of the contaminated concrete floor. The warehouse floor and portions of the subgrade containing PCB concentrations above 10 mg/kg were excavated. Fifteen tons of debris and soil consisting of the warehouse floor on which a PCB-transformer spill had occurred and excavated subgrade soil above 50 mg/kg were sent to the TSCA Subtitle C landfill in Michigan for disposal. Approximately 1,880 tons of debris and soil was sent to the RCRA Subtitle D landfills in either Milam, Illinois, or Bridgeton, Missouri. The excavation area was backfilled with coarse gravel and graded.

During removal activities, four 30-gallon and one 100-gallon USTs were discovered. Analysis of oil contained in these tanks determined that it did not contain PCBs. The oil was pumped from the tanks into 55-gallon drums. Oil and sludge were removed from the USTs were collected and removed from the site by the Safety-Kleen Corporation or the Kiesel Company. The USTs were disposed of at the Bridgeton landfill. Soil surrounding the USTs was sampled and analyzed for total petroleum hydrocarbons (TPH). The soil was below the remedial benchmark of 500 mg/kg for TPH.

SUMMARY

EPA issued a UAO to ACF industries based on the conclusions from the June 1995 TAT Site Assessment report. The order required ACF to conduct removal actions at its former Carter Carburetor manufacturing facility in St. Louis, Missouri, to "abate an imminent and substantial endangerment to the public health, welfare, or the environment that may be present by the actual or threatened release of hazardous substances at and/or from the site". ACF contracted S&W to coordinate and oversee removal

activities. S&W subcontracted SES, ER, and Cardinal Environmental during various phases of the removal project.

Removal activities included asbestos abatement, removal of PCB-containing transformers and ballast, demolition of building structures, and excavation of PCB-contaminated soil. Fourteen staged drums containing small PCB ballasts, PCB transformers, sludge/liquid were transported to Trans-Cycle Industries, Inc., located in Pell City, Alabama for recycling for disposal. Four drums containing PCB-contaminated material from cleanup activities was transported to the TSCA Subtitle C landfill in Belleville, Michigan for disposal. Twelve drums of containing trash, metal shavings, and grease were transported to the RCRA Subtitle D landfill for disposal. Wastewater in four drums was treated on site.

Asbestos abatement was conducted in the die cast buildings prior to demolition. Asbestos-containing material was disposed of at the Chain-of-Rocks landfill in Granite City, Illinois. Pipes, duct work, steel structures, and concrete were washed and rinsed with a proprietary cleaning solution prior to disposal. The die cast building and warehouse structures were demolished. A total of 2,044 tons of die cast building debris was removed from site. Approximately half of this amount, 1,028 tons, was transported to the TSCA Subtitle C landfill in Michigan for disposal. The remainder, 1,016 tons, was transported to the Chain-of-Rocks RCRA Subtitle D landfill for disposal. The concrete floor and sub-grade walls of the die cast building were left in place, washed, rinsed, and double coated with Carboline 890 epoxy.

A total of 1,100 tons of excavated soil from the north parking lot was transported to the TSCA Subtitle C landfill in Michigan for disposal. The warehouse structure and floor was demolished. A total of 2,662 tons of warehouse demolition debris was removed from the site. Approximately 1,167 tons of the debris from the warehouse demolition was transported to the RCRA Subtitle D Chain-of-Rocks or Milam landfills in Illinois for disposal. Approximately 1,480 tons of warehouse debris was transported to the RCRA Subtitle D Bridgeton landfill in Missouri for disposal. The remainder, 15 tons, of debris required disposal at the TSCA Subtitle C landfill in Michigan. The portion of the north parking lot where a PCB transformer had leaked onto the surface was excavated. The sub-grade area of the die cast buildings, north parking lot area, and a portion of the warehouse excavation was backfilled with pug mill, graded, and compacted.

Five USTs were discovered underneath the warehouse floor during excavation. Although the USTs contained oil, it was determined that the oil was not contaminated with PCBs. Oil and sludge were removed from the USTs were collected and removed from the site by the Safety-Kleen Corporation or the

Kiesel Company. The USTs were disposed of at the Bridgeton landfill. The warehouse floor excavation was backfilled with gravel and graded.

PRP-lead removal activities at the Carter Carburetor facility have been completed. No further site work is anticipated at this time. However, an engineering evaluation/cost analysis is currently being prepared by START to address the adequacy of the PRP-lead removal action and PCB contamination remaining in the CBI building.

REFERENCES

Ecology and Environment, Inc. (E & E), 1993, *Site Assessment: Carter Carburetor, St. Louis, Missouri*, TDD T07-9310-027B, Contract No. 68-WO-0037, November 16, 1993.

Ecology and Environment, Inc. (E & E), 1994, *Site Assessment: Carter Carburetor, St. Louis, Missouri*, TDD T07-9403-001, Contract No. 68-WO-0037, June 30, 1995.

Ecology and Environment, Inc. (E & E), 1995, *CERCLA Site Assessment: Carter Carburetor, St. Louis, Missouri*, TDD T07-9505-009, Contract No. 68-WO-0037, September 7, 1995.

ATTACHMENTS:

1. Figure A: Site Location Map
   Figure B: First Floor Site Sketch

2. A: S&W Removal Action Work Plan and Amendments
   B: S&W Sampling and Analysis Plan
   C: S&W Site Safety Plan
   D: S&W Standard Operating Procedures
   E: S&W Asbestos Abatement Work Plan
   F: S&W Warehouse Floor Removal Work Plan

3. Table A: Shannon & Wilson Sample Results
   Table B: Split Sample Results
   Table C: Subsurface Soil Sample Results

4. Split Sample Results

5. Photographic Documentation

ATTACHMENT 1

Figure A: Site Location Map
Figure B: First Floor Site Sketch

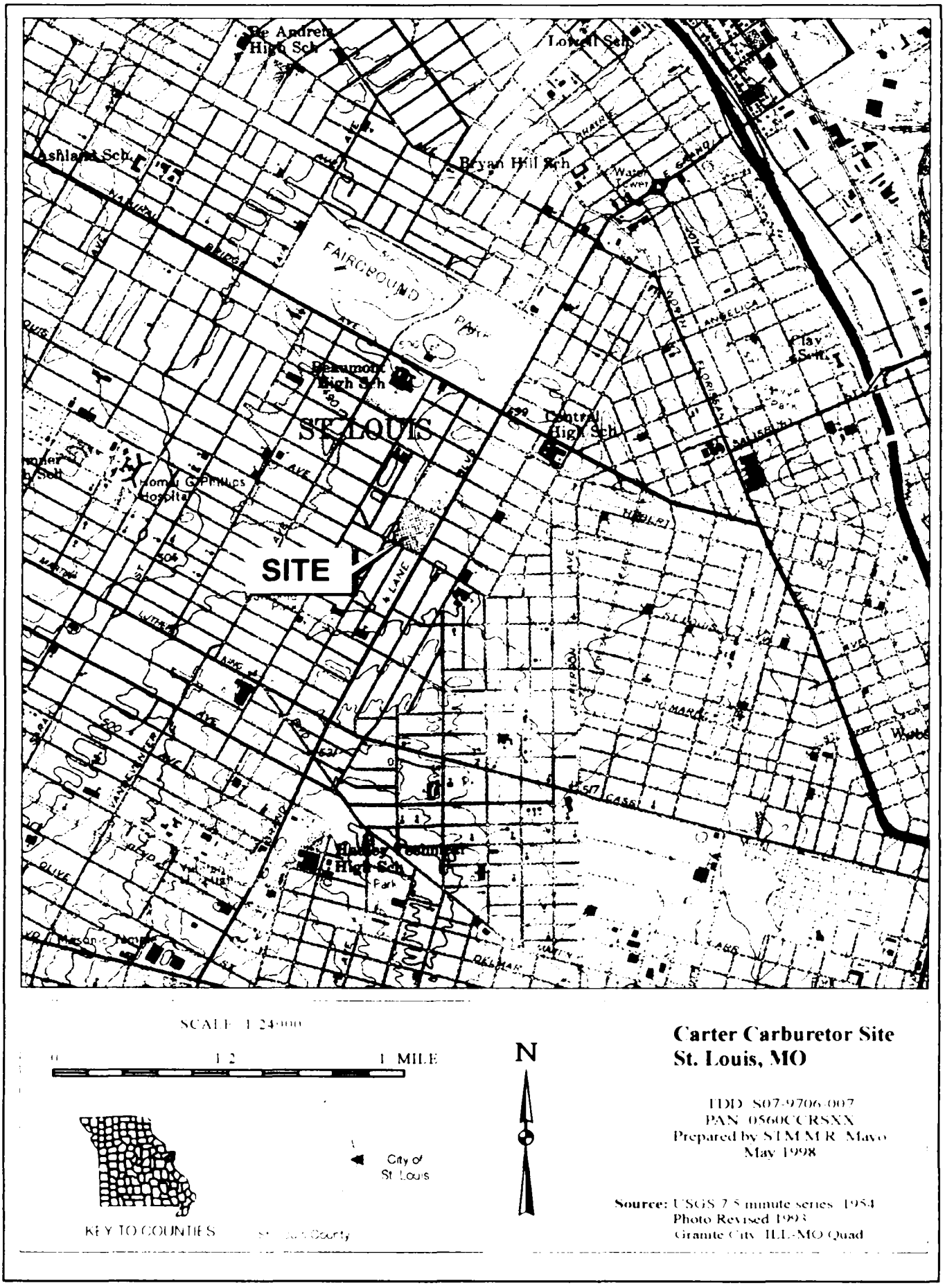

Figure A: Site Location Map

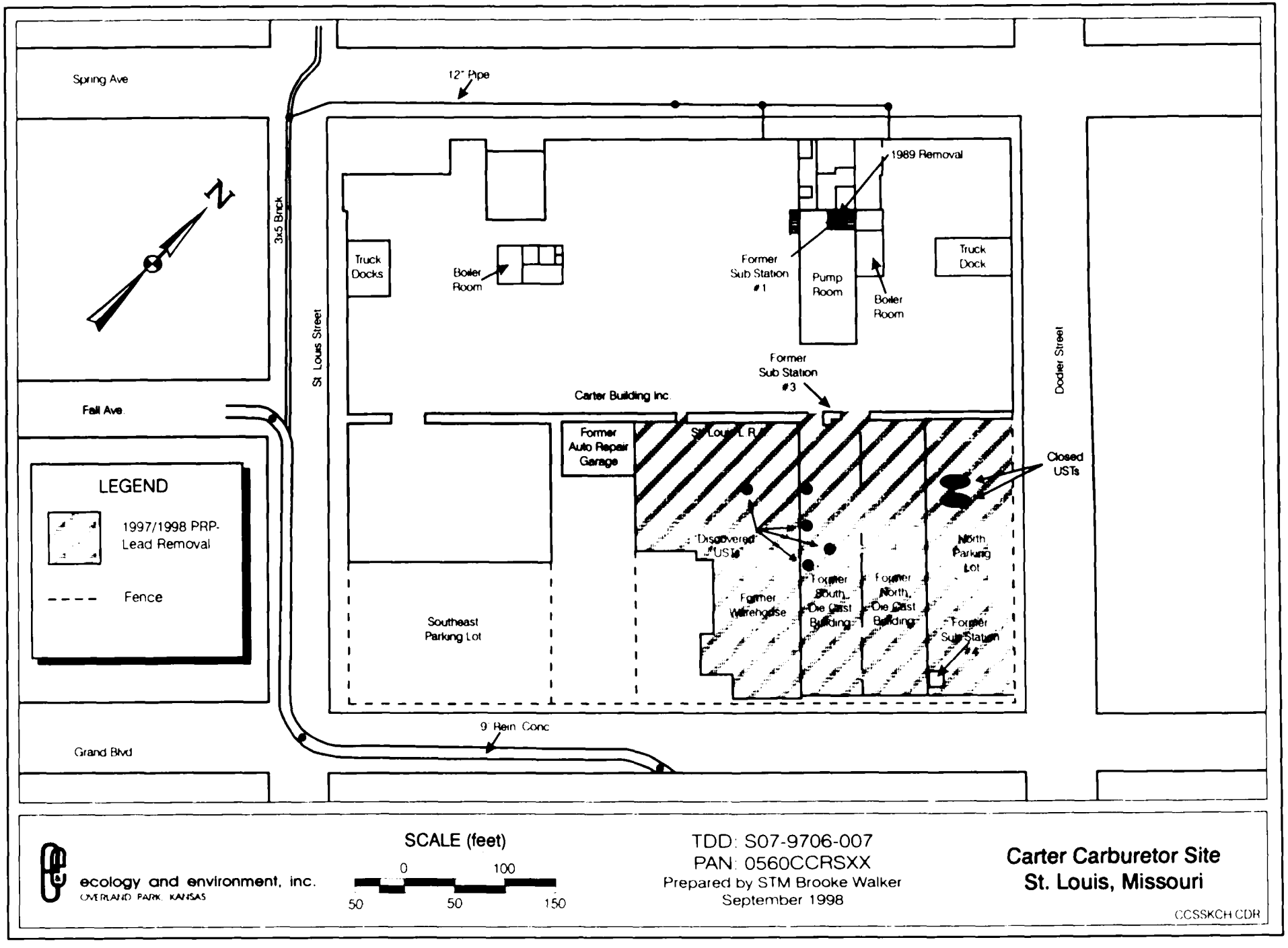

Figure B: Site Sketch

ATTACHMENT 2

A: S&W Removal Action Work Plan and Amendments
B: S&W Sampling and Analysis Plan
C: S&W Site Safety Plan
D: S&W Standard Operating Procedures
E: S&W Asbestos Abatement Work Plan
F: S&W Warehouse Removal Work Plan

A. S&W Carter Carburetor Removal Action Work Plan and Amendments